A Development Consent Order Application by

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

In respect of

Rail Central – A Proposed Strategic Rail Freight Interchange, Northamptonshire

DRAFT Transport Assessment

February 2018



www.tpa.uk.com

DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Central – A Proposed Strategic Rail Freight Interchange, Northamptonshire		
Project No.:	1211-80	**Report No.:**	1211-80/TA/01
Client:	Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.		

	Prepared By:	Checked By:	Approved for issue
Name			
Signature			
Date	February 2018	February 2018	February 2018

DRAFT

Issued by:

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates
25 King Street
Bristol
BS1 4PB

0117 925 9400
bristol@tpa.uk.com
www.tpa.uk.com

CONTENTS PAGE

NON-TECHNICAL SUMMARY 1

Introduction
Purpose of the Transport Assessment
National, Regional and Local Planning Guidance
Stakeholder Engagement
The Application Site
Design Year Baseline Conditions
The Proposed Development
Trip Attraction
Design Year 'With Development' Conditions
Junction Capacity Assessments
Cumulative Assessment
Conclusions

1 INTRODUCTION 8

Background
Purpose
Structure

2 RELEVANT TRANSPORT PLANNING POLICY AND DESIGN GUIDANCE 10

National Land Use and Transport Planning Policy
Local Land Use and Transport Planning Policy
Transport Infrastructure Design Guidance

3 STAKEHOLDER ENGAGEMENT 24

Scoping Opinion
Phase One Consultation
Transport Working Group
Local Liaison Group
Third Party Queries
Summary of Agreement

4 THE APPLICATION SITE 31

Environs
Existing Strategic Road Network
Existing Local Highway Network
Existing Highway Safety

5 DESIGN YEAR BASELINE CONDITIONS 43

DRAFT

Northamptonshire Strategic Transport Model
Data Collection
Assessment Scenarios
Design Year Baseline Modelling
6 THE PROPOSED DEVELOPMENT 46
Summary of Proposals
Means of Access
Parking
Off-Site Highway Works – Capacity Improvements
Off-Site Highway Works – Road Safety Schemes
Off-Site Highway Works – Pedestrian and Cycle Improvements
Off-Site Highway Works – Environmental Enhancement Schemes
Travel Planning
7 TRIP ATTRACTION 61
Person Trip Attraction - Methodology of Calculation
Heavy Goods Vehicle Trip Attraction – Methodology of Calculation
8 DESIGN YEAR 'WITH DEVELOPMENT' CONDITIONS 66
Distribution of Car Trips
Distribution of Heavy Goods Vehicle Trips
Assessment Scenarios
Agreed Study Area
Summary of Strategic Modelling Results
Phasing
9 JUNCTION CAPACITY ASSESSMENTS 70
Methodology of Analysis
Capacity Assessments
10 CUMULATIVE ASSESSMENT 78
Northampton Gateway
Methodology of Assessment
Capacity Assessments
Concluding Remarks
11 CONCLUSIONS 82
Overview
Relevant Transport Planning Policy and Design Guidance
Stakeholder Engagement
The Application Site

DRAFT

Design Year Baseline Conditions

The Proposed Development

Trip Attraction

Design Year 'With Development Conditions

Junction Capacity Assessments

Cumulative Assessment

DRAFT

LIST OF TABLES

Table 4.1 Summary of recorded Personal Injury Collisions (PICs) from 2012 to 2016
Table 4.2 Summary of Bus Services from Northampton Road (Opposite Business Park)
Table 4.3 Northampton Railway Station Services
Table 4.4 Overall Travel Time by Sustainable Modes of Travel
Table 6.1 Anticipated parking provision (based on NCC standards)
Table 7.1 Summary of Rail Central Person Movements – EMGSRFI Methodology
Table 7.2 Summary of Rail Central Person Movements including Ancillary Uses
Table 7.3 Rail Central Baseline Mode Shares
Table 7.4 Summary of Baseline Multi-Modal Trips
Table 7.5 Estimated Daily and Peak Hour HGV's
Table 8.1 Agreed Study Area
Table 9.1 Junction 13 Capacity Assessment - Proposed Site Access Junction
Table 9.2 Junction Five Capacity Assessment - Existing M1 Junction 15A
Table 9.3 Junction Five - Capacity Assessment - Mitigated M1 Junction 15A
Table 9.4 Summary of Junction Analysis
Table 10.1 Summary of Cumulative Development Junction Testing

LIST OF FIGURES

Figure 4.1 Local Highway Network, Existing Pedestrian Infrastructure and Public Rights of Way
Figure 4.2 Existing Bus Routes
Figure 5.1 Traffic Survey Locations
Figure 6.1 A43 Site Access Grade Separated Roundabout
Figure 6.2 Proposed Underpass of Spine Road under Northampton Road
Figure 6.3 Proposed Emergency Access / Egress Between Northampton Road and Site
Figure 6.4 Existing and Proposed Public Rights of Way
Figure 6.5 Proposed Pedestrian Underpass Arrangement
Figure 6.6 Proposed Footway / Cyleway along Towcester Road / Northampton Road'
Figure 8.1 Agreed Study Area Plan

DRAFT

LIST OF APPENDICES

A	TWG Meeting Minutes
B	Accident Analysis Technical Note
C	NSTM LMVR
D	Modelling Methodology Specification Report
E	Model Local Area Validation Report
F	NSTM Committed and Allocated Development and Infrastructure Schemes
G	Junction Capacity Improvement Schemes
G.1	Junction 1 Proposed Mitigation
G.2	Junction 3 Proposed Mitigation
G.3	Junction 4 Proposed Mitigation
G.4	Junction 5 Proposed Mitigation
G.5	Junction 6 Proposed Mitigation
G.6	Junction 7 Proposed Mitigation
G.7	Junction 9 Proposed Mitigation
G.8	Junction 10 Proposed Mitigation
G.9	Junction 11 Proposed Mitigation
G.10	Junction 12 Proposed Mitigation
G.11	Junction 14 Proposed Mitigation
G.12	Junction 15 Proposed Mitigation
G.13	Junction 19 Proposed Mitigation
G.14	Junction 20 Proposed Mitigation
G.15	Junction 25 Proposed Mitigation
H	Proposed Road Safety Schemes and Review of Collision Data
H.1	Junction 28 Highway Safety Review
H.2	Junction 29 Highway Safety Review and Proposed Mitigation
H.3	Junction 31 Highway Safety Review and Proposed Mitigation
I	Proposed Pedestrian and Cycle Strategy
J	Potential Environmental Enhancement Schemes
K	Proposed Public Transport Strategy
L	BN01 – Person Trip Attraction
M	TN06 – Ancillary Person Trip Attraction
N	BN02 – Baseline Mode Share
O	MDS Transmodal Report – HGV Trip Attraction
P	MDS Transmodal Report – GB Freight Model
Q	Strategic Modelling Assessment Report
R	Junction Assessment Technical Notes

DRAFT

S VISSIM Revalidation Report

T Northampton Gateway Proposed M1 J15 Mitigation

U Northampton Gateway Proposed Roade Bypass

V Cumulative Assessment Modelling Results

DRAFT

NON-TECHNICAL SUMMARY

Introduction

This is a Non-Technical Summary of the findings of the Transport Assessment work undertaken for the proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central ("the Development").

This Non-Technical Summary is a brief overview of a complex technical assessment, full details of which are provided in the preliminary Transport Assessment.

This Non-Technical Summary describes the following:

- The Purpose of the Transport Assessment;
- National, Regional and Local Planning Guidance;
- Stakeholder Engagement;
- The Application Site;
- Design year baseline conditions;
- The proposed development;
- Trip Attraction;
- Design Year 'With Development' Conditions;
- Junction Capacity Assessments;
- Cumulative Assessment; and
- Conclusions

Purpose of the Transport Assessment

The purpose of the Transport Assessment (TA) is to:

- Assess the impact of the development proposals on the highway network;
- Ensure the Development can be satisfactorily accessed by all relevant travel modes;
- Develop Highway mitigation/junction improvements if required;
- Assess whether proposed highway mitigation schemes are fit for purpose;
- Ensure the development proposals create no adverse impacts on the surrounding highway network.

National, Regional and Local Planning Guidance

The Transport Assessment includes reviews of the current policy, guidance and emerging strategies that relate to the Development on a local and national level. These policies and guidance documents form the criteria that the development proposals are assessed against.

The review makes clear that national and local planning policy recognises SRFIs and the intermodal freight industry has an important role to play in a low carbon economy and in helping combat climate change. SFRI's reduce trip mileage and freight movements on both the national and local road networks.

The Transport Assessment includes a review of the following policies:

- National Policy Statement for National Networks (December 2014);
- National Planning Policy Framework (March 2012);
- National Planning Practice Guidance (2014);
- The Strategic Road Network and the Delivery of Sustainable Development (DfT Circular 02/2013, 2013);
- Guidance on Transport Assessment (2007) (withdrawn 2014);
- South Northamptonshire Local Plan (1997) (Saved Policies revised December 2014)
- West Northamptonshire Joint Core Strategy (Part 1) (December 2014)
- Emerging South Northamptonshire Local Plan;
- Northamptonshire Transportation Plan (March 2012);
- Northamptonshire Parking Standards (September 2016);
- Design Manual for Roads and Bridges (November 2017);
- Manual for Streets (March 2007);
- Manual for Streets 2: Wider Application of the Principles (September 2010); and
- Northamptonshire Place and Movement Guide (December 2008).

The Transport Assessment concludes that the development aligns with the thrust of national and local planning policy and guidance and presents the opportunity to provide sustainable development and economic growth through the provision of a Strategic Rail Freight Interchange in a strategically suitable location.

Stakeholder Engagement

The Transport Assessment has been informed by engagement with stakeholders on an on-going basis. In this case a stakeholder is a person or authority with an interest or concern in the Development.

The feedback from stakeholders forms the evidence for the assessment methodology adopted in the Transport Assessment.

The following stakeholders were consulted in the production of the Transport Assessment;

- Secretary of State;
- Public – local population and interested parties;
- Highways England; and
- Northamptonshire County Council;

Through stakeholder engagement a significant number of matters and documents were agreed as appropriate with HE and NCC. The Transport Assessment includes a list of these agreements including matters relating to:

- Site access and site layout;
- Development trip attraction;
- Technical traffic modelling assumptions;
- Travel Planning approach and principles; and
- Junction improvements.

The Application Site

The Transport Assessment sets out a review of the existing site and surroundings. The review identified that the existing transport provision within the vicinity of the site is limited.

Whilst the existing provision around the site is limited there are opportunities to improve walking and cycling infrastructure and connections to surrounding villages. The proposals will be supported by a comprehensive public transport strategy including the provision of new bus stops on Northampton Road, a new bus interchange within the site and additional bus services. The Development is designed to allow easy movement within the site and to incorporate sustainable measures to encourage employees to minimise the use of private cars.

Design Year Baseline Conditions

In order to assess the impact of the Development on the transport network, the baseline traffic flow conditions were analysed. The baseline traffic flow conditions are made up of the existing and future year traffic flows on the existing and future highway networks, without the Development.

The derivation of baseline conditions is agreed with HE and NCC and was made up of the following:

- The existing and future baseline years:
  - i) 2015, includes traffic surveys;
  - ii) 2021, includes committed developments and mitigation and committed highway schemes and is the forecast opening year of development; and
  - iii) 2031, includes committed developments and committed highway schemes and is forecast to be the full build out of the Development.
- The existing and future highway network was taken from the 'Northamptonshire Strategic Transport Model (NSTM) for the above years. The NSTM highway network includes the whole of Northamptonshire and beyond.

The resulting analysis indicated that in future years 2021 and 2031 without the development, the Northamptonshire highway network is forecast to experience significant delays and congestion. The primary reason for this was found to be an increase in vehicles on the highway network as a result of traffic growth following the implementation of the West Northamptonshire Joint Core Strategy.

The Proposed Development

The Proposed Development is for a Strategic Rail Freight Interchange (SRFI) with associated highways works and ancillary development on land within the Proposed Development Area (PDA).

It is anticipated that the proposed development will comprise the following key elements:

- Demolition of existing buildings and structures;
- An intermodal freight terminal with direct connections to the Northampton Loop Line, capable of accommodating trains of up to 775m long, including up to 3 gantry cranes, container storage, a train maintenance depot and facilities to transfer containers to Heavy Goods Vehicles (HGV);
- An express freight terminal with direct connections to the West Coast Main Line, capable of accommodating trains of up to 240m long, a freight platform with associated loading and unloading facilities;
- Up to 702,097 sq m (Gross External Area) of rail connected and rail served warehousing and ancillary service buildings including a lorry park, terminal control building and bus terminal;
- New road infrastructure including a new separated access point on the A34 (T), an internal site underpass (under Northampton Road) and necessary utilities infrastructure; and
- Strategic landscaping and open space including alterations to public rights of way, the creation of new ecological enhancement areas and publicly accessible open areas, flood attenuation, and the partial diversion of the Milton Malsor brook.

Access to the site is proposed from the A43 via a new grade separated junction (GSJ) west of the development, the principle of which is agreed with HE and NCC. A temporary access is proposed for construction traffic. Proposed parking arrangements will be in line with Northamptonshire Parking Standards.

The Development proposals include:

- 15 junction improvements listed below:
  - i) M1 Junction 16;
  - ii) A4500 / Upton Way / Tollgate Way
  - iii) A5076 / A5123 / Upton Way
  - iv) M1 Junction 15A
  - v) A5076 / Hunsbury Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road
  - vi) Towcester Road / A5076 / A5123 / Tesco
  - vii) A45 / Eagle Drive / Caswell Road
  - viii) A45 Barnes Meadow Interchange
  - ix) A45 / A43 / Ferris Row
  - x) M1 Junction 15
  - xi) A43 Tove Roundabout

xii) A43 Abthorpe Roundabout
xiii) A5076 / Telford Way / Walter Tull Way / Duston Mill Lane
xiv) A5076 / High Street / Duston Mill
xv) A508 / A5199

- three road safety schemes on the A43;
- offsite pedestrian and cycle improvements on Rectory Road, Towcester Road and Barn Lane;
- Environmental enhancement schemes for Blisworth and Milton Malsor designed to encourage lower vehicles speeds, and hence make these routes less attractive to through traffic or 'rat running';
- Travel Planning including:
  - i) Construction Traffic Management Plan – plan to minimise impact of construction traffic on the local highway network;
  - ii) Operational Traffic Management Plan – plan to minimise impact of operational traffic on the local highway network;
  - iii) Public Transport Strategy – to encourage sustainable modes of transport including:
    - provision of new bus stops on either side of Northampton Road to the north of the proposed underpass;
    - provision of a new bus interchange within the site, situated to the north of the proposed underpass and west of Northampton Road. This will include an area where buses can turn and wait without blocking the bus stop.
    - extension of existing 88/89 bus services into the site from Northampton Road;
    - supplementary (out of hours) bus services to run along A43 for quicker journey time to / from Northampton and limit disruption to local residents;
    - potential additional bus services around shift changeover times; and
    - special offers and discounted fares for employees; and
  - iv) A Framework Travel Plan - sets out a number of measures and initiatives that are anticipated to be implemented at the site in order to minimise single occupancy vehicle trips and encourage use of public transport, walking, cycling and car sharing;

Trip Attraction

The development person trip attraction is agreed with HE and NCC and utilises person trip generation from similar SRFI facilities, specifically the East Midlands Gateway Strategic Rail Freight Interchange. HE and NCC agree that the trip generation is robust and a worst case assessment.

The peak hours for assessing the impact of the development were agreed with HE and NCC as weekday 0800-0900 and 1700-1800 as that is when the existing highway network is busiest.

MDS Transmodal prepared HGV traffic forecasts for the proposed Strategic Rail Freight Interchange on the basis that 685,882 sq.m of distribution centre floor space is developed at Rail Central alongside an intermodal terminal capable of handling 750 metre trailing-length trains.

Design Year 'With Development' Conditions

HE and NCC agreed for the NSTM to be used to distribute the development car trips. The HGV trips were derived through the use of the GB Freight Model (GBFM). The GB Freight Model is a national model that determines the origin and destination of freight movements across the UK, and is used by the Department for Transport (DfT) in preparing its national freight forecasts.

The assessment is agreed with HE and NCC and includes 37 junctions in total.

It was acknowledged at an early stage that an improvement scheme would be necessary at M1 J15A in order to mitigate the impact of Rail Central. The scheme was designed and analysed in the with development traffic strategic traffic model.

The final results demonstrate that the proposed improvements at M1 J15A provided a significant benefit to the operation of the wider highway network, with trips returning to major routes and away from minor routes. This means that there are a number of junctions where certain turning movements decrease in comparison to the baseline conditions and there is therefore a net beneficial impact.

Junction Capacity Assessments

The Transport Assessment derived junction improvement measures with the use of standalone junction models. Unlike the NSTM these models look at each junction individually with and without the development.

In conclusion, the Transport Assessment modelling identified 15 junction improvements. The results show that the junction improvements mitigate the impact of the proposed Development. The traffic modelling approach and methodology and junction improvement locations is agreed with HE and NCC.

Cumulative Assessment

The Transport Assessment includes a 'cumulative assessment' of traffic impacts. The cumulative assessment includes the traffic from the Development and the 'Northampton Gateway' plus this sites mitigation schemes.

The Northampton Gateway sits adjacent to M1 Junction 15. The development includes 468,000 sq.m (approx. 5 million sq. ft) Gross Internal Area (GIA) of B8 warehousing, an

intermodal freight terminal including container storage and HGV parking with associated highway works and ancillary development.

It has been demonstrated that in the vast majority of cases the highway mitigation proposals mitigate against both the Rail Central and the Northampton Gateway developments. However, further work will be carried out in advance of the DCO submission to determine whether further mitigation is required to mitigate the impact of the cumulative development at other locations

Conclusions

The Development accords well with the national, regional, and local transport policy and guidance to deliver sustainable development.

The effects of the Development have been assessed in detail and over a large study area using a variety of techniques. The methodology has been agreed with the relevant highway authorities and a robust assessment approach has been adopted. Being committed to mitigate the impact of the Development on the highway network, the applicant has developed a comprehensive package of measures including:

- junction improvements;
- a sustainable transport strategy;
- travel plan measures;
- pedestrian and cycle improvements;
- safety schemes; and
- environmental enhancements

With reference to the National Policy Statement for National Networks, the proposed measures ensure that appropriate weight has been applied to residual effects on the surrounding transport infrastructure and that reasonable steps have been taken to mitigate the impacts of the Development, which also ensure that a safe and suitable access can be delivered and the opportunities for sustainable transport modes have been taken up.

DRAFT

1 INTRODUCTION

Background

1.1 This Transport Assessment (TA) has been prepared by Transport Planning Associates (TPA) on behalf of Ashfield Land Ltd to support an application for a proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central. The site is located to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north. The villages of Milton Malsor and Blisworth are located south and north of the site, respectively.

1.2 The site itself comprises a total of 250ha and consists of farmland, with some small scale pastoral fields in the north east corner of the site.

1.3 The proposed development is for a Strategic Rail Freight Interchange (SRFI) of up to 702,097 sq.m (7.4M sq.ft) Gross External Area (GEA) with associated highway works and ancillary development on land within the Proposed Development Area (PDA). The number of employee's onsite is anticipated to be around 8,000.

1.4 The site is considered to be optimally located next to rail and trunk road infrastructure. The proposed SRFI will be progressed as a Nationally Significant Infrastructure Project (NSIP) and as such an application for the scheme will be taken through the Development Consent Order (DCO) process.

1.5 A number of Technical Notes, which are included as appendices, cover the methodology used to assess the effect the development will have on the surrounding transportation infrastructure and any associated mitigation. In accordance with the National Policy Statement for National Networks (NPS) these notes have been agreed with the highway authority at Northamptonshire County Council (NCC) and with Highways England (HE) and are consistent with the Scoping Opinion provided by the Secretary of State. The TA therefore provides a consistent methodology and approach to that provided within the Preliminary Environmental Information Report (PEIR).

Purpose

1.6 The purpose of this Transport Assessment (TA) is to assess the impact of the development proposals on the highway network. It will demonstrate that the proposed development can be satisfactorily accessed by all relevant travel modes and the proposed highway mitigation schemes are fit for purpose, ensuring that appropriate weight has been applied to residual effects on the surrounding transport infrastructure and that reasonable steps have been taken to mitigate the impacts of the Development in accordance with the NPS.

Structure

1.7 Following the Introduction, the TA is structured as follows:

- **Chapter 2** provides a review of the relevant transport planning policy and design guidance that have been applied in developing the highways proposals for the site;

- **Chapter 3** provides details of the stakeholder engagement undertaken in relation to the scheme, with information as to where specific queries have been addressed within this TA;

- **Chapter 4** provides an overview of the development site and surrounding local highway network, including accessibility to the site by all relevant modes of travel including a review of highway safety in the vicinity of the site**;**

- **Chapter 5** sets out the baseline highway conditions during the forecast design years, including the methodology for assessing the baseline operation of the highway network;

- **Chapter 6** sets out the development proposals including off-site highways works. These include junction capacity improvements, highway safety schemes, and pedestrian and cycle improvements. It also sets out travel planning, including a Construction Traffic Management Plan, Operational Traffic Management Plan, Public Transport Strategy and Framework Travel Plan;

- **Chapter 7** describes the forecast person trip attraction associated with the development proposals, the baseline mode share (including vehicle trips) and the forecast HGV trip attraction;

- **Chapter 8** sets out the forecast highway conditions following the implementation of Rail Central, including the methodology for assessing this and the agreed study area;

- **Chapter 9** provides results from the junction capacity assessments, including an assessment of the suitability of the proposed mitigation schemes;

- **Chapter 10** provides a review of the work carried out to date to assess cumulative impact of Rail Central and the Northampton Gateway proposal; and

- **Chapter 11** sets out the overall conclusions of this Transport Assessment, with specific reference to each of the chapters set out above.

2 RELEVANT TRANSPORT PLANNING POLICY AND DESIGN GUIDANCE

2.1 Relevant transportation policies and guidance are set out in the following documents:

(i) National Policy Statement for National Networks (December 2014);

(ii) National Planning Policy Framework (March 2012);

(iii) National Planning Practice Guidance (2014);

(iv) The Strategic Road Network and the Delivery of Sustainable Development (DfT Circular 02/2013, 2013);

(v) Guidance on Transport Assessment (2007) (withdrawn 2014);

(vi) South Northamptonshire Local Plan (1997) (Saved Policies revised December 2014)

(vii) West Northamptonshire Joint Core Strategy (Part 1) (December 2014)

(viii) Emerging South Northamptonshire Local Plan;

(ix) Northamptonshire Transportation Plan (March 2012);

(x) Northamptonshire Parking Standards (September 2016);

(xi) Design Manual for Roads and Bridges (November 2017);

(xii) Manual for Streets (March 2007);

(xiii) Manual for Streets 2: Wider Application of the Principles (September 2010); and

(xiv) Northamptonshire Place and Movement Guide (December 2008).

National Land Use and Transport Planning Policy

National Policy Statement for National Networks (December 2014)

2.2 The National Policy Statement for National Networks (NPS) sets out the need for, and Government's policies to deliver, development of Nationally Significant Infrastructure Projects (NSIPs) on the national road and rail networks in England. As set out in Section 104 of the 2008 Planning Act, the decision-maker of an application for an order granting development consent must have regard to any NPS which has effect to development of the description to which the application relates. The application must therefore must be decided in accordance with any relevant NPS, save for of certain specified circumstances.

2.3 The overall strategic aims of the NPS are consistent with the National Planning Policy Framework (NPPF). Although the NPPF will be a relevant consideration in decisions on NSIPs, it is not intended to contain specific policies for NSIPs where particular considerations apply. The NPS therefore assumes this function and provides transport policy which guides individual developments. The NPS also provides guidance and imposes requirements on specific matters including good scheme design and the treatment of environmental impacts.

In short, both documents seek to achieve sustainable development and recognise that different approaches and measures will be necessary to achieve this. However, the NPS identifies what the applicant's assessment must do, including the criteria for decision-making and the approach to mitigation.

2.4 Paragraph 5.203 states that *"Applicants should have regard to the policies set out in local plans"*

2.5 Paragraph 5.204 stipulates that *"Applicants should consult the relevant highway authority, and local planning authority, as appropriate, on the assessment of transport impacts"*.

2.6 Paragraph 5.205 states that *"Applicants should consider reasonable opportunities to support other transport modes in developing infrastructure"*. It goes on to say that *"the applicant should provide evidence that as part of the project they have used reasonable endeavours to address any existing severance issues that act as a barrier to non-motorised users".*

2.7 The NPS then continues to specify criteria for SFRI developments. At paragraph 5.207 it is stated that *"If a project is likely to have significant transport impacts it should include a Transport Assessment, using the WebTAG methodology stipulated in Department for Transport guidance, or any successor to such methodology. If a development is subject to EIA and is likely to have significant environmental impacts arising from impacts on transport networks, the applicant's environmental statement should describe those impacts".*

2.8 Paragraph 5.208 states that *"Where appropriate, the applicant should prepare a travel plan including management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport and sustainable modes where relevant, to reduce the need for any parking associated with the proposal and to mitigate transport impacts".*

2.9 At paragraph 5.209 the NPS states that *"For schemes impacting on the Strategic Road Network, applicants should have regard to DfT Circular 02/2013 The Strategic Road Network and the delivery of sustainable development (or prevailing policy) which sets out the way in which the highway authority for the Strategic Road Network, will engage with communities and the development industry to deliver sustainable development and, thus, economic growth, whilst safeguarding the primary function and purpose of the Strategic Road Network".*

2.10 Paragraph 5.210 states that *"If new transport infrastructure is proposed, applicants should discuss with network providers the possibility of co-funding by Government for any third-party benefits".*

2.11 With regard to decision-making, paragraph 5.211 of the NPS states that *"The Examining Authority and the Secretary of State should give due consideration to impacts on local transport networks and policies set out in local plans, for example, policies on demand management being undertaken at the local level"*

2.12 In terms of decision-making for SFRI developments paragraph 5.213 of the NPS states that *"Projects may give rise to impacts on the surrounding transport infrastructure including connecting transport networks. The Secretary of State should therefore ensure that the applicant has taken reasonable steps to mitigate these impacts. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the Secretary of State should expect applicants to accept requirements and/or obligations for funding infrastructure and otherwise mitigating adverse impacts on transport networks".*

2.13 Paragraph 5.214 states that "*Provided that the applicant is willing to commit to transport planning obligations and, to mitigate transport impacts identified in the WebTAG transport assessment (including environment and social impacts), with attribution of costs calculated in accordance with the Department's guidance, then development consent should not be withheld. Appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure"*

2.14 With reference to mitigation for SFRI development paragraph 5.218 of the NPS *"For strategic rail freight interchanges, travel planning should be undertaken for all major developments which generate significant amounts of transport movement. There may be circumstances where the implementation of travel plan measures alone would not be sufficient to reduce the traffic demand of a project to acceptable levels. In such instances, the applicant should work with the relevant local planning and highway authorities to determine whether the implementation of traffic management measures is appropriate, and if so how those might best be delivered".*

2.15 The NPS recognises that there is a need for development on the national networks to support national and local economic growth and regeneration, and states that new and improved transport links can facilitate economic growth by bringing businesses closer to their worker, their markets and each other.

2.16 The NPS also states there is a need to improve the integration between the transport modes, including the linkages between the road and rail networks. Improved integration can reduce end-to-end journey times and provide users of the networks with a wider range of transport choices.

2.17 The NPS demonstrates that the Government has concluded that at a strategic level there is a compelling need for development of the national networks – both as individual networks and as an integrated system. The Examining Authority and the Secretary of State should therefore start their assessments of applications for Infrastructure covered by the NPS on that basis.

2.18 The NPS recognises that SRFIs are key to reducing the cost to users of moving freight by rail and are important in facilitating the transfer of freight from road to rail, thereby reducing trip mileage or freight movements on both the national and local road networks. The document goes on to set out the importance that government has placed on the facilitation and development of the intermodal freight industry and that the transfer of freight from road to rail has an important role to play in a low carbon economy and in helping combat climate change.

2.19 The NPS highlights that it is important for SRFIs to be located near the business markets they will serve and are linked to key supply chain routes. In terms of the locational requirements, the NPS stipulates an SRFI should be located:

- relative to the markets they will serve, such as major urban centres of groups of centres and key supply chain routes;
- within close proximity to rail and road networks. Specifically on a rail route with a gauge capability of W8 or more, or capable of enhancement to a suitable gauge. For road links, the Governments policy is set out in Circular 02/2013 *The Strategic Road Network and the delivery of sustainable development*;
- not directly adjacent to residential or environmentally sensitive areas. However, in some circumstances mitigation measures may be able to limit adverse impacts; and
- within close proximity to a local workforce.

The Strategic Road Network and the Delivery of Sustainable Development (DfT Circular 02/2013, 2013)

2.20 The Strategic Road Network and the Delivery of Sustainable Development sets out the premise for how Highways England will engage with the planning system, communities and industry on sustainable development. It also provides details on how Highways England will fulfil its remit as a delivery partner for sustainable economic growth whilst maintaining, managing and operating a safe and efficient strategic road network.

2.21 The aim of Highways England is to support strategic economic growth. Development should therefore only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe. However, even where proposals would not result in capacity issues, the Highways Agency's prime consideration would be the continued safe operation of its network.

2.22 The document states that Highways England will provide the local planning authority or other relevant consenting body with its assessment of the transport impact, as generally derived from a Transport Assessment or Transport Statement incorporating a Travel Plan as required in the National Planning Policy Framework, produced by the promoter of the development concerned in line with current Department for Transport guidance or on a basis otherwise agreed with the Highways England.

2.23 It is outlined that where appropriate, conditions may be agreed to offset any unacceptable impacts that may be identified through the assessment process.

2.24 The Circular explains that the overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period up to ten years after the date of registration of a planning application or the end of the relevant Local Plan, whichever is the greater. This is known as the review period.

2.25 It is expected that the promoters of development put forward initiatives that manage down the traffic impact of proposals to support the promotion of sustainable transport and the development of accessible sites, particularly where the potential impact is on sections of the strategic road network that could experience capacity problems in the short or medium term. It is recognised that the preparation and implementation of a robust Travel Plan can provide the opportunity to free up additional capacity within the road network so that the demand generated by a proposed new development, which would otherwise be unacceptable, can be accommodated.

2.26 Where the overall forecast demand at the time of opening of the development can be accommodated by the existing infrastructure, further capacity mitigation will not be sought.

National Planning Policy Framework (2012)

2.27 The National Planning Policy Framework (NPPF) came into force on 27th March 2012. It retains the core principle set out within the preceding national policy guidance for development to be located in order to help reduce car dependency by making walking and cycling trip easier and by encouraging public transport trips between housing and jobs, shops and services. It also reflects the broad thrust of local transport policy.

2.28 There are three dimensions to sustainable development: economic, social and environmental. These dimensions give rise to the need for the planning system to perform a number of roles:

(i) an economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;

(ii) a social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and

(iii) an environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

2.29 Paragraph 29 of the NPPF, it is stated that '*Transport policies have an important role to play in facilitating sustainable development but also in contributing to wider sustainability and health objectives. Smarter use of technologies can reduce the need to travel. The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel. However, the Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas.'*

2.30 Paragraph 31 stipulates that, '*Local authorities should work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development, including large scale facilities such as rail freight interchanges, roadside facilities for motorists or transport investment necessary to support strategies for the growth of ports, airports or other major generators of travel demand in their areas.'*

2.31 Paragraph 32 states that '*All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:*

(i) the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;

(ii) safe and suitable access to the site can be achieved for all people; and

(iii) improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.'

2.32 At paragraph 143, the document suggests that when preparing Local Plans, authorities should *'safeguard existing and planned handling and processing facilities for the bulk transport by rail.'*

2.33 In transport terms the thrust of NPPF is a presumption in favour of sustainable development (paragraph 14); to make the fullest use of public transport, walking and cycling (paragraph 17) and when making planning decisions ensuring the opportunities for sustainable transport modes have been taken up (paragraph 32); to locate and design developments to give priority to pedestrian and cycle movements, and have access to high quality public transport facilities (paragraph 35); ensuring a safe and suitable access to the site can be achieved for all people (paragraph 32); that developments should be safe and accessible containing clear and legible pedestrian routes (paragraph 69); and that development should only be refused on transport grounds where the residual cumulative impacts are severe (paragraph 32).

National Planning Practice Guidance (2014)

2.34 National Planning Practice Guidance (NPPG) is an online resource providing planning guidance. It was launched in March 2014 following the publication of the NPPF and coincided with the cancelling of the majority of Government Circulars which had previously given guidance on many aspects of planning.

2.35 National Planning Practice Guidance includes *Travel Plans, Transport Assessments and Statements*, published on 6th March 2014 and sets out the overarching principles for preparing these documents in relation to decision-taking. It also contains an explanation of what they are, how they relate to each other, why they are important, the key principles of the documents, when they are required and what information should be included.

2.36 The guidance explains that Travel Plans, Transport Assessments and Statements are ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements.

Guidance on Transport Assessment (2007)

2.37 The Guidance on Transport Assessment (GTA) provided guidance to developers and stakeholders on the content and preparation of Transport Assessments and Transport Statements. The document was withdrawn in 2014, and superseded by the National Planning Practice Guidance set out above. However, the GTA is still widely considered to provide an appropriate overview of the general scope of a Transport Assessment, and Highways England requested within the Scoping Opinion (set out at **Chapter 3**) that work is carried out with reference to the GTA.

Local Land Use and Transport Planning Policy

South Northamptonshire Local Plan (1997) (Saved Policies revised December 2014)

2.38 The South Northamptonshire Local Plan was adopted in 1997. The plan set out what the Council planned to do with the District's land and how they would control development. It also showed the existing settlement confines. This document has been replaced by the *West Northamptonshire Joint Core Strategy (Part 1),* however a number of policies within the Local Plan were saved on 15 December 2014. Eventually, the saved policies will be replaced by the emerging South Northamptonshire Local Plan (Part 2).

2.39 The objectives of the Local Plan look to ensure that development and growth are sustainable, provide a range of employment opportunities and enhance the prosperity of the local economy, providing for the long term social and economic vitality of local communities.

West Northamptonshire Joint Core Strategy (Part 1) (December 2014)

2.40 The West Northamptonshire Joint Strategic Planning Committee adopted the West Northamptonshire Joint Core Strategy Local Plan (Part 1) (JCS) on 15 December 2014 and covers the administrative areas of Daventry District, Northampton Borough and South Northamptonshire District.

2.41 The JCS recognises the area's central position in the country, the good level of access to strategic rail and road network and the fact that recent growth in the warehouse sector has been strong. The JCS references the Daventry International Rail Freight Terminal (DIRFT) as an example and continues to explain that further demand for storage and distribution premises remain high within the area.

2.42 Policy C3 set out within the document stipulates that it is a priority to secure a number of transport related initiatives. Specifically, these initiatives include additional freight services and road improvements including the provision of managed motorway infrastructure between Junction 14 and Junction 19 of the M1, including hard shoulder running and traffic management measures on the A45 and A43.

2.43 The JCS makes reference to The East Midlands Strategic Distribution Study which has set a target of an additional 30 freight trains per day. This will require approximately 308 hectares of rail connected strategic distribution land to be developed in the East Midlands region by 2026.

2.44 The JCS stipulates that when locating strategic distribution infrastructure, priority consideration should be given to sites that can be served by rail freight that can operate an intermodal terminal. The JCS is therefore supportive of the principle of moving road freight to rail.

Emerging South Northamptonshire Local Plan (Part 2)

2.45 The emerging Local Plan (Part 2) for South Northamptonshire will build on the Joint Core Strategy and include a detailed and wide variety of policies to guide the decision making process for future planning applications across the district. The Pre-submission Draft Plan (September 2017) recognises the need to increase the supply of new employment at strategic sites.

Northamptonshire Transportation Plan (March 2012)

2.46 The Vision of the Northamptonshire Transportation Plan is to make the area more sustainable by reducing carbon emissions and encouraging the use of more sustainable transport that is relatively fast and accessible to everyone. Economic growth is one of the main priorities and getting people to employment, education and health facilities is therefore vital.

2.47 The Northamptonshire Transport Plan recognises that the ability to move freight by rail is crucial to the economy and the importance is likely to grow with the need to reduce congestion and emissions. It also notes that Northamptonshire is well located to take advantage of this and be a leader in the logistics sector.

Northamptonshire Road Freight Strategy

2.48 The aim of the Northamptonshire Road Freight Strategy is "*to encourage the sustainable distribution of goods through minimising road based travel and the associated environmental impacts of road haulage, whilst maintaining economic efficiency and helping to improve the quality of life for the residents of Northamptonshire"*. The six objectives are – to mitigate measures related to growing demand; address the problems caused by HGVs in urban and rural locations and reduce the impact of HGVs on local communities, especially concerning overnight lorry parking; encourage sustainable distribution within the county; encourage commercial and economic growth; reduce the environmental impact of freight movement and reduce the impact of HGVs on inappropriate routes; and manage the network to provide ease of movement and reduce the impacts of congestion.

2.49 Freight Policy 7 states that *"Northamptonshire County Council will support borough and district councils in securing lorry parking facilities countywide and in encouraging developers to provide safe, secure lorry parks at strategic points across the county, especially along the strategic routes and in towns with a high generation of HGV traffic."* The strategy also notes that the provision of lorry parks is something that borough and district councils can promote by encouraging developers of sites that will generate significant HGV movements to include parking facilities within the development site.

2.50 Freight Policy 8 states that *"Growth is to be supported whilst reducing the number of vehicle journeys and reducing carbon emissions and other pollutants which can be directly detrimental to human health. This will include support for the concept of 'secure freight consolidation centres' as appropriate as Northamptonshire grows, to mitigate any impacts of development or increased traffic growth."* Whilst not a 'Freight Consolidation Centre' the principle of a SRFI is to reduce the number of freight movements by road across the country, with a mode shift towards freight movements by rail.

2.51 Freight Policy 10 states that NCC *"will seek funding from new and innovative sources and opportunities that complement our budget provision and help us deliver our priorities to develop a fit for purpose freight network that allows Northamptonshire to grow and prosper with due regard for a sense of well-being overall."*

Northamptonshire Rail Strategy

2.52 The six objectives of the Northamptonshire Rail Strategy are – providing investment to give more capacity appropriate to larger populations; help to provide community leadership on rail issues; make rail travel more appealing to give people more choice about how they travel; improve rail service to make the county more attractive to businesses looking to invest in the area; increase the proportion of passenger and freight movements by rail to reduce vehicle emissions; encourage the rail industry to make appropriate value for money investment in Northamptonshire rail infrastructure and services, and will consider making a financial contribution to schemes where appropriate and affordable.

2.53 Policy RAIL 22 states that *"The County Council supports measures to increase the use of the county's rail network for freight, including the provision of additional track capacity (such as loops) and clearance to accommodate large containers."*

2.54 Policy RAIL 23 states that *"The County Council supports further development of rail freight terminals subject to appropriate planning considerations and the provision of appropriate highway access."*

Northamptonshire Bus Strategy

2.55 The aim of the Northamptonshire Bus Strategy is to increase the attractiveness of bus travel to encourage modal shift. The six objectives are – creating a transport system that supports growth; maintains safe, successful, cohesive and sustainable communities; provide information on the travelling options available to the people of Northamptonshire; create a transport system that supports economic growth; deliver a transport system that is environmentally sustainable on the built, natural and historic environment and; to be clear about funding priorities.

2.56 Policy BUS 19 states that *"Developers will be expected to demonstrate that the great majority of their development is within 400 metres reasonable and safe walking route of bus stops served by regular services to the nearest major facilities and centres. Where this is not the case, new stops and/or service diversions shall be provided by the developer. To achieve higher levels of modal shift, it is recommended that the majority of occupiers are within 250 metres of stops, through careful consideration of urban design and density."* The strategy also acknowledges that achieving 400 metre target may not always be strictly achievable and is subject to consultation with the County Council.

2.57 Policy BUS 20 states that *"Developers will be expected to provide funding to meet the gap between revenue and costs for new, diverted or enhanced bus service where these are necessary to ensure their development is adequately served by bus or to achieve the modal shift by bus service identified within their Transport Assessment".* Within the Transport Assessments it is expected of developers to "*Demonstrate that the service will become commercially viable when the development is complete".* This will include evening or Sunday services to be provided.

2.58 It is important to ensure that all employment developments are to be provided with a high quality bus service. Where the services can be re-branded or upgraded, the developers are expected to contribute by no more than 30 percent of the capital cost of such initiatives, which would be agreed by operator and directly secured with them.

2.59 The document also notes that "*in line with the 20% mode-shift target, but having regard to a minimum 10 passengers needed to make a journey reasonably viable, a threshold of 50 employees starting or finishing work within a 15-minute window will be that which requires the funding of a journey to the nearest town centre, where an existing journey is not available within 30 minutes before the start of shift, or within 30 minutes of the end of shift."*

Northamptonshire Walking Strategy

2.60 The aim of the walking strategy is to improve the pedestrian environment and encourage more people to work for short utility journeys and recreation to enable modal shift. The objectives of the strategy are: provide a safe and direct route to facilities; improve the quality and attractiveness of the pedestrian environment; reduce road casualties; improve the accessibility to the transport system and make it more inclusive and promote health, economic and environmental benefits of walking.

2.61 Walking policy 1 states: "*Liaise with Local Planning Authorities, the Joint Planning Units and developers to ensure connectivity between new developments and exciting infrastructure to ensure Walking Infrastructure is integrated into new developments.*"

2.62 Walking policy 7 states: *"We will seek to ensure new developments and redevelopments provide attractive walking infrastructure that makes people feel safe and want to walk more".*

Northamptonshire Cycling Strategy

2.63 The aim of the cycling strategy is to increase the number of people choosing to travel by cycle for trips under five miles through a combination of improvements to the on and off-road cycling environment, promotion and training.

2.64 The objectives are: providing a quality enhanced environment of on and off-road cycling; promoting health benefits of cycling; increase the accessibility of the cycling network; reducing congestion and improving air quality and access to various destinations; getting people to cycle more often to reduce environmental impacts and improve well-being and prioritising the investment in cycling schemes and deliver best value for money.

2.65 Cycling Policy 9 states that *"New developments will be required to demonstrate or provide connectivity into the existing cycling network and within the development as appropriate"*

Northamptonshire Parking Strategy

2.66 The overarching objectives of the Northamptonshire Parking Strategy are: appropriate parking standards that have effective parking management; engaging communities to manage parking appropriately; introducing parking standards to fit the needs of the people and encourage the use of sustainable transport modes; minimising the impact of parking on the highway network; reducing the impacts of parking on the local environment and; parking management that has a potential to generate income.

2.67 Additionally, it is aimed to encourage sustainable travel modes, meeting the resident's needs for car parking near home; improving journey time reliability for road users; improving road safety trough better enforcement of illegal parking and improving the accessibility to emergency services.

Northamptonshire Parking Standards (September 2016)

2.68 The Northamptonshire Parking Standards document was adopted on 6th September 2016 and sets the parking standards that Northamptonshire County Council will use when assessing proposed development. The parking standards are set as a minimum, with the aim of encouraging well designed parking as part of the development.

2.69 The aim of the parking standards document is to support the provision of sufficient, usable parking within development without compromising highway safety whilst supporting good design and sustainable travel.

Transport Infrastructure Design Guidance

Design Manual for Roads and Bridges (November 2017)

2.70 The Design Manual for Roads and Bridges (DMRB) provides standards, advice notes and other documents relating to the design, assessment and operation of trunk roads, including motorways in England and Wales.

2.71 The various highway works and off-site highway mitigation schemes which will be provided as part of the proposed development, have been designed in accordance with guidance contained within DMRB. This predominantly consists of the following:

- Volume 6 Section 2 Part 1 TD 22/06 Layout of Grade Separated Junctions;
- Volume 6 Section 2 Part 3 TD16/07 Geometric Design of Roundabouts;
- Volume 6 Section 2 Part 3 TD 50/04 The Geometric Layout of Signal-Controlled Junctions and Signalised Roundabouts;
- Volume 6 Section 2 Part 6 TD 42/95 Geometric Design of Major/Minor Priority Junctions;
- Volume 6 Section 1 Part 1 TD9/93 Amendment No. 1 Highway Link Design;
- Volume 6 Section 3 Part 1 TD 36/93 Subways for Pedestrians and Pedal Cyclists Layout and Dimensions;
- Volume 6 Section 2 Part 7 TD 41/95 Vehicular Access to all Purpose Trunk Roads;
- Volume 5 Section 2 Part 2 HD 19/15 Incorporating Amendments dated May 2017 Road Safety Audit;
- Volume 5 Section 2 Part 5 HD42/17 Walking, Cycling and Horse Riding Assessment and Review; and
- Volume 5 Section 1 Part 3 TA 79/99 Amendment No.1 Traffic Capacity of Urban Roads.

Manual for Streets (March 2007)

2.72 Manual for Streets was published by the Department for Transport and The Ministry of Housing, Communities and Local Government in March 2007. The document explains how to design, construct, adopt and maintain new and existing residential streets.

2.73 The scope of Manual for Streets is limited to residential and other lightly trafficked streets, although some of its principles may be applied to other road types where appropriate. The main premise of the guidance it that streets should not be designed just to accommodate the movement of motor vehicles, but also the needs of pedestrians and cyclists.

2.74 The key recommendation of the guidance is that increased consideration should be given to the 'place' function of streets. This function is essentially what distinguishes a street from a road, where the main purpose is to facilitate movement.

Manual for Streets 2 (September 2010)

2.75 Manual for Streets 2 was published by the Department for Transport in September 2010 and expands on the design advice provided in Manual for Streets to include how to plan and improve busy urban and rural streets.

2.76 It is intended to assist those in the planning, construction and improvement of our streets to deliver more contextually sensitive designs. The purpose of Manual for Street 2 is therefore to fill the gap in design advice that lies between Manual for Streets and the design standards for trunk roads as set out in the Design Manual for Roads and Bridges.

Northamptonshire Place and Movement Guide (December 2008)

2.77 The Northamptonshire Place and Movement Guide was adopted by NCC in 2008. The document is based on guidance contained in Manual for Streets and is used as the Council's primary tool for advising Local Planning Authorities and developers on residential applications.

2.78 The aim of the guide is to put well-designed residential streets at the heart of sustainable communities by using the environment to influence driver behaviour rather than just standard set criteria.

2.79 The guide works to recognise the importance of assigning higher priority to pedestrians and cyclists, while allowing for vehicle movements, thus creating places that work for all members of the community. The focus is on how streets can create a positive place and influence the design of new developments to serve these new communities in a positive way.

Summary

2.80 The national and local planning policy set out above presents the context against which the proposed development is submitted. As set out in the NPS, there is a clear drive towards the provision of strategic and viable infrastructure that can support nationally significant sustainable development and economic growth. This includes the provision of large scale rail freight interchanges, such as Rail Central.

2.81 Located near the major warehousing districts of Northamptonshire and close to major rail and road links including the M1 motorway, West Coast Mainline and the Northampton Loop, the site presents the opportunity to locate the proposals within a strategically important location. This accords to the thrust of the NPS and ensures proximity to a local workforce and the opportunity to maximise access by sustainable modes of travel.

2.82 In line with the NPS, the development proposals will improve the integration between road and rail networks and facilitate the development of the intermodal freight industry. This transfer of freight from road to rail will therefore facilitate the movement towards a lower carbon economy, which is also a recognised theme running throughout national and local policy set out above.

2.83 As demonstrated within this report, the development presents the opportunity for sustainable economic growth whilst minimising the residual effects on the surrounding transport infrastructure. In accordance with local policy, the development proposals will generate employment opportunities and enhance the prosperity of the local economy, contributing towards the long term social and economic vitality of the area.

2.84 Local policy recognises that Northamptonshire is well located to take advantage of the ability to move freight by rail, which will in turn reduce congestion and emissions at a strategic level. It is therefore acknowledged that Northamptonshire has the opportunity to be a leader in the logistics sector.

2.85 The proximity of the proposed development to a local work force will ensure that the development is highly accessible and presents the opportunity to promote the use of sustainable modes of transport such as walking, cycling and public transport in line with national and local policy.

2.86 The development proposals and associated highway mitigation works have all been designed in accordance with the relevant highway design guidance as set out above. This seeks to ensure that reasonable steps have been taken to mitigate the impacts of the Development in accordance with NPS and that all proposals consider the surrounding context and results in a safe and appropriately designed environment which caters for the intended users.

2.87 In conclusion, it is considered that the development aligns with the thrust of national and local planning policy and guidance and presents the opportunity to provide sustainable development and economic growth through the provision of a Strategic Rail Freight Interchange in a strategically suitable location.

3 STAKEHOLDER ENGAGEMENT

Scoping Opinion

3.1 A Scoping Report was submitted in December 2015, which included preliminary information regarding the proposals for the site, in so far as it was possible to provide at that early stage, along with details of the intended approach to preparation of the Environmental Statement.

3.2 In response to the Scoping Report, a Scoping Opinion was provided by the Secretary of State in January 2016, which included a number of comments in relation to highways and transportation, which are addressed within this TA. Full details of the comments raised and where they are addressed is included within Chapter 19 of the Environmental Statement. The key comments and where they are addressed within this TA are summarised as follows:

(i) **Comment:** Information required in relation to construction, including preparation of a Construction Traffic Management Plan.

Response: This is set out in **Chapter 6** and the Construction Traffic Management Plan is included at **Appendix 19.3** of the Preliminary Environmental Information Report (PEIR).

(ii) **Comment:** Information required in relation to operation and maintenance activities, including number of traffic movements.

Response: The forecast trip attraction is set out at **Chapter 7**, with assessments of the operation of the highway network set out in **Chapters 8** and **9**. The proposed off-site highway works are set out at **Chapter 6**, which also sets out the Traffic Management Plan for the operational phase of the proposals.

(iii) **Comment:** Information required in relation to the phasing of the development proposals.

Response: The phasing of the off-site highway works is subject to further modelling work, which will be carried out in advance of the DCO submission. Further details of the assessment work to be undertaken are set out in **Chapter 8**.

(iv) **Comment:** Information required in relation to Public Rights of Way (PROWs), and the impact of the proposals on these.

Response: The existing PROWs in the vicinity of the site are set out in **Chapter 4**, and the proposed diversions are set out at **Chapter 6**.

(v) **Comment:** Information required in relation to impact on nearby settlements and existing 'rat run' routes, including the use of these routes by HGVs

Response: The impact of the development on nearby settlements, and the routing of HGVs is assessed in **Chapter 8**.

(vi) **Comment:** Information required in relation to Travel Planning.

Response: This is set out in the Framework Travel Plan, contained at **Appendix 19.2** of the PEIR.

(vii) **Comment:** Information required in relation to the development's connectivity to the surrounding area.

Response: The proposed vehicular, pedestrian, cycle and public transport connections to the site are set out in **Chapter 6**. The rail connectivity of the site is considered in Chapter 8 of the PEIR.

(viii) **Comment:** Information required in relation to the proposed mitigation and off-site highway works.

Response: The proposed off-site highway works are set out in **Chapter 6**.

(ix) **Comment:** Traffic modelling required at a number of key locations.

Response: Assessments of the study area as agreed with Highways England and Northamptonshire County Council are included at **Chapters 8** and **9**.

(x) **Comment:** Impact of cumulative traffic plus events at Silverstone should be included

Response: The cumulative assessment is included at **Chapter 10**, and the operation of the site during events at Silverstone is considered in the Operational Traffic Management Plan, contained at **Appendix 19.4** of the PEIR.

Phase One Consultation

3.3 A first round of public consultation was carried out in April and May 2016, including eight public exhibition events. The consultation material included a range of initial information regarding the development proposals, and was carried out in advance of any material progression with the development of the highway proposals, in order to carry out early consultation with the local population and other interested parties. As part of this a number of comments were raised and are addressed within this TA. The key comments and where they are addressed within this TA are summarised as follows:

(i) **Comment:** Comment on road safety, including speed reduction and A43 junctions and access points.

Response: The existing highway safety record in the vicinity of the site is set out at **Chapter 4**.

(ii) **Comment:** Concerns regarding traffic on A43 and A508.

Response: The forecast trip attraction is set out at **Chapter 7**, with assessments of the operation of the highway network, including the traffic distribution, set out in **Chapters 8** and **9**.

(iii) **Comment:** Information regarding number of HGVs and potential impact on local villages.

Response: The forecast HGV trip attraction is set out at **Chapter 7** and the distribution of the HGV traffic is set out in **Chapter 8**.

(iv) **Comment:** Information required in relation to traffic during the British Grand Prix at Silverstone.

Response: This is set out in the Operational Traffic Management Plan, contained at **Appendix 19.4** of the PEIR.

(v) **Comment:** Information on level of access from Northampton Road and how emergency access will operate.

Response: The site access proposals are set out at **Chapter 6**.

(vi) **Comment:** Information required in relation to traffic management during major road closures.

Response: This is set out in the Operational Traffic Management Plan, contained at **Appendix 19.4** of the PEIR.

(vii) **Comment:** Details of the quantum of traffic, including staff and HGVs, and impact on M1, A43, A45, A5 and through local villages.

Response: The forecast trip attraction is set out at **Chapter 7**, with assessments of the operation of the highway network, including the traffic distribution, set out in **Chapters 8** and **9**.

(viii) **Comment:** Upgrade to Junction 15A of M1 required.

Response: The proposed off-site highway works, including those proposed at M1 Junction 15A are set out at **Chapter 6**.

(ix) **Comment:** Information on proposals in relation to cycle paths, footpaths and bridleways.

Response: A review of existing infrastructure is set out in **Chapter 4**. The proposed development and off-site highway works are set out in **Chapter 6**.

(x) **Comment:** Concern over impact on local bus services, and need for additional services.

Response: A review of existing services is set out in **Chapter 4**. The proposed public transport strategy is set out at **Chapter 6**, and further measures to encourage sustainable modes of transport are set out in the Framework Travel Plan at **Appendix 19.2** of the PEIR.

(xi) **Comment:** Should encourage car sharing and cycling.

Response: This is set out in the Framework Travel Plan, contained at **Appendix 19.2** of the PEIR.

Transport Working Group

3.4 In accordance with the NPS, a Transport Working Group (TWG) was set up in order to discuss and agree matters in relation to highways and transportation with the relevant highway authorities. The TWG includes representatives from TPA, Highways England (HE), AECOM (Highways England's consultant team) and Northamptonshire County Council (NCC).

3.5 The TWG has carried out meetings generally on a monthly basis since October 2015. Various departments and consultants from each organisation have attended these meetings on occasion, in order to provide advice in relation to their areas of expertise and depending on the stage of the project.

3.6 The TWG and its monthly meetings provide a platform for collaborative working between the applicant (via TPA) and the highway authorities, in order to ensure that the details of the scheme can be developed to the satisfaction of all parties and in working towards the preparation of a Statement of Common Ground (SoCG) in advance of the DCO submission. It also ensures a more efficient means of agreeing matters, with a forum in which comments can be discussed and the benefits and drawbacks made clear to all parties, before a consensus is reached. A copy of the TWG meeting minutes is included at **Appendix A**.

Local Liaison Group

3.7 Local Liaison Group (LLG) meetings have been held in relation to a number of matters regarding the proposed development. The LLG meetings provide a forum for local residents and other interested parties and stakeholders to find out further information about the proposals as the work progresses, as well as providing any comments that should be considered within the final DCO submission.

3.8 A specific, highways focussed LLG meeting was held on 24th May 2017. During this, TPA provided an update of the highways work carried out up to that date, and the results from the Northamptonshire Strategic Transport Model (NSTM) that had begun to be received from NCC (further details of the NSTM is contained in **Chapter 5** and **Chapter 8**). A number of comments were raised during the meeting which are summarised as follows:

(i) **Comment:** Number of vehicles using the proposed underpass beneath Northampton Road.

Response: The forecast trip attraction, including the number of vehicles using the proposed underpass is set out in **Chapter 7**.

(ii) **Comment:** Information required in relation to impact of proposed improvements at Junction 15A and rat-running in local villages.

Response: An assessment of the impact of the proposed M1 Junction 15A improvements on the local highway network is set out in **Chapter 8**.

(iii) **Comment:** Queries in relation to the 'traffic calming' schemes in Milton Malsor and Blisworth, including whether these are necessary and will be delivered, and whether they are agreed with the highway authority.

Response: This is discussed further in **Chapter 6**.

(iv) **Comment:** Work carried out in relation to the safety of local junctions, including the Blisworth turn and Tiffield turn of the A43.

Response: The highway safety assessment of these junctions is set out in **Chapter 4**, and the proposed mitigation is set out in **Chapter 6**.

(v) **Comment:** Information required in relation to the public transport strategy and how many people would walk or cycle to the site.

Response: The public transport strategy is included at **Chapter 6** and the multi-modal trip attraction is set out at **Chapter 7**. Further measures to encourage sustainable modes of transport are set out in the Framework Travel Plan at **Appendix 19.2** of the PEIR.

(vi) **Comment:** Information required in relation to data included in the NSTM.

Response: The data included within the base NSTM is set out in **Chapter 5**.

(vii) **Comment:** What happens on site if the A43 is closed?

Response: This is set out in the Operational Traffic Management Plan at **Appendix 19.3** of the PEIR.

(viii) **Comment:** Information required in relation to parking provision.

Response: The proposed parking provision for cars, HGVs, cycles and motorcycles is set out in **Chapter 6**.

(ix) **Comment:** Information required in relation to how many people will drive to the site and Travel Planning measures.

Response: The forecast multi-modal trip attraction is set out in **Chapter 7** and the Framework Travel Plan is included at **Appendix 19.2** of the PEIR.

(x) **Comment:** Queries in relation to the trip calculations and the suitability of the data used.

Response: The forecast trip attraction and its calculation methodology is set out in **Chapter 7.**

Third Party Queries

3.9 In addition to the various consultations set out above, a number of queries have been raised in relation to highways via the Rail Central website. Responses have been provided to these queries as appropriate, based on the latest information that was available at the time of the query. Full details of the consultation carried out with third parties is included within Chapter 4 of the PEIR.

Summary of Agreement

3.10 Through the TWG, a significant number of matters and documents have been agreed with HE and NCC to be appropriate. These are summarised as follows:

Site Access and Site Layout

- the principle of providing vehicle access via a grade separated junction onto the A43 only;
- the principle of the site access geometrical design onto A43 (detailed design issues to be agreed in due course);
- the principle of providing emergency only access onto Northampton Road and its geometrical layout (detailed design issues to be agreed in due course);
- the principle of providing an underpass under Northampton Road;
- the principle of providing a lorry park facility within the site;
- the principle of pedestrian and cycle access from Northampton Road;
- the principle of the construction access arrangements, including initial use of the existing left-in, left-out access on the A43 and construction of a temporary left-in, left-out access to the north of this on the A43;

Trip Attraction

- the process for determining trip attraction to include a review of different calculation methodologies, including examination of similar facilities elsewhere and a first principles based assessment;
- the overall level of daily and hourly person trip attraction (both employees / visitors and HGVs);
- daily and hourly trip attraction associated with ancillary (non-warehouse) uses;
- the baseline mode share (including total number of vehicle trips) to be applied, including the methodology for its calculation based on Census travel to work data;

Strategic Modelling

- methodology for modelling work to include use of Northamptonshire Strategic Transport Model (NSTM) for the typical network peak hours of 0800-0900 and 1700-1800;
- the typical network peak hours of 0800-0900 and 1700-1800 represent the busiest hours on the highway network and are the most appropriate time periods to be assessed. No other time periods require assessment;
- the principle of a local area validation of the NSTM specifically for use in assessing the impact of Rail Central;
- the traffic survey data to be input into the NSTM to facilitate the local area validation;

- assessment scenarios required for modelling;

Junction Assessments

- broad study area of junctions where detailed capacity assessment is required, based on outputs from the NSTM;
- junctions on A43 between the site and Tove roundabout to the south to be examined for potential safety improvements, but not for capacity improvements;
- junction capacity assessments to be carried out using Linsig or Junctions9 modelling software as appropriate;
- VISSIM model to be used in conjunction with individual junction modelling tools to demonstrate the operation of M1 Junction 15 and Junction 15A, as well as the site access;
- 2016 baseline VISSIM model agreed to appropriately reflect the existing situation and is in accordance with WebTAG guidelines;
- M1 Junction 15 and Junction 15A to be initially assessed using Linsig or Junctions9, as appropriate, in order to determine appropriate mitigation schemes for assessment within VISSIM;
- traffic flows used in junction assessments to be based on baseline traffic surveys with traffic growth as determined from the NSTM;

Travel Planning

- general approach to public transport strategy, including potential for new bespoke service into the site, subject to modelling;
- the principle of providing new bus stops on Northampton Road, and a bus interchange within the site, with potential for access from Northampton Road;
- on-site parking provision to be determined with reference to Northamptonshire Parking Standards (2016) document;

Mitigation Proposals

- the geometry and capacity of the proposed improvement scheme at M1 Junction 15A;
- the suitability of the proposed traffic calming schemes in Milton Malsor and Blisworth;
- the requirement for traffic calming schemes in Milton Malsor and Blisworth is to be determined through the strategic modelling work; and
- the principle and general scope of a proposed foot and cycleway along Northampton Road.

DRAFT

4 THE APPLICATION SITE

Environs

4.1 The site is situated approximately 20 kilometres northwest of Milton Keynes and six kilometres south of Northampton and is bound by the A43 to the west, the Northampton Loop Railway Line to the east, West Coast Main Line to the south and Gayton Road to the North.

4.2 The site itself comprises a total of 250ha and consists of farmland, with some small scale pastoral fields in the north east corner of the site.

4.3 The area is well served with good transport links, including the M1 and M6 motorways approximately two kilometres to the north and 32 kilometres to the northwest respectively, the West Coast Main Line railway and Northampton loop railway.

4.4 The site is located directly adjacent to the A43 Trunk Road whilst the A5 is located seven kilometres to the south. The A45 is located approximately 3.6 kilometres to the north east and 7.4 kilometres to the north west of the site.

4.5 The villages of Milton Malsor and Blisworth are located approximately 1,200 and 1,500 metres to the south and north of the site respectively. This equates to an approximate 15 to 19 minute walk based upon an average walking speed of 80 metres per minute[1] and up to a five minute cycle ride based upon an average cycling speed of 320 metres per minute[2], respectively. It is not considered that local topography would materially affect walking and cycling speeds in this location.

Existing Pedestrian, Cycle and Equestrian Facilities

Footways and Footpaths

4.6 Pedestrian infrastructure within the vicinity of the site is illustrated on **Figure 4.1**.

[1] 'Providing for Journeys on Foot' IHT (2000)

[2] Transport Note 2/08 'Cycle Infrastructure Design', published by the DfT in October 2008.

4.7 Footways are generally provided on both sides of roads within the villages of Milton Malsor and Blisworth. A pedestrian connection between the two villages is provided via a continuous footway measuring between 1.2 and two metres wide on the western side of Towcester Road / Northampton Road. This footway continues on Towcester Road to the north of Milton Malsor to tie in with the network of footways in Northampton to the north. The majority of this route is illuminated with the exception of a 1.2 kilometre section south of the Towcester Road / Rowtree Road junction.

4.8 A footway is present along Rowtree Road for its full extent, alternating between the northern and southern sides of the carriageway. Dropped kerb pedestrian crossing points are provided over junctions on this route.

Public Rights Of Way

4.9 There is a comprehensive network of Public Rights of Way (PROWs) in the vicinity of the site, as illustrated on **Figure 4.1**.

4.10 The towpath, (PROW BG1 and HW17) comprising a mixture of tarmac and fine gravel sections, runs alongside the Grand Union Canal and locally links Blisworth with west and central Northampton. Milton Malsor also links to this route via PROWs KX5 and KX16 to the west of the village.

4.11 PROW KX16 / RD12 is a footpath which runs south west to north east across the site between Blisworth Marina adjacent to the A43 and Gayton Road approximately 200 metres west of the junction with Towcester Road.

4.12 KX13 / RD1 is a footpath which runs south west to north east between Courteenhall Road in Blisworth to High Street in Collingtree. It crosses the West Coast Main Line via a footbridge and passes beneath the M1 motorway via an underpass.

4.13 KX15 / RD22 is a footpath which runs north to south from Barn Lane to Courteenhall Road to the east of Blisworth.

4.14 KX2 is a footpath which links to KX1 bridleway immediately south of the M1 motorway. From Milton Malsor a PROW footpath, KX5, links to KX1.

4.15 KX5 is a footpath that runs adjacent to the A43 west of Milton Malsor and links to Towcester Road immediately north of the M1 motorway. This links with footpath KX2 immediately south of the M1 motorway.

4.16 There is an additional footpath (KX13) running from the M1 motorway through the south east of the site. This provides access from the south-east of the site to Blisworth. The footpath measures approximately 1.8 kilometres from the eastern edge of the site to Blisworth.

Cycleways

4.17 Segregated cycling infrastructure is limited within the immediate vicinity of the site. On-road cycle lanes of approximately one metre width are provided along both sides of the Rowtree Road carriageway and a segregated footway and cycleway is located to the north of the A5076 carriageway.

4.18 The local highway network in the vicinity of the site is generally flat or of a shallow gradient, and is considered suitable for use by cyclists.

Bridleways

4.19 KX1 is a bridleway which runs south west to north east from Gayton Road approximately 70 metres east of North Street to Towcester Road approximately 250m south of Rowtree Road.

Existing Strategic Road Network

4.20 The site is located near to a number of elements of the strategic road network, considered below and illustrated on **Figure 4.1**.

A43 Trunk Road

4.21 The A43 is a dual carriageway passing immediately west of the site. It is designated as a trunk road between the M40 and the M1 and is subject to the national speed limit. The A43 meets the M1 motorway at Junction 15A approximately two kilometres north of the site, immediately south of Northampton.

4.22 Approximately seven kilometres south of the site the A43 bypasses Towcester where it meets the A5 at a signalised roundabout junction, known locally as Tove Roundabout. A further 1.3 kilometres south the A43 forms part of another signalised roundabout junction known as Abthorpe Roundabout.

4.23 The A43 meets the A45 at a signalised roundabout junction in east Northampton approximately 9.2 kilometres north east of the site and continues to Kettering as a single carriageway, at this point the A43 is no longer classified as trunk road. From Kettering to Stamford the A43 continues as a dual carriageway.

M1 Motorway

4.24 The M1 Motorway can be accessed at Junction 15A via the A43, approximately two kilometres to the north of the site, where Northampton Services are located. Junction 15A comprises a pair of dumbbell roundabouts with a bridge under the M1 and associated slip roads. The M1 motorway, which connects London to Leeds, is a managed motorway a various points along

the route and observes variable speed limits. Managed motorway works have been completed between Junction 16 and Junction 19, with work schedule to commence between Junction 13 and Junction 16.

A5 Trunk Road

4.25 The A5 is a designated trunk road located approximately seven kilometres to the south of the site, providing a strategic route between Hertfordshire and Birmingham and a diversion route for the M1. It connects to the A43 via a signalised roundabout junction, known locally as Tove Roundabout, approximately seven kilometres south of the site. It comprises a single carriageway and is subject to 60mph speed limit outside of residential areas.

A45 Trunk Road

4.26 The A45 connects Birmingham to the A14 via Northampton. The A45 links to the M1 motorway at Junction 16, approximately eight kilometres west of the site and at Junction 15, approximately three kilometres east of the site. To the north of Junction 15 the A45 is designated as trunk road and comprises a dual carriageway. The A45 meets the A428 at a signalised roundabout junction, known locally as the Barnes Interchange, approximately 5.3 kilometres north east of Junction 15. The A45 also provides access to Brackmills Industrial Estate via a signalised roundabout junction. The carriageway measures approximately seven metres wide and comprises one lane in each direction. The A45 is generally subject to the national speed limit outside of residential areas.

Existing Local Highway Network

4.27 The local highway network is illustrated on **Figure 4.1**. The local roads in the vicinity of the site are subject to a 30mph speed limit within the villages of Milton Malsor and Blisworth, throughout which street lighting is provided.

Towcester Road / Northampton Road

4.28 Towcester Road / Northampton Road runs north to south through the centre of the site, connecting the villages of Milton Malsor and Blisworth. Towcester Road is the northern section of the road, which becomes Northampton Road approximately 600 metres south of the junction with Rectory Lane. To the north of Milton Malsor, Towcester Road continues to link with Northampton Town Centre, approximately 6.5 kilometres to the north. To the south of the site, Northampton Road links to High Street and Courteenhall Road in Blisworth via a priority junction arrangement. Towcester Road links to the A43 via a priority junction arrangement approximately 1.7 kilometres south west of Blisworth.

4.29 The carriageway is approximately seven metres wide in the vicinity of the site. A change in the speed limit occurs approximately 275 metres south of the junction with Rectory Lane. The road is subject to a 40mph speed limit north of this point and a 60mph speed limit to the south. This 60mph speed limit is reduced to a 30mph speed limit as Northampton Road enters Blisworth, approximately 150 metres north of the junction with High Street and Courteenhall Road.

4.30 A footway measuring between approximately 1.2 and two metres wide is provided on the western side of the carriageway between the two villages.

A508

4.31 The A508 runs approximately three kilometres to the east of the site between Market Harborough and Milton Keynes, via central Northampton. The road is approximately five metres wide with one lane in each direction and is subject to the national speed limit outside of residential areas.

A4500

4.32 The A4500 runs approximately 5.4 kilometres north of the site from central Northampton to the M1 motorway at Junction 16. The A4500 is approximately six metres wide with two lanes in each direction for its rural extent. The route is subject to a 60mph speed limit which reduces to 50mph on approach to a roundabout junction with Sandy Lane. It is reduced to one lane in each direction after 6.2 kilometres for its urban extent. The speed limit reduces to 40mph at the roundabout with Tollgate Way and the A5076, and then reduces to 30mph a further 520 metres east.

A5199

4.33 The A5199 is located approximately nine kilometres to the north of the site. It connects Leicester to Northampton via a priority junction with the A508, approximately 8.4 kilometres north of the site. The A5199 is approximately six metres wide with one lane in each direction and is subject to the national speed limit outside of residential areas.

A5076

4.34 The A5076 forms part of the Northampton outer ring road and comprises two unconnected sections of carriageway. To the south east of central Northampton, the A5076 comprises a dual carriageway observing speed limits of 40 and 50 mph. Each carriageway measures approximately 7.5 metres in width. To the north, the A5076 comprises sections of single and dual carriageway and is subject to a 40mph speed limit.

4.35 The A5076 adjoins the A45 / A508 roundabout, known locally as the Queen Eleanor roundabout, to the south of Northampton and the roundabout junction with the A4500 to the west of Northampton. The A5076 / A5123 / Upton Valley Way East roundabout links the southern and western sections of the A5076. Along the southern section, the A5076 routes across two roundabout junctions, one with Towcester Road and another with Hunsbury Hill Road

4.36 The A5076 adjoins the A508 via a priority junction and routes to the roundabout with the A43, known locally as Lumbertubs Way, which connects the northern and eastern sections.

A428

4.37 The A428 connects Bedford with Northampton. Within Northampton town centre, the A428 adjoins the A4123 and Derngate at a signalised crossroads junction approximately six kilometres north of the site. Approximately 330 metres east of the signalised crossroads junction, the A428 forms part of a staggered crossroads with Beckets View and Nunn Mills Road before continuing east to the signalised roundabout junction with the A45 (Barnes Meadow Interchange). The road comprises of between one and three eastbound lanes and up to two westbound lanes and is subject to both 30mph and 40mph speed limits.

Existing Highway Safety

4.38 Northamptonshire County Council NCC has provided Personal Injury Collision (PIC) data for the most recent five year period between 01 January 2012 and 31 December 2016. A five year period has been assessed for robustness, although as set out in DMRB HD19/15 it is typical for the road safety to be assessed over the latest three year period.

4.39 The collision data has been summarised in **Table 4.1** below for each of the junctions within the agreed study area set out in **Chapter 8**. A full summary of the PIC records is included at **Appendix B**.

Table 4.1 Summary of recorded Personal Injury Collisions (PICs) from 2012 to 2016

Junction Number	Junction Name	Number of PICs		
		Slight	Serious	Fatal
J1	M1 Junction 16	6	2	0
J2	A4500 / Sandy Lane Relief Road	11	1	0
J3	A4500 / Upton Way / Tollgate Way	10	0	0
J4	A5076 / A5123 / Upton Way	17	2	0
J5	M1 Junction 15A	24	6	2
J6	A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road	0	0	0
J7	Towcester Road / A5076 / A5123 / Tesco	18	1	1
J9	A45 / Eagle Drive / Caswell Road	57	6	0
J10	Barnes Meadow Interchange	9	1	0
J11	A45 / A43 / Ferris Row	23	4	0

Junction Number	Junction Name	Number of PICs		
		Slight	Serious	Fatal
J12	M1 Junction 15	13	6	1
J13	Site Access	3	0	0
J14	Tove Roundabout	22	3	0
J15	Abthorpe Roundabout	11	2	0
J19	A5076 / Telford Way / Walter Tull Way / Duston Mill Lane	0	1	0
J20	A5076 / High Street / Duston Mill	1	0	0
J23	Nunn Mills Road / A428 / Beckett's View	0	0	0
J24	The Cock Hotel Junction	0	1	0
J25	A508 / A5199	6	0	0
J26	A43 / A5123 / A5076 / Stone Circle Road	2	0	0
J27	Blisworth turn	13	0	0
J28	Tiffield turn	2	1	0
J29	A43 / Northampton Road	2	1	1
J31	A5 / Brackley Road / Northampton Road	4	1	1
J38	M1 Junction 16	0	0	0
Blisworth		12	0	0
Milton Malsor		4	1	0

4.40 It has been identified that there are existing issues at a number of junctions on the A43. Given that the development will add additional traffic onto the A43, these locations have been considered further. In addition, the general public at public consultation events have also identified these locations which are considered further below.

4.41 A summary of causation factors at junctions with an existing or perceived highway safety issues are summarised below.

Junction 28 - A43 / Towcester Road

4.42 Three of the four incidents at this junction involved vehicles turning right from the A43 towards Towcester Road, and occurred in dark conditions, with no street lighting present. However, two of these incidents were recorded prior to improvements being implemented by HE in 2015, and it is therefore not clear at this stage whether there remains a material highway safety issue at this junction. This is considered further in **Chapter 6**.

Junction 29 – A43 / St John's Road

4.43 Three of the four incidents involved vehicles emerging from the minor arms colliding with northbound vehicles on the A43. There is no obvious pattern to the time, date or road and lighting conditions of the recorded PICs.

Junction 31 – A43 / Northampton Road

4.44 The main cause of collisions at Junction 31 is considered to relate to right turning movements from the A43 towards Northampton Road.

4.45 The PICs and recommendations for further improvements at these junctions are contained within **Chapter 6.**

Existing Local Bus Services

4.46 The closest northbound and southbound bus stops to the site are located on Northampton Road adjacent to the JBJ Business Park, approximately 200 metres south of the site boundary. The bus stops compromise a flag and pole with timetable information and a bench at both stops. A bus shelter is provided at the northbound stop.

4.47 Additional bus stops are located on Northampton Road opposite and adjacent to Station Road, approximately 300 metres south of the site boundary. The location of the bus stops within the vicinity of the site is shown on **Figure 4.2**.

4.48 The bus operators serving these stops are Uno and Stagecoach Northamptonshire. The stops are served by 86, 88, 89 and X89 services which provide access to Northampton, Milton Keynes, Towcester and Brackley. The 88 and 89 service provide a connection to Northampton Railway Station.

4.49 Bus service details and timetable information at the bus stops identified above have been obtained from the service providers, and are presented in **Table 4.1.** Local bus routes are illustrated on **Figure 4.2**.

DRAFT

Table 4.2 Summary of Bus Services from Northampton Road (Opposite Business Park)

Service	Route	Monday to Friday			Saturday			Sunday		
		First Bus	Frequency (mins)	Last Bus	First Bus	Frequency (mins)	Last Bus	First Bus	Frequency (mins)	Last Bus
86[1]	Towcester / Stony Stratford to Northampton (via Roade)	0733	120-180 (five services)	1737	0733	120-180	1737	No Service		
	Northampton to Towcester / Stony Stratford (via Roade)	0919	120 (five services)	1823	0919	120 (five services)	1823			
88[2]	Brackley to Northampton (via Silverstone and Towcester)	0752	2 AM services and 2PM services	1937	0752	2 AM services and 2 PM services	1941	0932	90	1832
	Northampton to Brackley (via Towcester and Silverstone)	0815/0821	1 AM service	-	0633	1 AM service	-	1023	90	1923
89[2]	Milton Keynes to Northampton (via Deanshanger and Towcester)	0702	3 AM services and 3 PM services	2113	0817	2 AM services and 2 PM services	2013	No service		
	Northampton to Milton Keynes (via Towcester and Deanshanger)	0649	2 AM services and 4 PM services	1835	0649	2 AM services and 4 PM services	1835			
X89[2]	Milton Keynes to Northampton (via Deanshanger and Towcester)	1122	60	1745	1122	60	1745	No service		
	Northampton to Milton Keynes (via Towcester and Deanshanger	0912	60	1412	0912	60	1412			

1 – Operated by Uno; 2 – Operated by Stagecoach

4.50 Northampton Bus Station, also known as North Gate Bus Station, consists of 14 departure bays with 12 on its western side and two on its southern side. A further eight bays for southbound journeys out of Northampton are located on the Drapery immediately adjacent to the bus station, also known as Northampton Bus Interchange. Within the bus station are facilities including a café, convenience store and toilets.

4.51 Travelling between Northampton bus station and the site takes between approximately 18 and 23 minutes depending on the service used. From Northampton bus station, bus services link to locations including Bedford, Kettering, Leicester, Rugby, Wellingborough.

4.52 Bus service 86 provides a service between Northampton and Towcester from 0733 until 1738 every two to three hours, Monday to Friday. On a Saturday the bus service runs from 0733 until 1415. This service runs through Milton Malsor, east through Collingtree and north along the A45 to the bus interchange, with an approximate journey time of 18 minutes between Northampton Road and Northampton Bus Interchange.

4.53 Bus 88 provides four services a day, Monday-Saturday, between Brackley and Northampton and a 90 minute service on a Sunday between 0923 and 1832. Between Northampton and Brackley, one morning service runs Monday to Saturday and a 90 minute service between 1023 and 1923.

4.54 Bus services 89 and X89 provide hourly services between Northampton and Milton Keynes. The 89 service runs during the morning between 0748 and 1020 and in the evening between 1858 and 2113 and the X89 service runs during the day between 1122 and 1742.

4.55 The 88, 89 and X89 services route towards Northampton along Towcester Road / Northampton Road passing through Blisworth and Milton Malsor. These services route through the residential areas of East Hunsbury along Rowtree Road in south Northampton before continuing to Northampton bus station. The service takes approximately 23 minutes Northampton Road (opposite bus stop) and Northampton Bus Interchange.

4.56 Currently, services 88, 89 and 89X provide a combined service at an approximate 30 minute frequency and the Northamptonshire Bus Strategy indicates that bus services 88 and 89 are anticipated to be operating every 15 minutes by approximately 2026 to 2031.

Existing Local Passenger Rail Services

4.57 Northampton Railway Station is located approximately eight kilometres to the north of the site in Northampton. Facilities include 85 cycle stands, 813 car parking spaces (including 13 disabled spaces) and a taxi rank. A café, shops and toilets are also provided. Northampton Railway Station is located on the main rail network between London and Birmingham. The line is served by London Midland and Virgin Trains.

4.58 The railway services operating from Northampton Railway Station are summarised in **Table 4.2** below.

Table 4.3 Northampton Railway Station Services

Destination	Direction	Monday to Friday			Saturday			Sunday		
		First Train	Frequency (minutes)	Last Train	First Train	Frequency (minutes)	Last Train	First Train	Frequency (minutes)	Last Train
London Euston (via Milton Keynes, Bletchley and Leighton Buzzard	To	0415	20-30	2335	0515	20-30	2330	0753	30	2300
	From	0534	20-30	0134	0534	5-35	0015	0654	30	2334
Birmingham (via Rugby and Coventry)	To	0516	10-20	2335	0555	10-30	2255	0926	60	2252
	From	0545	20	2310	0614	20	2254	0914	30-60	2300

4.59 During the daytime there are approximately three daytime trains per hour in each direction Monday to Sunday between Northampton and London Euston. In the evenings there are approximately two trains per hour in each direction.

4.60 There are approximately three daytime trains per hour in each direction between Northampton and Birmingham New Street and approximately two trains per hour in the evening in each direction.

4.61 Services call at local stations including Wolverton and Long Buckby, with approximate 10 minute journey times.

Accessible Locations by Sustainable Modes of Travel

4.62 A summary of key locations accessible from the site by sustainable modes of travel, within an approximate 90 minutes overall travel time, is provided in **Table 4.3** below. To provide a robust assessment, overall travel times have been determined for the PM peak hour (1700-1800).

4.63 The closest bus stops to the site are located on Northampton Road, adjacent to JBJ Business Park, which corresponds to an approximate five minute walk from the centre of the site.

Table 4.4 Overall Travel Time by Sustainable Modes of Travel

Start Location	Bus Service	Travel Time (mins)	Changeover	Changeover Time (mins)	Method of Travel	Travel Time (mins)	Final Destination	Overall Travel Time (mins)
Site Centre	86	12	-	-	-	-	South Northampton (London Road)	12
Site Centre	86	18	-	-	-	-	Central Northampton (Bus Interchange)	18
Site Centre	86	18	Northampton Bus Interchange	10	Bus (9)	14	West Northampton (Bants Lane)	42
Site Centre	86	18	Northampton Bus Interchange	15	Bus (16)	10	North Northampton (Harborough Road)	43
Site Centre	86	18	Northampton Bus Interchange	11	Bus (1)	16	East Northampton (Wellingborough Road)	45
Site Centre	86	7	Watering Lane, Collingtree	11	Bus (X7)	38	Milton Keynes	47
Site Centre	X89	16	Toys R Us, Northampton	9	Train	21	Rugby	58

Start Location	Bus Service	Travel Time (mins)	Changeover	Changeover Time (mins)	Method of Travel	Travel Time (mins)	Final Destination	Overall Travel Time (mins)
Site Centre	X89	23	Northampton Bus Interchange	10	Bus (X4)	34	Wellingborough	62
Site Centre	X89	60	-	-	-	-	Milton Keynes	73
Site Centre	86	18	Northampton Bus Interchange	7	Bus (D3)	60	Daventry	85
Site Centre	86	18	Northampton Bus Interchange	10	Bus (X4)	57	Kettering	86

Conclusions

4.64 In conclusion, the development site is well connected to the strategic highway network, including the M1, A43, A5 and A45, as well as strategic local routes such as the A5123 and A5076. The connectivity to the major road network is a key requirement of the NPS for SRFI sites, as set out in **Chapter 2**, and the site is therefore considered to be appropriately located in this regard.

4.65 Proposed walking and cycling infrastructure, set out in **Chapter 6**, will provide improved connections between the site, surrounding villages and the southern residential areas of Northampton, providing the opportunity for future employees to access the site by walking and cycling. Furthermore, a comprehensive public transport strategy is being developed to support the proposals, including the provision of new bus stops on Northampton Road, a new bus interchange within the site and additional bus services.

4.66 Junctions on the A43 have been identified where there is an existing highway safety issue and the development is likely to impact further on these. Safety improvements are therefore proposed at these locations as set out in **Chapter 6**.

4.67 It is concluded that, with the proposed improvements set out at **Chapter 6**, the highway network, pedestrian and cycle infrastructure and public transport facilities are appropriate to serve the development site, and that the site will be accessible by a range of modes of transport that will provide a viable alternative to single occupancy vehicle use.

5 DESIGN YEAR BASELINE CONDITIONS

Northamptonshire Strategic Transport Model

5.1 The Northamptonshire Strategic Transport Model (NSTM) is a SATURN model operated by WSP on behalf of NCC. A SATURN model is a strategic model which contains a large network of links and nodes, each of which has defined set of parameters including speed, distance and capacity. The model then applies a matrix of origins and destinations for trips that are likely to occur within the modelled periods, and these are assigned onto various routes within the SATURN model, according to the routes which provide the lowest 'cost'. The route 'cost' within SATURN is determined based on a number of factors, including link capacity, speed and distance among others.

5.2 During 2016, the NSTM was revalidated and recalibrated to a 2015 base year, in order to ensure that it remained WebTAG compliant. The 2015 NSTM represents the baseline situation of the local highway network in the vicinity of the site.

5.3 The NSTM has been used to assess the strategic impact of Rail Central as requested by HE and NCC, including a local revalidation of the model as set out below. The baseline NSTM was due to be available for modelling work in autumn 2016. However, due to various updates made to the model by NCC and its internal approval processes, it was not possible to begin undertaking assessments for Rail Central until March 2017.

Data Collection

5.4 The 2015 NSTM was developed to be calibrated and validated against a range of traffic survey data throughout Northamptonshire. These principally focussed on the main arterial routes and population centres such as Northampton, Wellingborough, Kettering and Corby. The Local Model Validation Report (LMVR) for the 2015 baseline model, prepared by WSP, is included at **Appendix C**.

5.5 In order to ensure that the model appropriately reflects the operation of the highway network in the immediate vicinity of the site, a large number of additional traffic surveys were carried out in order to revalidate the model. The extent and locations of these surveys have been agreed as appropriate with HE and NCC and included:

- Automatic Number Plate Recognition (ANPR) surveys at 29 locations in Northamptonshire on Thursday 30th of June 2016;
- one-week Automatic Traffic Count (ATC) surveys at 30 locations in Northamptonshire between 27th June and 3rd July 2016; and
- four-week ATC surveys at two locations in Northamptonshire between 23rd June and 20th July 2016.

5.6 The locations of the surveys are illustrated on **Figure 5.1**.

5.7 Full details of the updates made to the NSTM for revalidation purposes and the results of the revalidation are set out in the following reports:

- Modelling Methodology Specification Report – **Appendix D**; and
- Model Local Area Validation Report – **Appendix E**.

5.8 In accordance with the NPS, the reports above have been reviewed by both HE and NCC and confirmed to be appropriate and in accordance with WebTAG guidelines.

Assessment Scenarios

5.9 It has been agreed with HE and NCC that the Transport Assessment work will be carried out for the peak hours of 0800-0900 and 1700-1800, as these are considered to represent the busiest periods on the local highway network. Whilst these periods do not represent the peak of traffic associated with Rail Central, the overall quantum of traffic on the surrounding highway network (including both baseline and Rail Central traffic) is forecast to be highest during the network peak hours of 0800-0900 and 1700-1800. They would therefore provide a worst case assessment in terms of the operation of the highway network.

5.10 For the purpose of assessing the impact of Rail Central, future forecast assessment years, as set out in the Modelling Methodology Specification Report at **Appendix** , have been agreed with HE and NCC as follows:

- Highways England – Future forecast assessment year of 2021
  This is the forecast opening year for the proposed development. Although it is anticipated that Rail Central will not be fully built out in the 2021 opening year, the 2021 assessments have been carried out assuming a full build-out of Rail Central, in line with requirements set out in DfT Circular 02/2013.

- Northamptonshire County Council – Future forecast assessment year of 2031
  This equates to the end of the local plan period, and it is anticipated that the Rail Central development would be fully built out by this point.

5.11 The Northamptonshire Local Plan includes a number of allocated development schemes and infrastructure schemes. These are included within the NSTM to reflect the forecast traffic flows across the network once these schemes are implemented. NCC has also carried out an exercise to determine which of these schemes are likely to come forward by 2021 and which schemes will likely come forward between 2021 and 2031. The NSTM and the scheme delivery timescales have been agreed as appropriate with HE. A full list of the development and infrastructure schemes contained within the model, including the timescales for their delivery, is included at **Appendix F**.

5.12 The future forecast baseline scenario is known as the Do Minimum (DM) Scenario. This sets out the forecast situation without the Rail Central development. It includes all allocated and

committed development schemes, as well as all committed infrastructure schemes, that are reasonably expected to come forward in each assessment year.

5.13 The DM scenario will be used as a benchmark to determine whether the impact of Rail Central is significant, whether the proposed mitigation appropriately mitigates the development impact, and whether the residual impacts can be considered to be severe in the context of NPPF.

Design Year Baseline Modelling

5.14 The results of the DM modelling for the 2021 and 2031 design years indicate that the Northamptonshire highway network is forecast to experience significant delays and congestion in the future baseline scenarios. This is as a result of increases in trips compared to the 2015 base of 10% and 12% in the 2021 AM and PM peaks respectively, and 32% and 29% in the 2031 AM and PM peaks respectively. These trip increases are a result of traffic growth following the implementation of the West Northamptonshire Joint Core Strategy.

5.15 Due to the level of delay and congestion on the highway network in the DM scenario, traffic redistributes away from congested major roads onto minor routes, which may offer an improved journey time. Where highway improvements are proposed as part of the Rail Central proposals, it is likely that these will attract baseline traffic back towards major routes, therefore having a beneficial impact on other routes, which will affect both existing traffic and development traffic.

DRAFT

6 THE PROPOSED DEVELOPMENT

Summary of Proposals

6.1 The Proposed Development is for a Strategic Rail Freight Interchange (SRFI) with associated highways works and ancillary development on land within the Proposed Development Area (PDA).

6.2 It is anticipated that the proposed development will comprise the following key elements:

- Demolition of existing buildings and structures;
- An intermodal freight terminal with direct connections to the Northampton Loop Line, capable of accommodating trains of up to 775m long, including up to 3 gantry cranes, container storage, a train maintenance depot and facilities to transfer containers to Heavy Goods Vehicles (HGV);
- An express freight terminal with direct connections to the West Coast Main Line, capable of accommodating trains of up to 240m long, a freight platform with associated loading and unloading facilities;
- Up to 702,097 sq m (Gross External Area) of rail connected and rail served warehousing and ancillary service buildings including a lorry park, terminal control building and bus terminal;
- New road infrastructure including a new separated access point on the A34 (T), an internal site underpass (under Northampton Road) and necessary utilities infrastructure; and
- Strategic landscaping and open space including alterations to public rights of way, the creation of new ecological enhancement areas and publicly accessible open areas, flood attenuation, and the partial diversion of the Milton Malsor brook.

6.3 A Parameters Plan illustrating the general layout of the proposed development is included as part of the submission. It is anticipated that the proposed development site will be split into seven distinct zones which will be accessed from an estate road which runs through the development from west to east from the access on the A43. The zones are broadly summarised as follows:

(i) Zone 1 – 2 to 4 units – north west of site, between A43 and Northampton Road;
   a. Zone 1a – Truck Park (anticipated 149 spaces) – north west of site, adjacent to A43;
(ii) Zone 2 – 1 to 3 units – south west of site, between A43 and JBJ Business Park;
(iii) Zone 3 – 1 to 4 units – north east of site, between Northampton Road and Zone 6a;
(iv) Zone 4 – 1 to 3 units – south east of site, between Northampton Road and Zone 5a
(v) Zone 5 – 2 to 3 units – south east of site, between Zone 5a and Zone 6a;
   a. Zone 5a – 1 to 2 units – south east of site, between Zone 4 and Zone 5;
(vi) Zone 6 – Train Maintenance Depot – south east of site, between Zone 5 and West Coast Main Line;

a. Zone 6a – Intermodal Terminal – east of site, adjacent to Northampton Loop Railway Line; and

(vii) Zone 7 – Express Freight Terminal – south of site, adjacent to West Coast Main Line.

6.4 Each zone is anticipate to accommodate one or more logistics buildings comprising car, HGV and cycle parking, access docks and a range of ancillary development including gatehouses, vehicle maintenance areas and vehicle washing facilities.

Means of Access

Vehicular

6.5 Vehicular access to the site is proposed from the A43 via a new grade separated junction (GSJ) west of the development, as illustrated on **Figure 6.1**. The principal of this access strategy is agreed to be appropriate with HE and NCC.

6.6 The access junction will be located on the site of the existing access to the disused petrol filling station approximately 650 metres south of where Gayton Road crosses the A43 via a road bridge.

6.7 The GSJ has been designed in accordance with guidance set out in DMRB TD22/06. It comprises single lane slip roads and two lanes on the roundabout circulatory carriageway. The preliminary design of the GSJ has been accepted by HE, subject to detailed design elements as set out later in this chapter.

6.8 An estate spine road is proposed to serve the site from west to east from the access on the A43 through the development. Although not fixed, this is proposed to be circa 14m wide with two lanes in each direction through the western side of the site, before narrowing to 7.3m wide and one lane in each direction on the eastern side of the site. A 3m wide footway / cycleway will be provided on both sides of the estate road for its length. Dropped kerbs and tactile paving will be provided at all crossing points, along with pedestrian refuge islands where appropriate.

6.9 A vehicular underpass is proposed on the route of the main estate road to allow it to pass beneath Northampton Road without impeding existing local traffic flow, as illustrated on **Figure 6.2**. This is proposed to be 15.3m wide, which allows a number of different potential carriageway and footway/cycleway width options to be considered within the final design. The principle of the proposed underpass has been agreed as appropriate with NCC and HE.

Emergency

6.10 An emergency vehicle access point will be provided on to the western side of Northampton Road from the proposed bus terminal to the north of the underpass as illustrated on **Figure**

6.3. An additional emergency vehicle access will be provided further to the north on the eastern side of Northampton Road, as illustrated on **Figure 6.3**. The emergency vehicle access points will comprise priority junctions with Northampton Road and will be controlled by gates to prevent general vehicle access. Staff and visitors in vehicles and HGVs will not be able to access the site via these points and must use the access on the A43.

6.11 The emergency vehicle access points will be controlled by the emergency services and it is they who will decide when the emergency access points will / should be used.

Construction

6.12 During the initial phase of construction, the existing left-in, left-out access to the petrol filling station on the A43 will be used to provide access to the site. However, the proposed GSJ is situated in the same location as this existing access, which would prevent the use of the existing access in the long term. Therefore, the existing access will be used to facilitate the construction of a temporary left-in, left out construction access onto the A43, situated to the north of the existing access.

6.13 Following the construction of the temporary access point, the existing access will be closed up and the GSJ will be constructed. Once the GSJ is complete, this will be used for construction access to the site and the temporary access will be closed.

Pedestrians and Cyclists

6.14 Pedestrian and cycle access to the site will be provided from Northampton Road via foot and cycleway connections both to the east and west of Northampton Road in the vicinity of the proposed underpass. This has been agreed in principle with NCC and HE and is shown indicatively on **Figure 6.3**.

6.15 Foot and cycleways will be provided within the site adjacent to the internal estate roads, to provide a pedestrian and cycle connection to each zone. These will connect with a comprehensive network of new and existing (diverted) PROWs, which are proposed to be developed and retained through, around and across the site. They will also provide a connection to the existing public rights of way and pedestrian networks within the villages of Milton Malsor and Blisworth.

Proposed Diversion of Existing Public Rights of Way

6.16 As set out at **Chapter 3**, a number of existing PROWs cross the proposed development site. As part of the proposals, these will be diverted to alternative routes within the proposed landscape mitigation areas surrounding the site. The proposed PROW diversions are illustrated on **Figure 6.4**.

6.17 To facilitate the proposed PROW diversions, new pedestrian bridges will be provided over the West Coast mainline and the Northampton Loop Line, as shown indicatively on **Figure 6.4**.

6.18 The proposed diversion route of PROW KX16 crosses the proposed estate spine road, near to the proposed junction with the A43. It is proposed that a pedestrian underpass will be provided under the new access road, to allow pedestrians using the PROW to safely bypass this new infrastructure. It will be located approximately 40 metres to the east of the site access and comprise a 2.7m high, 5m wide and 70m long, artificially lit culvert, which will have the capacity to safely accommodate pedestrian and cycle users. The proposed underpass is illustrated on **Figure 6.5**.

6.19 As part of the proposed PROW diversions, a new north-south pedestrian and cycle link is proposed to be provided to the east of Northampton Road, connecting the existing PROW KX7 at the northern extent of the site to existing footways on Northampton Road at the southern extent of the site, with connections also provided into the site itself. The route will be separated from the Northampton Road carriageway, with the exception of a short section where it crosses the proposed underpass.

Public Transport

6.20 As set out later in this chapter, a public transport strategy is currently being developed in discussion with officers at NCC and Stagecoach Midlands. Subject to the final agreed strategy, this may include a need for bus services to enter the site.

6.21 In addition to the GSJ on the A43, access to the site for bus services can be provided via the emergency access point on the western side of Northampton Road, should this form part of the final public transport strategy. This access links directly to a proposed bus interchange which includes a bus stop, waiting area and turning facilities. In order to ensure that the emergency access point is not used by general traffic, the access would be controlled by a bus gate.

Parking

6.22 Parking arrangements within the scheme for both cars and HGVs will be provided with reference to standards set out in the Northamptonshire Parking Standards document, dated September 2016.

6.23 The NCC guidance sets out minimum parking standards for B8 use classes as follows[3]:

(i) cars – one space per 120sqm;
(ii) cycle – one space per 500sqm for staff plus one space per 1,000sqm for customers;
(iii) motorcycle / scooter – one space plus one per 20 car spaces (for 1st 100 car spaces) then one space per 30 car spaces (over 100 car spaces)
(iv) disabled – 10% of the total car parking spaces

[3] All areas stated are in Gross Floor Area (GFA)

(v) HGVs:

a. First 235sqm – one unloading / manoeuvring space per unit;
b. 235 – 800sqm – one unloading / manoeuvring space plus one waiting space per unit;
c. Over 800sqm – one loading bay per 800sqm plus waiting space at each bay for one additional vehicle of the largest type likely to be used.

6.24 Each of the units will be served with its own adjacent car and HGV parking provision which will be provided in accordance with the standards outlined above. A summary of the overall parking standards applied to the proposals is provided in **Table 6.1**.

Table 6.1 Anticipated parking provision (based on NCC standards)

GFA (sqm)*	Car Parking Spaces	Cycle Parking Spaces**	Motorcycle / Scooter Parking Spaces**	Disabled Parking Spaces	HGV Parking Spaces**
701,513	5,846	2,105	246	585	1,773

**Assumes GIA = 98% of GFA; **Assumes up to 19 units (see para. 6.3), each in excess of 1,000sqm GFA and with more than 100 car parking spaces*

6.25 In addition to the above, a lorry park comprising 149 HGV parking spaces is proposed to the north of the access road and adjacent to the site access at Zone 1a.

6.26 The train maintenance depot (Zone 6a) is anticipated be served by 185 car parking spaces and six HGV parking spaces. The intermodal freight terminal is expected to be served by 206 HGV parking spaces.

Off-Site Highway Works – Capacity Improvements

6.27 This section outlines the proposed junction mitigation schemes to be implemented further to the junction capacity assessments undertaken in **Chapter 9.** The proposed junction capacity improvement schemes are included at **Appendix G** .

Junction One – M1 Junction 16

6.28 The proposed highway mitigation measures for M1 Junction 16 are shown at **G.1**. A summary of the mitigation measures is as follows:

- provision of traffic signal control on both M1 off slips and the A45 approach, as well as three corresponding traffic signals on the circulatory carriageway;
- provision of an additional nearside lane on the M1 Eastbound off-slip approach;
- provision of an additional offside lane on the M1 Westbound off-slip approach;
- provision of an additional nearside lane on the A45 approach; and
- reconfiguration of the road markings to provide three lanes on circulatory carriageway, with the exception of the eastern section.

Junction Three – A4500 / Upton Way / Tollgate Way

6.29 The proposed highway mitigation measures for the A4500 / Upton Way / Tollgate Way roundabout are shown at **G.2**. A summary of the mitigation measures is as follows:

- provision of an additional nearside lane on the A4500 West approach;
- changing the existing nearside lane road marking to a straight ahead only on the A4500 West approach;
- realignment of the footway/cycleway adjacent to the A4500 West approach.

Junction Four – A5076 / A5123 / Upton Way

6.30 The proposed highway mitigation measures for the A5076 / A5123 / Upton Way roundabout are shown at **Appendix G.3**. A summary of the mitigation measures is as follows:

- extension to the offside right turn lane on the Upton Way approach;
- reconfiguration of the road markings on the Danes Camp Way approach;
- reconfiguration of the road markings on the circulatory carriageway;
- additional offside lane on the A5123 approach;
- additional lane on the circulatory carriageway; and
- additional lane on the Upton Way exit.

Junction Five – M1 Junction 15A

6.31 The proposed highway mitigation measures for the M1 Junction 15A are shown at **Appendix G.4**. A summary of the mitigation measures is as follows:

Southern Roundabout

- replacement of the existing roundabout with a signalised junction arrangement to facilitate all existing movements as well as a proposed left-in/left-out site access;
- provision of two through lanes in either direction for traffic travelling north and south on the A43;
- provision of a left turn lane for the A43 south approach;
- provision of two right turn lanes for the A43 north approach;
- provision of two right turn lanes for the A43 west approach;
- provision of a left turn lane for the A43 west approach; and
- provision of yellow box road markings.

Northern Roundabout

- signalisation of both A43 approaches and the A5123 approach, as well as three corresponding traffic signals on the circulatory carriageway;
- widening of the circulatory carriageway and provision of road markings on the circulatory carriageway;
- additional lanes on the A43 south approach;

- additional nearside lane on the A43 west approach;
- additional offside lane on the A5123 approach; and
- additional off side lane on the A5123 exit.

Junction Six – A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road

6.32 The proposed highway mitigation measures for the A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road roundabout are shown at **Appendix G.5**. A summary of the mitigation measures is as follows:

- provision of signal control on both arms of the A5076 Danes Camp Way approaches and two corresponding traffic signals on the circulatory carriageway;
- provision of an additional nearside lane on both of the A5076 Danes Camp Way approaches;
- provision of an additional merge lane on both of the A5076 Danes Camp Way exits;
- lengthening of the nearside lane on the Hunsbarrow Road approach; and
- reconfiguration of the road markings to provide extra connecters on the circulatory carriageway and entry arms;

Junction Seven – Towcester Road / A5076 / A5123 / Tesco

6.33 The proposed highway mitigation measures for the Towcester Road / A5076 / A5123 / Tesco roundabout are shown at **Appendix G.6**. A summary of the mitigation measures is as follows:

- provision of an additional lane and merge on Towcester Road south exit;
- provision of an additional offside lane on the A5076 Danes Camp Way approach;
- signalisation of the Towcester Road north approach and corresponding traffic signals on the circulatory carriageway;
- lengthening of the nearside lane on the Towcester Road north approach;
- provision of local widening on the circulatory carriageway;
- lengthening of the off side lane on the Mere Way approach;
- provision of a merge lane on the Mere Way exit; and
- provision of a merge lane on the Towcester Road south exit.

Junction Nine – A45 / Eagle Drive / Caswell Road

6.34 The proposed highway mitigation measures for the A45 / Eagle Drive / Caswell Road roundabout are shown at **Appendix G.7**. A summary of the mitigation measures is as follows:

- provision of traffic signal control on the Caswell Road approach and the circulatory carriageway.

Junction Ten – Barnes Meadow Interchange

6.35 The proposed highway mitigation measures for the A45 Barnes Meadow Interchange are shown at **Appendix G.8**. A summary of the mitigation measures is as follows:

- provision of an additional lane on A428 (E) approach;
- lengthening of the offside lane on the circulatory carriageway between the A45 (S) approach and the A428 (W) exit; and
- reconfiguration of road markings on the circulatory carriageway, A45 (S) approach and A428 (E) approach.

Junction Eleven – A45 / A43 / Ferris Row

6.36 The proposed highway mitigation measures for the A45 / A43 / Ferris Row roundabout are shown at **Appendix G.9**. A summary of the mitigation measures is as follows:

- additional third lane on the western circulatory for right turning traffic; and
- changing the road markings for the existing two lanes to straight ahead only lane and an ahead and right turn only lane on the western circulatory.

Junction Twelve – M1 Junction 15

6.37 The proposed highway mitigation measures for M1 Junction 15 are shown at **Appendix G.10**. A summary of the mitigation measures is as follows:

- provision of an additional nearside lane on the A45 approach;
- realignment of the footway/cycleway adjacent to the A45 approach;
- provision of an additional lane on the northern circulatory;
- provision of a merge lane on the A45 exit; and
- changing the road markings for the M1 Northbound off-slip and A508 approaches to allow three lanes towards the A45.

Junction Fourteen – Tove Roundabout

6.38 The proposed highway mitigation measures for the A43 Tove Roundabout are shown at **Appendix G.11**. A summary of the mitigation measures is as follows:

- reconfiguration of the roundabout and an increase in the size of the central island;
- lengthening of an existing lane and the provision of an additional lane on A43 south approach;
- reconfiguration and widening of the Towcester Road approach to accommodate an additional give way lane;

- lengthening of an existing lane and provision of an additional lane on the A5 (north) approach;
- widening of the circulatory carriageway between the A5 (north) and the A5 (south) to provide an additional lane; and
- provision of a merge lane on the A5 north exit.

Junction Fifteen – Abthorpe Roundabout

6.39 The proposed highway mitigation measures for the A43 Tove Roundabout are shown at **Appendix G.12**. A summary of the mitigation measures is as follows:

- provision of two additional offside lanes on the A43 north approach;
- realignment of the existing lanes on the Brackley Road approach;
- realignment of the A43 exit; and
- reconfiguration of the road markings on the circulatory carriageway.

Junction Nineteen – A5076 / Telford Way / Walter Tull Way / Duston Mill Lane

6.40 The proposed highway mitigation measures for the A5076 / Telford Way / Walter Tull Way / Duston Mill Lane roundabout are shown at **Appendix G.13**. A summary of the mitigation measures is as follows:

- provision of an additional nearside lane on the A5076 Upton Way north approach;
- realignment of the eastern approach;
- provision of a merge lane on the A5076 Upton Way south exit;
- provision of an additional nearside lane on the A5076 Upton Way south approach;
- realignment of the Telford Lane approach and exit;
- provision of a merge lane on the A5076 Upton Way north arm; and
- widening of the circulatory carriageway to accommodate three lanes on the east and west sections of the circulatory and two lanes on the north and south sections of the circulatory.

Junction Twenty – A5076 / High Street / Duston Mill

6.41 The proposed highway mitigation measures for the A5076 / High Street / Duston Mill roundabout are shown at **Appendix G.14**. A summary of the mitigation measures is as follows:

- provision of an additional nearside lane on the A5076 Upton Way north approach;
- provision of a merge lane on the A5076 Upton Way south exit;
- provision of an additional nearside lane on the A5076 Upton Way south approach;
- provision of a merge lane on the A5076 Upton Way north exit; and

- widening of the circulatory carriageway to accommodate three lanes on the east and west sections of the circulatory and two lanes on the north and south sections of the circulatory.

Junction Twenty Five – A508 / A5199

6.42 The proposed highway mitigation measures for the A508 / A5199 junction are shown at **Appendix G.15**. A summary of the mitigation measures is as follows:

- lengthening of an existing lane on the A5199 approach.

Off-Site Highway Works – Road Safety Schemes

6.43 Further to the review of accident data provided in **Chapter 4** of this report, this section outlines the proposed offsite highway safety schemes to be implemented to mitigate against any potential impact that the development proposals may have. The junctions below were also specifically identified by HE and NCC as existing road safety problem sites. It was agreed with HE and NCC that improvements at these locations would be for safety reasons only, and improving capacity would not be appropriate as that would encourage a higher usage of them.

6.44 Technical Notes containing a detailed review of each of these junctions, along with the proposed mitigation schemes, are included at **Appendix H**.

Junction 28 – A43 / Towcester Road

6.45 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location (and at other central reserve junctions along the A43) and recommendations were made for improvements to the junction following a committee review. These were:

(i) 'The addition of 'Junction Ahead' warning signs on the southbound approach to the Towcester Road junction. The junction warning signs are to be incorporated with the 300yds, 200yds and 100yd countdown signs (located within the nearside verge and central reserve) and positioned on yellow backing board; and

(ii) The stack-type direction sign on the southbound approach to the Towcester Road junction is to be removed and replaced with a map type advance direction sign.'

6.46 The above measures have now been provided at the junction, and it is not clear from the latest highway safety records whether there remains a significant highway safety problem. However, should future accident records indicate that a problem remains, the applicant is willing to provide a reasonable financial contribution towards further improvements at this location.

6.47 The detailed review of the highway safety record at this junction and the need for mitigation is included at **Appendix H.1**

Junction 29 – A43 / St John's Road

6.48 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location recorded up to 31st December 2011 (and at other central reserve junctions along the A43) and recommendations were made for improvements to the junction following a committee review.

6.49 Whilst a sufficient period of time has not passed since the implementation of the HE measures has passed to determine their effectiveness, it has been noted that further incidents have been recorded since 2012 that suggest an issue involving turning vehicles colliding with vehicles travelling on the A43 northbound. The Rail Central proposals therefore include junction ahead and warning signs and countdown markers as well as high friction surfacing for northbound vehicles on the A43, which accords with the improvements implemented by HE on the A43 southbound.

6.50 The detailed review of the highway safety record at this junction and the proposed mitigation is included at **Appendix H.2**

Junction 31 – A43 / Northampton Road

6.51 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location (and at other central reserve junctions along the A43) and recommendations were made for improvements to the junction following a committee review.

6.52 The report concluded that there was a higher than average number of PICs occurring in darkness and a site inspection revealed that the road studs have very limited amounts of reflectivity. Therefore, a programme of works for the studs to be replaced was included in future maintenance. These measure have now been provided at the junction.

6.53 From review of the form of the junction, it appears that the prominence of the junction to vehicles travelling southbound on the A43 may be low. Therefore, to mitigate against any potential impact of the development proposals, a signage scheme is proposed to be provided to include junction ahead warning signs with associated countdown markers. Similar schemes have been recently implemented by Highways England (HE) at Junction 28 and Junction 29.

6.54 The detailed review of the highway safety record at this junction and the proposed mitigation is included at **Appendix H.3**.

Off-Site Highway Works – Pedestrian and Cycle Improvements

6.55 This section outlines the proposed off-site infrastructure improvements proposed to provide suitable pedestrian and cycling infrastructure between the proposed site, the surrounding villages and the southern residential areas of Northampton. This is considered in further detail within the Pedestrian and Cycle Strategy at **Appendix I**.

Proposed footway/cycleway along Towcester Road

6.56 To facilitate pedestrian and cycle movement along Towcester Road the existing footway on the west side of the carriageway will be widened to accommodate a suitable footway/cycleway. The proposed footway/cycleway will measure 3.0 metres in width with a minimum 0.5m wide margin along the carriageway edge. The carriageway of Towcester Road/Northampton Road will be realigned in sections with a minimum width of 6.5m. For reference, the proposed measures are included on **Figure 6.6**.

6.57 Towcester Road will provide the main link for pedestrians and cyclists accessing the site from the southern residential areas of Northampton. Providing direct links from existing cycle and pedestrian infrastructure, including the on-road cycle lanes provide along Rowtree Road from the residential areas of East Hunsbury and Wooton. A plan showing the areas located within 5km cycle of the centre of the proposed development is included within the Pedestrian and Cycle Strategy at **Appendix I.**

Proposed crossing points over Towcester Road/Rectory Lane

6.58 There are currently no crossing points provided at the junction of Towcester Road and Rectory Lane. Given that employees could access the site from Milton Malsor via Rectory Lane and Towcester Road, it is therefore proposed that pedestrian crossing facilities will be required at this point.

6.59 It is considered that pedestrians would likely look to take the shortest route possible. It is therefore proposed that a two metre wide footway will be provided on the nearside corner of the junction, as shown on **Figure 6.6**. To facilitate pedestrian movement, a dropped kerb crossing point with tactile paving will be provided on Towcester Road immediately south of the junction with Rectory Lane. In addition a dropped kerb crossing with tactile paving will be provided on Rectory Lane immediately east of the junction with Towcester Road.

Pedestrian Link onto Barn Lane

6.60 As part of the proposed masterplan, a pedestrian route provided within the site will provide a link to an existing Public Rights of Way which emerges onto Barn Lane. Barns Lane currently accommodates a footway on the eastern side of the carriageway, which provides a route to Collingtree Road located to the north.

6.61 The footway currently measures approximately 1.0 metre in width, however it is considered that there is sufficient highway land available to widen the footway. It is therefore proposed that the footway is widened to approximately 2.0 metres to accommodate pedestrian movements between the site and Milton Malsor.

Off-Site Highway Works – Environmental Enhancement Schemes

6.62 As set out in **Chapter 3**, a number of comments were raised by local residents throughout the consultation process in relation to a perceived risk that the development may increase 'rat-running' of traffic through local villages. To address this, environmental enhancement schemes were developed for Blisworth and Milton Malsor. These are designed to encourage lower vehicles speeds, and hence make these routes less attractive to through traffic.

6.63 The schemes were designed as a direct response to the comments raised by local residents, and in advance of any modelling work, in order to encourage early engagement on the final design. However, it was acknowledged that the modelling work using the NSTM would ultimately determine whether the environmental enhancement schemes were necessary.

6.64 The environmental enhancement schemes were also subject to discussions with NCC, who confirmed that they were acceptable in principle. The environmental enhancement schemes and the associated correspondence with NCC are included at **Appendix J** for reference.

6.65 The results of the DS2 modelling from the NSTM indicate that the proposed development is not forecast to result in any material increase in traffic through local villages in comparison to the DM, and as such the environmental enhancement schemes are not considered necessary to mitigate the development's impact at this stage.

Travel Planning

Construction Traffic Management Plan

6.66 The development will be constructed over an approximate ten year period commencing in 2019 and completing in 2029, with 129,790 sq.m (GEA) becoming operational in 2021. The indicative phasing of the development and forecast number of employees for each phase is shown on the construction phasing plan, summarised within **Table 2.1** of the CTMP, included at **Appendix 19.3** of the PEIR.

6.67 The designated route for construction traffic will only be provided from the A43, which can be accessed via M1, Junction 15A to the north and via the A5 and M40 J10 to the south. The vehicles associated with the construction will not be permitted to use any other roads or travel through surrounding villages such as Milton Malsor and Blisworth. The majority of the construction traffic will arrive from the M1 Junction 15A to access the A43.

6.68 Whilst a temporary access is constructed, the site will be accessed via the existing left-in, left out access arrangement onto the A43. The temporary construction access, located to the north of the existing access, will provide access onto the A43 during the construction of the Grade Separated Junction (GSJ). When the GSJ is complete, vehicles will utilise this access point and the temporary access will be closed.

6.69 During the 10 year construction period, construction traffic will include the movement of workers associated with the construction of infrastructure and individual plots along with the movement of material in the form of importing or exporting material. It is anticipated that the maximum size articulated vehicle that will be accessing the site will be the maximum legal 16.5 metres, weighing a maximum of 40 tonnes.

6.70 As summarised in **Table 5.1** of the CTMP, there could be a maximum of 434 employee vehicles and 226 HGVs accessing the site during Phase 10 of the construction. This equates to a total of 1,320 two-way vehicles movements across the busiest day, 34 percent of which are HGVs. As a robust assessment it is assumed that 10 percent of construction traffic will arrive at the site during the peak hours on any given day, resulting in up to 174 two-way vehicle movements of cars / LGVs and up to 90 two-way HGV movements, in the peaks hours, on the busiest day.

6.71 Subject to agreement with the Local Planning Authority (LPA), construction activities are expected to be permitted between the core hours of 0730 and 1900 on Monday to Friday and 0800 to 1300 on Saturdays. Deliveries will only take place within these core hours, but avoiding the typical network peak hours of 0800-0900 and 1700-1800, and no working shall take place on Sundays or Public Holidays.

6.72 To minimise the impact resulting from construction activities, a package of mitigation measures will be introduced by the construction company(s). Mitigation measures are detailed within the CTMP attached as **Appendix 19.3** of the PEIR and include the provision of on-site car parking for construction workers, signs to direct construction vehicles associated along the routes and wheel-washing facilities so that no construction vehicles exiting the site compounds will take mud or debris onto the highway network. Appropriate measures are also detailed within the CTMP to prevent the spread of mud pollution to surface water and to control emissions of dust and dirt.

6.73 A Traffic Management Group (TMG) will be set up, prior to construction, and a Transport Coordination Officer (TCO) will be appointed. It will be the responsibility of the TCO to implement and monitor the CTMP and to review the implementation and effectiveness of the mitigation measures set out within the CTMP.

Operational Traffic Management Plan

6.74 An Operational Traffic Management Plan is included at **Appendix 19.4** of the PEIR. In conjunction with the CTMP, the recommended route for operational traffic will be from the A43. Once operational, access to Rail Central will solely be taken from the A43 via a Grade Separated Junction.

6.75 During the operational phase of the development, HGV movement will be managed using a number of strategies in line with the Northamptonshire Road Freight Strategy (NRFS), and the policies therein, including:

- signage;
- vehicle routing; and
- lorry parks.

6.76 It will be important to ensure that when measures are introduced that they are enforceable. There are a number of ways in which enforcement can be carried out, including:

- Traffic Regulation Orders (TRO's);
- planning enforcement; and
- GPS tracking.

Public Transport Strategy

6.77 To encourage sustainable modes of transport, a comprehensive public transport strategy is being developed to support the proposals, in discussion with public transport officers at NCC and Stagecoach Midlands. The current proposed public transport strategy is included at **Appendix K**, and summarised as follows:

(vi) provision of new bus stops on either side of Northampton Road to the north of the proposed underpass;
(vii) provision of a new bus interchange within the site, situated to the north of the proposed underpass and west of Northampton Road. This will include an area where buses can turn and wait without blocking the bus stop.
(viii) extension of existing 88/89 bus services into the site from Northampton Road;
(ix) supplementary (out of hours) bus services to run along A43 for quicker journey time to / from Northampton and limit disruption to local residents;
(x) potential additional bus services around shift changeover times; and
(xi) special offers and discounted fares for employees.

Framework Travel Plan

6.78 In accordance with the NPS, the proposed development is supported by a comprehensive Framework Travel Plan (FTP), included at **Appendix 19.2** of the PEIR. This sets out a number of measures and initiatives that are anticipated to be implemented at the site in order to minimise single occupancy vehicle trips and encourage use of public transport, walking, cycling and car sharing.

6.79 The FTP is intended to act as on overarching plan for the entire development, with each individual occupier developing this into their own operator-specific Travel Plans.

7 TRIP ATTRACTION

Person Trip Attraction - Methodology of Calculation

7.1 In forecasting person trip attraction, the following potential methodologies have been discussed with HE and NCC and considered for assessment:

(i) First Principles

This forecasts employee numbers with reference to a literary review of established data, census data and with reference to patterns at similar facilities.

(ii) Donor Site

This forecasts employee trip attraction with reference to an arrival and departure profile at a nearby (non-SRFI) distribution centre.

(iii) Similar SRFI Facilities

This sets out a reference case methodology with reference to employee trip rates at similar SRFI facilities.

7.2 Briefing Note 01 (BN01), attached as **Appendix L**, sets out the reference case methodology with reference to person trip rates at similar SRFI facilities (DIRFT, EMGSRFI and Radlett), for each of the peak and daily periods. It also refers to the first principles based assessment, as a means of confirming that the anticipated level of trip attraction is reasonable for the purpose of the forthcoming assessment work. The trip attraction methodology and trip attraction taken forward for assessment, as set out in BN01, has been agreed as appropriate with HE and NCC.

Forecast Person Trip Attraction

7.3 The development masterplan is not fixed at this stage, however, the Architect has advised that the GIA of the proposed scheme equates to 98% of Gross External Area (GEA). The proposals therefore equate to up to 701,513sq.m GEA of high bay warehousing.

7.4 BN01 concludes that trip attraction derived from the East Midlands Gateway Strategic Rail Freight Interchange (EMGSRFI) trip rates be taken forward for further assessment work, as agreed with NCC and HE. It is further agreed with NCC and HE that the highway network will be operating at its busiest between 0800-0900 and 1700-1800, and it is these peak hours which have been taken forward for assessment. These trip rates are based on an industry standard approach and have previously been agreed as appropriate by HE and NCC. They would also provide a worst case assessment in comparison to the other trip attraction forecasts derived.

7.5 The resultant total trips when the EMGSRFI trip rates are applied to the Rail Central proposals are shown in **Table 7.1** below.

Table 7.1 Summary of Rail Central Person Movements – EMGSRFI Methodology

	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Person Trips*	925	101	1,026	303	1,062	1,366	8,136	8,006	16,142

** This includes all person trips associated with employees, visitors and deliveries (non-HGV).*

7.6 For comparison purposes, an assessment of trip attraction has been undertaken based on first principles, as set out in BN01. The first principles based assessment results in a broadly similar level of peak hour trip attraction to both the DIRFT and Radlett methodologies, although is less than the EMGSRFI methodology.

7.7 It is therefore considered that the EMGSRFI based trip attraction provides a robust assessment of trip attraction as it uses PM peak trip rates for the 1600-1700 period (when the site's trip attraction is highest) applied to the typical network peak period of 1700-1800. The EMGSRFI based trip attraction is also shown to result in a higher trip attraction than each of the Radlett, DIRFT and First Principles methodologies.

7.8 It is concluded that adopting the EMGSRFI based trip attraction will ensure that the assessment can be considered to be a realistic worst case. This approach has been agreed with HE and NCC.

7.9 In order to ensure that the forecast trip attraction includes all person movements associated with Rail Central, an assessment of trips associated with the ancillary (non-warehouse) uses on the site has been carried out within Technical Note 06 (TN06), contained at **Appendix M**. This principally relates to the proposed Train Maintenance Depot.

7.10 TN06 concludes that there are forecast to be 290 employee arrivals and 290 employee departures associated with the ancillary uses per day. However, due to the shift patterns these are not forecast to have any impact on movements during the typical network peak hours of 0800-0900 and 1700-1800. This has been agreed as appropriate with HE and NCC.

7.11 A summary of the overall person trip attraction including ancillary uses is shown in **Table 7.2**.

Table 7.2 Summary of Rail Central Person Movements including Ancillary Uses

	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Person Trips*	925	101	1,026	303	1,062	1,366	8,426	8,296	16,722

** This includes all person trips associated with employees, visitors and deliveries (non-HGV).*

Mode of Travel Choice – Methodology of Calculation

7.12 In determining the baseline mode share, Briefing Note 02 (BN02), included at **Appendix N**, sets out a reference case methodology using 2011 Census travel to work data for a number of comparator areas. BN01 does not examine the forecast mode share that is likely to occur following the implementation of any Travel Plan measures. The trip attraction set out in BN01, without the trip suppressing effects of a Travel Plan, has been taken forward for assessment. This is in contradiction of Department for Transport's Circular 02/2013, which states that overall forecast demand is considered *"less any reduction arising from any travel plan or demand management measures"*. However, this approach has been required by HE and NCC, whereas in reality following the implementation of travel plan measures, the residual effects are likely to be reduced.

Forecast Mode of Travel Choice

7.13 The anticipated person trip attraction at Rail Central is set out within in **Table 7.2**, and this has been agreed to be appropriate and robust with HE and NCC. A summary of the baseline mode shares to be applied to the anticipated person trip attraction at Rail Central during the typical network peak hours, as derived in BN02, is set out in **Table 7.3**.

Table 7.3 Rail Central Baseline Mode Shares

Method of Travel to Work	Rail Central (Baseline)
Total Vehicles	90.5%
(Single Occupancy Vehicles)	*(86.5%)*
(Car Share)	*(8.0%)*
Public Transport (incl. Taxi)	1.5%
Walking	3.0%
Cycling	1.0%
Total	**100.0%**

7.14 A summary of the resultant baseline multi-modal trips at Rail Central is set out in **Table 7.4**.

Table 7.4 Summary of Baseline Multi-Modal Trips

	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Vehicles	837	91	929	274	961	1,236
(Single Occupancy Vehicles)	*(800)*	*(87)*	*(887)*	*(262)*	*(919)*	*(1,182)*
(Car Share)	*(74)*	*(8)*	*(82)*	*(24)*	*(85)*	*(109)*
Public Transport (incl. Taxi)	14	2	15	5	16	20
Walking	28	3	31	9	32	41
Cycling	9	1	10	3	11	14
Total Person Trips	**925**	**101**	**1,026**	**303**	**1,062**	**1,366**

7.15 The baseline multi-modal trips set out in **Table 7.4** have been taken forward for junction capacity assessments, as agreed appropriate with HE and NCC. The results of the junction capacity assessments are presented in **Chapter 9**.

Heavy Goods Vehicle Trip Attraction – Methodology of Calculation

7.16 MDS Transmodal has prepared HGV traffic forecasts for the proposed Strategic Rail Freight Interchange on the basis that 687,483 sq.m of distribution centre floor space is developed at Rail Central alongside an intermodal terminal capable of handling 750 metre trailing-length trains. The full MDS Transmodal report is attached as **Appendix O**.

7.17 The total daily volume of traffic to/from the warehousing planned for Rail Central has been estimated using a first principles approach, which is detailed within the MDS Transmodal report attached as **Appendix O**.

7.18 The Great Britain Freight Model (GBFM) has then been employed to estimate both the modal choice and distribution of cargo to and from Rail Central. The GBFM is a comprehensive freight transport model that has been developed by MDS Transmodal and used to provide freight inputs into DfT's National Transport Model.

Forecast Heavy Goods Vehicle Trip Attraction

7.19 Once the forecast rail traffic to/from the warehousing are accounted for, the resultant estimated daily and peak hour HGV's to/from Rail Central are summarised in **Table 7.5** below.

Table 7.5 Estimated Daily and Peak Hour HGV's

HGV's	Inbound	Outbound	Total
Daily	3,344	3,344	6,688
AM Peak (0800-0900)	141	163	304
PM Peak (1700-1800)	154	176	330

7.20 An origin/destination matrix has been produced, derived from the GBFM, which forecasts the likely origins and destinations of the 3,344 inbound and outbound HGV's by Post Code District (PCD) to and from Rail Central. This data has subsequently been entered into the NSTM and assessed within **Chapter 9**.

7.21 Forecast Rail Central HGV trip attraction and distribution has been agreed in detail with HE and NCC.

Northampton Road Underpass

7.22 As set out in **Chapter 6**, a vehicular underpass is proposed on the route of the main estate road to allow it to pass beneath Northampton Road without impeding existing traffic flow, as illustrated on **Figure 6.2**.

7.23 It is forecast that the underpass could be trafficked by approximately 913 arriving vehicles (120 HGV's and 793 cars) in the busiest hour and 749 departing vehicles (83 HGV's and 666 cars) in the busiest hour. This has been calculated based on the proportion of the overall development floorspace anticipated to be provided either side of Northampton Road, with the forecast development trips set out above distributed accordingly.

7.24 Although it is anticipated that it will not be offered for adoption, the underpass carriageway will be classified as Urban All-Purpose 2 (UAP2). UAP2 roads provide single/dual carriageway with frontage access and more than two side roads per kilometre.

7.25 The required width of the underpass carriageway has been calculated in accordance with DMRB TA79/99. The busiest one direction flow has been split 60/40 to determine the two-way flow. The proportion of HGV's in the busiest direction flow is less than 15% and so has not been adjusted for within the calculation.

7.26 In accordance with the forecast busiest direction flow, the underpass carriageway should provide for two lanes (one in each direction) at an overall carriageway width of 6.1m.

7.27 The underpass is indicatively designed to include a carriageway width of 7.3m and 3m wide foot/cycleways on either side. However, an overall underpass width of 15.3m is indicatively provided, allowing for a number of different potential carriageway and foot/cycleway width options to be considered within the final design.

DRAFT

8 DESIGN YEAR 'WITH DEVELOPMENT' CONDITIONS

Distribution of Car Trips

8.1 The distribution of car trips associated with Rail Central has been carried out within the NSTM. This has been agreed with HE and NCC to be the most reasonable and robust approach to determining the distribution of car trips.

8.2 The NSTM assigns traffic associated with employees and visitors of Rail Central into a matrix of origin and destination zones within the NSTM, based on the forecast population within each zone. These are then distributed within the modelled highway network, according to the routes which provide the lowest 'cost'. The route 'cost' within SATURN is determined based on a number of factors, including link capacity, speed and distance among others.

Distribution of Heavy Goods Vehicle Trips

8.3 The distribution of HGV trips within the NSTM has been carried out through use of the GB Freight Model (GBFM). The GB Freight Model is a national model that determines the origin and destination of freight movements across the UK, and is used by the Department for Transport (DfT) in preparing its national freight forecasts.

8.4 Through use of the GBFM, an origin-destination (O-D) matrix has been derived defining the UK Postcode District where HGVs associated with Rail Central are forecast to travel to or from. The NSTM has then been used to disaggregate this into the smaller NSTM zones, in order to determine the final distribution of HGVs included within the NSTM. This approach has been agreed as appropriate with HE and NCC. It has also previously been applied and agreed as appropriate by the local highway authorities and the Secretary of State as part of the public Inquiry for the proposed Slough International Freight Exchange (SIFE), as set out in further detail in the GB Freight Model Technical Note at **Appendix P**.

Assessment Scenarios

8.5 A number of scenarios have been used for the purpose of analysing the impact of Rail Central on the surrounding highway network. As set out in **Chapter 5**, these are applied to both forecast design years of 2021 and 2031, and the scenarios are summarised as follows:

- Do Something 1 (DS1)
  This is the first 'with development' scenario. It includes all of the elements contained within the DM scenario, as well as the full build-out of the proposed Rail Central development. There are no mitigation schemes contained within this scenario.

- Do Something 2 (DS2)
  This is the second 'with development' scenario. It includes all of the elements contained within the DM scenario, as well as the full build-out of the proposed Rail Central development. It also includes the proposed mitigation scheme at M1 Junction 15A (as set out in **Chapter 6**).

- Do Something 3 (DS3)[4]
  This is the third 'with development' scenario. It includes all of the elements contained within the DM scenario, as well as the full build-out of the proposed Rail Central development. It also includes all of the proposed junction mitigation schemes set out in **Chapter 6**.

8.6 The scenarios set out above have been carried out in a staged process to determine the impact of the Rail Central development. Firstly, the DS1 scenario was analysed in comparison to the DM scenario. As part of this it was noted that the model shows significant congestion within the highway network, both in the DM and DS1 scenarios, with the constrained M1 Junction 15A acting as a catalyst for this.

8.7 It was acknowledged at an early stage that an improvement scheme would be necessary at M1 Junction 15A in order to mitigate the impact of Rail Central. Therefore, it was agreed with HE and NCC that it would be appropriate for a mitigation scheme at M1 Junction 15A to be entered into the NSTM, in order to free up capacity within the network and determine the true impact of Rail Central on junctions elsewhere. This formed the DS2 scenario.

8.8 The DS2 scenario shows the impact of Rail Central in comparison to the DM and has been used in the junction capacity assessments, set out at **Chapter 9**, to determine where mitigation schemes are required. For completeness, the DS3 scenario will include all proposed mitigation schemes in order to present the residual cumulative impact of Rail Central on the highway network as a whole, although this will not affect the mitigation schemes to be provided.

Agreed Study Area

8.9 Based on initial analysis of the flow differences and v/c (volume over capacity) of the DS2 scenario in comparison to the DM scenario, an extensive list of junctions was compiled where further detailed capacity assessment was considered necessary. This was refined following a more detailed review of flow differences, v/c and development flows to determine the final study area for the development, with many junctions being excluded from further assessment due to the immaterial impact of the Rail Central at those locations. This has been agreed as appropriate with HE and NCC. The study area is illustrated on **Figure 8.1** and summarised in **Table 8.1** below.

[4] This scenario is currently ongoing, and will be included within the final DCO submission.

Table 8.1 Agreed Study Area

Junction Number	Junction Name (if applicable)	Intersection Description	Junction Type
Final Agreed Study Area Junctions			
1	M1 Junction 16	M1 / A4500 / A45	Grade Separated Roundabout
2		A4500 / Sandy Lane Relief Road	Signalised Crossroads
3		A4500 / Upton Way / Tollgate Way	Signalised Roundabout
4		A5076 / A5123 / Upton Way	Signalised Roundabout
5	M1 Junction 15A	M1 / A43 / A5123	Grade Separated Roundabouts
6		A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road	Roundabout
7		Towcester Road / A5076 / A5123 / Tesco	Signalised Roundabout
9		A45 / Eagle Drive / Caswell Road	Grade Separated Signalised Roundabout
10	Barnes Meadow Interchange	A45 / A428 / Bedford Road / A5095	Grade Separated Signalised Roundabout
11		A45 / A43 / Ferris Row	Grade Separated Signalised Roundabout
12	M1 Junction 15	M1 / A45 / Saxon Avenue / A508	Grade Separated Gyratory
13	Site Access	A43 / Site Access	Grade Separated Roundabout
14	Tove Roundabout	A43 / Towcester Road / A5	Signalised Roundabout
15	Abthorpe Roundabout	Abthorpe Road / A43 / Brackley Road	Signalised Roundabout
19		A5076 / Telford Way / Walter Tull Way / Duston Mill Lane	Roundabout
20		A5076 / High Street / Duston Mill	Roundabout
23		Nunn Mills Road / A428 / Beckett's View	Priority T-Junction
24	The Cock Hotel Junction	A508 / Mill Lane / A5095	Complex Signalised Junction
25		A508 / A5199	Signalised T-Junction
26		A508 / Holly Lodge Drive	Signalised T-Junction
27		A43 / A5123 / A5076 / Stone Circle Road	Signalised Roundabout
28*	Blisworth turn	A43 / Towcester Road	Priority T-Junction (Dual Carriageway)
29*	Tiffield turn	A43 / St John's Road	Priority Crossroads (Dual Carriageway)
31*		A43 / Northampton Road	Priority T-Junction (Dual Carriageway)
38		A5 / Brackley Road / Northampton Road	Signalised Crossroads
Initial Study Area Junctions No Longer Assessed			
8	Queen Eleanor Interchange	A5076 / A508 / A45 / Hardingstone Lane / Newport Pagnell Road	Grade Separated Signalised Roundabout
16	Old Stratford Roundabout	Deans Hanger Road / A5 / A508 / Towcester Road	Signalised Roundabout
17		A5 / Daventry Road / Unnamed Road	Priority Crossroads
18		A5 / A45	Signalised Crossroads
21		A4500 / Duston Road / Montfort Close / Peverel's Way	Signalised T-Junction
22		A4500 / A428	Signalised T-Junction
30*		A43 / Donkey Lane	Priority T-Junction (Dual Carriageway)
32		A45 / B4037	Priority T-Junction
33		A508 / Northampton Road	Priority Crossroads (Dual Carriageway)
34		A4500 / A5095	Signalised T-Junction
35		A5095 / Mare Fair	Signalised Crossroads
36		Pitsford Road / Boughton Fair Lane	Priority T-Junction
37		Billing Road / Alfred Street / Cliftonville Road	Signalised Crossroads

These junctions were considered for safety reasons only, and not assessed in capacity terms, as set out in **Chapter 6.*

Summary of Strategic Modelling Results

8.10 The DS2 results demonstrated that the proposed improvements at M1 Junction 15A provided a significant benefit to the operation of the wider highway network, with trips returning to major routes and away from, in some cases, inappropriate, minor routes. This means that there are a number of junctions where certain turning movements decrease in comparison to the DM scenario and there is therefore a net beneficial impact.

8.11 As set out above, capacity assessments (as set out in **Chapter 9**) have been carried out based on the DS2 scenario to determine which of the junctions within the agreed study area require mitigation to address the impact of Rail Central, as this gives a realistic picture of the mitigation needed for the wider highway network. The proposed package of mitigation measures is set out in **Chapter 6**.

8.12 These mitigation schemes will then be entered into the NSTM to form the DS3 scenario, which will show the residual impact of the development across the highway network for completeness. The DS3 modelling is currently ongoing, and will be included within the final DCO submission, although the final mitigation package will not exceed that which is included within this TA.

8.13 Full details of the strategic modelling results are provided in the Strategic Modelling Assessment Report, included at **Appendix Q**.

Phasing

8.14 The full package of proposed mitigation is set out in **Chapter 6**, and this is proposed to be implemented to mitigate the impact of the full Rail Central development. However, it is anticipated that the mitigation schemes would be delivered in a phased manner according to the relative impact of Rail Central as it is built-out. For instance, the impact of the opening year build-out of Rail Central is unlikely to require the full package of mitigation set out in **Chapter 6**.

8.15 Therefore, a full phasing assessment will be carried out using the NSTM to determine the level of Rail Central development (and its anticipated design year) that would necessitate the implementation of each mitigation scheme. This will be carried out in advance of the final DCO submission, and will be agreed as appropriate with HE and NCC.

9 JUNCTION CAPACITY ASSESSMENTS

9.1 Individual junction capacity analysis have been carried out at the junctions identified in **Chapter 6** by using DM and DS2 scenarios, as set out in **Chapter 5** and **Chapter 8** respectively, to assess the impact of the development using standard junction modelling techniques, as agreed with HE and NCC.

Methodology of Analysis

9.2 Priority and Roundabout junctions assessed as part of this Transport Assessment have been analysed using the DfT approved Junctions9 software program. The outputs from Junctions9 relate to Max RFC (Ratio of Flow to Capacity), maximum queue length in passenger car units (PCUs) and Delay in seconds per vehicles. RFC gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity and inefficient operation when the RFC is one or greater. For the purpose of this chapter and simplicity RFC has been assumed as a percentage (%) in the results tables.

9.3 The 'one hour mode' has been used for the junction analysis. This assumes a normal distribution of traffic within the peak hour and is nominally referred to as "a peak within a peak". This modelling approach represents a robust assessment.

9.4 The junction models have been set up based on the guidance provided within the Junctions9 handbook and industry standard practice. The geometries of the junctions have been measured in AutoCAD, to provide the most accurate measurements for the junction models.

9.5 Signalised junctions have been analysed using LinSig V3 and have been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

9.6 The junction models have been set up based on the guidance provided within the LinSig 3 handbook and industry standard practice. Further to comments received from NCC and HE and in accordance with guidance contained in Local Transport Note (LTN) 1/09, default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied.

9.7 Validation of the individual junction models has been carried out by TPA through a comparison of surveyed queues and modelled queues and an internal checking process to ensure that each junction model best replicates the existing use of the junctions by road users. Adjustments have been made to some junction models to provide a better validation to observed conditions and operation. Details of these amendments are provided within the technical notes appended to this Chapter, provided in **Appendix R**.

9.8 Individual junction modelling capacity assessments have been carried out using traffic flows obtained from the NSTM, adjusted to account for observed traffic flows, as previously agreed with the TWG. The approach agreed, uses the baseline traffic flows to which the growth predicted from the modelling outputs from the NSTM is added on top. This approach provides a robust assessment. The 2021 DM and 2031 DM baseline scenarios include all committed and allocated developments and infrastructure from the Local Plan. The 2021 and 2031 DS2 scenarios include all committed and allocated development and infrastructure, as well as the Rail Central development and the proposed mitigation scheme at M1 Junction 15A, which is included at **Appendix .4**.

9.9 For the purpose of determining whether mitigation is appropriate, the future year (2021 and 2031) baseline scenarios have been compared to the future year with Rail Central Scenarios (DS2). **Appendix** provides details of the results of the junction capacity assessments split on a junction by junction basis. These technical notes compare the DM and DS2 scenarios to understand the impact of the Rail Central development and provide a conclusion as to whether mitigation is necessary. The notes also provide details of proposed mitigation measures, where appropriate.

9.10 It should be noted that the 2021 assessments are based on a full development build-out at the opening year, in accordance with the requirements of Highways England as defined within the DfT Circular 02/2013. This is an unrealistic development scenario. For NCC purposes, the modelling assessments are based on a future year of 2031, with full development build-out.

Capacity Assessments

9.11 Referring to **Chapter 8** and the junction numbers which have been defined, the following section provides a summary of the results of individual junction capacity modelling work.

Analysis of Junction Thirteen - Proposed Site Access Junction with A43

9.12 A summary of the Junctions9 results for the proposed site access junction is provided in **Table 9.1**. There is no Do-Minimum assessment scenario for this junction as it is the site access for the proposed development and therefore the junction will not be implemented unless Rail Central is built. The results of the modelling exercise indicate that there is significant spare capacity in the proposed junction for the 2021 and 2031 base plus development scenarios for both the AM and PM peak periods. Furthermore there is minimal queuing predicted, with a maximum modelled queue of one vehicle in any scenario.

Table 9.1 Junction 13 Capacity Assessment - Proposed Site Access Junction

Scenario	Approach	AM Peak			PM Peak		
		RFC (%)	Mean Max Queue (PCU)	Delay (Seconds)	RFC (%)	Mean Max Queue (PCU)	Delay (Seconds)
2021 DS2	A43 North	58	1	5.35	27	0	3.54
	Site Access	14	0	2.20	45	1	2.43
	A43 South	10	0	3.61	11	0	9.15
2031 DS2	A43 North	55	1	5.00	26	0	3.54
	Site Access	15	0	2.21	46	1	2.49
	A43 South	11	0	3.62	12	0	8.48

Analysis of Junction Five - M1 Junction 15A

9.13 A summary of the Junctions9 and LinSig V3 output results respectively for the existing and proposed M1 Junction 15A junction are provided in **Table 9.2** and **Table 9.3**, respectively. As set out in **Chapter 8,** it was agreed with the Authorities that a mitigation scheme was needed at M1 Junction 15A due to existing and predicted congestion at this location.

9.14 As shown below in **Tables 9.2** and **9.3**, the junction improvement proposal mitigates the impact of Rail Central. Through discussions and work undertaken with the Transport Working Group, a number of iterations of potential improvements have been discussed and considered with NCC and HE. Furthermore, there have been numerous signal timing, phasing, staging and inter-green discussions and agreements with the Authorities. The proposed mitigation scheme provides an appropriate level of mitigation relative to the development's impact at this location.

9.15 There is no DoS presented in the **Table 9.2** as lane simulation was used in the Junctions9 modelling program to provide a more accurate analysis of the junction performance. This modelling technique provides an improved validation of conditions and a more realistic model of varied lane usage dependent upon traffic demand.

Table 9.2 Junction Five Capacity Assessment - Existing M1 Junction 15A

Peak Period		AM Peak				PM Peak			
Approach		A43 North	A5123	A43 South	A43 South	A43 North	A5123	A43 South	A43 South
2015	Queue – MMQ (PCU)	15	15	25	37	20	6	13	37
2021 DM		114	123	561	15	30	157	146	15
2031 DM		70	341	917	19	43	226	182	74
2015	Traffic Flows (PCU)	4,197				4,558			
2021 DM		5,237				5,487			
2031 DM		5,633				5,714			
2015	Total Delay PCU hr	105				77			
2021 DM		980				536			
2031 DM		1583				600			

9.16 As shown in **Table 9.2**, there is a significant increase in queueing when comparing the 2015, 2021 and 2031 scenarios. This demonstrates that the existing junction configuration is predicted be over capacity, with queuing and delay increasing significantly between the years assessed.

9.17 The capacity modelling results including the mitigation scheme at M1 Junction 15A are set out below in **Table 9.3**

Table 9.3 Junction Five - Capacity Assessment - Mitigated M1 Junction 15A

Peak Period		AM Peak				PM Peak			
Approach		A43 North	A5123	A43 South	A43 South	A43 North	A5123	A43 South	A43 South
2021 DM plus development	Queue – MMQ (PCU)	51	41	24	12	53	89	44	14
2031 DM plus development		25	24	138	11	41	33	177	8
2021 DM plus development	Traffic Flows (PCU)	6,590				6,883			
2031 DM plus development		6,986				7,110			
2021 DM plus development	DoS (%)	108.1	99.1	84.4	89.9	100	91.1	71.2	122.9
2031 DM plus development		109.8	107.7	89	100.8	105.6	95.8	57.1	128.4
2021 DM plus development	Total Delay (sec/pcu)	132				310			
2031 DM plus development		241				383			

9.18

9.19 As shown when comparing the results from **Tables 9.2 and 9.3** above, the proposed mitigation scheme at Junction 15A of the M1, mitigates the impact of the Rail Central scheme. There is a significant reduction in queuing across the whole junction by 685 and 148 PCUs in 2021 AM and PM peaks, respectively. Furthermore, there is reduction in queueing of 1,149 and 266 PCUs in the 2031 AM and PM peaks, respectively. There is a significant reduction in total delay across the whole junction by 848 and 226 PCU/hrs in 2021 AM and PM peaks when compared to the future scenario without Rail Central. Furthermore, turning to the 2031 scenario, there is reduction in delay of 1,342 and 217 PCU/hrs in the 2031 AM and PM peaks.

9.20 The results of capacity assessments for the remaining junctions are provided in **Table 9.4** below. Individual technical notes set out the validation, modelling results without Rail Central, modelling results with Rail Central along with the details of mitigation that is required, if appropriate.

Table 9.4 Summary of Junction Analysis

Junction Number	Junction Name	Scenarios	DoS/ RFC* (%)							
			AM Peak				PM Peak			
			2021 DM	2021 DS2	2031 DM	2031 DS2	2021 DM	2021 DS2	2031 DM	2031 DS2
1**	M1 Junction 16	Existing Junction	113.0	114.0	129.0	129.0	101.0	109.0	116.0	118.0
		Mitigation	-	91.2	-	127.1	-	97.4	-	100.6
2	A4500 / Sandy Lane Relief Road	Existing Junction	67.4	70.2	81.9	84.3	84.3	88.1	96.8	95.4
3	A4500 / Upton Way / Tollgate Way	Existing Junction	89.2	88.2	95.9	92.0	65.7	77.7	82.30	87.3
4	A5076 / A5123 / Upton Way	Existing Junction	94.7	120.4	116.8	124.9	118.4	190.8	154.3	230.1
		Mitigation	-	88.1	-	97.4	-	97.2	-	104.6
6**	A5076 / Hunsbury Hill Avenue/ Hunsbarrow Road / Hunsbury Hill Road	Existing Junction	102.0	107.0	104.0	112.0	141.0	125.0	158.0	164.0
		Mitigation	-	76.9	-	77.8	-	111.6	-	138.4
7	Towcester Road / A5076 / A5123 Tesco	Existing Junction	116.5	117.8	130.9	138.1	105.7	93.2	106.6	95.6
		Mitigation	-	99.8	-	117.6	-	87.6	-	92.5
9	A45 / Eagle Drive/ Caswell Road	Existing Junction	94.5	89.2	87.7	84.3	145.0	133.7	138.0	145.4
		Mitigation	-	85.3	-	83.1	-	133.7	-	114.1
10	A45 Barnes Meadow Interchange	Existing Junction	112.4	112.4	107.2	114.3	95.7	116.3	133.0	128.1
		Mitigation	-	107.0	-	103.5	-	94.3	-	128.8
11	A45 / A43 / Ferris Row	Existing Junction	113.3	117.9	121.3	120.3	116.3	122.7	113.5	112.4
		Mitigation	-	103.8	-	107.7	-	103.7	-	91.4
12	M1 Junction 15	Existing Junction	115.0	145.7	144.7	165.4	144.4	154.1	153.8	150.6
		Mitigation	-	98.7	-	117.1	-	143.1	-	146.6

Junction Number	Junction Name	Scenarios	DoS/ RFC* (%)							
			AM Peak				PM Peak			
			2021 DM	2021 DS2	2031 DM	2031 DS2	2021 DM	2021 DS2	2031 DM	2031 DS2
14	A43 Tove Roundabout	Existing Junction	128.2	123.3	174.0	223.4	117.0	188.2	126.9	132.2
		Mitigation	-	134.7	-	175.0	-	113.2	-	137.4
15	A43 Abthorpe Roundabout	Existing Junction	109.3	114.8	129.6	131.7	92.1	94.3	97.6	106.6
		Mitigation	-	97.6	-	115.8	-	91.6	-	92.5
19	A5076 / Telford Way / Walter Tull Way / Duston Mill Lane	Existing Junction	86.0	95.0	98.0	101.0	90.0	96.0	97.0	108.0
		Mitigation	-	77.0	-	81.0	-	73.0	-	82.0
20	A5076 / High Street / Duston Mill	Existing Junction	96.0	107.0	107.0	108.0	91.0	99.0	91.0	104.0
		Mitigation	-	82.0	-	83.0	-	77.0	-	81.0
23	Nunn Mills Road / A428 / Beckett's View	Existing Junction	38.0	27.0	45.0	29.0	66.0	50.0	77.0	54.0
24	The Cock Hotel Junction	Existing Junction	88.6	97.8	117.3	106.2	155.8	169.8	174.1	172.0
25	A508 / A5199	Existing Junction	101.9	102.5	126.4	125.2	94.1	84.9	96.8	96.0
		Mitigation	-	91.4	-	111.7	-	80.7	-	83.4
26	A508 / Holly Lodge Drive	Existing Junction	63.4	64.5	100.7	87.0	66.9	68.0	106.6	102.1
27	A43 / A5123 / A5076 / Stone Circle Road	Existing Junction	169.6	168.1	197.4	197.1	199.6	197.4	251.5	225.3

* Note that DoS and RFC are presented in the same format.
**Note Junction 1 and Junction 6 use different software for the existing and mitigated junctions.

9.22 As shown above in **Table 9.4**, and further to the junction assessments set out the in attached technical notes at **Appendix** , the following junctions operate within capacity and do not require mitigation:

- Junction 2 - A4500 / Sandy Lane Relief Road;
- Junction 3 - A4500 / Upton Way / Tollgate Way; and
- Junction 23 - Nunn Mills Road / A428 / Beckett's View.

9.23 A mitigation scheme at Junction 3 has previously formed part of the mitigation proposals that have been discussed with HE and NCC. However, the latest capacity assessments, as set out above, suggest that this is no longer necessary. Notwithstanding this, to ensure a worst case order limits is defined at this stage, a mitigation scheme is included at this location as set out at **Chapter 6**, although this would likely be removed in advance of the DCO submission.

9.24 At the following junctions, Rail Central has minimal impact and therefore the junctions do not require mitigation:

- Junction 24 – The Cock Hotel Junction;
- Junction 26 - A508 / Holly Lodge Drive; and
- Junction 27 – A43 / A5123 / A5076 / Stone Circle Road.

9.25 At the following junctions highway improvement are required and the schemes presented are appropriate to mitigate the developments impact:

- Junction 1 – M1 Junction 16;
- Junction 4 - A5076 / A5123 / Upton Way;
- Junction 5 - M1 Junction 15A;
- Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road;
- Junction 7 - Towcester Road / A5076 / A5123 / Tesco;
- Junction 9 - A45 / Eagle Drive / Caswell Road;
- Junction 10 - A45 Barnes Meadow Interchange;
- Junction 11 - A45 / A43 / Ferris Row;
- Junction 12 - M1 Junction 15;
- Junction 14 - A43 Tove Roundabout;
- Junction 15 - A43 Abthorpe Roundabout;
- Junction 19 - A5076 / Telford Way / Walter Tull Way / Duston Mill Lane;
- Junction 20 - A5076 / High Street / Duston Mill; and
- Junction 25 - A508 / A5199.

VISSIM Modelling

9.26 At the request of both Highway Authorities within the Transport Working Group, a VISSIM model of the site access junction, Junction 15A of the M1 and Junction 15 of the M1 is being developed. The work on the VISSIM model is ongoing. The VISSIM model will provide a visual representation of the operation of the junctions which will sit alongside the individual junction modelling capacity analysis already presented. The VISSIM model will provide an extra layer of analysis to complement the individual junction modelling analysis already provided to the Authorities.

9.27 The 2016 baseline VISSIM model has been agreed as appropriate with HE and NCC, and its validation report is included at **Appendix S**.

Conclusion

9.28 The modelling approaches for all the junction assessments have been agreed with HE and NCC in accordance with the NPS. These agreements cover how the junction models have been set up which is based on the guidance provided within the Junctions9 and LinSig 3 handbooks and further industry standard guidance within LTN 1/09.

9.29 As noted in the modelling capacity results, summaries and appended technical notes, where the Rail Central development has no or minimal impact, or an impact which cannot be considered to be severe in the context of the NPPF, no mitigation is proposed.

9.30 Where it has been demonstrated that the Rail Central development may have a potential material impact on the operation of the highway network in question, mitigation schemes have been developed.

DRAFT

10 CUMULATIVE ASSESSMENT

Northampton Gateway

10.1 Northampton Gateway, a proposed Strategic Rail Freight Interchange being brought forward by Roxhill Developments is immediately east of the site, adjacent to M1 Junction 15. The development will consist of up to 468,000 sq.m (approx. 5 million sq. ft) Gross Internal Area (GIA) of B8 warehousing, an intermodal freight terminal including container storage and HGV parking with associated highway works and ancillary development.

10.2 The proposed Northampton Gateway development is included within the Cumulative Assessment, as requested by the Planning Inspectorate and as such capacity analysis has been carried out at the junctions identified in **Chapter 9** to assess the cumulative impact the local plan allocations, the Rail Central Development, Northampton Gateway Development and the associated mitigation schemes.

Methodology of Assessment

10.3 The assessments have been carried out using the software discussed in **Chapter 9**. Capacity assessments have been carried out using traffic flows obtained from the NSTM, adjusted to account for observed traffic flows, as previously agreed with the Transport Working Group.

10.4 The 2021 and 2031 DM baseline scenarios include all committed and allocated developments and infrastructure within the NSTM. The 2021 and 2031 Do Something 5 (DS5) Cumulative Development scenarios include:

- all committed and allocated development and infrastructure included within the DM scenario;
- the Rail Central development and the proposed mitigation scheme at M1 Junction 15A; and
- the Northampton Gateway development and the associated mitigation schemes at M1 J15, shown at **Appendix T**, and the Roade Bypass, shown at **Appendix U**.

10.5 Junction capacity assessments for the DM baseline scenarios have been undertaken for the existing junction arrangements, with the DS5 Cumulative Development scenarios undertaken for the associated mitigation schemes set out in **Chapter 6**, with the exception of M1 J15 which applies the Northampton Gateway proposed mitigation scheme

10.6 The Rail Central development and associated mitigation schemes included within DS5 represent a close comparison to the DS2 scenario, which is how the mitigation requirements for Rail Central were assessed.

10.7 For the purpose of demonstrating the operation of the Rail Central mitigation schemes with the additional Northampton Gateway traffic, the future years' (2021 and 2031) baseline scenarios have been compared to the future year Cumulative Development Scenarios (DS5). There are full reports provided at **Appendix V,** showing the full modelling results.

10.8 It should be noted that the 2021 assessments are based on a full development build-out of Rail Central and Northampton Gateway at the opening year, in accordance with Department for Transport Circular 02/2013. Northamptonshire County Council assessments are based on a future year of 2031, with full development build-out.

Capacity Assessments

10.9 A summary of the modelling results is shown below at **Table 10.1** with further modelling outputs contained in **Appendix** .

Table 10.1 Summary of Cumulative Development Junction Testing

Junction Number	Junction Name	Scenario	Degree of Saturation (DoS) (%)							
			AM Peak				PM Peak			
			2021 DM	2021 DS5	2031 DM	2031 DS5	2021 DM	2021 DS5	2031 DM	2031 DS5
1	M1 Junction 16	Existing Junction	113.0	-	129.0		101.0	-	130.0	-
		Mitigation	-	91.4	-	127.9	-	89.1	-	110.7
3	A4500 / Upton Way / Tollgate Way	Existing Junction	89.2	-	95.9	-	70.9	-	82.3	-
		Mitigation	-	81.3	-	91.5	-	75.6	-	88.1
4	A5076 / A5123 / Upton Way	Existing Junction	97.9	-	116.8	-	188.4	-	154.3	-
		Mitigation	-	87.9	-	95.0	-	96.3	-	101.0
5	M1 Junction 15A	Existing Junction	122.8	-	115.8	-	128.2	-	122.2	-
		Mitigation	-	117.8	-	164.6	-	124.1	-	166.8
6	A5076 / Hunsbury Hill Avenue/ Hunsbarrow Road / Hunsbury Hill Road	Existing Junction	107.0	-	112.0	-	125.0	-	133.0	-
		Mitigation	-	77.0	-	80.5	-	103.9	-	128.5

7	Towcester Road / A5076 / A5123 Tesco	Existing Junction	118.4	-	130.9	-	93.2	-	106.6	-
		Mitigation	-	93.8	-	119.3	-	89.5	-	98.4
9	A45 / Eagle Drive/ Caswell Road	Existing Junction	94.5	-	87.7	-	145.0	-	138.0	-
		Mitigation	-	83.9	-	91.0	-	92.1	-	112.5
10	A45 Barnes Meadow Interchange	Existing Junction	112.4	-	107.2	-	95.7	-	133.0	-
		Mitigation	-	157.1	-	135.9	-	171.8	-	161.2
11	A45 / A43 / Ferris Row	Existing Junction	113.3	-	121.3	-	116.3	-	113.5	-
		Mitigation	-	102.3	-	107.6		101.9	-	81.6
12	M1 Junction 15	Existing Junction	115.0	-	144.7	-	145.7	-	153.8	-
		Mitigation	-	91.2	-	93.6	-	101.9	-	94.6
14	A43 Tove Roundabout	Existing Junction	128.2	-	174.0	-	117.0	-	126.9	-
		Mitigation	-	112.8	-	138.2	-	108.4	-	124.2
15	A43 Abthorpe Roundabout	Existing Junction	109.3	-	129.6	-	92.1	-	97.6	-
		Mitigation	-	98.4	-	114.8	-	100.8	-	91.9
19	A5076 / Telford Way / Walter Tull Way / Duston Mill Lane	Existing Junction	86.0	-	98.0	-	0.90	-	97.0	-
		Mitigation	-	75.0	-	81.0	-	67.0	-	75.0
20	A5076 / High Street / Duston Mill	Existing Junction	96.0	-	107.0	-	91.0	-	91.0	-
		Mitigation	-	82.0	-	87.0	-	77.0	-	80.0
25	A508 / A5199	Existing Junction	101.9	-	126.4	-	94.1	-	96.8	-
		Mitigation	-	91.8	-	111.4	-	80.8	-	82.3

10.27 As shown above in **Table 10.1** at the following junctions, the proposed highway mitigation schemes accommodate both the Rail Central and Northampton Gateway traffic flows and the junctions operate more efficiently than the base situation or within capacity:

- Junction 1 – M1 Junction 16;
- Junction 3 - A4500 / Upton Way / Tollgate Way;
- Junction 4 - A5076 / A5123 / Upton Way;
- Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road;
- Junction 7 - Towcester Road / A5076 / A5123 / Tesco;
- Junction 9 - A45 / Eagle Drive / Caswell Road;
- Junction 11 - A45 / A43 / Ferris Row;
- Junction 12 - M1 Junction 15;
- Junction 14 - A43 Tove Roundabout;
- Junction 19 - A5076 / Telford Way / Walter Tull Way / Duston Mill Lane;
- Junction 20 - A5076 / High Street / Duston Mill; and
- Junction 25 - A508 / A5199.

10.28 At Junction 15, the mitigation proposals mitigate the cumulative impact in three of the four scenarios. On this basis the junction mitigation is considered appropriate.

10.29 At the following junctions mitigation measures do not fully mitigate the cumulative impact of the two SRFIs:

- Junction 5 - M1 Junction 15A; and
- Junction 10 - A45 Barnes Meadow Interchange.

Concluding Remarks

10.30 It has been demonstrated that in the vast majority of cases the highway mitigation proposals mitigate against both the Rail Central and the Northampton Gateway developments. However, further work will be carried out in advance of the DCO submission to determine whether further mitigation is required to mitigate the impact of the cumulative development at other locations.

DRAFT

11 CONCLUSIONS

Overview

11.1 This document provides a Transport Assessment of the proposed Strategic Rail Freight Interchange (SRFI) known as Rail Central.

11.2 The effects of the Development have been assessed in detail and over a large study area using a variety of techniques. The methodology has been agreed with the relevant highway authorities in accordance with the NPS and a robust assessment approach has been adopted. Being committed to mitigate the impact of the Development on the highway network, the applicant has developed a comprehensive package of measures including:

- Junction improvements;
- A sustainable transport strategy;
- Travel plan measures;
- Pedestrian and cycle improvements;
- Safety schemes; and
- Environmental enhancements

Relevant Transport Planning Policy and Design Guidance

11.3 The local and national policy recognises that the development presents the opportunity for sustainable economic growth whilst minimising the impact upon the local highway network.

11.4 The development proposals and associated highway mitigation works have all been designed in accordance with the relevant highway design guidance

Stakeholder Engagement

11.5 Ongoing stakeholder engagement has resulted in:

- A number of comments in relation to highways and transportation from the Secretary of State in January 2016, which are included and are addressed within this TA;

- a number of comments made by local residents and other interested parties which are included and addressed within this TA; and

- the agreement of a significant number of matters and documents by HE and NCC in accordance with NPS. These include matters in relation to site access, site layout, trip attraction, strategic modelling, junction assessments, travel planning and mitigation proposals.

The Application Site

11.6 The Transport Assessment sets out a review of the existing site and surroundings. The review identified that the existing transport provision within the vicinity of the site is limited.

11.7 The proposals are supported by a comprehensive public transport strategy including the provision of new bus stops on Northampton Road, a new bus interchange within the site and additional bus services.

11.8 The development site is well connected to the strategic highway network, including the M1, A43, A5 and A45, as well as strategic local routes such as the A5123 and A5076. The connectivity to the major road network is a key requirement of the NPS for SRFI sites and the site is therefore considered to be appropriately located in this regard.

Design Year Baseline Conditions

11.9 The results of the DM modelling for the 2021 and 2031 design years indicate that the Northamptonshire highway network is forecast to experience significant delays and congestion in the future baseline 'without development' scenarios.

The Proposed Development

11.10 The following transport measures are proposed to accompany the SRFI to ensure that any opportunities for sustainable transport modes have been taken up, safe and suitable access can be achieved for all people, and improvements in the transport network to cost effectively limit the significant impacts of the development:

- Vehicular access to the site is proposed from the A43 via a new grade separated junction west of the development. The principal of this access strategy is agreed to be appropriate with HE and NCC;

- An estate spine road is proposed to serve the site from west to east from the access on the A43 through the development;

- A vehicular underpass is proposed on the route of the main estate road to allow it to pass beneath Northampton Road without impeding existing local traffic flow;

- Two emergency vehicle access points are provided into the site;

- During the construction phase, the existing left in, left out access on the A43 will be used to access the site, before this is switched to a new temporary left-in, left out access to the north on the A43;

- Pedestrian and cycle access to the site will be provided from Northampton Road via foot and cycleway connections both to the east and west of Northampton Road in the vicinity of the proposed underpass;

- It is proposed that a pedestrian underpass will be provided under the new access road, to allow pedestrians using the PROW to safely bypass this new infrastructure;

- bus services can be provided via the emergency access point on the western side of Northampton Road which links directly to a proposed bus interchange including a bus stop, waiting area and turning facilities;

- Each of the units will be served with its own adjacent car and HGV parking provision which will be provided in accordance with Northamptonshire Parking Standards. In addition, a lorry park comprising is proposed to the north of the access road and adjacent to the site access;

- Off-site capacity improvements are proposed at 15 junctions;

- Road safety schemes are proposed;

- A continuous off-carriageway foot/cycleway is proposed to be provided along Northampton Road between the site and residential areas at the southern edge of Northampton;

- A Construction Traffic Management Plan and an Operational Traffic Management Plan to minimise their impact on the local highway network; and

- A public transport strategy and Framework Travel Plan have been prepared which include a range of initiatives and measures to encourage modes of travel other than single occupancy vehicles, such as improved bus services and pedestrian and cycle facilities.

Trip Attraction

11.11 The development person trip attraction is agreed with HE and NCC and utilises person trip generation from similar SRFI facilities, specifically the East Midlands Gateway Strategic Rail Freight Interchange. HE and NCC agree that the trip generation is robust and a worst case assessment.

11.12 The peak hours for assessing the impact of the development were agreed with HE and NCC as weekday 0800-0900 and 1700-1800 as that is when the existing highway network is busiest.

11.13 MDS Transmodal prepared HGV traffic forecasts for the proposed Strategic Rail Freight Interchange on the basis that 685,882 sq.m of distribution centre floor space is developed at Rail Central alongside an intermodal terminal capable of handling 750 metre trailing-length trains. The overall vehicle trip attraction equates to 929 two-way movements during the AM peak and 1,236 two-way movements during the PM peak.

Design Year 'With Development Conditions

11.14 The DS2 results demonstrated that the proposed improvements at M1 J15A provide a significant benefit to the operation of the wider highway network, with trips returning to major routes and away from, in some cases, inappropriate, minor routes.

Junction Capacity Assessments

11.15 The junction capacity assessments show that the residual traffic impacts of the proposed development have been mitigated and that the proposed mitigation provides in some cases wider benefits and benefits to existing road users.

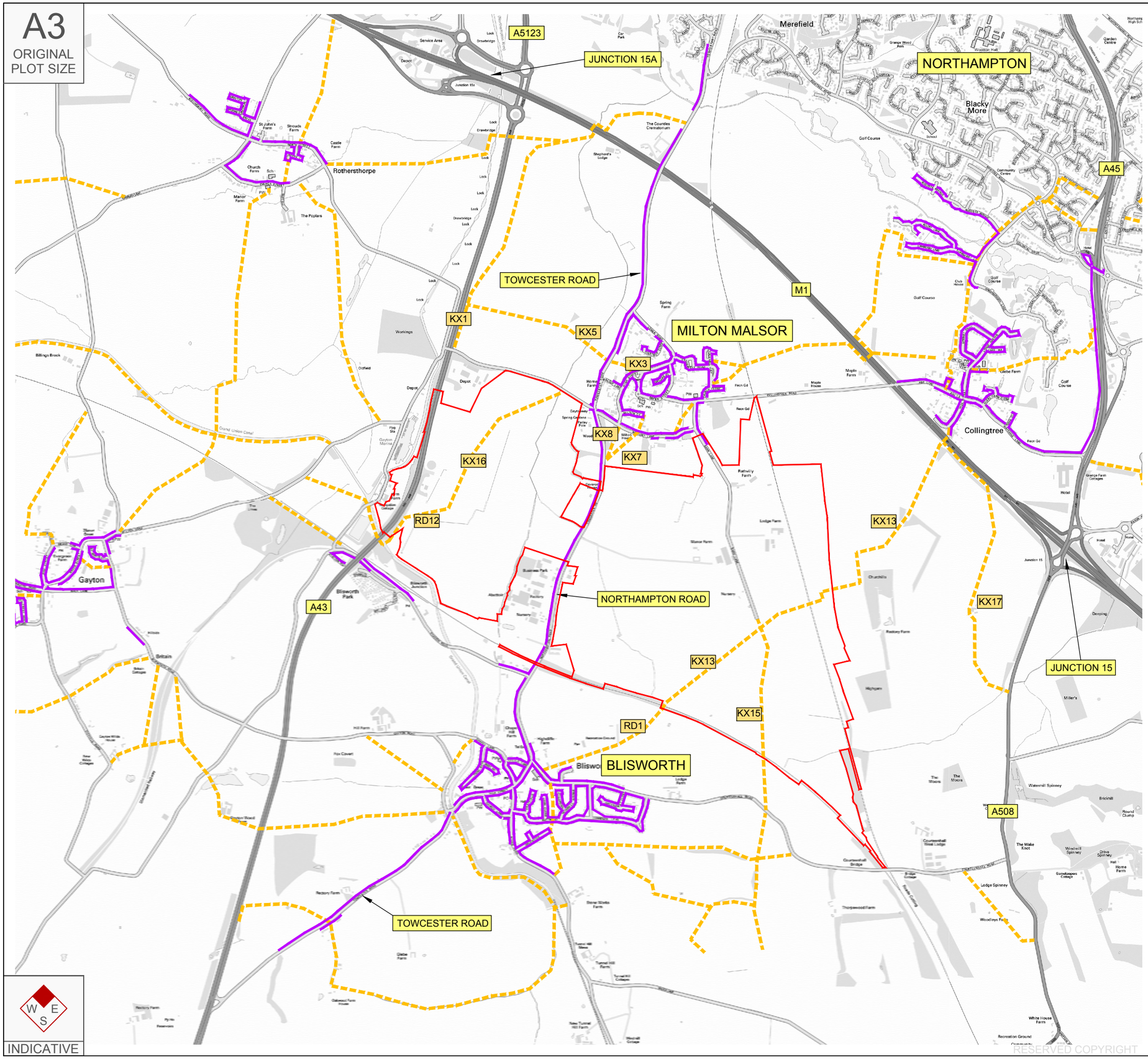
Cumulative Assessment

11.16 The capacity assessments carried out demonstrated that in the vast majority of cases the Rail Central highway mitigation proposals mitigate against both the Rail Central and the Northampton Gateway developments. However, further work will be carried out in advance of the DCO submission to determine whether further mitigation is required to mitigate the impact of the cumulative development at other locations.

FIGURES

DRAFT

A3
ORIGINAL
PLOT SIZE



RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY

- Approximate site boundary
- Public Rights Of Way
- Footways

Rev	Date	Details	Drawn by	Checked by	Approved by
A	28.02.18	Client Details Updated	AJS	MB	MB

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

PROJECT:
Rail Central Northamptonshire

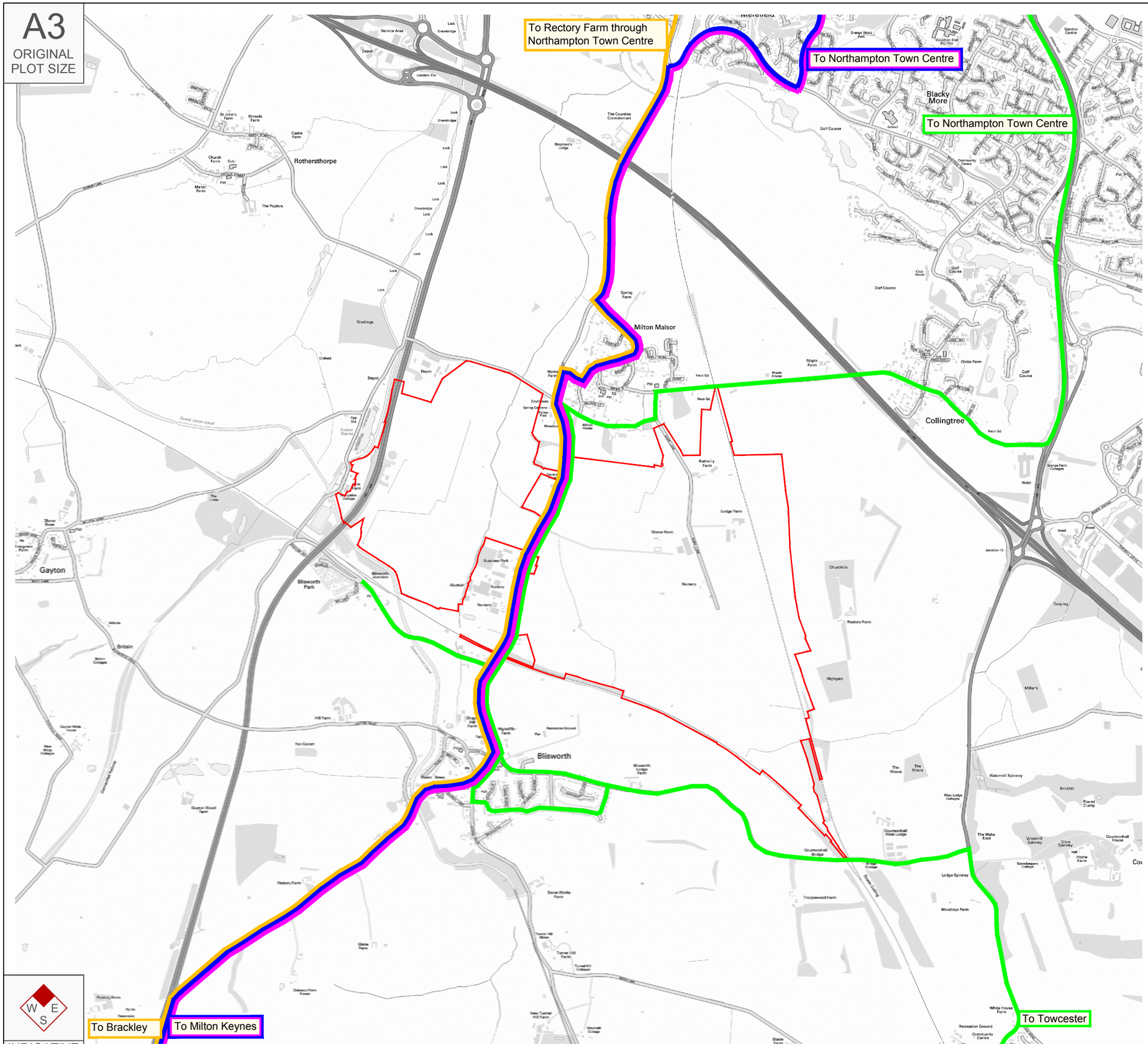
TITLE:
Local Highway Network, Existing Pedestrian Infrastructre and Public Rights of Way

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:20,000	26.01.18	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 4.1	A

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY

- Approximate site boundary
- Bus route 86 - Northampton - Towcester / Stony Stratford
- Bus route 88 - Northampton - Brackley
- Bus route 89 - Northampton - Milton Keynes
- Bus route X89 - Northampton - Milton Keynes

Rev	Date	Details	Drawn by	Checked by	Approved by
A	28.02.18	Client Details Updated	AJS	MB	MB

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

PROJECT:
Rail Central Northamptonshire

TITLE:
Existing Bus Routes

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:20,000	26.01.18	PSW	AJS	MB

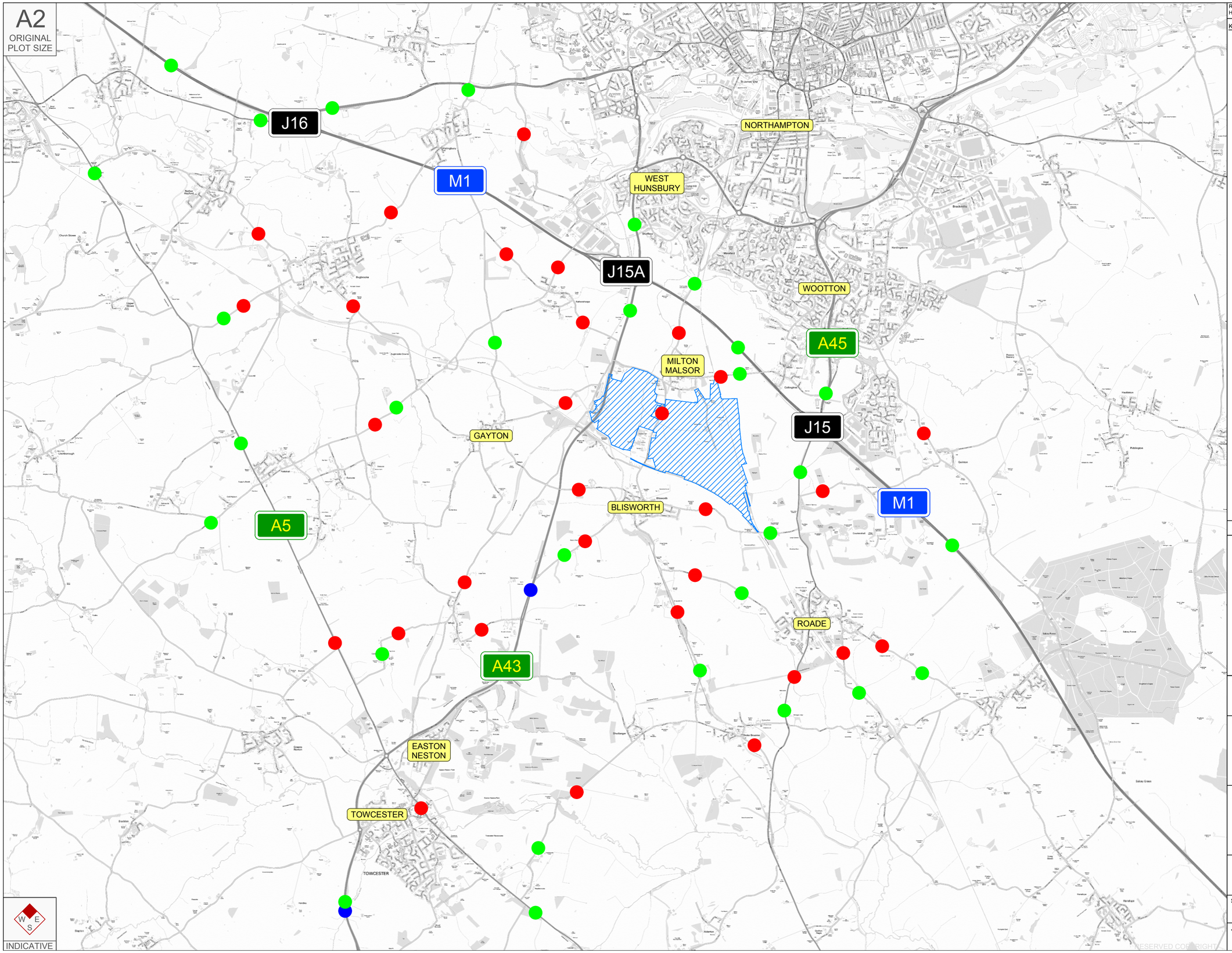
JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 4.2	A

W E S

INDICATIVE

RESERVED COPYRIGHT

A2
ORIGINAL
PLOT SIZE



W E S

INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY

- Approximate Site Boundary
- Proposed ATC Locations (One Week)
- Proposed ANPR Locations
- Proposed ATC Locations (Four Weeks)

Rev	Date	Details	Drawn by	Checked by	Approved by
A	28.02.18	Client Details Updated	AJS	MB	MB

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

PROJECT:
Rail Central Northamptonshire

TITLE:
Traffic Survey Locations

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:40,000	26.01.18	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 5.1	A

RESERVED COPYRIGHT

A1
ORIGINAL PLOT SIZE

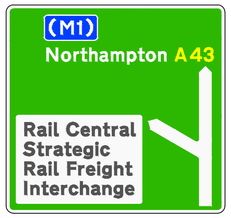
Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

1. The levels shown are indicative only and must not form the basis of detailed assessment work.
2. The earthworks shown are preliminary and indicative only.
3. The exact size and location of signs will be subject to a detailed design and agreement with highway officers.
4. The mounting heights for signs is 1.5m to the underside of the sign above the surface level of the adjacent carriageway.
5. The extent and retained height of retaining wall shown is indicative only and will be subject to a detailed design.
6. The earthworks in this location have been worked out assuming that the ground falls at a constant gradient between the levels on each side of this area, as detailed topographical information is not available.
7. The extent of adopted highway has been taken from an unscaled Ordnance Survey based 'indicative maintenance boundary' plan for Area 7 (A43 sheet 10 of 11) received from Highways England in July 2015. The adopted highway has been matched to surveyed topographical features where possible and is indicative only.

KEY

- Approximate redline boundary
- Indicative fill
- Indicative cut
- Indicative retaining wall
- Indicative area of adopted highway maintainable at public expense by Highways England



2no. Advance Direction Signs 4.5m long x 3.21m high, first sign at start of diverge taper and second sign ½ mile before start of diverge taper (SEE NOTE 4).



3no. distance countdown markers 1.2m high x 0.7m wide to diags. 825, 824 and 823 at 100 yards, 200 yards and 300 yards before start of diverge taper (SEE NOTE 4).



Direction Sign on slip road approach to roundabout, 6.92m long x 3.64m high (SEE NOTE 4).



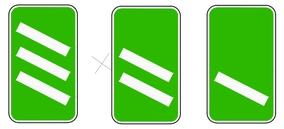
1no. 'finger point' Direction Sign (ref. A) on site spine road splitter island and entries to northbound and southbound slip roads; A1= 2.34m long x 1.05m high, A2= 2.08m long x 0.75m high, A3= 1.9m long x 0.75m high (SEE NOTE 4).



Direction Sign on slip road approach to roundabout, 6.92m long x 3.64m high (SEE NOTE 4).



2no, Advance Direction Signs 4.5m long x 3.21m high, first sign at start of diverge taper and second sign ½ mile before start of diverge taper (SEE NOTE 4).



3no. distance countdown markers 1.2m high x 0.7m wide to diags. 825, 824 and 823 at 100 yards, 200 yards and 300 yards before start of diverge taper (SEE NOTE 4).

Retaining wall with maximum retained height of approximately 2.6m (SEE NOTE 5).

Area of dense scrub and trees (SEE NOTE 6)

1no. 'finger point' Direction Sign (ref. A) on site spine road splitter island and entries to northbound and southbound slip roads; A1= 2.34m long x 1.05m high, A2= 2.08m long x 0.75m high, A3= 1.9m long x 0.75m high (SEE NOTE 4).



1no. diag. 515 Chevron Sign (3no. chevrons) 1.8m long x 0.4m high, with 'go left arrow' diag. 606 sign (600mm dia., ref. B) mounted above chevrons on centre roundabout island at each entry to circulatory carriageway for site link road and slip roads (SEE NOTE 4).

2no. diag 670 speed limit signs (600mm dia.) at exit from roundabout, 1no. on splitter island and 1no. on left hand side of carriageway (SEE NOTE 4).



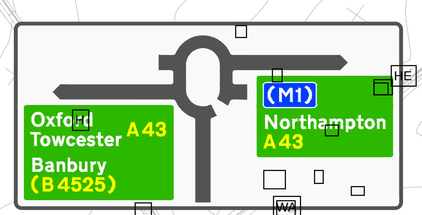
1no. 'finger point' Direction Sign (ref. A) on site spine road splitter island and entries to northbound and southbound slip roads; A1= 2.34m long x 1.05m high, A2= 2.08m long x 0.75m high, A3= 1.9m long x 0.75m high (SEE NOTE 4).



2no. diag 671 national speed limit signs (600mm dia.) at entry to roundabout, 1no. on splitter island and 1no. on left hand side of carriageway (SEE NOTE 4).



Direction Sign on site spine road approach to roundabout, 4.24m long x 1.78m high (SEE NOTE 4).



Rev	Date	Details	Drawn by	Checked by	Approved by
C	28.02.18	Client Details Updated	AJS	MB	MB
B	27.02.18	Red Line Boundary updated	PSW	AJS	MB
A	09.02.18	Proposed sign face details added	RC	RL	RL

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

PROJECT:
Rail Central Northamptonshire

TITLE:
A43 Site Access Grade Separated Roundabout

STATUS:
INFORMATION

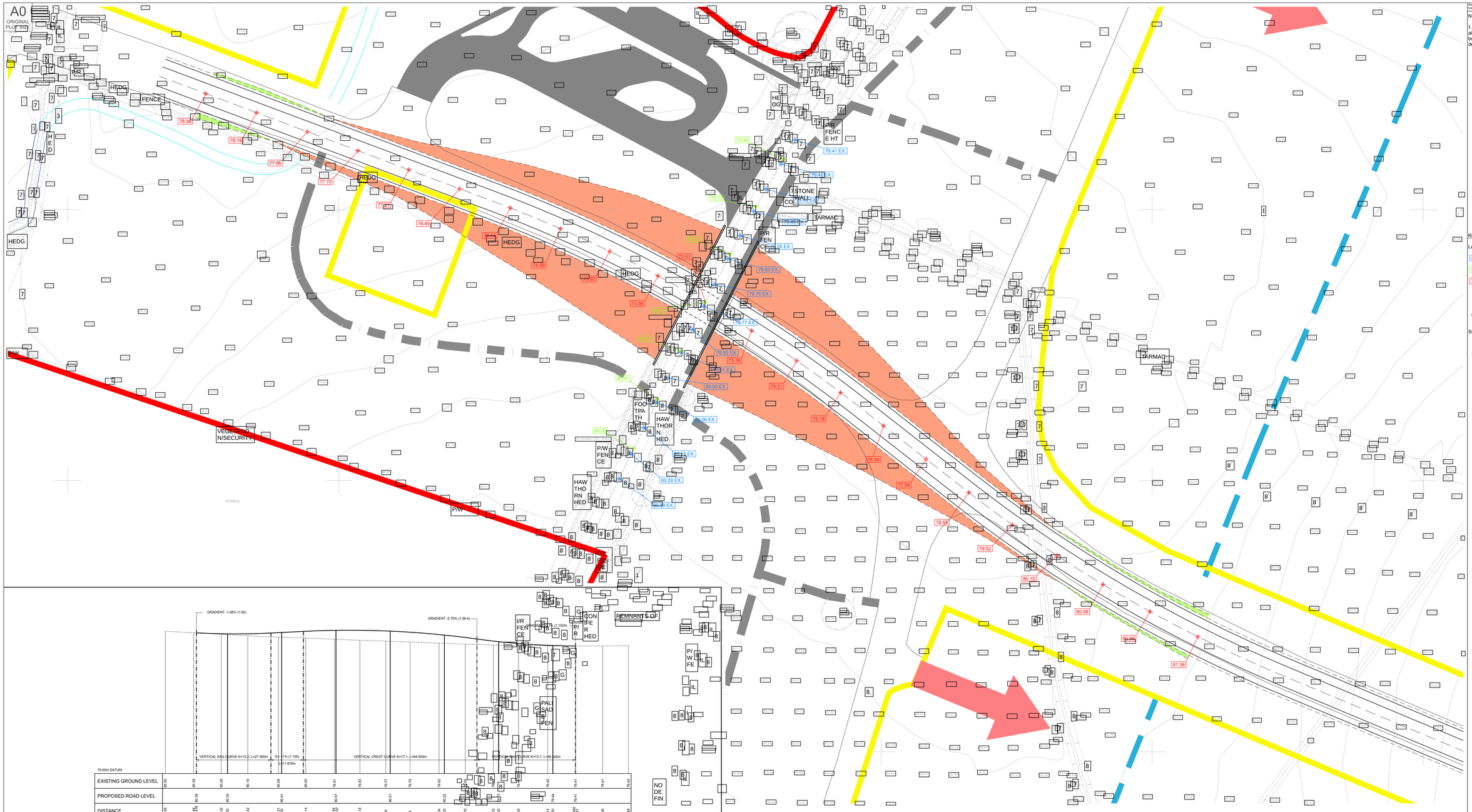
SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1,250	26.01.18	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 6.1	C

INDICATIVE

RESERVED COPYRIGHT

A0
ORIGINAL
PLOT SIZE

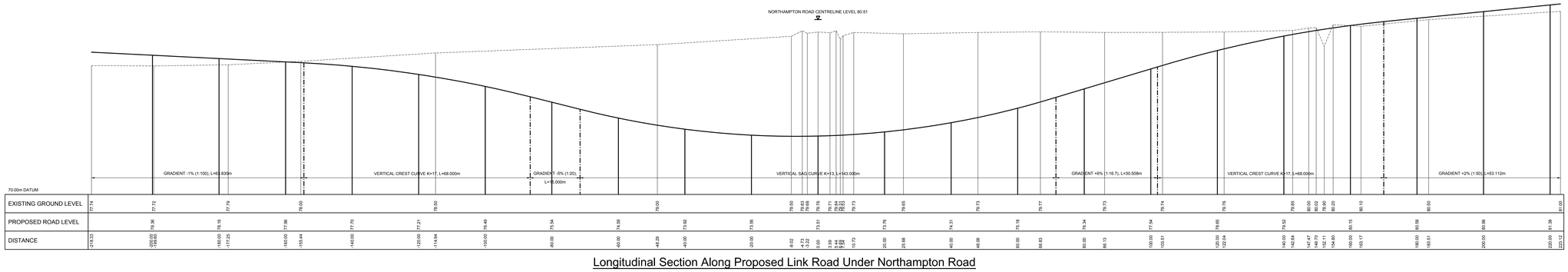


Longitudinal Section Along Northampton Road

Scale 1:500 Horizontal, 1:100 Vertical

Proposed Link Road Alignment At Northampton Road

Scale 1:500



Longitudinal Section Along Proposed Link Road Under Northampton Road

Scale 1:500 Horizontal, 1:100 Vertical

INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No: AL100034631

NOTES:

1. The proposed link road horizontal and vertical alignments, levels, earthworks and Northampton Road bridge extents are indicative only and are subject to detailed design.

KEY

Layout:

- 80.16 EX. Existing Northampton Road levels
- 80.91 Proposed Northampton Road levels
- 73.16 Proposed link road levels
- Proposed extent of cut
- Proposed extent of fill
- Proposed Northampton Road bridge

Sections:

- Existing ground profile
- Proposed road profile

Rev	Date	Issues	Drawn by	Checked by	Approved by
A	26.02.18	Client Details Updated	AJS	MB	MB

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

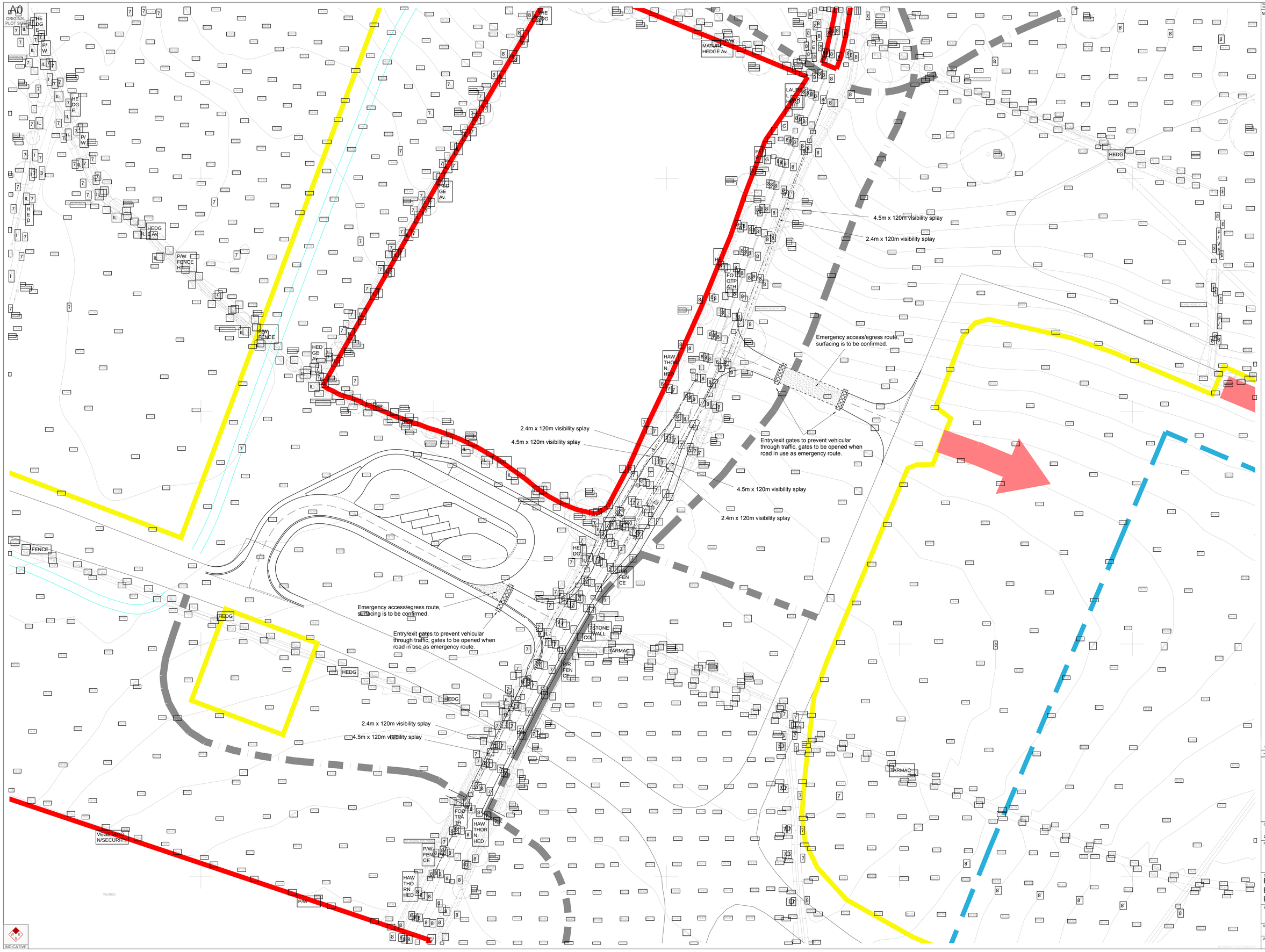
PROJECT:
Rail Central

TITLE:
Northampton Road Bridge Over Proposed Link Road

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
As shown	26.01.18	PSW	AJS	MB
JOB NO: 1211-80		DRAWING NO: Figure 6.2		REVISION: A

RESERVED FOR PLANNING



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034521

NOTES:

Rev	Date	Details	Drawn No	Checked No	Approved No
A	26.02.18	Client Details Updated	AJS	MB	MB

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

tpa
Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

PROJECT:
Rail Central
Northampton Rail Central

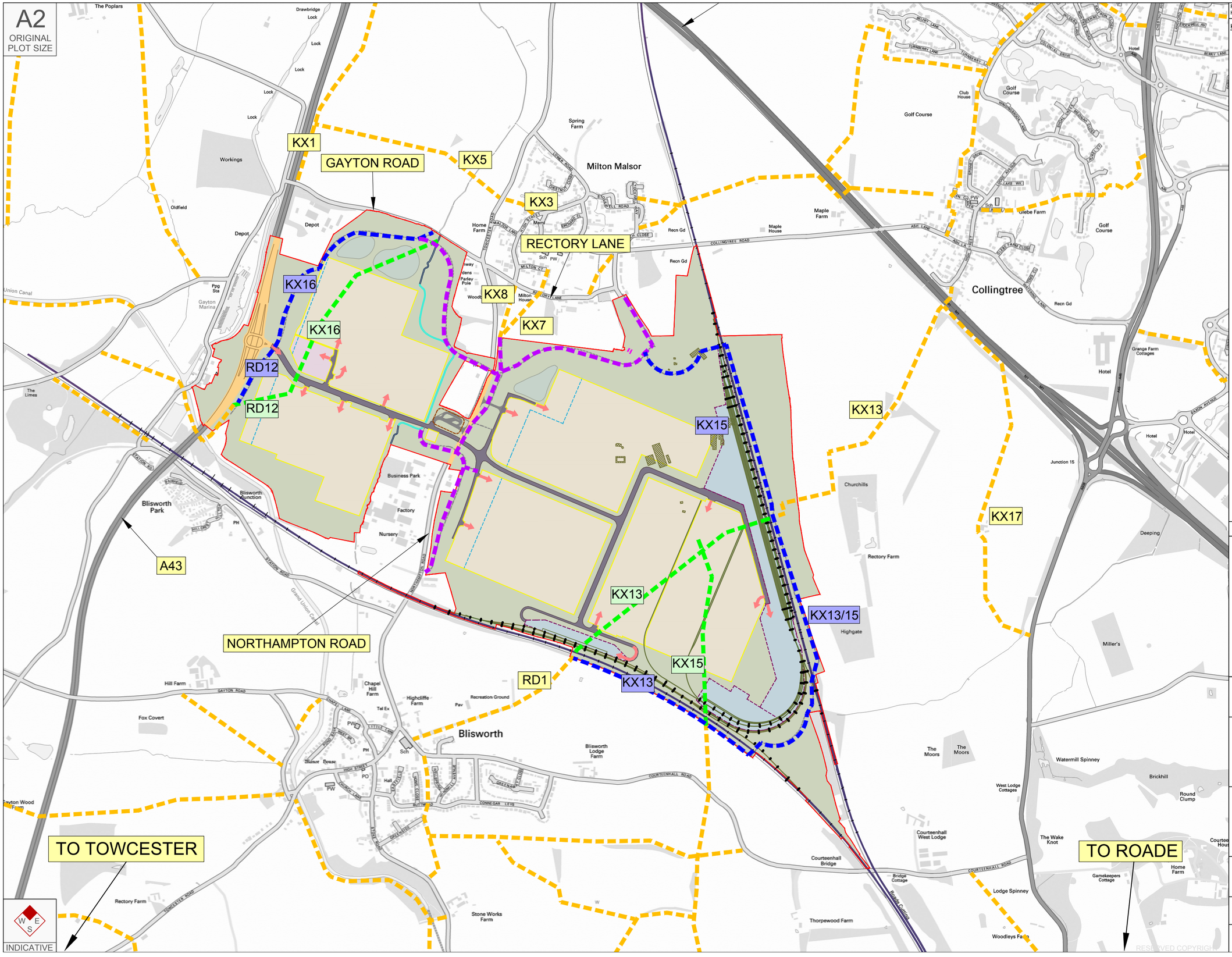
TITLE:
Proposed Emergency Access/ Egress Between Northampton Road and Site

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	26.01.18	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 6.3	A

A2
ORIGINAL
PLOT SIZE

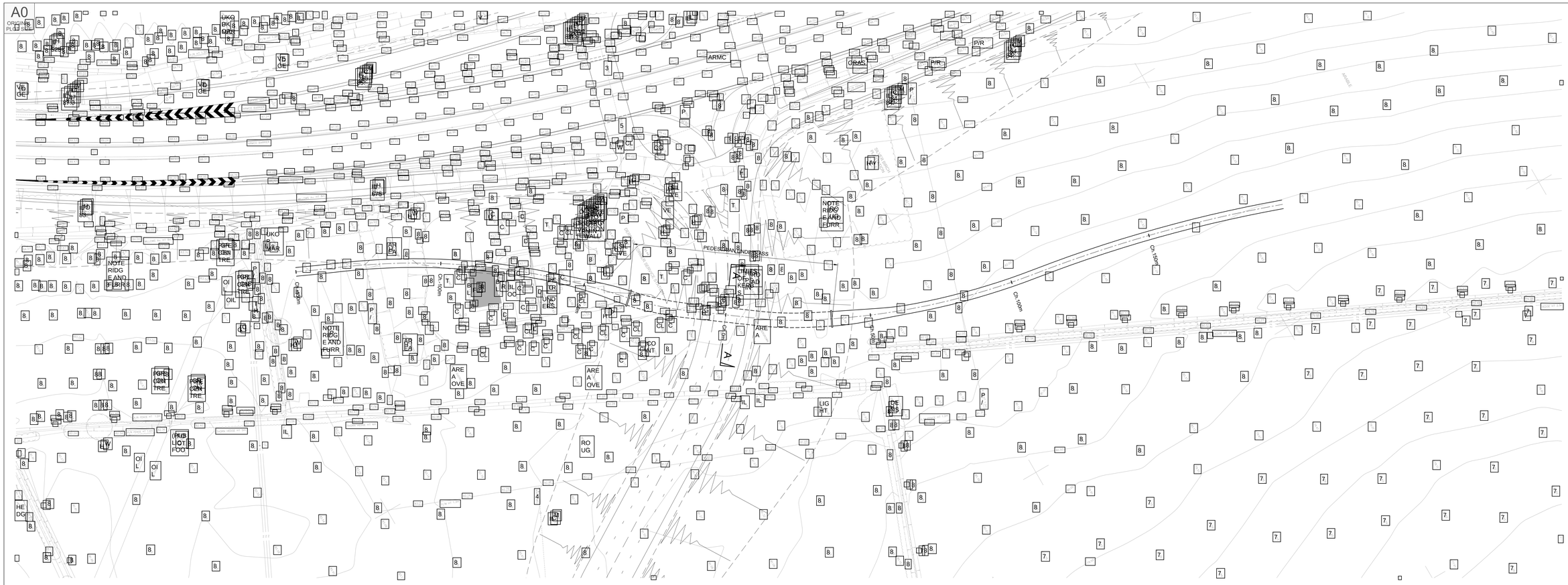

KX1
GAYTON ROAD
KX5
KX3
RECTORY LANE
KX16
KX16
KX8
KX7
RD12
RD12
KX15
KX13
KX17
KX13
KX13/15
KX15
RD1
KX13
A43
NORTHAMPTON ROAD
TO TOWCESTER
TO ROADE
Milton Malsor
Spring Farm
Workings
Oldfield
Depot
Depot
Home Farm
Maple Farm
Maple House
Golf Course
Club House
Golf Course
Glebe Farm
Golf Course
Collingtree
Recn Gd
Recn Gd
Recn Gd
COLLINGTREE ROAD
ASH LANE
Union Canal
Gayton Marina
The Limes
Blisworth Park
Blisworth Junction
Business Park
Factory
Nursery
Grand Union Canal
Churchills
Rectory Farm
Highgate
Deeping
Junction 15
Miller's
Hill Farm
Chapel Hill Farm
Highcliffe Farm
Recreation Ground
Fox Covert
Blisworth
Blisworth Lodge Farm
The Moors
The Moors
Watermill Spinney
Brickhill
Round Clump
West Lodge Cottages
Courteenhall West Lodge
The Wake Knot
Courteenhall Bridge
Bridge Cottage
Gamekeepers Cottage
Home Farm
Lodge Spinney
Thorpewood Farm
Woodleys Farm
Stone Works Farm
Rectory Farm
Grange Farm Cottages
Hotel
Hotel
Hotel
Hotel
COURTEENHALL ROAD
Grand Union Canal
Tel Ex
Pav
Sch
PO
Hall
PW
PH
PH
Ppg Sta
Milton House
Woods
Parley Pole
Home Farm
Manor House
Sch
PW
PW
Sch
PW
Sch
PW
Sch

A0
ORIGINAL PLOT SIZE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034631

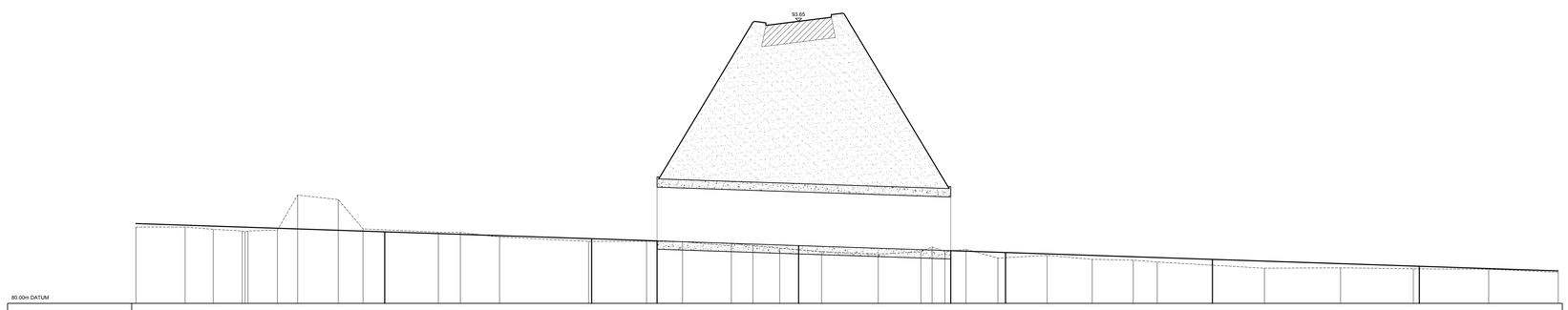
NOTES:

1. The proposed footpath diversion horizontal and vertical alignments, levels, earthworks and culverted underpass details and extents are indicative only and are subject to detailed design.



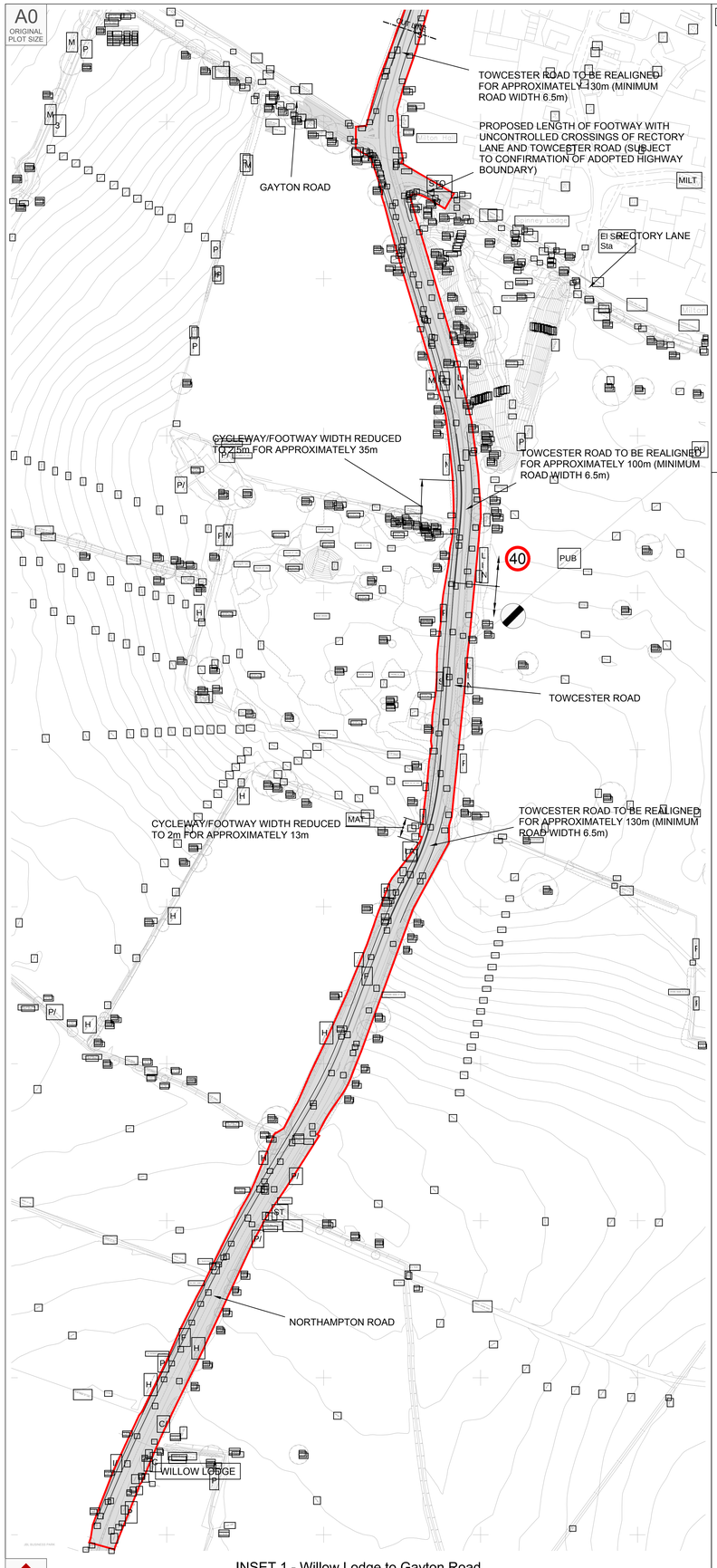
Proposed Footpath Diversion arrangement

Scale 1:500

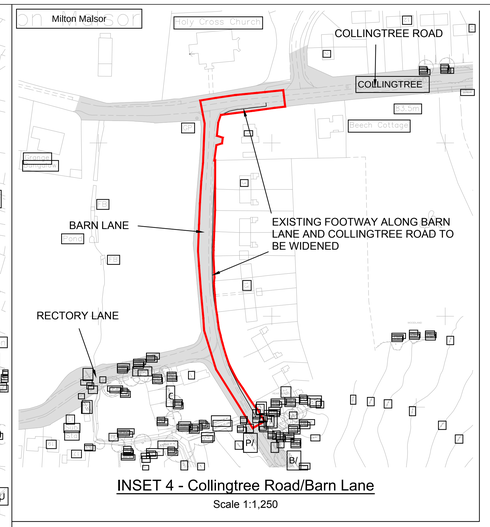


| | | |

A0
ORIGINAL
PLOT SIZE

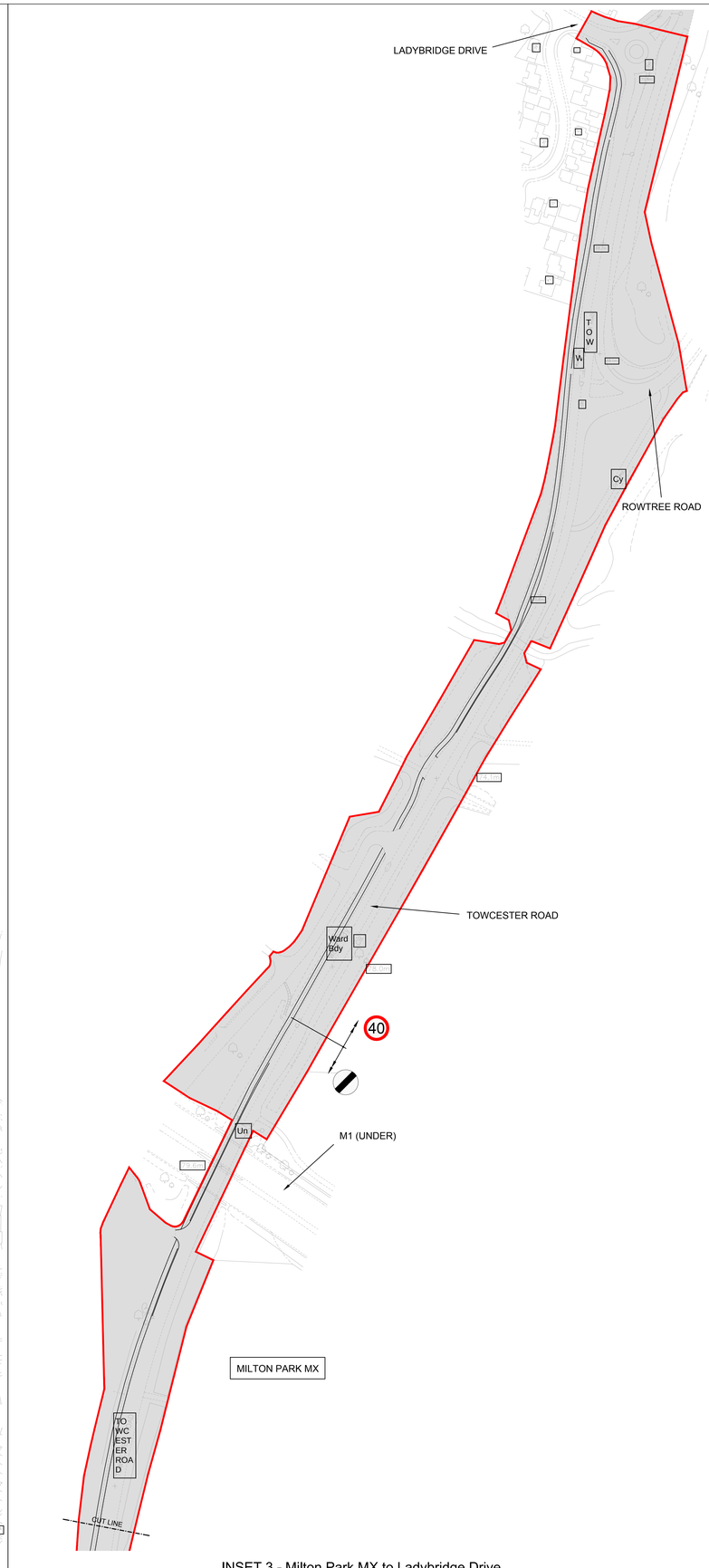


INSET 1 - Willow Lodge to Gayton Road
Scale 1:1,250



INSET 4 - Collingtree Road/Barn Lane
Scale 1:1,250

INSET 2 - Malzor Lane to Milton Park MX
Scale 1:1,250



INSET 3 - Milton Park MX to Ladybridge Drive
Scale 1:1,250

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034631

NOTES:

1. The proposed cycleway/footway is to be 3m wide with a minimum 0.5m wide margin along the carriageway edge, unless noted otherwise.

2. Realigned Towcester Road and Northampton Road to have a minimum carriageway width of 6.5m.

3. Existing drainage ditches along the route may be affected in some locations and will need to be considered in more detail.

4. The proposed cycleway/footway is indicative only and is subject to a full topographical survey along the complete route and confirmation of adopted highway/private ownership boundaries.

5. The extent of adopted highway shown has been taken from 1:1,250 scale Ordnance Survey based highway record plans received from Northamptonshire County Council in September 2015. The adopted highway boundary has been matched to existing topographical features where possible and is indicative only.

KEY

- 40 — Existing 40mph speed limit
- Existing national speed limit (60mph)
- Approximate extent of adopted highway maintainable at public expense by Northamptonshire County Council
- Red Line Boundary



Location Plan
Scale 1:10,000

Rev	Date	Details	Drawn By	Checked By	Approved By
B	26.02.18	Client Details Updated	AJS	MB	MB
A	31.02.18	Inset 4 added	PSW	AJS	JD

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

Transport Planning Associates

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

PROJECT:
Rail Central
Northamptonshire

TITLE:
Proposed Footway/Cycleway Along Towcester Road/Northampton Road

STATUS:
INFORMATION

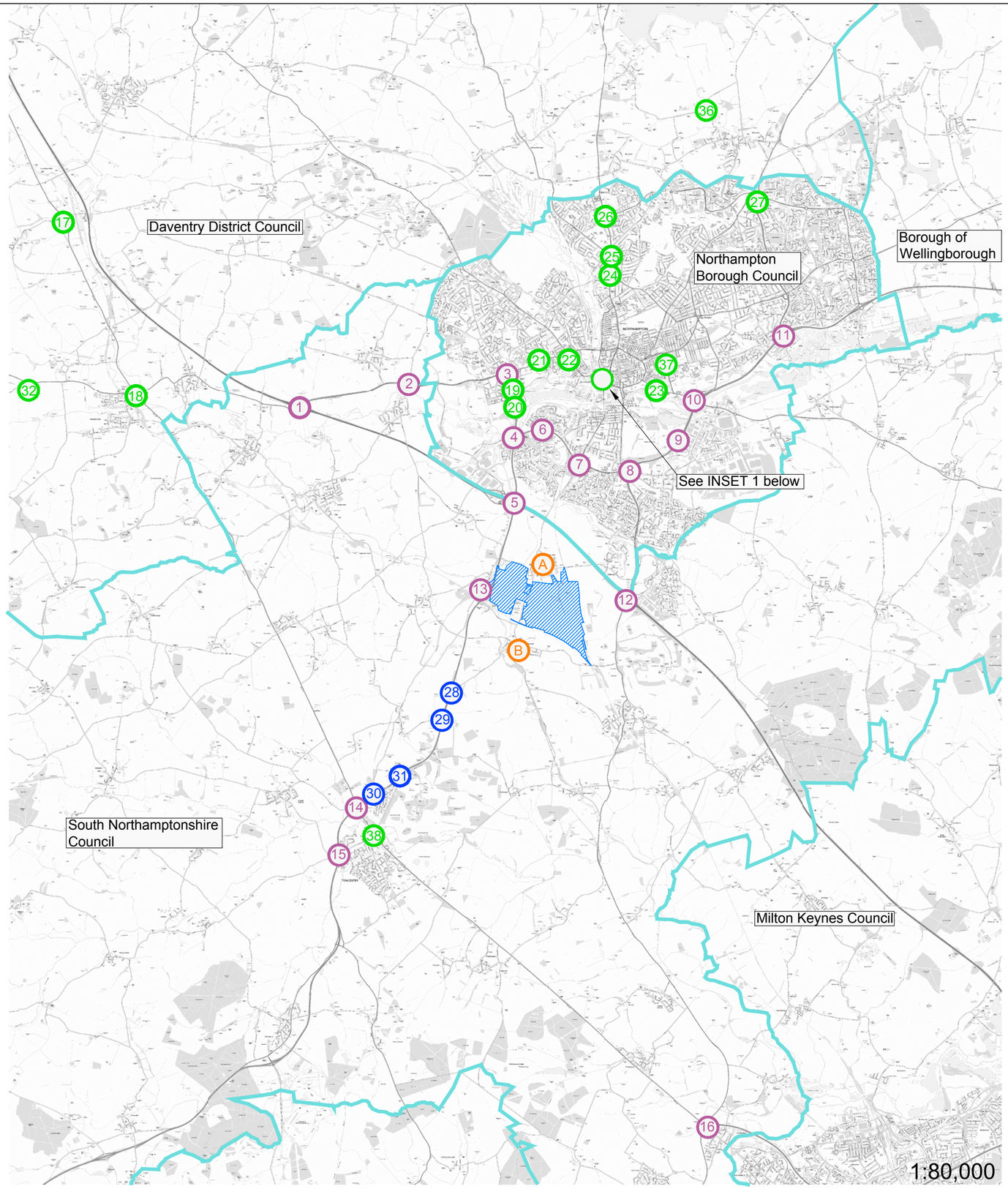
SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
As Shown	26.01.18	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 6.6	B

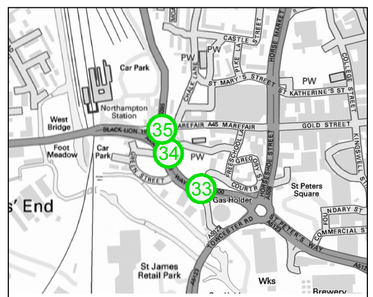
INDICATIVE

© COPYRIGHT TPA

A2
ORIGINAL
PLOT SIZE



Assessment Phase	Junction Number	Junction Name / Description	Junction Type
Phase 1	1	M1 Junction 16	Grade Separated Roundabout
	2	A4500 / Sandy Lane Relief Road	Signalised Crossroads
	3	A4500 / Upton Way / Tollgate Way	Signalised Roundabout
	4	A5076 / A5123 / Upton Way	Signalised Roundabout
	5	M1 Junction 15A	Grade Separated Roundabouts
	6	A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road	Roundabout
	7	Towcester Road / A5076 / A5123 / Tesco	Signalised Roundabout
	8	A45 Queen Eleanor Interchange	Grade Separated Signalised Roundabout
	9	A45 / Eagle Drive / Caswell Road	Grade Separated Signalised Roundabout
	10	Barnes Meadow Interchange	Grade Separated Signalised Roundabout
	11	A45 / A43 / Ferris Row	Grade Separated Signalised Roundabout
	12	M1 Junction 15	Grade Separated Gyratory
	13	A43 Site Access	Grade Separated Roundabout
	14	Tove Roundabout	Signalised Roundabout
	15	Abthorpe Roundabout	Signalised Roundabout
	16	Old Stratford Roundabout	Signalised Roundabout
Phase 2	17	A5 / Daventry Road / Unnamed Road	Priority Crossroads
	18	A5 / A45	Signalised Crossroads
	19	A5076 / Telford Way / Walter Tull Way / Duston Mill Lane	Roundabout
	20	A5076 / High Street / Duston Mill	Roundabout
	21	A4500 / Duston Road / Montfort Close / Peverel's Way	Signalised T-Junction
	22	A4500 / A428	Signalised T-Junction
	23	Nunn Mills Road / A428 / Beckett's View	Priority T-Junction
	24	The Cock Hotel Junction	Complex Signalised Junction
	25	A508 / A5199	Signalised T-Junction
	26	A508 / Holly Lodge Drive	Signalised T-Junction
	27	A43 / A5123 / A5076 / Stone Circle Road	Signalised Roundabout
	32	A45 / B4037	Priority T-Junction
	33	A508 / Northampton Road	Priority Crossroads (Dual Carriageway)
	34	A4500 / A5095	Signalised T-Junction
	35	A5095 / Mare Fair	Signalised Crossroads
	36	Pitsford Road / Boughton Fair Lane	Priority T-Junction
	37	Billing Road / Alfred Street / Cliftonville Road	Signalised Crossroads
	38	A5 / Brackley Road / Northampton Road	Signalised Crossroads
Additional	28	Blisworth turn	Priority T-Junction (Dual Carriageway)
	29	Fiffield Turn	Priority Crossroads (Dual Carriageway)
	30	A43 / Donkey Lane	Priority T-Junction (Dual Carriageway)
	31	A43 / Northampton Road	Priority T-Junction (Dual Carriageway)



INSET 1
(Scale 1:10,000)

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY

- Approximate Site Boundary
- Phase 1 Junctions
- Phase 2 Junctions
- Additional Junctions
- Environmental Enhancement Scheme - Milton Malsor
- Environmental Enhancement Scheme - Blisworth
- Approximate District Boundaries

Rev	Date	Details	Drawn by	Checked by	Approved by
A	28.02.18	Client Details Updated	AJS	MB	MB

Bristol
Cambridge
London
Manchester
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT:
Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

PROJECT:
Rail Central Northamptonshire

TITLE:
Agreed Study Area Plan

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:80,000	25.01.18	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 8.1	A

W E S

INDICATIVE

RESERVED COPYRIGHT

DRAFT

APPENDIX A
TWG Meeting Notes

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**6 December 2016**
Venue:	**Telecon**
Attending (Name and Company):	**Martin Seldon (Highways England)** **Aoife O'Toole (AECOM on behalf of Highways England)** **Matthew Jopp (AECOM on behalf of Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Michelle Berrington (TPA)** **Andrew Snowden (TPA)**
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

Meeting Minutes

1. AO'T confirmed that she had some comments on November meeting minutes (para 21) and would provide comments by end of week;
2. NCC advised of a typo at para 19, where 'John Spence' should be 'John Spencer';

Person Trip Attraction Briefing Note

3. AO'T advised that she had not been able to carry out a final review of the updated Person Trip Attraction Briefing Note, and would provide any comments by end of week;
4. NCC confirmed that the Person Trip Attraction Briefing Note is agreed;

HGV Trip Attraction Notes

5. AO'T advised that she had not been able to carry out a final review of the updated HGV Trip Attraction Notes, and would provide any comments by end of week;
6. NCC queried how the notes allow for NDCs which distribute to local areas. TPA to clarify with MDS.

Draft and Strictly Confidential

7. NCC queried whether the 63% NDCs assumption would be used in the assessments, as there is some ambiguity in the notes. TPA confirmed that if agreeable to NCC and HE, 63% would be used as it represents a robust scenario;

SATURN Modelling

8. NCC confirmed that the permitted and allocated land use and infrastructure forecasts (both for 2021 and 2031) have been signed off and provided to WSP for development of the forecast SATURN model. NCC is unable to provide a timetable at this stage for when this may be completed;
9. MB confirmed that she is seeking to arrange a meeting with Chris Wragg at NCC regarding access to the SATURN model files in order to prepare bespoke outputs. NCC reconfirmed that this would be unlikely;
10. TPA confirmed that Duncan Irons is currently reviewing the LMVR for the SATURN model, and will provide any comments on these;
11. TPA confirmed that it would provide a note on what is required from the SATURN model;
12. TPA confirmed that a list of scenarios to be assessed is currently being reviewed by the client and legal team, and will be circulated to HE and NCC shortly;

VISSIM Modelling

13. MJ confirmed that the VISSIM model and LMVR for M1 J15 and J15A has been provided to MS, who confirmed that this will be provided to TPA within the next few days;

Masterplan

14. NCC queried whether buses would enter serve the site from Northampton Road, noting that there is a bus turning area at this location. TPA confirmed that this is being considered;
15. TPA confirmed that following discussion with John Ellerby at NCC, a bespoke service from the A43 will be considered;
16. TPA also confirmed that the Public Transport Strategy is reliant on the distribution of workers derived from the SATURN model. Once this is known, a strategy to link to the town centre and the site can be considered;
17. TPA confirmed that parking provision is provided in accordance with latest NCC standards;
18. NCC queried whether a parking accumulation exercise had also been carried out. TPA confirmed that this has previously been carried out using previous iterations of the trip attraction forecasts, which showed a lesser parking requirement, and therefore the standards were applied for robustness and to prevent overspill parking on the local highway network. TPA confirmed that it would update the parking accumulation exercise for information purposes;

Other Matters

19. TPA advised that it had examined mode share at Milton Malsor, Blisworth, Pineham Park and DIRFT for the purpose of determining the number of car trips to be used for SATURN modelling purposes. NCC confirmed that it would like to see these comparisons to determine what is appropriate; and
20. TPA confirmed that it is preparing a note in relation to ancillary trip attraction in association with the Train Maintenance Depot and HOOB, which would be issued to the TWG within the next week. TPA also confirmed that these generally operate outside of typical network peak hours, and would therefore not materially impact upon the modelling work to be carried out.

Agreed and Outstanding actions

1. AO'T to provide comments on November meeting minutes by end of week;
2. AO'T to provide comments on Person Trip Attraction Briefing Note by end of week;
3. AO'T to provide comments on HGV Trip Attraction Notes by end of week;
4. TPA to clarify with MDS how the notes allow for NDCs which distribute to local areas;
5. TPA to arrange for notes to be amended to make clear that 63% NDC is to be used, if appropriate;
6. TPA to update parking accumulation exercise;
7. TPA to issue comparison of mode shares at nearby locations, along with a proposed mode share for Rail Central to be used in forthcoming modelling work; and
8. TPA to issue note in relation to ancillary trip attraction.

Private & Confidential
CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**10 January 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Irene Echeverria (AECOM on behalf of Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Michelle Berrington (TPA)** **Andrew Snowden (TPA)** **Duncan Irons (SYSTRA)**
Apologies:	**Martin Seldon (Highways England)** **Matthew Jopp (AECOM on behalf of Highways England)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

Meeting Minutes

1. NCC and AECOM confirmed that the minutes of the previous meeting (December 2016) are agreed.

Person Trip Attraction Briefing Note

2. NCC and AECOM confirmed that the Person Trip Attraction Briefing Note is agreed. [Post meeting note: TPA to finalise the note as a completed, signed document and issue to NCC, HE and AECOM]

HGV Trip Attraction Notes

3. NCC and AECOM confirmed that the HGV trip attraction notes (Forecast Trip Attraction, GB Freight Model and Floor Space Function Comparator) prepared by MDS Transmodal are agreed.

Strictly Confidential

Ancillary Trip Attraction Note

4. NCC and AECOM confirmed that the Ancillary Trip Attraction note is agreed.
5. NCC and AECOM confirmed that based on the note, ancillary uses would not impact upon the peak hour, although should be taken into account for the purpose of the daily traffic profile and parking accumulation exercise.
6. TPA to finalise the note and issue to NCC, HE and AECOM

Mode Share

7. TPA provided a brief overview of the mode share analysis carried out using 2011 Census data. TPA confirmed that these were based on the method of travel to work for residents of Milton Malsor and Blisworth, and the method of travel to work for the workplace population at Pineham Park and DIRFT.
8. It was noted that public transport usage at DIRFT was comparatively low, and NCC confirmed that this may have increased since 2011 following the introduction of additional services between DIRFT, Daventry and Rugby.
9. NCC and AECOM advised that they would like for the briefing note on mode share to include overall trip numbers by each mode.
10. TPA to issue briefing note on mode share to NCC, HE and AECOM.

SATURN Modelling

11. TPA confirmed that following a review of the SATURN model LMVR, TPA has requested additional work to improve the model validation at key junctions on the strategic road network. Once complete, SYSTRA to prepare note on the validation at the M1 J15 and J15A.
12. NCC confirmed that the list of committed infrastructure schemes previously provided to TPA was agreed by Highways England and is the latest version.
13. TPA confirmed that Turley is currently reviewing the list of committed development schemes and will contact NCC regarding any queries.
14. TPA to circulate a list of the scenarios that are to be modelled within SATURN, noting that a number of these are for environmental purposes.
15. TPA confirmed following meeting with WSP that the SATURN model would be progressed using current TEMPro forecasts, to be reviewed following the release of the updated forecasts in late February.

Masterplan

16. TPA confirmed that bus service provision will be considered in detail following the first SATURN distribution results, in order to identify areas where new or improved bus services would be most appropriate.
17. TPA to provide NCC and AECOM with more detailed drawings of the masterplan so that they may provide detailed comments on items such as pedestrian and cycle connections.
18. NCC confirmed that swept path assessments would also be required in due course.
19. NCC requested that TPA investigate an off-road cycle route along Northampton Road, which in areas of over 30mph should be separated by a verge.
20. TPA confirmed that Ashfield Land would be seeking a DCO on the parameters plan only. However, the comments raised by NCC and HE will help matters to progress more quickly should the current masterplan ultimately be taken forward for construction.
21. TPA confirmed that Road Safety Audits and Non-Motorised User Audits would be carried out on any off-site highway works in due course, including the proposed Grade Separated Junction.

Other Matters

22. DI confirmed that the SATURN model would assign all trips onto the highway network as either a car or a public transport trip. This would likely underestimate public transport trips, and the number of car trips would therefore be factored down accordingly in line with the baseline mode share to be agreed with NCC and HE.
23. NCC confirmed that the baseline bus service provision would therefore need to reflect the current situation in terms of bus service provision (albeit with stops adjacent to the site on Northampton Road), before any bus service mitigation is implemented. The improved bus service strategy and increased bus mode share can then be applied to any mitigation scenarios modelled.
24. NCC and AECOM confirmed that once the first set of model runs are completed, it would be useful for the information to be presented to them in order to identify junctions where detailed capacity assessments will be required.

Strictly Confidential

25. TPA confirmed that any mitigation scheme drawings would be agreed with NCC and HE in principle prior to inserting these into the SATURN model for mitigation scenario runs.
26. TPA confirmed that it would prepare a Statement of Common Ground in due course, which would essentially form a list of items and documents that are agreed with the highway authorities.
27. AO'T advised that she would need to re-examine the previous comments provided on the A43 Grade Separated Junction and associated TPA response, in order to identify any outstanding points.
28. AO'T advised that should any mitigation schemes require an application for a departure from standards, these typically take up to 42 days to process per departure, although multiple departures at a single junction would tend to be examined concurrently.
29. Discussion regarding the recent acquisition of JMP by SYSTRA, and whether this would lead to any conflicts of interest, given that JMP acts as a sub-consultant for AECOM and SYSTRA acts as a sub-consultant for TPA. AO'T confirmed that there are clearly defined roles between each party and she does not therefore consider that there is any conflict of interest. AO'T advised that AECOM may need to prepare a conflict letter to confirm this position.

Agreed and Outstanding actions

1. TPA to issue final version of agreed December 16 meeting minutes to NCC, HE and AECOM.
2. TPA to finalise Person Trip Attraction Briefing Note and issue to NCC, HE and AECOM as a complete, signed document.
3. TPA to issue final version of Ancillary Trip Attraction note to NCC, HE and AECOM.
4. TPA to issue Mode Share Briefing Note to NCC, HE and AECOM for comment.
5. SYSTRA to prepare note on validation of M1 J15 and J15A.
6. TPA to provide NCC and AECOM with more detailed drawings of the masterplan.
7. AO'T to re-examine previous comments and response on A43 Grade Separated Junction and confirm any outstanding points.

Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**7 February 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Irene Echeverria (AECOM on behalf of Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Michelle Berrington (TPA)** **Andrew Snowden (TPA)**
Apologies:	**Martin Seldon (Highways England)** **Matthew Jopp (AECOM on behalf of Highways England)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

Meeting Minutes

1. NCC and AECOM confirmed that they had received the previous meeting minutes, issued on 6th February, and would provide formal comments in due course;
2. NCC confirmed, as a post meeting comment, that in relation to point 23, that the public transport mode shares both in the baseline and forecast scenarios would need to take account of the service provision at shift changeover times;

Mode Share

3. TPA provided an overview of the mode share briefing note, noting that this forms part of Stage Three of the Transport Model and is currently being prepared in advance of Stage Two. This is because Stage Two is dependent on the outputs of the NSTM, which in turn is dependent on the determination of a baseline mode share;

Strictly Confidential

4. TPA confirmed that the mode shares set out in the briefing note are baseline, and that forecast mode shares would be determined in due course following the provision of sustainable transport strategies, and would be included within any mitigation modelling scenarios;
5. Discussion regarding public transport mode share. NCC queried that the suggested mode share at Rail Central is higher than at Blisworth. TPA confirmed that this is considered reasonable given that it is lower than at Milton Malsor, and that it is only applied to those units on the site that are within walking distance of bus stops, which results in an average across the site lower than at Blisworth;
6. TPA confirmed that it would consider public transport mode share in further detail within the briefing note;
7. Discussions regarding walking mode share. TPA confirmed that this had been reduced from the average proportion at Milton Malsor and Blisworth to provide a robust assessment. AECOM advised that this should be considered in further;
8. TPA confirmed that it would consider walking mode share in further detail within the briefing note;
9. TPA confirmed that the briefing note includes a cycling mode share of 1%, which all parties agreed appeared reasonable;
10. NCC and AECOM confirmed that mode shares for the daily period would need to be re-examined in order to account for a reduced propensity to walk/cycle during hours of darkness, and night time bus service provision;
11. TPA confirmed that for the purpose of the NSTM, the briefing note would relate solely to peak hour mode share, and that the daily mode share would be considered fully in due course;

SATURN Modelling

12. TPA confirmed that SYSTRA is currently preparing a report on the local area validation of the SATURN model, which was due to be provided to TPA on 15th February;
13. NCC noted that TPA is to use the model in advance of sign off by NCC;
14. NCC advised that the SYSTRA report would be helpful and may speed up NCC's sign off process;
15. TPA confirmed that it would provide the report to NCC and AECOM once finalised [post meeting note: the SYSTRA report was issued to NCC and AECOM on 16th February 2017];
16. TPA confirmed that the intention was for the 2021 model runs to be carried out first, followed by 2031. This is principally so that work can commence relating to M1 J15 and J15A;
17. TPA confirmed that the current timescales of the modelling are anticipated to provide the first set of results at the beginning of March. It is therefore intended that during the March TWG meeting these results would be discussed with a view to identifying and agreeing assessment areas to be modelled for impact;

VISSIM Modelling

18. AECOM confirmed that the VISSIM model prepared by them for M1 J15 and J15A is, in its view, suitable in its current state to represent the existing operation of the junctions;
19. AECOM advised that as TPA would be required to defend the use of the model for Rail Central, TPA would need to satisfy itself that the model is appropriate for this purpose;
20. TPA queried in relation to the LMVR, why the VISSIM model had not been validated against observed queue lengths. AO'T advised that she would seek confirmation on this from the modelling team and advise in due course;

Other Matters

21. AECOM confirmed that in order for the final design of the A43 access junction to be agreed, it would need to confirm details of horizontal and vertical alignment, drainage, any departures from standards, geotechnical information, directional signage, street lighting, AAP, NMU and RSA.
22. NCC advised that any mitigation schemes on local authority roads would also be subject to an RSA, and that Auditor CV's and a Safety Audit brief should be agreed in advance;
23. NCC advised that the operation of the scheme during the time of the British Grand Prix at Silverstone should be examined. TPA confirmed that this would be considered as part of the Transport Assessment; and
24. TPA confirmed that it would seek to carry out a cumulative impact assessment including the Northampton Gateway scheme, although would require detailed traffic flow information in order to do this. NCC advised that they are not able to provide this information at this stage.

Strictly Confidential

Agreed and Outstanding actions

1. TPA to finalise Person Trip Attraction Briefing Note and issue to NCC, HE and AECOM as a complete, signed document;
2. TPA to issue final version of Ancillary Trip Attraction note to NCC, HE and AECOM;
3. TPA to issue Mode Share Briefing Note to NCC, HE and AECOM for comment [post meeting note: submitted to NCC, HE and AECOM on 16th February];
4. SYSTRA to prepare note on validation of M1 J15 and J15A [post meeting note: submitted to NCC, HE and AECOM on 16th February];
5. AO'T to re-examine previous comments and response on A43 Grade Separated Junction and confirm any outstanding points.
6. NCC and AECOM to provide any comments on draft January meeting minutes;

Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**7 March 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Craig Drennan (WSP)** **Mily Parveen (WSP)** **Michelle Berrington (TPA)** **Andrew Snowden (TPA)** **Duncan Irons (SYSTRA)**
Apologies:	**Martin Seldon (Highways England)** **Irene Echeverria (AECOM on behalf of Highways England)** **Matthew Jopp (AECOM on behalf of Highways England)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

Meeting Minutes

1. TPA confirmed that previous meeting minutes (January and February 2017) were agreed previously by NCC. AO'T confirmed that they are agreed by AECOM also. TPA to issue final copy of agreed minutes.

Strictly Confidential

Briefing Notes

2. TPA confirmed that the briefing notes are currently being subject to a final internal review prior to final issue.
3. TPA confirmed that the briefing notes have been updated following changes to the scheme. These have included the removal of the HOOB and a reduction in warehousing floor space to 7.4M sqft.

SATURN Modelling

4. WSP provided an update on the modelling work carried out to date, including timescales and model convergence.
5. Initial results were provided to TPA in advance of the meeting for 2021 DM and 2021 DS scenarios.
6. Discussion regarding development flow plots:
   a. DI requested select link analysis plots for HGVs only [post meeting note: WSP has provided these to TPA].
   b. Noted that arrival routes are split between using M1 J15 or Ring Road before travelling through M1 J15A, and that journey times and delay should be examined in relation to these two routes.
7. Discussion regarding v/c plots:
   a. TPA confirmed that the plots showed that Rail Central is forecast to result in a minimal impact on the operation of junctions across the highway network, although it was noted that this may be a result of redistribution of baseline traffic.
   b. WSP confirmed that it would provide a spreadsheet showing v/c at all junctions so that a detailed analysis could be carried out [post meeting note: WSP has provided this to TPA].
8. Discussion regarding flow change plots:
   a. Noted that flow difference plots indicate that traffic is rerouting from A43 onto other routes. DI and WSP confirmed that this would be examined further to determine whether updates to the model are required.
   b. DI requested demand vs actual flow plots to inform this also. WSP confirmed that it would provide these [post meeting note: WSP has provided these to TPA]
9. DI queried whether SYSTRA could be allowed access to the model in order to more easily identify any issues and to produce its own bespoke outputs. NCC confirmed that it would raise this again with Chris Wragg.
10. Discussion regarding agreement of the base model and the local validation report prepared by SYSTRA:
    a. TPA confirmed confirmation would be required from both HE and NCC that the model is fit for purpose.
    b. AO'T confirmed that AECOM would review the model in terms of its validation at M1 J15A and that she would review the report prepared by SYSTRA and provide any comments/sign off by the end of the following week.
    c. NCC also confirmed that it would review the report prepared by SYSTRA and provide any comments/sign off by the end of the following week.

VISSIM Modelling

11. TPA confirmed that the VISSIM model prepared by AECOM of M1 J15 and J15A is currently being amended by SYSTRA to improve validation against observed queue lengths.
12. AO'T requested a note summarising the changes made so that AECOM may fully Audit the model, once completed [post meeting note: the amended VISSIM model files and summary note were provided to HE and NCC on 5th April 2017].

Other Matters

13. AO'T confirmed that she had spoken to Graham Fry and confirmed that there is no conflict of interest between AECOM and SYSTRA, and that a letter is not required.
14. TPA queried whether information was available from Roxhill in order to facilitate a cumulative impact assessment. NCC confirmed that it is not.

Agreed and Outstanding actions

1. TPA to issue final copy of agreed minutes of previous meetings.
2. WSP to provide SLA plots for HGVs only [post meeting note: WSP has provided these to TPA].

Strictly Confidential

3. WSP to provide spreadsheet showing v/c at all junctions [post meeting note: WSP has provided these to TPA].
4. WSP and SYSTRA to review the model to examine the reasons for traffic rerouting away from the A43.
5. WSP to provide demand vs actual flow plots [post meeting note: WSP has provided these to TPA].
6. NCC to raise query of allowing SYSTRA access to the model with Chris Wragg.
7. AECOM and NCC to review the local validation report prepared by SYSTRA and provide any comments/sign off by end of next week.
8. SYSTRA to prepare note confirming the amendments to the VISSIM model [psot meeting note: the VISSIM model files and summary note were provided to HE and NCC on 5th April 2017]
9. TPA to finalise Person Trip Attraction Briefing Note and issue to NCC, HE and AECOM;
10. TPA to issue final version of Ancillary Trip Attraction note to NCC, HE and AECOM;
11. TPA to issue final version of Mode Share Briefing Note to NCC, HE and AECOM;

Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**11 April 2017**
Venue:	**SYSTRA, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Martin Seldon (Highways England)** **Andrew Snowden (TPA)** **Duncan Irons (SYSTRA)**
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley, Bond Dickinson and NCC**

Key issues / matter discussed

Meeting Minutes

1. TPA confirmed that agreed meeting minutes for January and February 2017 along with draft meeting minutes for March 2017 were issued on 10th April. HE / AECOM to review and provide any comments.

SATURN Modelling

2. AO'T confirmed that AECOM has reviewed the local validation report prepared by SYSTRA and that they are generally happy with it. There is potentially a slight concern at J15A, although on the whole is considered reasonable. [post meeting note – AOT confirmed via email on 7th June 2017 that the report prepared by SYSTRA and the WSP LMVR are agreed, although caution should be taken on using flows extracted for two of the approaches] AECOM to provide formal confirmation that the report is agreed and the model is fit for purpose.
3. DI provided update on SATURN modelling and amendments made to date, and confirmed that the model is producing reasonable results.
4. DI confirmed that the model suggests that M1 J15A is holding up traffic across the network, with traffic rerouting onto other routes. DI confirmed that this appears to be a result of congestion at the junction. DI advised that there was a large amount of queued traffic southbound on A43 and that the coding would need to be checked at M1 J15A as each roundabout is inserted as a single node. [post meeting note: this has been checked by WSP and changing the node layout has no material effect on the junction operation, therefore it has been agreed that the coding is appropriate]
5. Discussion regarding an anomaly of large flow differences around Daventry. DI confirmed that this is due to traffic switching between routes and therefore not a significant issue. AO'T also advised that this may be an effect of the new Daventry Link Road.
6. Discussion regarding study area in which detailed capacity assessments would be required.

Strictly Confidential

7. DI confirmed that there are seven locations where v/c plots indicate an increase of 5% and where there are capacity issues at SRN junctions that might be considered for detailed assessment.
8. AO'T confirmed that assessments would likely be required at M1 J15 and J15A and the A43 Tove and Abthorpe Roundabouts.
9. Noted that M1 J15A is a bottleneck for the entire network, with traffic rerouting to avoid it. As such, it was agreed that the study area would be better identified after a mitigation scheme at J15A is input into the model, as this would draw traffic back towards J15A and would change how other junctions across the network are impacted.
10. Agreed methodology of carrying out additional modelling ruin with mitigation in place at M1 J15A prior to identifying a wider study area.
11. AO'T confirmed that AECOM would need to be provided with SATURN outputs in order to formally confirm agreement of a study area. DI confirmed that SYSTRA would prepare a report to set out the SATURN modelling results for issue to HE and AECOM.

VISSIM Modelling

12. AO'T confirmed that the updated VISSIM model and associated report prepared by SYSTRA is being reviewed by AECOM's modelling team, and that she would review the status and outcome of this.
13. DI queried whether HE were happy for turning counts from SATURN to be directly applied to VISSIM. AO'T confirmed that she would review the validation and confirm.

Other Matters

14. AO'T advised that mitigation schemes on the SRN would need to be approved on various points, such as drainage, street lighting and signing and lining.
15. Discussion regarding whether mitigation schemes would be considered as NSIPs in their own right. TPA advised that there are different thresholds depending on the grade of road and it is therefore necessary to identify the limits of what is classified as a 'special road', particularly at M1 J15A.
16. AO'T and MS advised that the limit is likely to be at the end of the slip road, as there needs to be a location for non-motorway traffic to legally turn around before entering the motorway. However, AO'T and MS advised that for confirmation of the extent of 'special roads' it would be necessary to obtain the original line order for the junction.
17. MS advised that the line orders are not held by HE and are instead held in the national archives, although he would seek to provide details of who TPA should contact in order to obtain the orders. [post meeting note: MS has provided a link to the legislation.gov.uk website where the line orders can be located].
18. [Post Meeting Note: AO'T advised that her meeting notes stated *"Submission of drawings in May"* and believes this note relates to the proposals at M1 J15A. TPA's meeting notes do not suggest such and there was no commitment to submit the Junction 15A drawing in May]

Agreed and Outstanding actions

1. HE and AECOM to review draft March meeting minutes and provide comments.
2. AECOM to confirm that the local model validation report prepared by SYSTRA is agreed and the model is fit for purpose [post meeting note – AOT confirmed via email on 7th June 2017 that the report prepared by SYSTRA and the WSP LMVR are agreed, although caution should be taken on using flows extracted for two of the approaches].
3. SYSTRA to prepare report setting out SATURN results for issue to HE and AECOM.
4. AO'T to confirm whether the updated VISSIM model prepared by SYSTRA is appropriate.
5. AO'T to confirm whether turning counts from SATURN can be directly inserted into VISSIM.
6. MS to provide details of who TPA should contact to obtain line orders. [post meeting note: MS has provided a link to the legislation.gov.uk website where the line orders can be located].
7. TPA to finalise Person Trip Attraction Briefing Note and issue to NCC, HE and AECOM.
8. TPA to issue final version of Ancillary Trip Attraction note to NCC, HE and AECOM.
9. TPA to issue final version of Mode Share Briefing Note to NCC, HE and AECOM.

Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**25 April 2017**
Venue:	**SYSTRA, Birmingham**
Attending (Name and Company):	**Rob Sim-Jones (NCC)**
	Jethro Punter (NCC)
	Martin Draper (NCC)
	Andrew Snowden (TPA)
	Duncan Irons (SYSTRA)
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley, Bond Dickinson and NCC**

Key issues / matter discussed

Meeting Minutes

1. NCC confirmed that the minutes of the previous meeting on 7th March are agreed. TPA to finalise and issue as agreed minutes, once agreement is confirmed from HE and AECOM.

SATURN Modelling

2. JP confirmed that Chris Wragg had agreed for the SATURN model files to be released to SYSTRA.
3. JP requested the letter previously issued to NCC to be signed by SYSTRA and returned to them so that they may release the files. [post meeting note: SYSTRA issued the signed letter to NCC on 25th April and WSP confirmed that they were able to provide the model files on 26th April].
4. NCC confirmed that the LMVR prepare by WSP and overall base SATURN model has been signed off by NCC and is considered fit for purpose to assess Rail Central.
5. NCC advised that the future forecast reference case models are currently being reviewed to determine whether they are appropriate.
6. TPA confirmed that SYSTRA have been reviewing the forecast model runs prepared for Rail Central in conjunction with WSP, and a number of amendments have been made.
7. DI provided an overview of the updates made to the model, including elements that were not previously providing appropriate results, such as ensuring that traffic was entering the network from all zones and that minor routes were not unrealistically attractive in comparison to strategic routes. These have now been amended and the model is considered appropriate.
8. Discussion regarding the SATURN modelling results for 2021 DM and DS scenarios, and the impact shown as a result of Rail Central. It was noted that there is a large delay on the A45 corridor present

Strictly Confidential

in the DM scenario (i.e. without Rail Central). It was also noted that due to congestion across the network a significant number of vehicles reroute to avoid congested junctions.

9. DI confirmed that SYSTRA would prepare a report summarising the results of the SATURN modelling for the 2021 and 2031 DM and DS scenarios (without mitigation), for agreement with HE and NCC. DI also confirmed that these would ultimately feed into a final report alongside the scenarios with mitigation.
10. TPA and DI confirmed that the SATURN results suggest that congestion at M1 J15A is leading to traffic rerouting to avoid the junction and resultant delays across the network.
11. TPA confirmed that the modelling approach being taken, and agreed during the previous meeting with HE, was that a mitigation scheme at J15A would be input into the model as an additional assessment. This would then draw traffic back into the junction and provide a more accurate representation of which other junctions are likely to be impacted by the development. NCC agreed this approach and confirmed that it is acceptable.

M1 J15A

12. TPA tabled the mitigation scheme at J15A that had been provided to WSP for modelling purposes.
13. NCC queried how access would be provided to the Milton Ham Site. TPA confirmed that the site does not have an extant consent. TPA confirmed that WSP had therefore been advised to include an unconstrained access into the site further to the north, as would be the case for other allocated sites.
14. NCC commented that the proposal would remove an existing access to the Milton Ham site (northeast of M1 J15A), which may also have rights of access in this location, and queried whether this is appropriate. TPA to examine this further with advice from the legal team as appropriate.

Other Matters

15. TPA confirmed that the study area would be agreed once SATURN modelling work with J15A mitigation was complete. However, NCC agreed this approach and advised that areas of concern would likely include junctions along the A45 and ring road corridors.
16. TPA confirmed that detailed assessments of various junctions are being prepared and that it would be useful to agree with NCC that the base validated models are appropriate, prior to any 'with development' assessments being prepared. NCC confirmed that this would be appropriate and requested that the LINSIG or Junctions 9 files are provided in order to review these.
17. NCC confirmed that the VISSIM model updated by SYSTRA had been reviewed and a report prepared. NCC advised that there were a few queries, but no major concerns over the model's operation. NCC to provide the prepared report to SYSTRA for review. [post meeting note: the report was provided to SYSTRA on 27th April 2017]
18. TPA and DI queried how NCC would prefer flows to be applied from SATURN into detailed capacity assessments. NCC advised that this would need to be considered on a junction by junction basis to determine the validation of the turning movements in the base model. TPA advised that as the base SATURN model is now agreed with NCC, this process could be commenced at junctions that are anticipated to be considered in detail in due course.

Agreed and Outstanding actions

1. SYSTRA to sign letter on access to SATURN model and return to NCC [post meeting note: SYSTRA issued the signed letter to NCC on 25th April and WSP confirmed that they were able to provide the model files on 26th April].
2. SYSTRA to prepare report setting out SATURN results for issue to NCC.
3. TPA to examine access rights for Milton Ham site with advice from legal team as appropriate.
4. TPA to provide LINSIG/Junction 9 files to NCC.
5. NCC to provide report regarding VISSIM model to SYSTRA for review [post meeting note: the report was provided to SYSTRA on 27th April 2017].
6. NCC to confirm agreement of the future forecast SATURN model.
7. TPA to finalise Person Trip Attraction Briefing Note and issue to NCC, HE and AECOM.
8. TPA to issue final version of Ancillary Trip Attraction note to NCC, HE and AECOM.
9. TPA to issue final version of Mode Share Briefing Note to NCC, HE and AECOM.

Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**9 May 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Martin Seldon (Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Andrew Snowden (TPA)** **Duncan Irons (SYSTRA)**
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley, Bond Dickinson and NCC**

Key issues / matter discussed

1. TPA provided recap of previous (April) meetings and agreements made, noting that these were held separately with HE and NCC.
2. TPA confirmed that the March meeting minutes had been agreed with NCC, although still awaiting response from HE / AECOM. AO'T to confirm that March meeting minutes are agreed.
3. AO'T confirmed that the VISSIM model of M1 J15 and J15A prepared by SYSTRA had been reviewed by others in AECOM and AO'T understood that it was acceptable, although was subject to review of the revalidation report. DI confirmed that SYSTRA would commence work on future forecast VISSIM model on this basis.
4. AOT also advised that the accompanying VISSIM revalidation report had not been reviewed. AO'T to review report and provide any comments.
5. AO'T queried whether the proposed improvements for M1 J15A could be provided to AECOM for review. TPA confirmed that it would provide this.
6. NCC queried whether any further consideration had been given to the impact of the proposed improvements on the access rights to the Milton Ham site (northeast of M1 J15A). TPA confirmed that this is currently being examined by the legal team.

<u>SATURN Modelling</u>

Draft and Strictly Confidential

7. DI provided an overview of the cordon area defined within which the impact of Rail Central would be considered, which had been provided to WSP. NCC advised that the area should be extended to include the A5/A508 Stony Stratford Roundabout. All parties confirmed that, with the noted amendment, the cordon area is appropriate and agreed. [post meeting note: a revised cordon area, including the A5/A508 Stony Stratford Roundabout, was issued to WSP on 9th May 2017]
8. DI provided overall overview of the modelling work undertaken with a mitigation scheme at M1 J15A in place.
9. It was noted that the proposed improvements result in a net reduction in rat-running through local villages, with more traffic using the A43, as intended.
10. NCC raised queries in relation to a reduction of flows on the ring road during the PM peak, and the rerouting of traffic through the residential estate between Upton Way and A4500. DI confirmed that the model results had not yet been reviewed in detail, although these are likely modelling quirks.

Study Area

11. Discussion regarding study area for detailed assessment work. Agreed that in defining the impact of Rail Central, change in flow and change in capacity should be examined together.
12. Noted that mitigation measures at junctions may result in a reduction of impact at other junctions on the network. Therefore agreed that detailed assessments would form a two phase assessment, with a first phase to be examined and mitigation entered into the model, with the second phase junctions being examined following this if necessary.
13. The agreed phase one and phase two junctions are as follows:

Phase One:

1) M1 J16
2) A4500 / Sandy Lane Relief Road
3) A4500 / Upton Way / Tollgate Way Roundabout
4) A5076 / A5123 / Upton Way Roundabout
5) M1 J15A
6) A5076 / Hunsbury Hill Road Roundabout
7) A5076 / Towcester Road / Tesco Roundabout
8) A45 Queen Eleanor Roundabout
9) A45 Brackmills Roundabout
10) A45 Barnes Meadow Interchange
11) A45 / A43 Roundabout
12) M1 J15
13) Site Access Roundabout
14) A43 / A5 Tove Roundabout
15) A43 Abthorpe Roundabout
16) A5 / A508 Stony Stratford Roundabout

Phase Two:

17) A5 / Daventry Road crossroads
18) A5 / A45 Crossroads
19) Upton Way / Telford Way Roundabout
20) Upton Way / High Street Roundabout
21) A4500 / Duston Road
22) A4500 St James Road / A428 Harlestone Road
23) A428 / Beckett's View
24) A508 Kingsthorpe Road / A5095 Kingsthorpe Grove
25) A508 Harborough Road / A5199 Welford Road
26) A508 Harborough Road / A5076 Holly Lodge Drive
27) A43 Lumbertubs Way / A5076 Talavera Way Roundabout

14. DI confirmed that SYSTRA would prepare a plan showing the study area for issue to HE / AECOM and NCC. [post meeting note: the study area plan was issued to HE / AECOM and NCC on 12th May 2017].

Other Matters

Draft and Strictly Confidential

15. TPA queried whether NCC were able to provide any information regarding the Northampton Gateway (Roxhill) scheme, in order to allow for a cumulative assessment to be carried out. NCC advised that this information would be available in August.
16. Discussion regarding M1 Smart Motorways Scheme, which is included within the SATURN modelling work undertaken to date. MS confirmed that the scheme is committed and due to commence in Spring 2018. MS to confirm via email. [post meeting note: MS has confirmed via email on 25th May 2017 that M1 J13-16 Smart Motorway Scheme is currently in design and construction is programmed to commence in Spring 2018].

Agreed and Outstanding actions

1. AO'T to confirm agreement of March meeting minutes.
2. AO'T to review VISSIM modelling report prepared by SYSTRA and provide any comments.
3. TPA to provide copy of M1 J15A improvement scheme to AECOM for review.
4. SYSTRA to provide study area plan for issue to HE / AECOM and NCC [post meeting note: study area plan issued on 12th May 2017].
5. MS to confirm status of M1 Smart Motorway Scheme [post meeting note: MS confirmed via email on 25th May 2017]
6. SYSTRA to prepare report setting out SATURN results for issue to NCC.
7. TPA to provide LINSIG/Junction 9 files to NCC.
8. NCC to confirm agreement of the future forecast SATURN model.
9. TPA to finalise Person Trip Attraction Briefing Note and issue to NCC, HE and AECOM.
10. TPA to issue final version of Ancillary Trip Attraction note to NCC, HE and AECOM.
11. TPA to issue final version of Mode Share Briefing Note to NCC, HE and AECOM.

Draft and Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**13 June 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Irene Echeverria (AECOM on behalf of Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Andrew Snowden (TPA)**
Apologies:	**Martin Seldon (Highways England)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley, Bond Dickinson and NCC**

Key issues / matter discussed

Meeting Minutes

1. AS confirmed that minutes of previous meetings in April and May were issued to HE and NCC on 12th May 2017. HE and NCC to review and provide comments as necessary.

SATURN Modelling

2. AS queried whether the forecast SATURN model has been signed off by NCC yet. NCC confirmed that it had not yet been signed off, but that this was expected imminently.
3. AO'T confirmed that AECOM and HE would not review the forecast SATURN model as it is NCC's model and that if NCC accept the model, HE will accept also, although they have reviewed the LMVR.
4. AS provided general update on progress with SATURN modelling. AS confirmed that previous SATURN model runs with mitigation at J15A had been reassessed due to model coding errors made by WSP. As a result the mitigation scheme was revised to provide additional capacity at the junction.
5. AS confirmed that following input of the amended junction, the SATURN outputs show similar results to those which were presented during the previous meeting (based on the incorrectly coded

Draft and Strictly Confidential

modelling), and therefore it was agreed that no changes to the study area were considered necessary.

6. AS confirmed that SATURN modelling would be discussed in more detail at the next meeting, when SYSTRA would be in attendance.

M1 J15A

7. AS tabled proposed mitigation scheme at M1 J15A and provided copies to both AECOM and NCC for review. AS advised that a digital copy would be issued following the meeting [Digital copy of drawings issued on 14th June 2017].
8. AS confirmed that the legal team has advised that Rail Central is not required to provide access to the Milton Ham site (north east of M1 J15A), provided we can demonstrate that an appropriate access is deliverable.
9. NCC queried whether access to the land to the south east of M1 J15A had been considered. AS confirmed that there is no current planning status for the site and that field access could be provided.
10. AO'T advised that landowners may object to the proposals if suitable access arrangements are not provided.

Construction Access

11. AS confirmed that construction access to the site would initially be via the existing left in, left out junction on the A43. Following this, a temporary left in, left out junction would be constructed to the north of the existing access, in order to allow construction of the proposed grade separated junction, in the location of the existing access. Once complete, the grade separated junction would be used for construction access, with the temporary access removed.
12. AS tabled the existing left in, left out and proposed temporary left in, left out junction arrangements and provided copies for review. AS advised that a digital copy would be issued following the meeting [Digital copy of drawings issued on 14th June 2017].
13. AO'T advised that the DfT circular does not differentiate between temporary and permanent accesses, and the proposed temporary access would therefore need to be justified as a new access onto the strategic road network. However, AO'T confirmed that she did not foresee any issues with this.
14. Discussion regarding routing of construction traffic and impact at Tove Roundabout, given access is left in, left out only. AS confirmed that TPA would provide construction traffic forecasts as soon as possible. AECOM and NCC also advised that a draft CTMP would be useful.

Other Matters

15. AS confirmed that emergency access would be provided onto Northampton Road for use by emergency services only. Site traffic would only be permitted access onto Northampton Road where the emergency services consider that it is necessary, and would not be an operator decision.
16. NCC noted that this explanation would be useful to allay public concerns regarding traffic on Northampton Road.
17. NCC queried the arrangements for access to the site during the British Grand Prix at Silverstone. AS confirmed that this would be examined within the Transport Assessment and Traffic Management Plan.
18. AS provided update on discussions with public transport officers at NCC and with local operators, noting that improvements may include increased frequency of existing services and a potential bespoke service along the A43 and entering the site.
19. NCC and AECOM requested that any proposed public transport improvements should not be entered into the SATURN model, as they consider that this would represent a robust assessment.
20. AS confirmed that TPA is currently examining accident records and identifying problem areas, further to comments raised by local residents in relation to junctions on the A43. NCC advised that TPA should liaise with John Spencer to discuss this in further detail.
21. NCC confirmed that data for the Northampton Gateway scheme is still, to the best of its knowledge, anticipated to be available in August.

Agreed and Outstanding actions

1. AO'T to confirm agreement of March meeting minutes.
2. AECOM and NCC to review April and May meeting minutes and provide any comments.

Draft and Strictly Confidential

3. TPA to provide digital copy of M1 J15A improvement scheme and construction access arrangements for review [Digital copy of drawings issued on 14th June 2017].
4. AECOM and NCC to review M1 J15A improvement scheme and construction access arrangements and provide any comments.
5. TPA to provide construction traffic forecasts and routing.
6. TPA to liaise with John Spencer regarding potential highway safety schemes.
7. SYSTRA to prepare report setting out SATURN results for issue to NCC.
8. NCC to confirm agreement of the future forecast SATURN model.
9. TPA to finalise Person Trip Attraction Briefing Note and issue to NCC, HE and AECOM.
10. TPA to issue final version of Ancillary Trip Attraction note to NCC, HE and AECOM.
11. TPA to issue final version of Mode Share Briefing Note to NCC, HE and AECOM.

Draft and Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Katie Stock TPA**
Share File ref:	
Date:	**27 June 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Irene Echeverria (AECOM on behalf of Highways England)** **Martin Seldon (Highways England)** **Rob Sim-Jones (NCC)** **Martin Draper (NCC)** **Duncan Irons (Systra)** **Michelle Berrington (TPA)** **Katie Stock (TPA)**
Apologies:	**Jethro Punter (NCC)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

1. DI set out issues and delay experienced with the SATURN model to date including problems around Daventry and HGV flows. DI confirmed that the HGV issue is across both the DM and DS scenarios and as such that there should be negligible change in the model outputs.
2. TPA explained the number of junctions that have been considered totals 38, comprising phase one and two previously agreed plus junctions identified by residents at Local Liaison Group meetings.
3. TPA set out the improvements proposed at J15a that had been previously provided to HE and NCC and explained how this draws traffic back to the junction from villages and the numbers of vehicles with and without the scheme. This shows a net benefit to nearby villages as rat-running is reduced. The J15a mitigation scheme is now included in the SATURN model.
4. RSJ queried whether the proposed mitigation scheme at J15a accounts for the Travis Perkins access. TPA confirmed that there is no existing access to maintain but that TPA have looked at schemes to ensure that access for Travis Perkins is not prejudiced. TPA confirmed that they are

Draft and Strictly Confidential

also looking into providing access in the location of the existing field access on the southern roundabout, but noted that there is no planning history or allocation associated with this land.

5. DI explained a spreadsheet prepared setting out differences in V over C and change in traffic flows at each of the junctions. It was agreed that the 2031 scenario was considered as a worst case scenario.
6. Junction 1 (M1 J16) – DI confirmed that traffic goes down across the whole junction in the AM peak. AO'T suggested that the difference would depend on the particular arm, and suggested that TPA consider queuing on the off-slips. AO'T agreed that the junction is unlikely to require mitigation.
7. Junction 2 (Sandy Lane relief road) – TPA set out that this junctions had been modelling using Linsig which demonstrates that saturation flows are forecast to be less than 90 percent. RSJ agreed that there is no need for mitigation, subject to evidence of capacity results.
8. Junction 3 (Tollgate Way / Upton Way) – DI set out that only one arm of the junction has an increase in flows of five percent. RSJ agreed in principle no mitigation required (see Junction 19).
9. Junction 4 (A5076 / A5123 / Upton Way) – TPA confirmed substantial changes in flows in this location and that a mitigation scheme has been prepared. Drawing 1211-80/PL04 was discussed and RSJ agreed that this was appropriate.
10. Junction 6 (Hunsbury Hill Ave) – TPA confirmed increase in traffic as a result of traffic redistributing to J15a and that a mitigation scheme has been prepared. Drawing 1211-80/PL06 was discussed and RSJ agreed that the scheme is acceptable in principle.
11. Junction 7 (Tesco roundabout) – DI set out that there is forecast to be an increase in flows in the AM peak, but decrease in the PM peak. RSJ queried whether the model includes the committed improvement scheme in this location and DI confirmed that if it is a committed scheme and on WSP's list then it will be included.
12. Junction 8 (Queen Eleanor) – DI confirmed a reduction in traffic in the AM and PM Peak. RSJ confirmed no mitigation is required as there is a net benefit.
13. Junction 9 (Brackmills) – DI set out limited change in V/C. RSJ confirmed that a detailed assessment will be required due to the increase in traffic on four out of five arms of the junction.
14. Junction 10 (Barnes Meadow) – DI confirmed maximum of 4.8 percent increase. RSJ suggested that it will depend on which arms are affected as to whether a detailed assessment and mitigation is required. TPA to provide development traffic flows in this location and DI to provide breakdown by arm.
15. Junction 11 (Lumbertubs roundabout) – DI confirmed that there is only a small increase at this junction. RSJ asked that a detailed assessment be carried out. TPA confirmed that this has already been completed which demonstrates that mitigation is not required. RSJ agreed.
16. Junction 12 (M1 J15) – DI confirmed general benefit across most of the junction. RSJ queried whether the model results consider queuing and AO'T confirmed that this would be required for the off-slips. TPA noted that this junction will be assessed using the VISSIM model also.
17. Junction 14 (Tove) – DI confirmed high flow increases due to the proximity to the site, J15a and redistribution. TPA set out the mitigation proposed and drawing 1211-80/PL14 was discussed. RSJ queried movements to/from the A5 north and TPA confirmed that traffic is redistributing due to the bypass south of Towcester.
18. Junction 15 (Abthorpe) – TPA confirmed that a mitigation scheme is proposed here and drawing 1211-80/PL15 was discussed. RSJ suggested that the existing bus stop and pedestrian crossing on Brackley Road should be reviewed in more detail given the proximity to the roundabout.
19. Junction 16 (Stony Stratford) – DI set out that the junction is at the very edge of the model and the reliability of outputs in this location should not be relied upon. RSJ confirmed that there is an existing issue at this junction and DI will review development flows only here to confirm requirements for mitigation.
20. TPA discussed the Phase Two junctions in turn. All phase two junctions were discussed in high level terms, but those with more detailed comments are outlined below.
21. Junction 19 (Upton Way / Telford Way / Walter Tull Way) – DI explained that it appears from the model that traffic is avoiding this location and rat-running through the adjacent residential area. RSJ suggested that this may have implications on Junction 3. DI will contact WSP to confirm.
22. Junctions 28 – 31 (A43 junctions south of site) – TPA confirmed that these junctions were raised at LLG meetings with potential highway safety issues. TPA have reviewed the highway safety records and these do not demonstrate that there is any problem, and also noted that HE recently implemented schemes in some of these locations. RSJ suggested that some improvements for capacity may be needed and suggested that TPA discuss with John Spencer. MS to confirm HE contact for safety team to inform discussions.

Draft and Strictly Confidential

23. Junctions 33 – 37 (town centre) – RSJ requested that development traffic numbers be provided for these locations. DI suggested that they were not locations previously requested by NCC for assessment. RSJ agreed.
24. Junction 38 (A5 / Brackley Road / Northampton Road) – RSJ confirmed that there are a number of improvement schemes in this location as part of planning conditions for local consent but none have been implemented. RSJ suggested that the effects of Tove and Abthorpe are considered first before reviewing this junction further.

VISSIM

25. AO'T requested that DI provides convergence and justification of changes to the model and flow changes. IE suggested that the same flows cannot be used to calibrate and validate the model. DI confirmed that additional flows had been obtained and these could be sent to HE. AO'T confirmed that she is still waiting for comments from HE on J15a design.
26. AO'T confirmed that additional detail is required for the site access GSJ including drainage, lighting, signage and lining, including Approval in Principle for the overbridges. TPA to progress.
27. TPA set out progress to date on the public transport strategy which has included a meeting with NCC and Stagecoach who have confirmed that a solution using the existing Northampton Road corridor and/or the A43 can be achieved. RSJ suggested that triggers are based on employee numbers to relate to patronage, and that a Service Level Agreement (SLA) is entered in to. TPA noted that this process had been agreed at DIRFT at that this would be considered further.
28. The emergency access on to Northampton Road and suggested bus stop improvements was discussed and TPA to send drawings to RSJ for review. [Post meeting note: these were provided to NCC on 28th June 2017].
29. The vehicular and pedestrian underpasses were discussed and RSJ suggested that the drawings are sent to Walter Merritt at NCC for approval in principle as it is a structures issue.
30. TPA advised that Bond Dickinson are drawing up a schedule of works for the DCO and that this would be sent to NCC and HE shortly to confirm that the details of the description of works is appropriate.
31. TPA confirmed the project programme of mid-August for completed draft ES chapters, including all modelling work and that agreement with HE and NCC is required by then.
32. TPA asked about the Roxhill site and cumulative assessment. RSJ suggested that they thought they were working to an August timescale and TPA confirmed that when this is available a cumulative assessment can be carried out.

Agreed and Outstanding actions

1. TPA to consider queuing on off-slips at M1 J15 and 16 (once SATURN modelling updated).
2. TPA to provide evidence of capacity results (once SATURN modelling updated).
3. DI / TPA to provide development traffic flows at Junctions 10 and 16 (once SATURN modelling updated).
4. TPA to consider the bus stop and pedestrian crossing at Junction 15.
5. DI to contact WSP regarding potential rat-running at Junction 19.
6. TPA to discuss need to safety schemes at A43 junctions with John Spencer.
7. MS to provide TPA with HE contact for safety team.
8. DI to provide justification of VISSIM model changes to HE.
9. TPA to provide additional details on the site access GSJ to HE.
10. TPA to send Northampton Road drawings to NCC for review *[post meeting note – drawings have been sent to RSJ]*
11. TPA to send underpass drawings to Walter Merritt for review.
12. TPA to send schedule of works to NCC and HE for agreement.

Draft and Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**11 July 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)**
	Irene Echeverria (AECOM on behalf of Highways England)
	Martin Seldon (Highways England)
	Mark Roxburgh (Highways England)
	Emma Stewart (Highways England)
	Rob Sim-Jones (NCC)
	Jethro Punter (NCC)
	Martin Draper (NCC)
	Duncan Irons (Systra)
	Matt Millard (Systra)
	Michelle Berrington (TPA)
	Andrew Snowden (TPA)
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Draft and Strictly Confidential

Key issues / matter discussed

Saturn Modelling

1. TPA / NCC confirmed that the forecast SATURN model had been signed off by NCC. AO'T confirmed that this is therefore agreed with HE also.
2. DI provided overview of amendments made to the model, noting that issues in relation to HGV flows and Daventry Development Link have now been resolved.

3. DI provided overview of revised model results, including flow difference, difference in volume to capacity ratio, and development flow through each junction within the agreed study area.
4. Discussion regarding each junction and whether further consideration is required. A summary of the outcome of this is as follows:

J1 Noted that on the westbound approach traffic flow had increased, but v/c had decreased, and this is likely as a result of the redistribution of traffic at the junction. AO'T confirmed that assessment would be required to determine the impact on the slip roads.

J2 Noted that no significant change in v/c and flows decrease overall across the junction. JP noted significant increase on Sandy Lane (S) and requested that this be considered in detail, as this is a key junction in the Northamptonshire Local Plan.

J3 RSJ noted that there are significant development flows at this junction but overall traffic flows decrease. Redistribution plots required to determine whether this is a result of the improvements at M1 J15A or due to development traffic displacing baseline traffic.

J4 Significant number of development trips and increase in traffic at junction. Detailed assessment required.

J5 Noted that following the improvements, this junction now accommodates approximately 1000 additional vehicles, a large part of which is not development related.

J6 Significant number of development trips and increase in traffic at junction. Detailed assessment required.

J7 Discussion regarding the relative impact of development, noting that flow difference is low but significant development trips use junction. NCC requested detailed capacity assessment.

J8 Net reduction in traffic at junction and noted that large scale improvement scheme is due to be implemented at the junction by third parties. Therefore, no further assessment work required.

J9 Noted that there are significant development flows at this junction but overall traffic flows decrease. Redistribution plots required to determine whether this is a result of the improvements at M1 J15A or due to development traffic displacing baseline traffic.

J10 Noted that there are significant development flows at this junction but overall traffic flows decrease. Redistribution plots required to determine whether this is a result of the improvements at M1 J15A or due to development traffic displacing baseline traffic.

J11 Noted that there are significant development flows at this junction but overall traffic flows decrease. Redistribution plots required to determine whether this is a result of the improvements at M1 J15A or due to development traffic displacing baseline traffic.

J12 Development trips through junction are low and overall traffic flow change is low or decreased through junction, although noted that there are significant increases in flow on M1 slip roads. Detailed assessment therefore required to determine impact of this.

J14 Significant number of development trips and increase in traffic at junction. Detailed assessment required.

J15 Significant number of development trips and increase in traffic at junction. Detailed assessment required.

J16 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

Draft and Strictly Confidential

J17 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J18 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J19 To be considered at Phase 2.

J20 To be considered at Phase 2.

J21 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J22 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J23 To be considered at Phase 2.

J24 Noted that there are additional development flows at this junction but overall traffic flows do not increase accordingly. Redistribution plots required to determine whether this is a result of the improvements at M1 J15A or due to development traffic displacing baseline traffic. To be considered at Phase 2.

J28 AO'T confirmed that mitigation schemes at this junction would be for safety purposes only, and it would not be desirable to improve capacity at this location.

J29 AO'T confirmed that mitigation schemes at this junction would be for safety purposes only, and it would not be desirable to improve capacity at this location.

J30 AO'T confirmed that mitigation schemes at this junction would be for safety purposes only, and it would not be desirable to improve capacity at this location.

J31 AO'T confirmed that mitigation schemes at this junction would be for safety purposes only, and it would not be desirable to improve capacity at this location.

J32 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J33 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J34 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J35 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J36 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

J37 Traffic flow changes and development trips at junction not considered significant. No further assessment required.

5. TPA and SYSTRA noted that the position of NCC and HE in relation to junction assessments is vastly different to that which was agreed at the previous meeting, and there has not been a material change in traffic flows to justify this.
6. TPA and SYSTRA also noted that assessment had been requested at junctions where traffic flows have increased by approximately 15 vehicles. TPA considered that this is not severe and is unreasonable to assess further, also noting that it would be difficult for the highway authority to justify any mitigation work at a junction where there is such a small increase in trips during examination.

Draft and Strictly Confidential

VISSIM Modelling

7. Discussion regarding VISSIM modelling work. TPA confirmed that it is necessary for the VISSIM model to accurately represent queue lengths for the purpose of presentation to third parties. SYSTRA confirmed that the changes were applied to the model to give a greater focus on the queue lengths and turning movements, and that both the original model prepared by AECOM and the updated model prepared by SYSTRA are in accordance with WebTAG guidelines.

M1 J15A

8. Discussion regarding M1 J15A. MR raised concerns over use of signalised T-Junctions on high speed roads, indicating that roundabouts are preferred if 85th percentile speeds are greater than 65mph. TPA noted that the junction has been designed in accordance with design standards and will be subject to a Stage 1 Road Safety Audit. TPA also noted that reduced speed limits and other warning signs could be implemented along with speed cameras to reduce speeds. MR advised that the speed limits could not be enforced, although TPA noted that there is a legal requirement to do so.
9. TPA also noted that the additional capacity provided by the current proposals provides a benefit across the wider highway network, and that roundabout (and signalised roundabout) options had been considered previously, but these did not provide sufficient operational capacity either in their current location or relocated. MR commented that his experience is that signalised roundabouts, particularly three-arm roundabouts, typically operate more efficiently than signalised T-Junctions. TPA to provide roundabout option assessments to MR for review. TPA confirmed that the proposed design is the best solution in capacity terms, and that HE's safety concerns could be alleviated.

A5 / A43 Tove Roundabout

10. MR commented that driver confusion is already an issue at this roundabout, particularly for those exiting Towcester Road towards the A43 SB. TPA queried whether HE would amend the design of the junction to address these existing issues. MR advised that HE does not have sufficient land available to make any further changes to the junction, and that the roundabout should be made bigger to accommodate extra lanes, if possible. TPA to consider this further.

A43 Abthorpe Roundabout

11. MR queried the feasibility of delivering an additional lane to the north, given the proximity of existing road and embankments to adjacent properties. TPA confirmed that topographical and GPR surveys are currently being arranged so that this could be considered further. MR advised that HE's stats drawings from the recent improvement works may be useful, and would provide these to TPA for review.

Other Matters

12. MR queried the level of HGV and car parking to be provided on site. TPA confirmed that parking would be provided for each unit in accordance with NCC standards for both HGVs and cars. There would also be a 149 space truck park provided for stopovers.
13. TPA confirmed that a Travel Plan is being prepared and would be submitted as part of the DCO application to support the sustainable operation of the site.
14. Discussion regarding method for input of traffic flows from SATURN into detailed junction assessments. SYSTRA to provide flow difference of actual vs modelled flow for an example junction so that a methodology can be agreed.

Agreed and Outstanding actions

1. TPA to consider queuing on off-slips at M1 J15 and 16 (once SATURN modelling updated).
2. TPA to provide evidence of capacity results.
3. TPA to provide roundabout option assessments for M1 J15A to MR for review.
4. TPA to give further consideration to proposals at Tove Roundabout.
5. MR to provide stats drawings for Abthorpe Roundabout to TPA for review.
6. SYSTRA to provide flow difference of actual vs modelled flow for an example junction.

Draft and Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**27 July 2017**
Venue:	**SYSTRA, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Irene Echeverria (AECOM on behalf of Highways England)** **Martin Seldon (Highways England)** **Mark Roxburgh (Highways England)** **Emma Stewart (Highways England)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Duncan Irons (Systra)** **Matt Millard (Systra)** **Michelle Berrington (TPA)** **Andrew Snowden (TPA)** **Rupert Lyons (TPA)**
Apologies:	**Rob Sim-Jones (NCC)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

Meeting Minutes

1. TPA confirmed that March meeting minutes now agreed. Recent discussions have taken place between TPA and AECOM regarding April meeting minutes. AO'T advised that her notes of the meeting indicated "Submission of drawings in May". TPA advised that this was not stated in its own meeting notes and the drawings had not been finalised at that stage, although noted that this was included within the May minutes.

Draft and Strictly Confidential

2. NCC confirmed that it would provide comments on the April and May meeting minutes during w/c 7th August, due to officers being on annual leave.

SATURN Modelling

3. DI provided overview of SATURN redistribution plots. DI noted that without mitigation at J15A traffic reroutes onto minor roads. DI confirmed that with mitigation at J15A, this traffic reverts back to the major roads including the A43 and Ring Road. DI also noted that there is a reassignment of traffic from M1 J15 and J16 to J15A after the mitigation scheme is implemented.
4. JP queried whether there is any traffic within the model that is unable to get through the network. DI confirmed that there is some small amount of traffic that is unable to get through the network (mainly along the ring road) due to the amount of congestion within the network, but that this was greatly reduced following updates carried out to the model early in the process.
5. DI confirmed that development related traffic is largely distributed along the major road network, with low levels of trips though Northampton Town Centre and to the north of Northampton.
6. DI confirmed that the mitigation at J15A is successful and provides a benefit for the whole network.
7. DI provided example methodology for determining turning counts by applying modelled growth to observed base counts. JP confirmed that this was acceptable in principle, but will review the example to confirm. DI confirmed that SYSTRA would provide a digital copy of the example, along with some additional text explaining each calculation step to assist. [post meeting note: example provided on 28th July 2017]

VISSIM Modelling

8. IE provided further comments on VISSIM model, advising that there are a number of route choice options unselected, which are potentially preventing the model from converging. IE confirmed that if these are addressed and the model converges, AECOM would approve the model.
9. Discussion regarding use of small connectors. IE and MR suggested that the number of these is excessive and may cause issues in forecast models. MM advised that these are necessary to better reflect driver behaviour, and that these corrected issues arising in the previous AECOM model such as vehicles using the incorrect lane on entry to the junction. [post meeting note: MM has provided further information to AECOM to confirm that the number of small connectors in SYSTRA's model is lower than those included within the original AECOM model].
10. DI advised that a sensible approach should be taken with regards to small issues such as this, as it is likely that changes would be required to the future forecast models in any case to address any driver behaviour issues that arise when more traffic is present.
11. Discussion regarding validation and whether the model should validate to observed queues. TPA advised that it is important that the model represents the current situation in terms of queuing to present to non-technical third parties. AO'T advised that this would therefore require separate models as they serve two different purposes. DI confirmed that this is not the case as the model prepared by SYSTRA still accords with WebTAG guidance.

M1 J15A

12. TPA provided overview of meeting carried out with Mark Roxburgh on 21st July 2017 to discuss the proposals at J15A. TPA confirmed that it had presented a speed reduction scheme to MR to accompany the T-Junction proposals.
13. TPA tabled two schemes (rough sketches) for introducing deflection into the T-Junction proposals, and noted that MR had confirmed that these would be acceptable, although MR would still want confirmation that a roundabout option cannot be provided in capacity or deliverability terms.
14. Discussion regarding access to Travis Perkins (TP) land. TPA confirmed that it is necessary to confirm that a suitable access is deliverable and queried whether HE would take the same stance in relation to signalised T-Junctions, should this be included to the north of M1 J15A. MR confirmed that he would be happier with a signalised T-Junction in that location as the changes to J15A and roundabout to the north highlight this as a different nature of link. MR also confirmed that the deflected northern T-Junction proposal at J15A would not be undermined by the presence of the TP access.
15. HE / NCC advised that the TP access should be included within the VISSIM model to determine its suitability, but is not required to be specifically included within the SATURN modelling.
16. Discussion regarding impact of Smart Motorways scheme. TPA confirmed that it is in discussion with HE's Smart Motorways team and understand that no changes are proposed to M1J15a. TPA also confirmed that its J15A proposals do not impact on the slip roads and therefore do not impact the Smart Motorways scheme.

Draft and Strictly Confidential

17. TPA set out next steps, advising that the deflected T-Junction proposals would be formally drawn up in CAD to determine the full extent of works required.
18. TPA confirmed that a meeting is arranged with MR on 18th August, by which time both HE and TPA would have drawings and modelling work finalised, with a view to reaching in principle agreement of a scheme for J15A at the TWG meeting on 12th September.

Junction Capacity Assessments

19. TPA queried when it would receive comments on the junction capacity assessments. AECOM confirmed that these would be provided tomorrow [post meeting note: these were provided on 28th July]. NCC confirmed that it would provide comments following RSJ's return from leave during w/c 7th August.

Programme and Timetable for Approvals

20. TPA confirmed that it is seeking to agree highway mitigation, in terms of the general arrangement, by 12th September. MR confirmed that HE typically have a 6 week turnaround time. ES also advised that she would need to speak to the individual asset team leads to gain detailed comments, and that it is unlikely that it would be possible to receive these by 12th September.
21. TPA confirmed that it would issue an approval tracker, so that all parties can be clear on what has been or is still to be approved. HE, AECOM and NCC confirmed that this would be useful.

Other Matters

22. Discussion regarding Statement of Common Ground. AO'T confirmed that this could be a short document with simple statements such as 'The Transport Assessment is common ground', as this would encompass any relevant technical notes and documents.
23. NCC confirmed that data is still expected to be received from Roxhill for the Northampton Gateway scheme in August, to enable a cumulative assessment to be carried out.
24. Discussion regarding how the cumulative assessment would be dealt with, noting that there is potential for two different mitigation schemes to be proposed at the same junctions, and the authorities would need to make a judgement on which is to go ahead. TPA also noted that there is some work to be done to determine whether a full build-out of both schemes is a realistic scenario, due to rail capacity constraints, and that this affects what a cumulative assessment would contain.
25. TPA advised that HE and NCC should seek advice from PINS as to how best assess the suitability of any cumulative assessment.

Agreed and Outstanding actions

1. NCC to provide comments on April and May minutes during w/c 7th August.
2. SYSTRA to provide a digital copy of the example, along with some additional text explaining each calculation step to assist. [post meeting note: example provided on 28th July 2017].
3. TPA to formally draw up the deflected T-Junction proposals in CAD.
4. TPA and HE to finalise drawing and modelling work of M1 J15A in time for meeting on 18th August.
5. AECOM to provide comments on junction capacity assessments [post meeting note: these were provided on 28th July].
6. NCC to provide comments on junction capacity assessments during w/c 7th August.
7. TPA to issue an approval tracker to all parties.

Draft Only Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**08 August 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)**
	Irene Echeverria (AECOM on behalf of Highways England)
	Martin Seldon (Highways England)
	Mark Roxburgh (Highways England) via phone
	Emma Stewart (Highways England) via phone
	Rob Sim-Jones (NCC)
	Jethro Punter (NCC)
	Martin Draper (NCC)
	Duncan Irons (Systra)
	Michelle Berrington (TPA)
	Andrew Snowden (TPA)
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

Junction Capacity Assessments

1. TPA confirmed that it had received comments from AECOM on the junction assessments, although comments are still awaited from NCC.
2. TPA advised that further junction assessments for the remaining phase one junctions would be issued shortly [post meeting note: these were issued on 9th August].
3. TPA noted that AECOM had confirmed agreement of the flow calculation methodology provided by SYSTRA. NCC also confirmed that this is agreed.

Draft and Strictly Confidential

M1 Junction 15A

4. MR advised that a roundabout solution had been devised which performs better than signalised T-Junctions. TPA queried whether further details, such as a sketch drawing, could be provided for review. MR advised that this is not available as yet.
5. TPA queried whether any comments on the design of J15A would be provided by NCC, noting that none had been provided so far. RSJ confirmed that it would be reviewed once fixed with HE, and only comment to date is in relation to providing access to the Travis Perkins land. RSJ confirmed that NCC would be led by HE on the junction design and did not foresee any fundamental changes.
6. TPA queried whether access to Travis Perkins land is included within HE's modelling. MR confirmed that it is not currently included as it is assumed that it would be a separate junction to the north. MR confirmed that this would need to be considered in detail in due course.
7. RSJ queried whether any roundabout solution would be able to retain access to the Travis Perkins land. TPA advised that this would be subject to modelling.

Meeting Minutes

8. AO'T confirmed that the revised April and May minutes provided by TPA are acceptable, and will confirm via email [post meeting note: AO'T confirmed via email on 8th August].
9. NCC confirmed that April minutes are agreed and will respond in due course on May and June minutes.

VISSIM Modelling

10. IE confirmed that the level of convergence and calibration of the VISSIM model is agreed, although the revised revalidation report is required for review. DI advised that this would be provided shortly [post meeting note: revalidation report issued on 8th August]. IE confirmed that the VISSIM model can be signed off within a week of receipt of the revalidation report [post meeting note: AECOM confirmed that the VISSIM model is fit for purpose on 11th August].

Other Matters

11. TPA confirmed that it is moving forward with a cumulative assessment of the Northampton Gateway site based on the information that is currently available within the public domain.
12. NCC confirmed that it has reviewed the flow information and approvals tracker spreadsheet provided previously and has some queries and amendments. NCC confirmed that it will update the approvals tracker spreadsheet along with some associated commentary [post meeting note: NCC provided update approval tracker on 11th August]. NCC advised that the changes include approximately 15 phase one junctions to be assessed and a couple of junctions in phase two.

Agreed and Outstanding actions

1. NCC to provide comments on junction capacity assessments.
2. TPA to provide further junction assessments for review [post meeting note: these were issued on 9th August].
3. AO'T to confirm agreement of April and May meeting minutes via email [post meeting note: AO'T confirmed via email on 8th August].
4. NCC to provide comments on May and June minutes.
5. SYSTRA to issue revised VISSIM revalidation report [post meeting note: revalidation report issued on 8th August]
6. AECOM to confirm acceptance of the VISSIM model [post meeting note: AECOM confirmed that the VISSIM model is fit for purpose on 11th August]
7. NCC to provide updated approvals tracker with its comments [post meeting note: this was provided on 11th August].

Draft and Strictly Confidential

Meeting Note

Rail Central Northamptonshire

Originators (Name and Company):	**Craig Rawlinson TPA**
Share File ref:	
Date:	**10 November 2015**
Venue:	**Riverside House, Northampton**
Attending (Name and Company):	**Martin Seldon – Highways England (HE)** **Aoife O'Toole – AECOM** **Rob Sim-Jones – Northamptonshire CC (NCC)** **Jethro Punter – NCC** **Mark Draper – NCC** **Craig Rawlinson - TPA** **Andrew Snowden - TPA**
Apologies:	**Steve Pearce – HE**
Client / TA circulation:	**Ashfield Land (AL)** **Turley Associates (TA)**
Circulation:	**Those present plus AL, TA and Bond Dickenson**

Key issues / matter discussed

1. First full meeting of 'Transport Working Group'.
2. Comments on Draft Briefing Note 1 (Forecast Employee Numbers) by HE and NCC as follows:

    (i) Structure of report considered appropriate in principle;

    (ii) Clarification sought on employment densities. Is it operational capacity at any one time or total jobs over 24 hours? TPA confirmed it is considered to be total jobs over 24 hours and this is consistent with other DCO applications. TPA will confirm with project team;

    (iii) Employment densities for rail-served and rail-connected were discussed as these are identified separately. HE and NCC view is that the MDST assumptions are too optimistic and not in line with other DCO applications. TPA will confirm with project team; and

    (iv) Phasing of employee numbers should be introduced, which considers the fact that rail-connected and the associated lower densities, should only be applied once the rail head is in-situ. TPA to discuss potential phasing with the team.

3. Comments on Draft Briefing Note 2 (Working Patterns) as follows;

    (i) Discussion on Chapter 3 'General Attendance Patterns' and whether it is reasonable to assume temporary staff will be contracted-in when employees are on leave or are sick. HE stated this hasn't been assumed on other DCOs and AECOM does not consider that it should be applied. TPA consider that absenteeism is a relevant parameter at this stage and will confirm with project team. Also should assume it will operate on Bank Holidays (para 3.3);

    (ii) Discussion on Chapter 4 'Working Patterns Using First Principles' and whether Brackmills is an appropriate proxy to assess spread of Occupational Groups, as it is considered to have a significant office proportion. TPA suggested the Pro-Logis technical note could give a more standardised set of proportions for Occupational Groups. Magna Park was also raised as a possibility. It was noted by all that proportions may not be possible to assess specifically in relation to rail 'connected schemes but it was considered by all that the proportions are not likely to be significantly different. TPA to consider occupational groups with project team and specifically Turley Associates;

    (iii) TPA queried whether HE can provide any thoughts on different approach if data on working patterns is not ultimately acceptable to it. HE will compare with what was done for East Midlands Gateway (one of the latest schemes reviewed by HE); and

    (iv) Confirmation sought on whether HGV drivers will be based at the site and therefore create their own car trips to their 'place of work' and also numbers of rail-specific employees whom are not connected with the warehouse uses (TPA noted other schemes had very low numbers of these at around 15). TPA to confirm.

4. TPA confirmed the project is currently being progressed with a lorry park and ancillary facilities.

5. NCC expressed (again) its desire to avoid/minimise employee car trips on Northampton Road, but it supports sustainable travel trips (bus etc) on this corridor. HE expressed its view that employee car trips exclusively using the trunk road network 'junction hopping' is not desirable. TPA suggested impacts on local junctions once assessed, will help steer the best strategy; and that all options need to be left open at this stage.

Agreed actions

1. TPA to confirm queries on technical notes; and
2. HE to confirm whether it would prefer an alternative approach that does not consider working patterns.

Meeting Note

Rail Central Northamptonshire

Originators (Name and Company):	**Michelle Berrington TPA**
Share File ref:	
Date:	**1 December 2015**
Venue:	**The Cube, Birmingham**
Attending (Name and Company):	**Martin Seldon – Highways England (HE)** **Aoife O'Toole – AECOM** **Rob Sim-Jones – Northamptonshire CC (NCC)** **Jethro Punter – NCC** **Martin Draper – NCC** **Craig Rawlinson - TPA** **Michelle Berrington - TPA**
Apologies:	**Steve Pearce – HE**
Client / TA circulation:	**Ashfield Land (AL)** **Turley Associates (TA)**
Circulation:	**Those present plus AL, TA and Bond Dickenson**

Key issues / matter discussed

1. TPA advised that the ES scoping exercise was ongoing.

2. TPA confirmed that the comments received from HE and NCC on the Draft Briefing Notes were currently being considered by the team and that the notes would be updated and re-issued by mid-December. It was agreed that the meeting scheduled for January would be used in part to consider any outstanding issues and agree them. TPA confirmed that the reports would continue with the First Principles approach, with some assumptions remaining until a later date.

3. It was agreed that the NCC area wide model should be used to determine the distribution of employees to the development site, if possible. This could be undertaken initially using the current area wide model following improvements to local validation. It was considered by HE / NCC that population growth in the area would be sufficient to serve the development and that the area wide model was appropriate to model the distribution of workers associated with it.

4. Discussion regarding modelling;

a. NCC confirmed that the area wide model will need a local validation exercise in the area of the proposed development to provide finer detail of the highway network in that locality.
b. JP to provide plan of network coverage and a link to the Local Model Validation Report (LMVR) for review.
c. TPA to liaise with Milly Parveen of WSP (which maintains the model) regarding the validation required.
d. NCC advised that the area wide model is currently being updated. A programme for completion was not available. It was agreed that the current model (once local validation is completed) could be used in advance of the updated model.
e. HE confirmed that the area wide model is agreed with the strategic highway authority.
f. NCC to confirm whether an interim design year for the new model will be developed and also to confirm whether the current design year is 2031.

5. HE considered that rail connections to the site could only be made from 2026 onwards. TPA to provide information regarding rail connectivity options. Further, TPA to consider phasing with the team and the description of development which will then be assessed in the transport submissions. It was confirmed by TPA in the meeting that the site is not reliant upon the completion of HS2 for rail connections. [Post meeting note: agreements are already in place with network rail for connections from the railway line].

6. Further information was requested by HE / NCC regarding the freight traffic forecasts. TPA to provide, once obtained from the team.

7. HE confirmed that the proposed access junction from the A43(T) had been provided to A1+ for an initial review and this would identify whether they considered that there were any 'show stoppers'. It was reconfirmed that the principal of a new grade separated junction for the development was previously agreed with Jonathan Price of Highways England.

8. TPA tabled the draft red line plan for comment from authorities as currently proposed to be submitted to PINS as a starting point. Initial comments received that the redline may need to include the A43 junction towards Abthorpe.

9. TPA tabled a plan providing details of the traffic count data which had been undertaken to date by the consultant team. It was considered that some of this data may be useful in the local validation exercise. TPA to confirm that the surveys were not undertaken during school holidays.

10. TPA confirmed that the HCA had confirmed that the employee densities were based on a full 24 hour period as opposed to a single shift, and that they are likely to change slightly. This will be submitted in an updated technical note (see 2 above)

Agreed actions

1. TPA to updated the notes and issue mid-December;
2. NCC to provide network plan and LMVR link to area wide model;
3. TPA to liaise with WSP regarding local area validation updates to the area wide model;
4. NCC to provide completion programme for updated area wide model;
5. NCC to confirm design years for new area wide model;
6. TPA to provide information regarding rail connectivity programme, phasing and description of development;
7. TPA to provide further information regarding freight traffic forecasts;
8. HE to provide feedback from A1+ on the access design;
9. HE / NCC to provide comments on the draft redline plan as appropriate;

Meeting Note

Rail Central Northamptonshire

Originators (Name and Company):	**Michelle Berrington TPA**
Share File ref:	
Date:	**12 January 2016**
Venue:	**Riverside House, Northampton**
Attending (Name and Company):	**Rob Sim-Jones – Northamptonshire CC (NCC)** **Jethro Punter – NCC** **Martin Draper – NCC** **Aoife O'Toole – AECOM** **Matt Jopp - AECOM** **Craig Rawlinson - TPA** **Michelle Berrington - TPA**
Apologies:	**Steve Pearce – HE** **Martin Seldon - HE**
Client / TA circulation:	**Ashfield Land (AL)** **Turley Associates (TA)**
Circulation:	**Those present plus AL, TA and Bond Dickenson**

Key issues / matter discussed

1. AO requested an amendment to the minutes of the November Transport Working Group TWG. Item 3(i) has subsequently been amended and the minutes issued to the TWG.

2. TPA advised that the project is progressing within the development team, but that some items are taking more in depth analysis than originally expected. TPA suggested that it may be prudent to postpone the meeting scheduled for February on this basis and TPA to advise in due course.

3. TPA agreed that the Framework Assessment Methodology as set out in the Technical Notes is appropriate, acknowledging that some of the finer detail will come forward in due course. AECOM stated that they would prefer for the Framework Assessment Methodology to make reference to the four stage transport model going forward from now.

4. AECOM and NCC requested one central case to be taken forward for their purposes, with accompanying sensitivity assessments. AECOM requested that the assessment years should meet the requirements of Circular 02/2013.

5. General discussion on the briefing notes as follows:

    a. AECOM requested comparisons with other freight facilities as a logic check. TPA noted that these were already included within the notes provided (eg DIRFT, East Midlands, Radlett etc);
    b. TPA confirmed that the B1 land-use identified is ancillary to the B8 uses;
    c. TPA to investigate further with the HCA the employee density trends, the proportions of office space, the reasons for the changing densities, and whether the data includes or excludes absenteeism (TPA noted absenteeism is inherent in TRICS data and currently consider it is appropriate on a first principles assessment). AECOM suggested that HCA is best placed to advise if absenteeism is captured in the HCA employment density figures and to advise on any other assumptions included;
    d. Shift patterns to be considered further by the development team. AECOM suggested that shift patterns will vary in the source data and that a robust assessment should be used in the absence of a planning condition being agreed;
    e. TPA to review assumptions on GIA to GEA and where possible use actual proposed GEA;
    f. TPA advised that the truck-stop facility would be for use by occupiers only and therefore would not generate its own traffic movements. AECOM advised that a planning condition would be required to secure this, otherwise the likely trip generation of this facility would need to be included for a robust assessment;
    g. TPA reconfirmed that the HGV traffic distribution will be derived from the National Freight Model;
    h. TPA reconfirmed that the distribution of employees would be derived from the NCC SATURN model as previously agreed;
    i. The TWG team agreed that TRICS data did not appear to be as suitable as other sources of data, although AECOM and NCC commented that TRICS data should be compared to trip rates at other RFI's and a clear explanation provided for any notable differences;
    j. TPA advised that the team is progressing the socio-economic assessment and this work will inform the transport elements and whether Brackmills is appropriate, or not;
    k. It was agreed that the mode share will need to take account of existing travel characteristics along with Travel Plan measures noting that RSJ advised in previous meetings [post meeting note: Meeting on 5th May 2014] that demand for non-car access would be high owing to the economical nature of the transport modes. AECOM advised that modal share is assessed at the opening year (fully operational) of the site, with reference to Circular 02/2013 and the scenario will need to be robustly evidenced. AECOM confirmed that the use of the distribution to inform mode share is suitable;
    l. TPA advised that once the distribution is completed within the SATURN model this will be used to inform the likely mode share;
    m. TPA to consider arrival and departure profiles for employees more fully to include departures in the morning peak and arrivals in the evening peak. TPA confirmed this work is ongoing. AECOM suggest that this work is only undertaken if there is robust evidence to suggest different profiles would be likely;

6. AECOM advised that Highways England have provided a formal response on the ES Scoping note.

7. AECOM requested that modal shift (thereby reducing vehicular trips) for travel planning measures is not applied to the likely trip generation from the site. NCC indicated it would take a similar view. TPA noted paragraph 33 of Circular 02/2013. However, AECOM confirmed its view that the paragraph of the Circular is never applied. TPA noted that is not its experience of a Circular.

8. AECOM advised, with reference to Circular 02/2013, that an assessment of the final phase of development at its year of opening will be expected for the SRN, along with an assessment ten years after registration of the application or the plan end period for information purposes. NCC will require an assessment of the impact of development at the plan end period.

Agreed actions

1. TPA to advise on the need for the February meeting;
2. TPA to investigate further with the HCA the available data;
3. Shift patterns to be considered further by the development team;
4. TPA to provide updated masterplan when available including GEA information;
5. TPA to consider arrival and departure profiles for employees more fully to include departures in the morning peak and arrivals in the evening peak.

Outstanding Actions from Previous Meetings

6. TPA to provide information regarding rail connectivity programme, phasing and description of development;
7. TPA to provide further information regarding freight traffic forecasts;
8. HE / NCC to provide comments on the draft redline plan as appropriate; [post meeting note, can TPA assume that HE and NCC have no comments to make?]

Meeting Note

Rail Central Northamptonshire

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**10 March 2016**
Venue:	**Colmore Plaza, Birmingham**
Attending (Name and Company):	**Martin Seldon – Highways England (HE)** **Aoife O'Toole – AECOM** **Matt Jopp - AECOM** **Rob Sim-Jones – Northamptonshire County Council (NCC)** **Jethro Punter – NCC** **Martin Draper – NCC** **Michelle Berrington - TPA** **Andrew Snowden - TPA**
Apologies:	**None**
Client / TA circulation:	**Ashfield Land (AL)** **Turley Associates (TA)**
Circulation:	**Those present plus AL, TA and Bond Dickenson**

Key issues / matter discussed

1. TPA provided an update on the progress of the scheme to date, including details of the latest site masterplan with an overview of the rail and express freight provisions.

2. TPA also outlined the intention to provide separate Truck Park and Truck Stop facilities. TPA advised that the Truck Park would act as a 'waiting area' for HGV's waiting for their delivery slot or restrictions on driving hours etc., whilst the Truck Stop would include facilities such as accommodation, showers and cafe for HGV drivers. TPA advised that both the Truck Park and the Truck Stop would be restricted for use by vehicles associated with Rail Central only.

3. NCC advised that there is a need for truck stops locally, particularly along the A43 corridor, and asked that we consider making the truck stop facility available for public use.

4. AECOM queried where the first level of security would be. TPA advised that security would be located so that any vehicles who turn into the site by mistake have sufficient space to turn around without impacting on the highway network and that the Truck Stop facility will have security.

5. TPA tabled the proposed culvert design at Northampton Road, which would prevent the need for access at this point for HGVs and provide uninterrupted traffic flow on Northampton Road.

6. NCC advised that the structural details of the proposed culvert would need to be reviewed by NCC with findings reported to the Inspector. TPA to provide structural details alongside preliminary designs in order for NCC to review.

7. TPA advised that the Briefing Notes have been updated and reflect the four stage transport model, as requested by AECOM. TPA aim to provide these to NCC, HE and AECOM by the end of the week, subject to a meeting with the Client team.

8. TPA advised that the results of the SATURN modelling and the GB Freight Model (from MDS Transmodal) will form part of the trip distribution element of the four stage transport model. Therefore, the briefing notes to be provided will consider the four stage model up to that point.

9. TPA confirmed that it has contacted the HCA, which clarified that the employment densities guide does not account for absenteeism, therefore TPA's assessments will continue to take this factor into account.

10. TPA tabled two option drawings for ghost island right-turn lanes on Northampton Road, to facilitate access for employees only.

11. TPA confirmed that an initial run of the NCC SATURN model has been obtained from WSP to determine the distribution of traffic. TPA advised that this initial assessment included the site as a single zone with three access points (one on A43 and two on Northampton Road) within the model in order to establish the number of vehicles which would desire to use Northampton Road to access the site.

12. TPA confirmed that the intention is for the two proposed junctions on Northampton Road to provide access to car parks for employees only, the capacity of which would limit the amount of vehicles that could be expected to use Northampton Road, along with other measures such as RPZs. TPA suggested that this could be managed through the use of parking passes, for example.

13. NCC expressed concerns over the workability of this and suggested that occupiers would be unwilling to sign up to this system. NCC also suggested that the employees at distribution centres are transient in nature and it would therefore be difficult to implement any access restrictions.

14. NCC requested examples of other distribution centres where restrictions on who can use different access points is in place.

15. NCC suggested that SATURN model should be run with only a single access onto the A43. AECOM agreed with this and stated that TPA would need to demonstrate to local residents that access onto Northampton Road is required.

16. AECOM queried the public transport strategy for the site. TPA advised that this was being progressed and are due to discuss this with the client as to whether buses can enter the site. AECOM commented that some units are around one kilometre away from Northampton Road.

17. TPA outlined the current programme for submission, with an anticipated opening year of the first phase of development of around 2021. TPA also advised that current forecasts are for a 7.5 year build-out period, with full build-out therefore being in 2028. Further detail to be provided in due course.

18. NCC advised that the future assessment year should be 2031, in line with the local plan period, and NCC's SATURN model to be used to assess this.

19. TPA confirmed that public consultations are due to be carried out in April / May 2016.

20. TPA advised that the next TWG meeting (in April) will provide an update on the ongoing modelling work being undertaken, including preliminary results in order to form a platform for discussion of off-site mitigation works required. It would also include discussions in preparation for the upcoming public consultations. TPA also advised that the TWG in May would provide feedback from the public consultations.

21. HE and AECOM advised that previous meeting minutes should be issued prior to each meeting, and suggested that a written log should be kept indicating each party's acceptance of the minutes.

Agreed actions

1. TPA to provide updated briefing notes, subject to client comments;
2. TPA to discuss the public transport strategy for the site with the client team;
3. TPA to discuss with client team the possibility of allowing public use of the truck stop facility;
4. TPA to research examples of distribution centres which have restrictions to the use of access points;
5. TPA to reconfirm with AECOM, HE and NCC that previous meeting minutes are agreed;
6. Future meetings to be timetabled and agreed one week in advance whether the meeting is going ahead.

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**05 April 2016**
Venue:	**Colmore Plaza, Birmingham**
Attending (Name and Company):	**Martin Seldon – Highways England (HE)** **Aoife O'Toole – AECOM** **Michelle Berrington - TPA** **Craig Rawlinson - TPA**
Apologies:	**Rob Sim-Jones - NCC** **Jethro Punter - NCC** **Martin Draper - NCC**
Client / TA circulation:	**Ashfield Land (AL)** **Turley Associates (TA)**
Circulation:	**Those present plus AL, TA and Bond Dickenson**

Key issues / matter discussed

1. TPA provided an update on the progress of the scheme to date, including details of the latest site masterplan with an overview of the rail and express freight provisions.

2. TPA confirmed that strategic modelling work was being undertaken by WSP running the model on NCC's behalf. TPA provided a summary of the modelling scenarios being undertaken and how they represented a very much worst case scenario.

3. TPA tabled SATURN plots of changes in traffic flows between the Do Minimum and Do-Something scenarios. It was noted that larger changes in traffic flows were experienced on the A43(T) in the vicinity of the site, the M1 and the ring road.

4. TPA confirmed that the modelling scenarios run were as follows:

    a. all development access being taken from the A43(T) and
    b. a scenario including 400 employee vehicles accessing the site from Northampton Road.

CONFIDENTIAL

5. TPA discussed the forthcoming public consultations and provided information regarding extent and location of the events.

6. TPA tabled potential highway mitigation schemes for the trunk road network. This included mitigation schemes for M1 Junction 15a. A scheme was presented including an offside merge on the south bound A43(T). Aecom confirmed that such similar schemes were evident at other locations and that there was not an in principle objection, subject to thorough analysis and highway design review.

7. HE confirmed that the Smart Motorways scheme is being taken forward by HE and their consultants. MB to investigate timescales and implications for highway capacity on the SRN.

Agreed and outstanding actions

1. MB to investigate timescales and proposals for Smart Motorways on the M1 Junctions 13 to 16.

2. TPA to provide updated briefing notes, subject to client comments – update – work ongoing;
3. TPA to discuss the public transport strategy for the site with the client team – update – work ongoing
4. TPA to discuss with client team the possibility of allowing public use of the truck stop facility – update – being considered by client team;
5. TPA to research examples of distribution centres which have restrictions to the use of access points - ongoing;
6. TPA to reconfirm with AECOM, HE and NCC that previous meeting minutes are agreed – update - schedule being produced.

CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Michelle Berrington TPA**
Share File ref:	
Date:	**03 May2016**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Martin Seldon – Highways England (HE)** **Aoife O'Toole – AECOM** **Rob Sim-Jones – NCC** **Jethro Punter – NCC** **Martin Draper – NCC** **Debraj De – Highways England** **Ian Dunning - Amey** **Michelle Berrington - TPA** **Craig Rawlinson - TPA**
Apologies:	**None**
Client / TA circulation:	**Ashfield Land (AL), Turley Associates (TA)**
Circulation:	**Those present plus AL, TA and Bond Dickenson**

Key issues / matter discussed

1. TPA provided a summary on the scheme proposals (particularly for DD and ID's benefit) including advice that the public consultation PEIR (Pre Environmental Impact Report) considers a proposal of up to 8msqft of B8 Warehousing and Distribution. TPA agreed to provide a copy of the Transport PEIR document to attendees for review along with a masterplan to DD and ID for their records.

2. DD and ID provided a summary of the RIS scheme being progressed by Highways England for Junctions 13-16 of the M1. The scheme is to be a 'Smart Motorway Scheme'. This, as opposed to a 'managed motorway' scheme, will provide an additional running lane of capacity at all times of the day, rather than just at peak times. The hard shoulder will 'run' at all times, ie four lanes at 70mph.

3. DD and ID confirmed that it is expected that the scheme will be 'fixed' by the end of 2016 with detail design commencing from March 2017 onwards. It is also expected that construction will begin in

CONFIDENTIAL

early 2018 with an anticipated build programme of 32 months. Potential conflict with construction of the M1 scheme and construction of the site works was discussed. This will need to be considered further by TPA. ID advised that there may be potential for TPA to feed into the HE design process should a Development Consent Order be granted with a view to modifying the scheme to account for the development. ID noted that road works on the HE's network can no longer be more than 10km in length in any one section. ID advised that this therefore might permit the section around J15a-15 to be constructed at an appropriate time when linked to the potential granting of a DCO.

4. MB enquired about improvements being undertaken to slip roads and what improvements are being proposed across the network. ID confirmed that at some locations, including J15a of the M1 departures and relaxations from standards will be required. Some improvements are being proposed although these are not yet fixed.

5. DD and ID advised that modelling work in support of the scheme proposals is being undertaken by AECOM, with Ian Bamforth of the Chesterfield office being the modelling contact. It was agreed that it would be appropriate for TPA to undertake preliminary discussions with the AECOM modelling team to understand the work being undertaken. MB to action.

6. DD advised that a series of Technical Notes have been produced to consider scheme options for Junctions 13-16 of the M1 Smart Motorway Scheme. DD to confirm whether these can be issued to the TWG team for review.

7. The SATURN modelling programme was discussed. JP and RSJ confirmed that Smart Motorways between junctions 13-16 is not included in the SATURN model. JP advised that the inclusion of the now committed Smart Motorway scheme had the potential to delay completion of the SATURN validated model. Presently it is envisaged the SATURN model will be ready at the end of the summer. It was noted that following the meeting on the 16th May, further information on the programme may be available.

8. TPA advised that refinement of the trip attraction calculations is ongoing and that an updated technical note would be provided shortly. This is using the four stage transport model as requested by AECOM.

9. MS agreed to investigate the current A43(T) road closure operations during the three days of the British Grand Prix at Silverstone. It was noted that there was the potential for the section of the A43(T) to the development access to remain open as the proposed grade separated junction provides opportunity for other vehicles to U-turn at this location.

10. It was noted that RSJ has stated that the use of microsimulation models is not required for the local highway network and that SATURN and traditional junction modelling tools are appropriate. AO'T confirmed that for the HE's network, it may be a requirement to provide a microsimulation model of junction 15a of the M1.

11. Initial public consultation feedback was provided by CMR. Generally he advised that main topic areas of discussion were:

    a. emergency access onto Northampton Road;
    b. impacts during the British Grand Prix; and
    c. access to the site and traffic impact.

12. JP / RSJ to confirm whether Northampton Road is a Freight Route for the county.

13. TPA tabled a number of potential highway improvement schemes for J15a, J15, Queen Eleanor Roundabout, Towcester Road / Ring Road junction. RSJ noted that the Queen Eleanor roundabout is being funded through the Growth Management Strategy and the junction will be improved by NCC.

CONFIDENTIAL

14. The timetable for submission was discussed, with TPA advising that a consent order application is envisaged at the end of this year / early next year.

Agreed and Outstanding actions

1. TPA to undertake preliminary discussions with the AECOM modelling team regarding M1 J13-16;
2. DD to confirm whether scheme option Technical Notes can be issued to the TWG team for review;
3. MS to investigate the current A43(T) road closure operations during the British Grand Prix at Silverstone;
4. TPA to provide updated briefing notes, subject to client comments – update – work ongoing;
5. JP / RSJ to confirm whether Northampton Road is a Freight Route for the county.
6. TPA to discuss the public transport strategy for the site with the client team – update – work ongoing
7. TPA to research examples of distribution centres which have restrictions to the use of access points - ongoing;
8. TPA to reconfirm with AECOM, HE and NCC that previous meeting minutes are agreed – update - schedule being produced.

CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Michelle Berrington TPA**
Share File ref:	
Date:	**14 June 2016**
Venue:	**Riverside House, Northampton**
Attending (Name and Company):	**Rob Sim-Jones – NCC** **Jethro Punter – NCC** **Martin Draper – NCC** **Martin Seldon – Highways England (part) (HE)** **Aoife O'Toole – AECOM** **Craig Rawlinson - TPA** **Michelle Berrington - TPA**
Apologies:	**None**
Client / TA circulation:	**Ashfield Land (AL), Turley Associates (TA)**
Circulation:	**Those present plus AL, TA and Bond Dickenson**

Key issues / matter discussed

1. TPA provided a summary of the public consultation and the transportation issues raised during the events. Overall it was noted the following recurring themes were prevalent during the events: rat running on local roads, the impact of the development on the areas of Milton Malsor and Blisworth, the operation of the M1 motorway, the impact on Northampton Road and the impact during the Silverstone annual motor-racing event.

2. TPA provided a brief summary of the development of the scheme and the likely GFA to be developed on site. TPA advised that the current masterplan indicates that around 7.5msqft would be developed on site but that for a robust assessment current transport work allows for up to 8msqft of development. HE and NCC advised that the assessments undertaken need to demonstrate that there is a linkage between the masterplan being developed and the development/ floor area assessed.

3. It was discussed that there was a potential option to use the old SATURN demand model to undertake some assessment work in support of the scheme. MB to discuss this with Mily Parveen.

CONFIDENTIAL

4. The upgrading of the SATURN model was discussed and a suggested area of survey data, including the survey specification was provided. This was reviewed by the attendees. It was discussed that Richard Ryan within NCC is the current data manager and could be contacted regarding the surveys for assistance.

5. The potential for a temporary at-grade access solution from the A43(T) was discussed, with TPA indicating that they would be keen to demonstrate that an at-grade solution would be appropriate for some construction and early phases of development. MS advised that HE would be hesitant to accept an at grade solution given that it is intended that the A43(T) will form part of the HE's network of Expressways which was announced in the RIS 2014. MS provided background to the scheme and the overall aspirations noting that it is proposed that all at-grade junctions along the link will be upgraded to Grade Separated junctions. TPA enquired how the additional capacity could be accounted for in the modelling work being undertaken. However, it was noted that although there is commitment for the scheme, the timetable has yet to be defined and therefore the capacity to be provided cannot be included within the modelling to be undertaken. On the basis that the scheme is in early infancy, TPA advised that they would consider temporary at-grade solutions at this location and discuss with HE.

6. TPA noted that it is important to have discussions with public transport officers and agreed to contact John Ellerby in this regard.

7. AO'T requested that early consideration be given to conditions and obligations.

8. The issue of perceived rat running through the villages of Milton Malsor and Blisworth was discussed. TPA advised that given local opinion on the issue, TPA is keen to consider environmental enhancement of the villages to deter rat running. RSJ confirmed that he was not adverse to the idea but would need convincing via the presentation of draft improvement schemes which would need to account for the fact that Northampton Road is a bus route. TPA to progress.

Agreed and Outstanding actions

1. All to consider requirements and obligations;
2. TPA to develop environmental enhancement schemes for the areas of Milton Malsor and Blisworth;
3. TPA to contact John Ellerby regarding the public transport strategy to be developed;
4. TPA to consider a temporary at-grade solution for the access point from the A43(T);
5. DD to confirm whether scheme option Technical Notes can be issued to the TWG team for review;
6. TPA to provide updated briefing notes, subject to client comments – update – work ongoing;
7. JP / RSJ to confirm whether Northampton Road is a Freight Route for the county;
8. TPA to discuss the public transport strategy for the site with the client team – update – work ongoing
9. TPA to research examples of distribution centres which have restrictions to the use of access points - ongoing;
10. TPA to reconfirm with AECOM, HE and NCC that previous meeting minutes are agreed – update - schedule being produced.

CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Michelle Berrington TPA**
Share File ref:	
Date:	**02 August 2016**
Venue:	**Rivershill House, Northampton**
Attending (Name and Company):	**Jethro Punter – NCC** **Martin Draper – NCC** **Aoife O'Toole – AECOM** **Martin Seldon – Highways England (HE)** **Craig Rawlinson - TPA** **Michelle Berrington - TPA**
Apologies:	**Rob Sim-Jones - NCC**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

1. Noted that all previous minutes agreed and a series of PDF's to be issued to the Transport Working Group [post meeting note – PDF minutes issued].
2. TPA noted that it was agreed with the team that a vehicular access from Northampton Road would at this time not be taken forward. This had been agreed with the wider team following comments received from the community on this issue. It was noted by TPA that the decision was not taken on highway capacity grounds. Pedestrian and cycle access would be maintained from Northampton Road along and consideration would be given to the use of proposed emergency access points;
3. Construction access from the A43(T) was discussed and it was noted that there is an existing left in / left out access onto the A43(T) to/from the site. It was agreed that a left in / left out access from the A43(T) could be used for site construction purposes;
4. JP noted that a preliminary review of the Briefing Note had been undertaken by NCC and the initial feedback was that NCC considered that the use of the average of the three approaches did not seem like an appropriate way forward. Further comments to be received by NCC shortly. AECOM and HE to provide comments.

Agreed and Outstanding actions

CONFIDENTIAL

1. All to consider requirements and obligations;
2. NCC and HE to provide comments on the Briefing Notes submitted on the 27th July 2016;
3. TPA to develop environmental enhancement schemes for the areas of Milton Malsor and Blisworth – post meeting note draft's completed and will be provided to NCC for review.

CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Michelle Berrington TPA**
Share File ref:	
Date:	**06 September 2016**
Venue:	**Aecom, Birmingham**
Attending (Name and Company):	**Matt Jopp – AECOM** **Martin Seldon – Highways England (HE)** **Rob Sim-Jones – NCC** **Jethro Punter – NCC** **Martin Draper – NCC** **Craig Rawlinson - TPA** **Michelle Berrington - TPA**
Apologies:	**Aoife O'Toole – AECOM**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

1. TPA provided a summary of the ongoing development of the scheme and the S47 formal consultation due to close at the end of September. MS confirmed he believed that HE has been formally consulted.
2. The access arrangements for pedestrians, cyclists, public transport users, cars and HGVs was discussed, noting that it was now agreed that access from Northampton Road would be restricted to pedestrians and cyclists and during emergency's only. This was welcomed. It was agreed that TPA would provide some wording for consideration as to the definition of an 'emergency' in the context of the emergency access points.
3. General discussion about the Briefing Notes and a discussion centred around the email drafted by Matt Jopp and received by TPA post meeting on the 06th September. It was noted that some further evidence was requested by both NCC and HE in relation to the approach adopted but that there was a general preference for the first principles assessment to be taken forward. This was despite there being significantly less queries about the comparable facilities trip rates (DIRFT, EMGSRFI and Radlett) or the Pineham Park methodology. TPA agreed to consider the comments received and respond with amendments to the note or a response via email.

CONFIDENTIAL

4. Discussion regarding HGV trip attraction and it was noted that the information relating to this will be provided in separate Briefing Notes which will also demonstrate the validity of the approach to be adopted alongside a First Principles assessment for comparison purposes.
5. JP confirmed that the model major SATURN model update is on course to be completed early to mid-October.
6. AECOM confirmed that the microsimulation model of junctions 15 and 15a of the M1 is now completed. It was noted that prior to release it would be beneficial for this to be approved by Highways England's TAME team. TPA to contact Martin Seldon to request access to the model.
7. Minutes of the previous meeting in August to be issued to the team.

Agreed and Outstanding actions

1. All to consider requirements and obligations;
2. TPA to develop environmental enhancement schemes for the areas of Milton Malsor and Blisworth – post meeting note draft's completed and will be provided to NCC for review;
3. TPA to provide updated briefing notes, subject to client comments – update – work ongoing;
4. TPA to contact Martin Seldon to understand timescales for the provision of the VISSIM model of M1 J15 and J15a.

CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**22 September 2016**
Venue:	**Systra, Birmingham**
Attending (Name and Company):	**Martin Seldon – HE** **Aoife O'Toole – AECOM** **Matt Jopp – AECOM** **Rob Sim-Jones – NCC** **Jethro Punter – NCC** **Martin Draper – NCC** **Duncan Irons - Systra** **Craig Rawlinson - TPA** **Michelle Berrington – TPA** **Andrew Snowden – TPA**
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

1. TPA provided a summary of the revised trip attraction briefing note, following comments received from NCC and HE at the previous meeting on 6th September and the subsequent email from MJ on the same day.
2. TPA confirmed that, following legal advice, the first principles trip attraction values are to be taken forward have been selected in order to provide a precautionary assessment. TPA confirmed that the 'similar facilities' and Pineham Park methodologies should provide comfort that this is the case.
3. NCC and HE confirmed that they were happy with the final trip attraction values stated within the note. AO confirmed that they were of the order anticipated based on experience of similar schemes AO confirmed that she would provide final comments on the note by end of following week.
4. TPA confirmed that MDS Transmodal has prepared notes relating to the GB Freight Model and a first principles assessment of the HGV trip attraction. TPA also confirmed that they would seek some slight amendments to provide further clarity on certain aspects of this, and would circulate to the TWG following this.

CONFIDENTIAL

5. TPA confirmed that MDS Transmodal will attend the October TWG meeting to discuss and agree HGV trip attraction.
6. Discussion regarding modelling methodology report, which DI clarified was intended for the benefit of all parties including third parties and the examination panel.
7. AO confirmed that she will review and provide any comments by end of following week on behalf of HE.
8. Discussion regarding the methodology for the site access to be used within the SATURN model. It was agreed that as there is an existing junction design which has already been modelled within ARCADY, VISSIM and the previous SATURN model, this would be appropriate to use within the new SATURN model.
9. DI noted that since the modelling methodology report was prepared, TEMPRO version 7 has been released, and questioned whether this would be used within SATURN as opposed to version 6.2. NCC advised that this would need to be confirmed with WSP. [Post meeting note: WSP has confirmed to JP that the updated model will use TEMPRO 7]
10. JP stated that he had been advised by WSP that the SATURN model may underestimate modal shift to Public Transport. DI noted that this is often the case with schemes of this kind which may use demand responsive services rather than typical public services, and advised that this should be supplemented with a manual exercise. NCC agreed that this would be an appropriate way forward. HE did not disagree with this approach.
11. AO advised that HE would need the modelling to be carried out fully in accordance with the DfT Circular 02/2013 (Opening year with full development scheme and full local plan allocations). DI confirmed that a realistic opening year assessment would also be required (i.e. only including allocated developments up to 2021) for environmental purposes. NCC acknowledged that this would be necessary, but re-confirmed that they would only be interested in a 2031 assessment for highway purposes. [Post meeting note: AO has clarified that Circular 02/2013 requires an assessment at the opening year with committed developments and the full development scheme, but not full local plan allocations. AO also confirmed that HE will require a 2031 future year assessment]
12. NCC confirmed that committed infrastructure schemes and timescales for delivery are contained within the Infrastructure Delivery Plan, although these may need updating. TPA suggested that it would be beneficial to agree a list of infrastructure schemes and timescales for delivery to be used in the forthcoming modelling work, especially for 2021 and possibly for an interim assessment year.
13. Discussion regarding the potential expressway scheme on the A43. MS advised that delivery of the scheme may be in 2040 and there is therefore no need to take account of it in the Rail Central modelling.
14. MS advised that the M1 J16-13 smart motorways is still being progressed and currently due to be completed in 2021. TPA confirmed that following legal advice, modelling would be carried out both with and without the M1 scheme in place.
15. DI advised that he would prepare a revised version of the modelling methodology report following the comments raised and recirculate. [Post meeting note: DI circulated a revised note on 22nd September]
16. All parties confirmed that they had no comments on the draft meeting minutes for August and September meetings that were circulated prior to the meeting.
17. MS advised that he is not aware of the Interim Advice Note on walking and cycling being published yet, although he would confirm.
18. AO to schedule monthly meetings on the first Tuesday of the month in Birmingham.

Agreed and Outstanding actions

1. TPA to provide updated trip attraction briefing note;
2. TPA to provide MDS Technical notes on GB Freight Model and HGV Trip Attraction;
3. AO to review trip attraction briefing note and provide any comments by end w/c 26th September
4. DI to provide update modelling methodology report [Post meeting note: DI circulated a revised note on 22nd September]
5. AO to review modelling methodology report and provide any comments by end w/c 26th September [Post meeting note: AO provided comments on 26th September]
6. TPA to issue finalised meeting minutes for August and September TWG meetings [Post meeting note: finalised meeting minutes issued on 26th September]
7. MS to confirm whether IAN on walking/cycling has been published
8. AO to schedule monthly meetings on the first Tuesday of the month in Birmingham

CONFIDENTIAL

CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**04 October 2016**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM)** **Martin Seldon (Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Duncan Irons (SYSTRA)** **Michelle Berrington (TPA)** **Andrew Snowden (TPA)** **Mike Hatfield (MDS)** **Chris Wright (MDS)**
Apologies:	**Matthew Jopp (AECOM)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

1. TPA confirmed that draft minutes of the previous meeting had been issued. NCC and AECOM advised that they have not yet reviewed these.
2. MS confirmed that the IAN relating to walking and cycling is due to be published in October 2016.
3. NCC and AECOM confirmed that they have no further comments on the Briefing Note regarding person trip attraction, and that the person trip attraction is therefore accepted.
4. TPA confirmed that it will finalise the briefing note including updated trip calculations to account for a reduced development size of 7.5M sqft. MDS to also revise its technical notes to account for the reduced development size.
5. NCC confirmed that it would be discussing the planning data (regarding committed and allocated developments and infrastructure scheme) with its Transport Planning team to determine the level of development anticipated by 2021. NCC confirmed it would issue a list of committed development

CONFIDENTIAL

schemes and infrastructure schemes, including likely build out proportions at 2021, by mid-late w/c 17th October.

6. AO confirmed that the test in accordance with the DfT Circular 02/2013 would require a 2021 assessment including all sites with planning permission, but not to include any sites that are allocated. AO also confirmed that TEMPRO growth factors would provide suitable levels of traffic growth from the build-out of local plan allocations at 2021.
7. DI confirmed that on this basis, this provides a realistic reference case for 2021 assessments, and there would therefore be no need for an additional environmental reference case.
8. NCC confirmed that they only require a 2031 assessment for highway purposes, although interim years may be required if a phased infrastructure delivery is sought.
9. TPA reconfirmed that all scenarios would be assessed both with and without the M1 Smart Motorways scheme in place.
10. Discussion regarding the ownership of survey data that TPA has provided for SATURN model validation, and whether this can be made available to third parties. TPA to discuss with Client team, noting potential timescale impacts of this. NCC will also discuss this issue internally.
11. MH provided overview of the GB Freight Model and the three technical notes prepared by MDS.
12. Discussion regarding how the GB Freight Model assigns traffic onto road or rail, and how it accounts for rail network capacity.
13. Discussion regarding HGV traffic forecast methodology and whether a 70% share of NDC's on the site was reasonable. CW confirmed that the rail connection of the site was more likely to attract NDC's and MH confirmed that DIRFT is almost entirely NDC's, therefore applying 70% share of NDC's provides a robust assessment. NCC advised that assumptions should be backed up with evidence where possible. MDS also confirmed that there would be no discernible difference between rail served and rail connected warehousing in terms of their likelihood to be NDC's rather than RDC's.
14. Discussion regarding hourly profile of HGV trips based on Swan Valley trip rates and whether this is an appropriate comparator. MDS confirmed that this was also checked against trip rates at Hams Hall SRFI.
15. NCC questioned whether rail timings would result in a more 'peaky' flow of HGVs than displayed in the notes.MH confirmed that the typical operation of SRFI's is such that goods are not transferred directly from rail to road, rather they are stored on site first before being loaded onto a HGV within its allocated time slot. This therefore leads to a flatter profile of HGV movements. MH also noted that the average dwell time of goods at deep sea ports is two days.
16. DI suggested it would be useful for NCC and HE to undertake a site visit to an existing SRFI to observe the operation. MH advised that MDS can arrange a visit to an SRFI in Widnes, which is a relatively recently constructed SRFI and therefore is likely to operate in a similar way to Rail Central.
17. Agreed that HGV traffic would be entered into the SATURN model in order to accurately reflect the impact of any road congestion, and MDS to provide an OD matrix from the GB Freight Model for this purpose.

Agreed and Outstanding actions

1. TPA to finalise the Person Trip Attraction briefing note and issue w/c 10th October.
2. MDS to revise technical notes to reflect 7.5M sqft
3. NCC to issue planning data mid-late w/c 17th October.
4. TPA to discuss ownership of survey data in SATURN model with Client team.
5. MDS to provide evidence of assumptions used in technical notes.
6. TPA to discuss potential for site visit with Client team.

CONFIDENTIAL

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**10 November 2016**
Venue:	**SYSTRA, Birmingham**
Attending (Name and Company):	**Duncan Irons (SYSTRA)**
	Martin Seldon (Highways England)
	Aoife O'Toole (AECOM)
	Matthew Jopp (AECOM)
	Rob Sim-Jones (NCC)
	Jethro Punter (NCC)
	Martin Draper (NCC)
	Michelle Berrington (TPA)
	Andrew Snowden (TPA)
	Mike Hatfield (MDS)
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

1. TPA and MS discussed requirements for access to Highways England land for topographical and ecological survey purposes. TPA queried whether there is any existing topographical survey information or as-built drawings available. MS to confirm.
2. All parties stated that minutes of the previous meeting are agreed. TPA to issue final version of previous minutes.

Trip Attraction Briefing Note

3. AO'T indicated that additional clarification was required at paragraph 3.21 to confirm that first principles based assessment is broadly similar to DIRFT and Radlett methodologies during the peak periods.

Draft and Strictly Confidential

4. TPA confirmed that mode share of the total person trips is still to be agreed with the Authorities.
5. TPA to update the notes to reflect the comments above.
6. NCC and HE confirmed that after completion of items 3 and 4 above, the updated briefing notes, approach and methodology and the total person trips are agreed.

HGV Trip Attraction Technical Notes

Warehouse Function Technical Note

7. MH clarified various methods of desk-based research undertaken to inform the warehouse function technical note. NCC requested that this clarification should be detailed in the notes.
8. Discussion regarding split of NDCs and RDCs assumed at Rail Central, compared to Swan Valley, DIRFT and Magna Park. MH confirmed that 70/30 split is considered robust in the context of these.
9. NCC noted that Swan Valley has 63/37 split of NDC/RDC and that for consistency purposes (given the person trip attraction note uses data from Swan Valley) consideration should be given to using the 63/37 split for HGV forecasting purposes. DI suggested that a sensitivity test of this could be carried out. MH confirmed that this may slightly increase HGV trip attraction.
10. MH gave explanation of difference between NDCs and RDCs in operational terms, and why this is important in determining HGV trip attraction.
11. MH to update Warehouse Function Technical Note to reflect the above.

Site Traffic Forecasts

12. MH confirmed that freight movements are assigned on a postcode district level, with additional local refinement to account for the retail floor space in each postcode district, to ensure a robust assessment. This was agreed as appropriate.
13. MJ queried whether there would be any potential for sub-letting of HGVs and whether this has been accounted for in the calculations. MH confirmed that back loading of HGVs has been considered within the technical notes presented previously.

SATURN Modelling

14. JP confirmed that NCC will not allow for the whole SATURN model to be provided to third parties. DI clarified that TPA is not seeking to have a copy of the model itself, but to the specific files that would allow TPA to prepare bespoke outputs. TPA to provide further clarification on what it is seeking so that NCC may consider this further.
15. Discussion regarding costs for running the SATURN model. TPA to provide further clarification of what is required, so that NCC may confirm whether this is included in the quoted costs.
16. NCC confirmed that it has compiled a list of committed and allocated development and infrastructure schemes to be delivered by both 2021 and 2031, using information from the Joint Core Strategy, annual monitoring reports and the Infrastructure Delivery Plan. NCC is currently awaiting information from the Joint Planning Unit in order to finalise this. AECOM confirmed on behalf of HE that it would agree with NCC's conclusions in relation to committed developments and allocations, including the timing of the delivery of these.
17. JP to circulate to team urgently.
18. AO'T confirmed that AECOM (on behalf of HE) would review the infrastructure proposed for the trunk road network and the associated timings for delivery for the SATURN model. All other aspects of the SATURN model are accepted by AECOM on behalf of HE, including its acceptability for use in this DCO application.

Environmental Enhancement Schemes

19. RSJ advised that the Road Safety team have raised concerns over the proposed schemes, and that TPA should liaise directly with John Spencer to agree upon an appropriate scheme.

M1 J15A

20. Discussion regarding traffic surveys at M1 J15A and checks carried out by AECOM. TPA confirmed that it considers the traffic surveys carried out are an appropriate representation of a typical day,

PRIVILEGED & CONFIDENTIAL

although did not follow the logic of the checks carried out using TEMPRO. MJ confirmed that the checks provide AECOM (on behalf of HE) sufficient comfort that the surveys are acceptable.

21. MJ confirmed that the VISSIM model at M1 J15 and J15A would not be subject to TAME approval, although they consider that it is entirely satisfactory for their purposes. Third parties should satisfy themselves that the model is suitable for them to use for their intended purpose.
22. NCC confirmed that they would accept the VISSIM model being developed by AECOM on behalf of HE for use on applications and the Rail Central DCO and that an audit of the model was not required.
23. MJ confirmed that the model would be available to third parties shortly (within a few days). TPA to formally request MS for access to the model via email.
24. MJ confirmed that VISSIM 5.4 and PCMOVA would be required to run the model.
25. TPA queried whether it may be a possibility for AECOM to run the model on behalf of TPA, similar to the way WSP is running the NSTM on TPA's behalf. AECOM advised that this would likely be a conflict of interest.
26. DI queried whether there was any preference in how flows are inputted into the VISSIM model from SATURN. AECOM advised that they will discuss this with their strategic modellers and provide confirmation to TPA/DI.

Adjacent Site

27. NCC confirmed that Roxhill will be required to follow the same modelling process and assessment approach as Ashfield Land in pursuing its DCO application (eg. using the updated 2016 NSTM)
28. NCC also confirmed that both sites may be required to carry out a cumulative impact assessment. TPA requested Roxhill's traffic data in order to carry this out, although NCC advised that they were not able to provide this and suggested direct exchange of data between Roxhill and Ashfield Land. TPA advised that this would be unlikely and that an option might be to apply TPA's calculations to the Roxhill site. NCC and AECOM on behalf of HE confirmed that this would be acceptable. TPA confirmed that it would take further advice on this issue.

Other Matters

29. MS confirmed that the Interim Advice Note regarding cycle traffic on the SRN has now been published, and would circulate shortly [post meeting note: MS has now circulated IAN 195/16]

Agreed and Outstanding actions

1. MS to confirm whether there is any existing topographical survey information or as-built drawings available for M1 J15A.
2. TPA to issue final version of previous minutes.
3. TPA to update the briefing notes to reflect comments raised at the meeting.
4. MH to update Warehouse Function Technical Note to reflect comments raised at the meeting.
5. TPA to provide further clarification on what it is seeking with regards to access to the SATURN model and the ability to derive bespoke outputs, so that NCC may consider this further.
6. TPA to provide further clarification of what outputs are required from the SATURN model, so that NCC may confirm whether this is included in the quoted costs.
7. NCC to urgently provide list of committed and allocated developments and infrastructure schemes.
8. TPA to liaise with John Spence regarding Environmental Enhancement schemes.
9. TPA to formally request for access to the model via email to MS.
10. AECOM to discuss method of inputting flows from SATURN into VISSIM with their strategic modellers.

DRAFT Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**12 September 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)**
	Irene Echeverria (AECOM on behalf of Highways England)
	Martin Seldon (Highways England)
	Mark Roxburgh (Highways England)
	Emma Stewart (Highways England)
	Rob Sim-Jones (NCC)
	Jethro Punter (NCC)
	Martin Draper (NCC)
	Rupert Lyons (TPA)
	Michelle Berrington (TPA)
	Andrew Snowden (TPA)
Apologies:	
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Bond Dickinson**

Key issues / matter discussed

M1 Junction 15A

1. TPA provided an overview of the pre-meeting held immediately prior to this TWG meeting with MR.
2. TPA outlined the new proposed option for M1 Junction 15A, which includes two signalised roundabout junctions and widening of the structures beneath the M1 to provide 4 lanes in each direction.
3. MR confirmed that he is happy with the overall junction design from a geometrical and capacity perspective, subject to some minor amendments.

Draft and Strictly Confidential

4. RSJ queried whether the proposals made any provision for pedestrians and cyclists. MR confirmed that in this location, the canal towpath is typically used instead, and that it would be preferable to avoid any interaction between pedestrians, cyclists and vehicles at the junction, as far as possible.
5. TPA outlined the alternative option for M1 Junction 15A, which includes a signalised roundabout at the north and a signalised T-Junction at the south.
6. MR confirmed that he is also happy with this option from a geometrical and capacity perspective, subject to some minor amendments.
7. HE confirmed that an Approval in Principle would be required in advance of the DCO submission to cover the structural elements.

Junction Assessments

8. TPA provided overview of junction assessments carried out for existing junction layouts.
9. TPA confirmed that the models had been amended to take account of the comments raised previously by NCC and HE in relation to the junction assessments.
10. Based on the results of the modelling, HE and NCC confirmed the following, subject to review of the junction assessments:
    a. Junction 1 – No severe impact on M1 slip roads in the 2021 Do Something (DS) scenario compared to 2021 Do Minimum (DM). NCC noted significant increase in queuing on A45 in the 2031 DS scenario compared to 2031 DM. TPA advised that the arm is already significantly over capacity in the DM scenario, and that Rail Central does not materially affect its capacity. The increase in queuing is likely due to the limitations of any junction model, once a junction exceeds capacity, to fully represent likely queuing. NCC advised that its policy is that where a junction is already over capacity, developments should demonstrate nil detriment.
    b. Junction 2 – The junction operates within capacity in the 2031 DS scenario, and it is therefore not considered necessary for any mitigation to be applied.
    c. Junction 3 – The 2031 DS scenario shows a material impact in comparison to the 2031 DM scenario. Mitigation is required.
    d. Junction 4 – The 2031 DS scenario shows a material impact in comparison to the 2031 DM scenario. Mitigation is required.
    e. Junction 6 – The 2031 DS scenario shows a material impact in comparison to the 2031 DM scenario. Mitigation is required.
    f. Junction 7 – The 2031 DS scenario shows a material impact in comparison to the 2031 DM scenario. Mitigation is required.
    g. Junction 8 – Previously agreed with HE and NCC that no mitigation is required.
    h. Junction 9 – 2031 DS scenario shows slight improvement in operation compared with DM scenario, and that there is no material change to queues on A45 slip roads in the 2021 scenario. TPA therefore considered that no mitigation is necessary. NCC queried why DS performs better than DM and whether there is an issue with redistribution. TPA confirmed that redistribution plots were previously provided by SYSTRA and reviewed by NCC. The DS likely performs better than the DM due to the changes in traffic flows resulting in a different optimisation of the signals. JP to review redistribution plots.
    i. Junction 10 – The 2031 DS scenario shows a material impact in comparison to the 2031 DM scenario. Mitigation is required.
    j. Junction 11 – Junction assessment is still to be completed. MR noted that HE is currently examining the potential for a new signal crossing at this junction, which may affect any mitigation proposals.
    k. Junction 12 – DS scenario shows impact on A45 and M1 off slip. Mitigation is required, likely focussed on these two approaches.
    l. Junction 14 – The 2031 DS scenario shows a material impact in comparison to the 2031 DM scenario. Mitigation is required.
    m. Junction 15 – The 2031 DS scenario shows a material impact in comparison to the 2031 DM scenario. Mitigation is required.
    n. Junction 16 – Previously agreed with HE and NCC that no mitigation is required.
    o. Junction 19 – This was brought forward from phase two to phase one at the request of NCC. The junction operates within capacity in the 2031 DS scenario, and it is therefore not considered necessary for any mitigation to be applied.
    p. Junction 20 – This was brought forward from phase two to phase one at the request of NCC. The junction shows a material impact in the 2021 DS scenario compared to 2021 DM, although

Draft & Strictly Confidential

the impact at 2031 is negligible. This is to be considered further to determine whether mitigation is appropriate.

Other Matters

11. HE and NCC noted that phase two consultation had been cancelled and requested that they be kept up to date with any changes in the project programme.
12. NCC queried whether any walking and cycling schemes are proposed. TPA confirmed that these are currently being examined, and would be discussed with NCC in due course. MR requested that he also be involved with those discussions.

Agreed and Outstanding actions

1. TPA to provide junction assessments for review [post meeting note: these are currently being prepared as a series of technical notes for each junction].
2. NCC to provide comments on May and June minutes.

Draft and Strictly Confidential

Meeting Note

Rail Central Northamptonshire

STRICTLY CONFIDENTIAL

Originators (Name and Company):	**Andrew Snowden TPA**
Share File ref:	
Date:	**14 November 2017**
Venue:	**AECOM, Birmingham**
Attending (Name and Company):	**Aoife O'Toole (AECOM on behalf of Highways England)** **Irene Echeverria (AECOM on behalf of Highways England)** **Martin Seldon (Highways England)** **Emma Stewart (Highways England)** **Rob Sim-Jones (NCC)** **Jethro Punter (NCC)** **Martin Draper (NCC)** **Rupert Lyons (TPA)** **Andrew Snowden (TPA)** **Duncan Irons (SYSTRA)**
Apologies:	**Mark Roxburgh (Highways England)**
Client / TA circulation:	**Ashfield Land (AL), Turley**
Circulation:	**Those present plus AL, Turley and Womble Bond Dickinson**

Key issues / matter discussed

1. TPA provided overview of work carried out since previous meeting. It was noted that following a review of the information published by Roxhill in relation to the Northampton Gateway scheme, and previous advice provided by HE and NCC, the scope of works required to mitigate the impact of Rail Central could be significantly reduced in comparison to the previous position.
2. TPA tabled a revised scheme at M1 J15A which, whilst still mitigating the impact of Rail Central and encouraging some drawback of baseline traffic, is greatly reduced in scale and cost in comparison to the previously presented schemes.
3. TPA confirmed that it had met previously with MR to discuss the revised scheme, and MR confirmed that it appeared acceptable, subject to review of the modelling for the southern junction. [Post-

Draft and Strictly Confidential

meeting note: MR has subsequently confirmed by email that the proposed design at the southern junction performs better than a conventional signalised roundabout].

4. TPA tabled a poster presenting the difference between the operation of the existing and proposed M1 J15A in each of the scenarios assessed, demonstrating that the proposed scheme would more than mitigate the impact of Rail Central, and will have a beneficial impact on the wider network as a result.
5. TPA confirmed that the existing junction operation is based on ARCADY assessments, rather than VISSIM, although DI confirmed that the VISSIM model also shows the junction to be highly congested at 2021.
6. IE requested copy of the ARCADY outputs for review. TPA confirmed that these would be provided. [Post-meeting note: these were provided on 6th December]
7. TPA confirmed that the latest SATURN modelling run had been completed which included mitigation at J15A along with 10 other junctions (DS4 scenario).
8. DI provided an overview of the DS4 vs DM flow change plots. These show that more traffic uses the major routes of the A43 and M1, with less traffic on minor roads. There is also more traffic shown using the ring road as a result of the improvements proposed at those junctions.
9. RSJ queried whether there are any issues with link flow capacities, particularly along ring road and A43. TPA and DI noted that link capacities are inherently built into the SATURN model, and that traffic would reroute away from links that are over capacity.
10. Discussion regarding the overall impact of the mitigation and noted that at some locations the proposed mitigation draws in additional traffic, resulting in an increase in V/C compared to the DM. TPA confirmed that it would look in more detail at these junctions to determine the appropriateness the mitigation scheme, and whether there is an over-mitigation.
11. AO'T requested 2021 outputs, as these are what HE would require Rail Central to mitigate. DI confirmed that these would be provided.
12. AO'T queried the project programme. TPA confirmed that this is dependent on being able to confirm that the highways package is ready for phase two consultation.
13. TPA confirmed that a package of information in relation to the proposed mitigation would be provided to HE and NCC one week prior to the next TWG meeting on 12th December for discussion. [Post-meeting note: the mitigation package was issued to HE and NCC for review on 6th December].
14. DI advised that a note had been issued to AECOM in relation to the VISSIM modelling, and changes made to this in the future forecast scenarios. DI requested a meeting with AECOM to discuss this next week. AO'T advised that she would check her diary for availability.
15. JP queried whether further consideration had been given to pedestrian and cycle links to the site. TPA confirmed that this is being examined, and a note regarding this would be included with the highways mitigation package to be issued in advance of the next TWG meeting. [Post-meeting note: this was issued to HE and NCC for review on 6th December].

Agreed and Outstanding actions

1. TPA to provide ARCADY outputs for existing M1 J15A model. [Post-meeting note: these were provided on 6th December].
2. TPA to give further consideration to mitigated junctions where V/C increases in DS4 compared to DM.
3. TPA / SYSTRA to provide 2021 SATURN outputs to HE / AECOM for review. [Post meeting note: 2021 and 2031 SATURN flows used in junction modelling work were provided to HE and NCC on 6th December].
4. TPA to provide package of information in relation to proposed mitigation one week prior to the next TWG meeting on 12th December [Post-meeting note: this was provided on 6th December]
5. SYSTRA / AECOM to arrange meeting to discuss VISSIM modelling.

Draft for Client Confidential

DRAFT

APPENDIX B
Accident Analysis Technical Note

A Planning Application by

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

In respect of

Rail Central

Accident Analysis Technical Note

February 2018



DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Central		
Project No.:	1211-80	**Report No.:**	1211-80/TN/03
Client:	Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.		

	Prepared By:	Checked By:	Approved for issue
Name	Tom Slane	Sasha Bowland	
Signature			
Date	February 2018	February 2018	February 2018

DRAFT

Issued by:

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates
25 King Street
Bristol
BS1 4PB

0117 925 9400
bristol@tpa.uk.com
www.tpa.uk.com

CONTENTS PAGE

1	INTRODUCTION	1
2	M1 JUNCTION 16	2
3	A4500 SANDY LANE	5
4	A5076 / A4500 / TOLLGATE WAY ROUNDABOUT	7
5	M1 JUNCTION 15A	10
6	TOWCESTER ROAD / MERE WAY / A5076 / A5123 ROUNDABOUT	14
7	A45 / A428 BRACKMILLS	17
8	BARNES MEADOW INTERCHANGE	23
9	A45 / A43 ROUNDABOUT	25
10	M1 JUNCTION 15	29
11	TOWCESTER BYPASS / A5 ROUNDABOUT (TOVE)	33
12	TOWCESTER BYPASS / A5 ROUNDABOUT (ABTHORPE)	37
13	UPTON WAY / TELFORD WAY ROUNDABOUT	40
14	UPTON WAY / HIGH STREET ROUNDABOUT	42
15	A5076 DANES CAMP WAY / A5123 UPTON WAY ROUNDABOUT	44
16	A508 MILL LANE / HARBOROUGH ROAD TO BRAMPTON HEATH	48
17	A43 LUMBERTUBS WAY / A5076 TALAVERA WAY ROUNDABOUT	54
18	A43 / TOWCESTER ROAD	57
19	A43 / ST JOHNS ROAD	59
20	A43 / NORTHAMPTON ROAD JUNCTION	62
21	A43 (SITE ACCESS)	65
22	BLISWORTH	67
23	MILTON MALSOR	70

DRAFT

1 INTRODUCTION

1.1 Northamptonshire County Council (NCC) has provided Personal Injury Collision (PIC) data for the most recent five year period between 01 January 2012 and 31 December 2016. The full collision records can be supplied on request.

1.2 The areas and junctions that are addressed in turn within this Technical Note (TN) are as follows:

(i) M1 Junction 16;
(ii) A4500 Sandy Lane;
(iii) A5076 / A4500 / Tollgate Way Roundabout;
(iv) M1 Junction 15A;
(v) Towcester Road / Mere Way / A5076 / A5123 Roundabout;
(vi) A45 / A428 Brackmills;
(vii) Barnes Meadow Interchange;
(viii) A45 / A43 Roundabout;
(ix) M1 Junction 15;
(x) Towcester Bypass / A5 roundabout (Tove);
(xi) Towcester Bypass / A5 roundabout (Abthorpe);
(xii) Upton Way / Telford Way Roundabout;
(xiii) Upton Way / High Street Roundabout;
(xiv) A5076 Danes Camp Way / A5123 Upton Way Roundabout;
(xv) A508 Mill Lane / Harborough Road to Brampton Heath;
(xvi) A43 Lumbertubs Way / A5076 Talavera Way Roundabout;
(xvii) A43 Towcester Road;
(xviii) A43 / St Johns Road;
(xix) A43 / Northampton Road Junction;
(xx) A43;
(xxi) Blisworth; and
(xxii) Milton Malsor.

DRAFT

2 M1 JUNCTION 16

2.1 A total of eight personal injury collisions (PICs) resulting in 12 injuries were reported to have occurred at Junction 16 of the M1. A total of six of the incidents recorded in the study period were classified as slight with two classified as serious, resulting in 10 slight and two serious injuries. A summary of the results of the data is shown in **Table 2.1**.

Table 2.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Details	LIKELY CAUSE
1	WS085812	A45 junction 16 roundabout	Slight (Car Driver, Car Passenger, Car Passenger, Car Passenger)	08/04/2012 1640 Dry / Light	V1 (car) emerges into the path of v2 (car) causing v2 to brake. V3 (car) fails to stop in time and collides with the rear of v2. V1 fails to stop.
2	TM129012	M1 southbound at junction with junction 16 onslip	Slight (Car Driver)	26/05/2012 0111 Dry / Dark – Street Lights Lit	V1 (car) collides with the trailer of V2 (HGV) travelling south under the junction 16 flyover. The driver of v1 blew 0.86 on a breathalyser test.
3	TM204012	M1 junction 16 offslip	Slight (Car Driver, Car Passenger)	19/08/2012 1844 Dry / Light	V1 (car) changes lanes to exit the motorway on the offslip and collides with v2 (police car).
4	WD223912	A45 junction 16 roundabout (Weedon Road)	Serious (Motorcycle Rider)	08/09/2012 1231 Dry / Light	V1 (motorcycle) fails to properly negotiate the roundabout and collides with the central barrier.
5	WS056213	A45 / M1 junction 16	Slight (LGV Driver)	12/03/2013 1350 Dry / Light	V1 (LGV) and v2 (car) travelling eastbound on the A45. V1 collides with the rear of v2 that was stationary at the give way junction with the M1 junction 16 roundabout.
6	WS170513	A4500 roundabout junction with M1 junction 16	Serious (Motorcycle Rider)	01/08/2013 1940 Dry / Light	V1 (car) and v2 (motorbike) negotiating the roundabout, v1 continues around causing v2 to continue as well. V2 hits gravel, loses control and comes to a stop on the grass verge.
7	WS033914	A45 junction 16 roundabout (Weedon Road)	Slight (Car Driver)	11/02/2014 1752 Dry / Dark – Street Lights Lit	V1 (car) collides with the rear of v2 (car) at the junction.
8	TM309214	M1 junction 16 westbound	Slight (Car Driver)	02/12/2014 0740 Dry / Light	V1 (car) collides with the rear of v2 (car) entering roadworks.

2.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 2.2** and **2.3** respectively.

DRAFT

Table 2.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	3	7	1	1	0	0	4	8
2013	1	1	1	1	0	0	2	2
2014	2	2	0	0	0	0	2	2
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
Total	6	10	2	2	0	0	8	12

Table 2.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	0	0	0
M/Cycles	0	2	0	2
Vehicle Drivers	6	0	0	6
Vehicle Passengers	4	0	0	4
Total	10	2	0	12

2.3 From **Tables 2.1** to **2.3** it is shown that the incidents recorded were due to driver error / misjudgement, drivers under the influence of alcohol or temporary road conditions. Visibility is generally considered to be good and there are no obvious underlying problems with the highway on the M1 Junction 16.

2.4 The first serious injury occurred on Saturday 8th September 2012 at 1844 in dry, light conditions. The incident involved a motorcyclist who failed to properly negotiate the roundabout and collided with the central barrier. No other vehicles were involved.

2.5 The second serious injury occurred on Wedndesday 1st August 2013 at 1940 in dry, light conditions. The incident involved a car and a motorbike negotiating the roundabout. The car continues to travel on the roundabout and the motorcyclist followed. This caused the motorcyclist to hit gravel, lose control and come to a stop on the grass verge.

2.6 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with this location and it is considered

that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

3 A4500 SANDY LANE

3.1 A total of 12 personal injury collisions (PICs) resulting in 15 injuries were reported to have occurred within the A4500 Sandy Lane study area. A total of 11 of the incidents recorded in the study period were classified as slight with one classified as serious, resulting in 14 slight and one serious injury. A summary of the results of the data is shown in **Table 3.1**.

Table 3.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Details	LIKELY CAUSE
1	WS138412	C67 Sandy Lane, 165 metres north of A4500 Weedon Road	Slight (Car Driver, Car Passenger)	30/05/2012 1943 Dry / Light	V1 (car) and v2 (car) travelling south on Sandy Lane. V1 begins to perform a 'U' turn to park on the opposite side of the carriageway, v2 begins to overtake and collides with v1.
2	WS215112	A4500 / C54 roundabout, near Harpole	Slight (Cyclist)	31/08/2012 0645 Dry / Light	V2 (cycle) travelling from southbound exit to eastbound exit and uses hand signals. V1 (car) approaches eastbound, fails to give way and collides with v2.
3	WS144813	A4500 Kislingbury roundabout with C67 Sandy Lane	Slight (Car Driver)	06/07/2013 0807 Dry / Light	V1 (car) fails to negotiate the roundabout, loses control and leaves the carriageway. The driver of v1 blew 0.45 on a breathalyser test.
4	WS186313	A4500 roundabout near Kislingbury exit	Slight (Car Driver, Car Passenger)	19/08/2013 1430 Dry / Light	V1 (car) shunted v2 (car) off the A4500 onto the roundabout near to the exit for Kislingbury.
5	WN024314	A4500 Weedon Road / Upton High Street	Slight (Car Driver, Car Driver)	30/01/2014 1850 Wet / Dark	V2 (car) crossing the junction on a green light signal, v1 (car) failed to stop at the red light signal and collided with v2.
6	WS193314	Weedon Road / C67 Sandy Lane A4500 roundabout	Slight (Motorcycle Rider)	12/08/2014 0605 Dry / Light	V1 (Van) enters the roundabout and collides with v2 (motorcycle).
7	WS249414	50 metres south of C54 Banbury Road / A4500 roundabout	Slight (Car Driver)	09/10/2014 0855 Dry / Light	V1 (car) collides with the rear of v2 (car).
8	WN043615	A4500 Weedon Road / St Crispin Drive junction	Serious (Pedestrian)	17/02/2015 1830 Dry / Dark	C1 steps into the carriageway in front of oncoming v1 (car) travelling southwest.
9	WS130715	A4500 Weedon Road roundabout	Slight (Cyclist)	27/05/2015 1729 Dry / Light	V1 (car) enters the roundabout into the path of v2 (cycle).
10	WS206515	No Exact Location Given	Slight (Car Driver)	14/08/2015 1820 Wet / Light	V1 (car) loses control negotiating the right hand bend, leaves the carriageway and collides with the fencing.
11	WN070616	A4500 Weedon Road / High Street junction	Slight (Car Driver)	22/04/2016 0730 Dry / Light	V1 (car) collides with v2 (car) turning right at the junction.
12	WD114216	Weedon Road / C67 Sandy Lane A4500 roundabout	Slight (Cyclist)	14/09/2016 1930 Dry / Dark	V1 (car) collides with v2 (cycle) on the roundabout.

3.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 3.2** and **3.3** respectively.

Table 3.2 – Summary of PIC severity by year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	2	3	0	0	0	0	0	0
2013	2	3	0	0	0	0	0	0
2014	3	4	0	0	0	0	0	0
2015	2	2	1	1	0	0	0	0
2016	2	2	0	0	0	0	0	0
Total	11	14	1	1	0	0	12	15

Table 3.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	1	0	1
P/Cycles	3	0	0	3
M/Cycles	1	0	0	1
Vehicle Drivers	8	0	0	8
Vehicle Passengers	2	0	0	2
Total	14	1	0	15

3.3 From **Tables 3.1** to **3.3** it is shown that the incidents recorded within the Sandy Lane study area were due to driver error / misjudgement, aggressive driving, drivers under the influence of alcohol. Visibility at priority junctions is generally considered to be good and there are no obvious underlying problems with the highway.

3.4 There were a total of three PICs that involved cyclists sustaining slight injuries and one that involved a motorcycle rider sustaining a slight injury. All four incidents occurred due to cars crossing the cyclist / motorcyclist paths and colliding on the roudnabout.

3.5 The serious incident occurred on Tuesday 17th February at 1830 in dry, dark conditions. The incident involved a pedestrian stepping into the carriageway into the path of an oncoming car.

3.6 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Sandy Lane study area and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

4 A5076 / A4500 / TOLLGATE WAY ROUNDABOUT

4.1 A total of 10 incidents resulting in 16 PICs were reported to have occurred at the A5076 / A4500 / Tollgate Way roundabout. All 10 incidents recorded in the study period were classified as slight with none classified as serious or fatal. A summary of the results of the data is shown in **Table 4.1**.

Table 4.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WN035113	A4500 Weedon Road at C151 Tollgate Way (Sixfields Roundabout)	Slight (Driver)	17/02/2013 13:15 Dry / Light	V1 (Car) in lane2, V2 (Car) in lane1 on the eastbound approach to the roundabout. When the traffic signals change V2 travels in an easterly direction while V1 travels in a northerly direction colliding with the front offside of V2.
2	WN298813	Roundabout at junction with A5076, Upton Way and A4500, Weedon Road, Northampton.	Slight (Driver, Passenger)	19/12/2013 08:25 Wet / Light	V2 (Car) re-directed due to road closure when V1 (Car) collided with the rear of V2 on roundabout.
3	WN002214	100m south on roundabout A4500, Weedon Road / A5076, Upton Way, Northampton.	Slight (Driver, Passenger, Passenger)	02/01/2014 10:53 Wet / Light	Slowing traffic V2 (Car) stops but V1 (Car) fails to stop and collides with the rear of V2.
4	WN104514	Junction with A4500, Weedon Road and A5123, Upton Way, upton.	Slight (Driver, Motorcycle Rider)	30/04/2014 08:25 Dry / Light	V2 (Car) in lane 2 stops at the traffic lights, V1 (Motorcycle) does not and collides with rear of v2.
5	WN131815	A5076, Upton Way and A4500, Weedon Road roundabout, Northampton.	Slight (Driver, Passenger)	24/05/2015 15:45 Dry / Light	V1 (Car) collides with the rear of V2 (Goods 3.5 tonnes and under) waiting at junction.
6	WN036016	A4500, Weedon Road and U8278, Millway junction, Northampton.	Slight (Cyclist)	12/02/2016 08:10 Dry / Light	V2 (Pedal Cycle) collides with the rear of V1 (Car) turning left at junction.
7	WN081116	A4500, Weedon Road roundabout and C151, Tollgate Way, Duston.	Slight (Passenger)	19/04/2016 17:00 Dry / Light	V1 (Car) collides with v2 (Car) on the roundabout.
8	WN141316	C151 Tollgate Way / A4500 Weedon Road Roundabout	Slight (Cyclist)	21/11/2016 0845 Dry / Light	V1 (car) collides with the rear wheel of v2 (cycle) on the pedestrian crossing.
9	WN010417	A5076 Upton Way / A4500 Weedon Road Roundabout	Slight (Car Driver, Car Driver)	25/02/2017 1556 Dry / Light	V1 (LGV) collides with the rear of v2 (car), and v2 collides with the rear of v3 (car) on the roundabout.

DRAFT

10	WN015217	A4500 Weedon Road Roundabout	Slight (Pedestrian)	14/03/2017 1820 Dry / Light	V1 (car) collides with c1 at the pedestrian crossing.

4.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 4.2** and **4.3** respectively.

Table 4.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2013	2	3	0	0	0	0	2	3
2014	2	5	0	0	0	0	2	5
2015	1	2	0	0	0	0	1	2
2016	3	3	0	0	0	0	3	3
2017	2	3	0	0	0	0	2	3
Total	10	16	0	0	0	0	10	16

Table 4.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	1	0	0	1
P/Cycles	2	0	0	2
M/Cycles	1	0	0	1
Vehicle Drivers	7	0	0	7
Vehicle Passengers	5	0	0	5
Total	16	0	0	16

4.3 From **Tables 4.1** to **4.3** it is shown that the incidents recorded on the A5076 / A4500 / Tollgate Way roundabout were due to driver error / misjudgement or temporary road conditions.

4.4 One slight incident involved a motorcyclist that failed to stop at a red traffic light signal and collided with the rear of the vehicle in front, which had stopped.

4.5 Two of the recorded incidents involved cyclists sustaining slight injuries. The first occurred when a cyclist collided with the rear of a car making a left hand turn at the Weedon Road / Millway junction. The second involved a car colliding with the rear wheel of a cyclist at the pedestrian crossing.

4.6 One incident involved a pedestrian sustaining a slight injury. It occurred when a car collided with a pedestrian whilst using the pedestrian crossing.

4.7 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with A5076 / A4500 / Tollgate Way roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

5 M1 JUNCTION 15A

5.1 A total of 24 incidents resulting in 47 PICs were reported to have occurred at junction 15A of the M1. A total of 24 of the incidents recorded in the study period were classified as slight with six classified as serious with one being classified as a fatal. A summary of the results of the data is shown in **Table 5.1**.

Table 5.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	TM087412	M1 northbound carriageway, 50m north east of the junction with M1 J15a entry slip, Milton Malsor.	Slight (Passenger, Passenger, Passenger, Passenger, Driver)	04/04/2012 14:05 Dry / Light	V1 is on M1 northbound in lane 1. V1 begins to move over into lane 2, colliding with V2. V2 spins out of control, colliding with the central reservation and coming to rest in lane3.
2	WS099112	A43, link road to the M1 northbound, Rothersthorpe at the A43 roundabout.	Slight (Passenger)	11/04/2012 13:18 Dry / Light	V1 (Car) fails to stop in time and collides with the rear of V2 (Car) which was stationary at the roundabout.
3	WS173212	A43, link road between A43 and M1 northbound.	Slight (Driver)	23/06/2012 22:50 Wet / Dark	V1 (Car) overtakes another vehicle and collides with the o/s of V2 (Car) which was travelling in the opposite direction.
4	WS233812	A43 roundabout with link road to M1 northbound	Serious (Motorcycle Rider)	22/09/2012 16:45 Dry / Light	V1 (Motorcycle) travelling northbound on A43 turns left heading to M1 misjudges turn and hits trailer of V2 (Goods 7.5 tonnes and over) e/b waiting at roundabout.
5	WS251512	A43 roundabout with A43 link to M1 northbound at junction 15A	Slight (Driver, Driver)	06/10/2012 07:25 Dry / Light	V1 (Car) travelling e/b off roundabout onto M1 J15A northbound slip. V2 (Goods 7.5 tonnes and over) travelling westbound approaching roundabout from M1. V1 loses control on roundabout exit and collides with V2.
6	TM299412	A43 link leaving services at junction joining M1 northbound slip J15A	Slight (Driver)	23/11/2012 18:25 Wet / Dark	V2 stopped at give way on A43 services exit to join M1 slip northbound, V1 collides with rear of V2.
7	TM040313	M1 northbound junction 15A adjacent to off slip.	Slight (Driver)	25/02/2013 07:10 Wet / Dark	V1 travelling in lane 1, V2 travelling in lane 2 overtaking. V1 moves into lane 2 colliding with the rear of V2. V2 spins in carriageway mounts the verge

					8and comes to a stop facing in 9the wrong direction.
8	WS077413	A43 northern roundabout with J15a of M1.	Slight (Driver)	12/04/2013 11:37 Wet / Light	V1 (Car) lane entering roundabout from south intends to continue round to head south and collides with V2 (Car) in lane 2 at northbound roundabout exit.
9	TM108113	M1 southbound 400m north of J15A	Slight (Driver, Driver, Driver)	23/05/2013 08:00 Dry / Light	All vehicles travelling southbound in lane 3 M1. V2 and V3 stop in rush hour traffic and V1 collides with rear of V2, which collides with rear of V3.
10	WN116213	A43 roundabout for A43 Towcester at the junction with 15A M1 northbound entry	Serious (Motorcycle Rider)	03/06/2013 07:50 Dry / Light	V1 (car) in lane 1 V2 (Motorcycle) in lane 2 on the roundabout. They both exit from junction 15aAand enter the roundabout to travel towards A43 / Towcester, V1 does not take the turn and carries on travelling around the roundabout colliding with V2.
11	WN117713	A43 southbound at junction south	Slight (Driver, Passenger)	04/06/2013 07:15 Dry / Light	V1 which was in lane 2 on the roundabout and V2 in lane 1. Both vehicles intending on turning left onto M1 southbound, V1 cuts into the path of V2 causing collision.
12	WN161713	A43 on the roundabout with A5123 / m1 south services northbound	Serious (Motorcycle Rider)	21/07/2013 13:28 Dry / Light	V1 (Car) travelling in lane 1 on the roundabout, V2 (Motorcycle) in lane 2 both going in a northbound direction. V1 keeps going right and collides with V2 turning left.
13	TM199613	25m north west of A43 link road with J15A of M1, Rothersthorpe, Northampton.	Slight (Driver, passenger)	05/09/2013 14:15 Dry / Light	V2 (Car) travelling on A43 turns left towards link road of M1 northbound and collides with V1 (Car) coming in opposite direction on one way street.
14	TM216213	586m north of junction 15A, M1, Northampton	Slight (Driver)	27/09/2013 02:15 Dry / Dark	V1 collides with the rear of V2.
15	WS266013	M1/A43 link road, Rothersthorpe	Slight (Passenger, Passenger)	09/11/2013 20:45 Wet / Dark	V1 (Car) believed to be on one way slip road collided with V2 (Car) travelling in opposite direction.
16	TM073414	M1, northbound, Rothersthorpe.	Serious (Driver) Slight (Driver)	25/03/2014 06:55 Wet / Light	V1 (Goods over 3.5 tonnes) for unknown reasons collides hard shoulder, loses control and collides with V2 (Car) travelling in Lane 2.

DRAFT

17	TM150014	M1, southbound, 536m north west of J15A, Rothersthorpe.	Serious (Driver)	24/06/2014 15:45 Dry / Light	V1 collides with o/s barrier losing control of vehicle.
18	WN196115	A43, Oxford road roundabout and A45, M1, J15A exit road, Rothersthorpe.	Slight (Driver)	17/07/2015 05:30 Dry / Light	V1 (Car) collides with o/s of V2 (Car) turning right on roundabout.
19	TM009616	M1 southbound and M1 southbound slip road junction, 50m south east, Rothersthorpe.	Slight (Passenger)	14/01/2016 14:45 Dry / Light	V1 pulls into Lane 1 and collides with n/s V2 and causing V1 to spin into path of V3 in Lane 2.
20	WS800416	M1 southbound, Rothersthorpe.	Fatal (Pedestrian)	10/02/2016 13:14 Dry / Light	V1 (car) collides with pedestrian exiting carriageway.
21	WS042116	A43, Oxford Road and A43, Oxford road roundabout, Rothersthorpe.	Slight (Driver)	18/02/2016 13:55 Dry / Light	V1 (Goods 7.5 tonnes and over) collides with n/s V2 (Car) on roundabout.
22	WS058416	M1 northbound and A43, Oxford Road, J15A, Rothersthorpe.	Slight (Driver)	06/03/2016 23:05 Dry / Dark	V1 moves to lane 3 and collides with n/s of V2 already in Lane 3.
23	WS067816	M1 northbound and M1 J15A slip road, Rothersthorpe.	Slight (Driver, Passenger)	30/03/2016 06:40 Wet / Light	V1 in Lane 3 collides with rear of V2, V2 in turn collides with rear of V3.
24	WS066716	A5123, Oxford Road and A43, Oxford Road roundabout, Milton Malsor.	Slight (Driver)	07/04/2016 16:40 Dry / Light	V1 (Car) collides with rear of V2 (Car) on approach to roundabout.

5.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 5.2** and **5.3** respectively.

Table 5.2 – Summary of PIC severity by year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	5	10	1	1	0	0	6	11
2013	7	12	2	2	0	0	9	14
2014	1	1	2	2	0	0	2	3
2015	1	1	0	0	0	0	1	1
2016	5	6	0	0	1	1	6	7
Total	19	30	5	5	1	1	24	36

Table 5.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	1	1
Cyclist	0	0	0	0
Motorbikes	0	3	0	3
Vehicle Drivers	19	2	0	21
Vehicle Passengers	11	0	0	11
Total	30	5	1	36

5.3 From **Tables 5.1** to **5.3** it is shown that the incidents recorded at junction 15A of the M1 were due to driver error / misjudgement.

5.4 One of the recorded PICs that occurred in this location resulted in a pedestrian fatality. The incident occurred on Wednesday 10th February 2016 at 1314 in dry, light conditions. It appeared to have occurred when a car collided with a pedestrian that was exiting the carriageway. Likely cause was driver error or misjudgement.

5.5 A total of five incidents resulted in serious injuries, three of which involved motorcycle riders and two car drivers.

5.6 The first serious incident involving a motorcyclist occurred on Saturday 22nd September at 1645 in dry, light conditions. The motorcycle was travelling northbound on the A43 and turns left heading to the M1. The rider appears to have misjudged the turn and collided with the trailer of a HGV that was waiting at the roundabout.

5.7 The next serious incident involving a motorcyclist occurred on Monday 3rd June 2013 at 0750 in dry, light conditions. A car and a motorcycle were both travelling in lane 2 on the roundabout, both exiting from junction 15A towards the A43 / Towcester. The car does not make the turn and collides with the motorcyclist.

5.8 The last serious incident involving a motorcyclist occurred on Sunday 21st July 2013 at 1328 in dry, light conditions. The incident appears to have occurred when two vehicles, a car and a motorcycle were travelling on the roundabout in a northbound direction, the car continued and collided with the mortocycle that was making a left hand turn.

5.9 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with junction 15A of the M1 and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

6 TOWCESTER ROAD / MERE WAY / A5076 / A5123 ROUNDABOUT

6.1 A total of 20 PICs resulting in 20 recorded injuries were reported to have occurred on Towcester Road / Mere Way / A5076 / A5123 roundabout. A total of 18 of the incidents recorded in the study period were classified as slight with one being classified as serious and one was classified as a fatal. A summary of the results of the data is shown in **Table 6.1**.

Table 6.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WN306112	A5076 Danes Camp Way exit off rab with A5123 Towcester Road norhampton	Slight (Driver)	02/12/2012 09:45 Wet / Light	V2 (Car) exits roundabout in lane 1 heading northwest bound. V1 (Goods 3.5 tonnes and under) with trailer exits in lane2 and pulls into lane 1, V1 trailer hits V2 and V2 mounts the kerb.
2	WN032413	A5076 Danes Camp Way and A5076 Mere Way rad Northampton	Slight (Driver)	15/02/013 16:35 Dry / Light	V2 (Car) travelling around Mere Way roundabout when slows behind two other vehicles for other traffic and V1 (Goods 3.5 tonnes and under) collides with rear of V2 then leaves scene.
3	WN147913	Mere Way roundabout 2m from Danes Camp Way junction	Slight (Driver)	10/07/2013 14:50 Dry / Light	V2 (Car) on roundabout in direction of Towcester Road, V1 (Goods 7.5 tonnes and over) collides with rear of V2 causing the rear window to shatter.
4	WN289413	Junction with C188, Towcester Road and A5076 roundabout at Mere Way, Northampton.	Slight (Driver)	10/12/2013 17:55 Dry / Dark	V1 (Car) collides with V2 (Car) who is stationery at junction.
5	WN062714	Roundabout at A5123, Towcester Road and A5076, Mere Way, Northampton.	Slight (Driver)	23/01/2014 16:00 Wet / Light	V1 (Car) joins roundabout, V2 (Car) already on roundabout, V2 brakes hard but avoids collision with V1.
6	WN166414	A5123, Towcester Road, Northampton.	Slight (Driver)	04/07/2014 12:50 Dry / Light	V1 (Car) collides with rear of V2 (Car) pushing into opp carriageway causing V2 to collide with rear of/s of V3 (Car) travelling in opp direction.
7	WN169314	A5065, Mere Way, Northampton.	Serious (Driver)	10/07/2014 08:20 Dry / Daylight	V1 (Car) collides with rear of V2 (Car).
8	WN255114	A5123, Towcester Road and A5076 Towcester Road roundabout, Northampton.	Slight (Driver)	12/10/2014 11:55 Dry / Light	V2 (Car) collides with rear of V1 (Car) at roundabout entrance.
9	WN309314	A5076, Mere Way, Northampton.	Slight (Cyclist)	03/12/2014 19:30 Wet / Street Lights	V2 (Car) collided with V1 (Pedal Cycle) crossing the carriageway.
10	TN800415	A5076, Danes Camp Way and A5076, Towcester	Fatal	18/03/2015 14:15 Dry / Light	V1 (Goods over 3.5 tonnes) pulls over from lane 2 into path of V2 (Motorcycle) in lane 1.

DRAFT

		Road roundabout, 50m northwest, Northampton.	(Motorcycle Rider)		
11	WN084215	A5076, Danes Camp Way and A5076, Danes Camp Way roundabout, Northampton.	Slight (Driver)	08/04/2015 14:00 Dry / Light	V1 (Car) loses control at junction and collides with traffic lights to n/s on roundabout.
12	WN096615	A5076, exit from Tesco, Mere Way and A5076, Towcester Road roundabout, Northampton.	Slight (Driver)	12/04/2015 15:45 Dry / Light	V1 (Car) collides with rear of V2 (Car) at junction to roundabout.
13	WN282515	A5076, Towcester Road roundabout and A5123, Towcester Road, Northampton.	Slight (Motorcycle Rider)	08/11/2015 18:15 Snow / Dark	V1 (Car) collides with V2 (Motorcycle) at roundabout.
14	WN321115	A5076, Towcester Road roundabout and A5076, Danes Camp Way, Northampton.	Slight (Driver)	13/12/2015 07:30 Wet / Light	V1 (car) loses control at junction, crosses carriageway hitting railings, travelling down embankment coming to rest on pedestrian subway area.
15	WN329815	A5076, Towcester Road roundabout and A5076, Danes Camp Way, Northampton.	Slight (Motorcycle Rider)	20/12/2015 11:20 Dry / Light	V1 (Car) changing lanes collides with V2 (Motorcycle).
16	WN280115	A5076, Mere Way and A5076, Towcester Road roundabout	Slight (Driver)	03/11/2015 15:59 Wet / Daylight	V2 (Goods 3.5 tonnes and under) collides with rear of V1 (Car) and V3 (Car) with rear of V2.
17	WN005516	A5076, Mere Way and A5076, Towcester Road roundabout Northampton.	Slight (Driver)	05/01/2016 13:15 Dry / Daylight	V1 (Car) collides with rear of V2 (Car).
18	WN090916	A5076 Danes Camp Way Roundabout / A5076 Danes Camp Way, Northampton	Slight (Motorcycle Rider)	03/07/2016 1210 Dry / Light	V1 (Motorcycle) approaching from the slip road takes a turn too sharply and falls from motorcycle.
19	WN127116	A5076 Danes Camp Way roundabout / A5076 Danes Camp Way, Northampton	Slight (Car Driver)	16/10/2016 1205 Wet / Light	V1 (car) collided with v2 (bus/coach 17+) on the roundabout.
20	WN022217	A5076 Danes Camp Way / C188 Towcester Road roundabout	Slight (Motorcycle Rider)	25/03/2017 1930 Dry / Dark (Street Lights Lit)	V1 (car (taxi)) pulled out of the junction into the path of v2 (motorcycle) causing it to collide with the rear of v1.

6.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 6.2** and **6.3** respectively.

Table 6.2 – Summary of PIC severity by year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties

2012	1	1	0	0	0	0	1	1
2013	3	3	0	0	0	0	3	3
2014	4	4	1	1	0	0	5	5
2015	6	6	0	0	1	1	7	7
2016	3	3	0	0	0	0	3	3
2017	1	1	0	0	0	0	1	1
Total	18	18	1	1	1	1	20	20

Table 6.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	1	0	0	0
M/Cycles	4	0	1	0
Vehicle Drivers	13	1	0	0
Vehicle Passengers	0	0	0	0
Total	18	1	1	20

6.3 From **Tables 6.1** to **6.3** it is shown that the incidents recorded at this location were due to driver error / misjudgement.

6.4 One of the recorded PICs that occurred in this location resulted in a motorcyclist fatality. The incident occurred on Wednesday 18th March 2015 at 1415 in dry, light conditions. It appeared to have occurred when a HGV (over 3.5 tonnes) changed lanes into the path of a motorcycle and as a result collided.

6.5 The serious collision resulted in a driver being injured. It appears to have occurred when one car collided with the rear of another. The likely cause is driver error or misjudgement.

6.6 A total of five incidents resulted in slight injuries to vulnerable road users, four of which involved motorcycle riders and one a cyclist.

6.7 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with Towcester bypass roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

7 A45 / A428 BRACKMILLS

7.1 A total of 57 PICs resulting in 73 recorded injuries were reported to have occurred at the A45 / A428 Brackmills. A total of 66 of the incidents recorded in the study period were classified as slight with seven being classified as serious. A summary of the results of the data is shown in **Table 7.1**.

Table 7.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Details	LIKELY CAUSE
1	WN246812	A428 Bedford Road / A501 Cliftonville Road junction	Slight (Car Driver)	07/10/2012 2010 Dry / Dark (Street Lights Lit)	V1 (car) and V2 (car) travelling eastbound on A428. V2 braked for the red light signal at Cliftonville and V1 collided with the rear of V2.
2	WN038613	A45 (eastbound) / A428 Bedford Road junction	Slight (Car Driver, Car Driver)	08/02/2013 0905 Wet / Light	V4 (car) braked suddenly for slowing vehicles ahead which caused v3 (car), v2 (car) and v1 (car) to collide with the rear of each other.
3	WN030013	A428 Bedford Road / U8304 Nunn Mills Road	Slight (Car Driver)	11/02/2013 2104 Wet / Dark (Street Lights Lit)	V1 (car) travelling westbound on A428 failed to negotiate right hand ben by Nunns Mills Road and collided with the wall.
4	WN036813	A45 (eastbound) 50 metres east of exit slip for Brackmills	Slight (Van Driver, Van Passenger)	19/02/2013 1015 Dry / Light	V1 (van) and v2 (police vehicle) travelling eastbound in heavy traffic. The traffic slowed and v1 failed to stop and collided with the rear of v2.
5	WN127613	A45 westbound carriageway, 265 metres west of U8100 Eagle Drive, 100 metres west of Brackmills slip	Slight (Car Driver)	14/06/2013 1013 Dry / Light	All vehicles travelling westbound on the A45. V1 (car) moved lane into the path of v2 (car), v2 collided with the central reservation and across the carriageway and collided with v3's (HGV) trailer.
6	WN149113	A45 westbound (after Brackmills Industrial Estate slip)	Slight (Car Driver)	09/07/2013 1810 Dry / Light	V2 (car) pulled out in from of v1 (HGV) and braked. V1 cannot stop in time and collided with the rear of v2.
7	WN159913	A45 on/off slip for Brackmills, 275 metres northeast of A45 Brackmills roundabout	Slight (Car Driver)	21/07/2013 1847 Dry / Light	V2 travelling southwest bound to enter A45 westbound. For an unknown reason v1 loses control and left the carriageway over two lanes and onto roof.
8	WN201313	A428 Bedford Road / U8437 Brown's Way	Slight (Car Driver)	09/09/2013 1705 Wet / Light	V1 emerged from the junction into the path of cyclist travelling east on Bedford Road.
9	WN239013	300 metres east of A428 / A45 slip / A45 Nene Valley Way	Slight (Car Driver)	19/10/2013 1442 Dry / Light	V1 front tyre blew and collided with v2. V4 braked causing v3 to collide with v4.
10	WN301013	A428 Bedford Road / A4501 Cliftonville Road	Slight (Cyclist)	19/11/2013 0845 Dry / Light	C1 (cyclist) moves to the right after checking it was safe to do so, as moved across is struck by v1 but remained on cycle.

DRAFT

11	WN006114	A5095 Rushmere Road	Slight (Car Driver)	10/01/2014 1620 Dry / Dark (Street Lights Lit)	V1 attempts a 'U' turn in stationary traffic, it appeared as though v2 would wait but a collision occurred.
12	WN020614	A45 slip / A45 east	Slight (Car Passenger, Car Passenger)	26/01/2014 2048 Wet / Dark (Street Lights Lit)	V2 overtook v1 when v1 changed lanes. V2 collided with the central reservation and came to a stop on the verge.
13	WN029214	A45 northeast slip, Brackmills	Slight (Car Driver)	03/02/2014 1800 Dry / Dark (Street Lights Lit)	V1 joining the A45 collided with v2 which had already collided with v3.
14	WN043014	A428 Bedford Road, Workbridge access	Slight (Motorcycle Rider)	21/02/2014 1850 Dry / Dark (Street Lights Lit)	V1 emerged from private access into the path of oncoming v2 (motorcycle) and collided.
15	WN119514	20 metres northeast A45 slip / A45 Nene Valley Way	Slight (Car Driver, Car Driver)	12/05/2014 1640 Dry / Light	V1 changed lanes at the same time as v2 and collided with each other.
16	WN171214	A45 slip / Nene Valley Way	Slight (Car Driver)	10/07/2014 0522 Dry / Light	V1 lost control for an unknown reason and collided with the crash barrier and filled onto its roof.
17	WN187314	A45 Nene Valley Way / U8327 Caswell / Rhossili Road roundabout	Serious (Motorcycle Rider)	31/07/2014 1945 Dry / Light	V1 (motorcycle) collided with the rear of stationary v2 which caused v3 to collide with v4.
18	WN185914	A428 Bedford Road	Slight (Car Passenger)	01/08/2014 1315 Dry / Light	V2 stationary in traffic. V1 collided with the rear of v2 which shunted v2 into the rear of v3.
19	WN252614	A428 Bedford Road / A4501 Cliftonville Road junction	Serious (Pedestrian)	09/10/2014 20:40 Dry / Dark	C1 runs out into the path of v1 travelling southwest bound.
20	WN252714	A45 slip / A45 (eastbound)	Slight (Car Driver)	10/10/2014 1605 Dry / Light	V1 collided with the rear of v2 on the slip.
21	WN255014	A45 Nene Valley Way / A45 Eagle Drive roundabout	Slight (Car Driver, Car Driver)	13/10/2014 1710 Wet / Damp / Light	V1 collided with the rear of v2.
22	WN312214	A5095 Rushmere Road / A428 Bedford Road roundabout	Slight (Van Driver, Car Driver)	05/12/2014 1926 Wet / Damp / Light	V1 exited the carriageway and collided with v2 traveling in the opposite direction.
23	WN323914	A45 Nene Valley Way / A45 slip	Slight (Car Passenger)	08/12/2014 1021 Wet / Damp / Light	V1 entering from the slip collided with the rear of v2.
24	WN014415	A45 Nene Valley Way	Slight (Car Driver)	21/01/2015 0730 Dry / Light	V1 collided with the rear of v2.
25	WN021015	A428 Bedford Road / A428 Bedford Road roundabout	Slight (Car Driver)	28/01/2015 1900 Slight	V1 collided with v2 on the roundabout.
26	WN038715	U8343 Pavilion Drive	Slight (Car Driver, Car Passenger)	13/02/2015 1930 Wet / Damp / Dark	V1 for an unknown reason hit the ramp at speed and collided with the kerb.
27	WN079315	A4501 Cliftonville Road	Slight (Motorcycle Rider)	20/03/2015 0855 Dry / Light	V3 and v2 stop for construction traffic. V1 does not and collided with the rear of v2 which collided with the rear of v3.

DRAFT

28	WN073115	A45 Nene Velley Way / A428 Bedford Road junction	Slight (Car Passenger)	24/03/2015 0808 Dry / Light	V1 collided with the rear of v2 shunting v2 into the rear of v3.
29	WN110315	A428 Bedford Road / A4501 Cliftonville Road junction	Slight (Pedestrian)	05/05/2015 1720 Dry Light	C1 runs into the carriageway into the path of v1 travelling northwest.
30	WN159915	A428 Bedford Road / A4501 Cliftonville Road junction	Slight (car Driver, Car Passenger)	27/06/2015 10:05 Dry / Light	V2 turning across the carriageway collided with v1 travelling southeast.
31	WN172415	A45 Nene Valley Way slip / A438 Bedford Road roundabout	Slight (Car Driver)	10/07/2015 1130 Wet / Damp / Light	V1 collided with the rear of v2 at the traffic lights at the roundabout.
32	WN229815	500 metres southwest A45 Nene Valley Way / U8039 Eagle Drive roundabout	Slight (Car Passenger, Car Passenger, Car Passenger, Car Passenger)	07/09/2015 0855 Dry / Light	V1 changed lanes and collided with v2 which caused the vehicle to spin across the carriageway.
33	WN261515	A45 Nene Valley Way	Slight (Car Driver)	18/09/2015 1755 Dry / Dark	V1 changed lanes and collided with v2.
34	WN251915	A45 Nene Valley Way	Slight (Car Driver)	06/10/2015 0750 Wet / Damp / Light	V2 collided with the rear of v1.
35	WN261115	A428 Bedford Road / A428 Bedford Road roundabout	Slight (Car Passenger)	14/10/2015 18:50 Dry / Dark	V1 collided with v2 on the roundabout.
36	WN307515	A45 Nene Valley Way / A45 slip, Pavilion Drive junction	Serious (Car Driver, Car Passenger)	25/11/2015 1730 Wet / Damp / Dark	V1 veers into lane 2 colliding with rear of V2 causing it to skid and collide with central barrier.
37	WN316815	A45 (eastbound) Nene Valley Way / U8039 Eagle Drive junction	Serious (Motorcycle Rider)	05/12/2015 2050 Dry / Dark	A gust of wind blows V1 in lane 2 into the path of V2 in lane 3.
38	WN318815	A45 slip (eastbound) / A45 Nene Valley Way	Slight (Car Driver, Car Passenger)	08/12/2015 1245 Dry / Light	V1 collides with rear of V2 on slip road and V2 collides with front near side of V3 travelling eastbound on dual carriageway.
39	WN319215	A428 Bedford Road / A5095 Rushmere Road roundabout	Slight (Car Driver)	13/12/2015 0015 Wet / Damp / Dark	V1 collides with rear near side of V2 on roundabout.
40	WN011416	A45 slip (eastbound) / Nene Valley Way junction	Slight (Car Driver)	12/01/2016 1755 Wet / Damp / Light	V1 in lane 2 changes lane and collides with V2. V2 pushes V1 into path of VS. V2 collides with V4.
41	WN017416	A428 Bedford Road / A428 Bedford Road roundabout	Slight (Car Driver)	22/01/2016 1510 Dry / Light	V1 collides with V2 on roundabout.
42	WN037516	A428 Bedford Road / A4501 Cliftonville Road junction	Slight (Car Driver)	15/02/16 1015 Dry / Light	V1 collides with C1 pedestrian on motorised hoverboaroad crossing carriageway.
43	WN081316	A45 Nene Valley Way slip (eastbound)	Slight (Car Driver)	18/06/16 0610 Dry / Light	V1 in lane 2 changes lane to the right and collides with V2 in L2 on slip road.
44	WN090516	100 metres southeast A428 Bedford Road / A428 Bedford Road roundabout	Serious (Cyclist)	01/07/2016 0525 Dry / Light	V1 in lane 2 turns left, collides with unknown vehicle travelling in opposite direction, spins and collides with cyclist who is thrown over barrier onto river bank below.

DRAFT

45	WN093016	400 metre southwest A45 Nene Valley Way / A428 Bedford Road roundabout	Serious (Car Driver)	13/07/16 1350 Dry / Light	V1 in lane 2 hits central reservation for unknown reason, rebounds across all lanes leaving carriageway and colliding with trees to near side.
46	WN098916	A428 Bedford Road / U Becketts View junction	Slight (Cyclist)	13/07/16 0850 Dry / Light	V1 collides with V2 at junction.
47	WN105316	A428 Bedford Road / access to skate park	Slight (Pedestrian)	04/08/2016 1815 Dry / Light	V1 collided with C1 crossing carriageway.
48	WN105716	A428 Bedford Road / A4501 Cliftonville Road junction	Slight (Car Driver)	12/08/2016 0740 Wet / Damp / Light	V1 rides off pavement into path of V2. V3 collides with rear of V2 performing emergency stop.
49	WN106716	A45 Nene Valley slip / A45 Nene Valley Way junction	Slight (Car Driver, Car Passenger)	19/08/2016 1740 Dry / Daylight	V1 in lane 2 collides with rear V2 in lane 2 waiting to join main carriageway.
50	WN118316	A428 Bedford Road	Slight (Car Passenger)	24/08/2016 1620 Dry / Light	V1 collides with rear of V2.
51	WN112516	A428 Bedford Road / A428 Bedford Road roundabout	Slight (Car Driver, Car Passenger)	10/09/2016 0830 Dry / Daylight	V1 collides with rear of V2 at lights on roundabout.
52	WN121416	A45 (eastbound) Nene Valley Way	Slight (Car Driver, Car Driver, Car Passenger)	28/09/2016 1735 Dry / Light	V4 collides with rear of V3, V3 with V2 and V2 with V1.
53	WN129816	A428 Bedford Road / A428 Bedford Road roundabout	Slight (Cyclist)	12/10/2016 1619 Dry / Light	V1, for reasons unknown, crosses carriageway, returns to correct lane, mounts kerb and collides with V2 pinning cycle against protective barrier.
54	WN131016	A428 Bedford Road / A4501 Cliftonville Road junction	Slight (Car Passenger)	26/10/2016 2215 Dry / Dark	V1 collides with rear of V2 at junction.
55	WN149316	A428 Bedford Road / A4501 Cliftonville Road junction	Slight (Cyclist)	10/12/2016 0225 Wet / Damp / Dark	V1 collides with V2 crossing carriageway from footpath.
56	WN151716	100 metres southwest A45 (eastbound) Nene Valley Way / A428 Bedford Road roundabout	Slight (Van Driver)	15/12/2016 1719 Dry / Dark	V1 in lane 3 collides with rear of V2 in Lane 3.
57	WN015617	91 metres northwest A428 Bedford Road / A428 Bedford Road roundabout	Slight (Motorcycle Rider)	28/02/2017 1830 Wet / Damp / Dark	V1 loses control, becomes unseated and falls from vehicle.

7.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 7.2** and **7.3** respectively.

Table 7.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	1	1	0	0	0	0	1	1

2013	9	11	0	0	0	0	9	11
2014	11	15	2	2	0	0	13	17
2015	14	20	2	3	0	0	16	23
2016	15	18	2	2	0	0	17	20
2017	1	1	0	0	0	0	1	1
Total	51	66	6	7	0	0	57	73

Table 7.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	2	1	0	3
P/Cycles	4	1	0	5
M/Cycles	3	2	0	5
Vehicle Drivers	39	2	0	41
Vehicle Passengers	19	1	0	20
Total	67	7	0	74

7.3 From **Tables 7.1** to **7.3** it is shown that the incidents recorded at Brackmills were due to driver error / misjudgement, aggressive driving, or temporary road / weather conditions. Visibility at priority junctions is generally considered to be good and there are no obvious underlying problems with the highway on Brackmills.

7.4 A total of six incidents resulted in serious injuries, two of which involved motorcycle riders, one involved a pedestrian, one involved a cyclist, one involved a car driver and one involved a car driver and a passenger.

7.5 The first serious incident involved a motorcycle rider. It occurred on Thursday 31st July 2014 at 1945 in dry, light conditions. It occurred when a motorcycle for reasons unknown collided with the rear of the vehicle in front, which in turn, collided with the vehicle in front of it.

7.6 The second serious incident occurred on Thursday 9th October 2014 iat 2040 in dry, dark conditions. It occurred when a pedestrian ran into the carriageway into the path of an oncoming vehicle.

7.7 The third serious incident occurred on Wednesday 25th Novermber 2015 at 1730 in wet, dark conditions. The incident occurred when a car veered into lane 2, colliding with the rear of a

vehile in front, causing it to skid and collide with the central barrier. The collision resulted in the injury of a car driver and its passenger.

7.8 The fourth serious incident occurred on Saturday 5th December 2015 at 2050 in dry, dark conditions. It occurred when a gust of wind caused a car to swerve into the path of another vehicle.

7.9 The fifth serious incident occurred on Friday 1st July 2016 at 0525 in dry, light conditions. The incident occurred when a car collided with an unknown vehicle travelling in the opposite direction. This caused the car to spin and collide with a cyclist, causing the cyclist to be thrown over the barrier and onto the river bank below.

7.10 The last serious incident occurred on Wednesday 13th July 2016 at 1350 in dry, light conditions. The incident occurred when the car collided with the central barrier for an unknown reason and rebounds, colliding with trees on the carriageway edge.

7.11 A total of nine incidents resulted in slight injuries of vulnerable road users, four of which involved cyclists, two three involved mortorcycle riders and two involved a pedestrian.

7.12 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Brackmills roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

8 BARNES MEADOW INTERCHANGE

8.1 A total of 10 PICs resulting in 17 recorded injuries were reported to have occurred at the Barnes Meadow Interchange. A total of nine of the incidents recorded in the study period were classified as slight with one being classified as serious. A summary of the results of the data is shown in **Table 8.1**.

Table 8.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Details	LIKELY CAUSE
1	WN079913	A45 (eastbound) between Barnes Meadow interchange and Brackmills, 200 metres southwest of A428 Bedford Road	Serious (Motorcycle Rider) Slight (Van Driver)	16/04/2013 1735 Dry / Light	V1 (motorbike) and v2 (van) travelling eastbound. V1 failed to stop and collided with the rear of v2. The rider was thrown from v1 into the rear of v2. Rider's foot is caught in the tow bar and gets dragged along the carriageway.
2	WN254813	A45 at junction with Barnes Meadow interchange	Slight (Car Driver, Car Driver, Car Driver)	05/11/2013 0910 Wet / Light	V1 travelling west in traffic collided with the rear of v2 and then v3 into v4.
3	WN255313	A45 Barnes Meadow interchange (eastbound), 140 metres southwest of A428 Bedford Road roundabout	Slight (Car Driver, Car Driver)	05/11/2013 0910 Wet / Light	V1 (HGV) travelling northeast in exit slip re-joins the A45 to go straight causing v2 to brake suddenly and v3 collided with the rear of v2.
4	WN026114	A45 Nene Valley Way, Barnes Meadow interchange	Slight (Car Driver)	02/02/2014 0313 Dry / Dark (Street Lights Lit)	V1 travelling southwest lost control and collided with the barrier, coming to a stop against central reservation.
5	WN258414	A45 Barnes Meadow flyover	Slight (Car Driver, Car Driver, Car Passenger)	15/09/2014 08:35 Wet / Damp / Light	Stationary rush hour traffic. V1 (van) collided with the rear of v2, v2 into v3, v3 into the rear of v4.
6	WN245314	A45 Nene Valley Way / A45 slip to Barnes Meadow interchange	Slight (Van Driver, Van Passenger)	02/10/2014 17:34 Dry / Light	V1 collided with the rear of v2 and v2 collided with the rear of v3.
7	WN278514	A45 / A428 Barnes Meadow interchange	Slight (Car Driver)	04/11/2014 1700 Dry / Dark	V1 collided with the rear of v2.
8	WN250215	91 metres northeast A5095 Rushmere Road / A428 Barnes Meadow roundabout	Slight (Car Driver)	05/10/2015 1640 Wet / Damp / Light	V1 tried to negotiate the right hand bend but lost control, left the carriageway and collided with a tree.
9	WN271515	A45 Nene Valley Way / Barnes Meadow interchange roundabout	Slight (Car Passenger)	26/10/2015 1830 Dry / Dark	V1 and v2 changed lanes and collided.
10	WN156916	A45 Barnes Meadow flyover	Slight (Car Driver)	02/12/16 1734 Dry / Dark	V2 travelling east in heavy traffic. V1 fails to stop and collides with rear of V2.

8.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 8.2** and **8.3** respectively.

Table 8.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2013	3	6	1	1	0	0	3	7
2014	4	7	0	0	0	0	4	7
2015	2	2	0	0	0	0	2	2
2016	1	1	0	0	0	0	1	1
2017	0	0	0	0	0	0	0	0
Total	10	16	1	1	0	0	10	17

Table 8.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	0	0	0
M/Cycles	0	1	0	1
Vehicle Drivers	13	0	0	13
Vehicle Passengers	3	0	0	3
Total	16	1	0	17

8.3 From **Tables 8.1** to **8.3** it is shown that the incidents recorded on the Barnes Meadow Interchange were due to driver error / misjudgement, or heavy traffic conditions. Visibility at priority junctions is generally considered to be good and there are no obvious underlying problems with the highway.

8.4 One incident resulted in the serious injury of a motorcyclist, the same incident also resulted in a slight van driver injury. It occurred on Tuesday 16th April 2013 at 1735 in dry, light conditions. It occurred when a motorcycle and a can were travellign eastbound. The motorcyclist failed to stop in slowing traffic and collided with the rear of a van in front. The rider was thrown from his machine into the rear of the van. The rider's foot was caught in the vans towbar and was dragged along the carriageway.

8.5 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Barnes Meadow Interchange and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

9 A45 / A43 ROUNDABOUT

9.1 A total of 27 PICs resulting in 40 recorded injuries were reported to have occurred at the A45 / A43 roundabout junction. A total of 23 of the incidents recorded in the study period were classified as slight with four being classified as serious. A summary of the results of the data is shown in **Table 9.1**.

Table 9.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Details	LIKELY CAUSE
1	WN164412	C38 Bewick Road 25 metres southwest of junction with U8102 Edgemont Road	Slight (Car Driver, Car Driver)	04/07/2012 0950 Wet / Dark (No Street Lights)	V1 (car) loses control on right hand bend, crosses onto the opposite side of the carriageway and into the path of v2 (car) and collided.
2	WN234013	A43 Lumbertubs Way (southbound) / U8467 Wilforoad Way	Serious (Motorcycle Rider)	31/01/2013 0740 Wet / Dark (Street Lights Lit)	V1 (motorcycle) travelling southbound in the middle of the carriageway. Traffic was slowing for the junction ahead and v1 collided with the rear of v2 (car).
3	WN028413	A43 Lumbertubs Way / A45 Nene Valley Way	Slight (Pedestrian, Pedestrian)	09/02/2013 1540 Wet / Dark (Street Lights Lit)	V1 (car) waiting at the traffic light signals southbound. The traffic signal changed to green and c1 and c2 chased a ball into the carriageway on the pedestrian crossing. V1 collided with c1 and c2 fell over.
4	WN099013	A45 / A43 Lumbertubs Way roundabout	Slight (Motorcycle Rider)	09/05/2013 1435 Dry / Light	V1 (car) exited the A45 eastbound to travel north on the A43. V2 (motorcycle) made the same exit. V1 switched lanes and caused the motorcycle to swerve and fall off bike, to avoid the car.
5	WN177113	C38 Bewick Road / A43 Lumbertubs Way junction	Serious (Motorcycle Rider)	12/08/2013 0530 Dry / Dark (Street Lights Lit)	V2 (motorcycle) traveling northeast. V1 misjudged v2's (car) speed and pulled out in front of the oncoming vehicle. V1 and v2 collided.
6	WN283713	40 metres southwest of A45 / A43 Lumbertubs Way roundabout	Slight (Car Passenger)	04/12/2013 1800 Dry / Dark (Street Lights Lit)	V2 (car) and v3 (car) in the queue at the traffic light signals, v1 (good vehicle over 7.5 tonnes) failed to brake and collided with v2 which in turn collided with v3.
7	WN093014	C38 Bewick Road / A43 Lumbertubs Way	Slight (Car Driver)	17/04/2014 1520 Dry / Light	V1 (car) collided with v2 (car) whilst exiting the dual carriageway junction.
8	WN123714	A43 Lumbertubs Way Roundabout	Slight (Van Driver)	21/05/2014 1725 Dry / Light	V1 (car) changed lanes and collided with v2 (goods vehicle over 7.5 tonnes).
9	WN122214	A43 Lumbertubs Way / A45 Nene Valley Way	Serious (Cyclist)	21/05/2014 1935 Dry / Light	V1 (car) collided with v2 (pedal cycle) at the pedestrian crossing point.
10	WN225314	C38 Bewick Road / A43 Lumbertubs Way	Slight (Car Driver)	12/09/2014 1615 Dry / Light	V1 (car) collided with the rear of v2 (car) at the junction.
11	WN252314	A43 / A43 Riverside	Slight (Car Driver, Car Passenger)	05/10/2014 1140 Dry / Light	V1 (car) collided with the rear of v2 (car) stationary at the traffic light signals.
12	WN276814	A43 Lumbertubs Way / A45 Nene Valley Road	Slight (Car Driver)	03/11/2014 1539 Dry / Light	V1 (car) cut in front of v2 (car) on the roundabout.
13	WN304414	A43 Lumbertubs Way / A43 Riverside	Slight (Car Driver, Car Passenger,	28/11/2014 1808	V1 (car) collided with the rear of v2 (car).

			Car Passenger, Car Passenger)	Dry / Dark (Street Lights Lit)	
14	WN015515	U8503 Ferris Road / A43 Lumbertubs Way roundabout	Slight (Car Driver, Car Passenger)	24/01/2015 1650 Dry / Dark (Street Lights Lit)	V1 (car) collided with the rear of v2 (car) at the roundabout.
15	WN029115	A43 Lumbertubs Way / A45 Nene Valley Way	Slight (Car Passenger)	03/02/2015 1645 Dry / Light	V1 (car) collided with v2 (car) on the slip road.
16	WN120615	A43 Lumbertubs Way / U8467 Wilford Avenue junction	Slight (Car Driver)	02/03/2015 0510 Dry / Dark (Street Lights Lit)	V1 (van 3.5 tonnes and under) collided with the rear of v2 (car) at the junction.
17	WN057015	A43 Lumbertubs Way / A45 Nene Valley Way	Slight (Car Driver, Car Passenger)	03/03/2015 1225 Dry / Light	V1 (car) collided with the rear of v2 (car) at the traffic light signals.
18	WN169915	Carousel Way / U8503 Ferris Road roundabout	Slight (Car Driver)	06/07/2015 1450 Dry / Light	V1 (van 3.5 tonnes or under) reversed into v2 (car) waiting at the roundabout.
19	WN172015	U8467 Wilforoad Avenue Slip road / A43 Lumbertubs Way junction	Slight (Cyclist)	10/07/2015 1810 Dry / Light	V1 (car) collided with v2 (pedal cycle) on the slip road.
20	WN258015	A45 Nene Way slip road	Slight (Car Driver)	12/10/2015 1815 Dry / Dark (Street Lights Lit)	V1 (car) collided with the rear of v2 (car) on the slip road.
21	WN327815	43 Lumbertubs Way roundabout / A45 eastbound slip	Slight (Motorcycle Rider)	07/12/2015 0800 Wet / Light	V1 (motorcycle) collided with the rear of v2 (car) at the junction.
22	WN321815	A43 Lumbertubs Way / A45 Nene Valley Way 200 metres southwest	Slight (Car Driver, Car Driver, Car Passenger)	08/12/2015 1450 Dry / Light	V1 (car) collided with the rear of v3 (goods vehicle 7.5 tonnes and over) and v2 (car) collided with the rear of v1.
23	WN070816	A43 Lumbertubs Way / A45 Nene Valley Way (westbound)	Slight (Taxi Driver, Car Driver)	23/04/2016 0852 Dry / Light	V1 (taxi / car) collided with the rear of v2 (car).
24	WN112616	A43 Lumbertubs Way / A45 Nene Valley Way	Slight (Car Driver)	13/09/2016 1817 Dry / Light	V1 (car) collided with v3 (car), v1 span and collided with v2 (car).
25	WN120016	A43 Lumbertubs Way	Slight (Car Driver, Car Passenger)	24/09/2016 1325 Dry / Light	V1 (car) collided with the rear of v2 (car) and v2 collided with the rear of v3 (car).
26	WN146716	A43 Lumbertubs Way / A45 Nene Valley Way	Slight (car Driver, Car Passenger)	19/11/2016 1346 Dry / Light	V1 (taxi / car) collided with the rear of v2 (car), v2 with the rear of v3 (car) and v4 (car) collided with the rear of v1.
27	WN149816	U8503 Ferris Row / A43 Lumbertubs Way roundabout	Serious (Cyclist)	22/12/2016 1708 Dry / Dark (Street Lights Lit)	V1 (car) collided with v2 (pedal cycle) crossing the carriageway from the uncontrolled, unmarked crossing.

A summary of the accident severity by year and by casualty type are summarised in **Tables 9.2** and **9.3** respectively.

Table 9.2 – Summary of PIC severity by year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	1	2	0	0	0	0	1	2
2013	3	4	2	2	0	0	5	6
2014	6	10	1	1	0	0	5	8
2015	9	13	0	0	0	0	9	13
2016	4	7	1	1	0	0	5	8
Total	23	36	4	4	0	0	27	40

Table 9.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	2	0	0	2
P/Cycles	1	2	0	3
M/Cycles	2	2	0	4
Vehicle Drivers	20	0	0	20
Vehicle Passengers	11	0	0	11
Total	36	4	0	40

9.2 From **Tables 9.1** to **9.3** it is shown that the incidents recorded on the A45 / A43 roundabout were due to driver / rider error / misjudgement or temporary road conditions.

9.3 A total of four incidents resulted in serious injuries, two of which involved motorcycle riders and two involved cyclists.

9.4 The first serious incident occurred on Thursday 31st January 20013 at 0740 in wet dark conditions, the street lights were present and lit. The incident occurred when a motorcycle was travellign southbound, in the middle of the carriageway. Traffic was slowing for the junction ahead and the motorcycle collided with the rear of a car that had slowed.

9.5 The second serious incident occurred on Monday 12th August 2013 at 0530 in dry, dark consitions. The street lights were present and lit. The incident occurred when a motorcycle travellign northeast misjudged the car in fronts speed and pulled out in front of the oncoming vehicle.

9.6 The third serious incident occurred on Wednesday 21st May 2014 at 1935 in dry, light conditions. The incident occurred when a car collided with a cyclist on the pedestrian crossing point.

9.7 The last serious incident occurred on Thursday 22nd December 2016 at 1708 in dry, dark conditions. The street lights were present and lit. The incident occurred when a car collided with a cyclist crossing the carriageway from the uncontrolled, unmarked crossing point.

9.8 A total of four incidents resulted in slight injuries of vulnerable road users, three of which involved motorcycle riders, two involved cyclists and two involved a pedestrian.

9.9 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the A45 / A43 roundabout junction and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

10 M1 JUNCTION 15

10.1 A total of 24 PICs resulting in 37 recorded injuries were reported to have occurred at Junction 15 of the M1. A total of 13 of the incidents recorded in the study period were classified as slight with six being classified as serious and one resulting in a fatality. A summary of the results of the data is shown in **Table 10.1**.

Table 10.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	TM068912	M1, southbound, entry slip, Courteenhall.	Slight (Driver)	15/03/2012 17:43 Dry / Light	V1 (Goods 7.5 tonnes and over) and V2 (Car) enter the slip road at the same time as it narrows V1 to pull in front of V2 and collides with the front of V2.
2	TM310612	M1 northbound lane 3 junction 15	Serious (Car Driver)	05/12/2012 17:20 Dry / Street Lights	V1, 2, 3, 4 and 5 travelling north west in lane 3. Traffic slows, V1 (Car) fails to stop and collides with the rear of V2 (Car). V2 collides with the rear of V3 (Goods 3.5 tonnes and under). V4 (Car) fails to stop and collides with the rear of V5 (Car) forcing V5 down the offside of other impacted vehicles collide.
3	WN039613	A45, westbound, Collingtree. 300m north of the M1 junction 15.	Slight (Driver)	26/02/2013 17:50 Wet / Street Lights	V1 (Car) fails to stop in time and collides with the rear of V2 (Car) which was slowing for traffic a head.
4	WS055013	A45 westbound 55 metres east of junction with watering lane Northampton	Slight (Car driver, Car Driver)	13/03/2013 16:30 Dry / Light	V1 (Car) and V2 (Car) westbound on A45. V2 slows for stationary traffic and V1 collides with rear of V2.
5	TM111413	M1 Junction 15 with A45, Courteenhall parish	Slight (Car driver, Car Driver)	25/05/2013 09:05 Dry / Daylight	V1 (Car) fails to stop at Watforoad gap services, re-joins M1 southbound, leaves M1 at Junction 15 and collides with electricity box then V1 ending on roof in carriageway.
6	WN212713	150m north east of M1 and A45, London Road, Northampton	Slight (Car Driver)	20/09/2013 19:15 Dry / Darknes	V2 (Car) travelling along A45 towards M1 Junction 15 held in stationary traffic when hit in rear by V1 (Car) which did not stop.
7	TM802113	300m south M1, J15, Milton Malsor, Northampton.	Fatal (Car Passenger)	27/10/2013 02:35 Wet / Street Lights	V1 (Car) travelling south along M1, nearing Junction15 crosses all lanes and collides with central barrier.
8	WN031914	50 metres north east of junction, Watering lane and A45, Collingtree, Northampton.	Slight (Car Driver, Car Driver)	07/02/2014 10:29 Wet / Daylight	V3 (Car) broken down Lane 2, V2 (Car) in Lane 2 brakes to avoid collision, V1 (Car) moves to lane2 to overtake collides with rear of of V2 which collides with V3.

DRAFT

9	TM054214	Slip road. M1, southbound, Northampton.	Slight (Car Driver)	01/03/2014 05:45 Dry / Darkness	V1 (Car) loses control on slip road, mounts o/s verge and collides with traffic lights.
10	WN065514	Junction with A45, London Road, Watering Lane, Collingtree.	Slight (Car Driver, Car Driver, Car Passenger)	19/03/2014 22:35 Dry / Street Lights	V1 (Car) collides with rear of of V2 (Car) who, in turn, collides with rear of V3 (Car).
11	WS071814	Junction with A508, Northampton Road and m1 junction 15 roundabout, Roade.	Slight (Car Driver)	22/03/2014 08:15 Dry / Daylight	V2 (Car) stationary at junction when V1 (Car) collides with rear of V2.
12	WN157314	A45 and A45 roundabout, Collingtree	Slight (Pedestrian)	30/06/2014 21:00 Dry / Daylight	V1 (Car) stationary at road closure, after altercation drives off and C1 hit by o/s wing mirror.
13	TM196314	M1 junction 15, Collingtree.	Serious (Passenger)	02/08/2014 02:54 Dry / Street Lights	V1 (Car) collides with rear of V2 (Goods over 3.5 tonnes).
14	TM298514	M1 slip road, Junction 15 and A508, London Roadroundabout, Northampton.	Slight (Car Driver)	20/11/2014 19:30 Wet / Street Lights	V2 (Goods vehicle unknown weight) collides with o/s of V1 (Car) on roundabout.
15	WN165315	A45, London Roadand M1 slip road roundabout, Collingtree.	Serious (Car Driver)	30/06/2015 20:05 Dry / Daylight	V1 (Car) collides with o/s of V2 (Car) at roundabout.
16	WN207715	Saxon Avenue and A45, London Roadroundabout, 60 metres south east, Grange Park.	Serious (Driver, Passenger)	14/08/2015 20:20 Wet / Daylight	V1 (Car) loses control on wet surface and collides head on with V2 (Goods over 3.5 tonnes) travelling opposite direction.
17	WS222615	A508, London Roadroundabout and M1 Junction 15 northbound slip Road, Courteenhall.	Slight (Car Driver)	05/09/2015 22:10 Dry / Street Lights	V1 (Car) collides o/s of V2 (Car) at junction.
18	TM323915	M1 southbound, Milton Malsor.	Serious (Car Driver, Car passenger)	13/12/2015 18:20 Wet / No Street Lights	V1 (Car) collides with rear of V2 (Car). V2 collides with rear of V3 (Car), all in Lane3.
19	WS033416	A508, London Roadroundabout and M1 northbound slip road, Milton Malsor.	Serious (Driver, passenger)	10/02/2016 20:23 Dry / Street Lights	V1 (Car) collides with n/s V2's trailer (Goods 7.5 tonnes and over) on roundabout.
20	WS056316	A508, London Roadroundabout, Milton Malsor.	Slight (Motorcycle Rider)	07/03/2016 16:57 Dry / Daylight	V1 (Motorcycle) for unknown reason loses control and falls from motorbike, re-mounts, travels approximately 15m but decides to bump up kerb to check damage to vehicle and falls a second time.

10.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 10.2** and **10.3** respectively.

DRAFT

Table 10.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2013	4	6	0	0	1	1	5	7
2014	6	9	1	1	0	0	7	10
2015	3	4	4	6	0	0	7	10
2016	1	1	1	2	0	0	2	3
Total	15	21	7	10	1	1	23	30

Table 10.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	1	0	0	1
P/Cycles	0	0	0	0
M/Cycles	1	0	0	0
Vehicle Drivers	18	5	0	23
Vehicle Passengers	1	4	1	6
Total	21	9	1	30

10.3 From **Tables 10.1** to **10.3** it is shown that the incidents recorded at junction 15 of the M1 were due to driver error / misjudgement or temporary road conditions.

10.4 One of the collisions resulted in a fatality of a car passenger. The incident occurred on Sunday 27th October 2013 at 0235 in wet, dark conditions. The street lights were present and lit. The incident occurred when a car travelling southbound on the M1 crosses all of the lanes for an unknown reason and collides with the central barrier.

10.5 A total of six incidents resulted in serious injuries of five car drivers and four passengers.

10.6 The first serious incident occurred on Wednesday 5th December 20121 at 1720 in dry, dark conditions. The street lights were present and lit. The incident resulted in the injury of a car driver and occurred when the traffic was slowing and a car failed to stop colliding with the rear of a car in front, this in turn shunted two vehicles in front.

10.7 The second serious incident occurred on Saturday 2nd August 2014 at 0254 in dry, dark conditions. The street lights were present and lit. The incident resulted in the serious injury of a vehicle passenger and occurred when a car collided with the rear of a good vehicle over 3.5 tonnes.

10.8 The third serious incident occurred on Wednesday 30th June 2015 at 2005 in dry, light conditions. The incident occurred when a car collided with the rear of a second car and resulted in the injury of a car driver.

10.9 The fourth serious incident occurred on Friday 14th August 2015 at 2020 in wet, light conditions. The incident occurred when a car lost control on the wet road surface and collided head on with an oncoming good vehicle (3.54 tonnes and over).

10.10 The fifth serious incident occurred on Sunday 13th December at 1820 in wet, dark conditions. The incident occurred when a car collided with the rear of another car which, in turn collided with the rear of the vehicle in front resulting in the injury of a car driver and its passenger.

10.11 The last serious incident occurred on Wednesday 10th February 2016 at 2023 in dry, dark conditions. The street lights were present and lit. The incident occurred when a car collided with a trailer and resulted in the injury of a car driver and its passenger.

10.12 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with junction 15 of the M1 and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

11 TOWCESTER BYPASS / A5 ROUNDABOUT (TOVE)

11.1 A total of 25 PICs resulting in 30 recorded injuries were reported to have occurred at the Tove roundabout junction. A total of 22 of the incidents recorded in the study period were classified as slight with three being classified as serious. A summary of the results of the data is shown in **Table 11.1**.

Table 11.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WS054912	A43, northbound, Towcester at the A5 roundabout.	Slight (Motorcycle Rider)	27/02/2012 05:45 Dry / Dark	V1 (Car) enters the roundabout and into the path of V2 (Motorcycle) which was already on the roundabout.
2	WS064812	A5 watling street at the roundabout with A43 Oxford Road, Towcester.	Slight (Motorcycle Rider)	12/03/2012 19:25 Dry / Dark	V2 (Motorcycle) travelling on A43 ne, enters the roundabout heading straight over to continue on A43 ne. V1 (Car) enters the roundabout from a5 travelling s onto roundabout, pulling out in front of and colliding with V2.
3	WS111412	A43 southbound carriageway 250 metres south of A43/A5 roundabout	Serious (Car Driver, Car Driver)	04/05/2012 2350 Wet / Dark (No Street Lights)	V1 (car) travelling northeast on the southwest bound carriageway collided with v2 (car) travelling southwest.
4	WS185212	A5 outside Garden Centre, 180 north of A43 roundabout	Slight (Motorcycle Rider)	29/07/2012 1630 Dry / Light	V1 (car) pulled out of the Garden centre towards Weedon into the path of oncoming v2 (motorcycle)
5	WS198112	A5 / A43 roundabout, Watling Street exit	Slight (Car Driver)	10/08/2012 13:00 Dry / Light	V2 (Car) starts to pull out of watling st onto roundabout and stalls, V1 (Car) fails to stop and collides with V2.
6	WS266212	At roundabout of A43 and A5	Slight (Car Passenger)	22/10/2012 21:10 Wet / Dark	V2 (Car) travelling northbound over roundabout when V1 (Car) coming from Greens Norton overshoots and collides with V2.
7	WS062813	A43 / A5 roundabout Towcester	Slight (Car Driver)	24/03/2013 13:12 Snow / Light	V1 (car) travelling s/w fails to stop and collides with V2 (Car) travelling s/e.
8	WS082413	A43 and A5 roundabout, Towcester	Slight (Motorcycle Rider)	21/04/2013 09:45 Dry / Light	V2 (Motorcycle) stationary in lane 1 on s/w approach to roundabout. V1 (Car) collides with rear of V2.
9	WS227713	Roundabout at A43 Northampton and A5, London Road, Towcester	Slight (Car Driver, Car Pasenger)	07/10/2013 14:39 Dry / Light	V1 (Car) travelling to Northampton and V2 (Car) travelling to Towcester collide mid-junction on roundabout.

DRAFT

10	WS315213	91m northeast of junction with A5 and A43, Towcester.	Serious (Car Passenger)	29/12/2013 12:59 Dry / Light	V1 (Car) collides into rear of V2 (Car) stationary in traffic queue.
11	WS022314	Roundabout at A43 and A5, Watling Street, Towcester.	Slight (Car Driver)	28/01/2014 19:20 Wet / Dark	As V2 (Car) pulls out from junction V1 (Car) drove into rear of of V1 due to acceleration on mud.
12	WS060314	A5/A43 roundabout, Towcester.	Slight (Car Driver)	14/03/2014 13:20 Dry / Light	V1 (Car) engine stalls and V2 (Car) collides with rear of V1.
13	WS104314	A43 at the roundabout with the A5, north of Towcester	Slight (Motorcycle Rider)	20/04/2014 18:30 Wet / Light	V1 (Motorcycle) travelling from the direction of Northampton on A43 loses control on roundabout and slides into V2 (Car) travelling north on a5. Weather was extremely bad.
14	WS015215	A43 Oxford Road	Slight (Car Driver, Car Passenger)	06/01/2015 1830 Dry / Dark (No Street Lights)	V1 (car) collided with the rears of v2 (car) and v3 (car).
15	WS029615	A5 Watling Street roundabout	Slight (Motorcycle Rider)	02/02/2015 1505 Dry / Light	V1 (motorcycle) overtaking a stationary vehicle collided with V2 (car) making a right hand turn.
16	WS045515	A5, Watling Street roundabout and A5, Watling Street, Towcester	Slight (Passenger)	23/02/2015 07:00 Wet / Light	V1 (Car) collides with rear of v2 (Goods 3.5 tonnes and under) entering roundabout.
17	WS276215	A43 Oxford Road / A5 Watling Street roundabout	Serious (Car Driver) Slight (Van Driver, Car Passenger)	26/10/2015 1345 Dry / Light	V1 (van, 3.5 tonnes and under) collided with the rear of V2 (car) and V2 collided with the rear of V3 (car) when approaching the roundabout.
18	WS062615	A5, Watling Street roundabout and C2, Towcester Road, Towcester.	Slight (Passenger)	11/03/2015 19:35 Dry / Dark	V1 (Car) collides as V2 (Car) leaves roundabout at junction.
19	WS094215	A43, Oxford Road and A5, Watling Street roundabout, Towcester.	Slight (Car Driver)	14/04/2015 07:56 Dry / Light	V1 collides with rear of v2 whilst stationary at traffic lights.
20	WS109815	A5, Watling Street and A5 Watling Street roundabout, Towcester	Slight (Car Driver)	19/04/2015 19:29 Dry / Light	V1 (Car) collides with V2 (Car) on roundabout.
21	WS186615	A5, Watling Street and A5, Watling Street roundabout, Towcester	Slight (Pedestrian)	25/07/2015 12:23 Dry / Light	V1 (Car) exiting roundabout collides with o/s V2 (Car), V2 o/takes, stops in front of V1, approaches car which drives off and collides with C1 (V2) who falls to ground.
22	WS023316	A5, Watling Street and A5, Watling Street roundabout, Towcester	Slight (Car Driver)	30/01/2016 16:53 Dry / Light	V1 (Car) collides with rear of V2 (Car) at roundabout.

DRAFT

23	WS040416	A43 Oxford Road / A5 Watling Street roundabout	Slight (Motorcycle Rider)	15/02/2016 1250 Dry / Light	V1 (motorcycle) filtering through the traffic due to a lane closure collided with a traffic cone and fell from machine.
24	WS071916	A5 Watling Street roundabout	Slight (Car Driver)	13/05/2016 0845 Dry / Light	V1 (car) collided with V2 (car) on the roundabout causing V2 to cross the carriageway and collide with the road sign and barrier.
25	WS094816	A43 Oxford Road / A5 Watling Street roundabout	Slight (Car Driver)	23/07/2016 1138 Dry / Light	V1 (car) collided with the rear of V2 (car) and v2 collided with the rear of v3 (car).

11.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 11.2** and **11.3** respectively.

Table 11.2 – Summary of PIC severity by year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2008*								
2009								
2010								
2011	3	3	0	0	0	3	3	
2012	5	5	1	2	0	0	6	7
2013*	3	4	1	1	0	0	4	5
2014	3	3	0	0	0	0	3	3
2015	8	10	1	1	0	0	9	11
2016	4	4	0	0	0	0	1	1
Total	23	26	3	4	0	0	26	30

Table 11.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	1	0	0	1
P/Cycles	0	0	0	0
M/Cycles	7	0	0	7
Vehicle Drivers	13	3	0	18
Vehicle Passengers	5	1	0	7
Total	26	4	0	30

DRAFT

11.3 From **Tables 11.1** to **11.3** it is shown that the incidents recorded on the Tove roundabout were due to driver error / misjudgement, temporary weather / road conditions or a faulty vehicle.

11.4 A total of three incidents resulted in serious injuries of three car drivers and a passenger.

11.5 The first serious incident occurred on Friday 4th May 2012 at 2350 in wet, dark conditions. The incident occurred when a car travelling northeast on the southwestbound carriageway collided with an oncoming vehicle.

11.6 The second serious incident occurred on Sunday 29th December 2013 at 1259 in dry, light conditions. The incdent occurred when a car collided with the rear of a car that was stationary in a traffic queue.

11.7 The last serious incident occurred on Monday 26th October 2015 at 1345 in dry, light conditions. It occurred when a lights goods vehicle (under 3.5 tonnes) and collided with the rea rof a car approaching the roundabout.

11.8 A total of eight incidents resulted in the slight injury of vulnerable road users, of which seven were motorcycle riders and one was a pedestrian.

11.9 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Tove roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

12 TOWCESTER BYPASS / A5 ROUNDABOUT (ABTHORPE)

12.1 A total of 13 PICs resulting in 15 recorded injuries were reported to have occurred at the Abthorpe roundabout junction. A total of 11 of the incidents recorded in the study period were classified as slight with two being classified as serious. A summary of the results of the data is shown in **Table 12.1**.

Table 12.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WS214512	C1 Abthorpe Road 81 metres southwest of A43 roundabout	Slight (Car Driver)	29/08/2012 1400 Wet / Light	V1 (car) made a right turn into Abthorpe Road and into the path of oncoming v2 (car).
2	WS233412	C1 Abthorpe Road 120 metres west of A43 roundabout	Slight (Cyclist)	14/09/2017 1200 Dry / Light	V1 (car) overtook v2 (pedal cycle) too closely and collides with v2. V2 ends up in the ditch.
3	WS274712	C1 Abthorpe j/w U4908 Greens Norton Road	Slight (Car Driver)	16/10/2012 1804 Dry / Dark (no street Lights)	V2 (car) travelling eastbound on C1, v1 (car) travelling westbound on C1 made a right hand turn onto the U4908 into the path of v2.
4	WS313312	C188 Brackley Road / U4907 Springfields roundabout	Slight (Cyclist)	08/12/2012 1250 Dry / Light	V2 (pedal cycle) travelling on roundabout when v1 (car) enters the roundabout travelling southwest and collided with v2.
5	WS002913	A43 / C1 Greens Norton roundabout	Slight (Cyclist)	03/01/2013 1800 Wet / Dark (Street Lights Lit)	V2 (pedal cycle) enters the roundabout from Brackley Road and indicates to exit onto Greens Norton. V1 (car) enters the roundabout and fails to see v2 and collided with the cyclist.
6	WS056113	A43 southbound 72 metres from roundabout with C188 Brackley Road outside Mcdonalds	Serious (Goods Vehicle Driver, Goods Vehicle Passenger)	11/03/2013 1240 Dry / Light	V1 (goods vehicle over 3.5 tonnes and under 7.5 tonnes) travelling southbound fails to negotiate speed on the roundabout and loses control. The goods vehicle tipped onto its side and landed on the pedestrian barrier.
7	WS221113	A43 / A5 roundabout	Serious (Motorcycle Rider) Slight Motorcycle Passenger)	12/09/2013 1925 Dry / Dark (Street Lights Lit)	V2 (car) enters the roundabout and negotiates to the right lane. V1 (motorcycle) appears and collides with the rear of v2.
8	WS135514	C188 Brackley Road / Springfields / A43 roundabout	Slight (Motorcycle Rider)	17/05/2014 1920 Dry / Light	V1 (car) approached the roundabout, slowed and proceeded to enter the junction. V2 (motorcycle) already on the roundabout collided with the side of V1.
9	WS035715	C1 Abthorpe Road / U4908 Greens Norton Road junction	Slight (Motorcycle Rider)	08/02/2015 1300 Dry / Light	V1 (car) made a right hand turn into the path of V2 (motorcycle) travelling northeast.
10	WS081215	A43 Oxford Road roundabout northbound	Slight (Car Passenger)	05/04/2015 2115 Dry / Dark (Street Lights Lit)	V1 (goods vehicle 7.5 tonnes and over) collided with the rear of V2 (car) on the roundabout.

DRAFT

11	WS040316	A43 Oxford Road / C1 Abthorpe Road roundabout	Slight (Cyclist)	13/02/2016 0915 Dry / Light	V1 (car) overtaking collided with V2 (pedal cycle) at the roundabout.
12	WS056016	U4907 Springfields / U4901 Buckingham Way junction	Slight (Cyclist)	15/03/2016 1715 Dry /Light	V1 (car) pulled out of the junction into the path of V2 (pedal cycle) travelling southeast.
13	WS114816	C188 Brackley Road / A43 Oxford Street roundabout	Slight (Car Driver)	11/05/2016 0650 Wet / Light	V3 (van, 3.5 tonnes and under) collided with the rear of V2 (car) and V2 collided with the rear of v1 (car) at the roundabout.

12.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 12.2** and **12.3** respectively.

Table 12.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	3	3	0	0	0	0	3	3
2013*	2	2	2	3	0	0	3	5
2014	1	1	0	0	0	0	1	1
2015	2	2	0	0	0	0	2	2
2016	3	3	0	0	0	0	3	3
2017	1	1	0	0	0	0	1	1
Total	12	12	2	3	0	0	13	15

Table 12.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	5	0	0	5
M/Cycles	2	1	0	3
Vehicle Drivers	3	1	0	4
Vehicle Passengers	2	1	0	3
Total	12	3	0	15

12.3 From **Tables 12.1** to **12.3** it is shown that the incidents recorded on the Abthorpe roundabout were due to driver error / misjudgement.

DRAFT

12.4 A total of three incidents resulted in serious injuries of one motorcycle rider, two vehicle drivers and one passenger.

12.5 The first serious incident occurred on Monday 11th March 2013 at 1240 in dry, light conditions. The incdeint occurred when a goods vehicle (under 7.5 tonnes) failed to negotiate the speed on the roundabout and lost control. The vehicle tipped on to its side and landed on the pedestrian barrier.

12.6 The second serious incident occurred on Thursday 12th September 2013 at 1925 in dry, dark conditions. The street lights were present and lit. The incident occurred when a motorcycle entered the roundabout and collided with the rear of a car already on the roundabout.

12.7 A total of seven incidents resulted in the slight injury of vulnerable road users, of which five were cyclists and two were motorcycle riders.

12.8 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Abthorpe roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

13 UPTON WAY / TELFORD WAY ROUNDABOUT

13.1 A total of one PIC resulting in one recorded injuries were reported to have occurred at the Upton way / Telford Way roundabout junction and surrounds. A total of 14 of the incidents recorded in the study period were classified as slight with one being classified as serious. A summary of the results of the data is shown in **Table 13.1**.

Table 13.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WN237814	A5076, Upton Way and A5076 roundabout, 70m northeast, Northampton.	1 Serious (Cyclist)	29/09/2014 06:40 Dry / Light	V1 (Car) travelling in lane1 collides with V2 (Pedal Cycle) travelling in lane2.

13.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 13.2** and **13.3** respectively.

Table 13.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	1	1	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	1	1

Table 13.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	1	0	0
M/Cycles	0	0	0	0
Vehicle Drivers	0	0	0	0
Vehicle Passengers	0	0	0	0

DRAFT

Total	0	1	0	0

13.3 From **Tables 13.1** to **13.3** it is shown that the incident recorded at the Upton way / Telford Way roundabout junction and surrounds was due to driver error / misjudgement.

13.4 One PIC involving a cyclist resulted in a serious injury and occurred on Monday 29th September 2014 at 0640 in dry, light conditions. The incident occurred when a vehicle (car) travelling in lane one collided with a cyclist travelling in lane two.

13.5 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Upton way / Telford Way roundabout junction and surrounds and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

14 UPTON WAY / HIGH STREET ROUNDABOUT

14.1 A total of one PIC resulting in three recorded injuries were reported to have occurred at the Upton way / High Street roundabout junction and surrounds. The incident recorded in the study period was classified as slight. A summary of the results of the data is shown in **Table 14.1**.

Table 14.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WN004812	A5076, Upton Way, Northampton. 30m south of the roundabout.	Slight (Car Driver, Car Passenger, Car Passenger)	02/01/2012 17:58 Dry / Dark	For reasons unknown the driver of V1 (Car) loses control and collides with the o/s of V2 (Car).

14.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 18.2** and **18.3** respectively.

Table 14.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	1	3	0	0	0	0	0	0
2013*	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
Total	1	3	0	0	0	0	1	3

Table 14.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	0	0	0
M/Cycles	0	0	0	0

Vehicle Drivers	1	0	0	0
Vehicle Passengers	2	0	0	0
Total	3	0	0	0

14.3 From **Tables 14.1** to **14.3** it is shown that the incident recorded on the Upton Way / High Street roundabout was due to driver error / misjudgement.

14.4 None of the incidents recorded involved any vulnerable road users.

14.5 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Upton Way / High Street roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

15 A5076 DANES CAMP WAY / A5123 UPTON WAY ROUNDABOUT

15.1 A total of 19 PICs resulting in 21 recorded injuries were reported to have occurred at the Danes Camp Way / Upton Way roundabout junction. A total of 17 of the incidents recorded in the study period was classified as slight with two being classified as serious. A summary of the results of the data is shown in **Table 15.1**.

Table 15.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WN042112	A5076 Danes Camp Way 75m northeast of the roundabout with A5076 Upton Way, Northampton.	Slight (Driver)	15/02/2012 12:25 Dry / Light	V1 (Goods 7.5 tonnes and over) on Danes Camp Way northeast, in lane2. V2 (Car) on Danes Camp Way ne in lane1. V1 attempts to move into lane1, colliding with the offside of V2 and causing V2 to spin 180 and come to a rest in lane2 facing southwest.
2	WN132212	Roundabout of A5076 Danes Camp Way and A5123 Oxford road.	Slight (Car Driver)	28/05/2012 09:30 Dry / Light	V2 (Car) travelling southwest on Danes Camp Way enters roundabout on green light. V1 (Car) approached from right and collides with V2.
3	WN290312	A5123 Oxford road 42m south of A5076 roundabout Danes Camp Way	Slight (Car Driver)	14/11/2012 08:00 Dry / Light	Both V1 (Car) and V2 (Car) travelling north, V2 slows for traffic, V1 fails to stop and collides with the rear of V2.
4	WN038913	A5076 Upton Way approach to the A5076 roundabout with Danes Camp Way	Slight (Car Driver)	25/02/2013 18:00 Wet / Dark	V1 (Car), V2 (Car) and V3 (Car) travelling southwest. V1 fails to stop colliding with V2, V2 collides with V3.
5	WN055613	U8375 Rothersthorpe Road 32m northeast of A5076 Danes Camp Way, Northampton	Slight (Cyclist)	12/03/2013 08:05 Wet / Daylight	V1 (Pedal Cycle) travelling southeast from cycle path fails to negotiate traffic enters the main road and collides with V2 (Car) travelling northeast.
6	WN116113	A5076 Danes Camp Way northwestbound 159m northwest of U8375 Rothersthorpe Road Northampton	Slight (Car Driver)	02/06/2013 02:40 Dry / Darkness	V1 (Car) travelling northwest fails to negotiate road surface condition (roadworks) and leaves the carriageway to the nearside and collides with a wall.
7	WN141213	A5076 Danes Camp Way on the roundabout with A5123 Oxford Road Northampton	Serious (Motorcycle Passenger)	03/07/2013 07:35 Wet / Light	V1 (Car) and V2 (Motorcycle) travelling on the roundabout in a northwesterly direction. V1 brakes hard, V2 brakes but skids and falls into carriageway.
8	WN197113	Roundabout junction with A5123, Upton Valley Way East and A5076, Upton Way, Northampton.	Slight (Motorcycle Rider and Passenger)	01/09/2013 18:00 Dry / Light	V1 (Car) travelling on roundabout changes lanes into path of V2 (Motorcycle) which takes avoiding action, V1 rider falls from motorcycle - no collision takes place.

9	WN222113	Roundabout at A5076, Danes Camp Way and A5123, Upton Way, Northampton.	Slight (Car Driver)	04/10/2013 06:50 Wet / Dark	V2 (Car) travelling northeast on dual carriageway when collided with V1 (Car) travelling in same direction.
10	WN267913	A5056, Danes Camp Way roundabout.	Slight (Car Driver)	05/11/2013 07:30 Dry / Light	V1 (Car) and V2 (Car) correct lanes to travel west when V1 attempts to turn left into path of V2 causing collision.
11	WN126114	Junction with A5076, roundabout and A5076, Danes Camp Way, Northampton.	Slight (Car Driver)	21/05/2014 18:10 Dry / Light	V1 (Goods 7.5 tonnes and over) in lane2 collides with V2 (Car) in lane1. V2 crosses both lanes and flips onto roof, stopping on the opposite side of the carriageway.
12	WN309014	A5076, Danes Camp Way, Northampton.	Serious (Pedestrian)	18/06/2014 03:30 Dry / Street Lights	V1 (Motorcycle) collides with C1 on pathway on the opposite side of the carriageway.
13	WN043415	U8375, Rothersthorpe Road and A5076, Danes Camp Way junction, Northampton.	Slight (Car Driver)	16/02/2015 08:30 Dry / Daylight	V2 (Car) collides with rear of V1 (Goods 3.5 tonnes and under) at junction.
14	WN117615	A5076, Danes Camp Way and A5076, Danes Camp Way roundabout, Northampton.	Slight (Car Driver)	11/05/2015 13:00 Dry / Light	V1 (Car) in lane 2 moves across path of V2 (Car) in lane1 at junction.
15	WN185015	C202 Oxford Road and A5076, Danes Camp Way roundabout, Northampton.	Slight (Car Driver. Car Passenger	18/07/2015 23:10 Dry / Dark	V1 (Car) collides with traffic lights at roundabout.
16	WN297415	A5076, Upton Way and A5076, Danes Camp Way roundabout, Northampton.	Slight (Car Driver)	17/11/2015 18:19 Dry / Dark	V1 (Car) collides with rear of V2 (Car).
17	WN328515	A5076, Danes Camp Way and A5076, Danes Camp Way roundabout, 50m northeast, Northampton.	Slight (Car Passenger)	18/12/2015 07:15 Dry / Light	V2 (Goods 7.5 tonnes and over) changing lane to left collides o/s with V1 (Car).
18	WN058716	A5076, Danes Camp Way roundabout and A5076, Upton Way, Northampton.	Slight (Car Driver)	13/03/2016 14:00 Dry / Light	V1 (Car) collides with rear of V2 (Car) on roundabout.
19	WN070516	A5076, Danes Camp Way roundabout and A5076, Danes Camp Way, Northampton.	Slight (Car Driver)	22/04/2016 16:09 Dry / Light	V1 (Car) collides with rear of V2 (Goods 7.5 tonnes and over) on roundabout.

15.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 15.2** and **15.3** respectively.

Table 15.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	3	3	0	0	0	0	0	0
2013	6	7	1	1	0	0	0	0
2014	1	1	1	1	0	0	0	0
2015	4	5			0	0	0	0
2016	2	2	0	0	0	0	0	0
Total	17	19	2	2	0	0	19	21

Table 15.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	1	0	0
P/Cycles	1	0	0	0
M/Cycles	1	0	0	0
Vehicle Drivers	14	0	0	0
Vehicle Passengers	3	1	0	0
Total	19	2	0	21

15.3 From **Tables 15.1** to **15.3** it is shown that the incidents recorded on the Danes Camp Way / Upton Way roundabout were due to driver error / misjudgement, including disobeying traffic signals and temporary road conditions.

15.4 Two of the incident resulted in serious injuries of vulnerable road users, one of which was a motorcycle rider and the other was a pedestrian.

15.5 The first serious incident occurred on 3rd July 2013 at 0735 in wet, light conditions. The incident occurred when a car and a motorcycle were negotiating the roundabout. The car appeared to brake hard and the motorcycle followed, however the motorcycle skidded and fell into the carriageway.

15.6 The second serious incident occurred on Wednesday 18th June 2014 at 0330 in dry, dark conditions. The street lights were present and lit. The incident occurred when a motorcycle collided with a pedestrian on the footway on the opposite side of the carriageway.

15.7 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the Danes Camp Way / Upton Way roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

16 A508 MILL LANE / HARBOROUGH ROAD TO BRAMPTON HEATH

16.1 A total of 53 PIC resulting in 66 recorded injury were reported to have occurred at the A508 Mill Lane / Harborough Road to Brampton Heath junction. A total of 41 incidents recorded in the study period were classified as slight, with 12 being classified as serious. A summary of the results of the data is shown in **Table 16.1**.

Table 16.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Details	LIKELY CAUSE
1	WN107712	A508 Queens Park Parade 75 metres south of Osborne Road	Serious (Motorcycle Rider)	01/05/2012 1120 Wet / Damp / Light	V2 (motorcycle) travelling south on Queens Park Parade collides with V1 (car) which has pulled out from V2's nearside facing north.
2	WN185912	Yelvertoft Road 40 metres east of junction with the A508 Harborough Road, Northampton	Slight (Car Driver)	29/07/2012 2330 Dry / Light	V1 (car) travelling eastbound on Yelvertoft Road collides with trailer protruding into the carriageway and pushes it into v2 (car).
3	WN194912	A508 Cock Hotel junction with Tollgate Way	Slight (Car Driver, Car Driver, Car Passenger)	05/08/2012 1400 Dry / Light	V1 (car) police with emergency blue lights tries to cross Cock Hotel crossroads southbound and V2 (car) eastbound on green but doesn't see V1 blue lights and collides with the side of V1.
4	WN203912	A5199 75 metres north of junction with A508	Slight (Pedestrian)	20/08/2012 1615 Dry / Light	C1 crossing road with mum holding hands when C1 breaks free and runs into path of V1 (car).
5	WN266412	North of junction between A508 Harborough Road and U8173 Yelvertoft Road	Slight (Pedestrian)	10/10/2012 1450 Dry / Dark	C1 crossing road westbound on A508. C1 stopped at central island as northbound traffic was slow, another vehicle indicated C1 to cross but C1 was hit by V1 (car) on the right hand side.
6	WN001813	A508 Harborough Road 50m south of junction with Kingsland Avenue, Kingsthorpe,	Serious (Pedestrian, Pedestrian)	04/01/2013 1703 Dry / Light	C1 and C2 cross road eastbound from pedestrian crossing central island on a red pedestrian signal into the path of V1 (car) on a green signal in lane 1 travelling southbound on A508.
7	WN036313	A508 Harborough Road adjacent to Yelvertoft Road	Slight (Car Driver)	19/02/2013 1145 Wet / Dark	V2 (cyclist) travelling north in lane 1. V1 (car) travelling north in lane 2. Unknown vehicle indicating to turn right in lane 2, V1 moves into lane 1 and collides with V2.
8	WN053413	A508 Harborough Road at the junction with Mill Lane	Slight (Car Driver, Car Passenger)	16/03/2013 0600 Dry / Light	V1 (car) travelling north fails to stop and collides with V2 (car) travelling east.

DRAFT

9	WN110313	A508 Harborough Road at the junction with Washington Street	Slight (Car Driver)	22/05/2013 1730 Dry / Light	V1 (car) travelling in lane 2 fails to negotiate manoeuvre into lane 1 and collides with V2 (car).
10	NK147113	Junction on A508 between Vyse road, Boughton and Brampton Lane	Slight (Cyclist)	09/07/2013 0730 Dry / Light	V1 (cycle) and V2 (car) – NO DESCRIPTION
11	WN193613	15m south of Bective Road junction on Harborough road	Slight (Motorcycle Rider)	30/08/2013 1756 Dry / Light	V1 (car) in lane 1 and V2 (motorcycle) in lane 2, both north. Both pull away and V1 moves into lane 2 colliding with V2.
12	WN249513	A508, Harborough Road (opposite indoor bowls centre).	Slight (Car Driver)	29/10/2013 1500 Wet / Dark	In queue of traffic when queue moves forwaroad, V1 (car) collides with V2 (car) which, in turn, collides with V3 (car).
13	WN008214	Junction with the U8460 Wallbeck Close and A508 Harborough Road	Serious (Pedestrian)	12/01/2014 1628 Dry / Light	V1 (car) travelling south when C1 steps out into carriageway and collides with front of V1.
14	WN038114	Junction with the U8322 Osborne Road and the A508 Kingsthorpe Road / Queens Park Parade	Slight (Car Driver, Car Passenger)	16/02/2014 0952 Dry / Light	V1 (car) collides with rear on side of V2 (car).
15	WN053714	A5095, Harborough Road	Slight (Cyclist)	04/03/2014 1542 Dry / Light	V1 (car) overtakes V2 (cycle) causing V2 to fall off cycle, V1 then drives off.
16	WN164714	A508 Harborough Road and the A508 Kingsthorpe Grove junction	Slight (Car Driver, Car Driver)	07/07/2014 1845 Dry / Light	V1 (car) collides with rear on side of V2 (car).
17	WD174714	A508 Harborough Road	Serious (Pedestrian)	19/07/2014 1745 Dry / Light	C1 for reasons unknown steps into path of V1 (car) travelling south.
18	WN211314	Boughton Green Road and A508, Harborough Road junction	Slight (Car Driver)	28/08/2014 1645 Dry / Dark	V1 (car) collides with rear of V2 (car) at junction.
19	WN236814	A508, Harborough Road and Kingsland Avenue junction	Slight (Motorcycle Rider)	22/09/2014 2113 Wet / Dark	V1 (motorcycle) collides with central reservation when moving out of the way for a police vehicle (V2 car).
20	WN305014	A5095, Kingsthorpe Grove slip road and the A508 Harborough Road	Serious (Pedestrian)	27/11/2014 1747 Dry / Dark	V1 (Van) travelling south east collides with C1 crossing the carriageway.
21	WN013915	A508 Kingsthorpe Grove	Slight (Car Driver)	19/01/2015 1935 Wet / Light	V1 (car) collides with rear of V2 (car) waiting at traffic lights.
22	WN021915	A508 Harborough Road and the C151 Mill Lane crossroads junction	Slight (Car Driver)	28/01/2015 1530 Dry / Dark	V1 (car) collides with rear of V2 (car) at traffic lights.
23	WN064315	A508 Harborough Road and Yelvertoft Road junction	Serious (Cyclist)	13/03/2015 2030 Wet / Light	V1 (car) turning right collides with on side of V2 (cycle) at the junction.
24	WN078615	A508 Harborough Road and the C151, Mill Lane crossroads junction	Slight (Car Driver, Car Driver,	31/03/2015 0620 Dry / Light	V2 (car) turning right collides with V1 (car) at the crossroads junction.

DRAFT

			Car Passenger)		
25	WN085815	A508 Harborough Road	Slight (Car Driver)	08/04/2015 1830 Dry / Light	V1 (car) collides with rear of V2 (car) slowing for traffic lights.
26	WN119215	A508 Alexandra Terrace and Yelvertoft Road junction	Serious (Pedestrian)	11/05/2015 1523 Dry / Light	V1 (car) turning right at junction collides with C1 crossing carriageway using central reservation.
27	WN134515	A508 Harborough Road	Slight (Pedestrian)	28/05/2015 1643 Dry / Light	V1 (minibus) travelling through green light signal collides with C1 on pedestrian crossing.
28	WN165715	A508 Alexandra Terrace and Bective Road junction	Slight (Pedestrian)	05/07/2015 1750 Dry / Light	C1 runs out between parked cars into path of V1 (car) travelling north.
29	WN194815	A508 Alexandra Terrace and Bective Road junction	Slight (Pedestrian)	31/07/2015 1947 Dry / Dark	V1 (car) travelling northbound collides with C1 crossing carriageway from near side.
30	WN204615	A508 Harborough Road and Bective Road junction	Serious (Motorcycle Rider)	12/08/2015 2150 Wet / Light	V1 (car) turning right pulls out of junction into path of V2 (motorcycle) travelling south.
31	WN206415	A508 Harborough Road	Slight (Pedestrian)	13/08/2015 1625 Dry / Dark	V1 (car) collides with C1 crossing road.
32	WN256715	53 metres northeast of the Boughton Green Road and the A508 Harborough Road junction	Serious (Car Passenger, Car Passenger)	11/10/2015 0235 Dry / Light	V1 (car) loses control colliding with parked cars on both side of the carriageway.
33	WN263315	A508 Harborough Road	Serious (Pedestrian)	14/10/2015 0903 Wet / Light	C1 crosses carriageway into path of V1 (car) changing lanes to right.
34	WN334515	A508 Harborough Road and Mill Lane crossroads junction	Slight (Car Driver)	27/12/2015 1514 Dry / Dark	V1 (car) collides with rear near side of V2 (car) travelling east.
35	WN000816	A508 Alexandra Terrace and U8023 Bective Road junction	Slight (Pedestrian)	02/01/2016 2359 Dry / Dark	C1 crossing carriageway is hit by V1 (car) travelling East.
36	WN031316	A508 Harborough Road and High Street junction	Slight (Car Driver)	09/02/2016 1810 Icy / Dark	V1 (car) turning right collides with V2 (car) travelling north.
37	WD045316	A508 Harborough Road North and A408 Harborough Road roundabout	Serious (Van Driver)	24/02/2016 0540 Dry / Light	V1 (Van) brakes, skids, collides with roundabout signage, leaves carriageway to near side, goes through fence coming to rest in field beyond.
38	WN103716	A508 Harborough Road and Cranforoad Road junction	Slight (Car Passenger)	03/08/2016 1715 Dry / Light	V1 (car) turns right at junction into path of V2 (van) in lane 1 travelling south west.
39	WN105516	A508 Alexandra Terrace and Yelvertoft Road junction	Slight (Pedestrian)	12/08/2016 1025 Dry / Light	V1 (car) collides front on side with C1 crossing carriageway.
40	WN110316	A508 Harborough Road and supermarket egress junction	Slight (Car Driver)	04/09/2016 1145 Wet / Light	V1 (car) pulls out into path of V2 (car) travelling north.
41	WN120316	A5076 Holly Lodge Drive and A508,	Slight (Car Driver)	19/09/2016 1555 Dry / Light	V1 (car) collides with rear of V2 (car) at junction.

DRAFT

		Harborough Road junction			
42	WN119516	A508 Harborough Road and Cranford Road junction	Slight (Cyclist)	21/09/2016 1734 Dry / Light	V1 (van) collides with V2 (cycle) at the junction.
43	WN131716	A508 Harborough Road and the A5199, Welford Road junction	Slight (Van Driver, Van Passenger)	28/10/2016 0710 Dry / Light	V1 (Van) collides with rear of V2 (Van) at the traffic lights.
44	WN143316	A508 Harborough Road and the C151 Mill Lane crossroad junction	Serious (Motorcycle Rider, Motorcycle Passenger)	06/11/2016 1040 Wet / Light	V1 (car) collides with V2 (motorcycle) at crossroad junction.
45	WN136416	A508 Harborough Road and the A5076, Holly Lodge Drive junction	Slight (Car Driver)	15/11/2016 1430 Wet / Dark	V1 (car) collides with V2 (car) at the junction.
46	WN142116	A508 Harborough Road	Slight (Cyclist)	25/11/2016 2115 Dry / Dark	V1 (car) collides with rear of V2 (cycle).
47	WN148716	A508 Harborough Road and the A508 Kingsthorpe Grove junction	Slight (Car Passenger, Car Passenger)	06/12/2016 1953 Wet / Dark	V1 (car) changing lane at the traffic signals pulls in front of V3 (HGV) in lane 1 shunting V2 (car) in lane 1 and is sandwiched between both V2 in lane 1 and V3 in lane 2.
48	WN144516	A508 Harborough Road and Whitehills Crescent junction	Slight (Van Driver)	07/12/2016 1720 Dry / Light	V1 (Van) turns right into path of V2 (Bus) travelling north.
49	WN000617	A508 Harborough Road and Chalcombe Road junction	Slight (Bus Passenger)	04/01/2017 1140 Dry / Dark	V1 (car) pulls out from parked position turning right across path of V2 (Bus) turning right at junction.
50	WN017817	A508 Harborough Road and supermarket egress junction	Slight (Car Passenger)	07/01/2017 1605 Dry / Light	V1 (Taxi) runs over C1's foot as boaroading vehicle.
51	WN002717	A508 Harborough Road and supermarket egress junction	Slight (Pedestrian)	23/01/2017 0835 Dry / Light	V1 (car) turning right collides with C1 on pedestrian crossing.
52	WN006617	A508 Harborough Road and the A5199, Welford Road junction	Slight (Cyclist)	08/02/2017 1530 Wet / Dark	V1 (car) collides with V2 (cycle) at junction.
53	WN014717	A508 Harborough Road and supermarket egress junction	Slight (Pedestrian)	10/02/2017 1910 Wet / Dark	V1 (car) turning right at junction collides with C1 on pedestrian crossing.

16.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 16.2** and **16.3** respectively.

Table 16.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	4	6	1	1	0	0	5	7
2013	6	7	1	2	0	0	7	9
2014	5	7	3	3	0	0	8	10
2015	9	12	5	6	0	0	14	18
2016	12	14	2	3	0	0	14	17
2017	5	5	0	0	0	0	5	5
Total	41	51	12	15	0	0	53	66

Table 16.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	10	7	0	17
P/Cycles	5	1	0	6
M/Cycles	2	2	0	4
Vehicle Drivers	23	1	0	24
Vehicle Passengers	11	4	0	15
Total	51	15	0	66

16.3 From **Tables 16.1** to **16.3** it is shown that the incidents recorded on the A508 Mill Lane / Harborough Road to Brampton Heath junction were due to driver error / misjudgement, aggressive driving, drivers under the influence of alcohol or temporary weather conditions.

16.4 A total of 13 PICs involving pedestrians occurred at the A508 Mill Lane / Harborough Road to Brampton Heath study area which resulted in eight slight and sixn serious injuries.

16.5 The first serious incident involving two pedestrians occurred on 4th January 2013 at 1703 in dry, light conditions. It occurred when two pedestrians crossed the road on a red light signal into the path of an oncoming car on a green light signal.

16.6 The second serious incident involving a pedestrian occurred on 12th January 2014 at 1628 in dry, light conditions. It occurred when a pedestrian stepped into the carriageway into the path of an oncoming vehicle.

16.7 The third serious incident involving a pedestrian occurred on 19th July 2014 at 1745 in dry, light conditions. It occurred when a pedestrian stepped into the carriageway into the path of an oncoming vehicle, for an unknown reason.

16.8 The fourth serious incident involving a pedestrian occurred on 11th May 2015 when a car turning right collided with a pedestrian crossing the carriageway using the central reservation.

16.9 The last serious incident involving a pedestrian occurred on 14th October 2015 at 0903 in wet, light conditions. It occurred when a pedestrian crossed the carriageway in the path of an oncoming vehicle.

16.10 A total of five PICs involving cyclists occurred in the study area which resulted in four slight and one serious injury.

16.11 The serious incident involving a cyclist occurred on 13th March 2015 at 2030 in wet, light conditions. It occurred when a car turning right collided with the side of a cyclist at the junction.

16.12 A total of four PICs involving motorcyclists occurred in the study area which resulted in two slight and four serious injuries.

16.13 The first serious incident involving a motorcyclist occurred on 1st May 2012 at 1120 in wet, light conditions. It occurred when a motorcycle travelling south collided with a car that emergerd from the junction.

16.14 The second serious incident involving a motorcyclist occurred on 12th August 2015 at 2150 in wet, light conditions. It occurred when a car emerged right out of the junction into the path of an oncoming motorcyclist.

16.15 The last serious incident involved a motorcycle rider and passenger and occurred on 6th November 2016 at 1040 in wet, light conditions. It occurred when a car and a motorcyclist collided at the junction for an unknown reason.

16.16 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the A508 Mill Lane / Harborough Road to Brampton Heath junction and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

17 A43 LUMBERTUBS WAY / A5076 TALAVERA WAY ROUNDABOUT

17.1 A total of 13 PIC resulting in 15 recorded injury were reported to have occurred at the A45 Lumbertubs Way / A5076 Talavera Way roundabout. All of the incidents recorded in the study period were classified as slight. A summary of the results of the data is shown in **Table 17.1**.

Table 17.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Details	LIKELY CAUSE
1	WN039413	A43 roundabout exit from round Spinney roundabout with A5076 Talavera Way	Slight (Car Driver)	24/02/2013 1135 Dry / Light	V1 (car) travelling northbound on the A43 exits the Spinney roundabout and collides with the barrier.
2	WN193313	A43 / Thorpville and U8406 / Stone Circle Road junction	Slight (Motorcycle Rider)	01/09/2013 1420 Dry / Light	V1 (car) collides with the rear of v2 (motorcycle) that was stationary at the traffic lights. V1 fails to stop.
3	WN292513	A43 roundabout at Lumbertubs Way / Talavera Way	Slight (Car Driver, Car Passenger)	07/12/2013 0526 Dry / Dark – Street Lights Lit	V1 (car) mounts the central reservation and collides with the traffic light head, then the barrier on the opposite side of the carriageway knocking out the second traffic light head.
4	WN154314	100 metres northeast of A5076 Talavera Way / A43 roundabout	Slight (Pedestrian)	25/06/2014 1643 Dry / Light	C1 ran into the path of v1 (car) travelling northwest.
5	WN304914	A43 roundabout	Slight (Car Driver)	26/11/2014 1535 Wet / Light	V1 (car) collides with v2 (car) on the roundabout.
6	WD311814	A5076 Talavera Way / A43 roundabout	Slight (Bus Passenger, Bus Passenger)	03/12/2014 1200 Dry / Light	V1 (car) in the central lane collides with v2 (minibus) in the left lane, leaving the roundabout junction at the first exit.
7	WN332514	A5076 Talavera Way / A43 roundabout	Slight (Car Driver)	23/12/2014 1125 Dry / Light	V1 (car) collides with the rear of v2 (car) on the roundabout.
8	WN050015	A43 roundabout at Lumbertubs Way / Talavera Way	Slight (Car Driver)	27/02/2015 0920 Dry / Light	V1 (HGV) collides with v2 (car).
9	WN179115	200 metres southeast of A5076 Talavera Way / A43 roundabout	Slight (Car Driver)	17/07/2015 1152 Dry / Light	V1 (car) exiting the roundabout, changes lanes and loses control of the vehicle.
10	WN261215	A43 roundabout at Lumbertubs Way / Talavera Way	Slight (Pedestrian)	15/10/2015 1530 Dry / Light	V1 (car) collides with C1 causing v1 and v2 (car) to brake suddenly, and as a result, v3 (car) collides with the rear of v2.

DRAFT

11	WN282415	Lumbertubs Way / Talavera Way roundabout	Slight (Car Driver)	08/11/2015 0130 wet / Dark – Street Lights Lit	V1 (car) swerves to avoid collision, collides with the kerb and rebounds into the central reservation.
12	WN126316	A43 Thorpeville Road / A43 Talavera Way roundabout	Slight (Car Driver)	18/10/2016 1040 Wet / Light	V1 (LGV) collides with the rear of v2 (car) at the roundabout.
13	WN137416	U8406 Stone Circle Road and KAB seating access	Slight (Car Driver)	16/11/2016 0720 Wet / Light	V1 (car) turning left collides with v2 (car) head on at the junction.

17.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 17.2** and **17.3** respectively.

Table 17.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	0	0	0	0	0	0	0	0
2013	3	4	0	0	0	0	3	4
2014	4	5	0	0	0	0	4	5
2015	4	4	0	0	0	0	4	4
2016	2	2	0	0	0	0	2	2
Total	13	15	0	0	0	0	13	15

Table 17.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	2	0	0	2
P/Cycles	0	0	0	0
M/Cycles	1	0	0	1
Vehicle Drivers	9	0	0	9
Vehicle Passengers	3	0	0	3
Total	15	0	0	15

17.3 From **Tables 17.1** to **17.3** it is shown that the incidents recorded on the A45 Lumbertubs Way / A5076 Talavera Way roundabout were due to driver error / misjudgement.

17.4 A total of two PICs involved vulnerable road users, of which one was a pedestrian and one was a motorcycle rider

17.5 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the A45 Lumbertubs Way / A5076 Talavera Way roundabout and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

18 A43 / TOWCESTER ROAD

18.1 A total of three PICs resulting in three recorded injuries were reported to have occurred on the A43 / Towcester Road. A total of two of the incidents recorded in the study period were classified as slight with one being classified as serious.

18.2 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location (and at other central reserve junctions along the A43) and recommendations were made for improvements to the junction following a committee review. These recommendations are contained within **1211-80/TN28.**

18.3 A summary of the results of the data is shown in **Table 18.1**.

Table 18.1 – Summary of Personal Injury Accident Data – Towcester bypass roundabout

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WS250013	Junction with A43 westbound and C188, Towcester Road, Tiffield.	Serious (Passenger)	30/10/2013 18:54 Dry / Dark	V1 (Car) pulls away from slip road into path of V2 (Car) travelling westbound along A43.
2	WS052815	A43, Oxford Road and C188, Towcester Road junction, Blisworth.	Slight (Motorcycle)	27/02/2015 15:45 Dry / Light	V1 (Motorcycle) collides with rear of V2 (Goods 7.5 tonnes and over) at junction.
3	WS005416	A43, Oxford Road and C188, Towcester Road junction, Blisworth.	Slight (Car Driver)	04/01/2016 17:10 Wet / Dark	V1 (Car) turning right collides with V2 (Car) travelling southwest.

18.4 A summary of the accident severity by year and by casualty type are summarised in **Tables 18.2** and **18.3** respectively.

Table 18.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	0	0	0	0	0	0	0	0
2013*	0	0	1	1	0	0	1	1
2014	0	0	0	0	0	0	0	0
2015	1	1	0	0	0	0	1	1
2016	1	1	0	0	0	0	1	1

Total	2	2	1	1	0	0	3	3

Table 18.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	0	0	0
M/Cycles	1	0	0	1
Vehicle Drivers	1	0	0	3
Vehicle Passengers	0	1	0	1
Total	2	1	0	3

18.5 From **Tables 18.1** to **18.3** it is shown that the incidents recorded on the A43 / Towcester Road were due to driver error / misjudgement.

18.6 The serious collision resulted in a car passenger being injured. It appears to have occurred when one car pulled out at the slip road into the path of an oncoming vehicle. The likely cause is driver error or misjudgement.

18.7 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the A43 / towcester Road and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

19 A43 / ST JOHNS ROAD

19.1 A total of four PICs resulting in seven recorded injuries were reported to have occurred on the A43 / St Johns Road. A total of two of the incidents recorded in the study period were classified as slight with one being classified as serious and one resulting in a fatality.

19.2 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location (and at other central reserve junctions along the A43) and recommendations were made for improvements to the junction following a committee review. These recommendations are contained within **1211-80/TN29.**

19.3 A summary of the results of the data is shown in **Table 19.1**.

Table 19.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WS187212	A43, Tiffield at the junction with the U4122, St John's Road.	Serious (Passenger) Slight (Car Driver, Car Driver)	26/07/2012 09:15 Dry / Light	V1 (Car) has pulled out onto the A43 from cental reservation and has collided with V2 (Car) which was travelling n along A43. V2 is then pushed into V3 (Car) which was waiting on st johns road to enter the A43.
2	TS801813	Junction with U4122. St John's Road and A43 Brackley to northampton, Tiffield	Fatal (Car Driver) 1 Serious (Car Driver)	19/09/2013 17:05 Dry / Light	V1 (Car) pulls out into path of V2 (Car) heading towards Northampton. V2 collides with V1 causing C1 to eject from the car.
3	WS218314	A43 southbound and U4122, St john's Road, Tiffield.	Slight (Passenger)	06/09/2014 14:51 Dry / Light	V1 (Car) pulls out from junction and collides with V2 (Car) travelling sw.
4	WN011213	A43, Oxford Road and U4122, St John's Road junction, Tiffield.	Slight (Car Driver)	23/11/2015 17:35 Dry / Dark	V1 (Car) collides with V2 (Car) at junction.

19.4 A summary of the accident severity by year and by casualty type are summarised in **Tables 19.2** and **19.3** respectively.

Table 19.2 – Summary of PIC severity by year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	1	2	1	1	0	0	1	3
2013*	0	0	1	1	1	1	1	2
2014	1	1	0	0	0	0	1	1
2015	1	1	0	0	0	0	1	1
2016	0	0	0	0	0	0	0	0
Total	3	4	2	2	1	1	4	7

Table 19.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	0	0	0
M/Cycles	0	0	0	0
Vehicle Drivers	3	1	1	5
Vehicle Passengers	1	1	0	2
Total	4	2	1	7

19.5 The serious PIC occurred on Thursday 26 July 2012 at 0915 in dry, light conditions. The incident appears to have occurred when v1 (car) joined the A43 from the central reservation and collided with v2 (car) travelling northbound on the A43. V2 was then shunted into v3 (car) which was on St John's Road to enter the A43. This incident resulted in one serious (female, 70 years) and two slight injuries.

19.6 The fatal incident occurred on Thursday 19th September 2013 at 1705 in dry, light conditions. The PIC appeared to have occurred when v1 (car) emerged from St John's Road onto the A43 into the path of v2 (car). V2 collided with v1 causing the car driver (c1) to eject from the vehicle. It appears as though the driver of v1 was not wearing a seatbelt. This resulted in one fatality (female, 89) and one serious injury (male, 43).

19.7 None of the PICs involved vulnerable road users such as cyclists or pedestrians.

19.8 Overall, **Tables 19.1** to **19.3** show that three of the four incidents involved vehicles emerging from the minor arms colliding with northbound vehicles on the A43. There is no obvious pattern to the time, date or road and lighting conditions of the recorded PICs and it is considered that

the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

20 A43 / NORTHAMPTON ROAD JUNCTION

20.1 A total of six PICs resulting in eight recorded injuries were reported to have occurred on the A43 / Northampton Road. A total of four of the incidents recorded in the study period were classified as slight with one being classified as serious and one resulting in a fatality.

20.2 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location (and at other central reserve junctions along the A43) and recommendations were made for improvements to the junction following a committee review. These recommendations are contained within **1211-80/TN31.**

20.3 A summary of the results of the data is shown in **Table 20.1**.

Table 20.1 – Summary of Personal Injury Accident Data – Towcester bypass roundabout

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WS210512	A43 southwest, C188 Northampton Road	Slight (Car Driver, Car Driver)	24/08/2012 17:50 Dry / Light	V1 (Car) has entered the junction and collided with V2 (Car).
2	WS303512	At junction of A43 and C188 Northampton Road, Towcester	Slight (Car Driver, Car Passenger)	05/11/2012 17:08 Dry / Dark	V1 (Car) northbound on A43 turns right into Northampton Road and collides with V2 (Car) southbound on A43.
3	WS293714	A43, Oxford road and U4121, Northampton Road, Hulcote.	Slight (Car Driver)	13/11/2014 18:49 Dry / Dark	V1 (Car) pulled across junction into path of V2 (Car) travelling southwest.
4	TS800715	A43, Oxford road and C188, Northampton Road junction, Towcester.	Fatal (Car Driver)	27/04/2015 22:36 Dry / Dark	V2 (Car) collides with rear of V1 (Car) shunting vehicle off the carriagway to n/s at junction.
5	WS289515	A43, Oxford road and C188, Northampton Road junction, Hulcote.	Serious (Driver)	12/11/2015 17:50 Dry / Light	V1 (Goods 7.5 tonnes and over) waiting in central refuge to join carriagway, V2 (Car) in lane 2 opposite carriageway and collides with the rear of V1.
6	WS065516	U4121, Northampton Road and A43, Oxford Road junction, Hulcote.	Slight (Car Driver)	01/04/2016 10:20 Dry / Light	V1 (Car) collides with V2 (Car) at junction.

20.4 A summary of the accident severity by year and by casualty type are summarised in **Tables 20.2** and **20.3** respectively.

Table 20.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	2	4	0	0	0	0	2	4
2013*	0	0	0	0	0	0	0	0
2014	1	1	0	0	0	0	1	1
2015	0	0	1	1	1	1	1	2
2016	1	1	0	0	0	0	1	1
Total	4	6	1	1	1	1	5	8

Table 20.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	0	0	0
M/Cycles	0	0	0	0
Vehicle Drivers	5	1	1	7
Vehicle Passengers	1	0	0	1
Total	6	1	1	8

20.5 From **Tables 20.1** to **20.3** it is shown that all of the incidents involved right turners, one of which was a rear end shunt.

20.6 One of the incidents resulted in a serious injury. It occurred on Thursday 12 November 2015 at 1750 in dry, light conditions. The incident occurred as v1 (HGV 7.5T and over) was waiting in the central refuge to join the carriageway and v2 (car) collided with the rear of v1. This PIC resulted in one serious injury (car driver, male, 67).

20.7 One of the recorded PICs resulted in a fatality (car driver, male, 78). It occurred on Monday 27 April 2015 at 2236 in dry, dark conditions (street lighting unknown). The incident appears to have occurred due to v2 (car) colliding with the rear of v1 (car) making a right turn onto the A43, and shunting the vehicle off the carriageway.

20.8 None of the PICs involved vulnerable road users such as cyclists or pedestrians.

20.9 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with A43 / Northampton Road junction

and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

21 A43 (SITE ACCESS)

21.1 A total of three PICs resulting in three recorded injuries were reported to have occurred on the A43. All three of the incidents recorded in the study period was classified as slight. A summary of the results of the data is shown in **Table 21.1**.

Table 21.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WS281512	A43 dual carriageway 3000m north of junction with C188 Towcester Road	Slight (Driver)	09/11/2012 No Further Details	V1 (Goods over 3.5 tonnes) lane1 travelling northbound on the A43. V1 hit the central barrier and overturned.
2	WS321114	A43 Oxford Road and M1 junction 15A, 800m southwest, Rothersthorpe	Slight (Driver)	10/12/2014 16:40 Dry / Light	V1 (Goods 3.5 tonnes and under) collides with V2 (Car), V3 (Car) with V1 and V4 (Car) with V3.
3	WS240115	A43 southbound, Milton Malsor	Slight (Driver)	22/09/2015 10:35 Wet / Light	V1 (Car) collided with rear of V2 (Goods 7.5 tonnes and over).

21.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 21.2** and **21.3** respectively.

Table 21.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	1	1	0	0	0	0	1	1
2013	0	0	0	0	0	0	0	0
2014	1	1	0	0	0	0	1	1
2015	1	1	0	0	0	0	1	1
2016	0	0	0	0	0	0	0	0
Total	4	4	0	0	0	0	3	3

DRAFT

Table 21.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	0	0	0
M/Cycles	0	0	0	0
Vehicle Drivers	3	0	0	3
Vehicle Passengers	0	0	0	0
Total	3	0	0	3

21.3 From **Tables 21.1** to **21.3** it is shown that the incidents recorded on the A43 were due to driver error / misjudgement.

21.4 None of the incidents involved vulnerable road users such as pedestrians or cyclists.

21.5 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the A43 and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

22 BLISWORTH

22.1 A total of 12 PICs resulting in 18 recorded injuries were reported to have occurred within Blisworth. All of the incidents recorded in the study period were classified as slight. A summary of the results of the data is shown in **Table 37.1**.

Table 22.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WS071612	C188 High Street 20m west of the junction with C27 Stoke Road, Blisworth	Slight (Driver, Passenger, Passenger, Passenger)	18/03/2012 14:35 Wet / Light	V2 (Car) travelling west on High Street comes to a stop 20m w of the junction with Stoke Road, to allow unknown vehicle travelling e to pass parked cars. V1 (Car) travels n on Stoke Road, and turns w onto High Street. V1 then collides with the rear of V2.
2	WS234212	C27 Stoke Road 235m south of U4123	Slight (Pedestrian)	19/09/2012 09:00 Dry / Light	V1 (Goods 3.5 tonnes and under) travelling southbound on C27. 2 vehicles in front of V1 pass C1 who is walking southbound on C27 but V1 doesnt see C1 and collides with righthand side of C1.
3	WS009413	C188 High Street 40m west of C27 Stoke Road Blisworth	Slight (Driver)	18/01/2013 13:30 Snow / Light	V2 (Car) parked C1 exits V2 and stands next to V2 in road. V1 (Car) wing mirror collides with C1.
4	WS020913	C188 Towcester Road at junction with U4123 Gayton Road, Blisworth	Slight (Driver)	01/02/2013 06:30 Wet / Dark	V1 (Car) travelling s/w loses control collides with street signage spins, hits a tree and ends up outside no1 Gayton Road.
5	WS041613	Junction of U4123 Courteenhall Road and C188 Northampton Road, Blisworth.	Slight (Driver)	09/02/2013 17:20 Wet / Dark	V1 (Car) northbound on Courteenhall Road applies brakes but doesn't stop so applies hand causing V1 to spin and collide with post of o/s and then collide with V2 (Car) who is stationary facing southbound at Northampton Road junction waiting to join Courteenhall Road.
6	WS142413	C27 Blisworth Road at the junction with the U4124	Slight (Car Driver, Car Driver, Passenger)	22/06/2013 14:26 Dry / Light	V1 (Car) travelling s/w fails to stop at give way sign and collides with V2 (Car) travelling n/w.
7	WS253813	C188 Northampton Road, Blisworth.	Slight (Car Driver)	31/10/2013 18:38 Dry / Dark	V1 (Car) swerved, tried to regain control but mounted kerb, flipped and rolled towards railway bridge.
8	WS303613	400M southwest of junction with the U41230 and the U4123 Courteenhall Road, Blisworth.	Slight (Passenger, Passenger)	20/12/2013 23:00 Wet / Dark	V1 (Car) loses control on bend, collides with gate, clips tree and comes to rest half way in road/half way in grass verge.

9	WS038214	202m northeast of the junction with the U124, Station Road and the C188 Northampton Road, Blisworth. At the entrance to Elite Caravans	Slight (Driver)	10/02/2014 14:10 Wet / Light	V1 (Car) indicating right, V2 (Motorcycle) fails to stop and collides rear of V1.
10	WS040415	C188, Northampton Road, Blisworth.	Slight (Passenger)	17/02/2015 11:50 Ice / Light	V1 (Car) crossing carriageway collides with V2 (Goods 7.5 tonnes and over) travelling ne.
11	WS249915	C188, High Street and the U4123, Little Lane junction, Blisworth.	Slight (Cyclist)	29/09/2015 11:48 Dry / Light	V1 (Goods 3.5 tonnes and under) collides with V2 (Pedal Cycle) at junction.
12	WS333415	C27, Stoke Road and the U4123 Greenside, Blisworth.	Slight (Pedestrian)	20/12/2015 14:00 Dry / Dark	V1 (Car) reversing off driveway collides with C1.

22.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 22.2** and **22.3** respectively.

Table 22.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	2	5	0	0	0	0	2	5
2013	6	10	0	0	0	0	6	10
2014	1	1	0	0	0	0	1	1
2015	3	3	0	0	0	0	3	3
2016	0	0	0	0	0	0	0	0
Total	12	19	0	0	0	0	12	19

Table 22.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	2	0	0	2
P/Cycles	1	0	0	1
M/Cycles	1	0	0	1
Vehicle Drivers	8	0	0	8
Vehicle Passengers	7	0	0	7
Total	19	0	0	19

22.3 From **Tables 22.1** to **22.3** it is shown that the incidents recorded within Blisworth were due to driver error / misjudgement.

22.4 A total of four incidents resulted in slight injuries to vulnerable road users, two of which involved pedestrians, one a cyclist and one a motorcycle rider.

22.5 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the junctions in Blisworth and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

23 MILTON MALSOR

23.1 A total of five PICs resulting in five recorded injuries were reported to have occurred within Milton Malsor and the surrounding areas. A total of four of the incidents recorded in the study period were classified as slight, with one being classified as serious. A summary of the results of the data is shown in **Table 23.1**.

Table 23.1 – Summary of Personal Injury Accident Data

No.	REF	LOCATION	SEVERITY	Date / Time / Conditions	Description
1	WN132112	C67, Gayton Road, Milton Malsor. 700m northwest of the C188, Towcester Road.	1 Slight (Driver)	28/05/2012 06:30 Dry / Light	V1 (Car) travelling southeast is in the wrong lane and collides with V2 (Goods 3.5 tonnes and under) travelling northwest.
2	WS316212	C188 Towcester Road 73m southwest of the U4125 Malsor Road	1 Slight (Driver)	05/12/2012 09:10 Frost / Daylight	V1 (Car) travelling n/e takes the right bend and skids on ice, goes onto opposite footpath ends up in the carriageway for opposing traffic colliding with V2 (Car).
3	WS093613	C188 Towcester Road at the junction with C67 Rectory Lane, Milton Malsor	1 Serious (Cyclist)	01/05/2013 18:00 Dry / Daylight	V1 (Car) travelling n/w turning left to travel n/e. V2 (Pedal Cycle) travelling from n/e waiting in the centre of the carriageway to turn right. V1 fails to see V2 and collides causing V2 to fall onto bonnet of V1.
4	WS296915	U4125 Stockwell Road, Milton Malsor	1 Slight (Driver)	20/11/2015 07:30 Wet / Daylight	V1 (Car) collides with rear of V2 (Car).
5	WS115013	At junction of C188 Towcester Road and C67 Rectory lnn Milton Malsor	1 Slight (Motorcycle)	31/05/2016 12:52 Dry / Daylight	V1 (Goods 3.5 tonnes and under) turns right out of rectory ln to head northbound on Towcester Road into path of V2 (Motorcycle) and V2 collides with V1 and V2 collides with V3 (Car) stationary at rectory lnn. junction.

23.2 A summary of the accident severity by year and by casualty type are summarised in **Tables 23.2** and **23.3** respectively.

Table 2.2 – Summary of PIC Severity by Year

	Slight		Serious		Fatal		Total	
	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties	Incidents	Casualties
2012	2	2	0	0	0	0	2	2
2013	0	0	1	1	0	0	1	1
2014	0	0	0	0	0	0	0	0

2015	2	2	0	0	0	0	2	2
2016	1	1	0	0	0	0	1	1
Total	5	5	2	2	0	0	7	7

Table 23.3 – Summary of PIC Severity by Casualty Type

Casualties	Slight	Serious	Fatal	Total
Pedestrians	0	0	0	0
P/Cycles	0	1	0	0
M/Cycles	1	0	0	1
Vehicle Drivers	3	0	0	3
Vehicle Passengers	0	0	0	0
Total	4	1	0	5

23.3 From **Tables 23.1** to **23.3** it is shown that the incidents recorded on the Towcester bypass roundabout were due to driver error / misjudgement or temporary weather and road conditions.

23.4 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated within Milton Malsor and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem.

DRAFT

DRAFT

APPENDIX C
NSTM LMVR

REPORT N^{O} 70027834

RAIL CENTRAL SRFI, MILTON MALSOR / BLISWORTH

LOCAL MODEL VALIDATION REPORT

CONFIDENTIAL

MARCH 2017

WSP | PARSONS BRINCKERHOFF

RAIL CENTRAL SRFI, MILTON MALSOR / BLISWORTH

LOCAL MODEL VALIDATION REPORT

Northamptonshire County Council

Type of document
Confidential

Project no: 70027834
Date: March 2017

WSP | Parsons Brinckerhoff
Mountbatten House
Basing View
Basingstoke
RG21 4HJ

Tel: +44(0) 1256 318621
Fax: +44(0) 1256 318700

www.wsp-pb.co.uk

QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks				
Date	20 March 2017			
Prepared by	Jon Cassell			
Signatures				
Checked by	Mily Parveen			
Signature				
Authorised by	Craig Drennan			
Signature				
Project number	70027834			
Report number				
File reference	S:\Northants Multi Modal Transport Model\ANALYSIS\#Developer Testing\TPA Rail Dev\Text\LMVR v2\TPA Rail Central LMVR 200317.docx			

TABLE OF CONTENTS

1 APPRAISAL PURPOSE AND MODEL DEVELOPMENT CONSIDERATIONS....1

2 DEVELOPMENT OVERVIEW....3

3 KEY FEATURES OF THE NSTM....5

4 WIDE AREA DATA COLLECTION....11

5 LOCAL AREA DATA COLLECTION....13

6 HIGHWAY NETWORK DEVELOPMENT METHODOLOGY....15

7 TRIP MATRIX DEVELOPMENT....20

8 CALIBRATION – MATRIX ESTIMATION....31

9 LOCAL AREA CALIBRATION AND VALIDATION....36

10 WIDER AREA CALIBRATION AND VALIDATION....52

11 CONCLUSION....60

1 APPRAISAL PURPOSE AND MODEL DEVELOPMENT CONSIDERATIONS

1.1 INTRODUCTION

1.1.1 WSP | Parsons Brinckerhoff has been tasked by Northamptonshire Highways, on behalf of Transport Planning Associates (TPA), to undertake transport modelling to assess the potential impacts of the proposed Rail Central Strategic Rail Freight Interchange (SRFI) development in Milton Malsor / Blisworth, Northamptonshire. The transport modelling assessment work uses the 2015 Northamptonshire Strategic Traffic Model (NSTM).

1.1.2 The proposed Rail Central Scheme in Northamptonshire is located on land to the south-west of M1 junction 15A adjacent to the A43 (see Figure 2.1). In keeping with the agreed methodology for development and scheme testing (Appendix A), initial validation checks were undertaken before assessing the development's impact.

1.1.3 Local Automatic Number Plate Recognition (ANPR), Automatic Traffic Count (ATC) and Manual Classified Count (MCC) data was collected in June and July 2016 at various locations around the proposed development (see Chapter 2) by PCC Traffic Information Consultancy. A local area validation and calibration exercise was conducted using the June and July 2016 data and other existing survey data. This report sets out the results of this exercise.

1.1.4 The impact of the development proposals is assessed using the 2015 updated NSTM. The information contained within this report only considers the results of the calibration and validation exercise. It does not provide any comment on the actual impact of the scheme, nor does it suggest any mitigation proposals to address the potential traffic impact of the SRFI.

1.2 BACKGROUND

1.2.1 The 2015 Northamptonshire Strategic Transport Model (NSTM) consists of a:

- → SATURN (Simulation and Assignment of Traffic in Urban Road Networks) suite: used to build the observed highway model
- → EMME3: used to build the Demand Model and the Public Transport Model.

1.2.2 The NSTM, developed by WSP | Parsons Brinckerhoff offers an integrated system for a range of transport modes, representing private and public transport, and modal interchange behaviour.

1.2.3 The NSTM has the ability to quantify the benefits of a policy change or new transport infrastructure, enabling the assessment of future transport proposals and developments (including those which developer led) in an efficient, consistent and evidentially based manner.

1.2.4 The model specification was developed in accordance with current Department for Transport (DfT) guidelines detailed in DfT Transport Analysis Guidance (TAG)[1]. The TAG website provides information on the role of transport modelling and appraisal to assist in the provision of a consistent and reputable approach for the development of transport models.

[1] https://www.gov.uk/guidance/transport-analysis-guidance-webtag

1.3 GUIDANCE

1.3.1 The model development has been guided by the following units of the DfT's TAG:

- Unit M1 "Principles of Modelling and Forecasting" (January 2014)
- Unit M1.2 "Data Sources and Surveys" (January 2014)
- Unit M2 "Variable Demand Modelling" (January 2014)
- Unit M3.1 "Highway Assignment Modelling" (January 2014)
- Unit M3.2 "Public Transport Assignment Modelling" (January 2014)
- Unit M5.1 "Modelling Parking and Park and Ride" (January 2014)

1.4 REPORT PURPOSE AND STRUCTURE

1.4.1 This report details the development and calibration and validation of the updated NSTM base year model. The structure of this Local Model Validation Report (LMVR) is as follows:

- Chapter 2 provides an overview of the development proposals
- Chapter 3 summarises key features of the NSTM
- Chapter 4 and Chapter 5 provide an overview of the data available for NSTM validation and calibration, both in the local area and the wider area
- Chapter 6 describes the development of the highway network
- Trip matrix development is outlined in Chapter 7
- Model calibration, specifically matrix estimation, is dealt with in Chapter 8
- Chapter 9 and Chapter 10 provide the results of the calibration and validation process in the local and wider areas, respectively
- Chapter 11 concludes the report.

2 DEVELOPMENT OVERVIEW

2.1 LOCATION

2.1.1 The proposed Rail Central SRFI is located on an area of undeveloped land bounded by the village of Milton Malsor to the North, the West Coast Mainline railway to the south and the A43 to the west.

2.1.2 It is currently proposed that access to the site will be via a new grade separated junction onto the A43, as shown in Figure 2.1. Northampton Road passes adjacent to the site, however there will be no traffic connections to this route from the development's internal road network. It is proposed that emergency, pedestrian and cycle access is to be provided from Northampton Road.

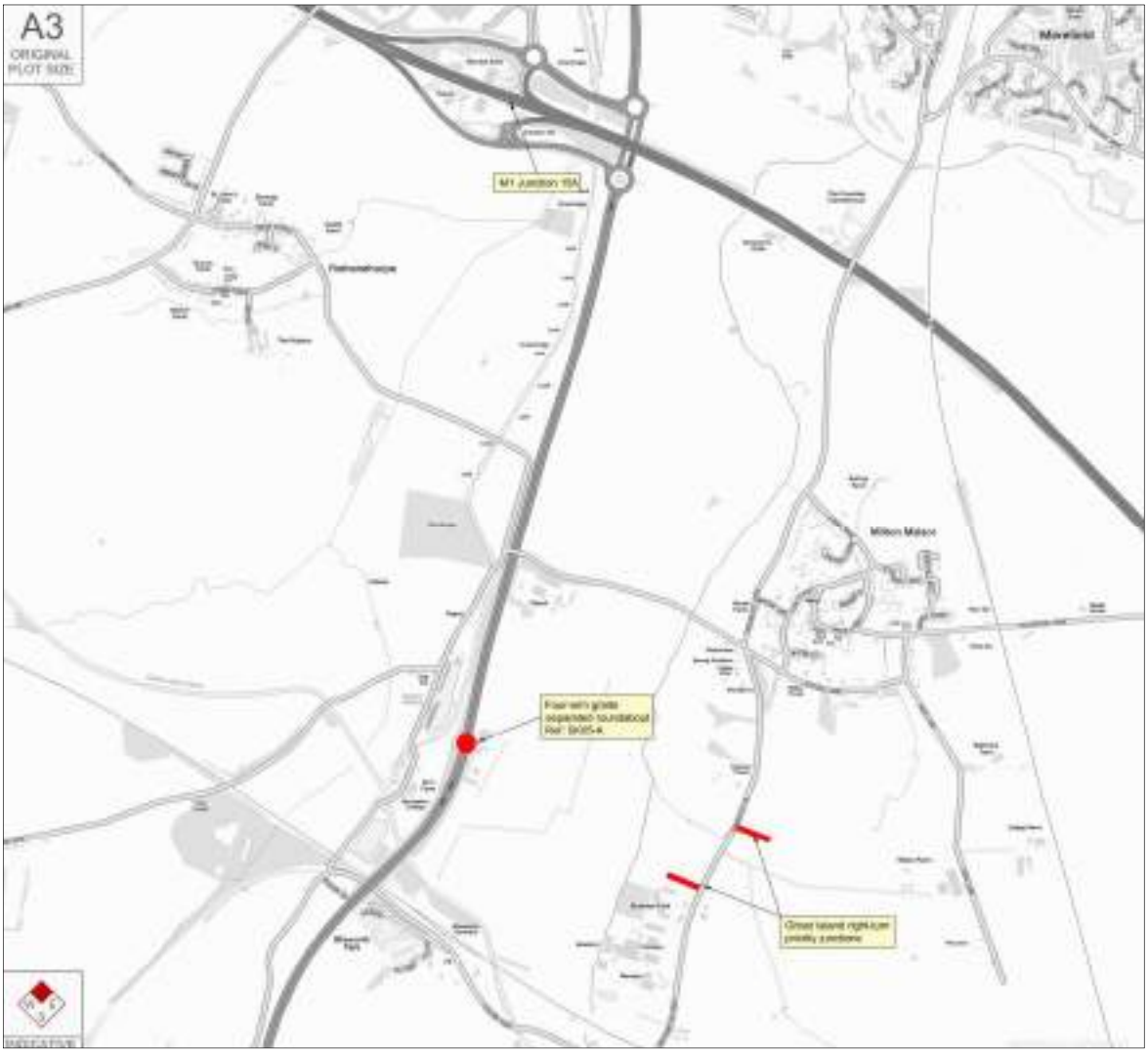


Figure 2.1 Location of Rail Central, South of Northampton

2.2 LAND USE PROPOSALS

2.2.1 The current land use proposals include:

- An inter-modal park on the Northampton Loop railway line
- Up to 8 million square feet of warehouse/distribution units
- A train maintenance depot
- A 149 space Heavy Goods Vehicle (HGV) truck park.

2.3 AREA OF INFLUENCE

2.3.1 An area of influence has been identified through an initial analysis of the traffic impact of the scheme using the NSTM, combined with discussions with interested parties regarding other routes and areas that maybe affected by the scheme. The area of influence, for transport modelling purposes, is shown in Figure 2.2.

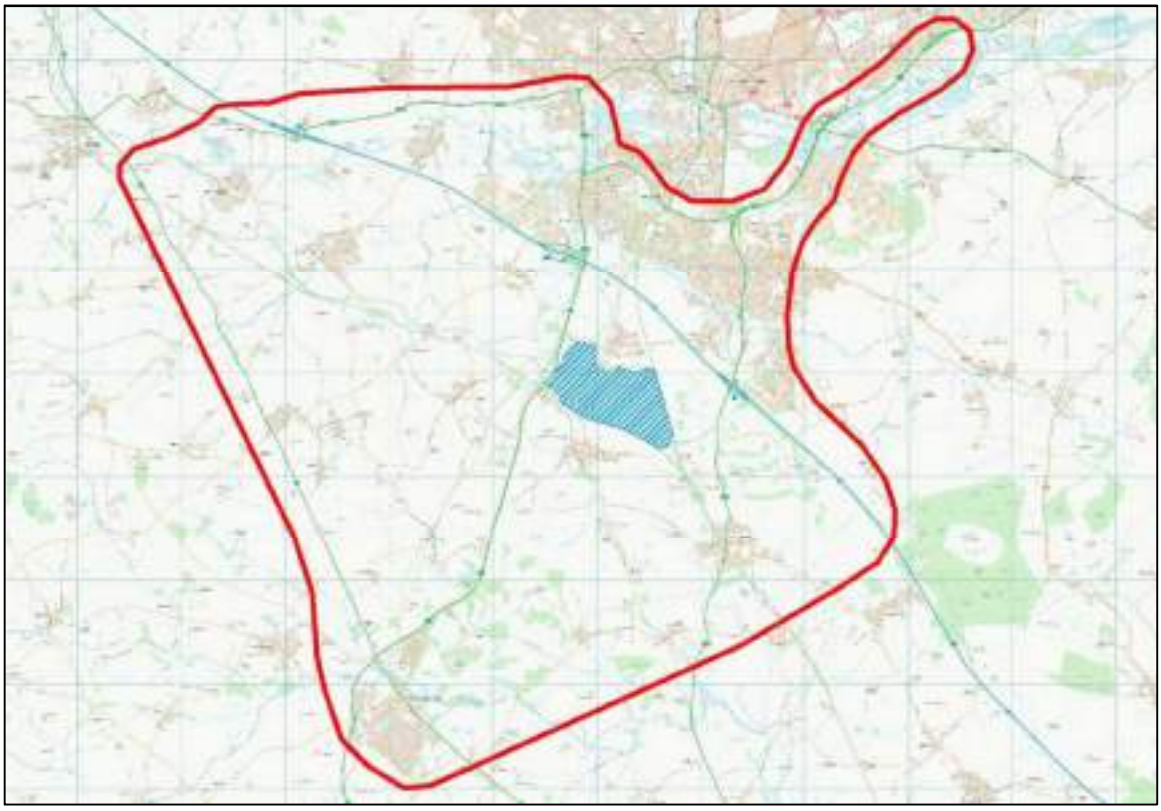


Figure 2.2 Strategic Modelling Area of Influence, South of Northampton

3 KEY FEATURES OF THE NSTM

3.1 MODELLED AREA

3.1.1 The study area is set out in terms of a three-tier hierarchy, comprising the:

- Area of Detailed Modelling (ADM): covers all roads with significant traffic volumes and all realistic route choices available to drivers, with all major junctions modelled
- Rest of Fully Modelled Area (RFMA): reduced level of detail, with principal strategic routes modelled and capacity restraint through the use of speed/flow curves and strategically important junctions
- External Area (EA): simplified network allowing traffic to enter the Fully Modelled Area (FMA) at the correct location, without capacity restraint. Skeletal network with approximate distances to allow demand model to capture full trip length.

3.1.2 It encompasses the major motorways of the M1 (Junction 14 to Junction 19) and M45 (from Junction 17). The modelled area has been defined to allow for the robust testing of possible impacts on the local transport network of infrastructure schemes and development proposals. It is shown in Figures 3.1 and 3.2.

3.1 ZONING SYSTEM

3.1.1 The NSTM zoning system consists of 825 zones (including 151 empty zones for new developments in the future). Table 3.1 summarises the locations of the zones.

Table 3.1 NSTM Zoning System

MODEL AREA	DESCRIPTION	NO OF ZONES
Area of detailed model	Northampton, Corby, Kettering, Wellingborough, Rushden and Daventry	505
Fully modelled area	Rest of Northamptonshire and Milton Keynes	118
External area	Rest of the country	51
Empty	Dummy zone to use for new development area in future	151
Total		**825**

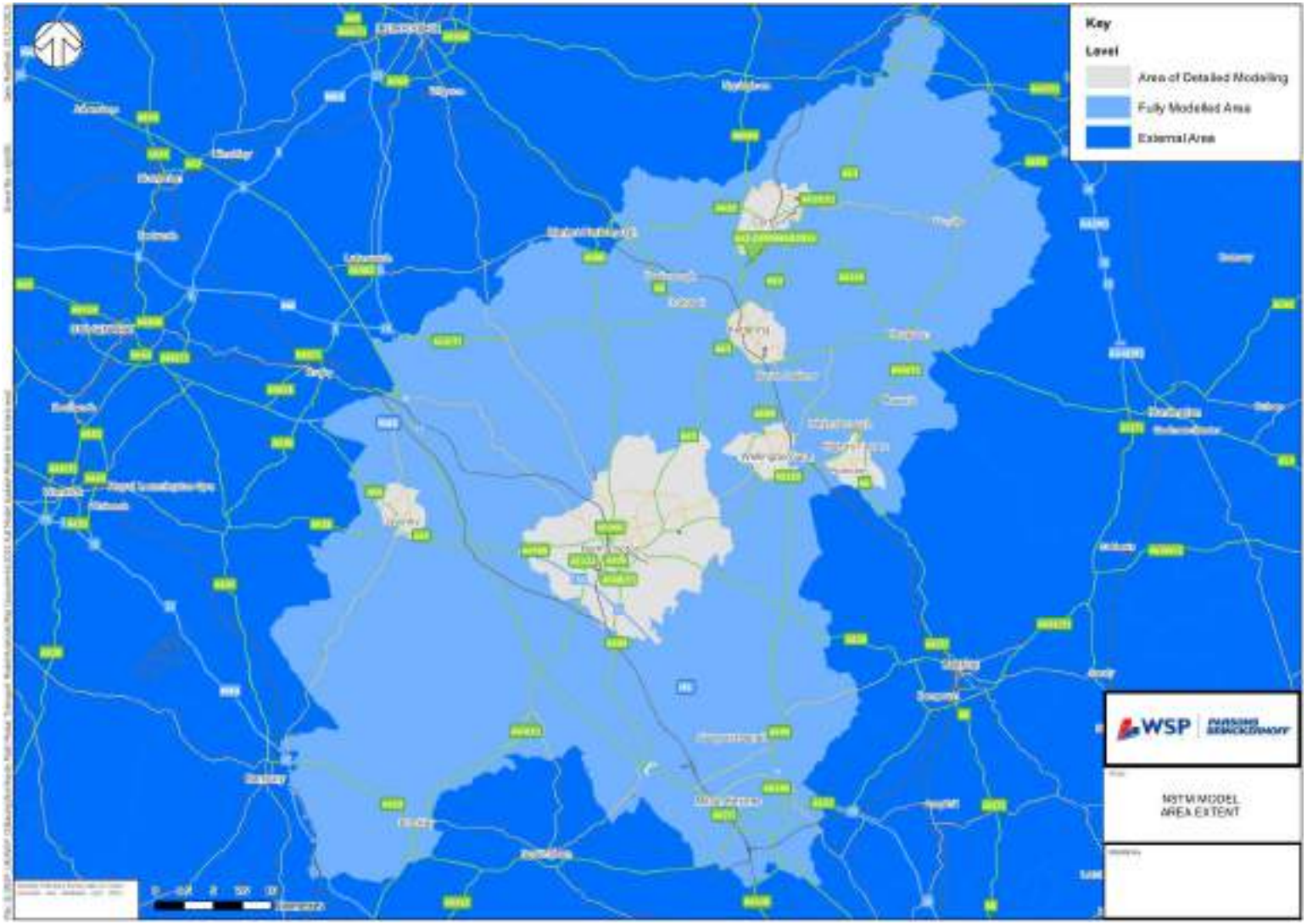


Figure 3.1 NSTM Study Area (Local Extent)

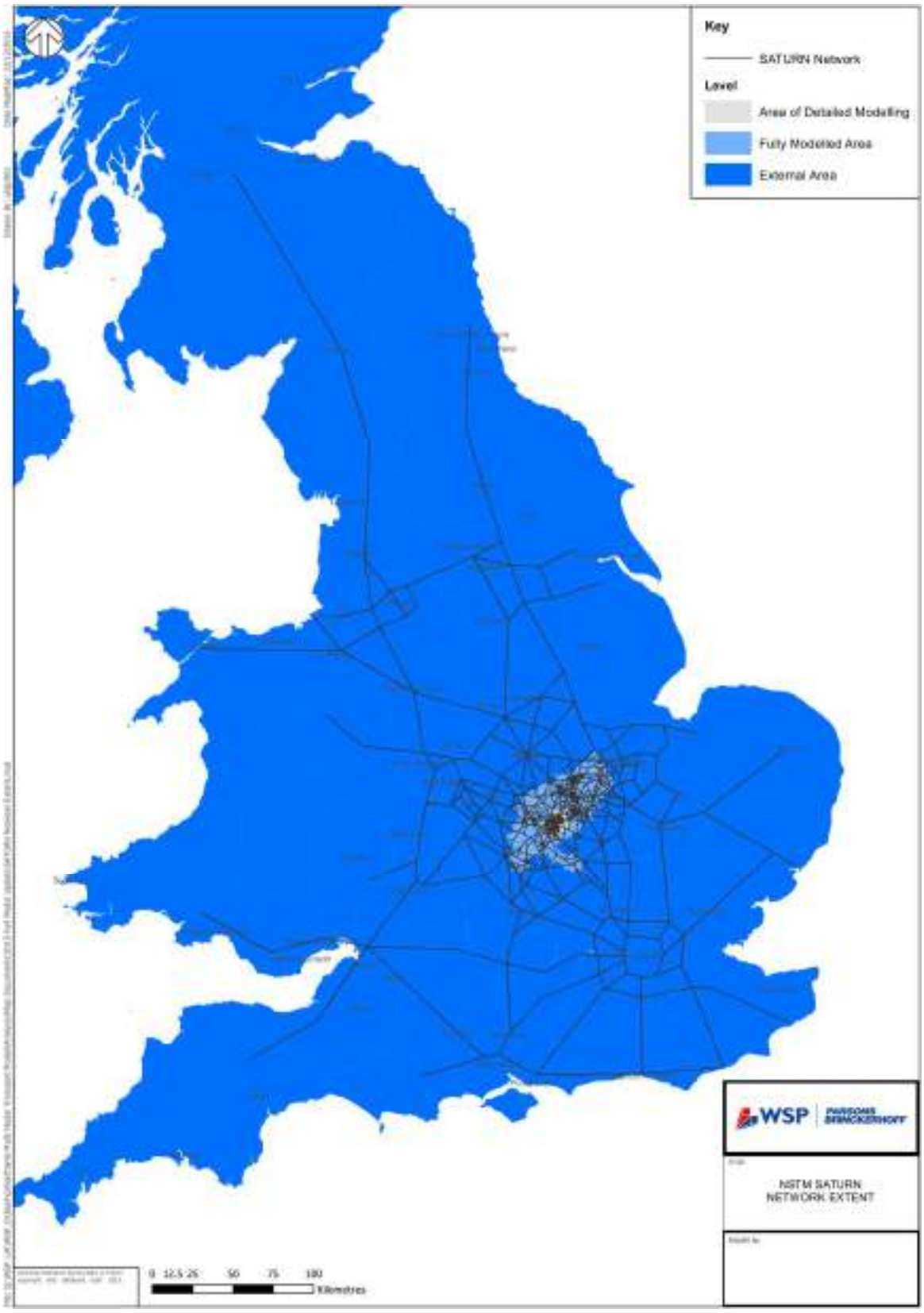


Figure 3.2 NSTM Study Area (Full Extent)

3.2 MODEL YEAR

3.2.1 The base year of the updated NSTM is 2015.

3.3 TIME PERIOD

3.3.1 For an average week, Monday-Friday, the following time periods were modelled which is consistent with advice presented in Section 2.6 of TAG Unit M3.1 (January 2014) :

- AM peak hour: (08:00-09:00)
- Average inter-peak hour: (10:00-16:00)
- PM peak hour: (17:00-18:00)

3.3.2 TAG Unit M2 (January 2014) advises that the demand model should operate at a 24-hour level in production-attraction format (described in section 6.1). It is therefore necessary to represent costs in the off-peak period. However, validated base assignment models of the off-peak period have not been built as available data is much more restricted in this time period. Off-peak demand was estimated by applying a simple factor, derived from traffic count data, to the validated inter-peak matrix.

3.3.3 The relationships between the various peak periods and the peak hours in three modelling elements are shown in the Table 3.2.

Table 3.2 NSTM Peak Period and Peak Hour Relationship

HOUR	DEMAND MODEL	HIGHWAY ASSIGNMENT	PUBLIC TRANSPORT MODEL
07:00-08:00	AM peak period		
08:00-09:00		AM peak hour	AM peak hour
09:00-10:00			
10:00 -11:00	Inter-peak period	1/6 of the 10:00-16:00	1/6 of the 10:00-16:00
11:00-12:00			
12:00-13:00			
13:00-14:00			
14:00 -15:00			
15:00-16:00			
16:00-17:00	PM peak period		
17:00 -18:00		PM peak hour	PM peak hour
18:00-19:00			
19:00 -07:00	Off peak period		

3.3.4 It is assumed that, across the network, delays in consecutive time periods do not have a significant impact on traffic flows. Consequently, no pre-load assignments were used and the PASSQ parameter in the SATURN model was set to false.

3.4 DEMAND SEGMENTATION AND USER CLASSES

3.4.1 In general, the trip matrices were segmented into a series of separate homogenous groups to adhere to current DfT guidance on variable demand modelling in TAG unit M2 (January 2014). In the Demand model, throughout the matrix building process, all of the matrices remained disaggregated as indicated below:

- Purpose: Work (Commute), Employer's Business (EB), and Other
- Car availability: Car available (CA) and No car available (NCA) (household level)
- Time period: AM peak period; Inter-peak period, and PM peak period
- Vehicle types: Light vehicles and Heavy vehicles
- Mode: Private vehicle and Public transport.

3.4.2 This segmentation is consistent with that adopted in the DfT modelling tools – namely the National Trip End Model (NTEM) and the National Transport Model (NTM). By retaining this disaggregation for as long as possible, maximum flexibility was retained for the demand and traffic assignment models and any separate analysis of behaviour that might be later appropriate.

3.4.3 For highway assignment, the following user classes were modelled, which is consistent with advice presented in Section 2.6 of TAG Unit M3.1 (January 2014):

- Car – Commuting
- Car – Employer's Business
- Car – Other
- Light Goods Vehicles (LGV)
- Heavy Goods Vehicles (HGV) (OGV1 and OGV2).

3.4.4 The segmentation scheme adopted in the NSTM is shown in Table 3.3.

Table 3.3 NSTM Demand Segmentation

SEGMENT	DEMAND MODEL	HIGHWAY	PUBLIC TRANSPORT
1	Commuting – CA	Commuting	Commuting
2	Commuting – NCA		
3	EB – CA	Business	Business
4	EB – NCA		
5	Other – CA	Other	Other
6	Other – NCA		
7		LGV	
8		HGV	

3.4.5 LGV and HGV were not included in the demand model, as growth in these vehicles is driven by factors other than those affecting the generalised cost of travel.

3.5 SOFTWARE PLATFORM

3.5.1 The highway assignment model was run in SATURN (version 11.3.12U_N4) as SATURN is the most widely-used and accepted highway assignment software in the UK. Many assessments required using a transport model are simple and can be undertaken only with the highway model. By separating the highway component from the demand component, it allows for this kind of simple testing by modellers who are not familiar with the more complex EMME demand model.

3.5.2 The demand model and public transport assignment model were run in EMME (version 4.2.7). This provides a straightforward TAG-compliant hierarchy.

4 WIDE AREA DATA COLLECTION

4.1 EXISTING DATA SOURCES

4.1.1 Survey data was already available within the study area on a large number of trunk roads, with counts recorded in the Traffic Information Database (TRADS). In line with TAG on what constituents a neutral month, TRADS data within the study area was downloaded and analysed for the average weekday in October 2015. A total of 121 TRADS directional link counts were processed on roads including, but not limited to, the A14, the A43, the A45, the A5 and the M1.

4.1.2 In addition, existing Manual Classified Counts (MCC) and Automatic Traffic Counts (ATC) from 2013, 2014 and 2015 were utilised, with any counts before 2013 being deemed as too old to include in the validation exercise. Further details are included within the Appraisal Specification Report (dated May 2016) for the updated NSTM.

4.2 ADDITIONAL DATA SOURCES

4.2.1 In September and October 2015, ATC and MCC surveys were carried out and analysed to generate suitable datasets for model calibration and validation. In line with the latest TAG guidance and by using all of the existing counts where possible, the counts were positioned in order to make the proposed NSTM screenlines and cordons (Figure 4.1) 'watertight'.

4.2.2 Trafficmaster data was obtained from the DfT and average travel time for selected routes within the study area was calculated. Journey time data was processed for an average Monday to Thursday between January 2015 and March 2015.

4.2.3 Bus passenger counts were conducted during the week commencing 9 November 2015 in order to provide observed data for a cordon around Northampton Town Centre. The purpose of the Northampton bus passenger cordon was to collect data on total volumes of passengers crossing each location, in each direction by time period. A record of passengers boarding and alighting at the stop was also completed.

4.2.4 Rail passenger counts were also completed in order to validate the rail demand that is produced as part of the matrix building process. The aim of the passenger counts at rail stations was to produce a set of observed passenger boarding and alighting movements by time period. Given the geographic focus of the model, only rail stations within Northamptonshire were included.

4.2.5 To inform development of the demand matrix, Vodafone Mobile Network Data (MND) was captured by Citi Logik and used as a basis for preparing initial Origin Destination (OD) matrices for the NSTM Modelled Area.

4.3 SUMMARY

4.3.1 The combination of existing and additional data provided a suitable basis for the update, validation and calibration of the NSTM.

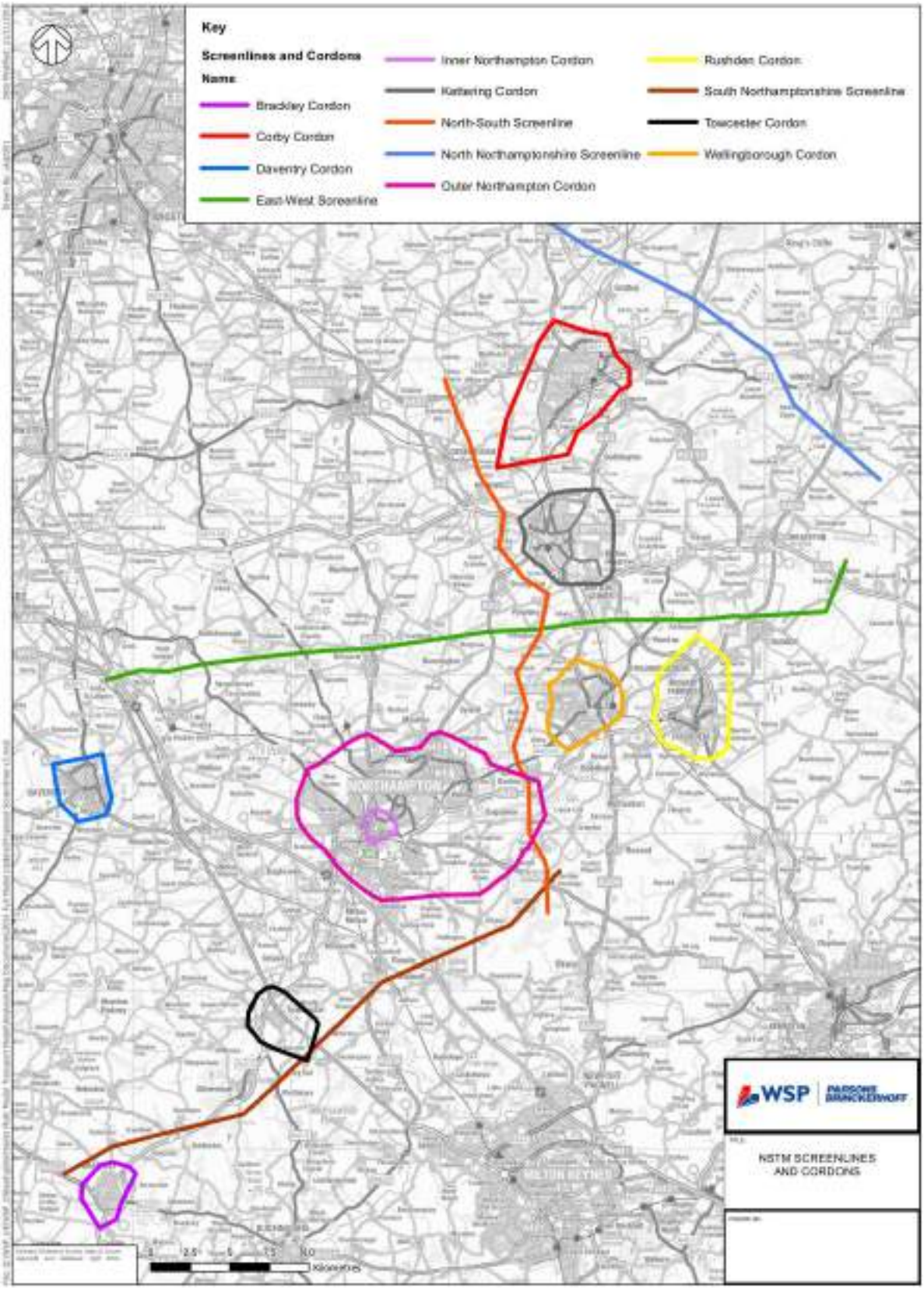


Figure 4.1 NSTM Screenlines and Cordons

5 LOCAL AREA DATA COLLECTION

5.1 AUTOMATIC TRAFFIC COUNTS

5.1.1 To improve the accuracy of the NSTM in the area around the SRFI, a series of ATC were commissioned in June and July 2016. Their locations are illustrated in red in Figure 5.1.

5.1.2 The traffic count data was collected in hourly intervals using the following classifications:

- Bin 1 (<=5.2m): Car
- Bin 2 (5.2-6.5m): LGV
- Bin 3 (6.5-11.5m): OGV1
- Bin 4 (>11.5m): OGV2

5.1.3 The ATC surveys produced data in vehicles. The factors below were applied to convert the data from vehicles to Passenger Car Unit (PCU) values. PCU is a unit of measure where Heavy Goods Vehicles (HGV) are converted to equivalent passenger cars using a conversion factor. The following PCU factors were used in the NSTM, based on what is written in TAG Unit M3.1 – D7:

- Cars (all purposes) and LGV: 1.0
- HGV (OGV1 and OGV2): 2.3

5.1.4 A PCU factor of 2.5 is quoted in TAG Unit M3.1 – D7 for HGV on motorways and D2AP roads, and a factor of 2.0 is quoted for HGV on other routes. Therefore, the average of these two values was used (rounded up) to give an overall HGV PCU factor of 2.3.

5.2 MANUAL CLASSIFIED TURNING COUNTS

5.2.1 The MCC data for Junctions 15 and 15A of the M1 was tabulated by movement, vehicle class and time of day. It was collected in 15 minute intervals and was reported using the following vehicle classifications:

- Pedal cycle
- Motor cycle
- Car
- LGV
- HGV (OGV1)
- HGV (OGV2)
- PSV

5.3 AUTOMATIC NUMBER PLATE RECOGNITION COUNTS

5.3.1 Automatic Number Plate Recognition (ANPR) cameras were used to collect link flow data and routing information, to later be used to validate the model. Their locations are illustrated in Figure 5.1 in green.



Figure 5.1 ATC/ANPR Count Locations

6 HIGHWAY NETWORK DEVELOPMENT METHODOLOGY

6.1 NETWORK DATA, CODING AND CHECKING

6.1.1 The model network was based on the existing NSTM, but was updated to take account of any changes that have occurred since the original model was built, or because of any network coding errors.

6.1.2 The network was verified through the use of ArcMap (GIS software), site visits and aerial photography. In particular, checks were carried out to verify the accuracy of:

- Node coordinates
- Link length check against measured GIS distance
- Speed/flow relationship
- Link type
- Link capacity
- One way/two way operation
- Number of (effective) lanes
- Length and position of flares
- Any observed turn delays/penalties
- Location of public transport routes
- Access points

6.1.3 The network errors and warnings generated by SATURN were checked to ensure the model network was free of coding errors.

6.1.4 Traffic loads onto the model network from zones in the form of centroid connectors. The centroid connectors in the updated NSTM were reviewed and refined to realistically represent the way in which traffic joins the road network.

6.1.5 Highway capacity is restrained by junctions and by the speed-flow curves allocated to links in the study area. Speed flow curves were based on standard COBA 10 values and allocated to specific links based on assessment of the road speed, width and capacity. Speed-flow curves were generally only used on rural or inter-urban links where the characteristics of the link itself, rather than junction capacity, have an impact on traffic speed. It was necessary in some circumstances to use speed-flow curves in suburban areas to replicate the impacts of un-modelled minor junctions.

6.1.6 The speed flow curves used are shown in Table 6.1.

Table 6.1 Model Speed Flow Curves

Description	ID	Free flow speed	Speed at capacity	Capacity	Power value
Rural - D4M Motorway - 4 lanes	1	116	45	9999	3.8
Rural - D3M Motorway - 3 lanes	2	116	45	7560	3.8
Rural - D2M Motorway - 2 lanes	3	112	45	4860	3.9
Rural - D3AP All-purpose - 3 lanes	4	109	45	6780	3.7
Rural – D2AP All-purpose - 2 lanes	5	105	45	4360	3.7
Rural - S10(Good) - 2 lanes	6	91	45	3720	2.2
Rural - S10(Good) - 1 lane	7	91	45	1860	2.2
Rural - S10(Typical) - 2 lanes	8	84	45	3320	2.2
Rural - S10(Typical) - 1 lane	9	84	45	1660	3.1
Rural - S7.3(Good) - 2 lanes	10	87	45	3280	2.2
Rural - S7.3(Good) - 1 lane	11	87	45	1640	2.2
Rural - S7.0(Typical) - 2 lanes	12	78	45	2760	2.1
Rural - S7.0(Typical) - 1 lane	13	78	45	1380	2.1
Rural - S6.5(Bad) - 2 lanes	14	67	45	2020	1.8
Rural - S6.5(Bad) - 1 lane	15	67	45	1010	1.8
Suburban - Dual(Slight devel)	16	78	35	3460	3.3
Suburban - Single(Slight devel)	19	68	25	3460	3.7
Suburban - Single(Slight devel)	20	68	25	1730	3.7
Suburban - Dual(Typical devel)	21	61	25	2540	2.3
Suburban - Dual(Typical devel)	22	61	25	1570	2.3
Suburban - Dual(Heavy devel)	23	48	25	1000	1.6
Suburban - Dual(Heavy devel)	24	48	25	500	1.6
Urban - Non-central(Good) - 2 lanes	25	54	25	1960	1.7
Urban - Non-central(Good) - 1 lane	26	54	25	980	1.7
Urban - Non-central(Typical) - 2 lanes	27	49	25	1560	1.6
Urban - Non-central(Typical) - 1 lane	28	49	25	780	1.6
Urban - Non-central(Poor) - 2 lanes	29	45	25	1300	1.5
Urban - Non-central(Poor) - 1 lane	30	45	25	650	1.5
Urban - Central(Good) - 2 lanes	31	37	15	1480	1.8
Urban - Central(Good) - 1 lane	32	37	15	740	1.8
Urban - Central(Typical) - 2 lanes	33	34	15	1260	1.7
Urban - Central(Typical) - 1 lane	34	34	15	630	1.7
Urban - Central(Poor) - 2 lanes	35	29	15	900	1.6
Urban - Central(Poor) - 1 lane	36	29	15	450	1.6
Small Town - Light devel - 2 lanes	37	66	30	2600	3.0
Small Town - Light devel - 1 lane	38	66	30	1300	3.0
Small Town - Typical devel - 2 lanes	39	57	30	2000	3.4
Small Town - Typical devel - 1 lane	40	57	30	1000	3.4
Small Town - Heavy devel - 2 lanes	41	47	30	1760	2.5
Small Town - Heavy devel - 1 lane	42	47	30	880	2.5
Suburban - Single(Slight devel)	43	78	35	1730	3.7
Centroid Connector - Internal	50	87	87	9999	3.3

6.1.7 Each junction included in the Fully Modelled Area requires several parameters:

- Lane allocations
- Junction type
- Saturation flows at signal-controlled and priority-controlled junctions
- Signal times, stages and phases
- Circulation and saturation flows at roundabouts

6.1.8 Default saturation flows per lane adopted for priority junctions are:

- Major straight ahead movement (unopposed) – 1,980 pcu/hr
- Major left turn movement (unopposed) – 1,500 pcu/hr
- Major right turn movement (opposed) - 745 pcu/hr
- Minor left turn movement (opposed) – 700 pcu/hr
- Minor right turn movement (opposed) - 600 pcu/hr
- Minor straight ahead movement (opposed) – 600 pcu/hr

6.1.9 Default saturation flows at signalised junctions are set to:

- Straight ahead movement – 1,980 pcu/hr
- Left or right turn movement – 1,740 pcu/hr

6.1.10 By default, SATURN assumes that opposing right turns at signalised junctions are “hooked” i.e. they interfere with each other. At larger junctions where there is sufficient space for traffic to turn right without being affected by the opposing right turn, it is possible to code these turns in the model so they do not interfere with each other. This strategy was implemented at relevant junctions.

6.1.11 Roundabouts require special consideration. Unlike with other junction types, each turn needs to be given the total saturation flow for the approach e.g. if a roundabout has a two-lane approach, with one lane to turn left and one to turn right, each turn should be coded with a saturation flow of 2,200. Default saturation flows (pcu/hr) to be adopted for roundabouts are given in Table 6.2. These values replicate typical ARCADY capacity estimates and have previously been utilised in a range of other models.

Table 6.2 Roundabout Entry Capacity Saturation Flows (PCU)

Approach lanes	Number of entry lanes			
	1	2	3	4
Single (3.5m)	1,130	1,670	2,030	
Single (5.0m)	1,510	1,940	2,250	2,450
Dual 2 lane		2,200	2,780	3,190
Dual 3 lane			3,330	3,940

6.1.12 Equivalent gap acceptance parameters are provided in Table 6.3.

Table 6.3 Roundabout Gap Acceptance Parameters (seconds)

Approach Lanes	Number of Entry Lanes			
	1	2	3	4
Single (3.5m)	1.8	1.3	1.2	
Single (5.0m)	1.4	1.2	1.1	1.1
Dual 2 lane		1.1	1.0	0.9
Dual 3 lane			0.9	0.8

6.2 ASSIGNMENT PARAMETERS

6.2.1 Generalised cost parameters were input into the model to determine the minimum cost routes by which traffic assigns itself onto the network. For the vehicle journeys modelled in the NSTM, generalised cost is a function of both the in-vehicle travel time and the operating costs (related to distance travelled).

6.2.2 Generalised costs for use in the NSTM were calculated using values of time, GDP growth rates, purpose splits and vehicle operating costs recommended by the DfT for use in economic appraisals of transport projects in England. These values are presented in TAG Databook (November 2016, release v1.6) and values calculated for use in the base year model are shown in Table 6.4.

Table 6.4 Generalised Cost Parameters

User Class	Pence Per Minute (PPM)			Pence Per Kilometre (PPK)		
	AM Peak	Inter-peak	PM Peak	AM Peak	Inter-peak	PM Peak
UC1	20.00	20.32	20.07	5.82	5.82	5.82
UC2	29.82	30.56	30.25	12.64	12.64	12.64
UC3	13.80	14.70	14.45	5.82	5.82	5.82
UC4	21.08	21.08	21.08	12.77	12.77	12.77
UC5	21.40	21.40	21.40	42.40	42.40	42.40

6.2.3 As mentioned previously, the following user classes (UC) were modelled, which is consistent with the User Classes shown in Table 6.4:

- UC1: Car – Commuting
- UC2: Car – Employer's Business
- UC3: Car – Other
- UC4: LGV
- UC5: HGV (OGV1 and OGV2)

6.2.4 The generalised cost parameters were input into SATURN as separate values for time and distance. Time is calculated in Pence per Minute (PPM), and distance as Pence per Kilometre (PPK) within SATURN. Although the parameters are specified as 'per minute' and 'per kilometre' the actual units used by SATURN for time and distance are seconds and metres with the appropriate conversion handled by the program. The assignment within SATURN works in terms of 'generalised cost', defined by adding terms proportional to link distance and/or monetary charge to the link travel time.

6.2.5 The generalised cost functions used for the AM peak for each vehicle class are shown below:

- UC1: GC = 1.00 t + 0.29 d
- UC2: GC = 1.00 t + 0.42 d
- UC3: GC = 1.00 t + 0.42 d
- UC4: GC = 1.00 t + 0.61 d
- UC5: GC = 1.00 t + 1.98 d

6.2.6 The generalised cost functions used for the inter-peak for each vehicle class are shown below:

- UC1: GC = 1.00 t + 0.29 d
- UC2: GC = 1.00 t + 0.41 d
- UC3: GC = 1.00 t + 0.40 d
- UC4: GC = 1.00 t + 0.61 d
- UC5: GC = 1.00 t + 1.98 d

6.2.7 The generalised cost functions used for the PM peak for each vehicle class are shown below:

- UC1: GC = 1.00 t + 0.29 d
- UC2: GC = 1.00 t + 0.42 d
- UC3: GC = 1.00 t + 0.40 d
- UC4: GC = 1.00 t + 0.61 d
- UC5: GC = 1.00 t + 1.98 d

6.2.8 The assignment technique that has been used is Wardrop Equilibrium Assignment which is the default assignment procedure within SATURN. Wardrop's Principle of traffic equilibrium states:

> *"Traffic arranges itself on congested networks such that the cost of travel on all routes used between each O-D pair is equal to the minimum cost of travel and all unused routes have equal or greater cost."*

7 TRIP MATRIX DEVELOPMENT

7.1 INTRODUCTION

7.1.1 Traditionally Origin and Destination (OD) matrices are developed from a range of data sources, e.g. Census data, Road Side Interviews, travel diaries and other. Getting this information in large quantities and in the context of an urban area may be disruptive to highway users. The growth of technology has led to an increase in the type and amount of data automatically created and collected about people and freight movements. The vast majority of travellers today use mobile phones, which generate vast amounts of data. Every time a traveller's mobile phone talks to the network (texts, phone calls, pings, etc.) a record with the time and approximate location of the event is generated. The continuous recording of travel behaviour allows generating OD matrices of a high resolution.

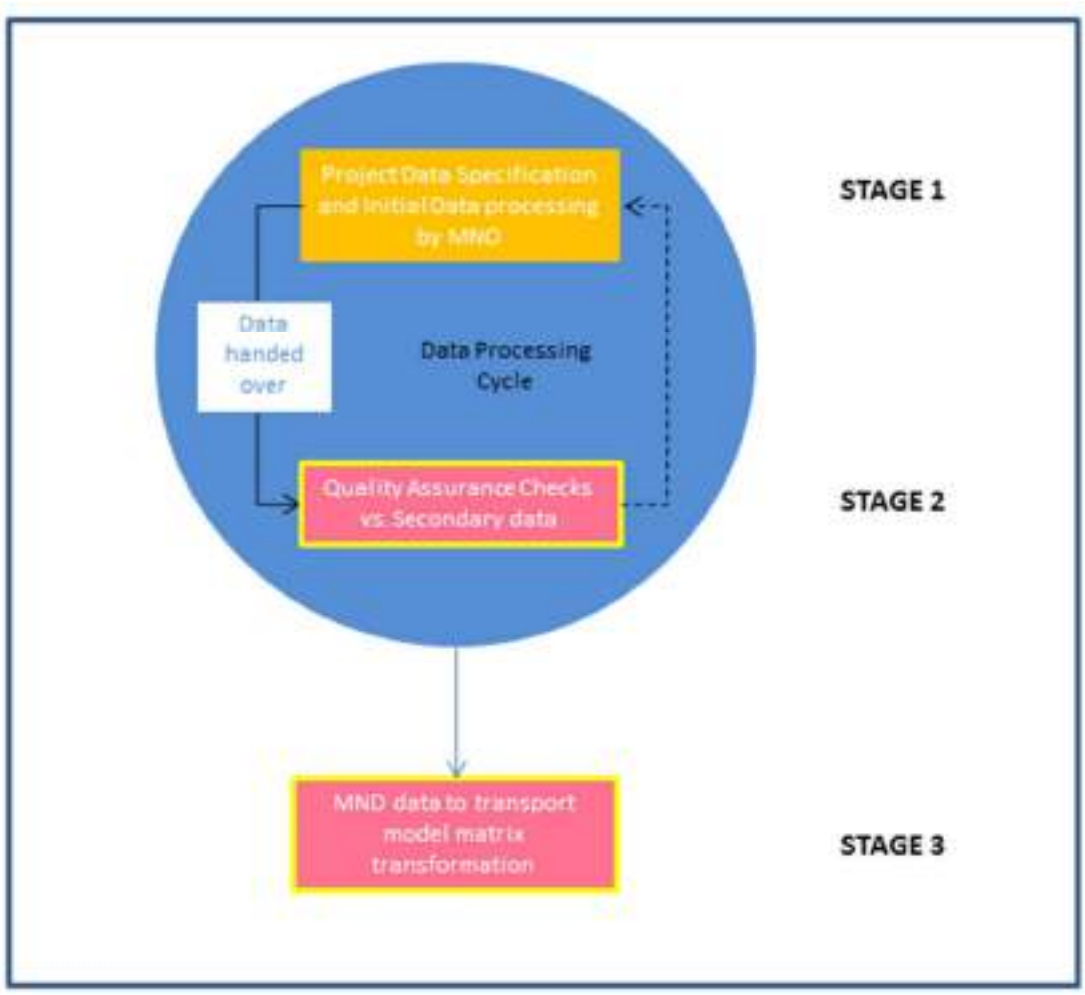
7.1.2 For the NSTM development, WSP | Parsons Brinkerhoff requested Citi Logik to capture Vodafone MND data and prepare initial OD matrices for the NSTM Fully Modelled Area. This MND supplemented with the existing data sources such as 2011 Census Data, TrafficMaster data, etc. has been used as the basis for the trip matrix development to match the NSTM specification.

7.1.3 Citi Logik is partnered with Vodafone, which has over 19.5 million UK customers, to develop demand insights and predictive analytics derived from anonymised mobile phone network data in compliance with UK data privacy laws and future EU regulations. Citi Logik has developed a platform to collect and interpret the Vodafone data to process space and time information to inform a transport model development. Given the nature of MND, it is generally better at identifying longer trips and those where the user dwells at their destination for a longer period of time. MND also has limits on detailed information as we cannot directly learn about every individual's travel motives (trip purpose) or directly ask questions, for example, about income band. For these reason, the data need to be combined with other data sources prior to application.

7.1.4 WSP | Parsons Brinckerhoff has researched this field and developed a robust methodology to produce a set of prior demand matrices from MND. It should be noted that there is currently no guidance available on the use of MND. We were engaged in the work Catapult was undertaking for the DfT to produce guidance to support the clear and consistent use of MND in transport modelling and appraisal and the work undertaken for the Highways England on the Regional Model Matrix Development and have applied knowledge gained to the development of the NSTM trip matrices.

7.2 OVERVIEW OF THE METHODOLOGY

7.2.1 Development of the NSTM demand matrices from MND follows three main stages as shown in Figure 7.1.



Source: "Utilising mobile phone data for transport modelling", 2016, Catapult

Figure 7.1 Approach overview

7.3 STAGE 1. INITIAL PROCESSING OF MND

7.3.1 At Stage 1 MND is captured and undergoes initial processing by Citi Logik. This included generation of travel demand matrices at the aggregated NSTM zone level (NSTM MND sectors) and segmentation of trips by day of the week, time of the day, mode, purpose and direction in order to allow the development of travel demand matrices for the Fully Modelled Area.

7.3.2 Through the network topology and behaviour, people's movements are accurately located in space and time, which is processed to derive OD movements. For data security and privacy reasons, the data is provided by Citi Logik to WSP | Parsons Brinkerhoff at an aggregated level so that individuals cannot be traced. Typically in dense urban and urban fringe areas Citi Logik is able to allocate mobile phone signals to areas similar to LSOAs in size, whereas in rural areas the signals can be accurately allocated to areas, which can combine a number of LSOAs.

7.3.3 Position information is obtained from both active and inactive phones as they switch between adjacent mobile network cells. Active phones are more likely to be used by people travelling on foot, by public transport or as car passengers. Inactive phone positions, derived as phones switch cells, are usually typical to car drivers.

7.3.4 Data has been provided for all movements to, from, within and passing through the Fully Modelled Area.

7.3.5 Monday to Thursday data has been provided for the period between 10 November 2015 and 22 November 2015 for the following time periods:

- AM peak period (07:00-10:00)
- Interpeak period (10:00-16:00)
- PM peak period (16:00-19:00)
- Off-peak (19:00-07:00)

7.3.6 Trips have been allocated to the following modes:

- Motorised (Cars/LGV/HGV/Bus)
- Rail
- Slow[2]
- Static.[3]

7.3.7 Matrices have been disaggregated to the following purpose segmentation:

- HBW: Home to Work
- HBO: Home to Other place (not Work)
- NHB: From Elsewhere (not home) to Work and other places
- Unknown

7.3.8 The MND data has been expanded to the total adult population.

7.3.9 The output of this stage is expanded OD matrices at MND sector level. There are 271 MND sectors in total, which represent an aggregation of the NSTM zones.

7.3.10 Vodafone privacy rules have been applied to the OD trip data, meaning that all values lower than 15 in the output files were set to 15, thus protecting mobile users' privacy. Such a high threshold applied to the OD data may result in unrealistically high demand for a large number of movements and distort the distribution of trips. To address this data limitation imposed by the privacy rules, WSP | Parson Brinkerhoff have requested and been provided with the trip end information for each demand segment for subsequent furnessing of the matrices and controlling of trip ends to the true values.

7.3.11 Further details on the initial data processing undertaken by CitiLogik are provided in Appendix B.

7.4 STAGE 2. MND VERIFICATION

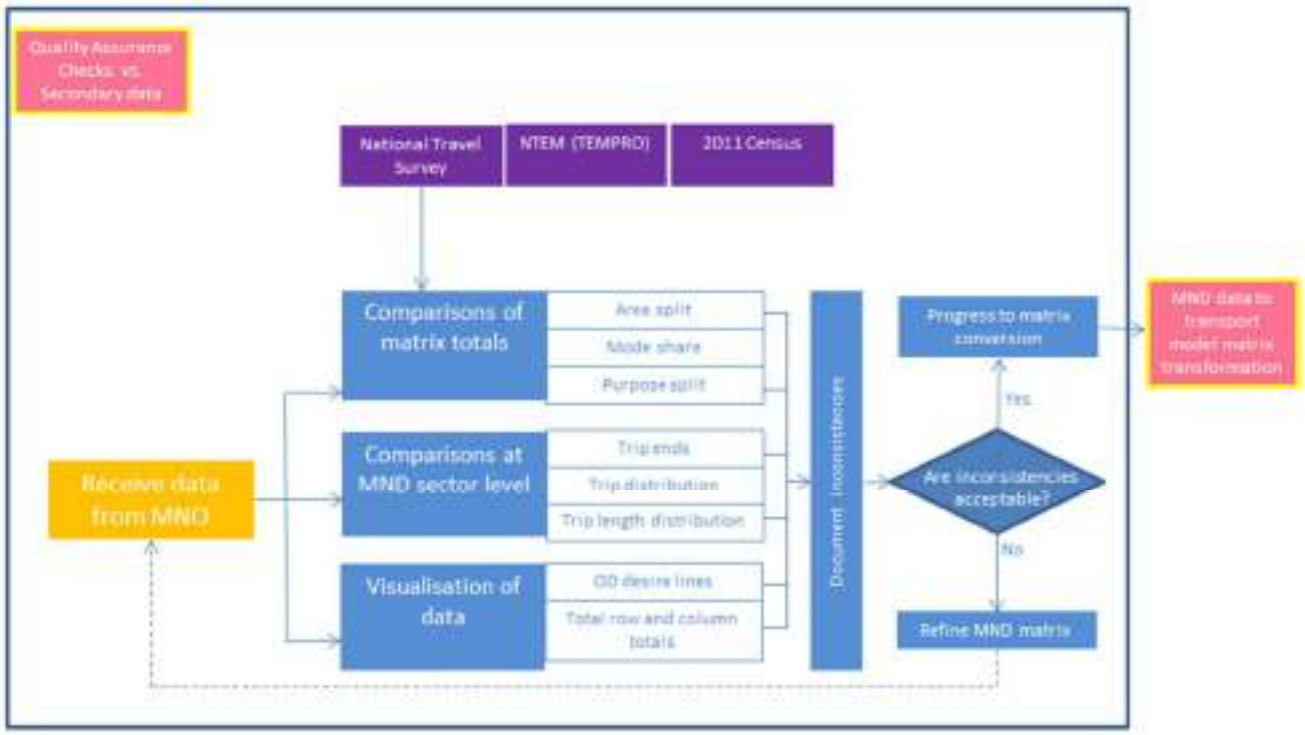
7.4.1 The OD matrices estimated from MND have certain strengths compared to conventional sources of OD information: data is collected from a large percentage of the population, capturing day-to-day variability of trips. However, MND is a relatively new data type which is not collected exclusively for the purpose of transport planning and one should be aware of and recognise potential limitations of using mobile phone data in the following aspects:

[2] The Slow mode is not represented in the model and therefore has been excluded from further analysis.
[3] Though Static trips were provided, this segment of data has been excluded from any further analysis due to its limited value for building demand matrices.

- spatial resolution and data accuracy
- identification of short trips
- identification of mode, vehicle type and vehicle occupancy
- identification of trip purpose
- expansion of mobile phone data sample

7.4.2 To gain confidence that the overall pattern of trips produced from MND is reasonable and to identify any potential issues associated with the initial processing of MND undertaken by Citi Logik, it is important to compare the MND with alternative well-established data sources. Any issues identified at this stage are fed back to Citi Logik for further refinement of the process or addressed during the follow up stages of matrix building.

7.4.3 Figure 7.2 provides an overview of the MND verification process.



Source: adapted from "Utilising mobile phone data for transport modelling", 2016, Catapult

Figure 7.2 MND Verification Process

7.4.4 Various tests have been undertaken to validate trip matrices developed on the basis of Vodafone customers' movements for the NSTM Modelled Area. Appendix C has described the results of the MND verification. The following conclusions can be drawn from that process:

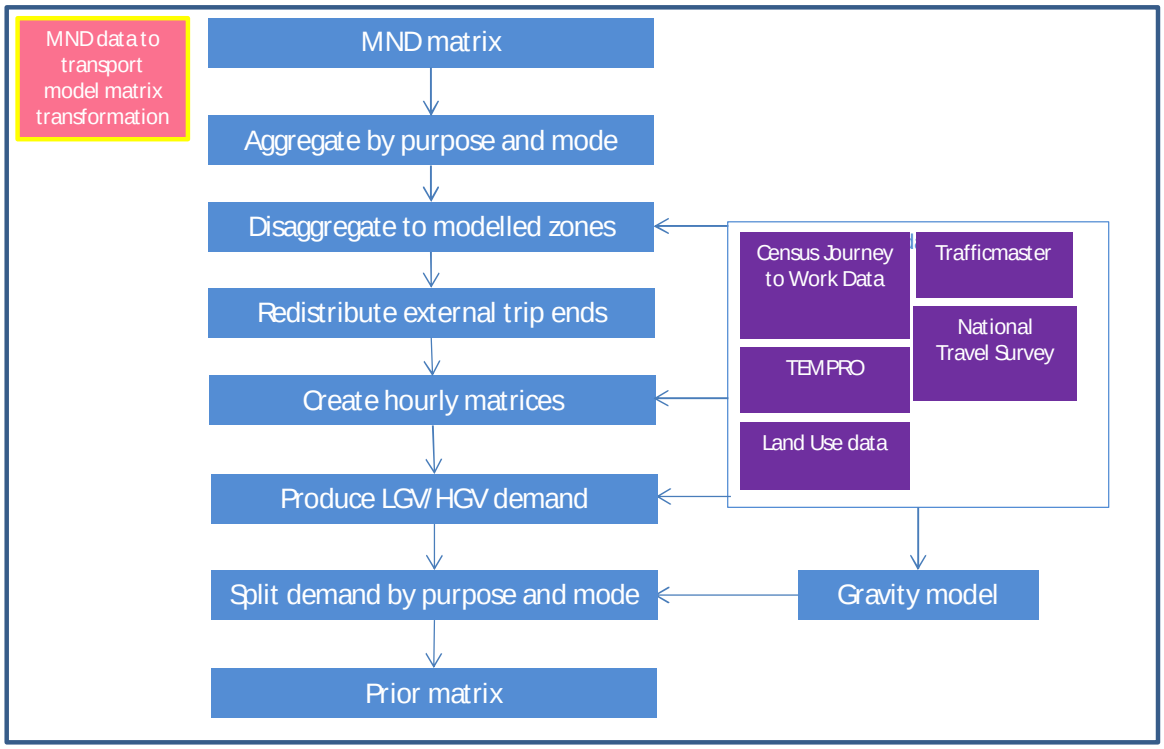
- The combined Motorised and Rail demand looks reasonably robust in terms of overall trip generation, trip distribution and time split
- The proportion of short distance within the MND dataset is lower than that observed within the NTS, which might be due to a coarse structure of NSTM MND sectors
- A good symmetry is observed confirming the realism of the demand observed by MND analysis

- Mode or purpose split is not represented within MND with a high degree of accuracy

7.4.5 A comprehensive verification process has been undertaken by WSP | Parsons Brinkerhoff. The analysis confirms that despite a number of potential issues outlined above the MND data accurately represents observed trip patterns and can be used as a basis for prior matrix development.

7.5 STAGE 3. PRIOR MATRIX DEVELOPMENT TO THE NSTM SPECIFICATION

7.5.1 Development of initial demand matrices to the NSTM specification requires the use of other post-processing techniques, which are outlined in Figure 7.3.



Source: adapted from "Utilising mobile phone data for transport modelling", 2016, Catapult

Figure 7.3 MND Matrices to NSTM Matrices Process Overview

7.5.2 The following key steps need to be completed in order to develop prior matrices from the MND matrices obtained at Stage 2.

- Aggregate MND demand matrices by purpose and mode
- Disaggregate demand from NSTM MND sectors to NSTM zones
- Refine the distribution of External trip ends
- Produce hourly matrices from peak period demand
- LGV and HGV trips
- Split the demand by purpose and mode using a gravity model

7.5.3 The methodology uses VISUM at each step of calculation and matrix manipulation which helps to build a very efficient process when working with large matrices. All the matrix development steps are included in a procedure sequence, which can be saved and transferred to other VISUM version files and projects if required. Background calculations are also undertaken using a set of extra spreadsheets.

7.5.4 The process will produce a set of prior demand matrices matching the NSTM specification:

- Time period: AM, IP and PM peak hours
- Mode and vehicle type: Car, Public Transport, LGV and HGV
- Purpose split: Commuting (including Education), Employee's Business, Other

AGGREGATION OF MND RAW MATRICES

7.5.5 The MND matrices originally were produced with a time, purpose and mode split. However the verification process highlighted that mode or purpose split are not represented within MND with a high degree of accuracy. Therefore the MND matrices were aggregated by purpose and mode to be then disaggregated using an alternative approach described further in this section.

DISAGGREGATION OF DEMAND FROM NSTM MND SECTORS TO NSTM ZONES

7.5.6 The original MND matrices were provided at the NSTM MND sector level, which represented an aggregation of the NSTM zones. The NSTM zones are nested within the MND sectors and the zone boundaries completely match with each other. The NSTM has a zone system of 671 zones whereas the MND sectoring contains 271 zones in total. The mismatch in the number of zones means that a disaggregation of original MND demand to the NSTM zones had to be carried out.

7.5.7 The disaggregation has followed the methodology originally developed by WSP | Parsons Brinkerhoff for Transport for London (TfL) to split spatially coarse LTS trip ends into smaller LoHAM zoning system. The methodology utilises the following land use data:

- Numbers of domestic delivery addresses from Ordnance Survey Codepoint data
- Workplace population from 2011 Census information
- Edubase pupil number data

7.5.8 Domestic delivery addresses, workplace population and Edubase pupil numbers have been assigned to the NSTM zones based on the centroids of their respective layers. The MND matrices have been disaggregated using a combination of datasets using the weighting factors from the work carried out for TfL in London.

7.5.9 The methodology behind carrying out this correspondence process in this manner is that the determination of how many trips would be expected to come out of any specific area within these initial zones should be based on a relevant dataset. For example, morning trips should have predominantly origins of homes, and destinations of workplaces (which in this case include places of education). This enables an initial sector that contains say a large residential area, and a large employment area, but where the final zones have these two areas as separate zones, to be split in a way that means the final trip matrices make a lot more sense, than just splitting proportionally by area in all cases.

7.5.10 Following the disaggregation of the NSTM trip ends from the MND sectors to NSTM zones, a TLD analysis has been completed with the daily all mode results presented in Figure 7.4. The comparison suggests that the proportion of short, medium and long distance trips within MND is comparable with the one observed through the NTS data collection. A significant proportion of MND trips in the range between 30 and 60 km is due to a heavy flow observed at the boundary of the Internal area where the MND sector structure is course.

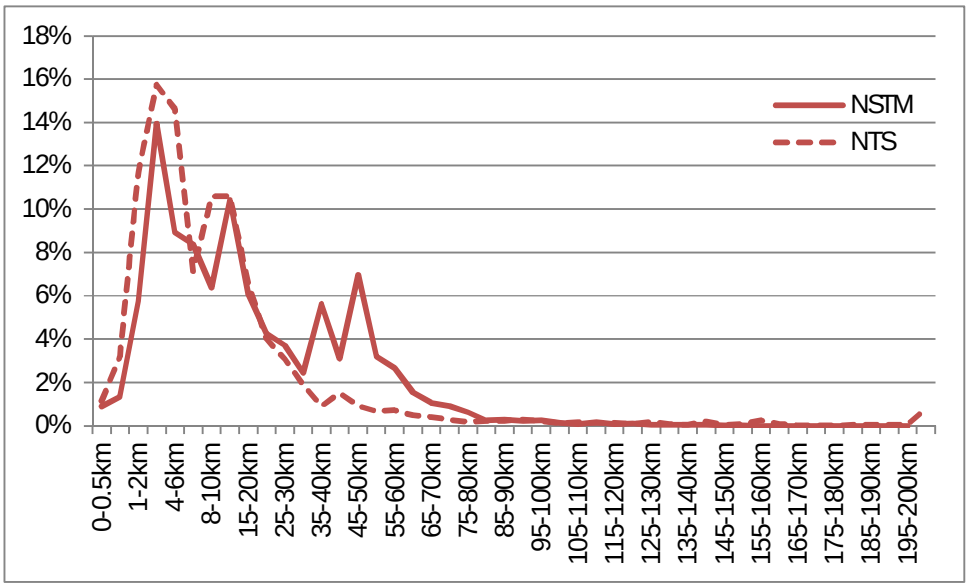


Figure 7.4 TLD post MND sector disaggregation to the NSTM zones

REFINEMENT OF THE DISTRIBUTION OF EXTERNAL TRIP ENDS

7.5.11 Due to the data collection method the true trip ends of the external movements are unknown with the trip ends allocated to an external zone closest to the boundary of the modelled area. To ensure a much more precise cost and skim calculation of such trips the external trip ends need to be redistributed and this was undertaken based on the 2011 JTW data.

7.5.12 Destination trips ends were refined using the JTW destination trip end distribution for all time periods. The JTW data provides information about a single direction only, i.e. home to work, and therefore the data was transposed for the purpose of adjusting the External origin trip ends of the MND data.

7.5.13 The above approach has been applied to Internal-External and External- Internal movements. The trip ends of the External-External movements were not refined further as these trips are fixed within the variable demand model and the knowledge of the true trip ends will not make any difference to the results.

CREATION OF HOURLY MATRICES

7.5.14 Creating hourly matrices is a single step where overall factors are used to factor down the peak period matrices into hourly matrices. The factors have been derived from NTS and are as follows:

- AM peak – 0.506
- IP average – 1/6
- PM peak – 0.370

LGV AND HGV TRIPS

7.5.15 Trafficmaster OD data was obtained from the DfT covering a period between September 2014 and August 2015. This data includes information on LGV and HGV movements between 2011 Census LSOA boundaries. The DfT were able to provide this data using the same cordon provided to Citi Logik for the MND collection, which ensured the consistency between the two datasets.

7.5.16 Matrices were then built from the Trafficmaster data for LGV and HGV trips and the following occupancy factors have been applied to produced vehicle trip matrices to ensure consistency with the NSTM specification:

- LGV – 1.23 person/vehicle
- HGV – 1.00 person/vehicle

7.5.17 The HGV and LGV matrices were then assigned in the highway model, with the results compared against screenlines. It is a known limitation of Trafficmaster OD data that the sample size is low, therefore once the assignment of these vehicle types was carried out, the flows were initially scaled up using select link analysis to ensure the flows matched observed counts. The LGV and HGV matrices were then run through matrix estimation to produce final LGV and HGV matrices.

7.5.18 The resultant LGV and HGV trip matrices were then subtracted from the MND matrices. The remaining MND demand represents car, bus and rail combined matrices.

SPLIT THE DEMAND BY PURPOSE AND MODE

7.5.19 A gravity model has been developed to split the combined demand by purpose (Commuting, Education, Employer's Business and Other) and by mode (public transport and car). The Commuting and Education purposes were later combined to form a single Commuting purpose. The outputs of the gravity model are used to produce mode and purpose specific proportions for individual OD relations, which are then applied to the combined MND matrices to calculate car and public transport matrices as shown in Figure 7.5.

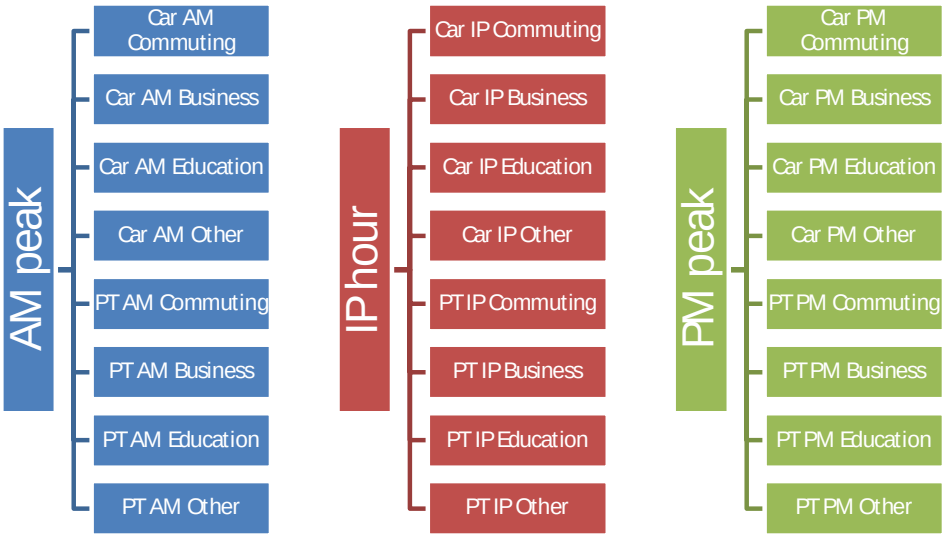


Figure 7.5 Gravity model to split matrices by purpose and mode

7.5.20 Development of purpose and mode specific demand matrices requires the use of the method and steps which are outlined in Figure 7.6. The same approach has been applied to all time periods.

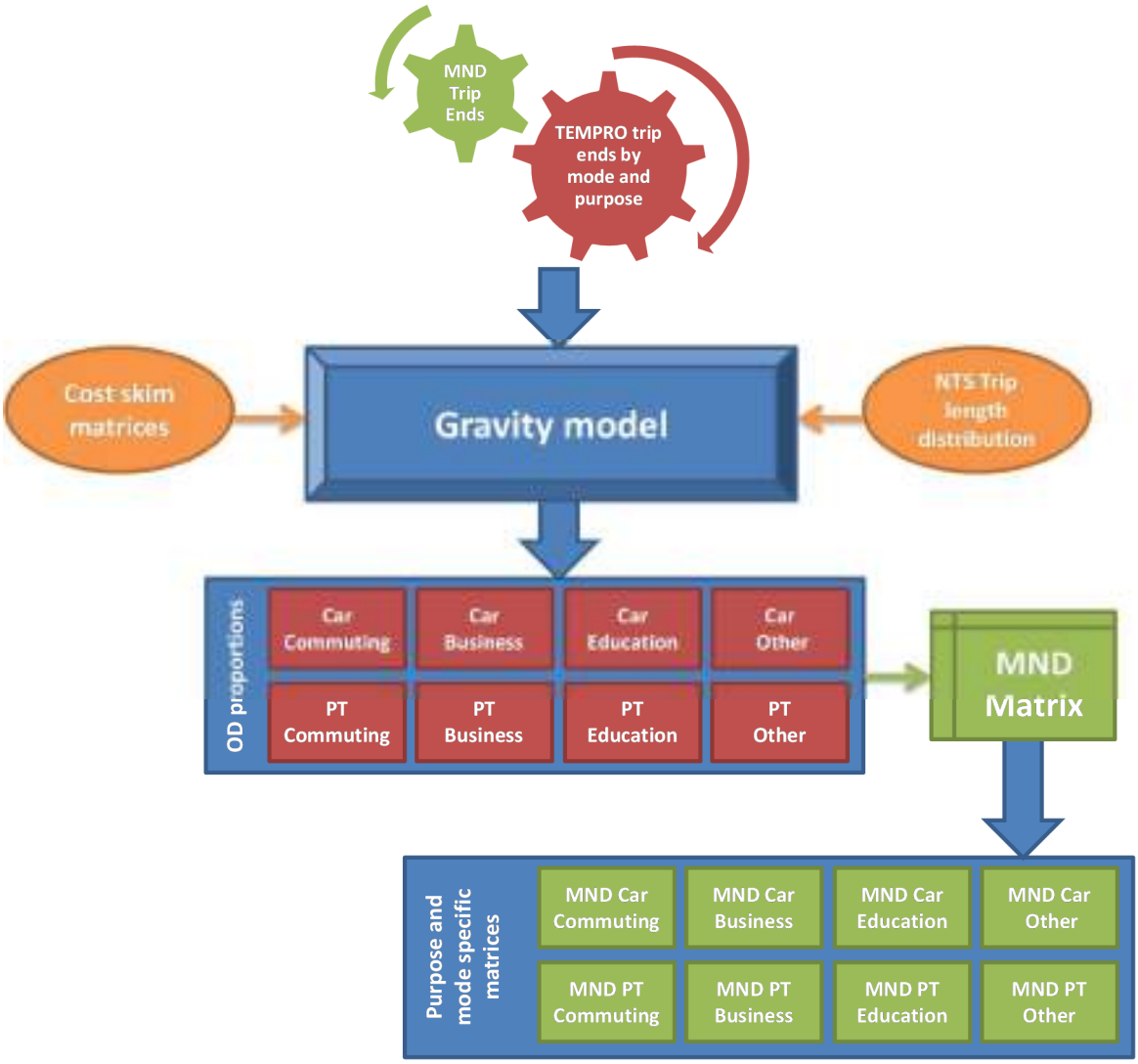


Figure 7.6 Outline of how the gravity model is used for mode and purpose split

7.5.21 The MND trip ends from the combined matrices were split using mode and purpose specific proportions extracted from TEMPRO to produce target trip ends for the gravity model. The trip length distribution data for the gravity model calibration comes from the NTS and varies by journey purpose and mode. The daily averages were used for each time period as it was found that there is no significant difference in individual time periods in the modelled area.

7.5.22 The cost for the gravity model represents uncongested generalised cost matrices produced from assigning LGV/HGV matrices for highway and dummy low value matrices for the public transport. These costs are used directly as utility functions in VISUM trip distribution procedure.

7.5.23 The intra-zonal trips have been initialised prior to running the gravity model and will not be taken into account at any further stages. The External-External movements have been excluded from the gravity model and were split by mode and purpose using a set of factors calculated using TEMPRO. The factors are reproduced in 7.1.

Table 7.1 External factors to mode and purpose split

EXTERNAL FACTORS			
Period	Purpose	Factor (Car)	Factor (PT)
AM	Commuting	0.387	0.073
	Business	0.083	0.005
	Education	0.160	0.062
	Other	0.209	0.021
IP	Commuting	0.109	0.017
	Business	0.091	0.005
	Education	0.089	0.025
	Other	0.577	0.088
PM	Commuting	0.304	0.051
	Business	0.065	0.005
	Education	0.043	0.012
	Other	0.479	0.042

7.5.24 The gravity model was set up in VISUM using the parameters shown in Figure 7.7.

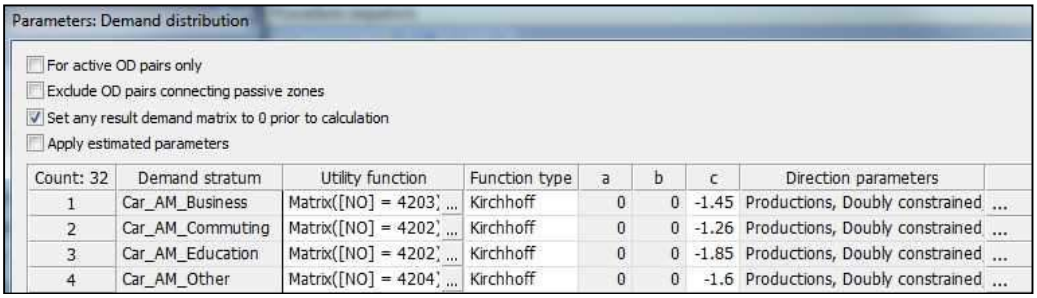


Figure 7.7 Gravity model in VISUM

7.5.25 The trip distribution functions are the same for each time period including the function type and parameters as well:

- Car Commuting: f(U)=U^c, c=-1.45 (Kirchhoff)
- Car Business: f(U)=U^c, c=-1.26 (Kirchhoff)
- Car Education: f(U)=U^c, c=-1.85 (Kirchhoff)
- Car Other: f(U)=U^c, c=-1.60 (Kirchhoff)
- PT Commuting: f(U)=e^[c(U^b-1)], b=0.1; c=-0.5 (Box-Cox)
- PT Business: f(U)=e^[c(U^b-1)], b=-0.5; c=-2.5 (Box-Cox)
- PT Education: f(U)=e^[c(U^b-1)], b=--0.1; c=-3 (Box-Cox)
- PT Other: f(U)=e^[c(U^b-1)], b=0.25; c=-0.75 (Box-Cox)

7.5.26 The functions and their parameters have been calibrated using a trip length distribution comparison spreadsheet with NTS data including 44 distance bands and graphical analysis. The comparison has been undertaken for the whole modelled area and for the core modelled area. The fine zone structure within this area will ensure the short distance trips are present within the demand matrices. An example of the trip length distribution calibration is presented in Figure 7.8.

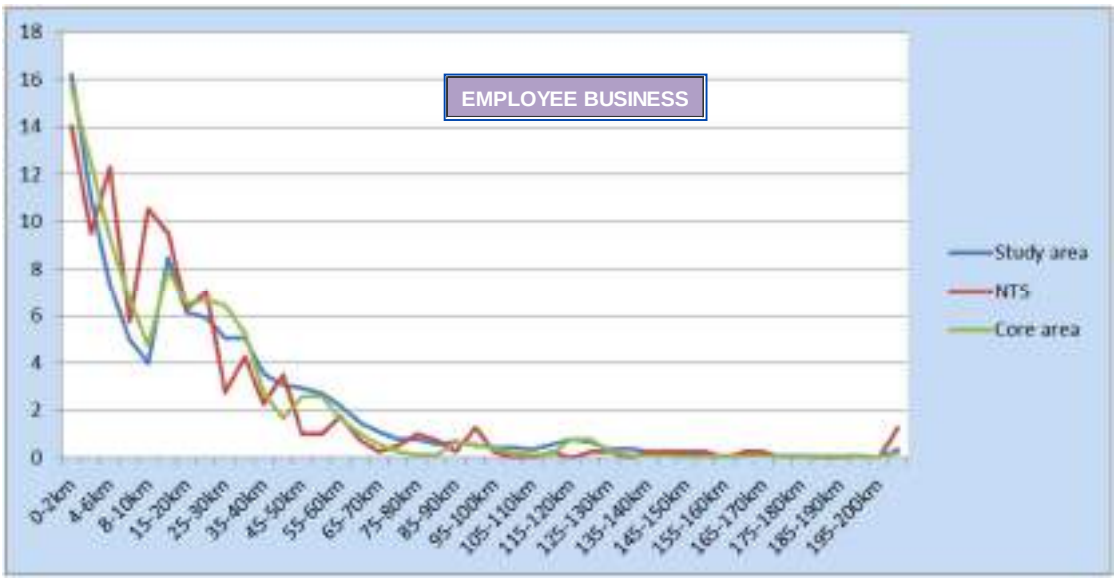


Figure 7.8 Example of a trip length distribution calibration diagram

7.5.27 The mode and purpose specific MND matrices were produced by applying the following formula:

[MND CAR AM COMMUTING] = [GRAVITY MODEL CAR AM COMMUTING] / [GRAVITY MODEL AM TOTAL] * [MND AM TOTAL]

7.5.28 The MND car matrices were finally converted from person trips to vehicle trips using different factors for each journey purpose. Factors were derived from TAG Databook Table A.1.3.3 (2015, version 1.4) and are shown below:

- Commuting – 1.15
- Business – 1.21
- Other – 1.72

8 CALIBRATION – MATRIX ESTIMATION

8.1 INTRODUCTION

8.1.1 A calibration exercise was undertaken to ensure that the base year model in the vicinity of the development site is an accurate representation of observed traffic conditions. This section describes the model approach and the data collated for assessing the development and for updating the NSTM.

8.2 NETWORK REVIEW AND UPDATE

8.2.1 A thorough review of the updated 2015 base model was carried out on the key strategic routes around the development. All of the key links and junctions within and around the proposed development were checked to confirm that they are accurately modelled.

8.2.2 As part of the network review, various zones (e.g. zone 189 and zone 516) were split to improve the model's accuracy and a comprehensive check of link speed limits and distances within the model was carried out.

8.2.3 During the network building process the following activities were undertaken:

- Review of the network coding warnings produced by the SATURN program SATNET
- Network distance and speed checks
- Review of junction approaches and saturation flows
- Detailed review of the coding of complex junctions
- Exclusion of neighbouring turning counts from the validation spreadsheet which would have caused failures when attempting to run the model calibration/validation procedure.

8.2.4 As part of these activities, the links shown in red in Figure 8.1 were coded into the network to increase network coverage in the area around the proposed development.

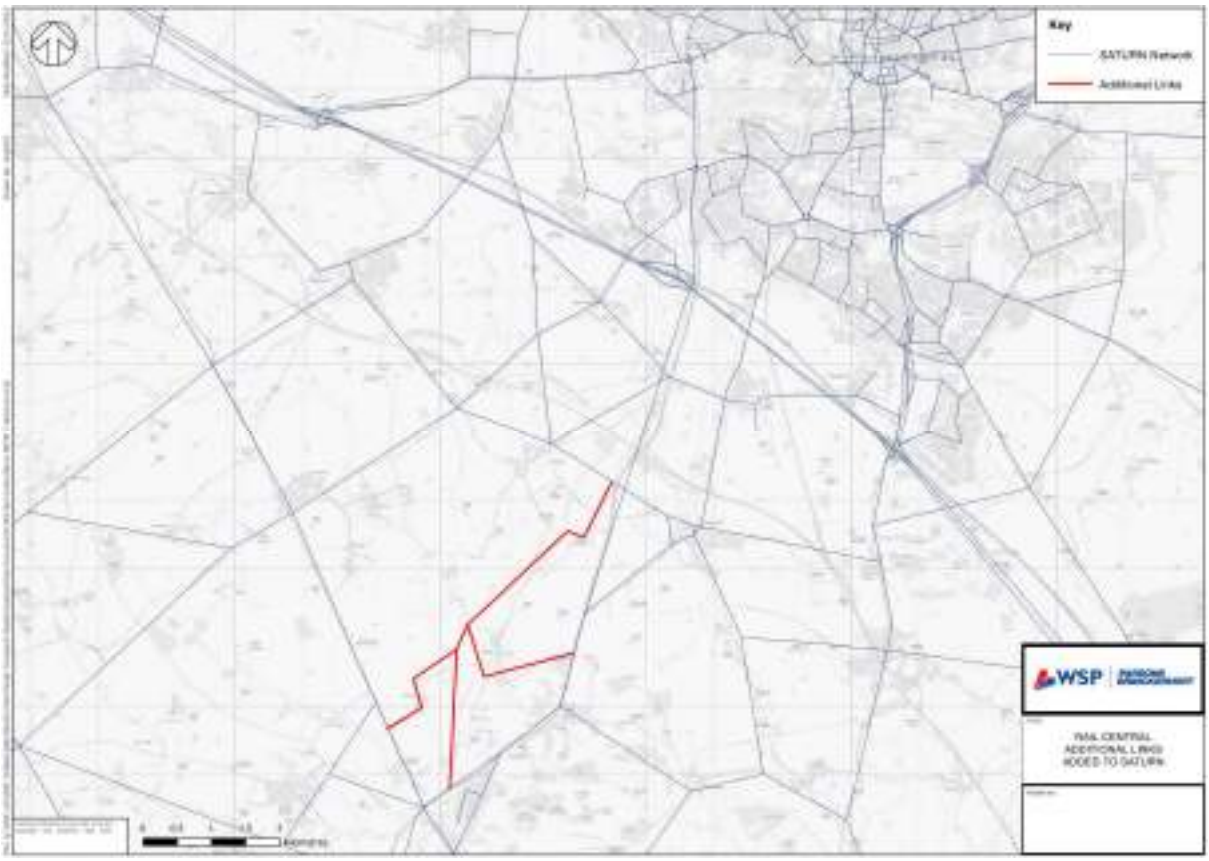


Figure 8.1 Additional Links (in Red) Coded into the Updated NSTM

8.3 MATRIX ESTIMATION

8.3.1 The model calibration process used matrix estimation procedures as contained in the SATME2 program. The basic operation of this uses the best estimation of trip movements, as contained in the prior matrix, and adjusts the pattern of trip distribution and volumes in order to match input traffic flows.

8.3.2 The Prior Matrix was assigned to a network representing the current highway network. SATME2 requires a PIJA file which represents the proportion (P) of trips between a particular origin-destination pair (IJ) which uses the counted link (A). The PIJA data is obtained through the program SATPIJA following a SATURN assignment using the SAVEIT option.

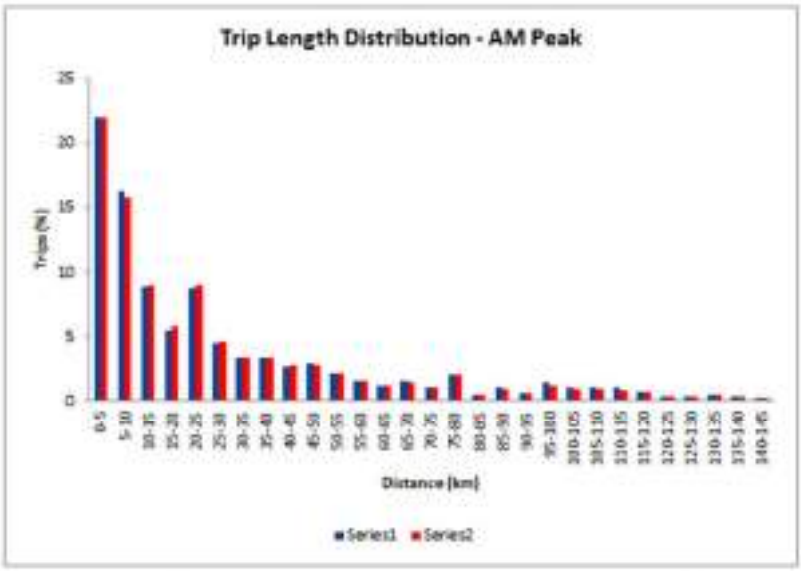
8.3.3 This produced PIJA output files for LGV and HGV which were used by SATME2 along with the Prior Matrix to produce updated 2015 Light Matrix and Heavy Matrix which were then combined into a 'stacked' estimated matrix for assignment. No cells were frozen and there were no zonal constraints applied. The default number of iterations i.e. 30 was allowed for in the estimation process.

8.3.4 Primary inputs to the calibration process were traffic flows used as target counts for the matrix estimation in process. The number of sites used is shown in Table 8.1 with most sites comprising a traffic count in each direction of travel. The matrices have been built to the same standard for both peaks and this is reflected in the calibration results. These sites were made up of both the new MCC and ATC data collected and the existing survey data.

Table 8.1 Number of ME2 Counts

Total Number of Calibration Counts Used		
AM Peak	IP	PM Peak
451	451	451

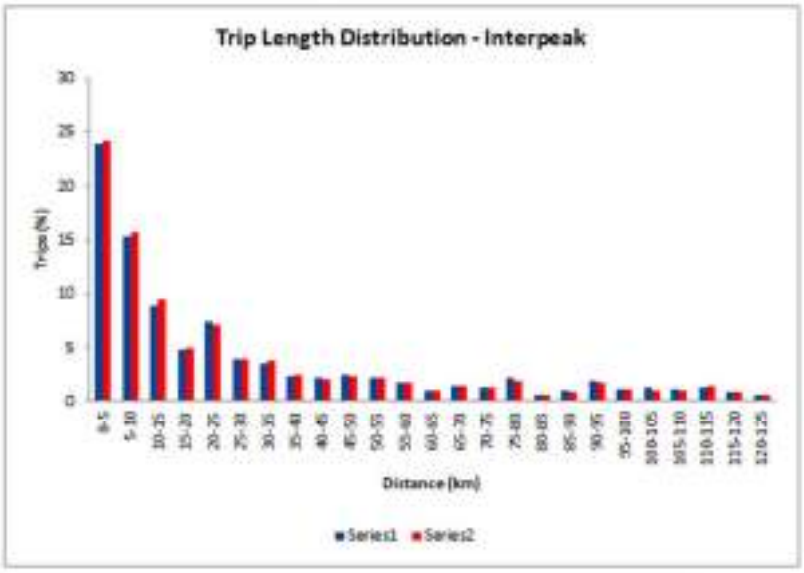
8.3.5 A large number of sites were used as it was important to ensure that the traffic volumes were matched at controlling points across the network. The matrix estimation process enabled traffic flows to be updated by varying degrees across different spatial areas of the network. The data within the count file has used those counts deemed the most recent in the order required to produce the calibration results shown in Figures 8.2 to 8.4.



Measurement		Requirement	Value	Pass?
Cells	Slope	Within 0.98 and 1.02	0.978	No
	Intercept	Near 0	0.013	Yes
	R-Sq	> 0.95	0.9544	Yes
Rows	Slope	Within 0.99 and 1.01	0.983	No
	Intercept	Near 0	7.323	No
	R-Sq	> 0.98	0.9878	Yes
Columns	Slope	Within 0.99 and 1.01	0.976	No
	Intercept	Near 0	9.096	No
	R-Sq	> 0.98	0.9876	Yes
Mean	Prior	Within 5%	33.585	Yes
	Post		33.299	
	Diff		0.9%	
SD	Prior	Within 5%	52.012	Yes
	Post		51.574	
	Diff		0.8%	

UC	Prior	Post	% Diff
UC1	104195.95	105374.38	1%
UC2	21003.67	21208.91	1%
UC3	34257.99	35184.17	3%
UC4	11718.43	9877.17	-16%
UC5	12990.26	14249.97	10%
TOTAL	184166.3	185894.6	1%

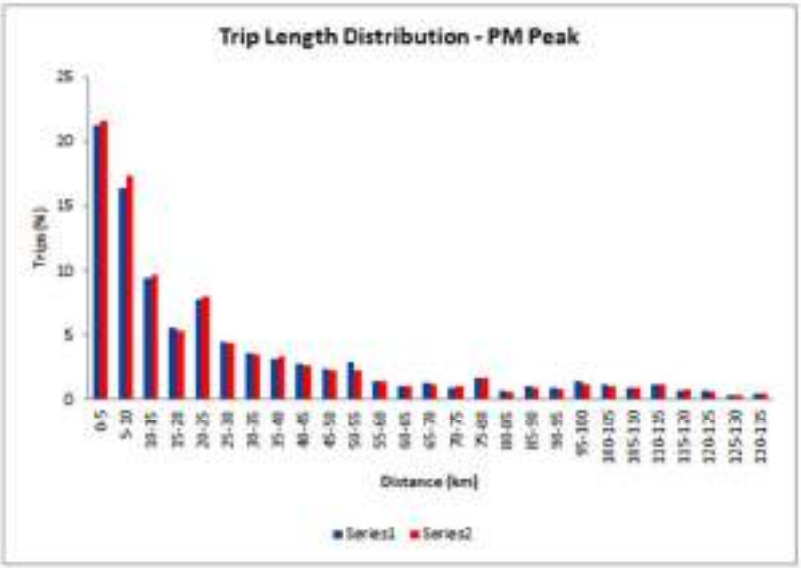
Figure 8.2 AM Peak – Comparison of Trip Matrix Totals



Measurement		Requirement	Value	Pass?
Cells	Slope	Within 0.98 and 1.02	0.956	No
	Intercept	Near 0	0.022	Yes
	R-Sq	> 0.95	0.9327	No
Rows	Slope	Within 0.99 and 1.01	0.996	Yes
	Intercept	Near 0	7.555	No
	R-Sq	> 0.98	0.9882	Yes
Columns	Slope	Within 0.99 and 1.01	0.967	No
	Intercept	Near 0	12.574	No
	R-Sq	> 0.98	0.9877	Yes
Mean	Prior	Within 5%	35.983	Yes
	Post		34.901	
	Diff		3.0%	
SD	Prior	Within 5%	69.101	Yes
	Post		66.954	
	Diff		3.1%	

UC	Prior	Post	% Diff
UC1	21041.08	21565.36	2%
UC2	16860.79	17164.52	2%
UC3	59249.48	61996.93	5%
UC4	7297.57	7264.13	0%
UC5	15113.77	16181.99	7%
TOTAL	119562.69	124172.93	4%

Figure 8.3 IP – Comparison of Trip Matrix Totals



Measurement		Requirement	Value	Pass?
Cells	Slope	Within 0.98 and 1.02	0.868	No
	Intercept	Near 0	0.05	Yes
	R-Sq	> 0.95	0.8762	No
Rows	Slope	Within 0.99 and 1.01	0.933	No
	Intercept	Near 0	16.635	No
	R-Sq	> 0.98	0.9836	Yes
Columns	Slope	Within 0.99 and 1.01	0.959	No
	Intercept	Near 0	9.69	No
	R-Sq	> 0.98	0.9815	Yes
Mean	Prior	Within 5%	34.863	Yes
	Post		33.627	
	Diff		3.5%	
SD	Prior	Within 5%	53.652	Yes
	Post		52.829	
	Diff		1.5%	

UC	Prior	Post	% Diff
UC1	79187.1	78920.07	0%
UC2	15793.62	15791.05	0%
UC3	65924.58	66222.27	0%
UC4	7568.59	7471.38	-1%
UC5	11218.26	10531.98	-6%
TOTAL	179692.15	178936.75	0%

Figure 8.4 PM Peak – Comparison of Trip Matrix Totals

8.4 SUMMARY

8.4.1 The AM peak shows an increase in the size of the Post Matrix of 1%, the IP shows an increase in the size of the Post Matrix of 4%, while the PM peak shows an increase in the size of the Post Matrix of 0%.

8.4.2 In conclusion, the output matrices from the estimation process are suitable for use in the assignment process.

9 LOCAL AREA CALIBRATION AND VALIDATION

9.1 INTRODUCTION

9.1.1 The process of model calibration and validation is designed to ensure that the parameters that control the model's calculation of route choices and the resulting delays, lead to accurate replication of traffic patterns in the network. The calibration of a model crucially relies on traffic entering the detailed model area at the correct points and on the correct routes.

9.1.2 A number of key checks were made between the modelled flows and observed flows:

- Checking assignment model convergence
- Comparison of modelled flows against observed flows that were used explicitly in the creation of the Prior Matrix, which include those used for developing the RSI Matrix and those used in matrix estimation.

9.2 MODEL CONVERGENCE

9.2.1 An element of finalising the model is ensuring satisfactory convergence is achieved. Model convergence is needed to ensure traffic flows remain stable between successive iterations of the model.

9.2.2 In accordance with criteria set out in the Design Manual for Roads and Bridges (DMRB), the parameters %Flow and Delta (d) have been monitored to determine the level of convergence. %Flow measures the proportion of links in the network with flows changing by less than 5% from the previous iteration and d is the difference between costs on chosen routes and costs on minimum cost paths.

9.2.3 The convergence criteria used to assess when a model is considered to have converged is shown in Table 9.1. The values shown in Table 9.1 are deemed to be acceptable however, the ISTOP value used for the model is 98%, ensuring greater robustness in the assigned flows.

Table 9.1 Convergence Criteria

MEASURE OF CONVERGENCE	ACCEPTABLE VALUE
Delta	<1%
Percentage of links with flow changes <5%	Four consecutive iterations greater than 90%

Source: DMRB Volume 12, Section 2, Part 1, Chapter 4, Table 4.1.

9.2.4 Table 9.2 indicates that satisfactory convergence has been achieved. TAG Unit 3.10.4 suggests that delta (d) values of less than 0.2% are reasonable targets. As Table 9.2 shows, all delta values are less than 0.2% therefore the base year model meets the required convergence standards.

Table 9.2 Convergence Statistics

Final 6 iterations are reported

SATURN Parameter	Required value
PCNEAR	1
RSTOP	98
STPGAP	0.1
NISTOP	4
KONSTP	5

Measure of convergence	Acceptable value
'Delta' and %GAP	Less than 0.1% or at least stable
Percentage of links with flow change < 1%	Four consecutive iterations greater than 98%
Percentage of links with cost change < 1%	Four consecutive iterations greater than 98%
Percentage change in total user costs	Four consecutive iterations less than 0.1%

AM Peak			
Iteration	Delta	%Flow	%Gap
12	0.0565	98	0.096
13	0.0526	98.3	0.072
14	0.0389	98.7	0.067
15	0.0329	98.8	0.057
16	0.0341	99.1	0.057
17	0.0295	99.3	0.053
5			
98.5			
1			
4			
0			
Pass			
Pass			
Not reported by SATURN			
Pass			

Interpeak			
Iteration	Delta	%Flow	%Gap
5	0.0546	96.9	0.074
6	0.0303	97.8	0.042
7	0.0194	98.7	0.04
8	0.0185	98.9	0.024
9	0.015	98.9	0.025
10	0.0117	98.9	0.023
5			
98.5			
1			
4			
0			
Pass			
Pass			
Not reported by SATURN			
Pass			

PM Peak			
Iteration	Delta	%Flow	%Gap
17	0.0368	98.4	0.073
18	0.0515	98.4	0.061
19	0.0382	98.6	0.054
20	0.038	98.8	0.05
21	0.0349	98.9	0.047
22	0.0327	98.7	0.055
5			
98.5			
1			
4			
0			
Pass			
Pass			
Not reported by SATURN			
Pass			

9.3 CRITERIA

9.3.1 A modified Chi² statistic known as the GEH (Geoffrey Edward Havers) statistic was used to determine the best fit. The statistic uses the formula shown below to calculate a value for the difference between observed (O) and modelled (M) flows:

$$GEH = \sqrt{\frac{(O - M)^2}{0.5(O + M)}}$$

9.3.2 The criteria used to assess the acceptable performance of a traffic model are defined in DMRB Volume 12 and are shown in Table 9.3.

Table 9.3 Assignment Acceptability Guidelines

Criteria and Measure Assigned Model Hourly Flows compared with Observed Flows		Acceptability Guideline
Flow Criteria		
Observed flow < 700 vph	Modelled flow within ±100 vph	**> 85 % of links**
Observed flow 700 - 2,700 vph	Modelled flow within ±15%	**> 85 % of links**
Observed flow > 2,700 vph	Modelled flow within ±400 vph	**> 85 % of links**
GEH Criteria		
GEH Statistic for individual links < 5		**> 85 % of links**

Source: DMRB Volume 12, Section 2, Part 1, Chapter 4, Table 4.2.

9.3.3 The GEH statistic takes account of the fact that when traffic flows are low the percentage difference between observed and modelled flows may be high but the significance of this difference is small. A GEH value greater than 10 indicates that closer attention is required as the match between observed and modelled flows is poor, while a GEH of less than 5 indicates a very good fit.

9.3.4 It is important that the model reproduces the observed volumes of traffic. The DMRB criteria for comparing the performance of the model traffic counts are reproduced in Table 9.3. Modelled flows are expected to be within a certain tolerance of the observed values and this goodness of fit is measured using the GEH statistic. Both the flow comparison and GEH criteria are assessed in this report and all counts are tabulated separately.

9.3.5 The existing NSTM 2014 base model used all counts in the final iteration of model calibration and validation process which was reported in the LMVR. This is an accepted approach according to the DMRB in Volume 12, section 11.1.7 which states:

> *"In theory, the adjustment of a model subsequent to a validation exercise to take account of independent observations will improve the model calibration but the model is no longer independently validated. In practice, if a model has performed adequately at validation, then the independent data may be absorbed to achieve an improved calibration. This should, however, be a considered decision taken after validation has been completed (and reported as in section 11.4). Under these circumstances an addendum to the calibration report should be prepared to document the fitting to the enlarged data base and to catalogue the effects of the recalibration"*

9.4 LOCAL COUNT DATA

9.4.1 Whilst updating the 2015 base year model with the recent counts, a similar approach has been adopted to ensure the required level of accuracy is met. All of the existing base year calibration counts as well as the new local calibration counts were incorporated into a single set for matrix estimation.

9.4.2 Of the 144 ATC/TRADS counts in the local study area, 22 counts were used to validate the model, whilst the vast majority (the other 122 counts) were used to calibrate the model. An illustration of which ATC/TRADS were used for calibration and validation is shown in Figure 9.1.

9.4.3 In total, 54 sets of ANPR count data were used to validate the model. Eight of the ANPR counts were excluded due to large differences between the total peak hour ANPR count flows and the ATC/TRADS count data, as shown in Table 9.4. An illustration of which ANPR counts were used for calibration and validation is shown in Figure 9.2.

9.4.4 Table 9.4 outlines the calibration and validation results for the local area in each model, as well as the GEH ranges.

9.4.5 Full details of link calibration and validation are given in Appendix D.

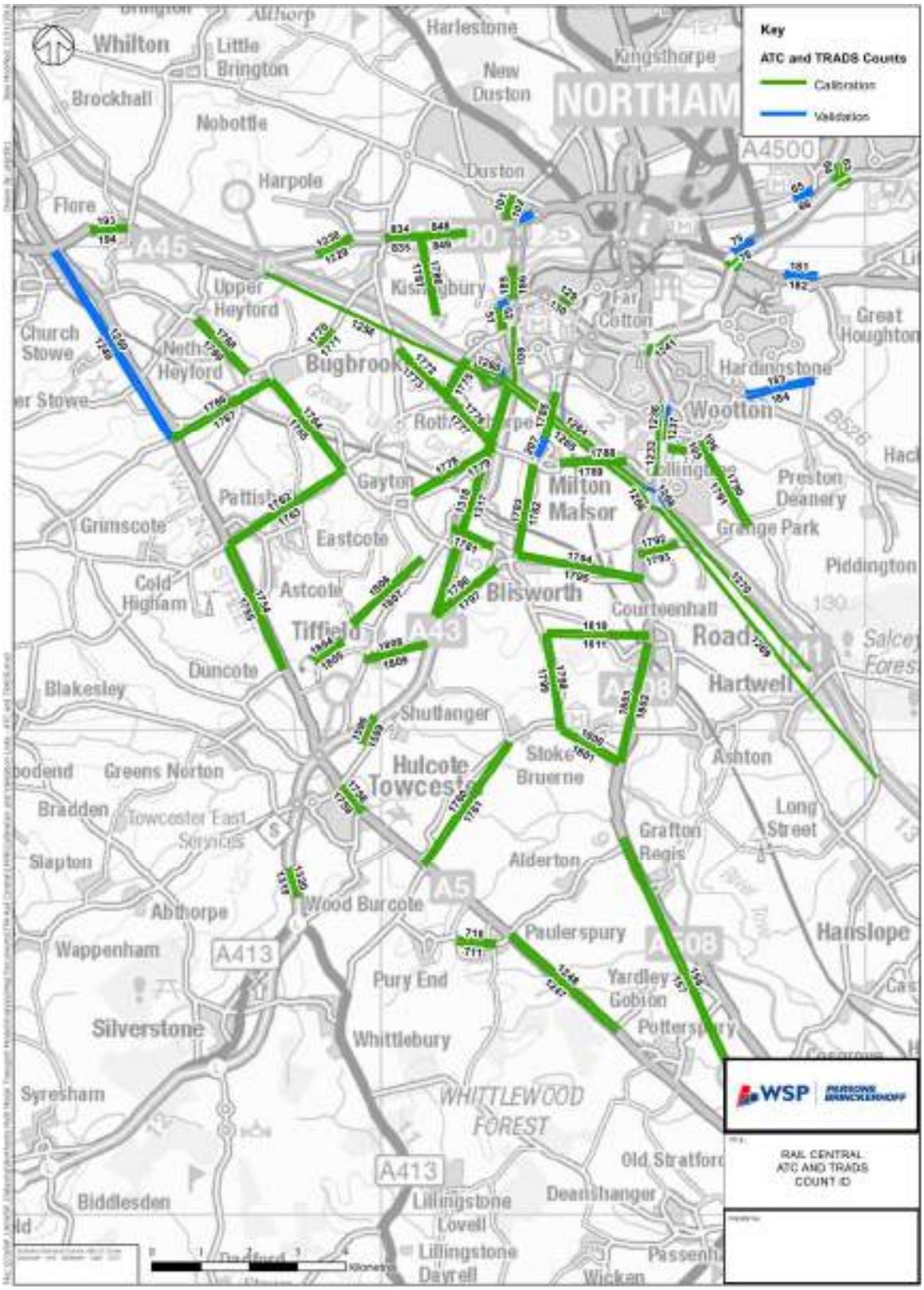


Figure 9.1 ATC/TRADS Count Locations

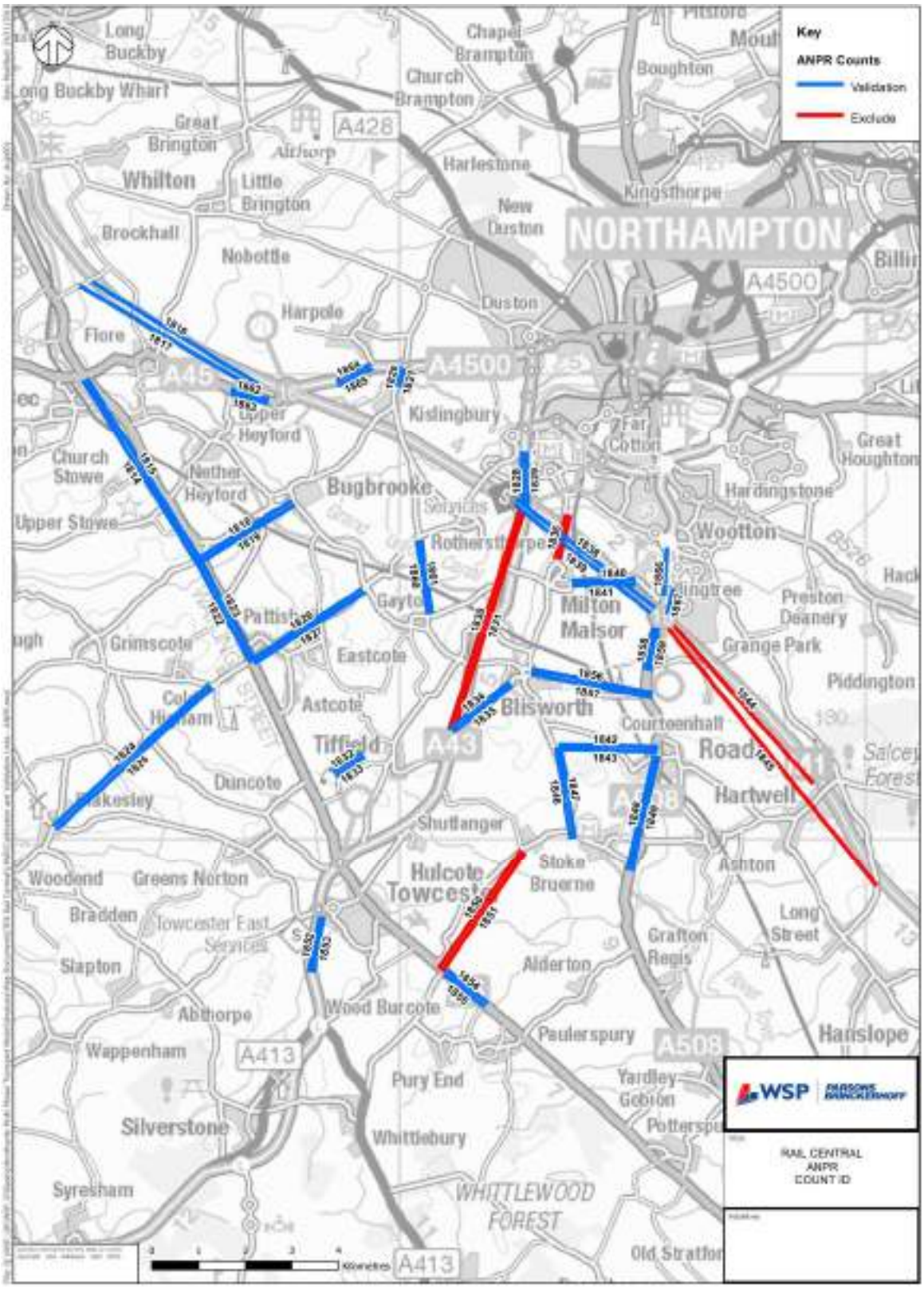


Figure 9.2 ANPR Count Locations

Table 9.4 ANPR Observed Data Compared to ATC/TRADS Observed Data

Status	Site Location	Direction	ANPR Site	AM Peak				Interpeak				PM Peak			
				ANPR Observed	ATC/TRADS Observed	ATC/TRADS - ANPR	% Difference	ANPR Observed	ATC/TRADS Observed	ATC/TRADS - ANPR	% Difference	ANPR Observed	ATC/TRADS Observed	ATC/TRADS - ANPR	% Difference
Validation	A5 Hopkins' Ln South of Church St	NB	A	410	483	73	17%	308	348	40	8%	699	660	-74	10%
Validation	A5 Hopkins' Ln South of Church St	SB	A	574	545	-29	5%	313	313	0	0%	432	475	43	-9%
Validation	M1 West of Junc 18	EB	B	4885				3142				4224			
Validation	M1 West of Junc 18	WB	B	3465				4216				4171			
Validation	Road (A5 to Great Lane)	NB	C	87	99	12	-13%	42	53	9	11%	47	47	0	-1%
Validation	Road (A5 to Great Lane)	SB	C	70	88	18	-28%	39	47	8	-18%	80	95	6	-8%
Validation	Sandy Ln South of A4500	NB	D	485				206				351			
Validation	Sandy Ln South of A4500	SB	D	461				241				445			
Validation	A5 South of Mill Ln	NB	E	388				177				690			
Validation	A5 South of Mill Ln	SB	E	661				333				440			
Validation	Banbury Ln west of Lilbrborough Rd	EB	F	86				34				94			
Validation	Banbury Ln west of Lilbrborough Rd	WB	F	80				49				75			
Validation	Banbury Lane (Southwest of Bagbrooke Road junction)	NB	G	155	161	6	-4%	68	69	-19	-19%	126	140	13	-11%
Validation	Banbury Lane (Southwest of Bagbrooke Road junction)	SB	G	116	130	13	-11%	71	84	13	-18%	123	131	8	-6%
Validation	A5123	NB	H	927				741				1,229			
Validation	A5123	SB	H	1339	1339	0	0%	718	837	-79	10%	972	924	-48	5%
Exclude	A43 North of Gayton Rd	NB	I	1,205	1,270	+65	5%	1074	1008	-67	7%	2169	1470	-713	-48%
Exclude	A43 North of Gayton Rd	SB	I	1748	1946	-202	11%	1012	837	-175	9%	1393	1262	-68	9%
Validation	Road (A5 to High Street)	NB	J	19	14	-5	28%	13	13	0	-2%	13	17	4	-30%
Validation	Road (A5 to High Street)	SB	J	13	22	9	-69%	8	13	5	37%	18	14	-3	19%
Validation	Towcester Road (A43 to Stoke Road)	NB	K	224	333	109	-33%	139	217	78	-56%	287	383	-96	-15%
Validation	Towcester Road (A43 to Stoke Road)	SB	K	360	295	-65	21%	168	176	8	-5%	289	295	24	-8%
Exclude	Towcester Road (M1 to Lower Road)	NB	L	387	681	314	-44%	263	344	81	-23%	186	480	-146	53%
Exclude	Towcester Road (M1 to Lower Road)	SB	L	629	386	-231	58%	262	307	45	-15%	430	686	253	-36%
Validation	M1 East of Jcn 15A	EB	M	4249	4189	-60	1%	3352	3356	3	0%	4186	4136	-26	0%
Validation	M1 East of Jcn 15A	WB	M	3858	3452	-16	9%	3618	3474	-143	10%	4211	4402	191	-4%
Validation	Collingtree Road (Towcester Road to M1)	EB	N	197	212	15	-7%	53	74	21	-28%	110	129	19	-15%
Validation	Collingtree Road (Towcester Road to M1)	WB	N	77	73	-4	6%	22	45	23	-51%	46	66	20	-30%
Validation	Knock Lane (Stoke Road to Blisworth Road	EB	O	59	82	4	-6%	29	45	16	-36%	91	91	0	0%
Validation	Knock Lane (Stoke Road to Blisworth Road	WB	O	83	89	6	-6%	22	34	12	-36%	43	44	1	-1%
Exclude	M1 South of Jcn 15	EB	P	4319	3880	-418	11%	3291	3141	-150	4%	3979	3836	-139	4%
Exclude	M1 South of Jcn 15	WB	P	3165	3381	196	-6%	3639	3364	-424	14%	4170	4184	8	0%
Validation	Stoke Road (Knock Lane to Shuttlenger Road)	NB	Q	78	62	8	-21%	42	60	18	-30%	216	237	22	-9%
Validation	Stoke Road (Knock Lane to Shuttlenger Road)	SB	Q	195	213	18	-9%	37	48	11	-23%	71	72	1	-1%
Validation	A508 Stratford Road (Rockery Lane to High Street)	NB	R	617	703	86	-12%	477	538	61	-11%	747	811	64	-8%
Validation	A508 Stratford Road (Rockery Lane to High Street)	SB	R	884	914	118	-12%	408	473	65	-14%	637	658	21	-3%
Exclude	Road Southeast of Shawsley Road/Main Road	NB	U	89	133	44	-33%	79	63	-16	25%	181	49	-132	229%
Exclude	Road Southeast of Shawsley Road/Main Road	SB	U	134	93	-41	45%	47	84	37	-44%	36	182	146	-80%
Validation	A43 North of Silverstone Bypass	NB	V	1070				1023				1070			
Validation	A43 North of Silverstone Bypass	SB	V	1473				908				1222			
Validation	A5 West of Fury Road	EB	W	613				428				646			
Validation	A5 West of Fury Road	WB	W	599				467				1064			
Validation	Courteenhall Road (Northampton Road to A508 Northampton Road)	EB	X	155	156	1	0%	90	90	0	1%	123	124	1	-1%
Validation	Courteenhall Road (Northampton Road to A508 Northampton Road)	WB	X	260	256	0	44%	118	148	34	-17%	236	286	50	-17%
Validation	A5068 Northampton Rd	NB	Y	756				528				787			
Validation	A5068 Northampton Rd	SB	Y	566				528				667			
Validation	Unnamed Rd North of Milton Road	NB	Z	21				4				18			
Validation	Unnamed Rd North of Milton Road	SB	Z	18				0				15			
Validation	A45 West of Jcn 15	EB	AA	880				478				841			
Validation	A45 West of Jcn 15	WB	AA	723				636				998			
Validation	A4500 West of Northampton Road	EB	AB	910	868	-55	6%	508	508	89	-17%	790	776	-19	2%
Validation	A4500 West of Northampton Road	WB	AB	662	723	71	-10%	573	618	45	-7%	923	713	-211	30%
Validation	A45 London Road North of M1 Jcn 15	NB	AC	2774	2686	-88	3%	1813	1491	-322	22%	2717	2291	-426	19%
Validation	A45 London Road North of M1 Jcn 15	SB	AC	2445				1848				2581			

Table 9.5 Local Calibration Results and GEH Ranges

Area: TPA Rail Central

Criteria and Measure		Acceptability Guideline
Flow Criteria		
Observed	Modelled	
< 700 vph	±100 vph	> 85 % of links
700 - 2,700 vph	±15%	> 85 % of links
> 2,700 vph	±400 vph	> 85 % of links
GEH Criteria		
GEH Statistic for individual links < 5		> 85 % of links

GEH Range
GEH < 2
GEH < 4
GEH < 6
GEH < 8
GEH < 10
GEH <5

AM Peak — ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
71	67	94%	45	40	89%
38	29	76%	18	12	67%
11	11	100%	5	5	100%
120	106	88%	68	55	81%

ALL					
Calibration		Validation		Combined	
55	46%	34	50%	89	47%
95	79%	48	71%	143	76%
110	92%	61	90%	171	91%
117	98%	68	97%	183	97%
118	98%	68	100%	186	99%
106	88%	55	81%	161	86%

Interpeak — ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
85	81	95%	55	51	93%
28	26	93%	9	5	56%
7	7	100%	4	3	75%
120	113	94%	68	61	90%

ALL					
Calibration		Validation		Combined	
86	72%	34	50%	120	64%
110	92%	53	78%	163	87%
115	96%	64	94%	179	95%
119	99%	67	99%	186	99%
120	100%	67	99%	187	99%
113	94%	61	90%	174	93%

PM Peak — ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
69	68	99%	42	36	90%
41	39	95%	21	18	86%
10	10	100%	5	3	60%
120	103	86%	68	57	84%

ALL					
Calibration		Validation		Combined	
61	51%	26	38%	87	46%
94	78%	51	75%	145	77%
110	92%	65	96%	175	93%
117	98%	67	99%	184	98%
120	100%	68	100%	188	100%
103	86%	57	84%	160	85%

Area: TPA Rail Central

Criteria and Measure	Acceptability Guideline
Flow or GEH Criteria Met	
Individual links	> 85 % of links

AM Peak — ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
120	106	88%	68	59	87%	188	166	88%

Interpeak — ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
120	113	94%	68	63	93%	188	176	94%

PM Peak — ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
120	117	98%	68	62	91%	188	179	95%

9.5 COUNT CALIBRATION AND VALIDATION

9.5.1 Figures 9.3 to 9.5 show the link GEH values for each model. Links with a GEH of less than 5 are highlighted in green and this indicates that these links have been calibrated to a high degree of accuracy. Links which have GEH over 5 are highlighted in red.

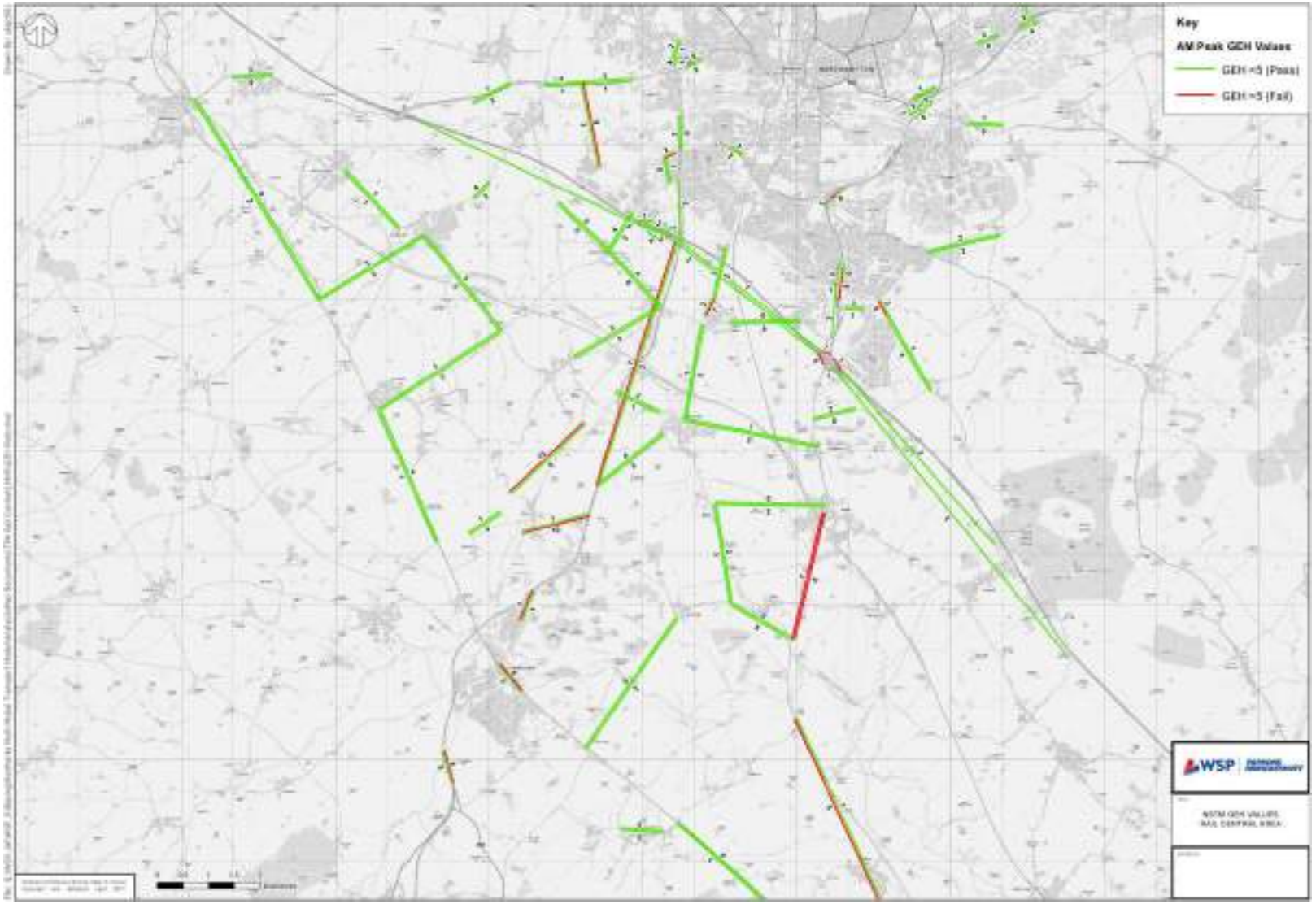


Figure 9.3 GEH – AM Peak

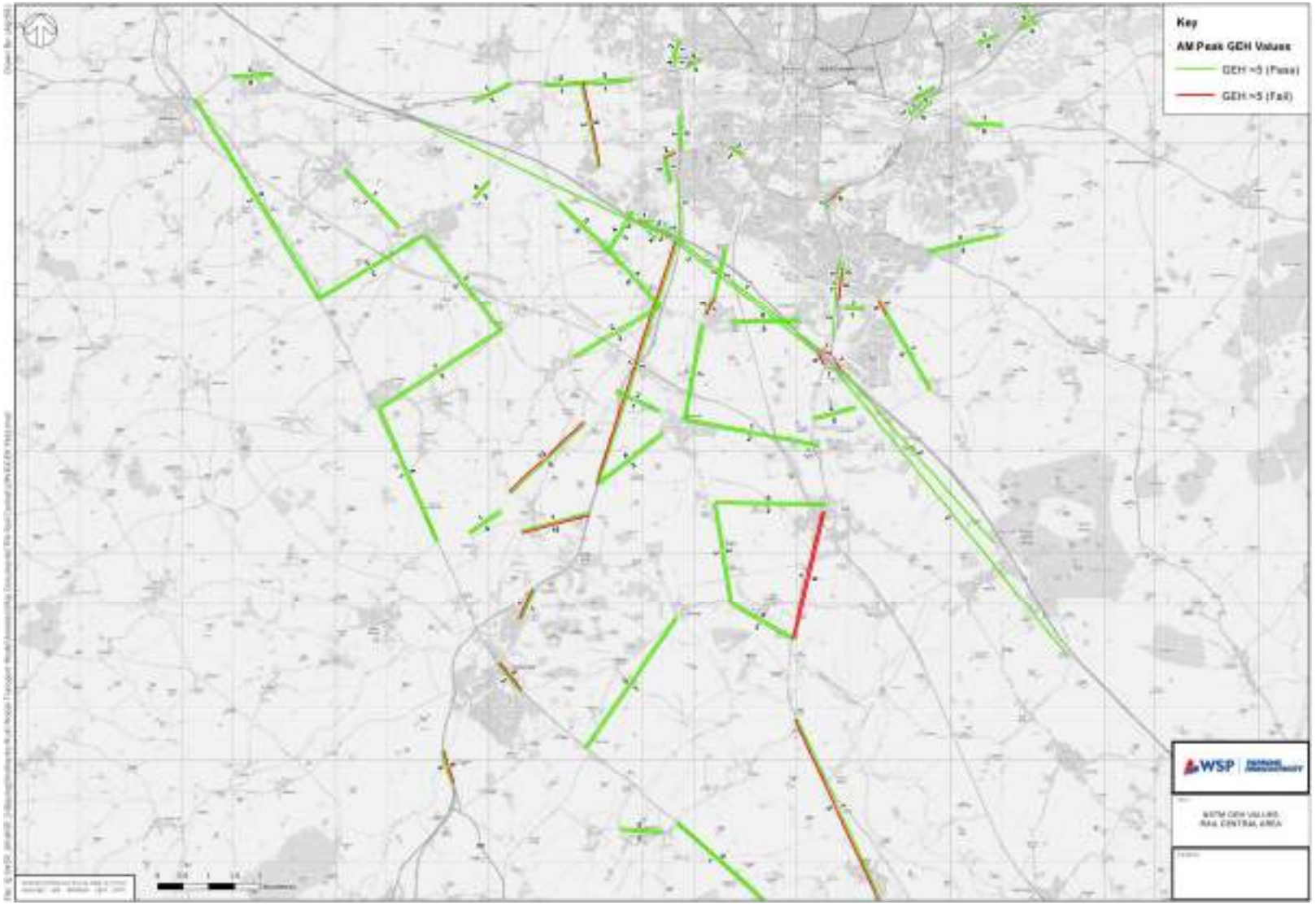


Figure 9.4 GEH – IP

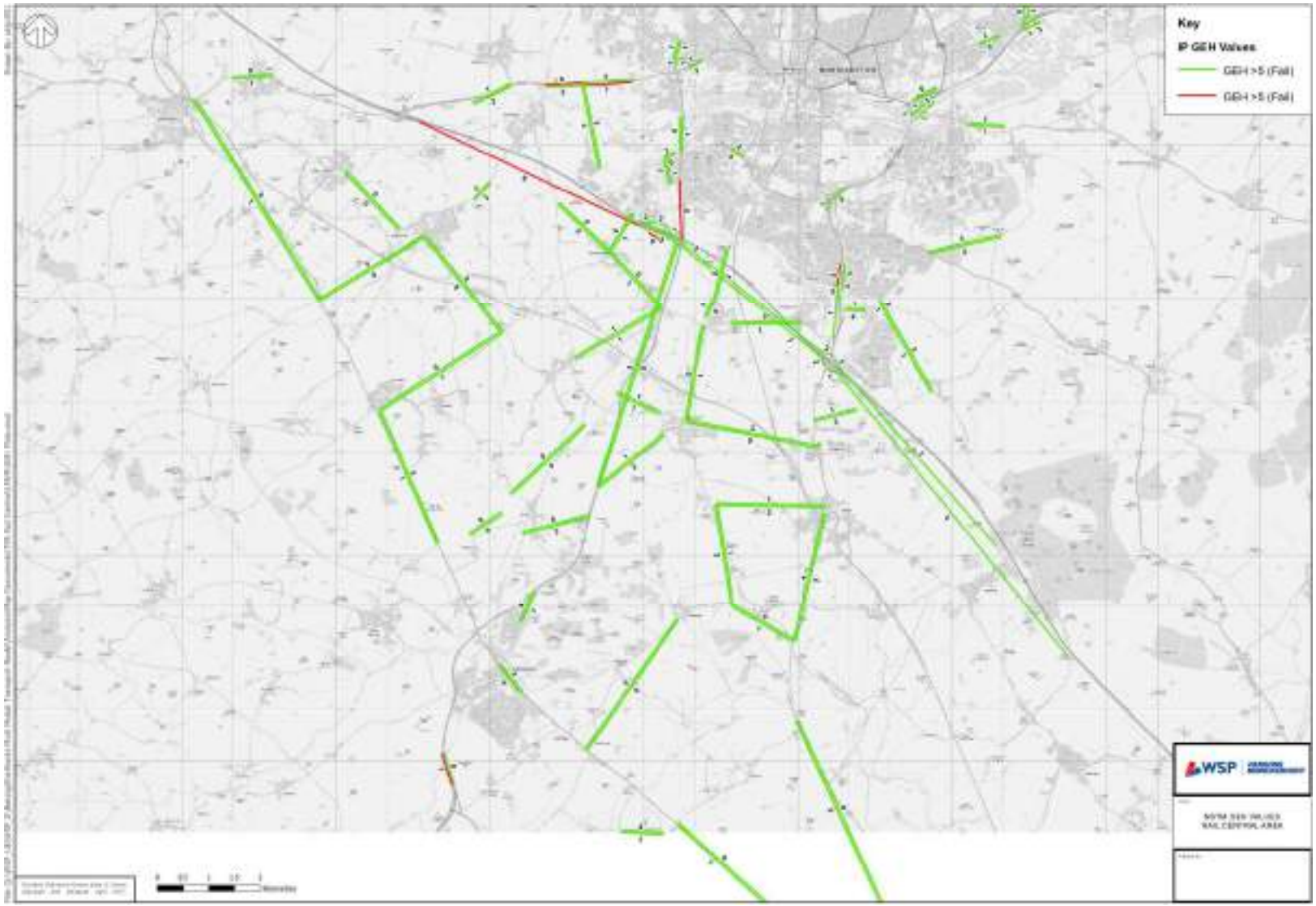


Figure 9.5 GEH – PM Peak

9.6 JOURNEY TIME DATA

9.6.1 In addition to calibrating and validating local count data, model validation was undertaken using Trafficmaster journey time data, validated using Google Maps. New journey time surveys were undertaken for the updated NSTM, which is the first time they have been carried out since the NSTM's initial construction in 2008. The new journey time data is therefore considered to be representative of observed 2015 conditions.

9.6.2 Eight journey time routes were assessed (in both directions) in the area around the proposed development. These local journey time routes are shown on Figure 9.6.

9.6.3 The DMRB Volume 12, Section 2, Paragraph 4.4.43 requires that total modelled journey time should be within 15% (or 1 minute, whichever is greater) of the observed average journey time. Table 9.5 compares the accuracy of the modelled and observed journey times in each model.

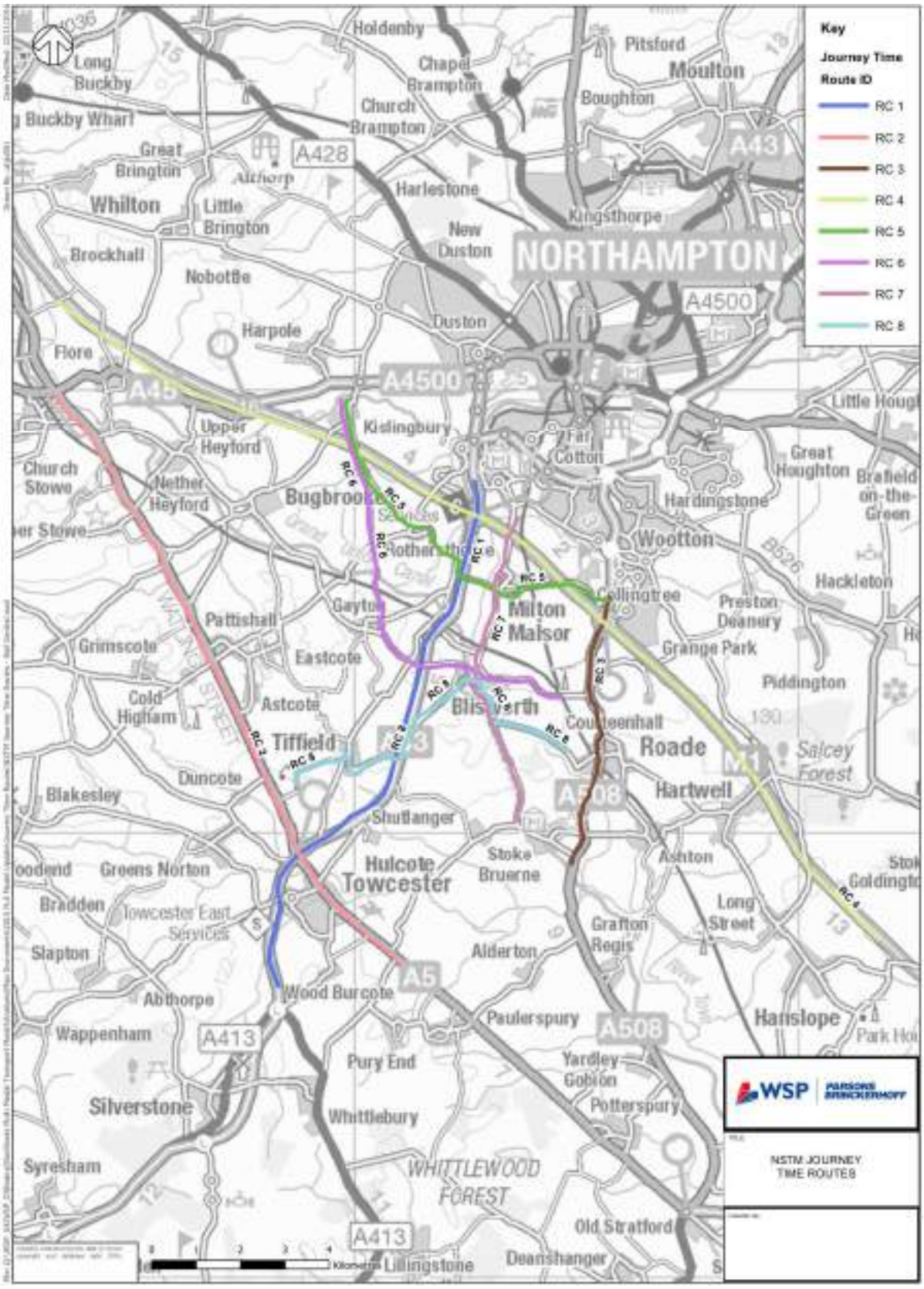


Figure 9.6 Local Area Journey Time Routes

Table 9.5 Local Area Journey Time Summary Results

		AM Peak					Interpeak					PM Peak				
ID	Name	Observed (s)	Modelled (s)	Diff	%	Pass?	Observed (s)	Modelled (s)	Diff	%	Pass?	Observed (s)	Modelled (s)	Diff	%	Pass?
43	Rail Central 1 - NB	630	575	55	9%	Yes	600	540	60	10%	Yes	1220	1217	3	0%	Yes
44	Rail Central 1 - SB	870	864	6	1%	Yes	600	522	78	13%	Yes	700	682	18	3%	Yes
45	Rail Central 2 - NB	1120	1103	17	2%	Yes	1080	1110	-30	-3%	Yes	1400	1418	-18	-1%	Yes
46	Rail Central 2 - SB	1300	1156	144	11%	Yes	1080	970	110	10%	Yes	1080	1015	65	6%	Yes
47	Rail Central 3 - NB	430	389	41	10%	Yes	480	533	-53	-11%	Yes	580	588	-8	-1%	Yes
48	Rail Central 3 - SB	490	434	56	12%	Yes	380	376	4	1%	Yes	480	450	30	6%	Yes
49	Rail Central 4 - WB	900	886	14	2%	Yes	1020	927	93	9%	Yes	1020	923	97	10%	Yes
50	Rail Central 4 - EB	1060	939	121	11%	Yes	1020	895	125	12%	Yes	930	927	3	0%	Yes
51	Rail Central 5 - EB	700	701	-1	0%	Yes	720	655	65	9%	Yes	750	674	76	10%	Yes
52	Rail Central 5 - WB	680	726	-46	-7%	Yes	720	681	39	5%	Yes	720	694	26	4%	Yes
53	Rail Central 6 - NB	920	848	72	8%	Yes	900	820	80	9%	Yes	950	890	60	6%	Yes
54	Rail Central 6 - SB	900	875	25	3%	Yes	900	834	66	7%	Yes	870	876	-6	-1%	Yes
55	Rail Central 7 - NB	600	596	4	1%	Yes	600	551	49	8%	Yes	570	582	-12	-2%	Yes
56	Rail Central 7 - SB	620	589	31	5%	Yes	600	553	47	8%	Yes	740	760	-20	-3%	Yes
57	Rail Central 8 - EB	1020	1020	0	0%	Yes	780	800	-20	-3%	Yes	1050	905	145	14%	Yes
58	Rail Central 8 - WB	780	779	1	0%	Yes	720	753	-33	-5%	Yes	810	795	15	2%	Yes

9.6.4 The journey time results for the AM peak period show that all of all the journey time runs are within 15% (or 1 minute) of the observed time. The graphs for the AM peak (see Appendix E) show that any queues and therefore delays which would have been observed have been reflected within the modelled journey time runs.

9.6.5 The journey time results for the IP period show that 16 out of 16 (100%) of all the journey time runs are within 15% (or 1 minute) of the observed time. The graphs for the IP period (see Appendix E) show that any queues and therefore delays which would have been observed have been reflected within the modelled journey time runs.

9.6.6 The journey time results for the PM peak period show that all of all the journey time runs are within 15% (or 1 minute) of the observed time. The graphs for the PM peak (see Appendix E) all show that any queues and therefore delays which would have been observed have been reflected within the modelled journey time runs.

9.7 JUNCTION TURNING COUNTS

9.7.1 Classified junction turning counts commissioned at the roundabouts comprising Junction 15A of the M1 and at Junction 15 of the M1. These junctions have been examined in detail to ensure that the modelled turning movements are realistic in each model. Appendix F shows the GEH for the turns at these junctions in each model.

9.8 ACTUAL FLOW PLOTS

9.8.1 Actual flow plots for the local study area in each peak are provided in Appendix G.

10 WIDER AREA CALIBRATION AND VALIDATION

10.1 INTRODUCTION

10.1.1 Although the calibration and validation results outlined previously are acceptable for the local area, it is also necessary to confirm that the remainder of the 2015 NSTM network also meets the requirements set out in the DMRB. Therefore, this chapter outlines the calibration and validation results for the wider area.

10.2 COUNT DATA

10.2.1 Table 10.1 outlines the calibration and validation results for the wider area in each model.

Table 10.1 Wider Area Calibration Results

Area

Criteria and Measure		Acceptability Guideline
Flow Criteria		
Observed	Modelled	
< 700 vph	±100 vph	> 85 % of links
700 - 2,700 vph	±15%	> 85 % of links
> 2,700 vph	±400 vph	> 85 % of links
GEH Criteria		
GEH Statistic for individual links < 5		> 85 % of links

GEH Range
GEH < 2
GEH < 4
GEH < 6
GEH < 8
GEH < 10
GEH <5

AM Peak — ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
282	267	95%	151	141	93%
153	132	86%	66	56	85%
14	13	93%	5	5	100%
449	398	89%	221	200	90%

ALL					
Calibration		Validation		Combined	
231	51%	34	15%	265	40%
366	82%	187	85%	553	83%
415	92%	213	96%	628	94%
436	98%	219	99%	667	99%
443	99%	221	100%	664	99%
398	89%	200	90%	598	89%

Interpeak — ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
341	331	97%	189	175	93%
101	96	95%	28	22	79%
7	7	100%	4	3	75%
449	425	95%	221	203	92%

ALL					
Calibration		Validation		Combined	
296	66%	34	15%	330	49%
407	91%	183	83%	590	88%
438	98%	212	96%	650	97%
447	100%	218	99%	665	99%
449	100%	219	99%	668	100%
425	95%	203	92%	628	94%

PM Peak — ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
276	245	89%	142	122	86%
162	142	88%	73	62	85%
11	11	100%	6	4	67%
449	377	84%	221	190	86%

ALL					
Calibration		Validation		Combined	
221	49%	26	12%	247	37%
343	76%	169	76%	512	76%
401	89%	211	95%	612	91%
429	96%	218	99%	647	97%
444	99%	221	100%	665	99%
377	84%	190	86%	567	85%

Area

Criteria and Measure	Acceptability Guideline
Flow or GEH Criteria Met	
Individual links	> 85 % of links

AM Peak — ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
449	416	93%	221	207	94%	670	623	93%

Interpeak — ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
449	438	97%	221	206	93%	670	642	96%

PM Peak — ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
449	436	90%	221	199	89%	670	635	95%

10.2.2 Table 10.1 shows that the criteria have been met in each of the peaks. The model is therefore not only well calibrated in the local area around the proposed development, but also in the wider area.

10.2.3 Full details of link calibration and validation for the wider area are given in Appendix D.

10.3 JOURNEY TIME DATA

10.3.1 As stated in Chapter 9, model validation was undertaken against new journey time data. In the wider area, journey time surveys has previously been undertaken (in both directions) on 21 routes to assist with validation of the previous NSTM. These routes are shown on Figure 10.1.

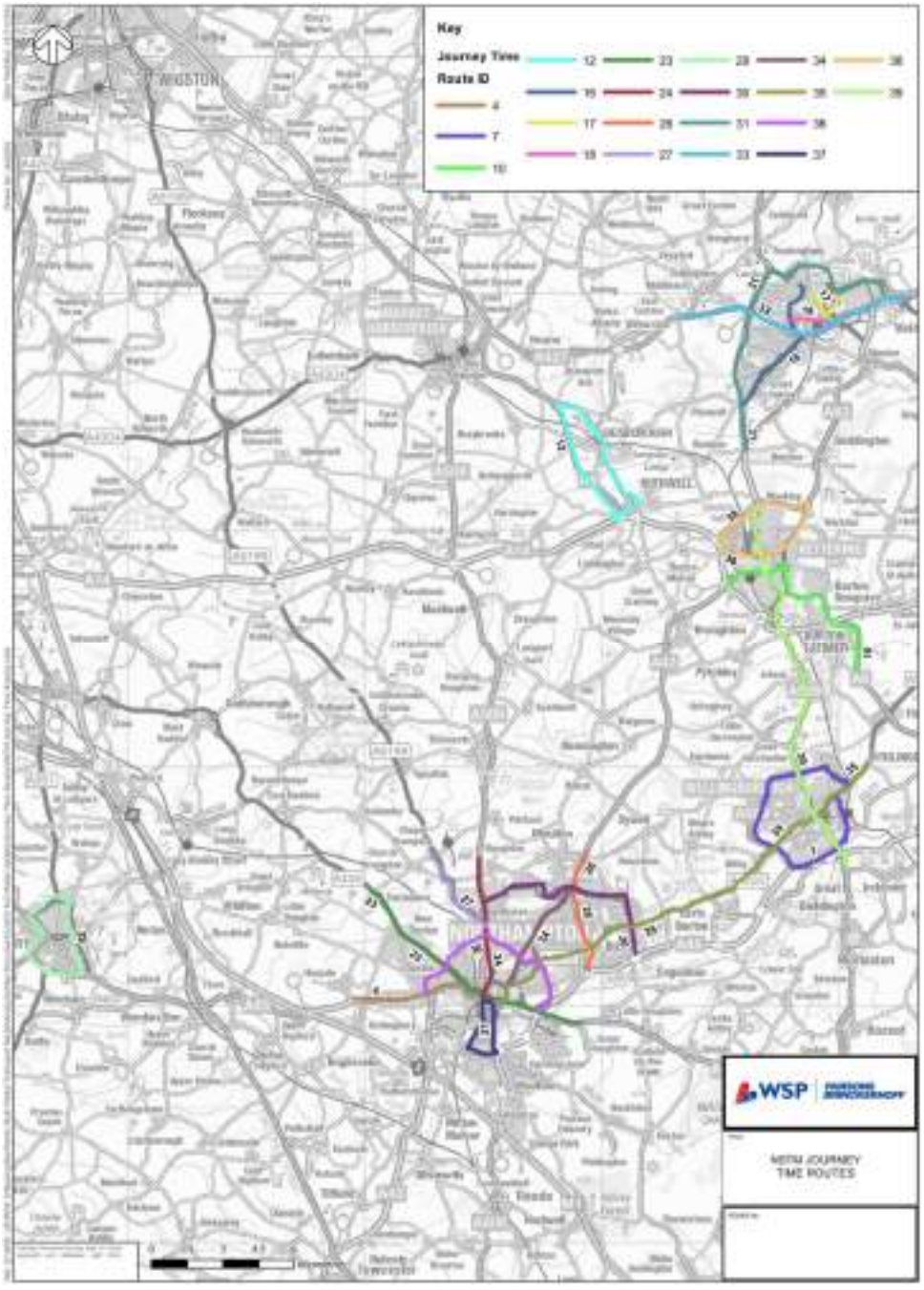


Figure 10.1 Wider Area Journey Time Routes

10.3.2 Table 10.2 compares the accuracy of the modelled and observed journey times in each model. The results of the local journey time routes (discussed in Chapter 9) are shown for reference.

Table 10.2 Journey Time Summary Results

ID	Name	AM Peak					Interpeak					PM Peak				
		Observed (s)	Modelled (s)	Diff	%	Pass?	Observed (s)	Modelled (s)	Diff	%	Pass?	Observed (s)	Modelled (s)	Diff	%	Pass?
1	4 - Eastbound	894	822	72	8%	Yes	785	657	128	17%	No	740	675	65	9%	Yes
2	4 - Westbound	741	639	102	14%	Yes	838	798	41	5%	Yes	957	971	-14	-1%	Yes
3	7 - Clockwise	1077	1039	38	4%	Yes	949	1026	-78	-8%	Yes	1118	1039	79	7%	Yes
4	7 - Anticlockwise	1085	1008	77	7%	Yes	962	981	-19	-2%	Yes	1152	994	158	14%	Yes
5	10 - Eastbound	1015	911	104	10%	Yes	880	850	30	3%	Yes	1016	869	147	14%	Yes
6	10 - Westbound	1020	889	131	13%	Yes	1002	849	153	15%	No	1135	844	291	26%	No
7	12 - Clockwise	772	830	-58	-7%	Yes	740	789	-49	-7%	Yes	754	842	-88	-12%	Yes
8	12 - Anti-clockwise	793	813	-20	-3%	Yes	723	763	-40	-5%	Yes	785	798	-13	-2%	Yes
9	18 - Northbound	654	680	-26	-4%	Yes	590	602	-12	-2%	Yes	833	829	4	1%	Yes
10	18 - Southbound	634	596	37	6%	Yes	614	612	2	0%	Yes	648	652	-4	-1%	Yes
11	17 - Eastbound	245	218	26	11%	Yes	253	217	35	14%	Yes	290	219	71	24%	No
12	17 - Westbound	254	213	41	16%	Yes	293	213	81	28%	No	378	356	22	6%	Yes
13	18 - Eastbound	182	138	44	24%	Yes	184	130	54	29%	Yes	183	139	44	24%	Yes
14	18 - Westbound	148	140	9	6%	Yes	148	138	10	7%	Yes	263	251	12	4%	Yes
15	23 - Eastbound	1576	2016	-439	-28%	No	1272	1178	94	7%	Yes	1469	1513	-44	-3%	Yes
16	23 - Westbound	1383	1324	59	4%	Yes	1387	1266	121	9%	Yes	1610	1767	-157	-10%	Yes
17	24 - Northbound	779	690	89	11%	Yes	700	649	50	9%	Yes	921	895	26	3%	Yes
18	24 - Southbound	727	631	97	13%	Yes	840	611	229	27%	No	848	719	129	15%	No
19	26 - Northbound	503	443	60	12%	Yes	422	401	21	5%	Yes	412	418	-6	-2%	Yes
20	26 - Southbound	506	439	68	14%	Yes	391	390	1	0%	Yes	374	416	-42	-11%	Yes
21	27 - Northbound	278	266	11	4%	Yes	278	258	20	7%	Yes	289	279	10	4%	Yes
22	27 - Southbound	362	303	59	16%	Yes	301	266	34	11%	Yes	311	275	36	12%	Yes
23	29 - Clockwise	704	616	87	12%	Yes	708	623	85	12%	Yes	672	637	35	5%	Yes
24	29 - Anti-clockwise	695	609	86	12%	Yes	682	605	87	13%	Yes	664	608	56	8%	Yes
25	30 - Eastbound	822	763	59	7%	Yes	666	613	53	8%	Yes	701	657	44	6%	Yes
26	30 - Westbound	955	734	221	23%	No	675	634	41	6%	Yes	1007	998	9	1%	Yes
27	31 - North Eastbound	861	834	26	3%	Yes	827	784	43	5%	Yes	822	792	30	4%	Yes
28	31 - South Westbound	900	867	33	4%	Yes	862	868	-6	-1%	Yes	1056	928	128	12%	Yes
29	33 - Eastbound	735	712	22	3%	Yes	680	658	1	0%	Yes	694	693	1	0%	Yes
30	33 - Westbound	703	654	49	7%	Yes	695	656	38	6%	Yes	899	1022	-123	-14%	Yes
31	34 - North Eastbound	1272	1029	243	19%	No	1073	920	153	14%	Yes	1350	1201	149	11%	Yes
32	34 - South Westbound	1032	1047	-15	-1%	Yes	1006	892	114	11%	Yes	1256	976	280	22%	No
33	35 - North Eastbound	2318	2341	-22	-1%	Yes	2189	2081	107	5%	Yes	3080	2681	399	13%	Yes
34	35 - South Westbound	2720	2576	144	5%	Yes	2185	2087	97	4%	Yes	2578	2258	320	12%	Yes
35	36 - Clockwise	1698	1427	271	16%	No	1071	1098	-26	-2%	Yes	1445	1264	181	13%	Yes
36	36 - Anti-clockwise	1565	1217	348	22%	No	1014	1091	-77	-8%	Yes	1689	1468	221	13%	Yes
37	37 - Clockwise	987	925	62	6%	Yes	956	717	239	25%	No	1047	943	104	10%	Yes
38	37 - Anti-clockwise	728	567	161	22%	No	675	534	142	21%	No	845	691	154	18%	No
39	38 - Clockwise	1137	1086	52	5%	Yes	1130	973	157	14%	Yes	1120	952	168	15%	Yes
40	38 - Anti-clockwise	916	987	-71	-8%	Yes	852	811	41	5%	Yes	1024	807	217	21%	No
41	39 - Northbound	1983	1750	233	12%	Yes	1568	1573	-5	0%	Yes	2008	1744	264	13%	Yes
42	39 - Southbound	1966	1779	187	10%	Yes	1734	1608	126	7%	Yes	1978	1738	240	12%	Yes
43	Rail Central 1 - NB	630	575	55	9%	Yes	600	540	60	10%	Yes	1220	1217	3	0%	Yes
44	Rail Central 1 - SB	870	864	6	1%	Yes	600	522	78	13%	Yes	700	682	18	3%	Yes
45	Rail Central 2 - NB	1120	1103	17	2%	Yes	1080	1110	-30	-3%	Yes	1400	1418	-18	-1%	Yes
46	Rail Central 2 - SB	1300	1156	144	11%	Yes	1080	970	110	10%	Yes	1080	1015	65	6%	Yes
47	Rail Central 3 - NB	430	389	41	10%	Yes	480	533	-53	-11%	Yes	580	589	-8	-1%	Yes
48	Rail Central 3 - SB	490	434	56	12%	Yes	380	376	4	1%	Yes	480	450	30	6%	Yes
49	Rail Central 4 - WB	900	886	14	2%	Yes	1020	927	93	9%	Yes	1020	923	97	10%	Yes
50	Rail Central 4 - EB	1060	939	121	11%	Yes	1020	895	125	12%	Yes	930	927	3	0%	Yes
51	Rail Central 5 - EB	700	701	-1	0%	Yes	720	655	65	9%	Yes	750	674	76	10%	Yes
52	Rail Central 5 - WB	680	726	-46	-7%	Yes	720	681	39	5%	Yes	720	694	26	4%	Yes
53	Rail Central 6 - NB	920	848	72	8%	Yes	900	820	80	9%	Yes	950	890	60	6%	Yes
54	Rail Central 6 - SB	900	875	25	3%	Yes	900	834	66	7%	Yes	870	876	-6	-1%	Yes
55	Rail Central 7 - NB	600	596	4	1%	Yes	600	551	49	8%	Yes	570	582	-12	-2%	Yes
56	Rail Central 7 - SB	620	589	31	5%	Yes	600	553	47	8%	Yes	740	760	-20	-3%	Yes
57	Rail Central 8 - EB	1020	1020	0	0%	Yes	780	800	-20	-3%	Yes	1060	905	145	14%	Yes
58	Rail Central 8 - WB	780	779	1	0%	Yes	720	753	-33	-5%	Yes	810	795	15	2%	Yes

10.3.3 The journey time results for the AM peak period show that 52 out of 58 (90%) of all the journey time runs are within 15% (or 1 minute) of the observed time. The graphs for the AM peak (see Appendix E) show that any queues and therefore delays which would have been observed have been reflected within the modelled journey time runs.

10.3.4 The journey time results for the IP period show that 52 out of 58 (90%) of all the journey time runs are within 15% (or 1 minute) of the observed time. The graphs for the IP period (see Appendix E) all show that any queues and therefore delays which would have been observed have been reflected within the modelled journey time runs.

10.3.5 The journey time results for the PM peak period show that 52 out of 58 (90%) of all the journey time runs are within 15% (or 1 minute) of the observed time. The graphs for the PM peak (see Appendix E) all show that any queues and therefore delays which would have been observed have been reflected within the modelled journey time runs.

10.4 SCREENLINES

10.4.1 Figure 4.1 showed the screenlines used in the validation exercise. DMRB validation standards require most screenlines to show total modelled flows within ±5% of observed flows, and the screenline GEH should be less than 4. Table 10.3 shows the screenline totals for each peak hour model.

Table 10.3 Screenline Results

Screenline			AM Peak All				Interpeak All				PM Peak All			
ID	Name	Type	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH
1	Brackley Cordon Inbound	Calibration	4384	4599	5%	3.215	2891	3059	6%	3.076	4249	4796	13%	8.136
2	Brackley Cordon Outbound	Calibration	4001	4013	0%	0.198	2896	2987	3%	1.673	4210	4379	4%	2.693
3	Corby Cordon Inbound	Calibration	4300	4281	0%	0.297	3075	3197	4%	2.188	4808	4880	2%	1.048
4	Corby Cordon Outbound	Calibration	4845	4443	-8%	5.892	3127	3188	2%	1.096	4273	4299	1%	0.402
5	Daventry Cordon Inbound	Calibration	3796	3694	-3%	1.675	2005	2005	0%	0.001	3060	2982	-3%	1.661
6	Daventry Cordon Outbound	Calibration	2918	2827	-3%	1.703	2046	2042	0%	0.088	3643	3538	-3%	1.752
7	East-West Screenline NB	Calibration	5790	5829	1%	0.514	4292	4299	0%	0.110	7415	7452	0%	0.428
8	East-West Screenline SB	Calibration	6541	6340	-3%	2.498	3374	3417	1%	0.738	4744	4575	-4%	2.472
9	Inner Northampton Cordon Inbound	Calibration	9970	9814	-2%	1.565	6711	6586	-2%	1.538	7775	7566	-3%	2.401
10	Inner Northampton Cordon Outbound	Calibration	6805	6411	-3%	2.405	6801	6619	-3%	2.226	9359	9170	-2%	1.964
11	Kettering Cordon Inbound	Calibration	10711	10568	-1%	1.385	7502	7677	2%	2.008	10232	10257	0%	0.251
12	Kettering Cordon Outbound	Calibration	7257	7441	3%	2.159	5526	5883	6%	4.720	8240	8241	0%	0.005
13	North-South Screenline EB	Calibration	8972	8861	-1%	1.181	5748	5734	0%	0.186	9894	9795	-1%	0.998
14	North-South Screenline WB	Calibration	7070	7091	0%	0.252	4347	4289	-1%	0.883	7098	6973	-2%	1.492
15	North Northamptonshire Screenline EB	Calibration	1595	1620	2%	0.638	1029	1034	0%	0.127	1548	1570	1%	0.565
16	North Northamptonshire Screenline WB	Calibration	1494	1530	2%	0.927	1035	1036	0%	0.042	1583	1564	-1%	0.477
17	Outer Northampton Cordon Inbound	Calibration	11997	11878	-1%	1.099	5863	5878	0%	0.196	10008	9662	-3%	3.488
18	Outer Northampton Cordon Outbound	Calibration	12066	11669	-3%	3.643	8077	8115	0%	0.418	14476	14296	-1%	1.507
19	Rushden Cordon Inbound	Calibration	3586	3745	4%	2.614	2744	2761	1%	0.329	5098	5205	2%	1.482
20	Rushden Cordon Outbound	Calibration	3773	3925	4%	2.441	2154	2142	-1%	0.255	3354	3346	0%	0.138
21	South Northamptonshire Screenline NB	Calibration	5238	5160	-1%	1.085	4561	4650	2%	1.313	6692	6479	-3%	2.629
22	South Northamptonshire Screenline SB	Calibration	8132	7901	-3%	2.582	5239	5333	2%	1.296	7018	7083	1%	0.776
23	Towcester Cordon Inbound	Calibration	1845	1664	-10%	4.303	1364	1628	19%	6.700	2141	1730	-19%	9.348
24	Towcester Cordon Outbound	Calibration	2138	1894	-11%	5.440	1229	1228	0%	0.038	1616	1481	-8%	3.446
25	Wellingborough Cordon Inbound	Calibration	8902	8733	-2%	1.792	5751	5781	1%	0.400	9477	9327	-2%	1.539
26	Wellingborough Cordon Outbound	Calibration	6523	6587	1%	0.791	4281	4423	3%	2.157	6597	6652	1%	0.680

10.4.2 The results shown in Table 10.3 show that all but three of the screenlines (88%) in the AM peak, IP and PM peak fulfil the GEH validation criteria. Only three of the screenlines do not meet the criteria in each peak. This indicates that the NSTM validates well regarding the capture all of the significant strategic movements within the study area.

10.1 ORIGIN AND DESTINATION TREES

10.1.1 Plots showing the percentage of traffic using each link between identified origin and destination zone pairs have been provided for each peak in Appendix H. They have been reviewed to ensure that the routes taken are logical and reasonable, which they are.

10.2 SUMMARY

10.2.1 The model calibration process was undertaken successfully and shows the model provides a satisfactory representation of the existing traffic situation across all peaks.

10.2.2 The link flow calibration and validation results for all time periods are at a sufficient standard to provide confidence that the model is replicating existing traffic conditions. Screenlines and journey time data provide further confirmation that the base year model reasonably represents observed traffic conditions in Northamptonshire.

10.2.3 Figures 10.2 to 10.4 graphically present the performance of the model against the thresholds of the key acceptability criteria for the AM peak, Inter peak and PM peak respectively. These figures clearly show the model performs to acceptable levels and robustly represents traffic conditions.

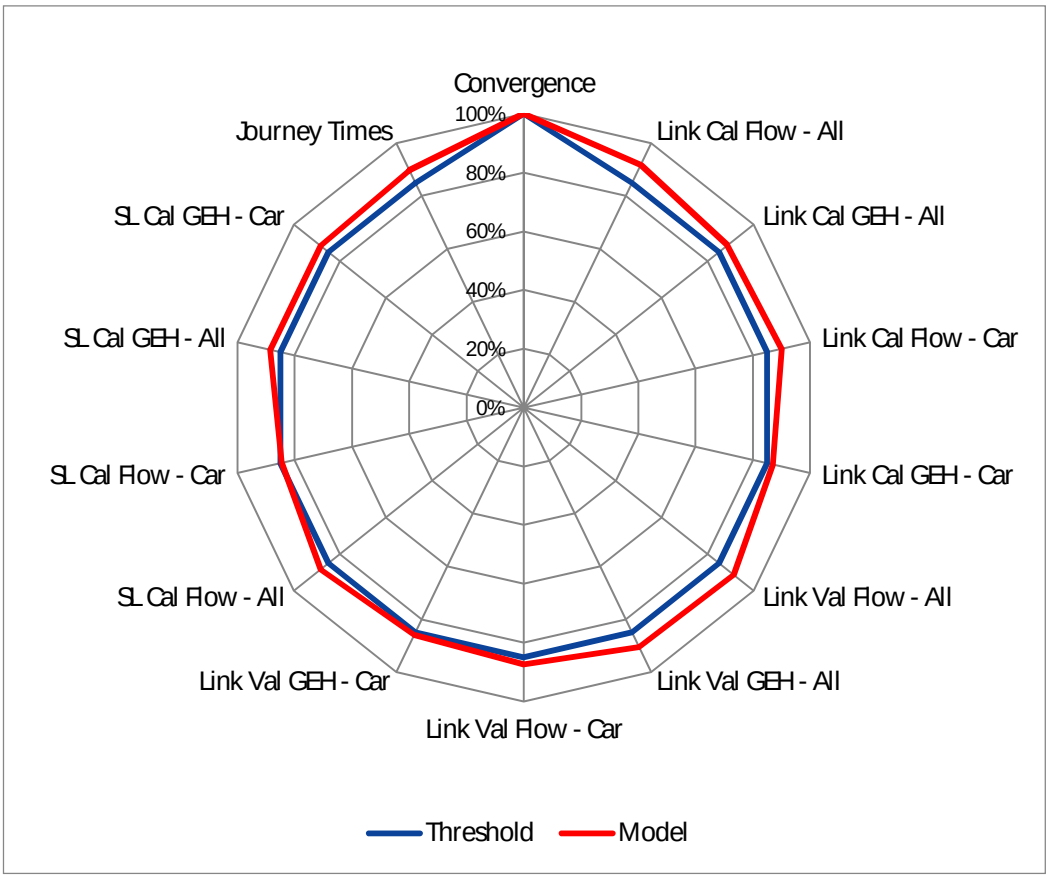


Figure 10.2 AM Peak Summary (above)

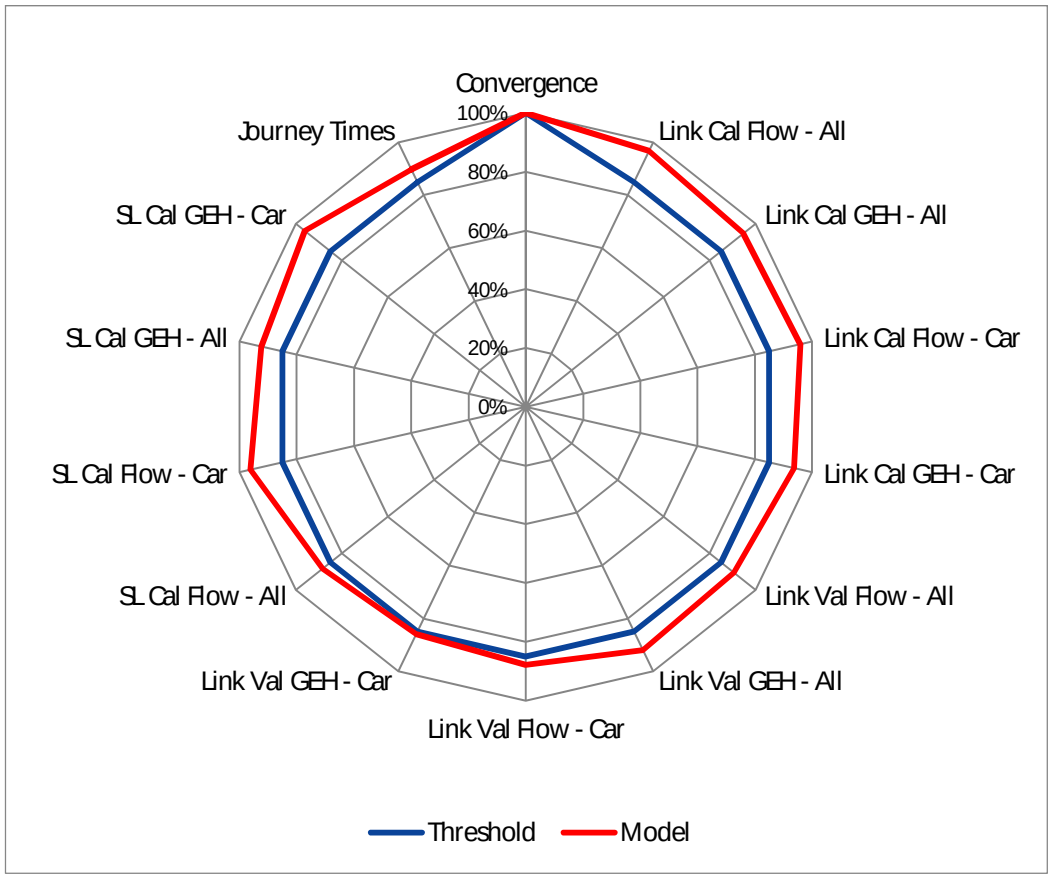


Figure 10.3 IP Summary (above)

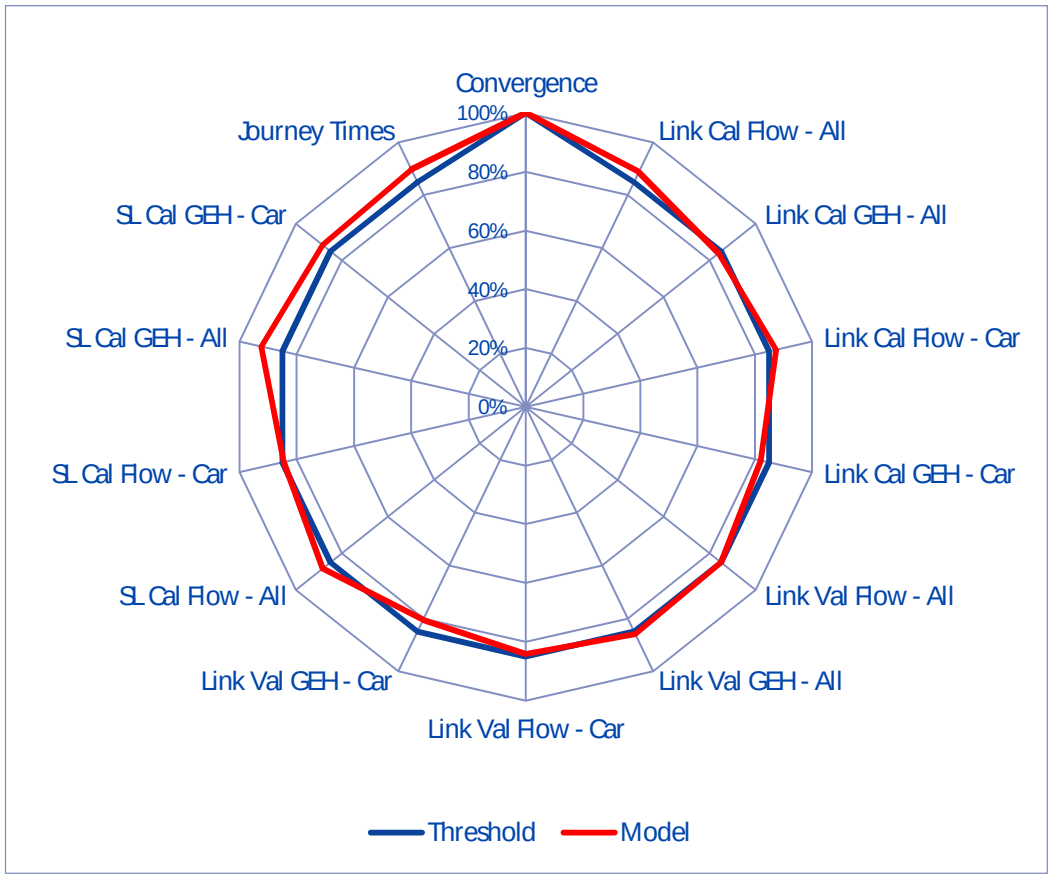


Figure 10.4 PM Peak Summary (above)

11 CONCLUSION

11.1 MODEL DEVELOPMENT

11.1.1 The highway assignment model element of the 2015 Northamptonshire Strategic Transport Model (NSTM) has been developed using SATURN as a foundation for forecasting the effects and impacts of proposed developments in and around Northamptonshire. The use of the SATURN modelling software with its detailed junction delay capabilities enables the accurate representation of the road network and junctions. This allows as accurate representation of the flows, speeds and delays on the road network as possible. The modelled vehicle types included in the NSTM include:

- Car – Commuting
- Car – Employer's Business
- Car – Other
- LGV
- HGV (OGV1 and OGV2).

11.1.2 The model has been developed in accordance with DMRB and DfT TAG standards and represents the:

- AM peak hour: (08:00-09:00)
- Average inter-peak hour: (10:00-16:00)
- PM peak hour: (17:00-18:00).

11.2 MODEL VALIDATION / CALIBRATION

11.2.1 The highway model calibration process was undertaken successfully and has produced a reasonable standard and quality of results for all time periods. The robustness of the observed highway model as a forecasting tool has been measured by comparing link flows and journey times against observations. The comparisons were benchmarked against DMRB calibration and validation standards.

11.3 FITNESS FOR PURPOSE

11.3.1 The technical information presented in this report demonstrates that the NSTM is an accurate representation of base year traffic flows in the vicinity of the development site. As such, it is considered fit for the purposes of forecasting and scheme assessment.

Appendix A

AGREED NSTM METHODOLOGY FOR DEVELOPMENT AND SCHEME TESTING

INFO NOTE

RAIL CENTRAL NORTHAMPTONSHIRE

MODELLING METHODOLOGY SPECIFICATION REPORT

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates (TPA)
Project	Rail Central Northamptonshire
Title of Document	Modelling Methodology Specification Report
Type of Document	Info Note
Date	18/08/2016
Reference number	104176
Number of pages	22

TABLE OF CONTENTS

1.	**INTRODUCTION**	**3**
1.1	**REPORT BACKGROUND**	**3**
2.	**RAIL CENTRAL DEVELOPMENT PROPOSALS**	**4**
2.1	**SITE LOCATION AND ACCESS**	**4**
2.2	**LAND USE PROPOSALS**	**4**
2.3	**AREA OF INFLUENCE**	**4**
2.4	**MODELLING REQUIREMENTS**	**5**
3.	**NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)**	**7**
3.1	**MODEL OVERVIEW**	**7**
3.1	**MODEL STRUCTURE**	**7**
3.2	**SOFTWARE PLATFORM**	**7**
3.3	**MODELLED AREA**	**8**
3.4	**MODEL TIME PERIODS**	**8**
3.5	**DEMAND SEGMENTATION AND USER CLASSES**	**8**
4.	**STAGE 1: BASE MODEL ENHANCEMENTS AND VALIDATION**	**10**
4.1	**SURVEY DATA**	**10**
4.2	**NETWORK ENHANCEMENTS**	**11**
4.3	**NETWORK CHECKS**	**12**
4.4	**LOCAL AREA CALIBRATION AND VALIDATION (HIGHWAY)**	**13**
4.5	**PUBLIC TRANSPORT MODEL**	**15**

4.6	DEMAND MODEL CALIBRATION	15
4.7	REPORTING	15
5.	STAGE 2: REFERENCE CASE DEVELOPMENT	16
5.1	OVERVIEW	16
5.2	YEAR OF OPENING	16
5.3	FULL CORE STRATEGY MODEL	16
5.4	REPORTING	17
6.	STAGE 3: WITH DEVELOPMENT MODELLING	18
6.1	OVERVIEW	18
6.2	DEVELOPMENT ACCESS	18
6.3	TRAFFIC GENERATION	18
6.4	TRAFFIC DISTRIBUTION	19
6.5	REPORTING	19
7.	STAGE4: MITIGATION MODELLING	20
7.1	OVERVIEW	20
7.2	REPORTING	20
8.	ENVIRONMENTAL OUTPUTS	21
8.1	GENERAL APPROACH	21

1. INTRODUCTION

1.1 Report Background

1.1.1 This report outlines the suggested strategy associated with the strategic transport modelling of the proposed Rail Central Scheme in Northamptonshire located on land to the south-west of M1 junction 15A adjacent to the A43.

1.1.2 Transport Planning Associates (TPA) are developing the detailed transport related submissions associated with the Rail Central scheme and have commissioned SYSTRA to advise on the strategic modelling aspects of the appraisal.

1.1.3 The scheme is classified as a nationally significant infrastructure project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

1.1.4 A transport model is being developed to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process will be used in the development of a Transport Assessment to be submitted as part of the National Infrastructure Planning (NIP) application.

1.1.5 The Northampton Strategic Transport Model (NSTM) which is currently being rebased and revalidated by WSP Parsons Brinckerhoff has been identified as a suitable tool to form the basis of the strategic transport modelling for the site. Further details of this model are presented in this report. All updates and application of this model will be undertaken by WSP Parsons Brinckerhoff with model outputs being provided to the applicants team for use in their appraisal of the site.

2. RAIL CENTRAL DEVELOPMENT PROPOSALS

2.1 Site Location and Access

2.1.1 The proposed Rail Central site is located on an area of undeveloped land bounded by the village of Milton Malsor to the North, The West Coast Mainline Railway to the south, the Northampton Loop Railway to the east and the A43 Trunk Road to the west.

2.1.2 Access will be gained via a new grade separated junction onto the A43. Northampton Road passes through the site, however there will be no general traffic connections to this route from the developments internal road network, however, emergency, pedestrian and cycle access is to be provided.

2.2 Land Use Proposals

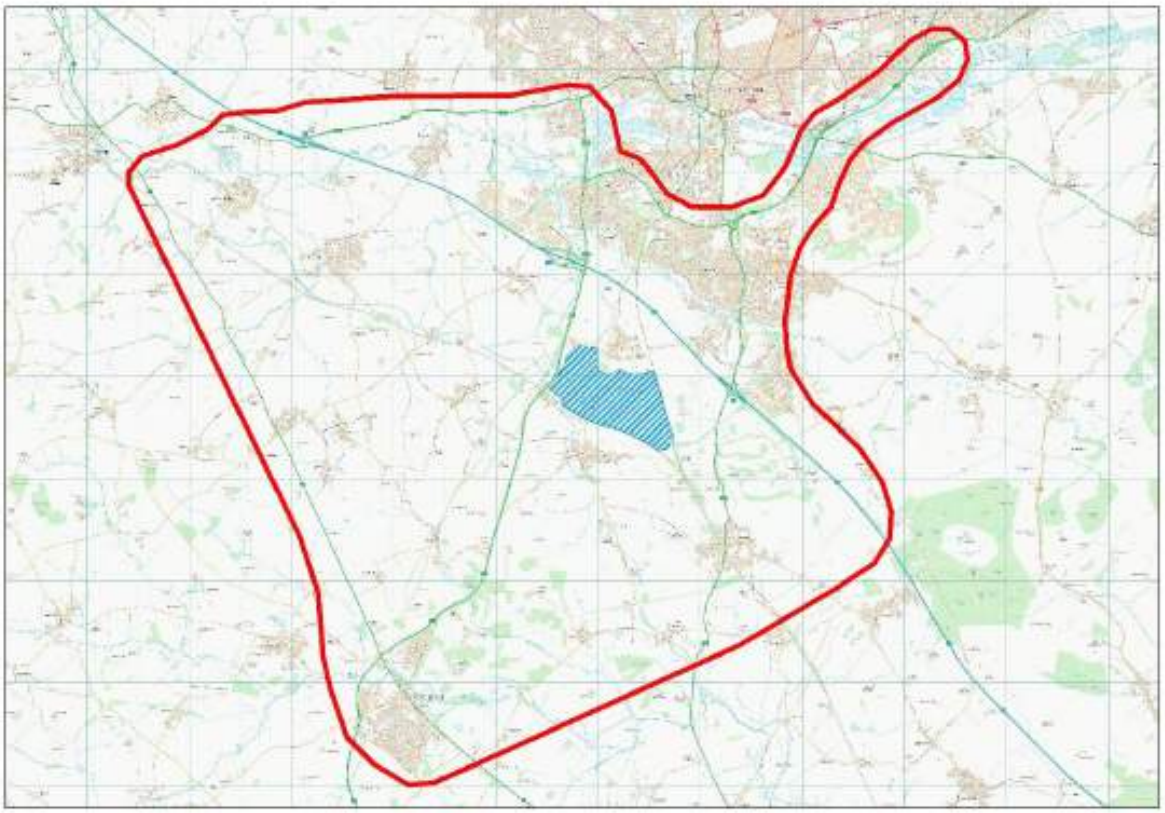
2.2.1 The current land use proposals include:

- An intermodal Park on the Northampton Loop line.
- Up to 8 million sqft of warehouse/distribution units.
- A train maintenance depot.
- A 149 space HGV Truck Park.

2.3 Area of Influence

2.3.1 A strategic modelling Area of Influence has been identified through an initial analysis of the flow impact of the scheme using the current Northamptonshire Transport Model combined with discussions with interested parties regarding other routes and areas that may be affected by the scheme. This AOI is shown in Figure 2.

Figure 1. Strategic Modelling Area of Influence



2.3.2 The Area of Influence for the site is shown in Figure 2 and the transport model is required to model this area in detail. This area includes

- the Highways England Routes of the A43, M1, A5 and A45;
- urban routes on the southern side of Northampton; and
- rural routes leading to local villages between the A5 and the M1.

2.4 Modelling Requirements

2.4.1 The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

2.4.2 A transport model is required to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process will be used in the development of a Transport Assessment to be submitted as part of the National Infrastructure Planning (NIP) application.

2.4.3 The mitigation measures are likely to include improvements to the HE routes in the vicinity of the site including an access onto the A43, local highway network improvements and bus based public transport improvements, potentially including new/extended services.

2.4.4 As a result of these general requirements we have identified a core list of model functionality that will be required to undertake this assessment as follows:

- Full simulated representation of the highway networks within the identified Area of Influence. This will include detailed representation of the operation of all classified roads and junctions within the network to enable the junction impacts to be assessed.
- Public Transport model capable of assessing the modal implications of new bus services accessing the site with routes serving the main catchment areas.
- Demand model to include mode choice and trip distribution as a minimum, calibrated to a level acceptable by the HE and local highway authorities.
- Separate OGV/HGV matrices that can reflect the regional and sub-regional HGV movements associated with the site.
- High levels of validation on the HE routes in the vicinity of the site and on local routes within the Area of Influence to an agreed level similar to WebTAG guidelines.
- Appropriate zoning system that ensures that local demand is disaggregated to ensure high quality representation of all transport movements between the site and its employment catchment.
- The model and modelling assessment has to be acceptable to all impacted authorities.
- Outputs have to be capable of being used to justify and design improvements to the local highway and public transport networks.
- Outputs robust enough to form the bases of the Transport Assessment to form part of the NSIP application.
- Provision of 16hr AAWT and 24hr AADT flows for assessment of Noise and Air Quality implications of the development by an environmental consultant.

2.4.5 As part of the NSIP application process Statements of Common Ground will be prepared between the development team, the local highway authorities and HE. It is anticipated that the outputs from the modelling process will form a key component of the Statements of Common Ground.

3. NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)

3.1 Model overview

3.1.1 In 2008, the North Northamptonshire Highway Model (SATURN) and the West Northamptonshire Multi-Modal Model (SATURN and EMME/2) were combined and updated to produce the Northamptonshire Strategic Transport Model (NSTM).

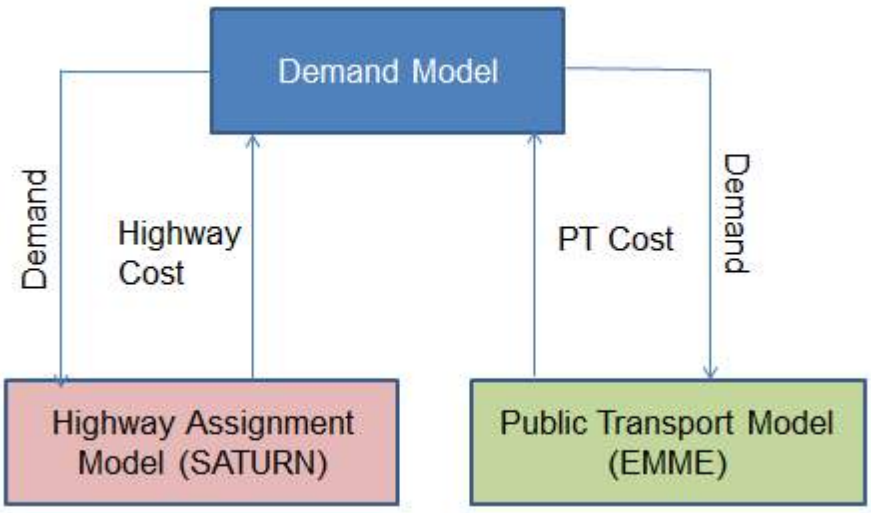
3.1.2 The SATURN suite of programs was used to build the highway model while EMME3 was used to build the Demand Model and the Public Transport Model. The strategic model developed by WSP offered an integrated system for a range of transport modes, representing private and public transport as well as modal interchange behaviour such as walking.

3.1.3 NSTM is currently being rebased to a 2015 base year by WSP Parsons Binckerhoff so that it is consistent with current WebTAG guidance. The resultant model is summarised below.

3.1 Model Structure

3.1.1 The NSTM will comprise a TAG compliant full demand model, with separate highway and public transport assignment models that interact under the control of the demand model. The interaction between the models is shown in Figure 3.

Figure 2. NSTM Model Structure



3.2 Software Platform

3.2.1 The highway assignment model will be run in SATURN (version 11.3.12F) as it is the most widely used and accepted highway assignment software in the UK.

3.2.2 The demand model and public transport assignment model will be run in EMME (version 4.2.3).

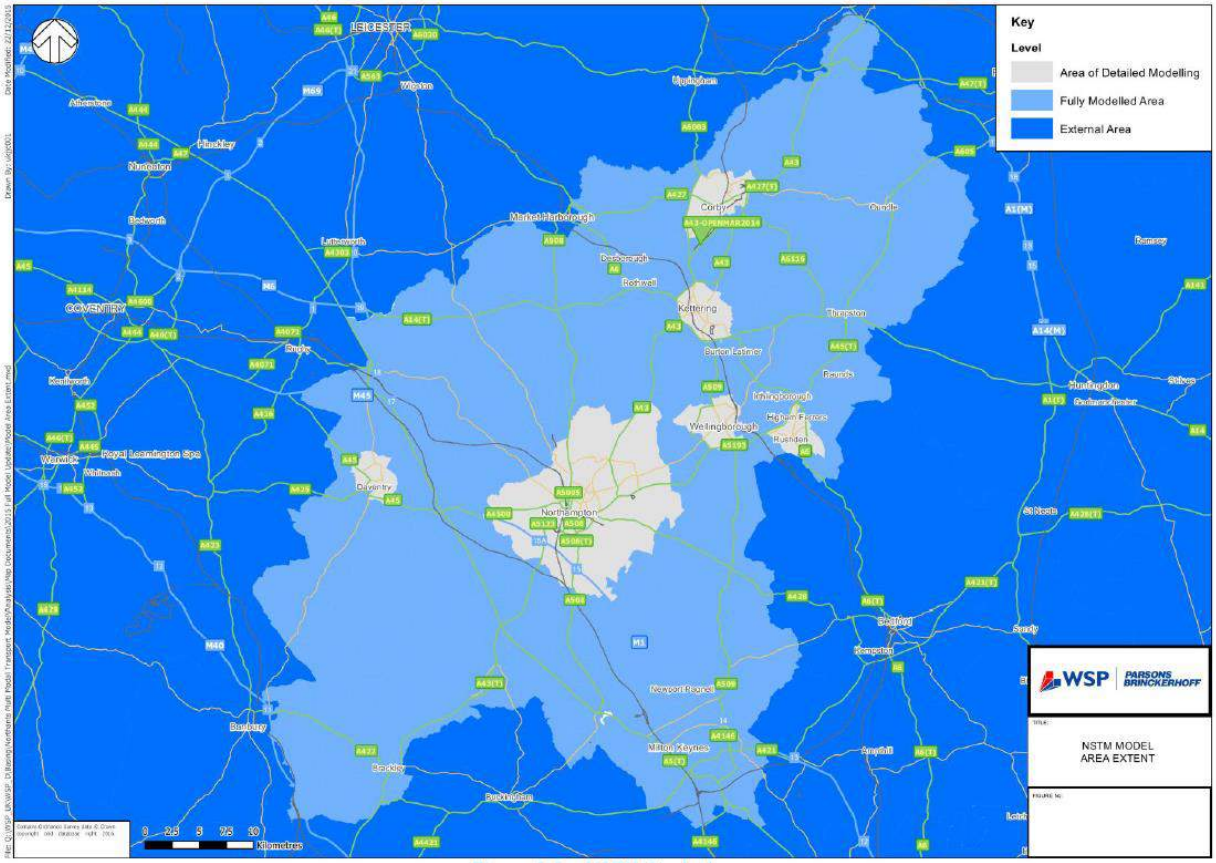
3.3 Modelled Area

3.3.1 The modelled area is set out in terms of a three-tier hierarchy, comprising:

- Area of Detailed Modelling: covers all roads with significant traffic volumes and all realistic route choices available to drivers, with all major junctions modelled
- Rest of Fully Modelled Area: reduced level of detail, with principal strategic routes modelled and capacity restraint through the use of speed/flow curves and strategically important junctions
- External Area: simplified network allowing traffic to enter the Fully Modelled Area at the correct location, without capacity restraint. Skeletal network with approximate distances to allow demand model to capture full trip length.

3.3.2 It encompasses the major motorways of the M1 (junctions 14 to 19) and M45 (from Junction 17).It is shown in Figure 4.

Figure 3. NSTM Coverage



3.4 Model Time Periods

3.4.1 The highway and public transport models include the following fully modelled time periods:

- AM peak hour: (08:00-09:00).
- Average inter-peak hour: (10:00-16:00).
- PM peak hour: (17:00-18:00).

3.4.2 The demand model operates at a 24-hour level in production-attraction format.

3.5 Demand Segmentation and User Classes

3.5.1 In general the trip matrices will be segmented into a series of separate homogenous groups to adhere to current DfT guidance on variable demand modelling in TAG unit M2 (January

2014). In the Demand model, throughout the matrix building process all matrices are disaggregated as follows:

- Purpose: Work (Commute), Employer's Business (EB), and Other.
- Car availability: Car available (CA) and No car available (NCA) (household level).
- Time period: AM peak period; Inter-peak period, and PM peak period.
- Vehicle types: Light vehicles and Heavy vehicles.
- Mode: Private vehicle and Public transport.

3.5.2 This segmentation is consistent with that adopted in the Department for Transport (DfT) modelling tools – namely the National Trip End Model (NTEM) and the National Transport Model (NTM).

3.5.3 For highway assignment, the following user classes will be modelled which is consistent with advice presented in Section 2.6 of TAG Unit M3.1 (January 2014):

- Car – Commuting.
- Car – Employer's Business.
- Car – Other.
- LGV.
- HGV (OGV1 and OGV2).

4. STAGE 1: BASE MODEL ENHANCEMENTS AND VALIDATION

4.1 Survey Data

Vehicle Count Information

4.1.1 Existing traffic count data is required to calibrate/validate the highway model to ensure that it provides a reasonable fit to the traffic conditions during the 2015 Base Year.

4.1.2 The development of the core model has generally relied on traffic count data from a range of sources which have been obtained by WSP for the validation and calibration of the entire model. The locations of the traffic counts being used in the core calibration/validation of the model are shown in Figure 5.

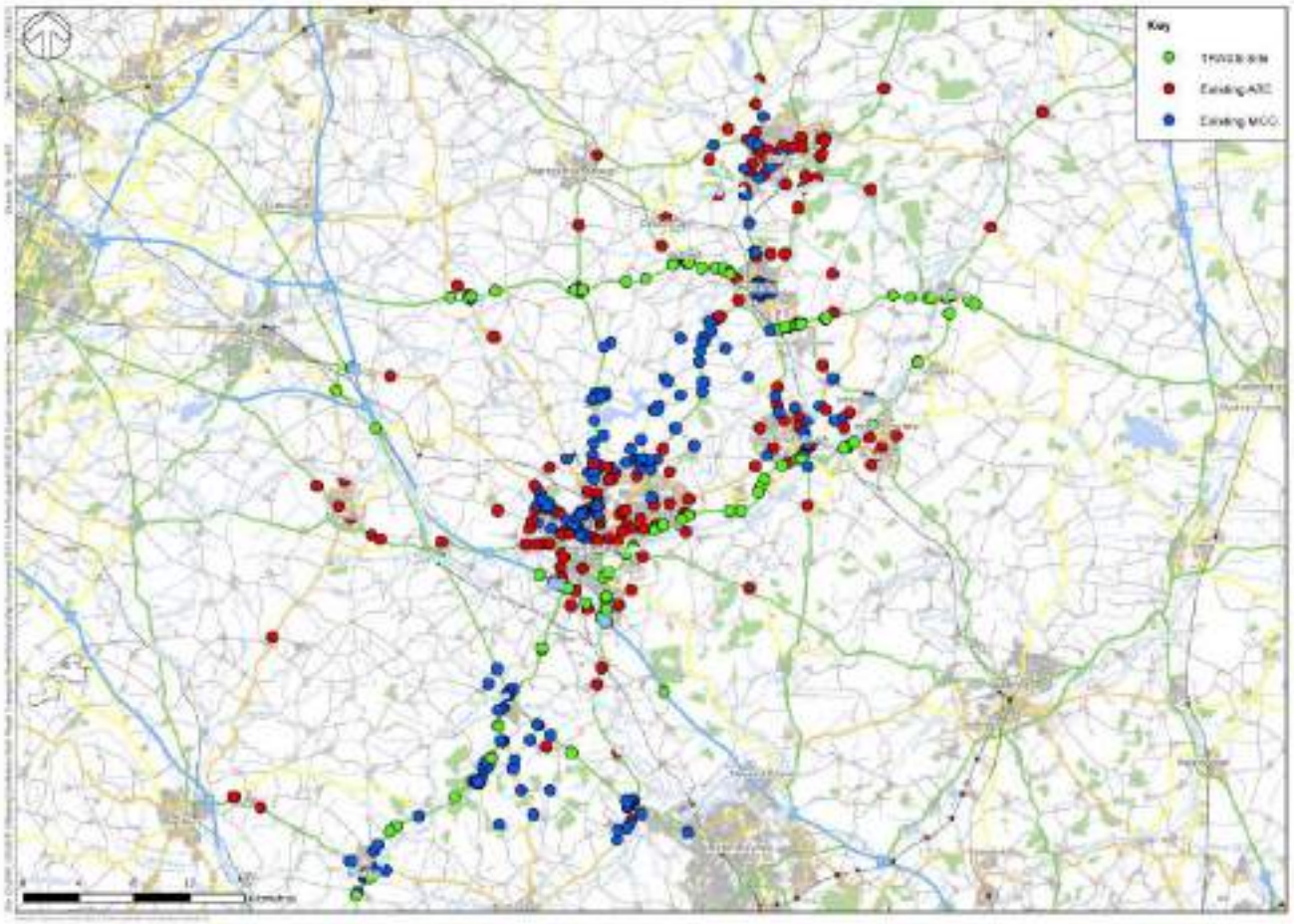


Figure 4. NSTM Calibration/Validation Count Locations

4.1.3 Within the Development's AOI these counts have been supplemented by additional ATC and ANPR data obtained on behalf of the developer for the Rail Central site. The locations of these counts are shown in Figure 6. These surveys were undertaken in a neutral month in 2016 and as such will be converted to the 2015 base year using factors from TEMPRO 7.

Figure 5. Additional AOI Count Locations



4.1.4 Turning counts have also been obtained for M1 Motorway junctions 15, 15A and 16.

Journey Time Information

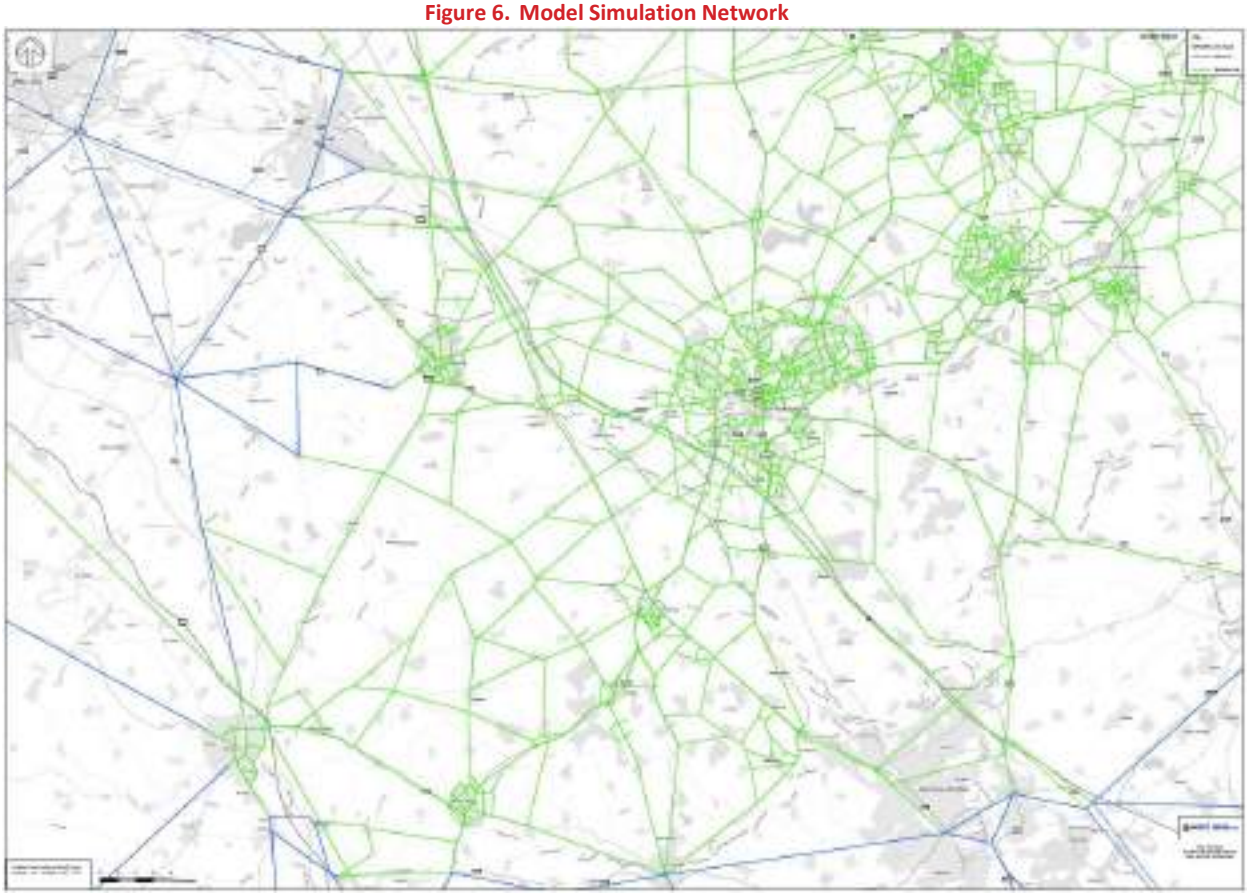
4.1.5 There is no journey time information being used within the developments AOI for the core model validation. However, Journey Times can be obtained from the additional ANPR data that is being obtained on behalf of the developer of the Rail Central site. This will be used to generate Journey times for the following routes:

- A43 between the M1 and the south of Towcester.
- A5 between the count to the south of Weedon Bec and the south of Towcester.
- A508 between the M1 and the south of the village of Roade.
- M1 between the count to the north of Junction 16 to the south of Junction 15.

4.2 Network Enhancements

4.2.1 Figure 7 shows the models simulation area (in green) in the vicinity of the development. The current model includes all the developments AOI within the fully simulated area of the model and therefore all junctions and road links will be specifically modelled to reflect their current layouts and operation. No expansion of the simulation network is envisaged to assess the Rail Central development.

Figure 6. Model Simulation Network



4.3 Network Checks

Queues

4.3.1 It is important that the delays simulated within the model have a close correlation with reality in order to be able to replicate the highway conditions and provide robust forecast year modelling. If queuing is illogical and mis-represented then forecasts into the future may result in dubious results.

4.3.2 Logic checks will be conducted to ensure that queues are represented in locations where existing congestion has been observed. A list of locations will be developed and agreed with the Northamptonshire and HE.

Routing

4.3.3 Modelled routes will be checked using Select link Analysis and Tree Analysis to ensure integrity. These checks will ensure that the model assigns traffic along logical and expected routes in order for traffic to reach its destination. These will be undertaken between major origins and destinations which are likely to route through the AOI and will include movements between Northampton, Towcester, Milton Keynes and Daventry as well as routes between these towns and the villages that surround the site.

Network Coding

4.3.4 Network coding within the AOI will be checked against mapping and satellite images to ensure that all routes within the AOI have appropriate distances, speeds, lanes numbers and saturation flows.

HGV Restrictions

4.3.5 As HGV movement is a significant part of the generation of the Rail central site HGV restrictions will be reviewed in the vicinity of the site and ensure that they are correctly modelled within the base model. This will ensure that the forecast routings of HGV's comply with current restrictions on the network. This could include weight, height and environmental restrictions on the movement of larger vehicles.

Strategic Road Network Checks

4.3.6 The strategic network will be closely checked against mapping tools to ensure that distances, lanes and lane allocation and speeds were correct. Merge GAP values will also be reviewed to ensure that the slip roads to the motorways are coded correctly and amended where necessary. Particular attention will be paid to M1 Junctions 15 and 15A.

Zone Loading Points

4.3.7 A number of zone loading checks will also be performed to ensure that zones loaded onto the correct parts of the network and all trips associated with the zone were able to get onto the highway network.

4.4 Local Area Calibration and Validation (Highway)

Calibration Procedures

4.4.1 Calibration is the process of adjusting the model to improve the fit to the observed data in two main areas:

- adjustments to the coded links and junctions in the network; and
- adjustments to the elements of the matrix that were synthesised.

4.4.2 The calibration process will be guided by a comparison of modelled flows with observed flows at individual survey sites, and through comparing modelled journey times with observed journey times.

4.4.3 Adjustments to the networks will made in order to improve the fit between modelled link flows and observed link flows as well as improving the fit between modelled and observed journey times. Care will be taken to ensure that any changes made improve the situation by making the model a better representation of conditions on the ground. Unrealistic changes to improve the fit will not be undertaken.

Validation Procedures

4.4.4 A key tool in presenting how well a model performs is to compare the modelled flows against observed vehicle flows from traffic counts. The validation of the model utilises counts that are independent of those used in the calibration process to provide an independent check on how well the model is replicating observed flow conditions on the network.

4.4.5 The DfT guidelines for the calibration/validation of highway models are based on those laid out in the Design Manual for Roads and Bridges (DMRB) Volume 12, Section 2, Part 1, Chapter 4 and WebTAG 3.19. In respect of the individual count comparisons presented in this section there are two separate sets of criteria against which the counts and modelled flow comparison should be measured. The two sets of criteria are:

- GEH Statistic:
  - links should have a GEH value of less than 5;
- Vehicle Flow Comparison (DMRB):
  - where observed flow is less than 700 vehicles per hour, the modelled flow should be within 100 vehicles of the observed flow;
  - where observed flow is between 700 and 2700 vehicles per hour, the modelled flow should be within 15% of observed flow; and
  - where observed flow is greater than 2700 vehicles per hour, the modelled flow should be within 400 vehicles of the observed flow.

4.4.6 With regard to DfT guidelines on the acceptability of validation statistics, WebTAG Unit 3.1 section 3.2.7 discusses validation statistics for counts meeting GEH and DMRB criteria, stating that:

> *"These two measures are broadly consistent and link flows that meet either criterion should be regarded as satisfactory."*

4.4.7 The local area validation for the Rail Central scheme will be conducted in line with these criteria for all count locations within the AOI whilst ensuring that the wider model retains its integrity and has improved on the overall results achieved during the core validation of the NSTM. We will to calibrate/validate against individual link counts rather than using cordons as this is generally a rural area which does not lead itself to the standard cordon approach. All link counts with flows less than 50 vehicles per hour will be excluded from the process.

4.4.8 There are a number of locations where pairs of counts have been obtained for the calibration/validation of the model with ANPR and ATC counts on the road links. Where this has occurred one of these counts will be used in calibration and one in validation.

4.4.9 For the motorway junctions the calibration/validation process will also consider the turning movements at the junctions as well as the link flows leading to and from the junctions.

4.4.10 We will aim to achieve in excess of 80% count validation based on the above criteria. This is slightly below the WebTAG requirements, however, it reflects the nature of the local highway network and is consistent with other similar model validation processes for developments in the East Midlands which have been accepted by the HE and Local Authorities.

4.4.11 The morning and evening peak hours will be the subject to this revalidation process as these represent the main congestion periods on the local network when the greatest impact of the Rail Central scheme will be observed.

Journey Times

4.4.12 WebTAG requires 85% of the modelled end to end journey times along major routes to be within 15% of the observed values. Within the AOI we propose to evaluate Journey Times along the following routes:

- A43 between the M1 and the south of Towcester.
- A5 between the count to the south of Weedon Bec and the south of Towcester.
- A508 between the M1 and the south of the village of Roade.
- M1 between the count to the north of Junction 16 to the south of Junction 15.

4.5 Public Transport Model

4.5.1 Public Transport services that currently pass through the AOI will be checked to ensure the routing and frequency of services is consistent with current timetables.

4.5.2 No further calibration/validation of the public transport model will be undertaken over and above the core modelling work being undertaken by WSP as a result of the limited numbers of routes that pass through the developments AOI and the limited levels of existing demand for buses in the area.

4.6 Demand Model Calibration

4.6.1 Following the validation of the model within the developments AOI the revised highway model parameters will be incorporated into the NSTM demand model. A calibration check will be undertaken to ensure that the Demand Model continues to comply with WebTAG guidelines and if required the demand model will be recalibrated. This demand model check will comply with the requirements of WebTAG.

4.7 Reporting

4.7.1 A comprehensive Local Model Validation Report (LMVR) is being prepared for the core NSTM upgrade.

4.7.2 It is proposed that an addendum LMVR is prepared concentrating on the AOI of the Rail Central development. This will detail the flow and journey time calibration and validation statistics for the entire AOI and also the HE routes separately.

4.7.3 We will also report on the standard impacts that Matrix Estimation (ME) has on the model matrices and the results of the Demand Model recalibration check.

5. STAGE 2: REFERENCE CASE DEVELOPMENT

5.1 Overview

5.1.1 Two Reference Case models will be developed from the revalidated 2015 base year model to represent the following scenarios:

- Year of Opening – assumed to be 2021.
- Full Core Strategy Assessment – 2031 as being developed for Northamptonshire by WSP.

5.1.2 The main data inputs required for the NSTM demand model in relation to developments are as follows:

- Households
- Jobs
- Retail Space Value
- School Pupil Numbers

5.2 Year of Opening

5.2.1 DfT 02/2013 Circular guidance states that the development should be assessed at a year of opening. In order to meet the requirements of this circular and provide a realistic year of opening assessment of the scheme we propose to develop the Year of opening model with the following assumptions:

- 2021 to be assumed as the year of opening.
- Growth to include the committed development that is envisages to be constructed by this year but no core strategy developments.
- Growth will be constrained to local growth levels to 2016 using TEMPRO 7.
- All infrastructure schemes to be implemented by 2021 to be included in the assessment.

5.2.2 Details of the land use and infrastructure proposals to be included in this year of opening model will be obtained from Northamptonshire County Council, the HE and the local planning departments. This will be detailed in a technical note to be circulated for approval in advance of the development of the Reference Case.

5.3 Full Core Strategy Model

5.3.1 The Full Core Strategy Reference Case (2031) will be based on the core models Reference Case assumptions for land use and Infrastructure that is being developed for Northamptonshire.

5.3.2 Appendix A details the list of land use and infrastructure schemes that are currently being included by WSP in the 2031 Reference Case.

5.4 Reporting

5.4.1 In addition to a technical note which outlines the planning and infrastructure assumptions to be included in the two Reference Cases we will also produce a Reference Case Report which will summarise the following:

- Describes the model development and the assumptions used.
- Compares the forecast models with the 2015 base model in terms of:
  - Changes in demand;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics.
- Identify the areas of congestion on the highway network within the AOI even without the Rail Central development.
- Provide peak hour turning movements for junctions in the vicinity of the site split by vehicle type.
-

6. STAGE 3: WITH DEVELOPMENT MODELLING

6.1 Overview

6.1.1 The Rail Central development will be added to the two reference cases to produce three main assessments as follows:

- **Year of Opening 2013 DfT Circular** – to include the full development to be compliant with the DfT 2013 circular.
- **Year Of Opening** – to include the level of development envisaged at the end of the year of opening to provide a most likely scenario for the assessment of the Environmental impacts of the scheme.
- **2031 Full Core Strategy** – to include the full Rail Central development.

6.2 Development Access

6.2.1 The grade separated access onto the A43 will be added to the model for this with development scenario, however, further improvements to the highway network will not be included as these will be considered as part of the Mitigation scenario.

6.2.2 The development will also be accessible to existing public transport services, with bus stops provided on Northampton Road to serve the site. .

6.2.3 We propose to have two zones for the development replicating the sites on either side of Northampton Road. This will ensure that the variable distances to access public transport are take into account.

6.3 Traffic Generation

6.3.1 The proposed SRFI, comprising both the warehousing and distribution units and the rail terminal, would generate the following type of trips:

- 1. Employee and visitor car trips to and from the B8 units and the rail terminal.
- 2. Local HGV traffic to and from the B8 units and the Rail terminal.
- 3. Regional HGV traffic to and from the B8 units and the Rail terminal.

6.3.2 Person and HGV trip rates for the first three categories of trips will be determined from counts at existing Warehouse and Distribution sites that have similar employment densities to the proposed Rail Central site. A separate Technical Note will be produced detailing the derivation of the trip rates to be used in the strategic modelling and Transport Assessment.

6.3.3 The person trip rates will determine the levels of overall employee and visitor movements associated with the site and the model will derive the mode split for the category 1 trips based on the availability of public transport for the origin/destination of the trip and also the relative generalised costs of undertaking the trip by the various available modes. The model will also apply a standard car occupancy ratio to the car borne trips.

6.3.4 The HGV trip rates will be used to derive the overall HGV movements to and from the site (trip categories 2&3) which will then be split between local and regional movements based on observations from other similar sites. These will be taken from the GB Freight model.

6.3.5 A technical note will be produced detailing the basis for the developments traffic generations which will be agreed with the HE and the local Authorities in advance of the modelling of the site.

6.4 Traffic Distribution

6.4.1 The distribution of the traffic movements to the local and wider highway network will vary between the various trip categories identified previously.

6.4.2 The distribution of employee and visitor trips (category 1) will be determined by the model based on zones which contain similar employment land use. This will compared with 2011 Journey to work census data for the identified zones to ensure that the zones that the model is reflecting employee household distributions correctly and will therefore fully represent the likely distribution of employment associated with the site.

6.4.3 The local HGV movements (category 2) represent the shorter trips to local businesses and therefore the distribution of these trips will be determined using the GB Freight model.

6.4.4 The Regional HGV trips (category 3) represent the longer distance journeys from ports and manufacturers. These will also be determined from GB Freight model.

6.4.5 We will produce a technical note which details the resultant traffic distributions for cars and HGV's and agree this with the HE and the various local authorities before we proceed with the detailed modelling of the site.

6.5 Reporting

6.5.1 During this stage we will prepare two technical notes to be submitted for approval as follows:

- **Traffic Attraction** – detailing the derivation of the traffic generation and the final flows to be used in the strategic modelling.
- **Traffic Distribution** – detailing the resultant traffic distribution for cars and HGV's associated with the site.

6.5.2 We will also add to the Reference Case report with outputs from the various with development model scenarios, which will summarise the impacts of the development compared to the Reference Case and highlight any areas of the network which may require further more detailed assessment and potentially mitigation. This additional section of the report will:

- Describe the derivation of the development scenario and the assumptions used.
- Identification of the impacts of the development in terms of
  - The distribution of development traffic flows;
  - Traffic redistribution for non-development movements;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics.
- Highlight main areas of congestion on the highway network within the AOI with the Rail Central development.
- Provide peak hour turning movements for junctions in the vicinity of the site split by vehicle type.

7. STAGE4: MITIGATION MODELLING

7.1 Overview

7.1.1 The highway and public transport models are capable of simulating at a strategic scale a range of potential mitigation measures to lessen the impact of the development on the local highway networks. Measures could include:

- Highway capacity improvements.
- New/improve public transport routes.
- Traffic management schemes.
- HGV bans and restrictions.

7.1.2 Based on the outputs of the earlier stages of modelling and also more detailed appraisals of the highway network using junction modelling tools we will identify a mitigation strategy in a further technical note to be discussed and agreed with the HE and the Local Authorities.

7.1.3 The agreed strategy will form the basis of the strategic modelling of the impacts of the identified strategy in mitigating the overall impacts of the development using NSTM.

7.2 Reporting

7.2.1 During this stage we will prepare a technical note detailing the proposed mitigation strategy to be discussed with the HE and the Local Authorities.

7.2.2 We will also add to the previous report with outputs from the mitigation model runs, which will summarise the impacts of the mitigation measures compared to the with development scenario. This additional section of the report will:

- Describe the mitigation measures assumed.
- Identify the impacts of the development in terms of:
  - Traffic redistribution for non-development movements;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics and compare these to the Reference Case.
- Highlight any areas of congestion on the highway network within the AOI with the Rail Central development and its mitigation package.
- Provide turning movements for junctions in the vicinity of the site.

8. ENVIRONMENTAL OUTPUTS

8.1 General Approach

8.1.1 Traffic flow and speed information will be generated from the Saturn Highway for use in the air quality and noise assessment which will be submitted as part of the NSIP application for the site.

8.1.2 Factors to take the average peak hour flows (AM and PM peak combined) to 18 and 24 hr flows as required for these assessments will be derived from the ATC information obtained for the assessment of the development scheme.

Appendix A: 2031 Reference Case Assumptions

Appendix B

NSTM TRAVEL DEMAND MATRICES FROM MND

1 Introduction

1.1 Project Scope

The purpose of this project was to provide WSP with a zonal breakdown of Origin-Destination movements around Northamptonshire, using cellular mobile phones data from the Vodafone network. This included generating travel demand matrices for a zoning system provided by WSP as aggregations of Lower Super Output Areas (LSOA) and to segment trips by day of the week, time of the day, mode purpose and direction in order to allow the development of travel demand matrices for the study area in both Origin-Destination (OD) and Production/ Attraction (PA) form. As part of the development of these matrices Citi Logik has undertaken a number of checks and verifications, these are detailed in a separate document.

1.2 Study Area

The Northamptonshire Study Area zones are shown in Figure 1. As part of the study, all trips starting, finishing or travelling through the study area zones had to be included in the database.

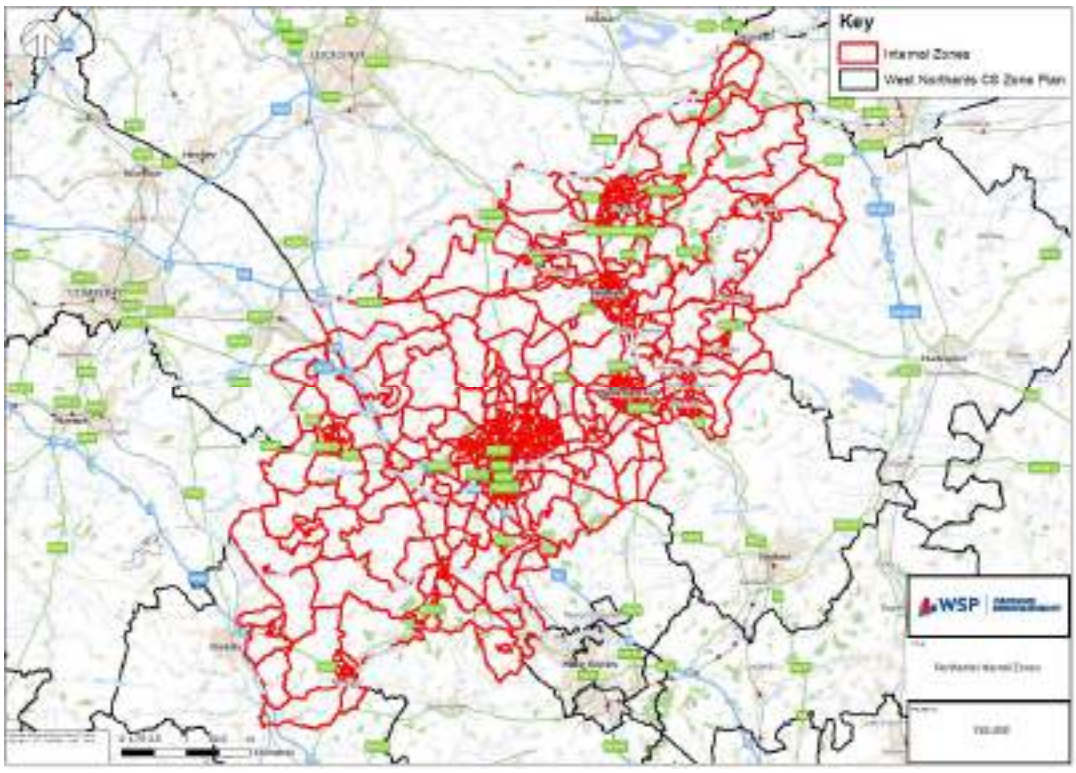


Figure 1: Northampton Study Area

1.3 Contents

This Technical Note discusses the Citi Logik's methodology for deriving the Origin-Destination matrices from the Vodafone mobile phone data, and details the format of the outputs.

2 High Level Methodology

The adopted methodology entails the execution of distinct tasks, some being generic and some including specific parameters, in order to derive the information required for Northamptonshire.

The data collection is the same for all processing purposes and an initial generic data processing methodology has been used to generate a database of defined trips and routing for the whole survey period from Tuesday 10th November to Sunday 22nd November 2015. Once this has been completed, a series of processes and queries specific to Northamptonshire Study Area have been built.

Each of these are discussed in turn in the next sections.

2.1 Data Collection

The first step of the process involves collecting all of the mobile phone data exchange events taking place on the Vodafone network within the Study Area, covering all Vodafone customers but excluding any international roaming. An "event" represents any type of communication between a unique device (mobile phone) and an area-specific Vodafone radio cell ("cell") within the Study Area over the course of the survey period. The Vodafone cells' locations specific to this study are shown in Figure 2. This includes about 6.800 of 2G, 3G and 4G mobile phone cells, covering the entire Study Area as well as a so-called "buffer area" around it.

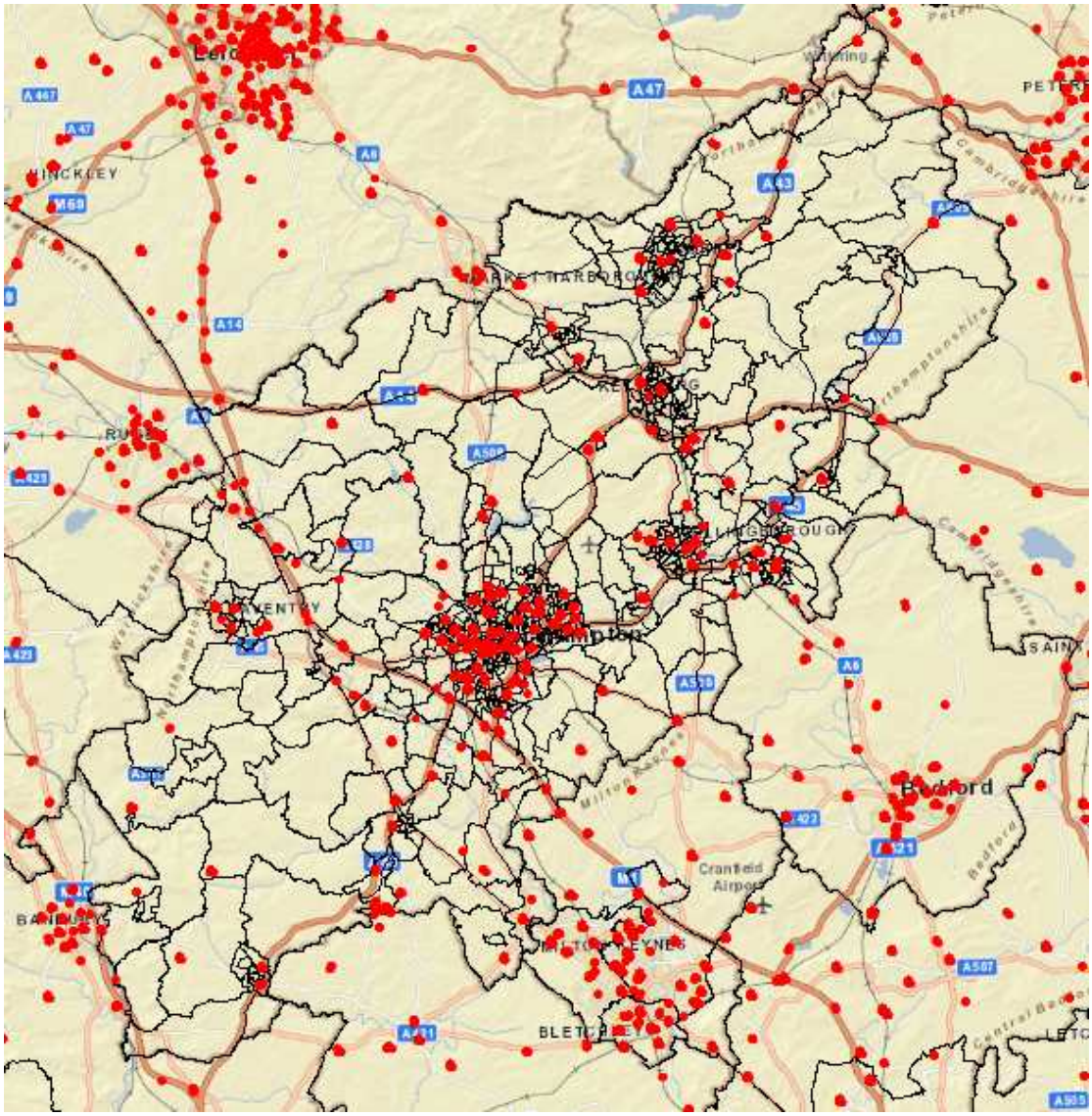


Figure 2: Vodafone Cells' Locations within the Study Area

Secondly, in line with prevailing privacy regulations, after collecting all the mobile phone data exchange events, Vodafone is obliged to anonymise this information. This results in replacing the device's customer details with identification code (ID) for the entire duration of specific sudy, to ensure that no privacy regulations are breached. Apart from mobile phone device's ID, cell IDs and day/time stamps, based on inhouse long-term historic analysis and subject to availability[1], Vodafone also

[1] For some mobile devices, behaviour does not allow identification of a nighttime or daytime location, this might be mobiles seen to move all the time or mobiles switched off at night.

informs Citi Logik about inferred nighttime (Home) and daytime (Work) mobile devices' locations, for all white listed devices[2].

As a next step, upon the completion of Vodafone user anonymisation, Citi Logik sources the above raw data from Vodafone and employs its algorithms to reconstruct journeys of Vodafone mobile phone users and develops a base journey database for further analyses.

For the purposes of this Northamptonshire survey, Citi Logik processed several billion of Vodafone customers' events for the Study Area and the buffer, which resulted in keeping 600 million events[3] for further analyses. During that processing an issue was identified for the 18th of November data records, whereby a cell power outage had resulted in partial losses of data. Therefore, to avoid confusion, data for that entire day was excluded from all further processing.

2.2 Initial Processing

2.2.1 Cell to Location Analysis

Whilst the data is anonymised by Vodafone, Citi Logik, through detailed analysis of the Vodafone network and mobile phone cell locations, have derived the most logical positions for all cell coverages ("virtual locations" hereafter). This differs from the physical location of the cell and corresponds to the most likely place from which mobile phone devices were serviced.

Citi Logik have developed a process (called Snap-to-Road, Snap-to-Rail or Snap-to-Zone depending on the situation) for locating moving and static phone users. This goes back to the first radio frequency principles and uses the cell characteristics to generate some most statistically likely position of the device. Through this approach, Citi Logik have achieved, with the right cell configuration, a significantly better accuracy than the MSOA typically used. Where cell density is good and coverage including 4G is in place, localisation down to LSOA level can be achieved.

[2] Black listed devices included devices owned by under aged population, security cleared devices and tablet mounted devices.
[3] Only pertinent events are kept for analysis. When on call, mobile devices can communicate with cell towers every second, but this does not bring additional value to the dataset for transport planning purposes, hence only one event per minute is kept in the database reducing its size significantly.

In a number of instances, it was however found through the checking processes that the proposed zoning level could not be achieved. Checks have carried out using the Vodafone devices population (based on inferred nighttime location) plotted against UK adult population (as provided by WSP). This process has helped checking:

- The cell to zone mapping; and
- The expansion factors.

This has highlighted that the automatic Snap-to-Zone process required some adjustment. Figure 3 illustrates zones' expansion factors ("red" - small expansion / "blue" - large expansion) and the Vodafone masts/cells locations. As observed, the Cell-to-Zone allocation needed to be adjusted to correct imbalance between contiguous zones with too high and too low expansion factors. Cell boundaries are not precise hence making it difficult to automate cell to zone allocation.

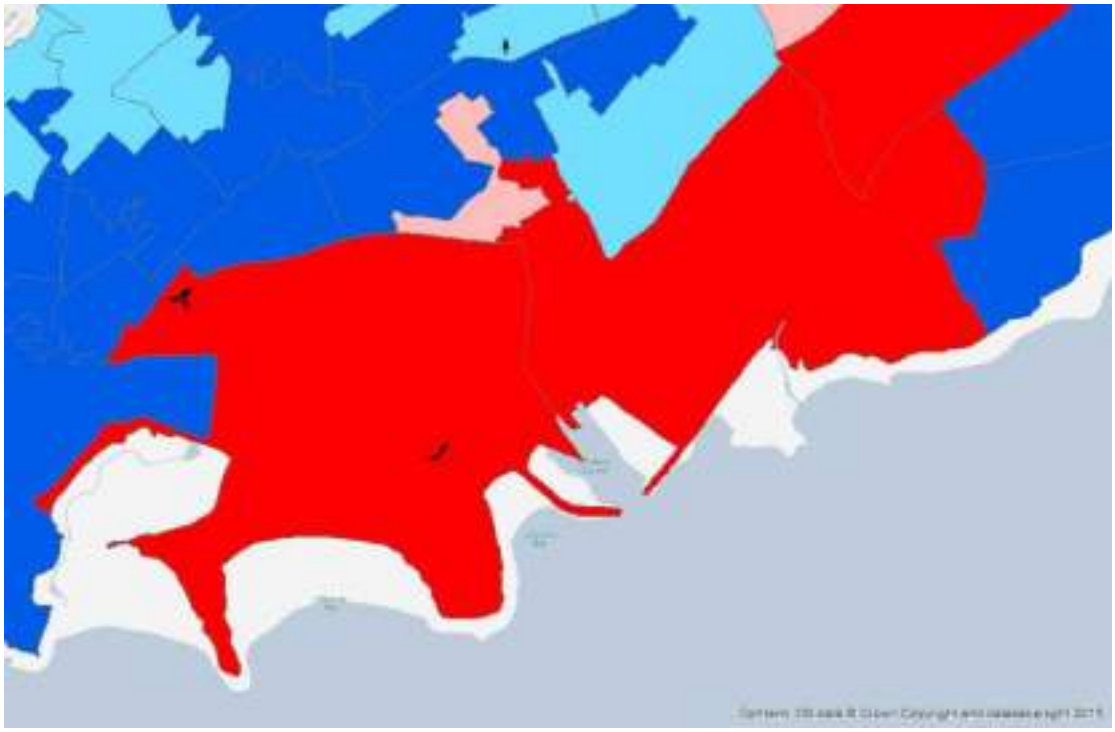


Figure 3: Zone Expansion Factors ("red" - small expansions, "blue" - high expansions)

In these instances, first the cell to zone allocation was adjusted. However where this was not sufficient, zones were aggregated to sectors. By grouping zones with high and low factors it was possible to correct expansion factors for them to fall within the expected range of 2-5.

This led to:

- More logical expansion factors; and
- Trips for the aggregated zones being aggregated and split back based on population.

A conversion table of zones has been created and provided as part of the outputs of the study.

2.2.2 Trip Identification

All available events recorded have been aggregated by unique mobile user ID. The random key generated by Vodafone as part of the anonymising process has been used to undertake this task.

This stage was a pre-requisite to identifying the chain of events completed by each unique mobile user to define trips made by the mobile device user. The chain of events contains a location and time stamp every time an event has been captured for a mobile device.

The chain of events made throughout the day by a unique mobile user has been analysed. Trip origins and destinations were allocated based on either:

- Unique mobile user appearing (mobile being switched on), or
- No events or events located in the same cell for more than 30 minutes[4].

At that stage a start and end location and start and end time is allocated to that journey for that unique mobile user.

However, this has then been further refined during the checking processes on purpose breakdown and symmetry which highlighted that the trip database contained not enough Home Based trips. Because mobile phone are only seen entering an area, when a device start to move it is perceived as starting a trip from the first cell it moves to, leading to many Home Trips starting from home being seen starting from the adjacent cell. This has been adjusted to bring back the start of the trip to the previous location where the device was known to be (with a number of thresholds on time and distance to avoid picking up mobile phone having been switched off).

[4] 30 minutes has been defined as the minimum duration for a mobile device not to move from location it is at to be considered as the end of a trip. This was calibrated as part of previous studies undertaken by Citi Logik.

A database containing all these trips (Origin cells – Destination cells, trip start and end dates and times) for the survey period has been generated. All visited cells as part of a trip have also been saved, and routing between these inferred using the Snap to Road outputs, allowing interrogation of the database for routing information and mode identification based on speed profiling.

The Journey database now included each trip details to aid with identifying the full chain of trips from the morning to the evening for each mobile phone device, as required to undertake the expansion. This also had benefits in identifying Home and Work locations, trip purposes and trip directionality (from/to Home).

2.2.3 Mode Identification

The first phase of the mode analysis has been completed, and trips have been split into three categories, namely static, slow and motorised based on speed distributions. Static trips can be seen as either a mobile device not moving for more than 30 minutes or moving within the coverage of a single cell[5]. Slow trips relate to pedestrians and cyclists. Motorised trips relate to trips made by car, LGV, HGV, bus, coach or rail.

The motorised trips needed to be split between road related (car/LGV/HGV/bus) and rail related trips. The process has been based on routing analysis to separate rail corridors from road corridors and cluster analysis and travel time duration analysis.

Whilst it has not been possible to consider all rail routes, the key rail routes running through the study area have considered for extraction of rails trips. The full list of routes considered is given below and shown in Figure 4.

Table 1: Rail Corridors of the Northamptonshire Study

Route	Start Station	End Station
1	RUGBY	NORTHAMPTON (via LONG BUCKBY)
2	NORTHAMPTON	DUMMY JUNCTION (nr Courteenhall)
3	RUGBY	DUMMY JUNCTION (nr Courteenhall)
4	DUMMY JUNCTION (nr Courteenhall)	WOLVERTON
5	MARKET HARBOROUGH	DUMMY JUNCTION (nr Glendon)

[5] Note that static trips are different from intrazonal trips. An intrazonal trip classified as slow/motorised/rail implies movement between cells located within a same zone. On the contrary a static trip really means a mobile device not moving for more than 30 minutes or moving within the coverage of a single cell.

Route	Start Station	End Station
6	OAKHAM	DUMMY JUNCTION (nr Glendon)
7	DUMMY JUNCTION (nr Glendon)	KETTERING
8	KETTERING	WELLINGBOROUGH

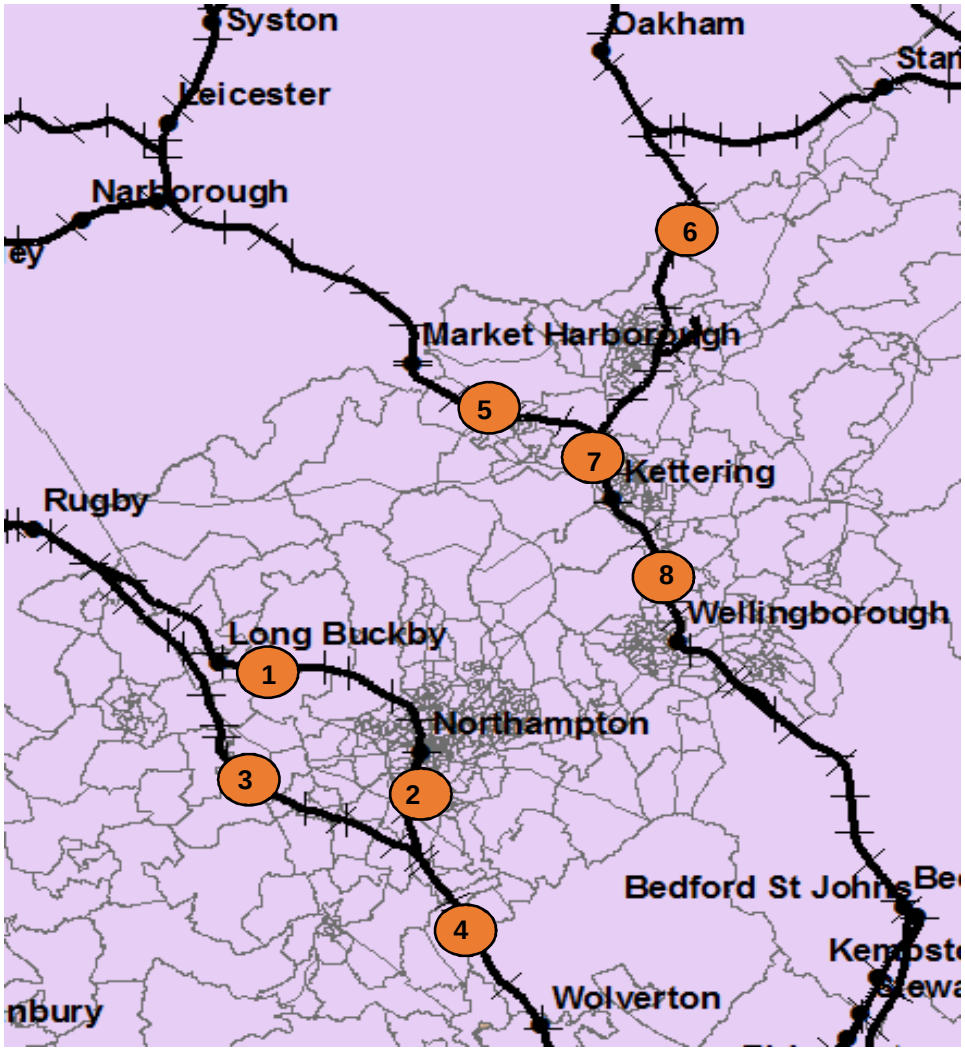


Figure 4: Rail Corridors of the Northamptonshire Survey

Through the rail route definition presented above, all rail movements identifiable travelling between or to/from the main urban centres or even through the study area without stopping are picked up as part of the analysis.

When rail trips are identified, the whole trip, end to end is classified as rail, including the access and egress part of the trip.

Owing to the relatively small distances between stations within the study area (for Example Kettering to Wellingborough), it is likely that not all rail trips have been picked up and that a number of these are still included in the motorised category.

2.2.4 Purpose Identification

Using the inferred day time and night information, and assuming 'Home' relating to the night-time location and 'Work' relating to the daytime location, all trip origins and trip destinations have been allocated a purpose.

- 1 – Home Only
- 2 – Work Only
- 3 – Home/ Work
- 4 – Other (within the study area but not related to home or work)
- 5 – External

The Home/ Work category corresponds to a location that is both the night and daytime inferred location. This might be home workers, unemployed or retired mobile device owners. External refers to locations that are outside the study area.

By combining the origin and destination purposes, a trip purpose has been created through a series of 25 rules. It should however be noted that for some devices it has not been possible to derive inferred night and daytime locations. Trip purposes for trips made by these devices are classified as 'unknown'.

During this process, the trip directionality has also been added for the Home-Based trips (from home/to home) allowing the development of PA matrices.

2.2.5 Expansion to Full Population

The data collected only refers to the proportion of UK population who posses Vodafone mobile devices (approximately 1/3rd of the population in the UK). Hence, the sample is converted to the full UK population, thorugh an expansion process.

In principle, expansion factors are calculated by comparing the numbers of users identified to have a home location (based on number and duration of hours stayed in a place overnight) and the total UK population, in a given geographic area. The size of geographical areas used to estimate expansion factors has a significant effect on the outcome of expansion. The expansion factors should represent variation in market share of the mobile data provider. It is therefore important to calculate and

use expansion factors at a disaggregate spatial level to account for variation in market share.

As described previously, Citi Logik and Vodafone have generated an inferred nighttime and inferred daytime location for each device. Each device has been given an anonymous hashed key permitting us to follow a device over a long period of time (but cannot identify device owner). This has been undertaken for the entire pool of devices using the Vodafone network and not just over the specific survey period but longer (ensuring the results are statistically relevant). This allowed a count of devices to be identified for all cells overnight time and over daytime periods (called nighttime Vodafone population and daytime Vodafone population thereafter). Generally, it is assumed that the nighttime location corresponds to the home location, and the daytime location to the work location. These have then been converted to the WSP using the cell to zone conversion developed of the study.

After the cell to zone conversion has been undertaken, the Vodafone nighttime population has been compared to the UK adult population provided by WSP. This has been used to create an expansion factor for each zone (or sector if aggregation was required) and each device that “lives” within that zone or sector. This expansion factor has then been applied to the entire chain of trips (sometimes called tour, independent of the origins being in the home zone or no) made by devices recorded as being part of the Vodafone night time population for that zone, in a similar way to expansion factor being applied to trips recorded as part of household surveys.

For devices without an inferred nighttime location available, the expansion factor for the zone of origin of each trip made by that device has been used as a proxy factor.

2.2.6 Core Database

This last step resulted in the Core journey database being ready for interrogation. This in particular meant that trips relevant to the Northampton Study Area could be extracted and combined using the relevant time of the day and day of the week information.

2.3 Northamptonshire Specific Build

Whilst the database was produced for the entire survey period, WSP requirements were for trips covering Monday to Thursday only, and the database extraction has been done for these specific days only.

Because the core database includes all trips origins destinations but also the routing information between the trip ends, the time definition for trips could be provided in different ways. It could be the trip start or trip end time but also the time at which the trip enters the fully modelled area. This time was selected for trips starting outside the fully modelled area as the most appropriate considering the transport model requirements, whilst for trips starting within the fully modelled area the start time was used to aggregate trips by time period.

Trips were split into four time bands, considering key peak periods, these are:

- 0 AM 0700-1000
- 1 Inter Peak 1000-1600
- 2 PM 1600-1900
- 3 Off Peak Rest

This resulted in the production of a listing report containing person-trips based on the information above. These has been analysed by Citi Logik as is to undertake the verification tests, and also further processed with privacy rules applied prior to issue to WSP. The verification tests are described in TN02.

The database has been provided as a sum of person-trips over the survey period for all Monday to Thursday (8 full days considered in total). The privacy rules include that all figures lower than 15 trips in the output reports are changed to 15, hence protecting the mobile users' privacy.

In addition, files containing trip end information only have also been generated, one for origins, and one for destinations. These can be used by WSP to derive correction factors for the privacy rules applied.

After discussions with WSP it was also agreed that matrices should also be provided at sector level, as described in section 2.2.1 for WSP to disaggregate to zones based on various data sources.

2.4 File Format

All data has been transferred to WSP via secured transfer including password-protected packages. The files have been provided as text comma separated files (*.csv). The key for the reports is provided below:

```
Report Keys

Mode
0 = Rail
1 = Motorized
2 = Static
3 = Other/Slow

Period
0 = '07:00:00' to '09:59:59'
1 = '10:00:00' to '15:59:59'
2 = '16:00:00' to '19:00:00'
3 = '19:00:01' to '06:59:59'

DayClassification
1 = 'Weekend' Not requested by Client
2 = 'WeekDay' Monday to Thursday only

Purpose
1 = 'HBW'
2 = 'HBO'
3 = 'NHBW'
4 = 'NHBO'
5 = 'Unknown'

HomeDirection
1 = 'FromHome'
2 = 'ToHome'
3 = 'NonHomeBased'
```

2.5 File Names

The latest files delivered are based on version 3 of the matrix build:

- Northampton_OD_client.csv – Full matrix;
- Northampton _Origin_client.csv – origin trip ends;
- Northampton _Destination_client.csv – destination trip ends;
- Northampton _OD_sector_client – Full matrix at sector level;
- Northampton _Origin_sector_client – origin trip ends at sector level;
- Northampton_Destination_sector_client.csv – destination trip ends at sector level;
- Report keys.doc – Contains keys to understand above files.

Appendix C

MND VERIFICATION

INTRODUCTION

An extensive and detailed verification exercise has included a review of the following key aspects of the MND:

- Trip generation
- Overall matrix statistics (area split, mode split, temporal profile and trip purpose allocation)
- Symmetry of trip ends
- Visualisation of trip distribution
- Sectored trip distribution
- Trip length profile

The following sources of data have been utilised in the verification tests:

- DfT's National Trip End Model (NTEM) trip end information accessible via TEMPRO v. 6.2[1].
- 2013 National Travel Survey (NTS) statistics
- 2011 Census Journey to Work (JTW) data

TRIP GENERATION

In the first instance the overall MND trip generation has been compared to the trip generation extracted from the NTEM. The NTEM provides a set of predictions in terms of the number of trips based on associated planning data projections and serves as a national benchmark for travel forecasting.

To ensure the like for like comparison between the MND and NTEM trip generation, the results have been produced separately for the trips originating from the Internal area and the trips, which have a destination within the Internal area. The External to External movements have been excluded from the comparison as it is impossible to isolate trips not passing through the Modelled Area within the NTEM. The Internal Area is defined as the area lying fully within the Modelled Area, the rest is considered to be External.

The results of the comparison are presented in Tables 1 and 2.

[1] The latest version available at the time of the model development.

Table 1 MND and NTEM Trip Generation. From the Internal Area

RAIL

Data Source	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	TOTAL
MND (excluding External-External)	306	402	254	268	1,231
NTEM	8,772	9,153	7,663	2,562	28,150
%Difference	3%	4%	3%	10%	4%

MOTORISED

Data Source	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	TOTAL
MND (excluding External-External)	390,923	689,120	327,748	445,454	1,853,244
NTEM	357,910	613,626	395,814	301,453	1,668,803
%Difference	109%	112%	83%	148%	111%

Rail + Motorised

Data Source	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	TOTAL
MND (excluding External-External)	391,229	689,521	328,002	445,722	1,854,475
NTEM	366,682	622,779	403,477	304,015	1,696,953
%Difference	107%	111%	81%	147%	109%

** Results include Intrazonal trips*

Table 2 MND and NTEM Trip Generation. To the Internal Area

RAIL

Data Source	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	TOTAL
MND (excluding External-External)	435	549	312	284	1,581
NTEM	8,727	9,157	7,689	2,566	28,139
%Difference	5%	6%	4%	11%	6%

MOTORISED

Data Source	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	TOTAL
MND (excluding External-External)	382,092	696,076	352,823	436,113	1,867,105
NTEM	357,252	613,803	396,154	301,416	1,668,625
%Difference	107%	113%	89%	145%	112%

Rail + Motorised

Data Source	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	TOTAL
MND (excluding External-External)	382,528	696,626	353,136	436,397	1,868,686
NTEM	365,979	622,960	403,843	303,982	1,696,764
%Difference	105%	112%	87%	144%	110%

** Results include Intrazonal trips*

The trip generation comparison shows that the MND demand may be higher or lower than the demand extracted from the NTEM with the rail MND demand being significantly lower. The lack of Rail trips within the MND demand highlights potential limitations of the dataset and of the data processing algorithms as within the initial MND processing the Rail demand is split out from the Motorised+Rail demand.

OVERALL MATRIX STATISTICS: SPLIT BY AREA, MODE AND PURPOSE

In the first instance, individual matrices provided by Citi Logik were aggregated by different attributes to produce matrices segmented by area, mode and purpose. Where possible the resultant summary statistics has been compared against secondary data sources and the results are described within this section.

The mode and time specific person movements were segmented by area, Internal and External. The results are presented in Table 3.

46% of all the daily trips are undertaken entirely within the Internal Area (the area bounded by the boundary of the Northamptonshire County). The trips passing through the Fully Modelled Area constitute 32%. A relatively high proportion of External to External movements may be explained by the presence of major motorways and key routes within or just outside of the Modelled Area, such as the M1, M40 and A1. The proportion of daily Internal to External and External to Internal movements is 11% each, which suggests the symmetry of the MND matrix.

Table 3 MND Matrix Statistics (Rail+Motorised) Split by Area

All Day

Area	Internal	External	Total
Internal	1,495,665	358,810	1,854,475
External	373,021	1,040,637	1,413,658
Total	1,868,686	1,399,447	3,268,133

Area	Internal	External	Total
Internal	46%	11%	57%
External	11%	32%	43%
Total	57%	43%	100%

RAIL+MOTORISED

AM (07:00-09:59)

Area	Internal	External	Total
Internal	300,020	91,210	391,229
External	82,508	232,067	314,576
Total	382,528	323,277	705,805

Area	Internal	External	Total
Internal	43%	13%	55%
External	12%	33%	45%
Total	54%	46%	100%

IP (10:00-15:59)

Area	Internal	External	Total
Internal	571,236	118,285	689,521
External	125,389	377,277	502,667
Total	696,626	495,562	1,192,188

Area	Internal	External	Total
Internal	48%	10%	58%
External	11%	32%	42%
Total	58%	42%	100%

Table 3 MND Matrix Statistics (Rail+Motorised) Split by Area (Continued)

PM (16:00-19:00)

Area	Internal	External	Total
Internal	264,501	63,501	328,002
External	88,635	209,003	297,638
Total	353,136	272,505	625,640

Area	Internal	External	Total
Internal	42%	10%	52%
External	14%	33%	48%
Total	56%	44%	100%

OP (19:00-06:59)

Area	Internal	External	Total
Internal	359,908	85,814	445,722
External	76,489	222,289	298,778
Total	436,397	308,103	744,500

Area	Internal	External	Total
Internal	48%	12%	60%
External	10%	30%	40%
Total	59%	41%	100%

** Results include Intrazonal trips*

The MND split between Motorised and Rail demand segments have been compared against NTS and NTEM mode split with the results, presented in

Table 4. The comparison shows that the proportion of MND trips allocated to rail is much lower than that extracted from NTEM or NTS. The lack of Rail trips within the MND demand highlights potential limitations of the dataset and of the data processing algorithms as within the initial MND processing the Rail demand is split out from the Motorised+Rail demand. To ensure the correct volume of Rail trips is allowed for within the model the Motorised and Rail trips will need to be combined and separated from each other using alternative techniques.

Table 4 MND Matrix Statistics. Mode Split

MND

Mode/Time period	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	Daily 24 hr
Rail	0.2%	0.1%	0.2%	0.1%	0.2%
Motorised	99.8%	99.9%	99.8%	99.9%	99.8%
Rail + motorised modes	100%	100%	100%	100%	100%

NTS

Mode/Time period	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	Daily 24 hr
Rail	1.6%	0.5%	1.1%	0.5%	0.9%
Motorised	98.4%	99.5%	98.9%	99.5%	99.1%
Rail + motorised modes	100%	100%	100%	100%	100%

NTEM

Mode/Time period	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	Daily 24 hr
Rail	5.3%	3.1%	4.7%	1.3%	3.6%
Motorised	94.7%	96.9%	95.3%	98.7%	96.4%
Rail + motorised modes	100%	100%	100%	100%	100%

The data was categorised by Citi Logik into the following purposes:

- Home Based Work (HBW)
- Home Based Other (HBO), and
- Non Home Based (NHB)
- Unknown

The purpose split produced by the MND analysis has been compared with the one calculated using NTEM and NTS datasets with the results presented in

Table 5.

Table 5 MND Matrix Statistics. Purpose Split

MND

Purpose/ Time period	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	Daily 24 hr
HBW	13%	2%	4%	3%	4%
HBO	35%	35%	35%	34%	35%
NHB	52%	63%	62%	64%	61%
Uknown	0%	0%	0%	0%	0%
All purposes	100%	100%	100%	100%	100%

NTS, 2013

Purpose/ Time period	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	Daily 24 hr
HBW	51%	17%	28%	32%	28%
HBO	38%	67%	60%	64%	60%
NHB	11%	16%	12%	5%	13%
Uknown	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%

TEMPRO, 2015

Purpose/ Time period	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)	Daily 24 hr
HBW	66%	23%	37%	19%	34%
HBO	27%	58%	53%	78%	54%
NHB	8%	19%	9%	4%	12%
Uknown	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%

Overall the MND purpose split underrepresents HBW (commuting) trips across all time periods with the proportion of the HBO and NHB trips being significantly higher than in NTS or NTEM. The high level analysis of the MND trips suggests that the purpose split is not reliably represented by the initial MND processing and this MND limitation will be addressed during the prior matrix development stage.

The MND allocation of trips to different time periods has also been compared to the NTS and NTEM data with the results presented in Table 6. Within MND the proportion of trips allocated to AM, IP, PM and Off Peak generally matches the values extracted from alternative data sources.

Table 6 MND, NTEM and NTS Trip Allocation to Time Periods

Data Source	AM (07:00-09:59)	IP (10:00-15:59)	PM (16:00-19:00)	OP (19:00-06:59)
MND	21%	36%	19%	24%
NTS	21%	44%	22%	13%
NTEM	22%	37%	24%	18%

SYMMETRY OF TRIP ENDS

The scatter plot in Figure 1 shows the correlation between 'from zone' and 'to zone' movements. The results suggest well-balanced travel generation and attraction behaviour for all zones with R^2 close to one.

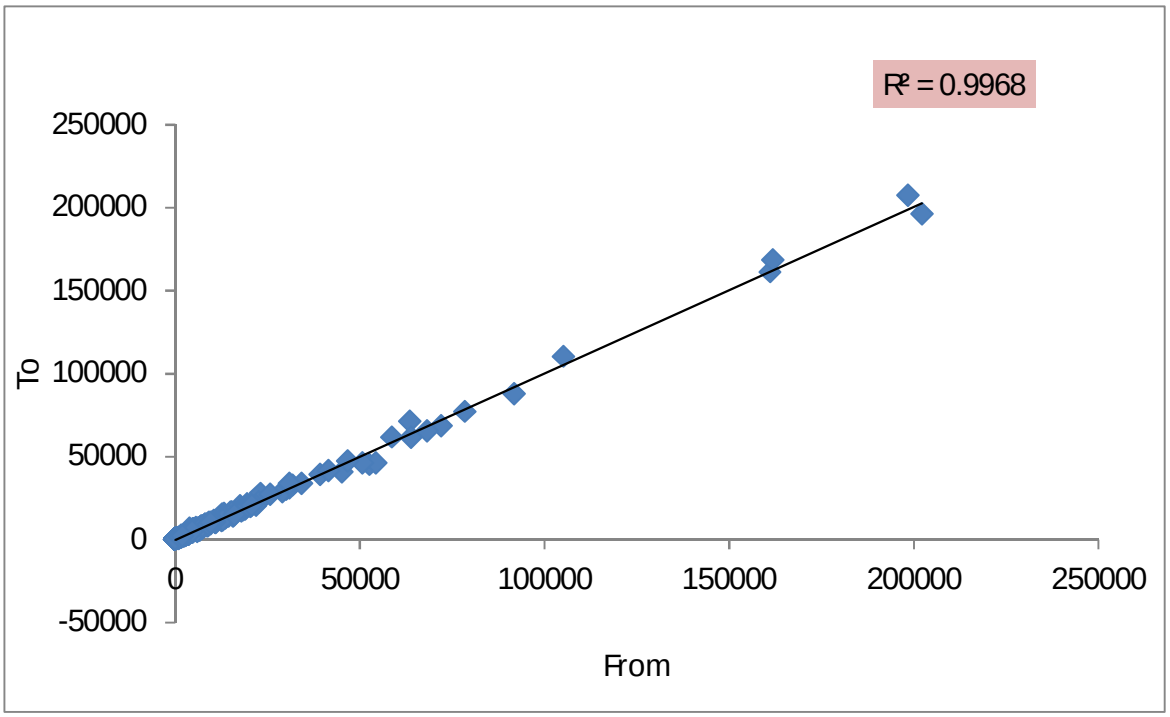


Figure 1 All Originated Trips (X) vs All Attracted Trips (Y)

VISUALISATION OF MOVEMENTS

In addition to numerical outputs, a series of figures have been prepared showing trip desire lines and zonal totals across the area. Visual checks of such outputs allowed confirmation of the robustness of the data against local knowledge and identification of any potential outliers.

The all-purpose and all-mode trip movements are shown in Figure 2. The figure shows that the key movements through the area are north to south and generally follow the key highway routes through the area.

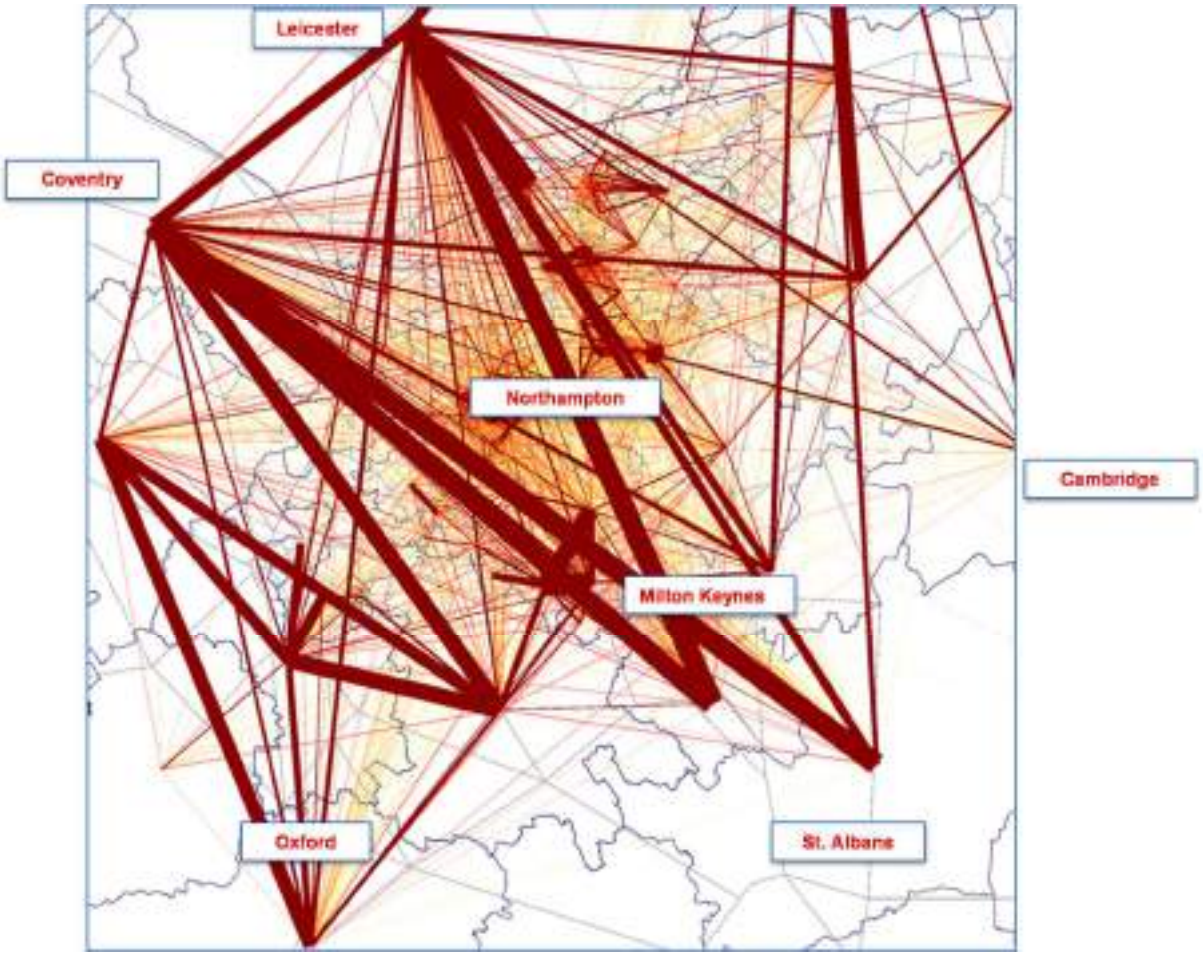


Figure 2 Daily Trip Movements Across all Purposes and Modes

Figure 3 presents daily trip movements across all purposes and modes within the Internal area, which includes areas of Northampton, Kettering, Wellingborough and Corby. As expected the greatest volume of trips is observed within the key urban areas. A significant number of trips is allocated to a rural zone west of Kettering, this does not look realistic and will be dealt with at the matrix refinement stage.

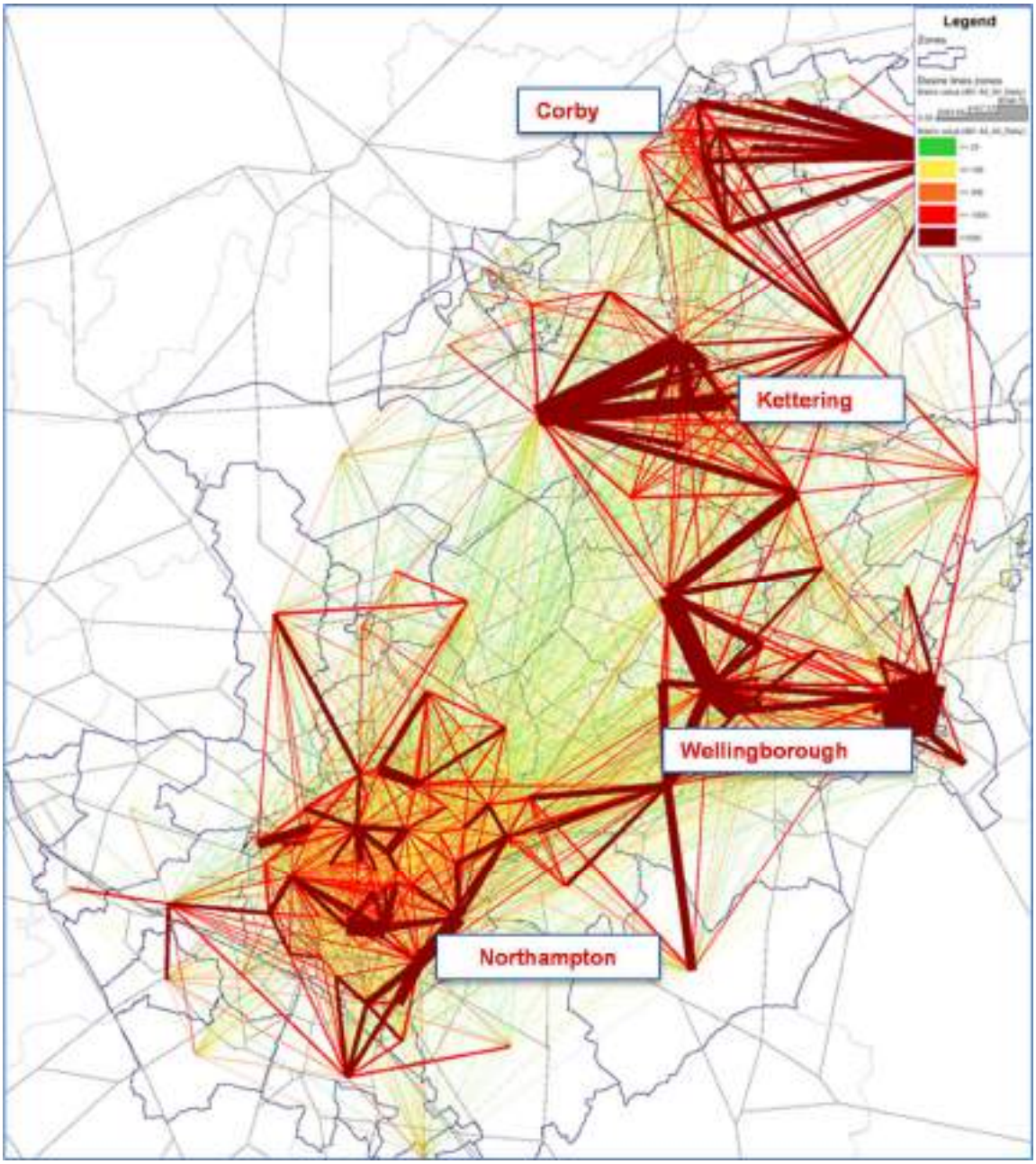


Figure 3 Daily Trip movements across all purposes and modes. Internal area only

SECTORED TRIP DISTRIBUTION

Daily motorised and rail matrices have been aggregated within the Internal area using the sectoring system presented in

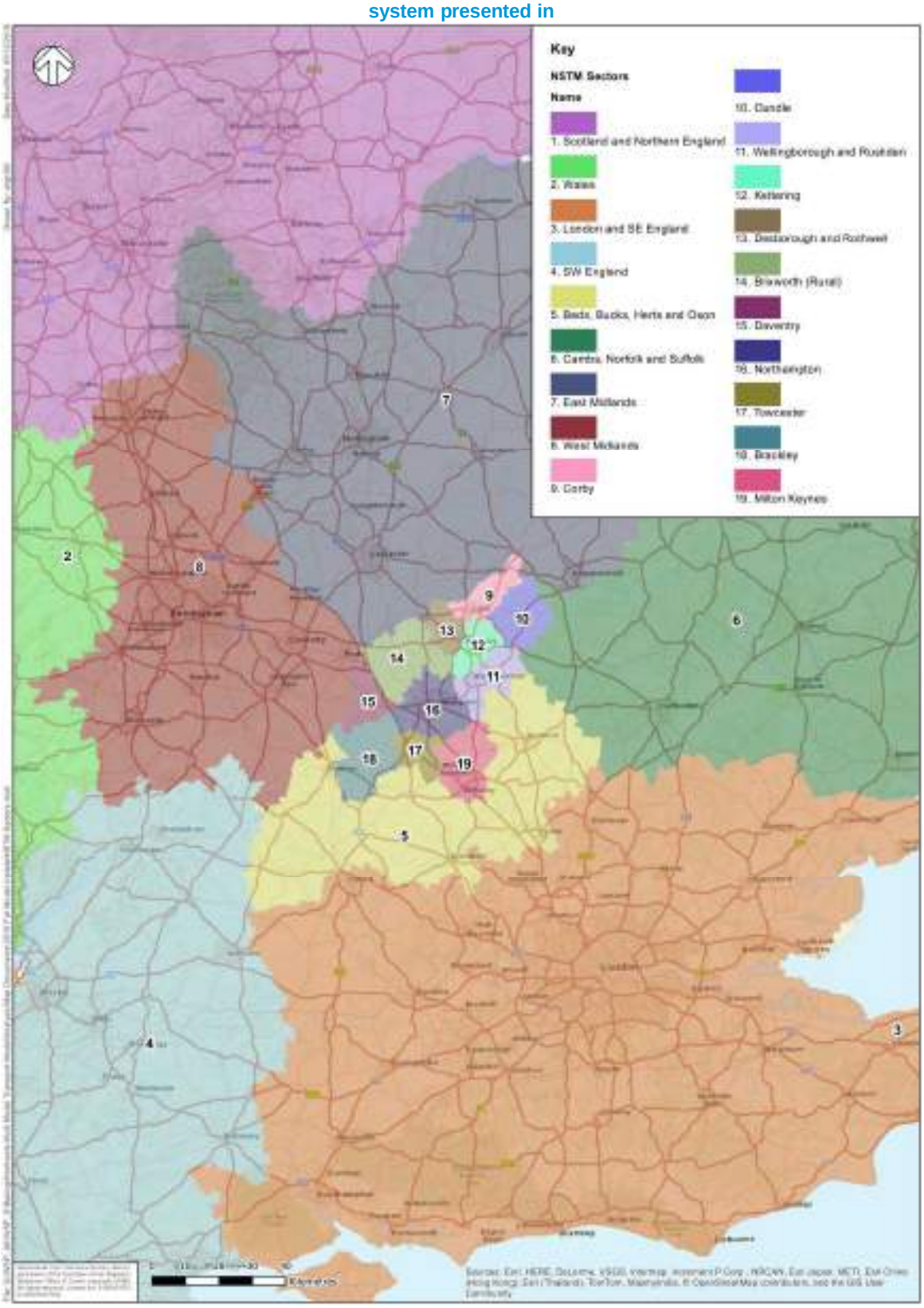


Figure 4. For each sector to sector movement proportion of trips undertaking this movement has been calculated. The proportions have then been aggregated across rows and columns to produce sector trip end origin and destination distribution.

The MND results across all purposes and modes have been compared with the 2011 Census data and are presented in Figure 5 and Figure 6. The correlation between the MND and Census is very close with all the sectors showing similar degree of attractiveness both for origins and destinations.

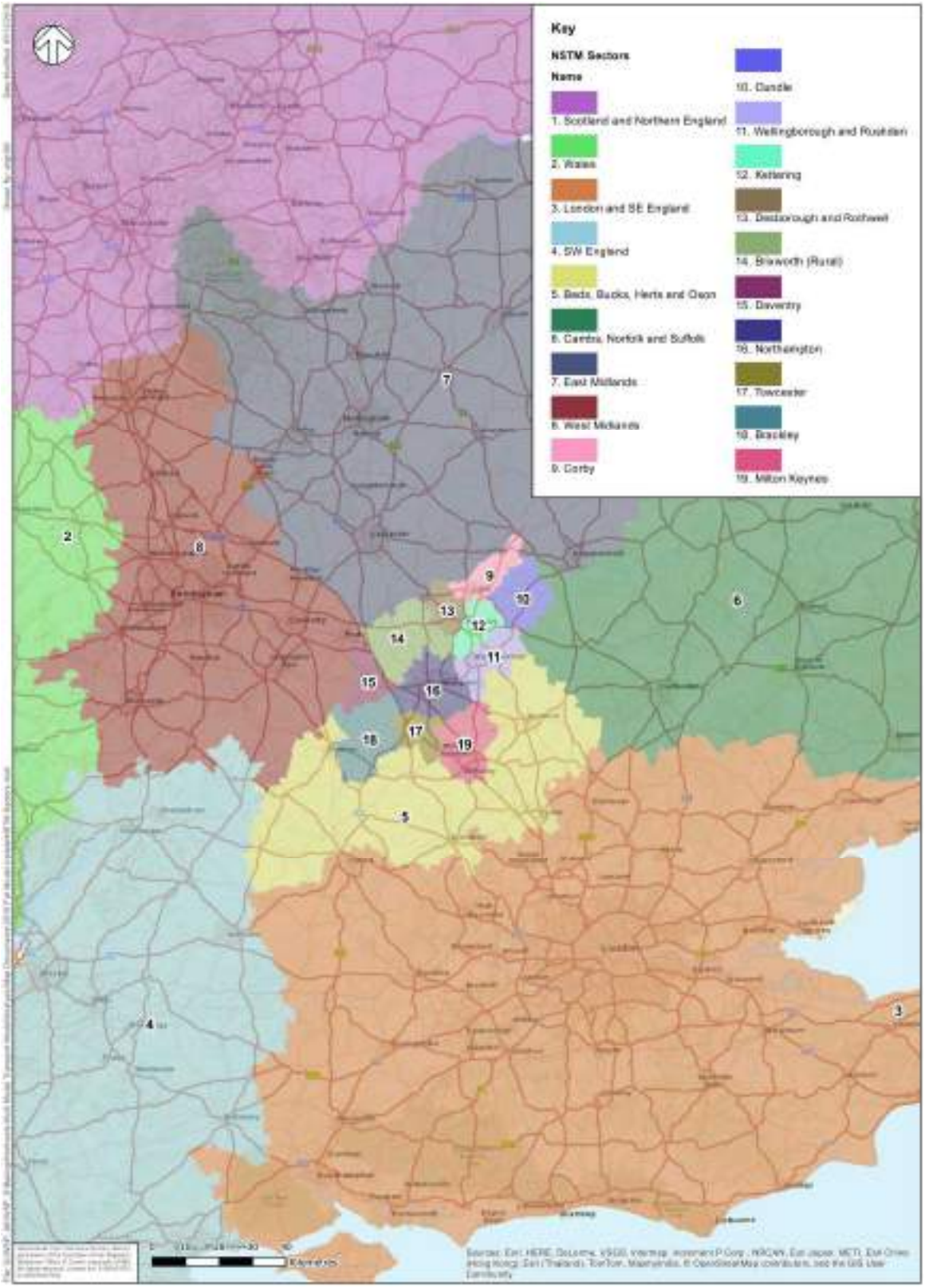
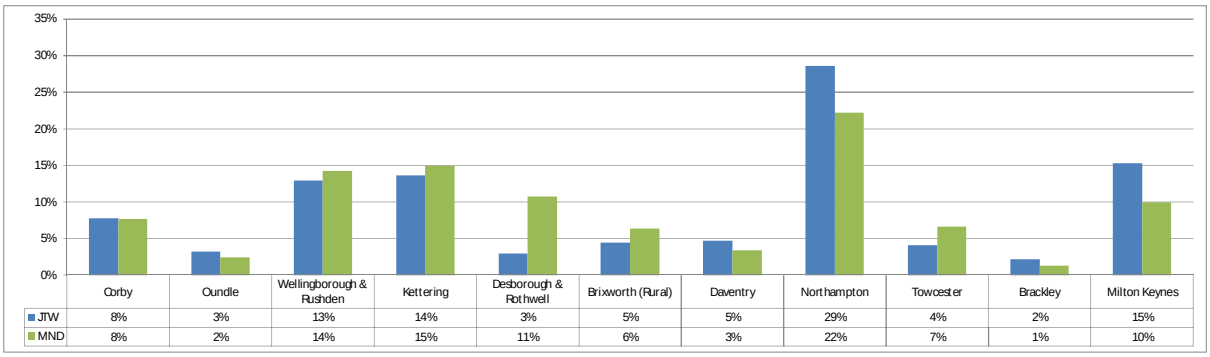
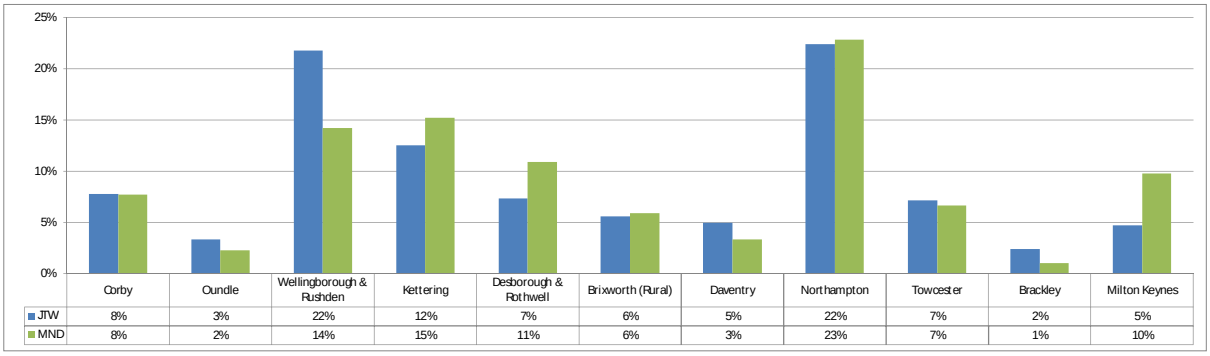


Figure 4 NSTM Sectoring



	Corby	Oundle	Wellingborough & Rushden	Kettering	Desborough & Rothwell	Brixworth (Rural)	Daventry	Northampton	Towcester	Brackley	Milton Keynes
JTW	8%	3%	13%	14%	3%	5%	5%	29%	4%	2%	15%
MND	8%	2%	14%	15%	11%	6%	3%	22%	7%	1%	10%

Figure 5 Origin Distribution Summary. MND vs 2011 Census



	Corby	Oundle	Wellingborough & Rushden	Kettering	Desborough & Rothwell	Brixworth (Rural)	Daventry	Northampton	Towcester	Brackley	Milton Keynes
JTW	8%	3%	22%	12%	7%	6%	5%	22%	7%	2%	5%
MND	8%	2%	14%	15%	11%	6%	3%	23%	7%	1%	10%

Figure 6 Destination Distribution Summary. MND vs 2011 Census

TRIP LENGTH DISTRIBUTION

The MND Trip Length Distribution (TLD) has been compared with the TLD extracted from NTS. The comparison is shown in Figure 7 for motorised and rail trips combined. The MND TLD is presented by a solid line whereas the NTS TLD is shown as a dashed line.

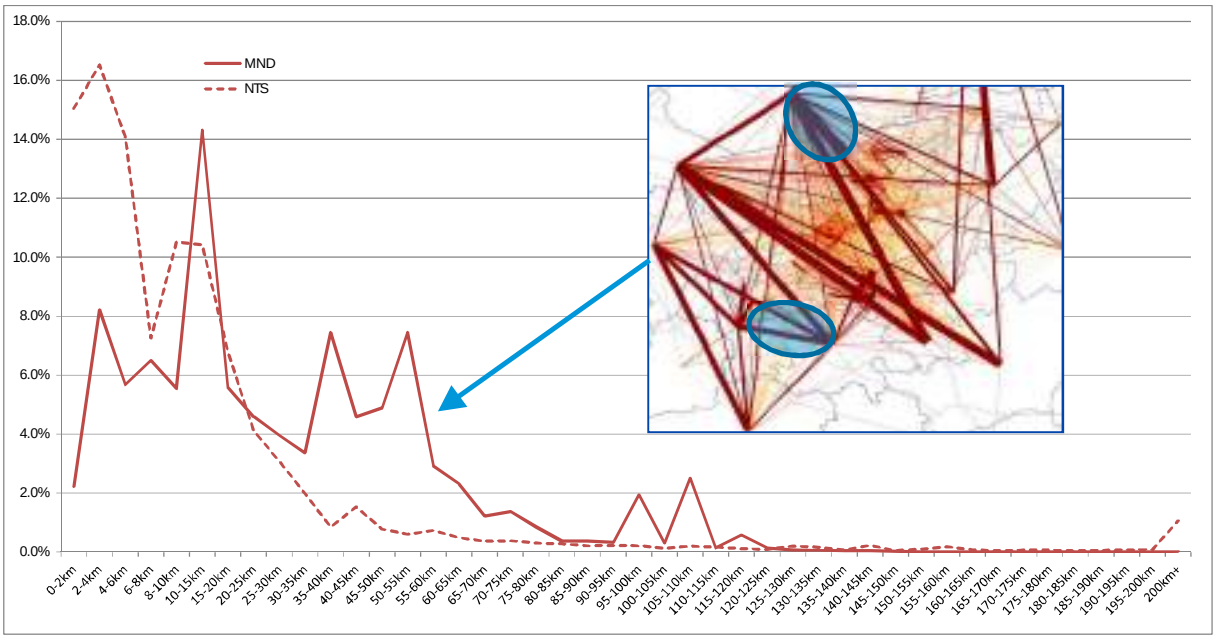


Figure 7 Trip Length Distribution. All Purpose. MND vs NTS

The comparison between the two datasets shows that:

- The proportion of short distance trips within the MND dataset is lower than within the observed NTS dataset. This may be due to underestimation of such trips by the MND processes or coarse MND sector structure within the Internal area.
- There is a significant proportion of MND trips in the range between 30 and 60 km, which is due to heavy movements observed at the boundary of the Internal area where the MND sector structure is course.

CONCLUSIONS

Various tests have been undertaken to validate trip matrices developed on the basis of Vodafone customers' movements for the NSTM modelled area. This Appendix has described the results of the MND verification.

The following conclusions can be drawn from the verification process:

- The combined Motorised and Rail demand looks reasonably robust in terms of overall trip generation, trip distribution and time split
- The proportion of short distance within the MND dataset is lower than that observed within the NTS, which might be due to a coarse structure of NSTM MND sectors
- A good symmetry is observed confirming the realism of the demand observed by MND analysis
- Mode or purpose split is not represented within MND with a high degree of accuracy

Appendix D

LINK CALIBRATION AND VALIDATION RESULTS

Link Flows

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
3	Calibration	NCC Data 2014	28	A428 Yardley Hastings	EB	ATC	343	345	0.101	Yes	Yes	223	169	3.880	Yes	Yes	597	646	1.945	Yes	Yes
4	Calibration	NCC Data 2014	28	A428 Yardley Hastings	WB	ATC	633	637	0.181	Yes	Yes	235	284	3.047	Yes	Yes	400	314	4.544	Yes	Yes
5	Validation	NCC Data 2014	142	A5199 Welford Road, Northampton	NB	ATC	520	475	2.009	Yes	Yes	372	326	2.472	Yes	Yes	759	893	4.663	Yes	No
6	Validation	NCC Data 2014	142	A5199 Welford Road, Northampton	SB	ATC	911	883	0.928	Yes	Yes	350	284	3.672	Yes	Yes	581	562	0.772	Yes	Yes
7	Validation	NCC Data 2014	162	C24 West of Church Brampton	WB	ATC	560	637	3.128	Yes	Yes	234	341	6.335	No	No	503	553	2.203	Yes	Yes
8	Validation	NCC Data 2014	162	C24 West of Church Brampton	EB	ATC	498	536	1.665	Yes	Yes	229	288	3.715	Yes	Yes	583	724	5.524	No	No
9	Validation	NCC Data 2014	29	A509 London Road, Wollaston	NB	ATC	616	545	2.926	Yes	Yes	413	425	0.581	Yes	Yes	849	670	6.528	No	No
10	Validation	NCC Data 2014	29	A509 London Road, Wollaston	SB	ATC	712	677	1.332	Yes	Yes	354	377	1.221	Yes	Yes	544	593	2.055	Yes	Yes
13	Validation	NCC Data 2014	34	Weekley	SB	ATC	593	587	0.248	Yes	Yes	358	378	1.026	Yes	Yes	748	653	3.565	Yes	Yes
14	Validation	NCC Data 2014	34	Weekley	NB	ATC	758	694	2.353	Yes	Yes	408	515	5.001	No	No	615	769	5.853	No	No
15	Calibration	NCC Data 2014	36	A510 Wellingborough Road, Finedon	NB	ATC	491	421	3.236	Yes	Yes	507	408	4.632	Yes	Yes	1068	877	6.149	No	No
16	Calibration	NCC Data 2014	36	A510 Wellingborough Road, Finedon	SB	ATC	1072	967	3.306	Yes	Yes	477	407	3.327	Yes	Yes	541	527	0.614	Yes	Yes
17	Calibration	NCC Data 2014	41	North of Rockingham	SB	ATC	483	486	0.137	Yes	Yes	260	267	0.435	Yes	Yes	360	377	0.900	Yes	Yes
18	Calibration	NCC Data 2014	41	North of Rockingham	NB	ATC	362	366	0.215	Yes	Yes	264	314	2.944	Yes	Yes	451	446	0.223	Yes	Yes
19	Calibration	NCC Data 2014	46	Brigstock	NB	ATC	573	505	2.907	Yes	Yes	268	270	0.081	Yes	Yes	398	373	1.243	Yes	Yes
20	Calibration	NCC Data 2014	46	Brigstock	SB	ATC	337	364	1.463	Yes	Yes	270	269	0.065	Yes	Yes	526	537	0.506	Yes	Yes
23	Calibration	NCC Data 2014	84	North of Kettering	NB	ATC	1339	1271	1.867	Yes	Yes	923	881	1.388	Yes	Yes	1596	1581	0.359	Yes	Yes
24	Calibration	NCC Data 2014	84	North of Kettering	SB	ATC	1364	1193	4.794	Yes	Yes	914	888	0.895	Yes	Yes	1203	1071	3.906	Yes	Yes
25	Calibration	NCC Data 2014	201	Warkton Lane, Kettering	WB	ATC	111	98	1.264	Yes	Yes	70	109	4.197	Yes	Yes	114	92	2.144	Yes	Yes
26	Calibration	NCC Data 2014	201	Warkton Lane, Kettering	EB	ATC	116	117	0.071	Yes	Yes	64	61	0.430	Yes	Yes	112	119	0.651	Yes	Yes
27	Validation	NCC Data 2014	202	Barton Road, Kettering	NB	ATC	676	659	0.644	Yes	Yes	585	555	1.275	Yes	Yes	980	1083	3.205	Yes	Yes
28	Validation	NCC Data 2014	202	Barton Road, Kettering	SB	ATC	924	1004	2.561	Yes	Yes	556	595	1.633	Yes	Yes	701	721	0.773	Yes	Yes
29	Validation	NCC Data 2014	205	Northampton Road, Kettering	NB	ATC	752	822	2.490	Yes	Yes	502	632	5.465	No	No	844	967	4.093	Yes	Yes
30	Validation	NCC Data 2014	205	Northampton Road, Kettering	SB	ATC	911	1044	4.266	Yes	Yes	500	434	3.049	Yes	Yes	820	919	3.351	Yes	Yes
31	Validation	NCC Data 2014	206	Rothwell Road, Kettering	EB	ATC	948	917	1.042	Yes	Yes	670	724	2.054	Yes	Yes	661	609	2.041	Yes	Yes
32	Validation	NCC Data 2014	206	Rothwell Road, Kettering	WB	ATC	555	441	5.128	No	No	674	719	1.697	Yes	Yes	908	810	3.329	Yes	Yes
33	Validation	NCC Data 2014	232	Sywell Road, Wellingborough	EB	ATC	247	223	1.574	Yes	Yes	266	255	0.668	Yes	Yes	634	658	0.973	Yes	Yes
34	Validation	NCC Data 2014	232	Sywell Road, Wellingborough	WB	ATC	639	575	2.585	Yes	Yes	276	255	1.290	Yes	Yes	295	314	1.104	Yes	Yes
35	Validation	NCC Data 2014	236	Irthlingborough Road, Wellingborough	EB	ATC	135	167	2.592	Yes	Yes	157	167	0.756	Yes	Yes	253	218	2.279	Yes	Yes
36	Validation	NCC Data 2014	236	Irthlingborough Road, Wellingborough	WB	ATC	241	265	1.548	Yes	Yes	140	112	2.450	Yes	Yes	167	166	0.086	Yes	Yes
37	Validation	NCC Data 2014	238	London Road, Wellingborough	NB	ATC	722	629	3.564	Yes	Yes	716	535	7.228	No	No	685	576	4.318	Yes	Yes
38	Validation	NCC Data 2014	238	London Road, Wellingborough	SB	ATC	646	597	1.965	Yes	Yes	596	427	7.476	No	No	822	677	5.276	No	Yes
39	Calibration	NCC Data 2014	239	Doddington Road, Wellingborough	NB	ATC	364	342	1.175	Yes	Yes	238	197	2.815	Yes	Yes	534	551	0.694	Yes	Yes
40	Calibration	NCC Data 2014	239	Doddington Road, Wellingborough	SB	ATC	577	586	0.387	Yes	Yes	294	325	1.750	Yes	Yes	398	333	3.364	Yes	Yes
41	Validation	NCC Data 2014	261	Oakley Road, Corby	NB	ATC	1007	1010	0.069	Yes	Yes	706	671	1.305	Yes	Yes	773	737	1.325	Yes	Yes
42	Validation	NCC Data 2014	261	Oakley Road, Corby	SB	ATC	505	392	5.349	No	No	704	577	5.025	No	No	1027	1013	0.465	Yes	Yes
43	Calibration	NCC Data 2014	262	Pheonix Parkway, Corby	NB	ATC	505	486	0.826	Yes	Yes	335	403	3.545	Yes	Yes	294	294	0.024	Yes	Yes
44	Calibration	NCC Data 2014	262	Pheonix Parkway, Corby	SB	ATC	343	437	4.775	Yes	Yes	429	463	1.590	Yes	Yes	473	462	0.481	Yes	Yes
45	Calibration	NCC Data 2014	263	Weldon Road, Corby	WB	ATC	937	850	2.903	Yes	Yes	984	967	0.534	Yes	Yes	1416	1274	3.892	Yes	Yes
46	Calibration	NCC Data 2014	263	Weldon Road, Corby	EB	ATC	1279	1390	3.060	Yes	Yes	863	857	0.194	Yes	Yes	966	927	1.286	Yes	Yes
47	Validation	NCC Data 2014	264	Westcott Way, Corby	WB	ATC	515	482	1.479	Yes	Yes	390	459	3.376	Yes	Yes	550	659	4.402	Yes	Yes
48	Validation	NCC Data 2014	264	Westcott Way, Corby	EB	ATC	509	521	0.522	Yes	Yes	375	452	3.756	Yes	Yes	472	588	5.011	No	Yes
51	Calibration	TPA Rail Central	137	C86 Banbury Lane, Northampton	NB	ATC	246	245	0.089	Yes	Yes	110	122	1.113	Yes	Yes	172	158	1.075	Yes	Yes
52	Calibration	TPA Rail Central	137	C86 Banbury Lane, Northampton	SB	ATC	207	215	0.531	Yes	Yes	105	114	0.885	Yes	Yes	185	167	1.321	Yes	Yes
53	Calibration	NCC Data 2014	143	C4 Boughton Green, Northampton	NB	ATC	267	290	1.417	Yes	Yes	163	165	0.126	Yes	Yes	534	360	8.256	No	No
54	Calibration	NCC Data 2014	143	C4 Boughton Green, Northampton	SB	ATC	521	554	1.454	Yes	Yes	157	156	0.112	Yes	Yes	247	285	2.299	Yes	Yes
55	Calibration	NCC Data 2014	144	C36 Northampton Lane South (Moulton) Northampton	NB	ATC	396	316	4.272	Yes	Yes	245	255	0.606	Yes	Yes	456	503	2.140	Yes	Yes
56	Calibration	NCC Data 2014	144	C36 Northampton Lane South (Moulton) Northampton	SB	ATC	838	836	0.064	Yes	Yes	384	385	0.055	Yes	Yes	493	442	2.356	Yes	Yes
57	Validation	NCC Data 2014	147	A4500 Wellingborough Road (Ecton), Northampton	EB	ATC	589	613	0.993	Yes	Yes	346	313	1.849	Yes	Yes	745	604	5.396	No	No
58	Validation	NCC Data 2014	147	A4500 Wellingborough Road (Ecton), Northampton	WB	ATC	796	740	2.031	Yes	Yes	324	335	0.569	Yes	Yes	511	456	2.498	Yes	Yes
59	Validation	NCC Data 2014	150	Great Billing Way, Northampton	SB	ATC	1336	1435	2.656	Yes	Yes	679	782	3.791	Yes	No	848	763	2.989	Yes	Yes
60	Validation	NCC Data 2014	150	Great Billing Way, Northampton	NB	ATC	884	846	1.278	Yes	Yes	697	813	4.200	Yes	No	1455	1424	0.825	Yes	Yes
61	Calibration	NCC Data 2014	152	Wellingborough Road	WB	ATC	829	917	3.008	Yes	Yes	628	563	2.672	Yes	Yes	768	741	0.981	Yes	Yes
62	Calibration	NCC Data 2014	152	Wellingborough Road	EB	ATC	827	743	3.002	Yes	Yes	687	573	4.560	Yes	No	1077	1111	1.030	Yes	Yes
63	Calibration	TPA Rail Central	154	A43 Lumbertubs Way (South), Northampton	SB	ATC	2416	2412	0.073	Yes	Yes	1492	1550	1.497	Yes	Yes	1993	2106	2.496	Yes	Yes
64	Calibration	TPA Rail Central	154	A43 Lumbertubs Way (South), Northampton	NB	ATC	2077	2081	0.077	Yes	Yes	1659	1665	0.155	Yes	Yes	2787	2694	1.785	Yes	Yes
65	Validation	TPA Rail Central	155	C38 Billing Road East, Northampton	EB	ATC	247	217	1.965	Yes	Yes	224	197	1.856	Yes	Yes	369	302	3.631	Yes	Yes
66	Validation	TPA Rail Central	155	C38 Billing Road East, Northampton	WB	ATC	509	504	0.244	Yes	Yes	233	226	0.492	Yes	Yes	330	348	0.993	Yes	Yes
67	Calibration	NCC Data 2014	156	Wellingborough Rd (West), Northampton	WB	ATC	944	873	2.329	Yes	Yes	701	635	2.558	Yes	Yes	775	727	1.738	Yes	Yes
68	Calibration	NCC Data 2014	156	Wellingborough Rd (West), Northampton	EB	ATC	761	635	4.757	Yes	No	712	657	2.071	Yes	Yes	1016	982	1.087	Yes	Yes
69	Validation	NCC Data 2014	157	A5123 Kettering Road, Northampton	NB	ATC	639	569	2.850	Yes	Yes	634	564	2.851	Yes	Yes	811	787	0.828	Yes	Yes
70	Validation	NCC Data 2014	157	A5123 Kettering Road, Northampton	SB	ATC	888	827	2.077	Yes	Yes	659	593	2.625	Yes	Yes	796	701	3.467	Yes	Yes
71	Validation	NCC Data 2014	158	Boughton Green Road	NB	ATC	751	836	3.013	Yes	Yes	425	327	5.058	No	Yes	528	552	1.046	Yes	Yes
72	Validation	NCC Data 2014	158	Boughton Green Road	SB	ATC	654	586	2.727	Yes	Yes	433	501	3.148	Yes	Yes	753	761	0.282	Yes	Yes
73	Validation	NCC Data 2014	159	A5076 Holly Lodge Drive, Northampton	EB	ATC	735	715	0.761	Yes	Yes	346	318	1.572	Yes	Yes	300	260	2.417	Yes	Yes
74	Validation	NCC Data 2014	159	A5076 Holly Lodge Drive, Northampton	WB	ATC	280	325	2.611	Yes	Yes	373	317	3.042	Yes	Yes	673	643	1.170	Yes	Yes
75	Validation	TPA Rail Central	163	A5095 Rushmere Road, Northampton	NB	ATC	581	602	0.856	Yes	Yes	471	480	0.439	Yes	Yes	937	1056	3.745	Yes	Yes
76	Validation	TPA Rail Central	163	A5095 Rushmere Road, Northampton	SB	ATC	1064	913	4.782	Yes	Yes	489	554	2.871	Yes	Yes	637	705	2.656	Yes	Yes
79	Validation	NCC Data 2014	291	B645 Northampton Road, Rushden	EB	ATC	263	219	2.859	Yes	Yes	339	262	4.458	Yes	Yes	785	621	6.167	No	No
80	Validation	NCC Data 2014	291	B645 Northampton Road, Rushden	WB	ATC	616	599	0.682	Yes	Yes	355	361	0.282	Yes	Yes	370	407	1.878	Yes	Yes
81	Calibration	NCC Data 2014	292	A6 Rushden/Higham Ferrers Bypass	NB	ATC	722	732	0.364	Yes	Yes	486	492	0.300	Yes	Yes	864	925	2.020	Yes	Yes
82	Calibration	NCC Data 2014	292	A6 Rushden/Higham Ferrers Bypass	SB	ATC	874	849	0.849	Yes	Yes	509	502	0.278	Yes	Yes	837	796	1.435	Yes	Yes
83	Calibration	NCC Data 2014	2	A4500 Main Road, Wilby	EB	ATC	604	562	1.725	Yes	Yes	292	256	2.183	Yes	Yes	843	651	7.020	No	No
84	Calibration	NCC Data 2014	2	A4500 Main Road, Wilby	WB	ATC	598	544	2.240	Yes	Yes	265	265	0.038	Yes	Yes	429	340	4.532	Yes	Yes
85	Validation	NCC Data 2014	3	A5028 High Street, Rushden	NB	ATC	633	606	1.059	Yes	Yes	585	529	2.363	Yes	Yes	649	654	0.169	Yes	Yes
86	Validation	NCC Data 2014	3	A5028 High Street, Rushden	SB	ATC	472	436	1.676	Yes	Yes	440	387	2.589	Yes	Yes	563	450	5.044	No	No
87	Validation	NCC Data 2014	23	A508 Harborough Road, Great Oxendon (South of)	NB	ATC	281	252	1.775	Yes	Yes	191	161	2.274	Yes	Yes	424	407	0.861	Yes	Yes
88	Validation	NCC Data 2014	23	A508 Harborough Road, Great Oxendon (South of)	SB	ATC	321	350	1.591	Yes	Yes	187	164	1.802	Yes	Yes	280	306	1.534	Yes	Yes
89	Calibration	NCC Data 2014	24	A43 Kettering Road, Broughton Bypass	NB	ATC	1080	964	3.626	Yes	Yes	708	699	0.351	Yes	Yes	1196	1170	0.738	Yes	Yes
90	Calibration	NCC Data 2014	24	A43 Kettering Road, Broughton Bypass	SB	ATC	1038	930	3.421	Yes	Yes	669	705	1.398	Yes	Yes	1050	1022	0.851	Yes	Yes
91	Validation	NCC Data 2014	31	B576 Harborough Road, Desborough	NB	ATC	289	243	2.833	Yes	Yes	163	122	3.391	Yes	Yes	203	179	1.715	Yes	Yes
92	Validation	NCC Data 2014	31	B576 Harborough Road, Desborough	SB	ATC	156	147	0.692	Yes	Yes	162	160	0.136	Yes	Yes	311	357	2.510	Yes	Yes
93	Calibration	NCC Data 2014	35	A6 Burton Road, Finedon (North of)	NB	ATC	715	775	2.170	Yes	Yes	517	530	0.582	Yes	Yes	864	868	0.132	Yes	Yes
94	Calibration	NCC Data 2014	35	A6 Burton Road, Finedon (North of)	SB	ATC	725	755	1.100	Yes	Yes	500	524	1.023	Yes	Yes	680	591	3.525	Yes	Yes
95	Validation	NCC Data 2014	39	A5001 Wellingborough Road, Rushden	EB	ATC	406	399	0.329	Yes	Yes	504	452	2.377	Yes	Yes	656	624	1.262	Yes	Yes
96	Validation	NCC Data 2014	39	A5001 Wellingborough Road, Rushden	WB	ATC	778	728	1.817	Yes	Yes	492	380	5.350	No	No	483	432	2.351	Yes	Yes
99	Calibration	NCC Data 2014	57	A508 Harborough Road, Boughton	NB	ATC	423	402	1.034	Yes	Yes	379	361	0.985	Yes	Yes	770	846	2.667	Yes	Yes
100	Calibration	NCC Data 2014	57	A508 Harborough Road, Boughton	SB	ATC	653	625	1.130	Yes	Yes	360	370	0.565	Yes	Yes	515	575	2.574	Yes	Yes
101	Calibration	TPA Rail Central	65	C151 Tollgate Way, Northampton	NB	ATC	1009	934	2.423	Yes	Yes	676	653	0.882	Yes	Yes	927	979	1.701	Yes	Yes
102	Calibration	TPA Rail Central	65	C151 Tollgate Way, Northampton	SB	ATC	1018	975	1.356	Yes	Yes	660	640	0.798	Yes	Yes	985	933	1.693	Yes	Yes
103	Calibration	NCC Data 2014	79	83 Weekley Wood Lane, Kettering Northern Bypass (E	EB	ATC	713	688	0.957	Yes	Yes	428	430	0.086	Yes	Yes	701	660	1.588	Yes	Yes
104	Calibration	NCC Data 2014	79	83 Weekley Wood Lane, Kettering Northern Bypass (E	WB	ATC	736	665	2.716	Yes	Yes	474	445	1.338	Yes	Yes	730	682	1.803	Yes	Yes
105	Calibration	TPA Rail Central	133	C23 Quinton Road, Wootton (South of)	NB	ATC	286	196	5.815	No	Yes	148	130	1.493	Yes	Yes	550	469	3.593	Yes	Yes
106	Calibration	TPA Rail Central	133	C23 Quinton Road, Wootton (South of)	SB	ATC	414	353	3.130	Yes	Yes	108	77	3.230	Yes	Yes	232	182	3.486	Yes	Yes
108	Calibration	TPA Rail Central	136	A43 Oxford Road, Blisworth Bypass (North of M1)	SB	ATC	1339	1469	3.471	Yes	Yes	637	855	7.962	No	No	924	1132	6.498	No	No
113	Calibration	NCC Data 2014	140	C5 Nobottle Road, Duston	EB	ATC	244	363	6.839	No	No	110	56	5.982	No	Yes	242	230	0.806	Yes	Yes
114	Calibration	NCC Data 2014	140	C5 Nobottle Road, Duston	WB	ATC	235	210	1.675	Yes	Yes	110	116	0.611	Yes	Yes	247	277	1.842	Yes	Yes
115	Calibration	NCC Data 2014	141	U61873 Duston Road, Duston	EB	ATC	39	16	4.468	Yes	Yes	34	28	1.106	Yes	Yes	43	35	1.297	Yes	Yes
116	Calibration	NCC Data 2014	141	U61873 Duston Road, Duston	WB	ATC	22	95	9.499	No	Yes	29	33	0.654	Yes	Yes	44	67	3.087	Yes	Yes
117	Calibration	NCC Data 2014	145	A43 Thorpeville Road, Northampton	NB	ATC	962	894	2.248	Yes	Yes	802	812	0.356	Yes	Yes	1343	1215	3.587	Yes	Yes
118	Calibration	NCC Data 2014	145	A43 Thorpeville Road, Northampton	SB	ATC	1262	1234	0.801	Yes	Yes	714	699	0.550	Yes	Yes	1059	972	2.740	Yes	Yes
119	Validation	NCC Data 2014	146	C24 Billing Lane, Overstone	NB	ATC	311	314	0.187	Yes	Yes	108	103	0.532	Yes	Yes	231	335	6.228	No	No
120	Validation	NCC Data 2014	146	C24 Billing Lane, Overstone	SB	ATC	298	296	0.094	Yes	Yes	102	106	0.414	Yes	Yes	227	281	3.429	Yes	Yes
121	Validation	NCC Data 2014	148	C24 The Causeway, Billing Aquadrome	NB	ATC	508	477	1.421	Yes	Yes	311	332	1.157	Yes	Yes	651	740	3.343	Yes	Yes
122	Validation	NCC Data 2014	148	C24 The Causeway, Billing Aquadrome	SB	ATC	570	556	0.596	Yes	Yes	277	216	3.859	Yes	Yes	459	300	8.147	No	No
123	Calibration	NCC Data 2014	151	A4501 Cliftonville Road, Northampton	NB	ATC	1099	1076	0.683	Yes	Yes	721	697	0.912	Yes	Yes	845	878	1.116	Yes	Yes
124	Calibration	NCC Data 2014	151	A4501 Cliftonville Road, Northampton	SB	ATC	786	734	1.877	Yes	Yes	648	715	2.568	Yes	Yes	912	1141	7.173	No	No
125	Calibration	NCC Data 2014	153	A43 Lumbertubs Way (North), Northampton	NB	ATC	1662	1638	0.587	Yes	Yes	1276	1297	0.592	Yes	Yes	2043	2031	0.260	Yes	Yes

							AM Peak ALL VEHICLES					Interpeak ALL VEHICLES					PM Peak ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
126	Calibration	NCC Data 2014	153	A43 Lumbertubs Way (North), Northampton	SB	ATC	1700	1677	0.549	Yes	Yes	1177	1173	0.118	Yes	Yes	1596	1715	2.936	Yes	Yes
127	Calibration	NCC Data 2014	160	C4 Moulton Lane, Boughton	EB	ATC	417	408	0.455	Yes	Yes	108	91	1.740	Yes	Yes	203	246	2.835	Yes	Yes
128	Calibration	NCC Data 2014	160	C4 Moulton Lane, Boughton	WB	ATC	227	170	4.012	Yes	Yes	127	144	1.416	Yes	Yes	397	529	6.103	No	No
129	Calibration	TPA Rail Central	165	A5076 Danes Camp Way, Northampton	EB	ATC	1933	2072	3.093	Yes	Yes	1278	1202	2.142	Yes	Yes	1797	1721	1.831	Yes	Yes
130	Calibration	TPA Rail Central	165	A5076 Danes Camp Way, Northampton	WB	ATC	1605	1703	2.413	Yes	Yes	1122	1128	0.186	Yes	Yes	1749	1941	4.470	Yes	Yes
131	Validation	NCC Data 2014	167	A4500 Wellingborough Road, Northampton	EB	ATC	514	466	2.170	Yes	Yes	534	500	1.480	Yes	Yes	730	664	2.496	Yes	Yes
132	Validation	NCC Data 2014	167	A4500 Wellingborough Road, Northampton	WB	ATC	725	810	3.051	Yes	Yes	563	536	1.144	Yes	Yes	564	519	1.952	Yes	Yes
133	Validation	NCC Data 2014	168	A5199 Northampton Road, Wellford (South of)	NB	ATC	199	182	1.259	Yes	Yes	115	90	2.382	Yes	Yes	311	293	1.073	Yes	Yes
134	Validation	NCC Data 2014	168	A5199 Northampton Road, Wellford (South of)	SB	ATC	303	209	5.849	No	Yes	100	105	0.498	Yes	Yes	149	148	0.080	Yes	Yes
135	Calibration	NCC Data 2014	203	C136 Polwell Lane, Barton Seagrave	NB	ATC	254	258	0.283	Yes	Yes	147	163	1.281	Yes	Yes	297	289	0.472	Yes	Yes
136	Calibration	NCC Data 2014	203	C136 Polwell Lane, Barton Seagrave	SB	ATC	359	375	0.848	Yes	Yes	166	207	2.943	Yes	Yes	229	341	6.659	No	No
137	Calibration	NCC Data 2014	204	A509 Kettering Road, Kettering	NB	ATC	1187	1151	1.068	Yes	Yes	733	729	0.139	Yes	Yes	934	892	1.413	Yes	Yes
138	Calibration	NCC Data 2014	204	A509 Kettering Road, Kettering	SB	ATC	574	533	1.728	Yes	Yes	706	696	0.364	Yes	Yes	1181	1138	1.279	Yes	Yes
139	Validation	NCC Data 2014	207	A6003 Rockingham Road, Kettering	NB	ATC	640	671	1.191	Yes	Yes	529	577	2.046	Yes	Yes	748	686	2.313	Yes	Yes
140	Validation	NCC Data 2014	207	A6003 Rockingham Road, Kettering	SB	ATC	846	846	0.003	Yes	Yes	557	440	5.265	No	No	839	848	0.307	Yes	Yes
141	Validation	NCC Data 2014	231	A5128 Northampton Road, Wellingborough	EB	ATC	575	531	1.868	Yes	Yes	535	515	0.865	Yes	Yes	879	830	1.679	Yes	Yes
142	Validation	NCC Data 2014	231	A5128 Northampton Road, Wellingborough	WB	ATC	816	650	6.134	No	No	533	461	3.197	Yes	Yes	595	575	0.823	Yes	Yes
143	Validation	NCC Data 2014	233	A5193 Harrowden Road, Wellingborough	NB	ATC	537	505	1.405	Yes	Yes	388	386	0.117	Yes	Yes	563	572	0.369	Yes	Yes
144	Validation	NCC Data 2014	233	A5193 Harrowden Road, Wellingborough	SB	ATC	545	632	3.584	Yes	Yes	344	398	2.812	Yes	Yes	548	587	1.628	Yes	Yes
145	Validation	NCC Data 2014	234	U94805 Nest Lane, Wellingborough	NB	ATC	221	210	0.759	Yes	Yes	136	131	0.425	Yes	Yes	93	84	0.982	Yes	Yes
146	Validation	NCC Data 2014	234	U94805 Nest Lane, Wellingborough	SB	ATC	110	87	2.266	Yes	Yes	138	191	4.194	Yes	Yes	270	247	1.396	Yes	Yes
147	Validation	NCC Data 2014	235	A5128 Finedon Road, Wellingborough	NB	ATC	478	412	3.119	Yes	Yes	428	387	2.011	Yes	Yes	672	644	1.112	Yes	Yes
148	Validation	NCC Data 2014	235	A5128 Finedon Road, Wellingborough	SB	ATC	720	632	3.380	Yes	Yes	438	386	2.572	Yes	Yes	545	510	1.541	Yes	Yes
149	Calibration	NCC Data 2014	237	B573 The Embankment, Wellingborough	NB	ATC	849	835	0.460	Yes	Yes	485	431	2.504	Yes	Yes	728	624	4.014	Yes	Yes
150	Calibration	NCC Data 2014	237	B573 The Embankment, Wellingborough	SB	ATC	456	446	0.468	Yes	Yes	425	410	0.714	Yes	Yes	569	605	1.483	Yes	Yes
151	Validation	NCC Data 2014	293	A6 Rothwell/Desborough Bypass	NB	ATC	462	439	1.091	Yes	Yes	305	274	1.846	Yes	Yes	674	706	1.221	Yes	Yes
152	Validation	NCC Data 2014	293	A6 Rothwell/Desborough Bypass	SB	ATC	666	738	2.733	Yes	Yes	295	246	2.998	Yes	Yes	484	474	0.451	Yes	Yes
153	Validation	NCC Data 2014	576	A361 Chanwelton Road, Byfield, NB	NB	ATC	284	253	1.859	Yes	Yes	182	138	3.497	Yes	Yes	401	345	2.931	Yes	Yes
154	Validation	NCC Data 2014	577	A361 Chanwelton Road, Byfield, SB	SB	ATC	323	284	2.267	Yes	Yes	173	122	4.215	Yes	Yes	282	223	3.743	Yes	Yes
155	Calibration	NCC Data 2014	578	A43 Stamford Road, Bulwick Bypass, NB	NB	ATC	350	434	4.287	Yes	Yes	315	323	0.500	Yes	Yes	531	533	0.110	Yes	Yes
156	Calibration	NCC Data 2014	579	A43 Stamford Road, Bulwick Bypass, SB	SB	ATC	539	462	3.433	Yes	Yes	309	275	2.020	Yes	Yes	392	319	3.835	Yes	Yes
157	Calibration	TPA Rail Central	580	A508 Northampton Road, Yardley Gobion, NB	NB	ATC	521	404	5.442	No	No	438	389	2.431	Yes	Yes	923	928	0.182	Yes	Yes
158	Calibration	TPA Rail Central	581	A508 Northampton Road, Yardley Gobion, SB	SB	ATC	835	793	1.494	Yes	Yes	356	362	0.332	Yes	Yes	553	539	0.609	Yes	Yes
159	Calibration	NCC Data 2014	582	A47 Peterborough Road, Duddington (East of), EB	EB	ATC	647	640	0.293	Yes	Yes	367	354	0.666	Yes	Yes	472	448	1.121	Yes	Yes
160	Calibration	NCC Data 2014	583	A47 Peterborough Road, Duddington (East of), WB	WB	ATC	382	353	1.526	Yes	Yes	374	375	0.049	Yes	Yes	674	653	0.831	Yes	Yes
161	Calibration	NCC Data 2014	584	A605 Peterborough Road, Warmington Bypass, NB	NB	ATC	1059	1067	0.236	Yes	Yes	583	570	0.569	Yes	Yes	836	841	0.165	Yes	Yes
162	Calibration	NCC Data 2014	585	A605 Peterborough Road, Warmington Bypass, SB	SB	ATC	669	661	0.306	Yes	Yes	587	575	0.501	Yes	Yes	975	994	0.602	Yes	Yes
163	Calibration	NCC Data 2014	586	A605 Oundle Road, Barnwell (South of), NB	NB	ATC	919	902	0.556	Yes	Yes	528	542	0.587	Yes	Yes	719	767	1.790	Yes	Yes
164	Calibration	NCC Data 2014	587	A605 Oundle Road, Barnwell (South of), SB	SB	ATC	620	705	3.273	Yes	Yes	540	560	0.867	Yes	Yes	901	940	1.279	Yes	Yes
165	Validation	NCC Data 2014	588	B4525 Thorpe Road, Middleton Cheney (West of), EB	EB	ATC	410	367	2.167	Yes	Yes	272	339	3.847	Yes	Yes	537	487	2.212	Yes	Yes
166	Validation	NCC Data 2014	589	B4525 Thorpe Road, Middleton Cheney (West of), WB	WB	ATC	598	519	3.316	Yes	Yes	239	263	1.536	Yes	Yes	346	358	0.642	Yes	Yes
167	Validation	NCC Data 2014	590	A422 Farthinghoe Road, Middleton Cheney (East of), EB	EB	ATC	492	510	0.783	Yes	Yes	335	265	4.049	Yes	Yes	654	588	2.671	Yes	Yes
168	Validation	NCC Data 2014	591	A422 Farthinghoe Road, Middleton Cheney (East of), WB	WB	ATC	666	534	5.418	No	No	352	366	0.721	Yes	Yes	519	605	3.637	Yes	Yes
169	Calibration	NCC Data 2014	592	A422 Buckingham Road, Old Stratford (South of), NB	NB	ATC	1186	975	6.446	No	No	556	552	0.173	Yes	Yes	751	706	1.658	Yes	Yes
170	Calibration	NCC Data 2014	593	A422 Buckingham Road, Old Stratford (South of), SB	SB	ATC	800	836	1.256	Yes	Yes	574	576	0.104	Yes	Yes	1037	1047	0.297	Yes	Yes
173	Calibration	NCC Data 2014	596	A45 London Road, Daventry (East of), EB	EB	ATC	686	592	3.730	Yes	Yes	525	521	0.189	Yes	Yes	863	802	2.141	Yes	Yes
174	Calibration	NCC Data 2014	597	A45 London Road, Daventry (East of), WB	WB	ATC	901	842	1.983	Yes	Yes	520	484	1.613	Yes	Yes	812	729	2.996	Yes	Yes
175	Calibration	NCC Data 2014	598	A45 The Wharf, Daventry (West of), EB	EB	ATC	513	567	2.325	Yes	Yes	281	288	0.387	Yes	Yes	375	345	1.595	Yes	Yes
176	Calibration	NCC Data 2014	599	A45 The Wharf, Daventry (West of), WB	WB	ATC	353	331	1.224	Yes	Yes	310	340	1.673	Yes	Yes	556	512	1.908	Yes	Yes
177	Calibration	NCC Data 2014	600	A361 Ashby Road, Daventry (North of), NB	NB	ATC	485	459	1.229	Yes	Yes	373	403	1.515	Yes	Yes	781	651	4.865	Yes	No
178	Calibration	NCC Data 2014	601	A361 Ashby Road, Daventry (North of), SB	SB	ATC	787	743	1.584	Yes	Yes	345	355	0.505	Yes	Yes	507	358	7.162	No	No
179	Calibration	NCC Data 2014	602	A43 Stamford Road, Easton on the Hill (North of), NB	NB	ATC	473	448	1.168	Yes	Yes	324	323	0.100	Yes	Yes	507	520	0.578	Yes	Yes
180	Calibration	NCC Data 2014	603	A43 Stamford Road, Easton on the Hill (North of), SB	SB	ATC	494	493	0.021	Yes	Yes	304	304	0.044	Yes	Yes	402	407	0.250	Yes	Yes
181	Validation	TPA Rail Central	604	A428 Bedford Road, Great Houghton (West of), EB	EB	ATC	317	298	1.090	Yes	Yes	318	363	2.429	Yes	Yes	1015	1119	3.185	Yes	Yes
182	Validation	TPA Rail Central	605	A428 Bedford Road, Great Houghton (West of), WB	WB	ATC	984	970	0.467	Yes	Yes	288	301	0.753	Yes	Yes	353	435	4.174	Yes	Yes
183	Validation	TPA Rail Central	606	B526 Newport Pagnell Road, Hardingstone, EB	EB	ATC	291	318	1.550	Yes	Yes	154	118	3.041	Yes	Yes	313	411	5.164	No	Yes
184	Validation	TPA Rail Central	607	B526 Newport Pagnell Road, Hardingstone, WB	WB	ATC	311	352	2.271	Yes	Yes	153	125	2.366	Yes	Yes	323	436	5.793	No	No
185	Calibration	TPA Rail Central	608	A5076 Upton Way, Northampton, NB	NB	ATC	1925	2024	2.232	Yes	Yes	1319	1331	0.305	Yes	Yes	1845	2053	4.702	Yes	Yes
186	Calibration	TPA Rail Central	609	A5076 Upton Way, Northampton, SB	SB	ATC	1813	1816	0.061	Yes	Yes	1365	1327	1.040	Yes	Yes	2135	2147	0.251	Yes	Yes
187	Validation	NCC Data 2014	610	B4038 London Road, Daventry, NB	NB	ATC	271	231	2.522	Yes	Yes	290	266	1.440	Yes	Yes	319	287	1.788	Yes	Yes
188	Validation	NCC Data 2014	611	B4038 London Road, Daventry, SB	SB	ATC	287	269	1.103	Yes	Yes	281	214	4.275	Yes	Yes	286	292	0.329	Yes	Yes
189	Validation	NCC Data 2014	612	A4256 Braunston Road, Daventry, NB	NB	ATC	670	589	3.217	Yes	Yes	440	522	3.729	Yes	Yes	593	711	4.611	Yes	No
190	Validation	NCC Data 2014	613	A4256 Braunston Road, Daventry, SB	SB	ATC	509	479	1.351	Yes	Yes	432	415	0.805	Yes	Yes	727	800	2.644	Yes	Yes
191	Validation	NCC Data 2014	20	A428 Crick, East of	WB	ATC	305	254	3.021	Yes	Yes	143	133	0.841	Yes	Yes	284	246	2.317	Yes	Yes
192	Validation	NCC Data 2014	20	A428 Crick, East of	EB	ATC	307	337	1.655	Yes	Yes	151	130	1.815	Yes	Yes	365	375	0.524	Yes	Yes
193	Calibration	TPA Rail Central	13	A45 Flore	EB	ATC	692	608	3.306	Yes	Yes	432	435	0.154	Yes	Yes	662	620	1.654	Yes	Yes
194	Calibration	TPA Rail Central	13	A45 Flore	WB	ATC	646	658	0.464	Yes	Yes	421	434	0.621	Yes	Yes	741	688	1.995	Yes	Yes
195	Calibration	NCC Data 2014	32	A6003 Rockingham Road, Great Oakley (South of)	NB	ATC	1035	1113	2.365	Yes	Yes	719	737	0.682	Yes	Yes	1386	1457	1.870	Yes	Yes
196	Calibration	NCC Data 2014	32	A6003 Rockingham Road, Great Oakley (South of)	SB	ATC	1278	1232	1.298	Yes	Yes	800	850	1.743	Yes	Yes	1087	1052	1.061	Yes	Yes
197	Calibration	NCC Data 2014	38	A509 Wellingborough Road, Great Harrowden	NB	ATC	772	794	0.783	Yes	Yes	602	698	3.777	Yes	Yes	1109	955	4.796	Yes	Yes
198	Calibration	NCC Data 2014	38	A509 Wellingborough Road, Great Harrowden	SB	ATC	882	930	1.589	Yes	Yes	565	695	5.182	No	No	967	991	0.778	Yes	Yes
199	Calibration	NCC Data 2014	58	A43 Kettering Road, Overstone Grange	NB	ATC	861	749	3.947	Yes	Yes	637	622	0.613	Yes	Yes	1158	1057	3.022	Yes	Yes
200	Calibration	NCC Data 2014	58	A43 Kettering Road, Overstone Grange	SB	ATC	838	851	0.464	Yes	Yes	528	548	0.853	Yes	Yes	946	789	5.332	No	No
201	Calibration	NCC Data 2014	85	A4300 Stamford Road, Geddington	NB	ATC	495	568	3.166	Yes	Yes	319	369	2.721	Yes	Yes	408	578	7.657	No	No
202	Calibration	NCC Data 2014	85	A4300 Stamford Road, Geddington	SB	ATC	409	438	1.397	Yes	Yes	293	247	2.773	Yes	Yes	483	484	0.061	Yes	Yes
203	Calibration	NCC Data 2014	265	A43 Corby Link Road	NB	ATC	436	368	3.390	Yes	Yes	238	385	8.309	No	No	366	481	5.585	No	No
204	Calibration	NCC Data 2014	265	A43 Corby Link Road	SB	ATC	311	361	2.746	Yes	Yes	234	287	3.300	Yes	Yes	508	462	2.101	Yes	Yes
205	Calibration	NCC Data 2014	574	A43 Kettering Business Park (N/B only)	NB	ATC	1549	1396	3.986	Yes	Yes	1159	1207	1.404	Yes	Yes	1896	1814	1.905	Yes	Yes
206	Calibration	NCC Data 2014	575	A43 Kettering Business Park (S/B only)	SB	ATC	1692	1501	4.773	Yes	Yes	1110	1087	0.696	Yes	Yes	1729	1407	8.121	No	No
207	Validation	TPA Rail Central	B	Towcester Road	NB	ATC	374	426	2.623	Yes	Yes	231	209	1.452	Yes	Yes	488	377	5.306	No	No
208	Validation	TPA Rail Central	B	Towcester Road	SB	ATC	578	431	6.528	No	No	264	264	0.003	Yes	Yes	364	429	3.307	Yes	Yes
211	Validation	NDC Data 2013	525	A5095 St Andrews Road	NB	ATC	213	216	0.190	Yes	Yes	209	243	2.221	Yes	Yes	261	253	0.493	Yes	Yes
212	Validation	NDC Data 2013	525	A5095 St Andrews Road	SB	ATC	276	197	5.153	No	Yes	277	286	0.555	Yes	Yes	313	362	2.685	Yes	Yes
213	Validation	NDC Data 2013	530	A5123 York Road	NB	ATC	341	287	3.046	Yes	Yes	360	399	2.014	Yes	Yes	362	500	6.641	No	No
214	Validation	NDC Data 2013	530	A5123 York Road	SB	ATC	454	479	1.160	Yes	Yes	344	288	3.149	Yes	Yes	311	358	2.615	Yes	Yes
215	Validation	NDC Data 2013	533	A4500 Wellingborough Road	NB	ATC	356	347	0.464	Yes	Yes	394	348	2.411	Yes	Yes	599	592	0.275	Yes	Yes
216	Validation	NDC Data 2013	533	A4500 Wellingborough Road	SB	ATC	717	624	3.584	Yes	Yes	479	463	0.735	Yes	Yes	496	448	2.248	Yes	Yes
217	Calibration	NDC Data 2013	534	A5095 Park Avenue South	NB	ATC	449	464	0.685	Yes	Yes	413	420	0.360	Yes	Yes	692	622	2.734	Yes	Yes
218	Calibration	NDC Data 2013	534	A5095 Park Avenue South	SB	ATC	797	772	0.883	Yes	Yes	430	414	0.806	Yes	Yes	568	527	1.715	Yes	Yes
219	Validation	NDC Data 2013	535	C151 Mill Lane	EB	ATC	1085	1015	2.144	Yes	Yes	800	787	0.468	Yes	Yes	1127	1278	4.343	Yes	Yes
220	Validation	NDC Data 2013	535	C151 Mill Lane	WB	ATC	977	981	0.139	Yes	Yes	825	792	1.152	Yes	Yes	1021	973	1.512	Yes	Yes
221	Validation	NDC Data 2013	536	A428 Harlestone Road	NB	ATC	559	512	2.045	Yes	Yes	496	543	2.059	Yes	Yes	610	642	1.289	Yes	Yes
222	Validation	NDC Data 2013	536	A428 Harlestone Road	SB	ATC	696	633	2.440	Yes	Yes	419	415	0.184	Yes	Yes	433	508	3.427	Yes	Yes
223	Calibration	NDC Data 2013	540	A5123 Kettering Road	NB	ATC	515	480	1.579	Yes	Yes	454	450	0.188	Yes	Yes	607	662	2.158	Yes	Yes
224	Calibration	NDC Data 2013	540	A5123 Kettering Road	SB	ATC	556	581	1.054	Yes	Yes	447	425	1.051	Yes	Yes	518	514	0.168	Yes	Yes
225	Validation	NDC Data 2013	541	A5101 Park Avenue North	NB	ATC	393	380	0.677	Yes	Yes	341	320	1.173	Yes	Yes	400	358	2.187	Yes	Yes
226	Validation	NDC Data 2013	541	A5101 Park Avenue North	SB	ATC	511	525	0.628	Yes	Yes	351	406	2.841	Yes	Yes	377	477	4.861	Yes	No
227	Calibration	NDC Data 2013	549	A428 Bedford Road	EB	ATC	682	627	2.147	Yes	Yes	668	607	2.446	Yes	Yes	933	992	1.891	Yes	Yes
228	Calibration	NDC Data 2013	549	A428 Bedford Road	WB	ATC	1183	1102	2.397	Yes	Yes	709	670	1.493	Yes	Yes	872	803	2.386	Yes	Yes
229	Calibration	NDC Data 2013	551	A508 Barrack Road	NB	ATC	729	656	2.777	Yes	Yes	656	678	0.859	Yes	Yes	1062	893	5.386	No	No
230	Calibration	NDC Data 2013	552	A508 Barrack Road	SB	ATC	1177	1214	1.060	Yes	Yes	687	718	1.194	Yes	Yes	885	719	5.860	No	No
231	Validation	NCC Data 2013	20130018	Grangeway, Rushden	NB	ATC	244	312	4.067	Yes	Yes	130	119	0.993	Yes	Yes	171	220	3.537	Yes	Yes
232	Validation	NCC Data 2013	20130018	Grangeway, Rushden	SB	ATC	244	253	0.592	Yes	Yes	151	165	1.118	Yes	Yes	308	352	2.397	Yes	Yes
675	Calibration	Stanton Cross	1	B571	NEB	ATC	192	157	2.619	Yes	Yes	203	273	4.540	Yes	Yes	425	441	0.733	Yes	Yes
676	Calibration	Stanton Cross	1	B571	SWB	ATC	457	435	1.037	Yes	Yes	202	153	3.653	Yes	Yes	394	414	0.981	Yes	Yes
677	Calibration	Stanton Cross	2	Ditchford Road	NB	ATC	291	318	1.525	Yes	Yes	216	315	6.075	No	Yes	382	424	2.084	Yes	Yes
678	Calibration	Stanton Cross	2	Ditchford Road	SB	ATC	411	377	1.738	Yes	Yes	245	227	1.147	Yes	Yes	614	632	0.687	Yes	Yes
679	Calibration	Stanton Cross	3	Sidegate Lane	NWB	ATC	306	315	0.544	Yes	Yes	173	168	0.437	Yes	Yes	264	269	0.330	Yes	Yes
680	Calibration	Stanton Cross	3	Sidegate Lane	SEB	ATC	287	322	2.019	Yes	Yes	200	190	0.694	Yes	Yes	357	313	2.383	Yes	Yes
710	Calibration	TPA Rail Central	C	C: On high Street west of Paulerspury	EB	ATC	64	63	0.156	Yes	Yes	45	23	3.850	Yes	Yes	77	87	1.172	Yes	Yes
711	Calibration	TPA Rail Central	C	C: On high Street west of Paulerspury	WB	ATC	88	92	0.377	Yes	Yes	37	42	0.764	Yes	Yes	54	26	4.501	Yes	Yes
712	Calibration	Silverstone	D	D: On Dadford Road, Silverstone to the south of the A43	SB	ATC	712	803	3.289	Yes	Yes	241	204	2.444	Yes	Yes	178	75	9.142	No	No
713	Calibration	Silverstone	D	D: On Dadford Road, Silverstone to the south of the A43	NB	ATC	144	142	0.169	Yes	Yes	229	195	2.326	Yes	Yes	631	695	2.499	Yes	Yes
714	Calibration	Silverstone	E	Hackley Road east of A43/Dadford Road Interchange, Sil	EB	ATC	368	380	0.577	Yes	Yes	132	138	0.556	Yes	Yes	199	196	0.228	Yes	Yes

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
715	Calibration	Silverstone	E	ackley Road east of A43/Dadford Road Interchange, Sil	WB	ATC	200	218	1.213	Yes	Yes	123	120	0.275	Yes	Yes	362	443	4.041	Yes	Yes
828	Calibration	Dallington Grange	1	A428	NB	ATC	575	589	0.588	Yes	Yes	325	466	7.097	No	No	818	958	4.725	Yes	No
829	Calibration	Dallington Grange	1	A428	SB	ATC	894	845	1.650	Yes	Yes	314	427	5.895	No	No	646	646	0.002	Yes	Yes
830	Validation	Dallington Grange	2	New Sandy Lane	NB	ATC	501	501	0.006	Yes	Yes	249	263	0.880	Yes	Yes	529	618	3.744	Yes	Yes
831	Validation	Dallington Grange	2	New Sandy Lane	SB	ATC	552	491	2.670	Yes	Yes	237	312	4.567	Yes	Yes	515	446	3.140	Yes	Yes
832	Validation	Dallington Grange	3	Sandy Lane	NB	ATC	461	546	3.796	Yes	Yes	259	323	3.743	Yes	Yes	637	729	3.521	Yes	Yes
833	Validation	Dallington Grange	3	Sandy Lane	SB	ATC	466	500	1.579	Yes	Yes	466	554	3.933	Yes	Yes	466	491	1.168	Yes	Yes
834	Calibration	TPA Rail Central	4	Weedon Road A4500	EB	ATC	1312	1392	2.168	Yes	Yes	669	890	7.924	No	No	919	888	1.029	Yes	Yes
835	Calibration	TPA Rail Central	4	Weedon Road A4500	WB	ATC	856	832	0.809	Yes	Yes	733	796	2.289	Yes	Yes	1258	1260	0.049	Yes	Yes
836	Validation	Dallington Grange	5	A428 Harlestone Road	NB	ATC	673	563	4.399	Yes	No	621	435	8.127	No	No	652	560	3.741	Yes	Yes
837	Validation	Dallington Grange	5	A428 Harlestone Road	SB	ATC	779	737	1.512	Yes	Yes	534	481	2.362	Yes	Yes	865	745	4.236	Yes	Yes
838	Validation	Dallington Grange	6	Harlestone Road	NB	ATC	507	522	0.645	Yes	Yes	533	466	2.980	Yes	Yes	593	581	0.515	Yes	Yes
839	Validation	Dallington Grange	6	Harlestone Road	SB	ATC	697	635	2.419	Yes	Yes	453	408	2.164	Yes	Yes	486	519	1.441	Yes	Yes
840	Validation	Dallington Grange	7	Mill Lane	NB	ATC	985	1004	0.624	Yes	Yes	828	763	2.321	Yes	Yes	1040	1149	3.278	Yes	Yes
841	Validation	Dallington Grange	7	Mill Lane	SB	ATC	890	888	0.067	Yes	Yes	874	869	0.180	Yes	Yes	1171	1123	1.420	Yes	Yes
842	Validation	Dallington Grange	8	Mill Lane	EB	ATC	987	915	2.343	Yes	Yes	799	713	3.118	Yes	Yes	1108	1095	0.382	Yes	Yes
843	Validation	Dallington Grange	8	Mill Lane	WB	ATC	1011	922	2.878	Yes	Yes	805	722	2.981	Yes	Yes	960	833	4.238	Yes	Yes
844	Validation	Dallington Grange	9	Harbourough Road	NB	ATC	607	605	0.070	Yes	Yes	541	523	0.765	Yes	Yes	745	851	3.739	Yes	Yes
845	Validation	Dallington Grange	9	Harbourough Road	SB	ATC	599	569	1.240	Yes	Yes	479	461	0.823	Yes	Yes	546	509	1.630	Yes	Yes
846	Validation	Dallington Grange	10	Kingsthorpe Road	NB	ATC	706	595	4.347	Yes	No	684	599	3.371	Yes	Yes	930	765	5.675	No	No
847	Validation	Dallington Grange	10	Kingsthorpe Road	SB	ATC	1018	1088	2.163	Yes	Yes	645	597	1.946	Yes	Yes	762	607	5.924	No	No
848	Calibration	TPA Rail Central	11	Weedon Road	EB	ATC	1180	1301	3.437	Yes	Yes	806	731	2.697	Yes	Yes	853	885	1.080	Yes	Yes
849	Calibration	TPA Rail Central	11	Weedon Road	WB	ATC	662	693	1.173	Yes	Yes	882	697	6.603	No	No	1066	1075	0.294	Yes	Yes
850	Validation	Dallington Grange	12a	Horse Market A508	SB	ATC	811	824	0.467	Yes	Yes	789	719	2.573	Yes	Yes	978	815	5.457	No	No
851	Validation	Dallington Grange	12b	Horse Market A508	NB	ATC	737	589	5.749	No	No	641	547	3.845	Yes	Yes	875	925	1.653	Yes	Yes
852	Validation	Dallington Grange	13a	Kingsthorpe Road	SB	ATC	1018	1118	3.078	Yes	Yes	645	637	0.316	Yes	Yes	762	658	3.906	Yes	Yes
853	Validation	Dallington Grange	13b	Kingsthorpe Road	NB	ATC	710	675	1.355	Yes	Yes	694	681	0.530	Yes	Yes	1051	1045	0.210	Yes	Yes
913	Calibration	West Corby SUE	1	B670 Rockingham Road, north of Ripley Rd.	NB	ATC	86	85	0.091	Yes	Yes	35	12	4.605	Yes	Yes	48	27	3.452	Yes	Yes
914	Calibration	West Corby SUE	1	B670 Rockingham Road, north of Ripley Rd.	SB	ATC	51	45	0.885	Yes	Yes	47	23	3.945	Yes	Yes	95	98	0.298	Yes	Yes
915	Calibration	West Corby SUE	2	Uppingham Rd. north of Vian Way	NB	ATC	859	865	0.205	Yes	Yes	522	529	0.317	Yes	Yes	570	554	0.686	Yes	Yes
916	Calibration	West Corby SUE	2	Uppingham Rd. north of Vian Way	SB	ATC	562	563	0.061	Yes	Yes	548	556	0.335	Yes	Yes	918	1024	3.375	Yes	Yes
917	Calibration	West Corby SUE	3	Corby Rd. near New Coppile	EB	ATC	483	474	0.412	Yes	Yes	266	246	1.230	Yes	Yes	430	309	6.301	No	No
918	Calibration	West Corby SUE	3	Corby Rd. near New Coppile	WB	ATC	354	411	2.931	Yes	Yes	297	271	1.556	Yes	Yes	503	615	4.764	Yes	No
919	Validation	West Corby SUE	4	Uppingham Rd. near Beanfield Lawn Cottage	NB	ATC	1003	985	0.583	Yes	Yes	602	562	1.650	Yes	Yes	907	902	0.173	Yes	Yes
920	Validation	West Corby SUE	4	Uppingham Rd. near Beanfield Lawn Cottage	SB	ATC	883	866	0.560	Yes	Yes	629	556	3.004	Yes	Yes	1011	936	2.401	Yes	Yes
921	Calibration	West Corby SUE	5	Pipewell Rd. north of Oakley Rd. junction	NB	ATC	18	10	2.151	Yes	Yes	12	9	1.169	Yes	Yes	17	25	1.561	Yes	Yes
922	Calibration	West Corby SUE	5	Pipewell Rd. north of Oakley Rd. junction	SB	ATC	17	12	1.230	Yes	Yes	20	20	0.008	Yes	Yes	33	12	4.484	Yes	Yes
923	Validation	West Corby SUE	6	Oakley Rd. near Lees R and L	EB	ATC	155	134	1.734	Yes	Yes	69	74	0.629	Yes	Yes	104	102	0.117	Yes	Yes
924	Validation	West Corby SUE	6	Oakley Rd. near Lees R and L	WB	ATC	79	90	1.151	Yes	Yes	75	78	0.301	Yes	Yes	138	147	0.687	Yes	Yes
925	Calibration	West Corby SUE	7	Cottingham Rd. between Essex Close and Dorset Rd.	EB	ATC	769	615	5.845	No	No	514	486	1.291	Yes	Yes	541	566	1.068	Yes	Yes
926	Calibration	West Corby SUE	7	Cottingham Rd. between Essex Close and Dorset Rd.	WB	ATC	500	493	0.352	Yes	Yes	531	509	0.944	Yes	Yes	839	745	3.327	Yes	Yes
927	Validation	West Corby SUE	8	Beanfield Av. between Seaford Walk, Mantlefield Rd	EB	ATC	209	192	1.183	Yes	Yes	173	183	0.745	Yes	Yes	272	184	5.772	No	Yes
928	Validation	West Corby SUE	8	Beanfield Av. between Seaford Walk, Mantlefield Rd	WB	ATC	295	333	2.160	Yes	Yes	155	194	2.991	Yes	Yes	215	254	2.588	Yes	Yes
931	Validation	West Corby SUE	10	Sowerleys Rd. outside Lowry Close	NB	ATC	611	663	2.058	Yes	Yes	286	140	10.007	No	No	483	387	4.578	Yes	Yes
932	Validation	West Corby SUE	10	Sowerleys Rd. outside Lowry Close	SB	ATC	319	332	0.736	Yes	Yes	298	247	3.085	Yes	Yes	634	529	4.345	Yes	No
933	Validation	West Corby SUE	11	A6014 near Tesco opticians	NB	ATC	744	726	0.676	Yes	Yes	552	581	1.227	Yes	Yes	703	732	1.056	Yes	Yes
934	Validation	West Corby SUE	11	A6014 near Tesco opticians	SB	ATC	500	515	0.694	Yes	Yes	554	548	0.272	Yes	Yes	729	726	0.095	Yes	Yes
935	Validation	West Corby SUE	12	Cottingham Rd west of Lime Trees Grove	EB	ATC	481	510	1.305	Yes	Yes	335	280	3.143	Yes	Yes	433	505	3.320	Yes	Yes
936	Validation	West Corby SUE	12	Cottingham Rd west of Lime Trees Grove	WB	ATC	371	293	4.237	Yes	Yes	329	294	1.973	Yes	Yes	671	667	0.138	Yes	Yes
937	Calibration	West Corby SUE	13	Weldon Rd west of industrial estate	EB	ATC	805	801	0.133	Yes	Yes	512	531	0.836	Yes	Yes	462	835	14.638	No	No
938	Calibration	West Corby SUE	13	Weldon Rd west of industrial estate	WB	ATC	428	427	0.018	Yes	Yes	440	493	2.416	Yes	Yes	678	447	9.719	No	No
939	Calibration	West Corby SUE	14	Bangrave Rd. South. North of Stamford Rd.	NB	ATC	743	742	0.056	Yes	Yes	371	394	1.191	Yes	Yes	369	445	3.776	Yes	Yes
940	Calibration	West Corby SUE	14	Bangrave Rd. South. North of Stamford Rd.	SB	ATC	404	518	5.305	No	No	357	385	1.475	Yes	Yes	656	935	9.896	No	No
941	Calibration	West Corby SUE	15	A43 between roundabout to NE and to SW	NB	ATC	577	368	9.623	No	No	347	385	1.977	Yes	Yes	494	481	0.582	Yes	Yes
942	Calibration	West Corby SUE	15	A43 between roundabout to NE and to SW	SB	ATC	468	361	5.218	No	No	324	287	2.090	Yes	Yes	574	462	4.925	Yes	No
943	Validation	West Corby SUE	16	A4300 Stamford Rd. south out Kettering Rd.	NB	ATC	562	488	3.241	Yes	Yes	257	251	0.416	Yes	Yes	294	312	1.026	Yes	Yes
944	Validation	West Corby SUE	16	A4300 Stamford Rd. south out Kettering Rd.	SB	ATC	298	289	0.566	Yes	Yes	250	230	1.301	Yes	Yes	469	582	4.931	Yes	No
1217	Calibration	Norwood Farm	ATC A	Sandy Lane	NB	ATC	529	571	1.799	Yes	Yes	269	321	3.036	Yes	Yes	694	545	5.972	No	No
1218	Calibration	Norwood Farm	ATC A	Sandy Lane	SB	ATC	613	590	0.939	Yes	Yes	273	323	2.930	Yes	Yes	521	522	0.042	Yes	Yes
1223	Validation	Norwood Farm	ATC D	Berrywood Road	EB	ATC	316	297	1.069	Yes	Yes	172	226	3.826	Yes	Yes	421	372	2.498	Yes	Yes
1224	Validation	Norwood Farm	ATC D	Berrywood Road	WB	ATC	407	311	5.094	No	Yes	170	114	4.730	Yes	Yes	272	436	8.740	No	No
1225	Calibration	TPA Rail Central	ATC E	Tollgate Way	NB	ATC	861	996	4.421	Yes	No	645	620	1.006	Yes	Yes	853	914	2.068	Yes	Yes
1226	Calibration	TPA Rail Central	ATC E	Tollgate Way	SB	ATC	851	823	0.956	Yes	Yes	648	666	0.698	Yes	Yes	800	762	1.362	Yes	Yes
1227	Validation	TPA Rail Central	ATC F	A4500	EB	ATC	924	915	0.265	Yes	Yes	820	835	0.510	Yes	Yes	998	1077	2.465	Yes	Yes
1228	Validation	TPA Rail Central	ATC F	A4500	WB	ATC	671	609	2.437	Yes	Yes	840	787	1.843	Yes	Yes	989	869	3.911	Yes	Yes
1229	Calibration	TPA Rail Central	ATC G	A4500	WB	ATC	723	649	2.854	Yes	Yes	618	560	2.392	Yes	Yes	713	738	0.948	Yes	Yes
1230	Calibration	TPA Rail Central	ATC G	A4500	EB	ATC	858	889	1.055	Yes	Yes	599	632	1.330	Yes	Yes	776	794	0.612	Yes	Yes
1231	Validation	Norwood Farm	ATC H	Larkhall Lane	EB	ATC	53	59	0.793	Yes	Yes	42	27	2.578	Yes	Yes	63	70	0.926	Yes	Yes
1232	Validation	Norwood Farm	ATC H	Larkhall Lane	WB	ATC	119	97	2.071	Yes	Yes	44	39	0.709	Yes	Yes	104	136	2.867	Yes	Yes
1233	Calibration	TPA Rail Central	Aug-49	NB, A45, NORTH OF M1 J15	NB	TRADS	2688	2565	2.397	Yes	Yes	1491	1548	1.464	Yes	Yes	2291	2454	3.348	Yes	Yes
1235	Calibration	TPA Rail Central	8/30016080	xit at a minor junction between M1 J15/A508 and A508 (	EB	TRADS	248	228	1.313	Yes	Yes	186	212	1.801	Yes	Yes	450	451	0.037	Yes	Yes
1236	Calibration	TPA Rail Central	8/30016081	t a minor junction between M1 J15 and A508 near Nort	EB	TRADS	2440	2337	2.100	Yes	Yes	1538	1336	5.337	No	Yes	2251	2003	5.371	No	Yes
1237	Calibration	TPA Rail Central	8/30016079	A45 WB between A508 near Northampton and M1 J15	WB	TRADS	2135	1783	7.956	No	No	1676	1537	3.472	Yes	Yes	2688	2345	6.840	No	Yes
1238	Validation	TPA Rail Central	8/30016078	xit at a minor junction between A508 (N)/A5076 and M1	WB	TRADS	252	256	0.252	Yes	Yes	236	197	2.639	Yes	Yes	499	600	4.318	Yes	No
1239	Calibration	TPA Rail Central	8/30016076	A45 EB exit for A508 near Northampton	EB	TRADS	374	351	1.205	Yes	Yes	340	311	1.597	Yes	Yes	401	342	3.055	Yes	Yes
1240	Calibration	TPA Rail Central	8/30016077	A45 EB within the A508 near Northampton junction	EB	TRADS	2879	2717	3.066	Yes	Yes	1497	1469	0.716	Yes	Yes	2221	2141	1.723	Yes	Yes
1241	Calibration	TPA Rail Central	8/30015996	A45 WB within the A508 near Northampton junction	WB	TRADS	1919	1591	7.829	No	No	1445	1441	0.114	Yes	Yes	2609	2422	3.722	Yes	Yes
1242	Calibration	TPA Rail Central	8/30015995	A45 WB exit for A508 near Northampton	WB	TRADS	1761	1768	0.163	Yes	Yes	1341	1360	0.522	Yes	Yes	2249	1967	6.135	No	Yes
1243	Calibration	TRADS Data 2015	Aug-68	SB, A43, Brackley between A422 (W) and A422 (E)	SB	TRADS	1561	1237	8.662	No	No	951	794	5.343	No	No	1327	1377	1.346	Yes	Yes
1244	Calibration	TRADS Data 2015	Aug-67	NB, A43, Brackley between A422 (W) and A422 (E)	NB	TRADS	1277	1060	6.362	No	No	1006	909	3.129	Yes	Yes	1519	1284	6.280	No	No
1245	Calibration	TRADS Data 2015	Aug-65	NB, A43, Between A421 & A422 at Evenley	NB	TRADS	1217	1728	13.324	No	No	995	1212	6.515	No	No	1672	2020	8.096	No	No
1246	Calibration	TRADS Data 2015	Aug-66	SB, A43, Between A421 & A422 at Evenley	SB	TRADS	1500	1932	10.436	No	No	875	1058	5.893	No	No	1153	1512	9.838	No	No
1247	Calibration	TPA Rail Central	8/30013672	A5 NB between A422/A508 and A43	NB	TRADS	802	828	0.915	Yes	Yes	423	408	0.739	Yes	Yes	657	670	0.488	Yes	Yes
1248	Calibration	TPA Rail Central	8/30013673	A5 SB between A43 and A422/A508	SB	TRADS	623	618	0.218	Yes	Yes	462	456	0.281	Yes	Yes	957	901	1.848	Yes	Yes
1249	Validation	TPA Rail Central	8/30013859	A5 NB between A43 and A45	NB	TRADS	463	423	1.883	Yes	Yes	346	328	0.975	Yes	Yes	560	547	0.562	Yes	Yes
1250	Validation	TPA Rail Central	8/30013860	A5 SB between A45 and A43	SB	TRADS	543	536	0.300	Yes	Yes	313	320	0.386	Yes	Yes	475	431	2.082	Yes	Yes
1251	Calibration	TRADS Data 2015	8/30014757	A5 NB between A45 and A361	NB	TRADS	333	368	1.865	Yes	Yes	261	291	1.826	Yes	Yes	426	425	0.058	Yes	Yes
1252	Calibration	TRADS Data 2015	8/30014758	A5 SB between A361 and A45	SB	TRADS	401	368	1.659	Yes	Yes	209	243	2.270	Yes	Yes	370	321	2.647	Yes	Yes
1253	Calibration	TRADS Data 2015	8/30015321	A5 NB between A361 and A428 near Rugby (W)	NB	TRADS	595	573	0.912	Yes	Yes	348	389	2.107	Yes	Yes	579	568	0.440	Yes	Yes
1254	Calibration	TRADS Data 2015	8/30015320	A5 SB between A428 near Rugby (W) and A361	SB	TRADS	617	606	0.446	Yes	Yes	411	415	0.182	Yes	Yes	683	658	0.964	Yes	Yes
1255	Calibration	TRADS Data 2015	8/30013677	A428 EB between A5 near Rugby (E) and M1/A5	EB	TRADS	908	890	0.599	Yes	Yes	621	629	0.334	Yes	Yes	1003	973	0.941	Yes	Yes
1256	Calibration	TPA Rail Central	8/30022767	M1 NB between J15A and J16	NB	TRADS	3380	3395	0.260	Yes	Yes	3398	3755	5.968	No	Yes	4019	4032	0.205	Yes	Yes
1257	Calibration	TPA Rail Central	8/30020395	M1 J15A SB exit	SB	TRADS	654	633	0.839	Yes	Yes	548	481	2.959	Yes	Yes	630	681	1.992	Yes	Yes
1258	Calibration	TPA Rail Central	8/30020418	M1 J15A NB access	NB	TRADS	636	539	4.008	Yes	Yes	595	831	8.837	No	No	589	541	2.013	Yes	Yes
1259	Calibration	TPA Rail Central	8/30020417	M1 NB within J15A	NB	TRADS	2744	2837	1.763	Yes	Yes	2820	2905	1.599	Yes	Yes	3452	3466	0.242	Yes	Yes
1260	Calibration	TPA Rail Central	8/30020421	M1 SB within J15A	SB	TRADS	3373	3502	2.200	Yes	Yes	2726	2777	0.969	Yes	Yes	3361	3329	0.554	Yes	Yes
1261	Validation	TPA Rail Central	Aug-75	A43, EB off slip from M1 J15a	EB	TRADS	507	546	1.684	Yes	Yes	400	441	2.023	Yes	Yes	496	618	5.151	No	No
1262	Validation	TPA Rail Central	8/30020422	M1 J15A SB access	SB	TRADS	785	734	1.835	Yes	Yes	515	483	1.439	Yes	Yes	743	706	1.365	Yes	Yes
1263	Validation	TPA Rail Central	8/30020394	M1 J15A NB exit	NB	TRADS	683	456	9.505	No	No	557	667	4.435	Yes	No	763	651	4.217	Yes	Yes
1264	Calibration	TPA Rail Central	8/30023183	M1 SB between J15A and J15	SB	TRADS	4189	4237	0.741	Yes	Yes	3265	3260	0.085	Yes	Yes	4136	4042	1.470	Yes	Yes
1265	Calibration	TPA Rail Central	8/30020420	M1 NB between J15 and J15A	NB	TRADS	3492	3293	3.412	Yes	Yes	3474	3572	1.653	Yes	Yes	4402	4117	4.365	Yes	Yes
1266	Calibration	TPA Rail Central	8/30020428	M1 J15 NB access	NB	TRADS	966	811	5.183	No	No	751	811	2.140	Yes	Yes	1197	1149	1.416	Yes	Yes
1267	Validation	TPA Rail Central	8/30020397	M1 J15 SB exit	SB	TRADS	1377	1651	7.040	No	No	750	689	2.242	Yes	Yes	1199	1066	3.937	Yes	Yes
1268	Validation	TPA Rail Central	8/30020424	M1 J15 SB access	SB	TRADS	924	1166	7.477	No	No	623	693	2.743	Yes	Yes	907	978	2.309	Yes	Yes
1269	Calibration	TPA Rail Central	8/30023627	M1 NB between J14 and J15	NB	TRADS	3361	3454	1.598	Yes	Yes	3364	3507	2.431	Yes	Yes	4184	4036	2.311	Yes	Yes
1270	Calibration	TPA Rail Central	8/30023597	M1 SB between J15 and J14	SB	TRADS	3900	3753	2.375	Yes	Yes	3141	3264	2.176	Yes	Yes	3836	3959	1.962	Yes	Yes
1271	Calibration	TRADS Data 2015	8/30015979	A45 WB within the A509 (S) junction	WB	TRADS	1668	1687	0.459	Yes	Yes	911	921	0.338	Yes	Yes	1402	1461	1.560	Yes	Yes
1272	Calibration	TRADS Data 2015	8/30015980	A45 EB exit for A509 (S)	EB	TRADS	677	727	1.892	Yes	Yes	512	521	0.431	Yes	Yes	701	662	1.510	Yes	Yes
1273	Calibration	TRADS Data 2015	8/30015981	A45 EB within the A509 (S) junction	EB	TRADS	1196	1117	2.316	Yes	Yes	920	940	0.653	Yes	Yes	1791	1675	2.786	Yes	Yes
1274	Validation	TRADS Data 2015	8/30015381	A14 WB between J1 and M1/M6	WB	TRADS	1417	1499	2.144	Yes	Yes	1382	1300	2.233	Yes	Yes	1463	1345	3.160	Yes	Yes
1275	Validation	TRADS Data 2015	8/30015382	A14 EB between M1/M6 and J1	EB	TRADS	1565	1389	4.592	Yes	Yes	1320	1192	3.606	Yes	Yes	1625	1500	3.157	Yes	Yes
1276	Calibration	TRADS Data 2015	8/30013616	A14 WB within J1	WB	TRADS	1358	1651	7.561	No	No	1311	1342	0.855	Yes	Yes	1464	1471	0.188	Yes	Yes
1277	Calibration	TRADS Data 2015	8/30013620	A14 EB within J1	EB	TRADS	1448	1442	0.147	Yes	Yes	1252	1272	0.565	Yes	Yes	1481	1508	0.700	Yes	Yes
1278	Validation	TRADS Data 2015	8/30015383	A14 EB between J1 and J2	EB	TRADS	1724	1693	0.740	Yes	Yes	1372	1387	0.402	Yes	Yes	1871	1864	0.160	Yes	Yes

							AM Peak ALL VEHICLES					Interpeak ALL VEHICLES					PM Peak ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
1279	Validation	TRADS Data 2015	9/30015384	A14 WB between J2 and J1	WB	TRADS	1754	1651	2.497	Yes	Yes	1440	1342	2.624	Yes	Yes	1704	1471	5.843	No	Yes
1280	Validation	TRADS Data 2015	9/30013625	A14 EB within J2	EB	TRADS	1610	1586	0.603	Yes	Yes	1306	1270	0.987	Yes	Yes	1693	1679	0.350	Yes	Yes
1281	Validation	TRADS Data 2015	9/30013626	A14 WB within J2	WB	TRADS	1594	1607	0.324	Yes	Yes	1342	1296	1.274	Yes	Yes	1524	1430	2.450	Yes	Yes
1282	Calibration	TRADS Data 2015	9/30015386	A14 WB between J3 and J2	WB	TRADS	1682	1784	2.447	Yes	Yes	1402	1349	1.437	Yes	Yes	1623	1621	0.044	Yes	Yes
1283	Calibration	TRADS Data 2015	9/30032477	A14 EB between J2 and J3	EB	TRADS	1730	1614	2.845	Yes	Yes	1374	1337	0.995	Yes	Yes	1764	1741	0.546	Yes	Yes
1284	Validation	TRADS Data 2015	9/30032514	A14 J3 EB exit	EB	TRADS	78	75	0.390	Yes	Yes	56	62	0.751	Yes	Yes	198	219	1.482	Yes	Yes
1285	Calibration	TRADS Data 2015	9/30013630	A14 EB between J3 and J4	EB	TRADS	2415	2281	2.757	Yes	Yes	1622	1626	0.094	Yes	Yes	2115	2182	1.436	Yes	Yes
1286	Calibration	TRADS Data 2015	9/30032472	A14 J3 WB exit	WB	TRADS	295	278	1.002	Yes	Yes	356	346	0.535	Yes	Yes	697	645	2.007	Yes	Yes
1287	Calibration	TRADS Data 2015	9/30032471	A14 WB between J4 and J3	WB	TRADS	2026	2085	1.292	Yes	Yes	1673	1621	1.270	Yes	Yes	2294	2224	1.466	Yes	Yes
1288	Calibration	TRADS Data 2015	9/30032469	A14 WB between J7 and J4	WB	TRADS	2305	2363	1.192	Yes	Yes	2014	1967	1.043	Yes	Yes	2947	2869	1.441	Yes	Yes
1289	Calibration	TRADS Data 2015	9/30032466	A14 EB between J4 and J7	EB	TRADS	2991	2990	0.016	Yes	Yes	1970	2080	2.433	Yes	Yes	2493	2602	2.156	Yes	Yes
1290	Calibration	TRADS Data 2015	9/30032515	A14 EB between J4 and J7	EB	TRADS	3008	2990	0.326	Yes	Yes	2009	2080	1.570	Yes	Yes	2543	2602	1.159	Yes	Yes
1291	Calibration	TRADS Data 2015	9/30032516	A14 J7 EB exit	EB	TRADS	1147	1033	3.462	Yes	Yes	665	664	0.040	Yes	Yes	817	819	0.054	Yes	Yes
1292	Calibration	TRADS Data 2015	9/30013629	A14 EB within J7	EB	TRADS	1813	1957	3.326	Yes	Yes	1370	1416	1.242	Yes	Yes	1675	1783	2.603	Yes	Yes
1293	Calibration	TRADS Data 2015	9/30032498	A14 WB between J10 and J9	WB	TRADS	2260	2421	3.327	Yes	Yes	1690	1870	4.272	Yes	Yes	2024	2296	5.844	No	Yes
1294	Calibration	TRADS Data 2015	9/30032497	A14 EB between J9 and J10	EB	TRADS	1913	2027	2.571	Yes	Yes	1680	1713	0.810	Yes	Yes	2484	2215	5.550	No	Yes
1295	Calibration	TRADS Data 2015	9/30032494	A14 J10 EB exit	EB	TRADS	760	828	2.430	Yes	Yes	628	625	0.133	Yes	Yes	1014	919	3.047	Yes	Yes
1296	Calibration	TRADS Data 2015	9/30032493	A14 EB within J10	EB	TRADS	1248	1198	1.415	Yes	Yes	1124	1089	1.061	Yes	Yes	1537	1296	6.410	No	No
1297	Calibration	TRADS Data 2015	9/30013614	A14 WB within J10	WB	TRADS	1352	1354	0.045	Yes	Yes	1135	1089	1.393	Yes	Yes	1282	1271	0.312	Yes	Yes
1298	Validation	TRADS Data 2015	9/30032518	A14 J10 WB exit	WB	TRADS	158	187	2.192	Yes	Yes	137	159	1.866	Yes	Yes	257	322	3.830	Yes	Yes
1299	Calibration	TRADS Data 2015	9/30032481	A14 EB between J10 and J11	EB	TRADS	1483	1575	2.349	Yes	Yes	1243	1361	3.290	Yes	Yes	1716	1740	0.587	Yes	Yes
1300	Calibration	TRADS Data 2015	9/30032482	A14 WB between J11 and J10	WB	TRADS	1484	1540	1.451	Yes	Yes	1255	1248	0.196	Yes	Yes	1519	1593	1.877	Yes	Yes
1301	Calibration	TRADS Data 2015	9/30013621	A14 WB between J12 and J11	WB	TRADS	1545	1518	0.678	Yes	Yes	1294	1277	0.486	Yes	Yes	1665	1632	0.801	Yes	Yes
1302	Calibration	TRADS Data 2015	9/30032510	A14 EB between J11 and J12	EB	TRADS	1597	1585	0.303	Yes	Yes	1259	1272	0.357	Yes	Yes	1660	1660	0.007	Yes	Yes
1303	Validation	TRADS Data 2015	9/30032509	A14 EB between J12 and J13	EB	TRADS	1665	1780	2.779	Yes	Yes	1295	1387	2.498	Yes	Yes	1702	1816	2.709	Yes	Yes
1304	Validation	TRADS Data 2015	9/30015394	A14 WB between J13 and J12	WB	TRADS	1605	1683	1.933	Yes	Yes	1343	1393	1.346	Yes	Yes	1756	1789	0.794	Yes	Yes
1305	Validation	TRADS Data 2015	9/30032519	A14 J13 EB exit	EB	TRADS	593	693	3.955	Yes	No	396	485	4.249	Yes	Yes	619	731	4.317	Yes	No
1306	Calibration	TRADS Data 2015	9/30013619	A14 EB within J13	EB	TRADS	1063	1087	0.733	Yes	Yes	888	902	0.462	Yes	Yes	1068	1084	0.502	Yes	Yes
1307	Calibration	TRADS Data 2015	9/30013624	A14 J13 WB exit	WB	TRADS	298	281	0.981	Yes	Yes	261	270	0.548	Yes	Yes	452	396	2.740	Yes	Yes
1308	Calibration	TRADS Data 2015	9/30013623	A14 WB within J13	WB	TRADS	1005	1096	2.802	Yes	Yes	934	961	0.852	Yes	Yes	1186	1196	0.282	Yes	Yes
1309	Calibration	TRADS Data 2015	9/30032504	A14 WB between J16 and J13	WB	TRADS	1307	1327	0.544	Yes	Yes	1204	1228	0.700	Yes	Yes	1640	1571	1.727	Yes	Yes
1310	Calibration	TRADS Data 2015	9/30032505	A14 WB between J16 and J13	WB	TRADS	1303	1327	0.655	Yes	Yes	1202	1231	0.842	Yes	Yes	1653	1571	2.048	Yes	Yes
1311	Calibration	TPA Rail Central	9/30015989	A45 EB exit for A43	EB	TRADS	1450	1418	0.845	Yes	Yes	1321	1313	0.216	Yes	Yes	2057	1947	2.452	Yes	Yes
1312	Calibration	TPA Rail Central	9/30015990	A45 EB within the A43 junction	EB	TRADS	1798	1705	2.216	Yes	Yes	1591	1628	0.921	Yes	Yes	3189	3028	2.882	Yes	Yes
1313	Calibration	TPA Rail Central	9/30015992	A45 WB between A428/A5095 and A508 (N)/A5076	WB	TRADS	3450	3186	4.583	Yes	Yes	1840	1874	0.780	Yes	Yes	2676	2769	1.781	Yes	Yes
1314	Calibration	TPA Rail Central	9/30015991	A45 WB exit for A428/A5095	WB	TRADS	1712	1699	0.320	Yes	Yes	843	847	0.138	Yes	Yes	802	785	0.604	Yes	Yes
1315	Calibration	TPA Rail Central	9/30015993	A45 EB exit for A428/A5095	EB	TRADS	1657	1546	2.768	Yes	Yes	903	921	0.602	Yes	Yes	1439	1252	5.111	No	Yes
1316	Calibration	TPA Rail Central	9/30015994	A45 EB within the A428/A5095 junction	EB	TRADS	2718	2549	3.299	Yes	Yes	2000	1976	0.539	Yes	Yes	3409	3171	4.155	Yes	Yes
1317	Calibration	TPA Rail Central	9/30013657	A43 SB between M1 and A5	SB	TRADS	1544	1650	2.660	Yes	Yes	937	923	0.469	Yes	Yes	1262	1283	0.585	Yes	Yes
1318	Calibration	TPA Rail Central	9/30013656	A43 NB between A5 and M1	NB	TRADS	1276	1525	6.653	No	No	1006	1108	3.162	Yes	Yes	1476	1556	2.055	Yes	Yes
1319	Calibration	TPA Rail Central	Aug-71	NB, A43, West of Towcester, S of A5, N of A413	NB	TRADS	1490	1317	4.624	Yes	Yes	1231	1479	6.733	No	No	1882	1520	8.777	No	No
1320	Calibration	TPA Rail Central	Aug-72	SB, A43, West of Towcester, S of A5, N of A413	SB	TRADS	1958	1629	7.764	No	No	1140	1131	0.267	Yes	Yes	1414	1224	5.227	No	Yes
1321	Calibration	TRADS Data 2015	9/30014846	A43 NB between B4525 and A413	NB	TRADS	1146	1104	1.257	Yes	Yes	1033	1021	0.400	Yes	Yes	1629	1518	2.804	Yes	Yes
1322	Calibration	TRADS Data 2015	9/30014847	A43 SB between A413 and B4525	SB	TRADS	1670	1496	4.362	Yes	Yes	946	904	1.387	Yes	Yes	1148	1150	0.047	Yes	Yes
1323	Calibration	TRADS Data 2015	9/30016038	A43 SB between A413 and B4525	SB	TRADS	1635	1663	0.690	Yes	Yes	975	1096	3.769	Yes	Yes	1402	1400	0.052	Yes	Yes
1324	Calibration	TRADS Data 2015	9/30013652	A43 NB between A422 near Brackley (E) and B4525	NB	TRADS	1134	964	5.236	No	Yes	963	957	0.182	Yes	Yes	1443	1509	1.725	Yes	Yes
1325	Calibration	TRADS Data 2015	9/30016036	A43 SB between B4525 and A422 near Brackley (E)	SB	TRADS	1504	1550	1.173	Yes	Yes	893	1008	3.729	Yes	Yes	1185	1318	3.759	Yes	Yes
1326	Calibration	TRADS Data 2015	9/30014845	A43 SB between A421 and B4100	SB	TRADS	1532	1478	1.395	Yes	Yes	962	962	0.014	Yes	Yes	1235	1117	3.453	Yes	Yes
1327	Calibration	TRADS Data 2015	9/30014844	A43 NB between B4100 and A421	NB	TRADS	1222	1092	3.817	Yes	Yes	1007	1013	0.207	Yes	Yes	1586	1578	0.198	Yes	Yes
1328	Calibration	TRADS Data 2015	9/30032521	A45 EB between B663 and A14	EB	TRADS	912	933	0.706	Yes	Yes	606	554	2.138	Yes	Yes	852	789	2.185	Yes	Yes
1329	Calibration	TRADS Data 2015	9/30013658	A45 EB between A6 and B663	EB	TRADS	909	933	0.781	Yes	Yes	716	657	2.259	Yes	Yes	1079	1046	1.008	Yes	Yes
1330	Calibration	TRADS Data 2015	9/30013659	A45 WB between B663 and A6	WB	TRADS	826	1027	6.594	No	No	694	743	1.831	Yes	Yes	990	1071	2.511	Yes	Yes
1331	Calibration	TRADS Data 2015	9/30016039	A45 EB between A5001 (W) and A6	EB	TRADS	1120	1121	0.019	Yes	Yes	1000	1040	1.259	Yes	Yes	1603	1647	1.099	Yes	Yes
1332	Calibration	TRADS Data 2015	9/30016040	A45 WB between A6 and A5001 (W)	WB	TRADS	1625	1695	1.712	Yes	Yes	974	990	0.526	Yes	Yes	1213	1364	4.211	Yes	Yes
1333	Calibration	TRADS Data 2015	9/30016041	A45 WB between A5001 (W) and A5001 (E)	WB	TRADS	1561	1705	3.575	Yes	Yes	916	824	3.110	Yes	Yes	1289	1364	2.073	Yes	Yes
1334	Calibration	TRADS Data 2015	9/30015976	A45 EB exit for A5001 (E)	EB	TRADS	526	596	2.974	Yes	Yes	492	457	1.625	Yes	Yes	832	847	0.525	Yes	Yes
1335	Calibration	TRADS Data 2015	9/30015977	A45 EB between A5001 (E) and A5001 (W)	EB	TRADS	1152	1155	0.086	Yes	Yes	927	933	0.205	Yes	Yes	1790	1665	3.017	Yes	Yes
1336	Calibration	TRADS Data 2015	9/30015978	A45 WB exit for A509 (S)	WB	TRADS	780	832	1.823	Yes	Yes	515	514	0.048	Yes	Yes	592	579	0.551	Yes	Yes
1337	Calibration	TRADS Data 2015	9/30015982	A5 WB between B573 near Little Irchester and A509 (N	WB	TRADS	2285	2281	0.090	Yes	Yes	1374	1482	2.871	Yes	Yes	2151	2154	0.065	Yes	Yes
1338	Calibration	TRADS Data 2015	9/30016082	A45 EB between B573 near Earls Barton and A509 (N)	EB	TRADS	1739	1541	4.889	Yes	Yes	1398	1380	0.462	Yes	Yes	2482	2410	1.457	Yes	Yes
1339	Calibration	TRADS Data 2015	9/30016068	A45 WB within the B573 near Earls Barton junction	WB	TRADS	2279	2132	3.123	Yes	Yes	1309	1442	3.573	Yes	Yes	1893	2045	3.416	Yes	Yes
1340	Validation	TRADS Data 2015	9/30016067	A45 WB exit for B573 near Earls Barton	WB	TRADS	85	125	3.889	Yes	Yes	74	118	4.488	Yes	Yes	104	156	4.558	Yes	Yes
1341	Validation	TRADS Data 2015	9/30016069	A45 EB exit for B573 near Earls Barton	EB	TRADS	149	195	3.477	Yes	Yes	98	91	0.701	Yes	Yes	328	387	3.130	Yes	Yes
1342	Calibration	TRADS Data 2015	9/30016070	A45 EB within the B573 near Earls Barton junction	EB	TRADS	1652	1607	1.103	Yes	Yes	1346	1366	0.526	Yes	Yes	2439	2691	4.971	Yes	Yes
1343	Calibration	TRADS Data 2015	9/30016072	5 WB at a minor junction between B573 near Earls Bar	WB	TRADS	2546	2584	0.755	Yes	Yes	1351	1386	0.957	Yes	Yes	1958	1990	0.712	Yes	Yes
1344	Validation	TRADS Data 2015	9/30016071	WB exit at a minor junction between B573 near Earls Ba	WB	TRADS	91	80	1.236	Yes	Yes	46	51	0.776	Yes	Yes	54	73	2.396	Yes	Yes
1345	Calibration	TRADS Data 2015	9/30016074	EB at a minor junction between A5076 near Northampto	EB	TRADS	1721	1691	0.731	Yes	Yes	1381	1496	3.033	Yes	Yes	2686	2972	5.379	No	Yes
1346	Calibration	TRADS Data 2015	9/30016073	exit at a minor junction between A5076 near Northamp	EB	TRADS	202	171	2.241	Yes	Yes	211	206	0.306	Yes	Yes	444	444	0.006	Yes	Yes
1347	Calibration	TRADS Data 2015	9/30015984	A45 WB within the A5076 near Northampton (E) junctior	WB	TRADS	2741	2290	8.982	No	No	1295	1111	5.300	No	Yes	1825	1739	2.040	Yes	Yes
1348	Validation	TRADS Data 2015	9/30015983	A45 WB exit for A5076 near Northampton (E)	WB	TRADS	318	294	1.385	Yes	Yes	226	275	3.092	Yes	Yes	352	251	5.830	No	No
1349	Validation	TRADS Data 2015	9/30015985	A45 EB exit for A5076 near Northampton (E)	EB	TRADS	653	693	1.524	Yes	Yes	697	641	2.142	Yes	Yes	1020	1013	0.223	Yes	Yes
1350	Validation	TRADS Data 2015	9/30015986	A45 EB within the A5076 near Northampton (E) junction	EB	TRADS	1600	1473	3.228	Yes	Yes	1370	1243	3.497	Yes	Yes	2757	2415	6.730	No	Yes
1351	Calibration	TPA Rail Central	9/30015988	A45 WB within the A43 junction	WB	TRADS	3289	3076	3.770	Yes	Yes	1414	1435	0.563	Yes	Yes	1786	1753	0.790	Yes	Yes
1352	Calibration	TPA Rail Central	9/30015987	A45 WB exit for A43	WB	TRADS	694	569	4.978	Yes	No	511	463	2.161	Yes	Yes	738	726	0.437	Yes	Yes
1353	Calibration	TPA Rail Central	9/30020396	M1 J15 NB exit	NB	TRADS	932	973	1.318	Yes	Yes	728	745	0.649	Yes	Yes	1192	1070	3.632	Yes	Yes
1587	Calibration	NCC Data 2015	A_02	Preston Deanery Road (N) to The Crescent (S)	SB (A - B)	ATC	262	367	5.891	No	No	131	155	2.045	Yes	Yes	269	292	1.351	Yes	Yes
1588	Calibration	NCC Data 2015	A_02	Preston Deanery Road (N) to The Crescent (S)	NB (B - A)	ATC	285	269	0.956	Yes	Yes	126	112	1.283	Yes	Yes	228	230	0.077	Yes	Yes
1589	Calibration	TPA Rail Central	A_04	Herbert Gardens (S) to A43 (N)	SB (B - A)	ATC	266	256	0.656	Yes	Yes	96	105	0.870	Yes	Yes	205	184	1.499	Yes	Yes
1590	Calibration	TPA Rail Central	A_04	Herbert Gardens (S) to A43 (N)	NB (A - B)	ATC	115	201	6.819	No	Yes	44	74	3.918	Yes	Yes	126	169	3.593	Yes	Yes
1591	Calibration	NCC Data 2015	A_05	Purse Lane (S) to Hatch Lane (N)	SB (B - A)	ATC	462	441	0.984	Yes	Yes	90	114	2.324	Yes	Yes	205	196	0.652	Yes	Yes
1592	Calibration	NCC Data 2015	A_05	Purse Lane (S) to Hatch Lane (N)	NB (A - B)	ATC	219	246	1.763	Yes	Yes	104	116	1.118	Yes	Yes	518	594	3.211	Yes	Yes
1593	Calibration	NCC Data 2015	A_07	West Haddon Road (S) to Northampton Road (N)	SB (B - A)	ATC	383	307	4.130	Yes	Yes	152	117	3.009	Yes	Yes	331	369	2.028	Yes	Yes
1594	Calibration	NCC Data 2015	A_07	West Haddon Road (S) to Northampton Road (N)	NB (A - B)	ATC	296	209	5.469	No	Yes	147	210	4.666	Yes	Yes	346	467	5.981	No	No
1595	Calibration	NCC Data 2015	A_08	Grooms Lane (S) to Teeton Lane (N)	SB (B - A)	ATC	484	362	5.904	No	No	151	128	1.947	Yes	Yes	214	185	2.049	Yes	Yes
1596	Calibration	NCC Data 2015	A_08	Grooms Lane (S) to Teeton Lane (N)	NB (A - B)	ATC	265	251	0.851	Yes	Yes	180	144	2.823	Yes	Yes	406	397	0.438	Yes	Yes
1597	Calibration	NCC Data 2015	A_09	Church Street (S) to Brixworth Road (N)	SB (B - A)	ATC	102	92	0.991	Yes	Yes	60	64	0.531	Yes	Yes	105	93	1.231	Yes	Yes
1598	Calibration	NCC Data 2015	A_09	Church Street (S) to Brixworth Road (N)	NB (A - B)	ATC	120	121	0.087	Yes	Yes	58	51	0.931	Yes	Yes	108	145	3.295	Yes	Yes
1599	Calibration	NCC Data 2015	A_10_B	Kilsby Road (S) to Foxhill Road (N)	SB (B - A)	ATC	231	232	0.025	Yes	Yes	79	83	0.421	Yes	Yes	123	101	2.157	Yes	Yes
1600	Calibration	NCC Data 2015	A_10_B	Kilsby Road (S) to Foxhill Road (N)	NB (A - B)	ATC	154	167	1.007	Yes	Yes	81	104	2.401	Yes	Yes	206	220	0.980	Yes	Yes
1601	Calibration	NCC Data 2015	A_11	Princewood Road (W) to A6116 Phoenix Parkway (E)	EB (A - B)	ATC	673	690	0.658	Yes	Yes	447	491	2.039	Yes	Yes	502	538	1.598	Yes	Yes
1602	Calibration	NCC Data 2015	A_11	Princewood Road (W) to A6116 Phoenix Parkway (E)	WB (B - A)	ATC	581	580	0.045	Yes	Yes	556	564	0.347	Yes	Yes	772	865	3.242	Yes	Yes
1603	Calibration	NCC Data 2015	A_12	Phoenix Parkway (W) to Corby Road (E)	EB (A - B)	ATC	73	80	0.749	Yes	Yes	86	62	2.784	Yes	Yes	168	108	5.074	No	Yes
1604	Calibration	NCC Data 2015	A_12	Phoenix Parkway (W) to Corby Road (E)	WB (B - A)	ATC	130	80	4.894	Yes	Yes	73	115	4.305	Yes	Yes	75	94	2.037	Yes	Yes
1605	Calibration	NCC Data 2015	A_13	Arkwright Road (W) to Curver Way (E)	EB (A - B)	ATC	635	554	3.334	Yes	Yes	350	265	4.815	Yes	Yes	461	249	11.252	No	No
1606	Calibration	NCC Data 2015	A_13	Arkwright Road (W) to Curver Way (E)	WB (B - A)	ATC	470	395	3.615	Yes	Yes	404	346	2.965	Yes	Yes	569	758	7.358	No	No
1607	Calibration	NCC Data 2015	A_14	Newton Road (S) to Mill Hill (N)	SB (B - A)	ATC	50	17	5.761	No	Yes	22	6	4.177	Yes	Yes	23	7	3.973	Yes	Yes
1608	Calibration	NCC Data 2015	A_14	Newton Road (S) to Mill Hill (N)	NB (A - B)	ATC	30	87	7.475	No	Yes	27	17	2.049	Yes	Yes	49	48	0.021	Yes	Yes
1609	Calibration	NCC Data 2015	A_16	Kettering Road (SW) to Orion Way (NE)	SWB (B - A)	ATC	114	213	7.750	No	Yes	84	74	1.073	Yes	Yes	138	155	1.432	Yes	Yes
1610	Calibration	NCC Data 2015	A_16	Kettering Road (SW) to Orion Way (NE)	NEB (A - B)	ATC	141	106	3.124	Yes	Yes	84	72	1.335	Yes	Yes	145	189	3.420	Yes	Yes
1611	Calibration	NCC Data 2015	A_17	Cransley Road (W) to Church Way (E)	EB (A - B)	ATC	94	142	4.345	Yes	Yes	43	30	2.049	Yes	Yes	43	42	0.160	Yes	Yes
1612	Calibration	NCC Data 2015	A_17	Cransley Road (W) to Church Way (E)	WB (B - A)	ATC	67	63	0.495	Yes	Yes	47	51	0.693	Yes	Yes	69	124	5.532	No	Yes
1613	Calibration	NCC Data 2015	A_18	Loddington Road (S) to Eagle Lane (N)	SB (B - A)	ATC	3	9	2.387	Yes	Yes	0	1	0.579	Yes	Yes	1	3	1.832	Yes	Yes
1614	Calibration	NCC Data 2015	A_18	Loddington Road (S) to Eagle Lane (N)	NB (A - B)	ATC	9	7	0.671	Yes	Yes	3	9	2.503	Yes	Yes	3	9	2.478	Yes	Yes
1617	Calibration	NCC Data 2015	A_20	Hermitage Road (W) to Stoke Hill (E)	EB (A - B)	ATC	489	455	1.549	Yes	Yes	248	220	1.836	Yes	Yes	481	330	7.520	No	No
1618	Calibration	NCC Data 2015	A_20	Hermitage Road (W) to Stoke Hill (E)	WB (B - A)	ATC	421	459	1.818	Yes	Yes	255	247	0.520	Yes	Yes	452	553	4.490	Yes	No
1619	Calibration	NCC Data 2015	A_21	Swift Close (S) to Oakley Road (N)	SB (B - A)	ATC	135	81	5.162	No	Yes	62	64	0.288	Yes	Yes	106	120	1.371	Yes	Yes
1620	Calibration	NCC Data 2015	A_21	Swift Close (S) to Oakley Road (N)	NB (A - B)	ATC	86	118	3.116	Yes	Yes	65	55	1.303	Yes	Yes	143	110	2.913	Yes	Yes
1621	Calibration	NCC Data 2015	A_22	B669 Stoke Road (S) to Harborough Road (N)	SB (B - A)	ATC	83	106	2.385	Yes	Yes	46	54	1.141	Yes	Yes	71	60	1.442	Yes	Yes
1622	Calibration	NCC Data 2015	A_22	B669 Stoke Road (S) to Harborough Road (N)	NB (A - B)	ATC	84	92	0.796	Yes	Yes	48	43	0.679	Yes	Yes	74	75	0.126	Yes	Yes
1623	Calibration	NCC Data 2015	A_23	Rushton Road (W) to High Street (E)	EB (A - B)	ATC	80	104	2.556	Yes	Yes	80	120	3.990	Yes	Yes	155	152	0.236	Yes	Yes
1624	Calibration	NCC Data 2015	A_23	Rushton Road (W) to High Street (E)	WB (B - A)	ATC	161	181	1.551	Yes	Yes	72	70	0.222	Yes	Yes	85	39	5.741	No	Yes
1625	Calibration	NCC Data 2015	A_24	Shotwell Mill Lane (W) to Desborough Road (E)	EB (A - B)	ATC	104	74	3.137	Yes	Yes	66	47	2.585	Yes	Yes	138	108	2.733	Yes	Yes
1626	Calibration	NCC Data 2015	A_24	Shotwell Mill Lane (W) to Desborough Road (E)	WB (B - A)	ATC	138	104	3.055	Yes	Yes	64	62	0.260	Yes	Yes	107	69	4.082	Yes	Yes
1627	Calibration	NCC Data 2015	A_25	Violet Lane (E) to Dempsey Drive (W)	EB (B - A)	ATC	167	203	2.628	Yes	Yes	75	83	0.905	Yes	Yes	92	83	0.950	Yes	Yes

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
1628	Calibration	NCC Data 2015	A_25	Violet Lane (E) to Dempsey Drive (W)	WB (A - B)	ATC	79	87	0.835	Yes	Yes	89	123	3.300	Yes	Yes	170	210	2.886	Yes	Yes
1629	Calibration	NCC Data 2015	A_26	High Street (N) to Top End (S)	SB (A - B)	ATC	177	147	2.356	Yes	Yes	71	55	1.996	Yes	Yes	107	92	1.505	Yes	Yes
1630	Calibration	NCC Data 2015	A_26	High Street (N) to Top End (S)	NB (B - A)	ATC	114	103	1.116	Yes	Yes	69	44	3.358	Yes	Yes	138	143	0.444	Yes	Yes
1631	Calibration	NCC Data 2015	A_27	Midland Road (S) to Mickle Hill (N)	SB (B - A)	ATC	19	8	2.809	Yes	Yes	19	6	3.604	Yes	Yes	45	121	8.329	No	Yes
1632	Calibration	NCC Data 2015	A_27	Midland Road (S) to Mickle Hill (N)	NB (A - B)	ATC	35	3	7.273	No	Yes	15	3	4.129	Yes	Yes	22	3	5.371	No	Yes
1633	Calibration	NCC Data 2015	A_28	Midland Road (S) to A45 (N)	SB (B - A)	ATC	8	3	2.064	Yes	Yes	8	3	2.051	Yes	Yes	11	3	3.231	Yes	Yes
1634	Calibration	NCC Data 2015	A_28	Midland Road (S) to A45 (N)	NB (A - B)	ATC	10	3	2.941	Yes	Yes	8	1	3.455	Yes	Yes	12	12	0.150	Yes	Yes
1635	Validation	NCC Data 2015	A_29	Church Street (N) to A45 (S)	SB (A - B)	ATC	262	248	0.916	Yes	Yes	175	125	4.060	Yes	Yes	322	317	0.299	Yes	Yes
1636	Validation	NCC Data 2015	A_29	Church Street (N) to A45 (S)	NB (B - A)	ATC	280	257	1.376	Yes	Yes	180	125	4.452	Yes	Yes	268	247	1.294	Yes	Yes
1637	Calibration	NCC Data 2015	A_31	A605 (E) to Causin Way (W)	WB (A - B)	ATC	77	73	0.444	Yes	Yes	37	44	1.104	Yes	Yes	70	100	3.233	Yes	Yes
1638	Calibration	NCC Data 2015	A_31	A605 (E) to Causin Way (W)	EB (B - A)	ATC	90	86	0.448	Yes	Yes	37	59	3.266	Yes	Yes	68	55	1.640	Yes	Yes
1639	Calibration	NCC Data 2015	A_32	A6116 (W) to Benefield Road (E)	EB (A - B)	ATC	24	13	2.398	Yes	Yes	19	0	6.161	No	Yes	24	0	6.918	No	Yes
1640	Calibration	NCC Data 2015	A_32	A6116 (W) to Benefield Road (E)	WB (B - A)	ATC	32	0	7.975	No	Yes	17	0	5.894	No	Yes	29	0	7.653	No	Yes
1641	Calibration	NCC Data 2015	A_33	Causin Way (NW) to Harley Way (SE)	SEB (A - B)	ATC	94	77	1.866	Yes	Yes	70	57	1.717	Yes	Yes	133	116	1.481	Yes	Yes
1642	Calibration	NCC Data 2015	A_33	Causin Way (NW) to Harley Way (SE)	NWB (B - A)	ATC	143	231	6.456	No	Yes	69	74	0.621	Yes	Yes	89	118	2.832	Yes	Yes
1643	Calibration	NCC Data 2015	A_34	Hatchdoyle Lane (S) to Warren Bridge (N)	SB (B - A)	ATC	55	27	4.372	Yes	Yes	39	38	0.173	Yes	Yes	70	49	2.702	Yes	Yes
1644	Calibration	NCC Data 2015	A_34	Hatchdoyle Lane (S) to Warren Bridge (N)	NB (A - B)	ATC	93	73	2.142	Yes	Yes	38	47	1.334	Yes	Yes	46	36	1.630	Yes	Yes
1645	Calibration	NCC Data 2015	A_39	High Street (S) to Deene Road (N)	SB (B - A)	ATC	29	33	0.695	Yes	Yes	23	45	3.721	Yes	Yes	31	37	1.056	Yes	Yes
1646	Calibration	NCC Data 2015	A_39	High Street (S) to Deene Road (N)	NB (A - B)	ATC	26	34	1.544	Yes	Yes	22	5	4.585	Yes	Yes	28	63	5.168	No	Yes
1647	Validation	NCC Data 2015	A_40	Wood Street (S) to Cemetary Lane (N)	SB (B - A)	ATC	516	476	1.773	Yes	Yes	396	388	0.387	Yes	Yes	482	390	4.381	Yes	Yes
1648	Validation	NCC Data 2015	A_40	Wood Street (S) to Cemetary Lane (N)	NB (A - B)	ATC	400	331	3.607	Yes	Yes	436	422	0.639	Yes	Yes	659	744	3.220	Yes	Yes
1649	Calibration	NCC Data 2015	A_41	Boundary Avenue (N) to Arkwright Road (S)	SB (A - B)	ATC	396	451	2.652	Yes	Yes	197	191	0.398	Yes	Yes	243	211	2.156	Yes	Yes
1650	Calibration	NCC Data 2015	A_41	Boundary Avenue (N) to Arkwright Road (S)	NB (B - A)	ATC	285	309	1.364	Yes	Yes	256	265	0.567	Yes	Yes	537	436	4.581	Yes	No
1651	Calibration	NCC Data 2015	A_43	Manor Lane (S) to Oxford Street (N)	SB (B - A)	ATC	75	107	3.361	Yes	Yes	78	104	2.690	Yes	Yes	129	100	2.645	Yes	Yes
1652	Calibration	NCC Data 2015	A_43	Manor Lane (S) to Oxford Street (N)	NB (A - B)	ATC	133	135	0.240	Yes	Yes	72	73	0.082	Yes	Yes	84	76	0.873	Yes	Yes
1653	Calibration	NCC Data 2015	A_44	Wymington Lane (S) to Bedford Road (N)	SB (B - A)	ATC	1069	1182	3.361	Yes	Yes	409	401	0.401	Yes	Yes	471	495	1.103	Yes	Yes
1654	Calibration	NCC Data 2015	A_44	Wymington Lane (S) to Bedford Road (N)	NB (A - B)	ATC	469	502	1.487	Yes	Yes	446	431	0.695	Yes	Yes	1094	1224	3.831	Yes	Yes
1655	Calibration	NCC Data 2015	A_45	Avenue Road (S) to A6 (N)	SB (B - A)	ATC	88	96	0.805	Yes	Yes	62	62	0.008	Yes	Yes	78	88	1.087	Yes	Yes
1656	Calibration	NCC Data 2015	A_45	Avenue Road (S) to A6 (N)	NB (A - B)	ATC	87	53	4.091	Yes	Yes	57	43	2.011	Yes	Yes	83	35	6.188	No	Yes
1657	Calibration	NCC Data 2015	A_46_A	Newton Road (W) to Bidwell Lane (E)	EB (A - B)	ATC	369	286	4.582	Yes	Yes	200	204	0.319	Yes	Yes	430	407	1.107	Yes	Yes
1658	Calibration	NCC Data 2015	A_46_A	Newton Road (W) to Bidwell Lane (E)	WB (B - A)	ATC	408	394	0.709	Yes	Yes	195	184	0.752	Yes	Yes	317	339	1.206	Yes	Yes
1659	Calibration	NCC Data 2015	A_47	A6 (S) to High Street (N)	SB (B - A)	ATC	73	49	3.128	Yes	Yes	14	10	1.071	Yes	Yes	16	14	0.527	Yes	Yes
1660	Calibration	NCC Data 2015	A_47	A6 (S) to High Street (N)	NB (A - B)	ATC	5	15	3.290	Yes	Yes	6	11	1.916	Yes	Yes	10	17	1.995	Yes	Yes
1661	Calibration	NCC Data 2015	A_49_A	The Leys (S) to A509 (N)	SB (B - A)	ATC	73	106	3.494	Yes	Yes	40	44	0.668	Yes	Yes	41	37	0.561	Yes	Yes
1662	Calibration	NCC Data 2015	A_49_A	The Leys (S) to A509 (N)	NB (A - B)	ATC	73	41	4.293	Yes	Yes	45	50	0.787	Yes	Yes	83	72	1.205	Yes	Yes
1663	Calibration	NCC Data 2015	A_50_A	Finedon Station (S) to Orlingbury Road (N)	SB (B - A)	ATC	867	1040	5.580	No	No	616	678	2.419	Yes	Yes	808	926	4.004	Yes	Yes
1664	Calibration	NCC Data 2015	A_50_A	Finedon Station (S) to Orlingbury Road (N)	NB (A - B)	ATC	1025	1005	0.622	Yes	Yes	660	625	1.381	Yes	Yes	1092	1078	0.424	Yes	Yes
1665	Calibration	NCC Data 2015	A_51	Station Road (S) to Riverview (N)	SB (B - A)	ATC	482	421	2.865	Yes	Yes	150	170	1.652	Yes	Yes	184	183	0.063	Yes	Yes
1666	Calibration	NCC Data 2015	A_51	Station Road (S) to Riverview (N)	NB (A - B)	ATC	152	158	0.483	Yes	Yes	152	185	2.552	Yes	Yes	457	395	2.987	Yes	Yes
1667	Calibration	NCC Data 2015	A_52	Eastlands Road (S) to Wold Road (N)	SB (B - A)	ATC	263	363	5.622	No	Yes	121	145	2.063	Yes	Yes	210	212	0.156	Yes	Yes
1668	Calibration	NCC Data 2015	A_52	Eastlands Road (S) to Wold Road (N)	NB (A - B)	ATC	184	224	2.777	Yes	Yes	115	136	1.889	Yes	Yes	225	252	1.779	Yes	Yes
1669	Calibration	NCC Data 2015	A_53	Westfields (W) to Niort Way (E)	EB (A - B)	ATC	46	145	10.150	No	Yes	15	11	1.253	Yes	Yes	22	72	7.297	No	Yes
1670	Calibration	NCC Data 2015	A_53	Westfields (W) to Niort Way (E)	WB (B - A)	ATC	10	77	10.106	No	Yes	10	13	1.060	Yes	Yes	25	127	11.748	No	No
1671	Calibration	NCC Data 2015	A_54	A43 (W) to Harwich Road (E)	EB (A - B)	ATC	15	4	3.638	Yes	Yes	8	1	3.618	Yes	Yes	8	3	2.001	Yes	Yes
1672	Calibration	NCC Data 2015	A_54	A43 (W) to Harwich Road (E)	WB (B - A)	ATC	5	3	0.892	Yes	Yes	7	1	3.004	Yes	Yes	10	1	3.729	Yes	Yes
1673	Calibration	NCC Data 2015	A_55	Highfield Road (W) to Sywell Road (E)	EB (A - B)	ATC	249	200	3.230	Yes	Yes	176	162	1.142	Yes	Yes	517	402	5.334	No	No
1674	Calibration	NCC Data 2015	A_55	Highfield Road (W) to Sywell Road (E)	WB (B - A)	ATC	667	650	0.694	Yes	Yes	158	145	1.089	Yes	Yes	300	291	0.546	Yes	Yes
1675	Calibration	NCC Data 2015	A_56	Duchess End (W) to Mears Ashby Road (E)	EB (A - B)	ATC	86	126	3.845	Yes	Yes	52	59	0.973	Yes	Yes	117	102	1.508	Yes	Yes
1676	Calibration	NCC Data 2015	A_56	Duchess End (W) to Mears Ashby Road (E)	WB (B - A)	ATC	144	198	4.153	Yes	Yes	48	53	0.612	Yes	Yes	92	138	4.312	Yes	Yes
1677	Calibration	NCC Data 2015	A_57	A4500 (S) to Washbrook Lane (N)	SB (B - A)	ATC	230	194	2.521	Yes	Yes	92	66	2.874	Yes	Yes	187	194	0.512	Yes	Yes
1678	Calibration	NCC Data 2015	A_57	A4500 (S) to Washbrook Lane (N)	NB (A - B)	ATC	158	123	2.923	Yes	Yes	94	75	2.114	Yes	Yes	200	205	0.382	Yes	Yes
1679	Calibration	NCC Data 2015	A_58	Wellingborough Road (W) to Mears Ashby Road (E)	EB (A - B)	ATC	418	356	3.113	Yes	Yes	294	245	2.963	Yes	Yes	590	392	8.951	No	No
1680	Calibration	NCC Data 2015	A_58	Wellingborough Road (W) to Mears Ashby Road (E)	WB (B - A)	ATC	693	617	2.986	Yes	Yes	269	219	3.159	Yes	Yes	439	357	4.096	Yes	Yes
1681	Calibration	NCC Data 2015	A_59	A45 (N) to Whiston Road (S)	SB (A - B)	ATC	219	185	2.442	Yes	Yes	73	52	2.612	Yes	Yes	129	97	2.989	Yes	Yes
1682	Calibration	NCC Data 2015	A_59	A45 (N) to Whiston Road (S)	NB (B - A)	ATC	125	123	0.156	Yes	Yes	68	56	1.556	Yes	Yes	163	85	6.974	No	Yes
1683	Calibration	NCC Data 2015	A_60	Napier Close (W) to A509 Park Farm Way (E)	EB (A - B)	ATC	184	187	0.195	Yes	Yes	232	228	0.205	Yes	Yes	499	579	3.463	Yes	Yes
1684	Calibration	NCC Data 2015	A_60	Napier Close (W) to A509 Park Farm Way (E)	WB (B - A)	ATC	616	581	1.444	Yes	Yes	212	210	0.126	Yes	Yes	145	209	4.880	Yes	Yes
1685	Validation	NCC Data 2015	A_61	Enstone CT (N) to Higham Road (S)	SB (A - B)	ATC	358	436	3.897	Yes	Yes	189	173	1.135	Yes	Yes	257	176	5.506	No	Yes
1686	Validation	NCC Data 2015	A_61	Enstone CT (N) to Higham Road (S)	NB (B - A)	ATC	170	124	3.773	Yes	Yes	167	132	2.853	Yes	Yes	290	303	0.774	Yes	Yes
1687	Calibration	NCC Data 2015	A_62	Edmonds Close (N) to Turnells Mill (S)	SB (A - B)	ATC	155	210	4.072	Yes	Yes	145	172	2.155	Yes	Yes	351	346	0.306	Yes	Yes
1688	Calibration	NCC Data 2015	A_62	Edmonds Close (N) to Turnells Mill (S)	NB (B - A)	ATC	260	245	0.917	Yes	Yes	92	120	2.668	Yes	Yes	65	118	5.512	No	Yes
1689	Calibration	NCC Data 2015	A_63_S	Cotswold Drive (N) to A45 (S)	SB (A - B)	ATC	1283	1084	5.759	No	No	805	732	2.635	Yes	Yes	1251	1198	1.524	Yes	Yes
1690	Calibration	NCC Data 2015	A_64	Turnells Mill Lane (S) to Denington Road (N)	SB (B - A)	ATC	426	597	7.578	No	No	464	427	1.778	Yes	Yes	518	677	6.500	No	No
1691	Calibration	NCC Data 2015	A_64	Turnells Mill Lane (S) to Denington Road (N)	NB (A - B)	ATC	531	573	1.782	Yes	Yes	530	513	0.740	Yes	Yes	527	549	0.963	Yes	Yes
1692	Calibration	NCC Data 2015	A_65	Deer Park Road (N) to Brickyard Spinney Road (S)	SB (A - B)	ATC	717	688	1.097	Yes	Yes	274	271	0.178	Yes	Yes	230	244	0.934	Yes	Yes
1693	Calibration	NCC Data 2015	A_65	Deer Park Road (N) to Brickyard Spinney Road (S)	NB (B - A)	ATC	1659	1572	2.156	Yes	Yes	585	556	1.231	Yes	Yes	663	580	3.346	Yes	Yes
1694	Calibration	NCC Data 2015	A_66	Overstone Lane (W) to Woodland Avenue (E)	EB (A - B)	ATC	215	223	0.545	Yes	Yes	164	104	5.183	No	Yes	401	313	4.636	Yes	Yes
1695	Calibration	NCC Data 2015	A_66	Overstone Lane (W) to Woodland Avenue (E)	WB (B - A)	ATC	676	702	0.971	Yes	Yes	168	144	1.865	Yes	Yes	257	236	1.309	Yes	Yes
1696	Calibration	NCC Data 2015	A_67	Northampton Road (E) to Golf Lane (W)	EB (B - A)	ATC	404	417	0.678	Yes	Yes	176	202	1.881	Yes	Yes	366	419	2.661	Yes	Yes
1697	Calibration	NCC Data 2015	A_67	Northampton Road (E) to Golf Lane (W)	WB (A - B)	ATC	305	282	1.303	Yes	Yes	179	261	5.538	No	Yes	348	403	2.881	Yes	Yes
1698	Calibration	NCC Data 2015	A_68	Main Road (S) to St James Mill Road E (N)	SB (B - A)	ATC	664	693	1.115	Yes	Yes	797	906	3.762	Yes	Yes	1034	1107	2.221	Yes	Yes
1699	Calibration	NCC Data 2015	A_68	Main Road (S) to St James Mill Road E (N)	NB (A - B)	ATC	891	765	4.382	Yes	Yes	723	809	3.094	Yes	Yes	828	983	5.159	No	No
1700	Calibration	NCC Data 2015	A_69	Ransome Road (S) to Old Towcester Road (N)	SB (B - A)	ATC	578	649	2.871	Yes	Yes	567	437	5.811	No	No	712	698	0.504	Yes	Yes
1701	Calibration	NCC Data 2015	A_69	Ransome Road (S) to Old Towcester Road (N)	NB (A - B)	ATC	867	919	1.730	Yes	Yes	571	514	2.449	Yes	Yes	767	682	3.175	Yes	Yes
1702	Calibration	NCC Data 2015	A_70	Cliftonville Road (W) to Lower Thrift Street (E)	EB (A - B)	ATC	283	351	3.797	Yes	Yes	340	270	4.004	Yes	Yes	559	545	0.593	Yes	Yes
1703	Calibration	NCC Data 2015	A_70	Cliftonville Road (W) to Lower Thrift Street (E)	WB (B - A)	ATC	536	687	6.110	No	No	315	295	1.179	Yes	Yes	292	379	4.781	Yes	Yes
1704	Calibration	NCC Data 2015	A_71	Spencer Road (S) - Clare Street (N)	SB (B - A)	ATC	659	713	2.056	Yes	Yes	438	369	3.431	Yes	Yes	438	365	3.658	Yes	Yes
1705	Calibration	NCC Data 2015	A_71	Spencer Road (S) - Clare Street (N)	NB (A - B)	ATC	342	288	3.069	Yes	Yes	449	355	4.689	Yes	Yes	666	495	7.109	No	No
1706	Calibration	NCC Data 2015	A_75	Brook Street (S) to Uppingham Street (N)	SB (B - A)	ATC	509	525	0.715	Yes	Yes	381	415	1.694	Yes	Yes	459	468	0.408	Yes	Yes
1707	Calibration	NCC Data 2015	A_75	Brook Street (S) to Uppingham Street (N)	NB (A - B)	ATC	396	387	0.487	Yes	Yes	322	312	0.544	Yes	Yes	500	648	6.155	No	No
1708	Calibration	NCC Data 2015	A_76	Gladstone Road (W) to A509 St Andrews Road (E)	EB (A - B)	ATC	1289	1308	0.522	Yes	Yes	898	912	0.490	Yes	Yes	1090	1238	4.325	Yes	Yes
1709	Calibration	NCC Data 2015	A_76	Gladstone Road (W) to A509 St Andrews Road (E)	WB (B - A)	ATC	920	828	3.099	Yes	Yes	916	909	0.258	Yes	Yes	1182	1255	2.072	Yes	Yes
1710	Calibration	NCC Data 2015	A_77	St James' Hill Road (W) to Mare Fair (E)	EB (A - B)	ATC	992	840	5.000	No	No	710	688	0.824	Yes	Yes	767	548	8.536	No	No
1711	Calibration	NCC Data 2015	A_77	St James' Hill Road (W) to Mare Fair (E)	WB (B - A)	ATC	735	688	1.772	Yes	Yes	869	907	1.299	Yes	Yes	1056	766	9.588	No	No
1712	Validation	TPA Rail Central	A_79	Banbury Lane (W) to A5123 (E)	EB (A - B)	ATC	570	531	1.663	Yes	Yes	352	402	2.563	Yes	Yes	461	428	1.542	Yes	Yes
1713	Validation	TPA Rail Central	A_79	Banbury Lane (W) to A5123 (E)	WB (B - A)	ATC	494	369	5.983	No	No	361	358	0.130	Yes	Yes	660	624	1.403	Yes	Yes
1714	Calibration	TPA Rail Central	A_80	Saxon Avenue (E) to A45 London Road (W)	EB (B - A)	ATC	429	488	2.750	Yes	Yes	212	220	0.580	Yes	Yes	456	371	4.180	Yes	Yes
1715	Calibration	TPA Rail Central	A_80	Saxon Avenue (E) to A45 London Road (W)	WB (A - B)	ATC	632	612	0.811	Yes	Yes	240	180	4.129	Yes	Yes	466	294	8.799	No	No
1716	Calibration	NCC Data 2015	A_81	Daventry Road (N) to Marston Way (S)	SB (A - B)	ATC	255	158	6.686	No	Yes	117	81	3.642	Yes	Yes	166	118	4.012	Yes	Yes
1717	Calibration	NCC Data 2015	A_81	Daventry Road (N) to Marston Way (S)	NB (B - A)	ATC	184	157	2.058	Yes	Yes	112	88	2.421	Yes	Yes	227	124	7.765	No	No
1718	Calibration	NCC Data 2015	A_82	Badby Lane (S) to A45 Stefan Way (N)	SB (B - A)	ATC	395	427	1.557	Yes	Yes	221	235	0.928	Yes	Yes	342	341	0.039	Yes	Yes
1719	Calibration	NCC Data 2015	A_82	Badby Lane (S) to A45 Stefan Way (N)	NB (A - B)	ATC	428	404	1.186	Yes	Yes	235	269	2.184	Yes	Yes	419	443	1.132	Yes	Yes
1720	Calibration	NCC Data 2015	A_83	Staverton Road (S) to Stefan Road (N)	SB (B - A)	ATC	484	381	4.918	Yes	No	254	245	0.585	Yes	Yes	414	483	3.287	Yes	Yes
1721	Calibration	NCC Data 2015	A_83	Staverton Road (S) to Stefan Road (N)	NB (A - B)	ATC	392	384	0.417	Yes	Yes	243	270	1.668	Yes	Yes	461	401	2.923	Yes	Yes
1724	Calibration	NCC Data 2015	A_85	High March (W) to B4037 (E)	EB (A - B)	ATC	674	598	3.016	Yes	Yes	534	538	0.151	Yes	Yes	827	821	0.208	Yes	Yes
1725	Calibration	NCC Data 2015	A_85	High March (W) to B4037 (E)	WB (B - A)	ATC	924	941	0.539	Yes	Yes	548	505	1.864	Yes	Yes	766	739	0.979	Yes	Yes
1726	Calibration	NCC Data 2015	A_86	Admirals Way (W) to Daventry Road (E)	EB (A - B)	ATC	343	474	6.518	No	No	241	193	3.259	Yes	Yes	496	605	4.655	Yes	No
1727	Calibration	NCC Data 2015	A_86	Admirals Way (W) to Daventry Road (E)	WB (B - A)	ATC	497	496	0.030	Yes	Yes	237	238	0.104	Yes	Yes	389	588	9.028	No	No
1728	Calibration	NCC Data 2015	A_87	Poppyfields Way (S) to B4525 (N)	SB (B - A)	ATC	102	84	1.844	Yes	Yes	51	46	0.817	Yes	Yes	65	82	1.968	Yes	Yes
1729	Calibration	NCC Data 2015	A_87	Poppyfields Way (S) to B4525 (N)	NB (A - B)	ATC	90	57	3.822	Yes	Yes	54	64	1.303	Yes	Yes	95	74	2.218	Yes	Yes
1730	Calibration	NCC Data 2015	A_89	Whilton Road (S) to Holdenby Road (N)	SB (B - A)	ATC	422	413	0.402	Yes	Yes	305	316	0.625	Yes	Yes	644	644	0.006	Yes	Yes
1731	Calibration	NCC Data 2015	A_89	Whilton Road (S) to Holdenby Road (N)	NB (A - B)	ATC	539	508	1.365	Yes	Yes	179	187	0.575	Yes	Yes	241	273	2.000	Yes	Yes
1732	Validation	NCC Data 2015	A_90	Kettering Road (S) to Highlands Avenue (N)	SB (B - A)	ATC	770	827	2.044	Yes	Yes	635	593	1.698	Yes	Yes	753	701	1.910	Yes	Yes
1733	Validation	NCC Data 2015	A_90	Kettering Road (S) to Highlands Avenue (N)	NB (A - B)	ATC	650	569	3.276	Yes	Yes	645	564	3.282	Yes	Yes	814	787	0.947	Yes	Yes
1736	Calibration	NCC Data 2015	A_92	Mill Hill (W) to A43 (E)	EB (A - B)	ATC	53	53	0.096	Yes	Yes	22	42	3.447	Yes	Yes	24	27	0.653	Yes	Yes
1737	Calibration	NCC Data 2015	A_92	Mill Hill (W) to A43 (E)	WB (B - A)	ATC	23	37	2.507	Yes	Yes	24	31	1.311	Yes	Yes	59	231	14.268	No	No
1740	Calibration	NCC Data 2015	A_94	The Green (S) to Orlingbury Road (N)	SB (B - A)	ATC	368	507	6.673	No	No	59	26	5.002	No	Yes	101	118	1.615	Yes	Yes
1741	Calibration	NCC Data 2015	A_94	The Green (S) to Orlingbury Road (N)	NB (A - B)	ATC	102	144	3.746	Yes	Yes	67	38	4.009	Yes	Yes	299	356	3.187	Yes	Yes
1742	Calibration	NCC Data 2015	A_95	Swallow Close (W) to High Street (E)	EB (A - B)	ATC	115	101	1.327	Yes	Yes	79	104	2.640	Yes	Yes	110	129	1.750	Yes	Yes
1743	Calibration	NCC Data 2015	A_95	Swallow Close (W) to High Street (E)	WB (B - A)	ATC	146	122	2.023	Yes	Yes	79	84	0.506	Yes	Yes	121	91	2.918	Yes	Yes
1744	Calibration	NCC Data 2015	A_97	Northfield Road (W) to Gypsy Lane (E)	EB (A - B)	ATC	127	129	0.180	Yes	Yes	58	18	6.449	No	Yes	61	43	2.440	Yes	Yes
1745	Calibration	NCC Data 2015	A_97	Northfield Road (W) to Gypsy Lane (E)	WB (B - A)	ATC	76	139	6.110	No	Yes	64	80	1.929	Yes	Yes	98	127	2.708	Yes	Yes
1748	Calibration	NCC Data 2015	A_99	A43 Stamford Road (E) to The Grove (W)	EB (B - A)	ATC	526	448	3.535	Yes	Yes	486	431	2.596	Yes	Yes	757	443	12.813	No	No
1749	Calibration	NCC Data 2015	A_99	A43 Stamford Road (E) to The Grove (W)	WB (A - B)	ATC	889	854	1.209	Yes	Yes	531	570	1.647	Yes	Yes	615	566	1.994	Yes	Yes

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
1750	Calibration	NCC Data 2015	A_100	Market Street (W) to West Street (E)	EB (A - B)	ATC	490	511	0.937	Yes	Yes	569	522	1.998	Yes	Yes	744	630	4.336	Yes	No
1751	Calibration	NCC Data 2015	A_100	Market Street (W) to West Street (E)	WB (B - A)	ATC	768	665	3.849	Yes	Yes	558	498	2.586	Yes	Yes	532	502	1.300	Yes	Yes
1752	Calibration	NCC Data 2015	A_101	Mill Street (W) to Stamford Road (E)	EB (A - B)	ATC	485	545	2.612	Yes	Yes	257	249	0.473	Yes	Yes	316	322	0.352	Yes	Yes
1753	Calibration	NCC Data 2015	A_101	Mill Street (W) to Stamford Road (E)	WB (B - A)	ATC	299	317	1.010	Yes	Yes	286	298	0.705	Yes	Yes	494	555	2.665	Yes	Yes
1754	Calibration	TPA Rail Central	TPA_19	A5 (Greens Northon to Butchers Lane)	SB	ATC	1272	1138	3.861	Yes	Yes	454	513	2.659	Yes	Yes	630	560	2.880	Yes	Yes
1755	Calibration	TPA Rail Central	TPA_19	A5 (Greens Northon to Butchers Lane)	NB	ATC	630	614	0.654	Yes	Yes	500	519	0.818	Yes	Yes	1128	1082	1.397	Yes	Yes
1758	Calibration	TPA Rail Central	TPA_23	A5 (Brackely Road to Chantry Lane)	SB	ATC	1498	1220	7.547	No	No	532	489	1.892	Yes	Yes	819	724	3.445	Yes	Yes
1759	Calibration	TPA Rail Central	TPA_23	A5 (Brackely Road to Chantry Lane)	NB	ATC	717	636	3.115	Yes	Yes	611	511	4.228	Yes	No	1364	1184	5.045	No	Yes
1760	Calibration	TPA Rail Central	TPA_25	Road Southwest of Showsley Road/Main Road	NB	ATC	133	137	0.355	Yes	Yes	63	50	1.753	Yes	Yes	49	121	7.792	No	Yes
1761	Calibration	TPA Rail Central	TPA_25	Road Southwest of Showsley Road/Main Road	SB	ATC	93	114	2.122	Yes	Yes	84	81	0.314	Yes	Yes	182	169	0.952	Yes	Yes
1762	Calibration	TPA Rail Central	TPA_30	Banbury Lane (Southwest of Bugbrooke Road junction)	NB	ATC	161	151	0.803	Yes	Yes	84	81	0.282	Yes	Yes	148	83	6.088	No	Yes
1763	Calibration	TPA Rail Central	TPA_30	Banbury Lane (Southwest of Bugbrooke Road junction)	SB	ATC	130	99	2.980	Yes	Yes	84	79	0.585	Yes	Yes	131	98	3.090	Yes	Yes
1764	Calibration	TPA Rail Central	TPA_32	Camp Hill (Southeast of Camp Close junction)	SB	ATC	115	145	2.635	Yes	Yes	43	43	0.026	Yes	Yes	56	38	2.566	Yes	Yes
1765	Calibration	TPA Rail Central	TPA_32	Camp Hill (Southeast of Camp Close junction)	NB	ATC	52	81	3.479	Yes	Yes	54	54	0.091	Yes	Yes	121	150	2.511	Yes	Yes
1766	Calibration	TPA Rail Central	TPA_21	Road (A5 to Great Lane)	NB	ATC	99	75	2.623	Yes	Yes	50	53	0.314	Yes	Yes	47	37	1.642	Yes	Yes
1767	Calibration	TPA Rail Central	TPA_21	Road (A5 to Great Lane)	SB	ATC	88	108	2.003	Yes	Yes	47	50	0.375	Yes	Yes	95	113	1.779	Yes	Yes
1768	Calibration	TPA Rail Central	TPA_20	Bugbrooke Road (Middle Street to Church Lane)	SB	ATC	117	124	0.597	Yes	Yes	91	91	0.014	Yes	Yes	113	103	0.971	Yes	Yes
1769	Calibration	TPA Rail Central	TPA_20	Bugbrooke Road (Middle Street to Church Lane)	NB	ATC	105	92	1.326	Yes	Yes	80	77	0.351	Yes	Yes	154	127	2.270	Yes	Yes
1770	Calibration	TPA Rail Central	TPA_31	Kingsbury Road (Mill Lane to M1)	NB	ATC	429	349	4.061	Yes	Yes	236	208	1.913	Yes	Yes	338	289	2.799	Yes	Yes
1771	Calibration	TPA Rail Central	TPA_31	Kingsbury Road (Mill Lane to M1)	SB	ATC	448	413	1.692	Yes	Yes	239	215	1.569	Yes	Yes	289	247	2.562	Yes	Yes
1772	Calibration	TPA Rail Central	TPA_15	Rothersthrope Road (M1 to Banbury Lane)	SB	ATC	190	130	4.757	Yes	Yes	70	66	0.468	Yes	Yes	92	84	0.850	Yes	Yes
1773	Calibration	TPA Rail Central	TPA_15	Rothersthrope Road (M1 to Banbury Lane)	NB	ATC	134	128	0.490	Yes	Yes	70	70	0.036	Yes	Yes	170	175	0.427	Yes	Yes
1774	Calibration	TPA Rail Central	TPA_16	Banbury Lane (Kislingbury Road to M1)	NB	ATC	198	253	3.686	Yes	Yes	140	139	0.048	Yes	Yes	190	188	0.130	Yes	Yes
1775	Calibration	TPA Rail Central	TPA_16	Banbury Lane (Kislingbury Road to M1)	SB	ATC	268	309	2.409	Yes	Yes	133	124	0.830	Yes	Yes	163	180	1.309	Yes	Yes
1776	Calibration	TPA Rail Central	TPA_4	North Street (Banbury Street to A43)	SB	ATC	116	79	3.735	Yes	Yes	47	45	0.377	Yes	Yes	55	54	0.216	Yes	Yes
1777	Calibration	TPA Rail Central	TPA_4	North Street (Banbury Street to A43)	NB	ATC	71	70	0.059	Yes	Yes	50	61	1.488	Yes	Yes	124	138	1.231	Yes	Yes
1778	Calibration	TPA Rail Central	TPA_7	Milton Road (Blisworth Road to A43)	NB	ATC	62	76	1.592	Yes	Yes	28	23	1.044	Yes	Yes	31	25	1.092	Yes	Yes
1779	Calibration	TPA Rail Central	TPA_7	Milton Road (Blisworth Road to A43)	SB	ATC	33	22	2.003	Yes	Yes	31	27	0.733	Yes	Yes	53	18	5.855	No	Yes
1780	Calibration	TPA Rail Central	TPA_9	Gayton Road (Blisworth Road to Chapel Lane)	SB	ATC	117	138	1.894	Yes	Yes	42	38	0.651	Yes	Yes	53	11	7.503	No	Yes
1781	Calibration	TPA Rail Central	TPA_9	Gayton Road (Blisworth Road to Chapel Lane)	NB	ATC	49	40	1.364	Yes	Yes	38	32	1.072	Yes	Yes	102	76	2.691	Yes	Yes
1782	Calibration	TPA Rail Central	TPA_8	Towcester Road (Rectory Lane to Northampton Road)	SB	ATC	331	304	1.527	Yes	Yes	231	240	0.533	Yes	Yes	643	598	1.820	Yes	Yes
1783	Calibration	TPA Rail Central	TPA_8	Towcester Road (Rectory Lane to Northampton Road)	NB	ATC	541	509	1.382	Yes	Yes	218	223	0.376	Yes	Yes	270	304	2.008	Yes	Yes
1784	Calibration	TPA Rail Central	TPA_5	Towcester Road (M1 to Lower Road)	SB	ATC	398	434	1.776	Yes	Yes	307	343	1.983	Yes	Yes	658	672	0.530	Yes	Yes
1785	Calibration	TPA Rail Central	TPA_5	Towcester Road (M1 to Lower Road)	NB	ATC	681	610	2.796	Yes	Yes	344	346	0.130	Yes	Yes	450	434	0.744	Yes	Yes
1786	Calibration	TPA Rail Central	TPA_14	Upton Valley Way North (A4500 to Camp Lane)	SB	ATC	264	139	8.776	No	No	261	300	2.323	Yes	Yes	143	117	2.337	Yes	Yes
1787	Calibration	TPA Rail Central	TPA_14	Upton Valley Way North (A4500 to Camp Lane)	NB	ATC	154	188	2.593	Yes	Yes	195	240	3.060	Yes	Yes	361	299	3.397	Yes	Yes
1788	Calibration	TPA Rail Central	TPA_6	Collingtree Road (Towcester Road to M1)	EB	ATC	212	213	0.076	Yes	Yes	74	74	0.075	Yes	Yes	129	158	2.430	Yes	Yes
1789	Calibration	TPA Rail Central	TPA_6	Collingtree Road (Towcester Road to M1)	WB	ATC	73	37	4.883	Yes	Yes	45	40	0.694	Yes	Yes	60	10	8.299	No	Yes
1790	Calibration	TPA Rail Central	TPA_18	Wootton Road (Wooldale Road to Preston Deanery Road	SB	ATC	327	353	1.414	Yes	Yes	98	77	2.212	Yes	Yes	214	182	2.269	Yes	Yes
1791	Calibration	TPA Rail Central	TPA_18	Wootton Road (Wooldale Road to Preston Deanery Road	NB	ATC	255	196	3.979	Yes	Yes	117	130	1.235	Yes	Yes	483	469	0.630	Yes	Yes
1792	Calibration	TPA Rail Central	TPA_17	Road (A508 Northampton Road to M1)	EB	ATC	100	123	2.228	Yes	Yes	27	32	0.911	Yes	Yes	94	137	4.020	Yes	Yes
1793	Calibration	TPA Rail Central	TPA_17	Road (A508 Northampton Road to M1)	WB	ATC	51	50	0.144	Yes	Yes	25	43	3.000	Yes	Yes	62	68	0.731	Yes	Yes
1794	Calibration	TPA Rail Central	TPA_10	Kingsthorpenhall Road (Northampton Road to A508 Northampton	EB	ATC	156	140	1.261	Yes	Yes	96	66	3.308	Yes	Yes	124	138	1.159	Yes	Yes
1795	Calibration	TPA Rail Central	TPA_10	Kingsthorpenhall Road (Northampton Road to A508 Northampton	WB	ATC	208	181	1.985	Yes	Yes	140	138	0.196	Yes	Yes	286	263	1.379	Yes	Yes
1796	Calibration	TPA Rail Central	TPA_11	Towcester Road (A43 to Stoke Road)	NB	ATC	333	263	4.041	Yes	Yes	217	202	1.020	Yes	Yes	303	226	4.773	Yes	Yes
1797	Calibration	TPA Rail Central	TPA_11	Towcester Road (A43 to Stoke Road)	SB	ATC	248	221	1.773	Yes	Yes	170	196	1.894	Yes	Yes	293	266	1.575	Yes	Yes
1798	Calibration	TPA Rail Central	TPA_13	Stoke Road (Knock Lane to Shutlanger Road)	SB	ATC	213	250	2.388	Yes	Yes	48	53	0.782	Yes	Yes	72	54	2.277	Yes	Yes
1799	Calibration	TPA Rail Central	TPA_13	Stoke Road (Knock Lane to Shutlanger Road)	NB	ATC	82	109	2.780	Yes	Yes	60	79	2.181	Yes	Yes	237	230	0.422	Yes	Yes
1800	Calibration	TPA Rail Central	TPA_22	Road (Bridge Lane to Northampton Road)	EB	ATC	154	156	0.166	Yes	Yes	33	35	0.403	Yes	Yes	54	23	5.035	No	Yes
1801	Calibration	TPA Rail Central	TPA_22	Road (Bridge Lane to Northampton Road)	WB	ATC	43	82	4.958	Yes	Yes	35	40	0.837	Yes	Yes	193	166	2.031	Yes	Yes
1802	Calibration	TPA Rail Central	TPA_26	A508 Stratford Road (Rockery Lane to High Street)	SB	ATC	914	749	5.713	No	No	473	418	2.628	Yes	Yes	658	639	0.757	Yes	Yes
1803	Calibration	TPA Rail Central	TPA_26	A508 Stratford Road (Rockery Lane to High Street)	WB	ATC	703	531	6.912	No	No	538	443	4.293	Yes	Yes	811	741	2.535	Yes	Yes
1804	Calibration	TPA Rail Central	TPA_1	Road (A5 to High Street)	EB	ATC	14	10	0.985	Yes	Yes	10	10	0.035	Yes	Yes	17	0	5.703	No	Yes
1805	Calibration	TPA Rail Central	TPA_1	Road (A5 to High Street)	WB	ATC	22	6	4.174	Yes	Yes	13	11	0.430	Yes	Yes	14	10	1.248	Yes	Yes
1806	Calibration	TPA Rail Central	TPA_2	High Street North (Eastcote Road to Tiffield Road)	NB	ATC	25	138	12.565	No	No	19	17	0.452	Yes	Yes	26	3	6.185	No	Yes
1807	Calibration	TPA Rail Central	TPA_2	High Street North (Eastcote Road to Tiffield Road)	SB	ATC	35	32	0.453	Yes	Yes	12	12	0.038	Yes	Yes	17	6	3.034	Yes	Yes
1808	Calibration	TPA Rail Central	TPA_3	St Johns Road (High Street South to A43)	EB	ATC	11	9	0.729	Yes	Yes	11	10	0.157	Yes	Yes	19	4	4.470	Yes	Yes
1809	Calibration	TPA Rail Central	TPA_3	St Johns Road (High Street South to A43)	WB	ATC	13	86	10.346	No	Yes	8	18	2.625	Yes	Yes	9	6	1.151	Yes	Yes
1810	Calibration	TPA Rail Central	TPA_12	Knock Lane (Stoke Road to Blisworth Road	EB	ATC	62	65	0.418	Yes	Yes	45	54	1.279	Yes	Yes	91	117	2.533	Yes	Yes
1811	Calibration	TPA Rail Central	TPA_12	Knock Lane (Stoke Road to Blisworth Road	WB	ATC	69	55	1.842	Yes	Yes	34	24	1.959	Yes	Yes	44	37	1.061	Yes	Yes
1814	Validation	TPA Rail Central	TPA_A	A5 Heyford Ln South of Church St	NB	ANPR	410	423	0.655	Yes	Yes	368	328	2.148	Yes	Yes	635	547	3.629	Yes	Yes
1815	Validation	TPA Rail Central	TPA_A	A5 Heyford Ln South of Church St	SB	ANPR	574	536	1.612	Yes	Yes	313	320	0.376	Yes	Yes	432	431	0.063	Yes	Yes
1816	Validation	TPA Rail Central	TPA_B	M1 West of Jctn 16	EB	ANPR	4065	3776	4.617	Yes	Yes	3142	3301	2.806	Yes	Yes	4224	3819	6.392	No	No
1817	Validation	TPA Rail Central	TPA_B	M1 West of Jctn 16	WB	ANPR	3465	3080	6.730	No	Yes	4216	3718	7.914	No	No	4171	3612	8.965	No	No
1818	Validation	TPA Rail Central	TPA_C	Road (A5 to Great Lane)	NB	ANPR	87	75	1.387	Yes	Yes	42	53	1.554	Yes	Yes	47	37	1.600	Yes	Yes
1819	Validation	TPA Rail Central	TPA_C	Road (A5 to Great Lane)	SB	ANPR	70	108	4.002	Yes	Yes	39	50	1.660	Yes	Yes	89	113	2.351	Yes	Yes
1820	Validation	TPA Rail Central	TPA_D	Sandy Ln South of A4500	NB	ANPR	486	549	2.775	Yes	Yes	200	256	3.699	Yes	Yes	351	382	1.615	Yes	Yes
1821	Validation	TPA Rail Central	TPA_D	Sandy Ln South of A4500	SB	ANPR	401	418	0.830	Yes	Yes	241	350	6.344	No	No	443	497	2.502	Yes	Yes
1822	Validation	TPA Rail Central	TPA_E	A5 South of Mill Ln	NB	ANPR	388	398	0.507	Yes	Yes	377	343	1.784	Yes	Yes	696	652	1.700	Yes	Yes
1823	Validation	TPA Rail Central	TPA_E	A5 South of Mill Ln	SB	ANPR	661	801	5.189	No	No	333	343	0.525	Yes	Yes	440	421	0.927	Yes	Yes
1824	Validation	TPA Rail Central	TPA_F	Banbury Ln west of Litchborough Rd	EB	ANPR	56	24	5.067	No	Yes	34	10	5.006	No	Yes	95	68	2.958	Yes	Yes
1825	Validation	TPA Rail Central	TPA_F	Banbury Ln west of Litchborough Rd	WB	ANPR	96	108	1.163	Yes	Yes	40	17	4.398	Yes	Yes	75	100	2.645	Yes	Yes
1826	Validation	TPA Rail Central	TPA_G	Banbury Lane (Southwest of Bugbrooke Road junction)	NB	ANPR	155	151	0.346	Yes	Yes	68	81	1.519	Yes	Yes	138	83	5.249	No	Yes
1827	Validation	TPA Rail Central	TPA_G	Banbury Lane (Southwest of Bugbrooke Road junction)	SB	ANPR	118	99	1.872	Yes	Yes	71	79	0.878	Yes	Yes	123	98	2.366	Yes	Yes
1828	Validation	TPA Rail Central	TPA_H	A5123	NB	ANPR	927	1218	8.898	No	No	741	891	5.265	No	No	1329	1305	0.672	Yes	Yes
1829	Validation	TPA Rail Central	TPA_H	A5123	SB	ANPR	1339	1469	3.477	Yes	Yes	716	855	4.953	Yes	No	972	1132	4.930	Yes	No
1832	Validation	TPA Rail Central	TPA_J	Road (A5 to High Street)	NB	ANPR	19	10	2.255	Yes	Yes	10	10	0.054	Yes	Yes	14	0	5.112	No	Yes
1833	Validation	TPA Rail Central	TPA_J	Road (A5 to High Street)	SB	ANPR	13	6	2.229	Yes	Yes	8	11	1.042	Yes	Yes	16	10	1.756	Yes	Yes
1834	Validation	TPA Rail Central	TPA_K	Towcester Road (A43 to Stoke Road)	NB	ANPR	224	263	2.519	Yes	Yes	139	202	4.858	Yes	Yes	257	226	2.017	Yes	Yes
1835	Validation	TPA Rail Central	TPA_K	Towcester Road (A43 to Stoke Road)	SB	ANPR	300	221	4.898	Yes	Yes	168	196	2.064	Yes	Yes	269	266	0.154	Yes	Yes
1838	Validation	TPA Rail Central	TPA_M	M1 East of Jctn 15A	EB	ANPR	4249	4237	0.183	Yes	Yes	3262	3260	0.041	Yes	Yes	4156	4042	1.781	Yes	Yes
1839	Validation	TPA Rail Central	TPA_M	M1 East of Jctn 15A	WB	ANPR	3508	3293	3.682	Yes	Yes	3816	3572	4.009	Yes	Yes	4211	4117	1.455	Yes	Yes
1840	Validation	TPA Rail Central	TPA_N	Collingtree Road (Towcester Road to M1)	EB	ANPR	197	213	1.119	Yes	Yes	53	74	2.680	Yes	Yes	110	158	4.175	Yes	Yes
1841	Validation	TPA Rail Central	TPA_N	Collingtree Road (Towcester Road to M1)	WB	ANPR	77	37	5.339	No	Yes	22	40	3.246	Yes	Yes	40	10	5.890	No	Yes
1842	Validation	TPA Rail Central	TPA_O	Knock Lane (Stoke Road to Blisworth Road	EB	ANPR	58	65	0.935	Yes	Yes	29	54	3.846	Yes	Yes	92	117	2.428	Yes	Yes
1843	Validation	TPA Rail Central	TPA_O	Knock Lane (Stoke Road to Blisworth Road	WB	ANPR	63	55	1.091	Yes	Yes	22	24	0.333	Yes	Yes	43	37	0.963	Yes	Yes
1846	Validation	TPA Rail Central	TPA_Q	Stoke Road (Knock Lane to Shutlanger Road)	NB	ANPR	76	109	3.428	Yes	Yes	42	79	4.704	Yes	Yes	215	230	1.032	Yes	Yes
1847	Validation	TPA Rail Central	TPA_Q	Stoke Road (Knock Lane to Shutlanger Road)	SB	ANPR	195	250	3.658	Yes	Yes	37	53	2.417	Yes	Yes	71	54	2.175	Yes	Yes
1848	Validation	TPA Rail Central	TPA_R	A508 Stratford Road (Rockery Lane to High Street)	NB	ANPR	617	531	3.572	Yes	Yes	477	443	1.578	Yes	Yes	747	741	0.229	Yes	Yes
1849	Validation	TPA Rail Central	TPA_R	A508 Stratford Road (Rockery Lane to High Street)	SB	ANPR	804	749	1.963	Yes	Yes	405	418	0.633	Yes	Yes	637	639	0.086	Yes	Yes
1852	Validation	TPA Rail Central	TPA_V	A43 North of Silverstone Bypass	NB	ANPR	1079	1317	6.870	No	No	1023	1479	12.893	No	No	1676	1520	3.902	Yes	Yes
1853	Validation	TPA Rail Central	TPA_V	A43 North of Silverstone Bypass	SB	ANPR	1473	1629	3.966	Yes	Yes	960	1131	5.279	No	No	1222	1224	0.062	Yes	Yes
1854	Validation	TPA Rail Central	TPA_W	A5 West of Pury Road	EB	ANPR	813	847	1.179	Yes	Yes	426	463	1.776	Yes	Yes	646	721	2.874	Yes	Yes
1855	Validation	TPA Rail Central	TPA_W	A5 West of Pury Road	WB	ANPR	596	714	4.628	Yes	No	497	441	2.568	Yes	Yes	1064	1186	3.629	Yes	Yes
1856	Validation	TPA Rail Central	TPA_X	Kingsthorpenhall Road (Northampton Road to A508 Northampton	EB	ANPR	155	140	1.220	Yes	Yes	96	66	3.358	Yes	Yes	123	138	1.294	Yes	Yes
1857	Validation	TPA Rail Central	TPA_X	Kingsthorpenhall Road (Northampton Road to A508 Northampton	WB	ANPR	200	181	1.404	Yes	Yes	116	138	1.941	Yes	Yes	236	263	1.711	Yes	Yes
1858	Validation	TPA Rail Central	TPA_Y	A5088 Northampton Rd	NB	ANPR	758	639	4.515	Yes	No	620	617	0.115	Yes	Yes	787	655	4.922	Yes	No
1859	Validation	TPA Rail Central	TPA_Y	A5088 Northampton Rd	SB	ANPR	859	914	1.846	Yes	Yes	529	522	0.318	Yes	Yes	867	772	3.306	Yes	Yes
1860	Validation	TPA Rail Central	TPA_Z	Unnamed Rd North of Milton Road	NB	ANPR	21	7	3.812	Yes	Yes	5	9	1.472	Yes	Yes	11	2	3.767	Yes	Yes
1861	Validation	TPA Rail Central	TPA_Z	Unnamed Rd North of Milton Road	SB	ANPR	18	1	5.692	No	Yes	9	6	1.022	Yes	Yes	15	15	0.038	Yes	Yes
1862	Validation	TPA Rail Central	TPA_AA	A45 West of Jctn 16	EB	ANPR	860	1043	5.947	No	No	479	585	4.600	Yes	No	841	795	1.605	Yes	Yes
1863	Validation	TPA Rail Central	TPA_AA	A45 West of Jctn 16	WB	ANPR	723	762	1.445	Yes	Yes	636	594	1.710	Yes	Yes	906	977	2.309	Yes	Yes
1864	Validation	TPA Rail Central	TPA_AB	A4500 West of Northampton Road	EB	ANPR	910	889	0.708	Yes	Yes	530	632	4.248	Yes	No	795	794	0.051	Yes	Yes
1865	Validation	TPA Rail Central	TPA_AB	A4500 West of Northampton Road	WB	ANPR	652	649	0.132	Yes	Yes	573	560	0.553	Yes	Yes	923	738	6.419	No	No
1866	Validation	TPA Rail Central	TPA_AC	A45 London Road North of M1 Jctn 15	NB	ANPR	2774	2565	4.043	Yes	Yes	1813	1548	6.471	No	Yes	2717	2454	5.171	No	Yes
1867	Validation	TPA Rail Central	TPA_AC	A45 London Road North of M1 Jctn 15	SB	ANPR	2443	2404	0.793	Yes	Yes	1846	1805	0.956	Yes	Yes	2581	2586	0.091	Yes	Yes

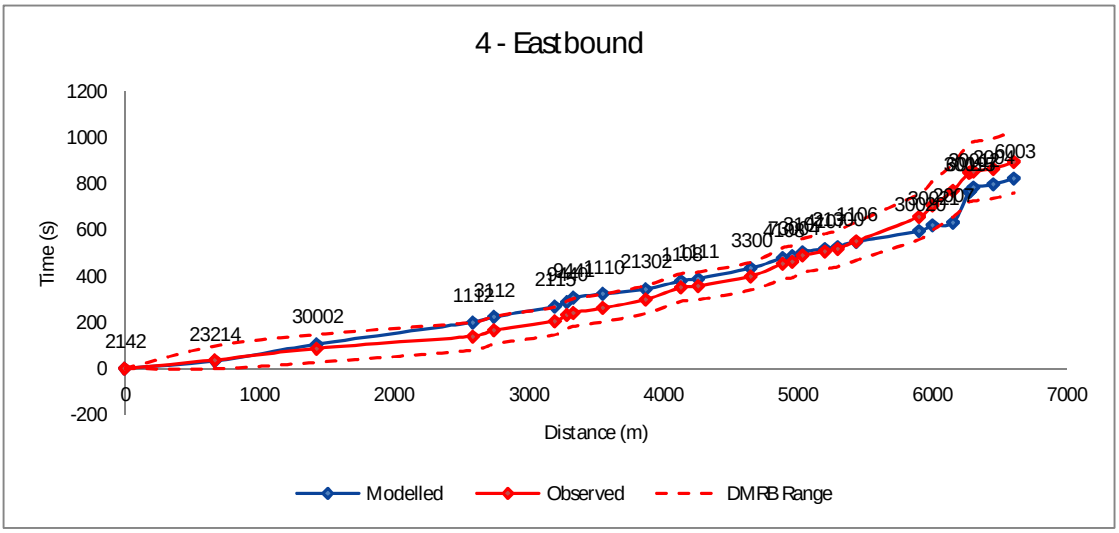
Appendix E

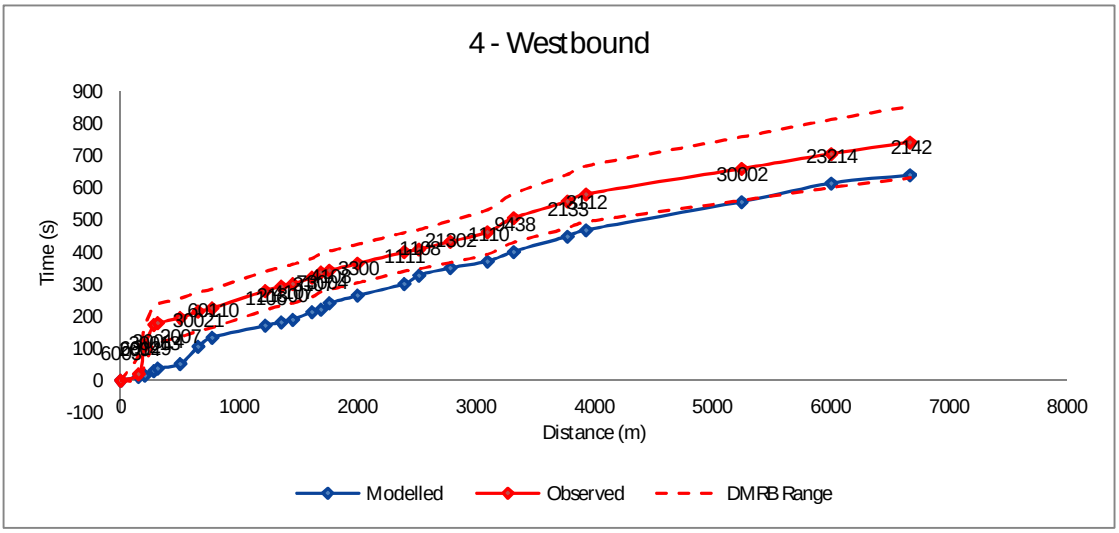
JOURNEY TIME GRAPHS

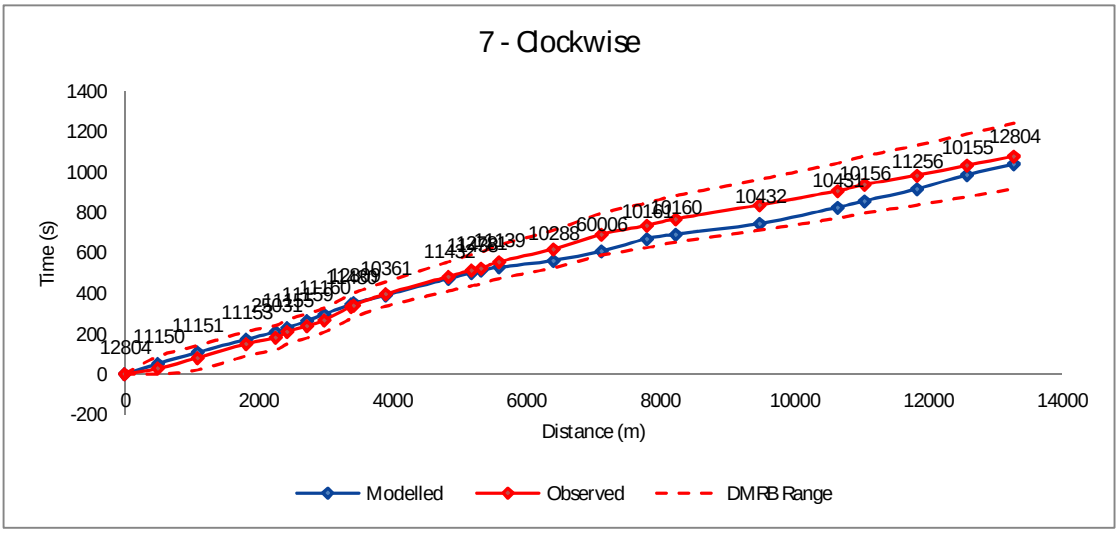
JT Graphs AM Peak

Model Map

Redraw Graphs



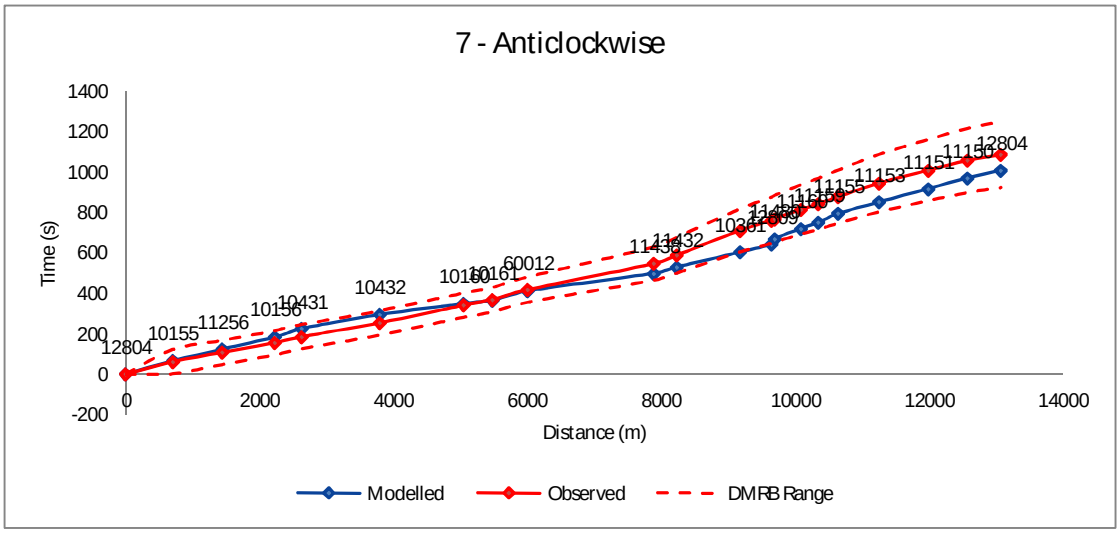


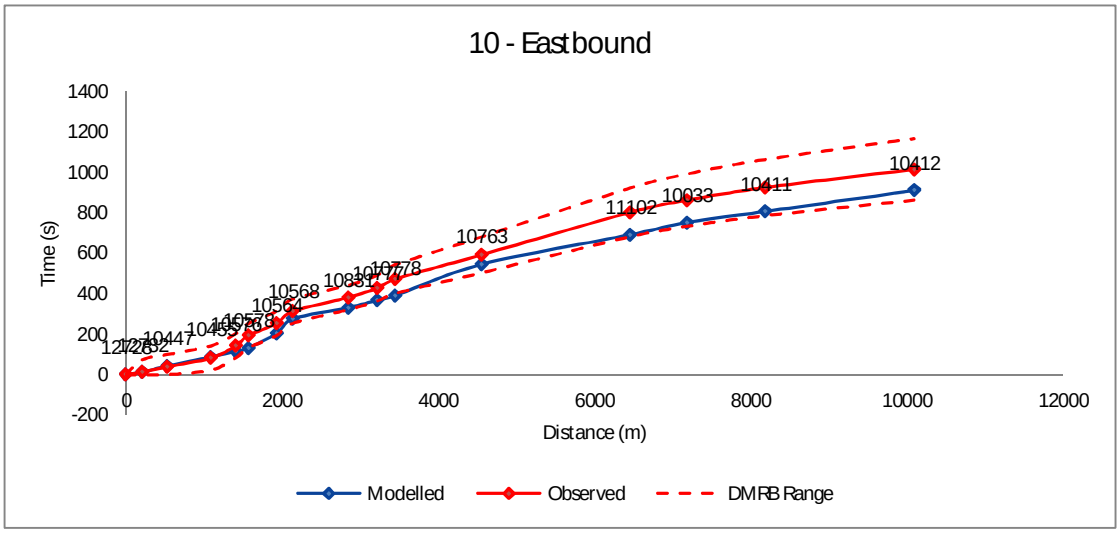


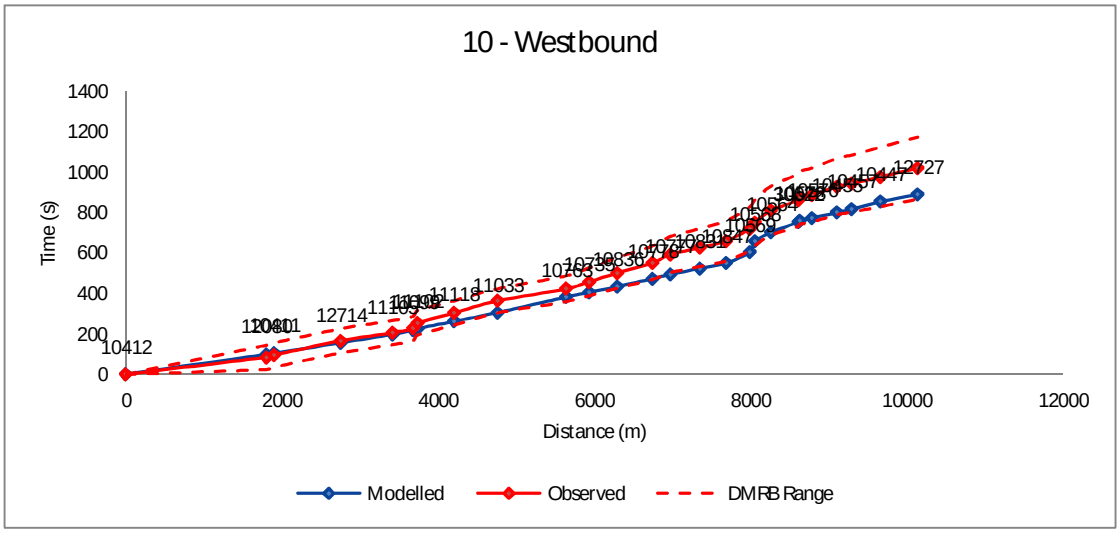
JT Graphs AM Peak

Model Map

Redraw Graphs



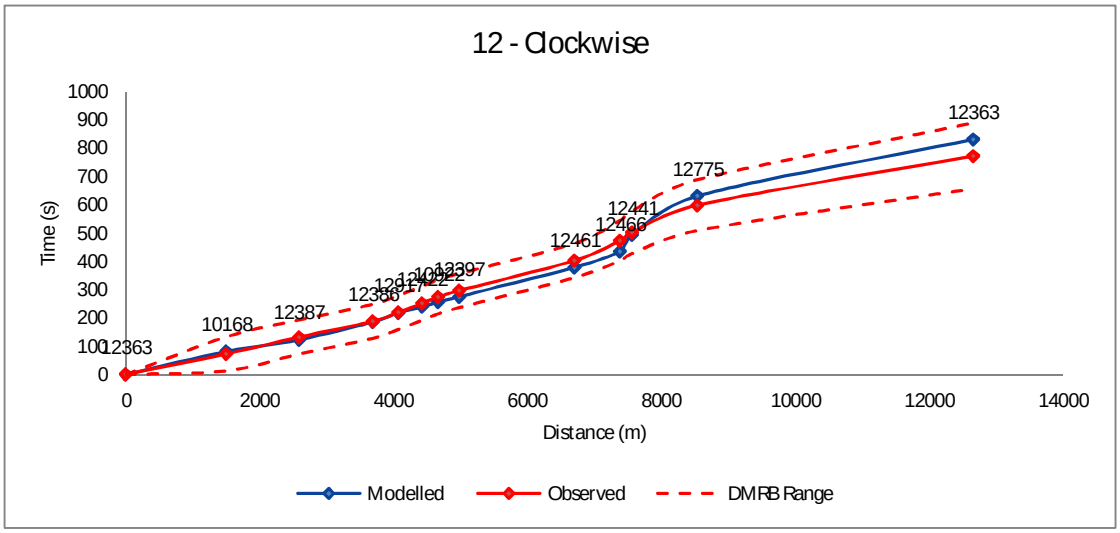


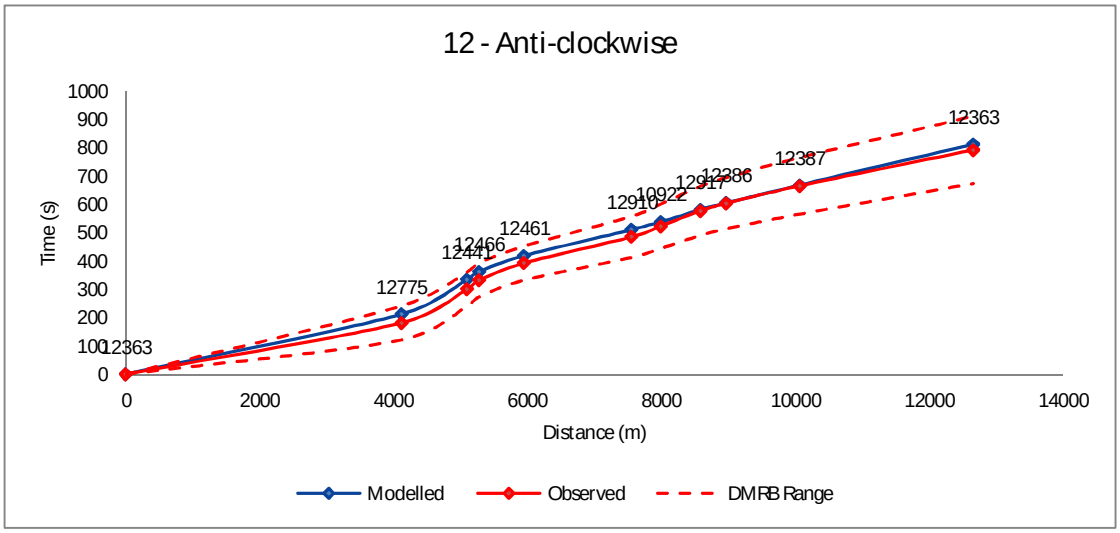


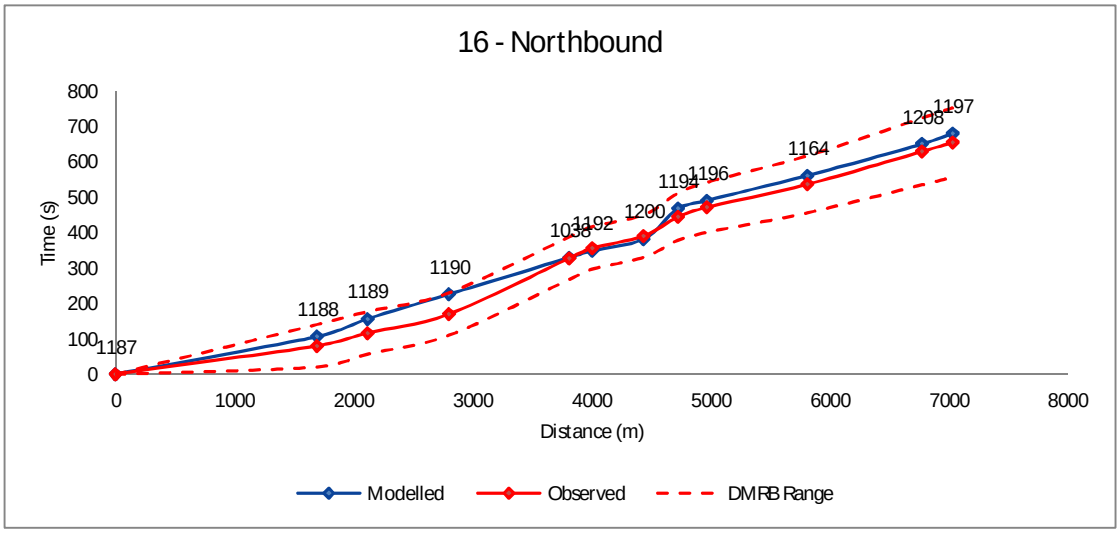
JT Graphs AM Peak

Model Map

Redraw Graphs



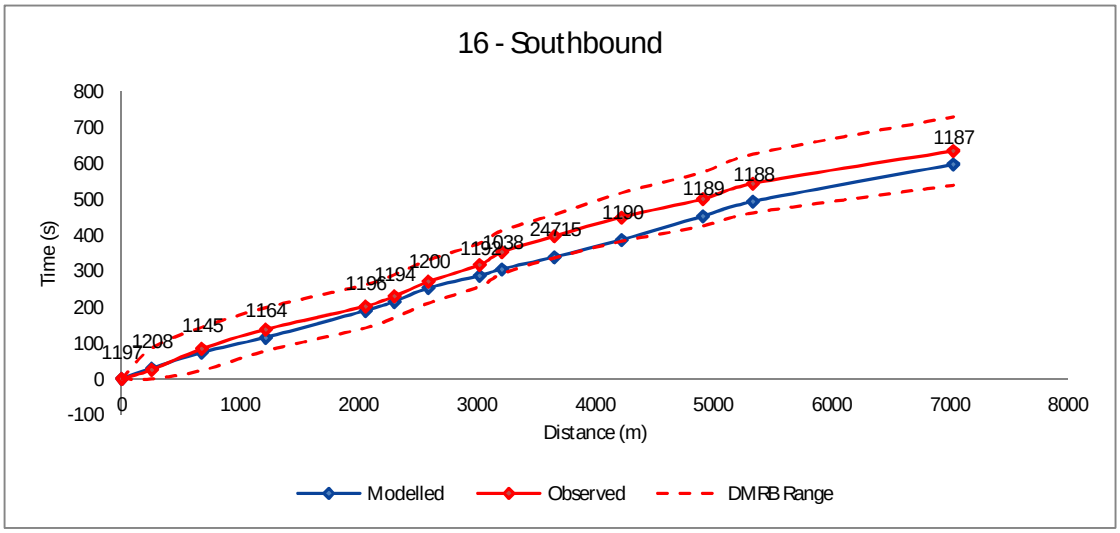


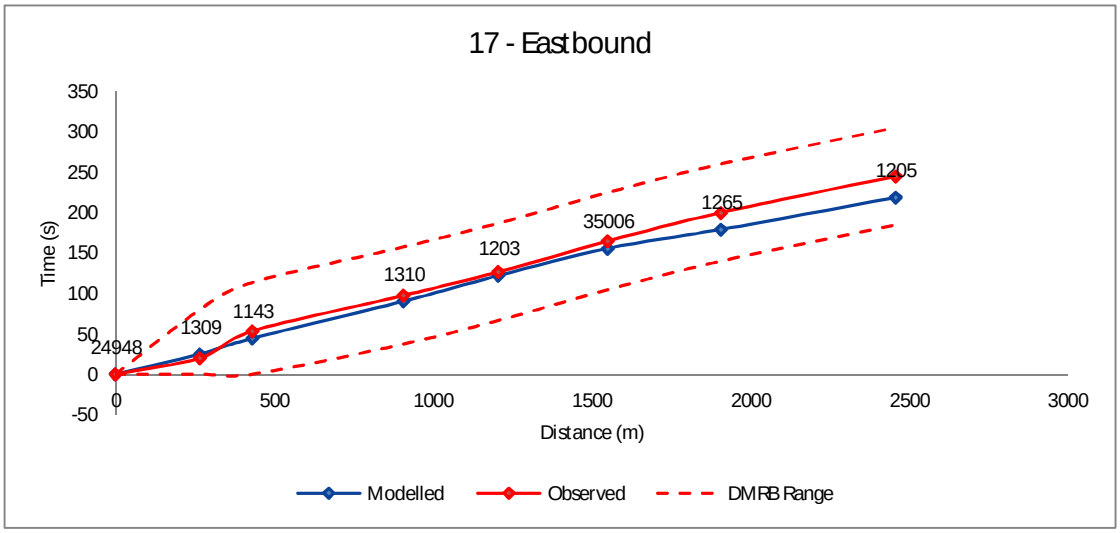


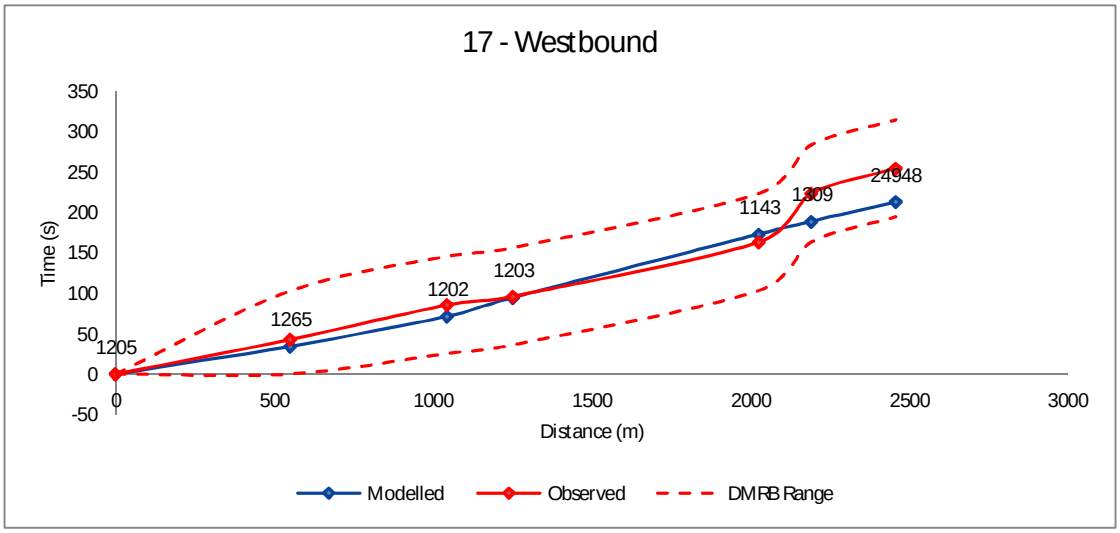
JT Graphs AM Peak

Model Map

Redraw Graphs



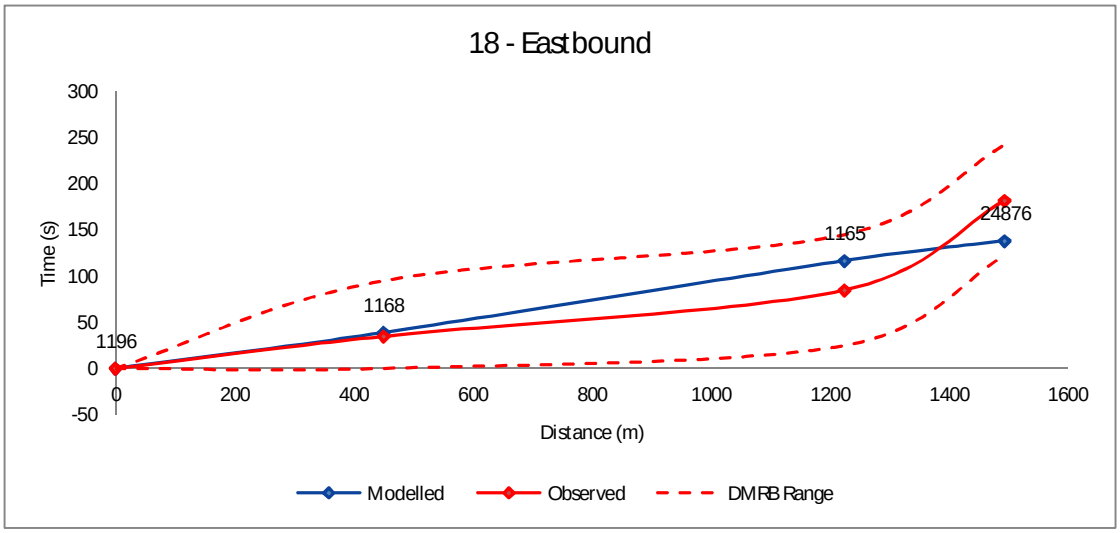


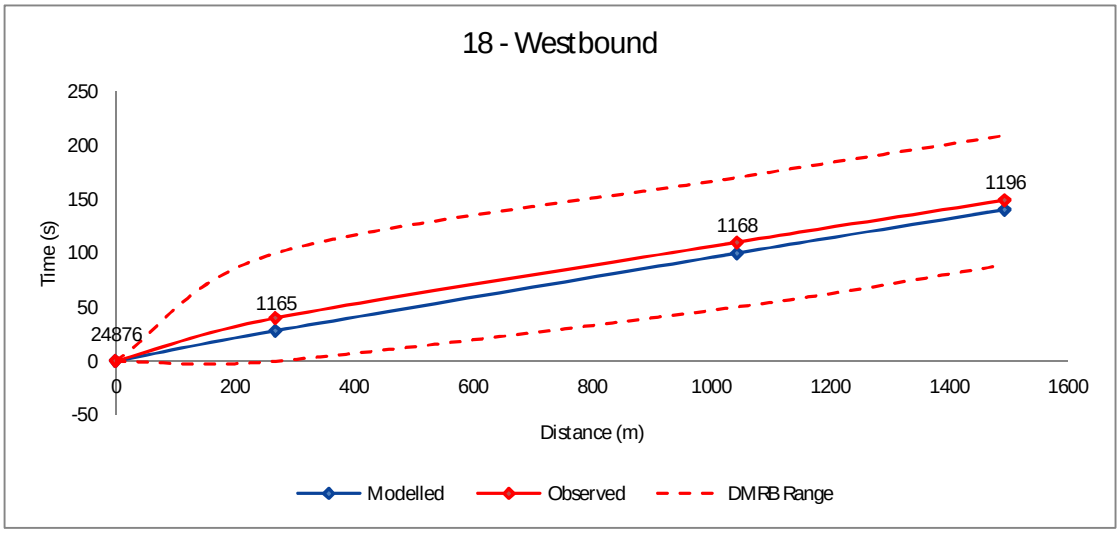


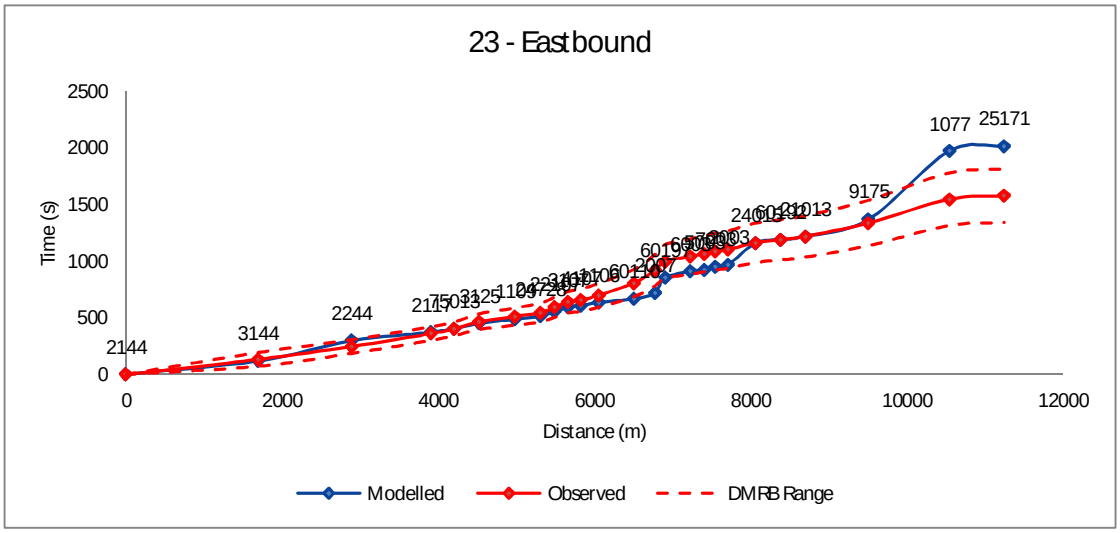
JT Graphs AM Peak

Model Map

Redraw Graphs



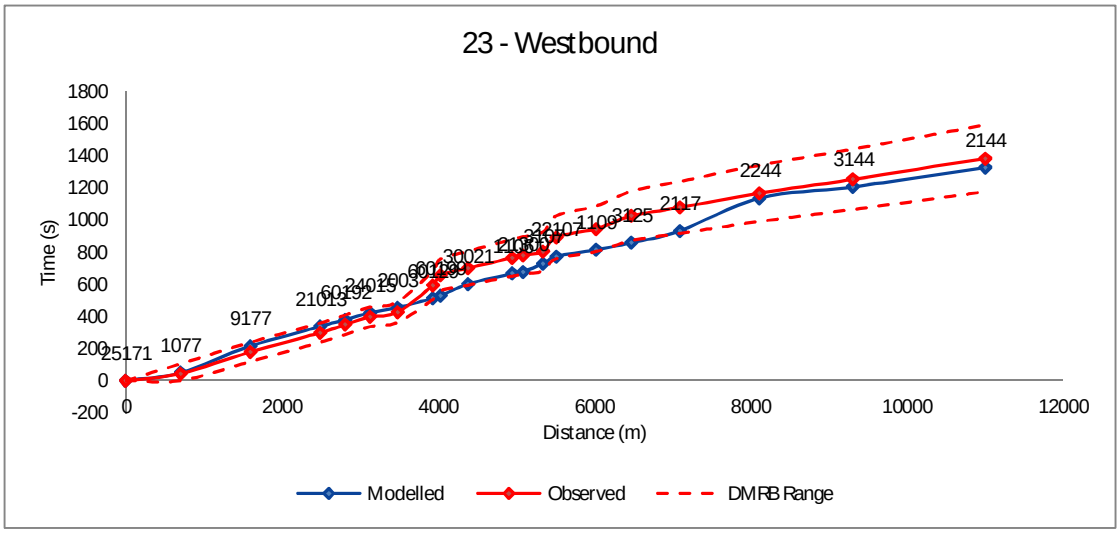


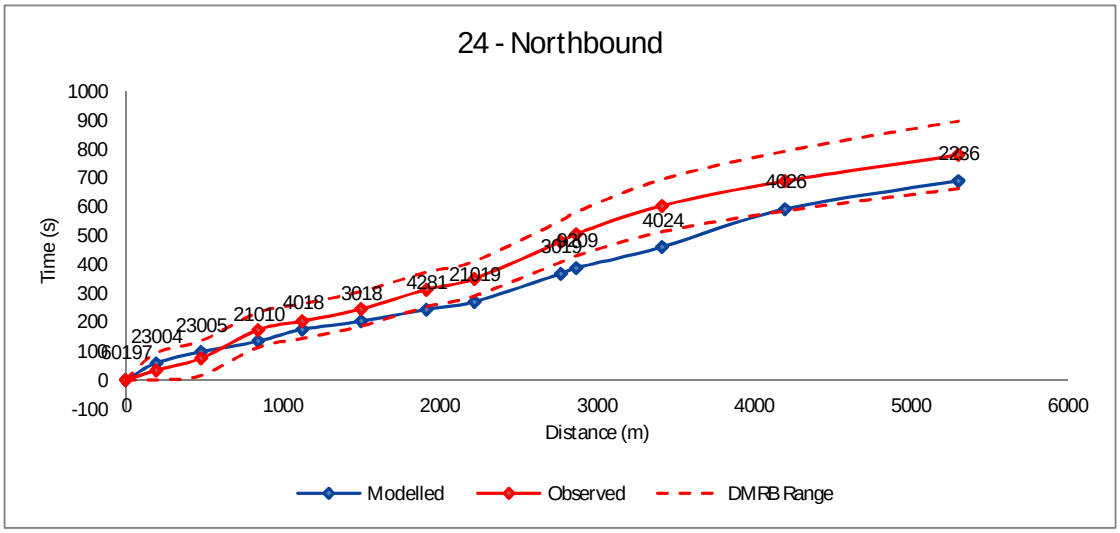


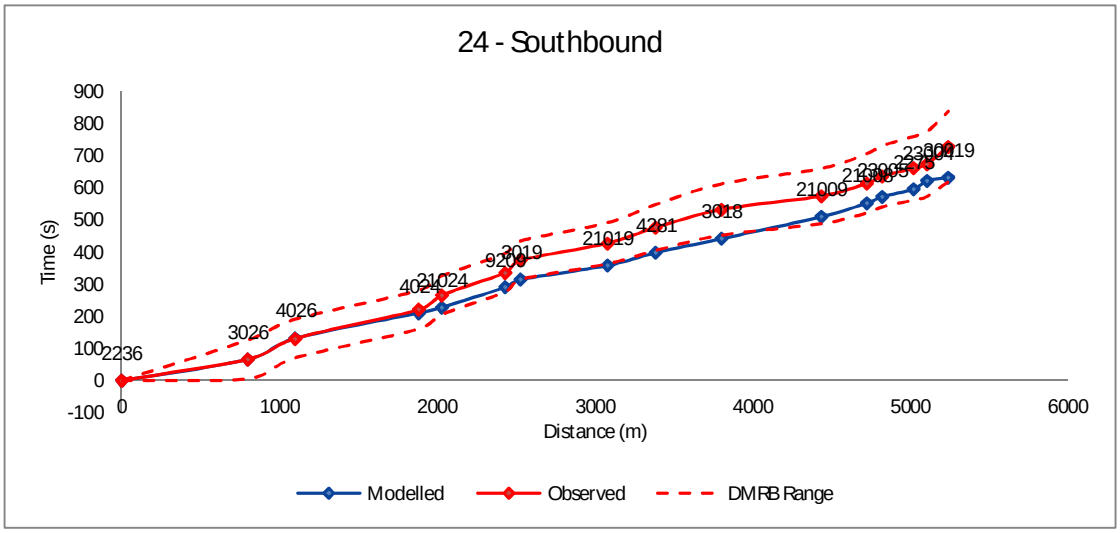
JT Graphs AM Peak

Model Map

Redraw Graphs



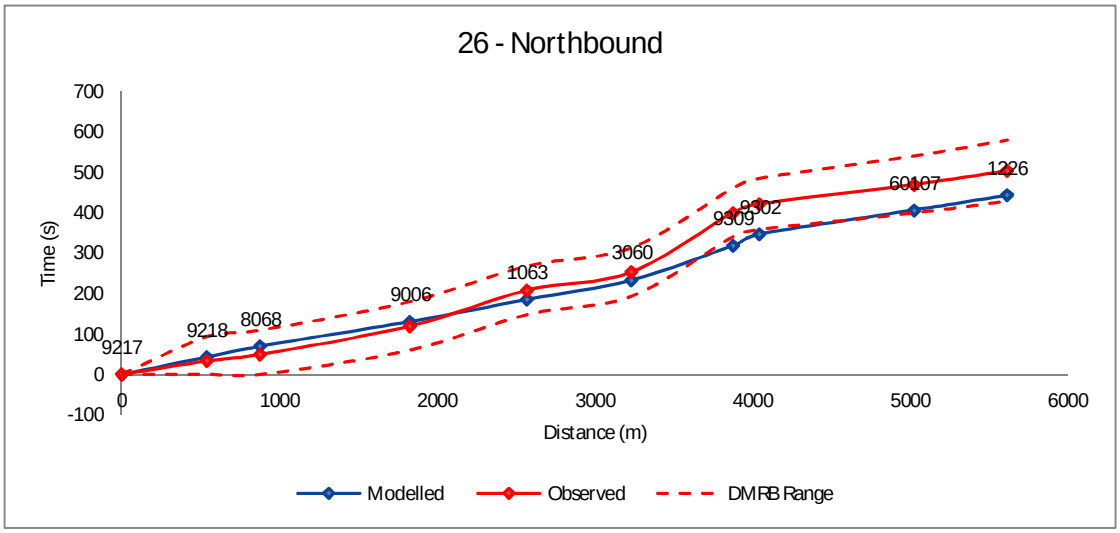


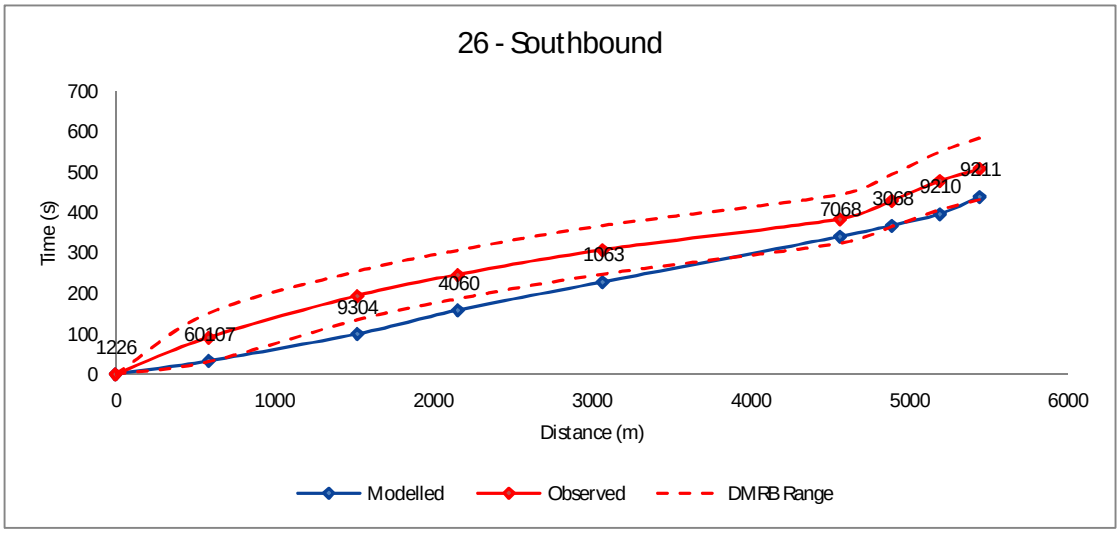


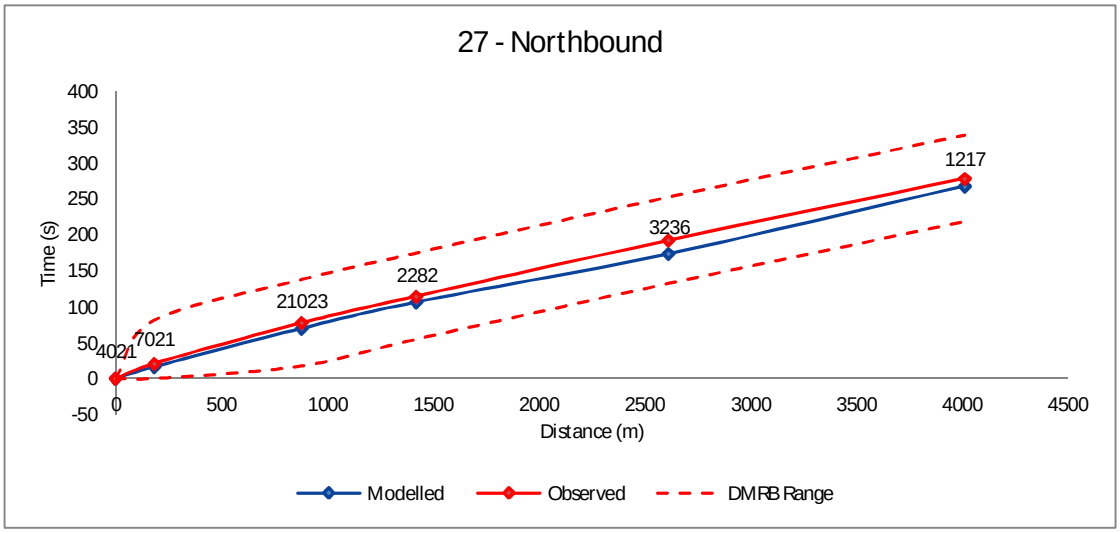
JT Graphs AM Peak

Model Map

Redraw Graphs



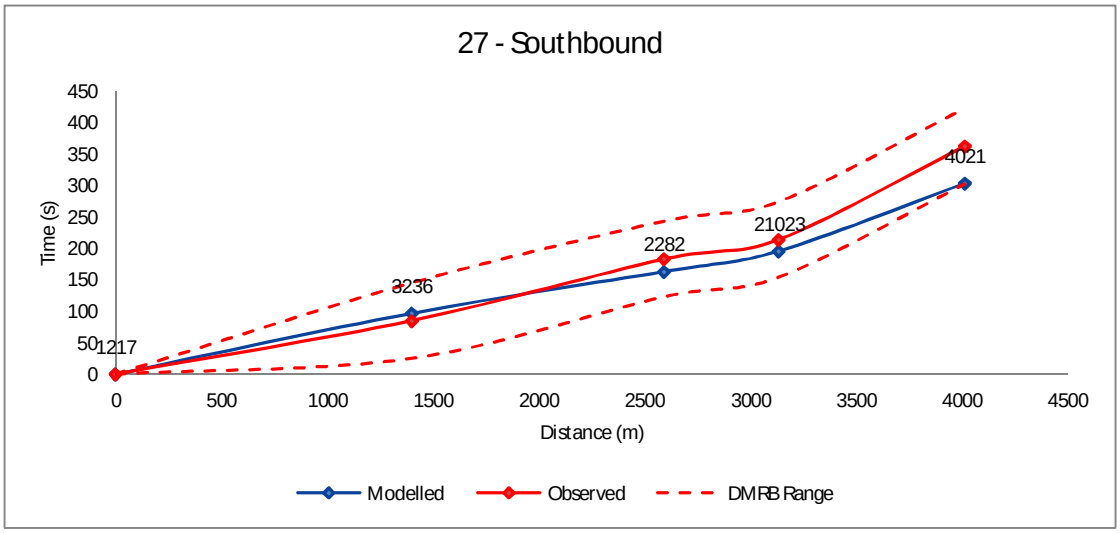


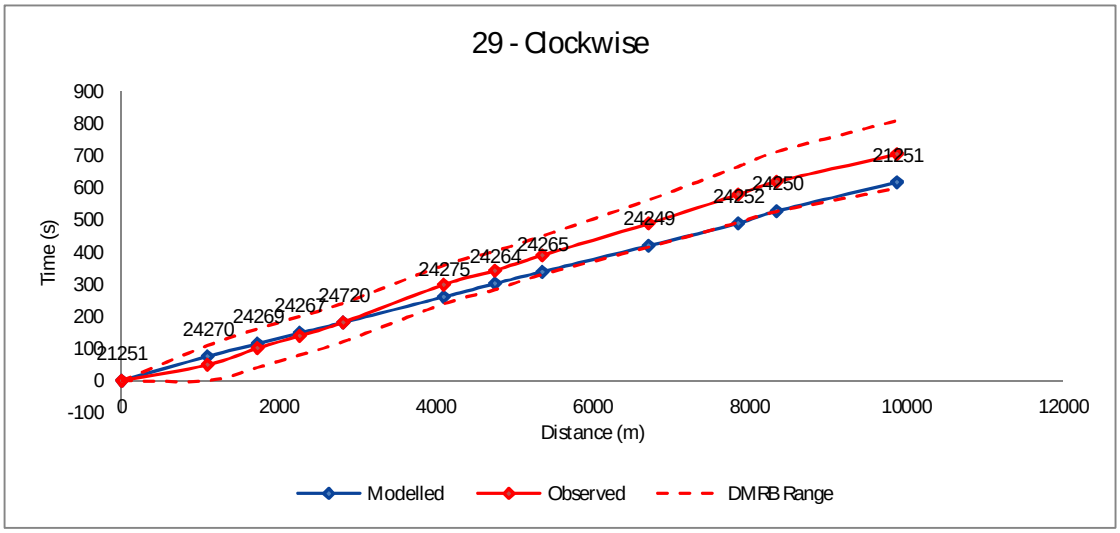


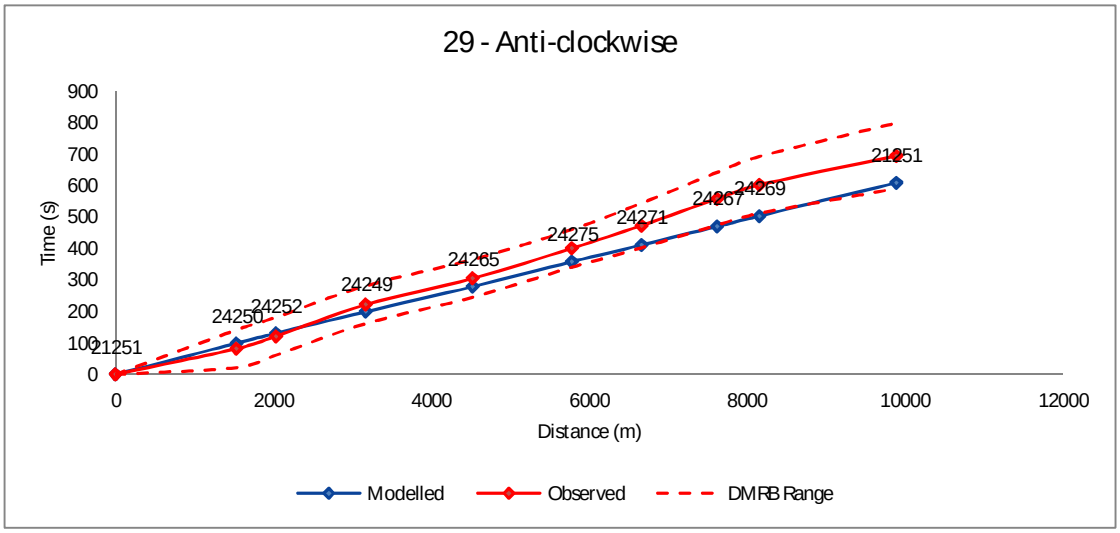
JT Graphs AM Peak

Model Map

Redraw Graphs



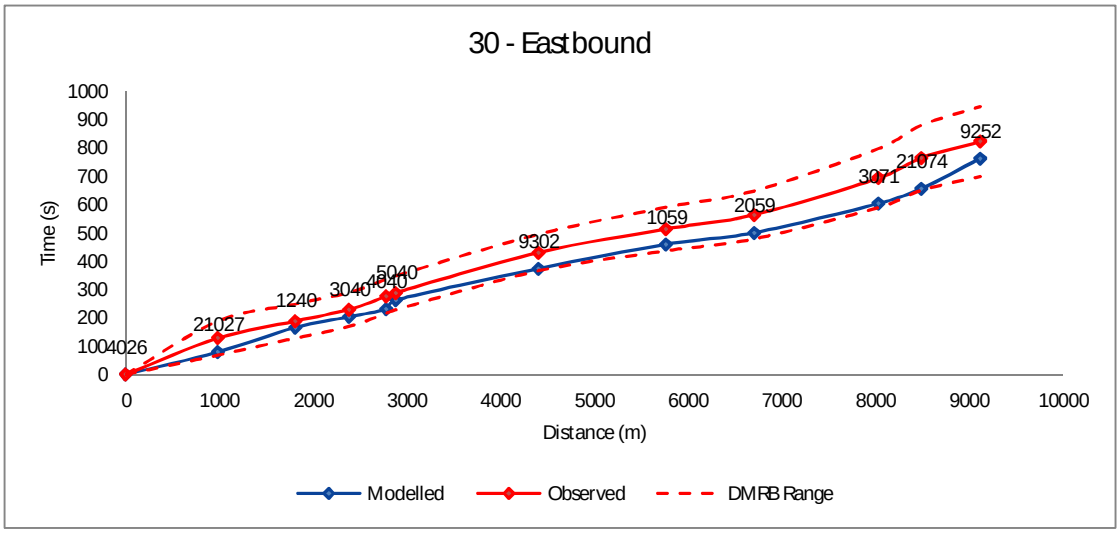


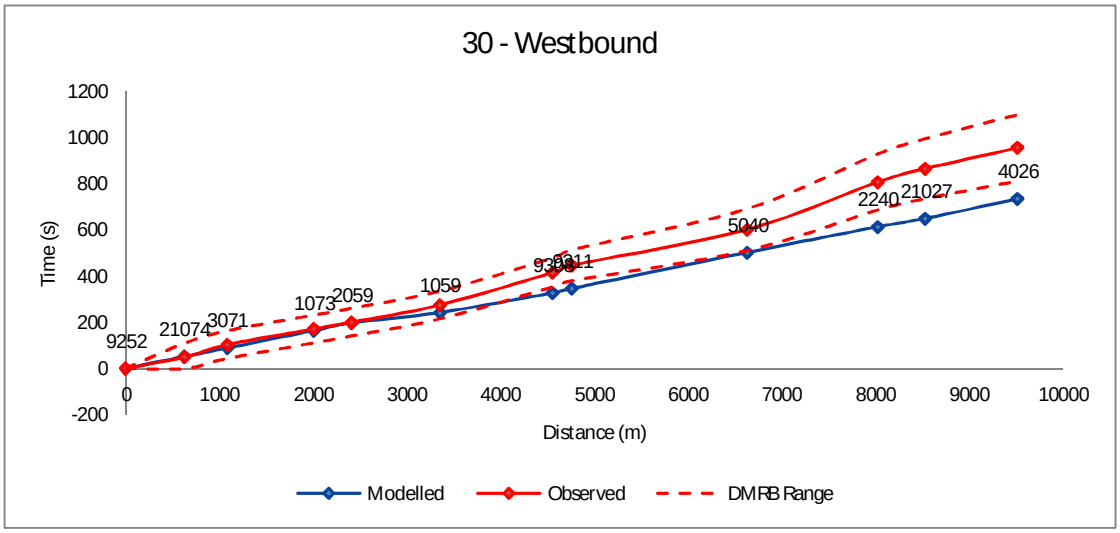


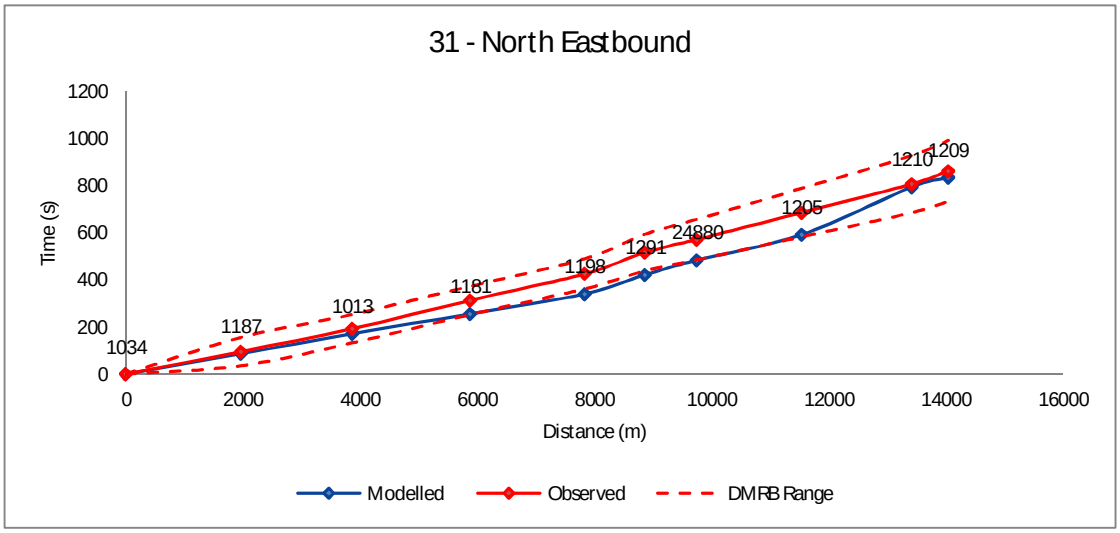
JT Graphs AM Peak

Model Map

Redraw Graphs



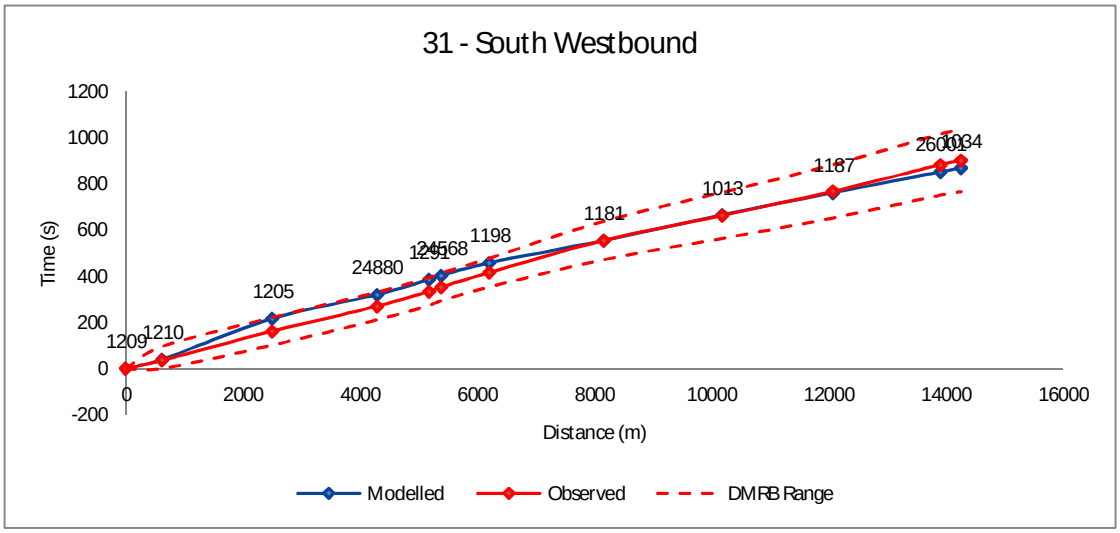


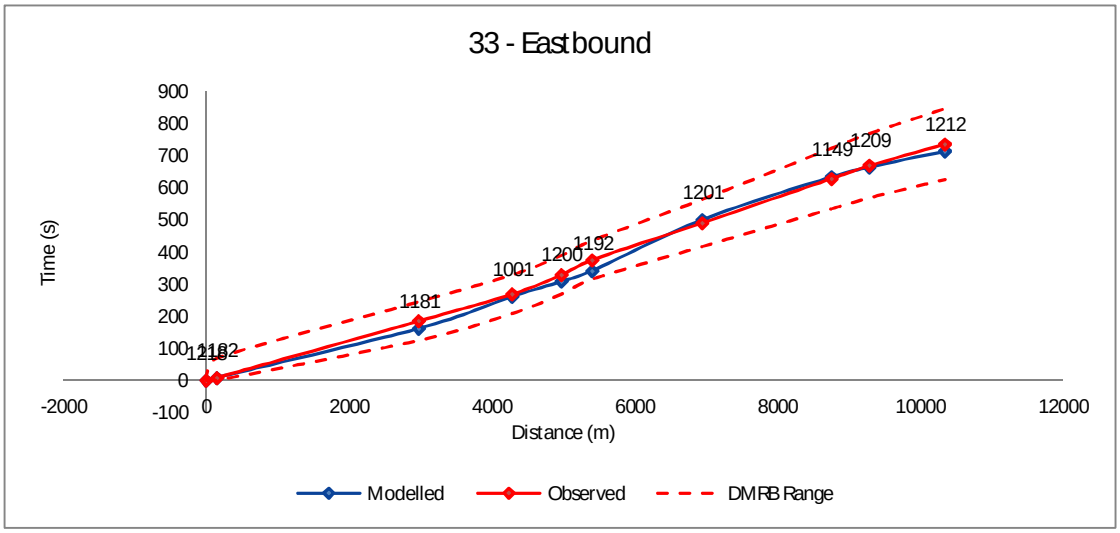


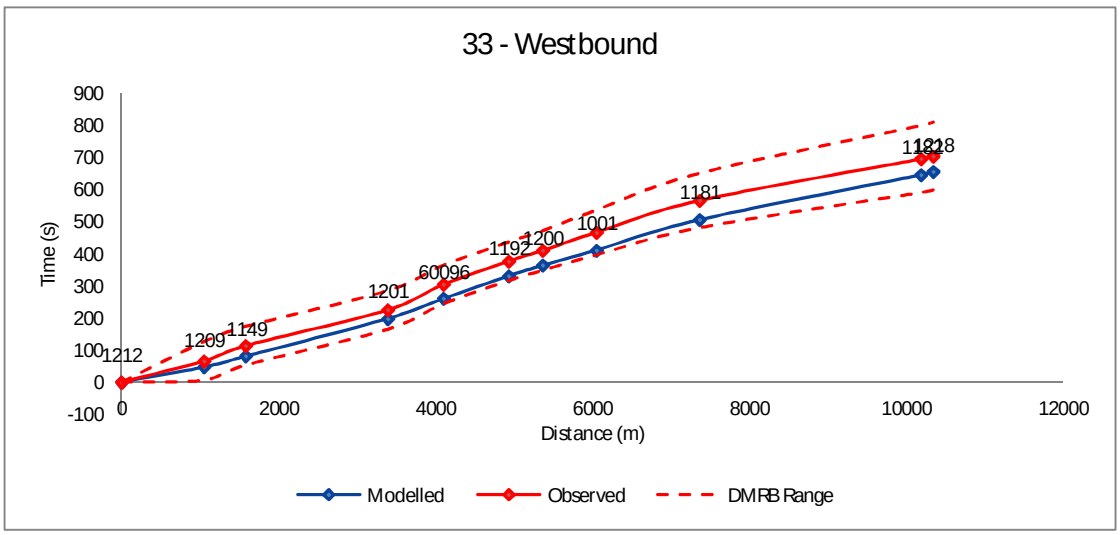
JT Graphs AM Peak

Model Map

Redraw Graphs



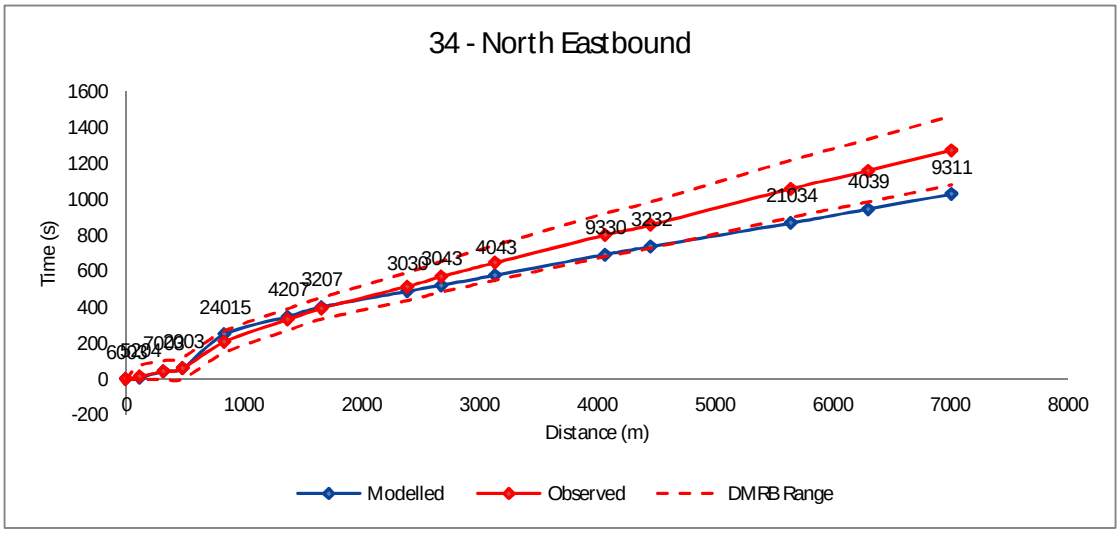


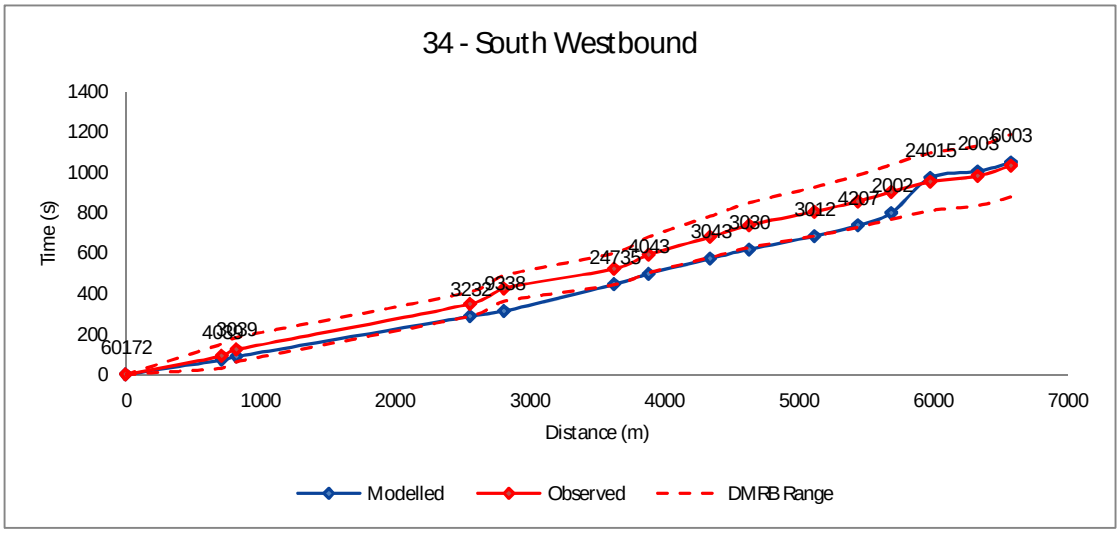


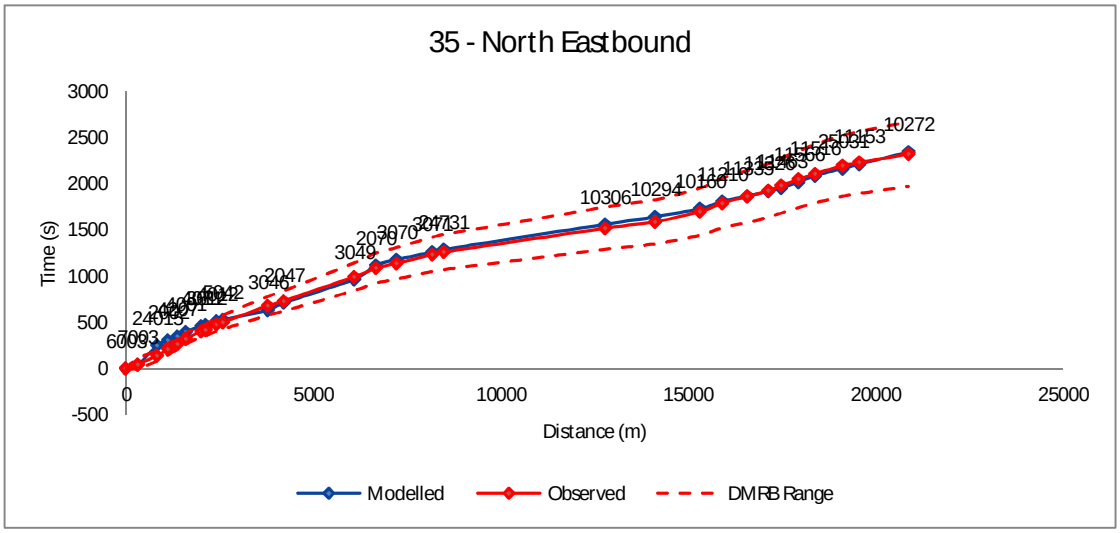
JT Graphs AM Peak

Model Map

Redraw Graphs



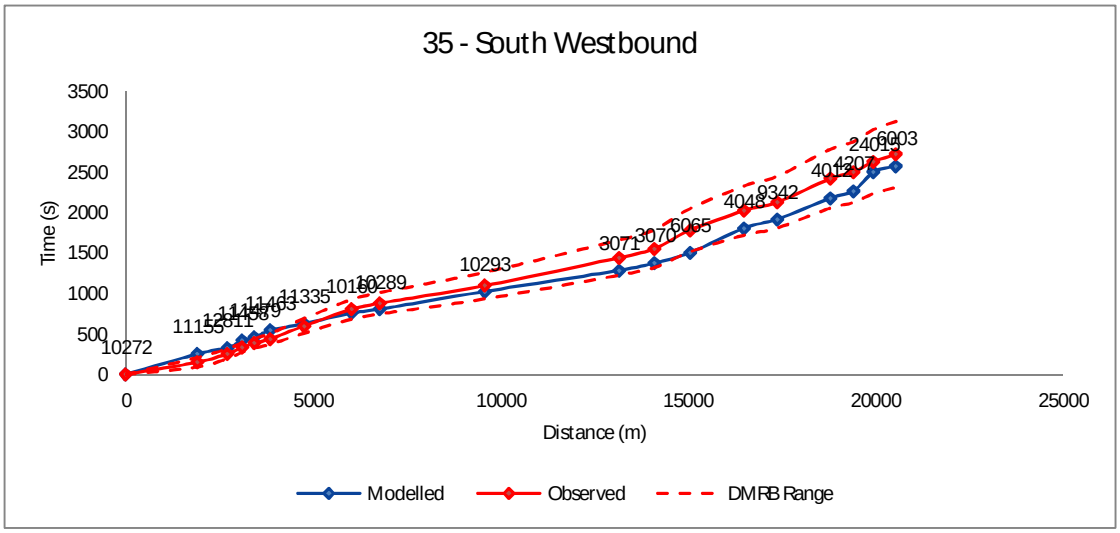


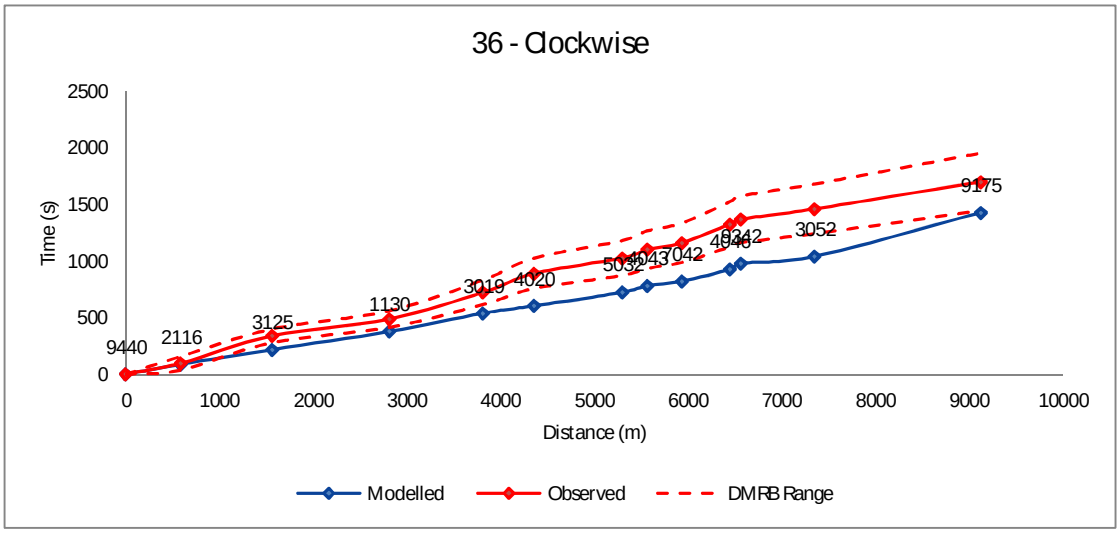


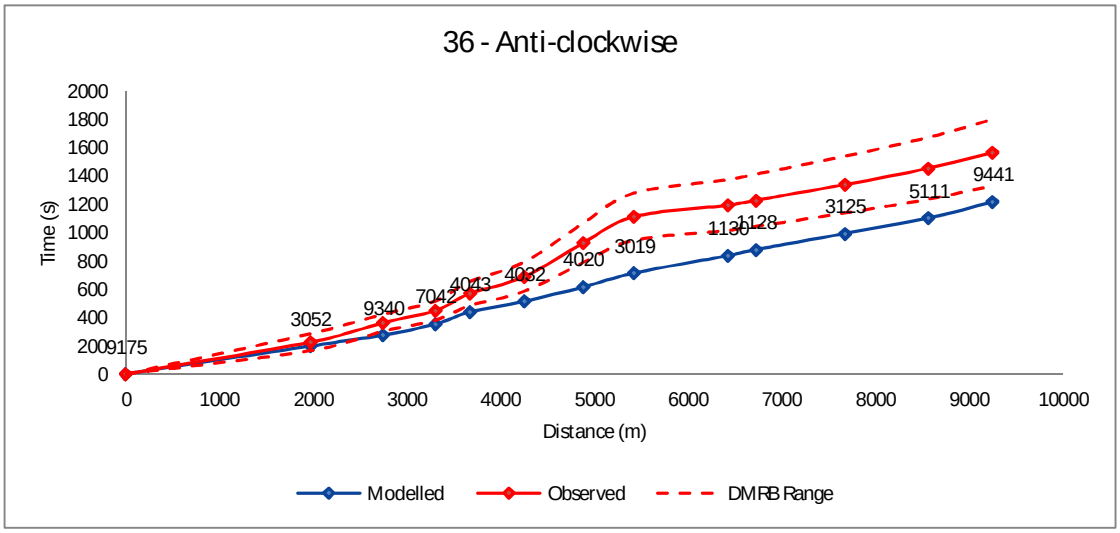
JT Graphs AM Peak

Model Map

Redraw Graphs



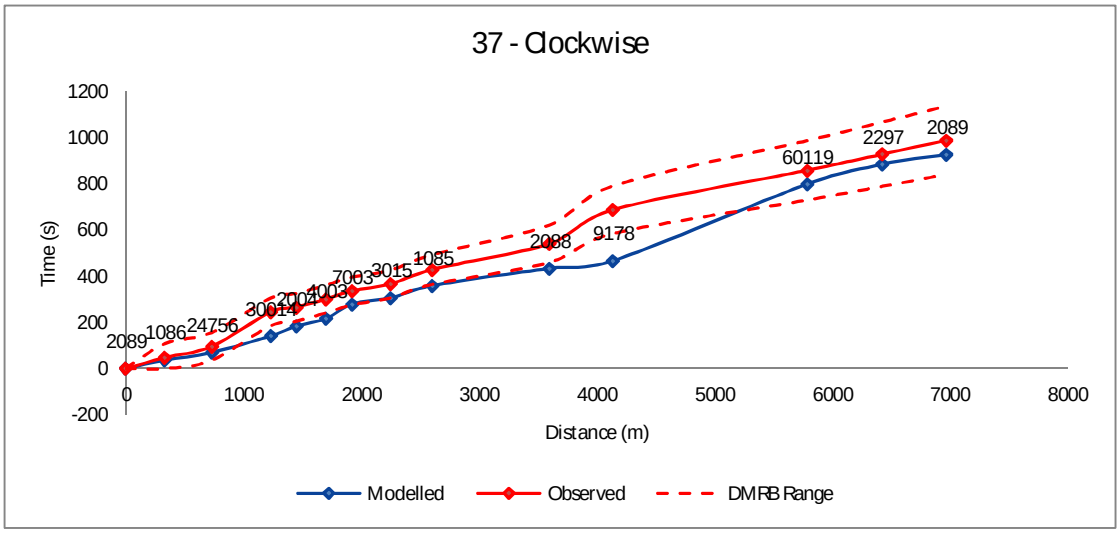


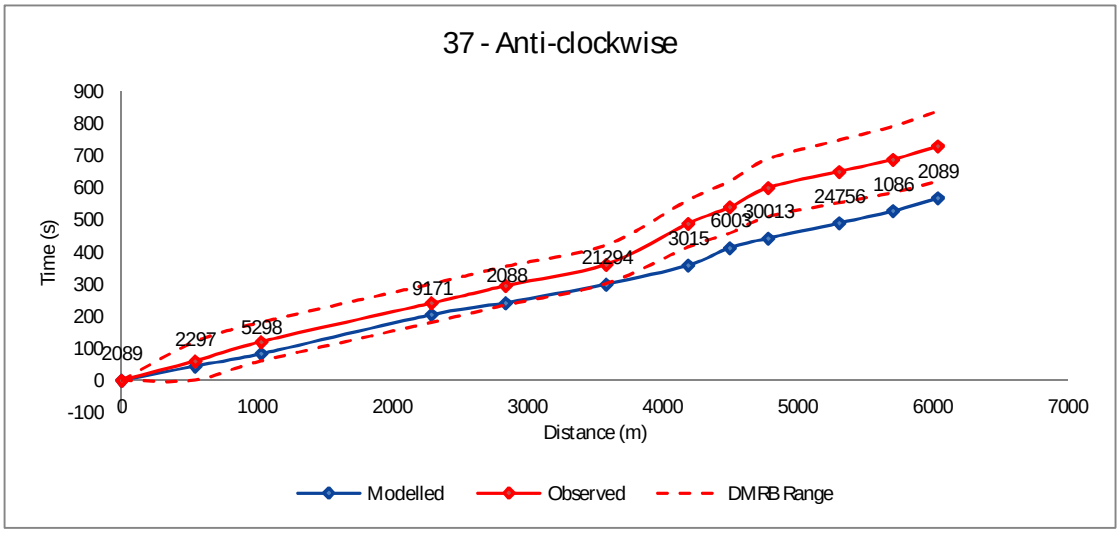


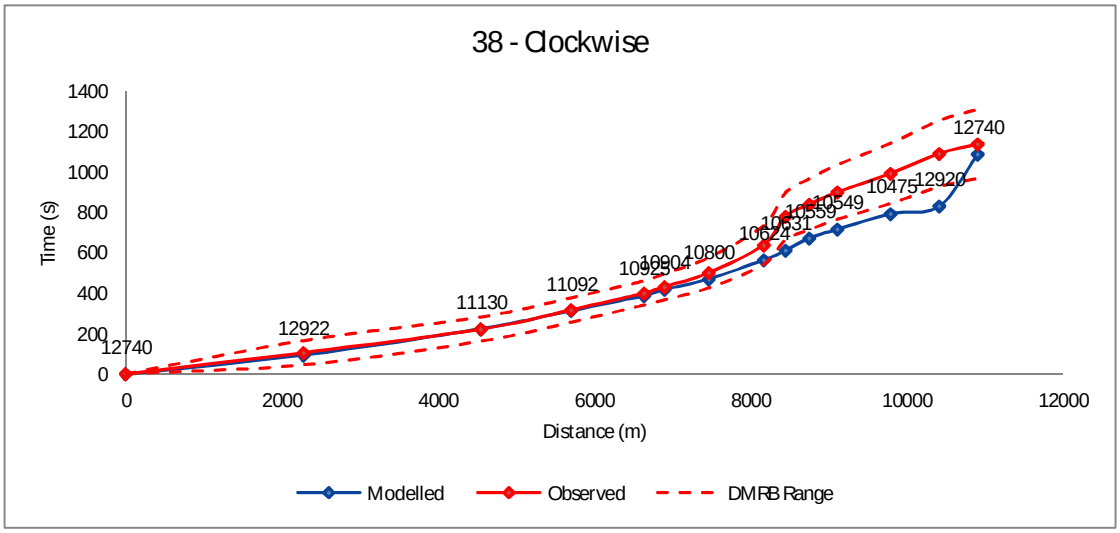
JT Graphs AM Peak

Model Map

Redraw Graphs



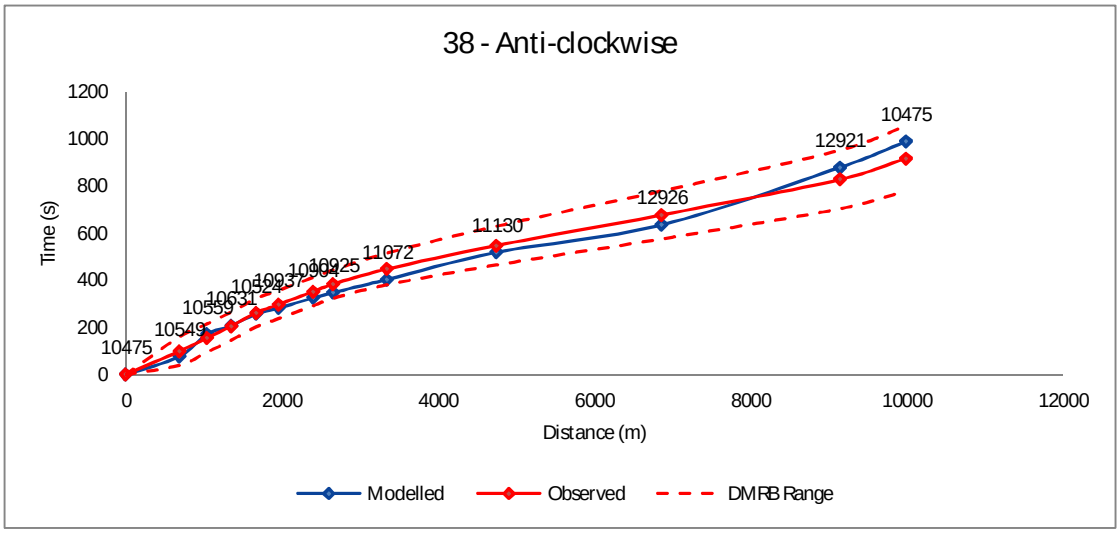


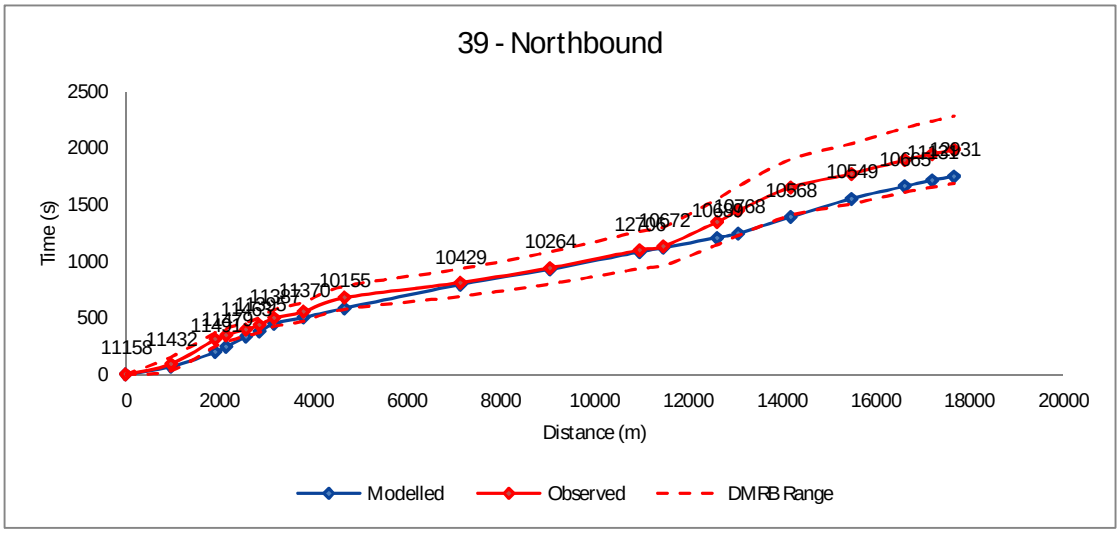


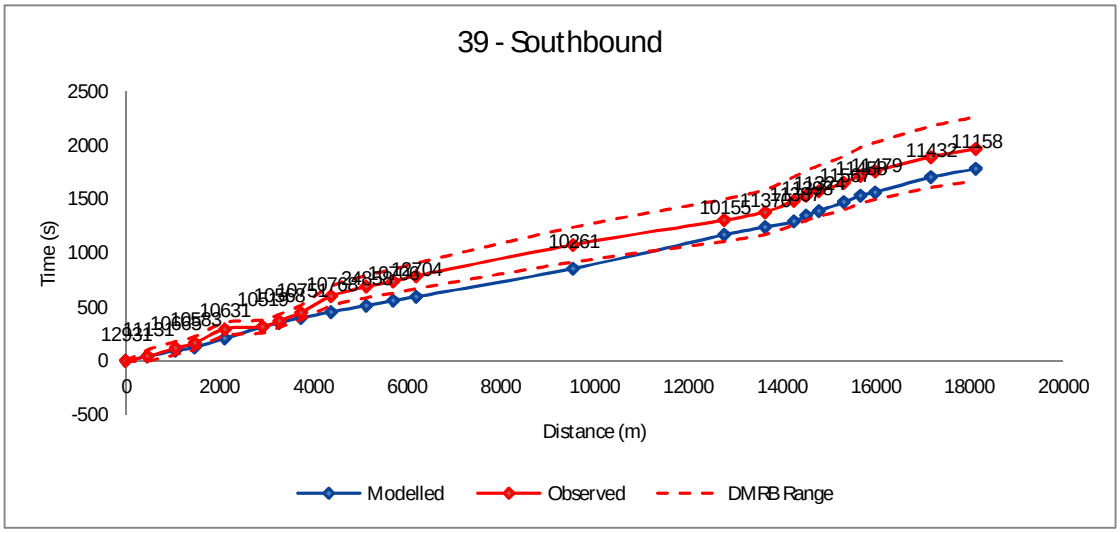
JT Graphs AM Peak

Model Map

Redraw Graphs



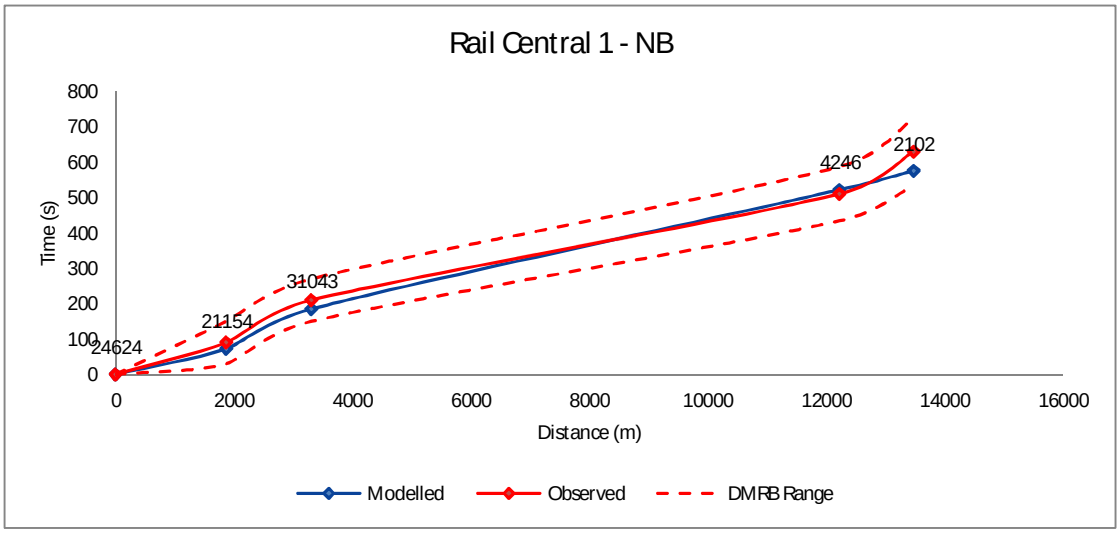


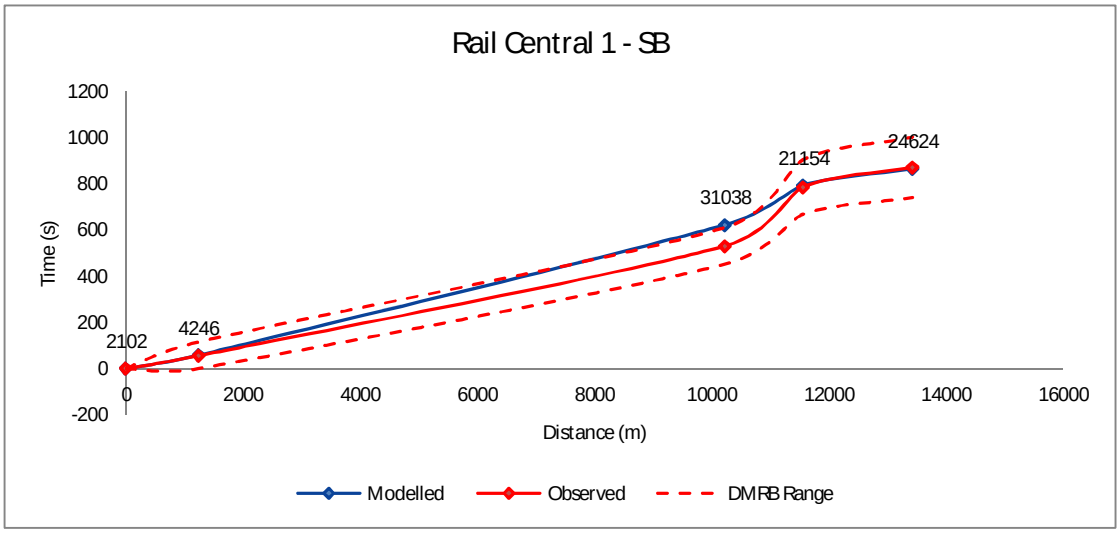


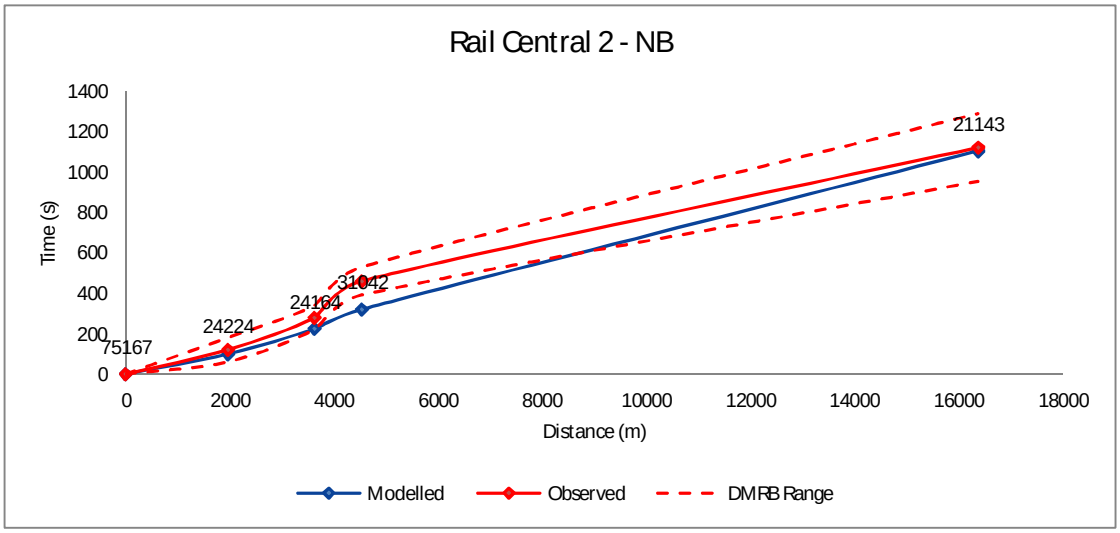
JT Graphs AM Peak

Model Map

Redraw Graphs



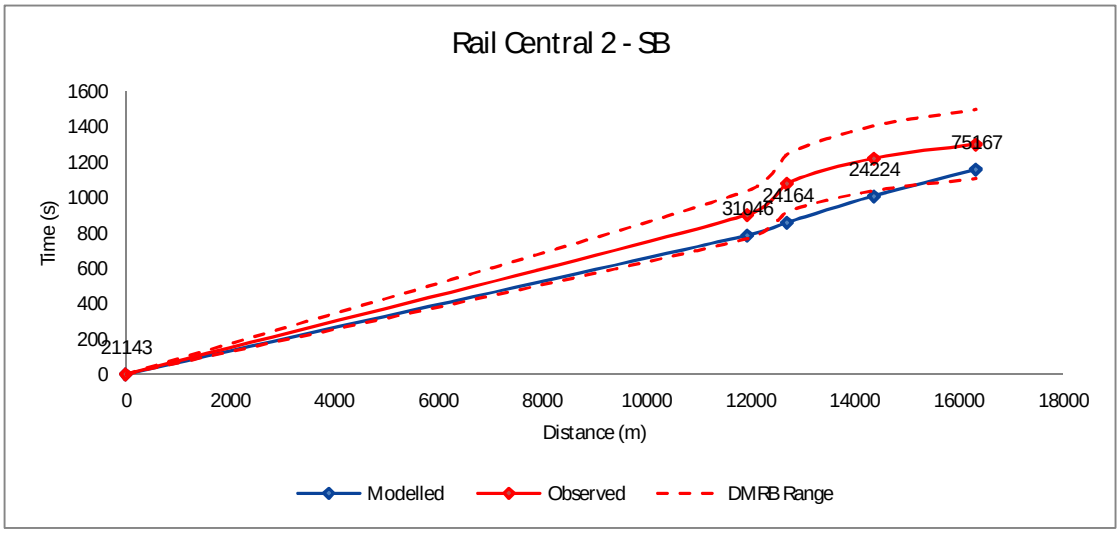


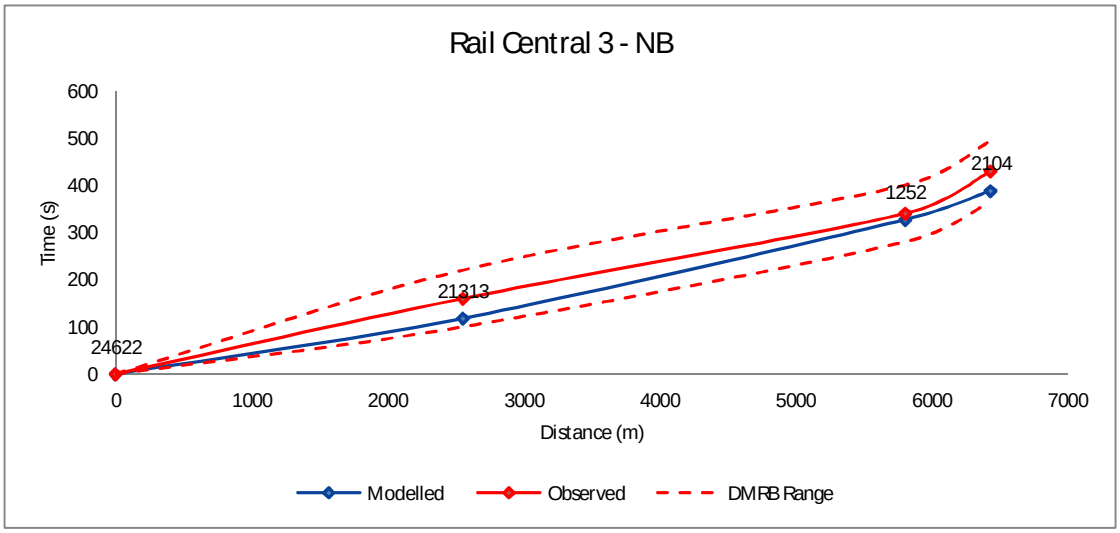


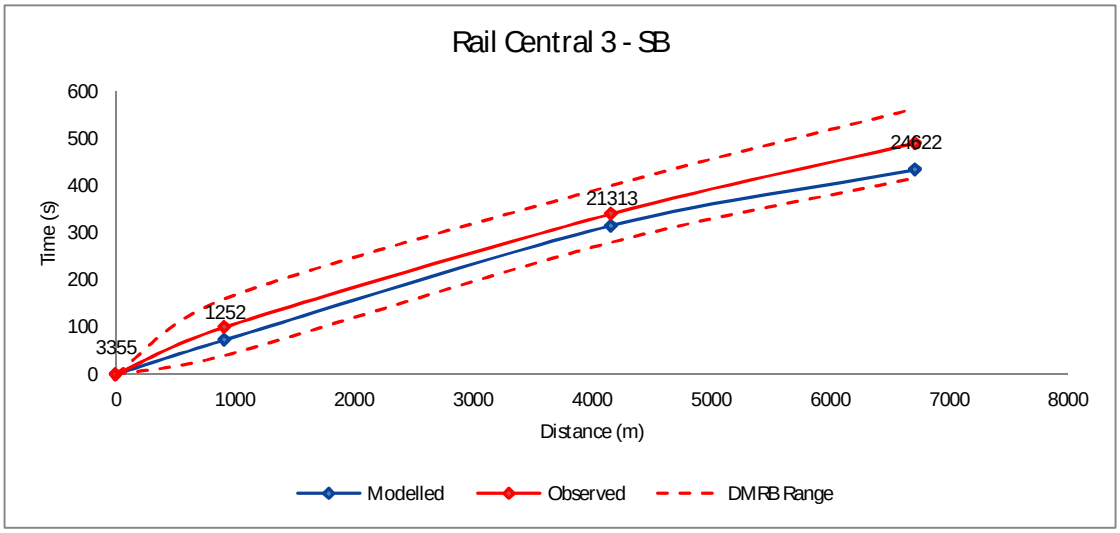
JT Graphs AM Peak

Model Map

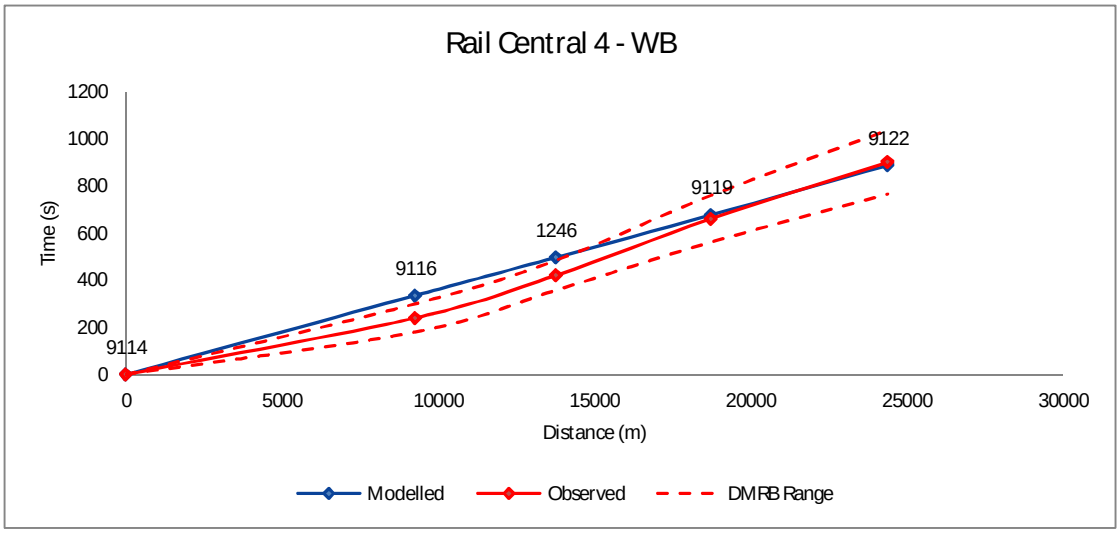
Redraw Graphs

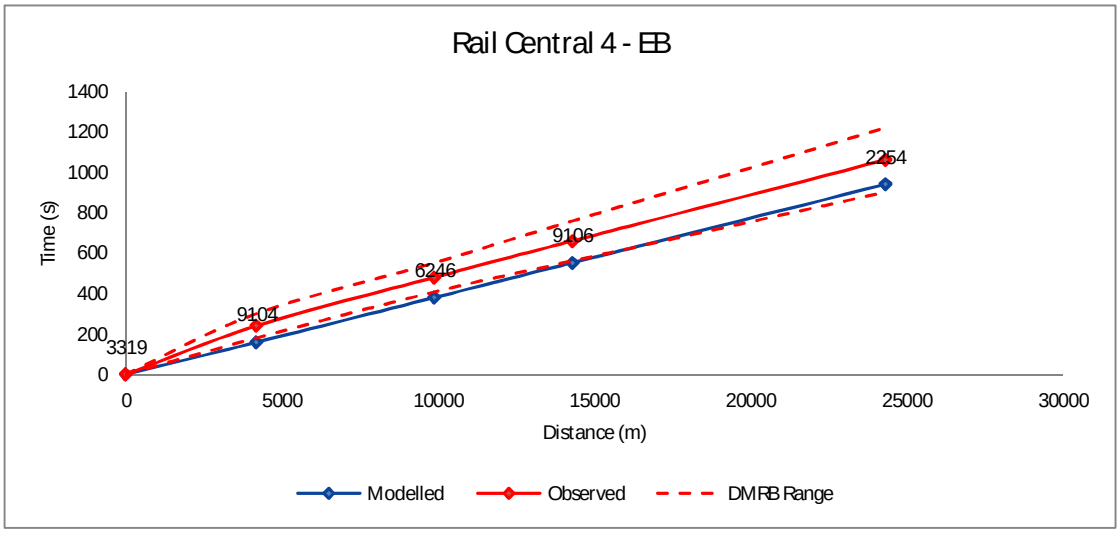


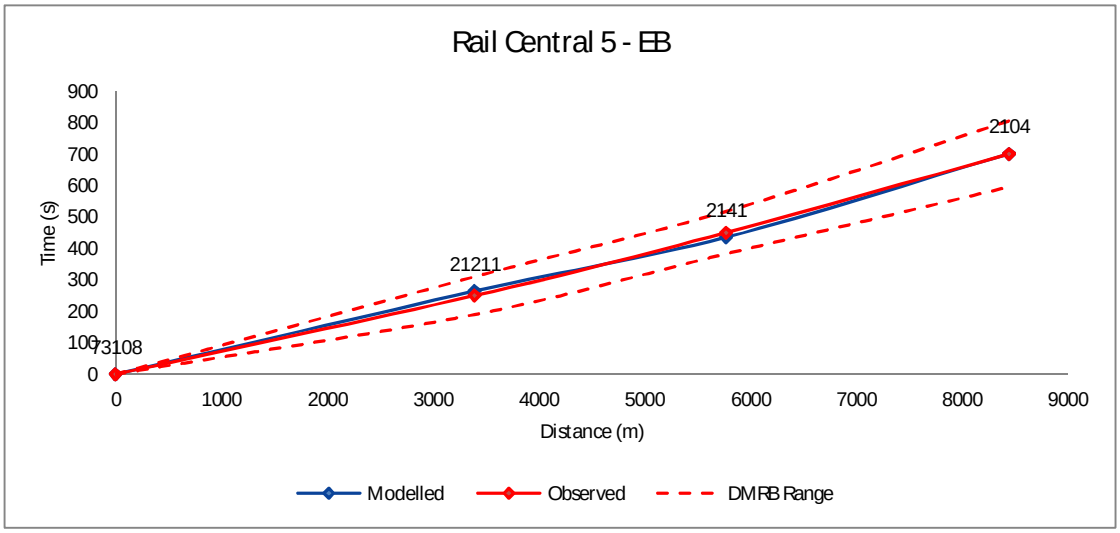




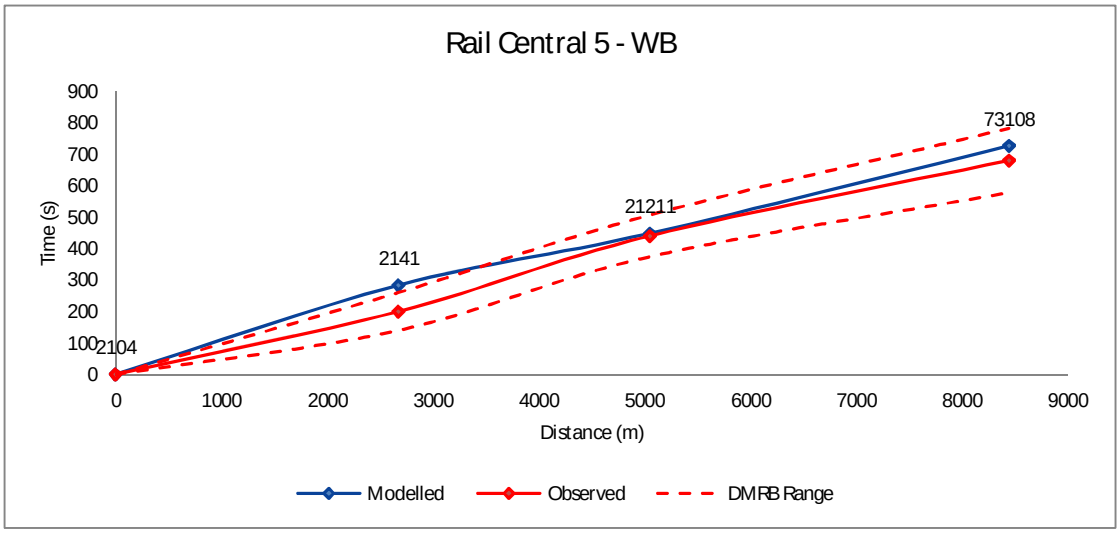
JT Graphs AM Peak

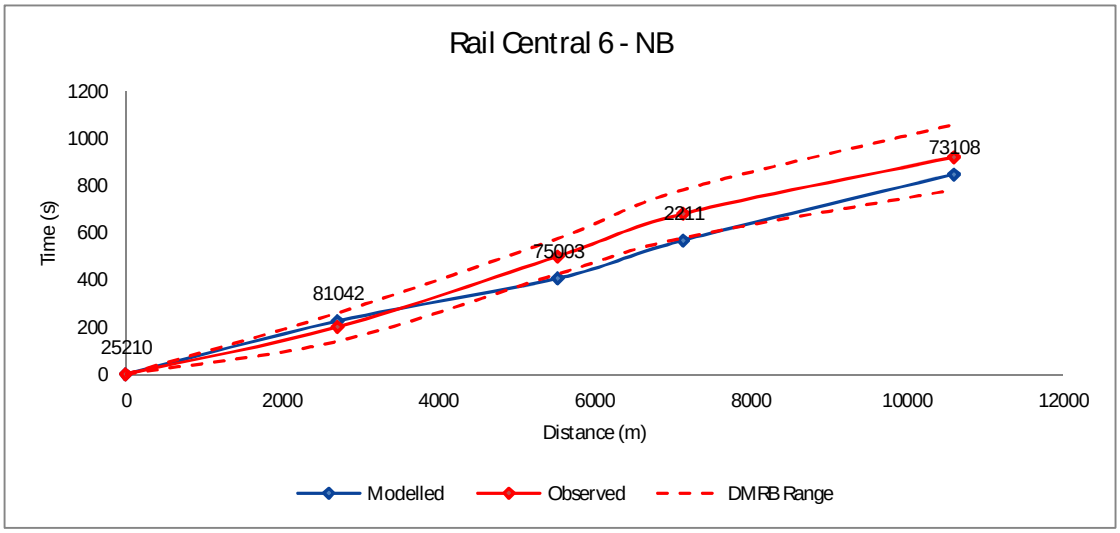


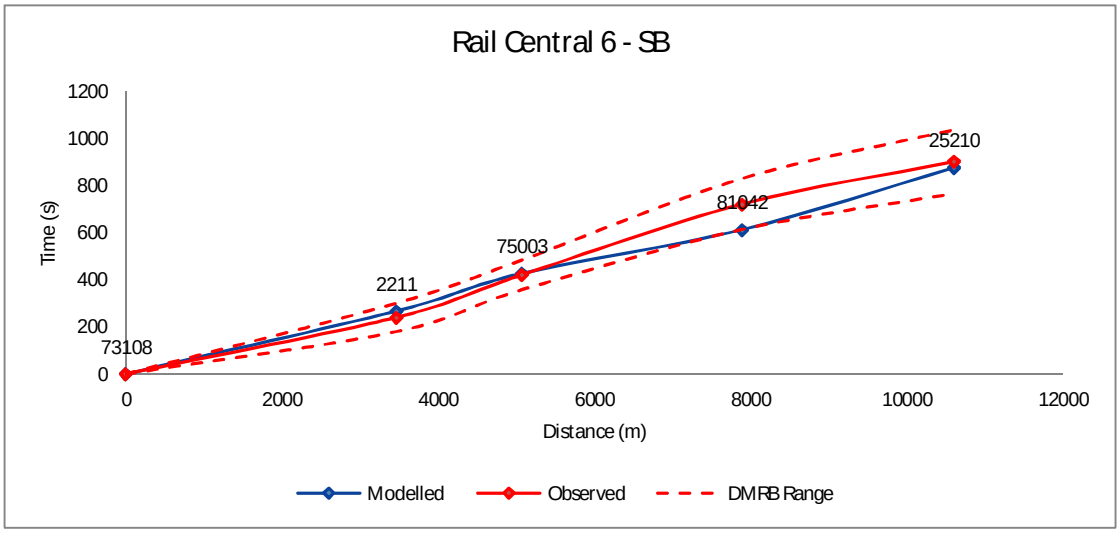




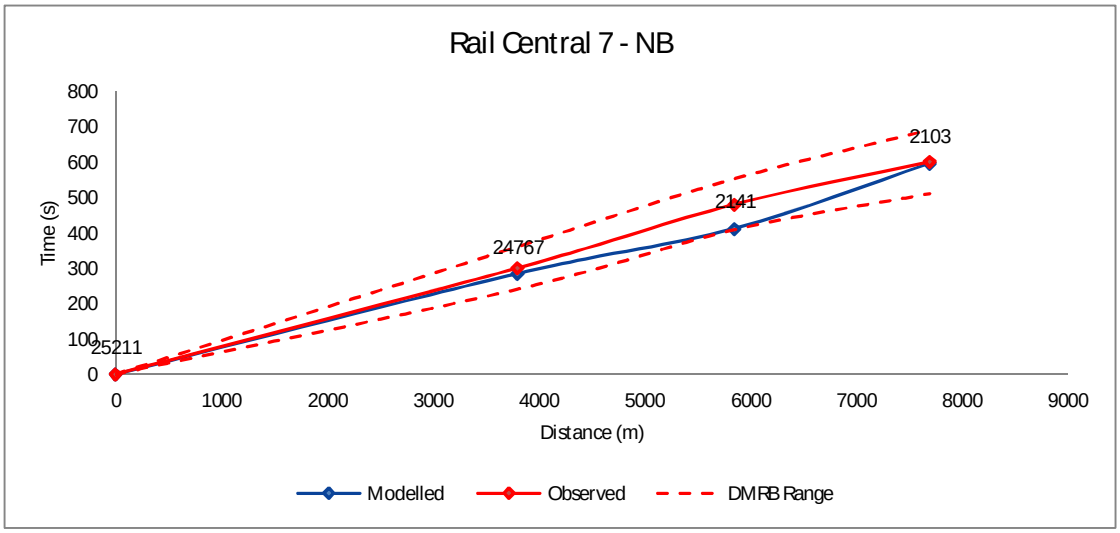
JT Graphs AM Peak

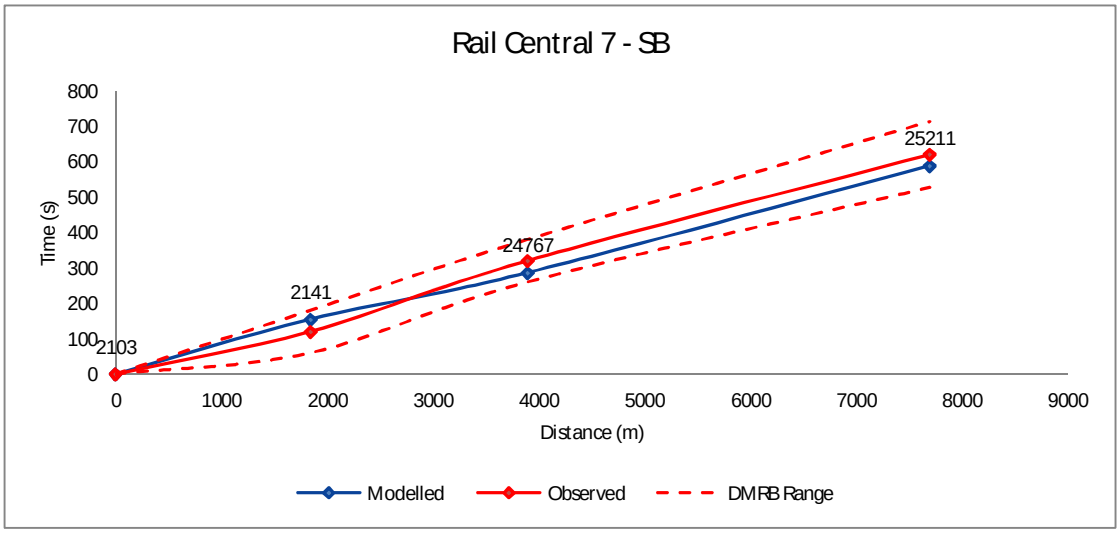


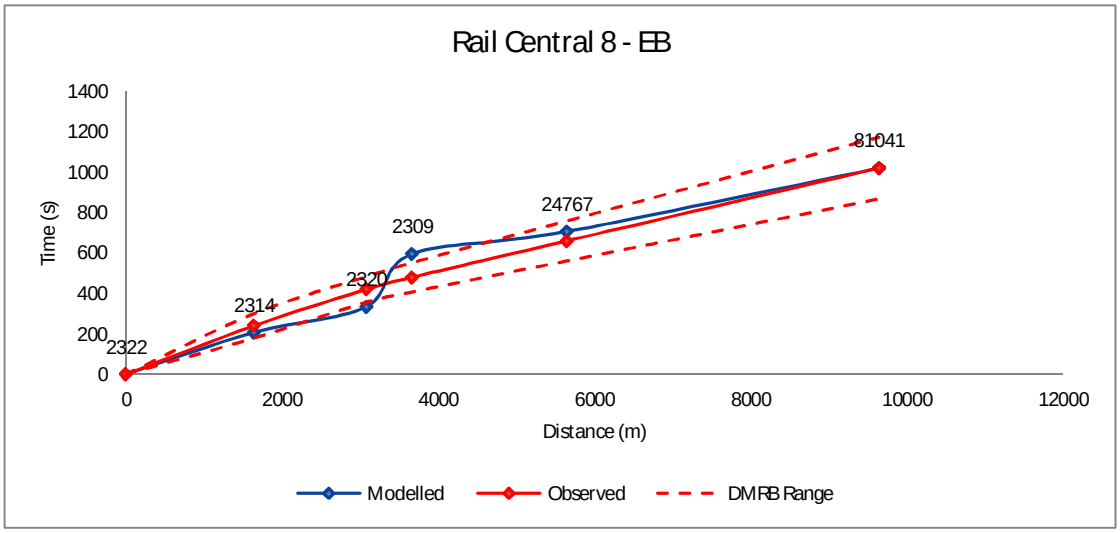




JT Graphs AM Peak



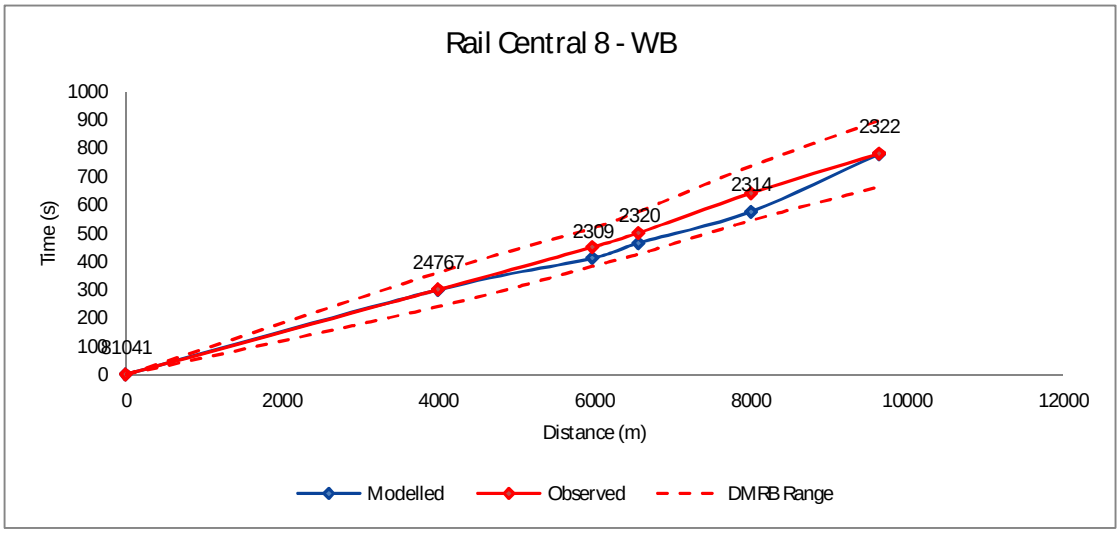




JT Graphs AM Peak

Model Map

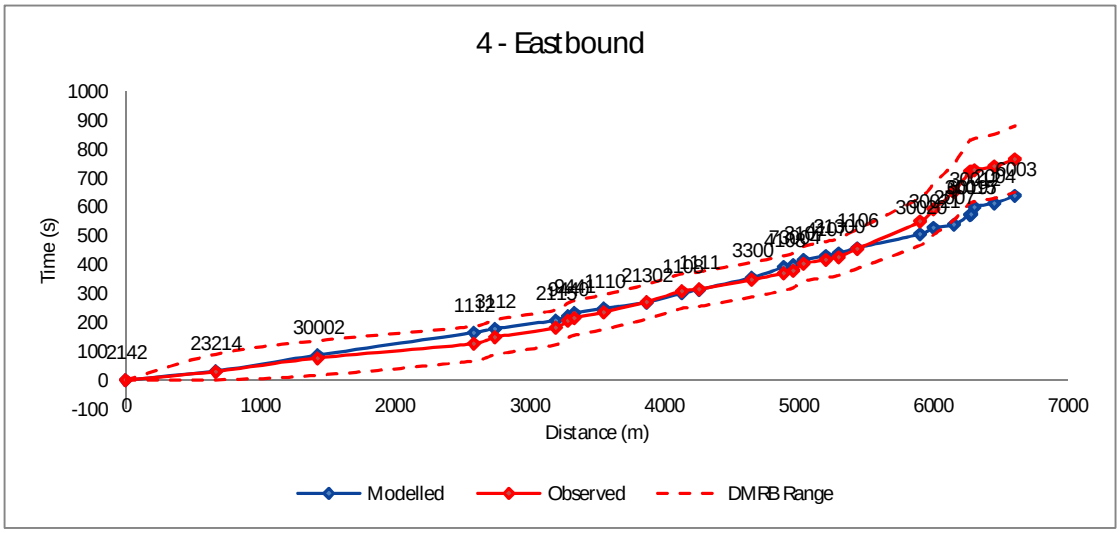
Redraw Graphs

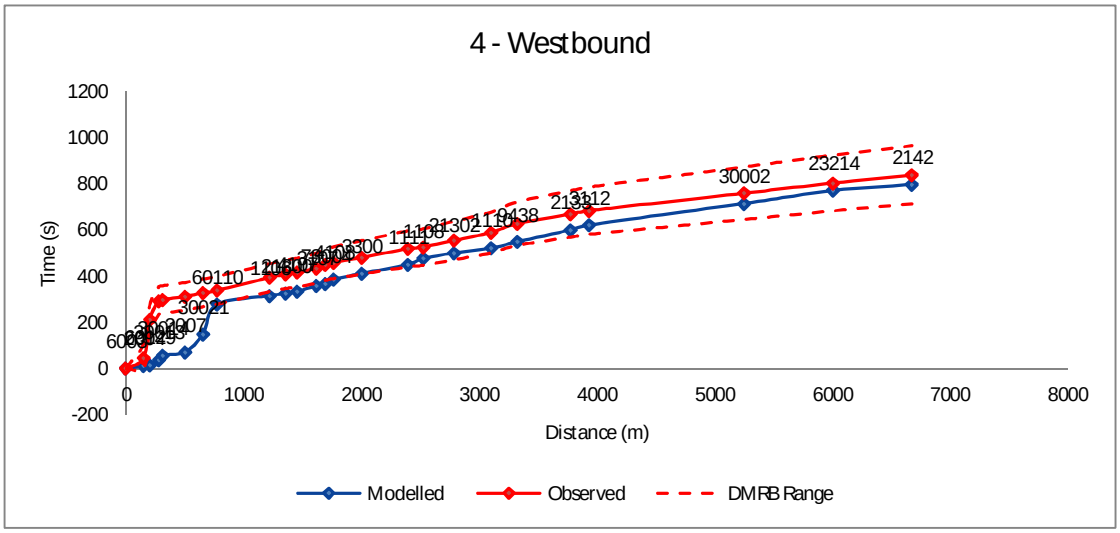


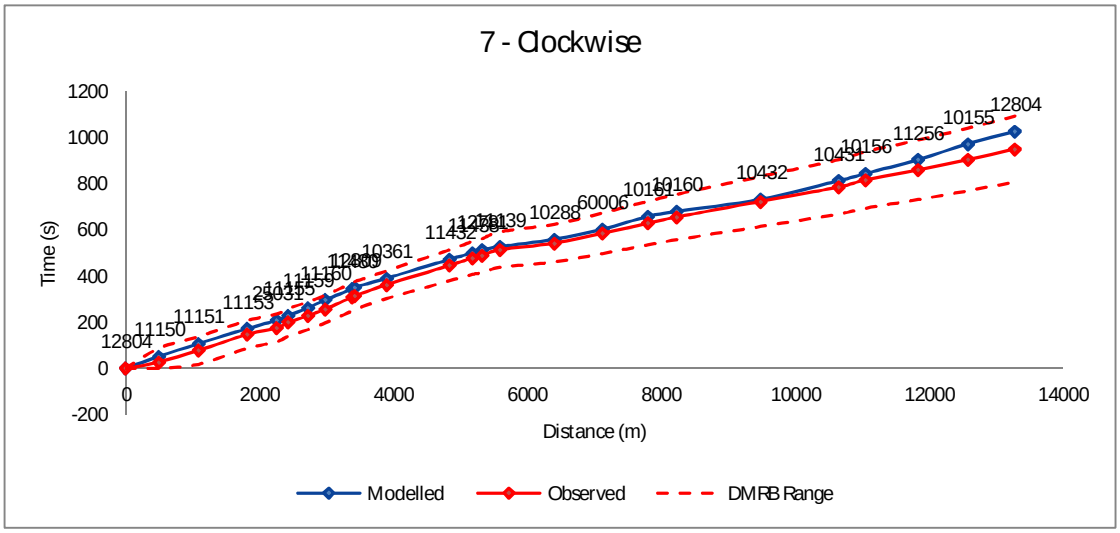
JT Graphs Interpeak

Model Map

Redraw Graphs



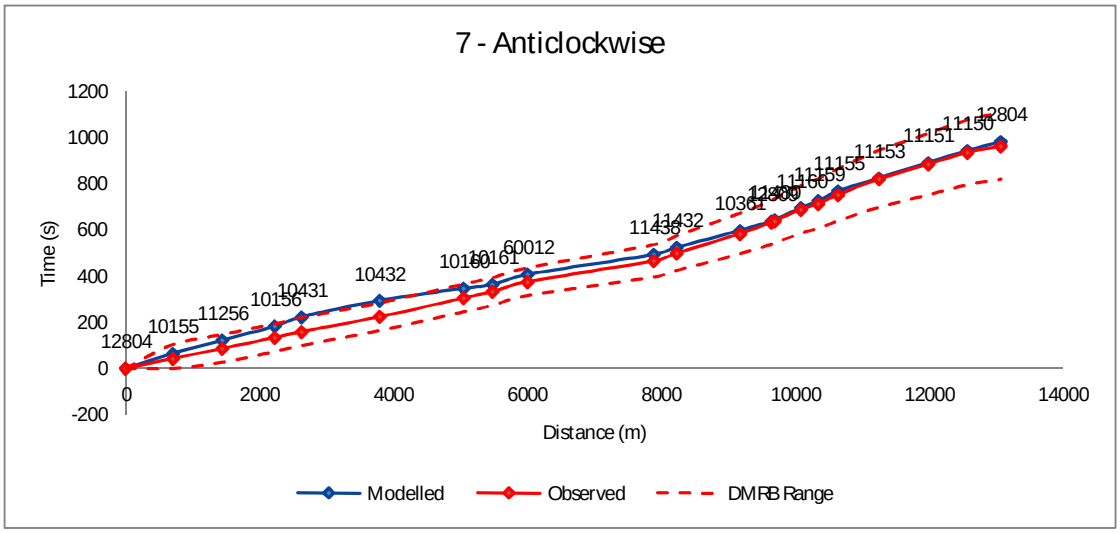


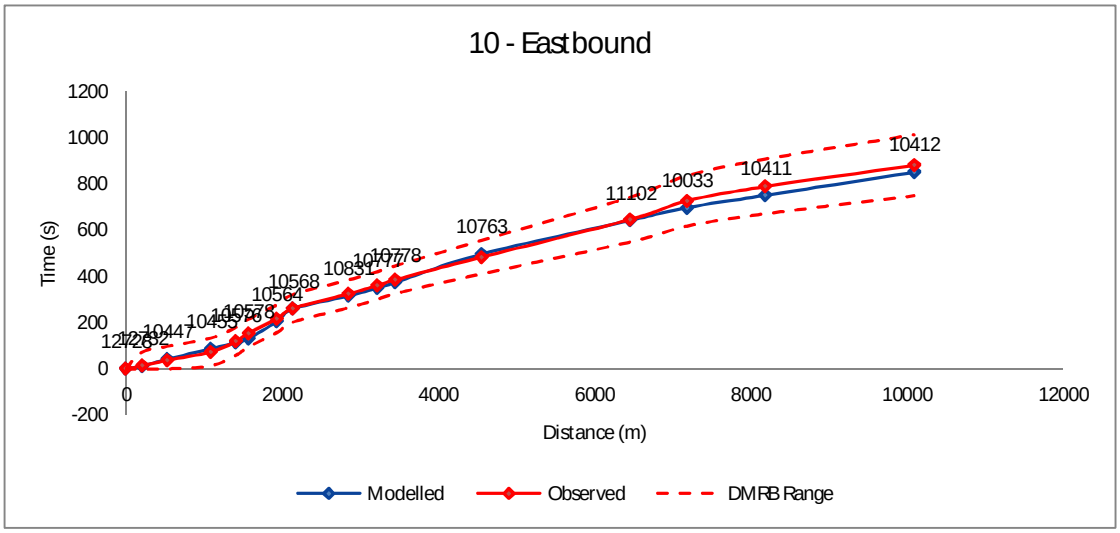


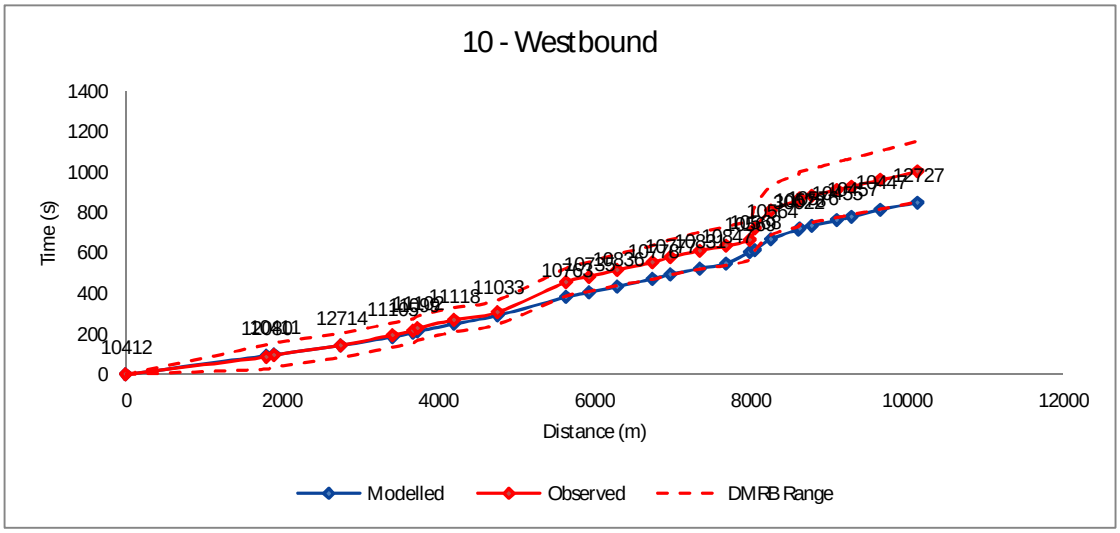
JT Graphs Interpeak

Model Map

Redraw Graphs



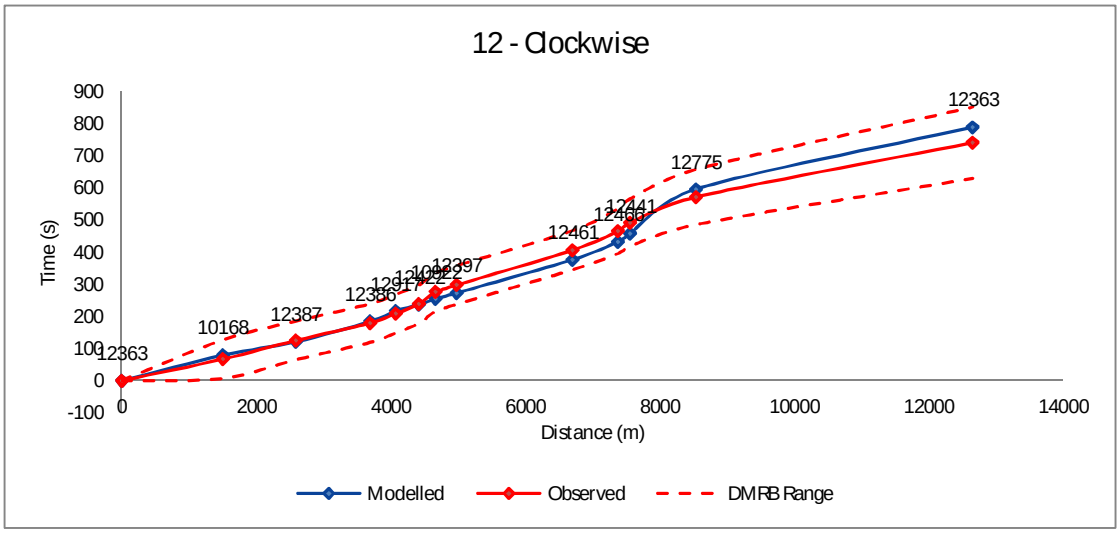


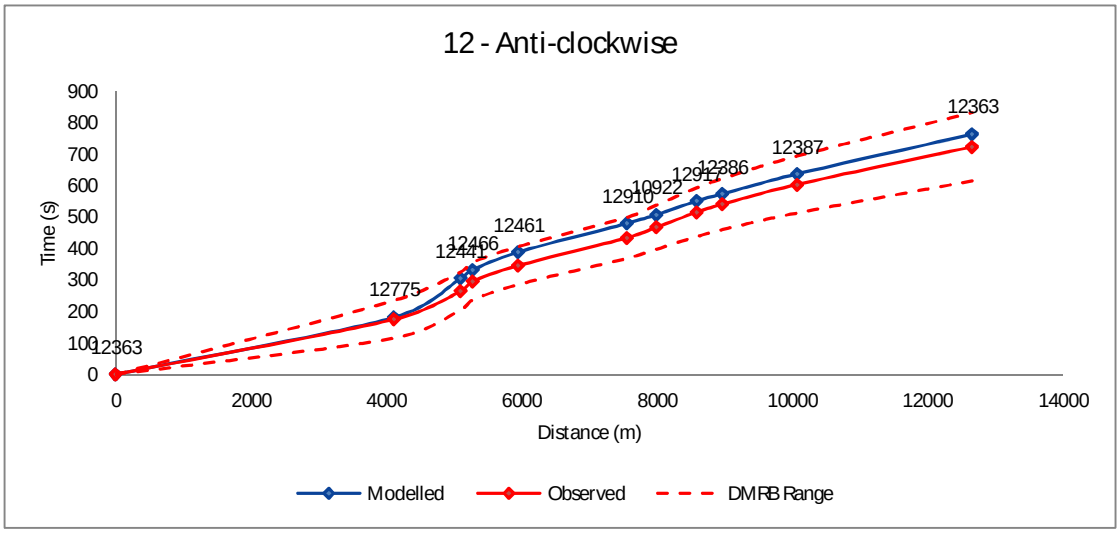


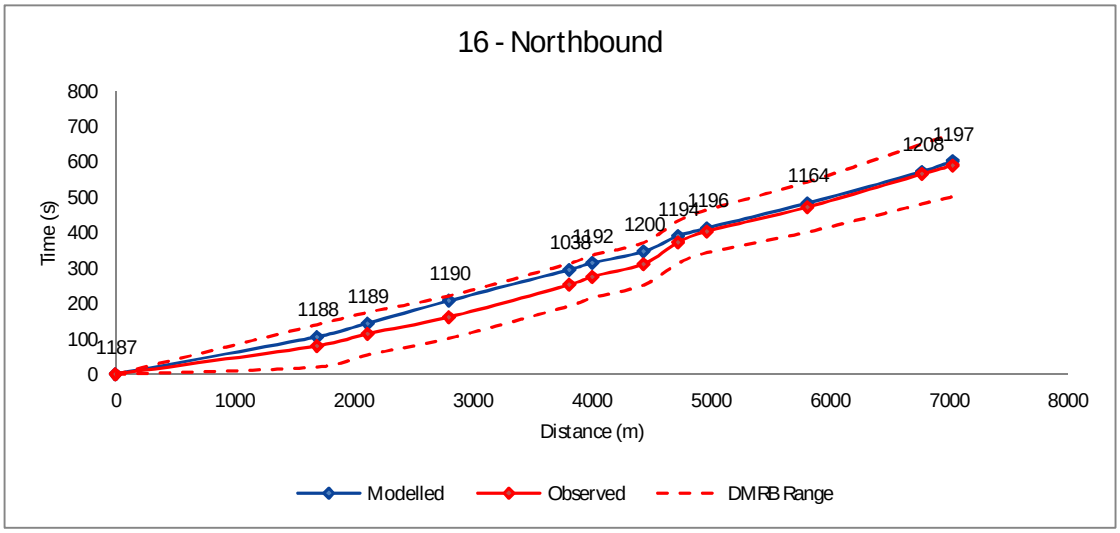
JT Graphs Interpeak

Model Map

Redraw Graphs



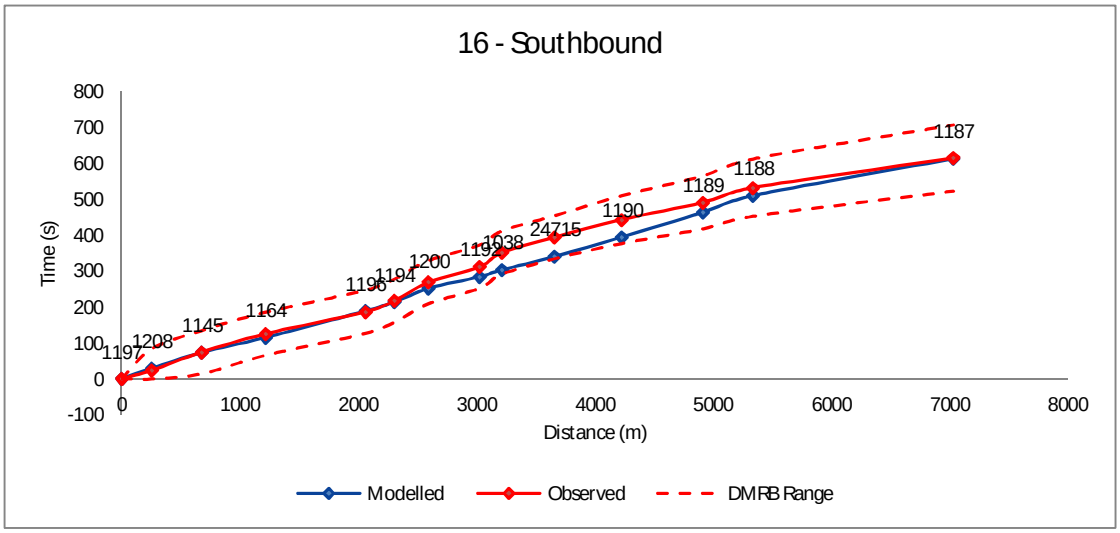


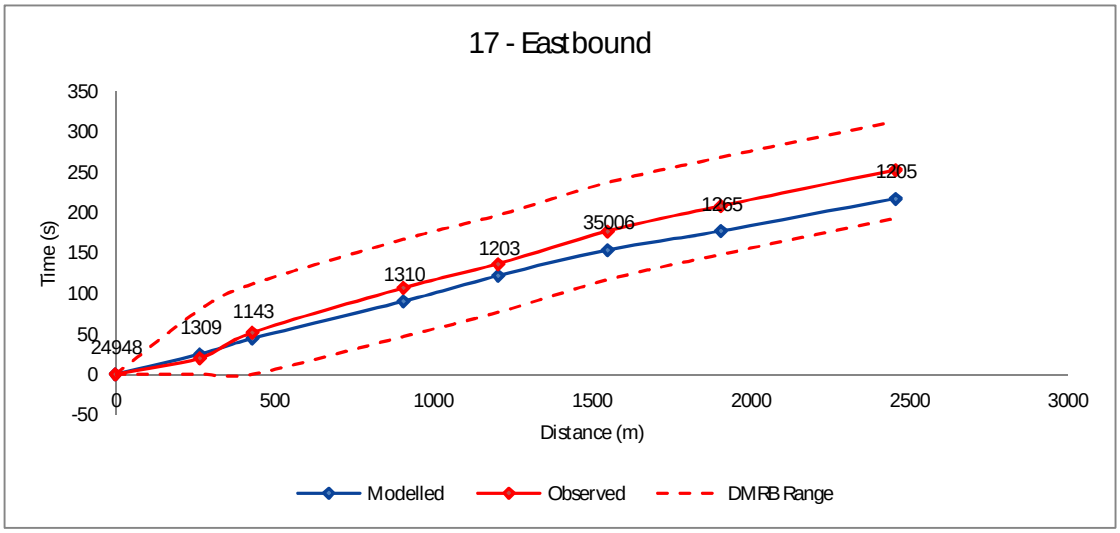


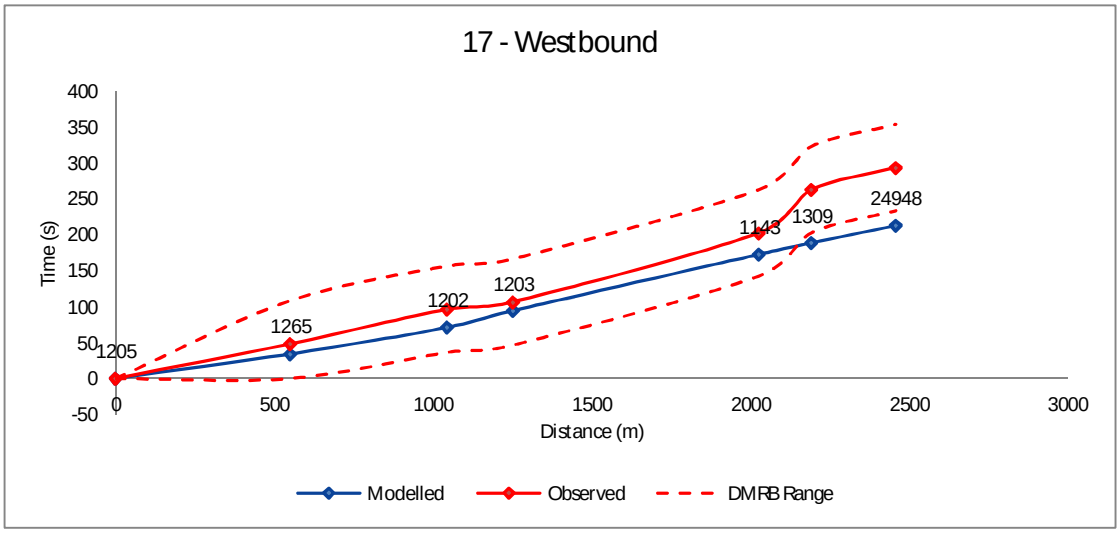
JT Graphs Interpeak

Model Map

Redraw Graphs



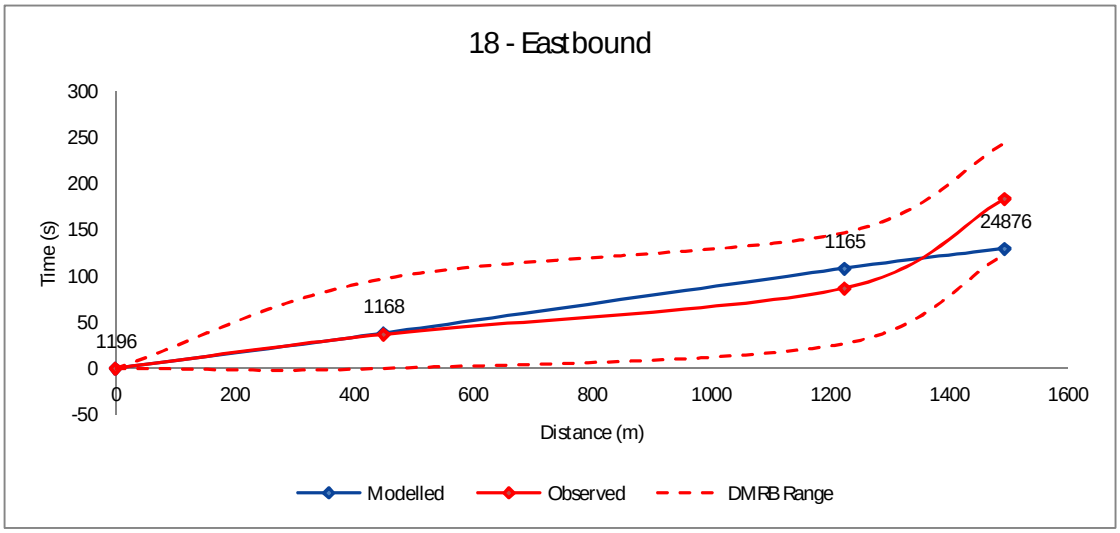


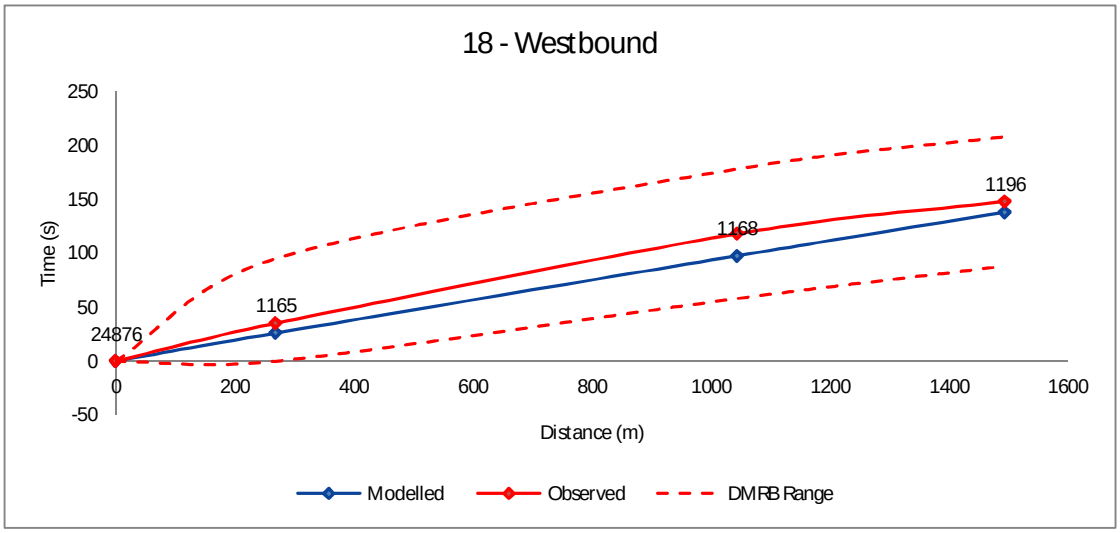


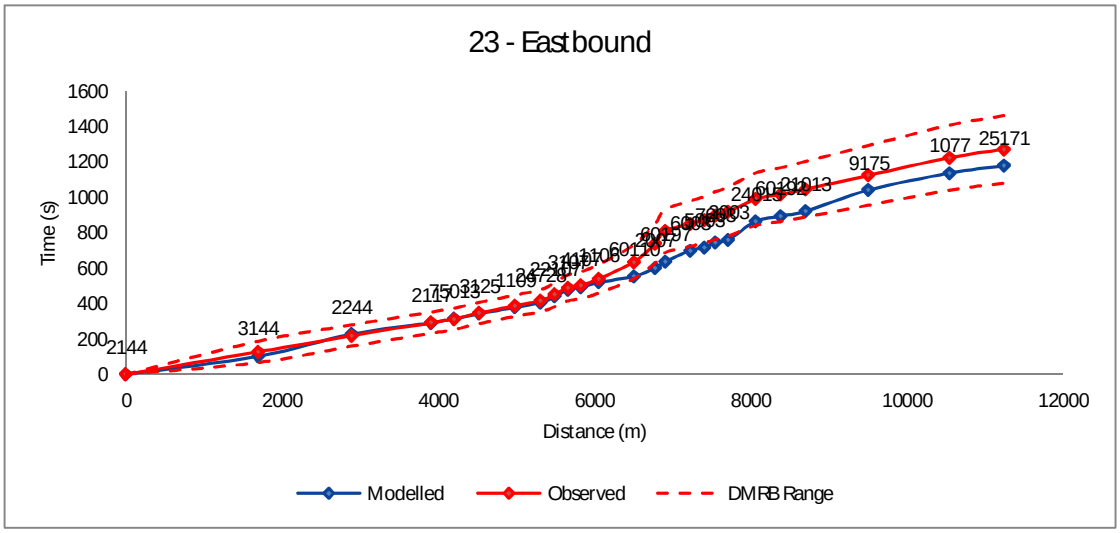
JT Graphs Interpeak

Model Map

Redraw Graphs



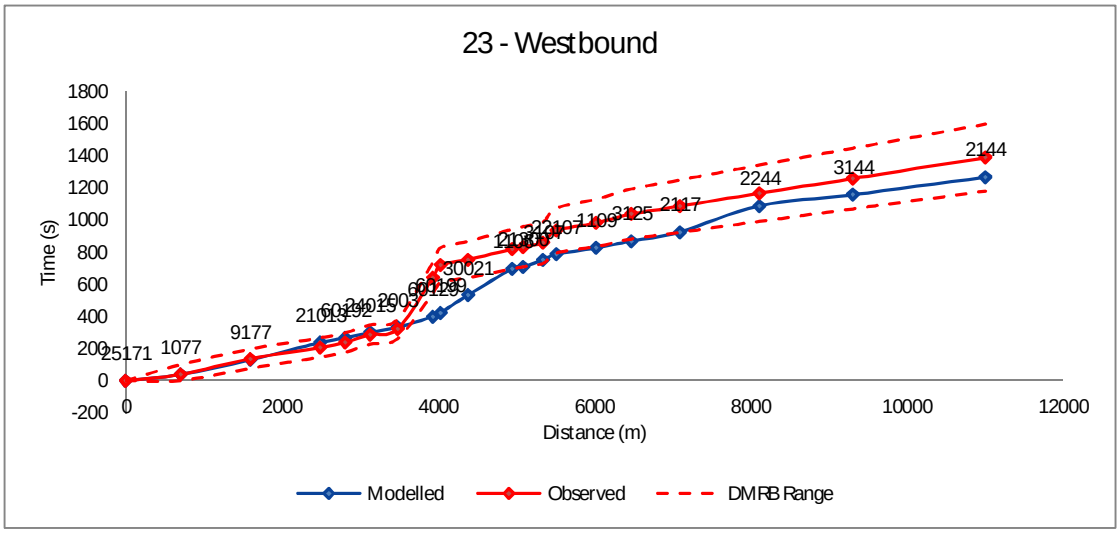


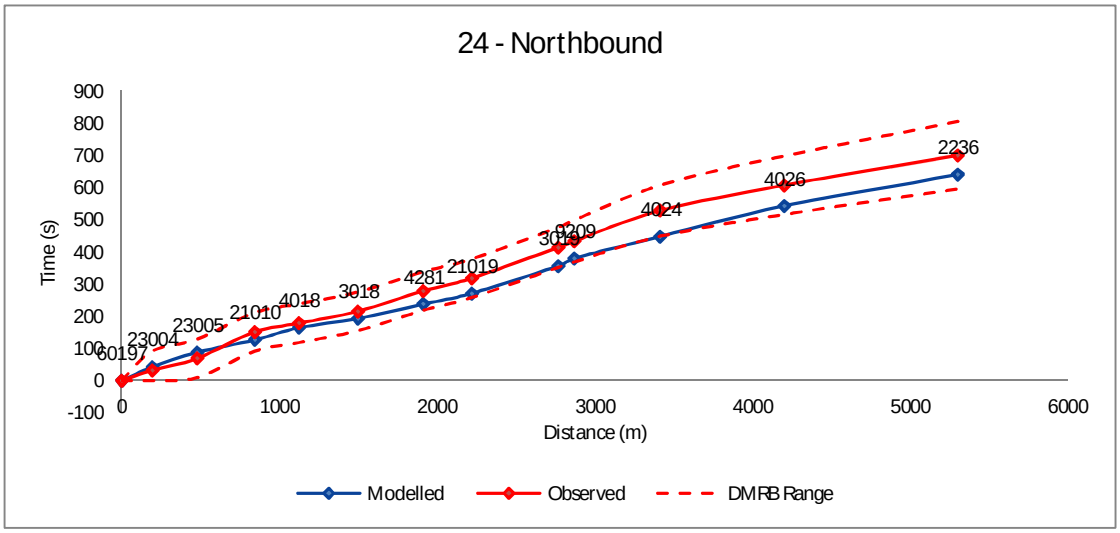


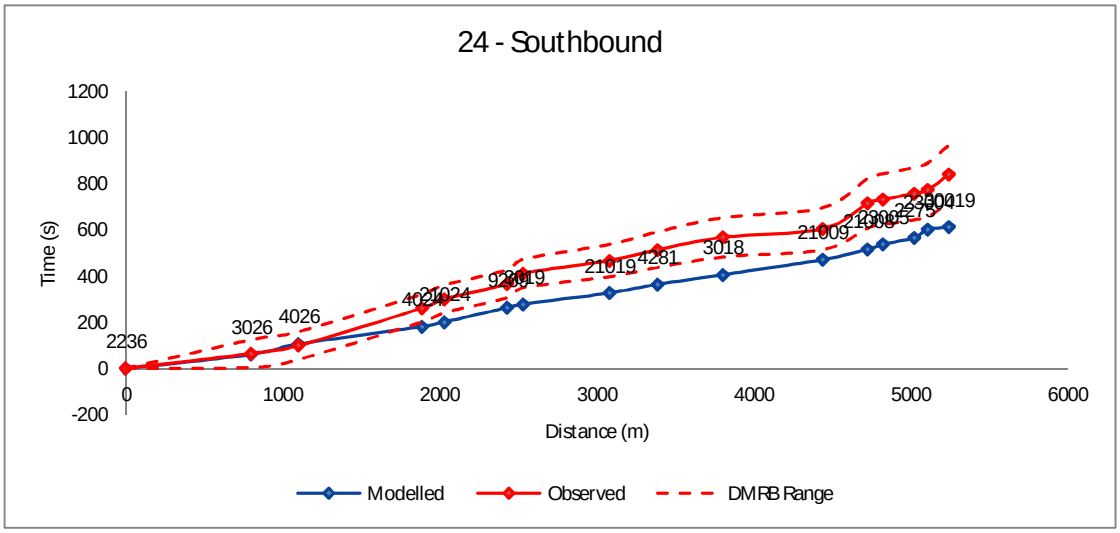
JT Graphs Interpeak

Model Map

Redraw Graphs



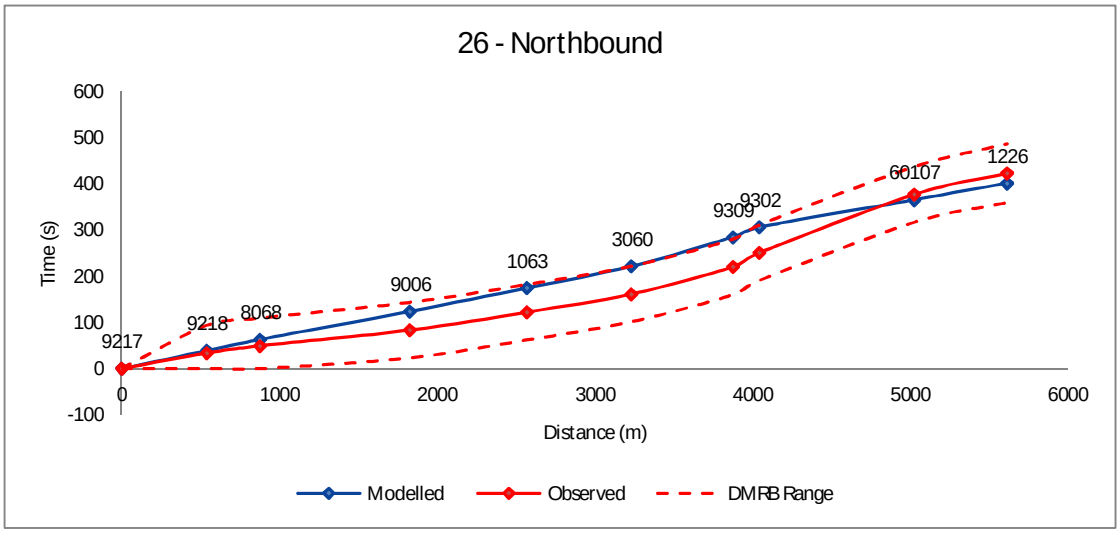


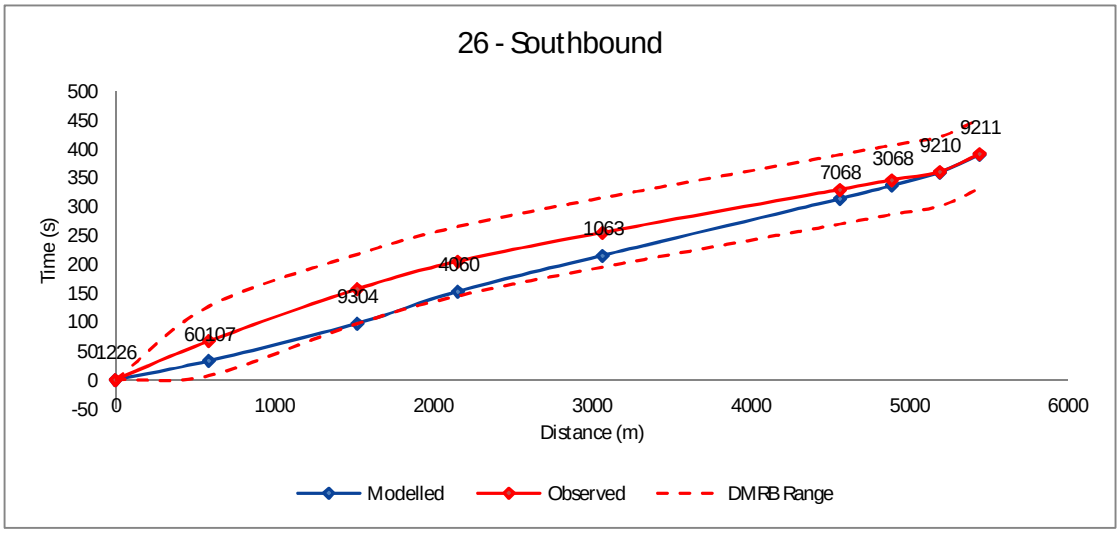


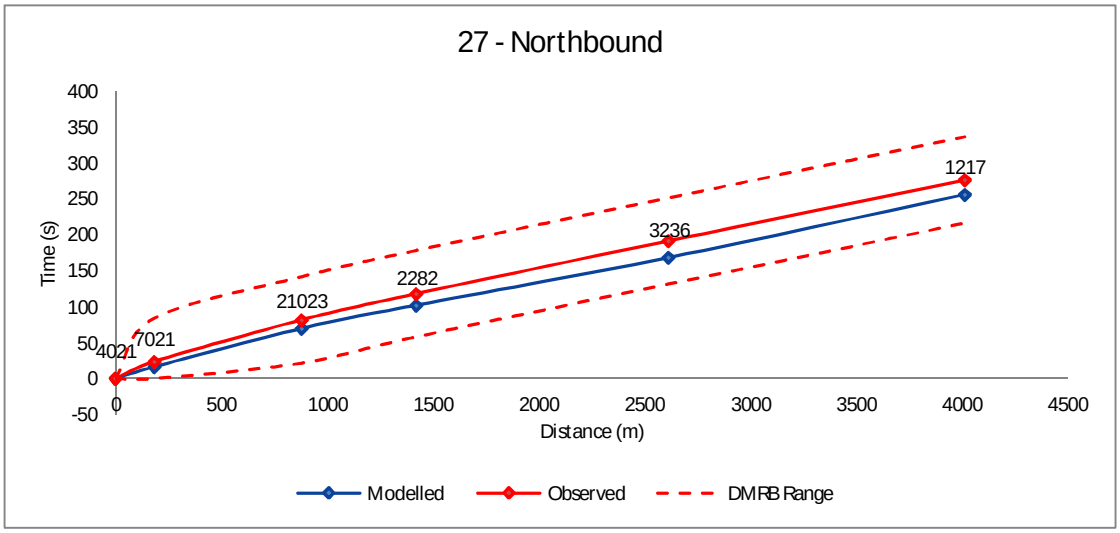
JT Graphs Interpeak

Model Map

Redraw Graphs



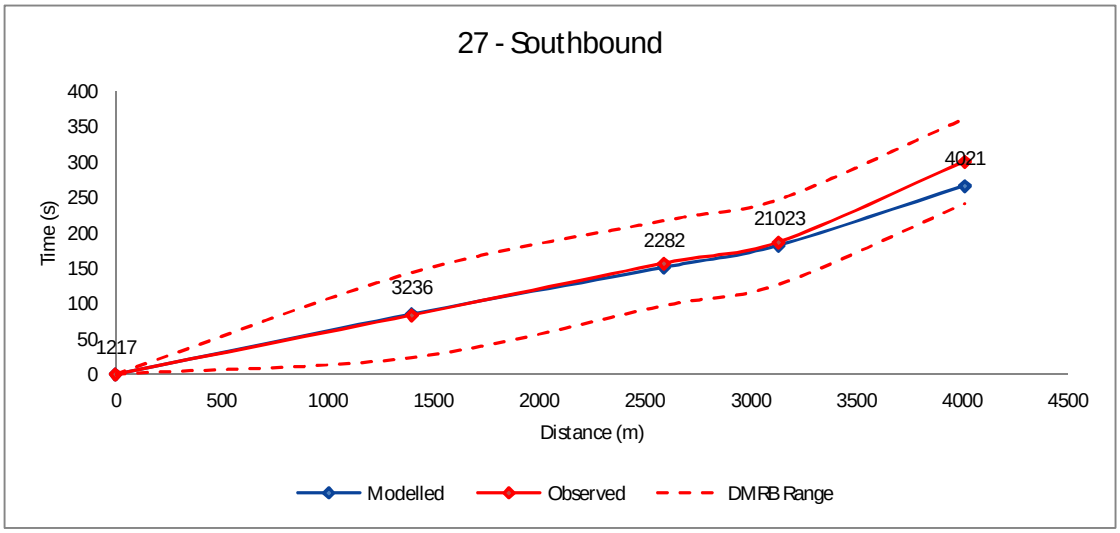


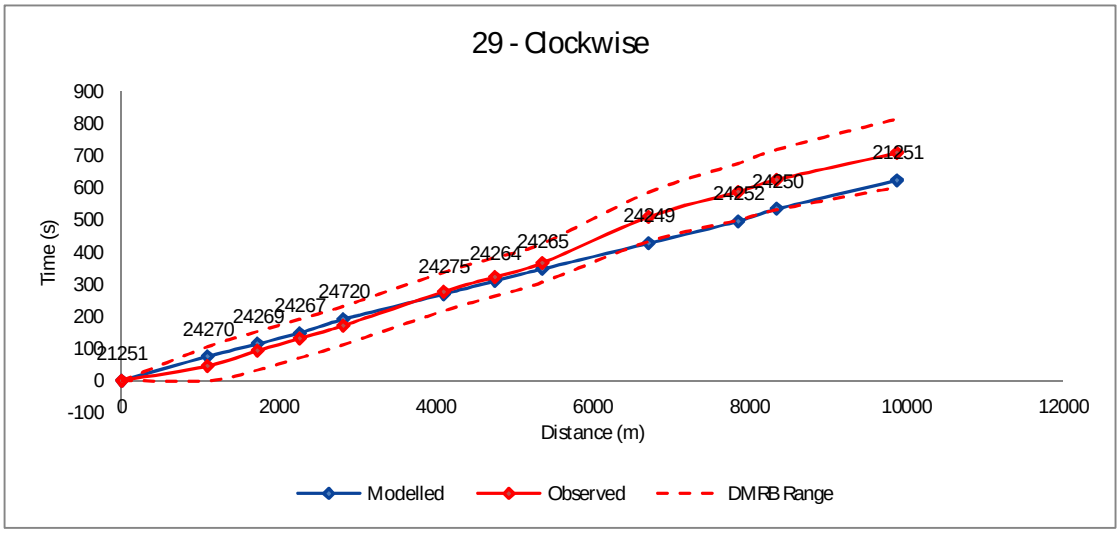


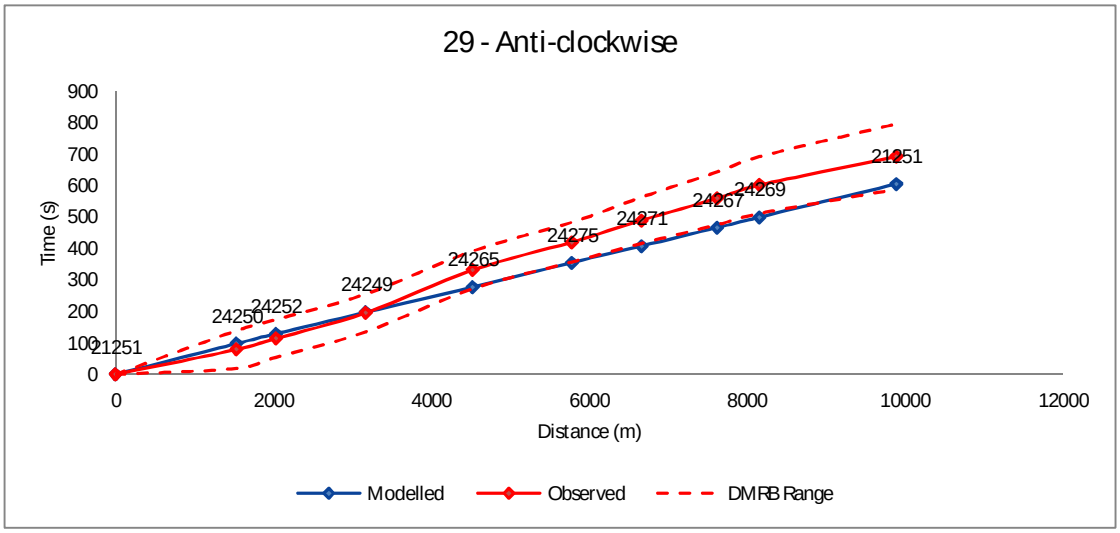
JT Graphs Interpeak

Model Map

Redraw Graphs



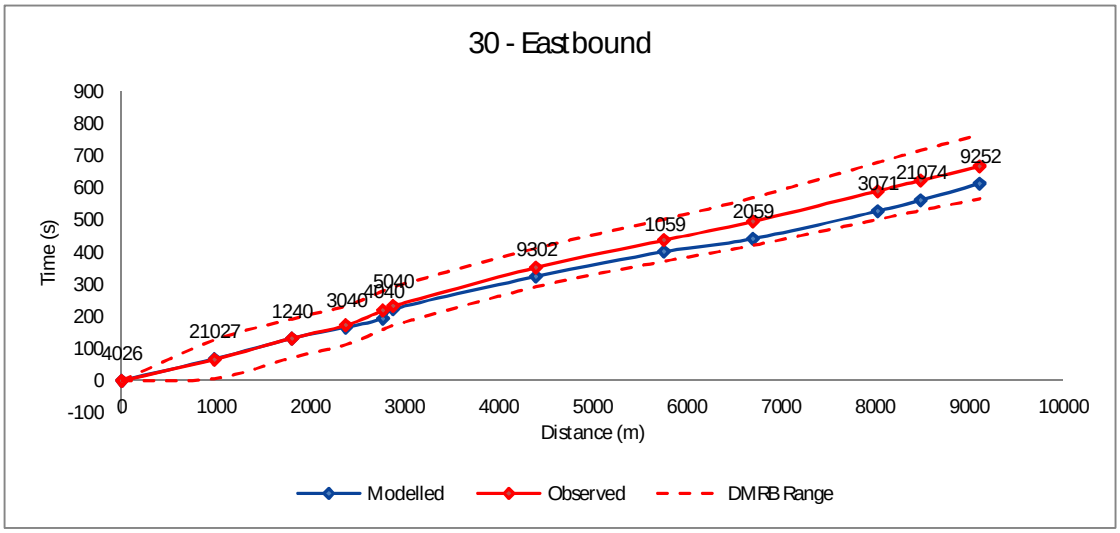


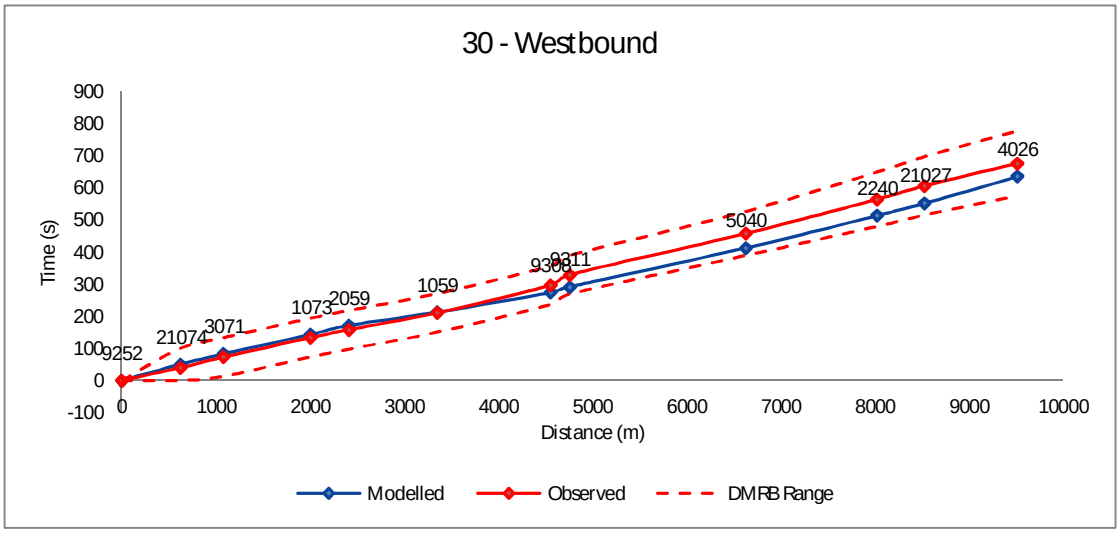


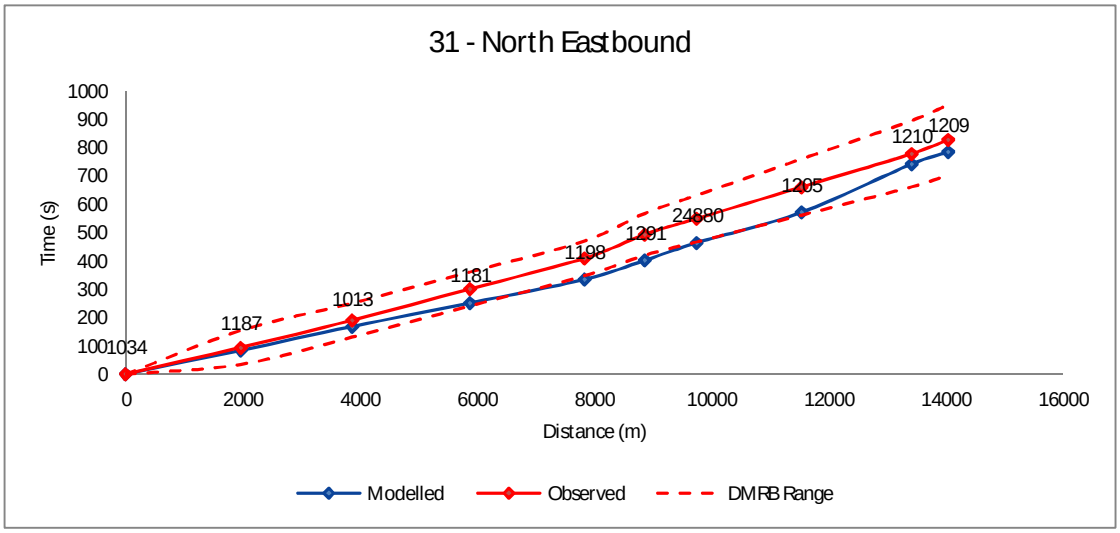
JT Graphs Interpeak

Model Map

Redraw Graphs



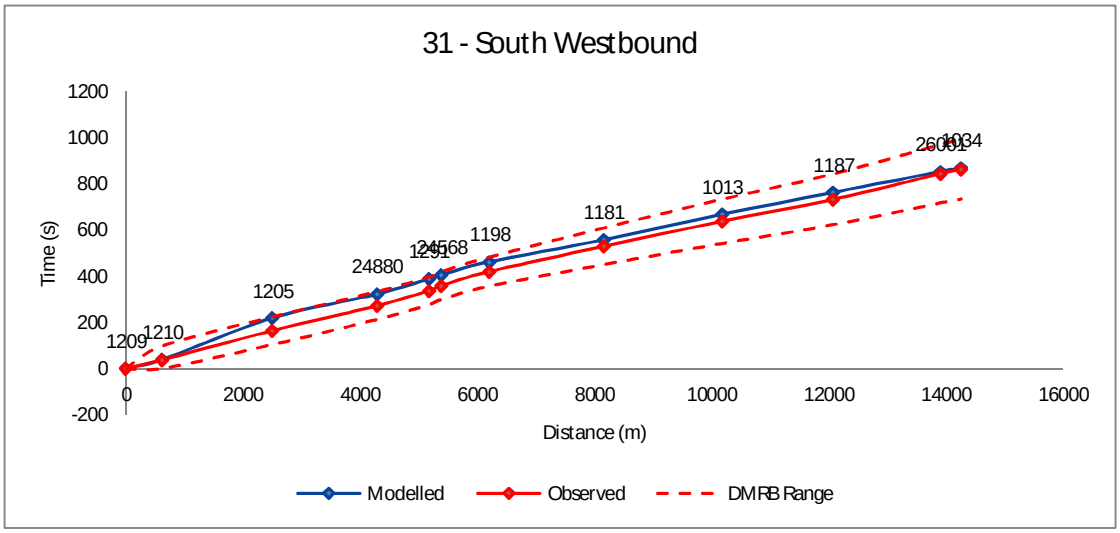


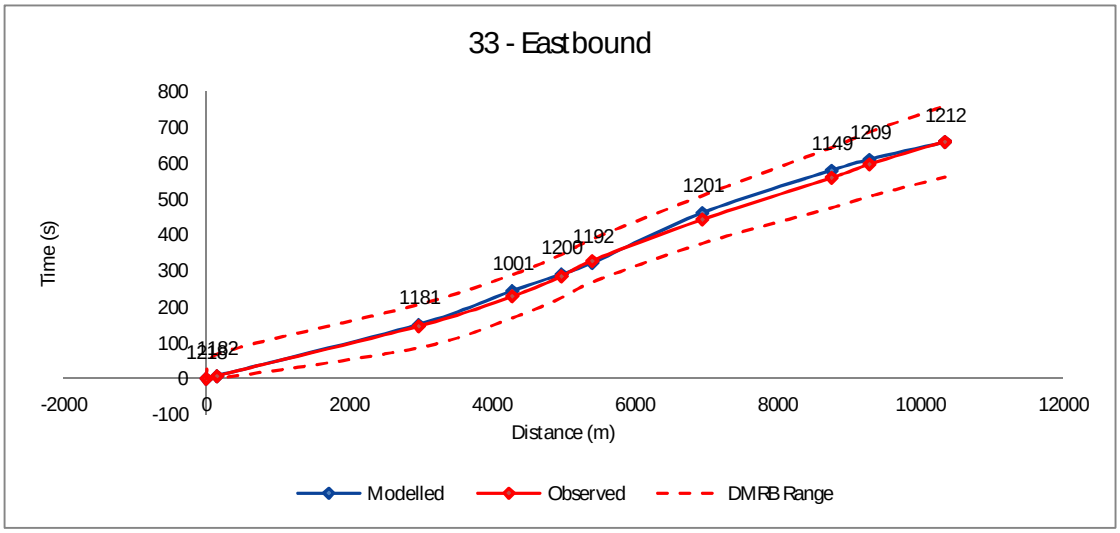


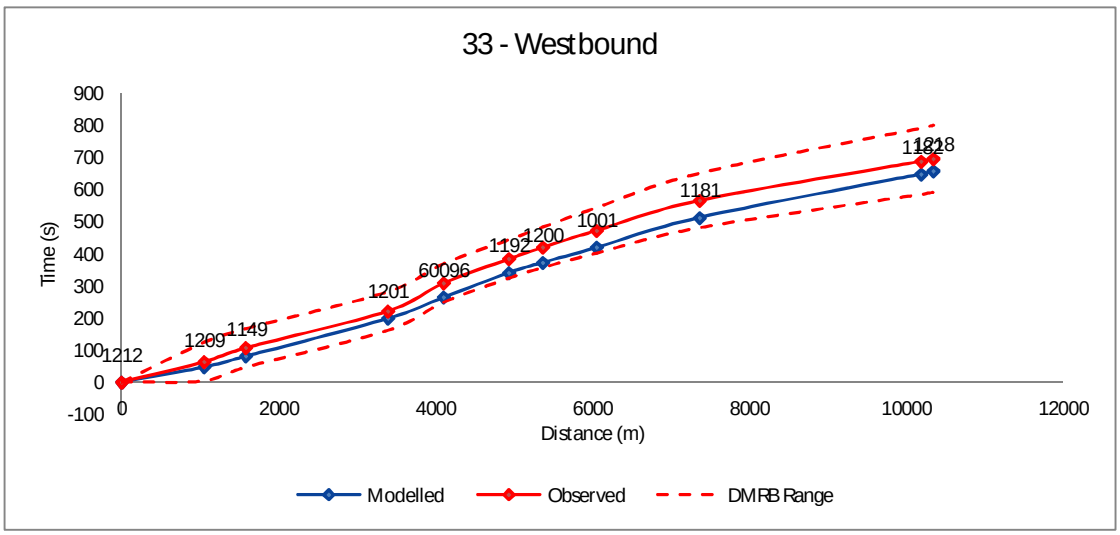
JT Graphs Interpeak

Model Map

Redraw Graphs



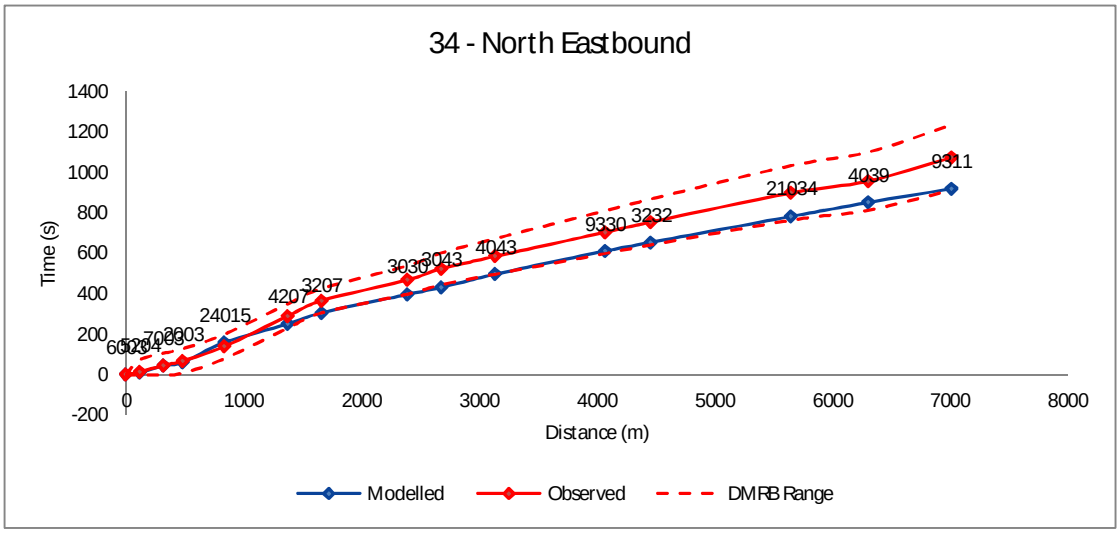


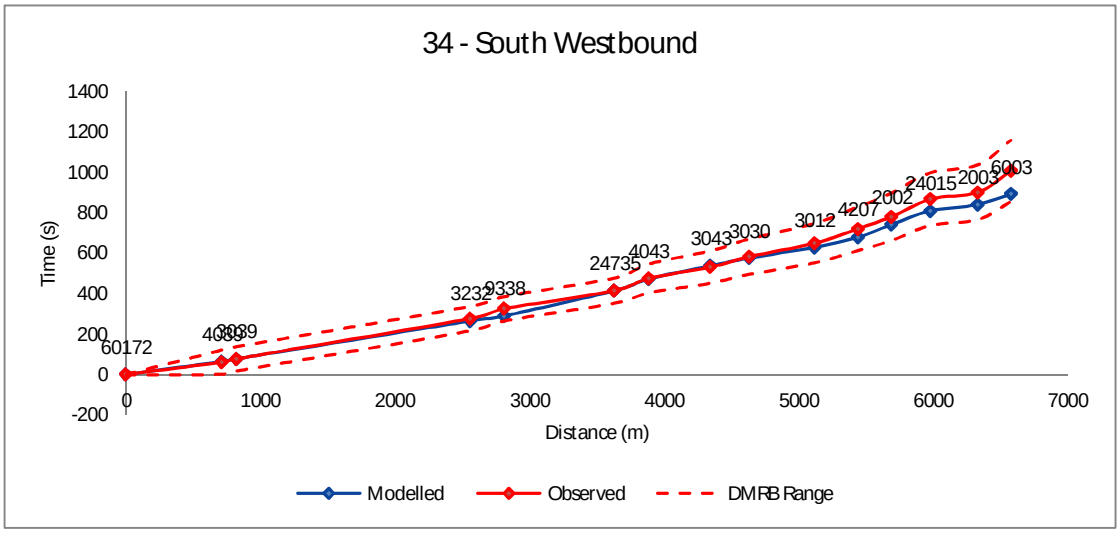


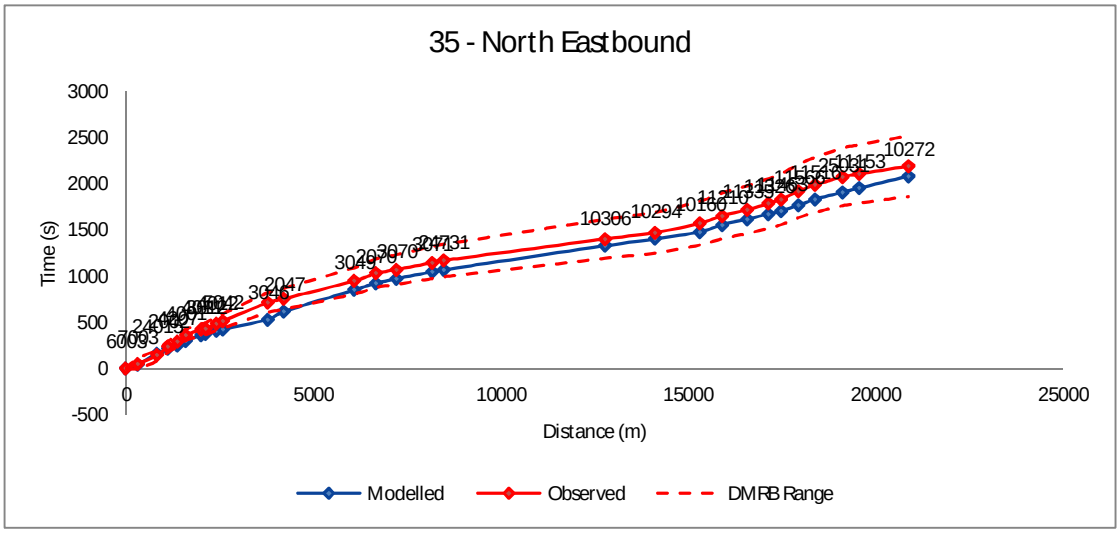
JT Graphs Interpeak

Model Map

Redraw Graphs



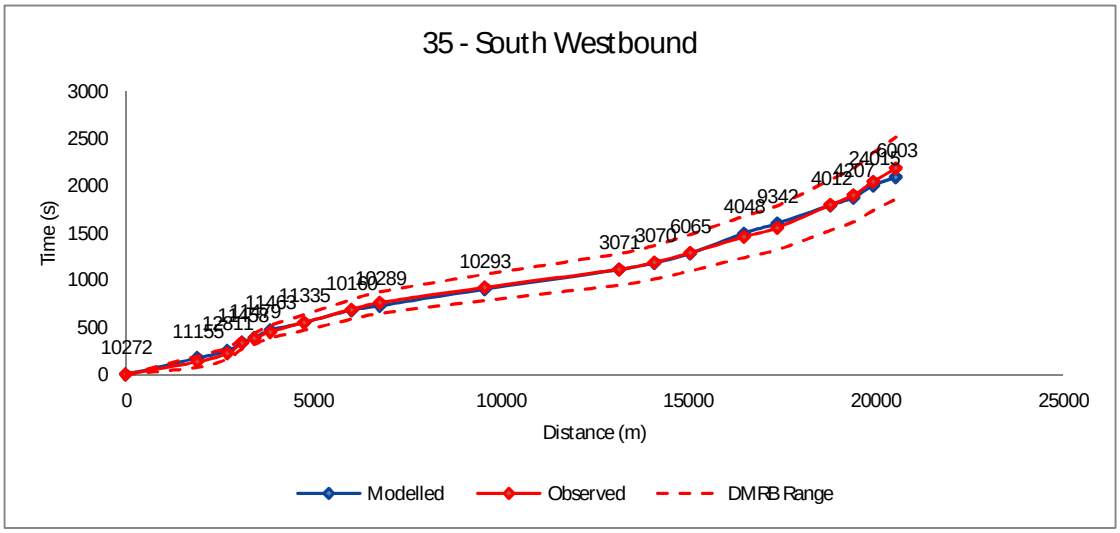


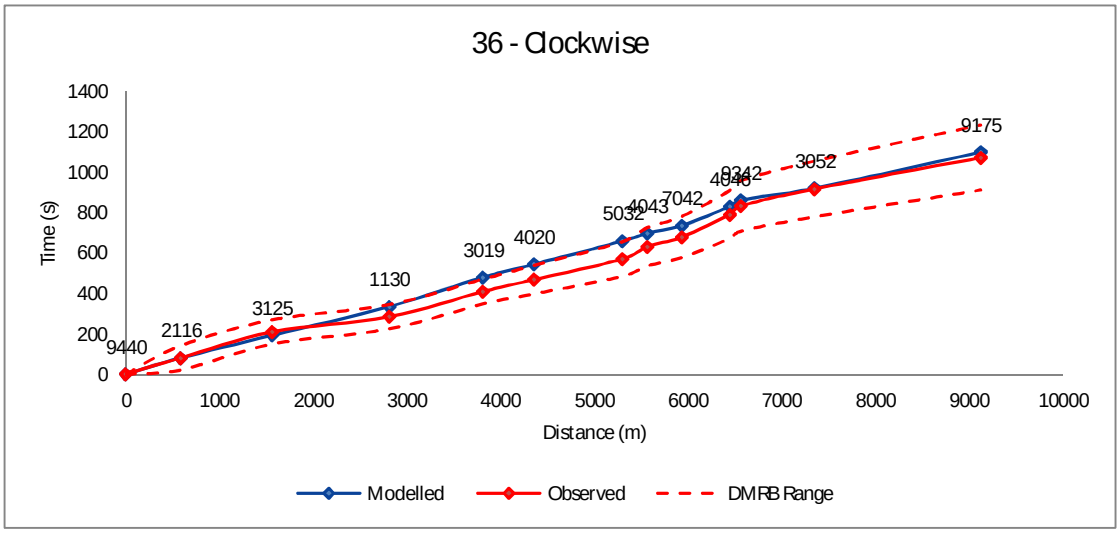


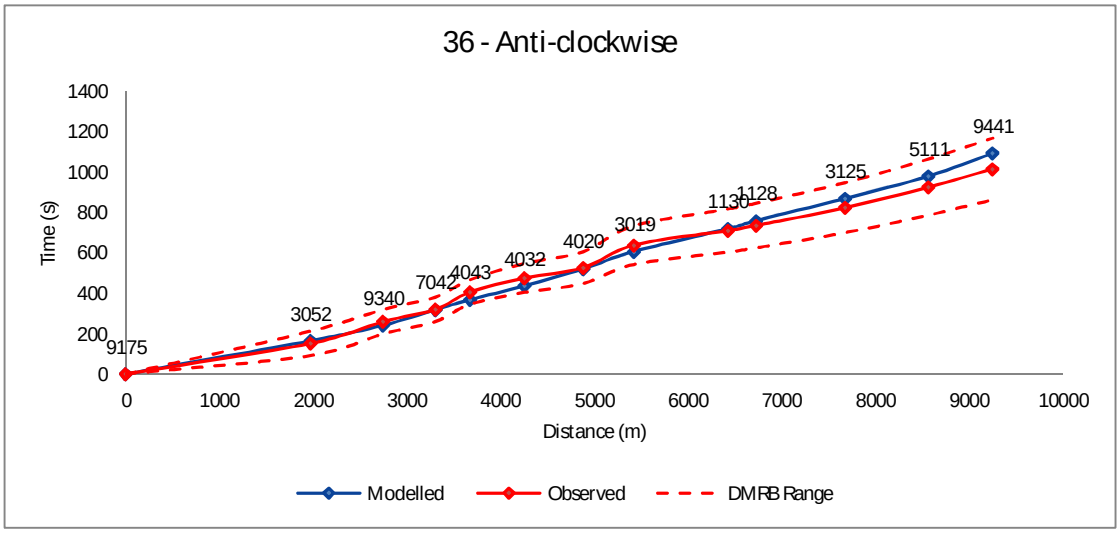
JT Graphs Interpeak

Model Map

Redraw Graphs



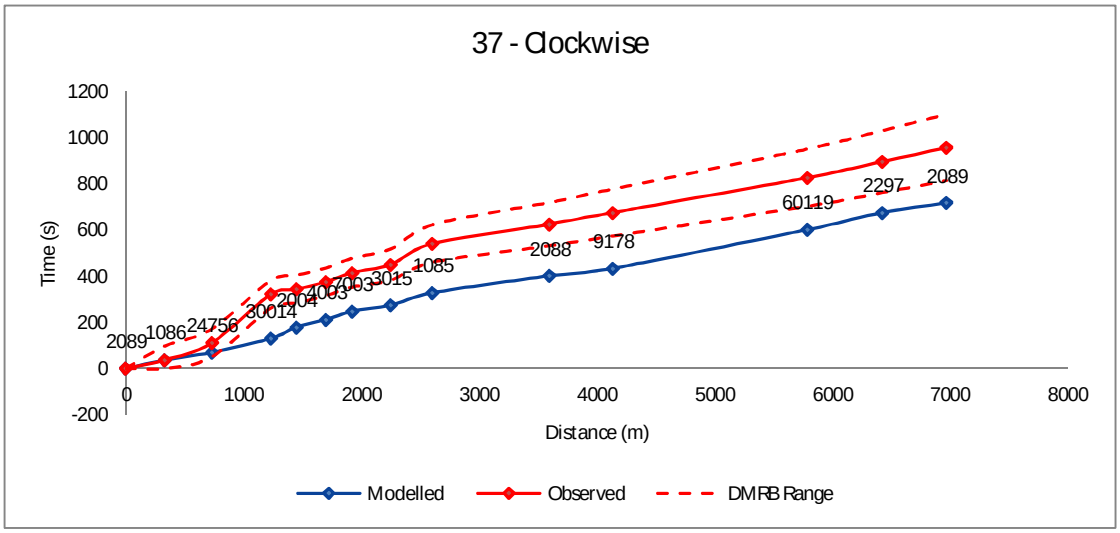


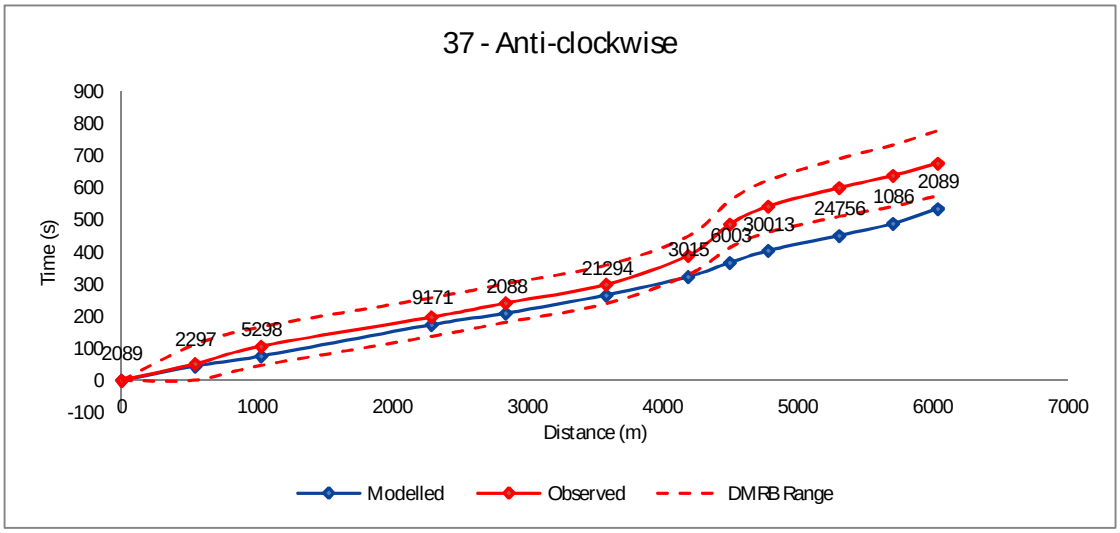


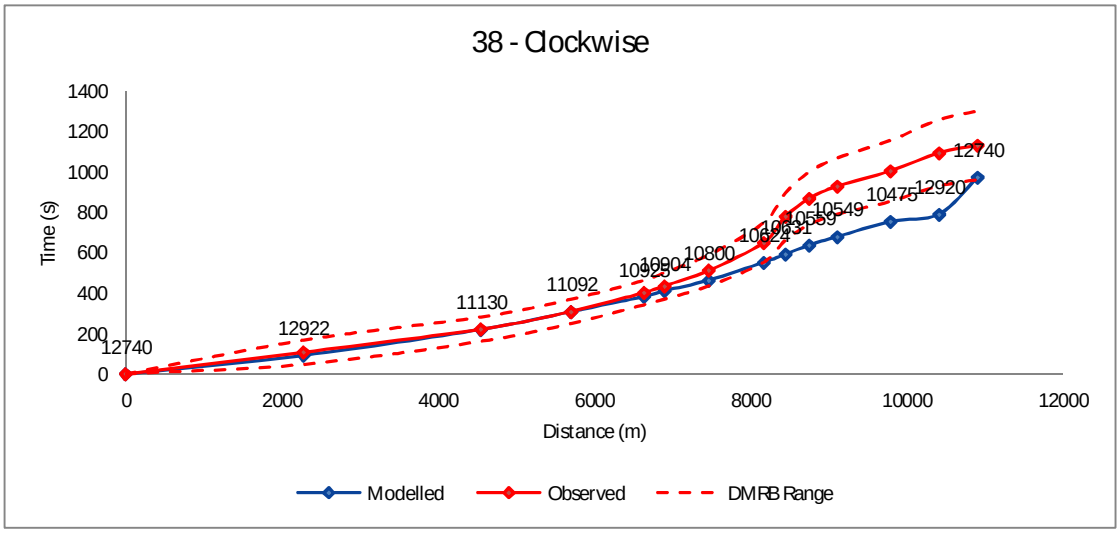
JT Graphs Interpeak

Model Map

Redraw Graphs



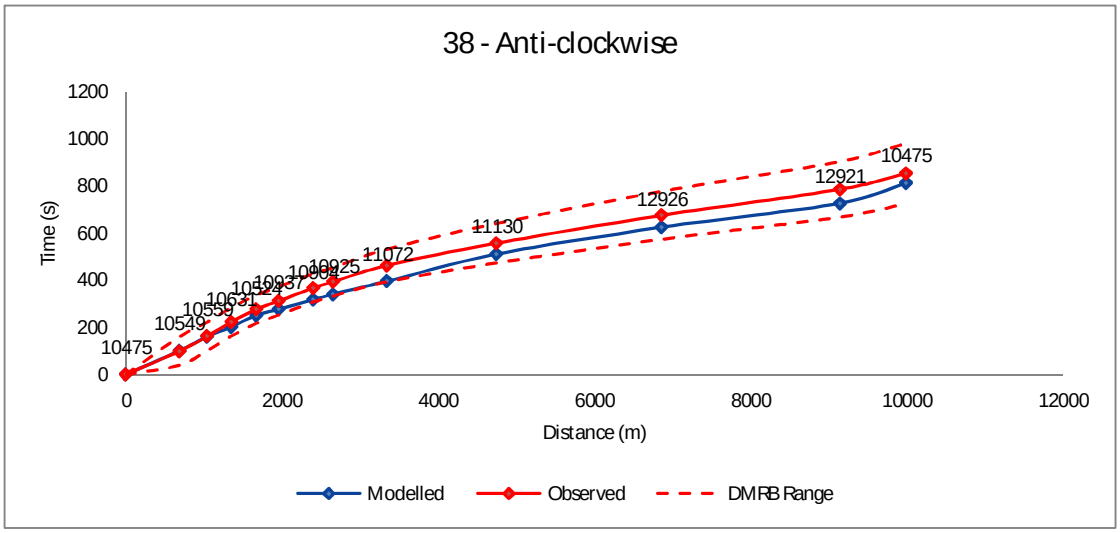


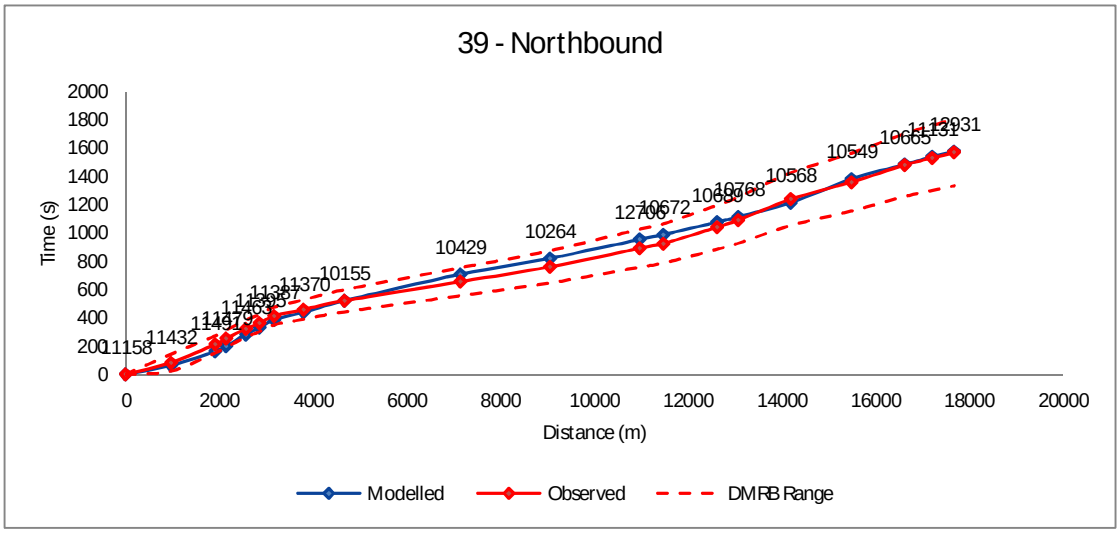


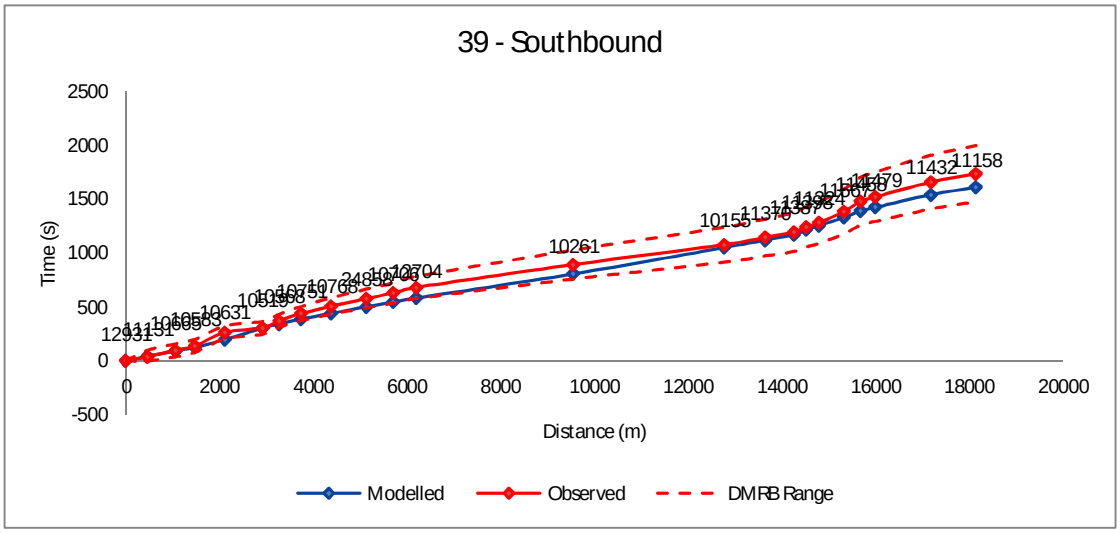
JT Graphs Interpeak

Model Map

Redraw Graphs



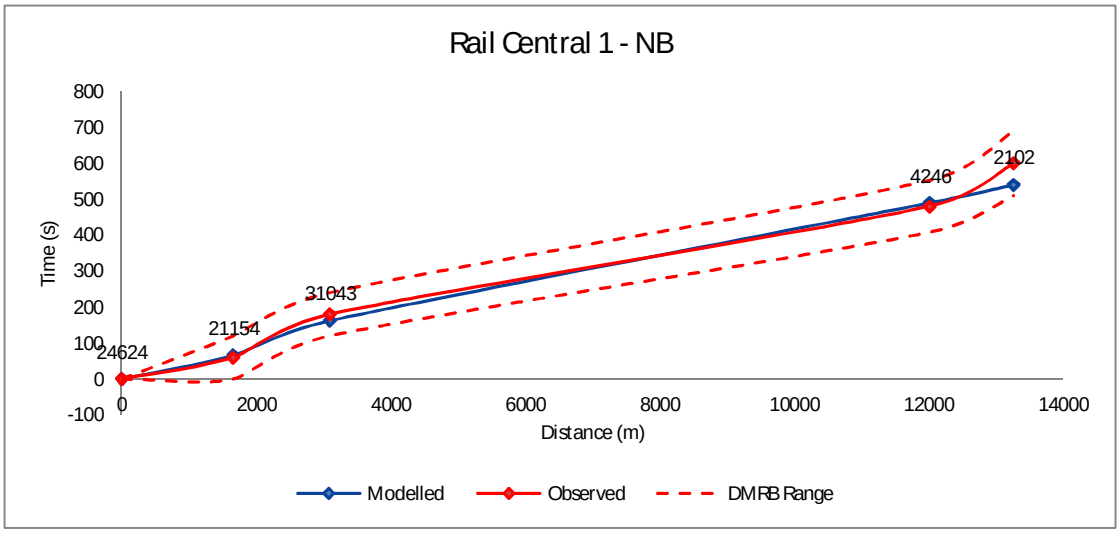


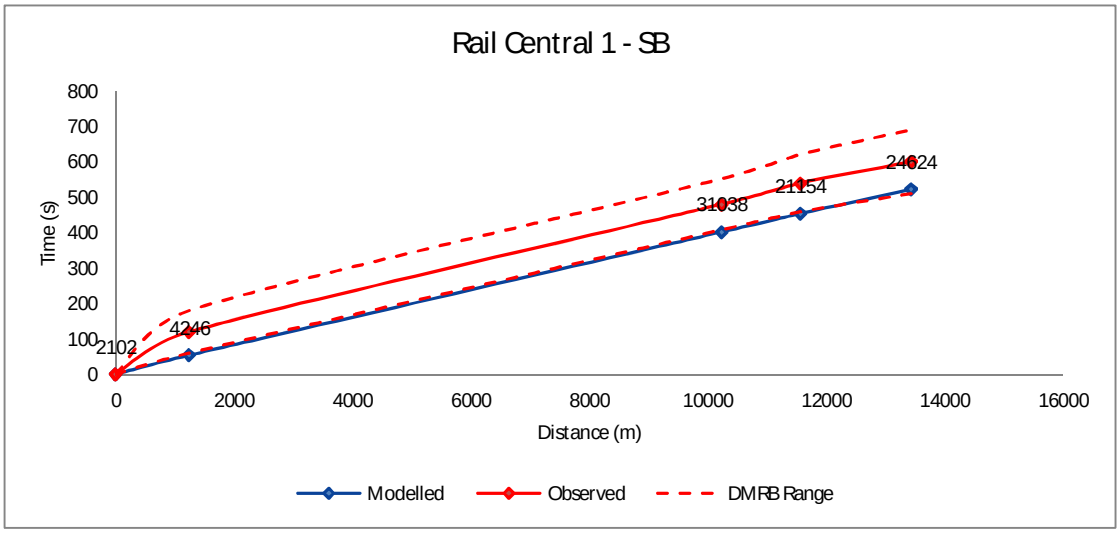


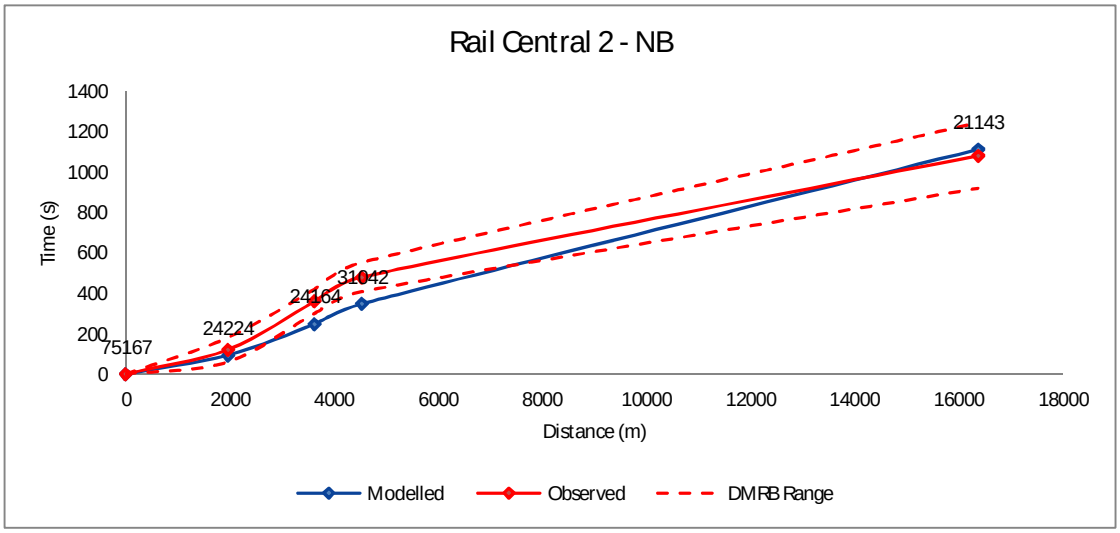
JT Graphs Interpeak

Model Map

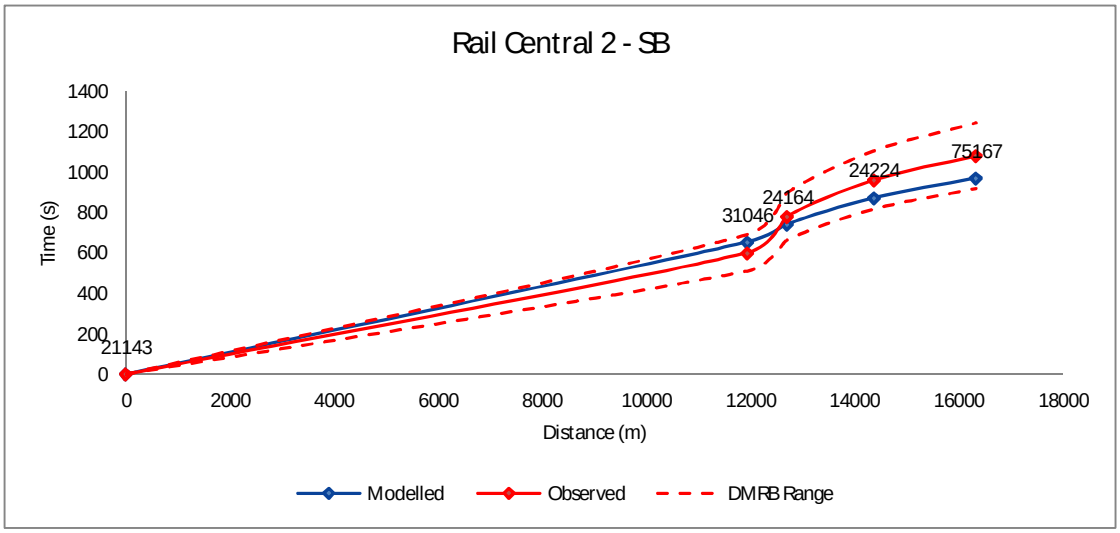
Redraw Graphs

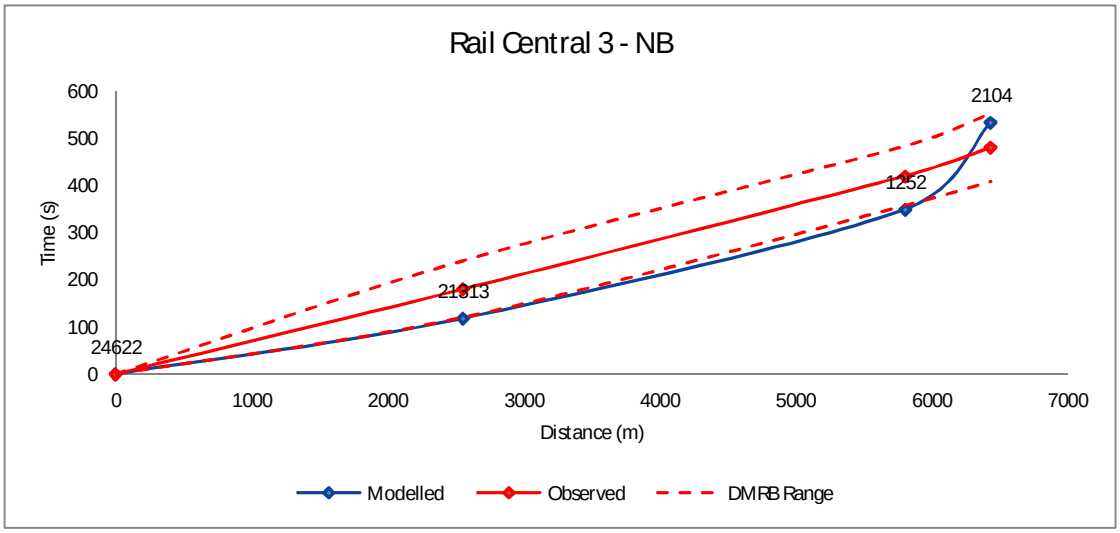


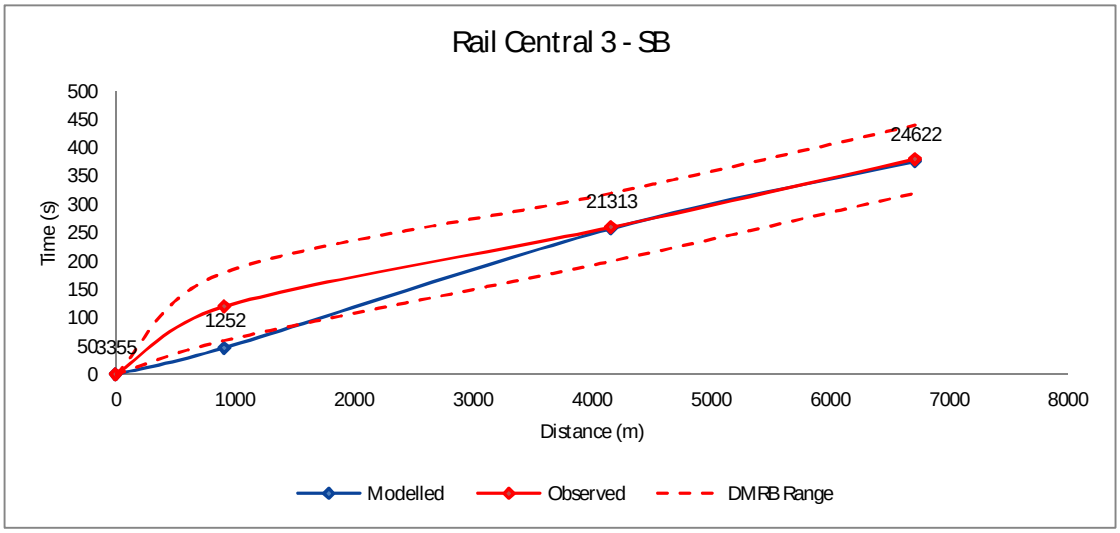




JT Graphs Interpeak



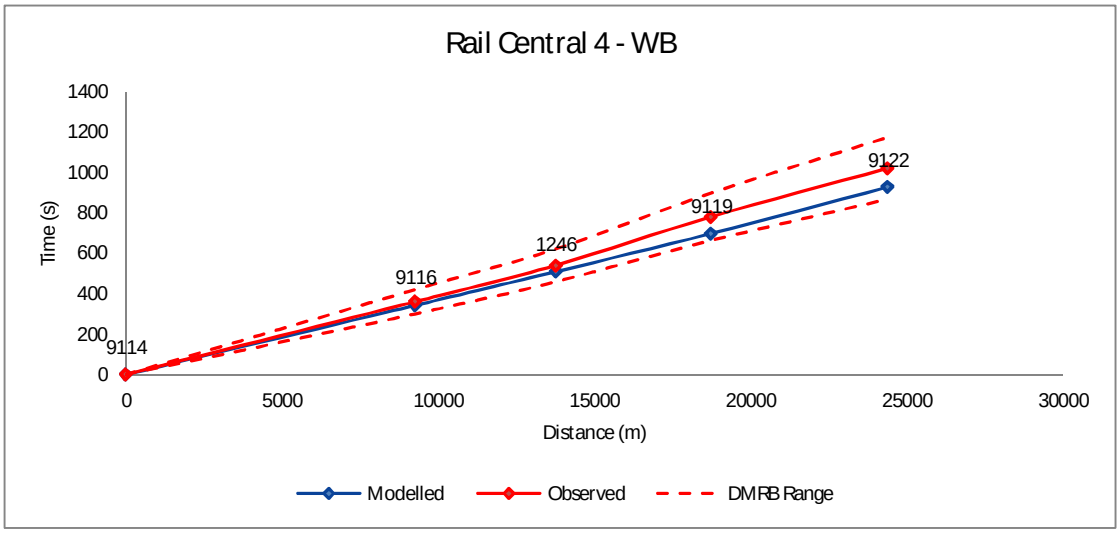


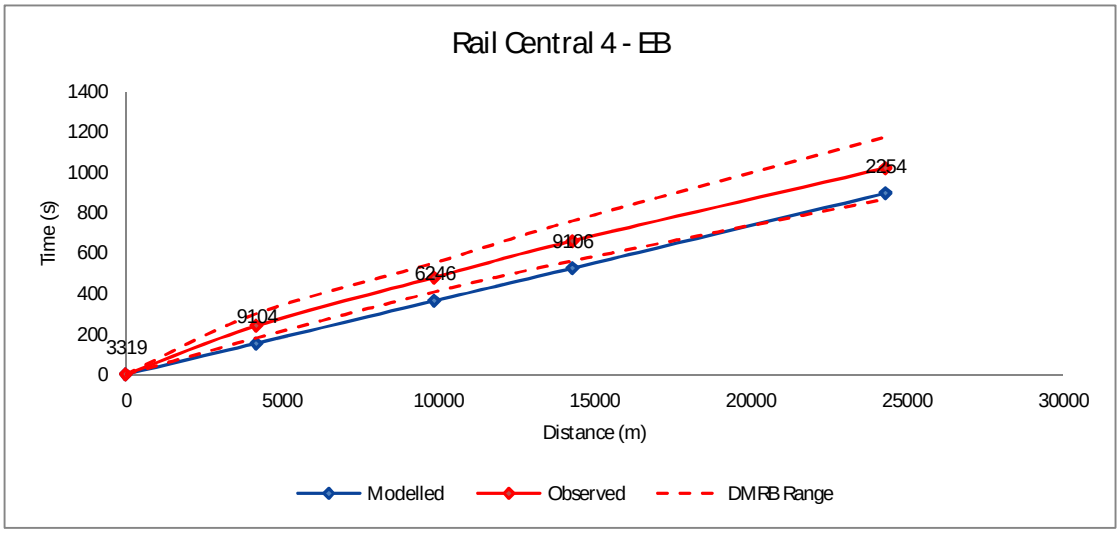


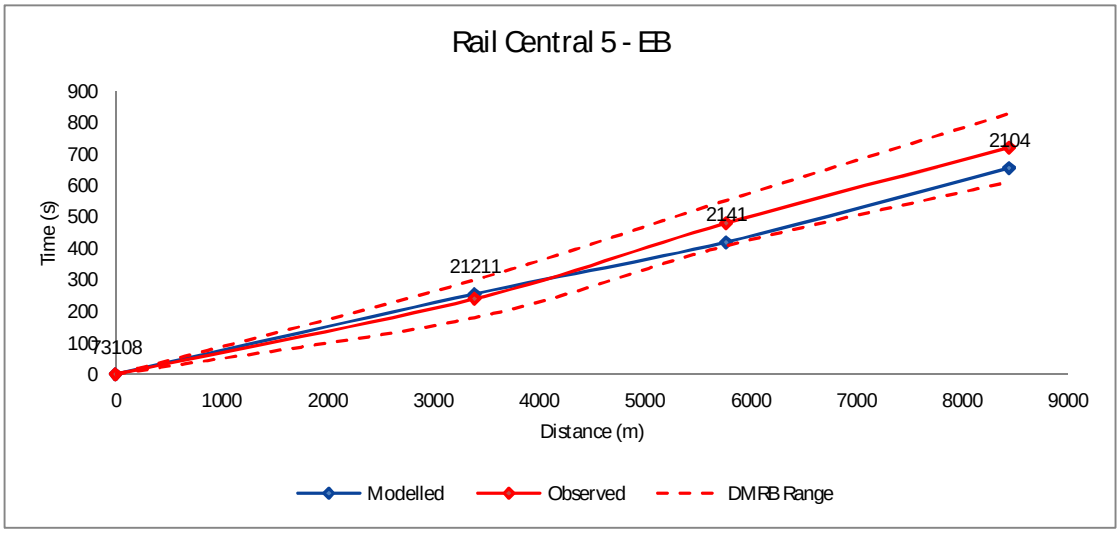
JT Graphs Interpeak

Model Map

Redraw Graphs



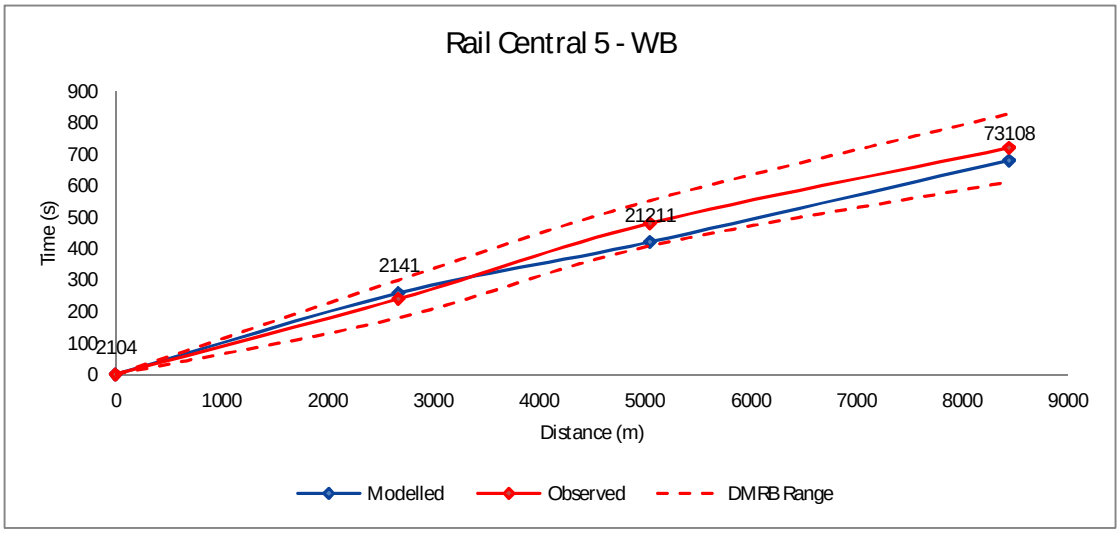


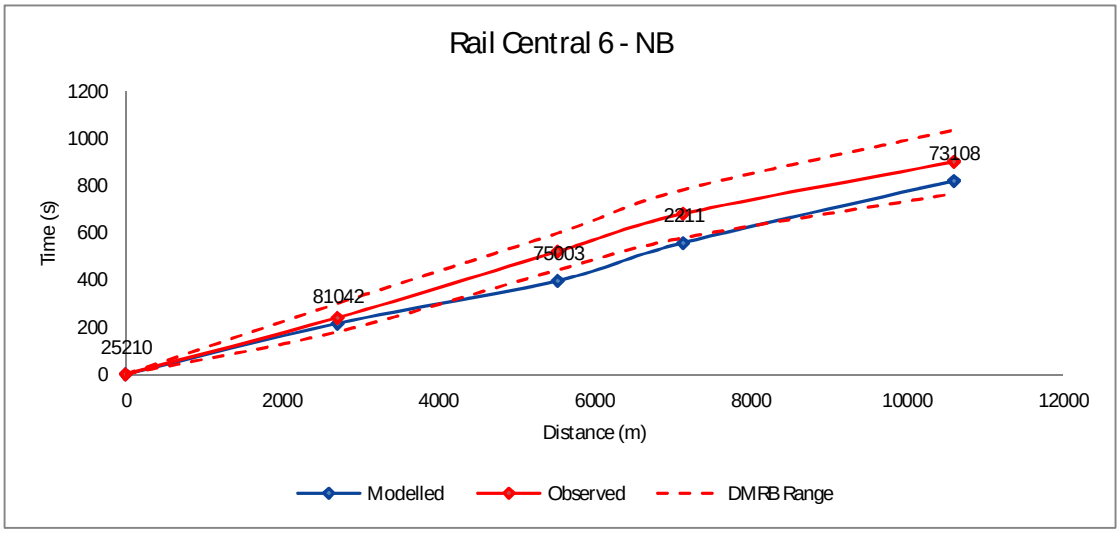


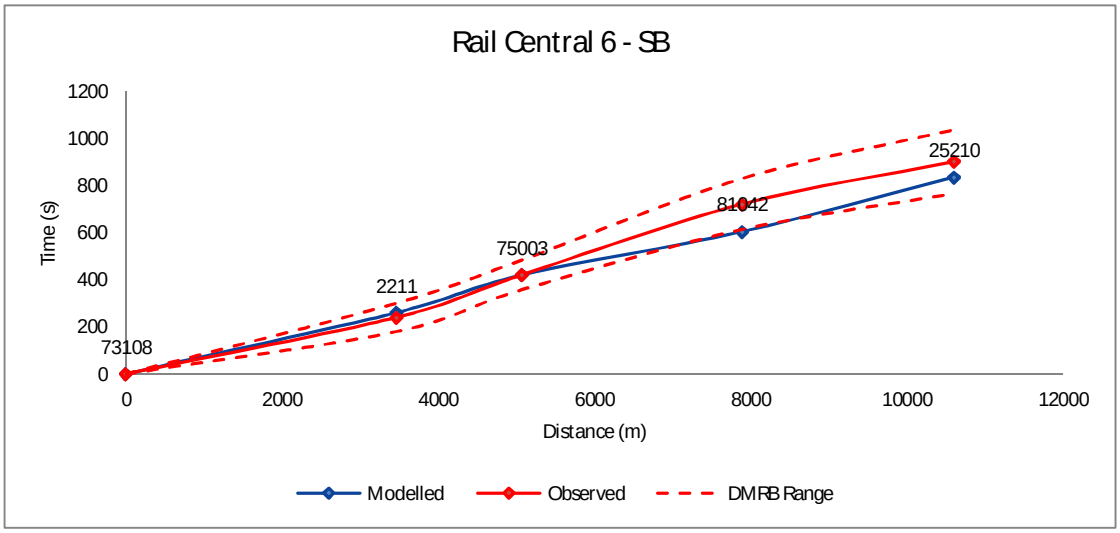
JT Graphs Interpeak

Model Map

Redraw Graphs



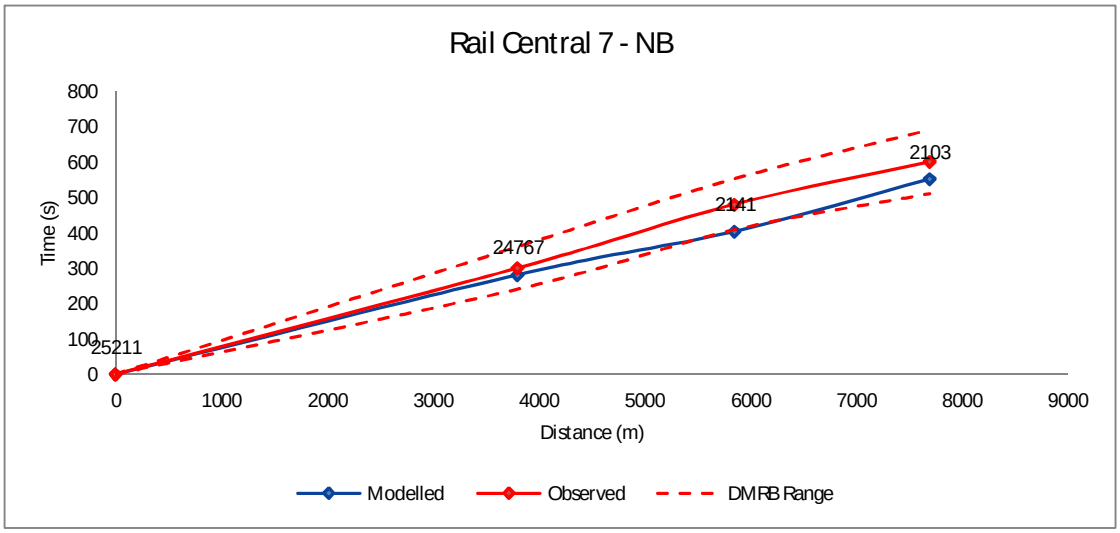


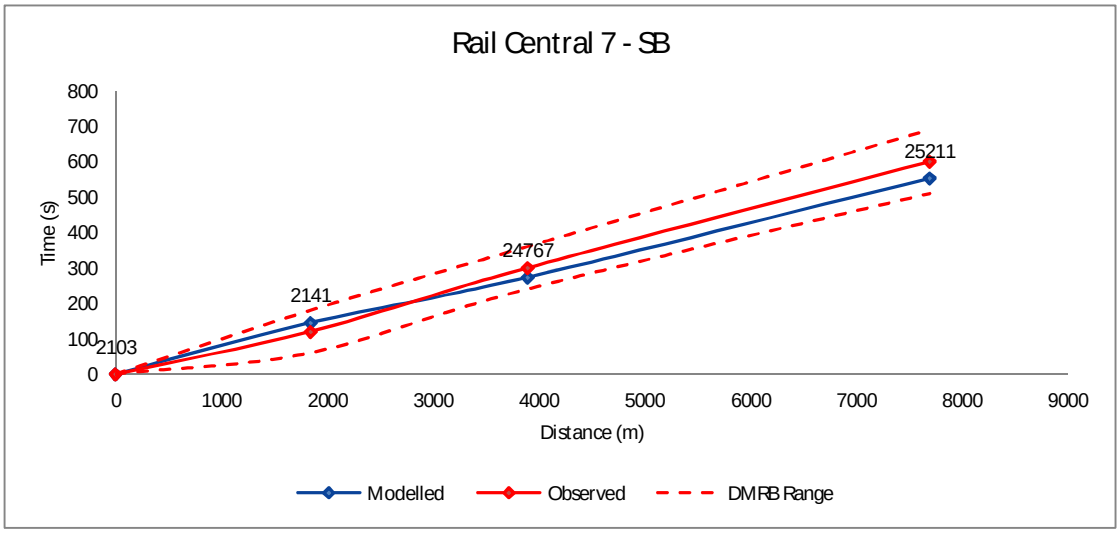


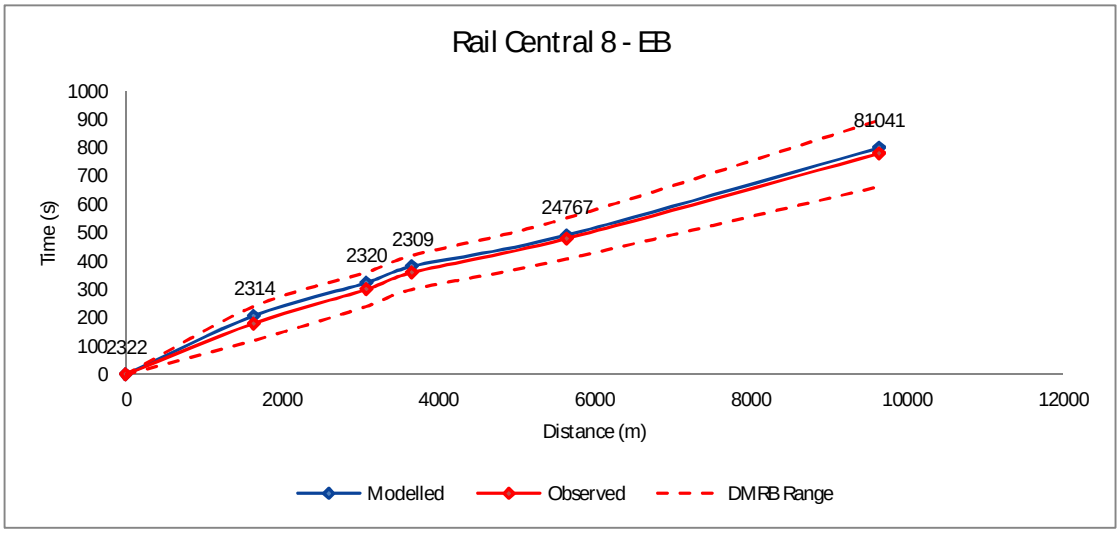
JT Graphs Interpeak

Model Map

Redraw Graphs



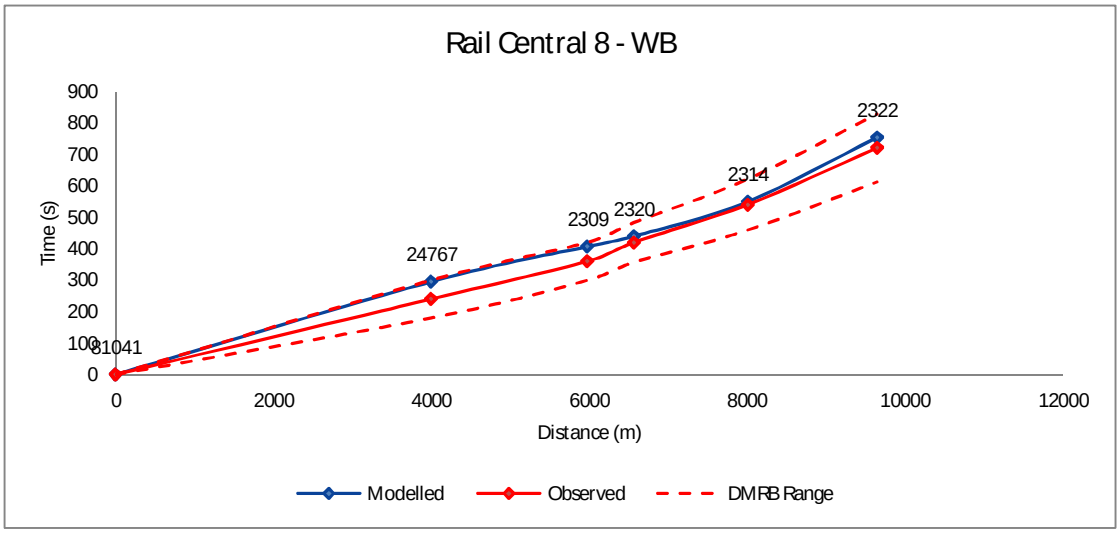




JT Graphs Interpeak

Model Map

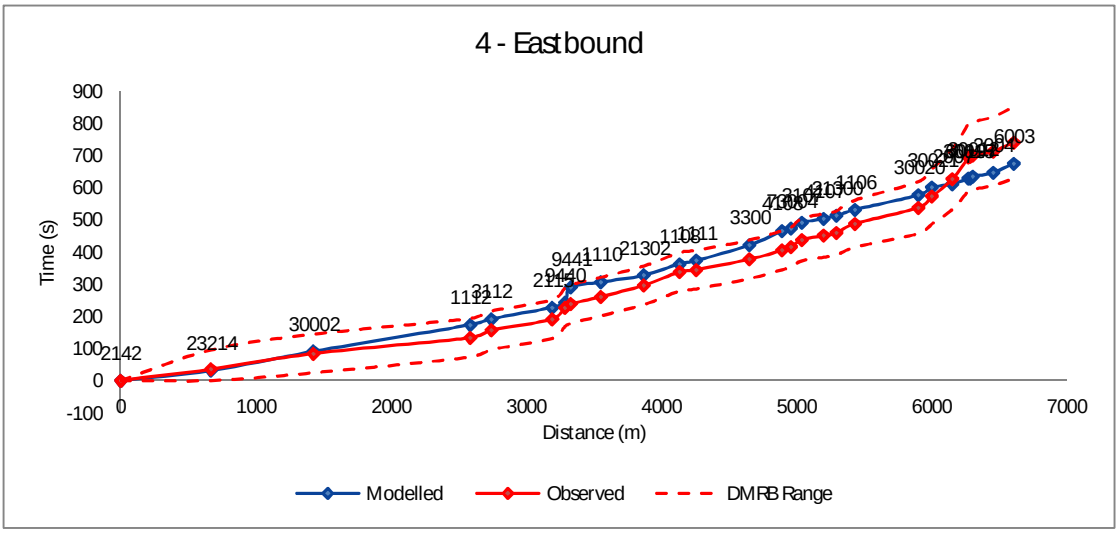
Redraw Graphs

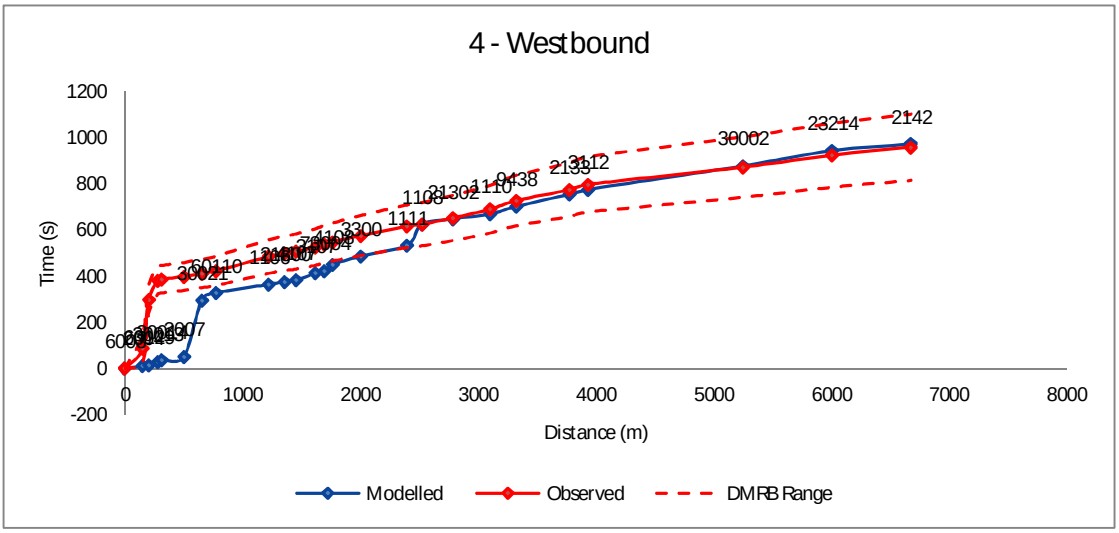


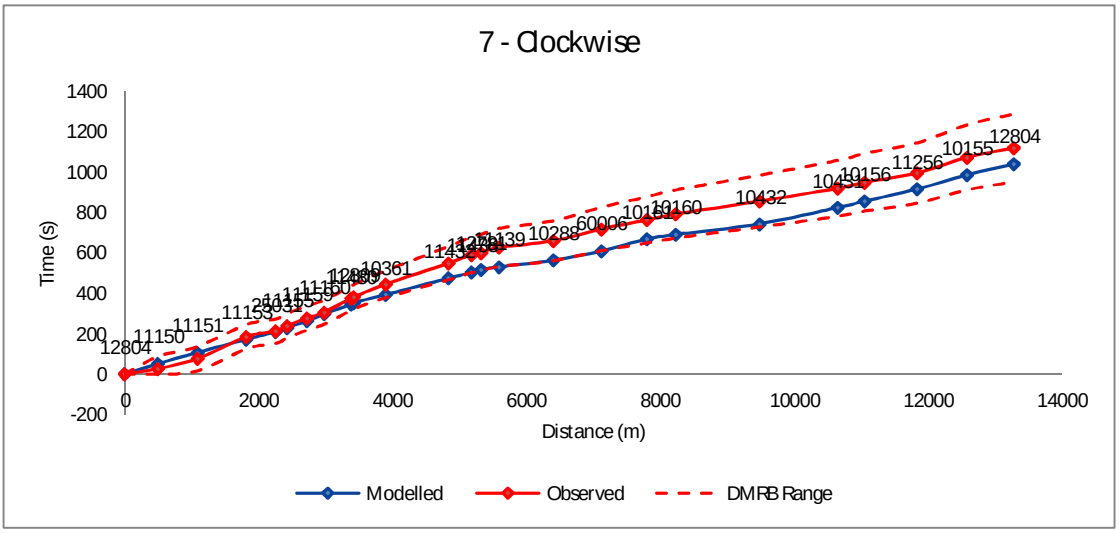
JT Graphs PM Peak

Model Map

Redraw Graphs



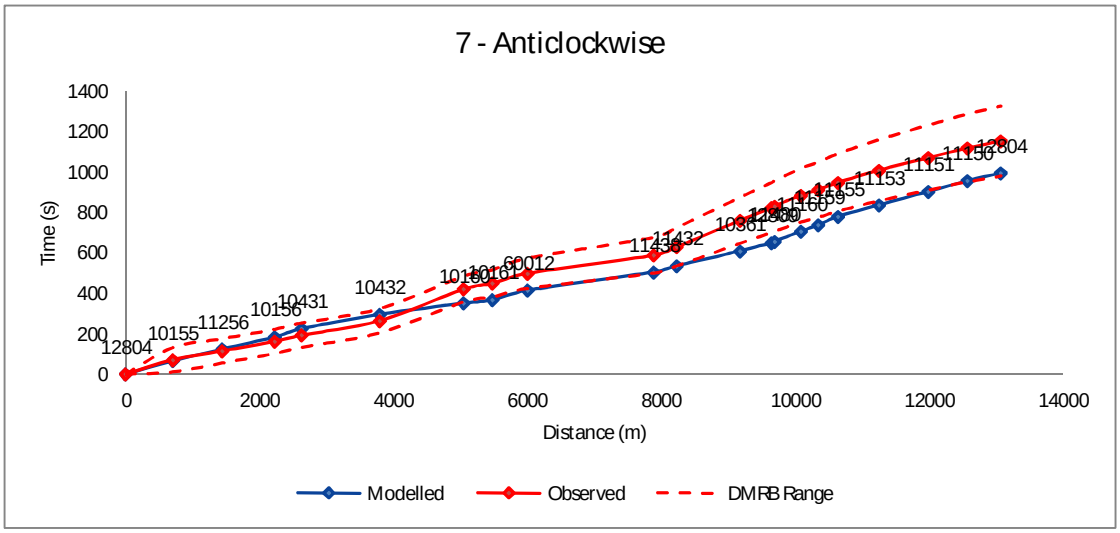


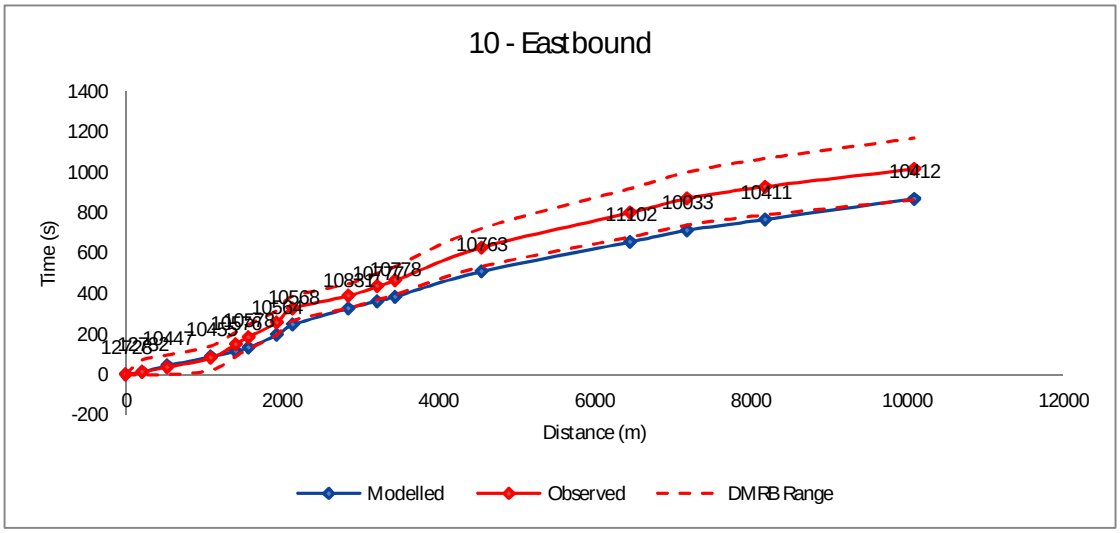


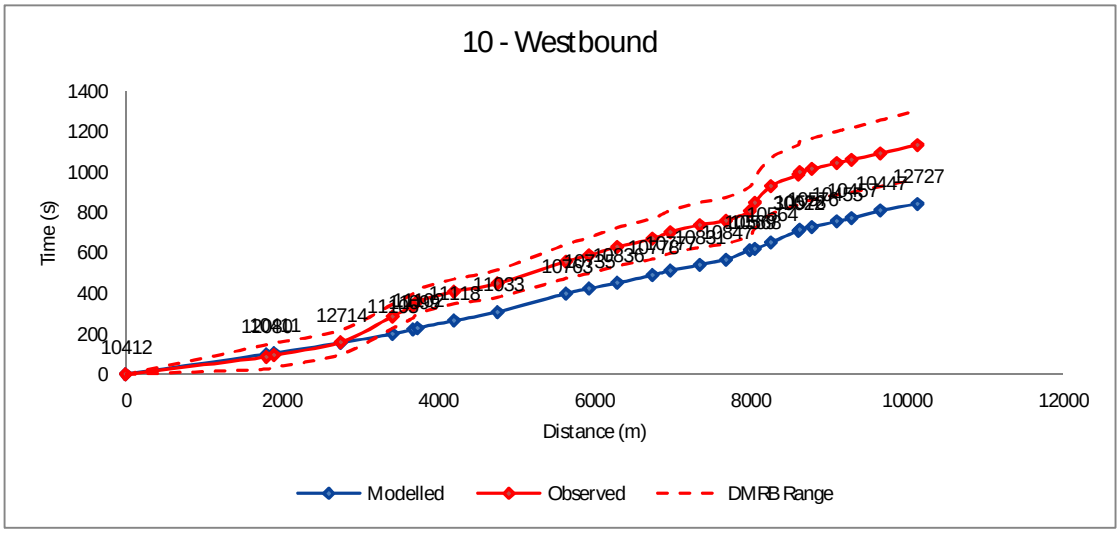
JT Graphs PM Peak

Model Map

Redraw Graphs



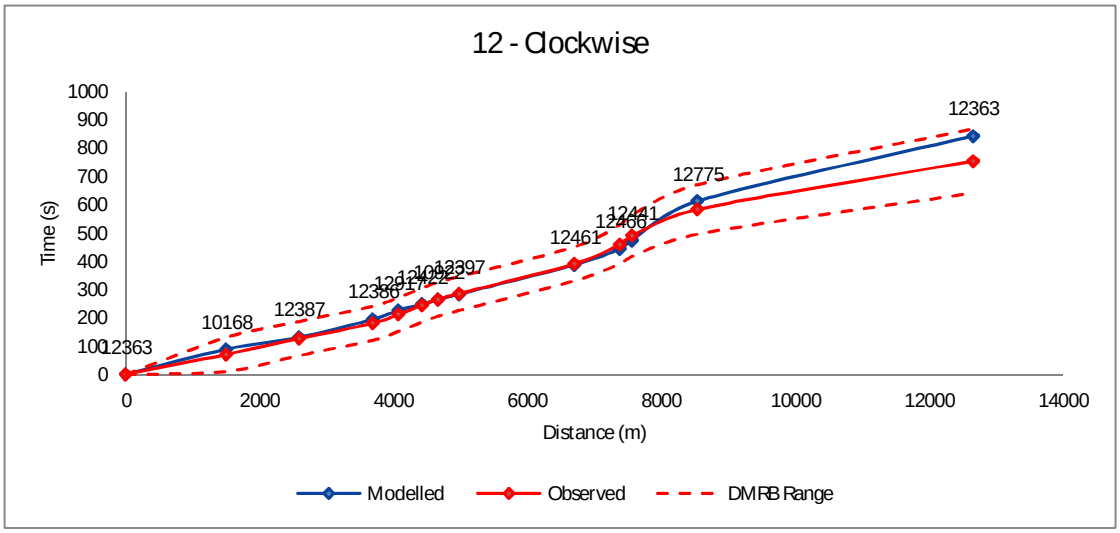


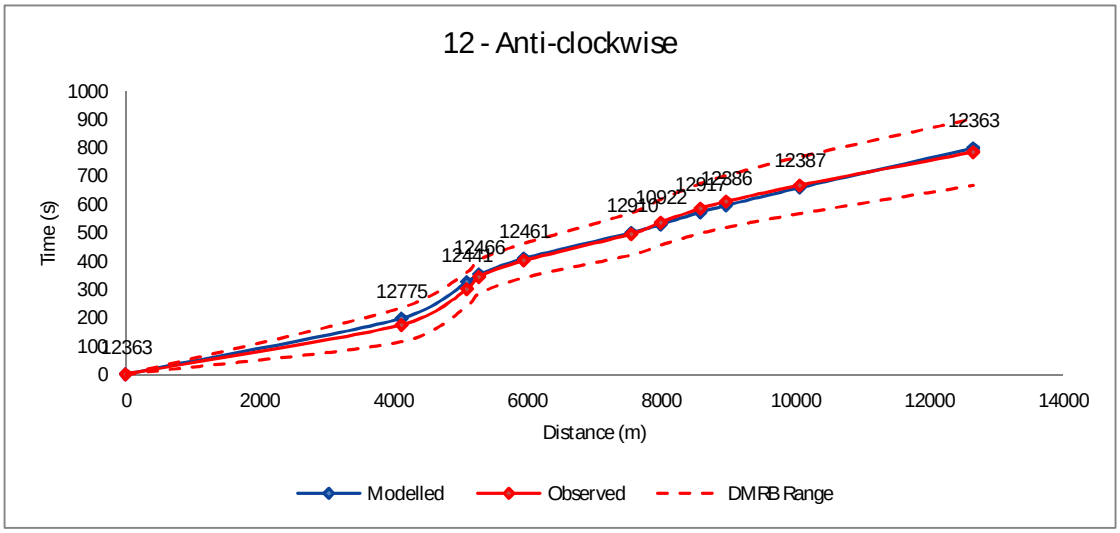


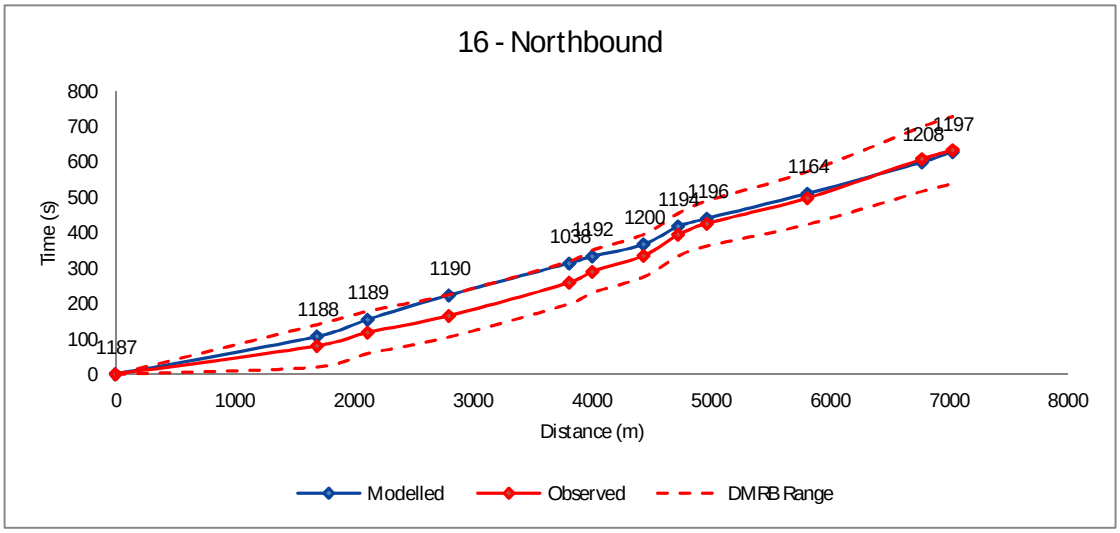
JT Graphs PM Peak

Model Map

Redraw Graphs



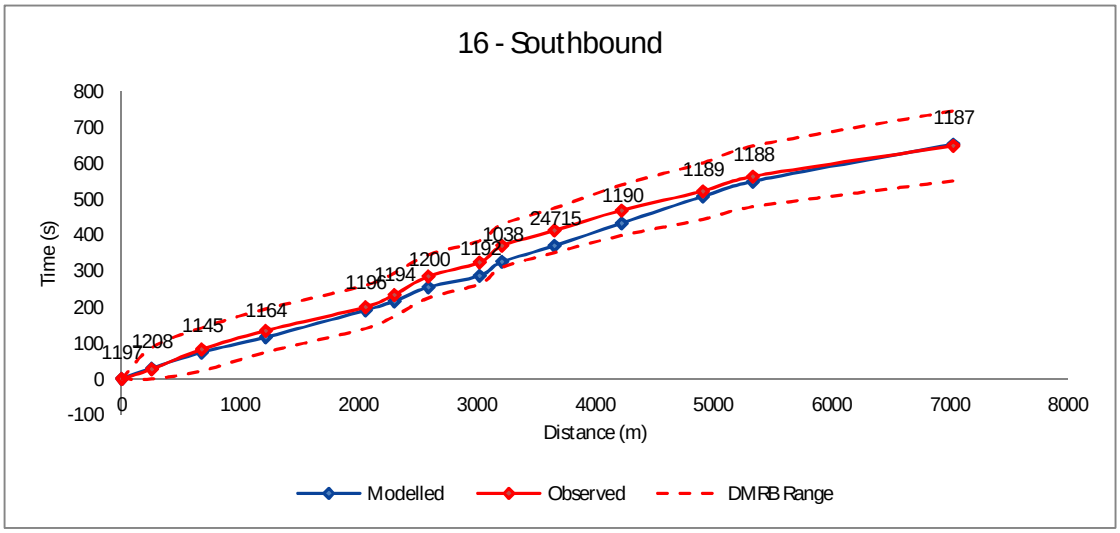


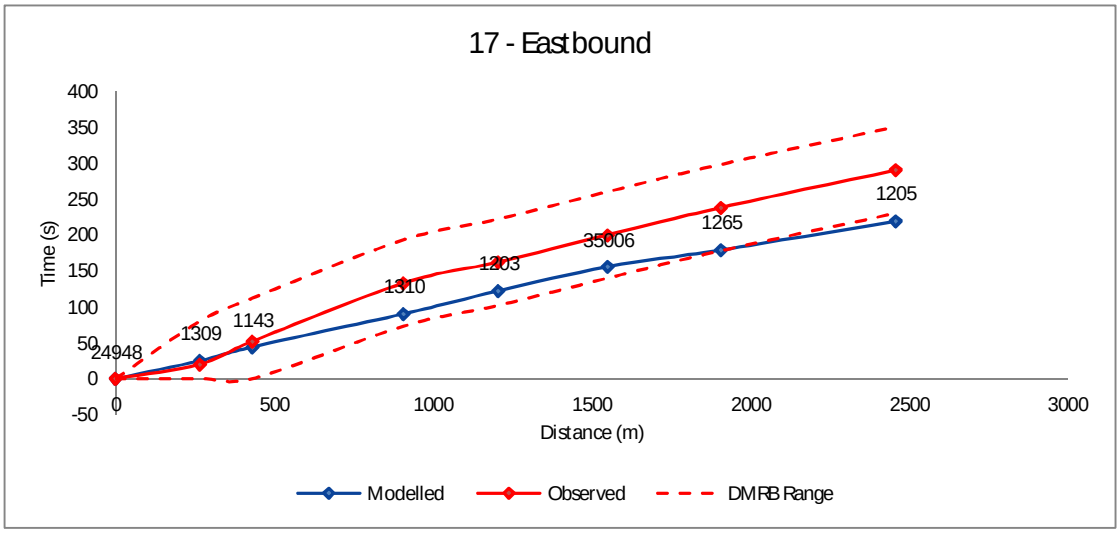


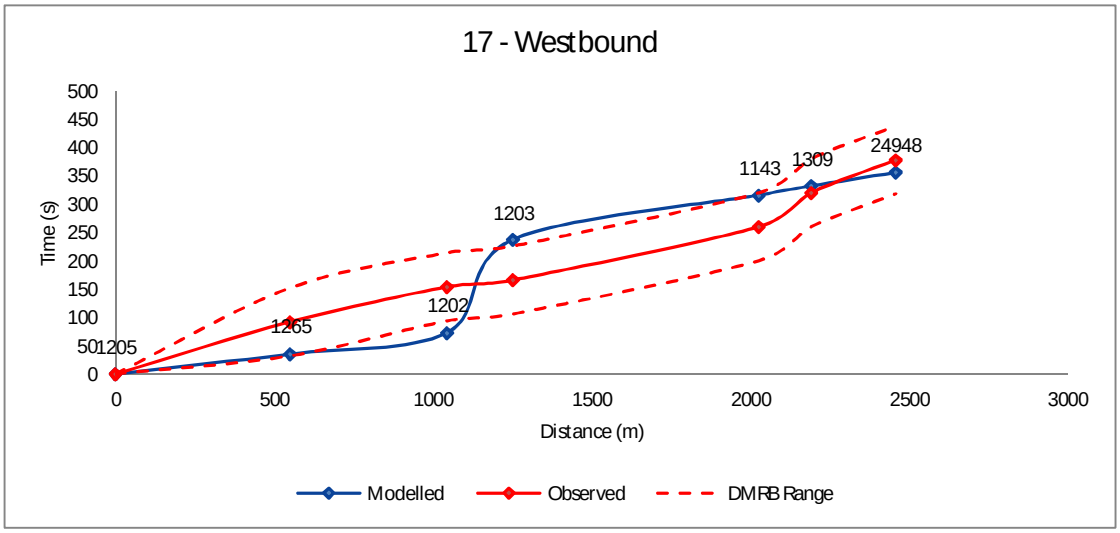
JT Graphs PM Peak

Model Map

Redraw Graphs



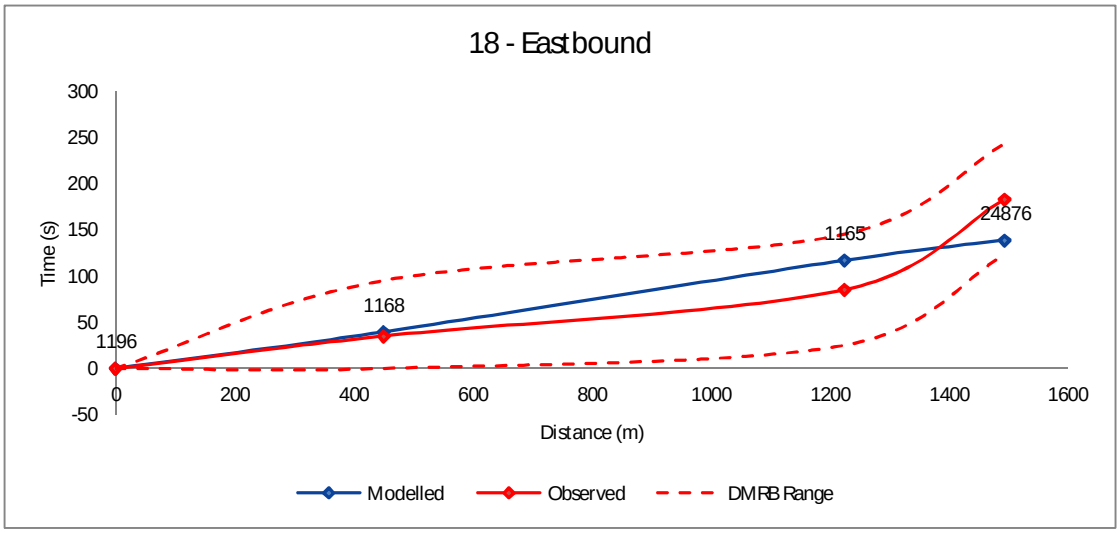


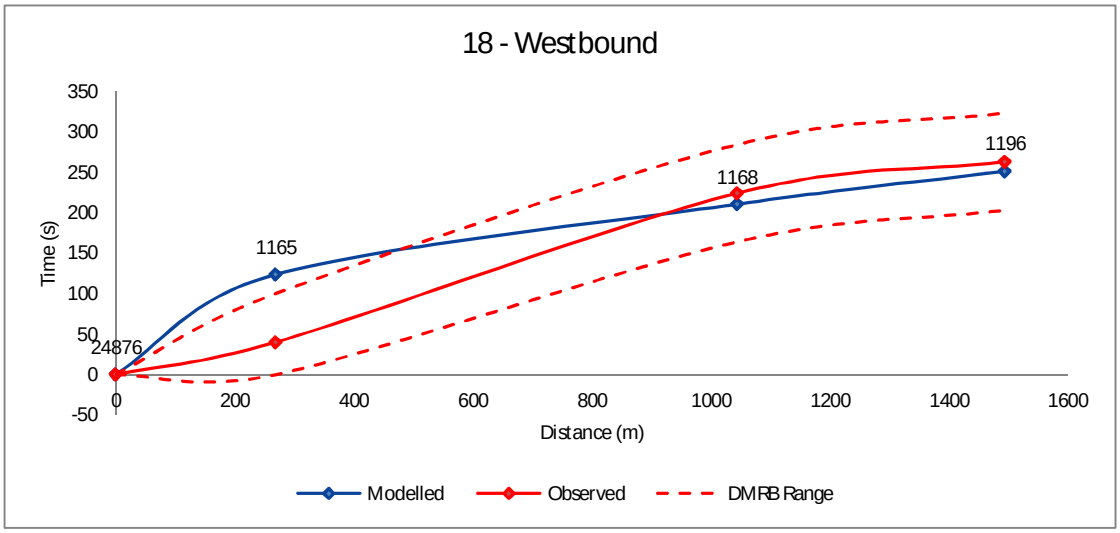


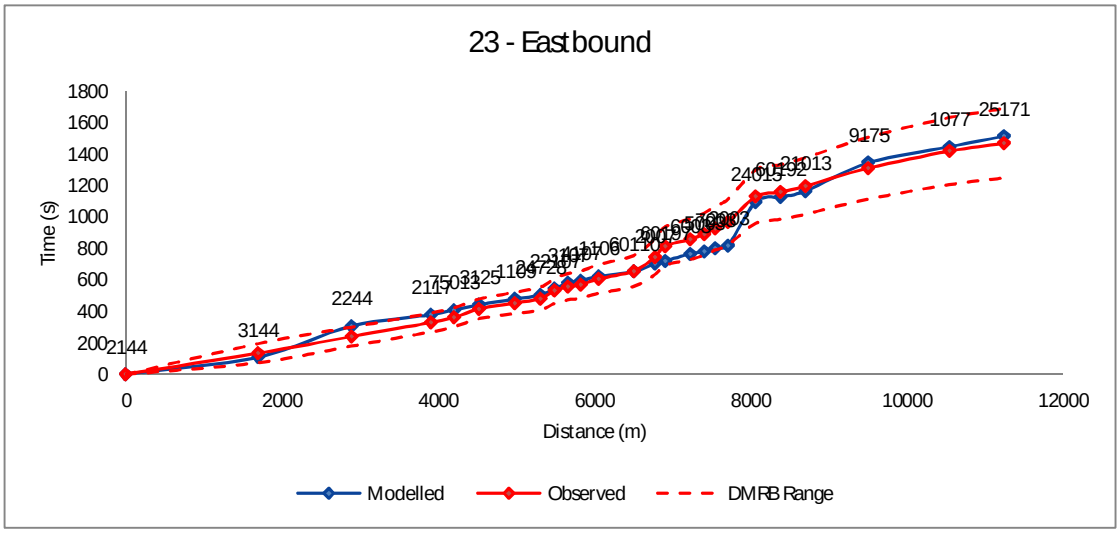
JT Graphs PM Peak

Model Map

Redraw Graphs



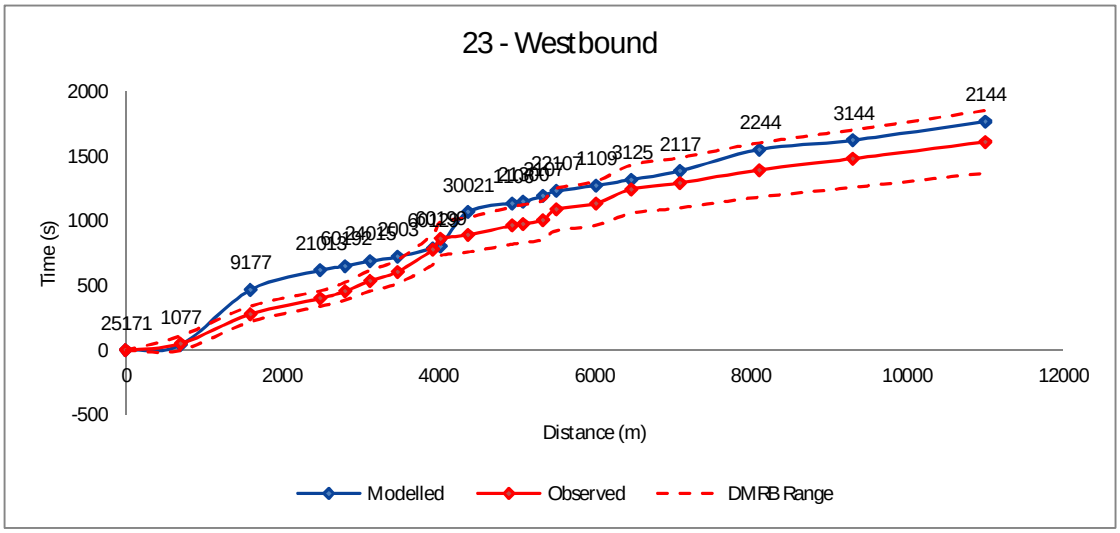


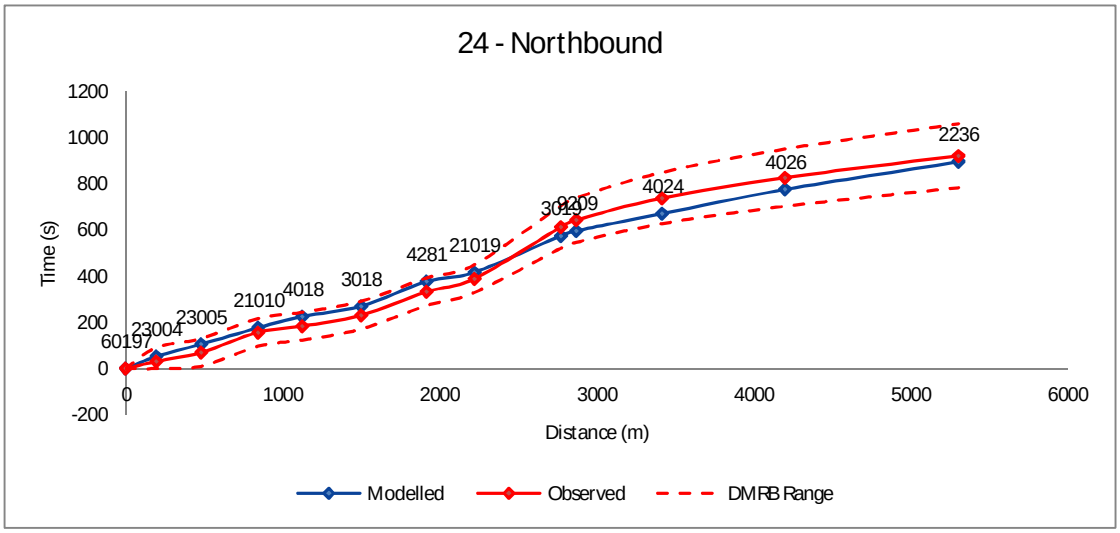


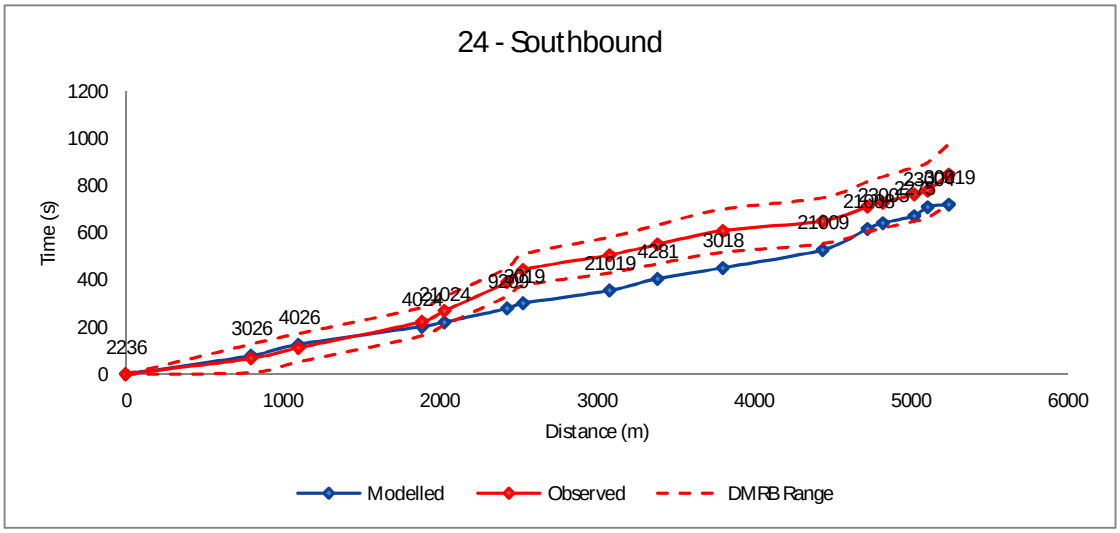
JT Graphs PM Peak

Model Map

Redraw Graphs



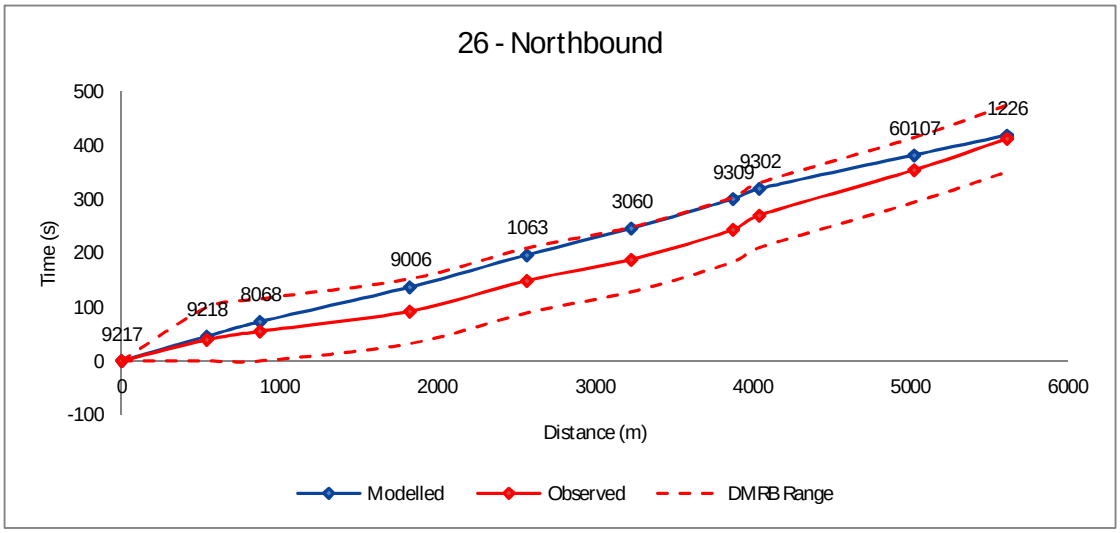


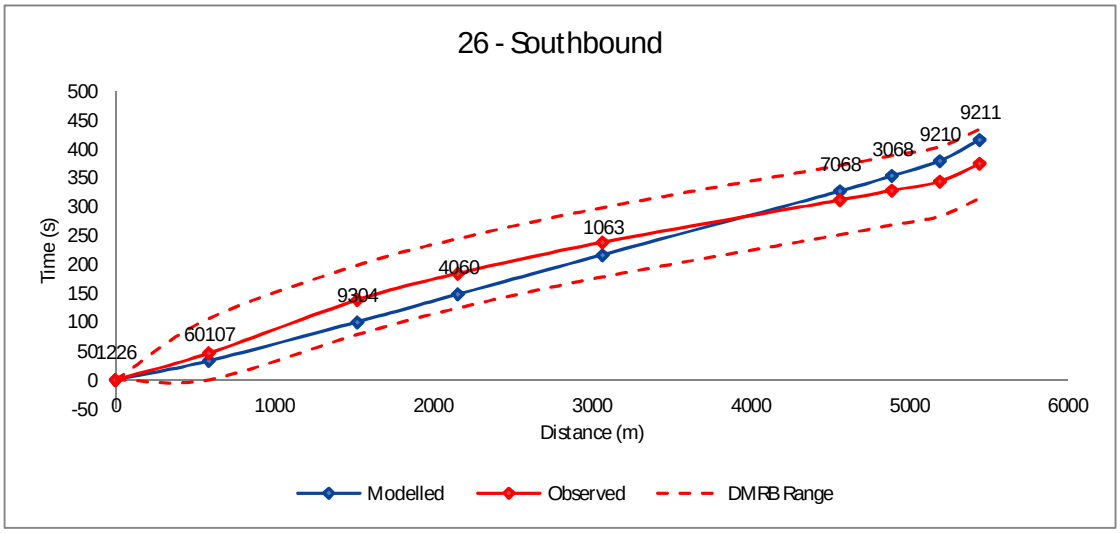


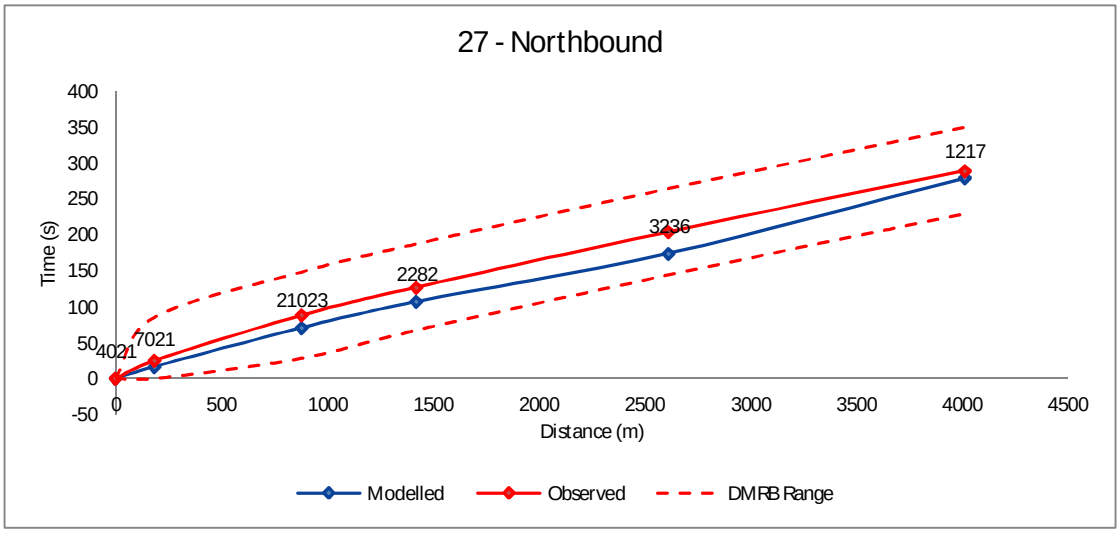
JT Graphs PM Peak

Model Map

Redraw Graphs



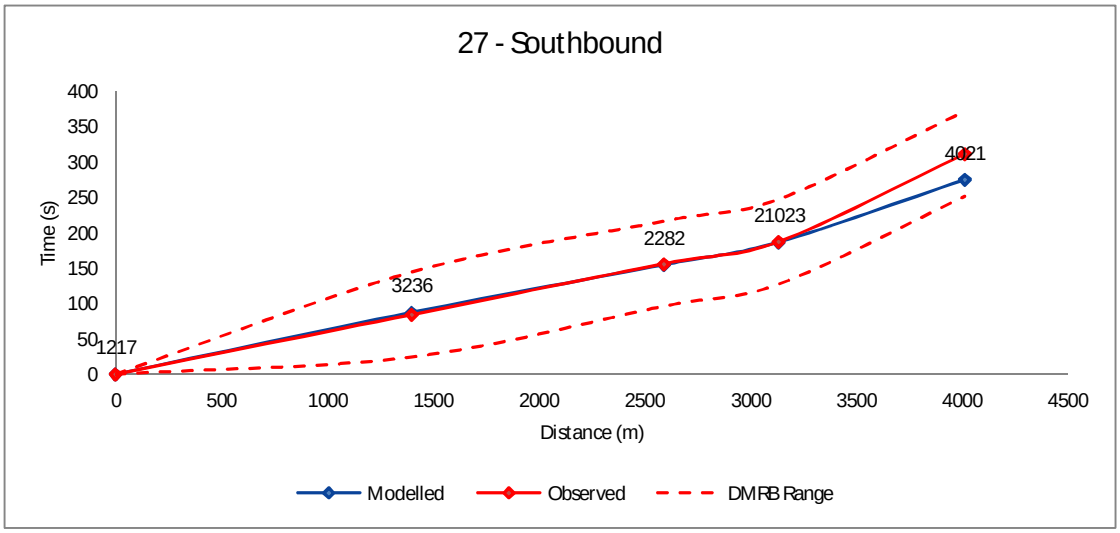


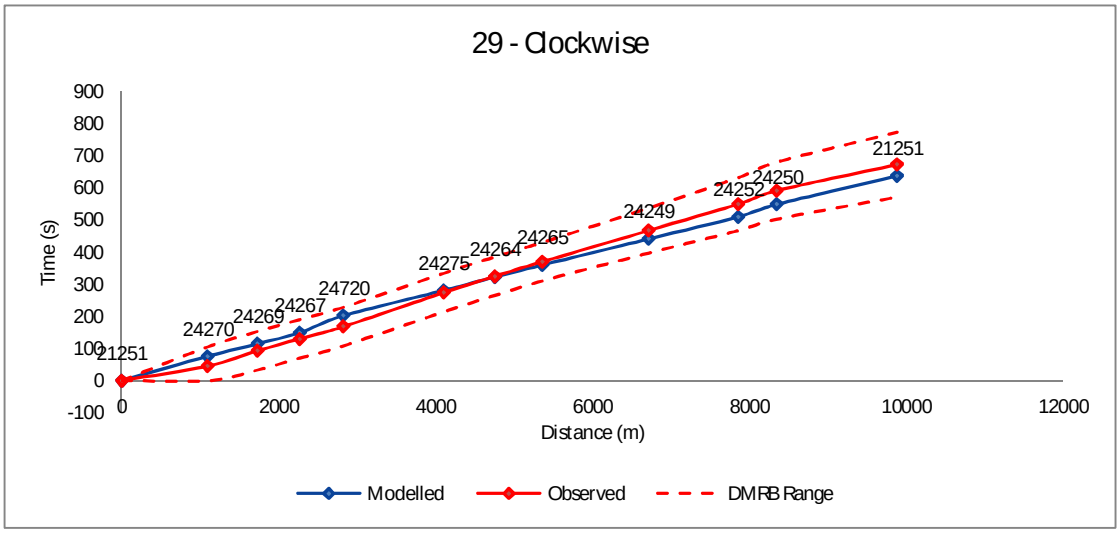


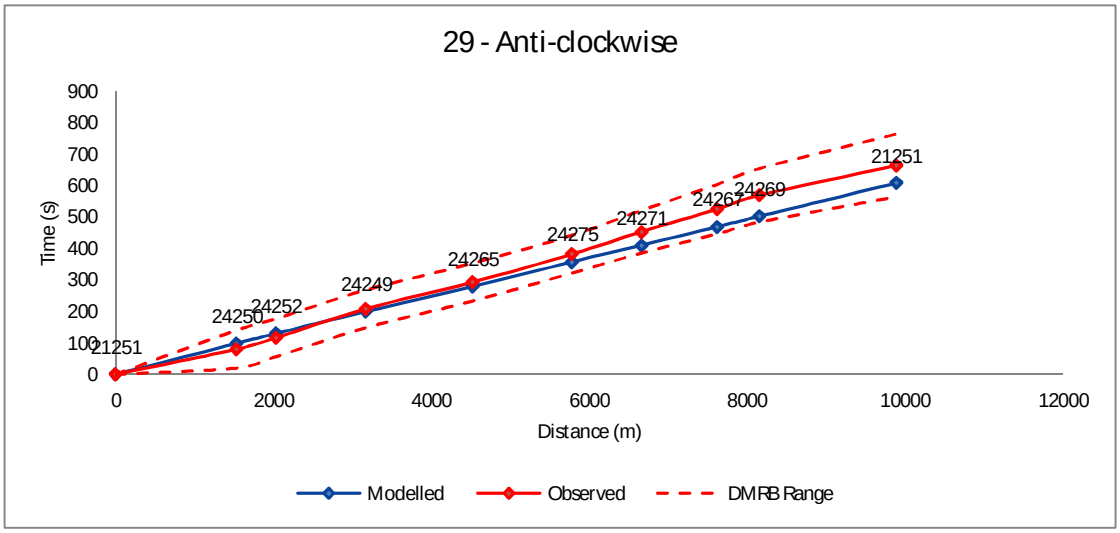
JT Graphs PM Peak

Model Map

Redraw Graphs



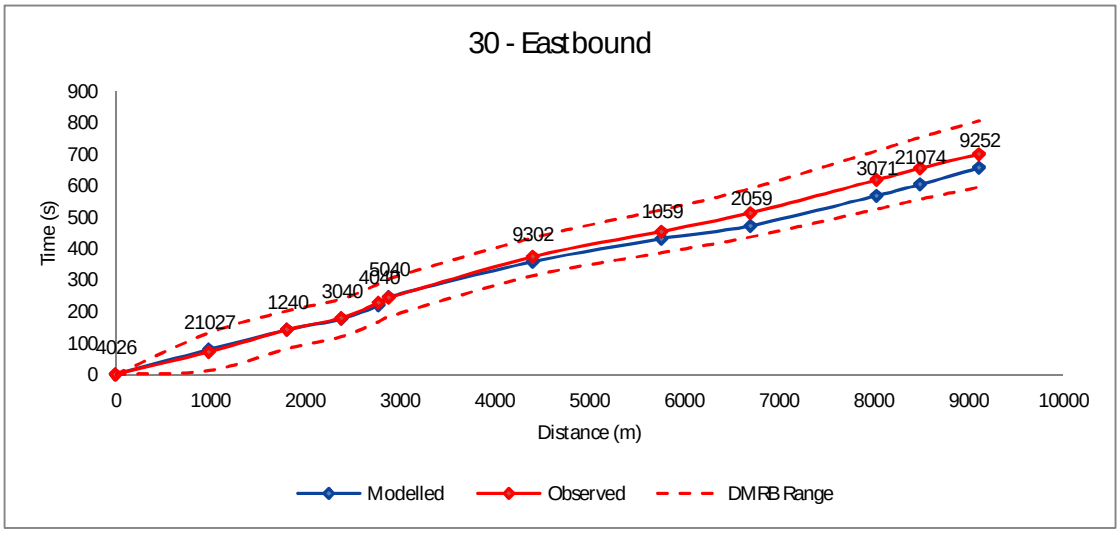


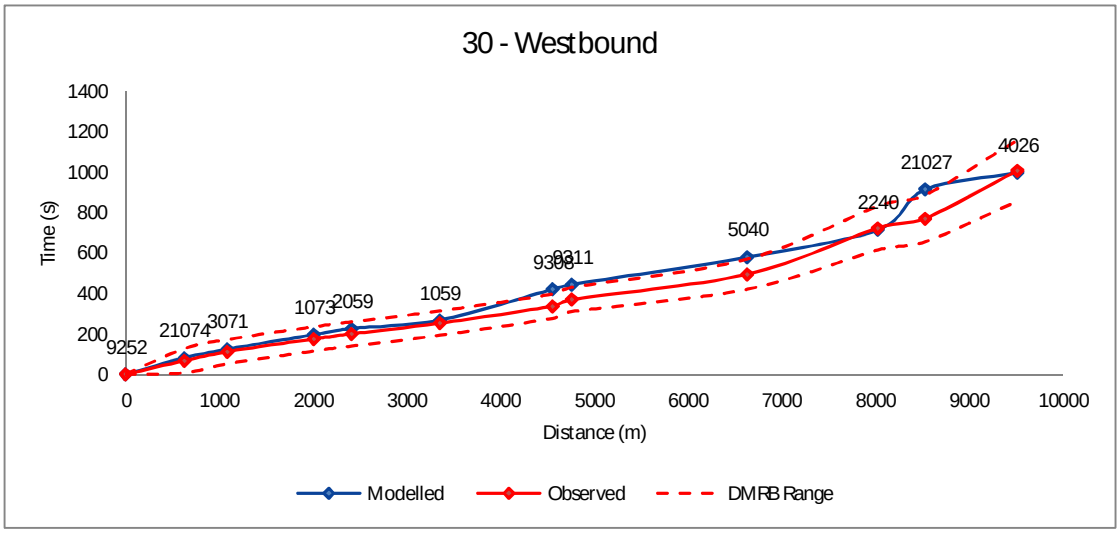


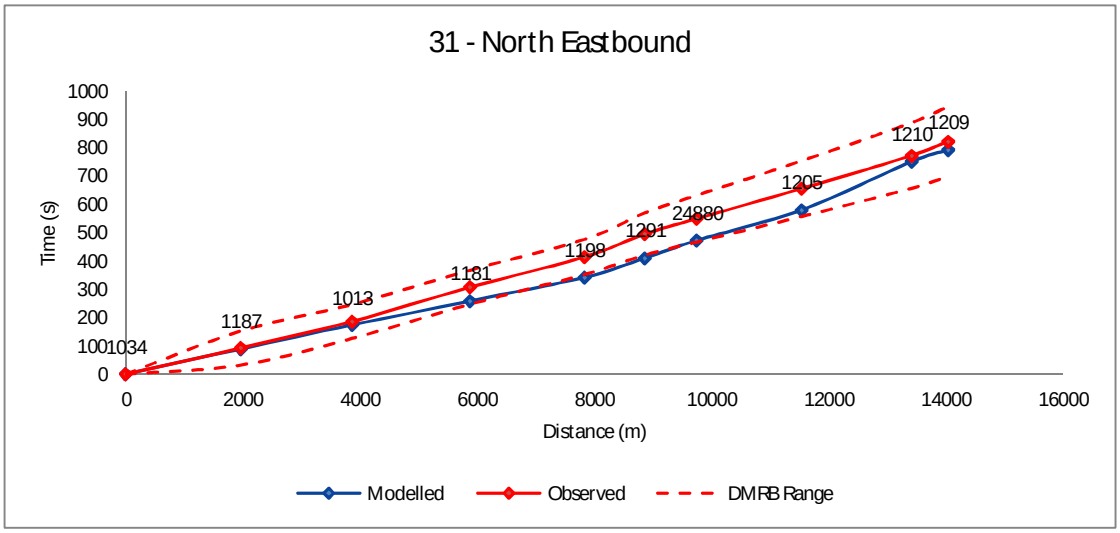
JT Graphs PM Peak

Model Map

Redraw Graphs



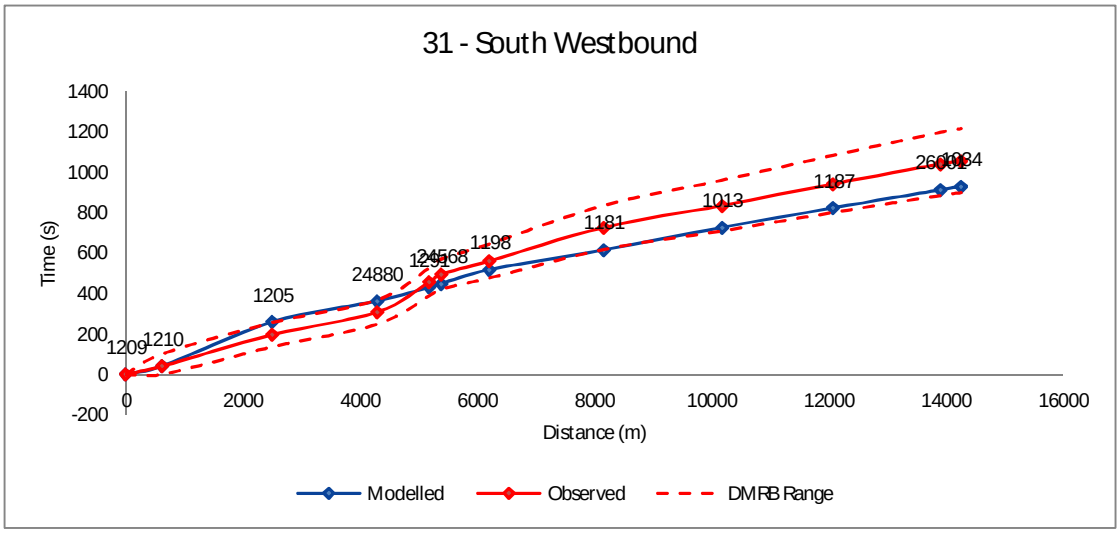


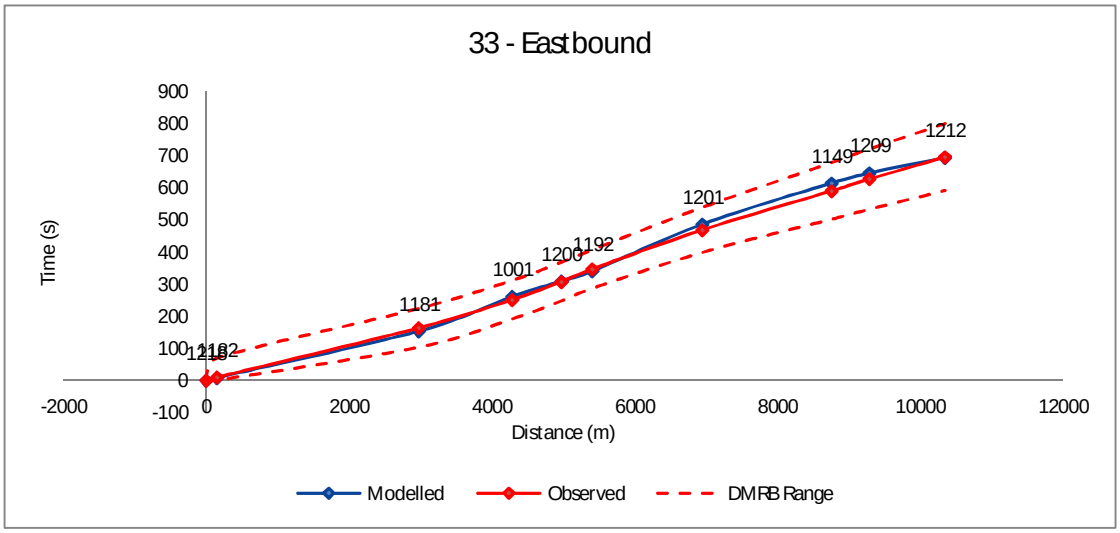


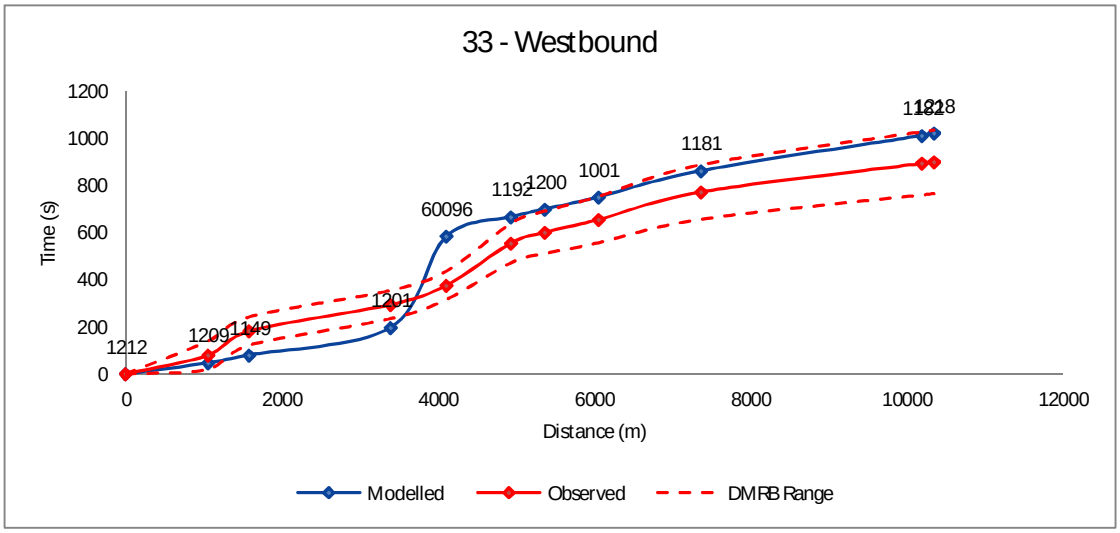
JT Graphs PM Peak

Model Map

Redraw Graphs



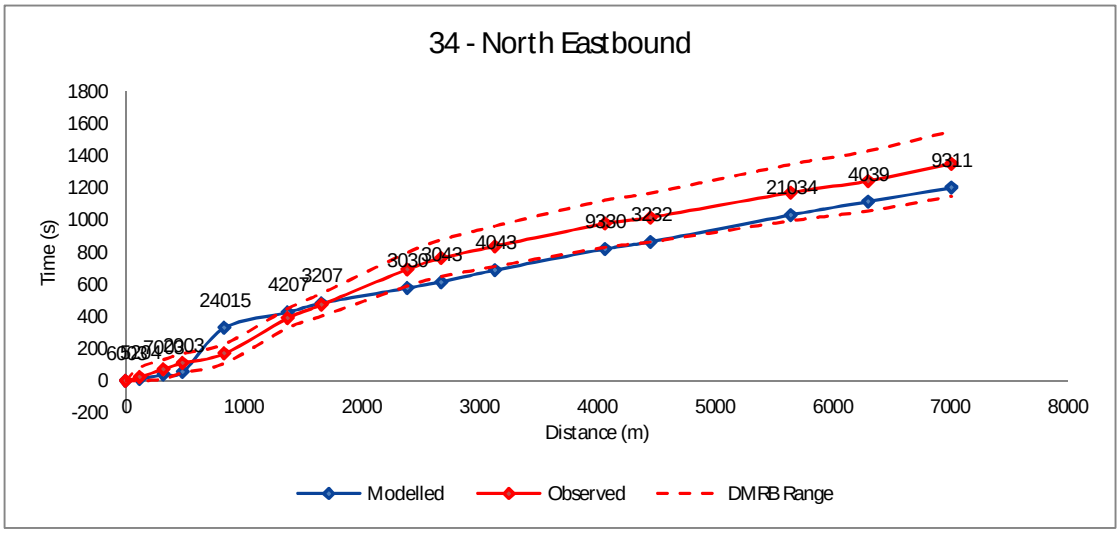


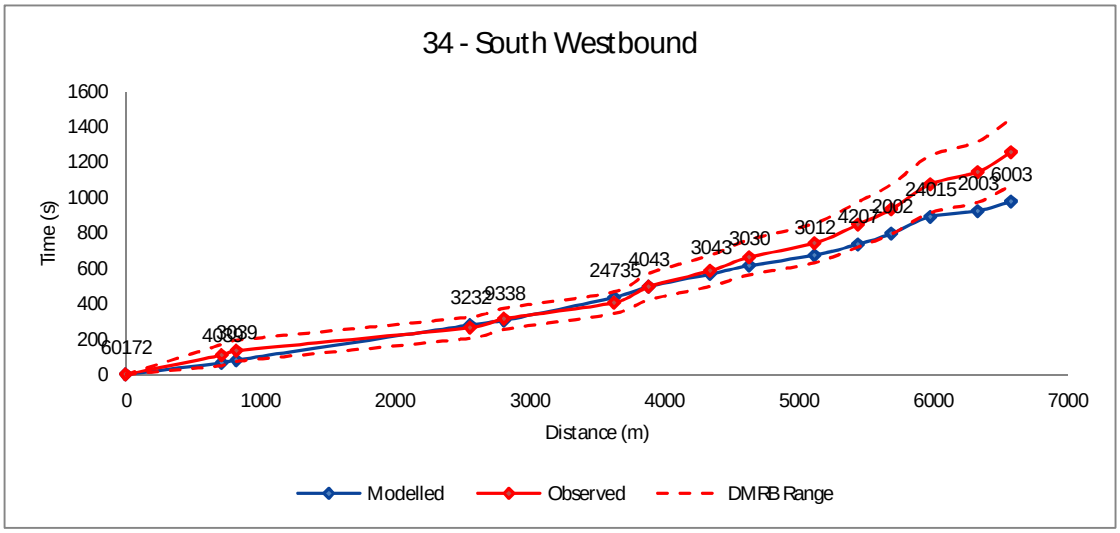


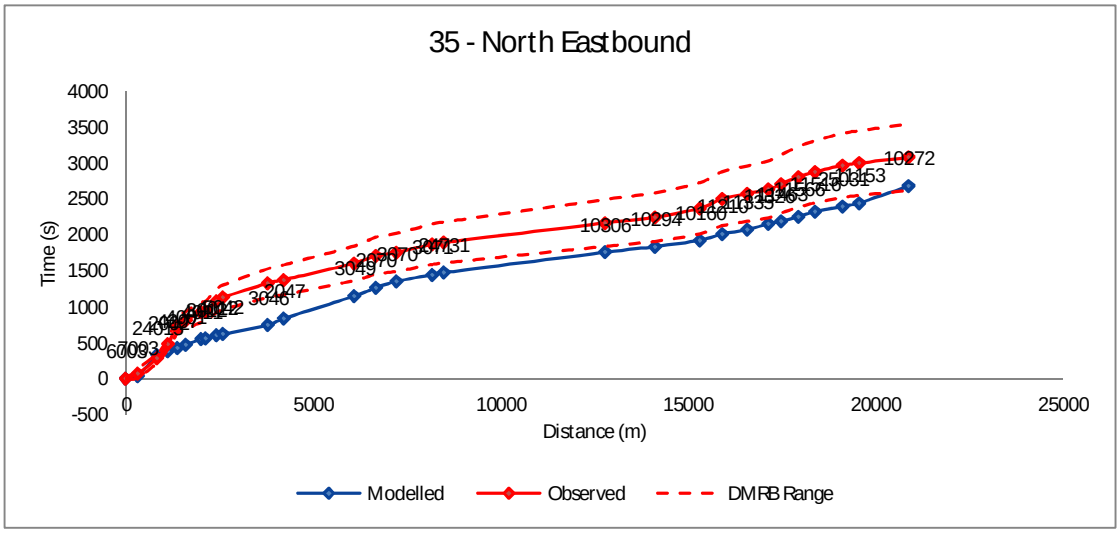
JT Graphs PM Peak

Model Map

Redraw Graphs



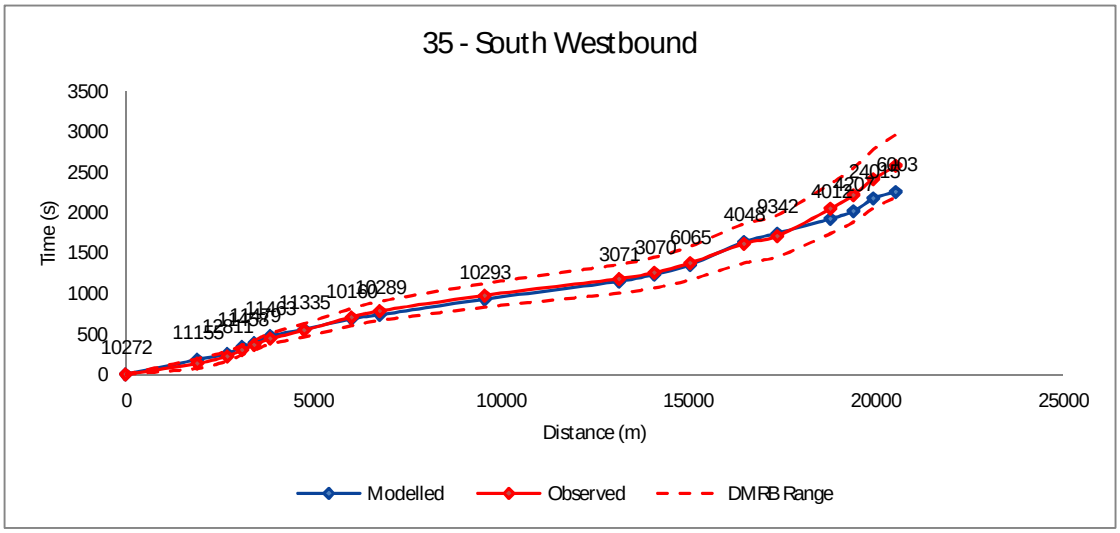


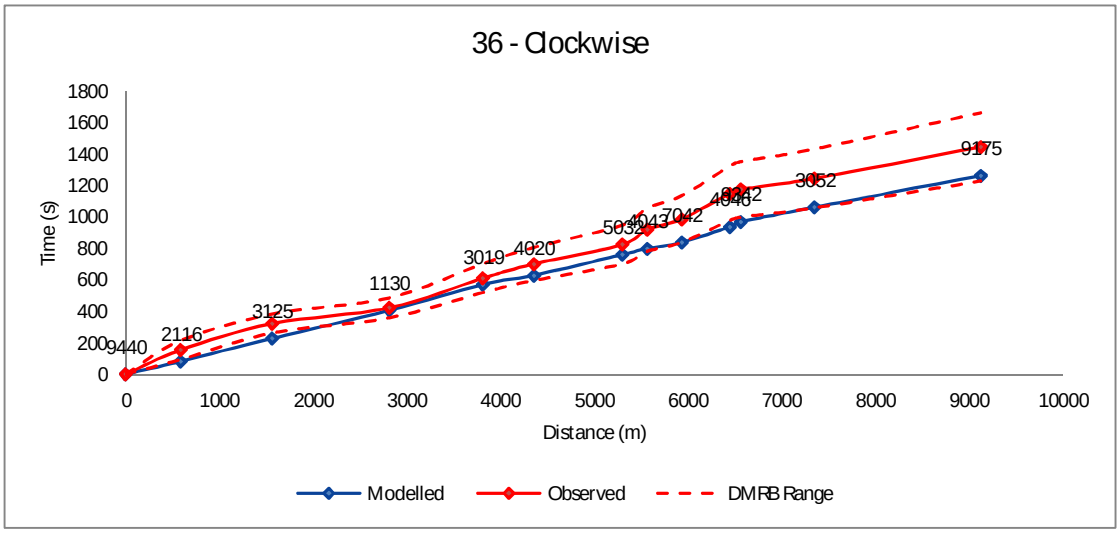


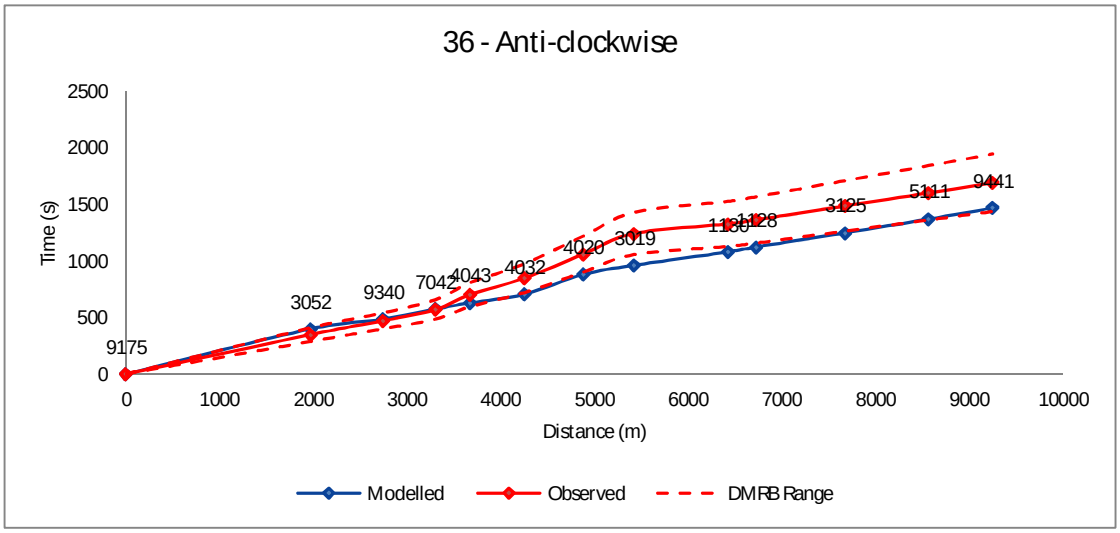
JT Graphs PM Peak

Model Map

Redraw Graphs



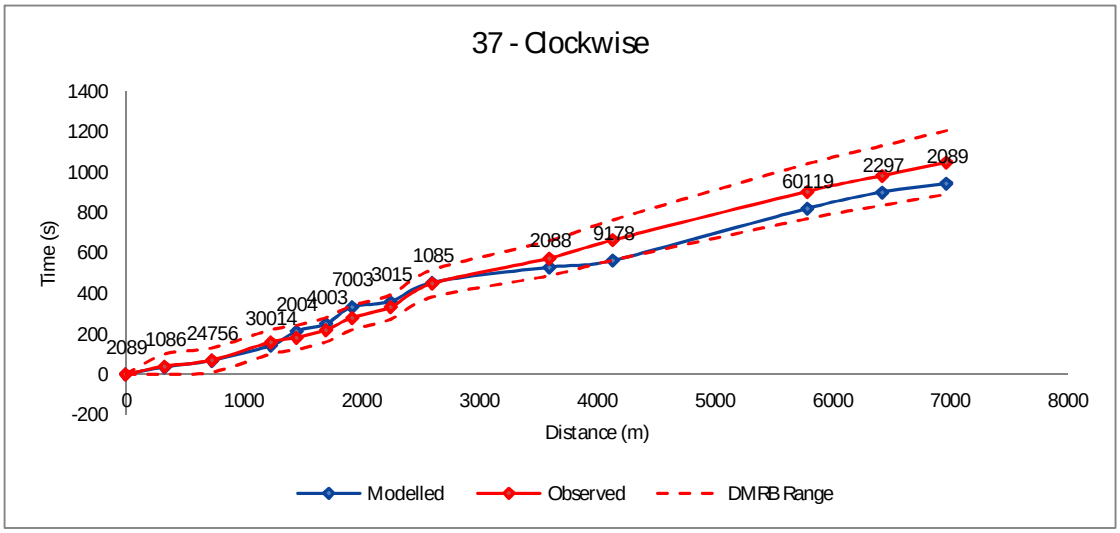


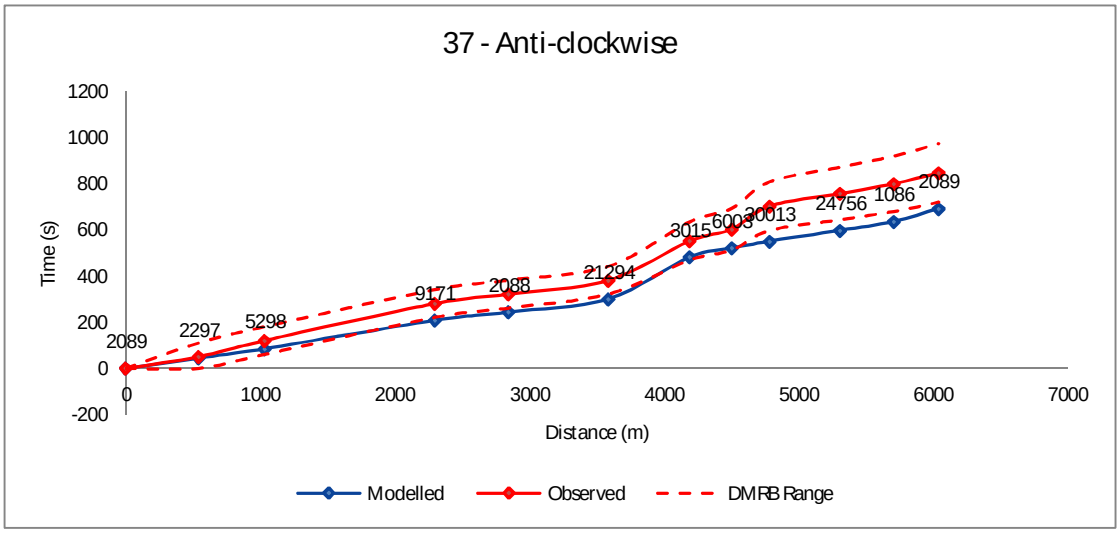


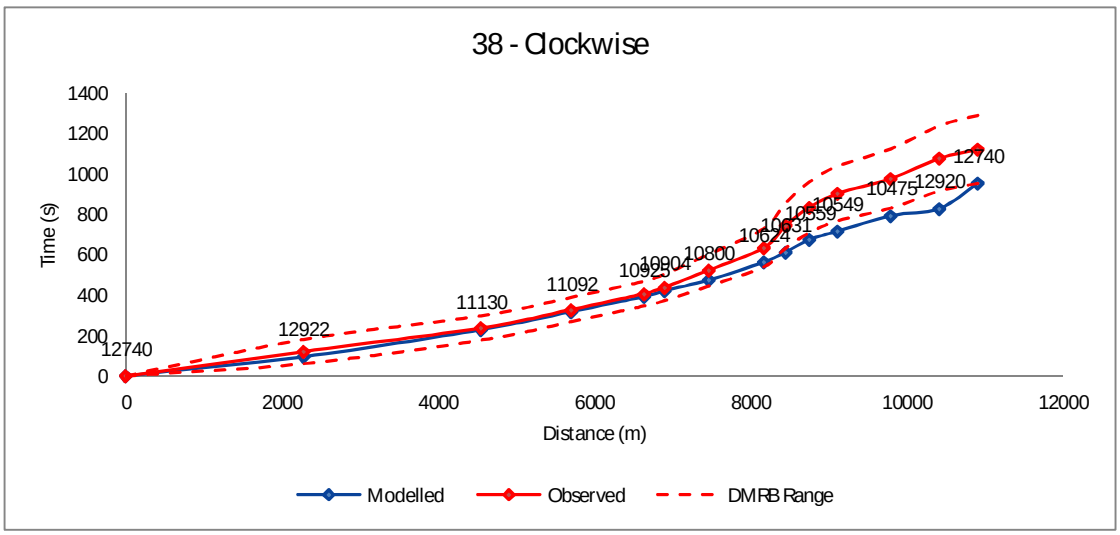
JT Graphs PM Peak

Model Map

Redraw Graphs



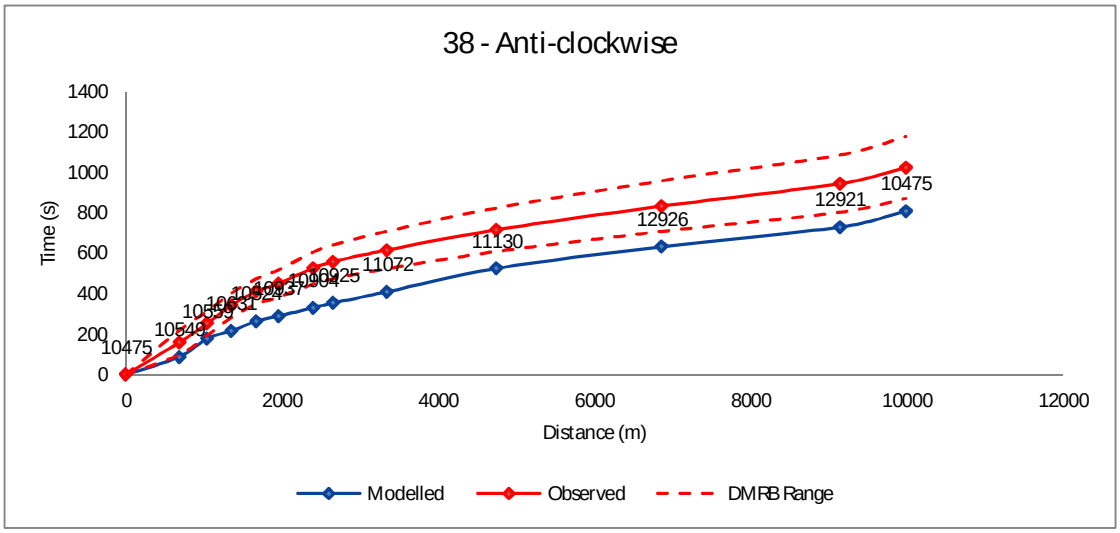


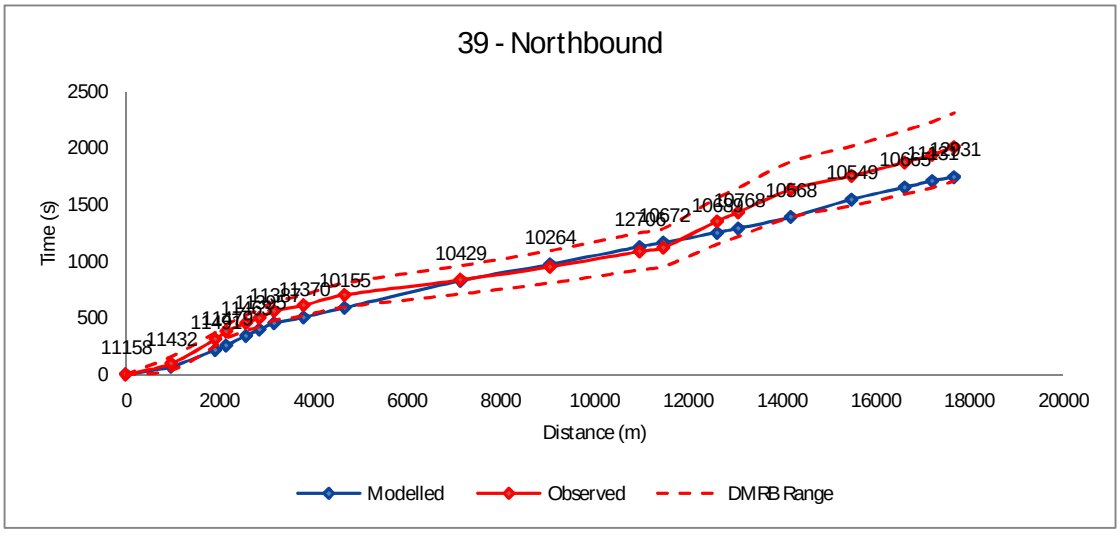


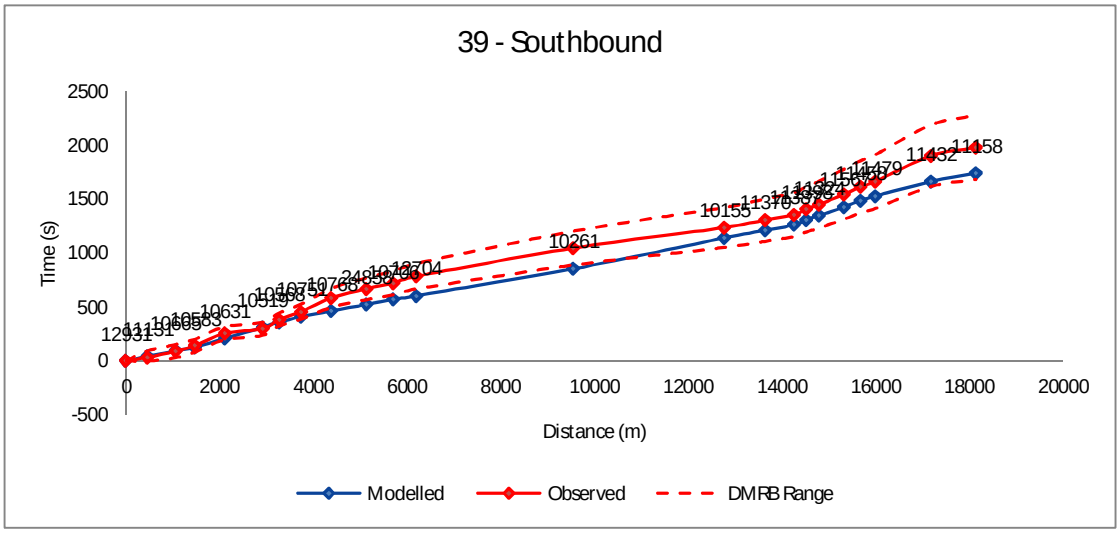
JT Graphs PM Peak

Model Map

Redraw Graphs



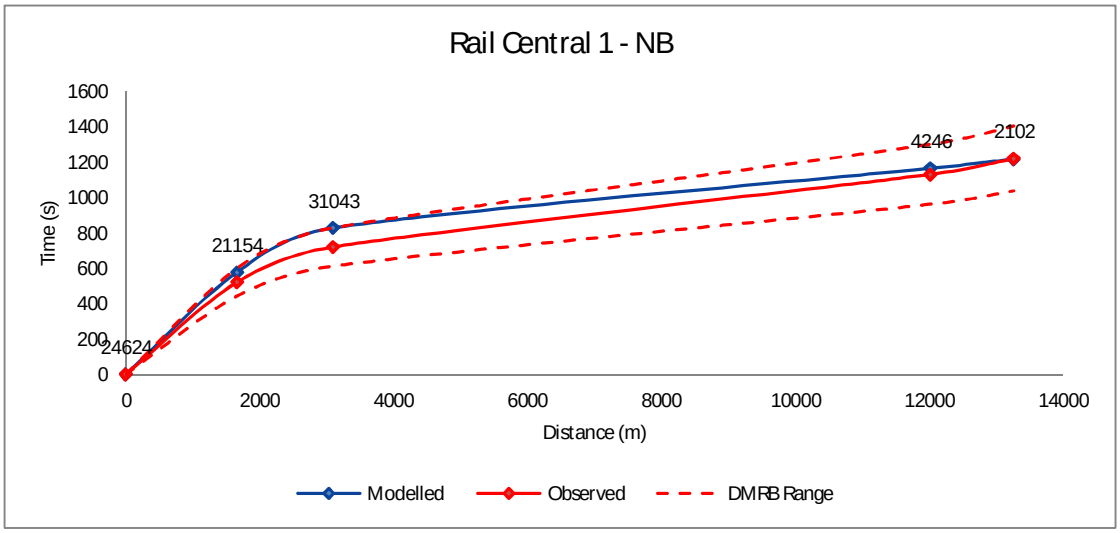


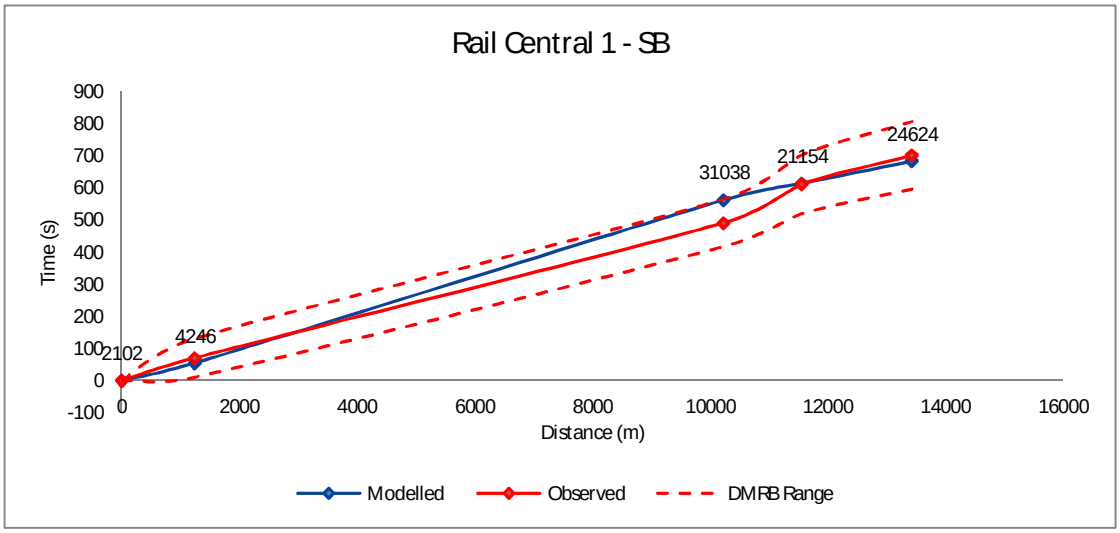


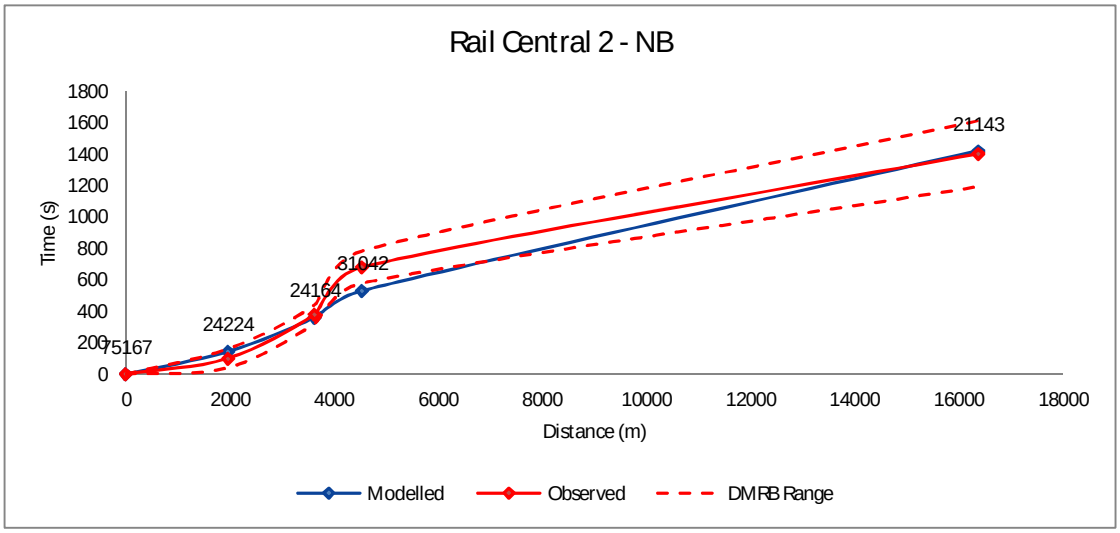
JT Graphs PM Peak

Model Map

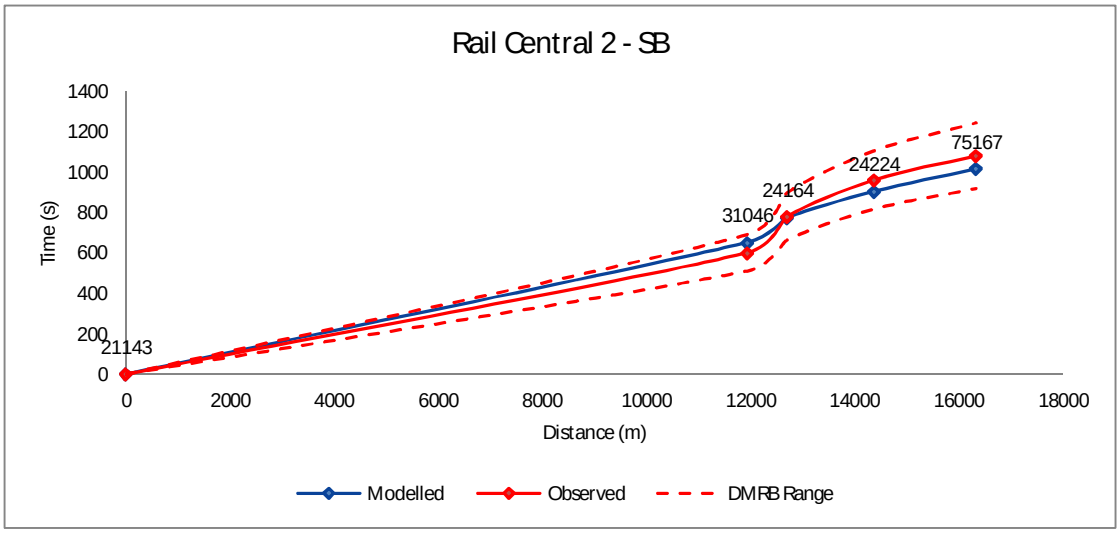
Redraw Graphs

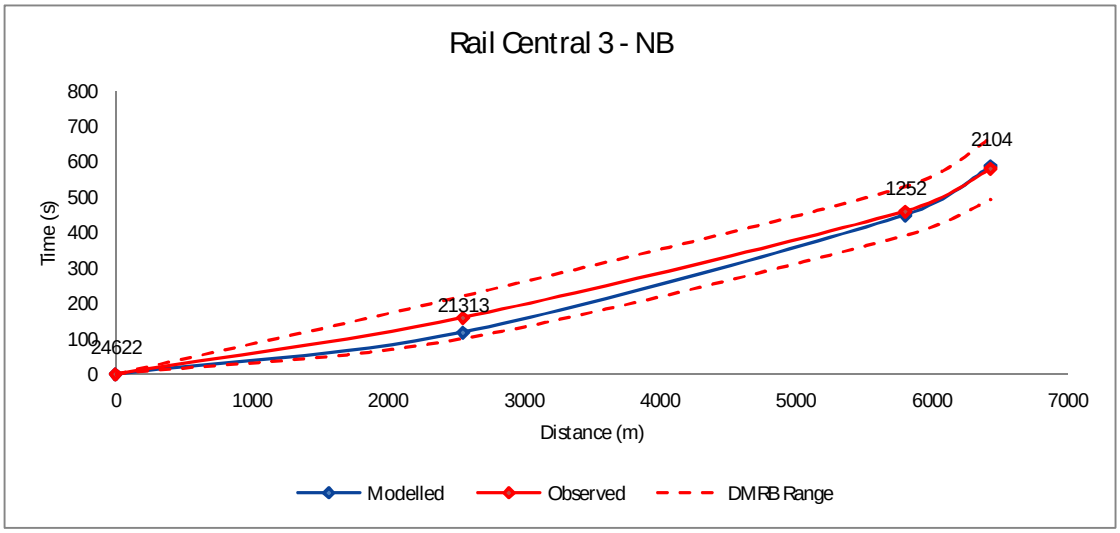


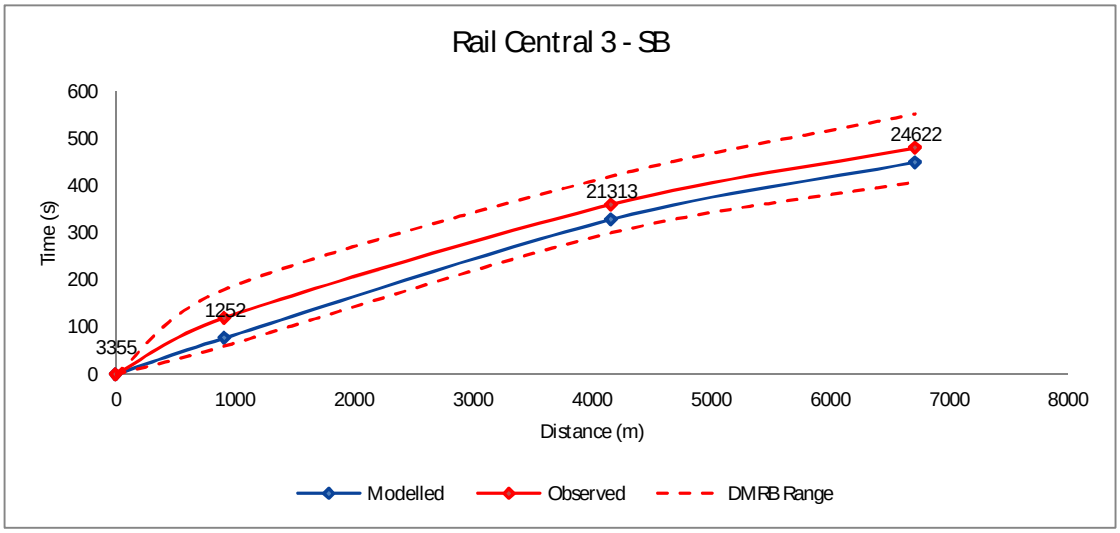




JT Graphs PM Peak



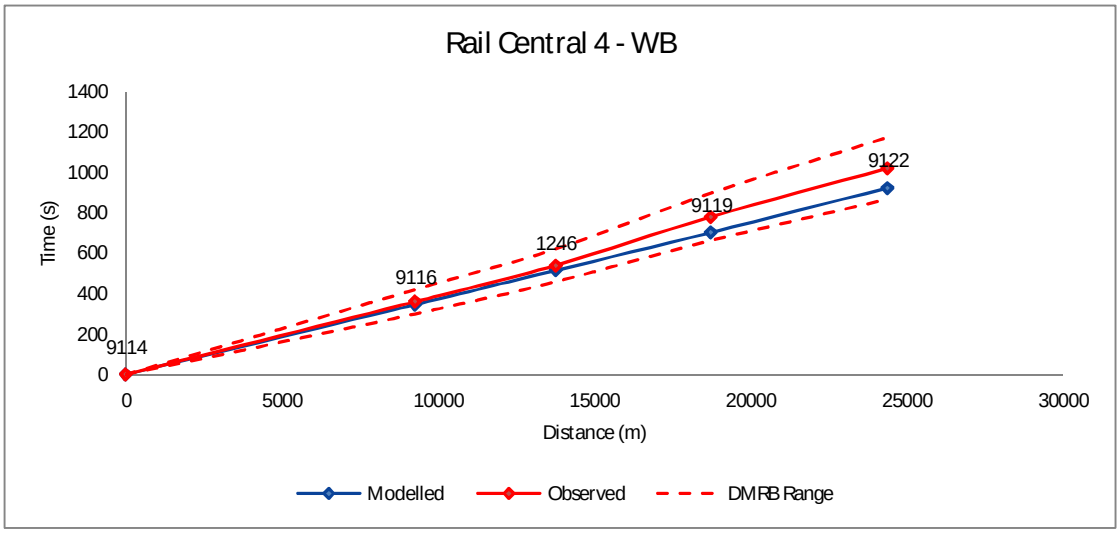


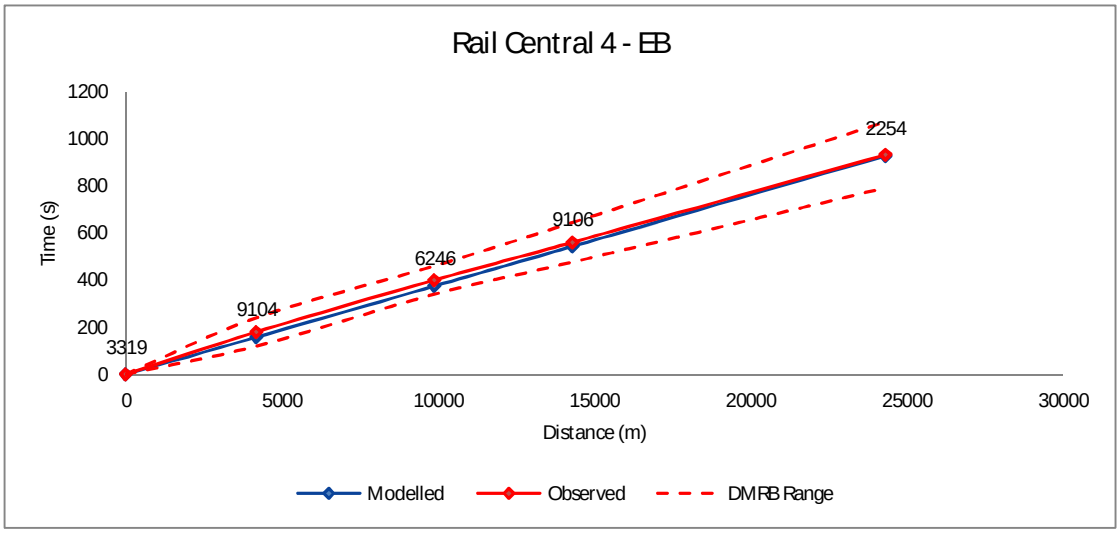


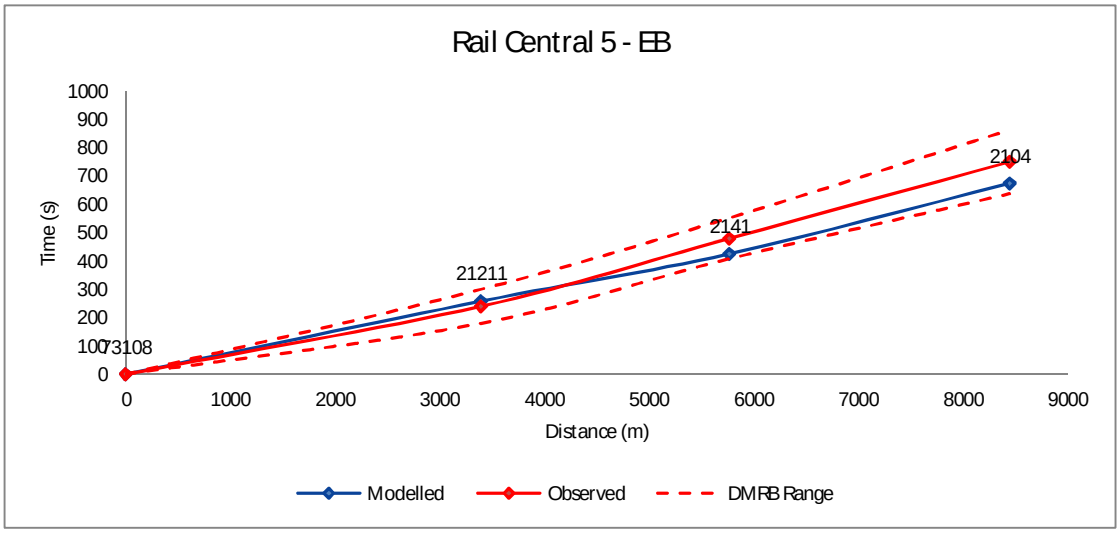
JT Graphs PM Peak

Model Map

Redraw Graphs



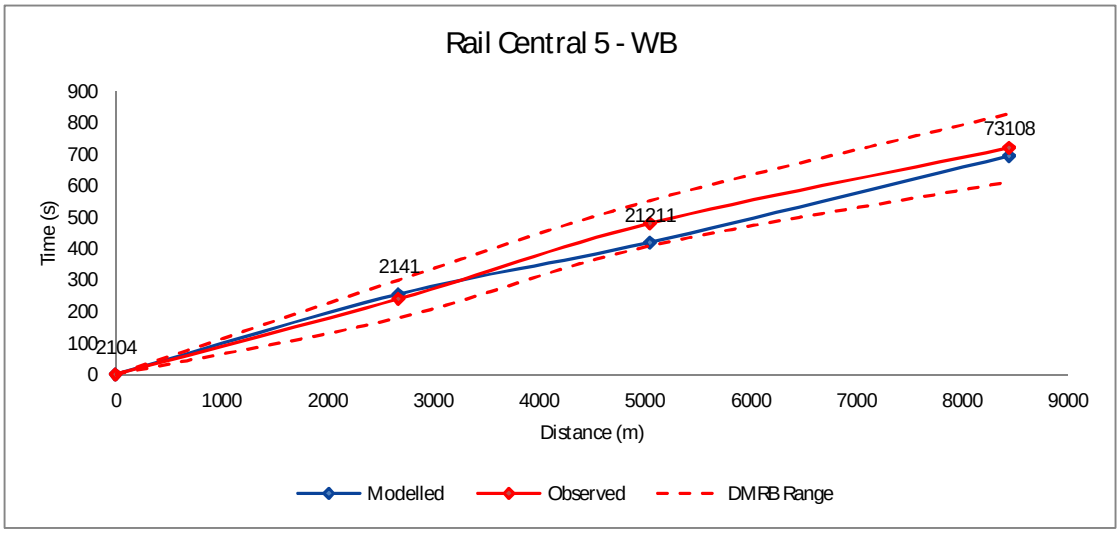


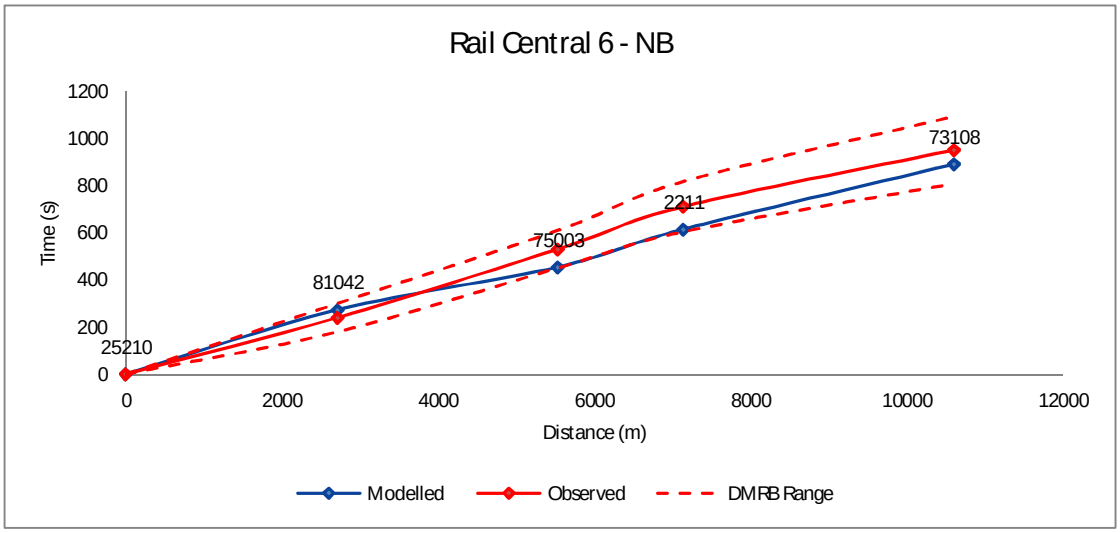


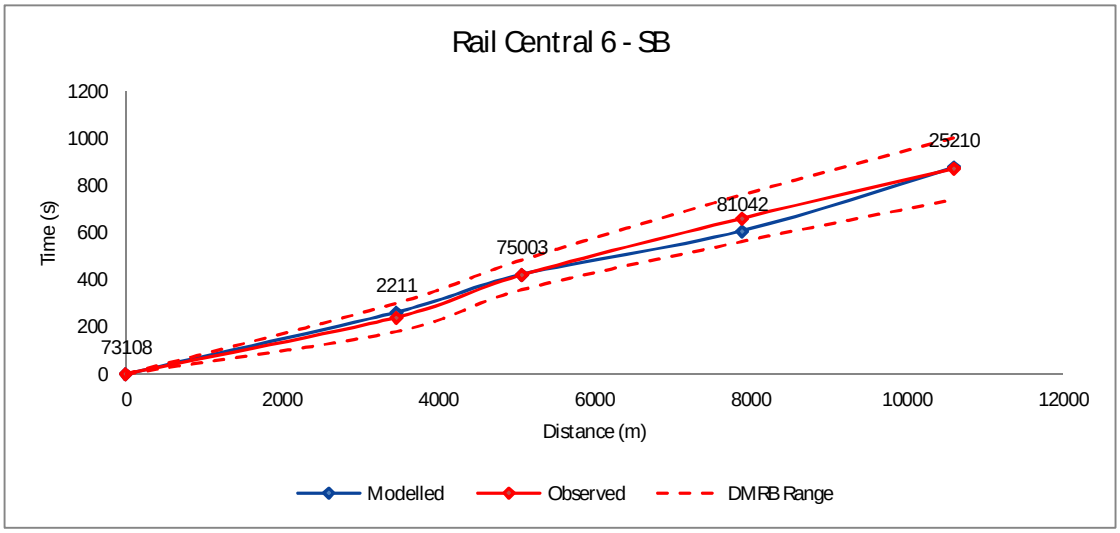
JT Graphs PM Peak

Model Map

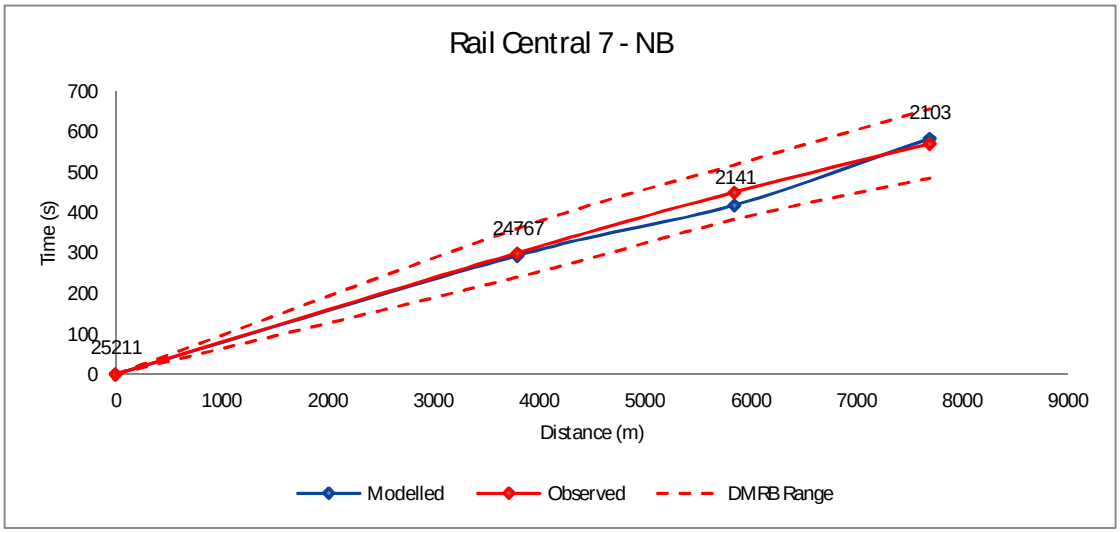
Redraw Graphs

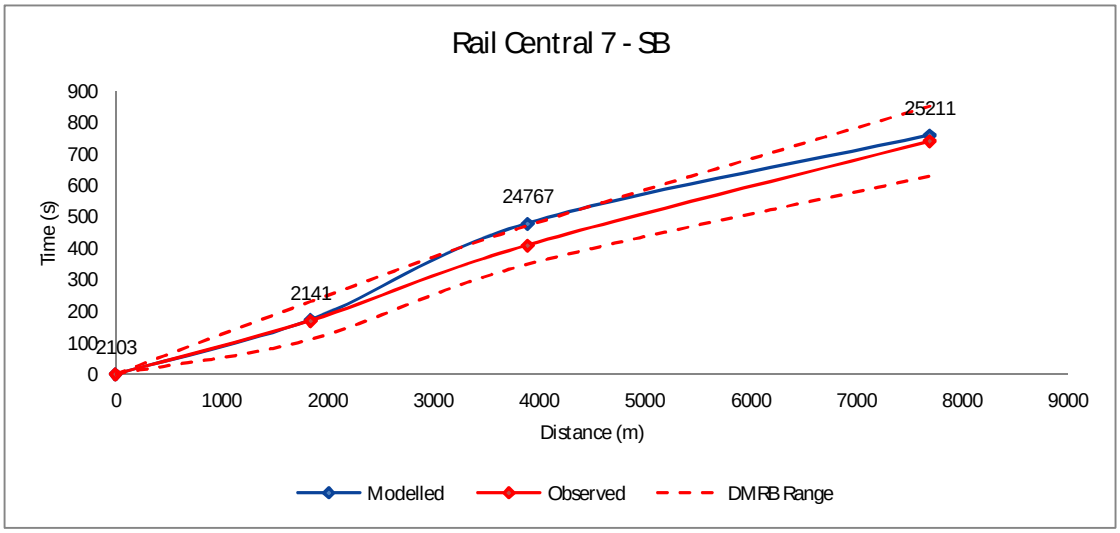


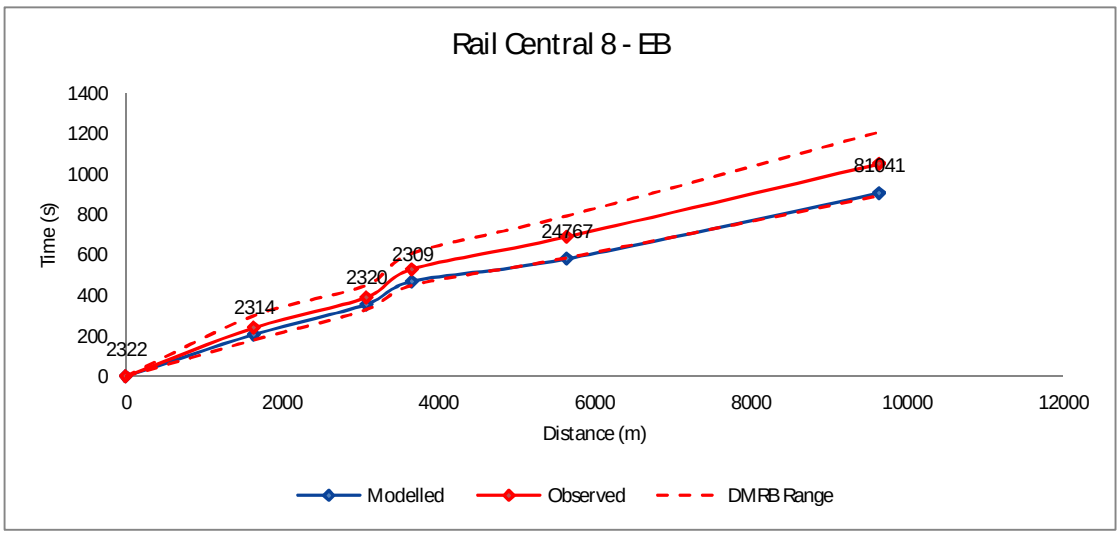




JT Graphs PM Peak



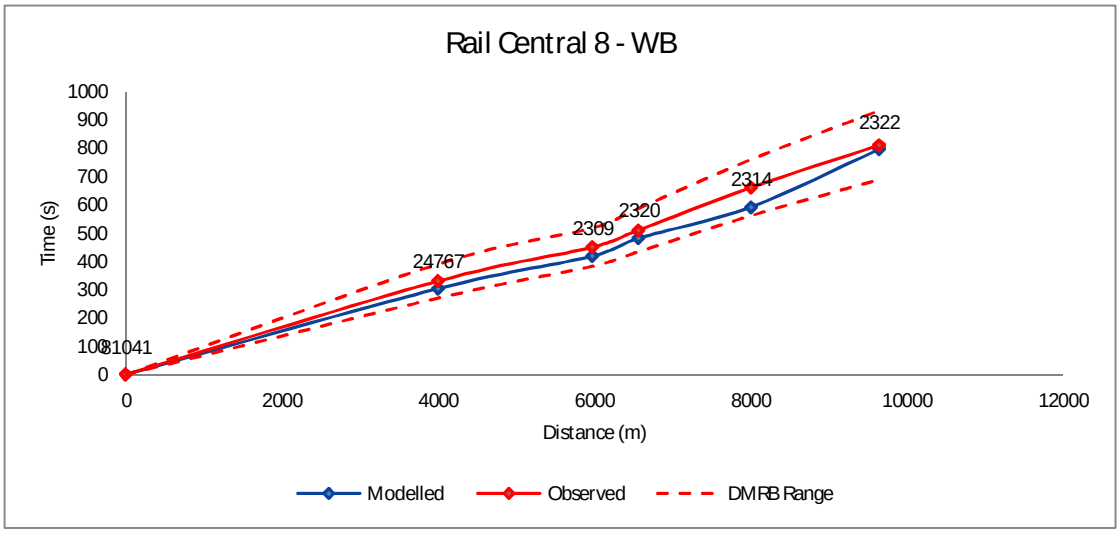




JT Graphs PM Peak

Model Map

Redraw Graphs



Appendix F

JUNCTION TURNING COUNTS

JTC 1

Model Map

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	21265	21266	21266	21265	*Swan valley Way*
B	5266	21266	21266	5266	*A43 (E)*
C	82001	21266	21266	82001	*Unamed Road*
D	82003	21266	21266	82003	*A43 (W)*
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	16	
GEH < 5.0	10	63%
GEH < 7.5	15	94%
GEH < 10.0	16	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	43	75	29				147	
	B	152	0	582	31				765	
	C	11	65	0	0				76	
	D	34	428	7	0				469	*507*
	E									
	F									
	G									
	TOTAL	197	536	664	60				1457	
	ATC			*785*						

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	100	151	4				254
	B	136	0	584	9				729
	C	50	41	0	0				92
	D	0	546	0	0				546
	E								
	F								
	G								
	TOTAL	187	687	734	13				1621

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	6.748	7.119	6.302				7.572
	B	1.309	0.000	0.070	4.836				1.307
	C	7.119	3.262	0.000	0.000				1.714
	D	8.246	5.331	3.742	0.000				3.402
	E								
	F								
	G								
		0.740	6.104	2.659	7.809				4.177

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	57	76	-25				107
	B	-16	0	2	-22				-36
	C	39	-24	0	0				16
	D	-34	118	-7	0				77
	E								
	F								
	G								
	TOTAL	-10	151	70	-47				164

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		133%	101%	-88%				73%
	B	-10%		0%	-70%				-5%
	C	359%	-37%						21%
	D	-100%	27%	-100%					16%
	E								
	F								
	G								
		-5%	28%	11%	-79%				11%

PM Peak

Include? Yes

Total Turns	16	
GEH < 5.0	9	56%
GEH < 7.5	14	88%
GEH < 10.0	16	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	79	83	18				180	
	B	112	0	524	21				657	
	C	3	52	0	0				55	
	D	16	433	14	0				463	
	E									
	F									
	G									
	TOTAL	131	564	621	39				1355	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	12	151	1				164
	B	179	0	556	1				736
	C	5	74	0	0				79
	D	86	532	0	0				618
	E								
	F								
	G								
	TOTAL	271	617	707	1				1596

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	9.890	6.290	5.653				1.223
	B	5.591	0.000	1.360	6.213				2.982
	C	1.077	2.727	0.000	0.000				2.908
	D	9.802	4.486	5.292	0.000				6.648
	E								
	F								
	G								
		9.856	2.195	3.324	8.400				6.273

ABSOLUTE DIFFERENCE

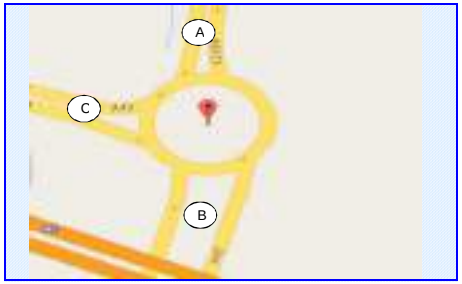
All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	-67	68	-17				-16
	B	67	0	32	-20				79
	C	2	22	0	0				24
	D	70	99	-14	0				155
	E								
	F								
	G								
	TOTAL	140	53	86	-38				241

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		-85%	82%	-96%				-9%
	B	60%		6%	-97%				12%
	C	73%	42%						43%
	D	437%	23%	-100%					33%
	E								
	F								
	G								
		107%	9%	14%	-97%				18%

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	2102	3246	3246	2102	*A5123*
B	7246	3246	3246	7246	*A43 (S)*
C	5266	3246	3246	5266	*A43 (W)*
D					
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	7	78%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	1025	321					1346	*1339*
	B	916	0	444					1360	
	C	97	439	0					536	
	D									
	E									
	F									
	G									
	TOTAL	1013	1464	765					3242	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	1149	321					1469
	B	1090	0	409					1499
	C	128	559	0					687
	D								
	E								
	F								
	G								
	TOTAL	1218	1707	729					3655

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	3.751	0.021					3.286
	B	5.498	0.000	1.710					3.672
	C	2.951	5.358	0.000					6.106
	D								
	E								
	F								
	G								
		6.151	6.111	1.305					7.035

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	124	0					123
	B	174	0	-35					139
	C	31	120	0					151
	D								
	E								
	F								
	G								
	TOTAL	205	243	-36					413

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		12%	0%					9%
	B	19%		-8%					10%
	C	32%	27%						28%
	D								
	E								
	F								
	G								
		20%	17%	-5%					13%

PM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	8	89%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	714	236					950	
	B	1345	0	421					1766	
	C	157	407	0					564	
	D									
	E									
	F									
	G									
	TOTAL	1502	1121	657					3280	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	815	317					1132
	B	1105	0	417					1523
	C	198	420	0					618
	D								
	E								
	F								
	G								
	TOTAL	1303	1235	734					3273

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	3.652	4.865					5.637
	B	6.842	0.000	0.173					5.993
	C	3.062	0.642	0.000					2.215
	D								
	E								
	F								
	G								
		5.306	3.323	2.933					0.128

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	101	81					182
	B	-240	0	-4					-243
	C	41	13	0					54
	D								
	E								
	F								
	G								
	TOTAL	-199	114	77					-7

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		14%	34%					19%
	B	-18%		-1%					-14%
	C	26%	3%						10%
	D								
	E								
	F								
	G								
		-13%	10%	12%					0%

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	7246	4246	4246	7246	*A43 (N)*
B	2309	4246	4246	2309	*A43 (S)*
C	24120	4246	4246	24120	*A43 (W)*
D					
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	7	78%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	1294	170					1464	
	B	1103	0	304					1407	*1276*
	C	257	265	0					522	
	D									
	E									
	F									
	G									
	TOTAL	1360	1559	474					3393	
	ATC		*1544*							

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	1484	225					1709
	B	1208	0	317					1525
	C	291	166	0					457
	D								
	E								
	F								
	G								
	TOTAL	1499	1650	542					3691

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	5.105	3.882					6.146
	B	3.083	0.000	0.748					3.081
	C	2.077	6.754	0.000					2.926
	D								
	E								
	F								
	G								
		3.681	2.276	3.004					5.008

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	190	55					245
	B	105	0	13					118
	C	34	-99	0					-65
	D								
	E								
	F								
	G								
	TOTAL	139	91	68					298

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		15%	32%					17%
	B	9%		4%					8%
	C	13%	-37%						-12%
	D								
	E								
	F								
	G								
		10%	6%	14%					9%

PM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	8	89%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	860	261					1121	
	B	1393	0	222					1615	
	C	373	254	0					627	
	D									
	E									
	F									
	G									
	TOTAL	1766	1114	483					3363	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	972	265					1237
	B	1271	0	285					1556
	C	292	359	0					651
	D								
	E								
	F								
	G								
	TOTAL	1563	1331	550					3444

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	3.698	0.240					3.373
	B	3.353	0.000	3.980					1.481
	C	4.445	5.993	0.000					0.945
	D								
	E								
	F								
	G								
		4.986	6.202	2.960					1.383

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	112	4					116
	B	-122	0	63					-59
	C	-81	105	0					24
	D								
	E								
	F								
	G								
	TOTAL	-203	217	67					81

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		13%	1%					10%
	B	-9%		29%					-4%
	C	-22%	41%						4%
	D								
	E								
	F								
	G								
		-12%	19%	14%					2%

Junction Turning Flows

Junction: M1 Junction 15



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	27014	27015	3104	27014	*Saxon Avenue*
B	9116	9221	27015	9107	*J15 On Slip Eastbou*
C	1252	9117	9221	1252	*Unnamed Road*
D	9106	9220	9117	9118	*J15 Off Slip Eastbou*
E	3355	3104	9220	2104	*A45 London Road*
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	25	
GEH < 5.0	22	88%
GEH < 7.5	23	92%
GEH < 10.0	25	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	77	26	32	155			290	
B	65	0	31	0	870			966	*932*
C	28	60	0	104	352			544	*703*
D	133	0	222	0	1069			1424	*1377*
E	76	939	555	661	0			2231	*2443*
F									
G									
TOTAL	302	1076	834	797	2446			5455	
ATC		*924*	*914*	*966*					

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	51	18	39	185			293
B	8	0	20	0	943			971
C	23	91	0	214	310			638
D	157	0	241	0	1254			1652
E	113	1055	657	571	7			2403
F								
G								
TOTAL	301	1197	936	824	2699			5957

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	3.250	1.706	1.175	2.301			0.176
B	9.435	0.000	2.178	0.000	2.425			0.161
C	0.990	3.568	0.000	8.724	2.309			3.867
D	1.993	0.000	1.249	0.000	5.428			5.814
E	3.806	3.674	4.143	3.626	3.742			3.573
F								
G								
	0.058	3.589	3.429	0.948	4.988			6.646

ABSOLUTE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	-26	-8	7	30			3
B	-57	0	-11	0	73			5
C	-5	31	0	110	-42			94
D	24	0	19	0	185			228
E	37	116	102	-90	7			172
F								
G								
TOTAL	-1	121	102	27	253			502

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		-34%	-31%	22%	19%			1%
B	-88%		-35%		8%			1%
C	-18%	52%		106%	-12%			17%
D	18%		9%		17%			16%
E	49%	12%	18%	-14%				8%
F								
G								
	0%	11%	12%	3%	10%			9%

PM Peak

Include? Yes

Total Turns	25	
GEH < 5.0	23	92%
GEH < 7.5	24	96%
GEH < 10.0	25	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	38	21	26	197			282	
B	63	0	38	0	909			1010	
C	33	38	0	235	501			807	
D	65	0	147	0	958			1170	
E	98	885	760	873	0			2616	
F									
G									
TOTAL	259	961	966	1134	2565			5885	
ATC									

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	9	8	22	137			176
B	30	0	45	0	994			1069
C	10	34	0	192	419			655
D	67	0	177	0	823			1067
E	108	886	656	888	47			2585
F								
G								
TOTAL	215	929	886	1102	2420			5552

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	5.982	3.414	0.816	4.643			7.005
B	4.839	0.000	1.087	0.000	2.756			1.830
C	4.960	0.667	0.000	2.943	3.823			5.622
D	0.246	0.000	2.357	0.000	4.524			3.080
E	0.985	0.034	3.909	0.506	9.695			0.608
F								
G								
	2.858	1.041	2.629	0.957	2.904			4.404

ABSOLUTE DIFFERENCE

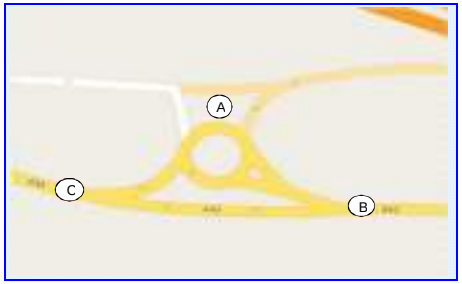
All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	-29	-13	-4	-60			-106
B	-33	0	7	0	85			59
C	-23	-4	0	-43	-82			-152
D	2	0	30	0	-135			-103
E	10	1	-104	15	47			-31
F								
G								
TOTAL	-44	-32	-80	-32	-145			-333

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		-76%	-62%	-15%	-30%			-38%
B	-52%		18%		9%			6%
C	-70%	-11%		-18%	-16%			-19%
D	3%		20%		-14%			-9%
E	10%	0%	-14%	2%				-1%
F								
G								
	-17%	-3%	-8%	-3%	-6%			-6%

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	82005	82006	82006	82007	*M1 WB Off Slip*
B	4246	24120	24120	4246	*A43 (E)*
C	82004	24121	24121	82004	*A43 (W)*
D					
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	9	100%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	486	0					486	
B	0	0	439					439	
C	0	0	0					0	
D									
E									
F									
G									
TOTAL	0	486	439					925	
ATC									

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	456	0					456
B	2	0	538					540
C	0	0	0					0
D								
E								
F								
G								
TOTAL	2	456	538					996

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	1.382	0.000					1.382
B	2.000	0.000	4.479					4.565
C	0.000	0.000	0.000					0.000
D								
E								
F								
G								
	2.000	1.382	4.479					2.291

ABSOLUTE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	-30	0					-30
B	2	0	99					101
C	0	0	0					0
D								
E								
F								
G								
TOTAL	2	-30	99					71

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		-6%						-6%
B			23%					23%
C								
D								
E								
F								
G								
		-6%	23%					8%

PM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	9	100%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	596	0					596	
B	0	0	450					450	
C	0	0	0					0	
D									
E									
F									
G									
TOTAL	0	596	450					1046	
ATC									

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	651	0					651
B	11	0	542					553
C	0	0	0					0
D								
E								
F								
G								
TOTAL	11	651	542					1204

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	2.203	0.000					2.203
B	4.690	0.000	4.131					4.599
C	0.000	0.000	0.000					0.000
D								
E								
F								
G								
	4.690	2.203	4.131					4.711

ABSOLUTE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	55	0					55
B	11	0	92					103
C	0	0	0					0
D								
E								
F								
G								
TOTAL	11	55	92					158

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		9%						9%
B			20%					23%
C								
D								
E								
F								
G								
		9%	20%					15%

Appendix G

ACTUAL FLOW PLOTS

Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central\LMVR\Actual Flow Plots.mxd

Key

AM Peak

Actual Flow (PCU)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 0.5 1 1.5 2 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM ACTUAL FLOWS
RAIL CENTRAL AREA
(PASSENGER CAR UNITS)

FIGURE No:

Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central\LMVR\Actual Flow Plots.mxd

Key

Inter-peak

Actual Flow (PCU)

0 0.5 1 1.5 2 Kilometres

Contains Ordnance Survey data © Crown copyright and database right 2017.

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM ACTUAL FLOWS
RAIL CENTRAL AREA
(PASSENGER CAR UNITS)

FIGURE No:

Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central\LMVR\Actual Flow Plots.mxd

Key

PM Peak

Actual Flow (PCU)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 0.5 1 1.5 2 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM ACTUAL FLOWS
RAIL CENTRAL AREA
(PASSENGER CAR UNITS)

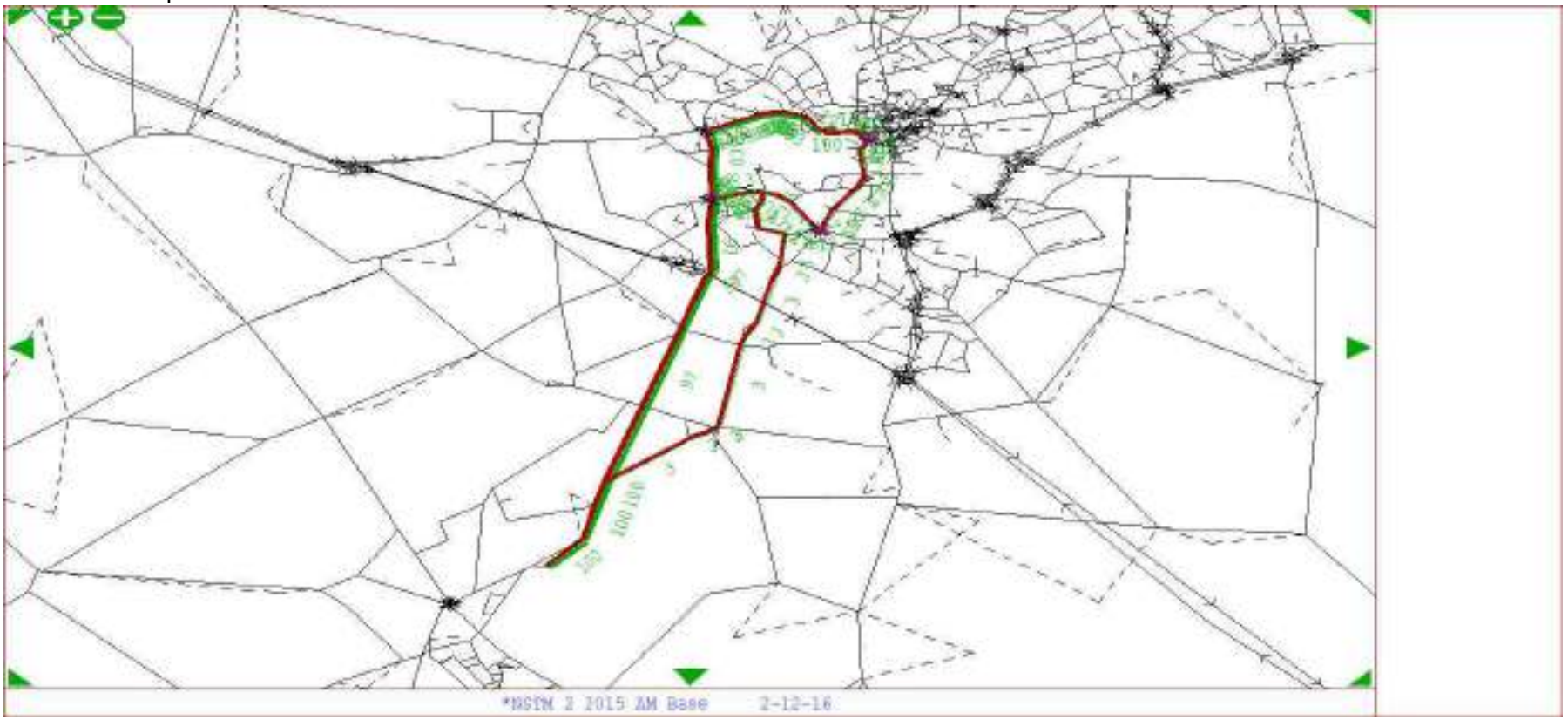
FIGURE No:

Appendix H

ORIGIN AND DESTINATION (OD) TREES

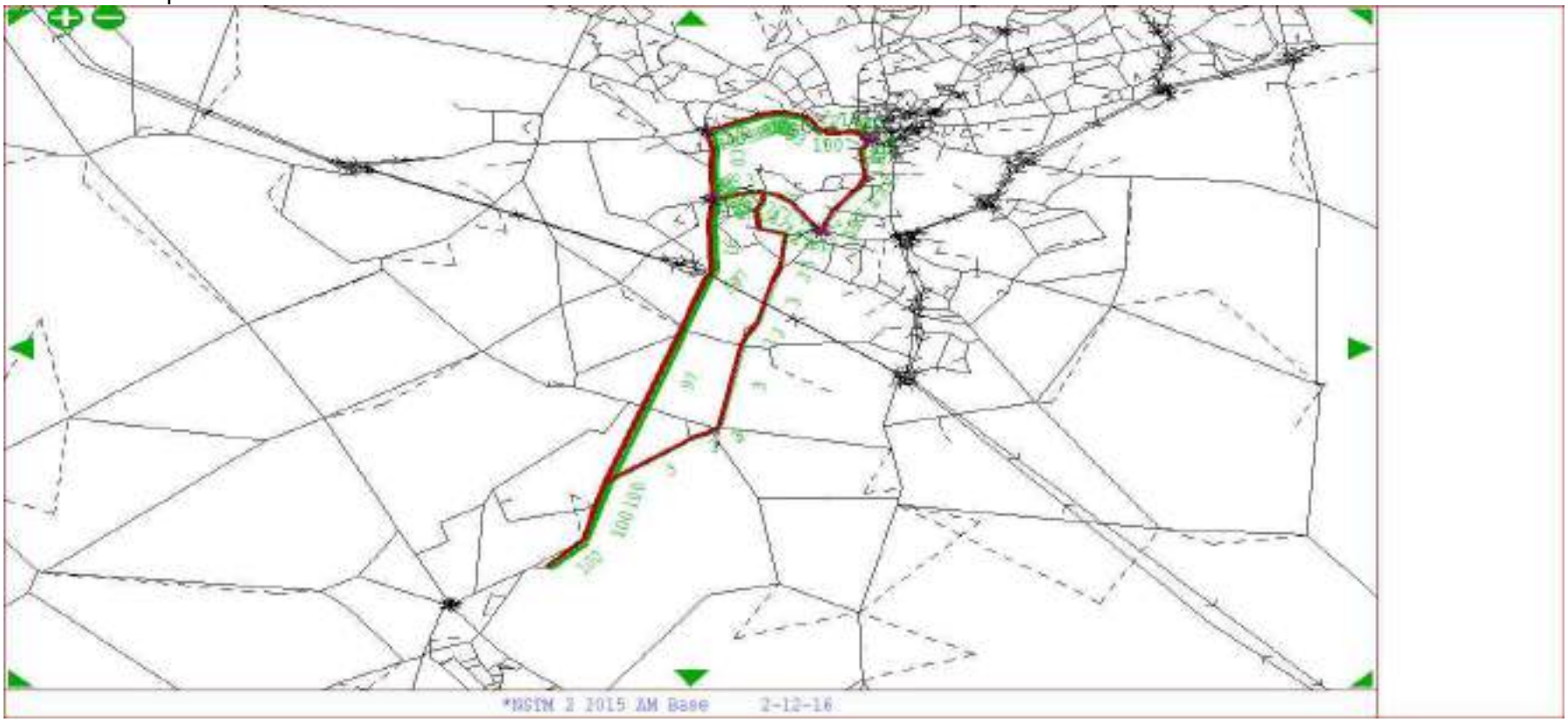
Project Name: OD Tree Plots -

From Northampton To Rail Central Area - User Class 1



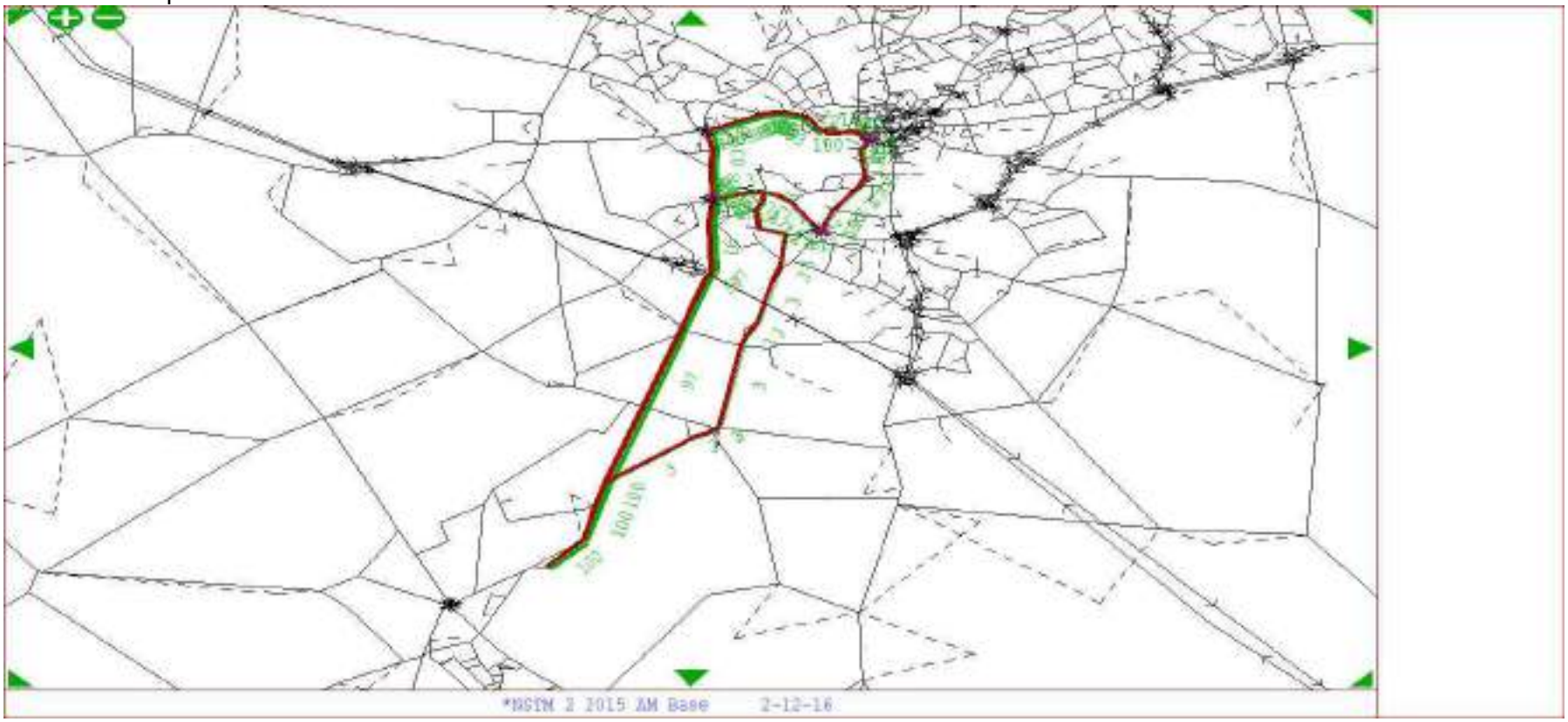
AM Peak

From Northampton To Rail Central Area - User Class 2



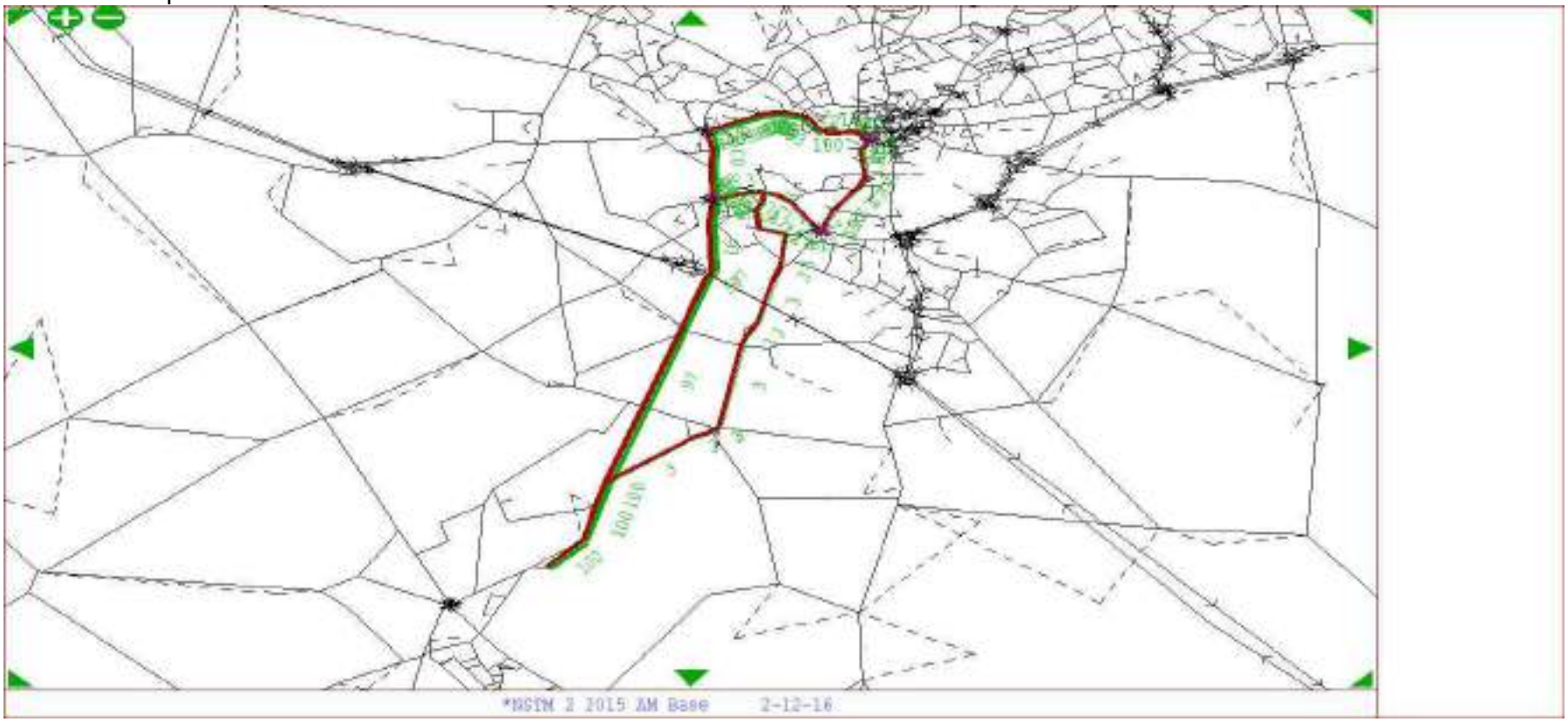
AM Peak

From Northampton To Rail Central Area - User Class 3



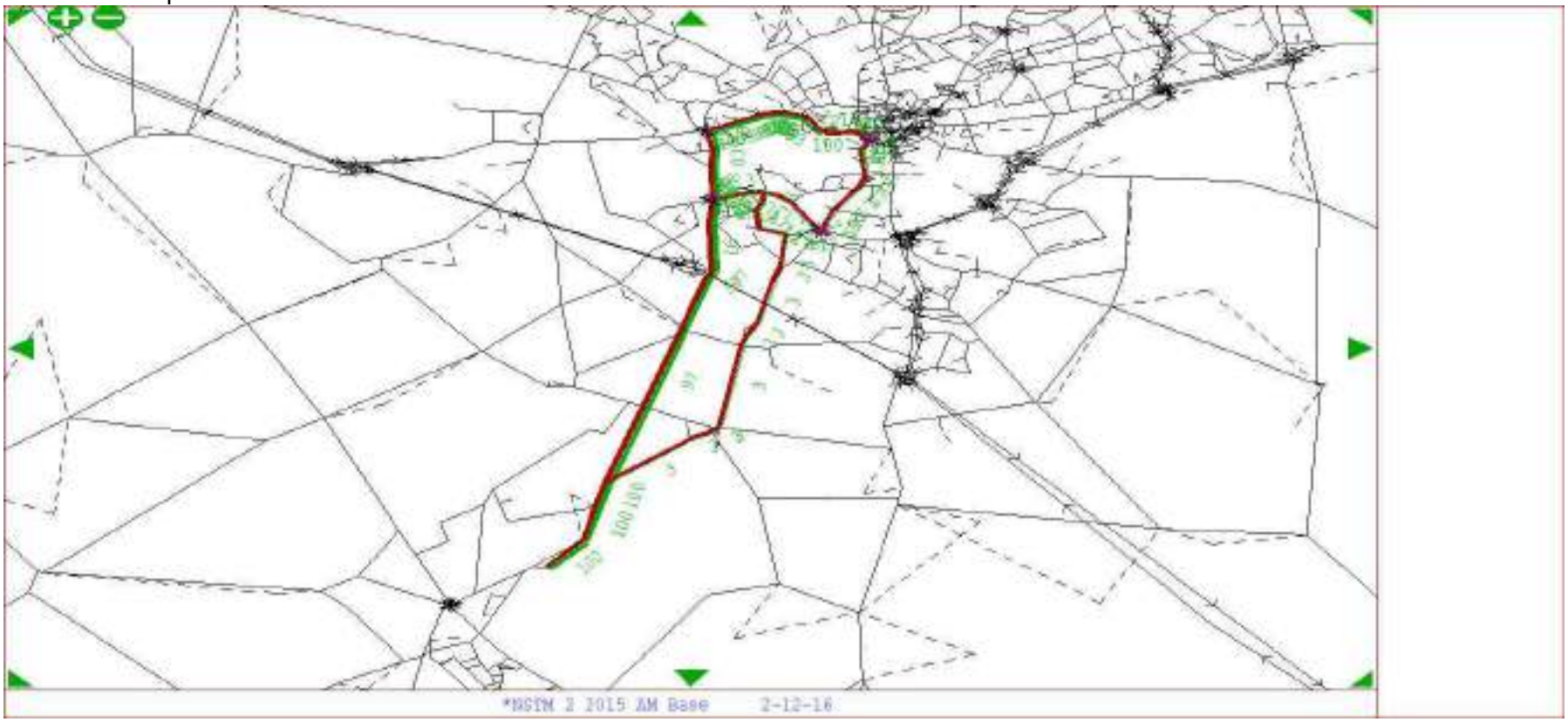
AM Peak

From Northampton To Rail Central Area - User Class 4



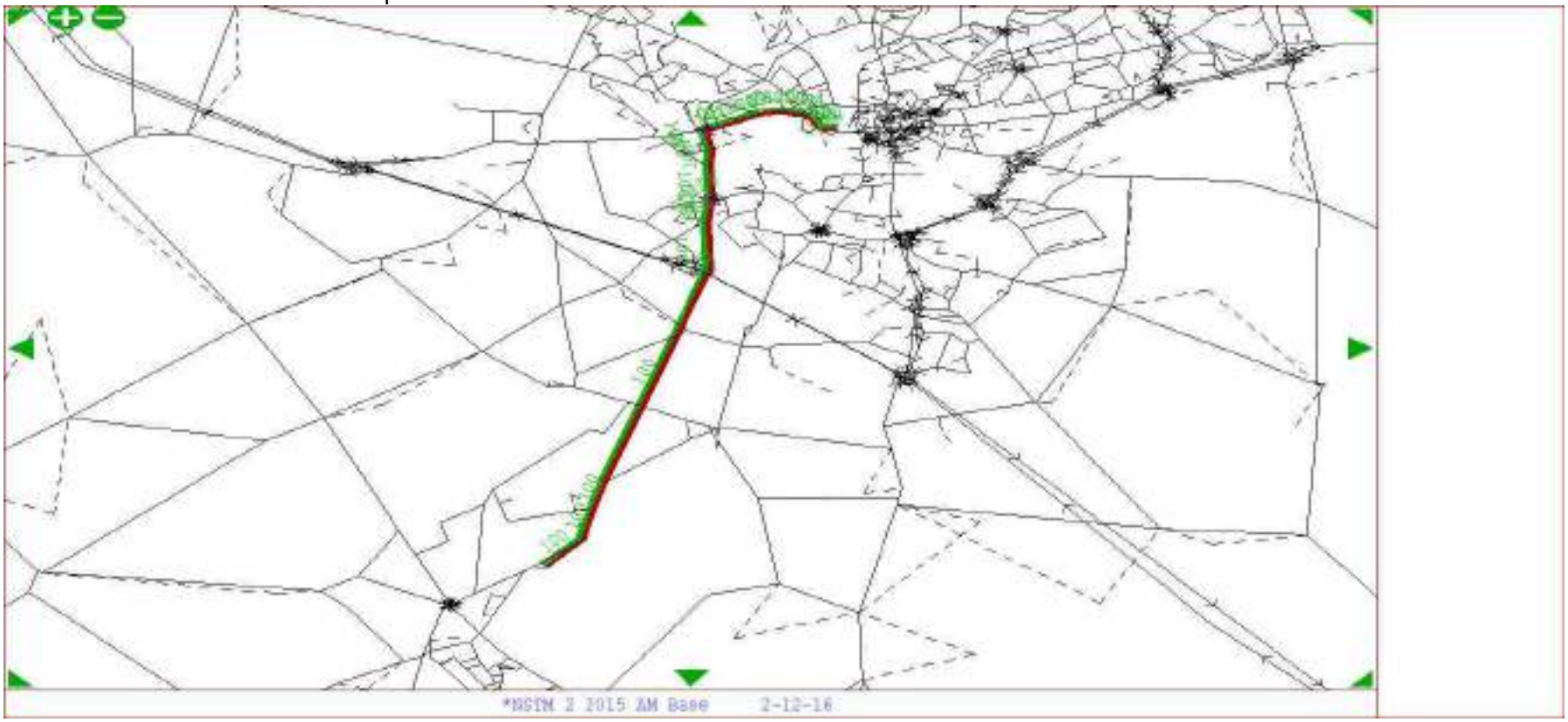
AM Peak

From Northampton To Rail Central Area - User Class 5



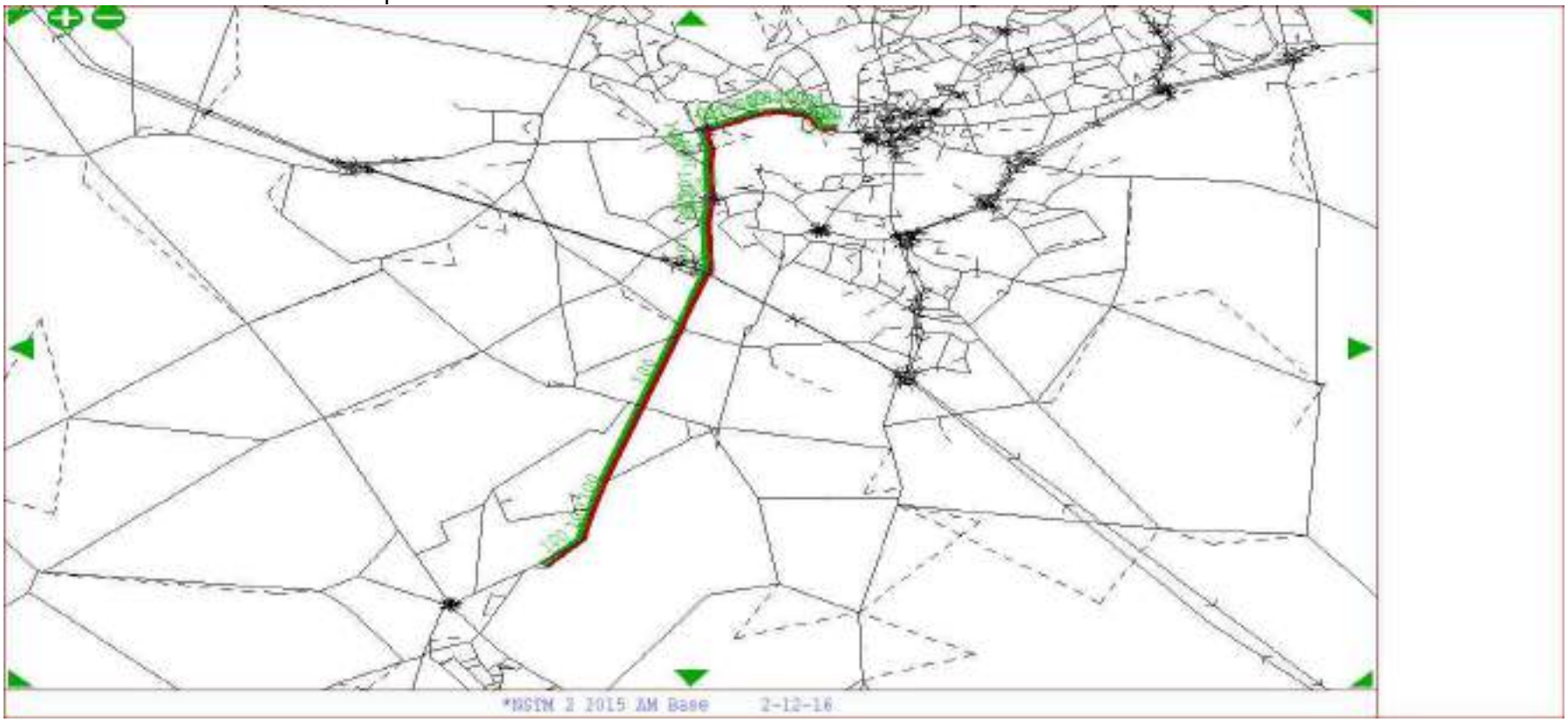
AM Peak

From Rail Central Area To Northampton - User Class 1



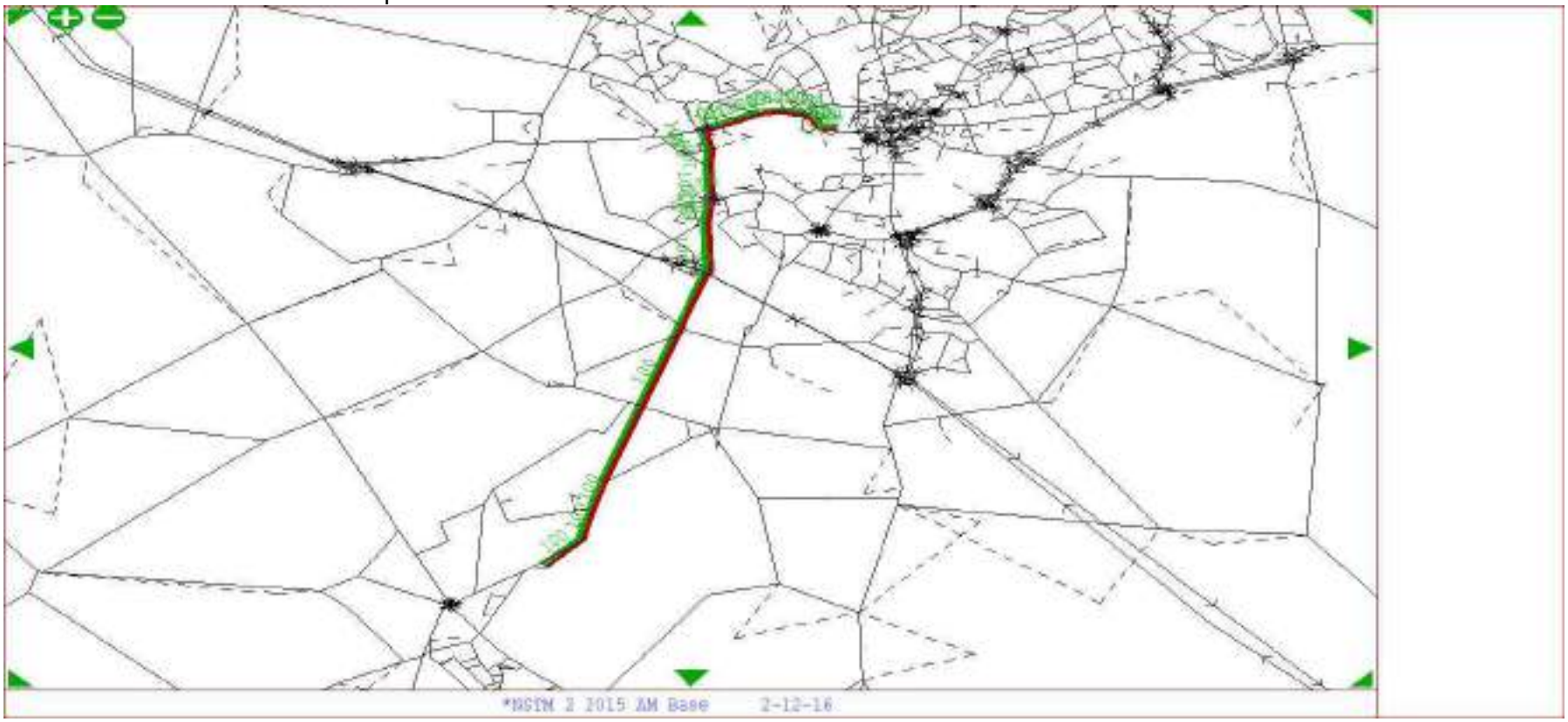
AM Peak

From Rail Central Area To Northampton - User Class 2



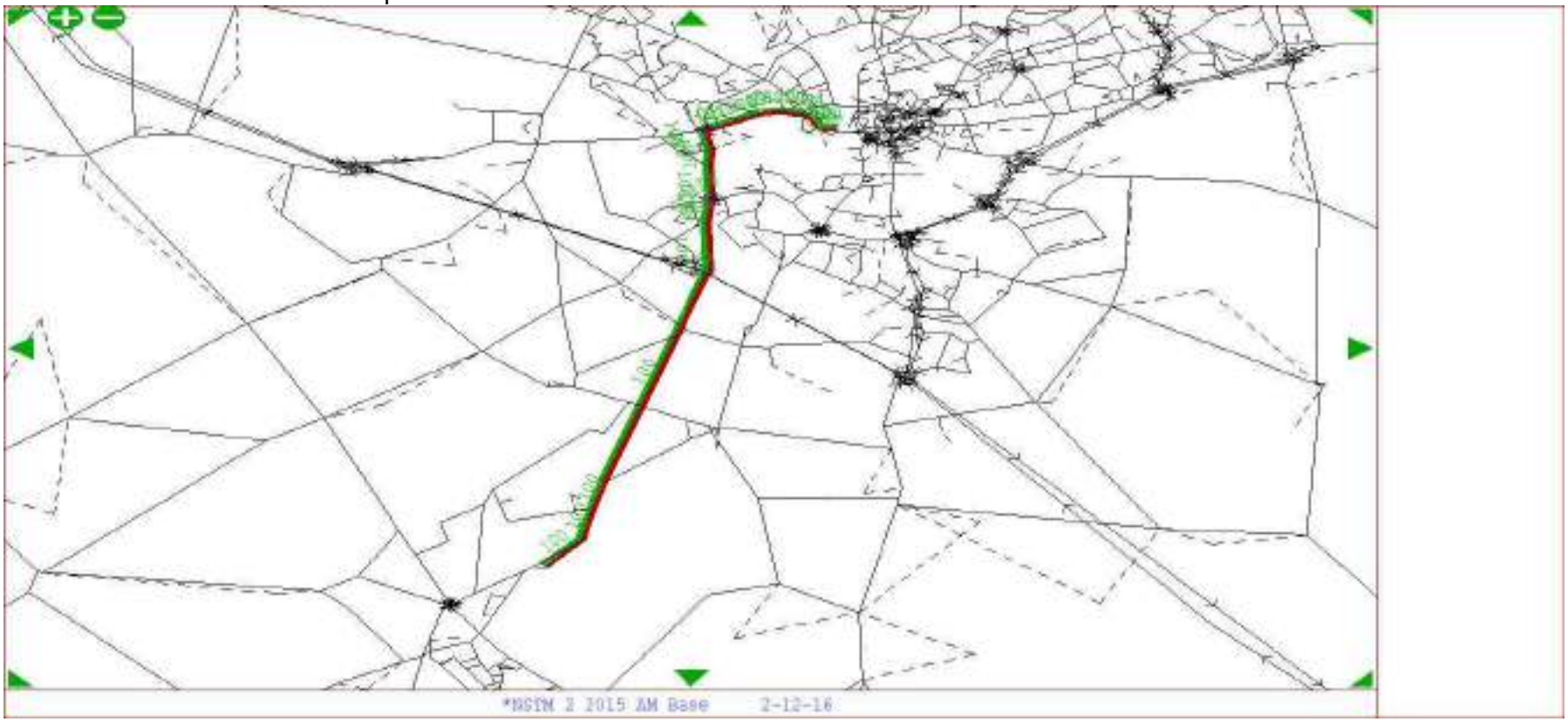
AM Peak

From Rail Central Area To Northampton - User Class 3



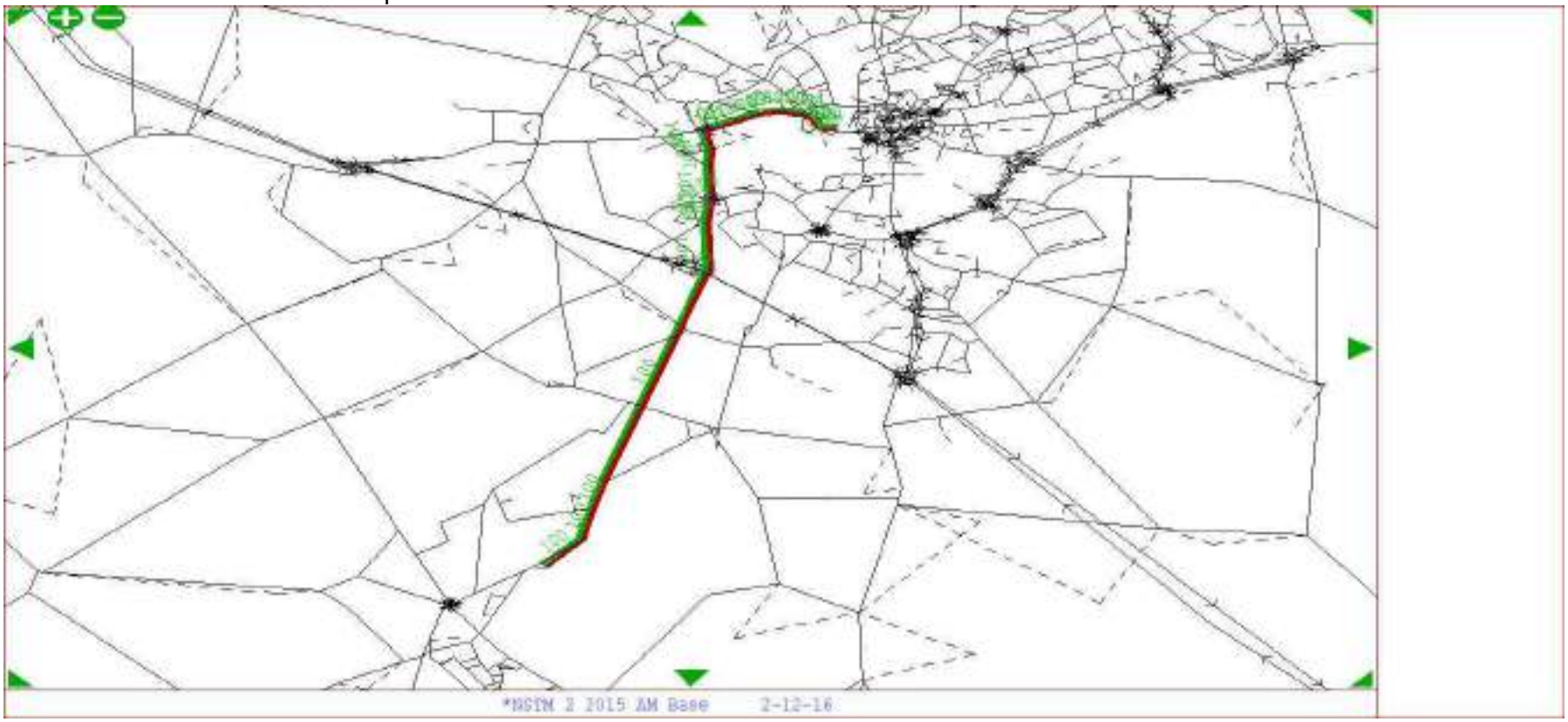
AM Peak

From Rail Central Area To Northampton - User Class 4



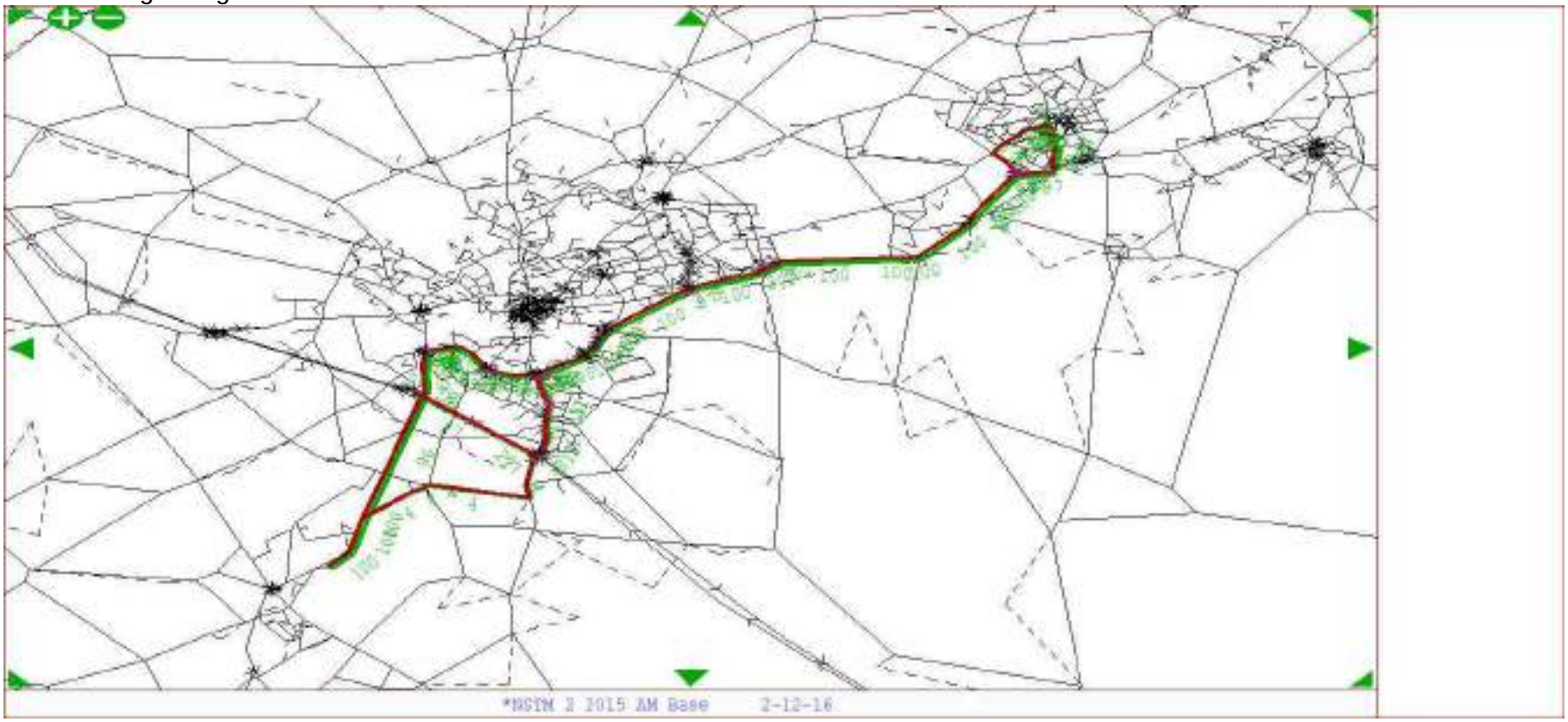
AM Peak

From Rail Central Area To Northampton - User Class 5



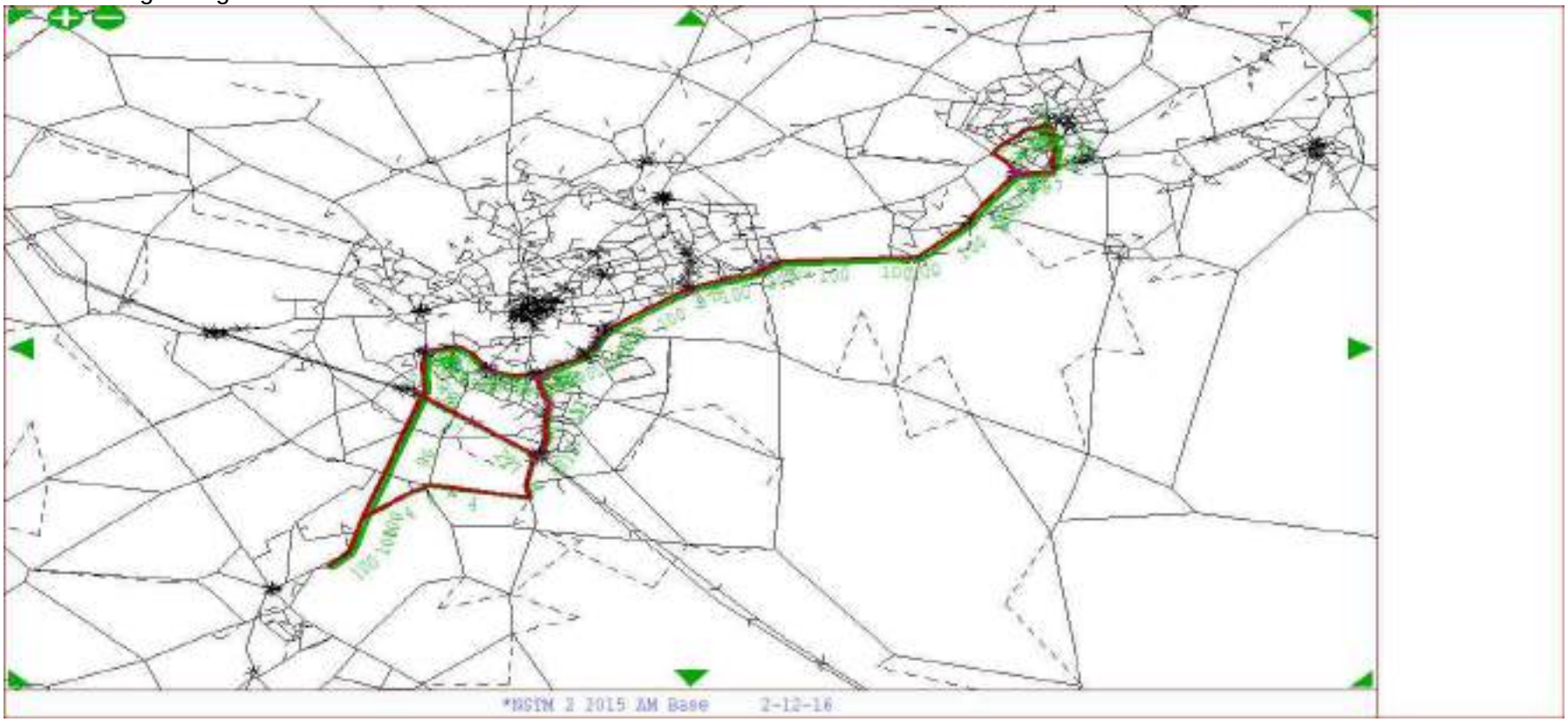
AM Peak

From Wellingborough To Rail Central Area - User Class 1



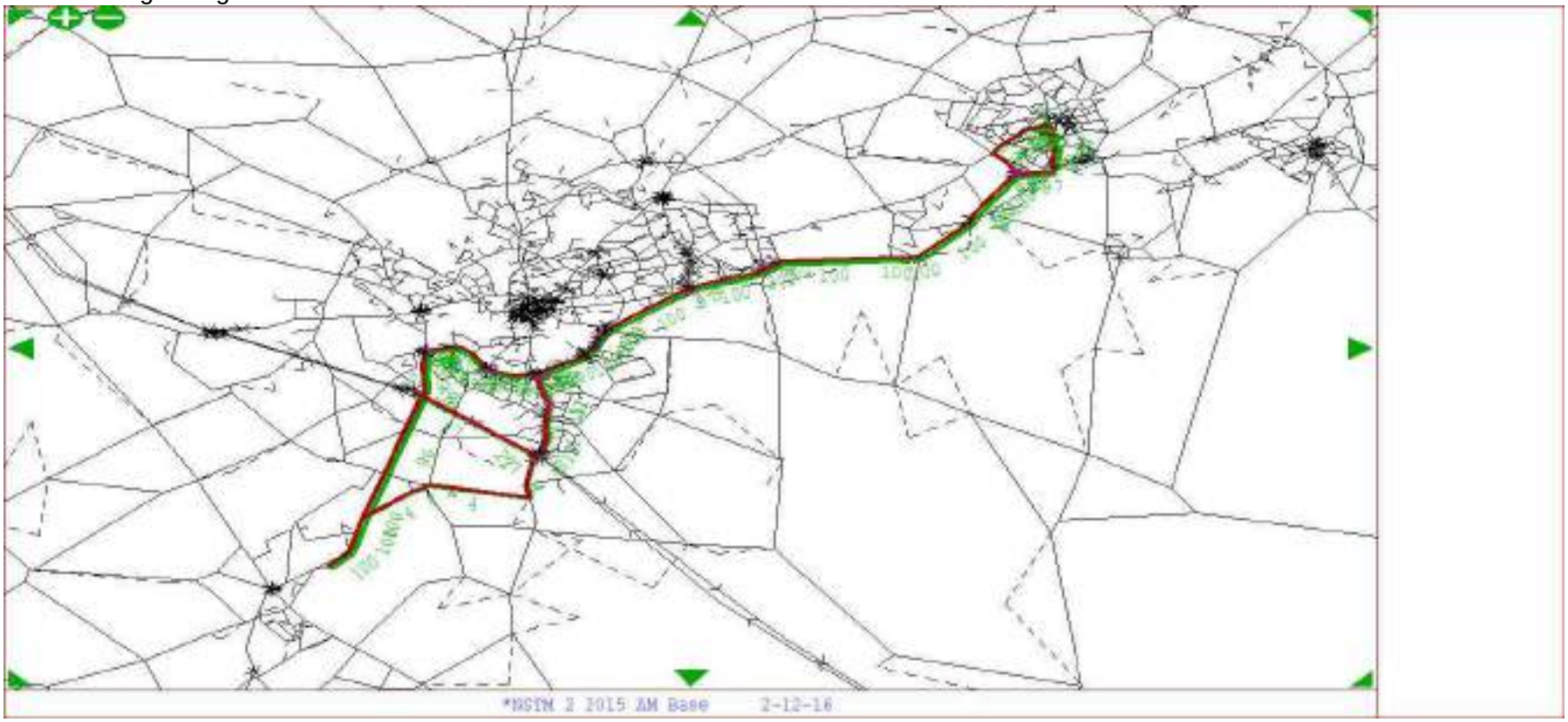
AM Peak

From Wellingborough To Rail Central Area - User Class 2



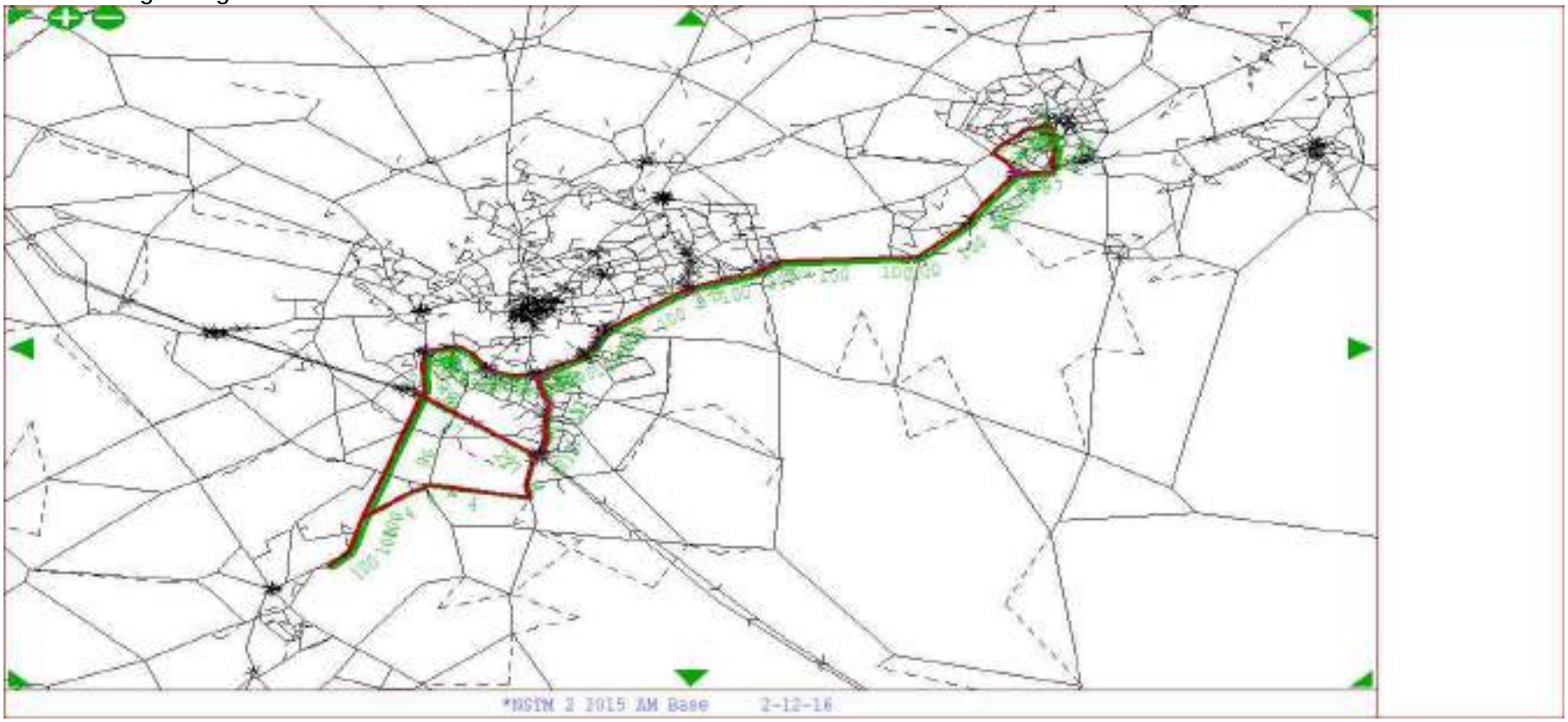
AM Peak

From Wellingborough To Rail Central Area - User Class 3



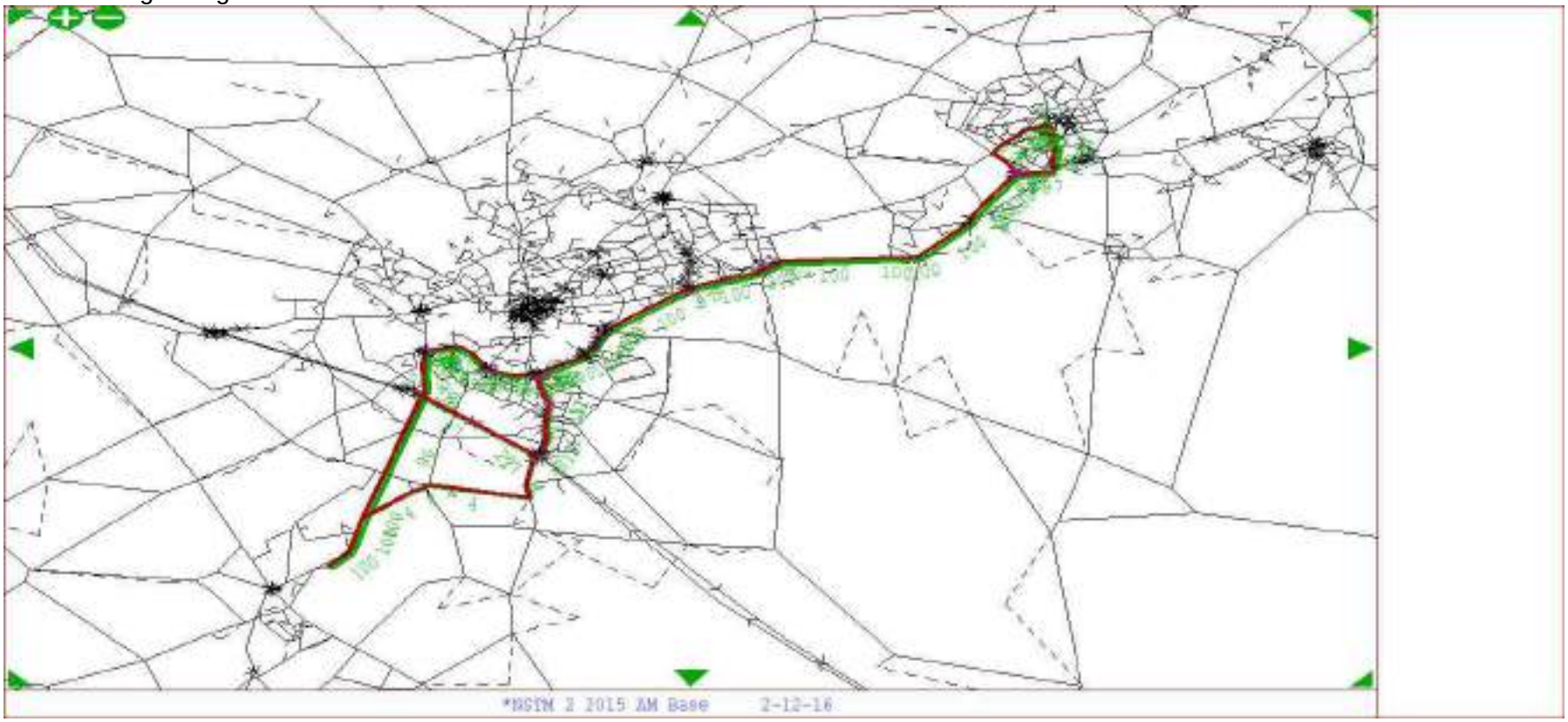
AM Peak

From Wellingborough To Rail Central Area - User Class 4



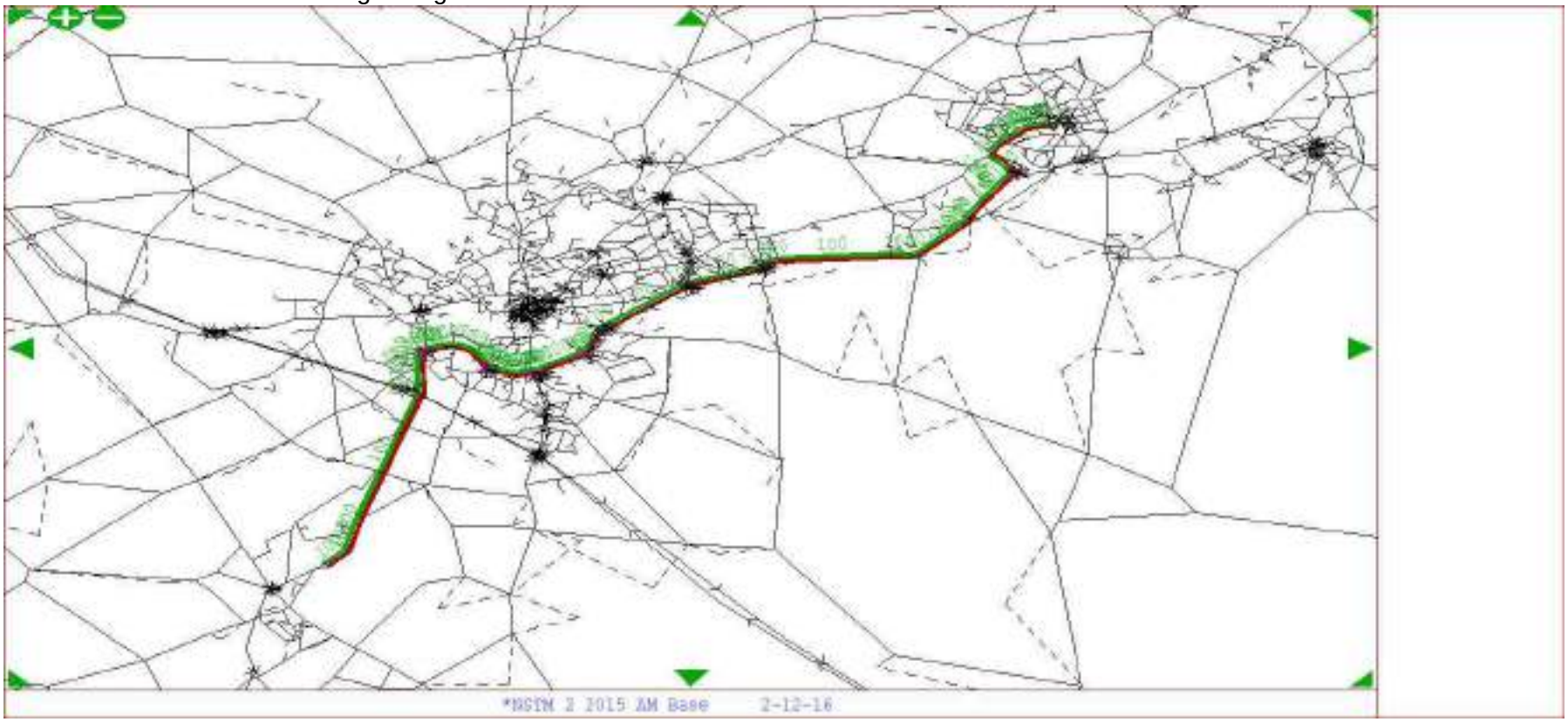
AM Peak

From Wellingborough To Rail Central Area - User Class 5



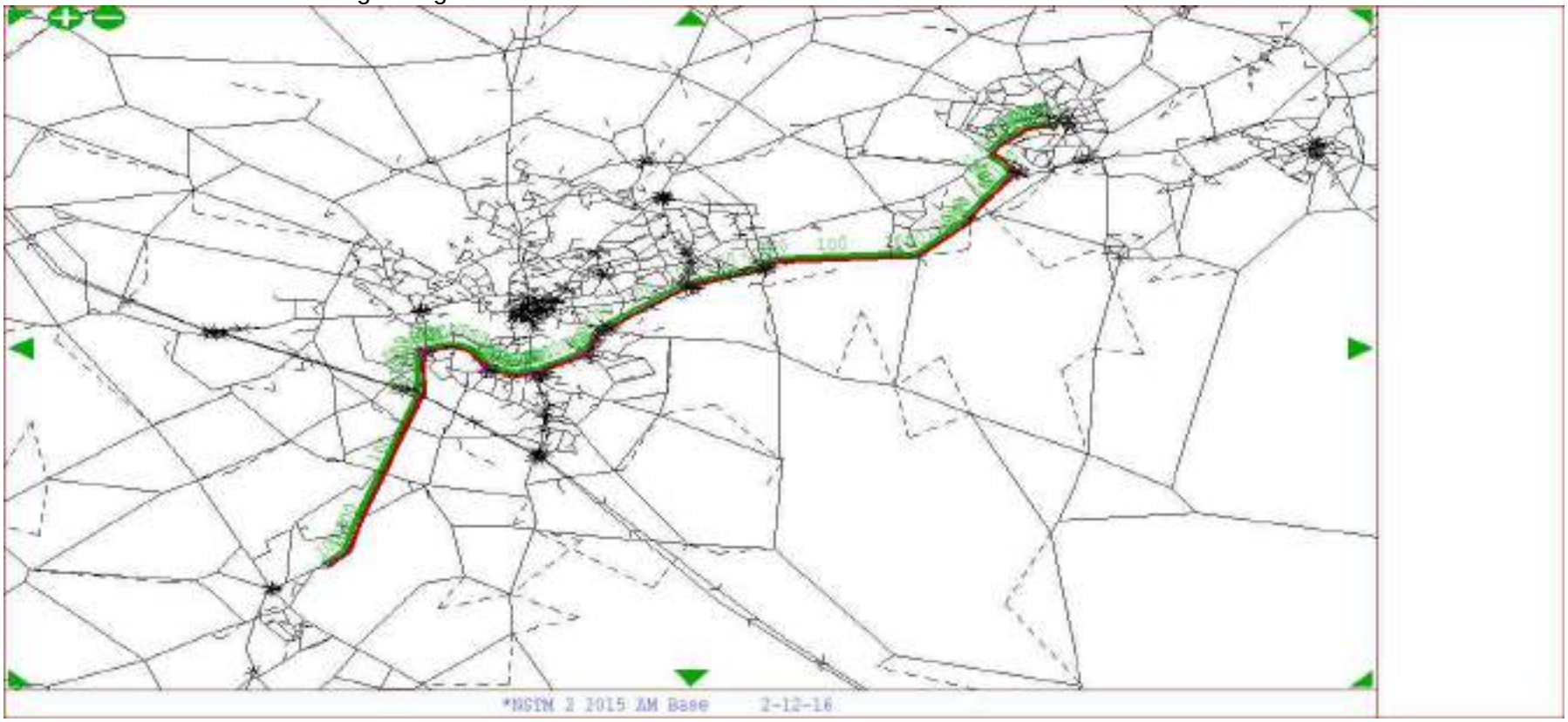
AM Peak

From Rail Central Area To Wellingborough - User Class 1



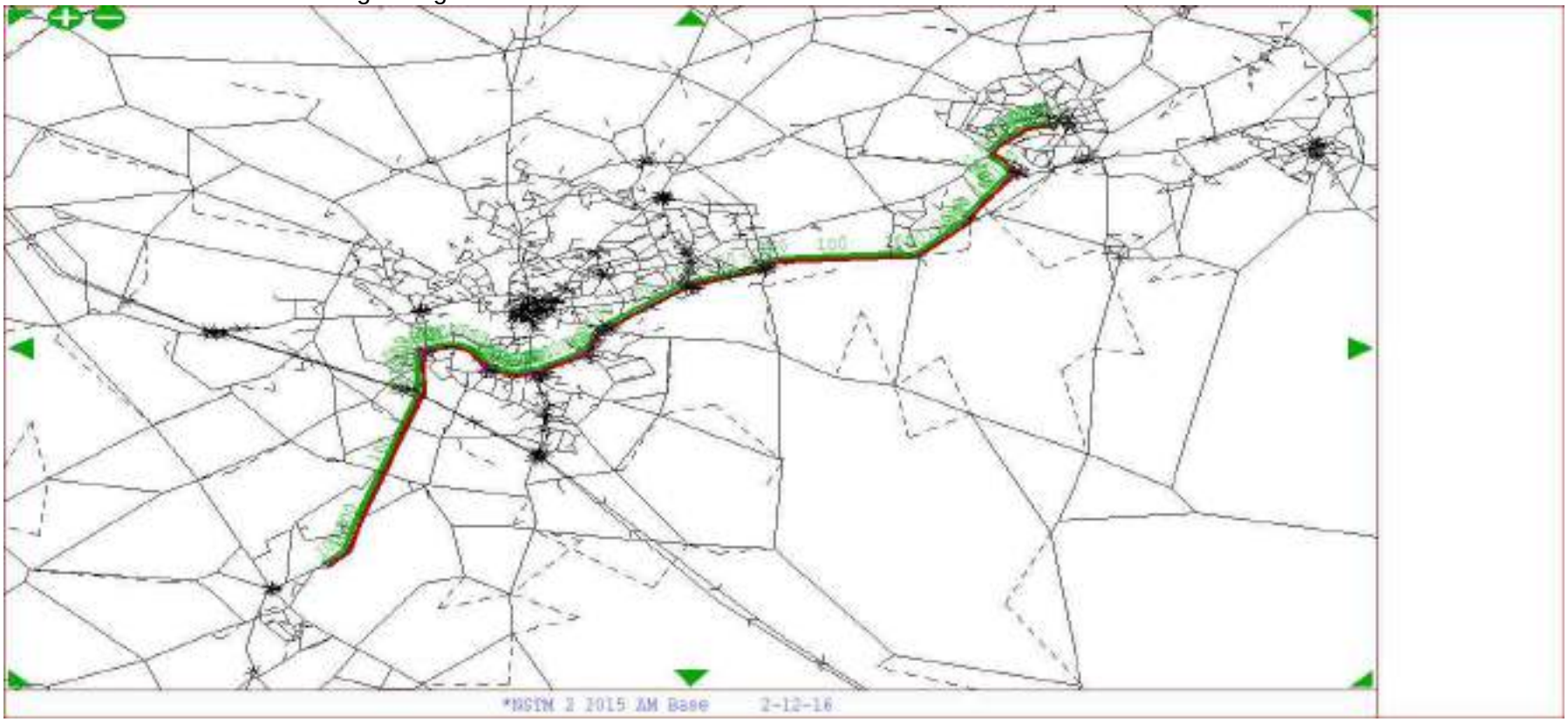
AM Peak

From Rail Central Area To Wellingborough - User Class 2



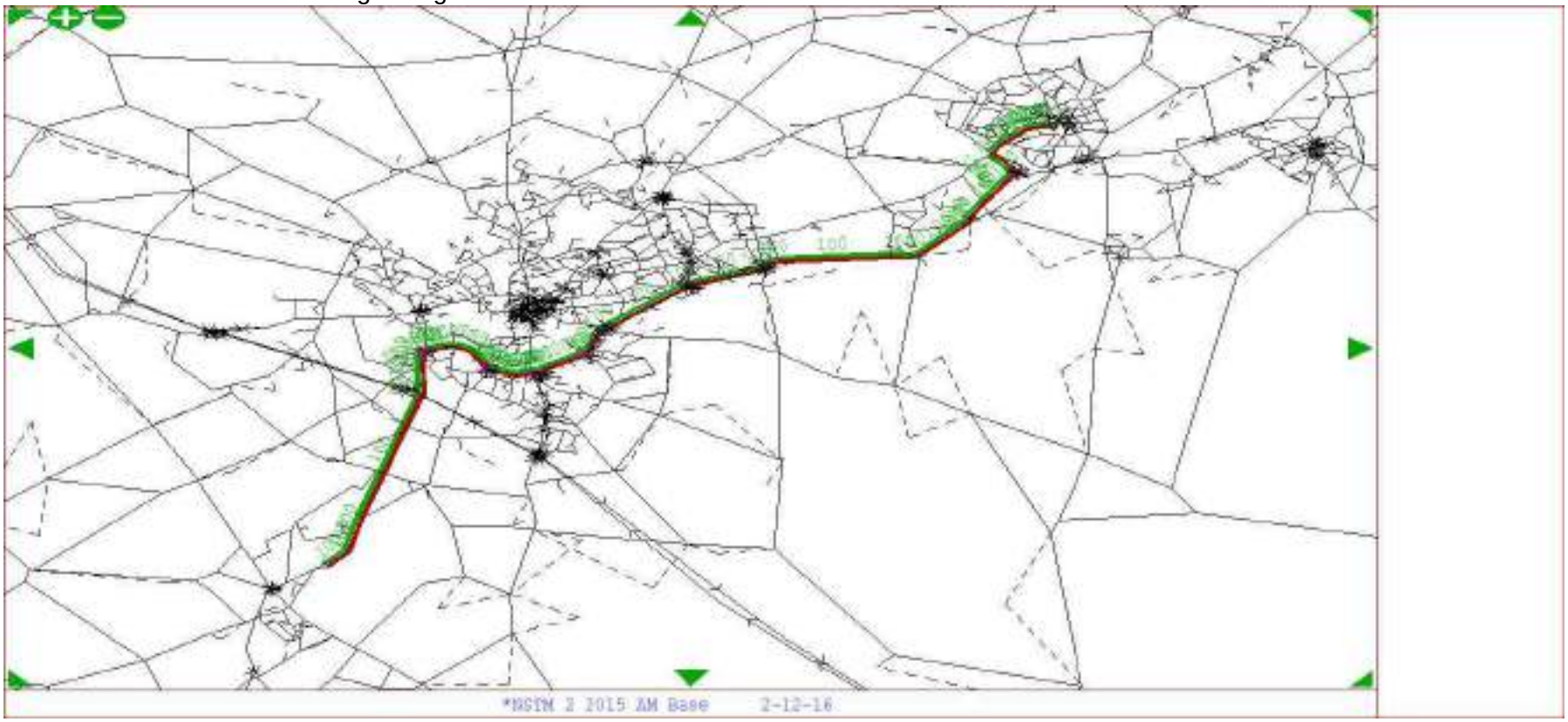
AM Peak

From Rail Central Area To Wellingborough - User Class 3



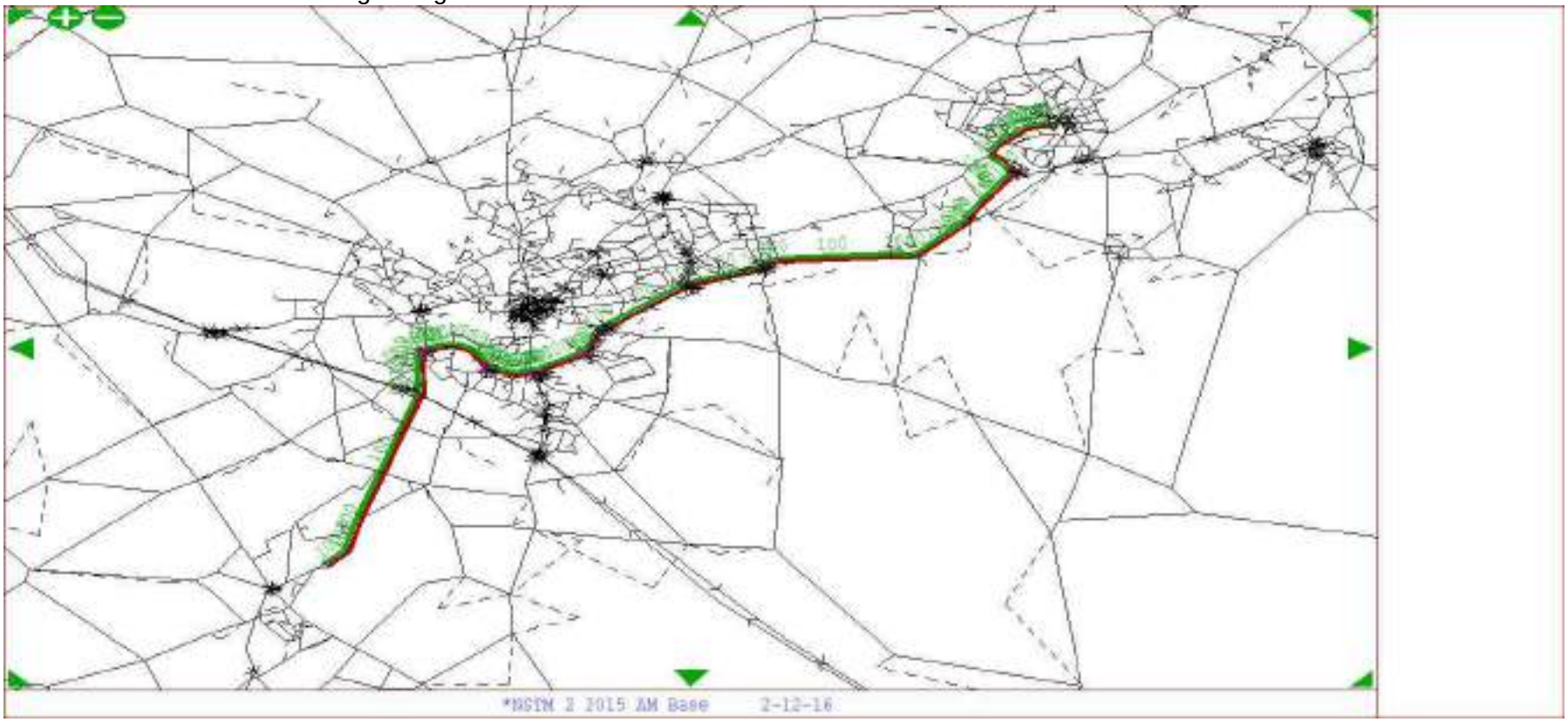
AM Peak

From Rail Central Area To Wellingborough - User Class 4



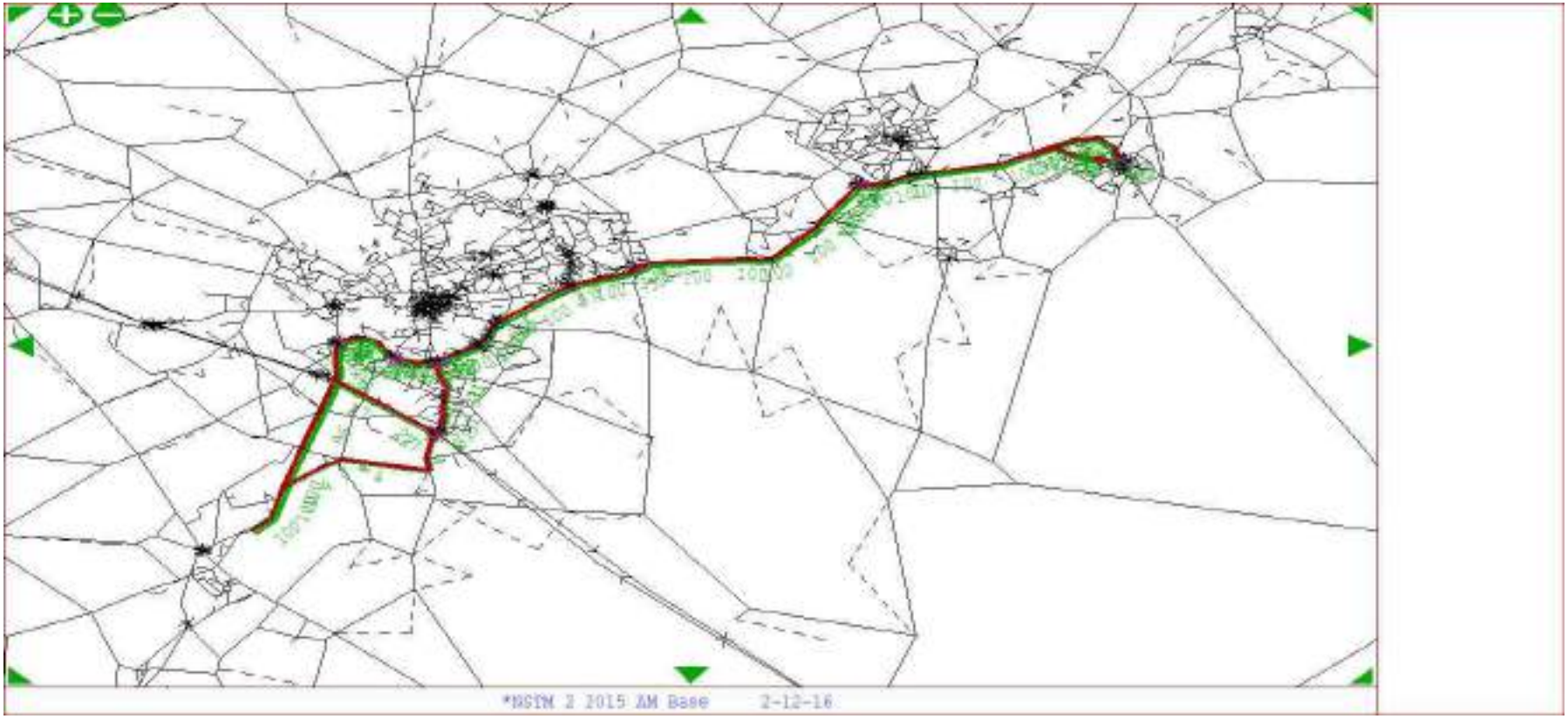
AM Peak

From Rail Central Area To Wellingborough - User Class 5



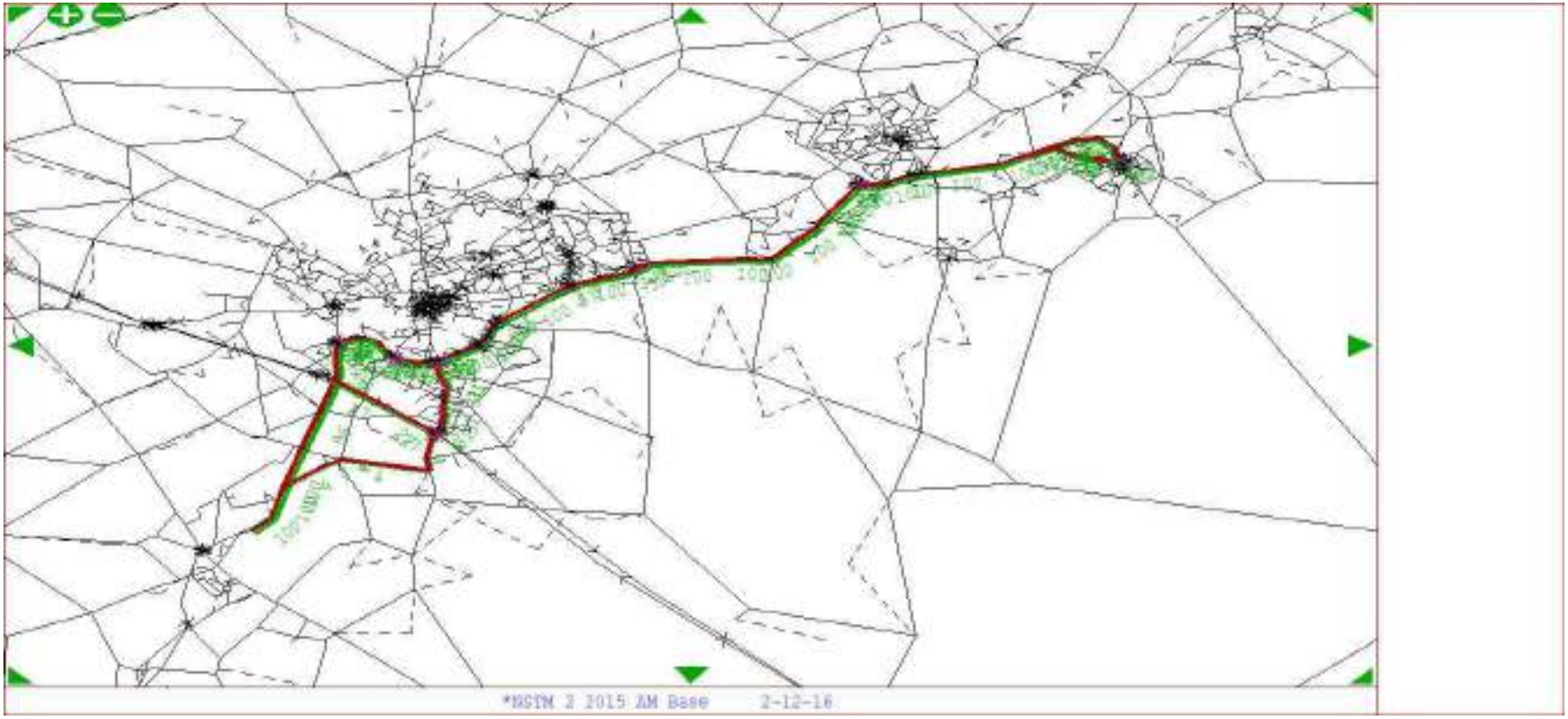
AM Peak

From Rushden To Rail Central Area - User Class 1



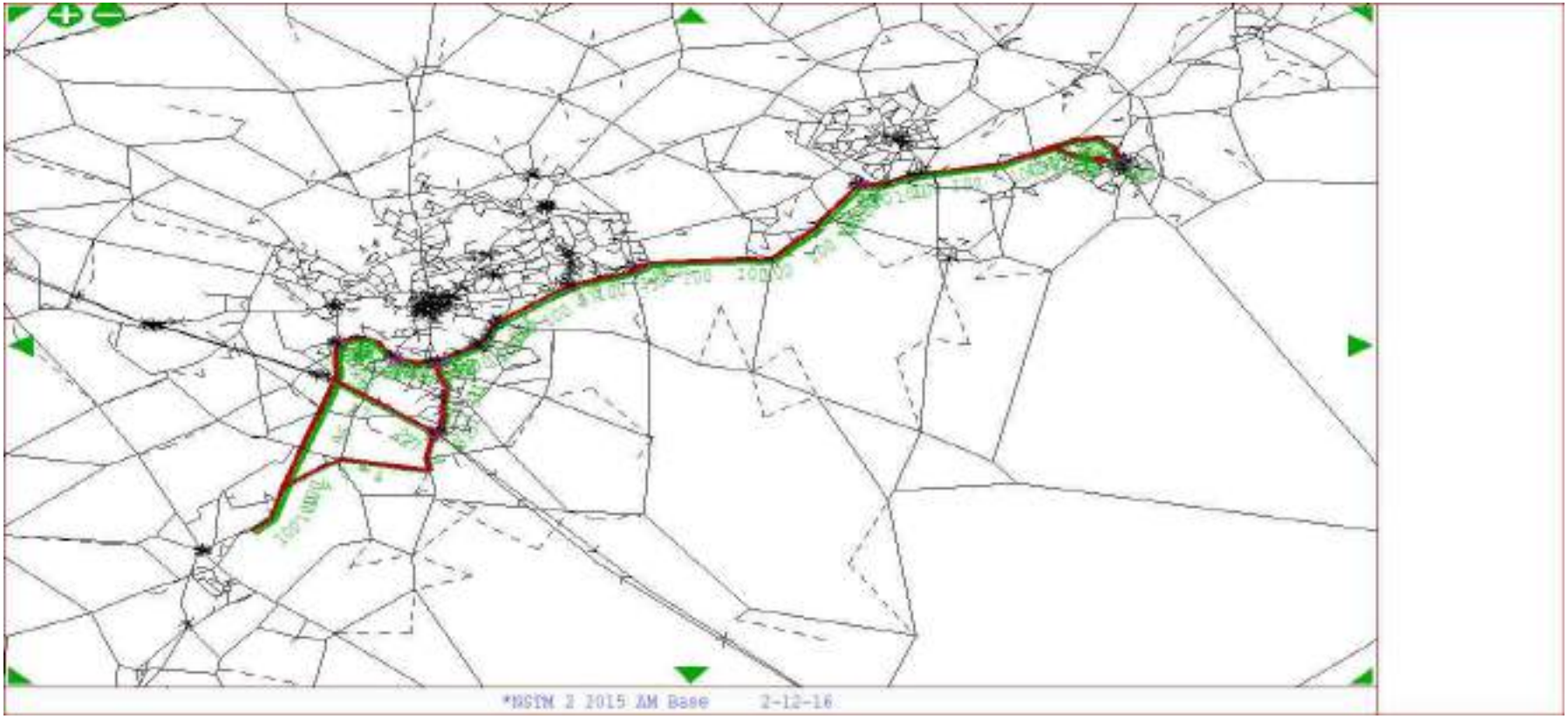
AM Peak

From Rushden To Rail Central Area - User Class 2



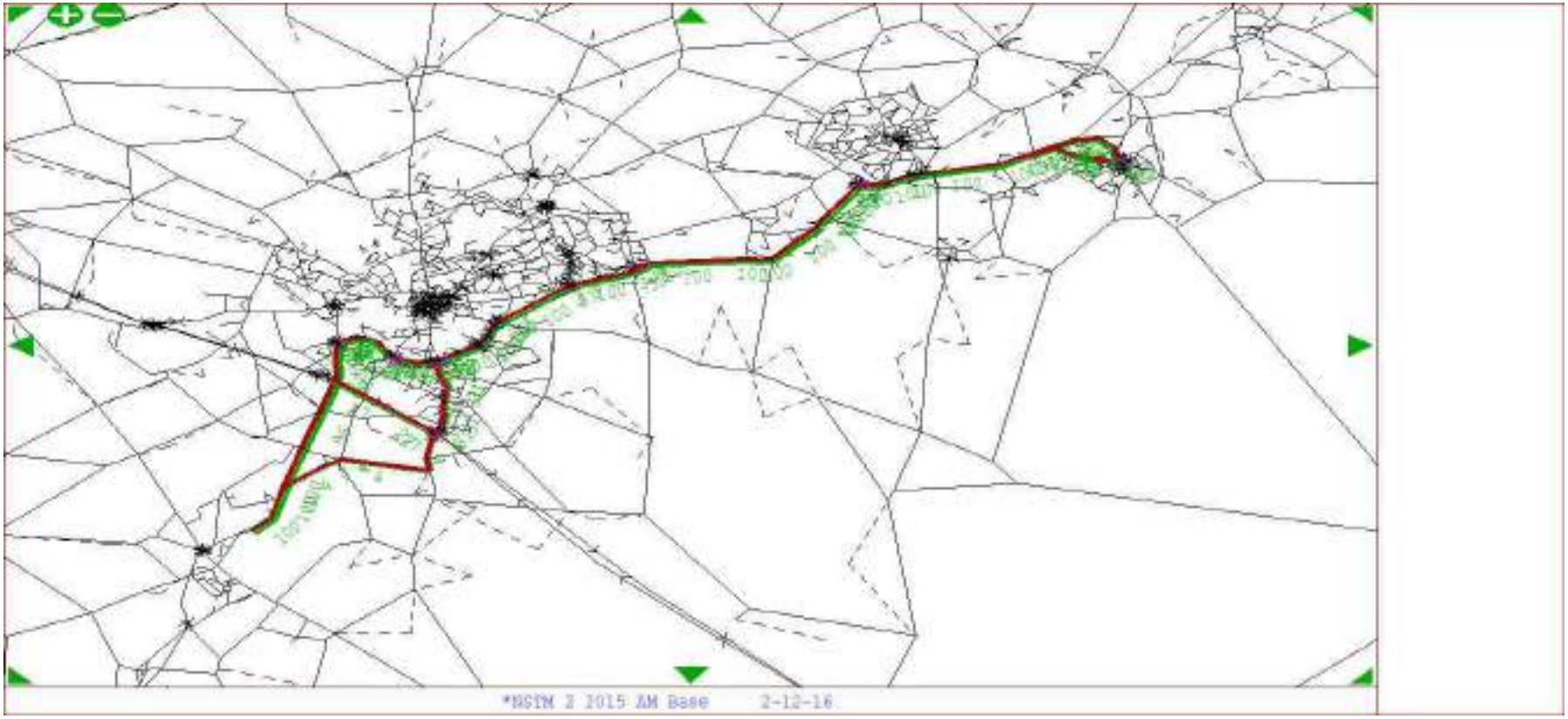
AM Peak

From Rushden To Rail Central Area - User Class 3



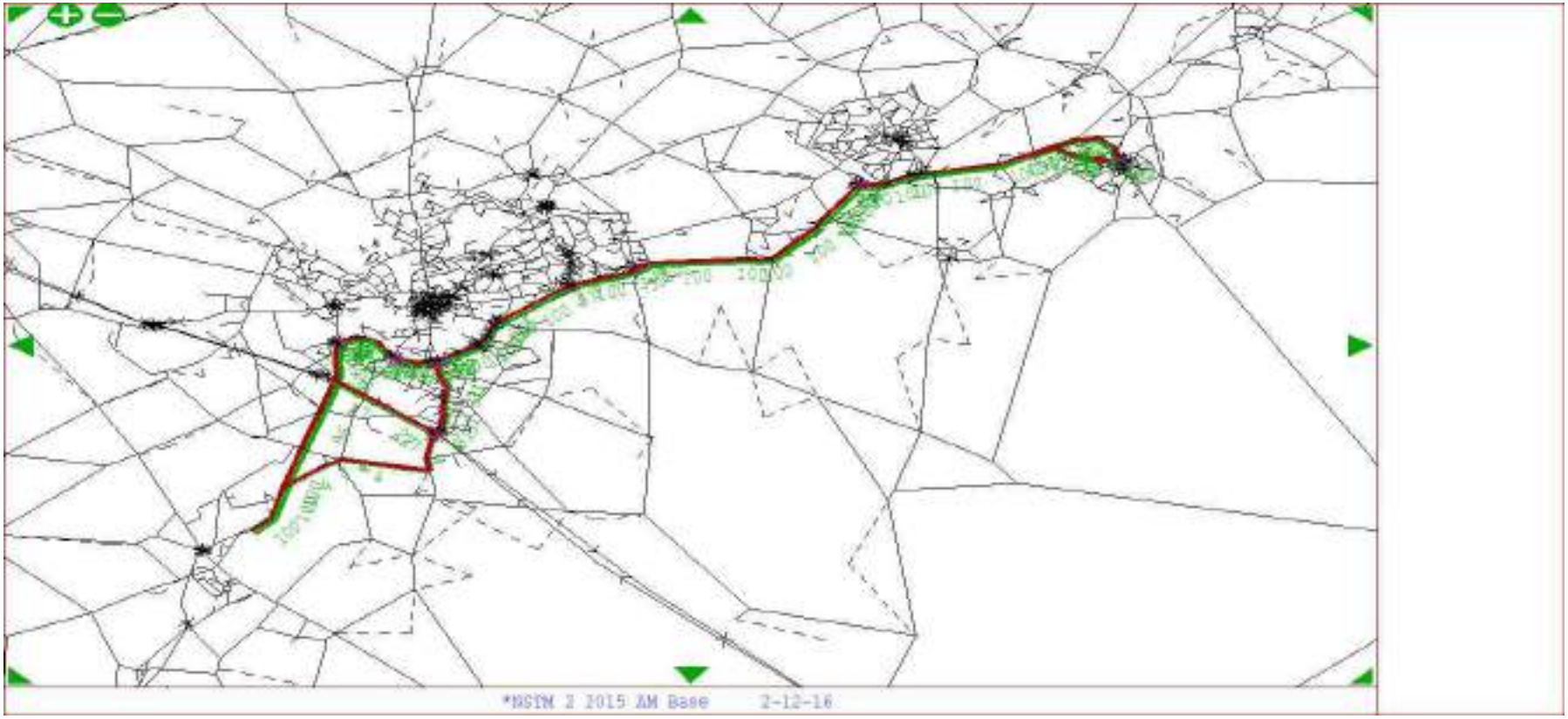
AM Peak

From Rushden To Rail Central Area - User Class 4



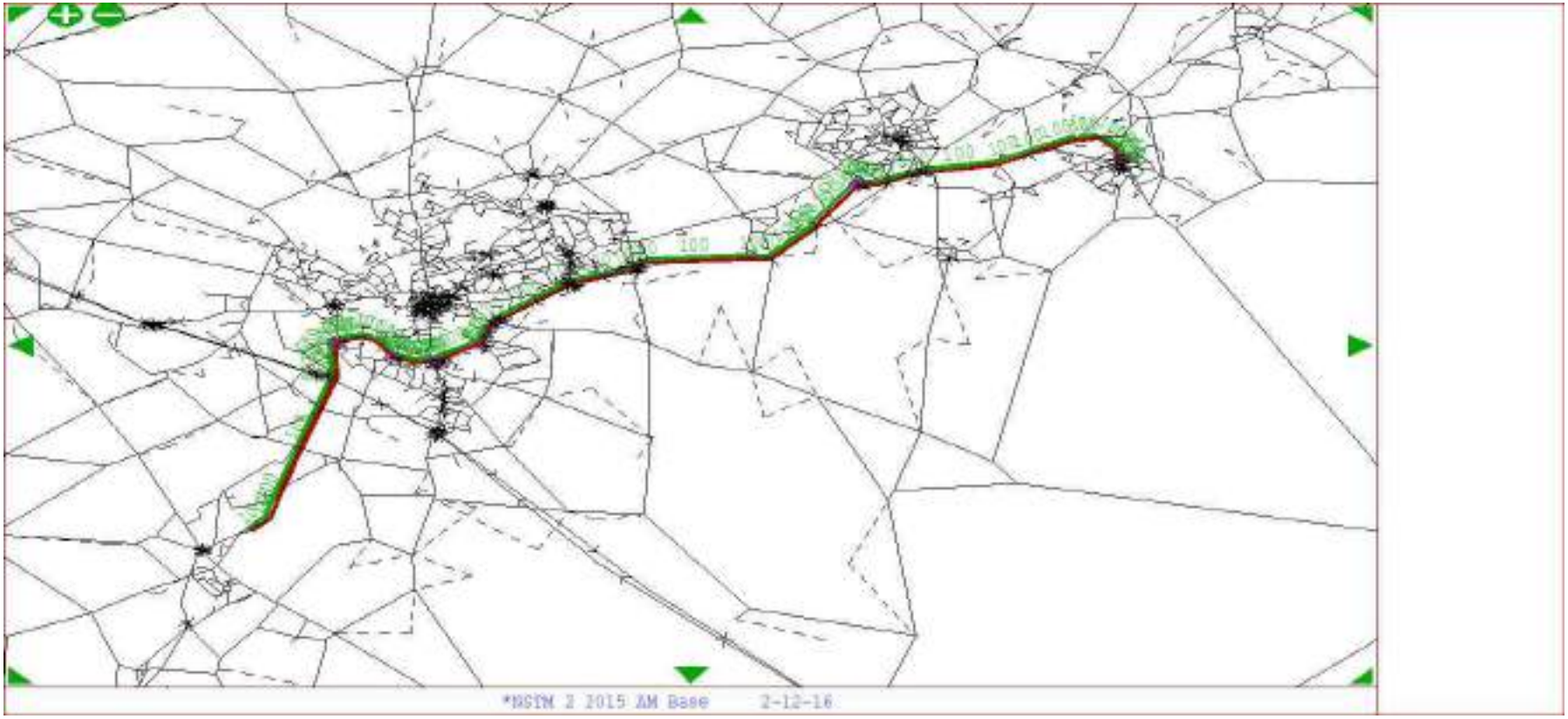
AM Peak

From Rushden To Rail Central Area - User Class 5



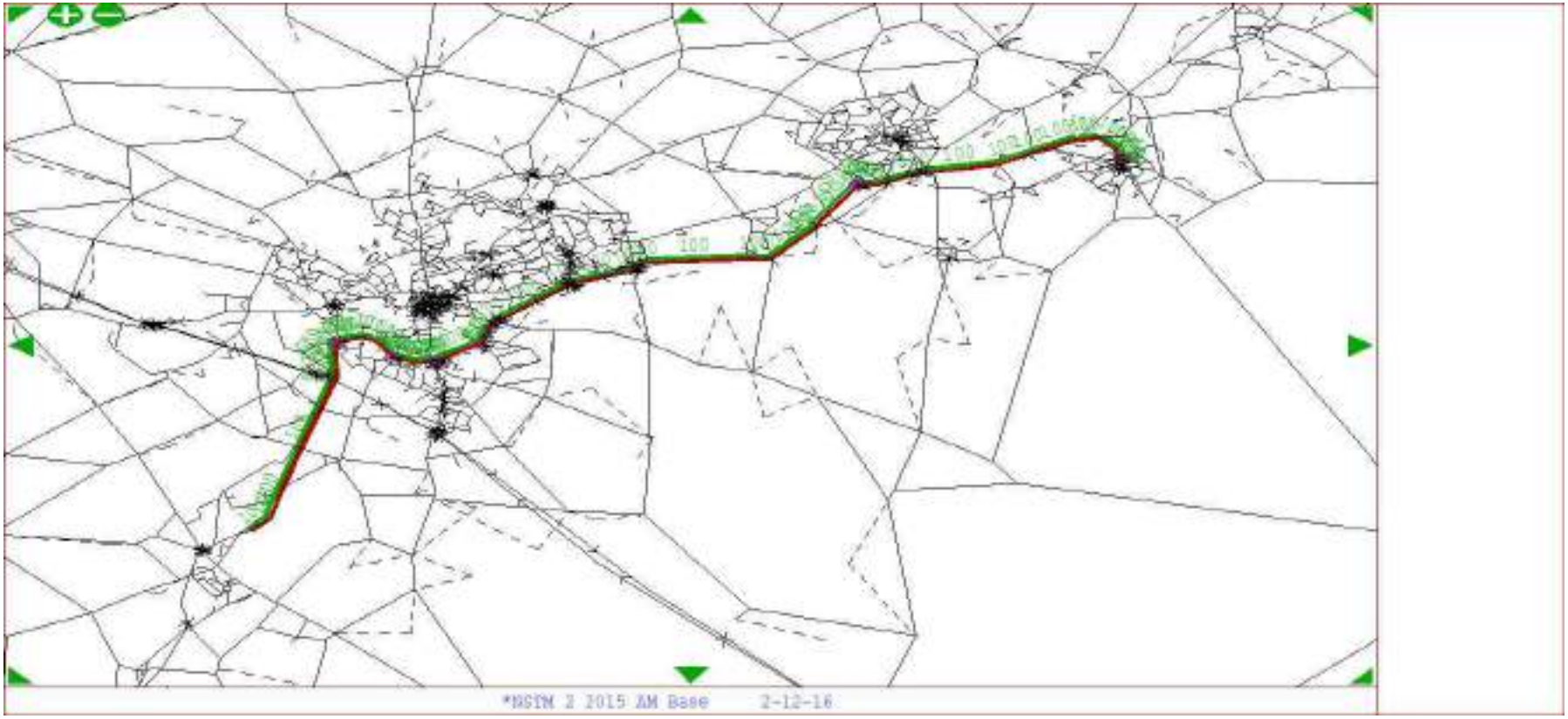
AM Peak

From Rail Central Area To Rushden - User Class 1



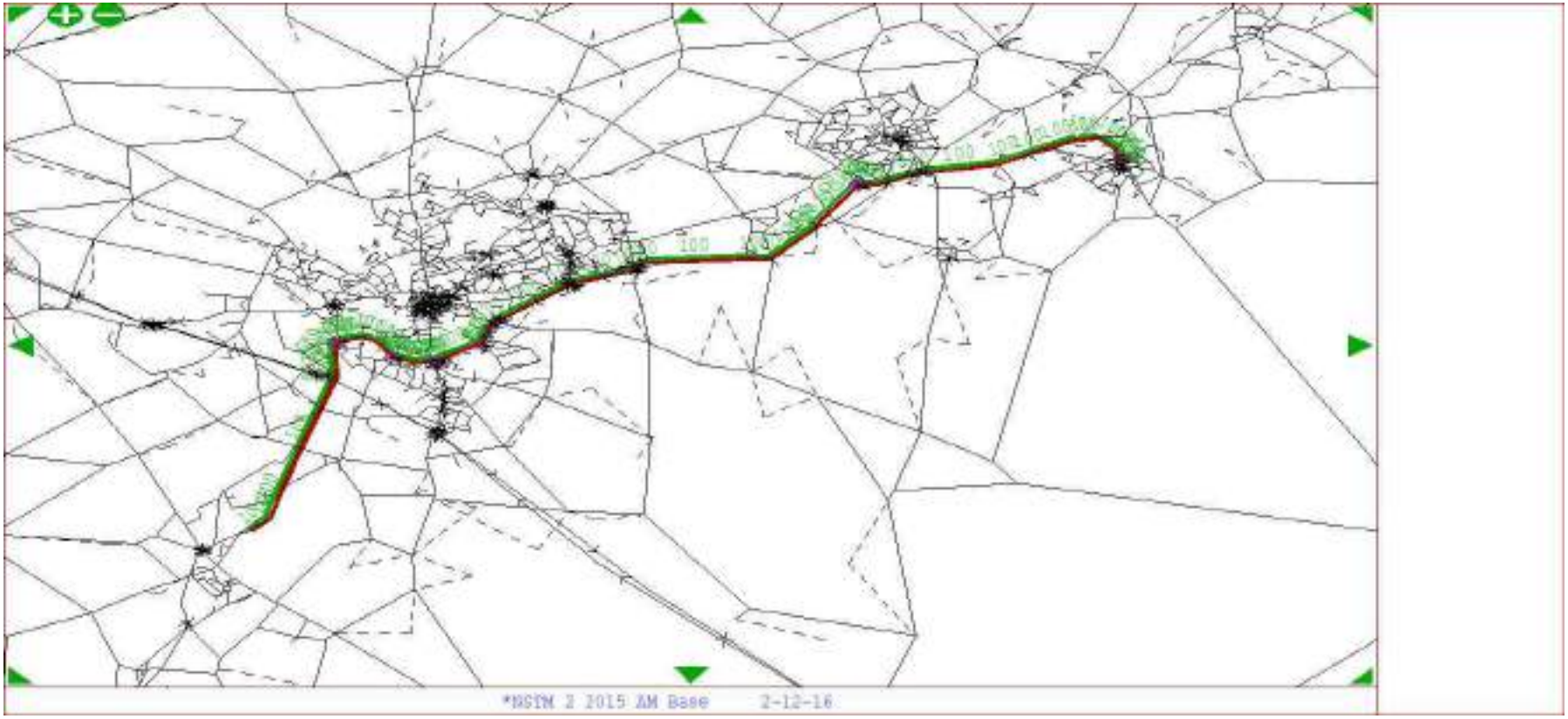
AM Peak

From Rail Central Area To Rushden - User Class 2



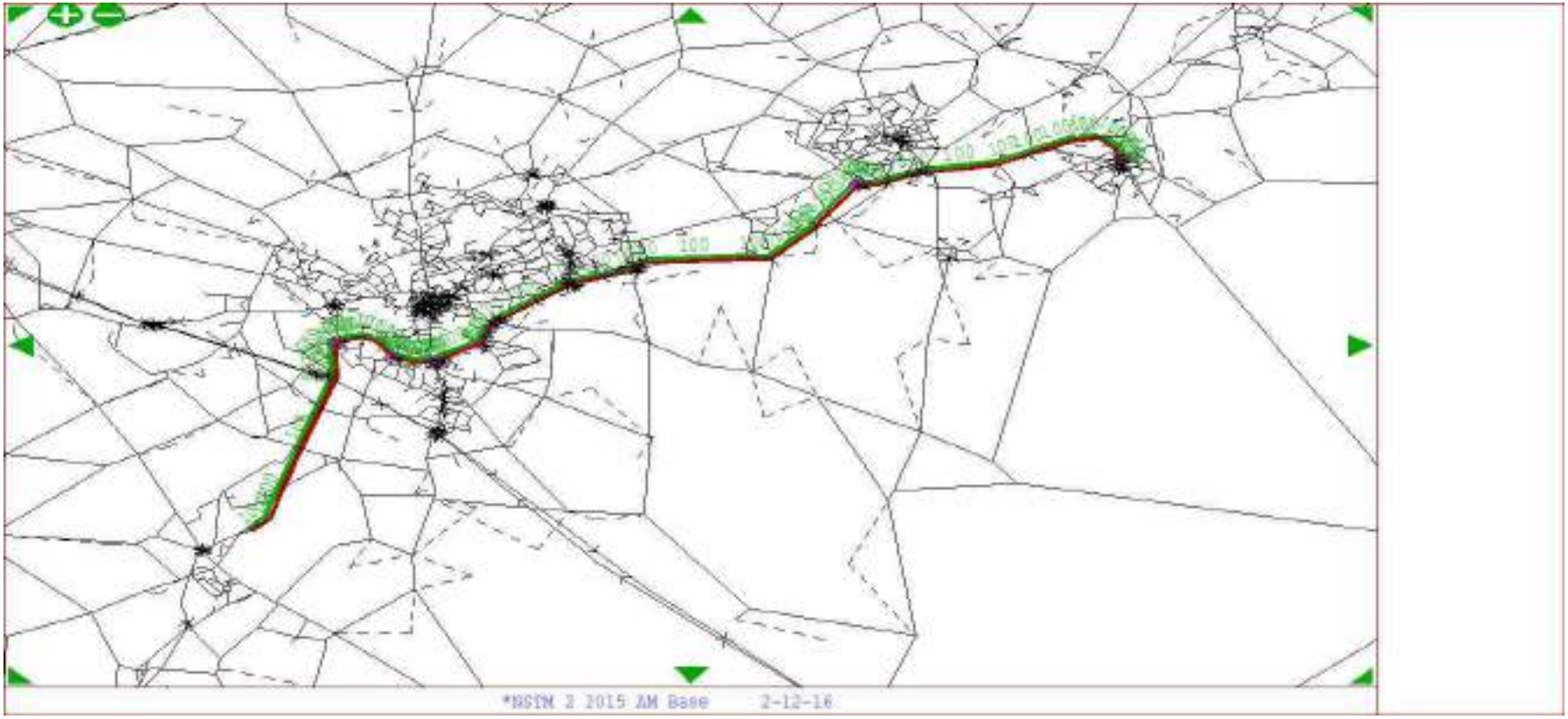
AM Peak

From Rail Central Area To Rushden - User Class 3



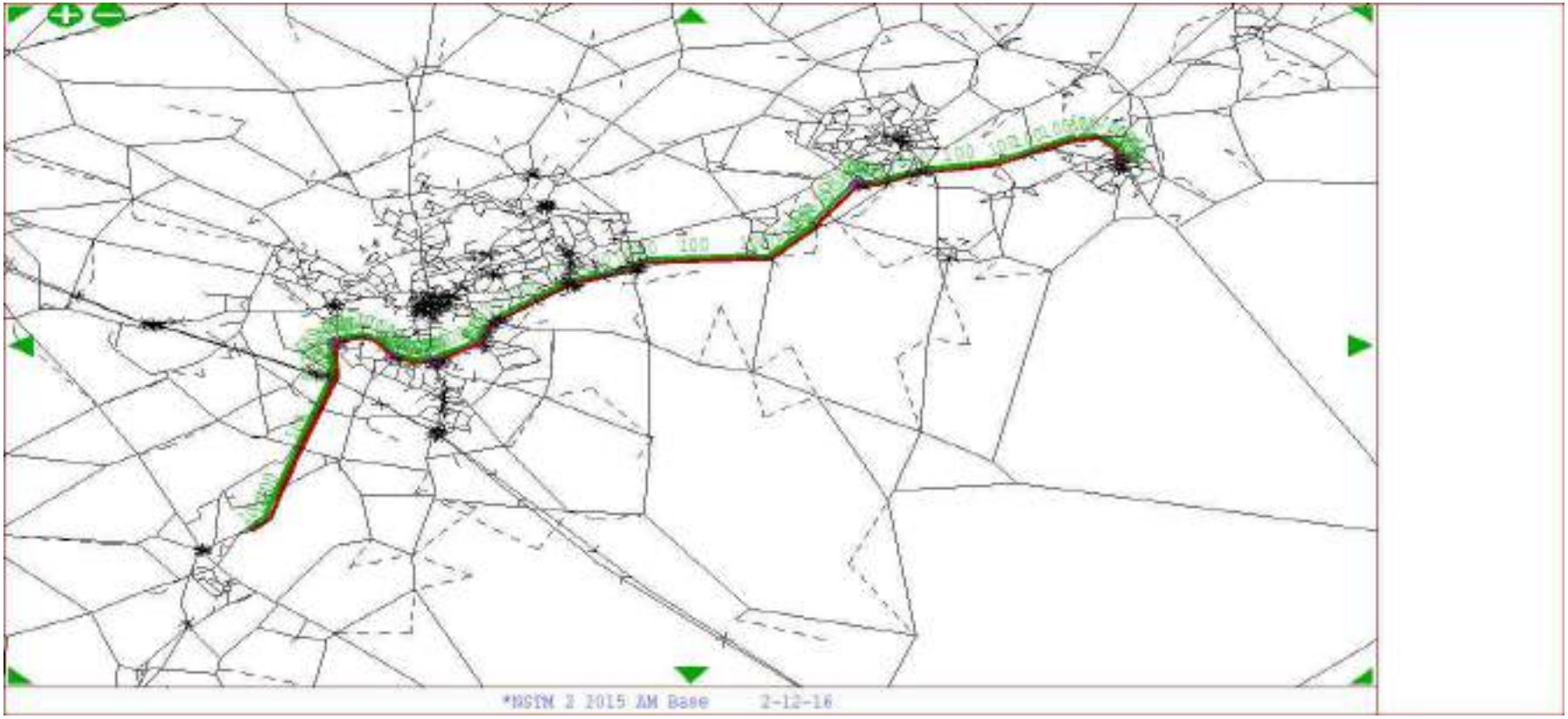
AM Peak

From Rail Central Area To Rushden - User Class 4



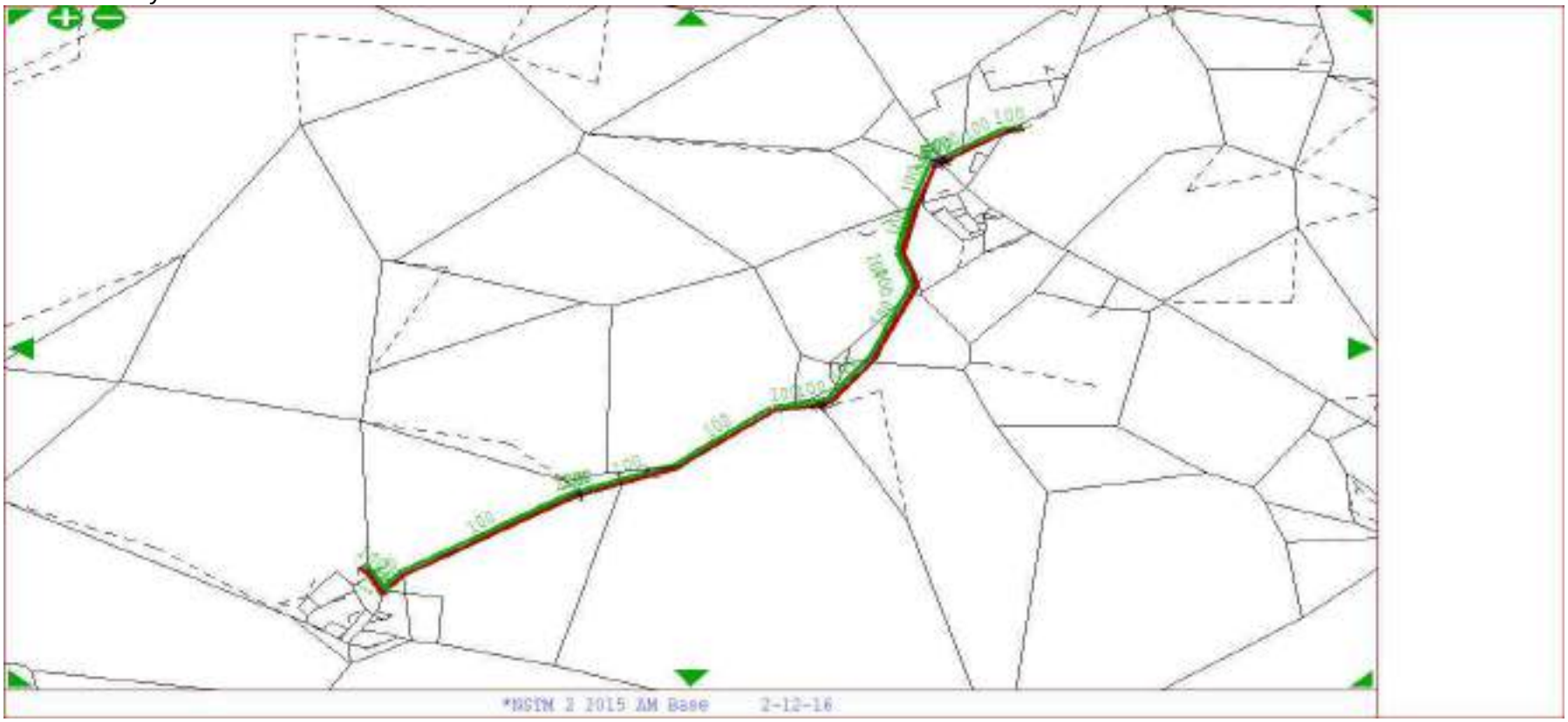
AM Peak

From Rail Central Area To Rushden - User Class 5



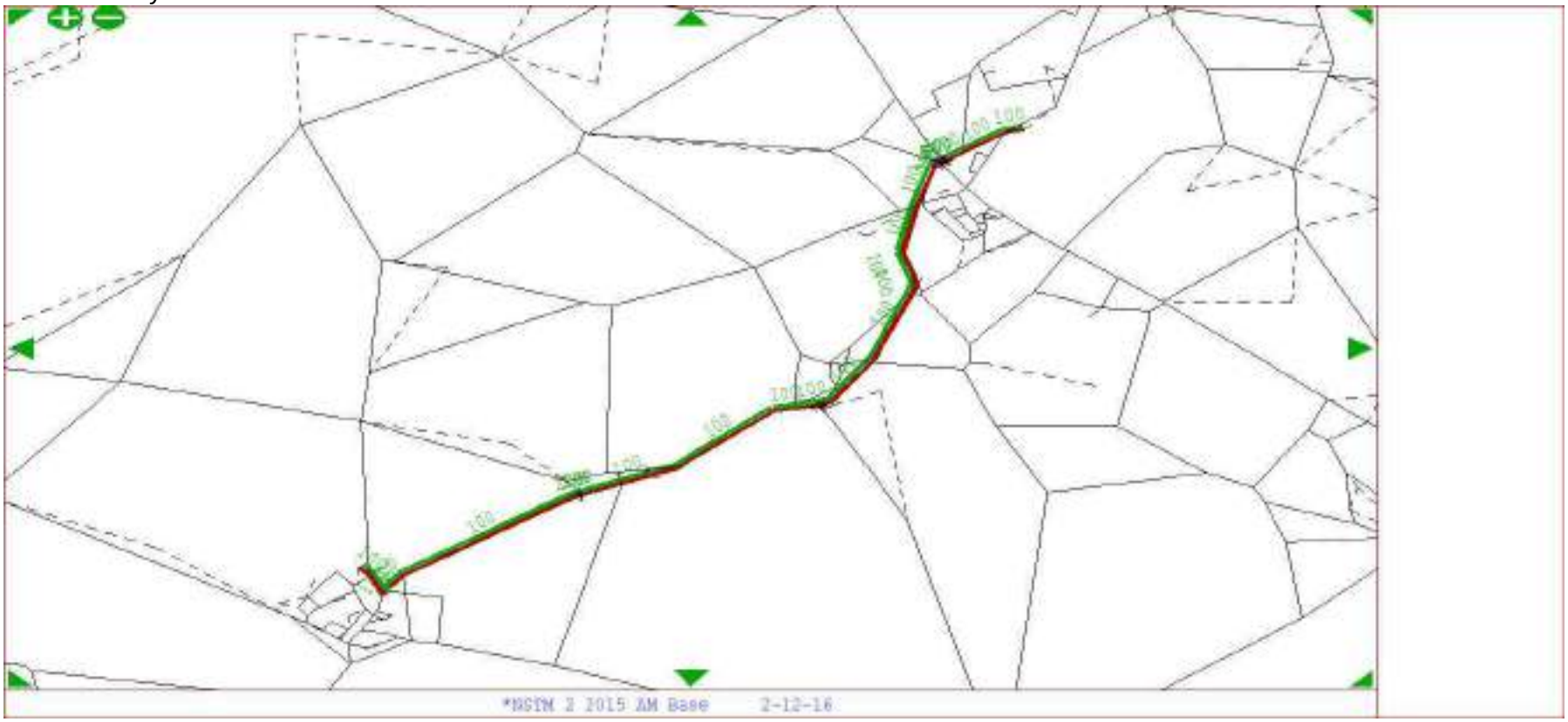
AM Peak

From Brackley To Rail Central Area - User Class 1



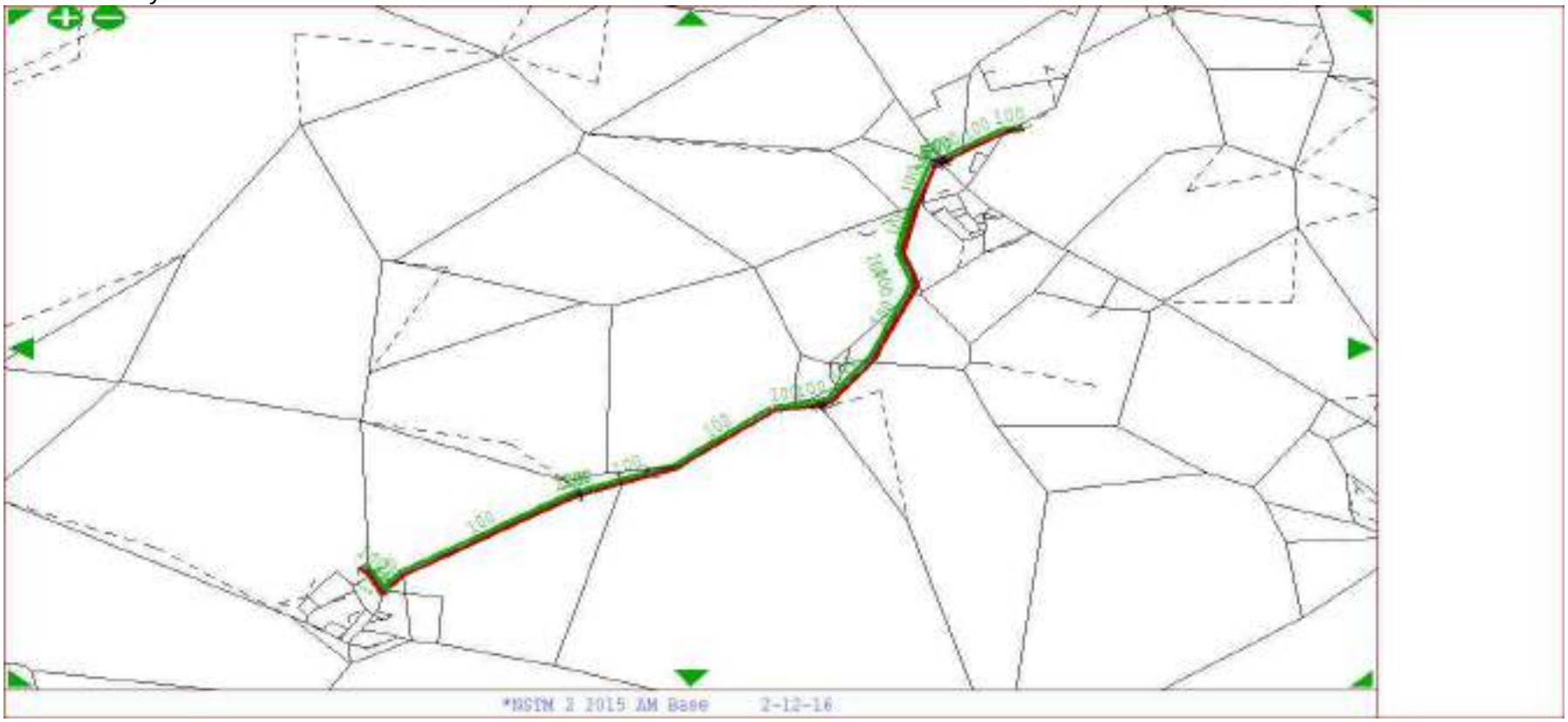
AM Peak

From Brackley To Rail Central Area - User Class 2



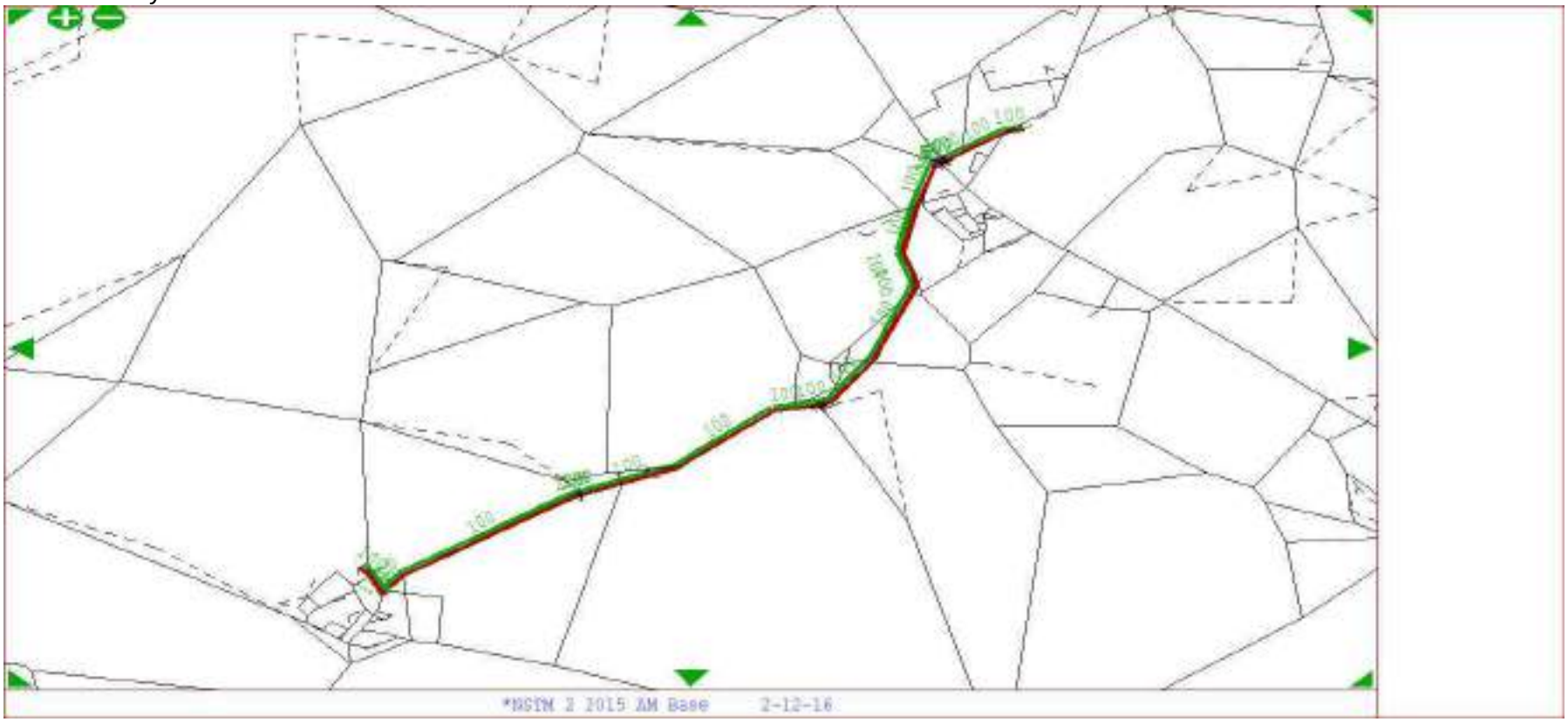
AM Peak

From Brackley To Rail Central Area - User Class 3



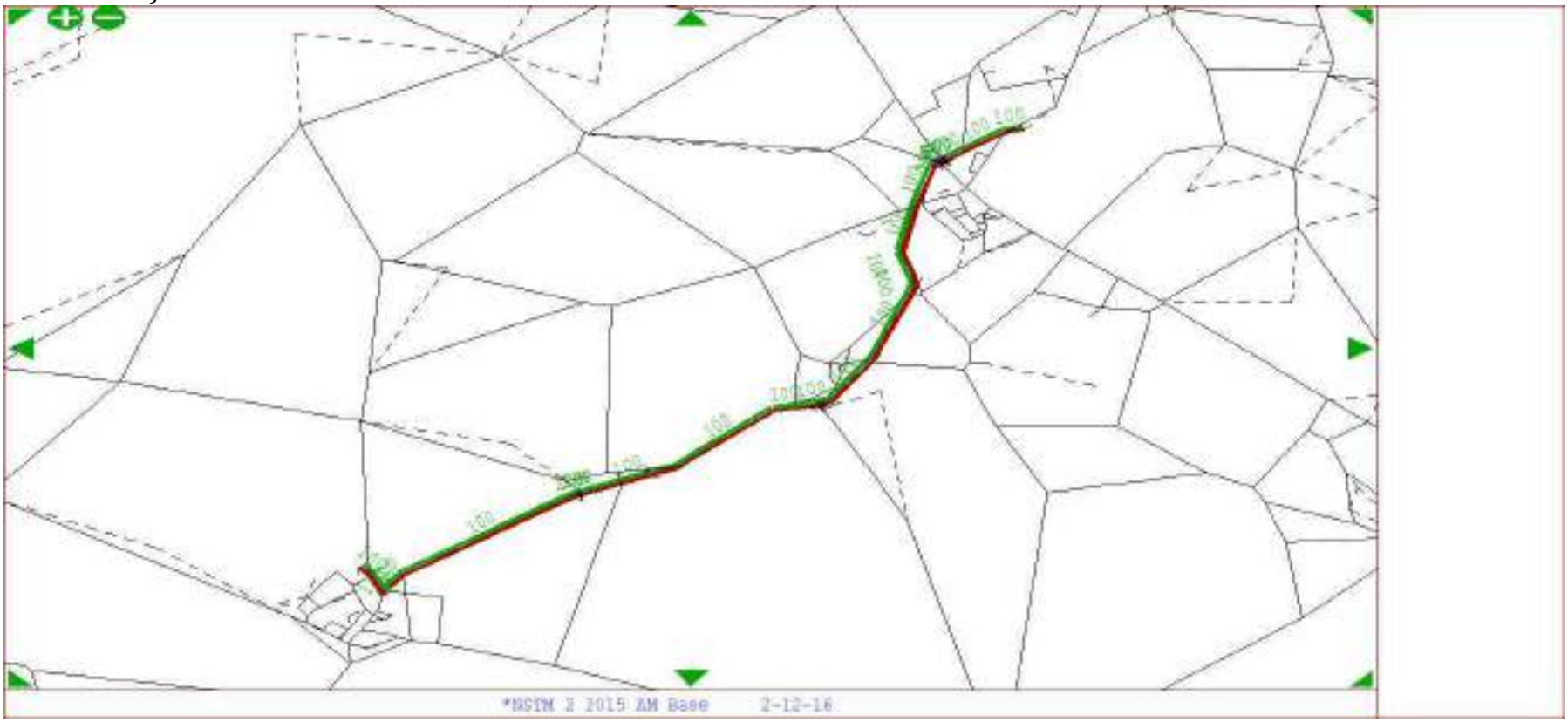
AM Peak

From Brackley To Rail Central Area - User Class 4



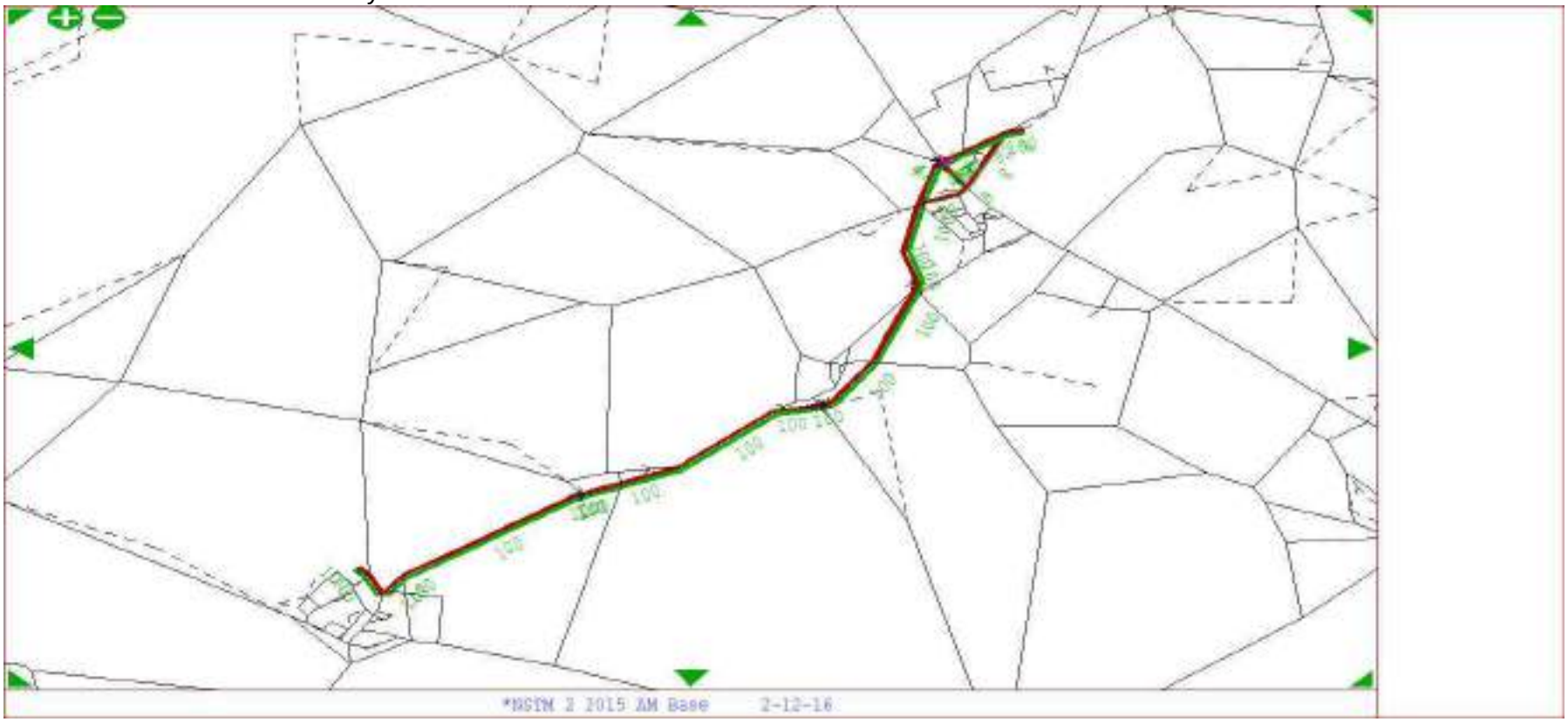
AM Peak

From Brackley To Rail Central Area - User Class 5



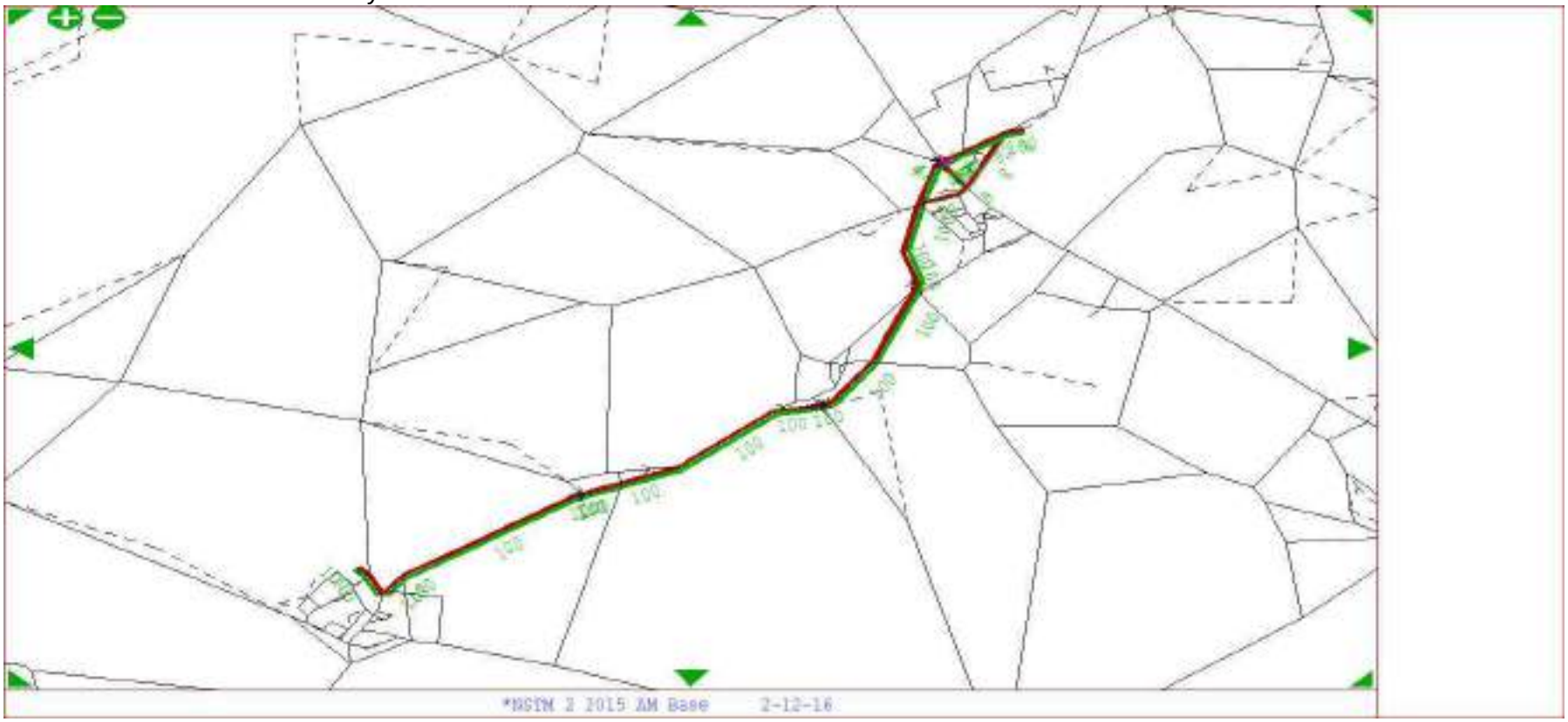
AM Peak

From Rail Central Area To Brackley - User Class 1



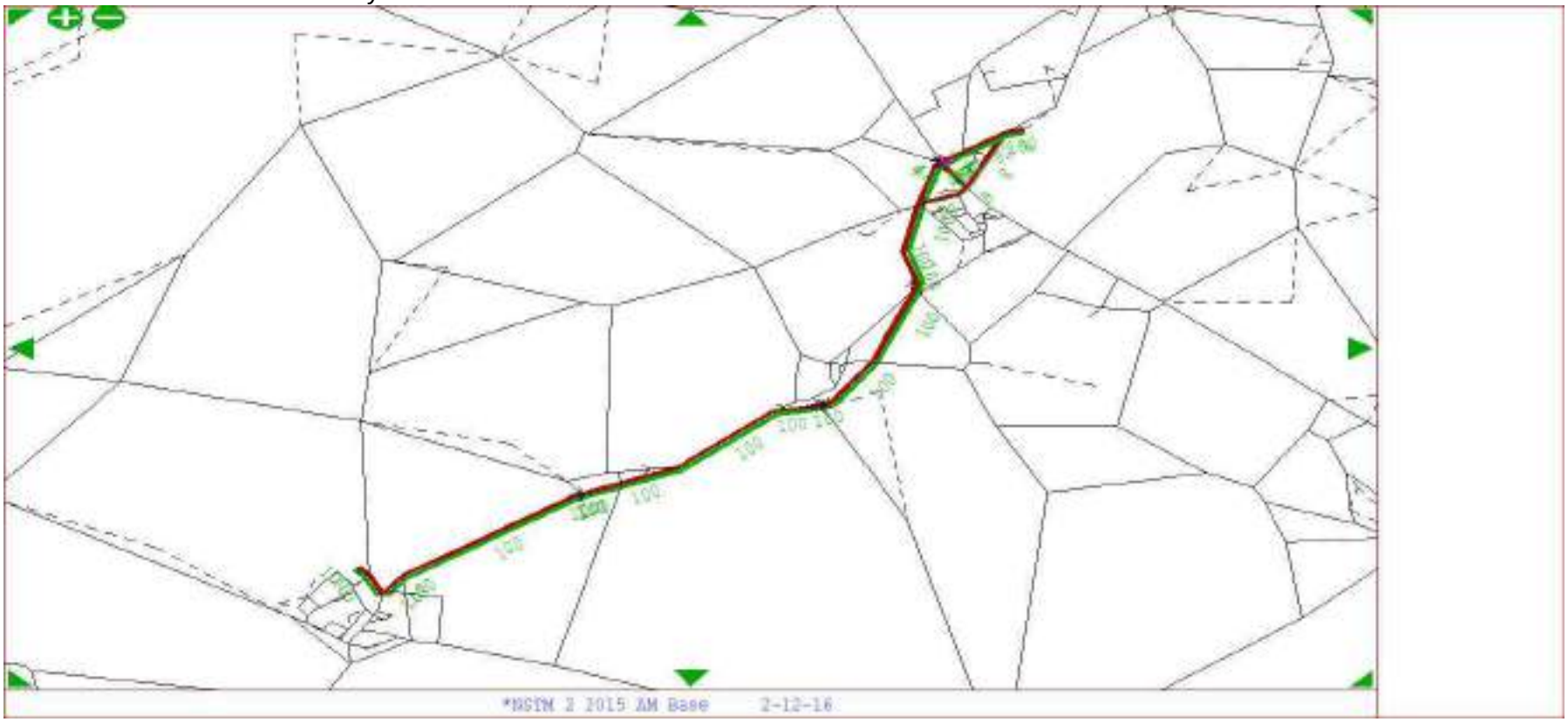
AM Peak

From Rail Central Area To Brackley - User Class 2



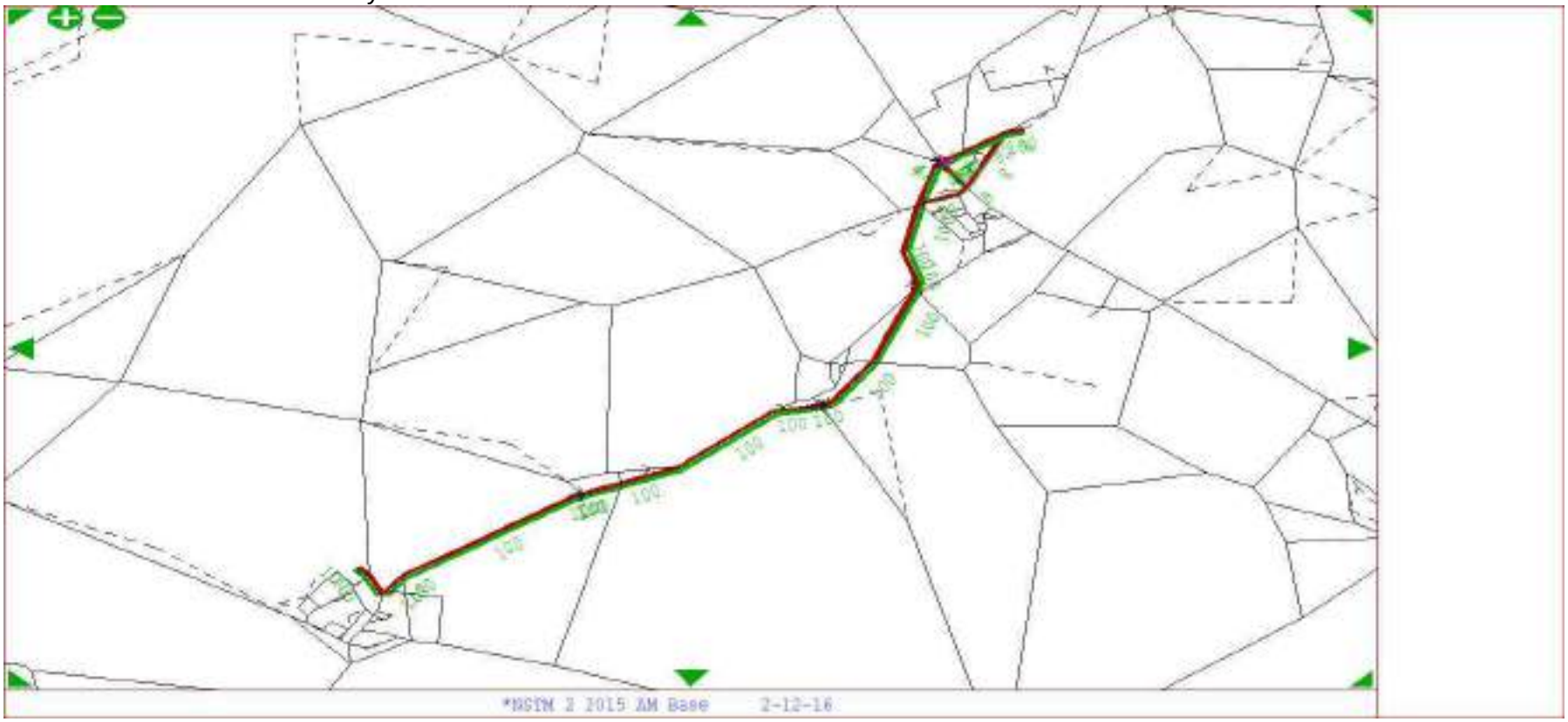
AM Peak

From Rail Central Area To Brackley - User Class 3



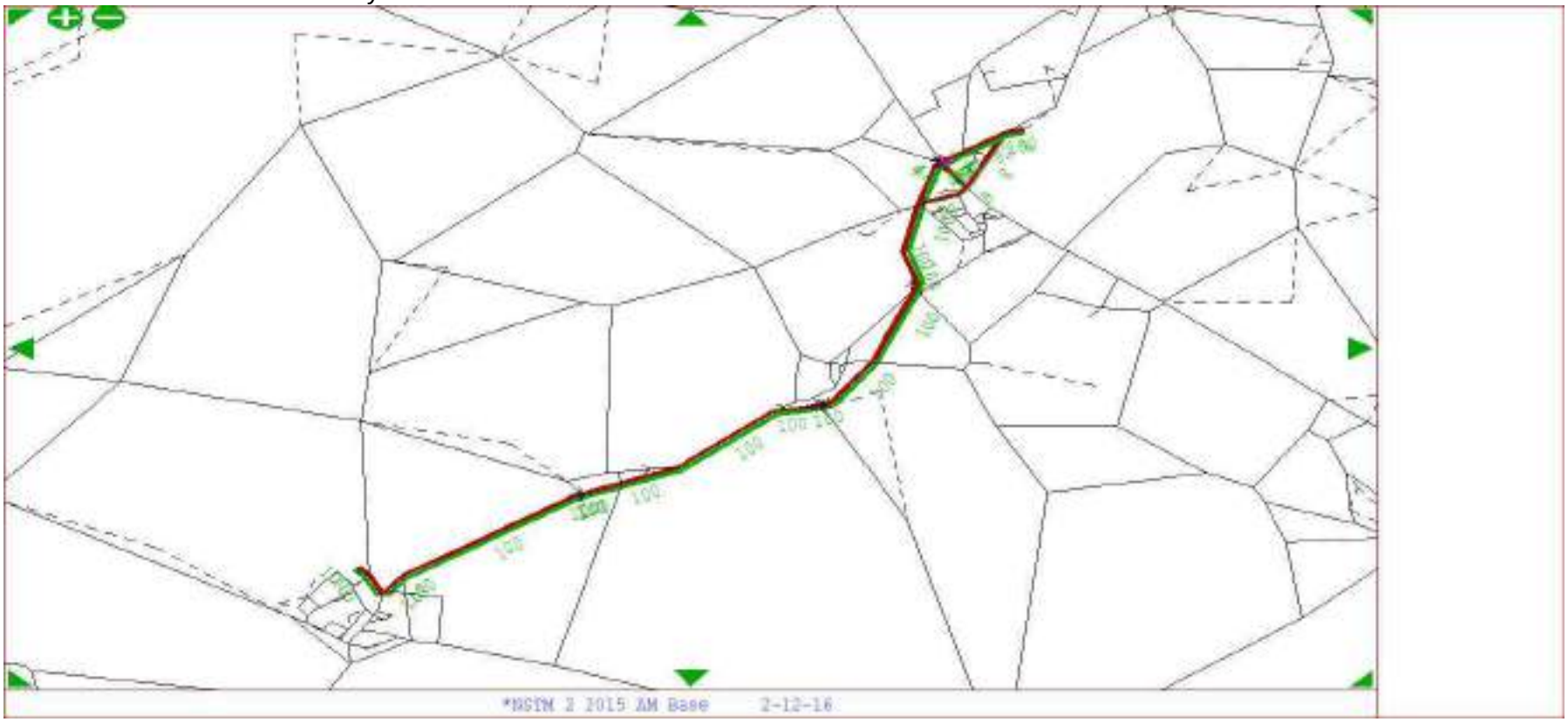
AM Peak

From Rail Central Area To Brackley - User Class 4



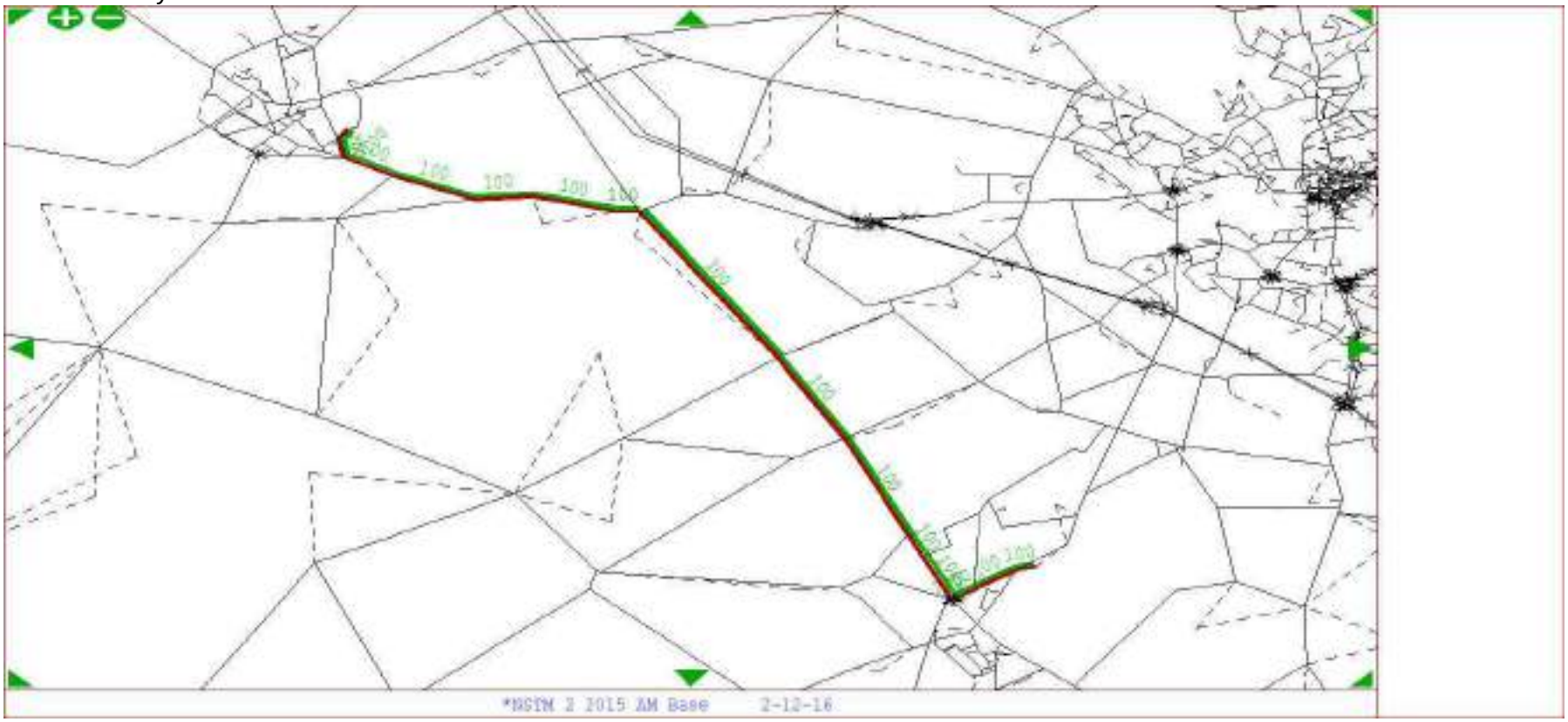
AM Peak

From Rail Central Area To Brackley - User Class 5



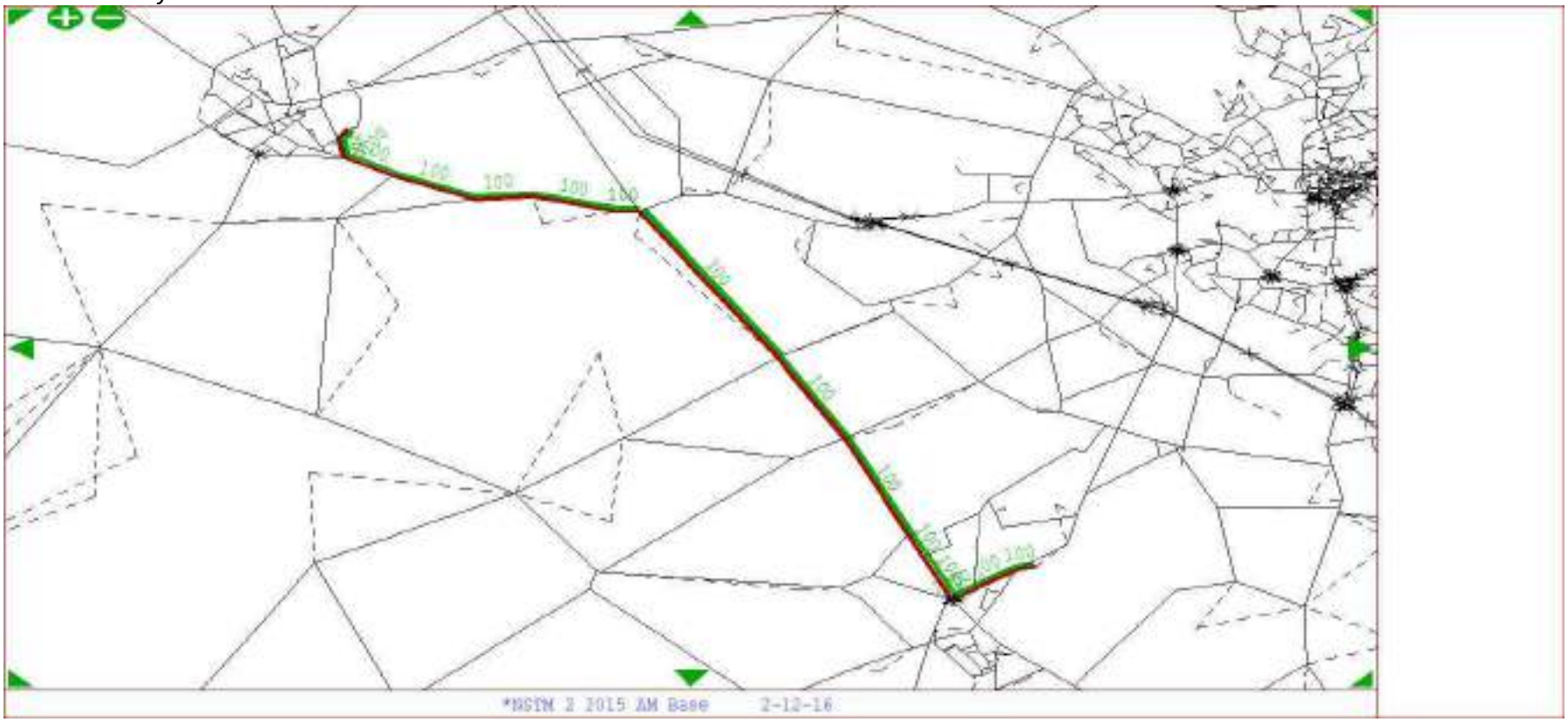
AM Peak

From Daventry To Rail Central Area - User Class 1



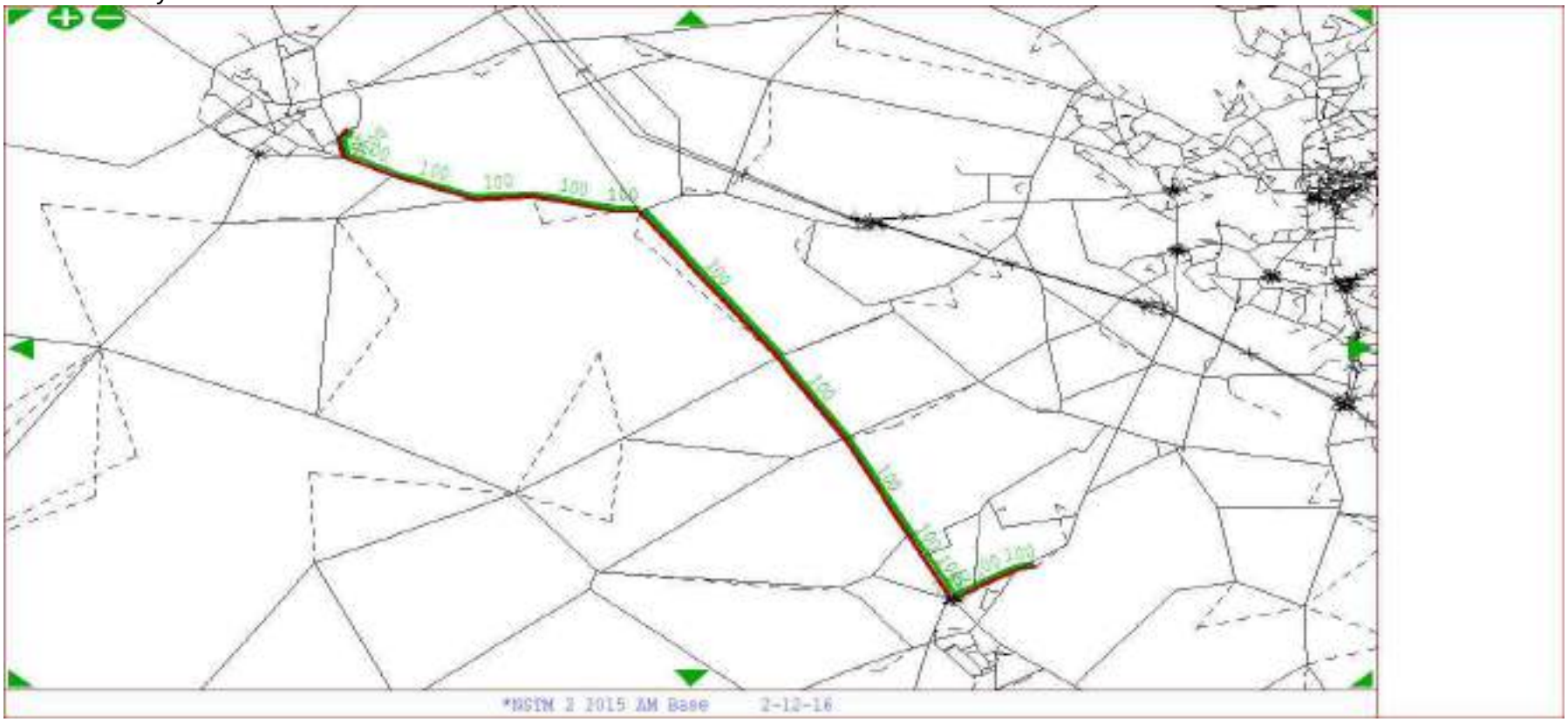
AM Peak

From Daventry To Rail Central Area - User Class 2



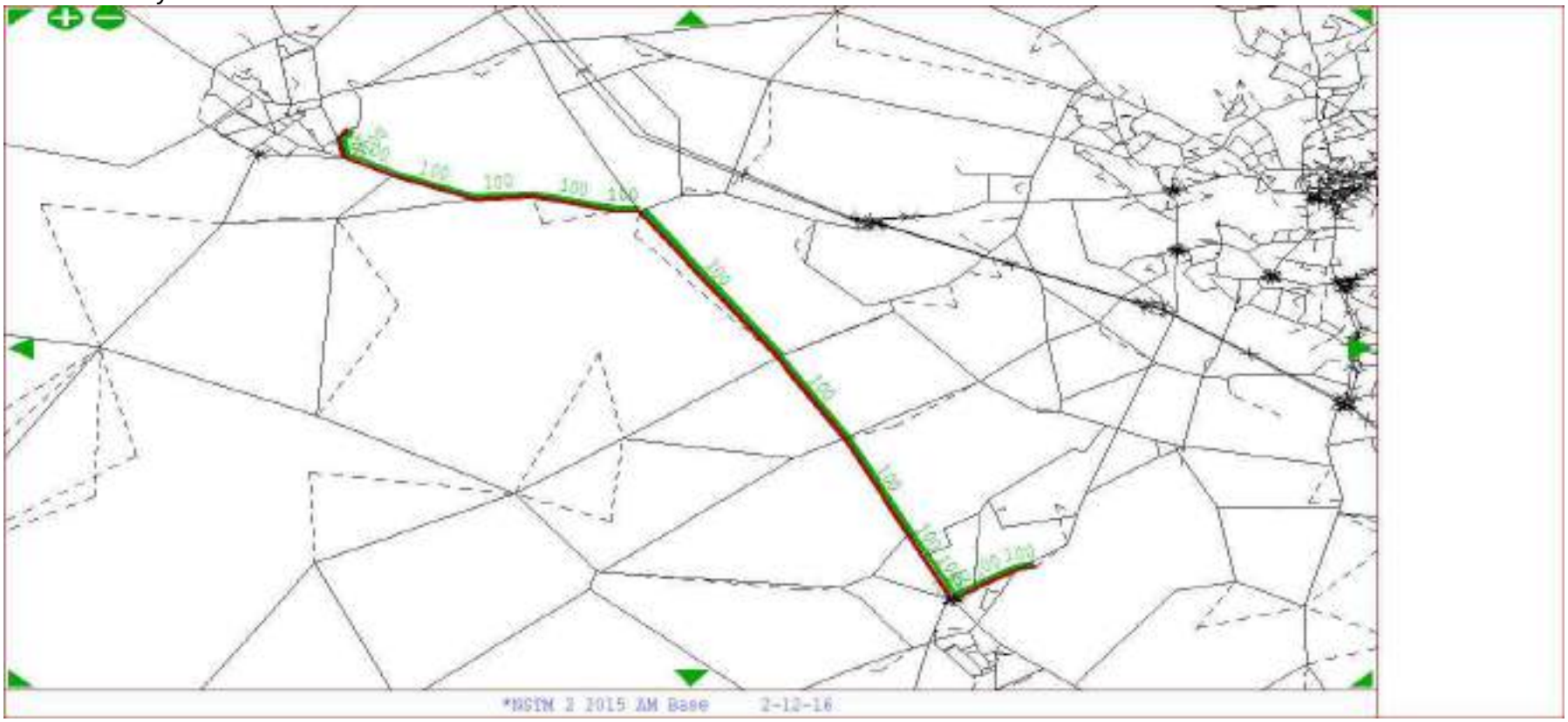
AM Peak

From Daventry To Rail Central Area - User Class 3



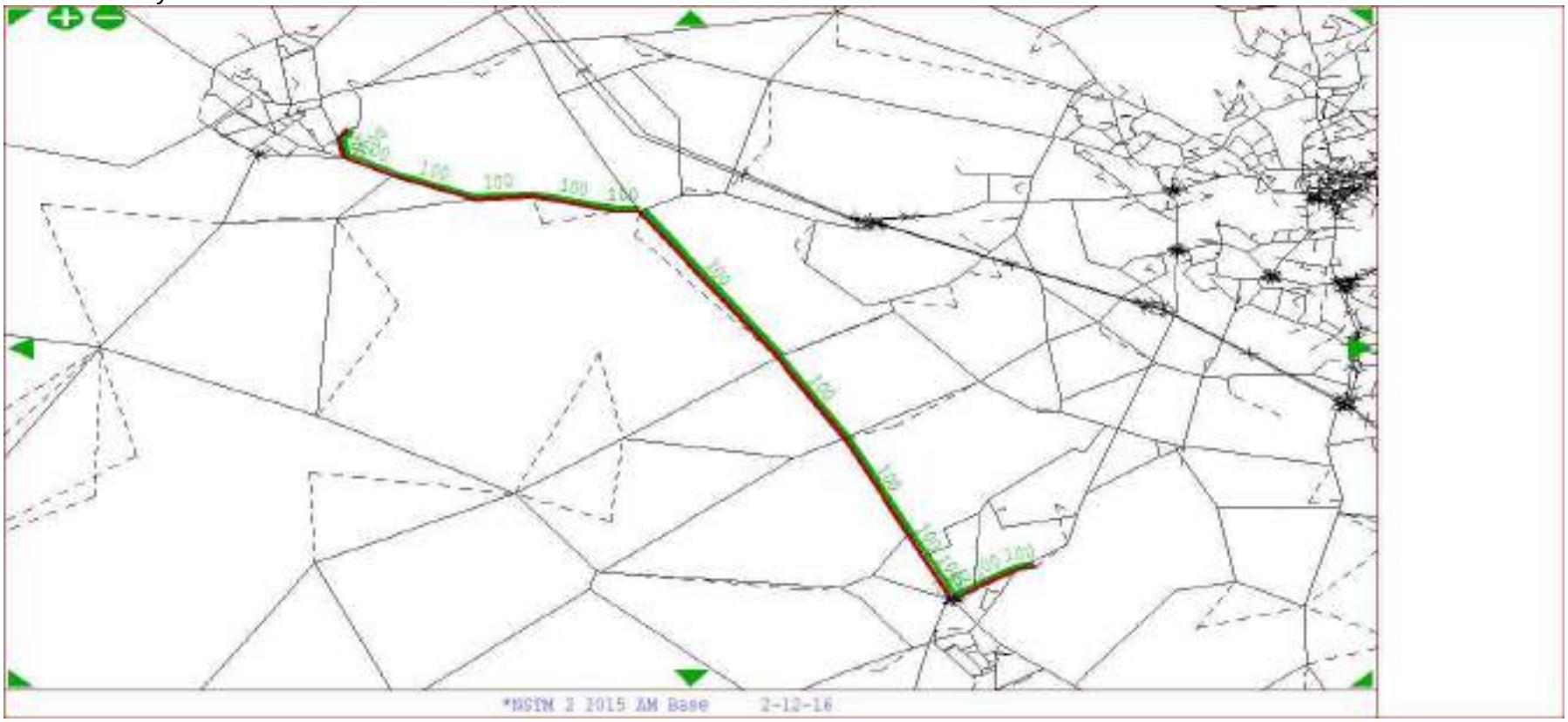
AM Peak

From Daventry To Rail Central Area - User Class 4



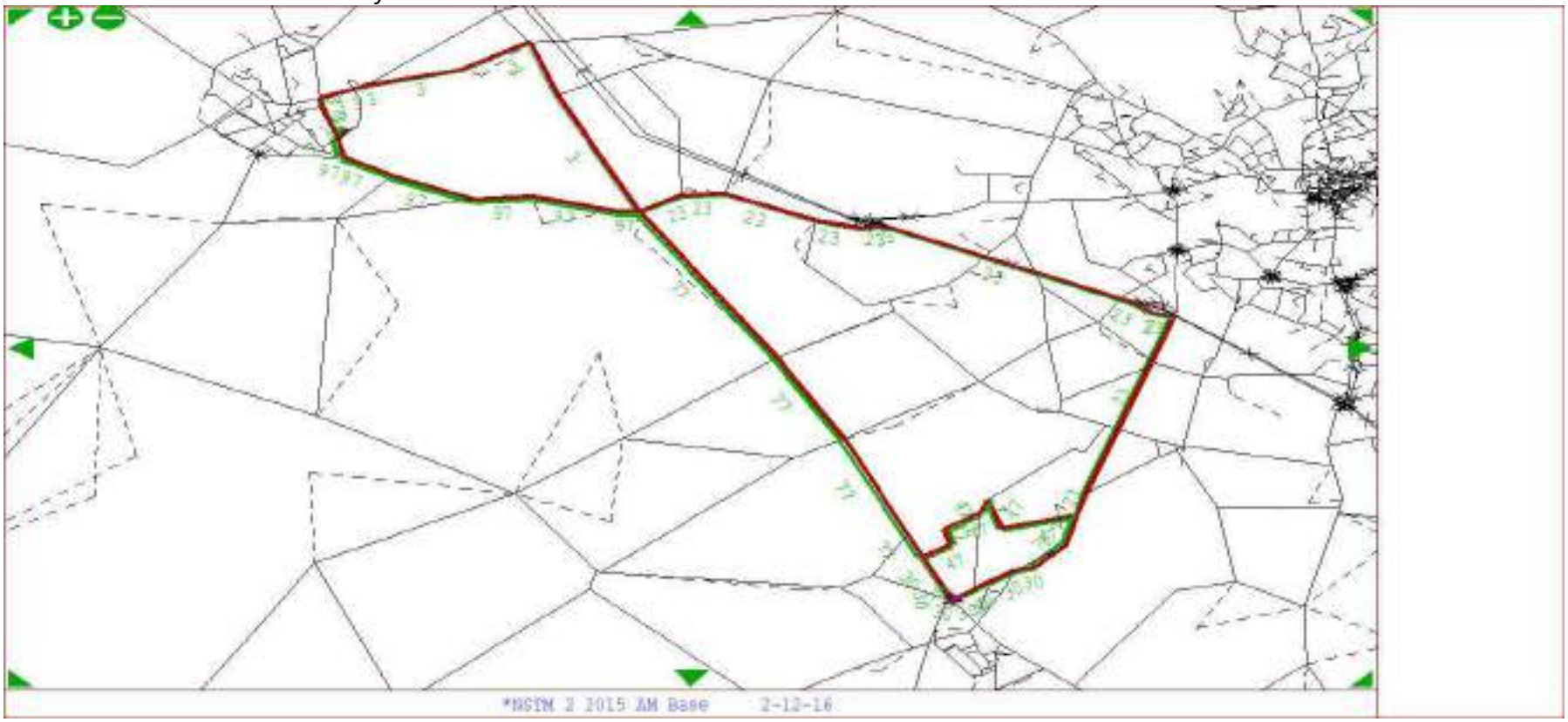
AM Peak

From Daventry To Rail Central Area - User Class 5



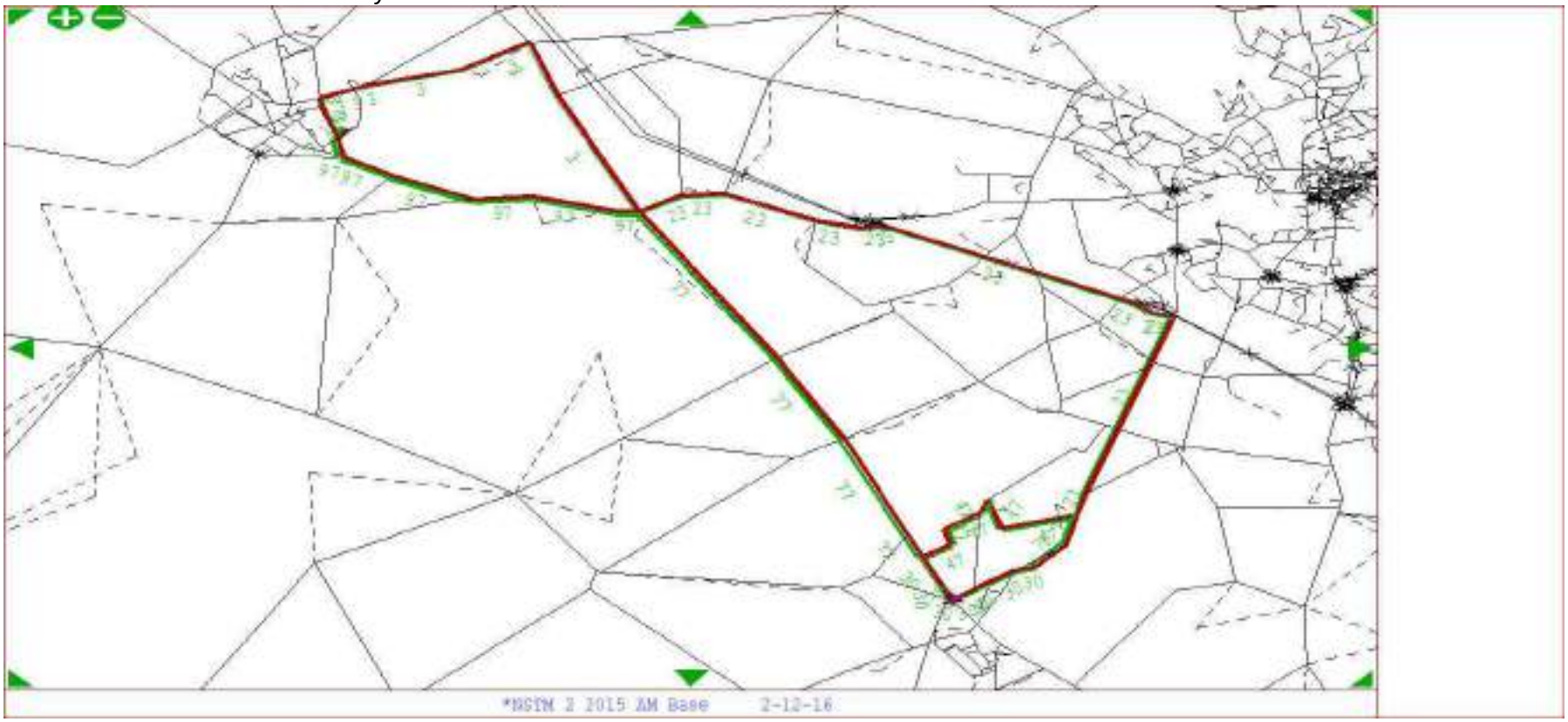
AM Peak

From Rail Central Area To Daventry - User Class 1



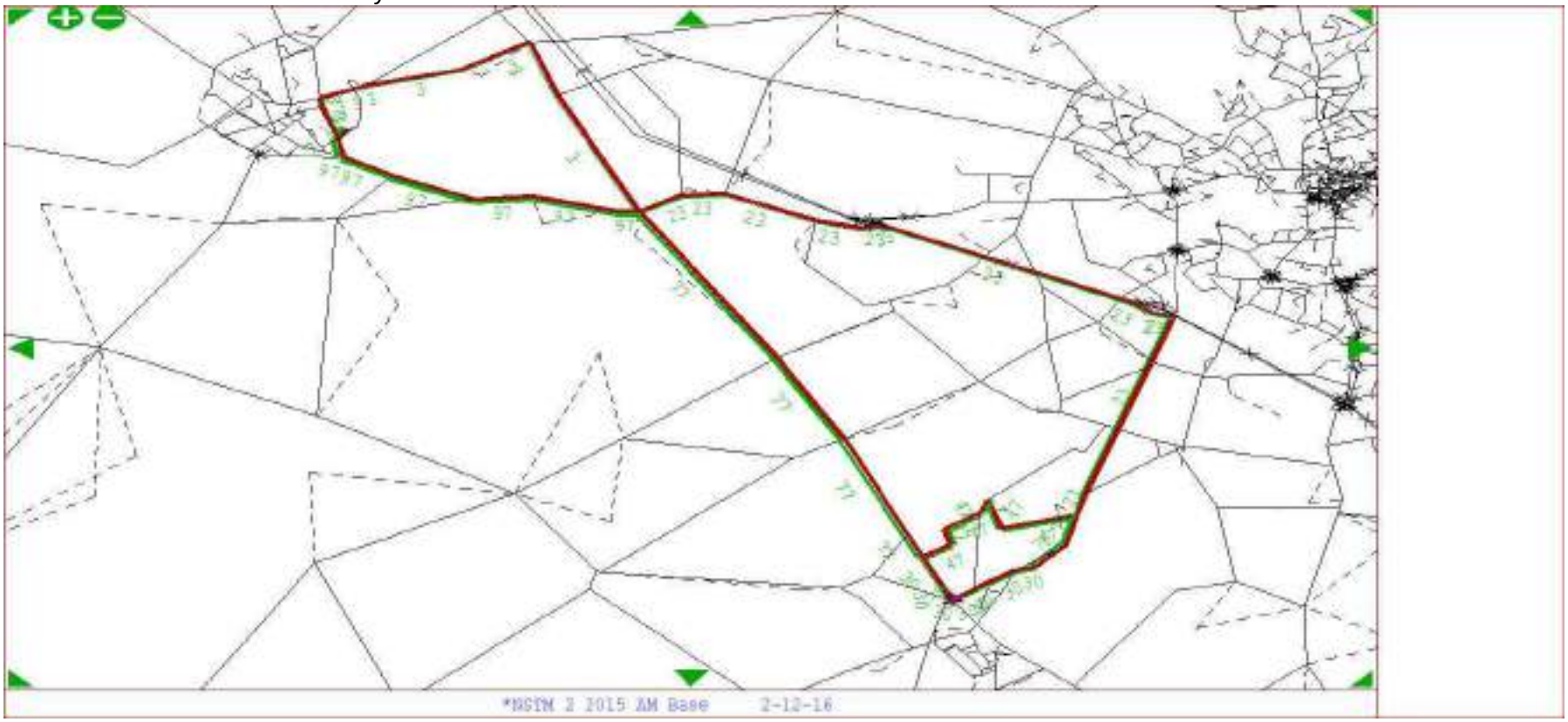
AM Peak

From Rail Central Area To Daventry - User Class 2



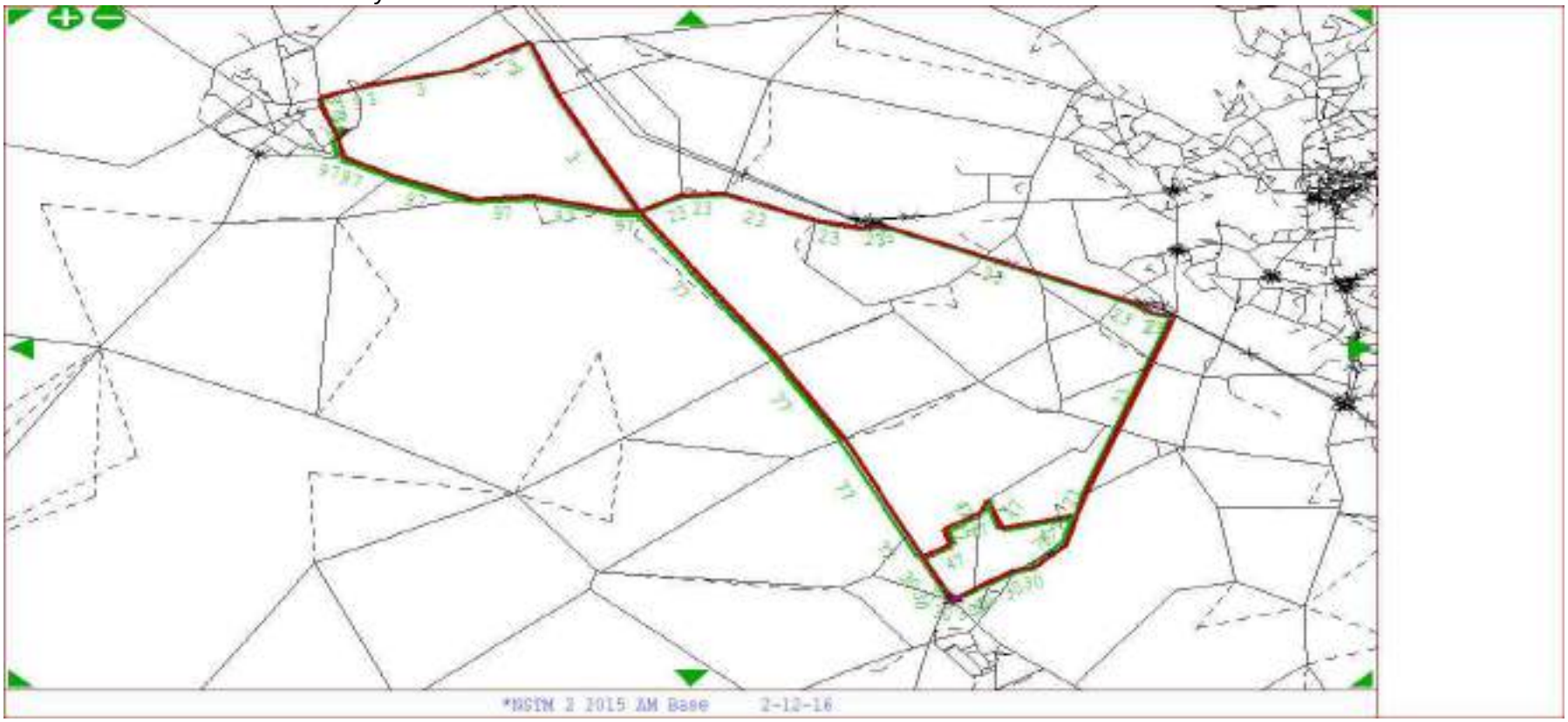
AM Peak

From Rail Central Area To Daventry - User Class 3



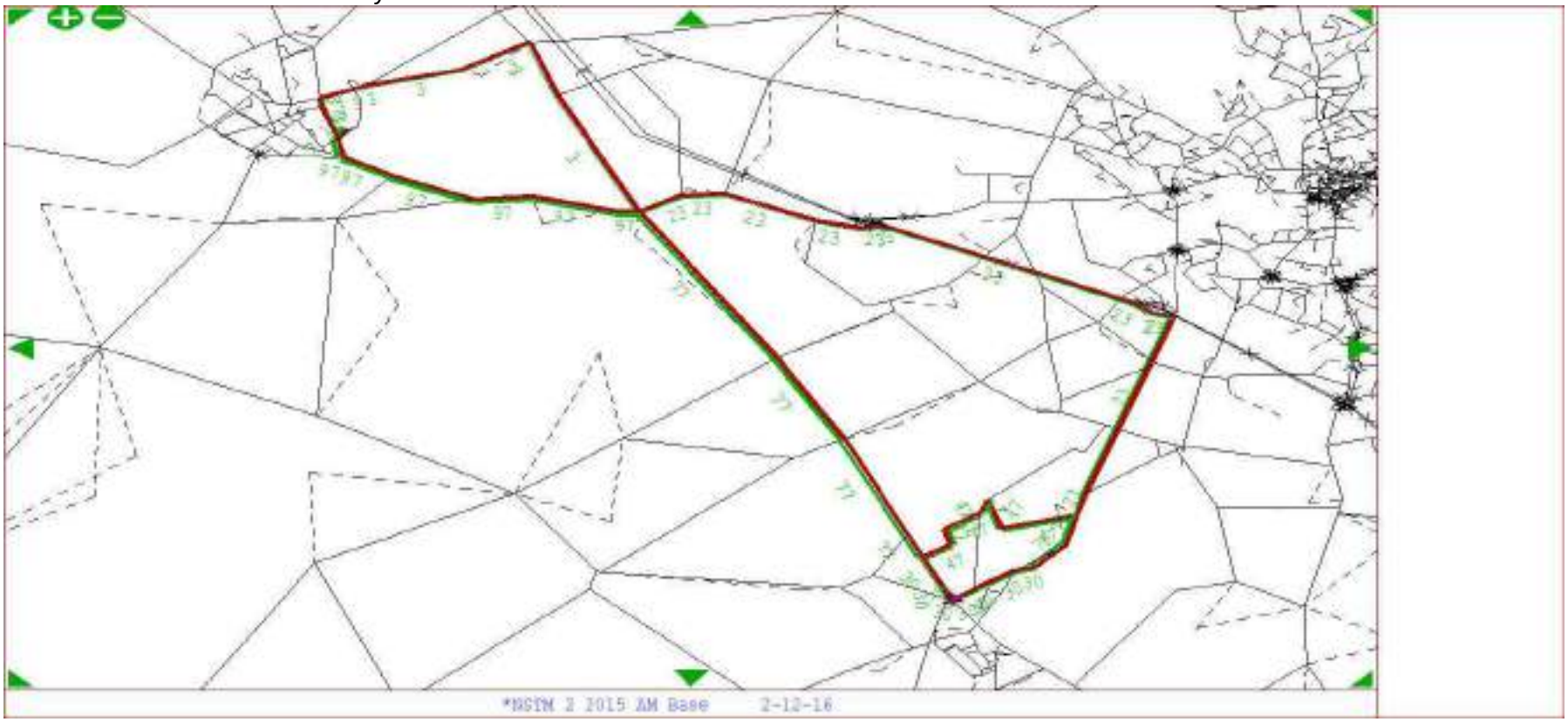
AM Peak

From Rail Central Area To Daventry - User Class 4



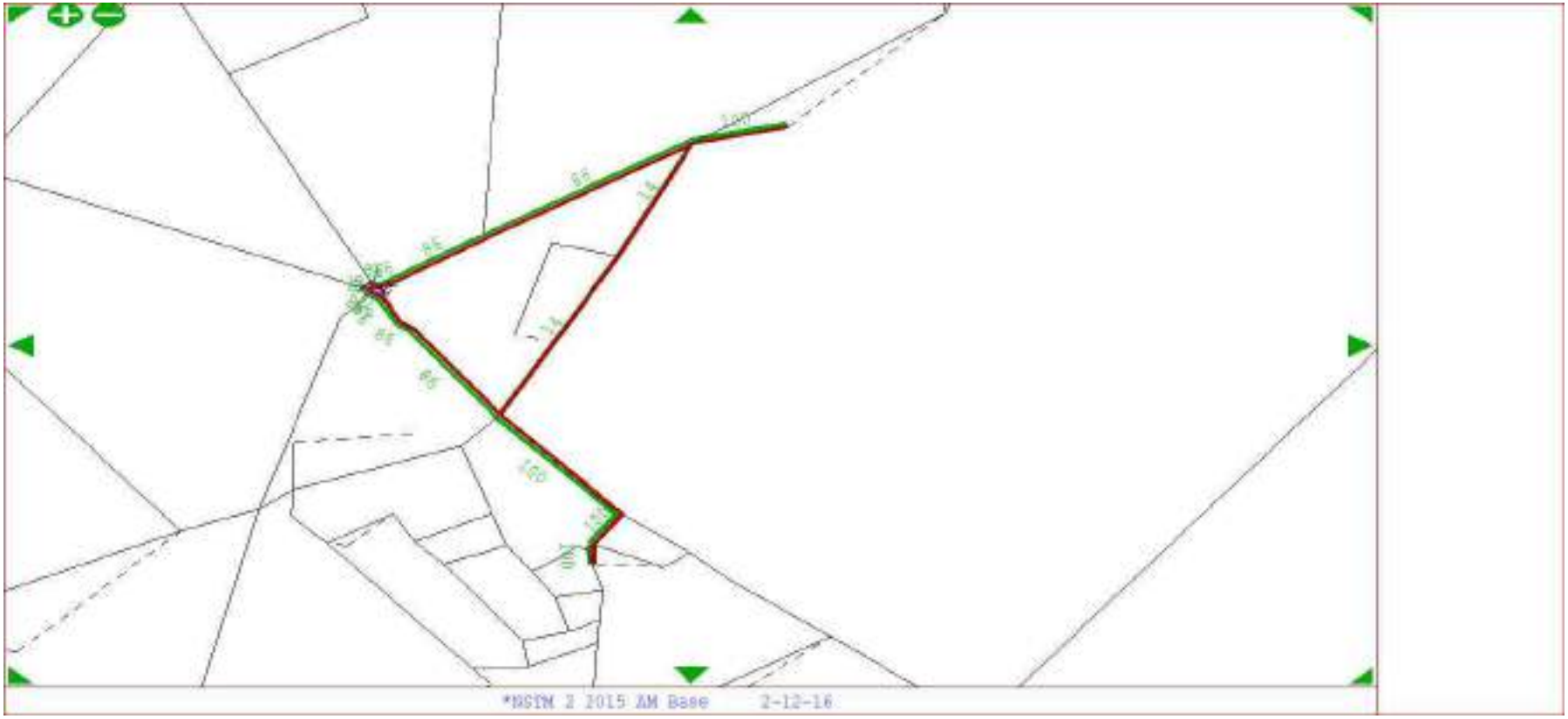
AM Peak

From Rail Central Area To Daventry - User Class 5



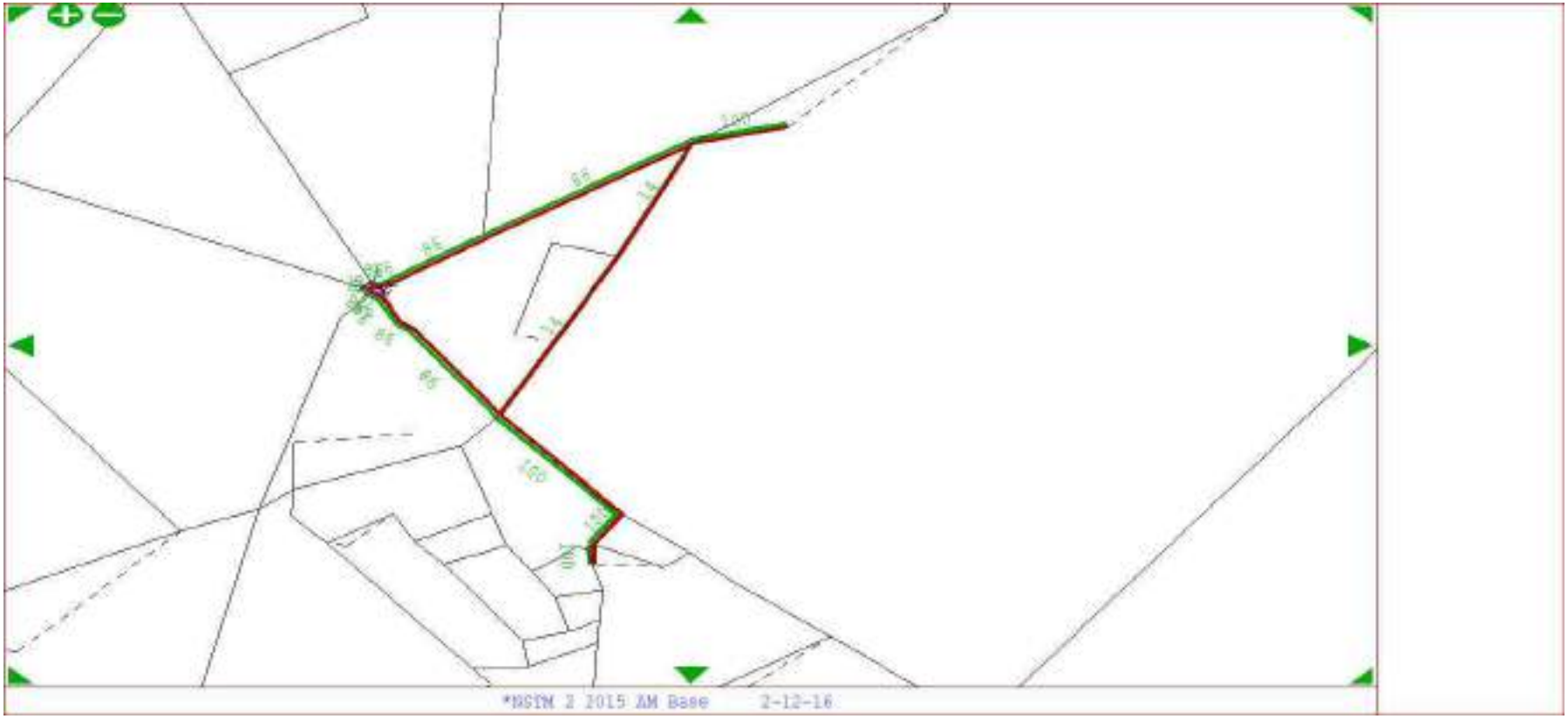
AM Peak

From Towcester To Rail Central Area - User Class 1



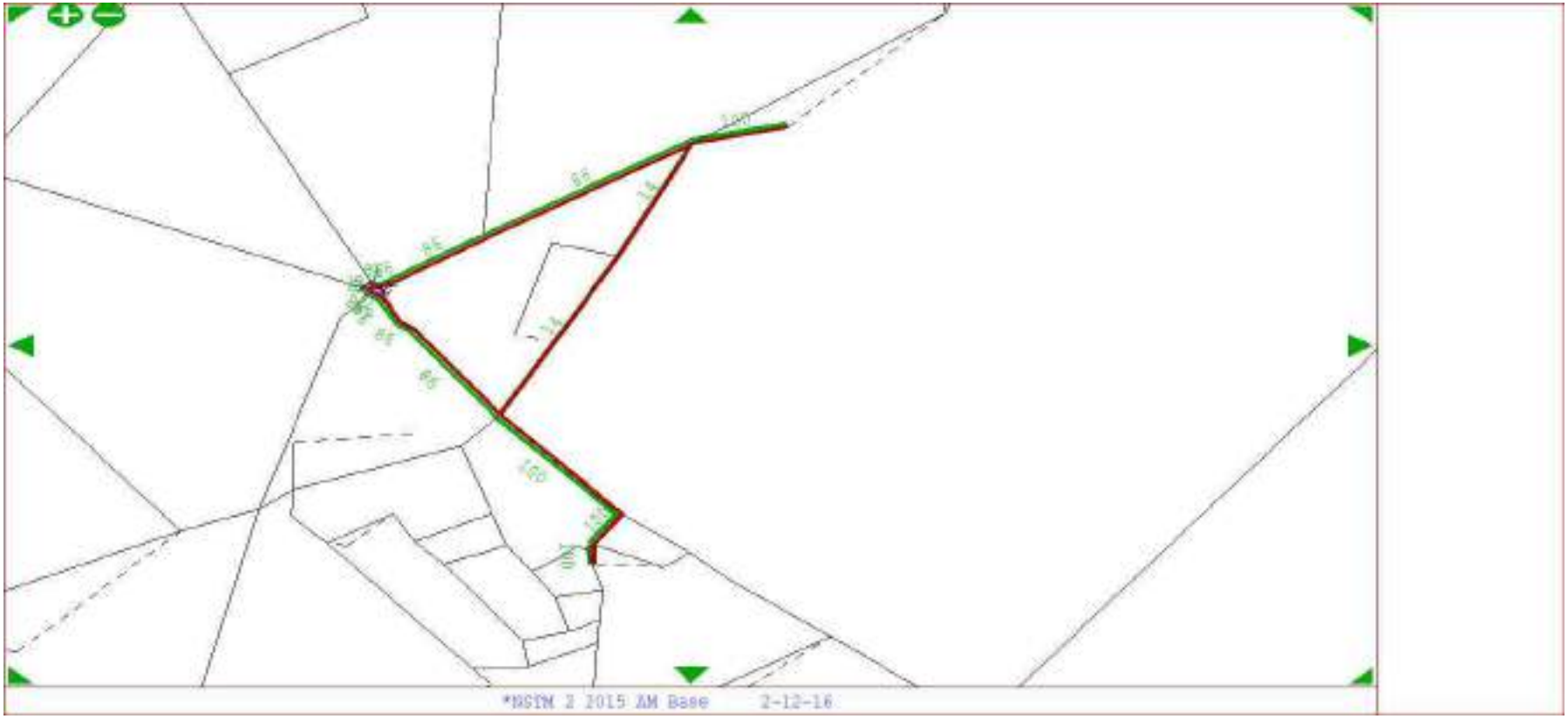
AM Peak

From Towcester To Rail Central Area - User Class 2



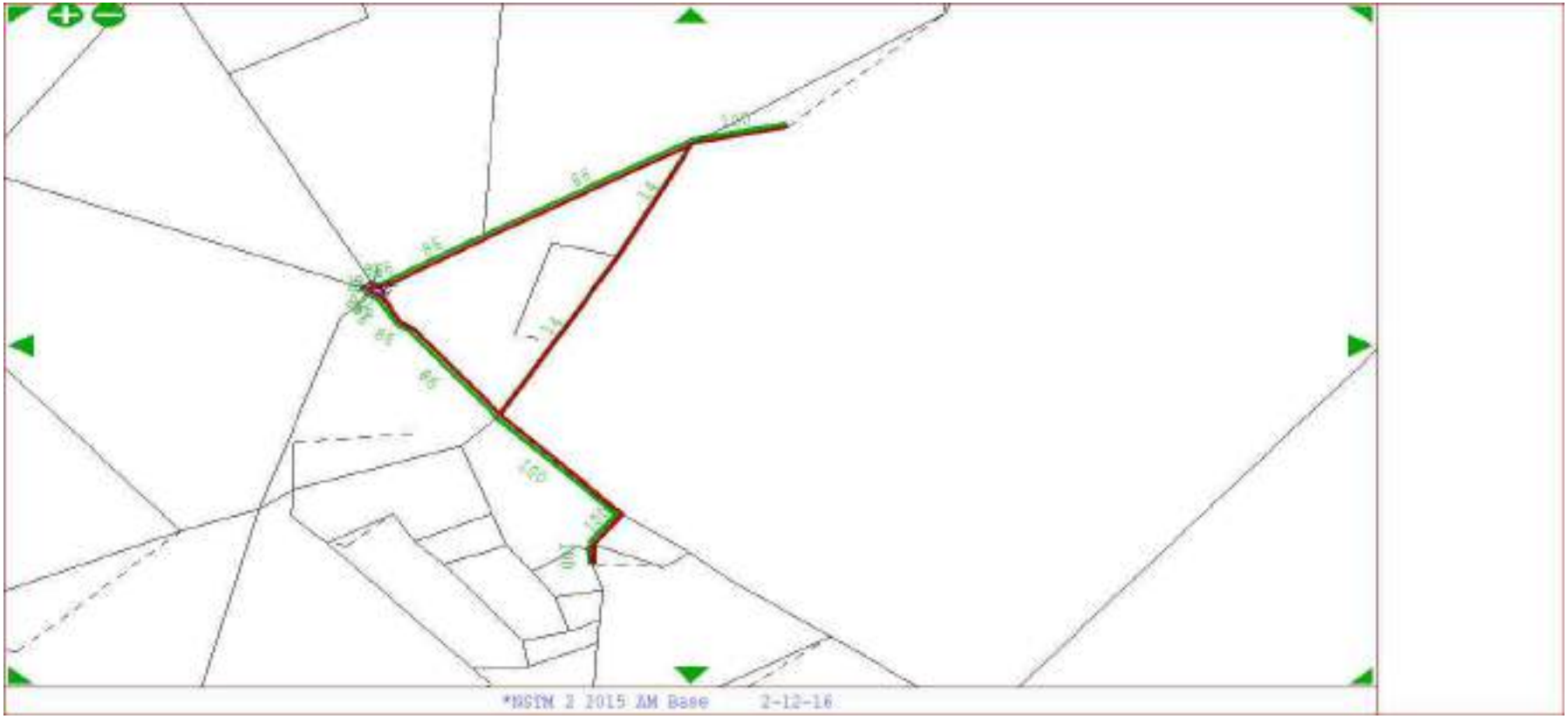
AM Peak

From Towcester To Rail Central Area - User Class 3



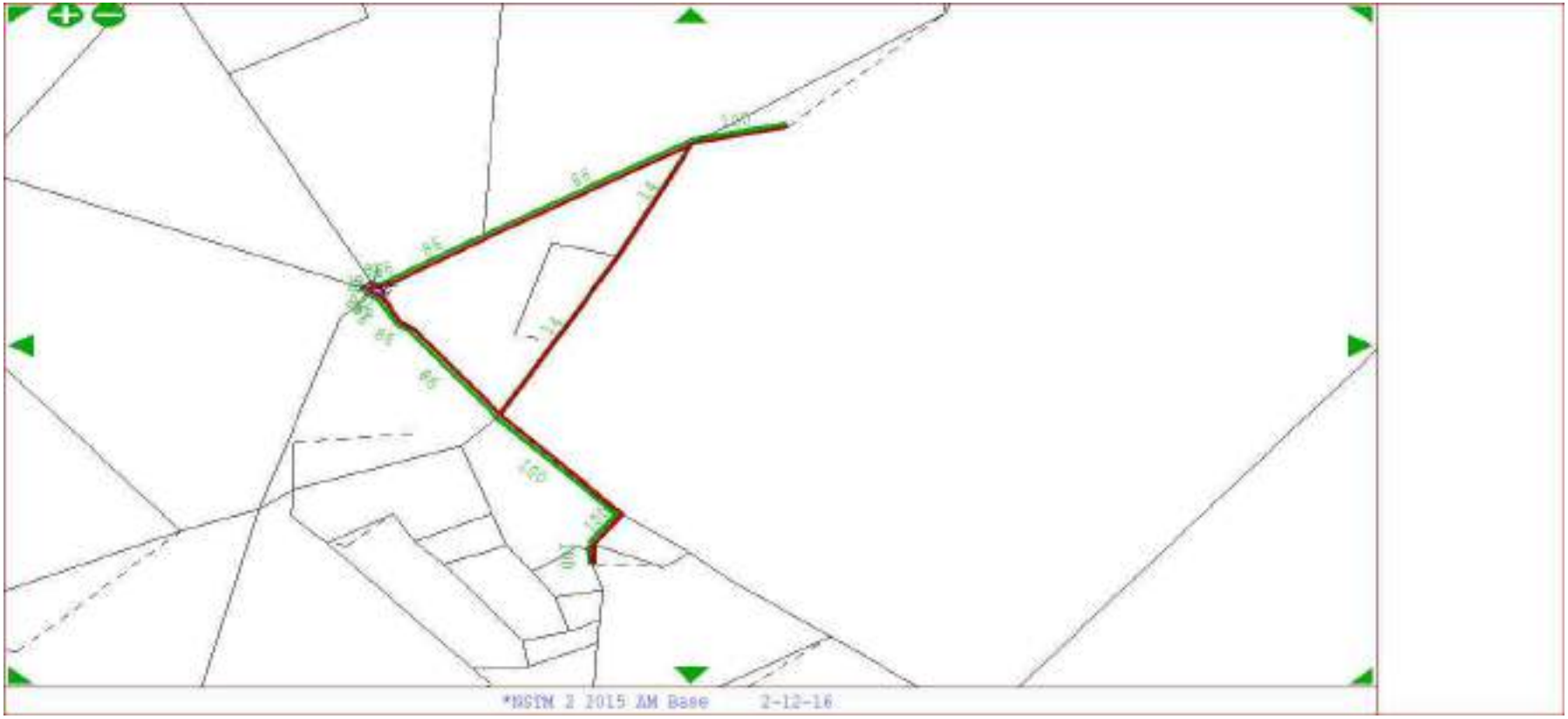
AM Peak

From Towcester To Rail Central Area - User Class 4



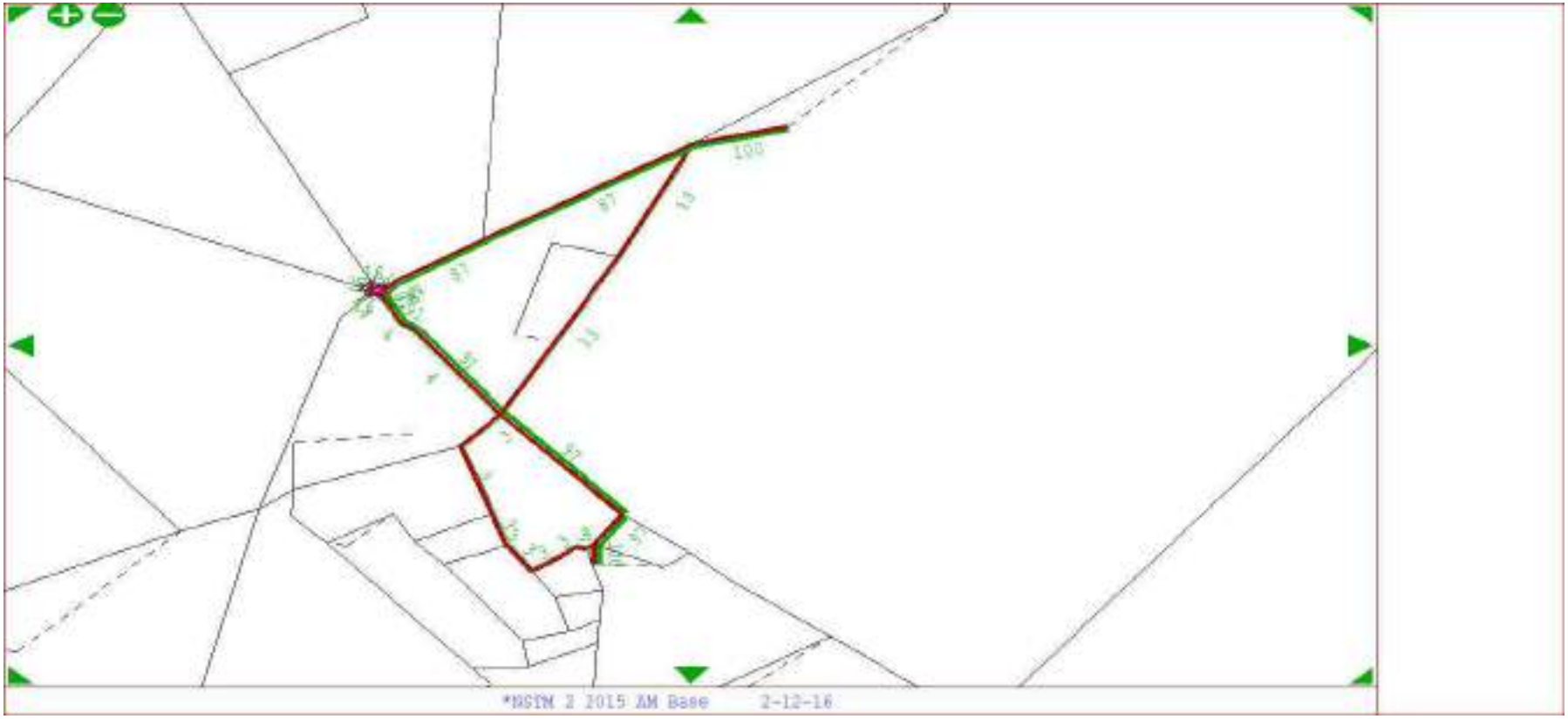
AM Peak

From Towcester To Rail Central Area - User Class 5



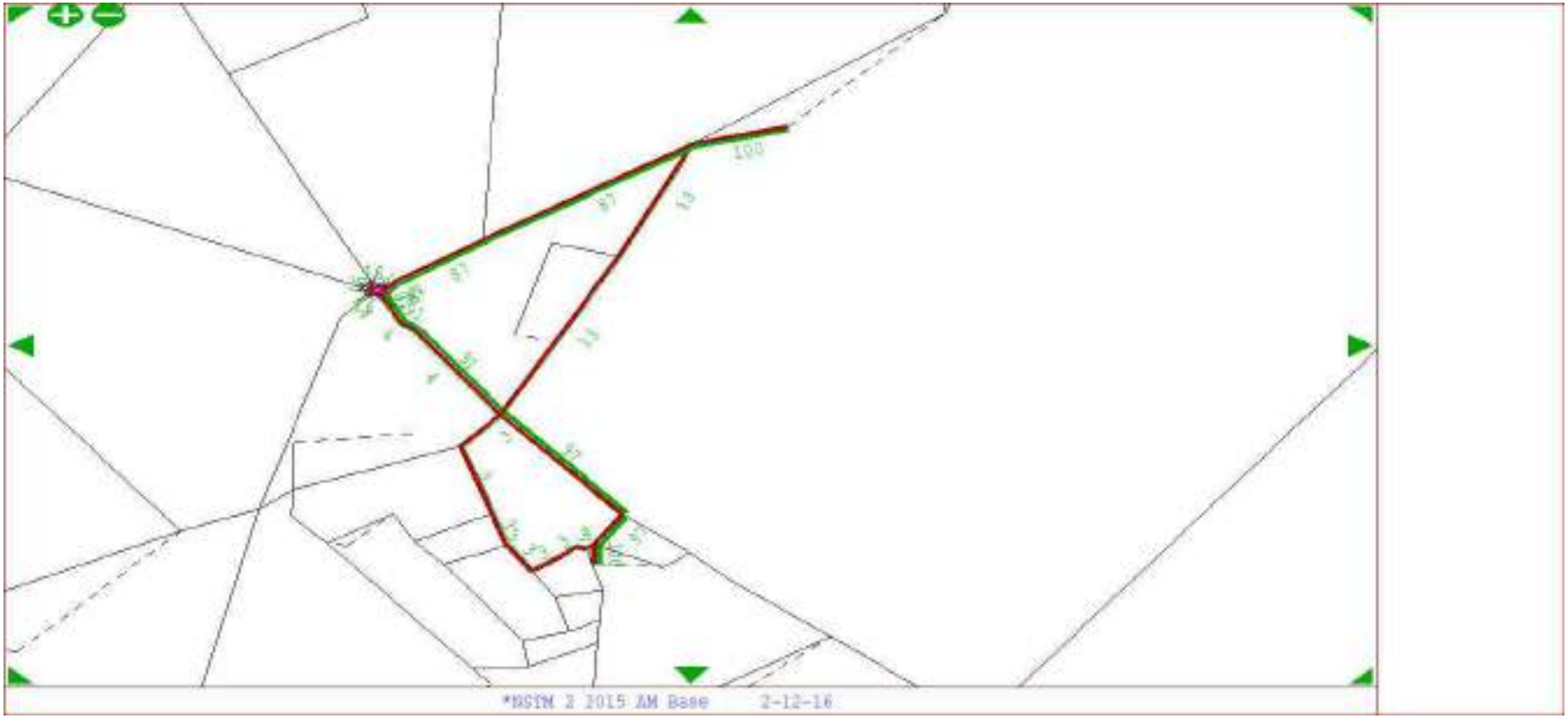
AM Peak

From Rail Central Area To Towcester - User Class 1



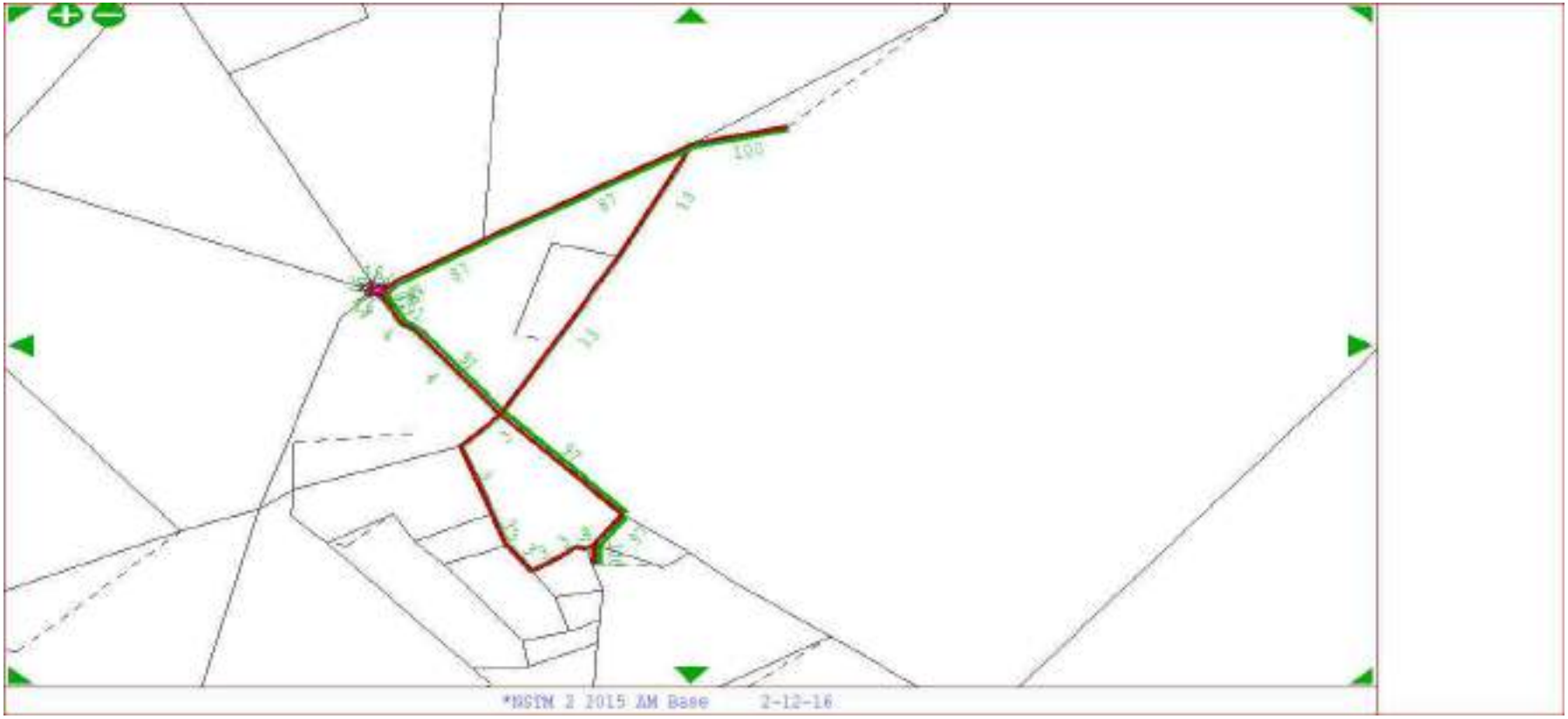
AM Peak

From Rail Central Area To Towcester - User Class 2



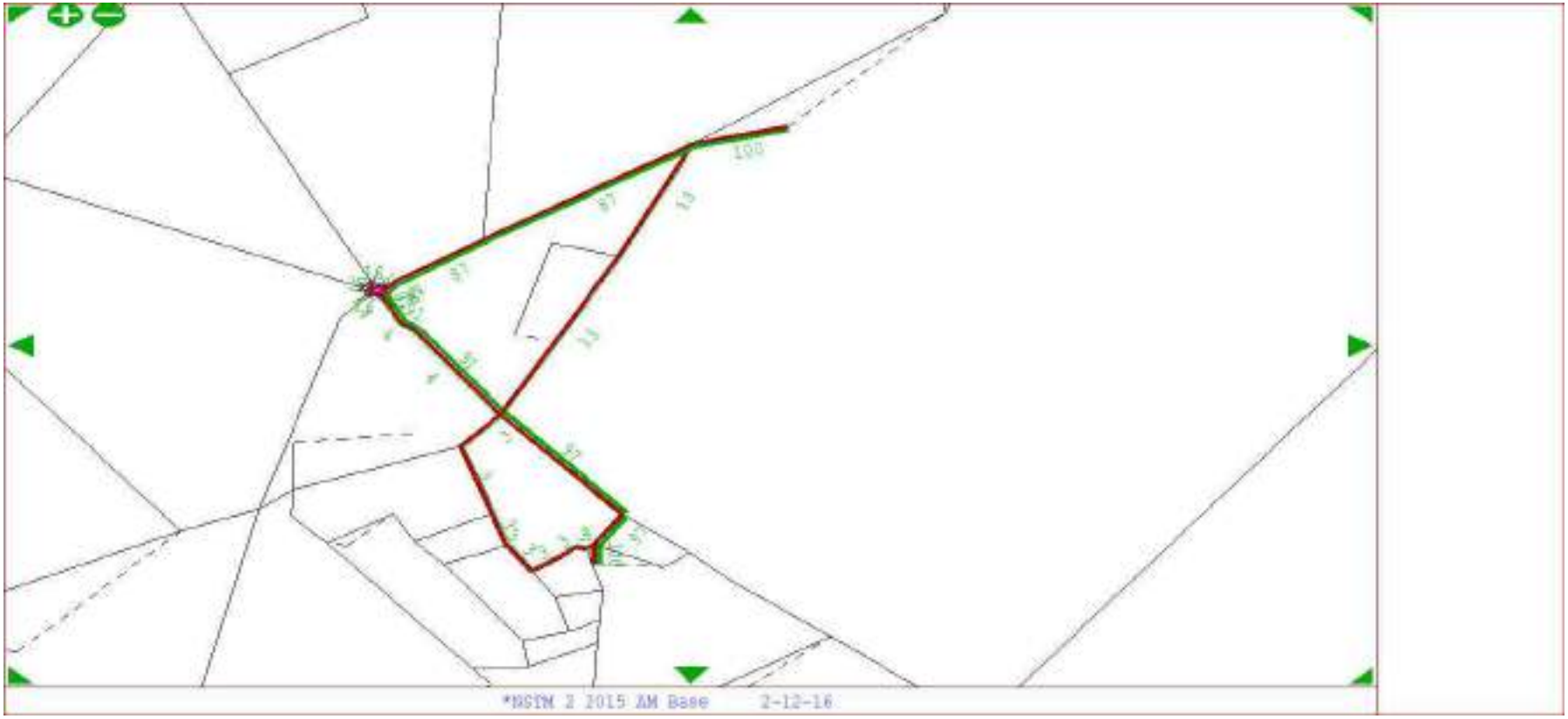
AM Peak

From Rail Central Area To Towcester - User Class 3



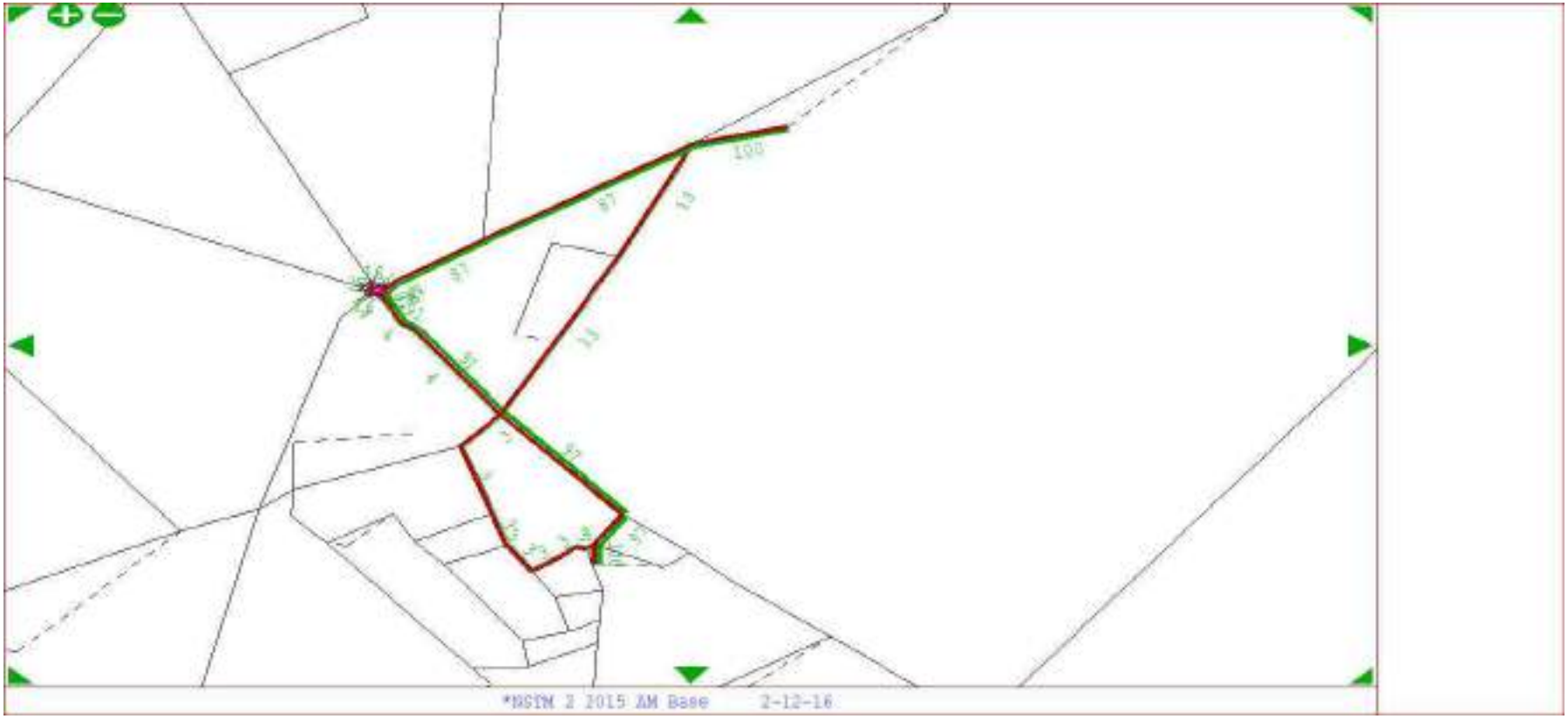
AM Peak

From Rail Central Area To Towcester - User Class 4



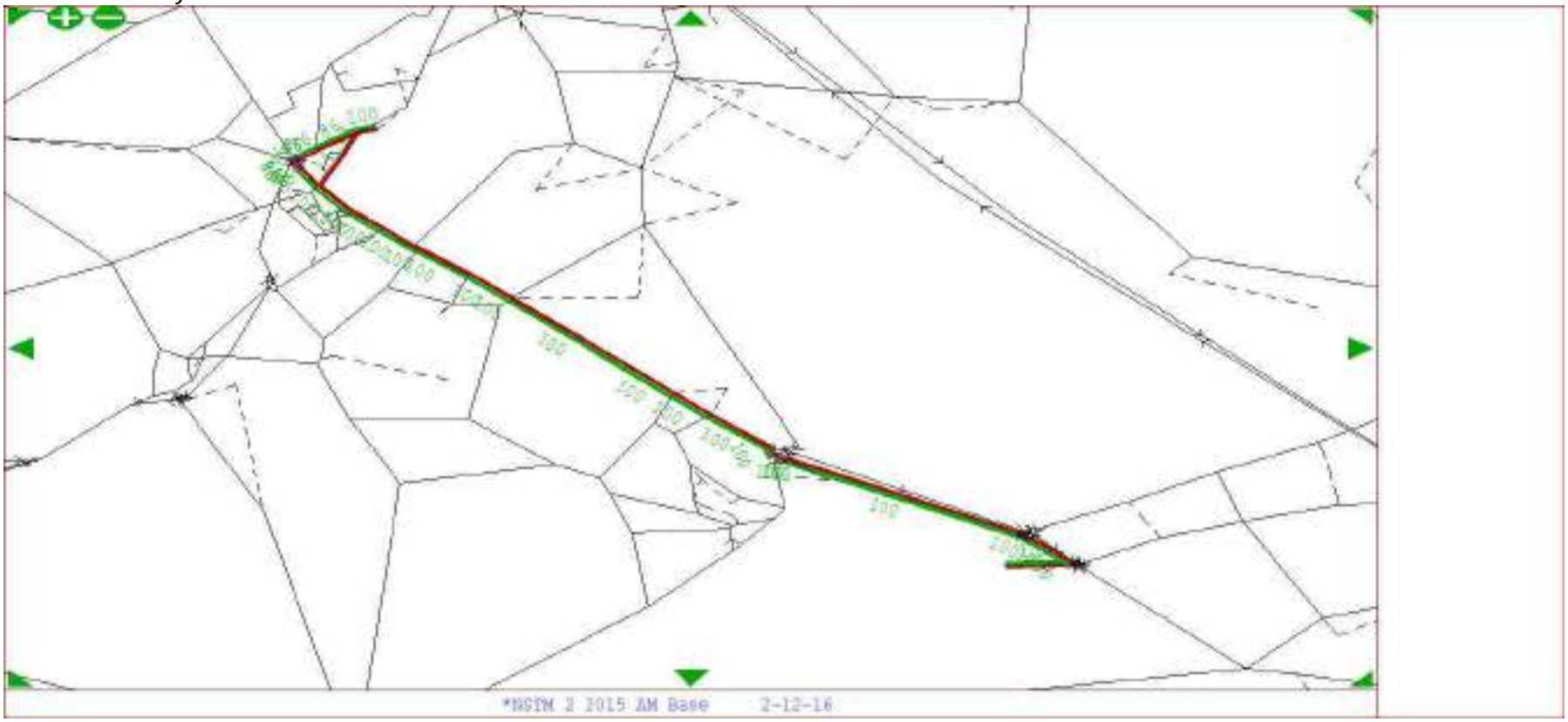
AM Peak

From Rail Central Area To Towcester - User Class 5



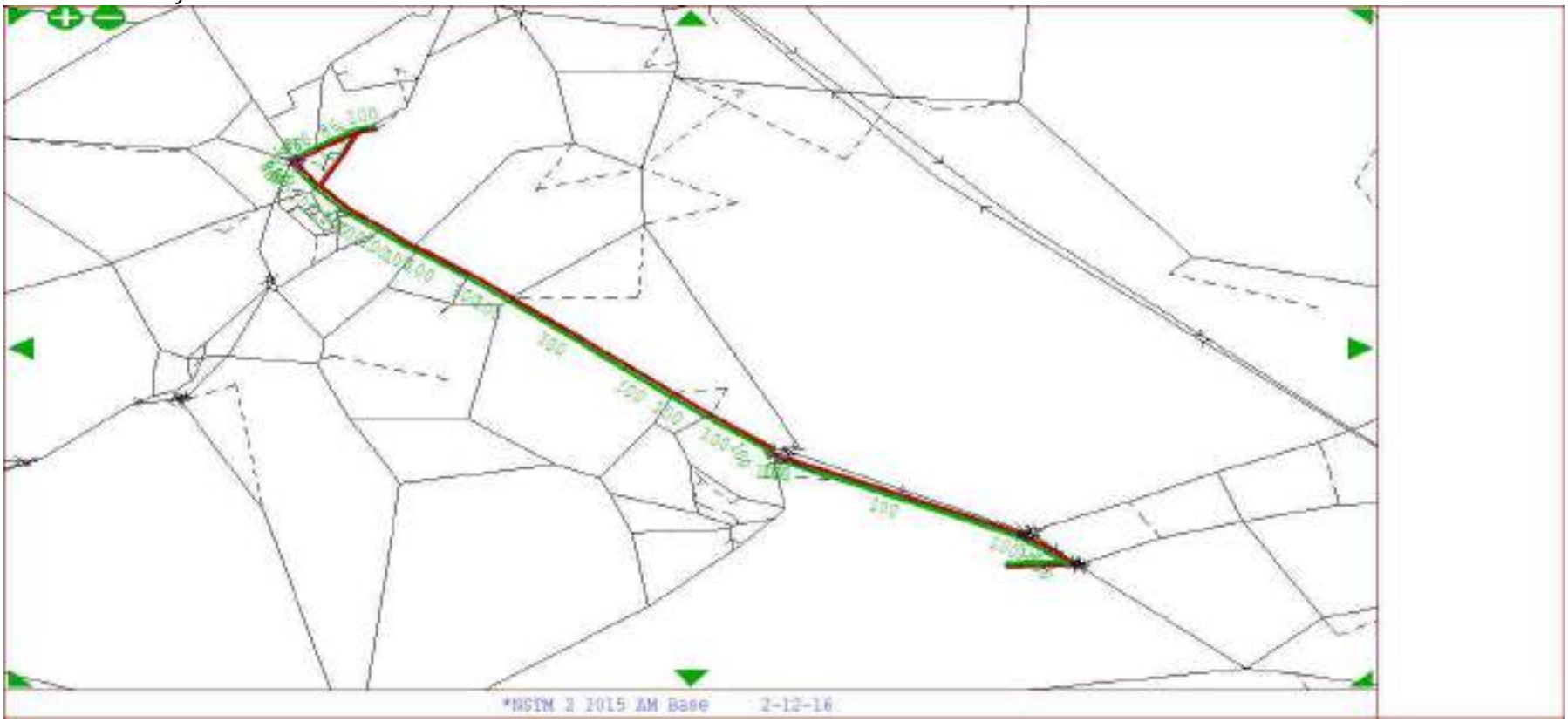
AM Peak

From Milton Keynes To Rail Central Area - User Class 1



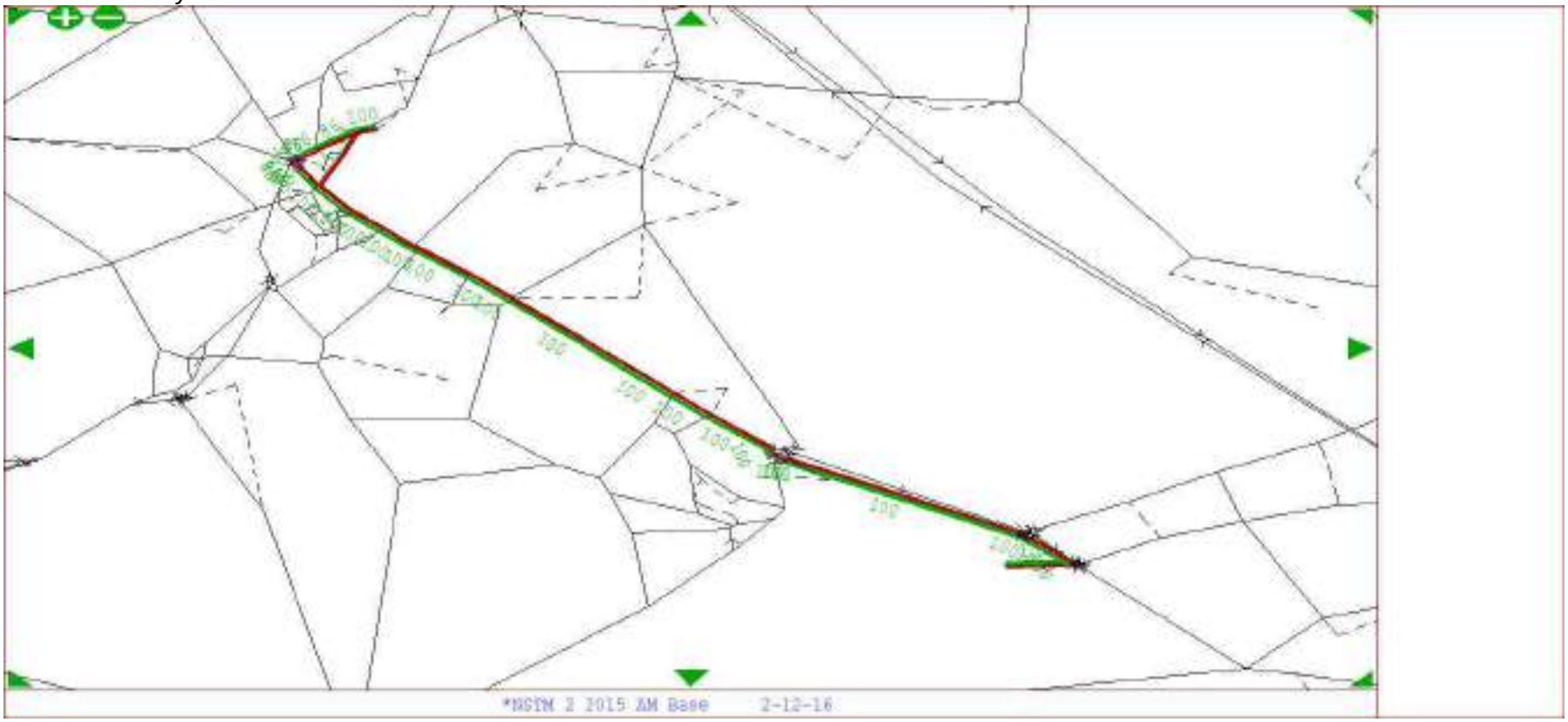
AM Peak

From Milton Keynes To Rail Central Area - User Class 2



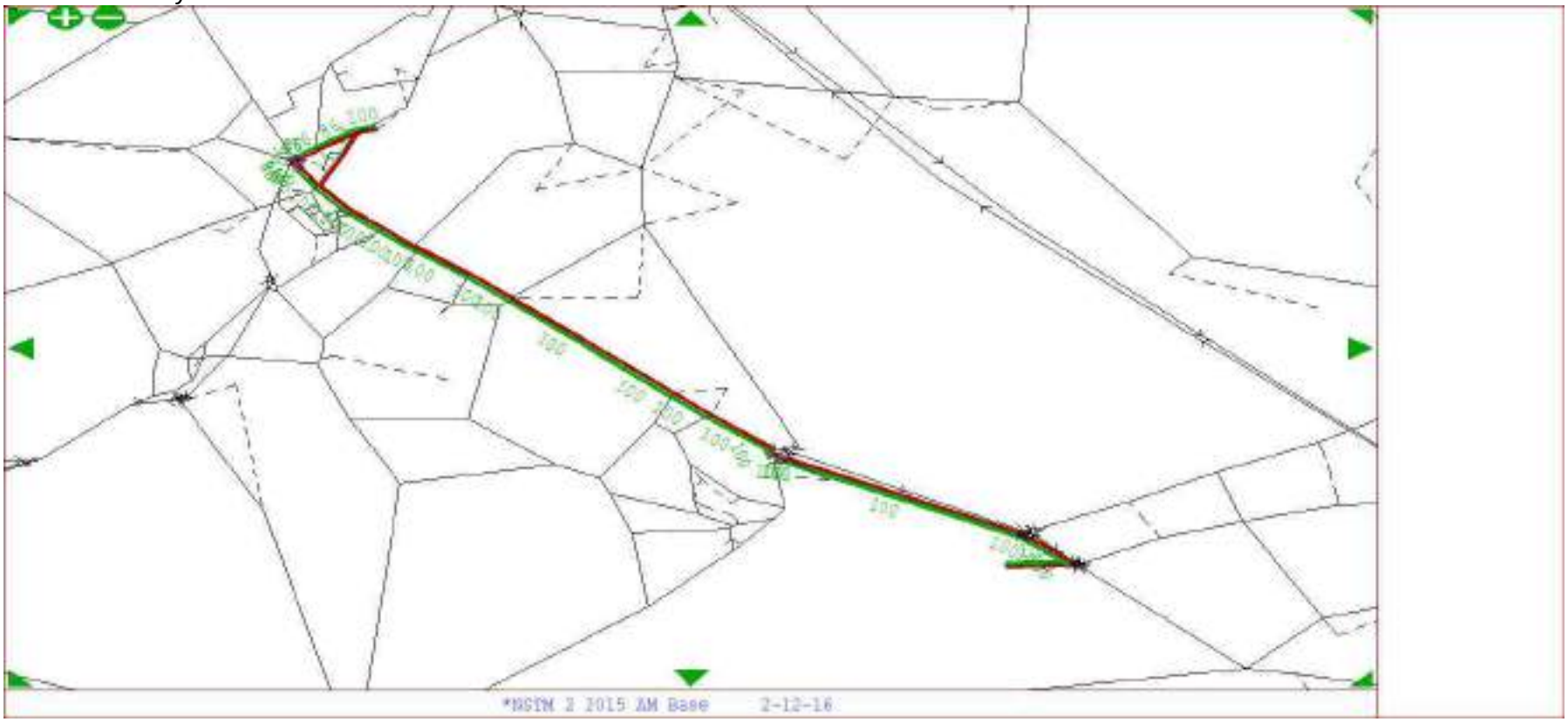
AM Peak

From Milton Keynes To Rail Central Area - User Class 3



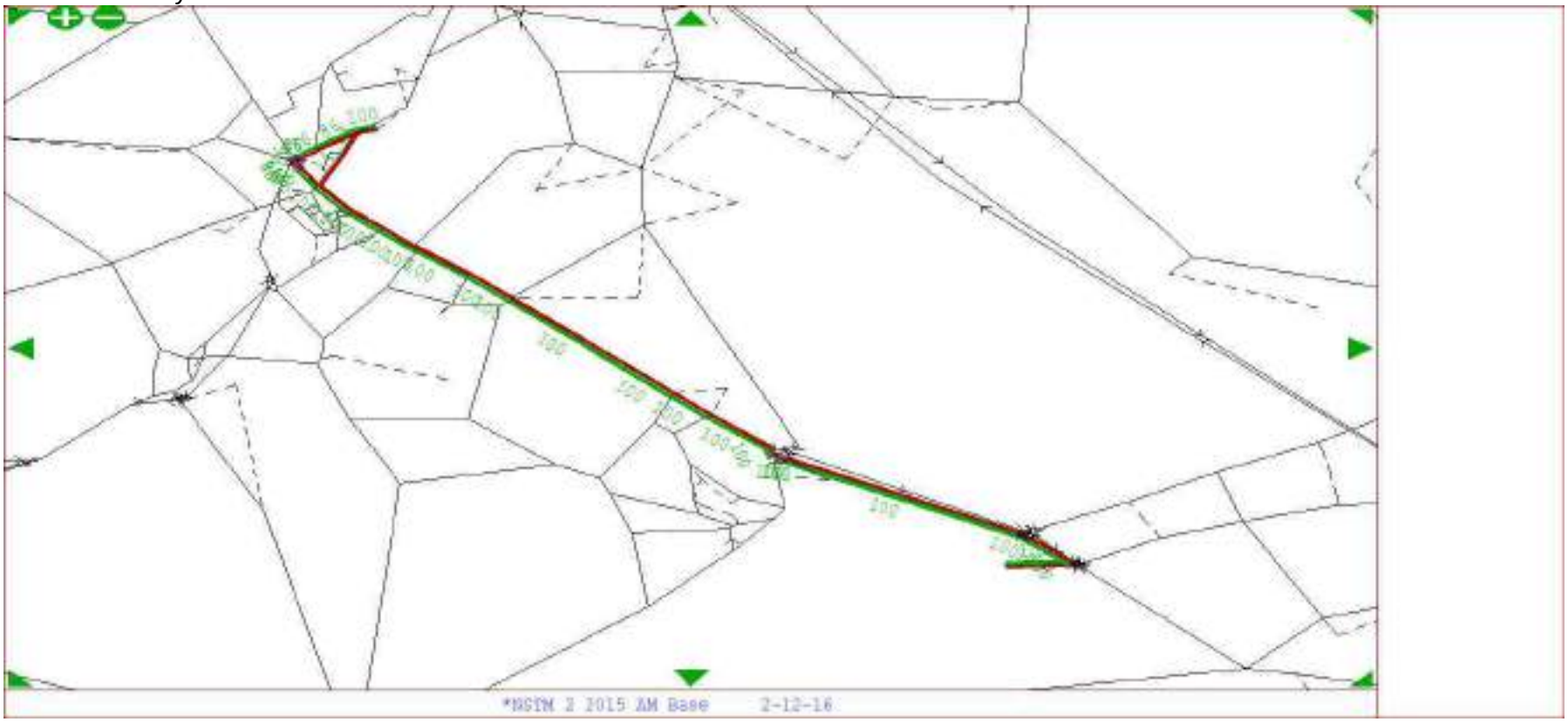
AM Peak

From Milton Keynes To Rail Central Area - User Class 4



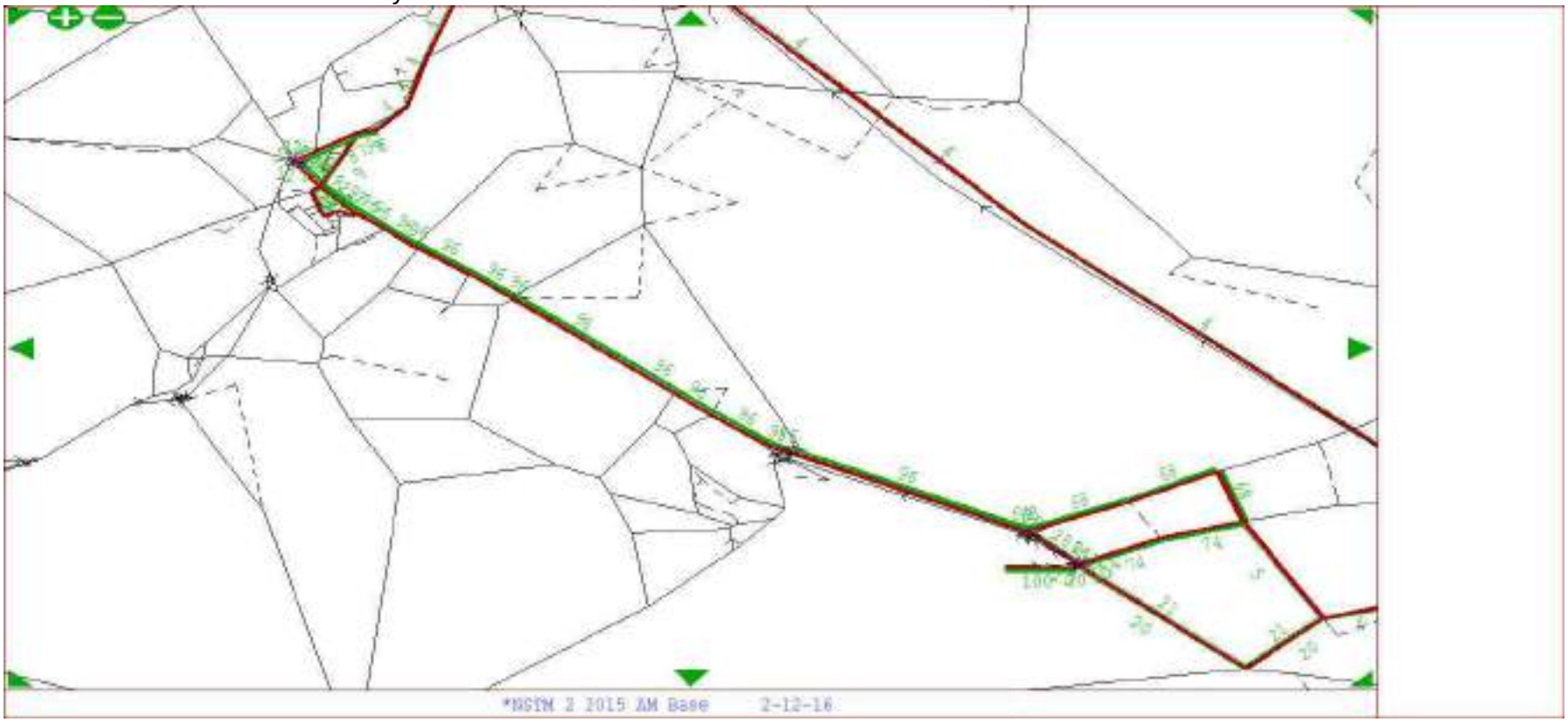
AM Peak

From Milton Keynes To Rail Central Area - User Class 5



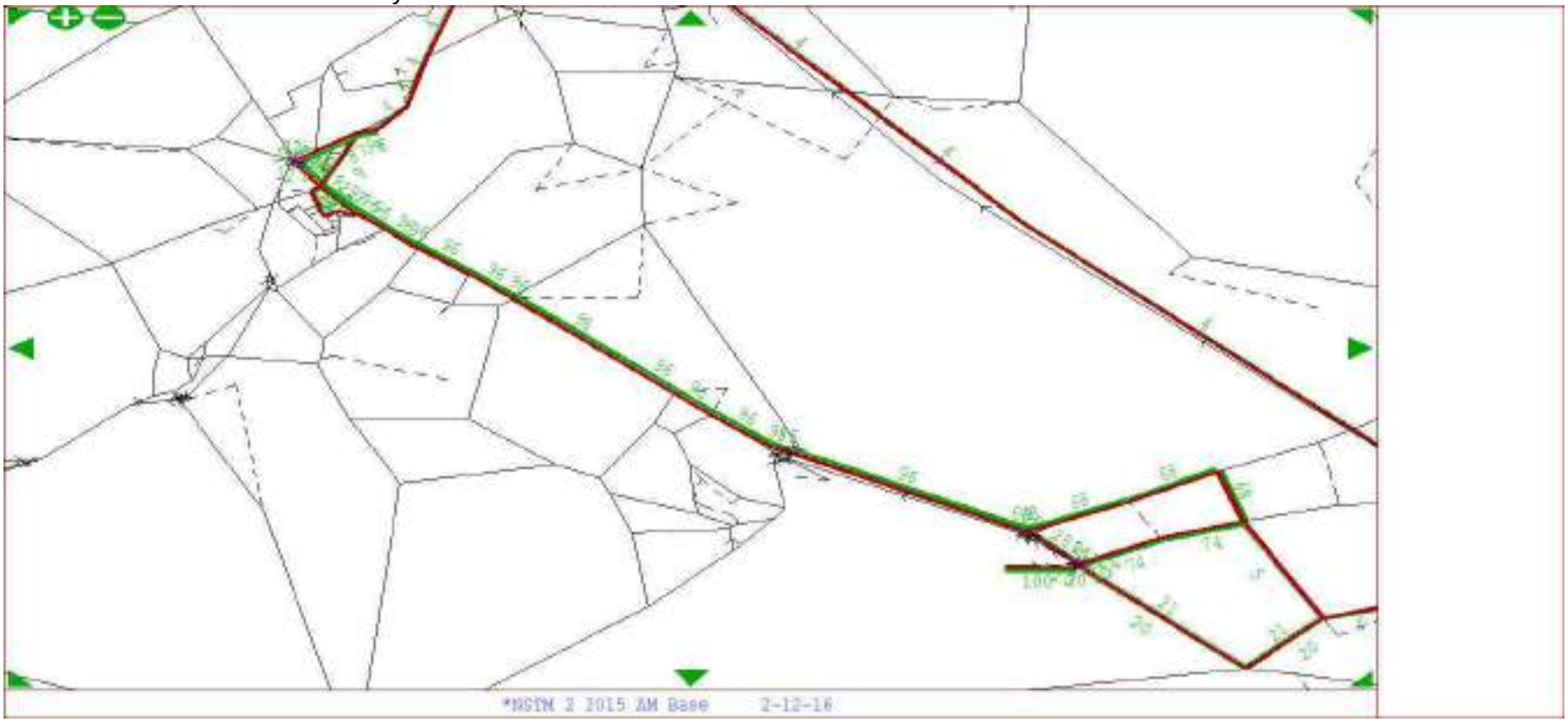
AM Peak

From Rail Central Area To Milton Keynes - User Class 1



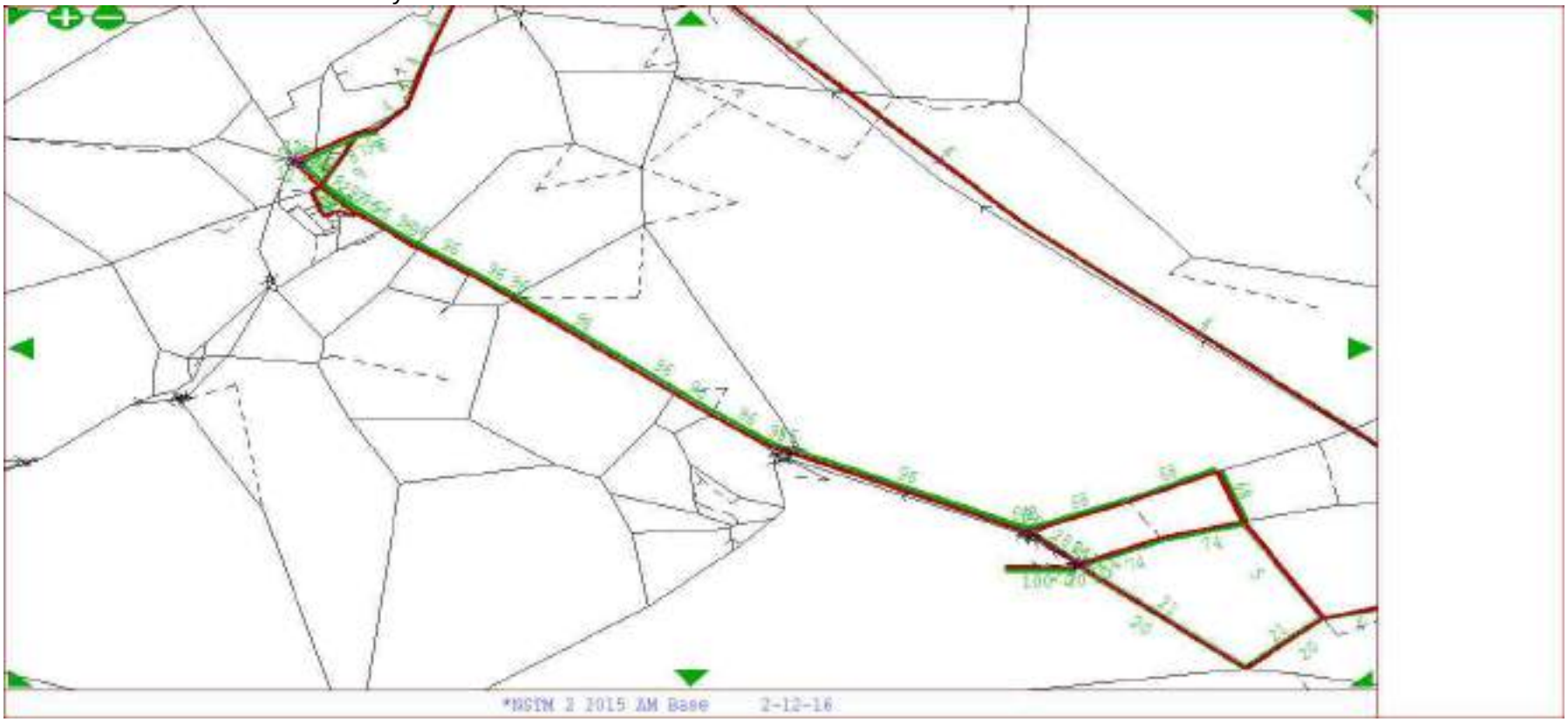
AM Peak

From Rail Central Area To Milton Keynes - User Class 2



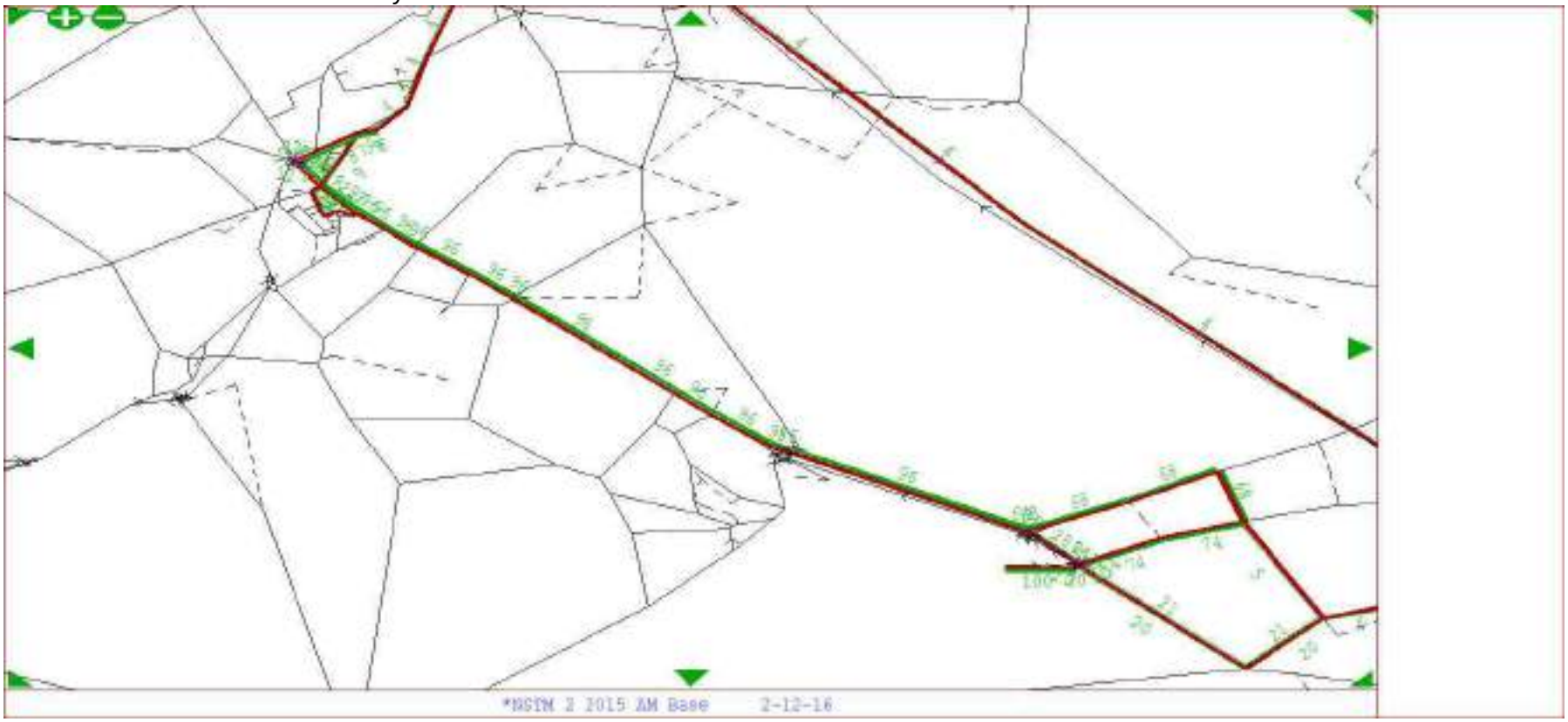
AM Peak

From Rail Central Area To Milton Keynes - User Class 3



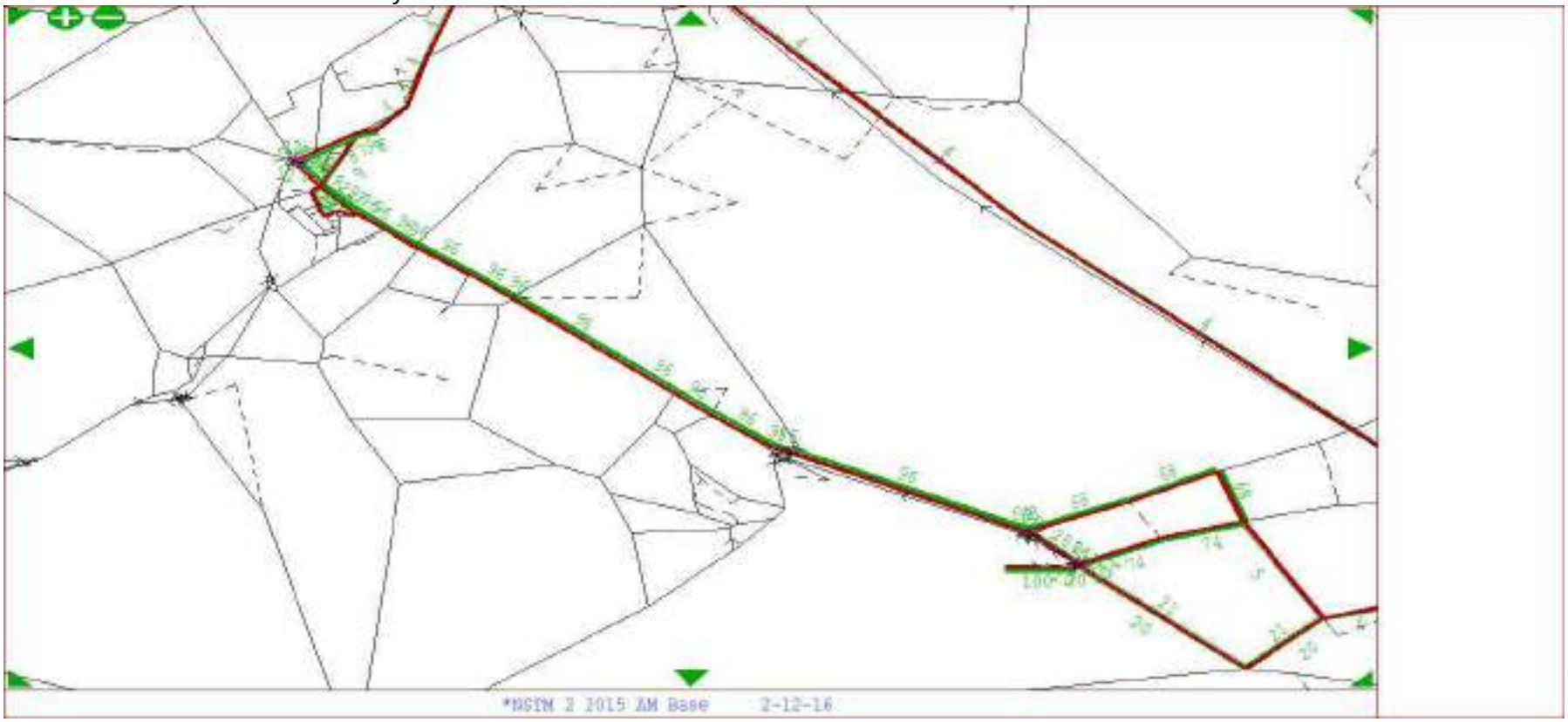
AM Peak

From Rail Central Area To Milton Keynes - User Class 4



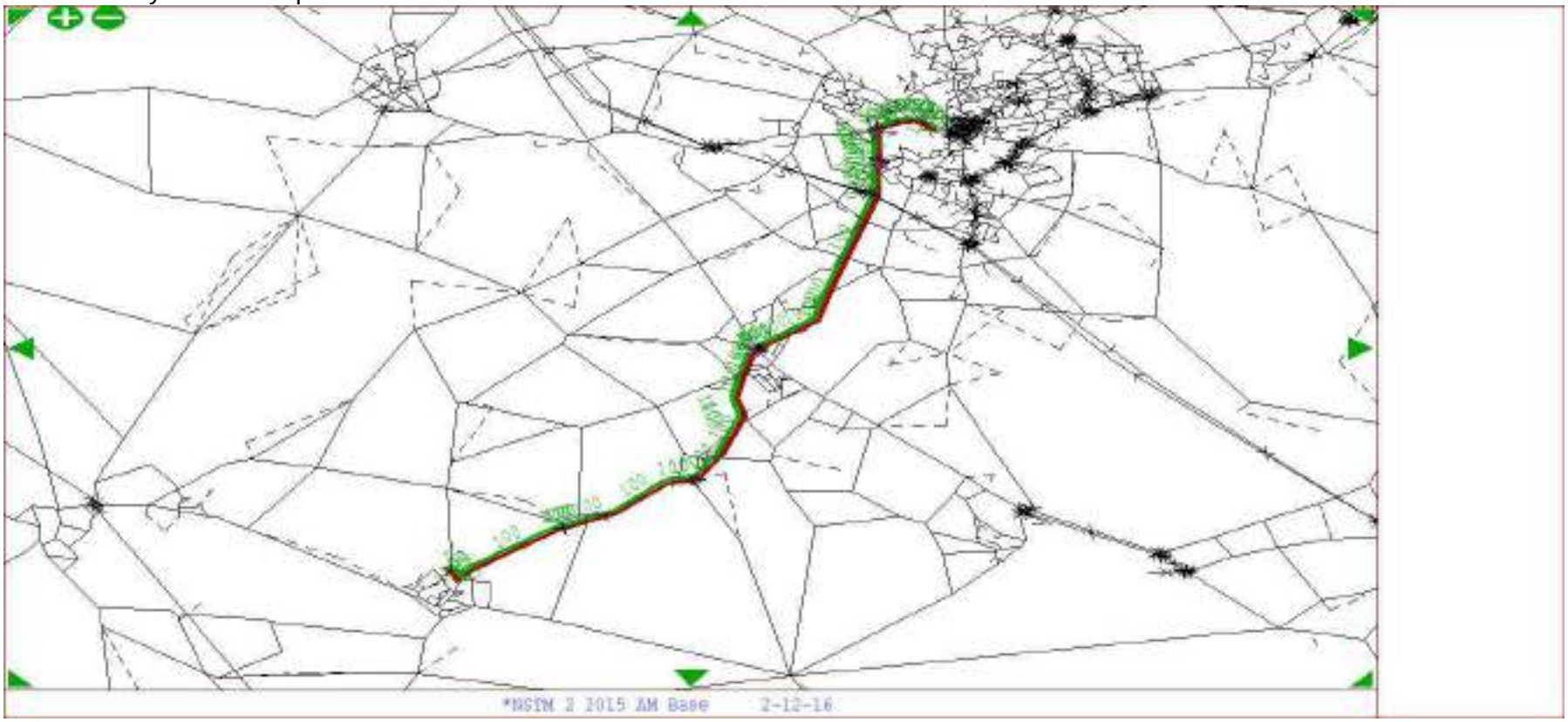
AM Peak

From Rail Central Area To Milton Keynes - User Class 5



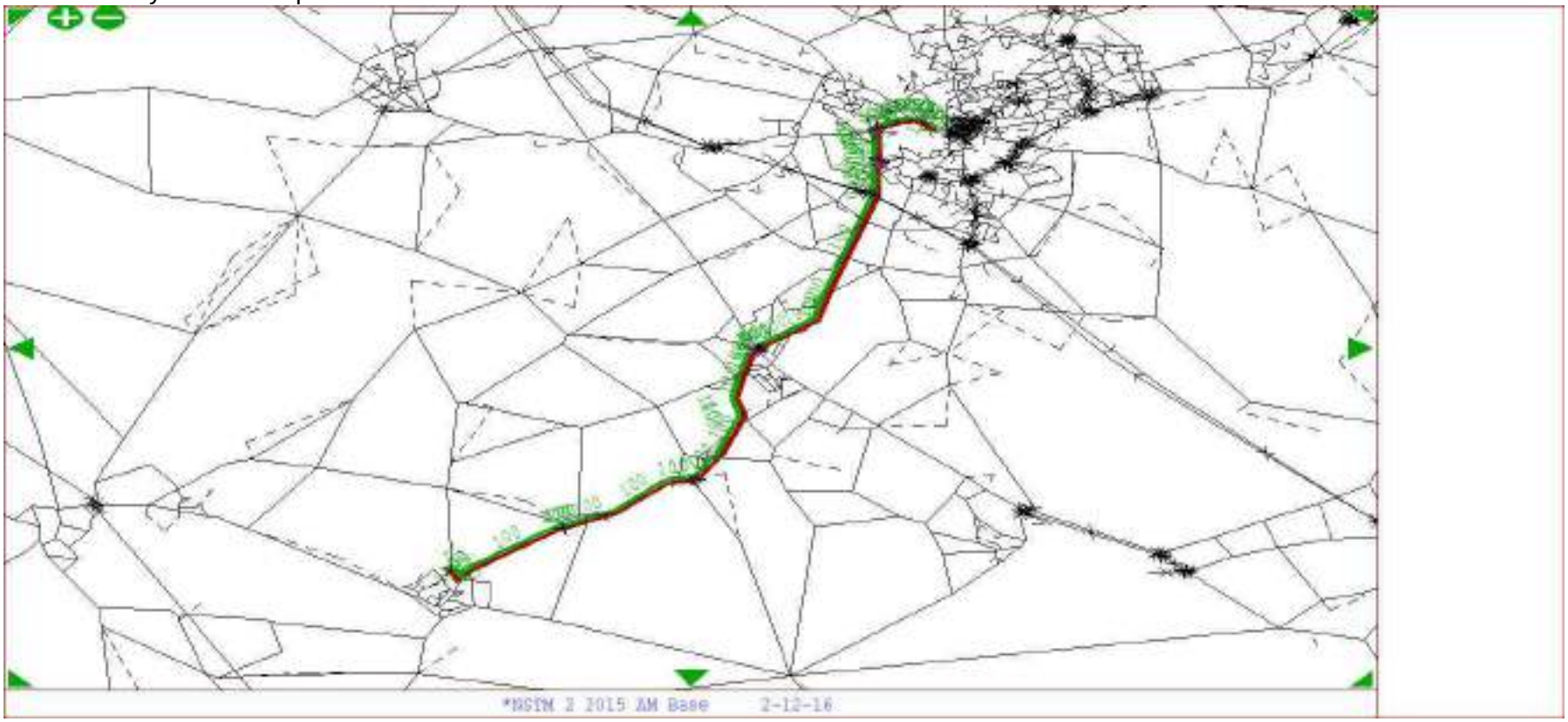
AM Peak

From Brackley To Northampton - User Class 1



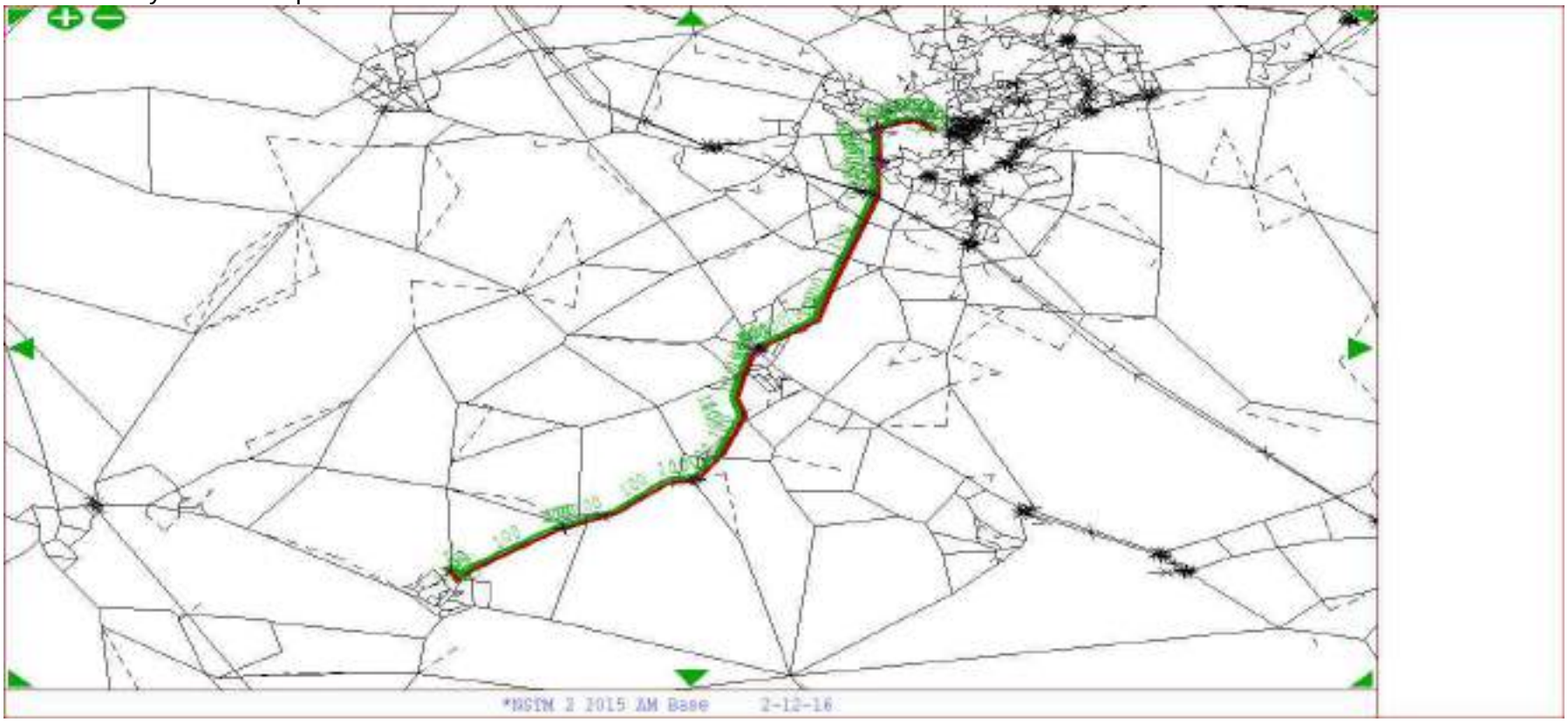
AM Peak

From Brackley To Northampton - User Class 2



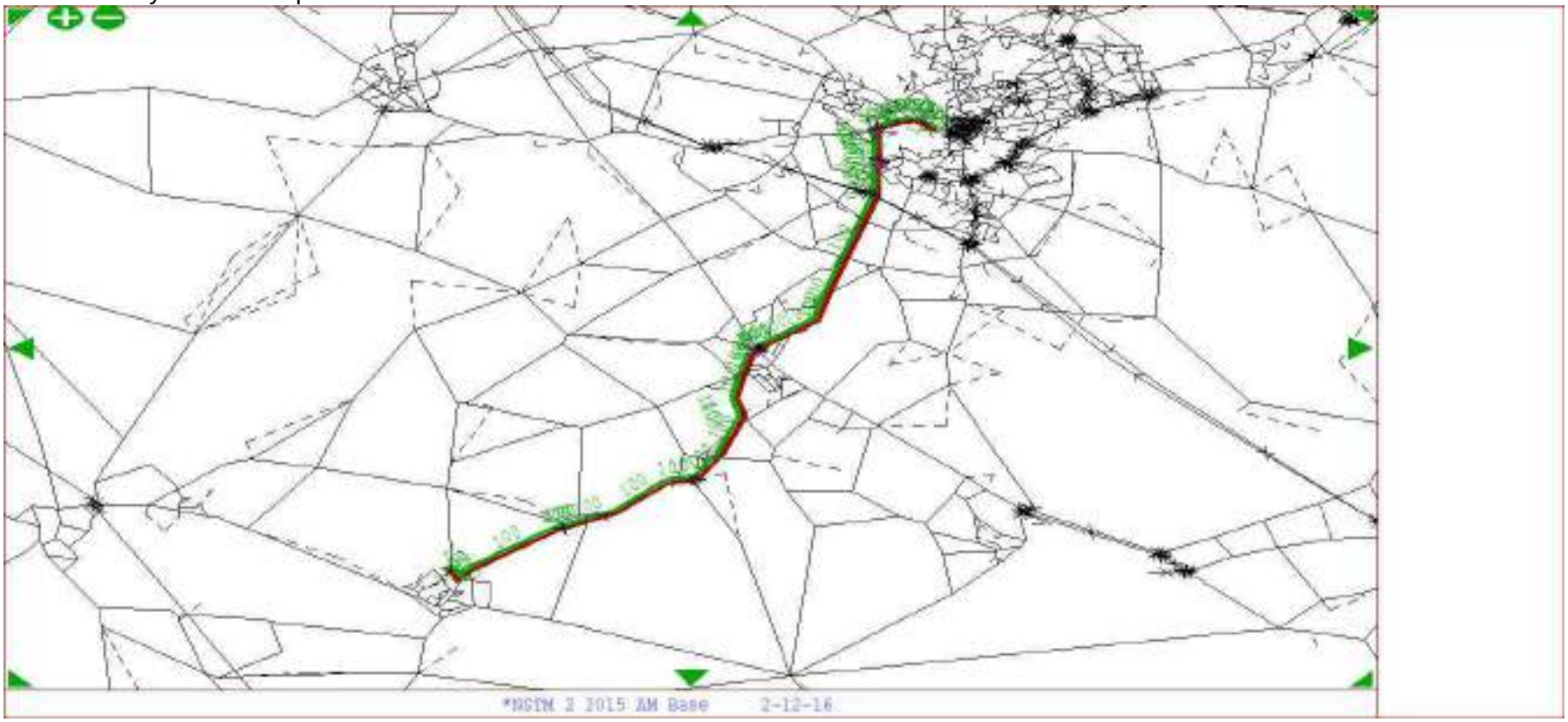
AM Peak

From Brackley To Northampton - User Class 3



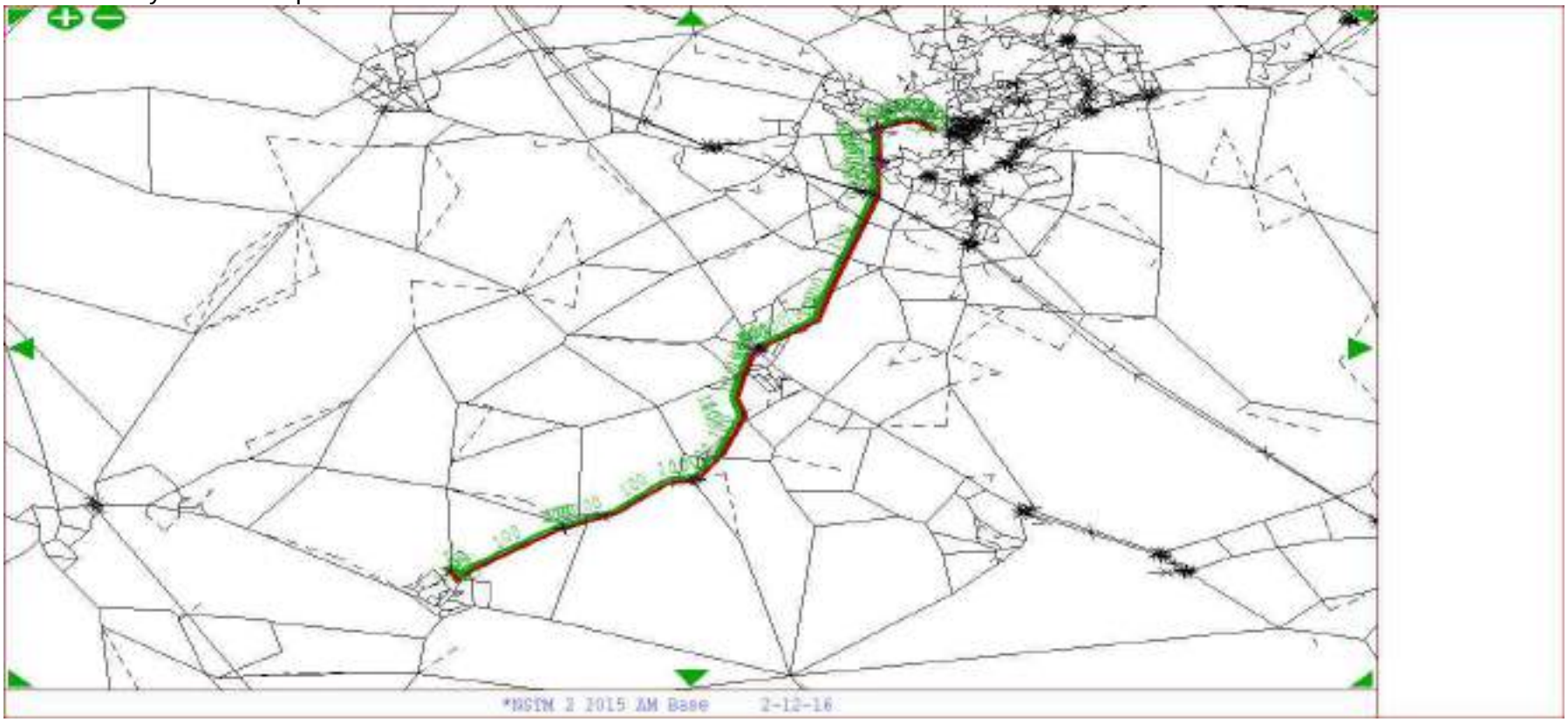
AM Peak

From Brackley To Northampton - User Class 4



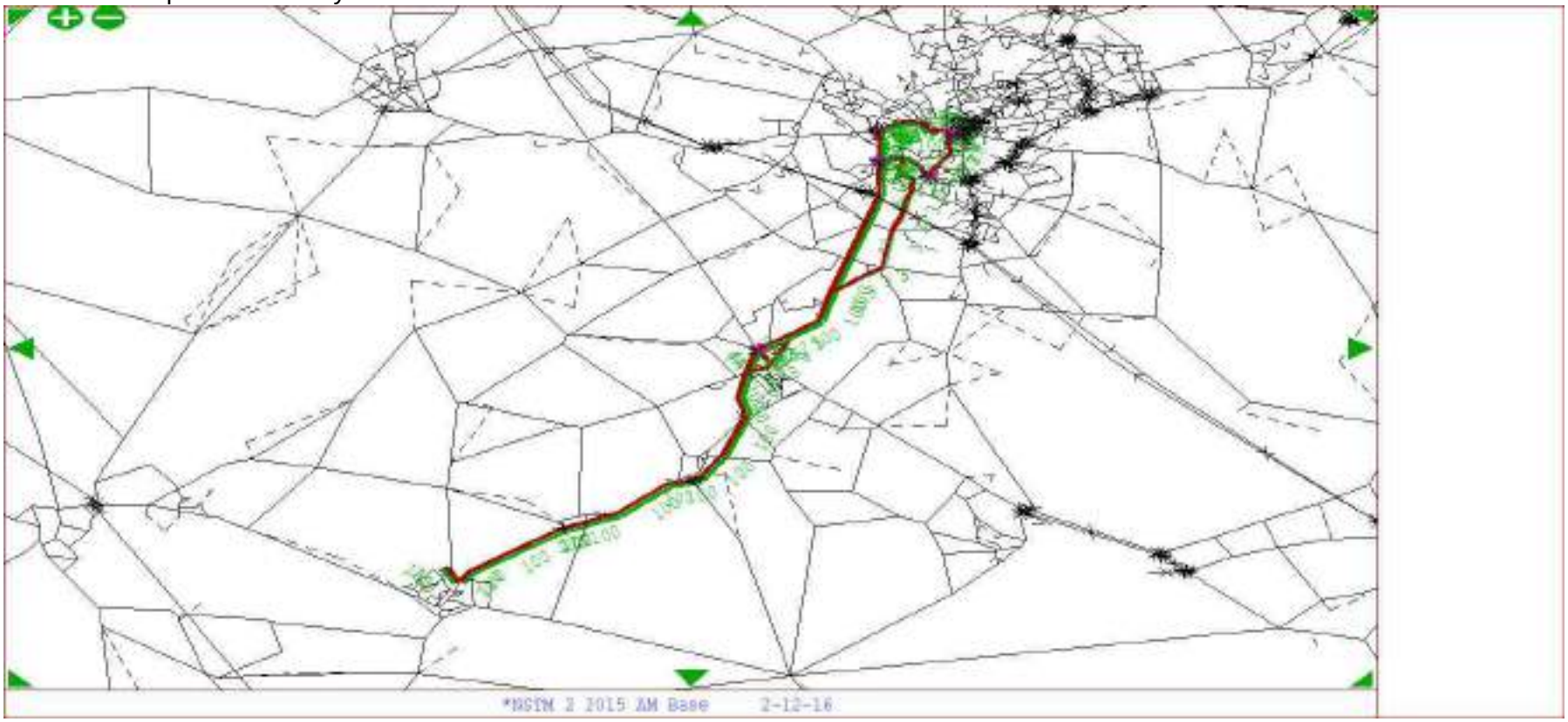
AM Peak

From Brackley To Northampton - User Class 5



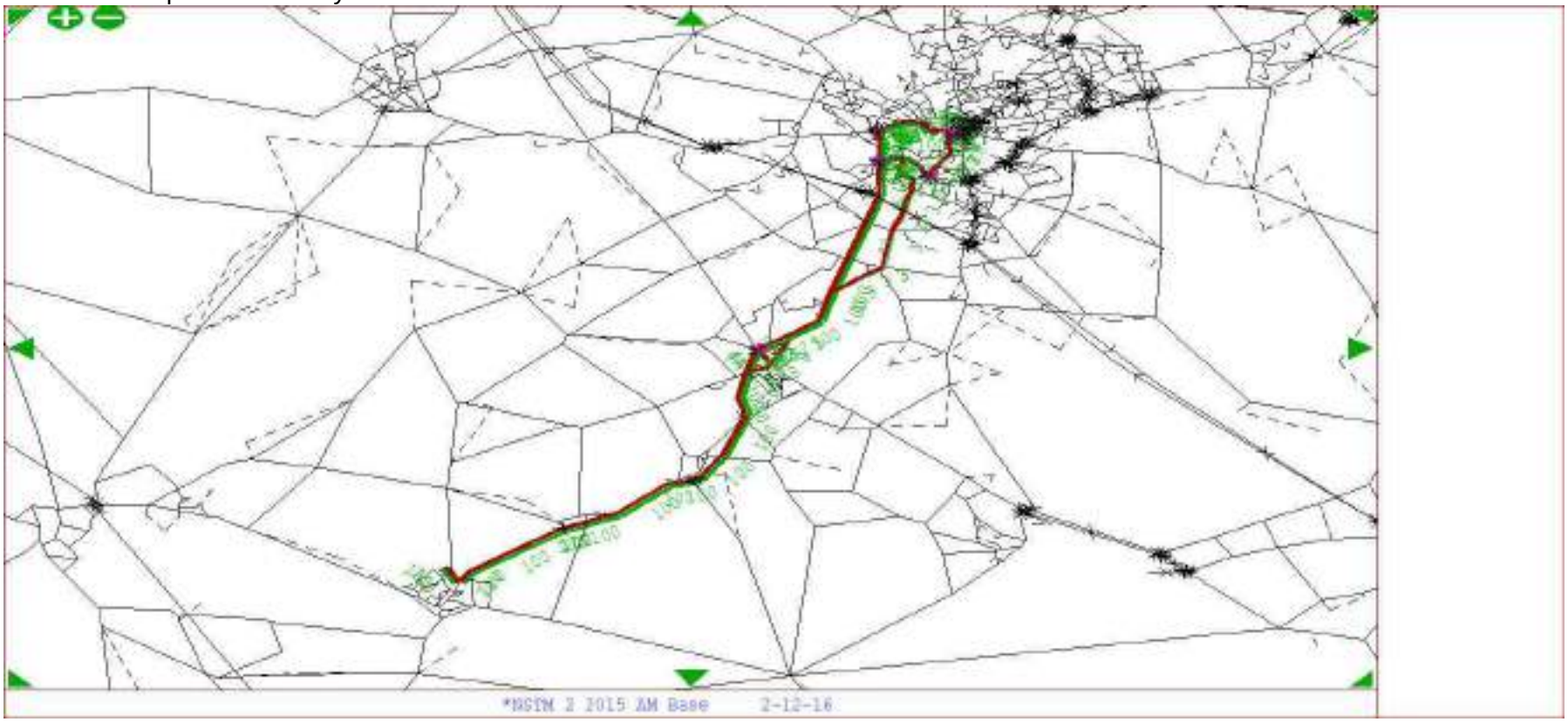
AM Peak

From Northampton To Brackley - User Class 1



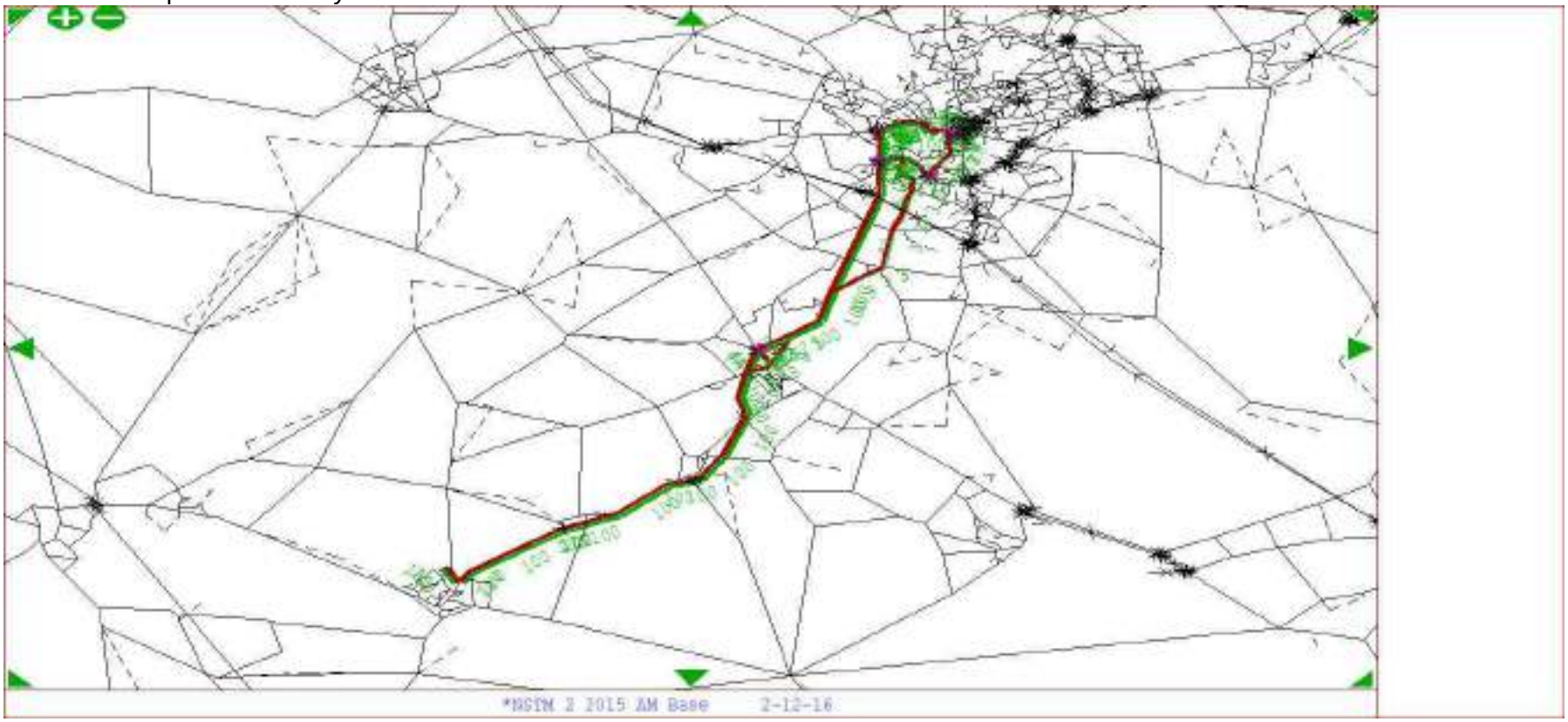
AM Peak

From Northampton To Brackley - User Class 2



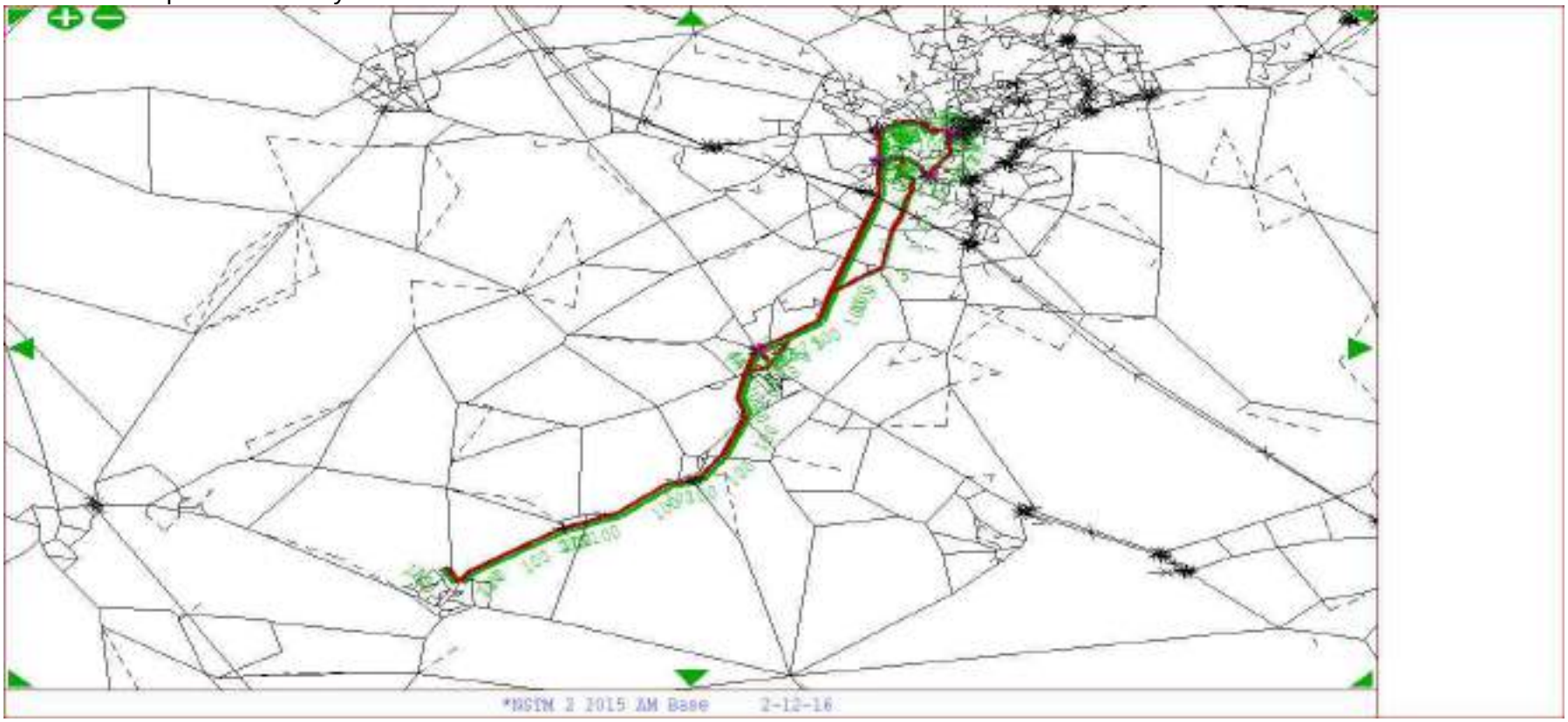
AM Peak

From Northampton To Brackley - User Class 3



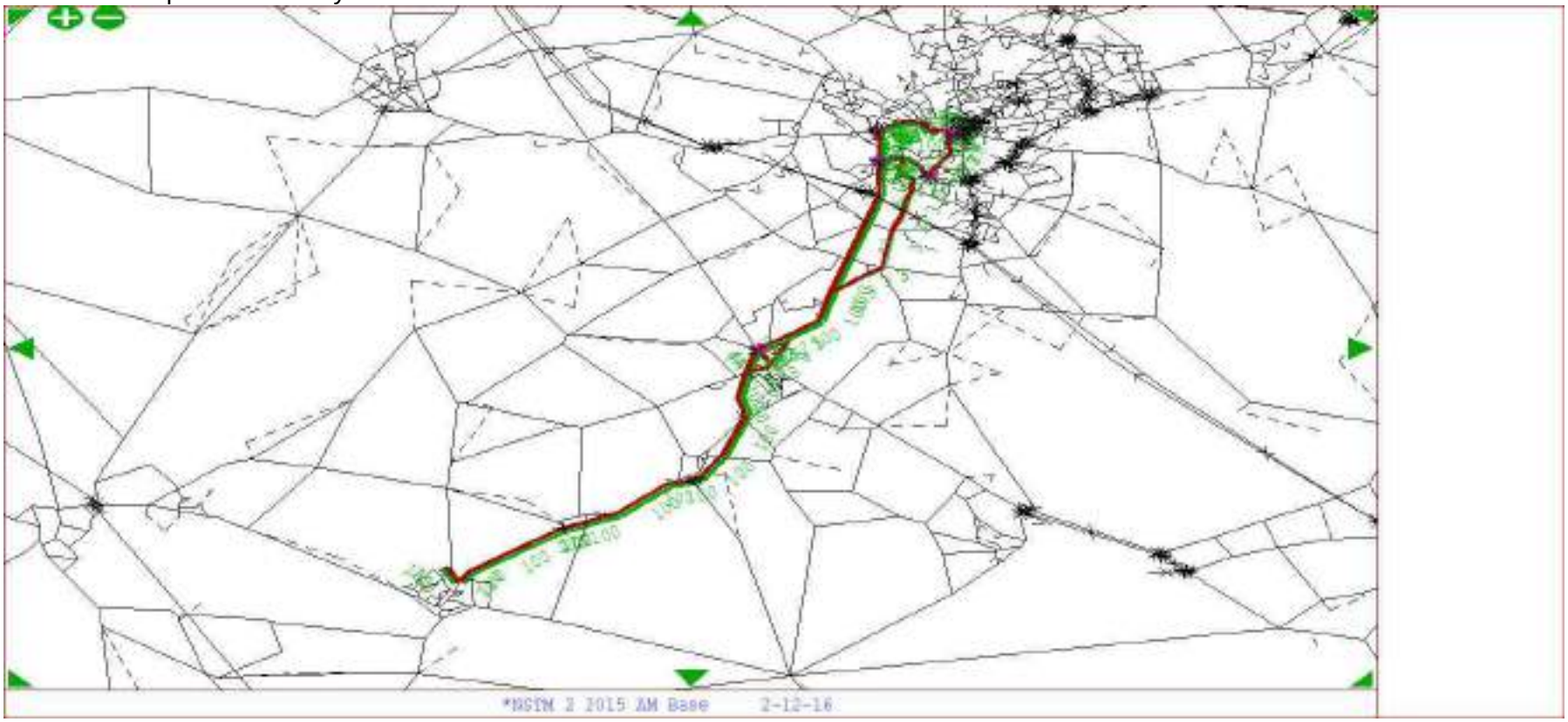
AM Peak

From Northampton To Brackley - User Class 4



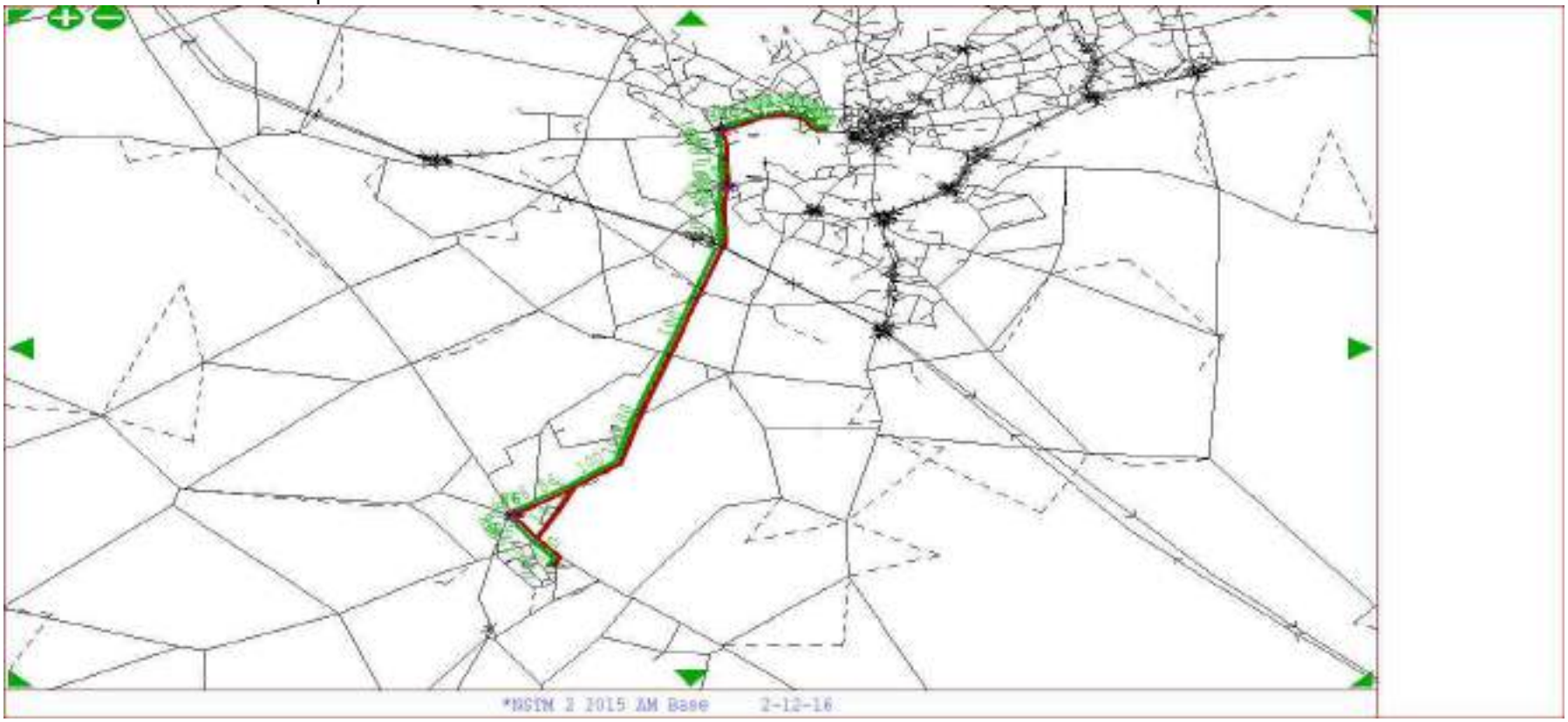
AM Peak

From Northampton To Brackley - User Class 5



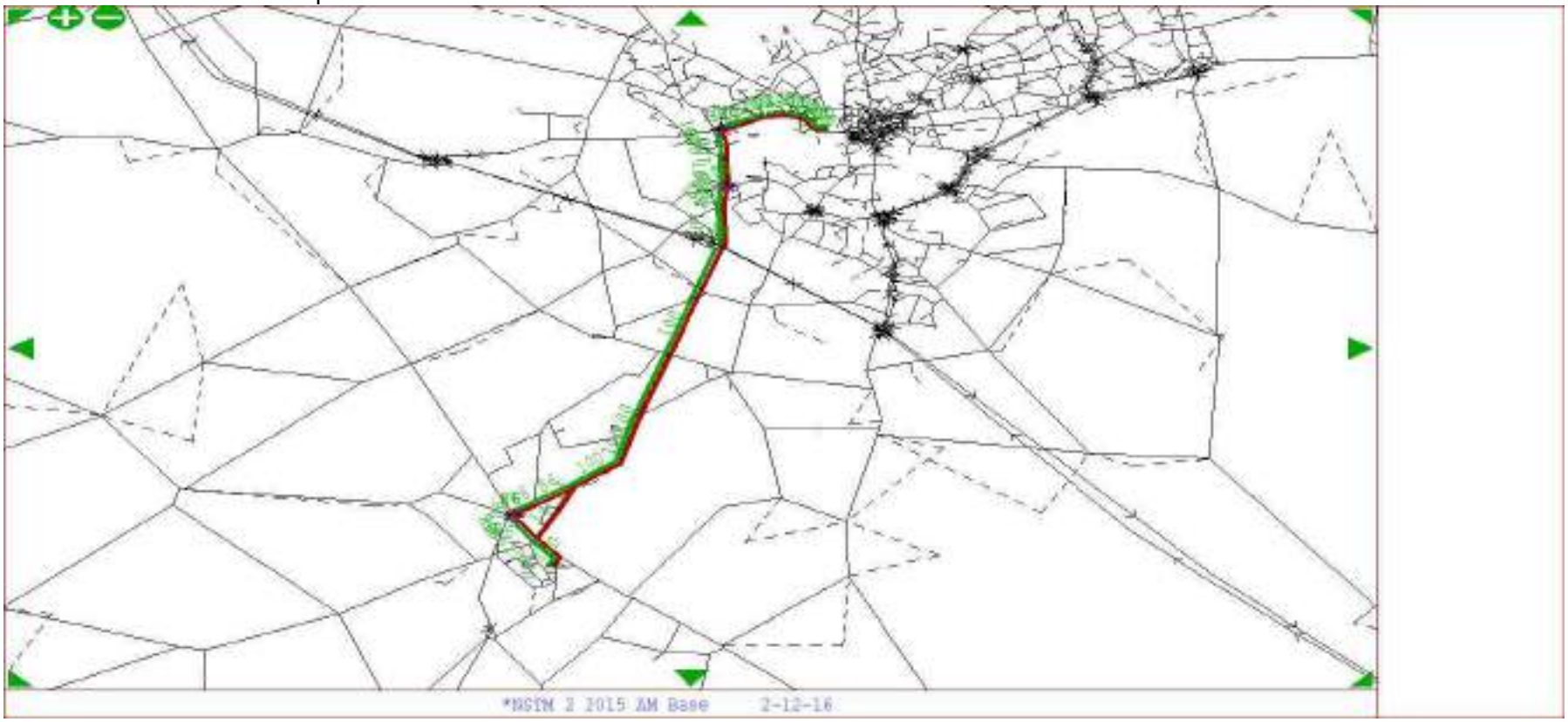
AM Peak

From Towcester To Northampton - User Class 1



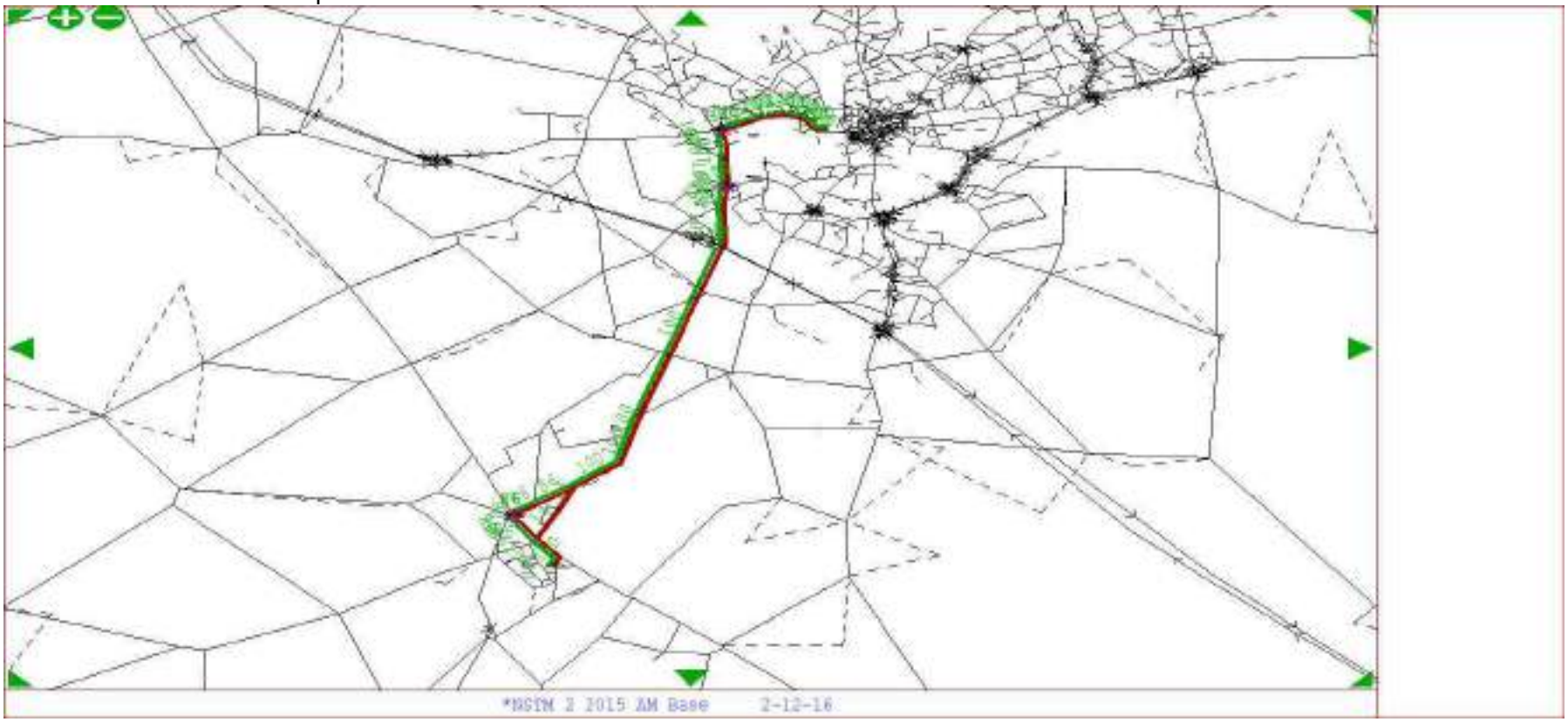
AM Peak

From Towcester To Northampton - User Class 2



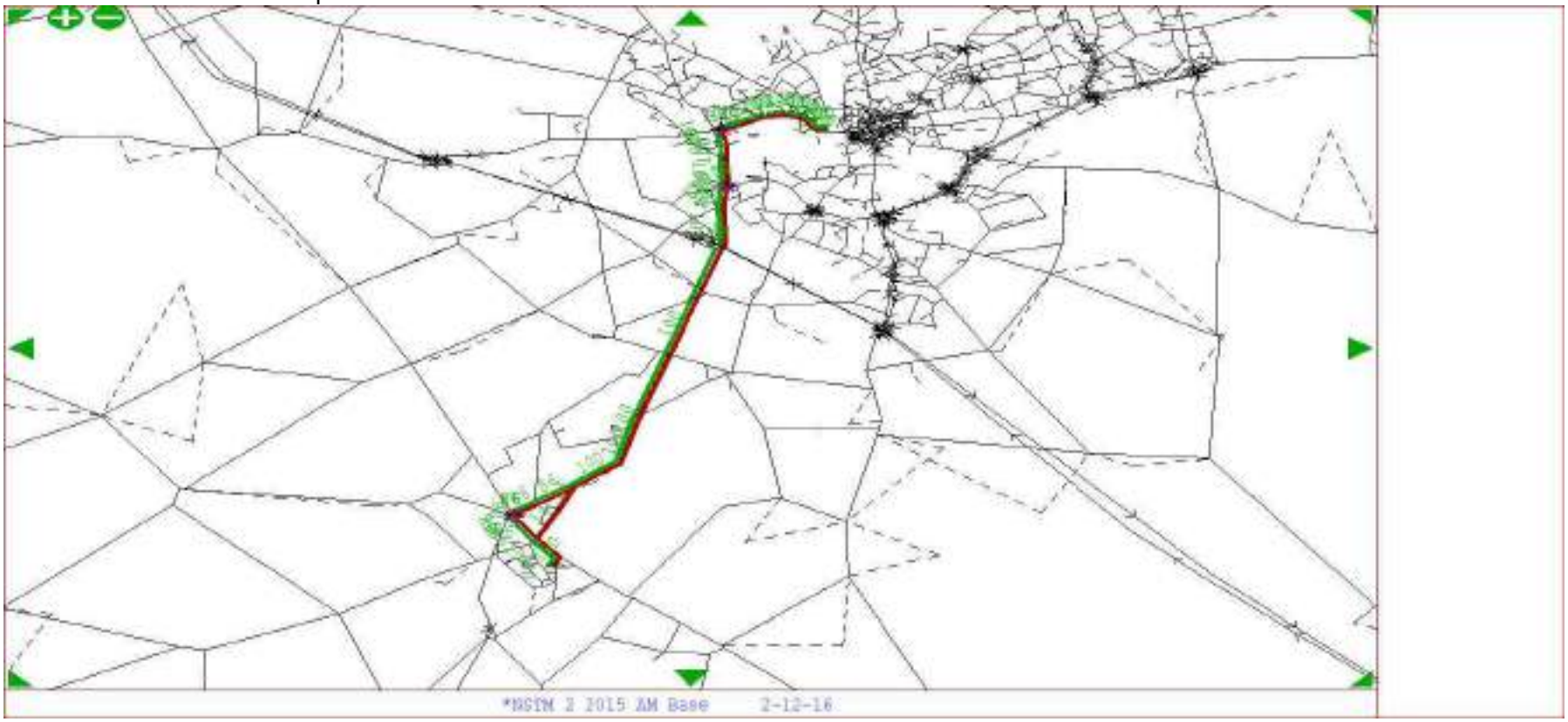
AM Peak

From Towcester To Northampton - User Class 3



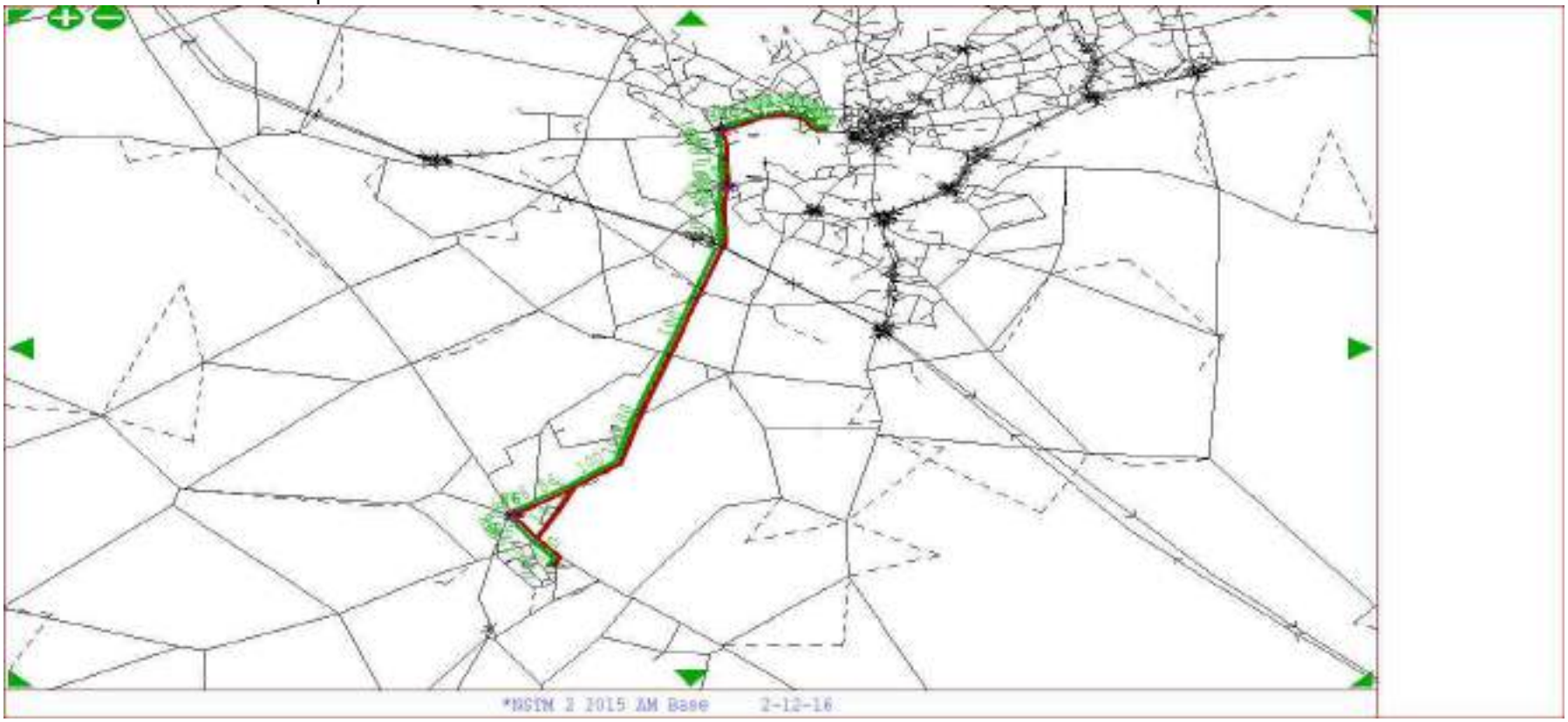
AM Peak

From Towcester To Northampton - User Class 4



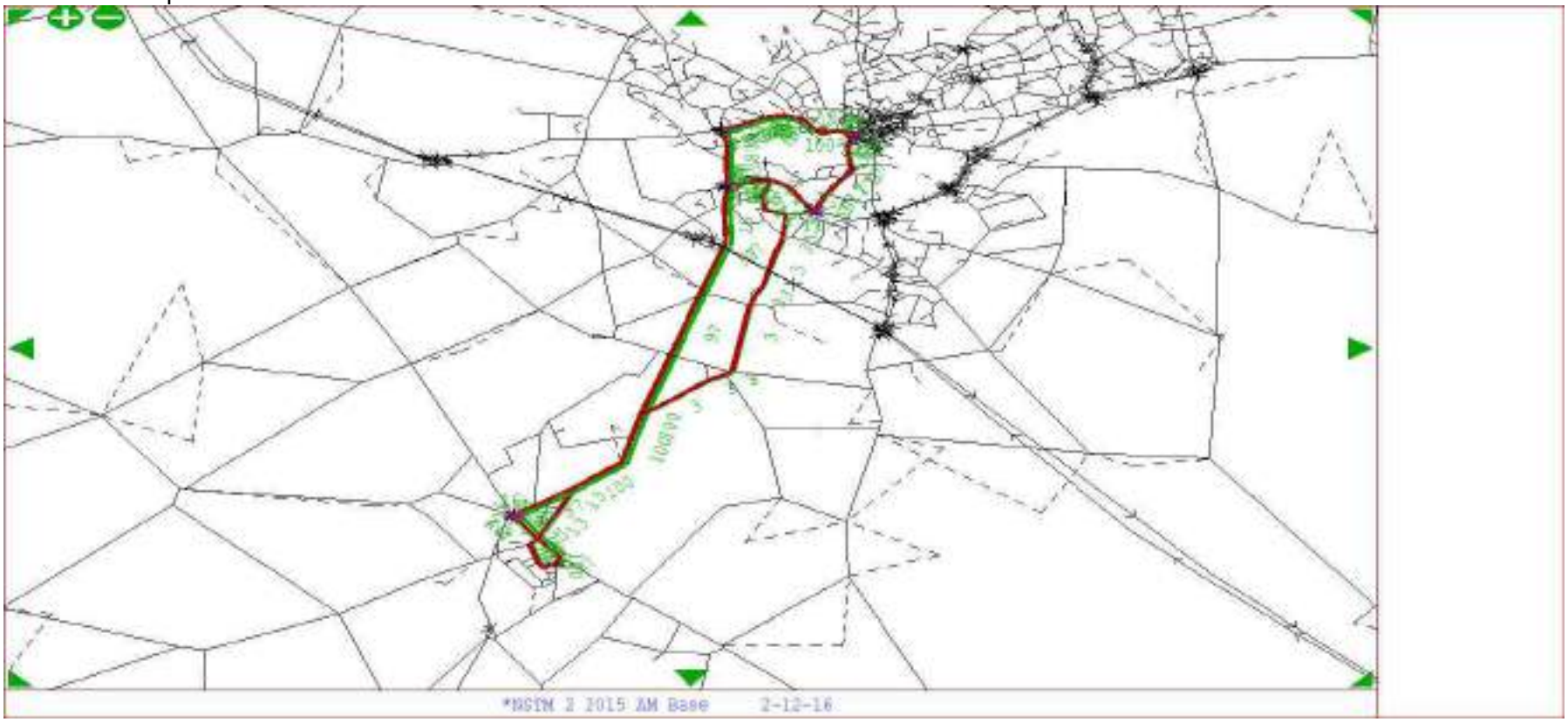
AM Peak

From Towcester To Northampton - User Class 5



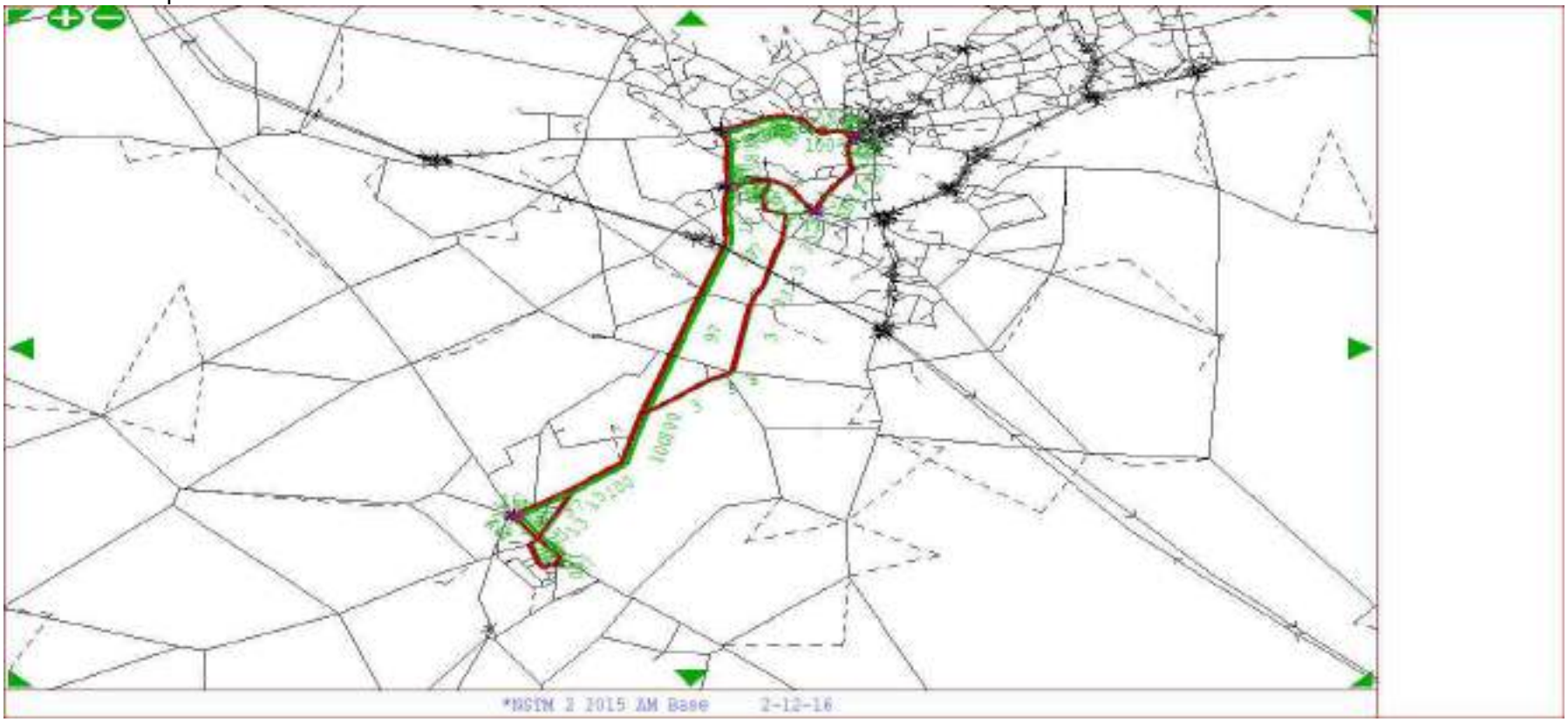
AM Peak

From Northampton To Towcester - User Class 1



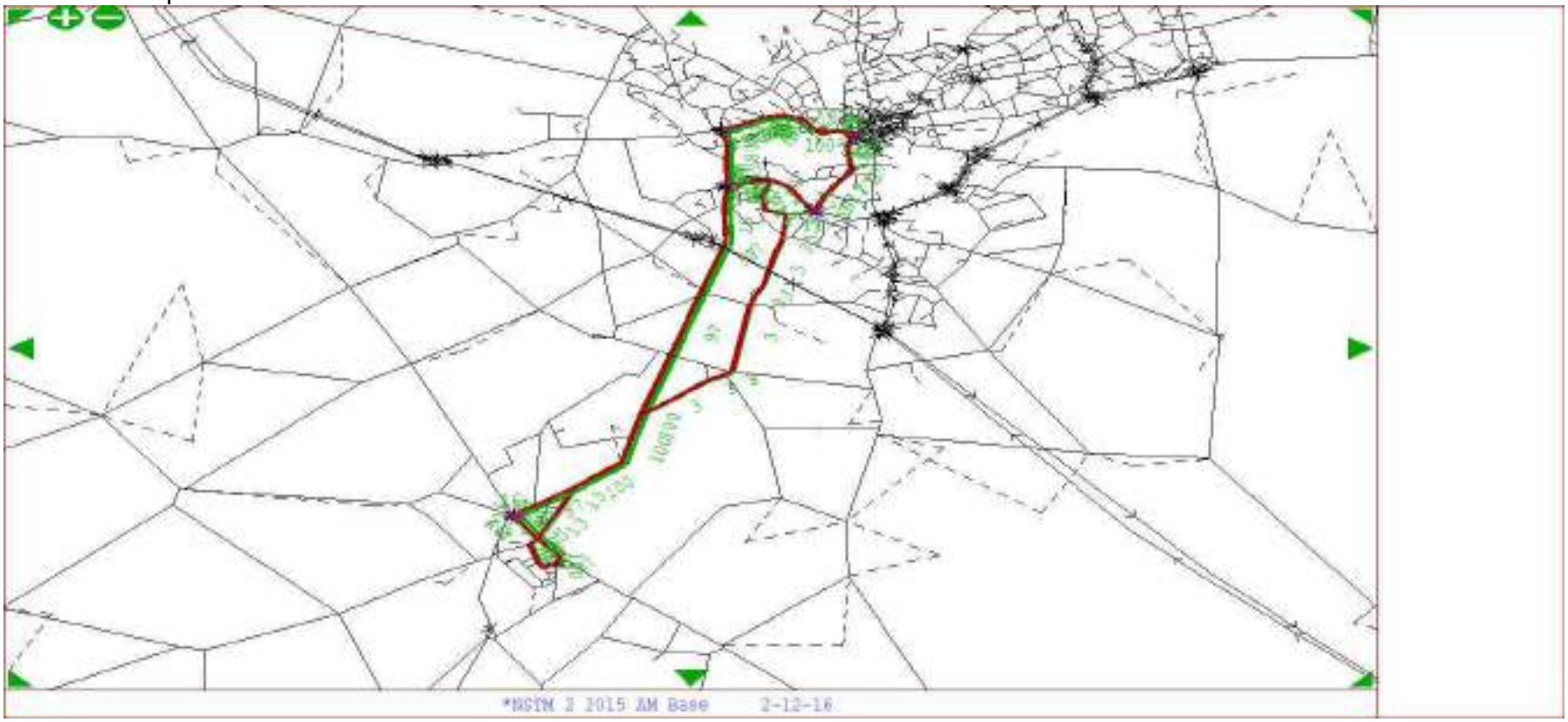
AM Peak

From Northampton To Towcester - User Class 2



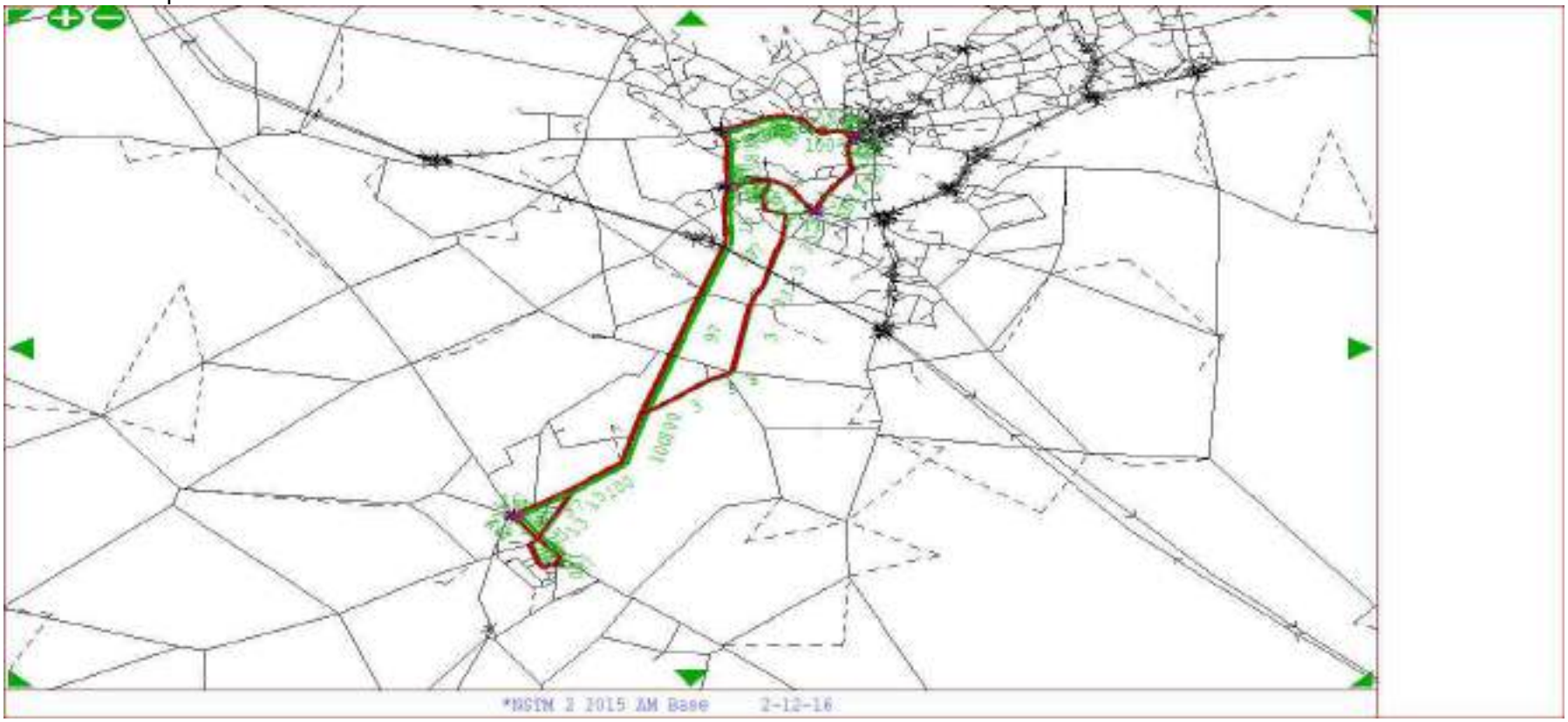
AM Peak

From Northampton To Towcester - User Class 3



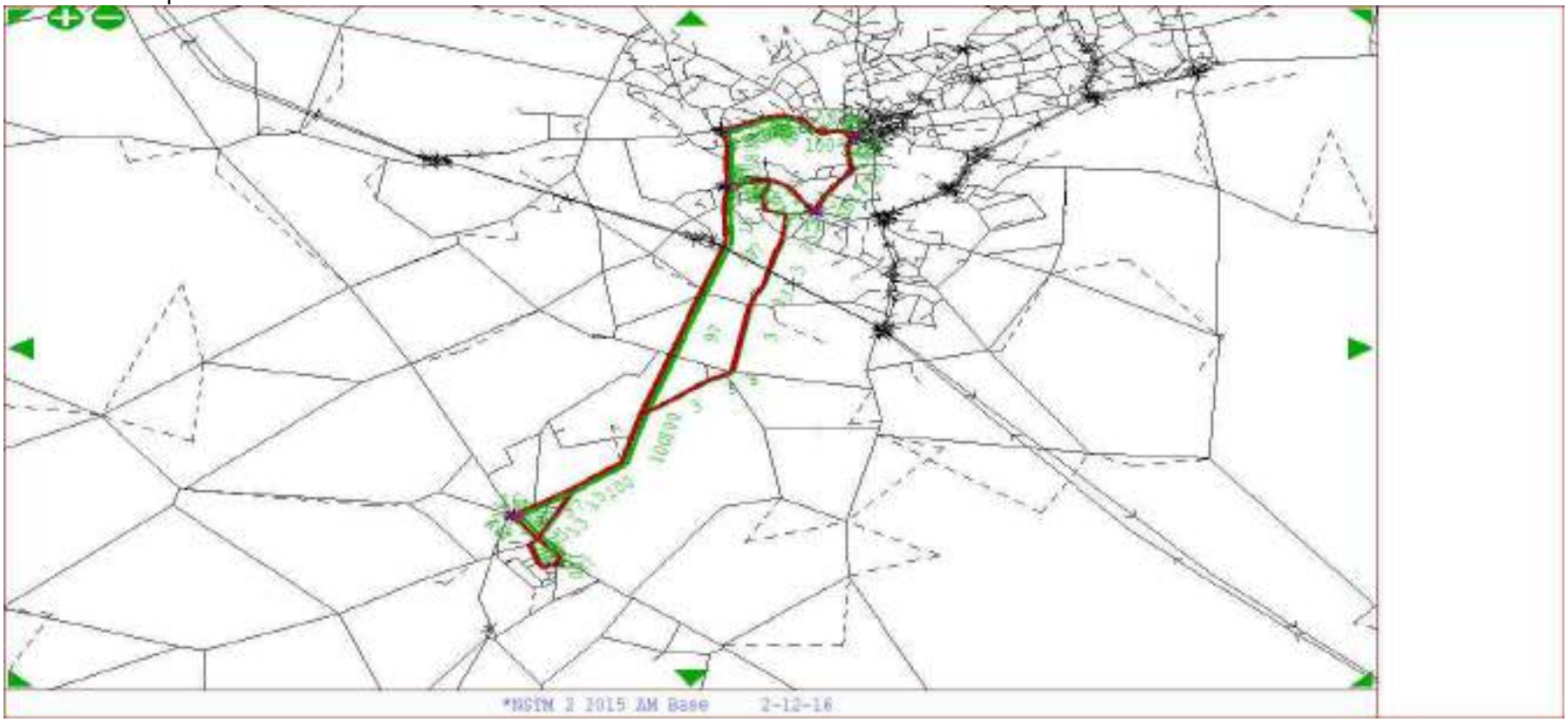
AM Peak

From Northampton To Towcester - User Class 4



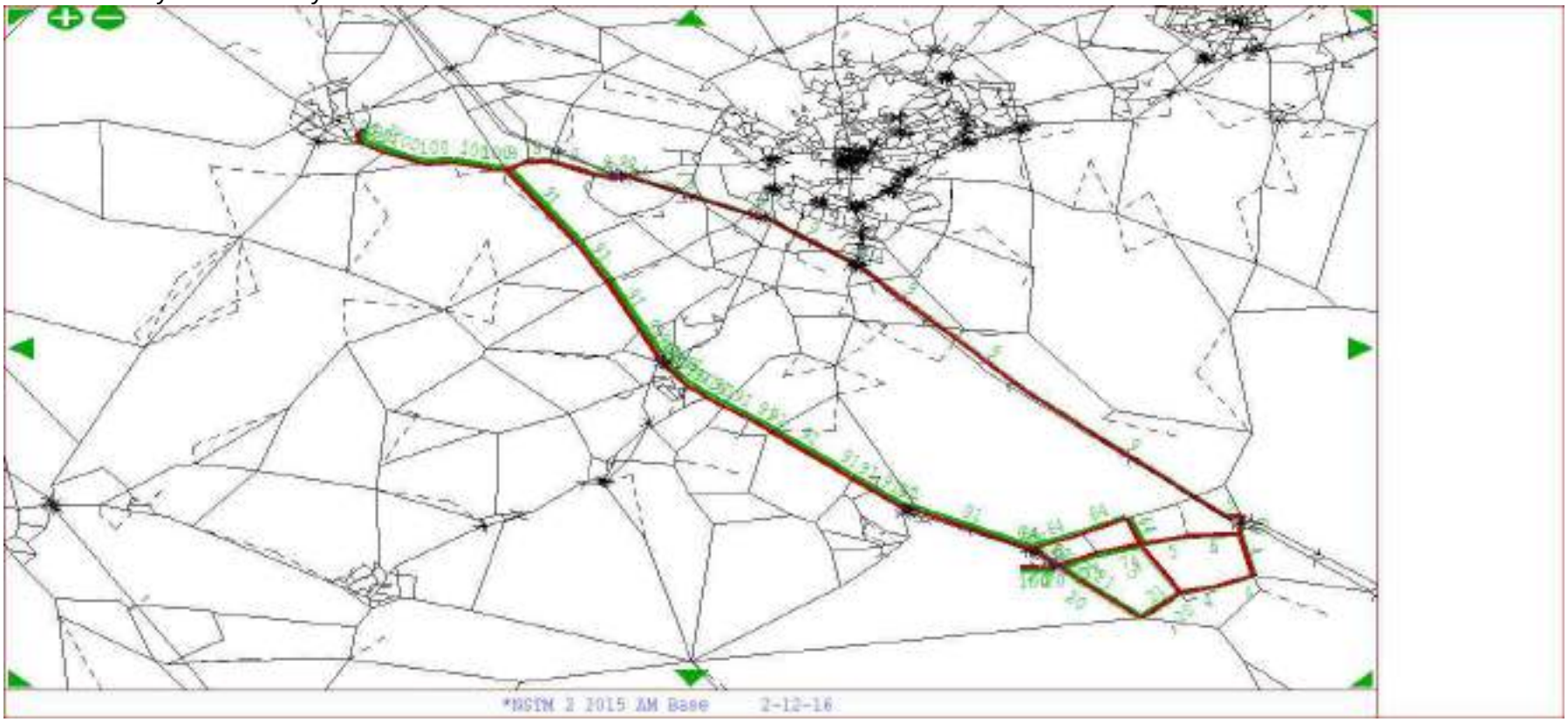
AM Peak

From Northampton To Towcester - User Class 5



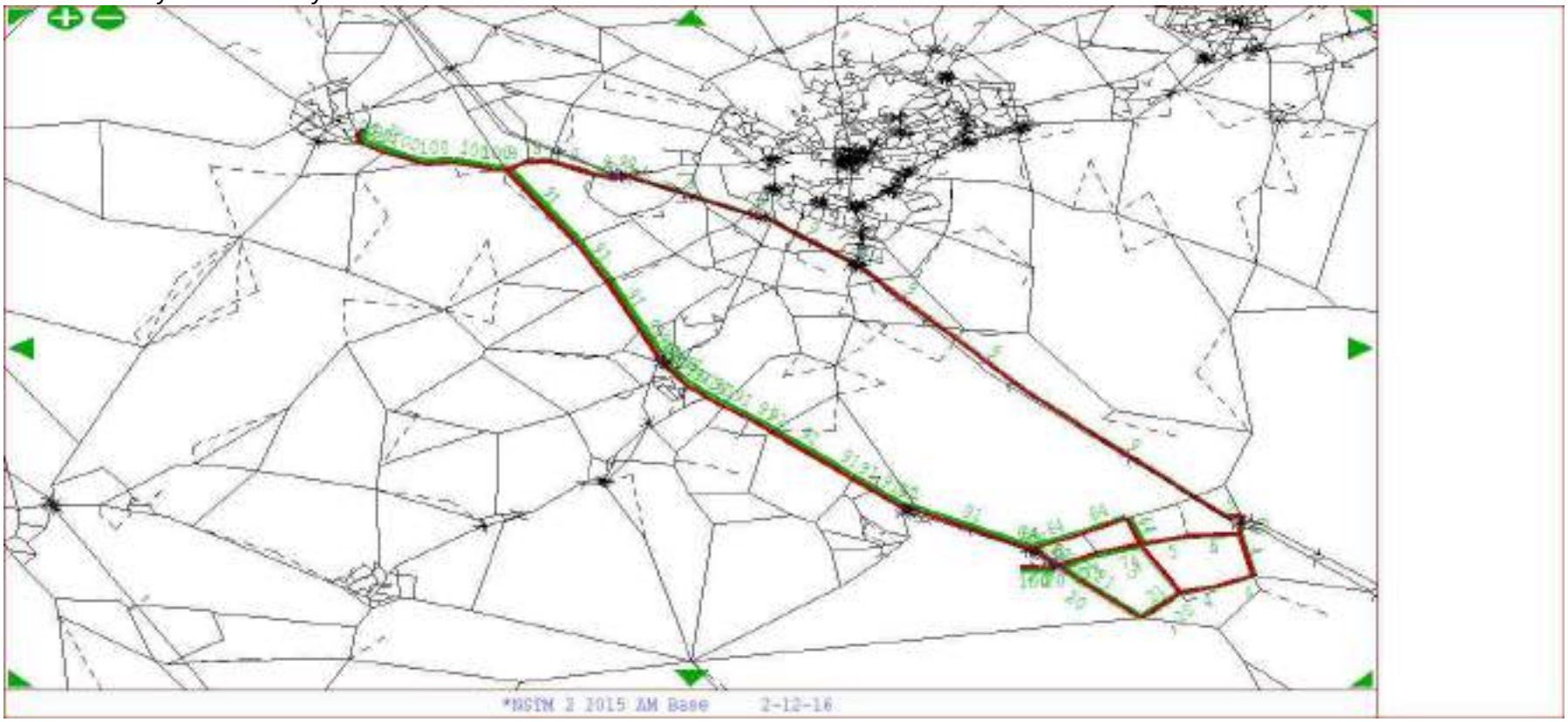
AM Peak

From Daventry To Milton Keynes - User Class 1



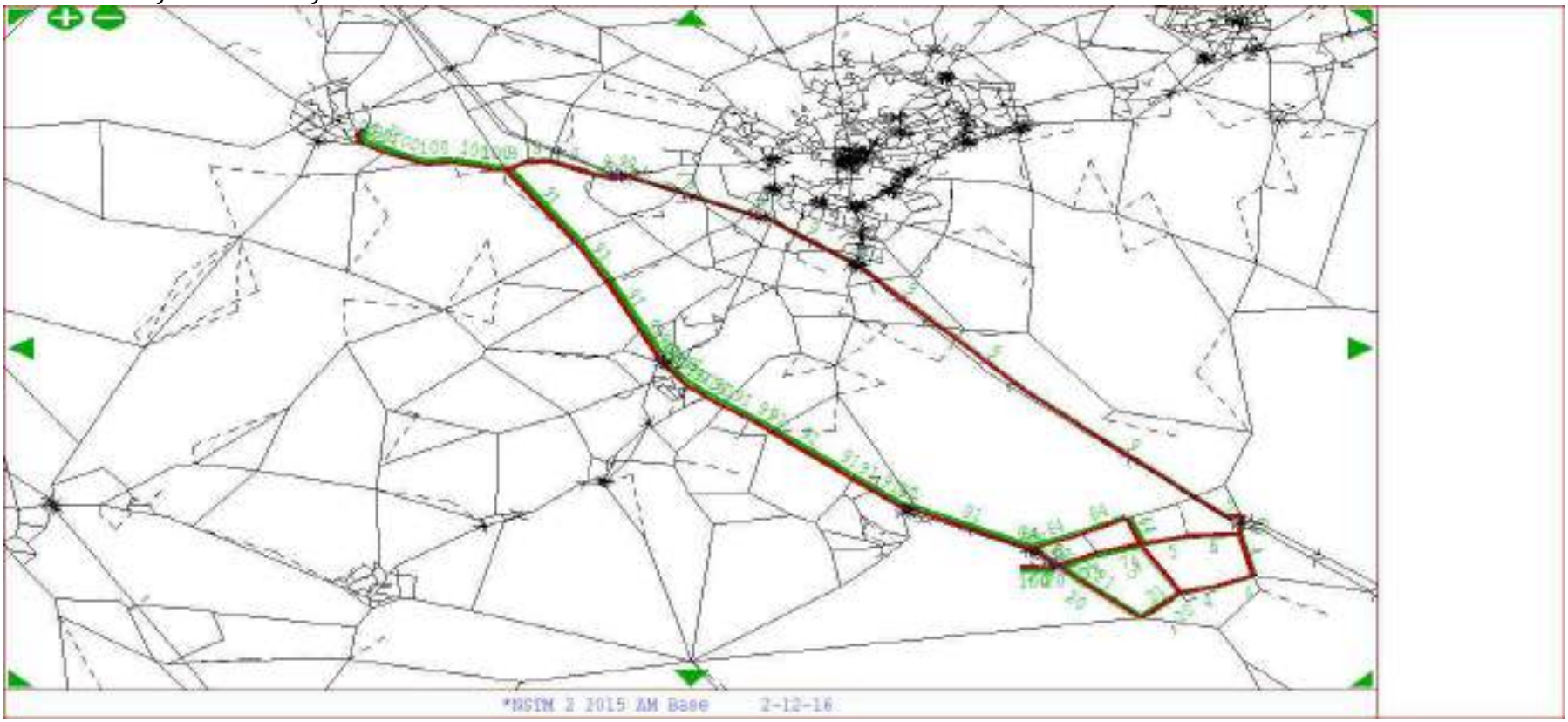
AM Peak

From Daventry To Milton Keynes - User Class 2



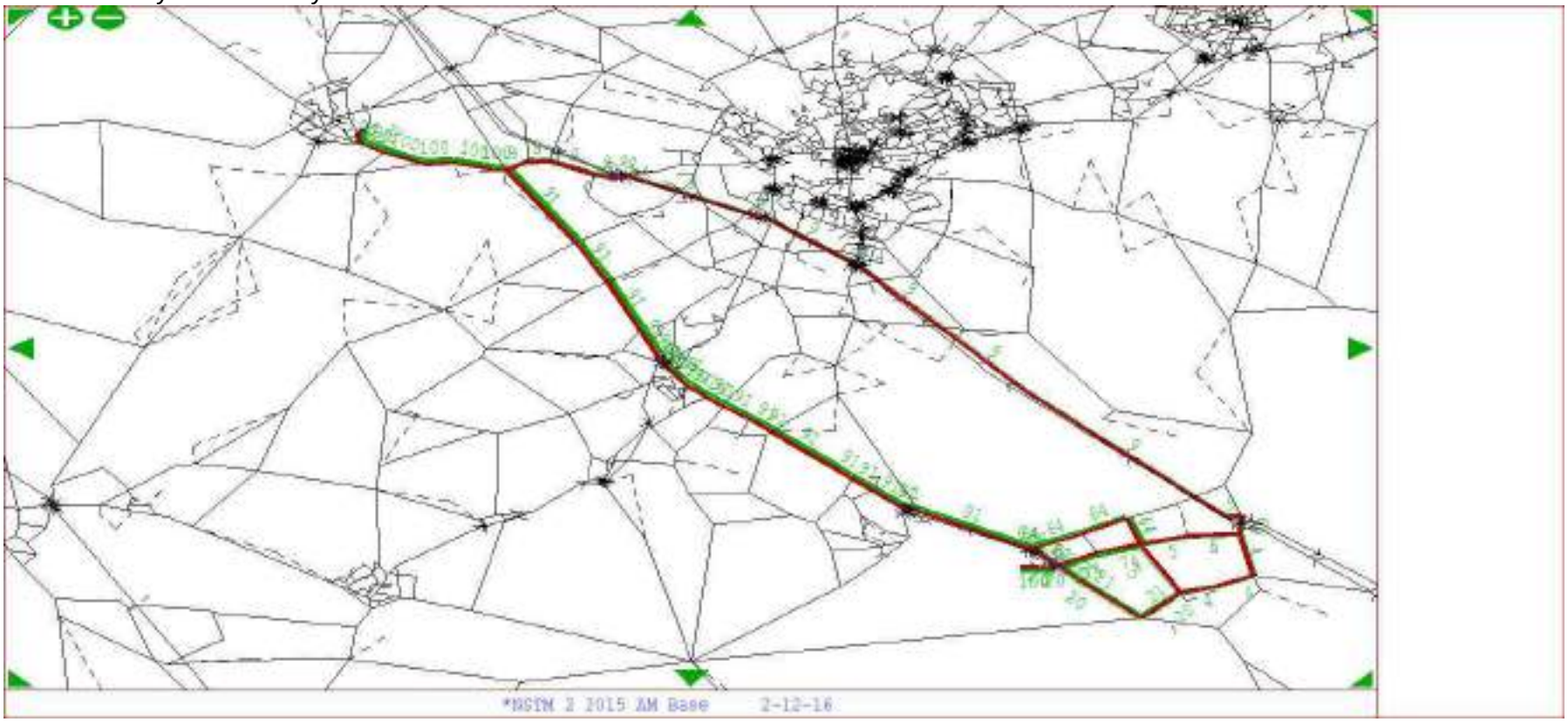
AM Peak

From Daventry To Milton Keynes - User Class 3



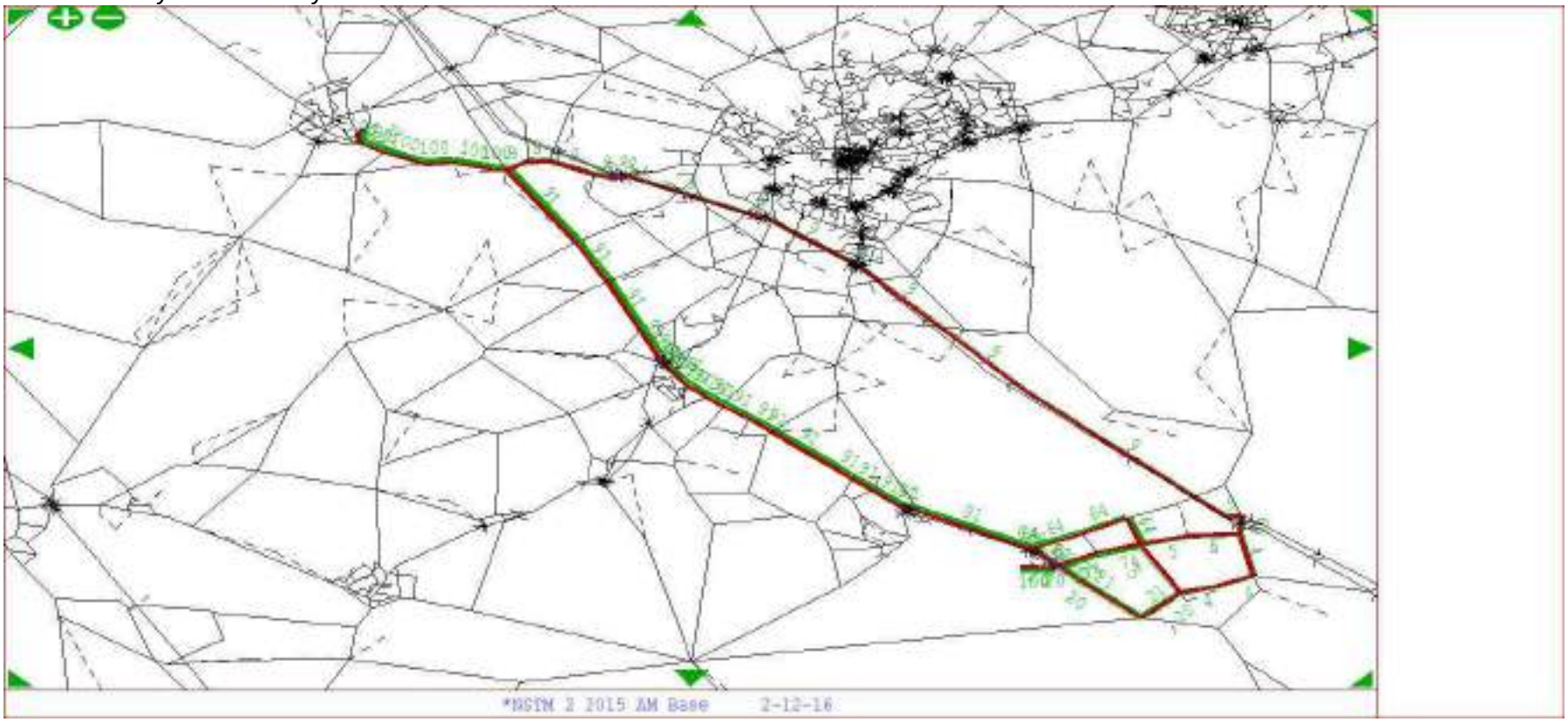
AM Peak

From Daventry To Milton Keynes - User Class 4



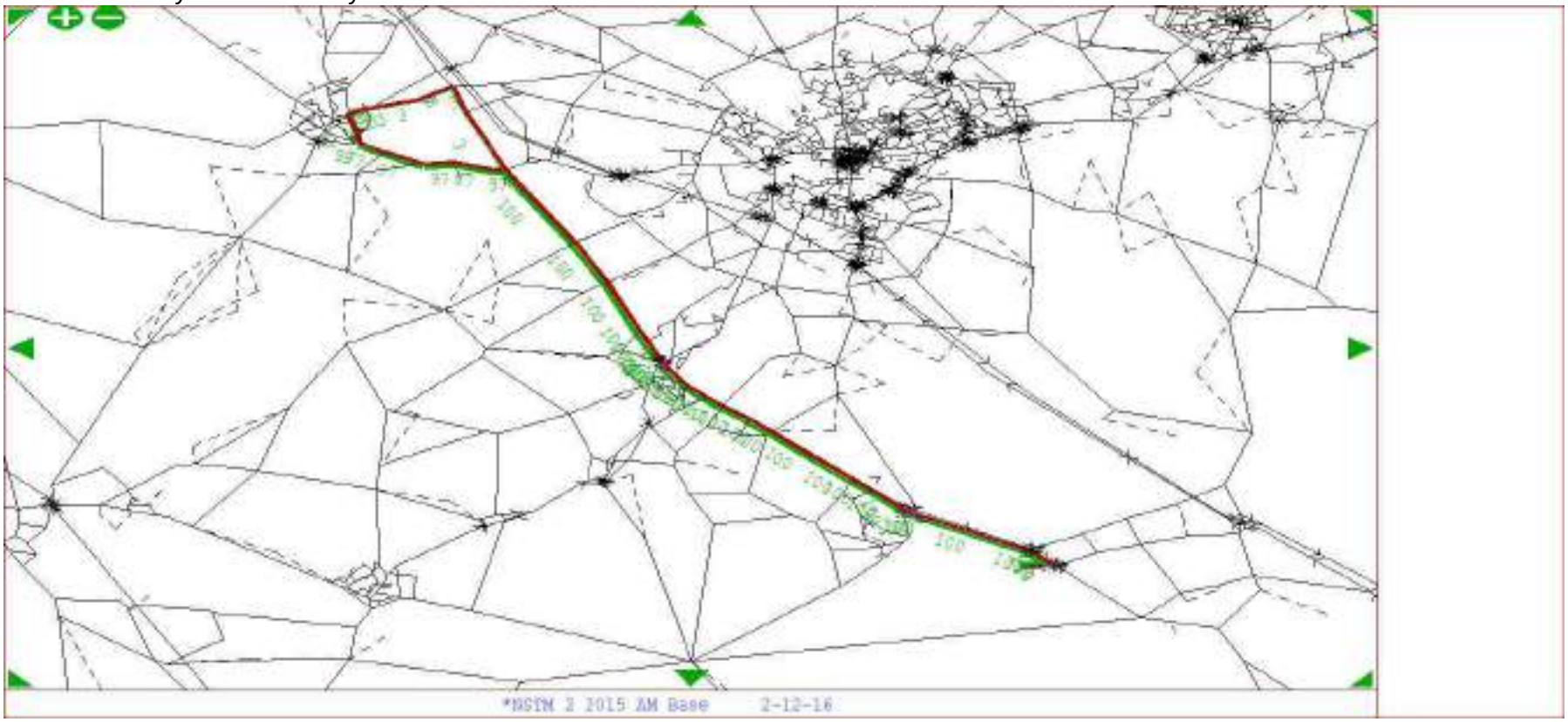
AM Peak

From Daventry To Milton Keynes - User Class 5



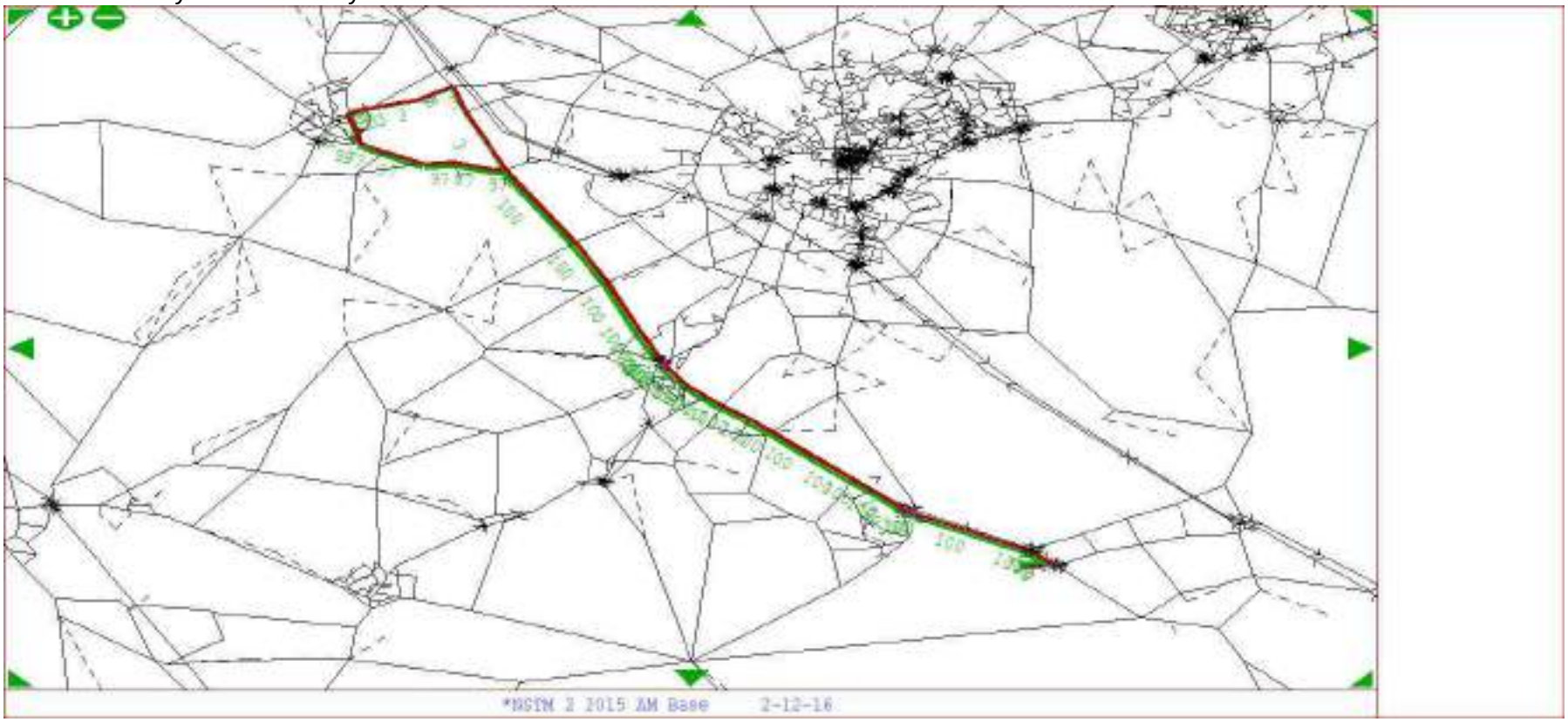
AM Peak

From Milton Keynes To Daventry - User Class 1



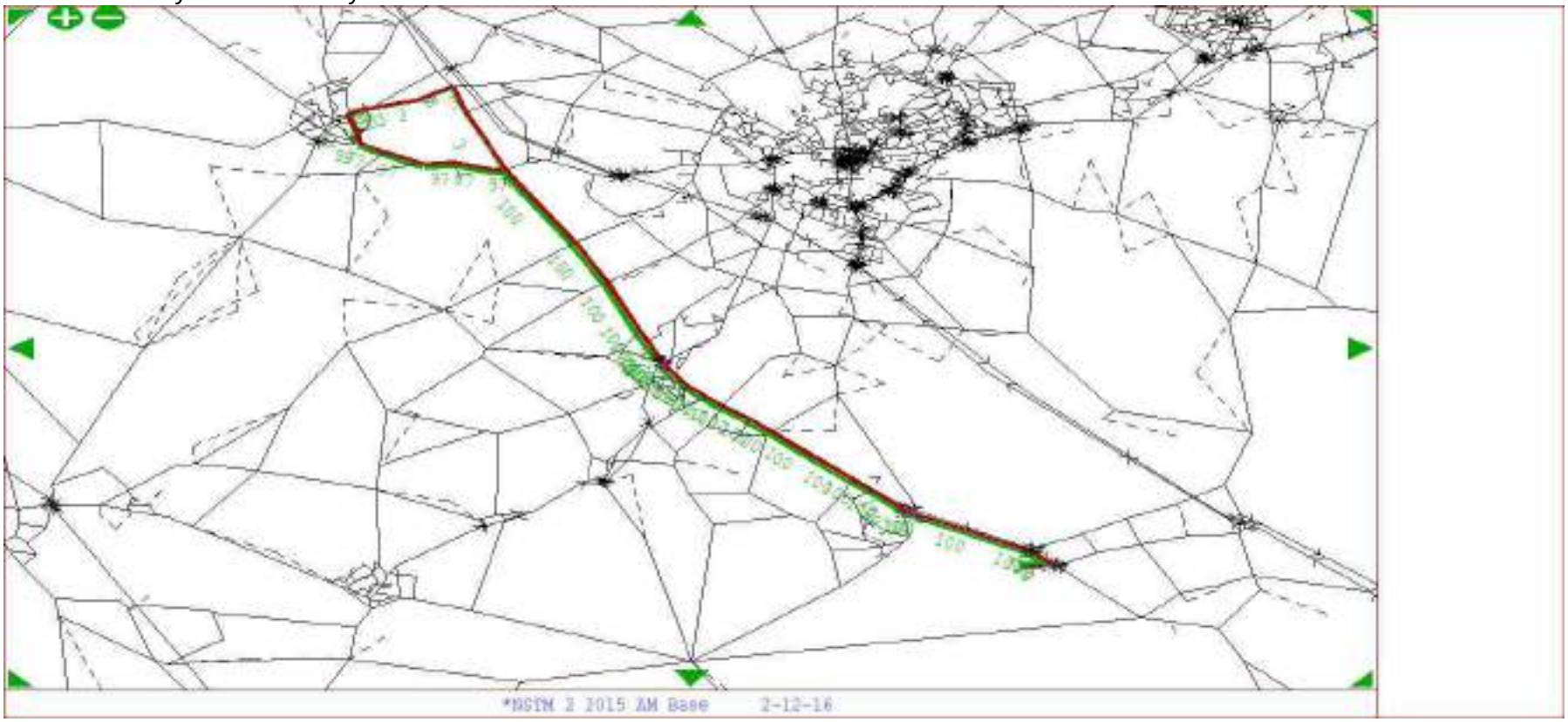
AM Peak

From Milton Keynes To Daventry - User Class 2



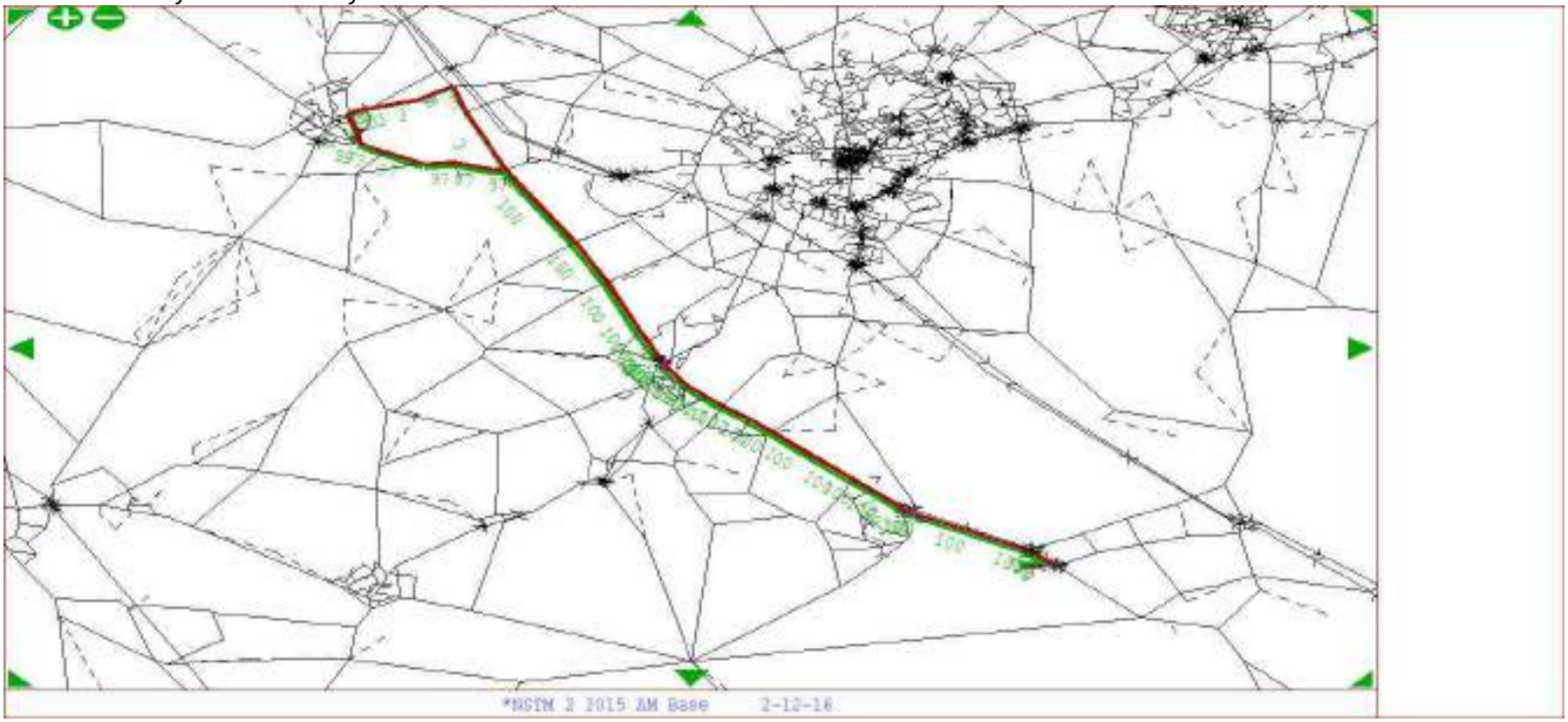
AM Peak

From Milton Keynes To Daventry - User Class 3



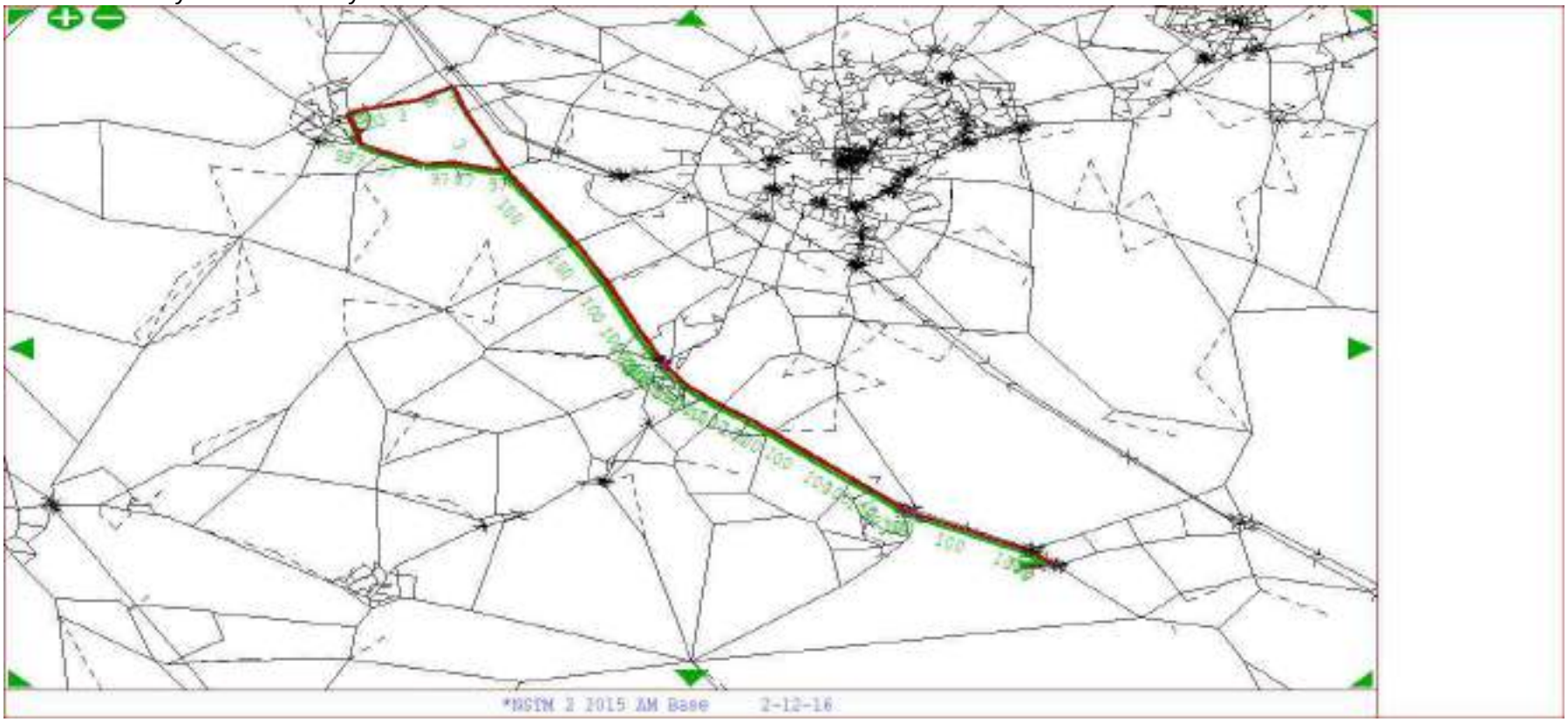
AM Peak

From Milton Keynes To Daventry - User Class 4



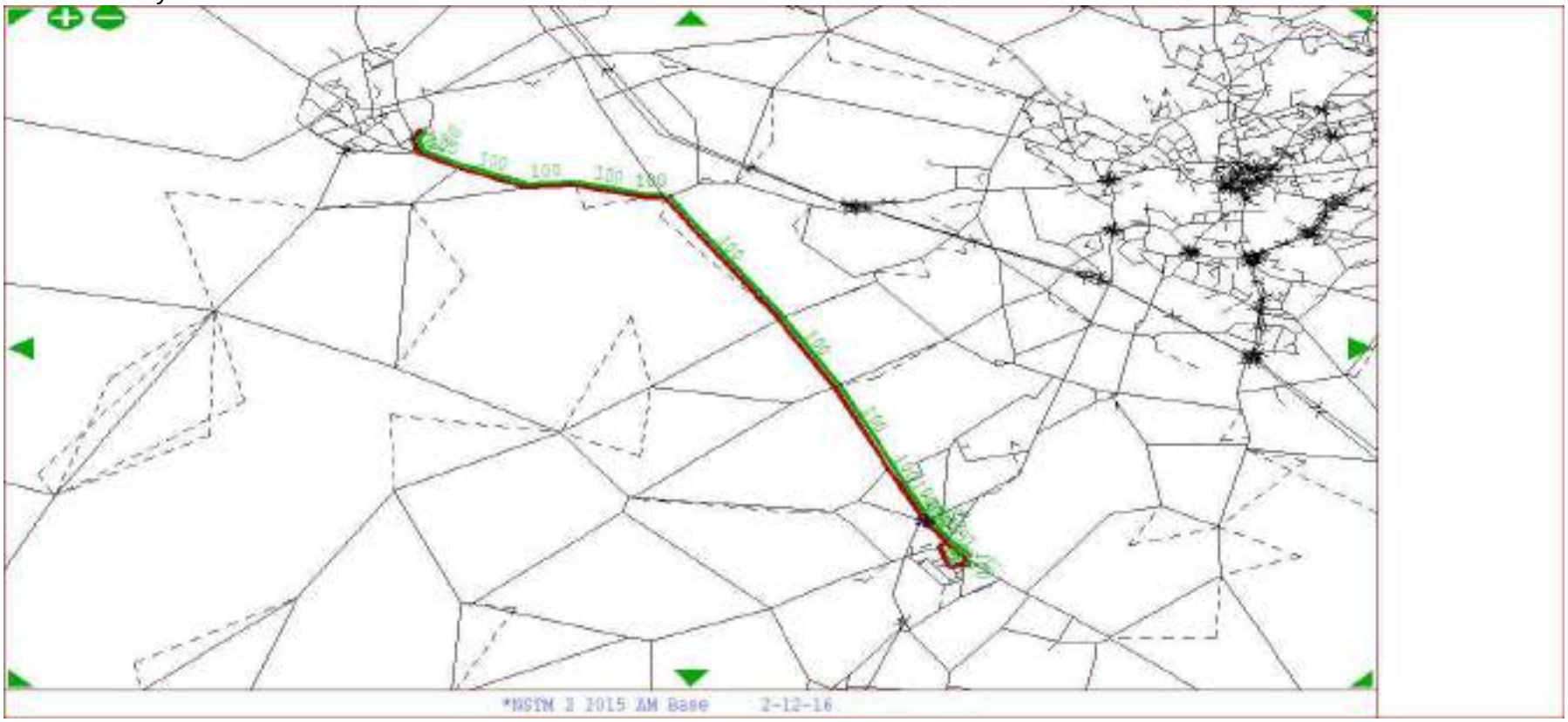
AM Peak

From Milton Keynes To Daventry - User Class 5



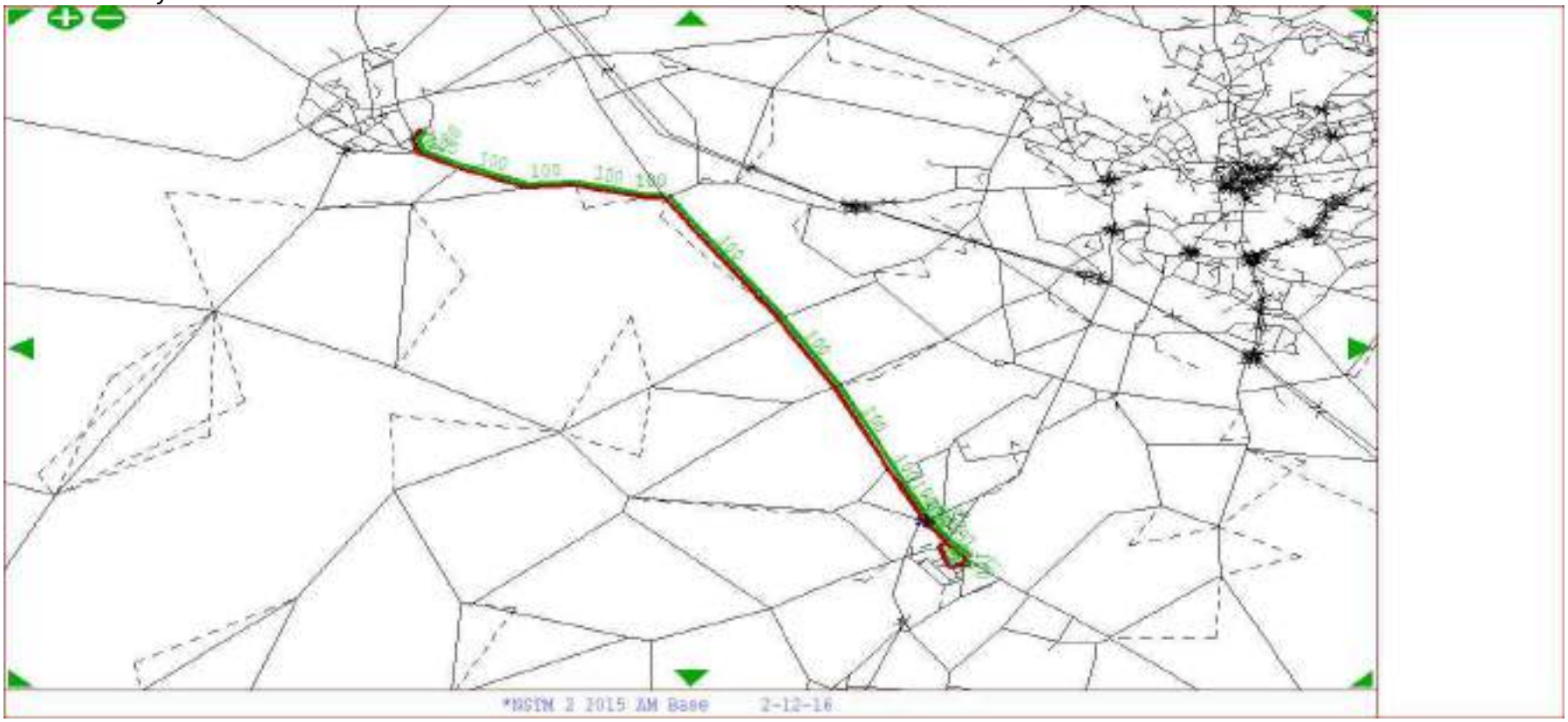
AM Peak

From Daventry To Towcester - User Class 1



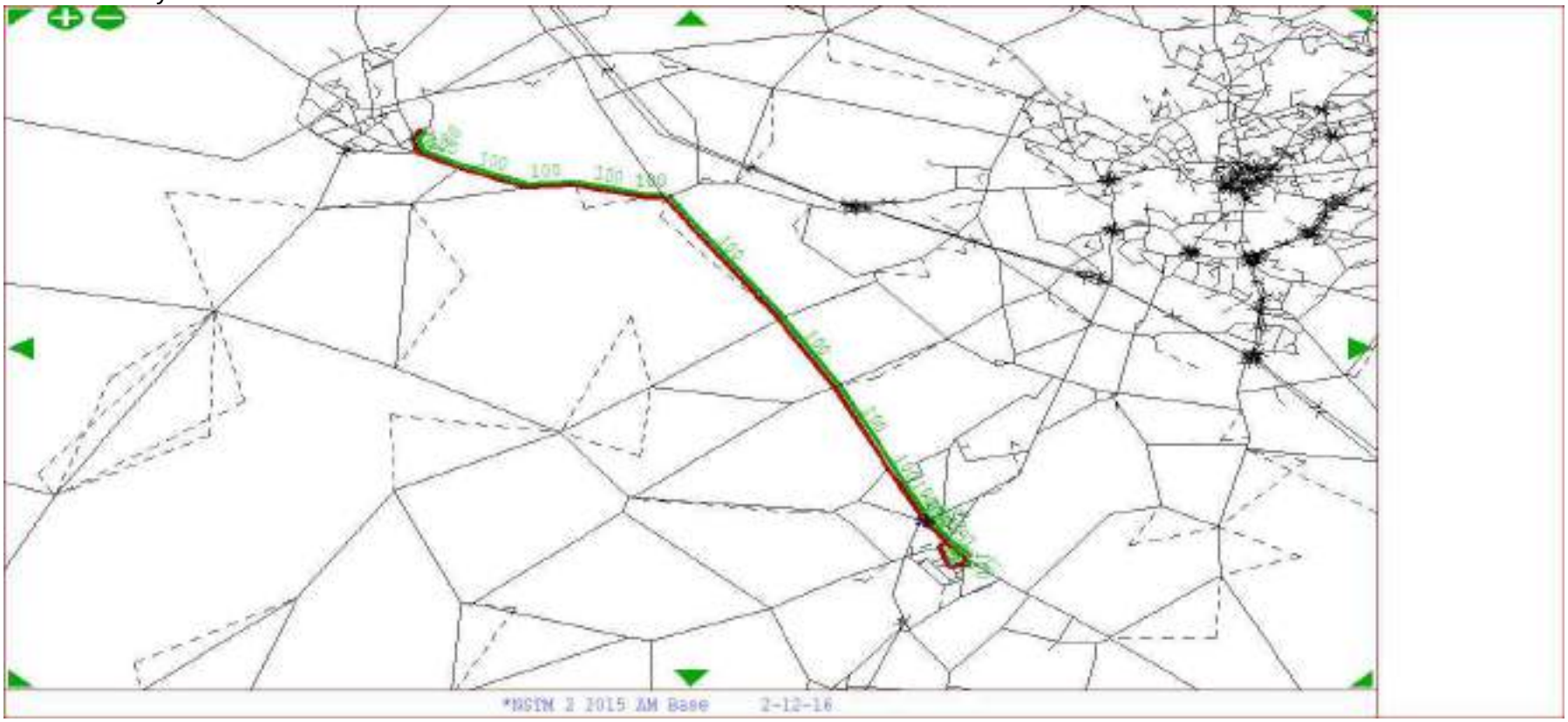
AM Peak

From Daventry To Towcester - User Class 2



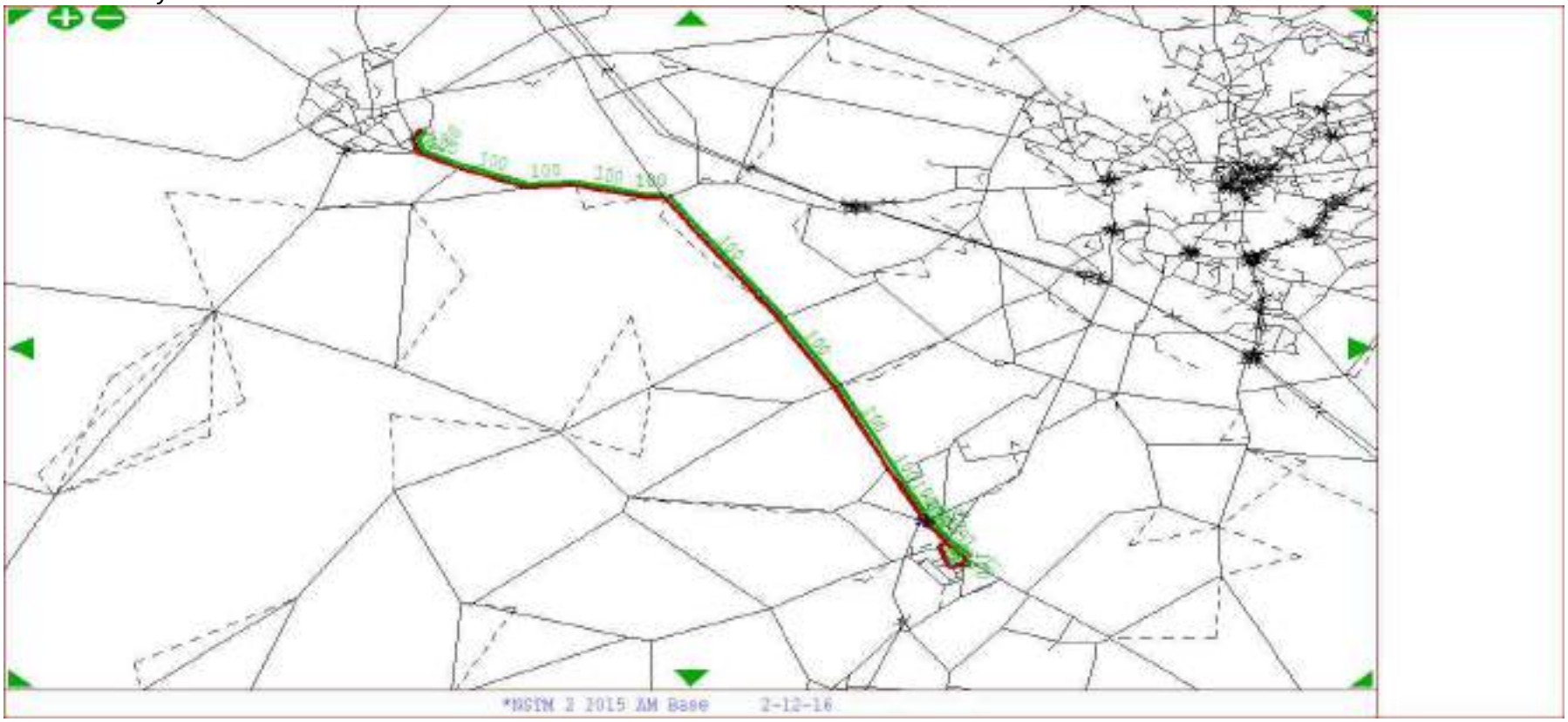
AM Peak

From Daventry To Towcester - User Class 3



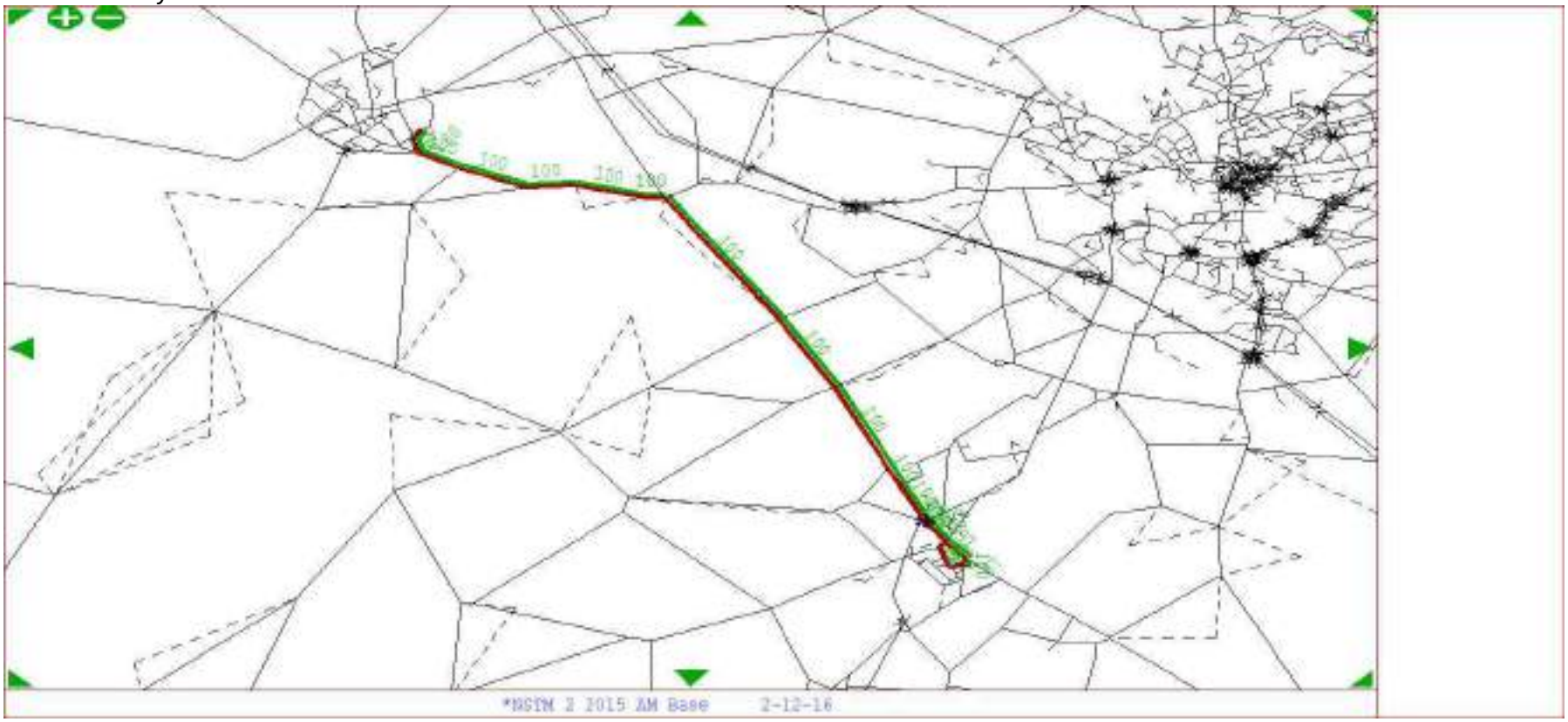
AM Peak

From Daventry To Towcester - User Class 4



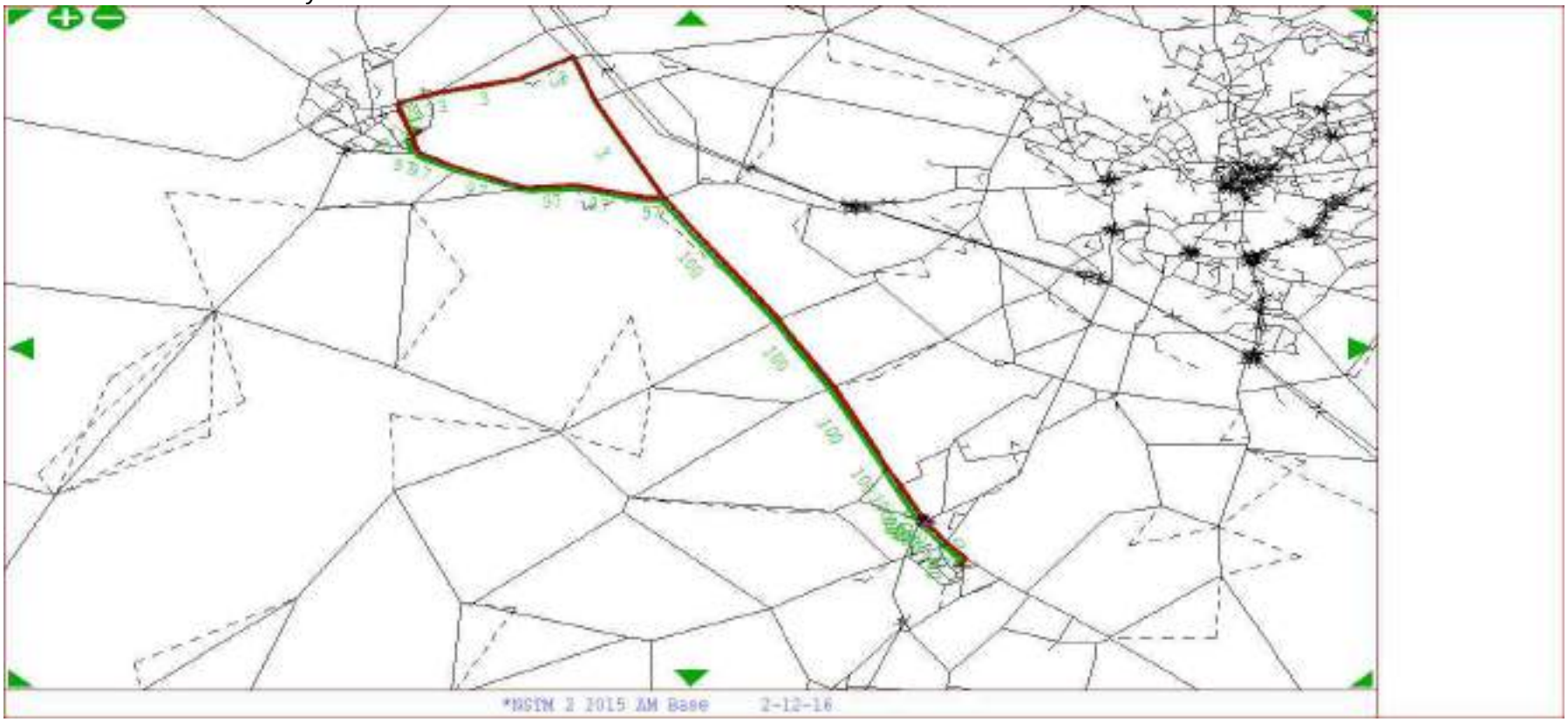
AM Peak

From Daventry To Towcester - User Class 5



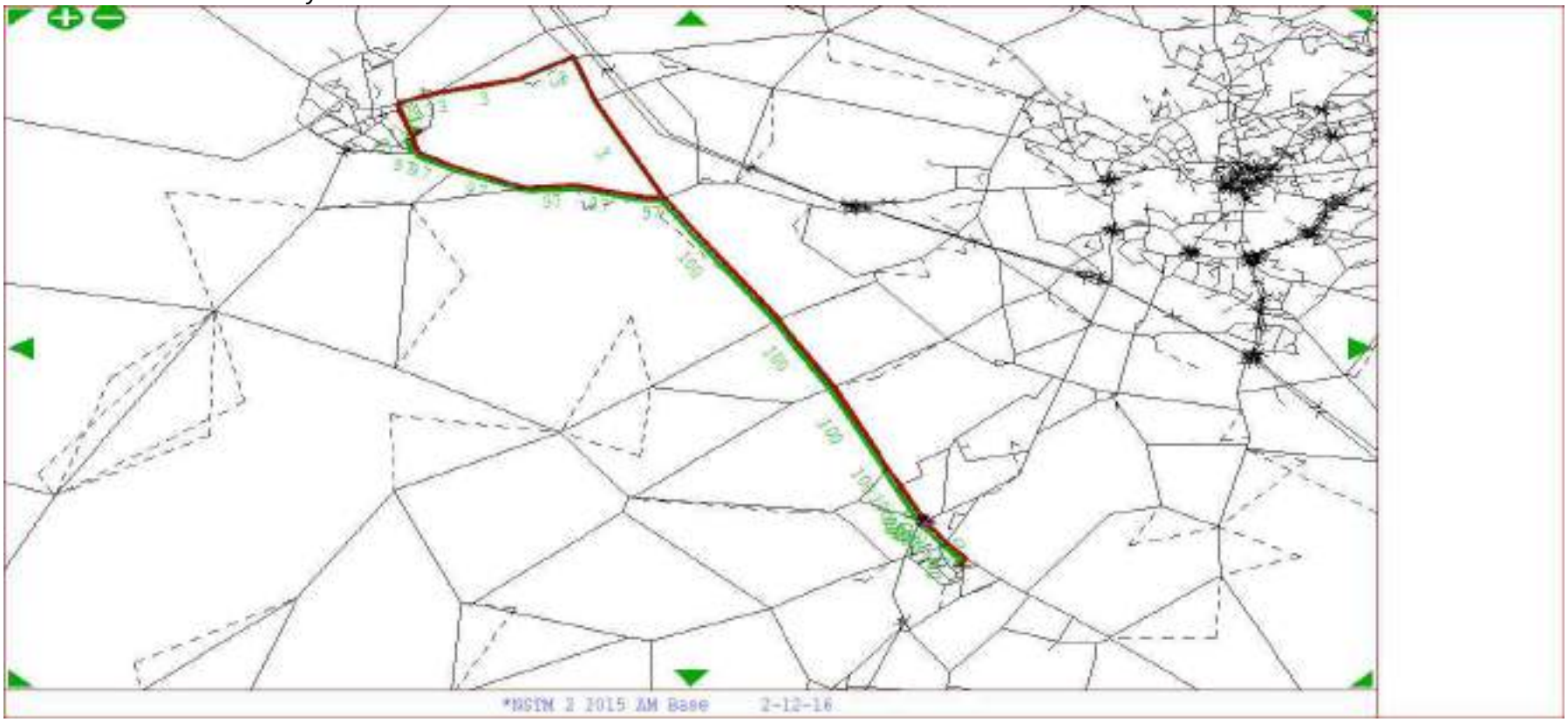
AM Peak

From Towcester To Daventry - User Class 1



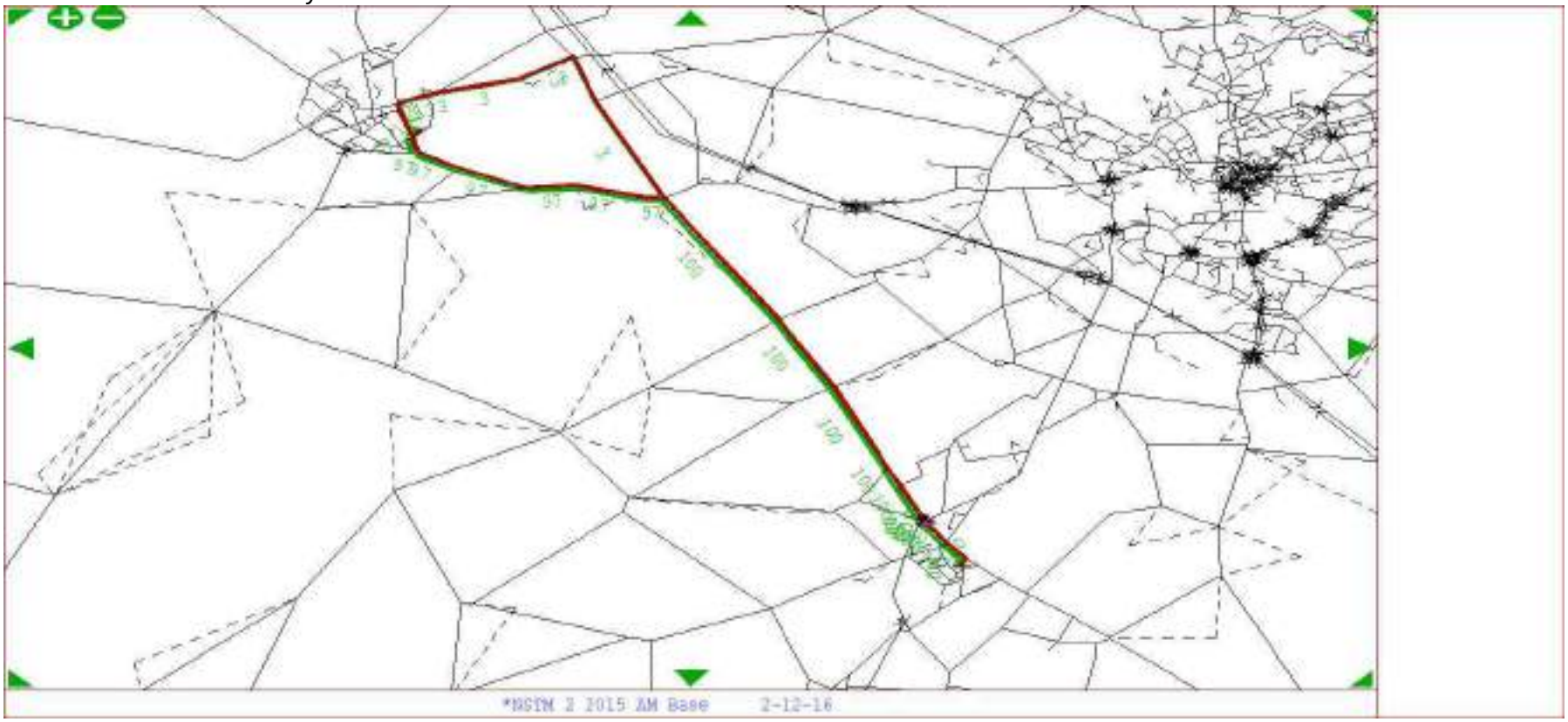
AM Peak

From Towcester To Daventry - User Class 2



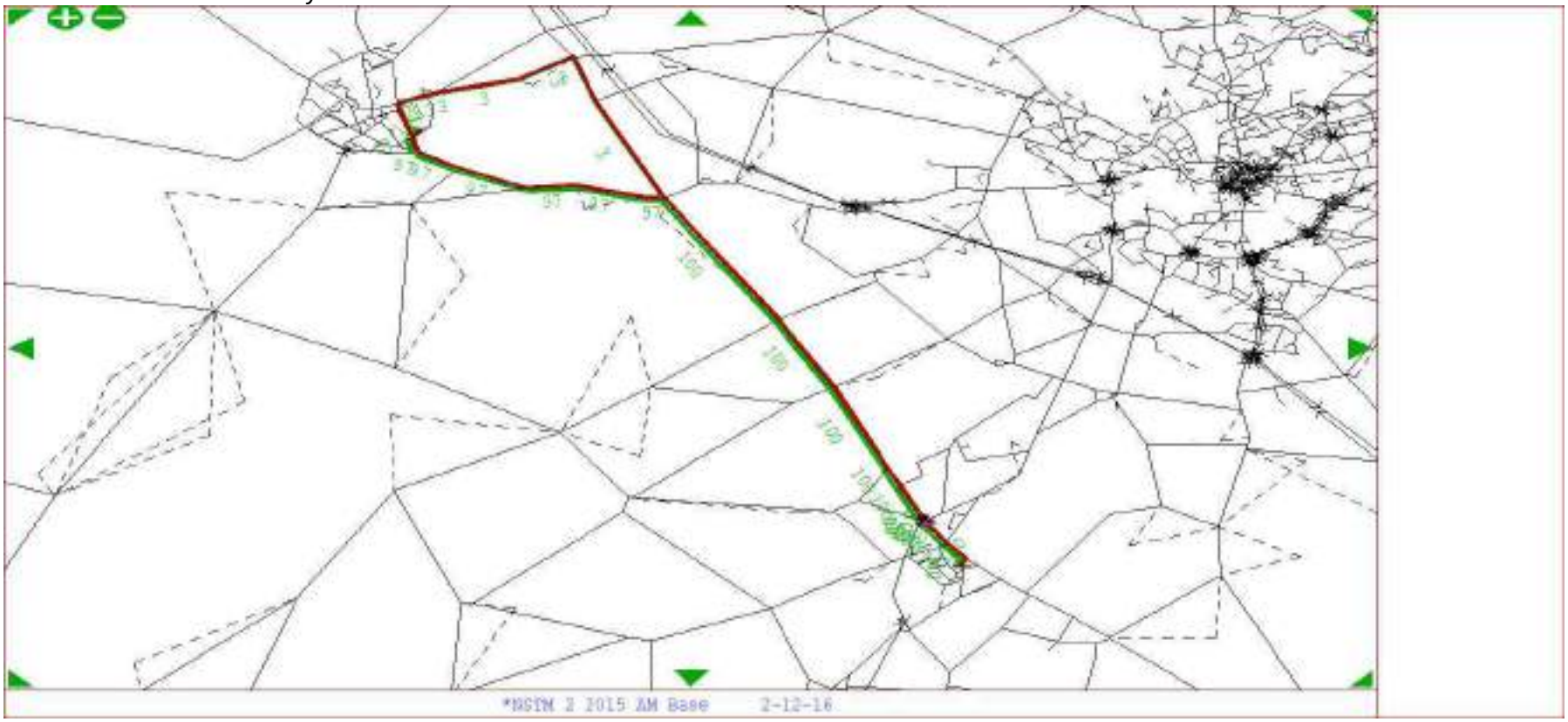
AM Peak

From Towcester To Daventry - User Class 3



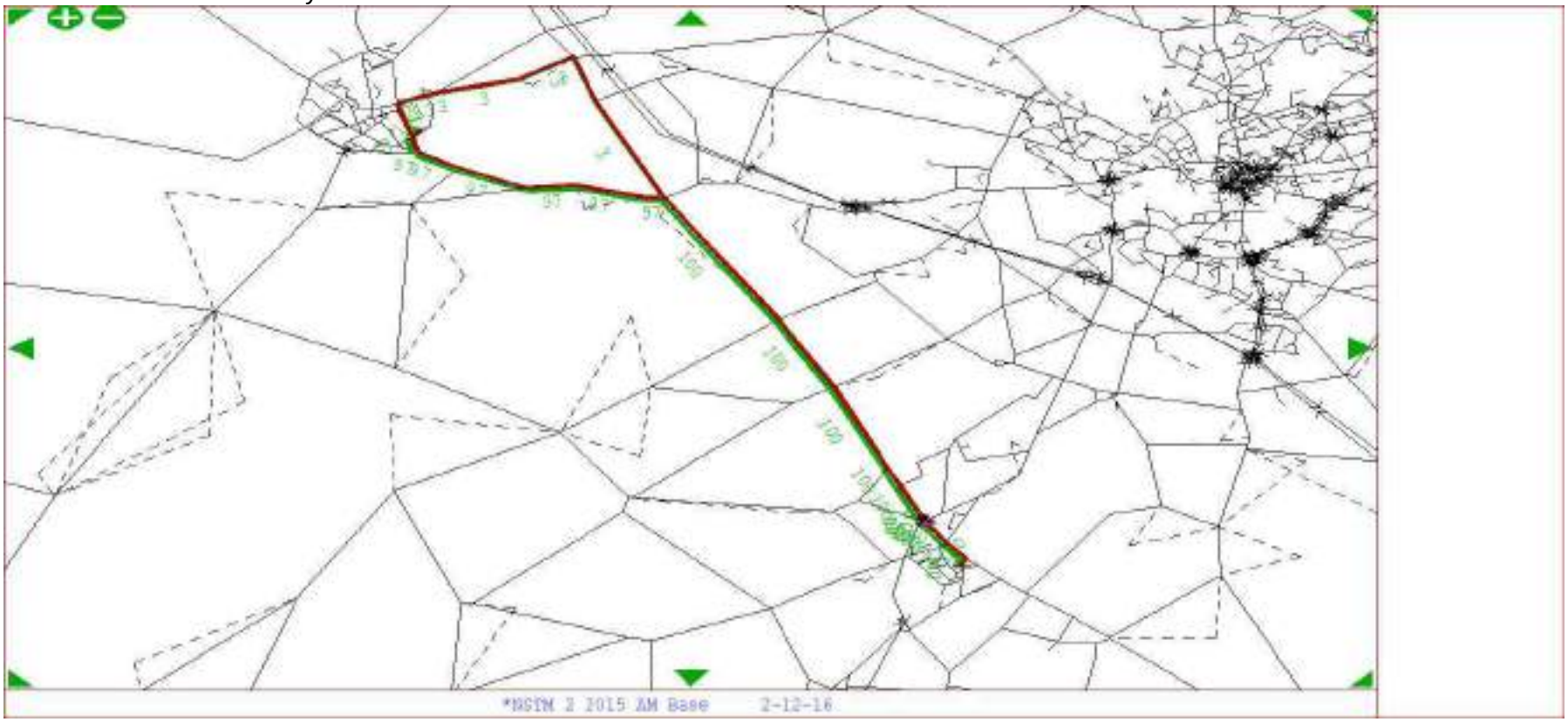
AM Peak

From Towcester To Daventry - User Class 4



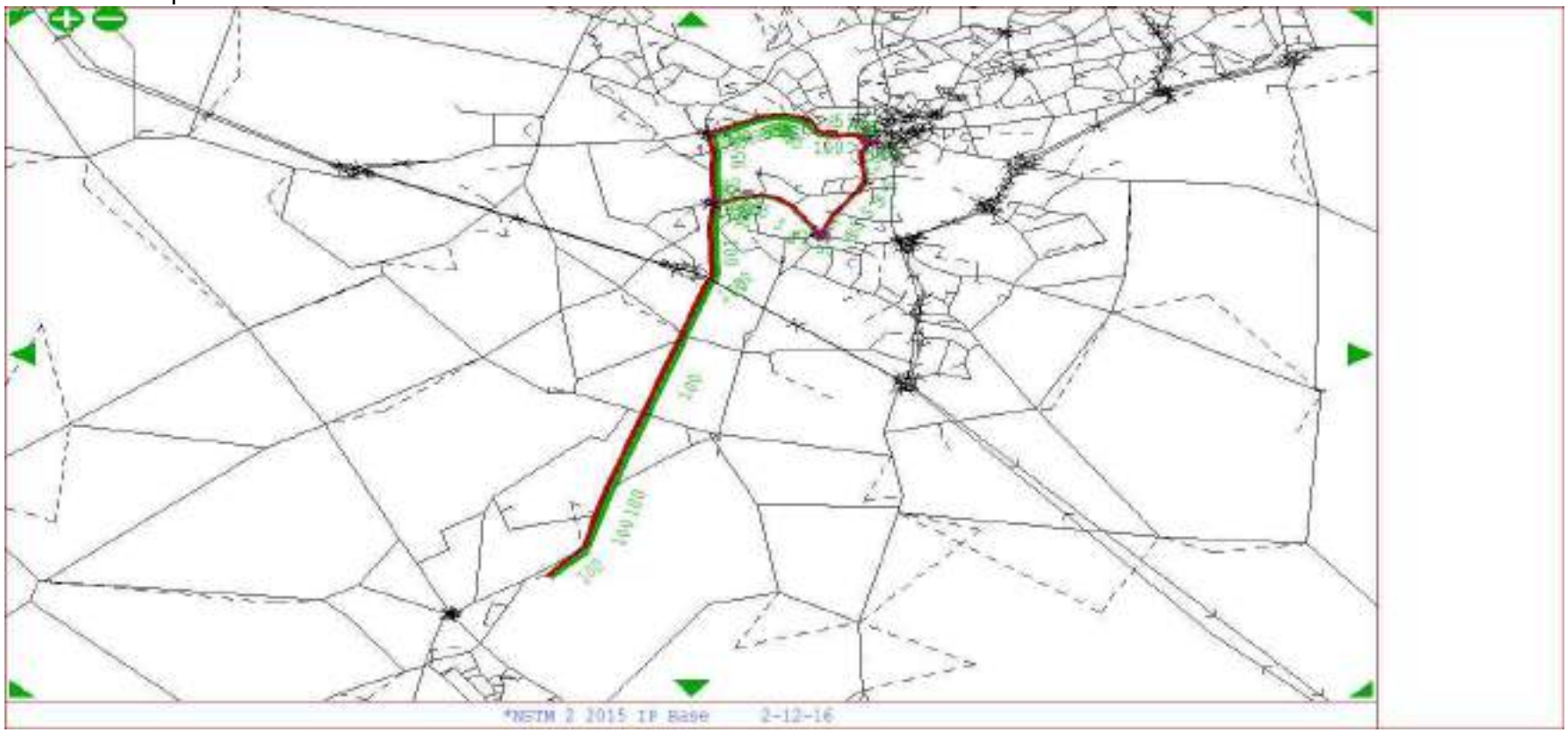
AM Peak

From Towcester To Daventry - User Class 5



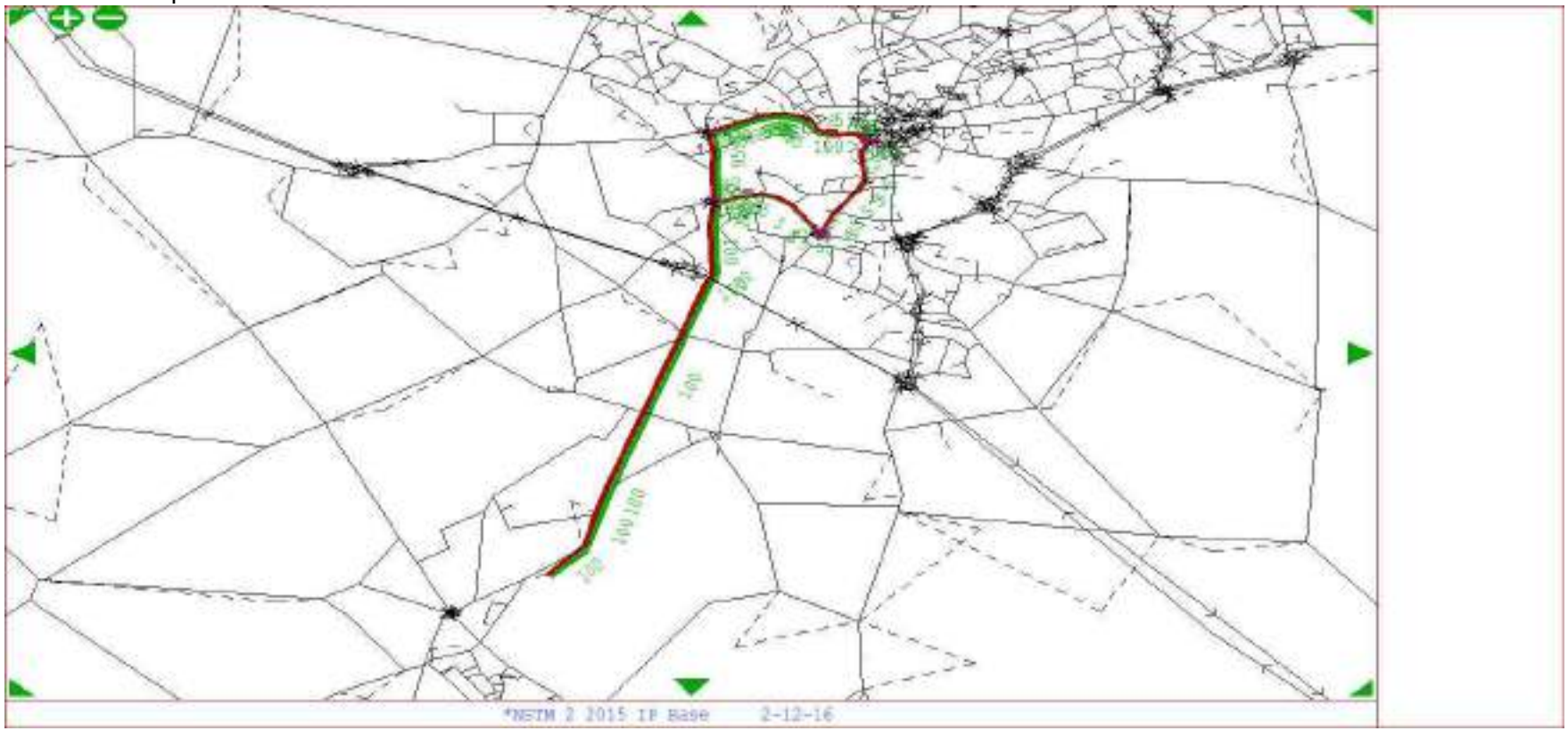
Project Name: OD Tree Plots -

From Northampton To Rail Central Area - User Class 1



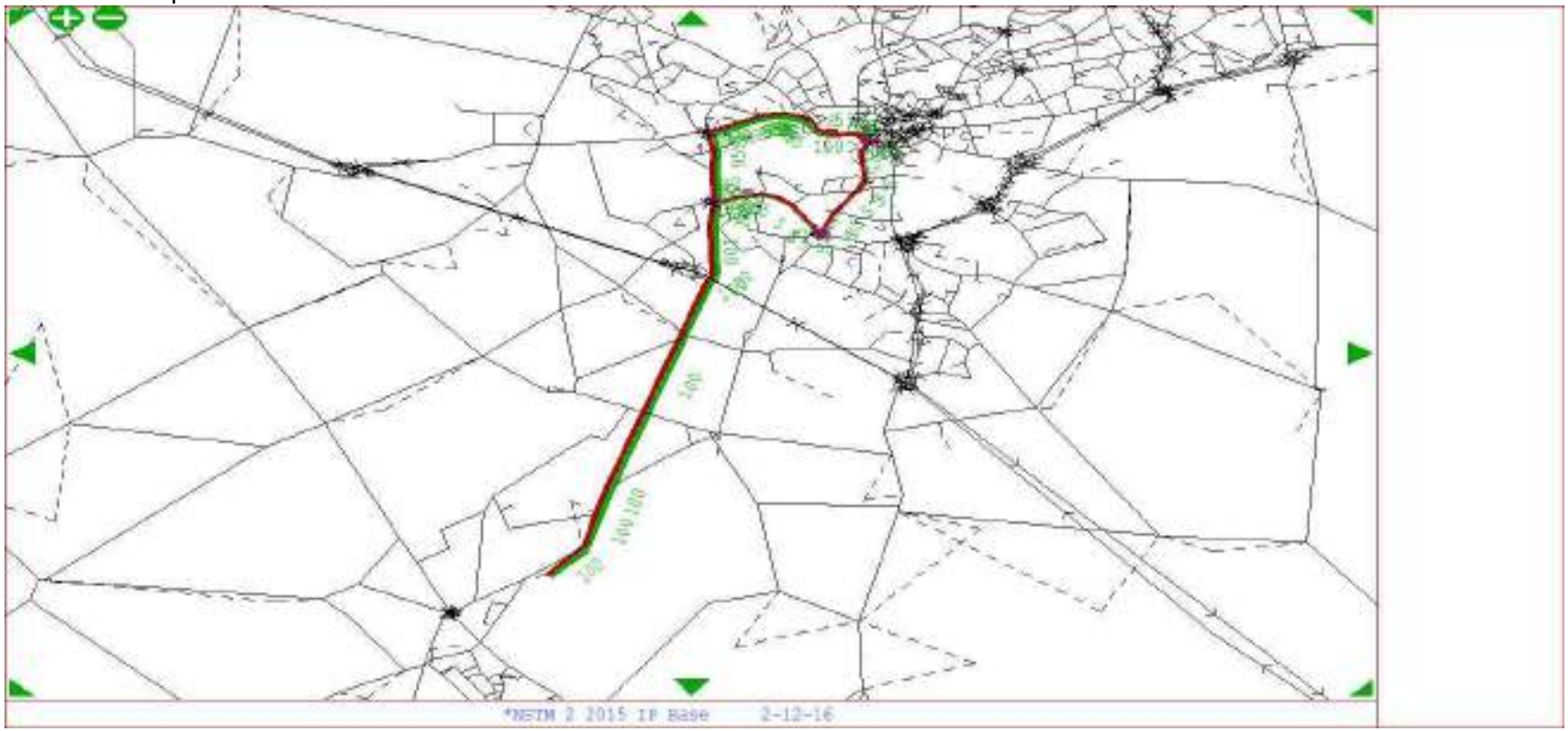
Inter-peak

From Northampton To Rail Central Area - User Class 2



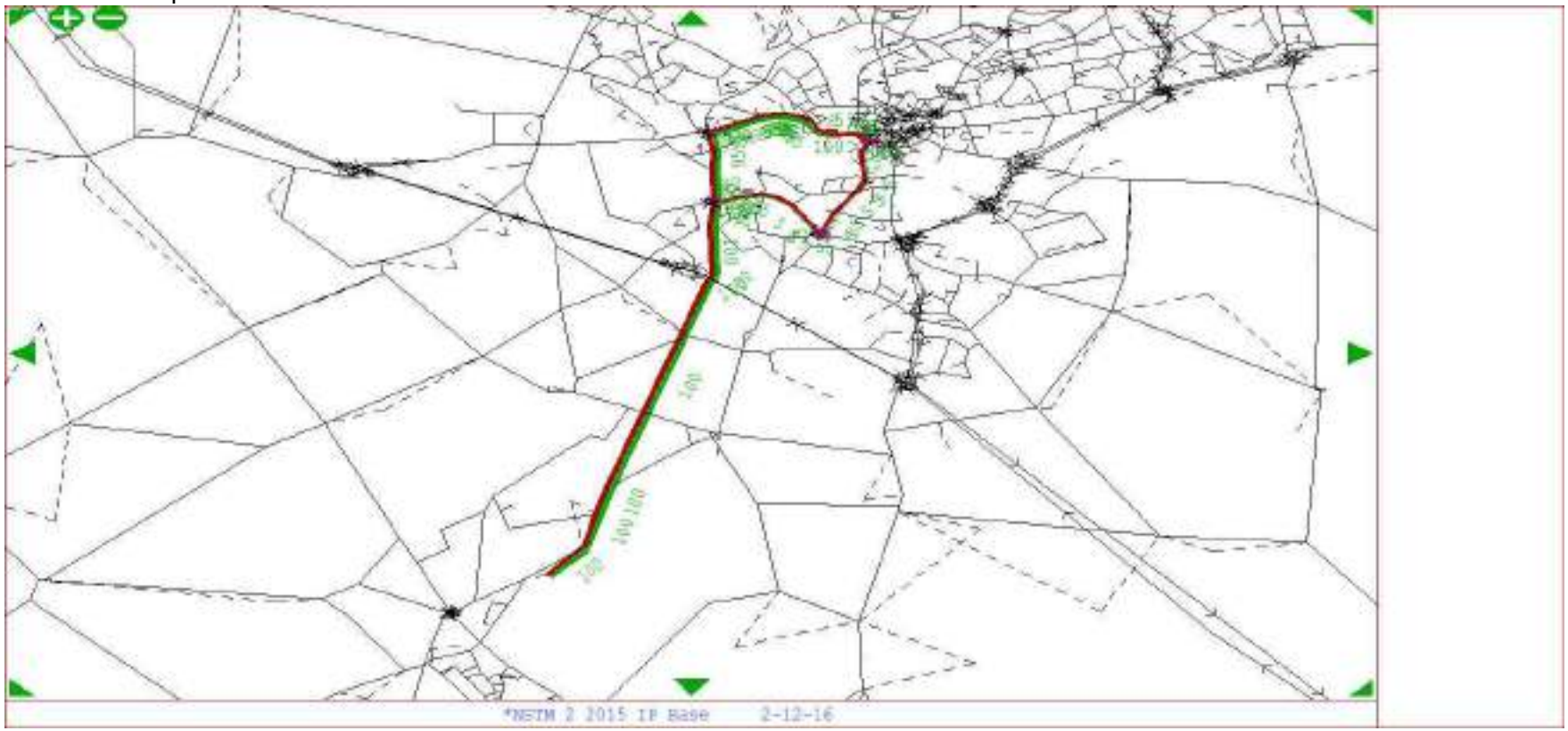
Inter-peak

From Northampton To Rail Central Area - User Class 3



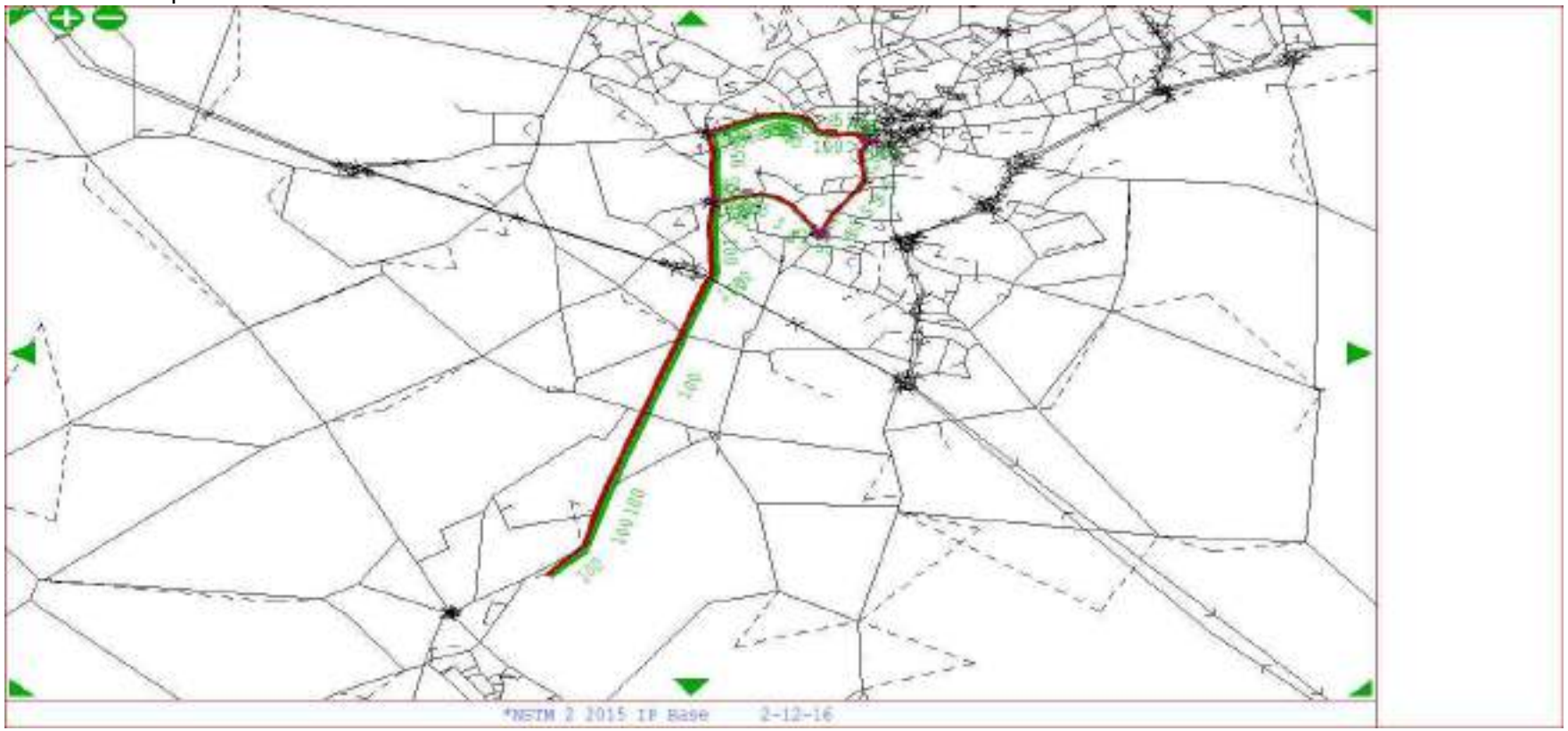
Inter-peak

From Northampton To Rail Central Area - User Class 4



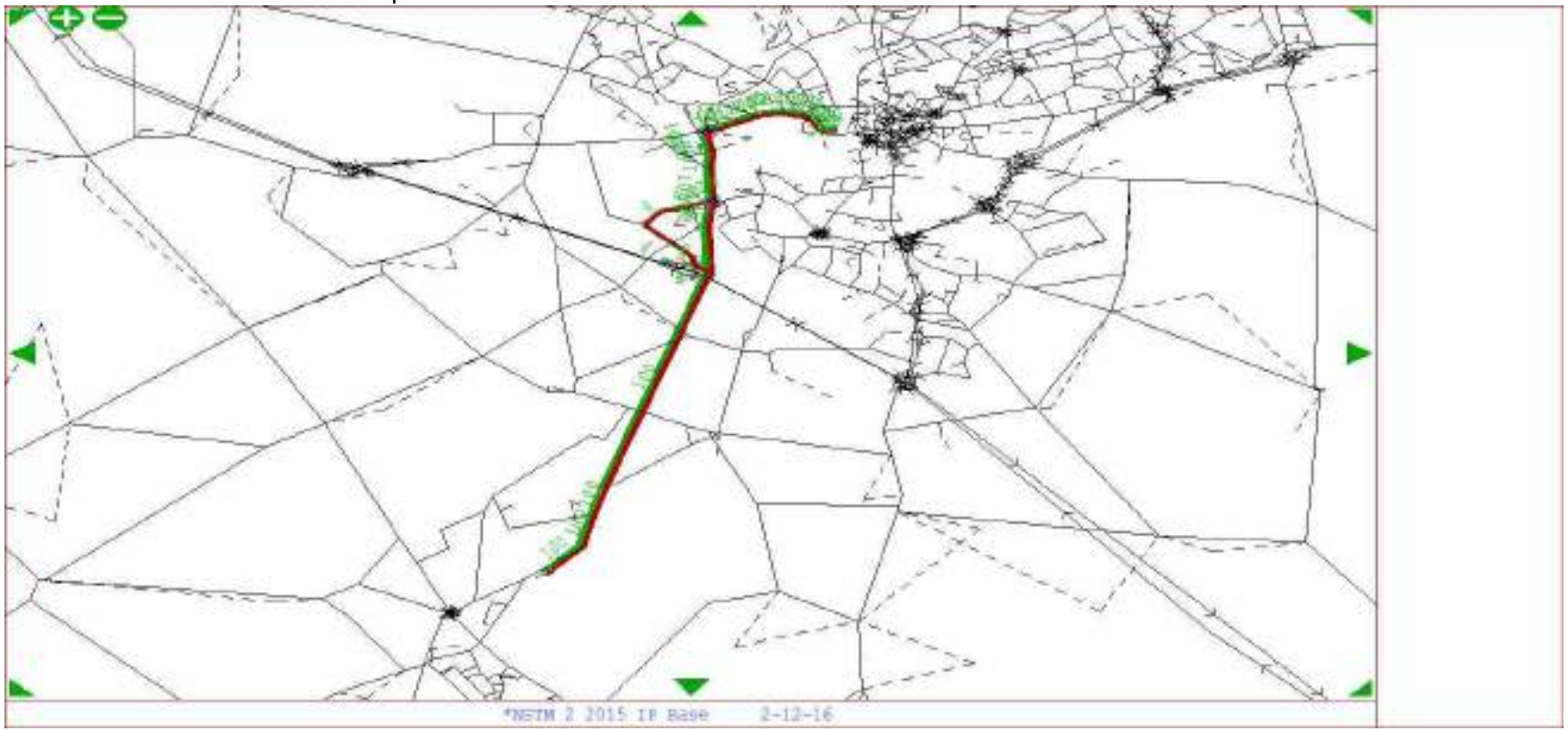
Inter-peak

From Northampton To Rail Central Area - User Class 5



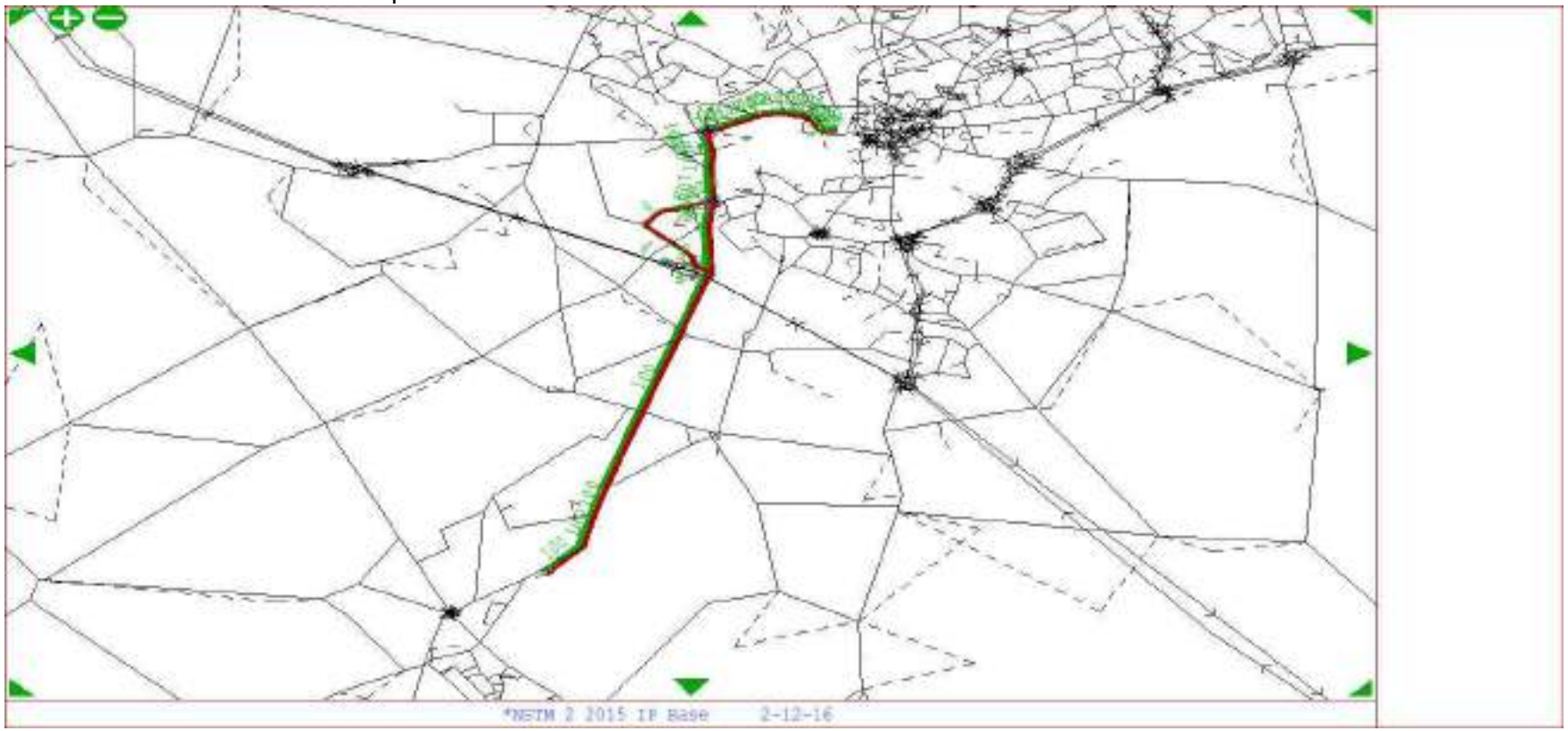
Inter-peak

From Rail Central Area To Northampton - User Class 1



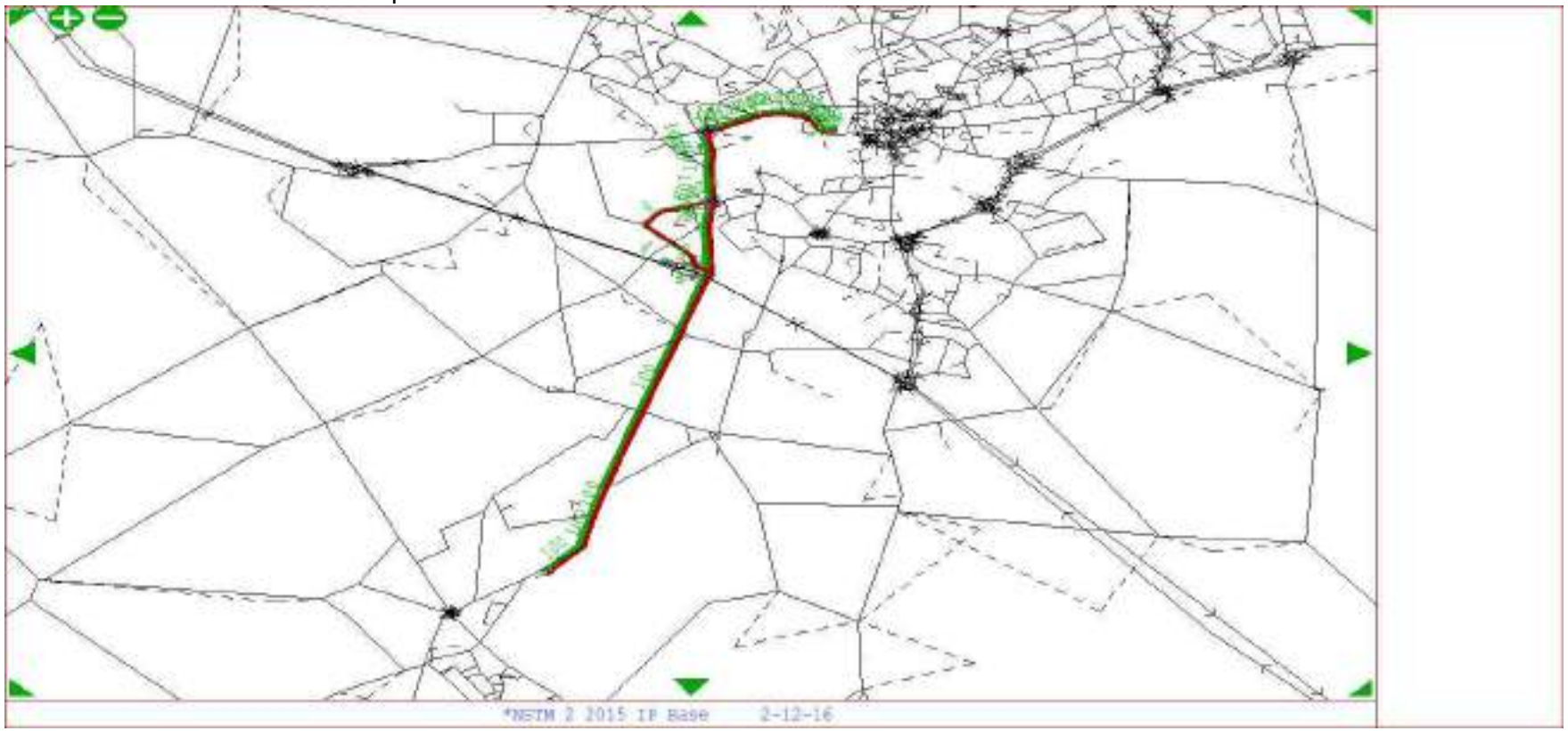
Inter-peak

From Rail Central Area To Northampton - User Class 2



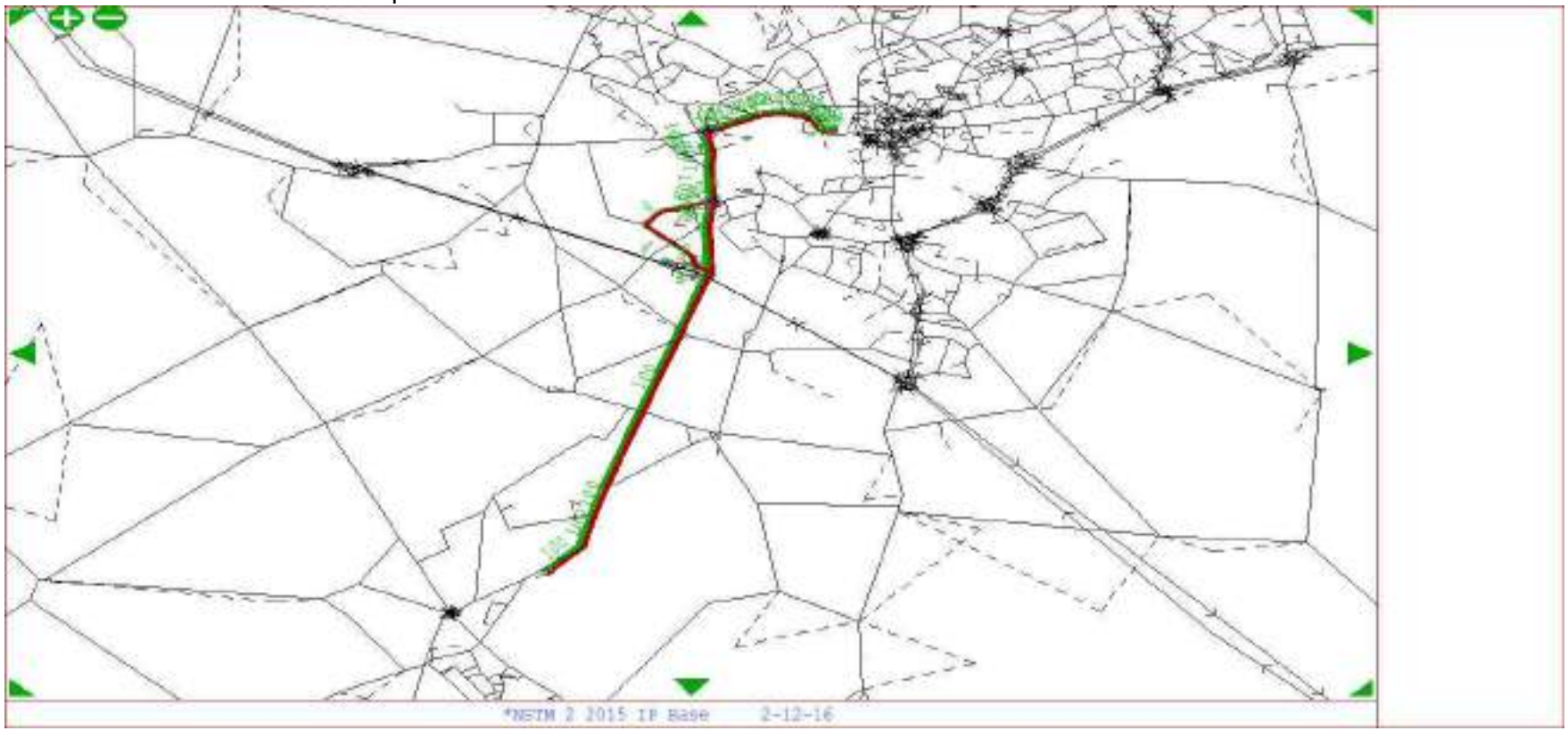
Inter-peak

From Rail Central Area To Northampton - User Class 3



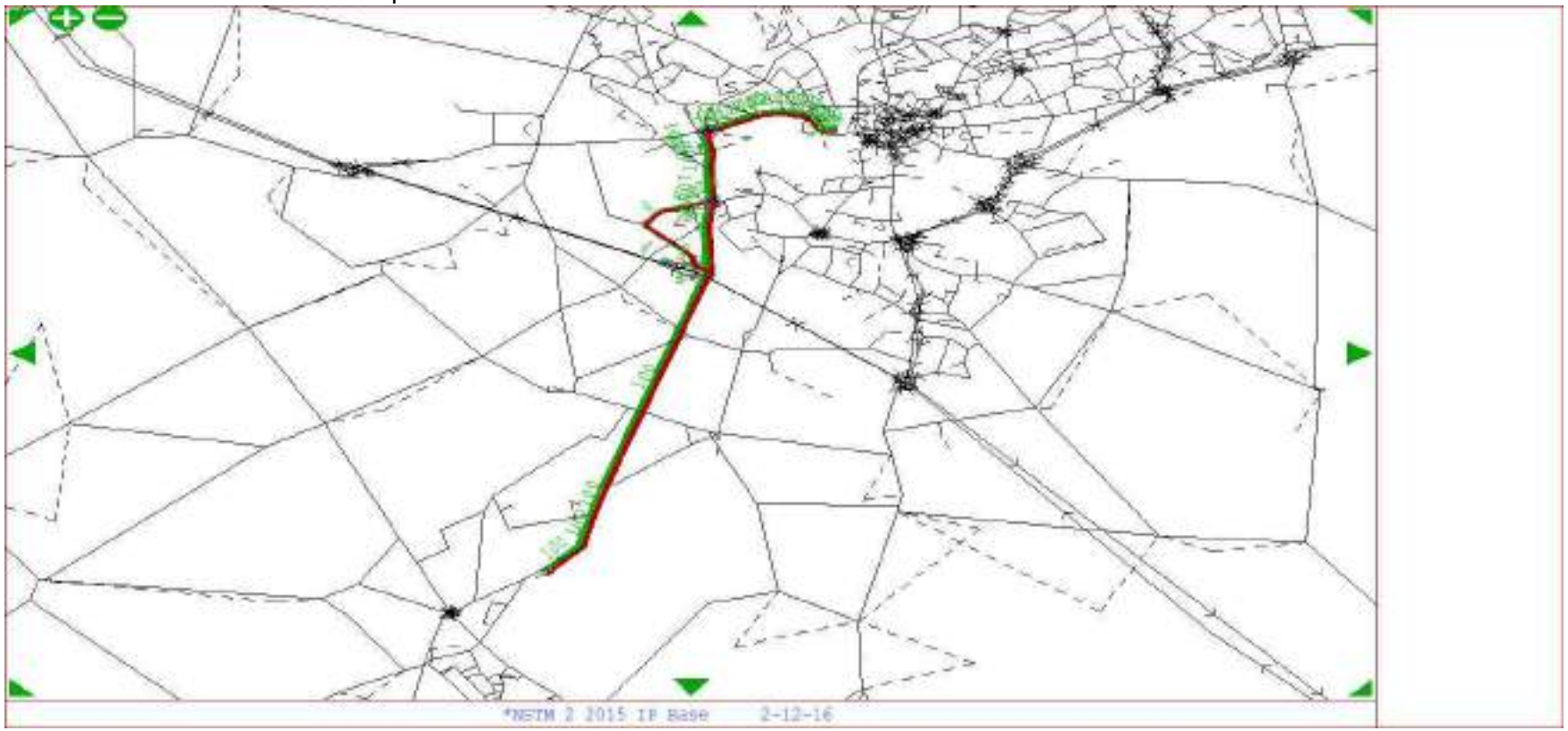
Inter-peak

From Rail Central Area To Northampton - User Class 4



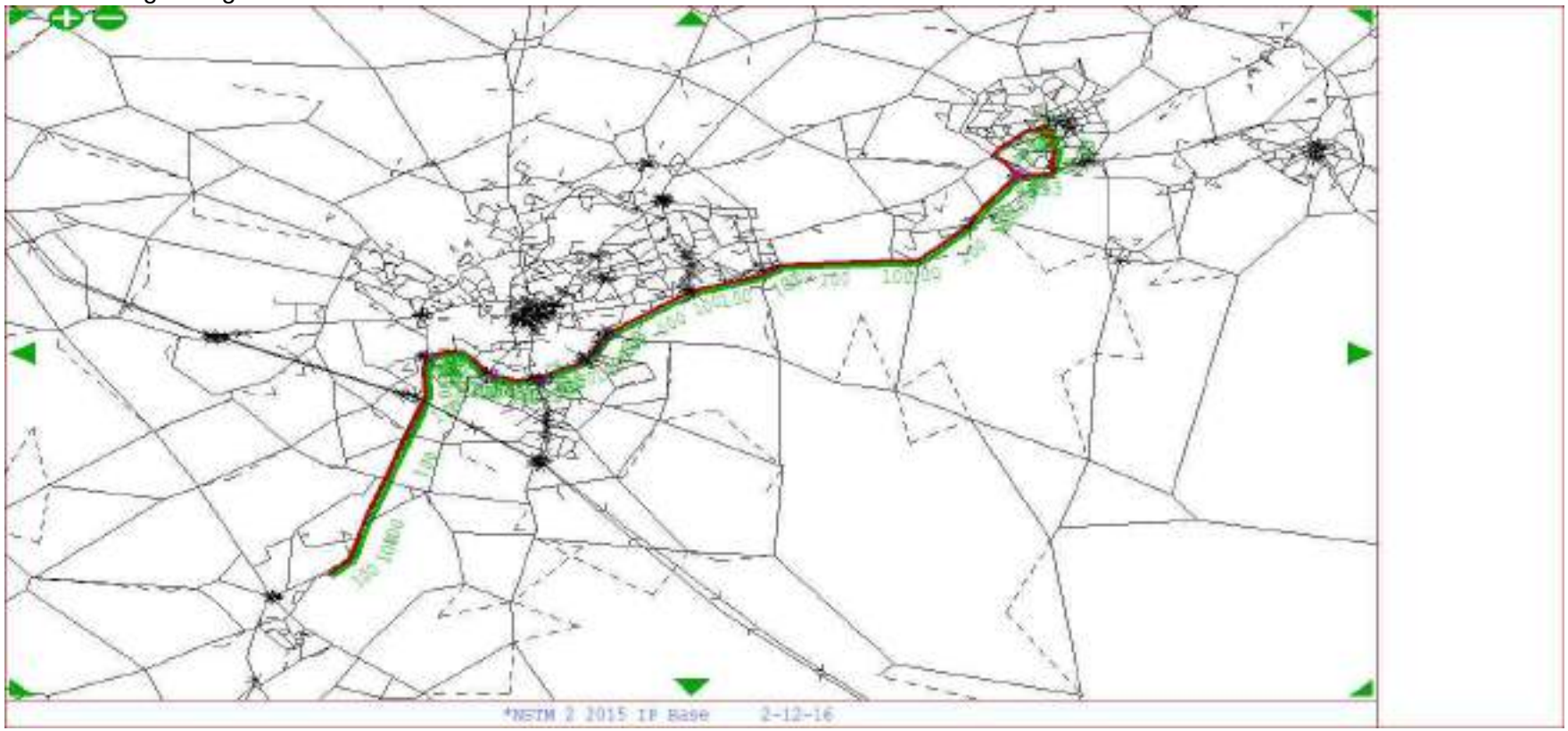
Inter-peak

From Rail Central Area To Northampton - User Class 5



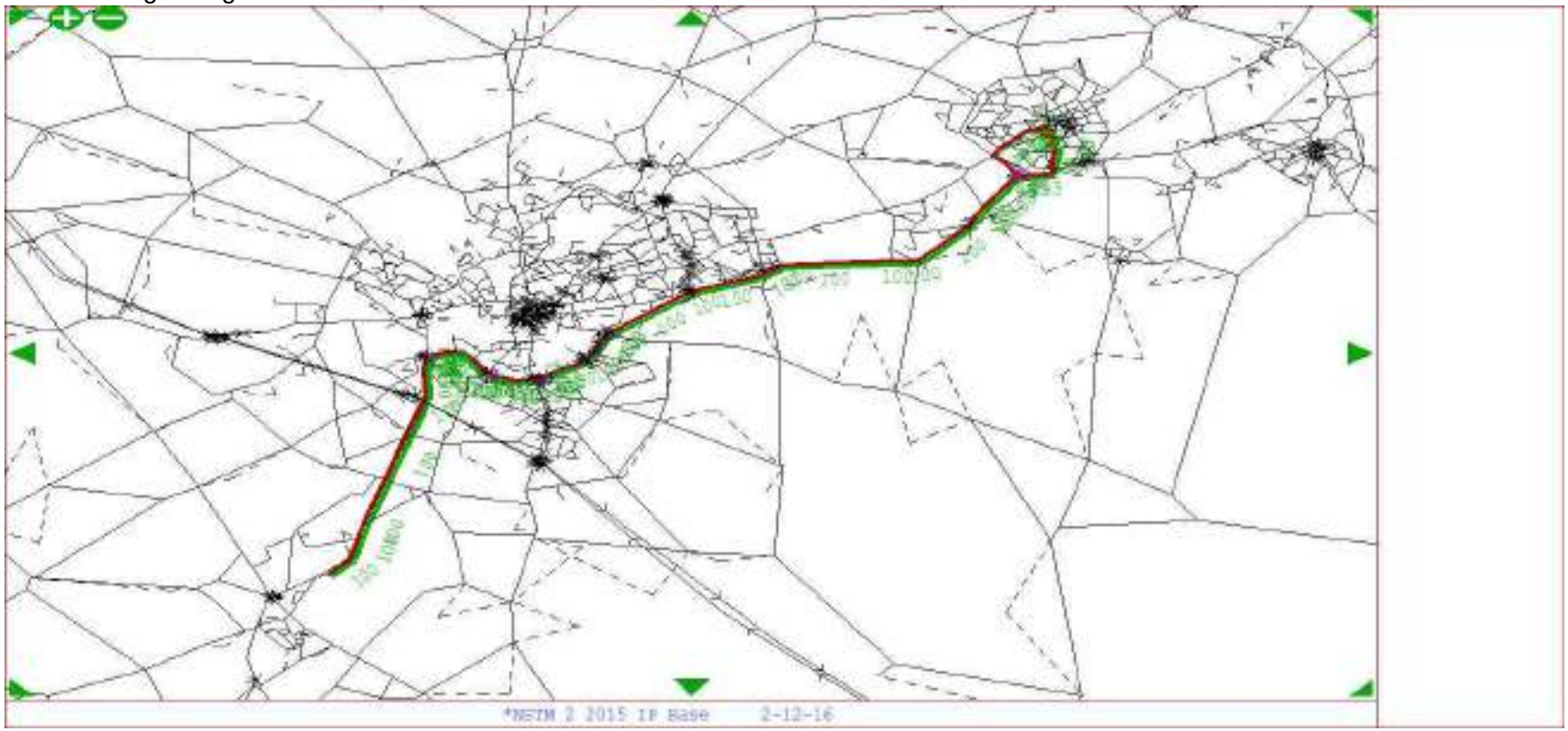
Inter-peak

From Wellingborough To Rail Central Area - User Class 1



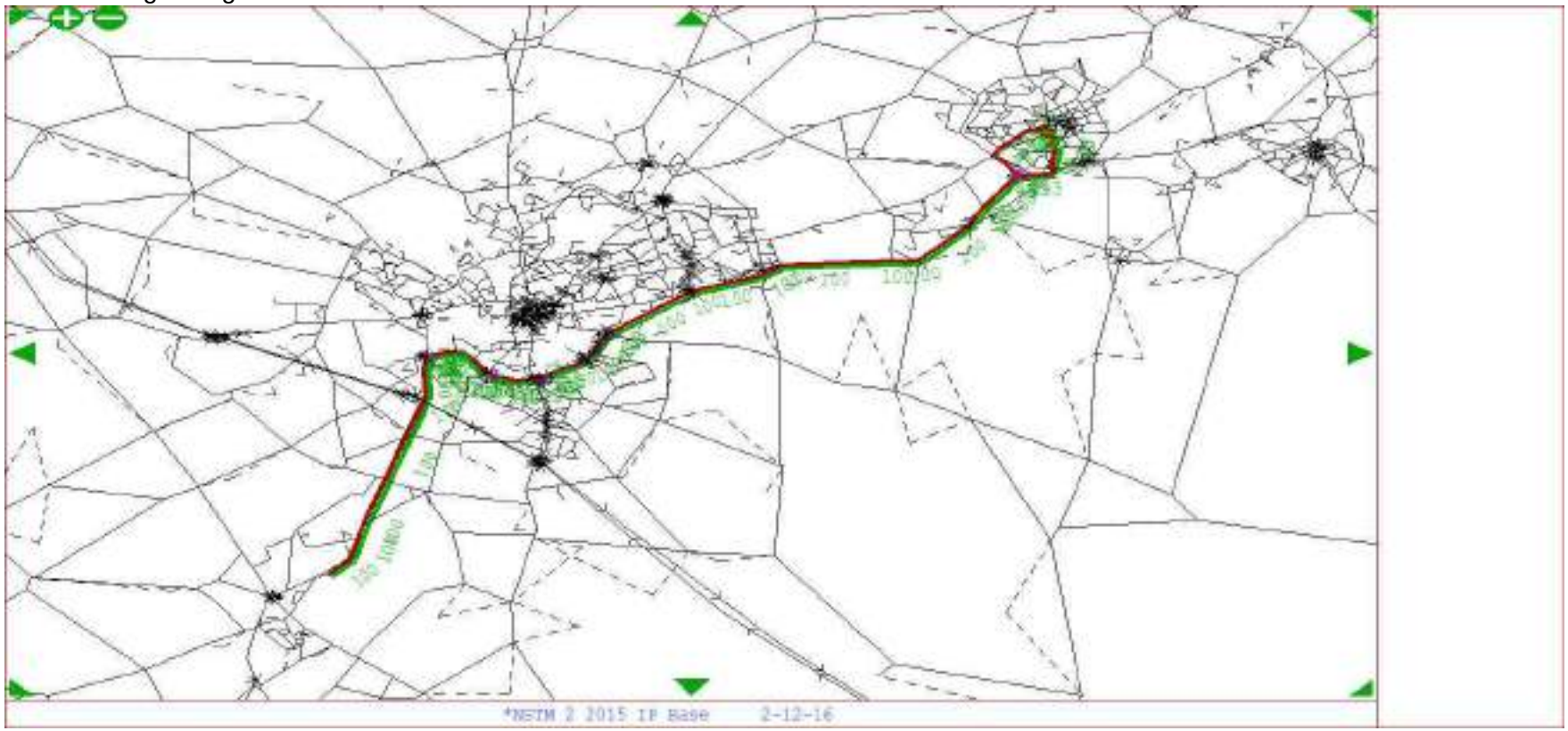
Inter-peak

From Wellingborough To Rail Central Area - User Class 2



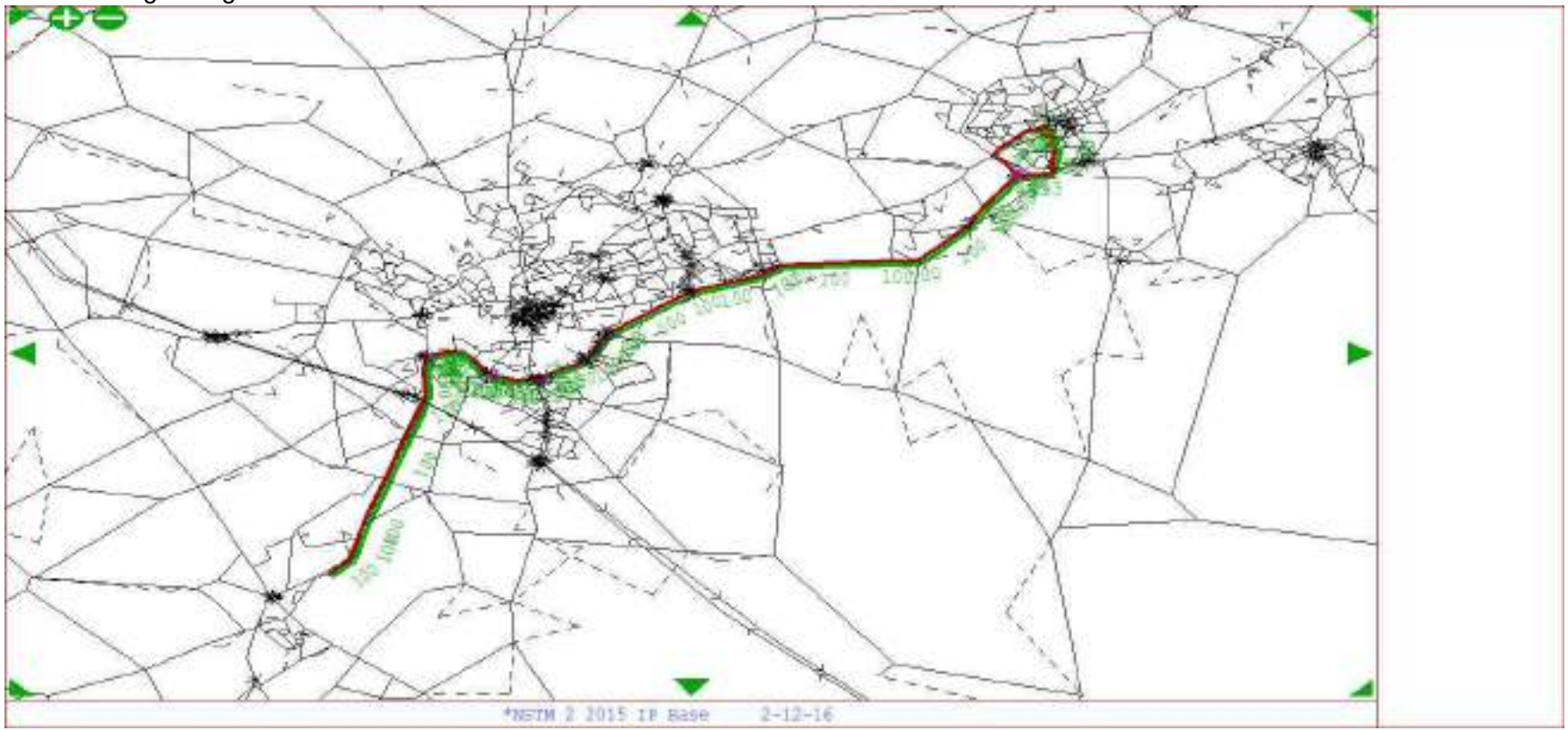
Inter-peak

From Wellingborough To Rail Central Area - User Class 3



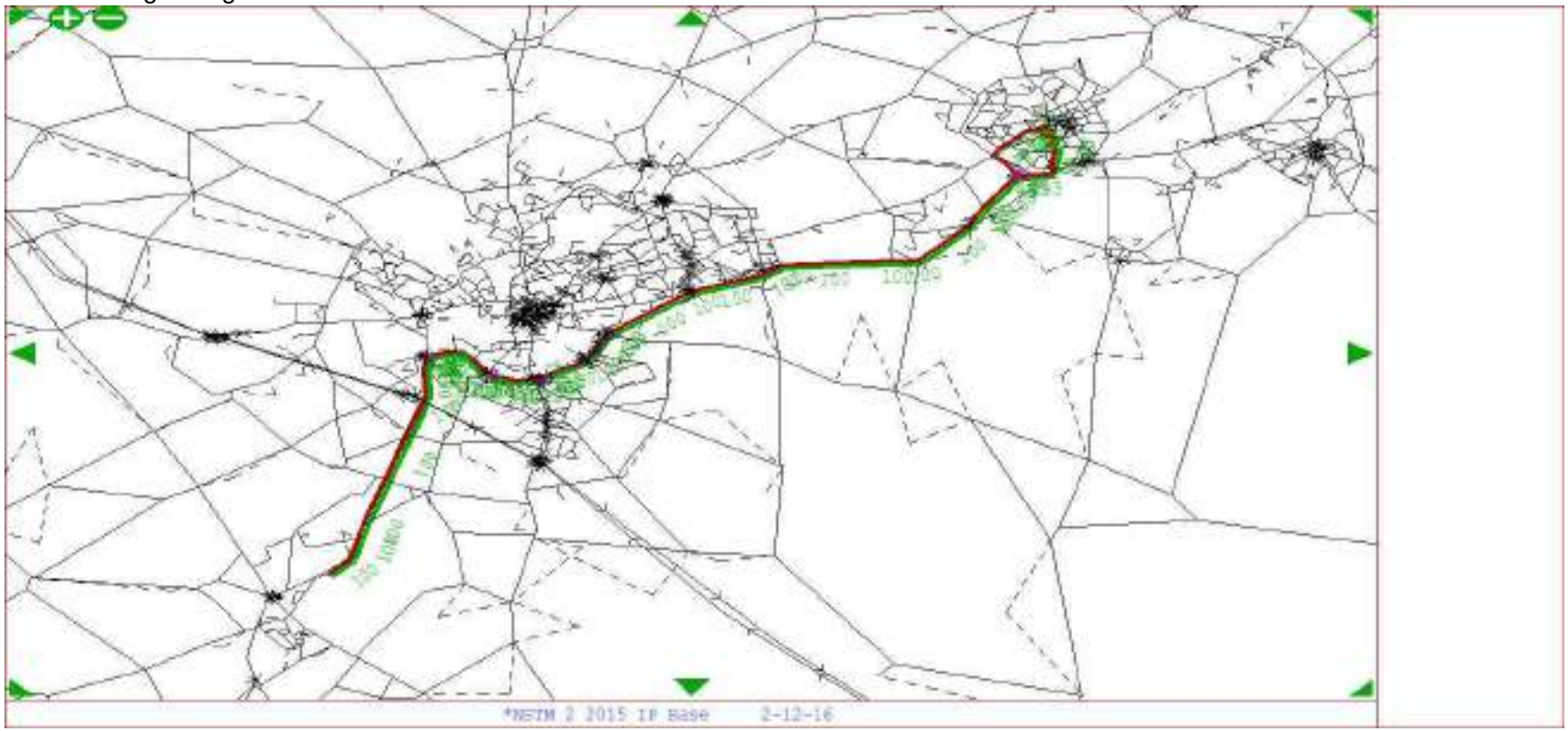
Inter-peak

From Wellingborough To Rail Central Area - User Class 4



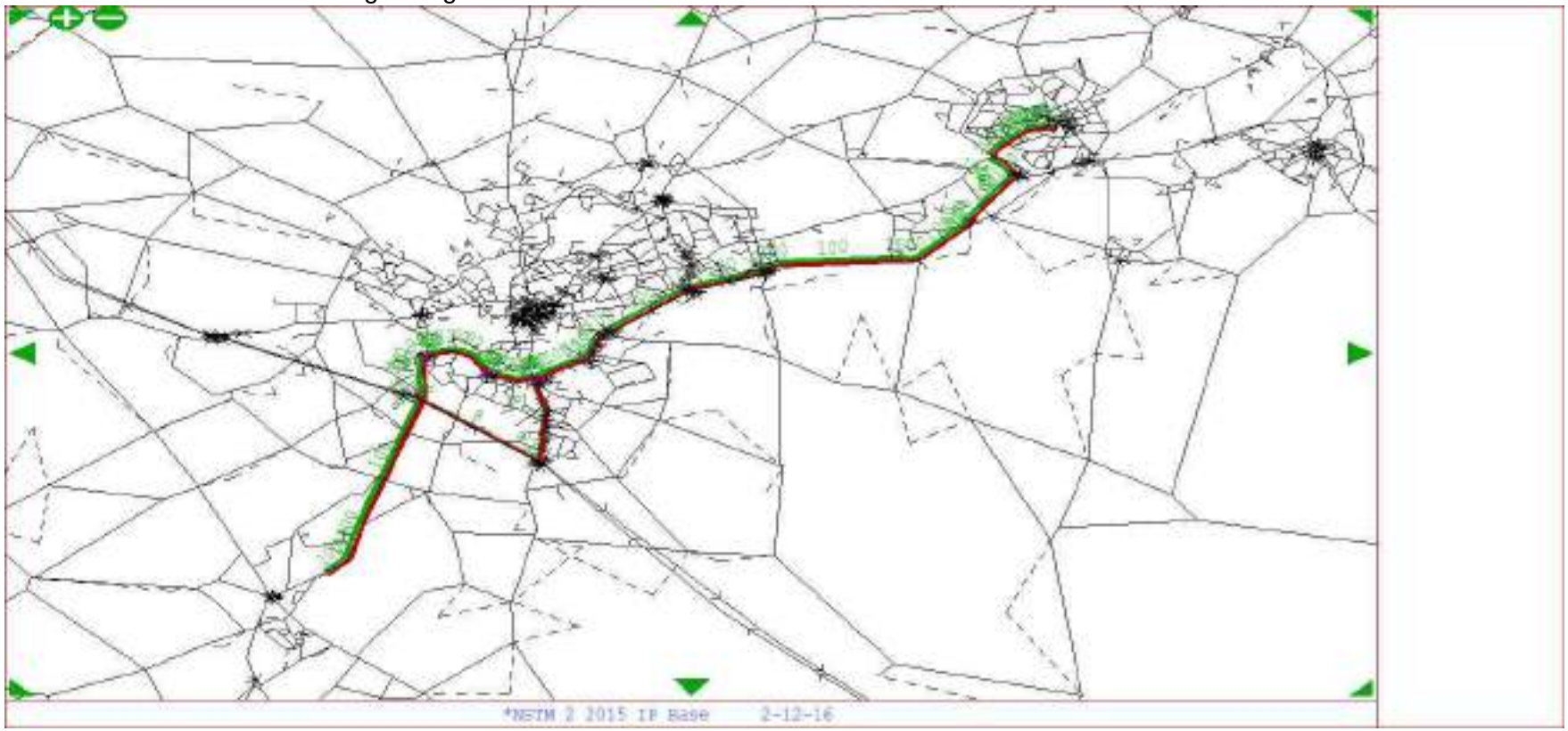
Inter-peak

From Wellingborough To Rail Central Area - User Class 5



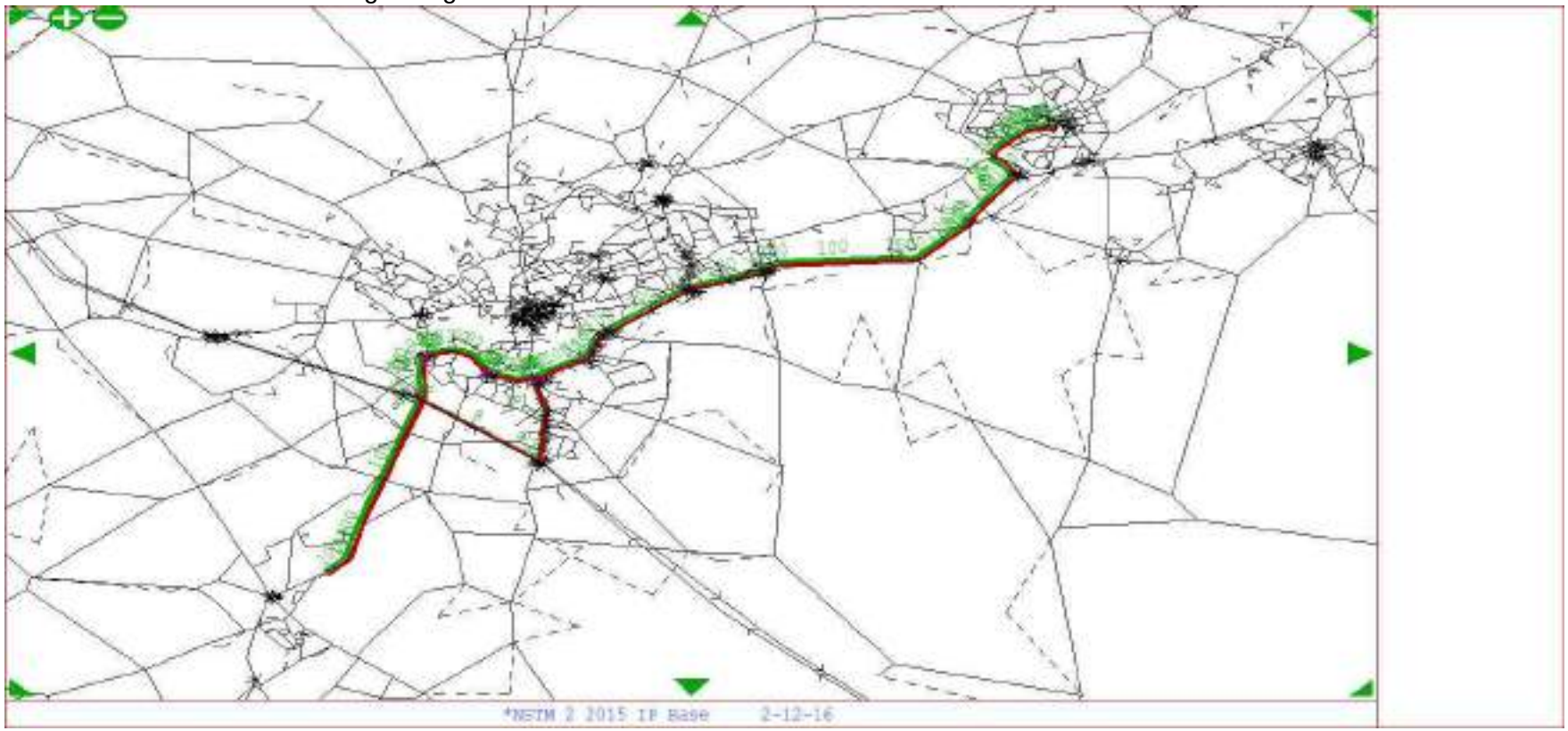
Inter-peak

From Rail Central Area To Wellingborough - User Class 1



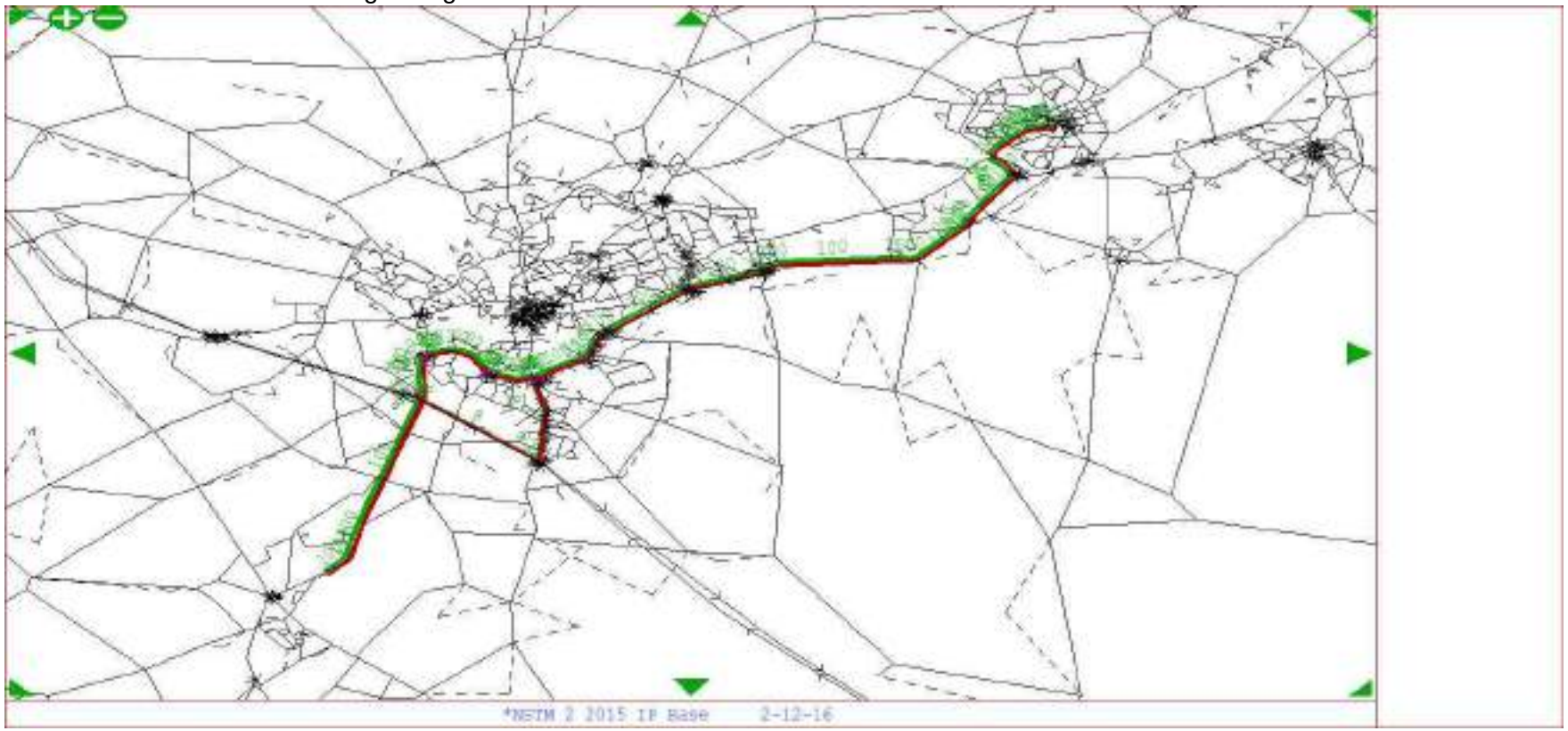
Inter-peak

From Rail Central Area To Wellingborough - User Class 2



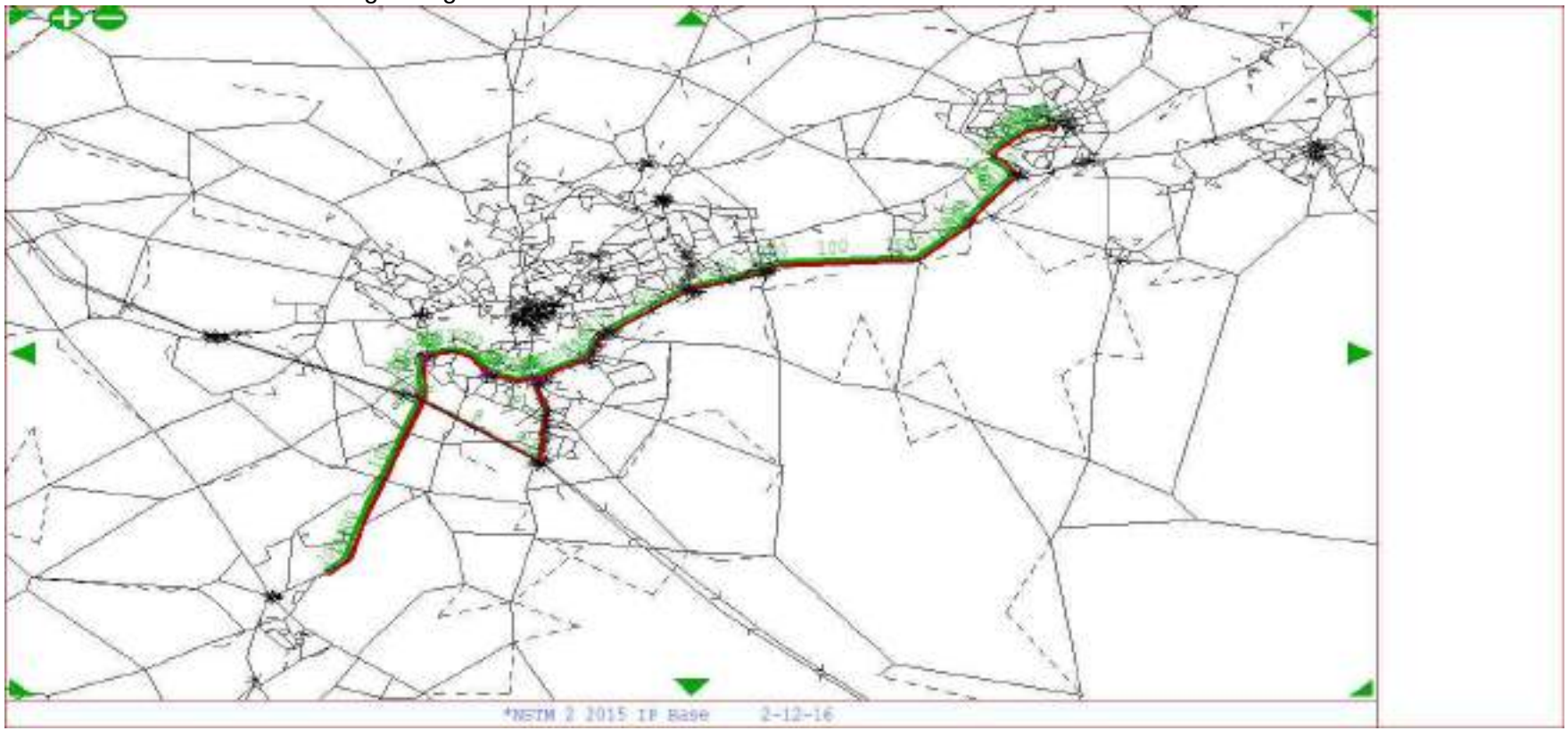
Inter-peak

From Rail Central Area To Wellingborough - User Class 3



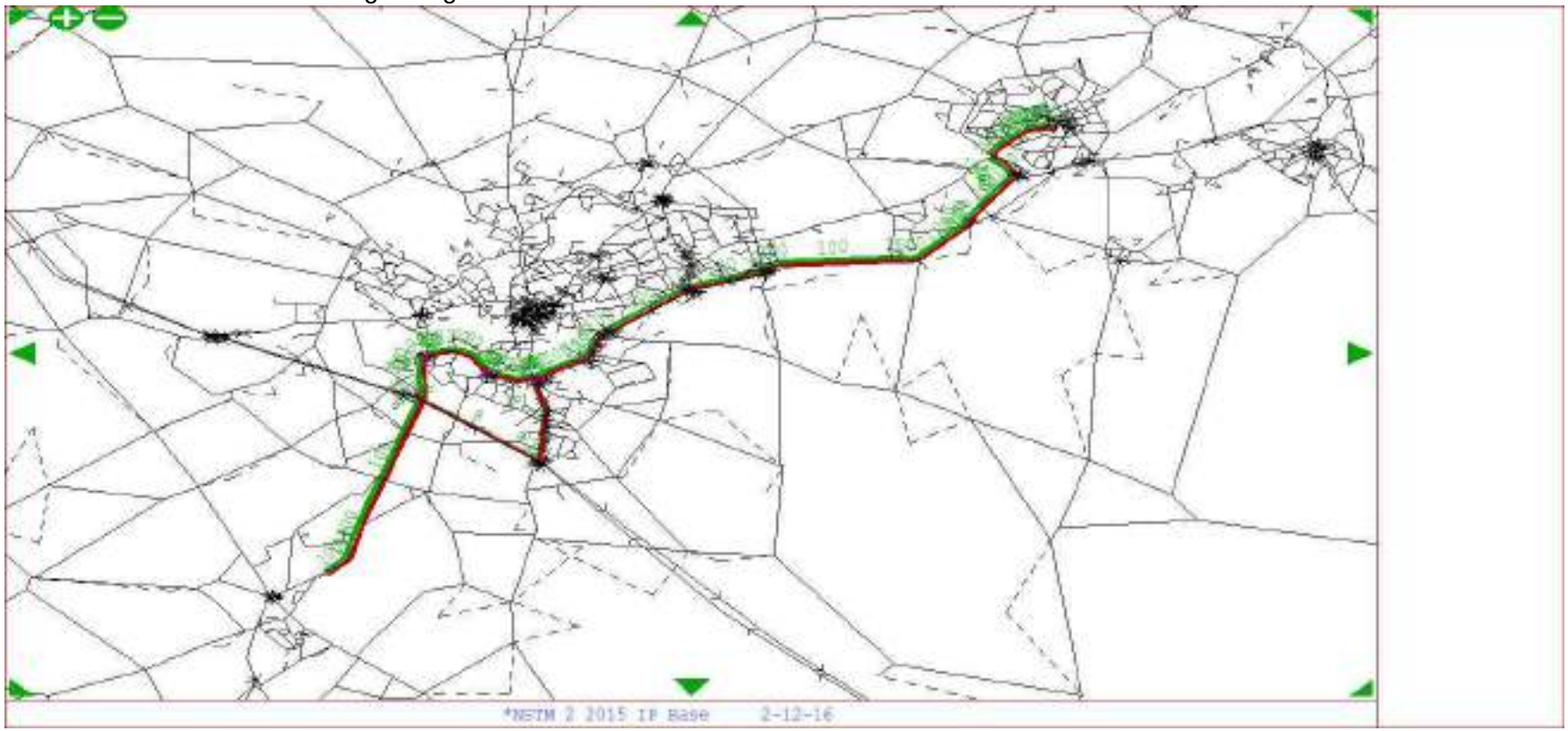
Inter-peak

From Rail Central Area To Wellingborough - User Class 4



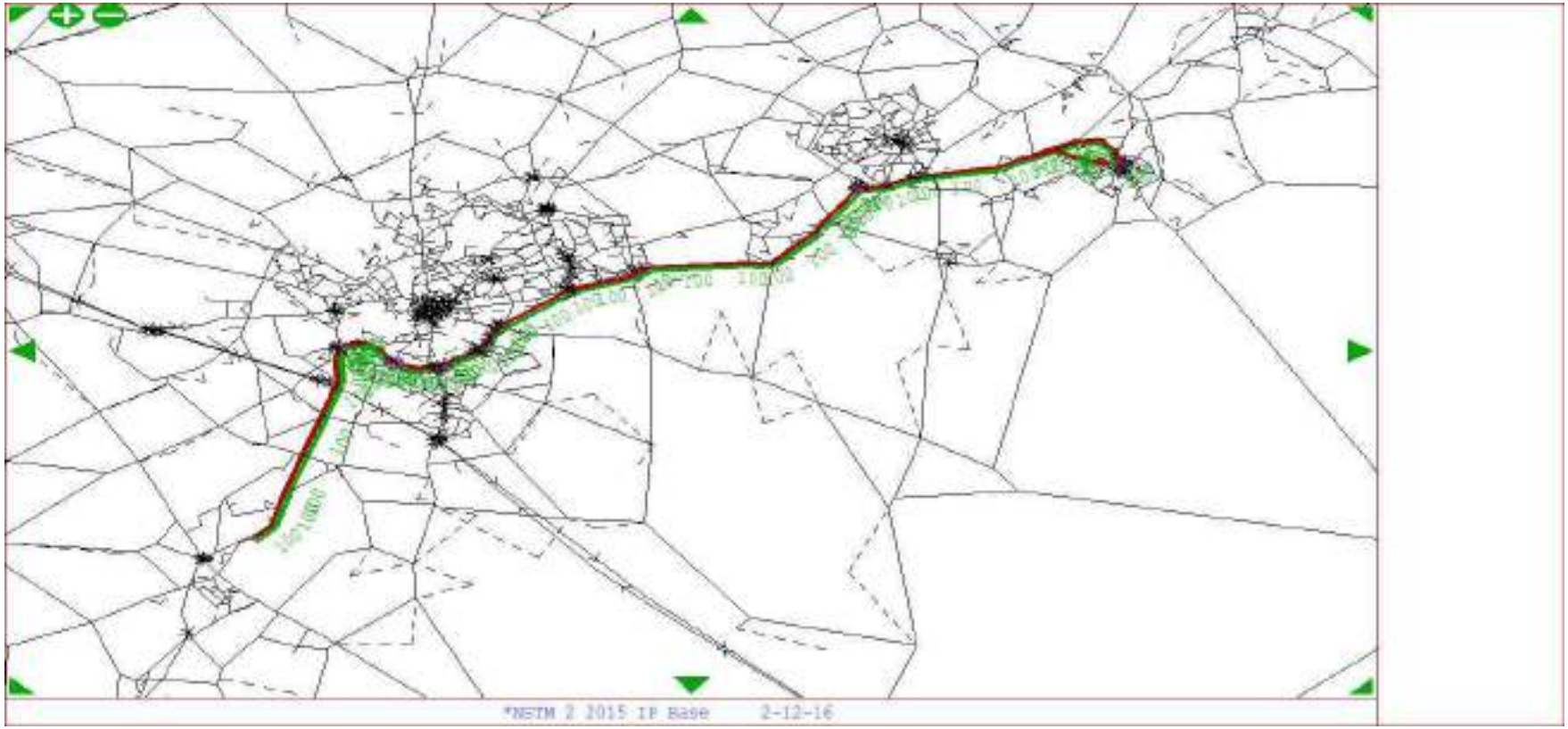
Inter-peak

From Rail Central Area To Wellingborough - User Class 5



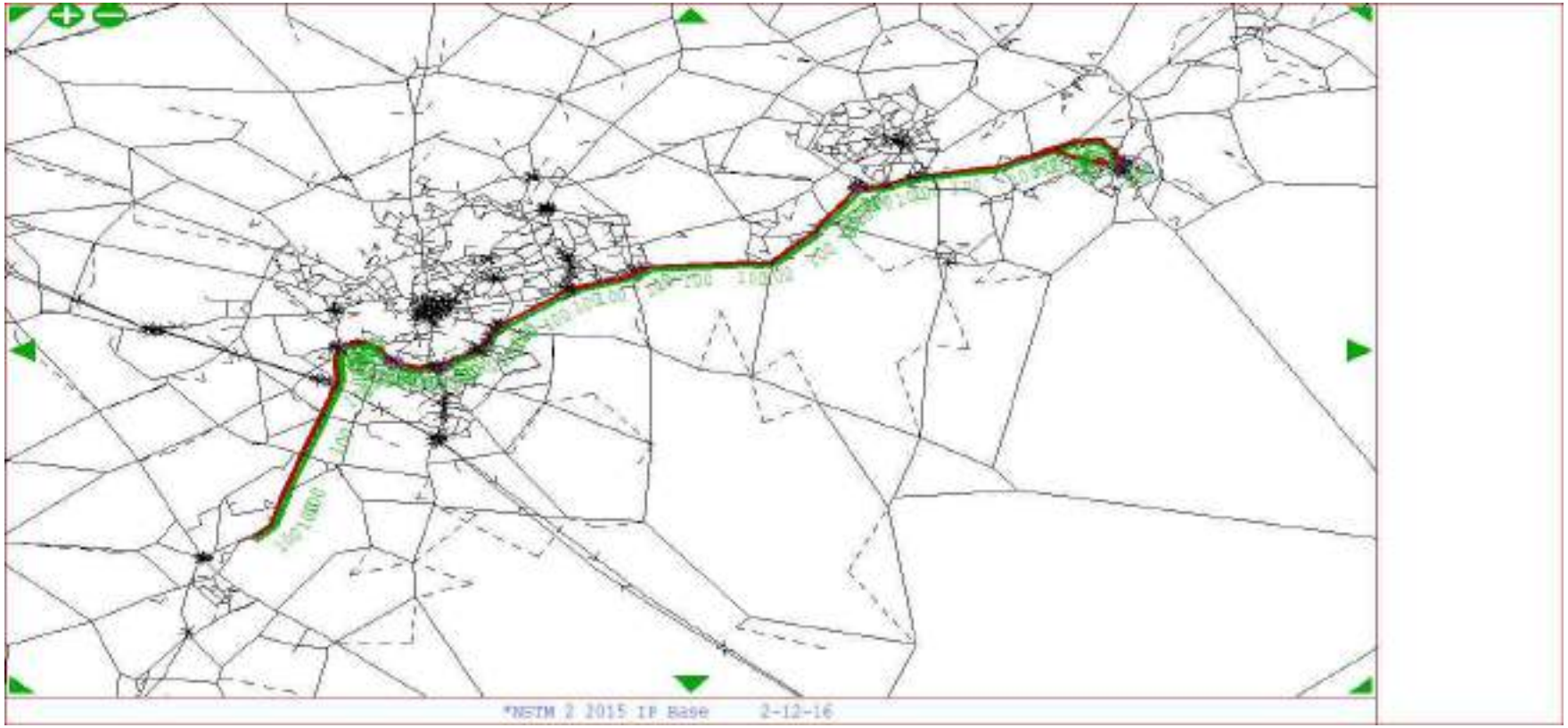
Inter-peak

From Rushden To Rail Central Area - User Class 1



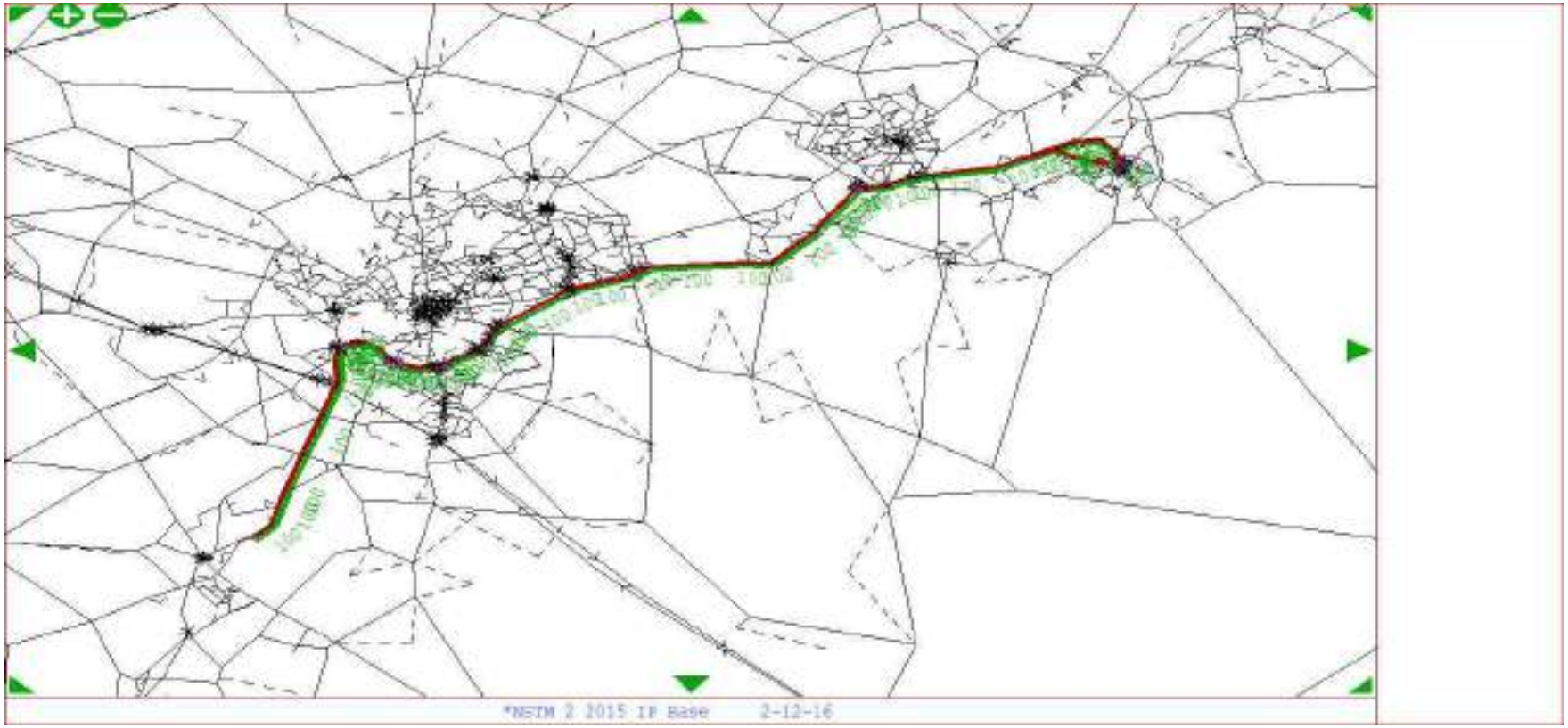
Inter-peak

From Rushden To Rail Central Area - User Class 2



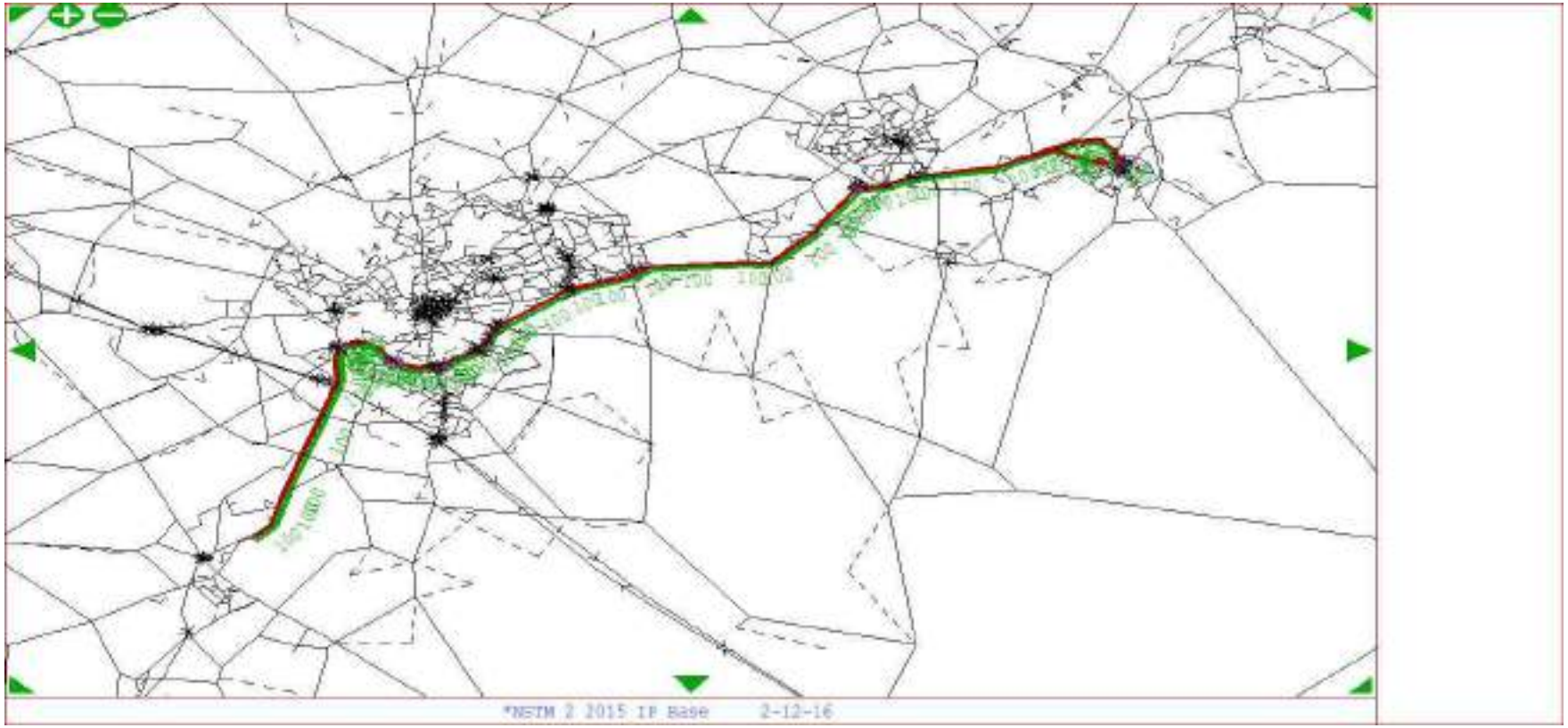
Inter-peak

From Rushden To Rail Central Area - User Class 3



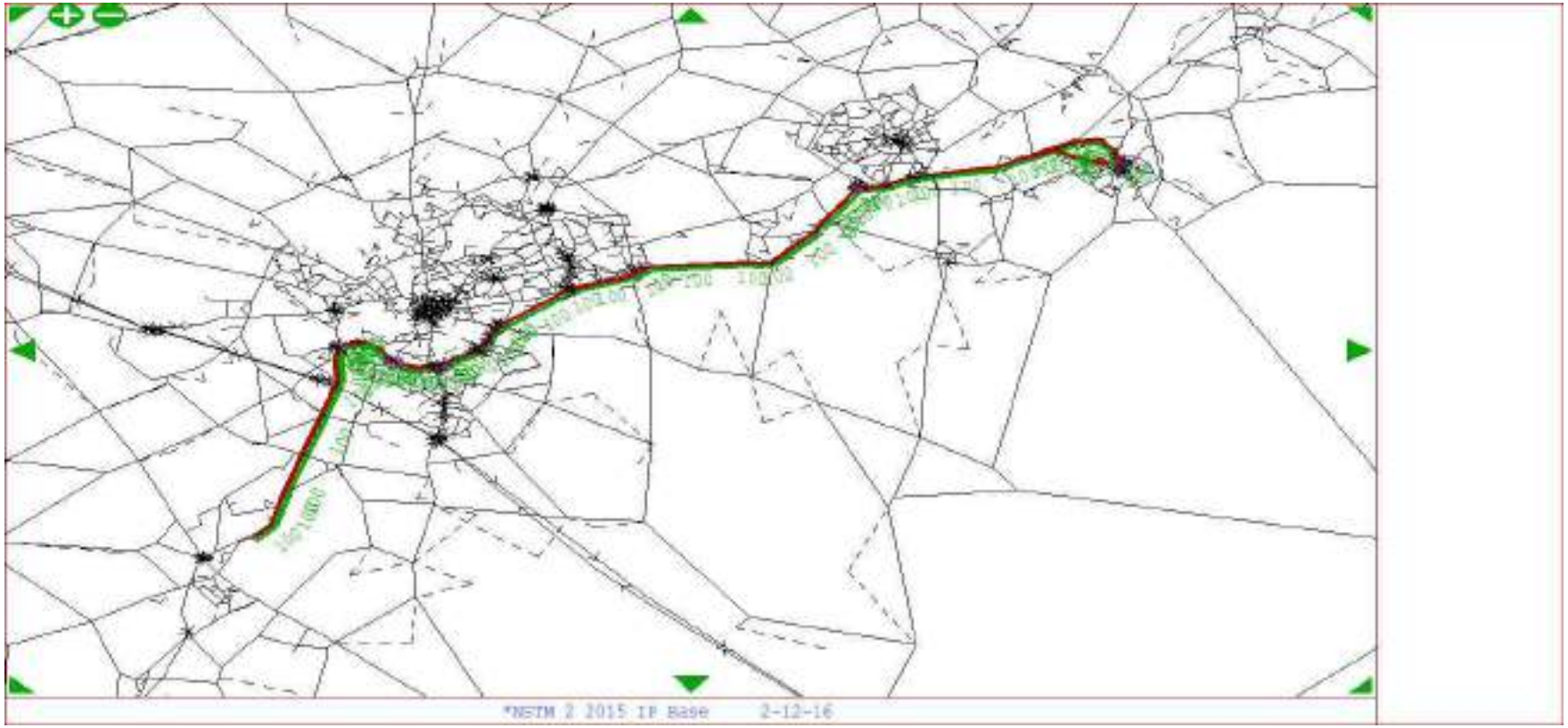
Inter-peak

From Rushden To Rail Central Area - User Class 4



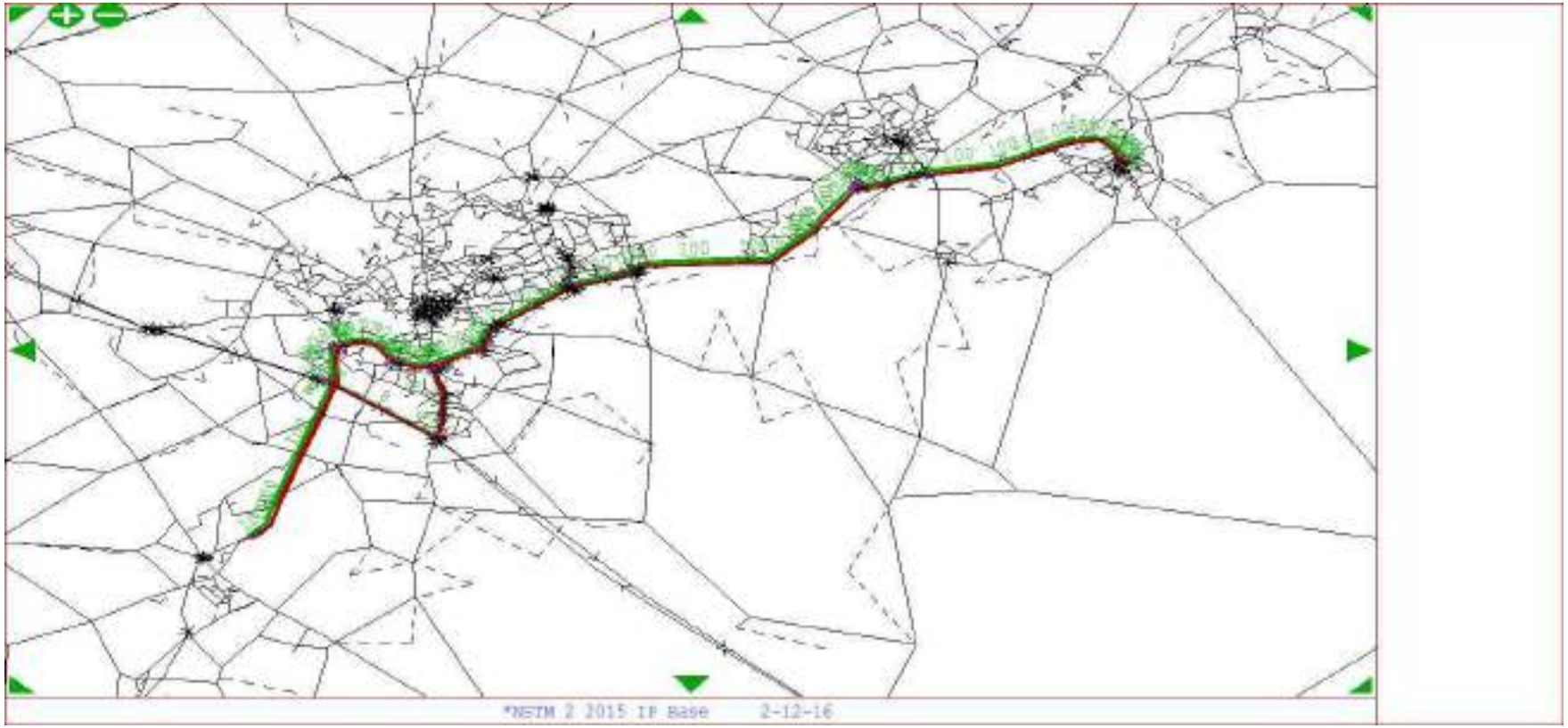
Inter-peak

From Rushden To Rail Central Area - User Class 5



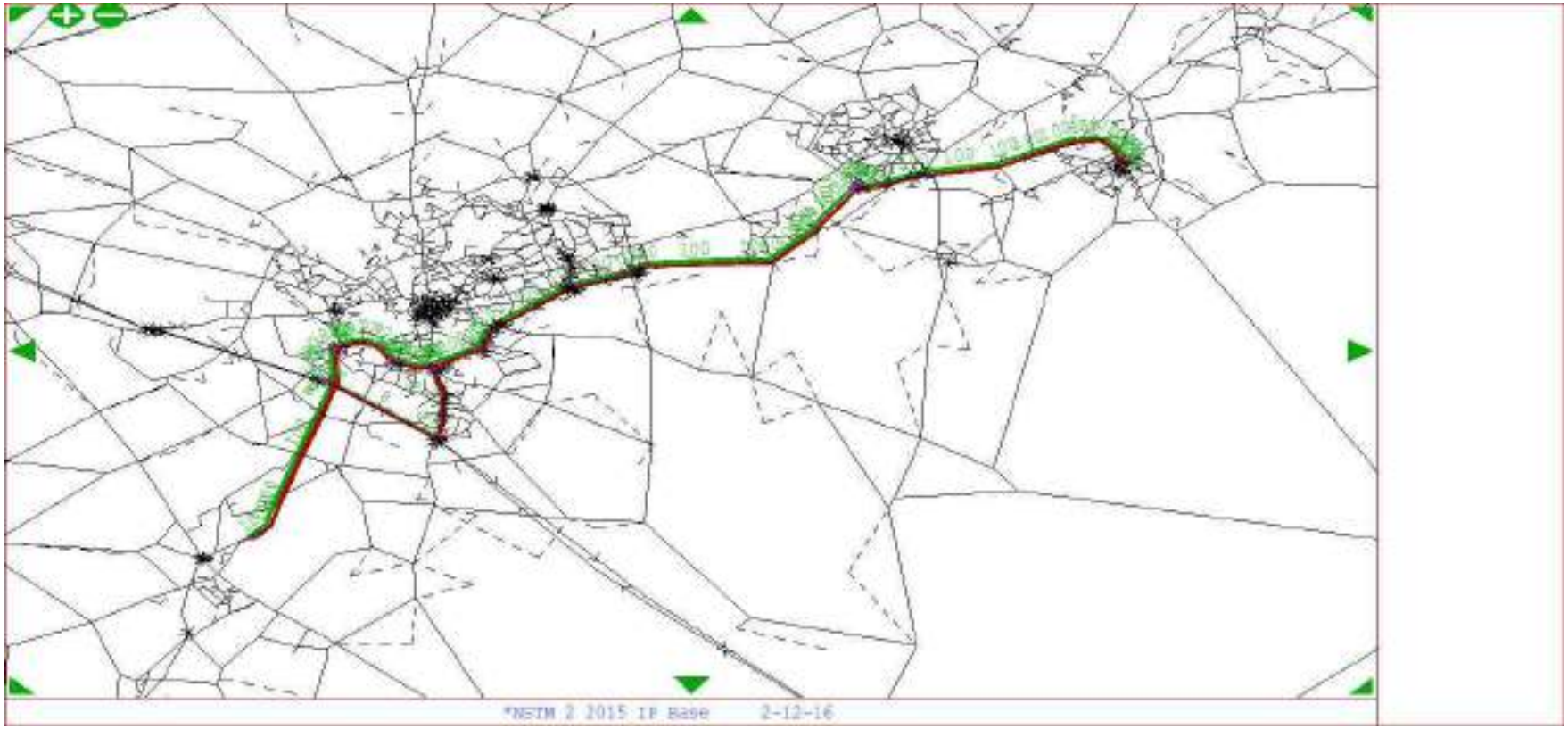
Inter-peak

From Rail Central Area To Rushden - User Class 1



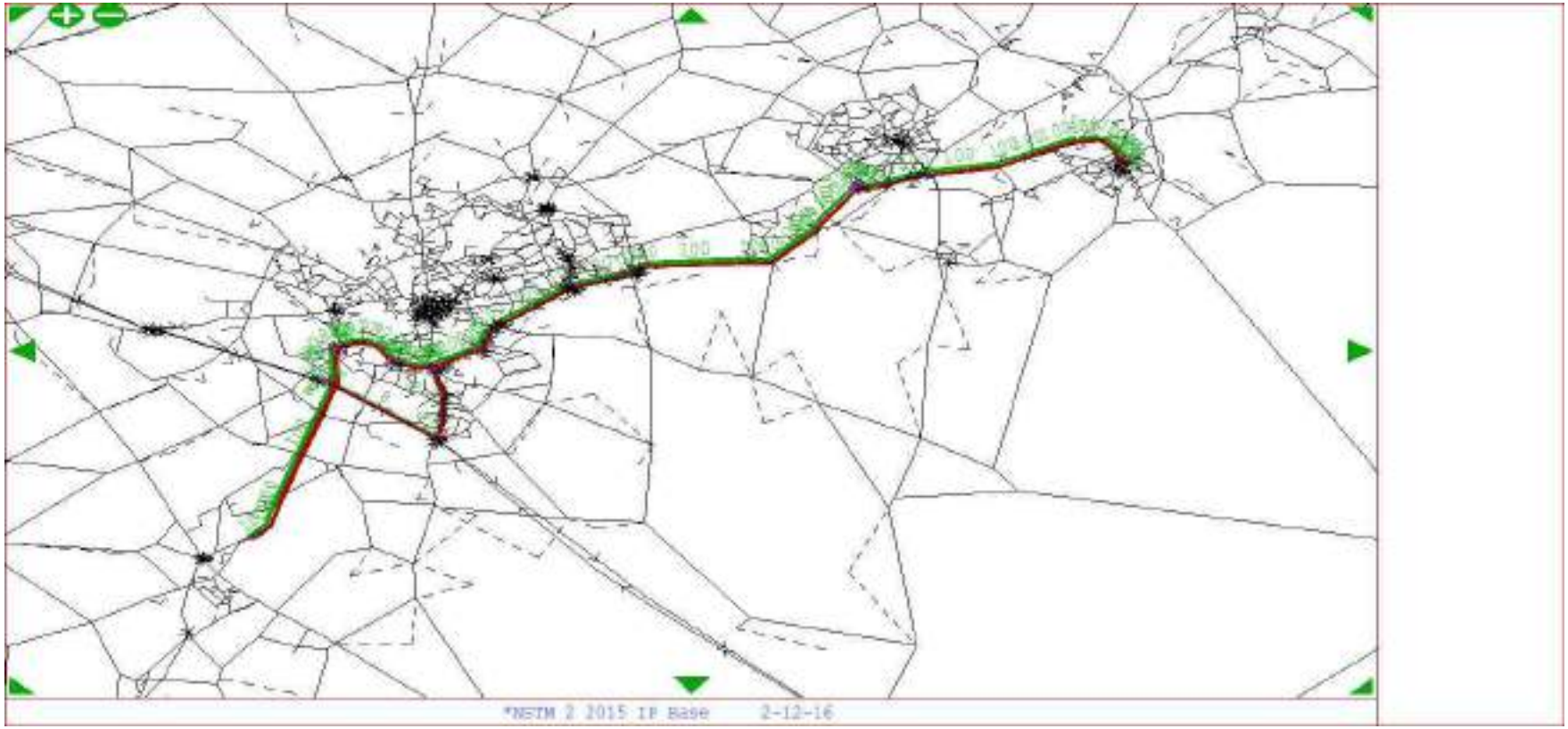
Inter-peak

From Rail Central Area To Rushden - User Class 2



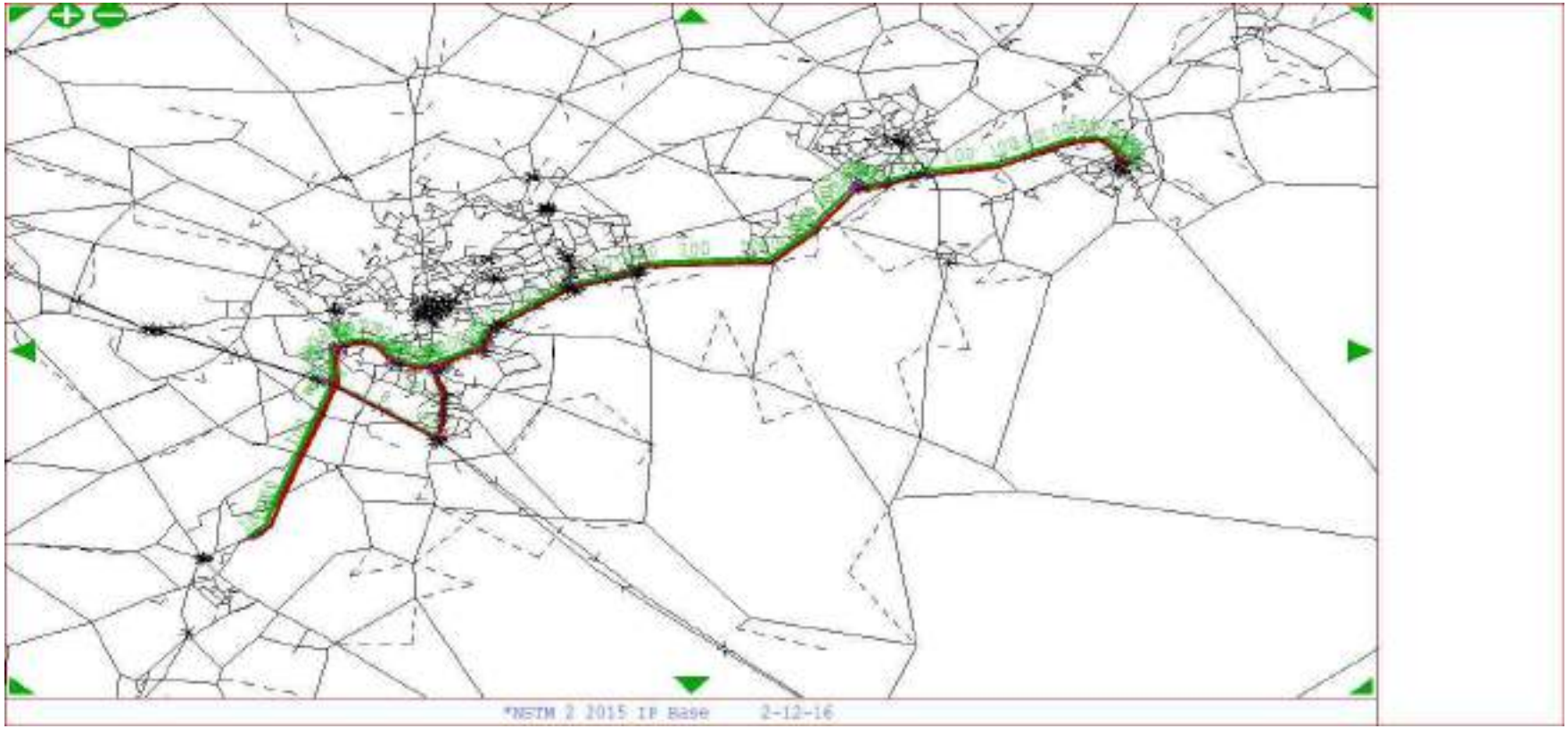
Inter-peak

From Rail Central Area To Rushden - User Class 3



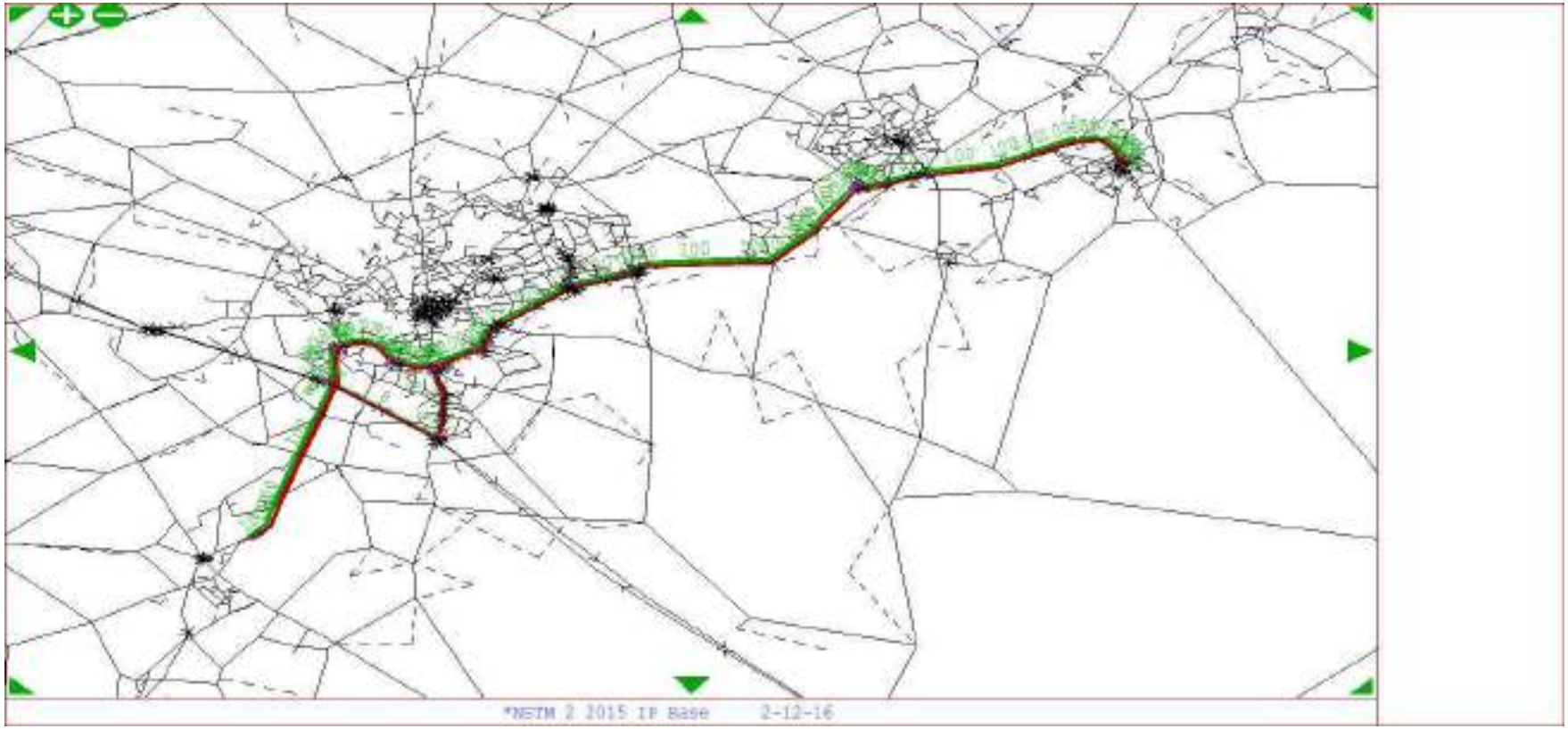
Inter-peak

From Rail Central Area To Rushden - User Class 4



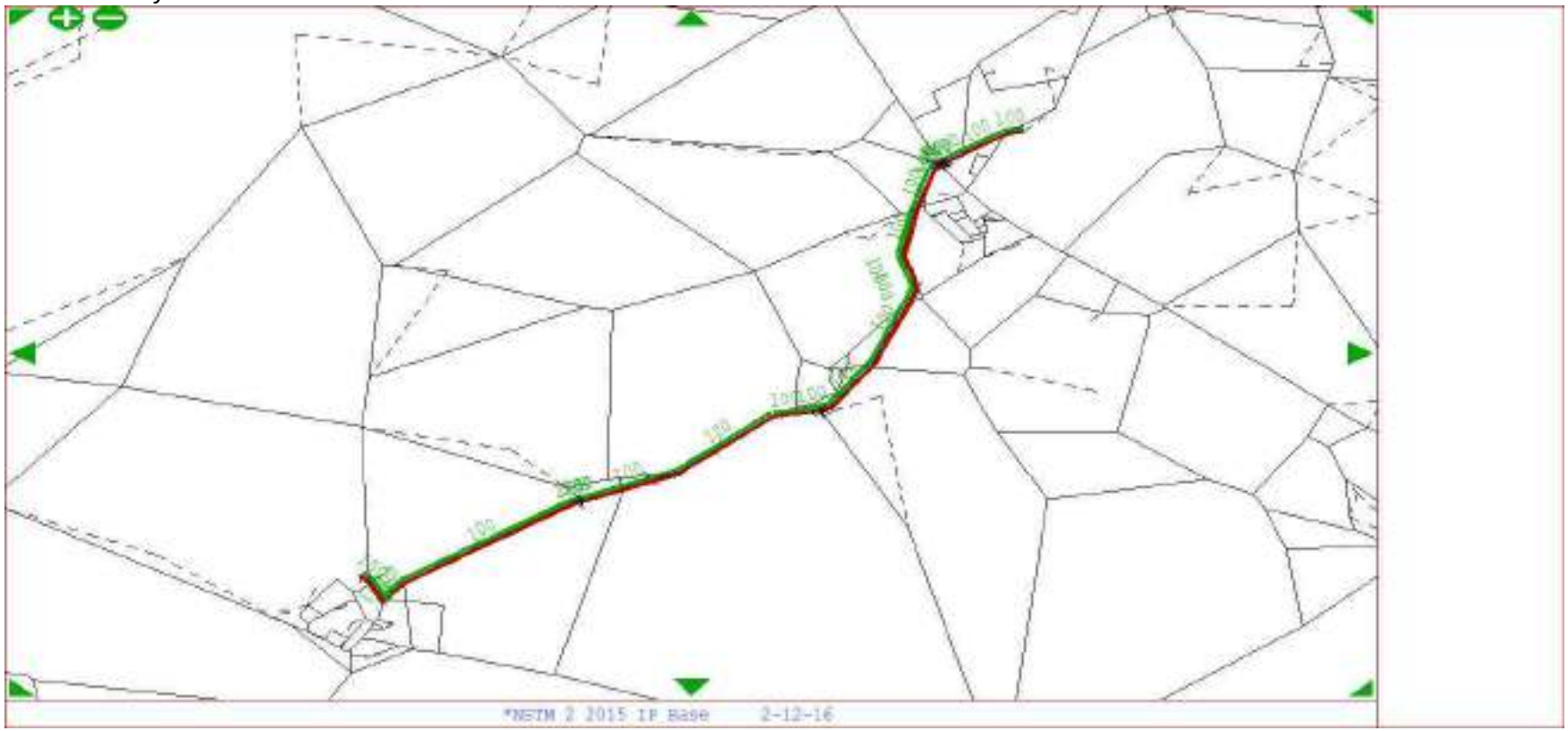
Inter-peak

From Rail Central Area To Rushden - User Class 5



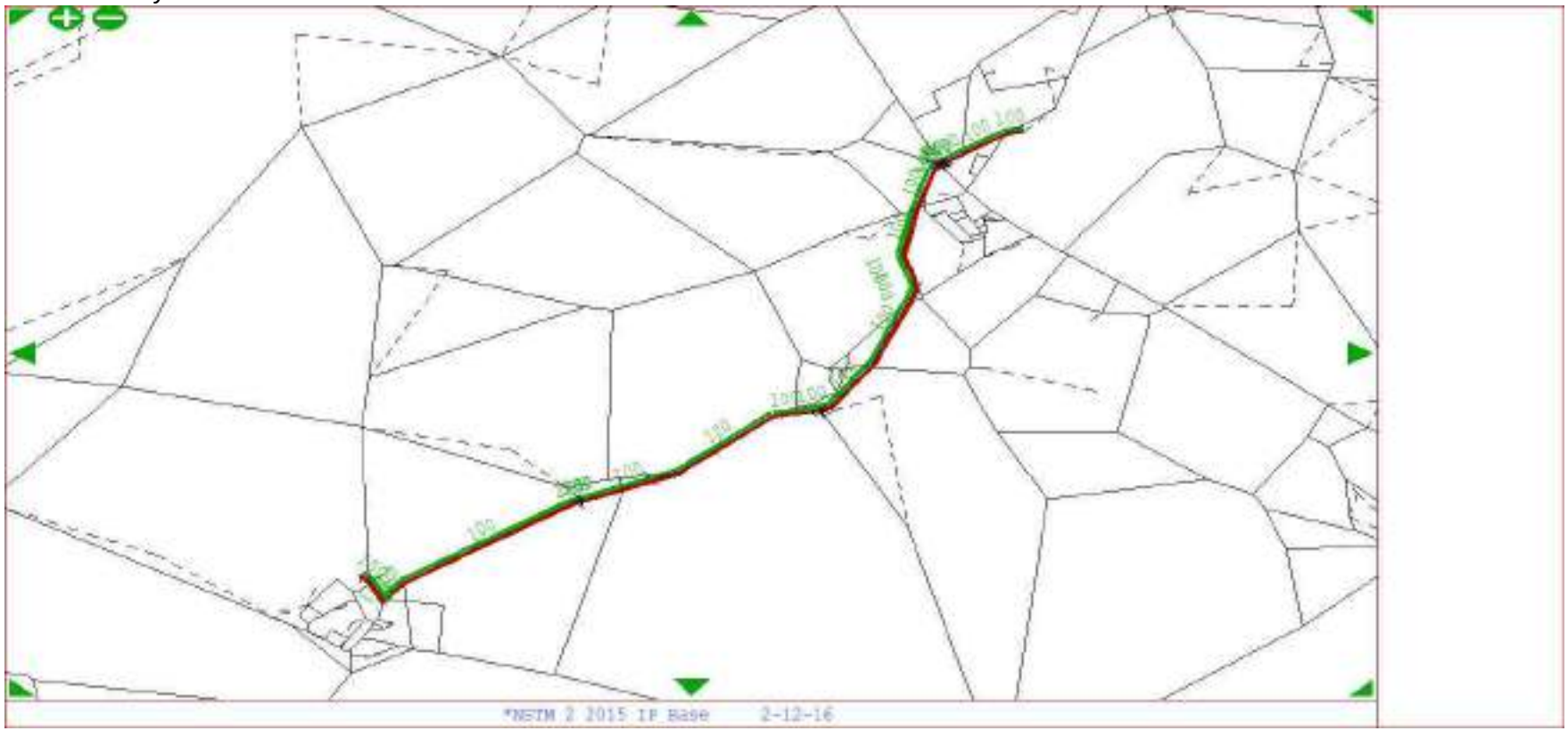
Inter-peak

From Brackley To Rail Central Area - User Class 1



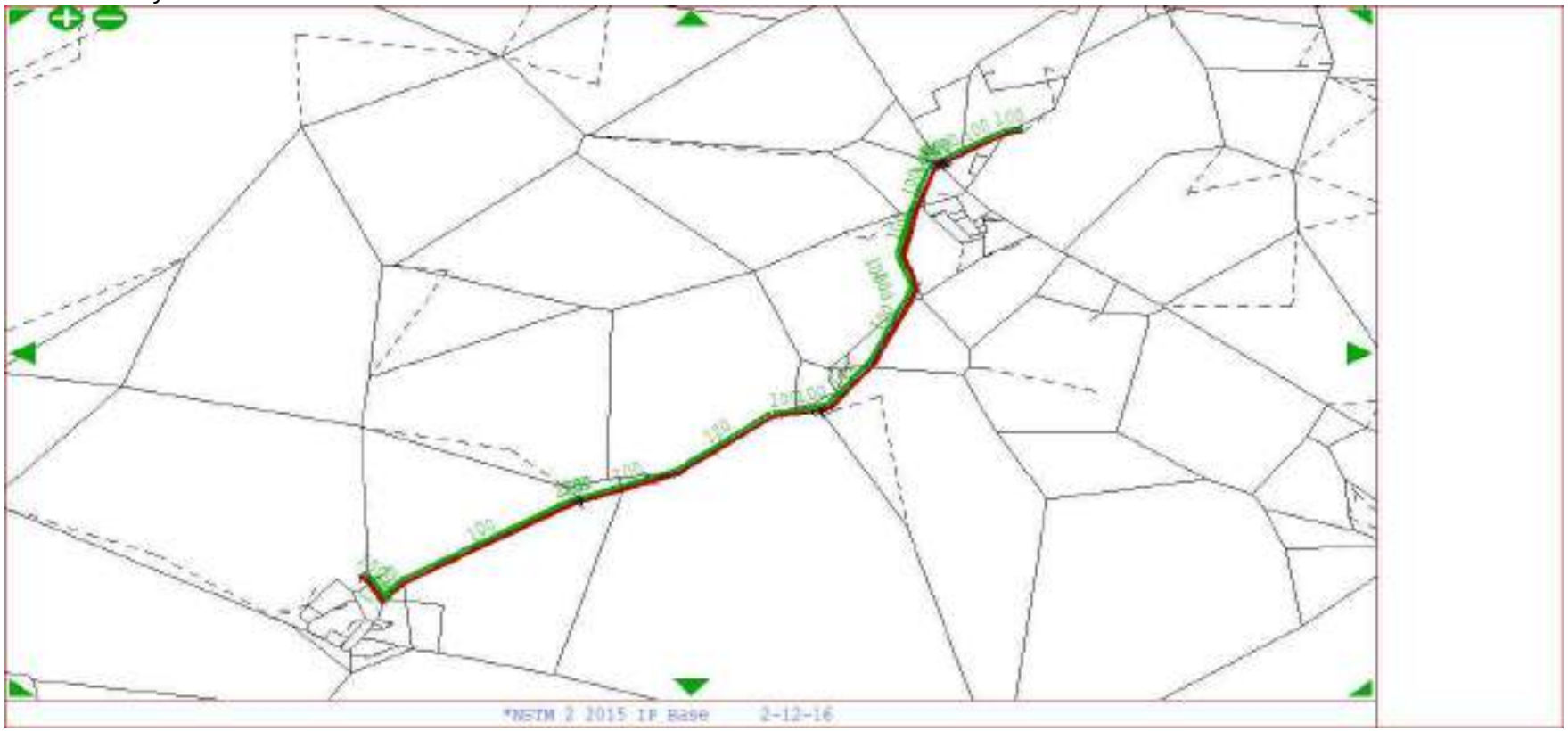
Inter-peak

From Brackley To Rail Central Area - User Class 2



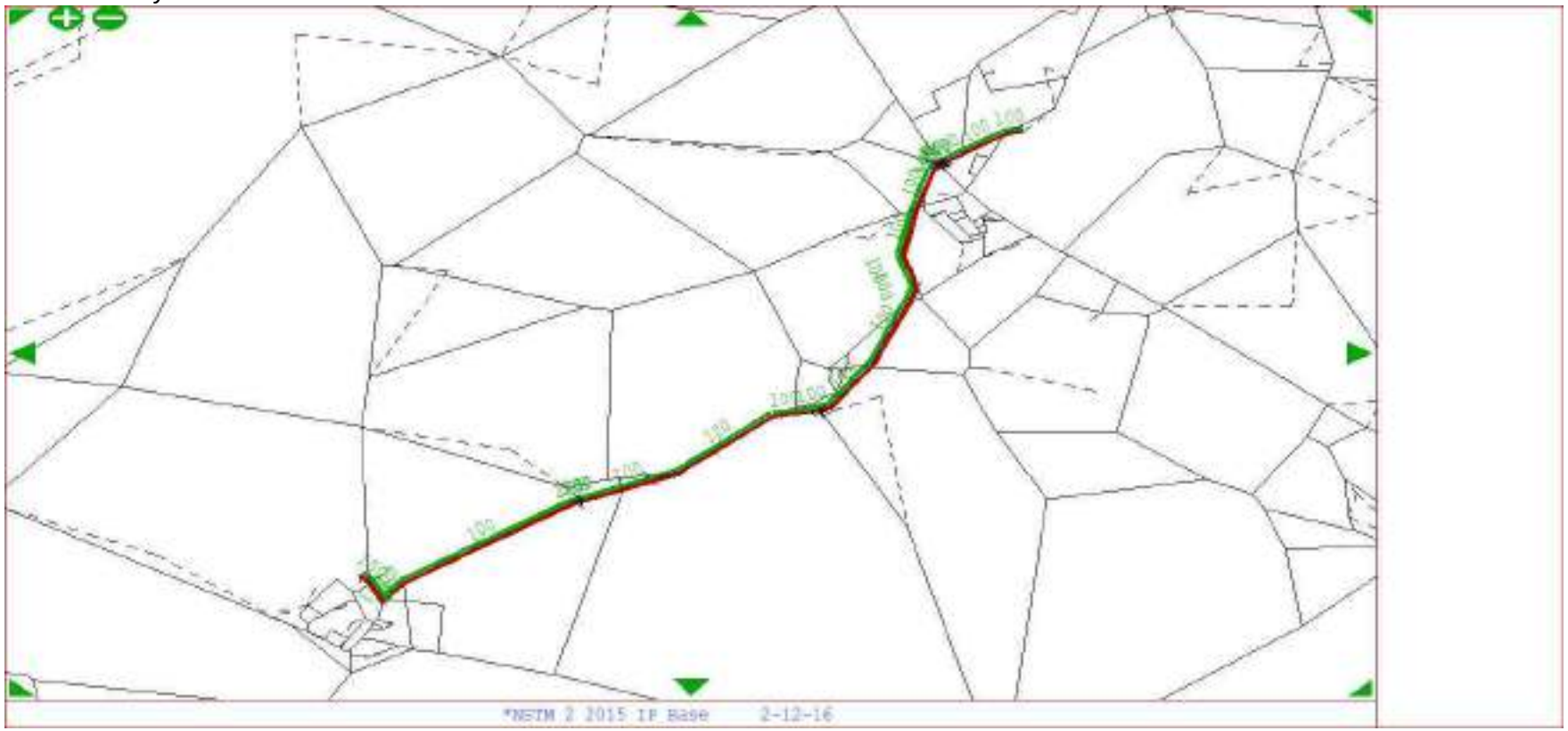
Inter-peak

From Brackley To Rail Central Area - User Class 3



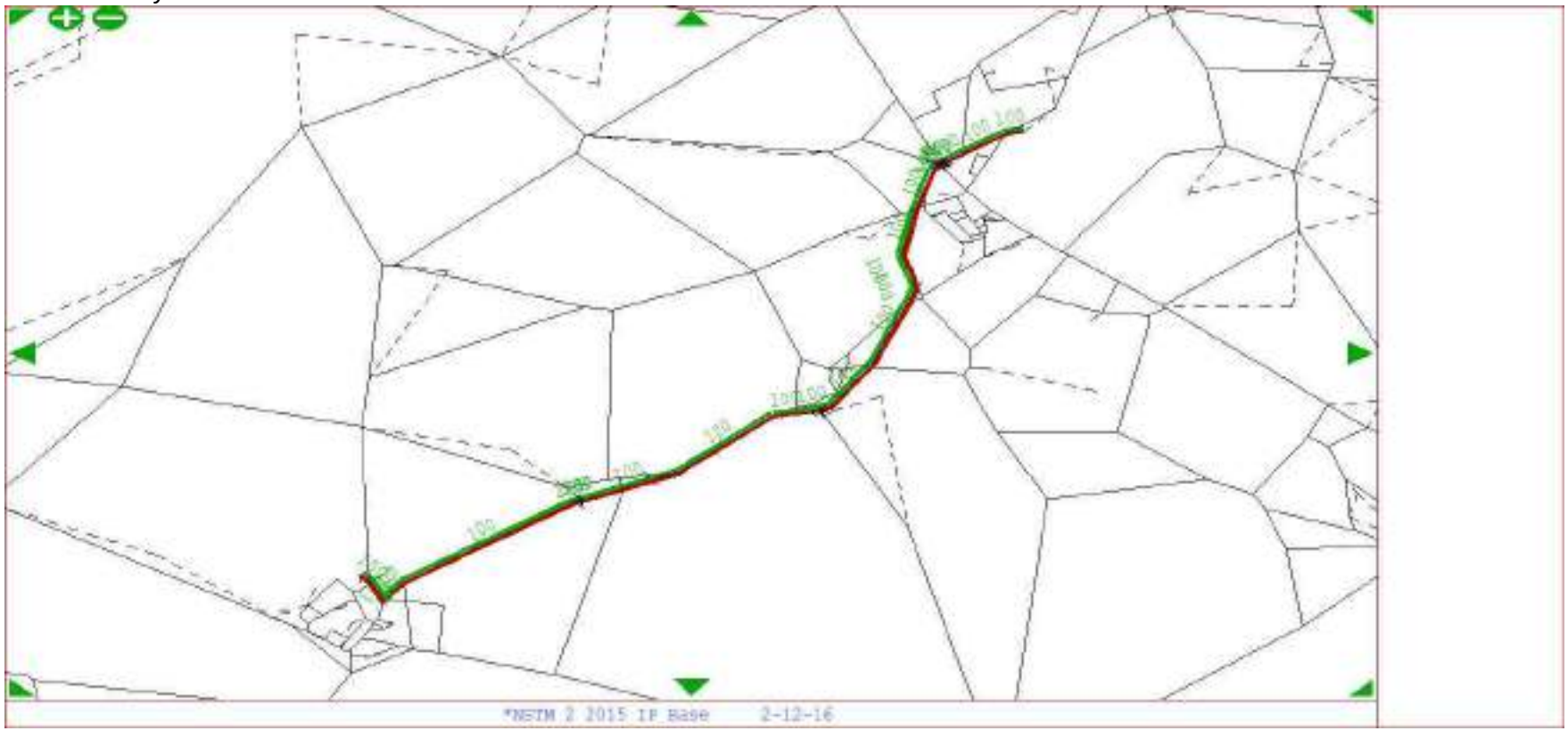
Inter-peak

From Brackley To Rail Central Area - User Class 4



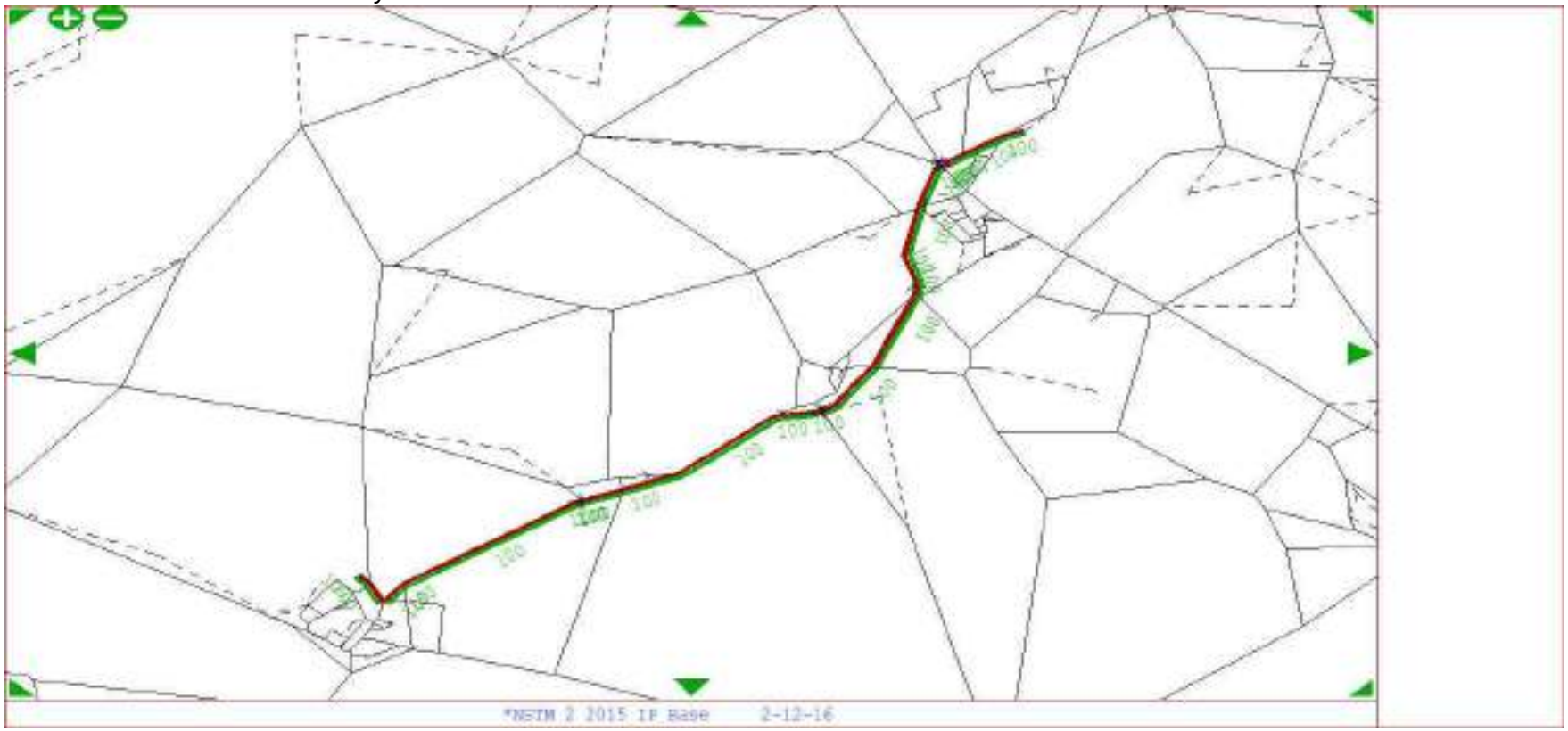
Inter-peak

From Brackley To Rail Central Area - User Class 5



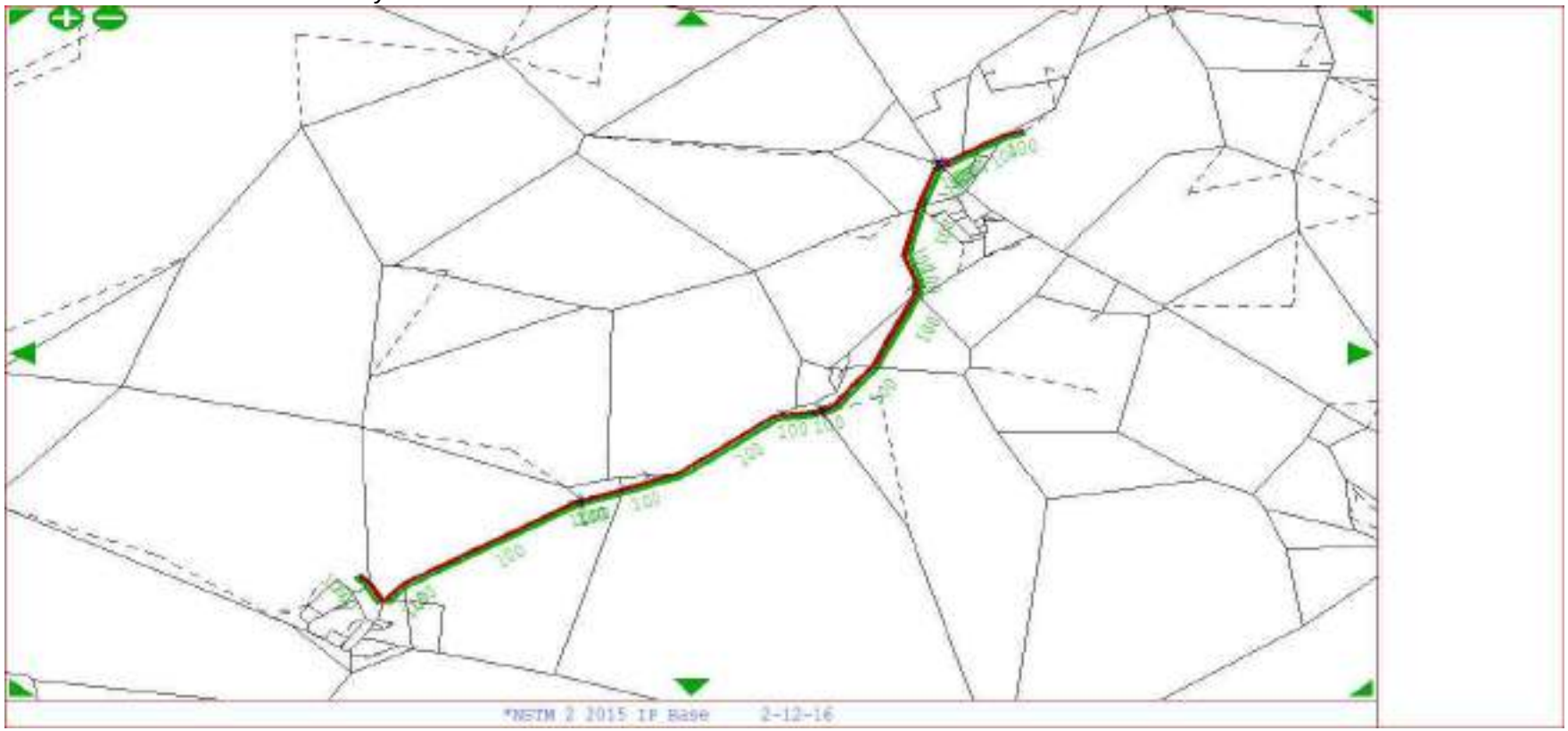
Inter-peak

From Rail Central Area To Brackley - User Class 1



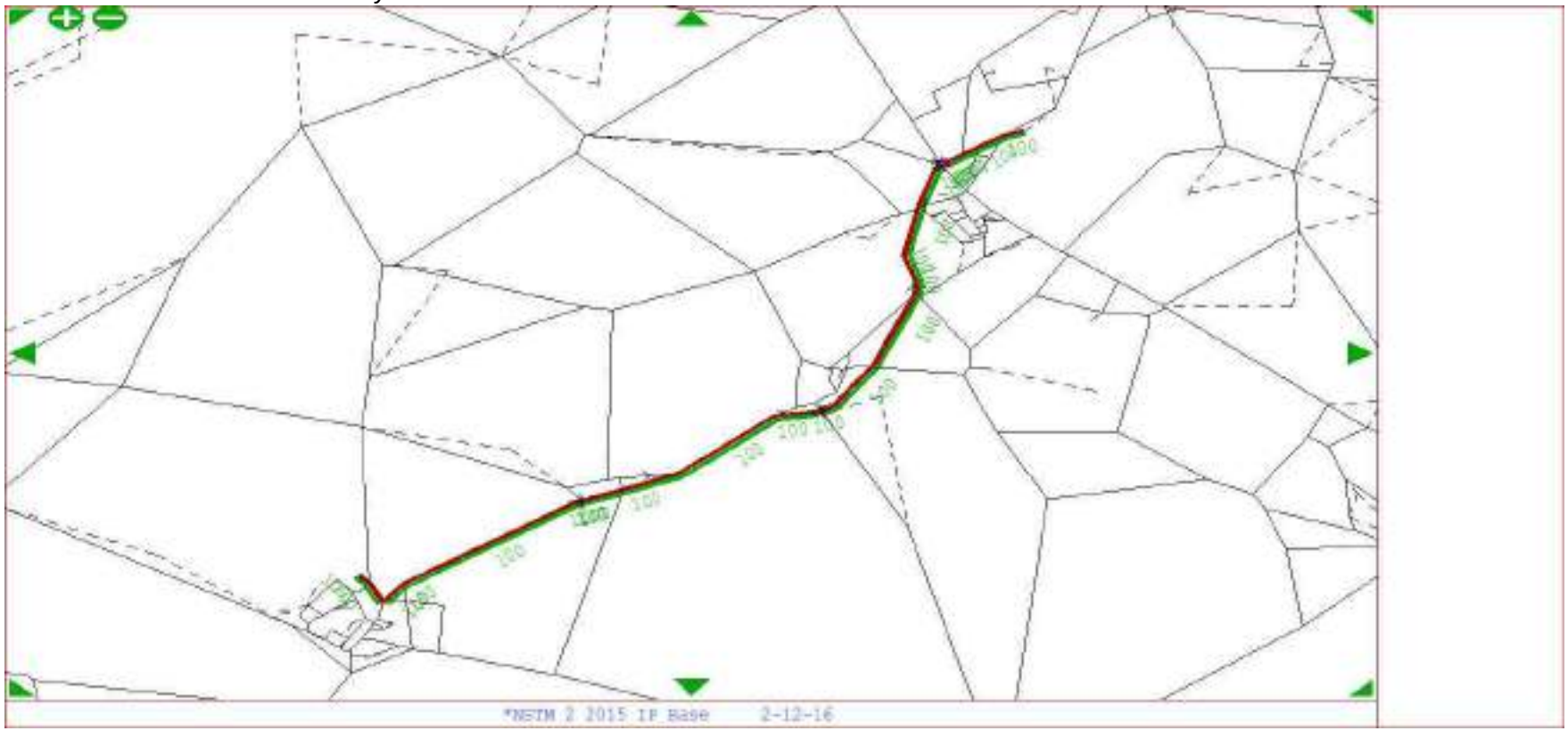
Inter-peak

From Rail Central Area To Brackley - User Class 2



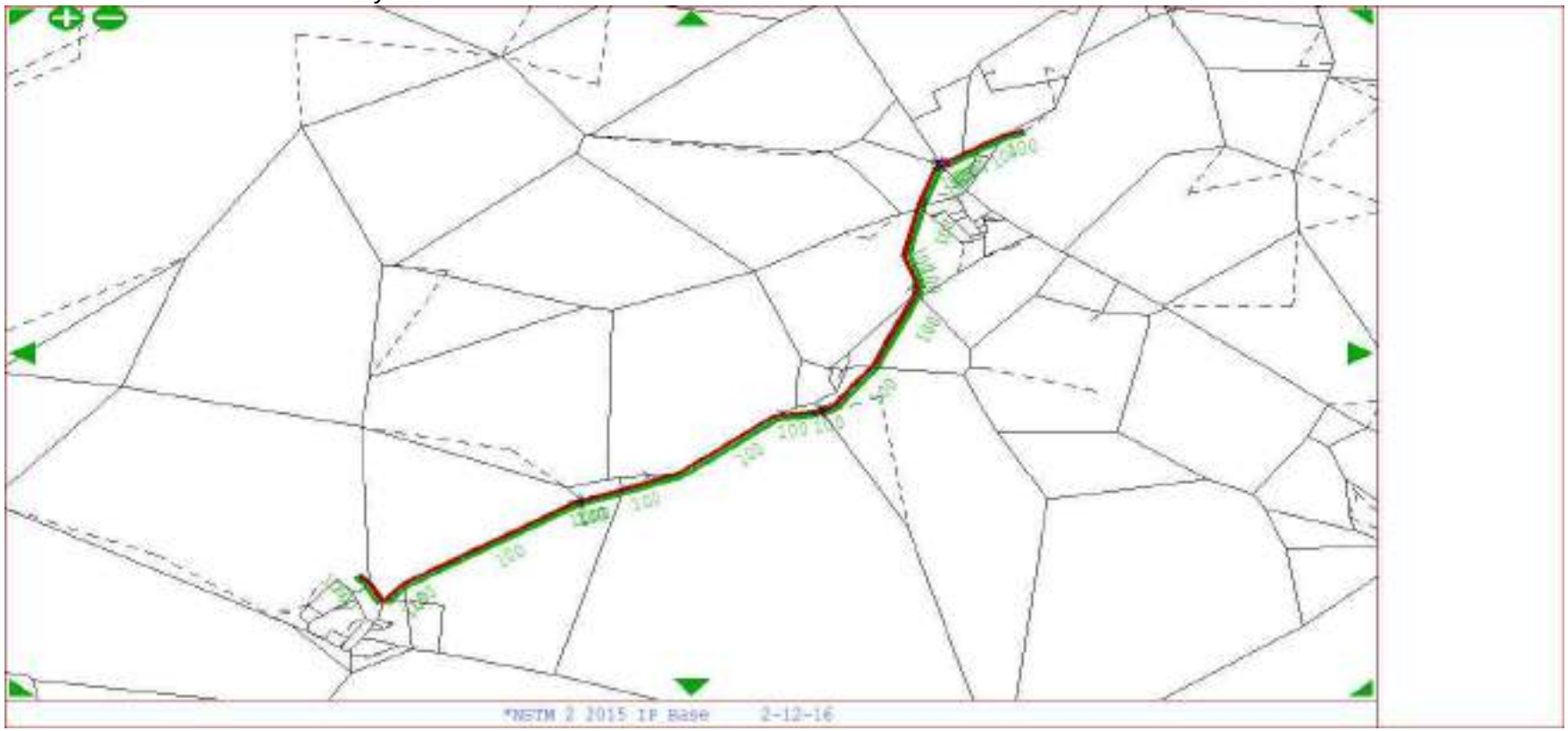
Inter-peak

From Rail Central Area To Brackley - User Class 3



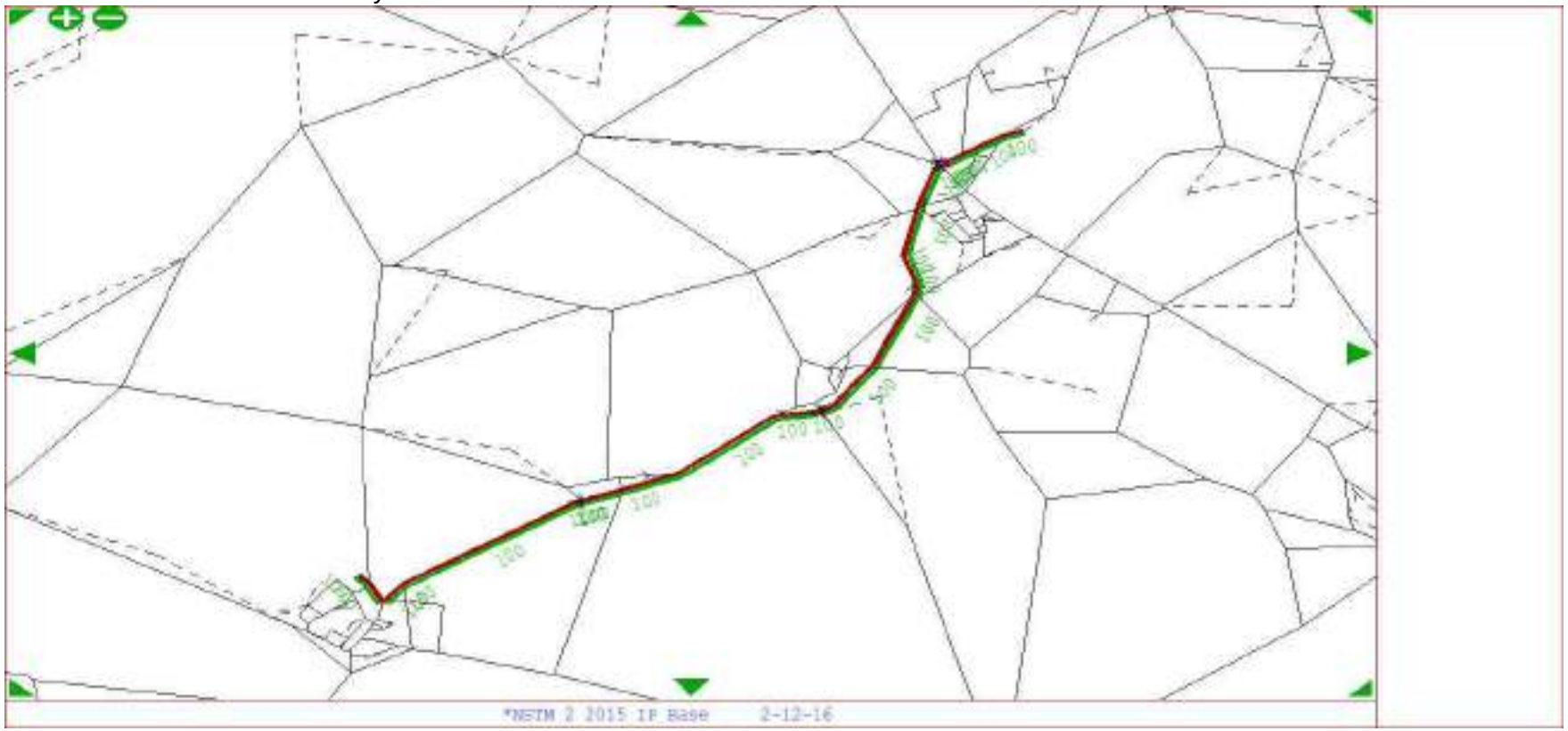
Inter-peak

From Rail Central Area To Brackley - User Class 4



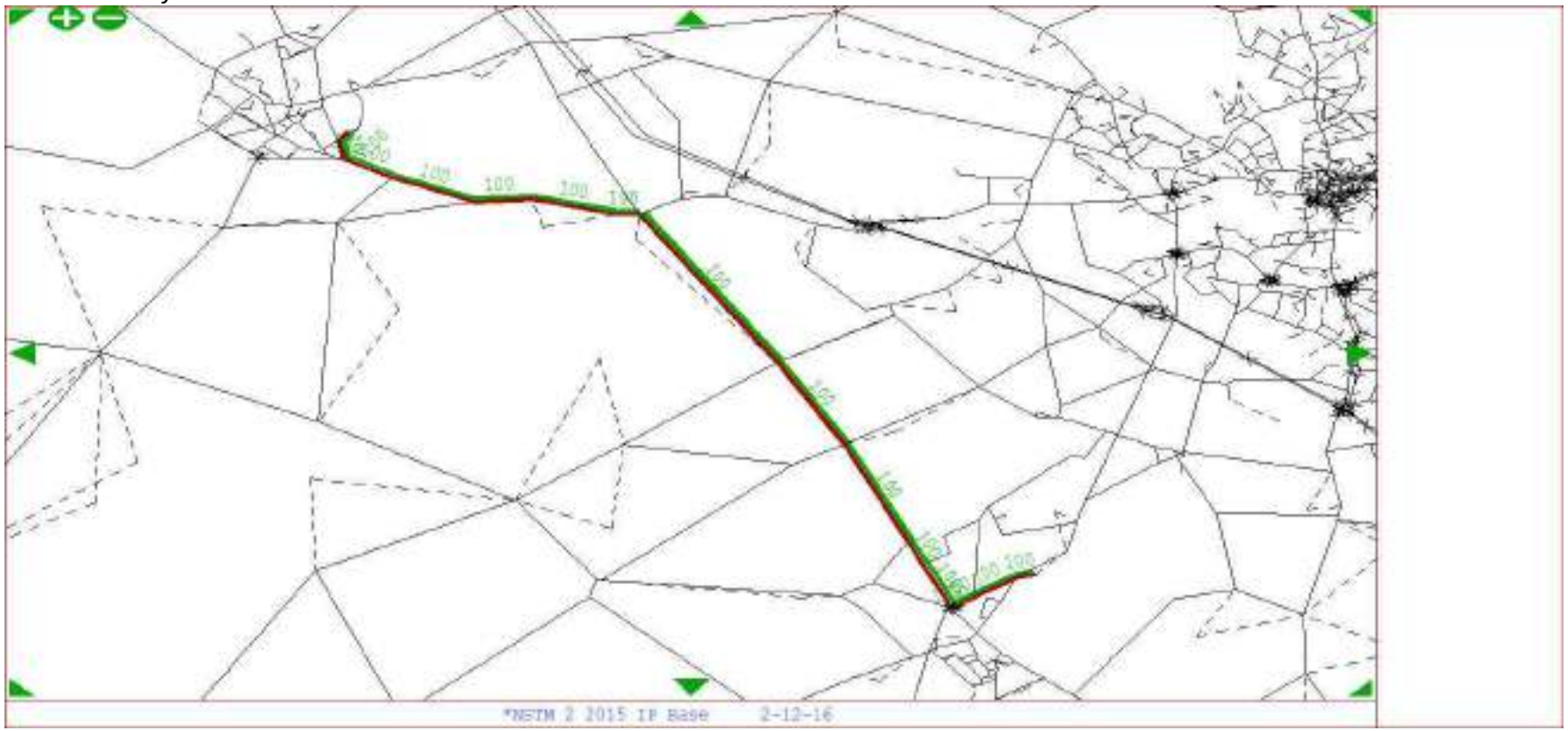
Inter-peak

From Rail Central Area To Brackley - User Class 5



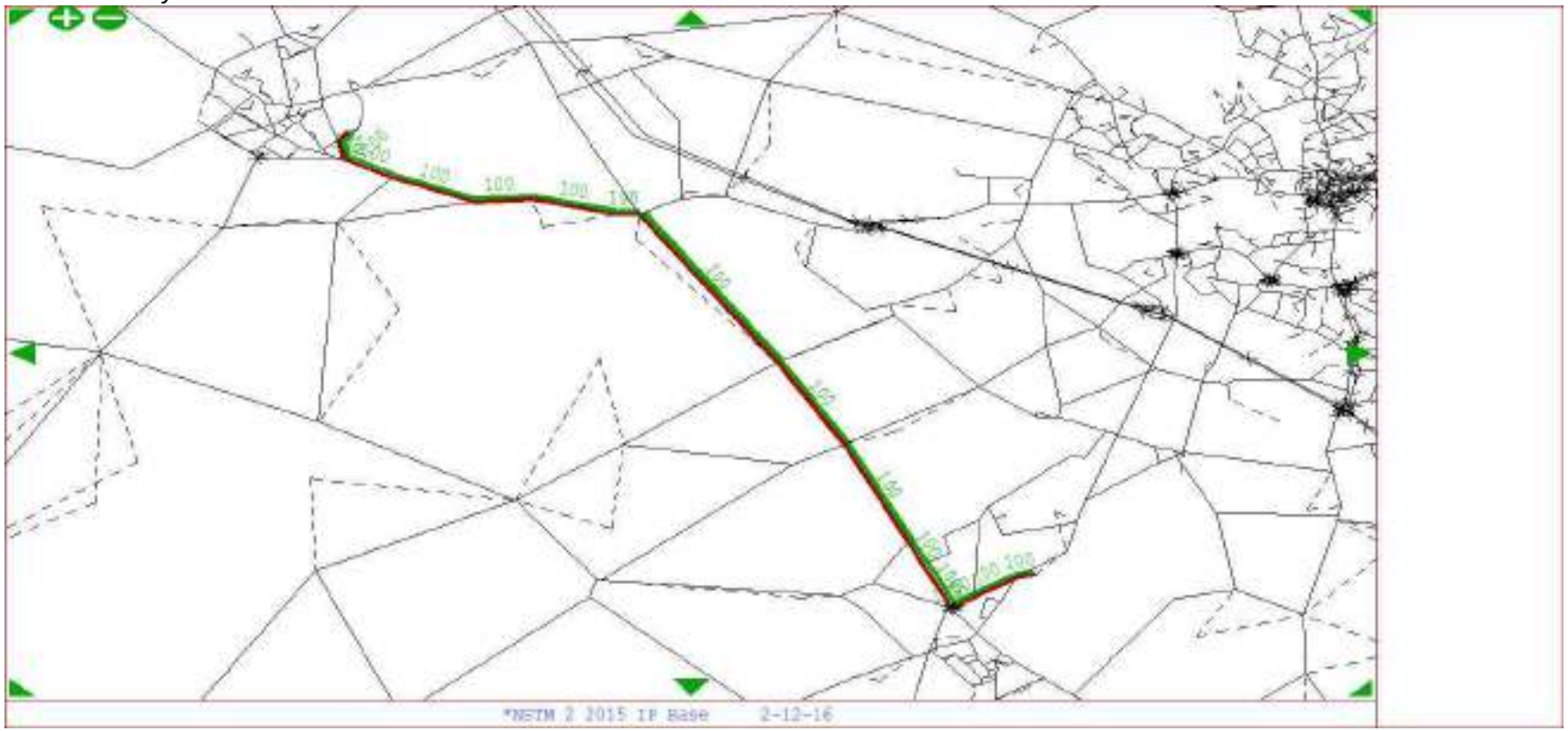
Inter-peak

From Daventry To Rail Central Area - User Class 1



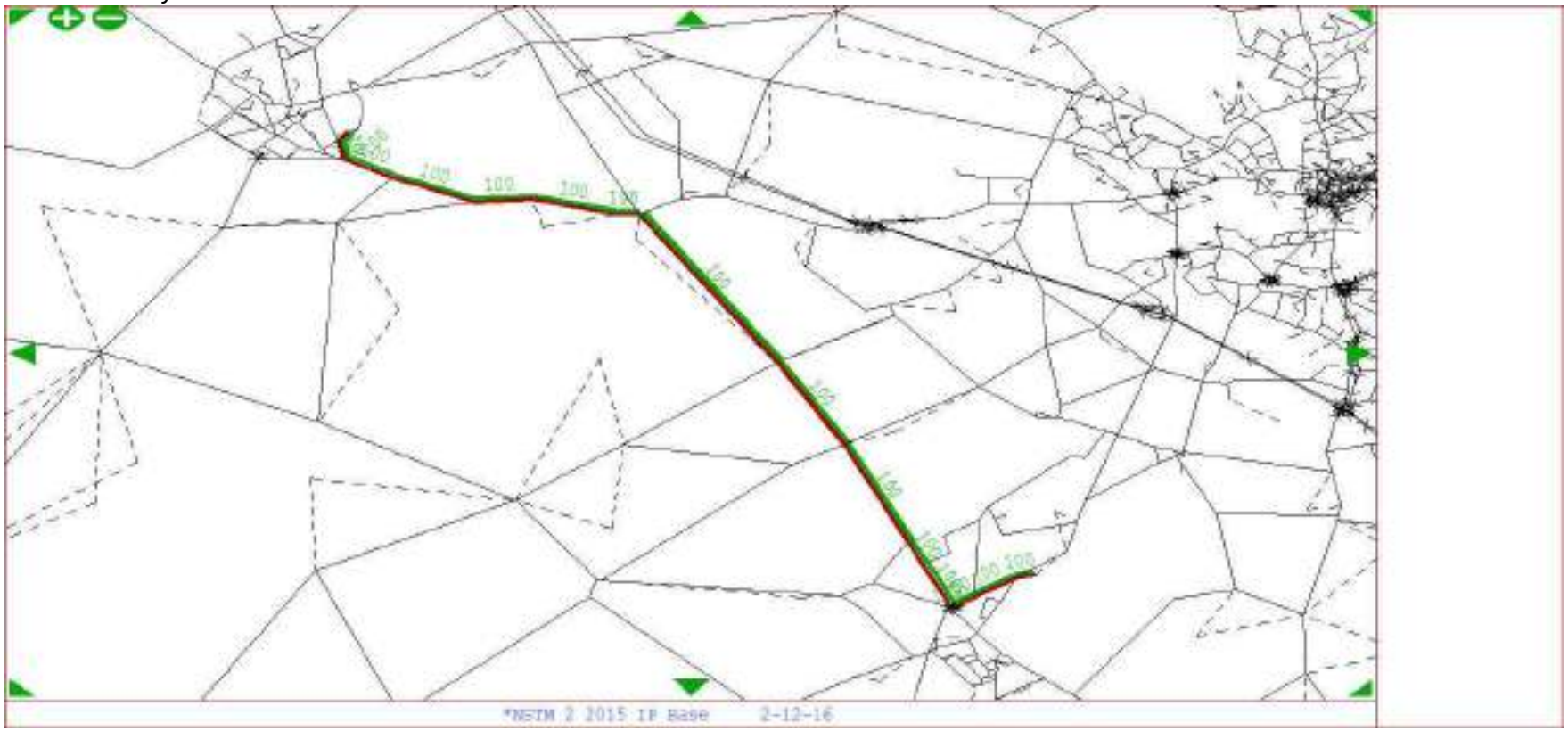
Inter-peak

From Daventry To Rail Central Area - User Class 2



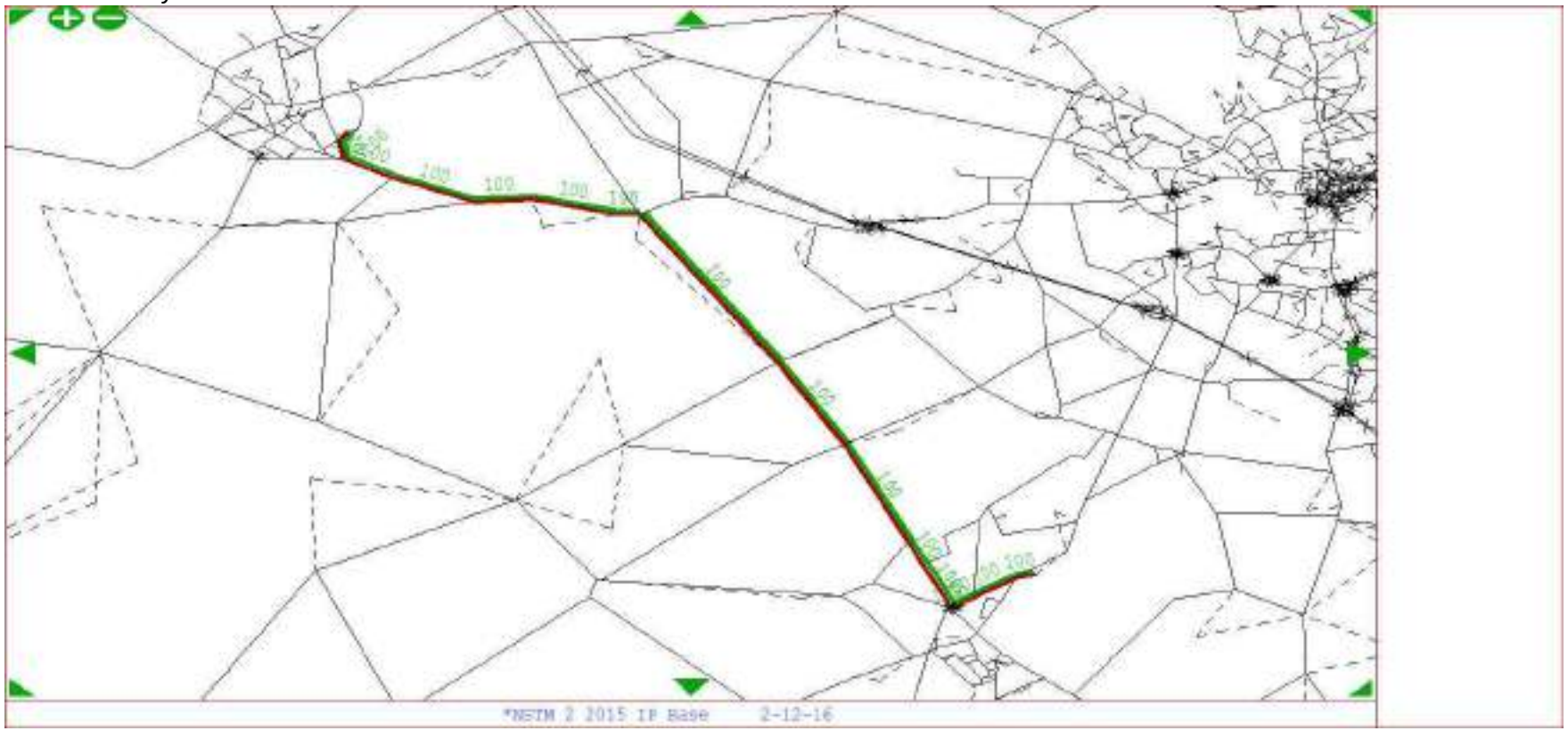
Inter-peak

From Daventry To Rail Central Area - User Class 3



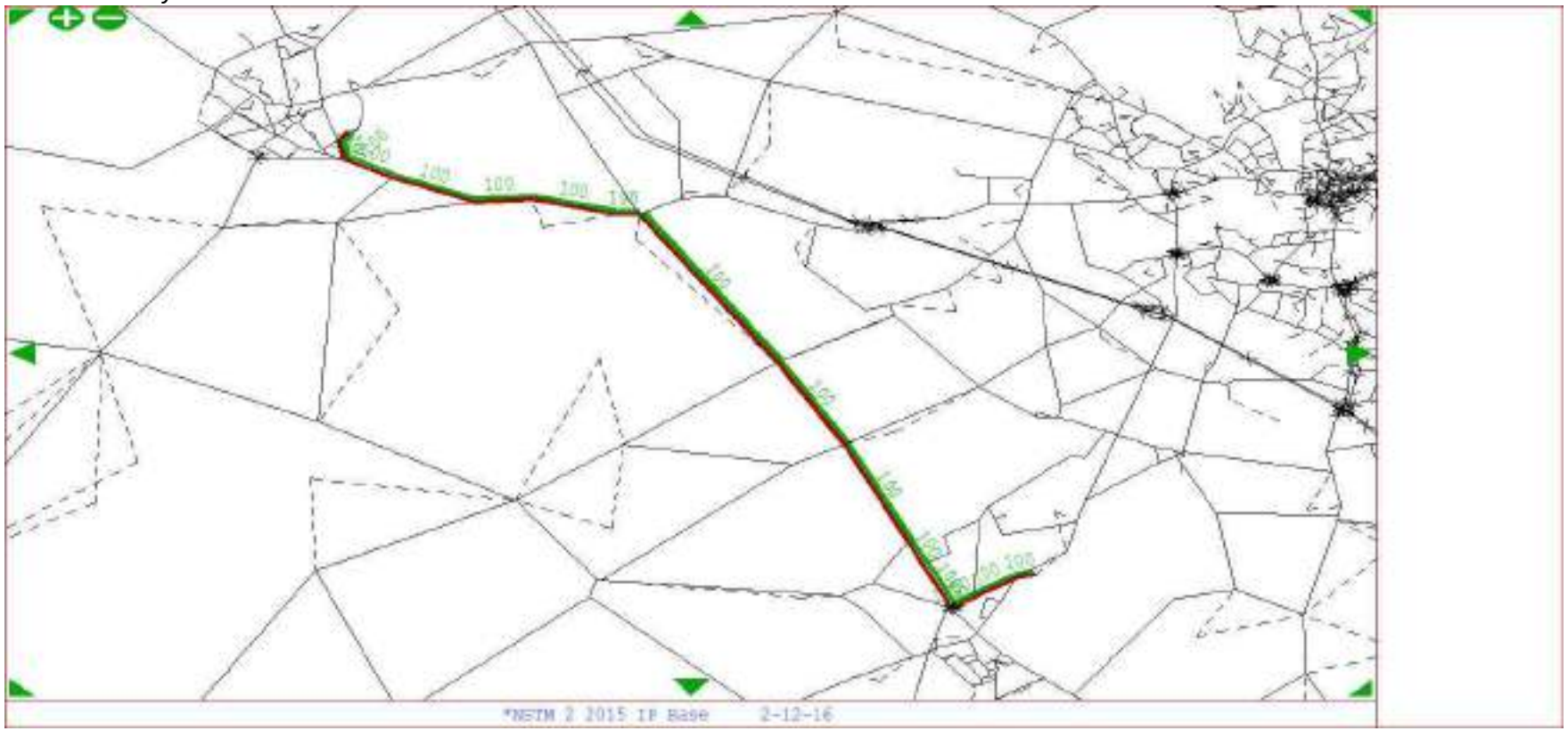
Inter-peak

From Daventry To Rail Central Area - User Class 4



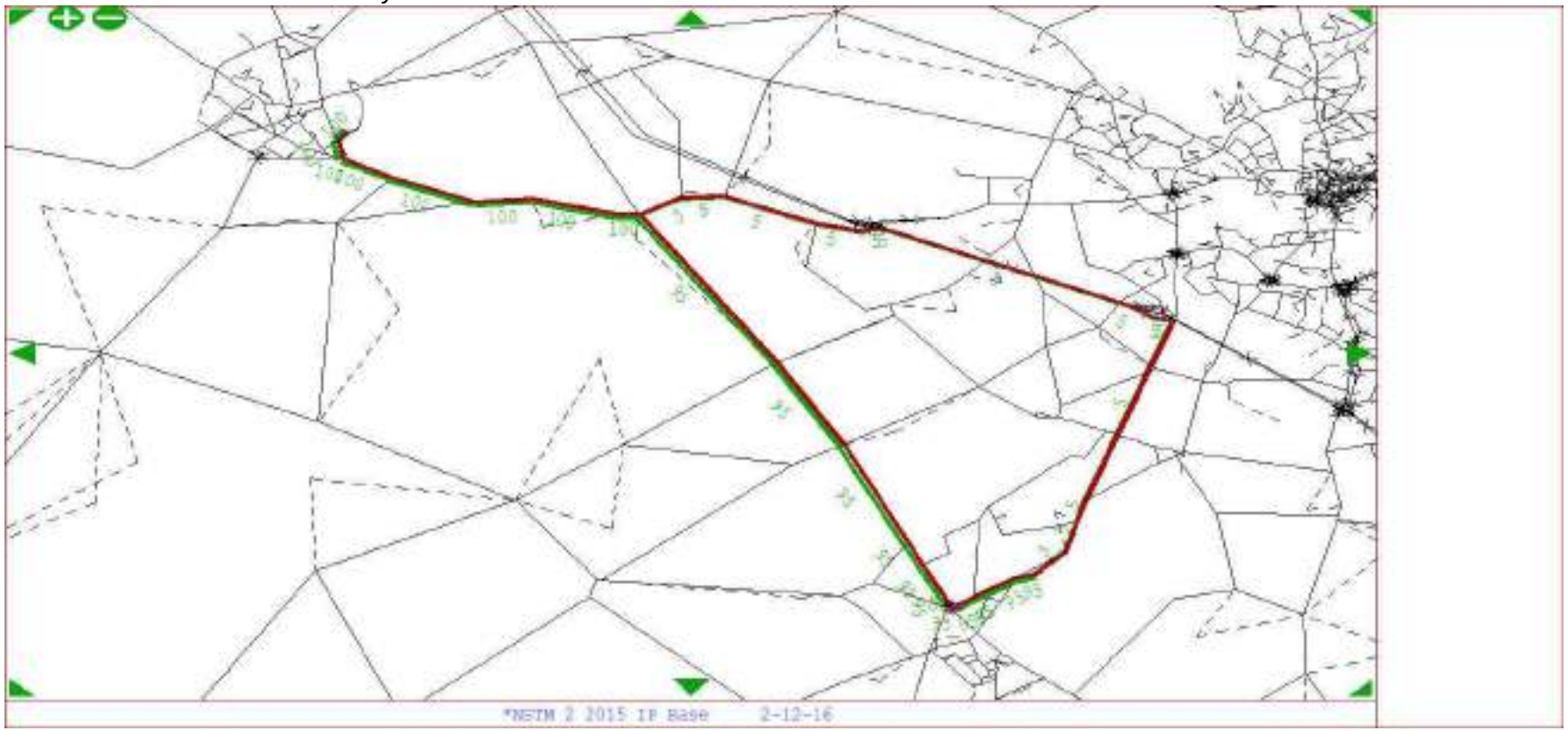
Inter-peak

From Daventry To Rail Central Area - User Class 5



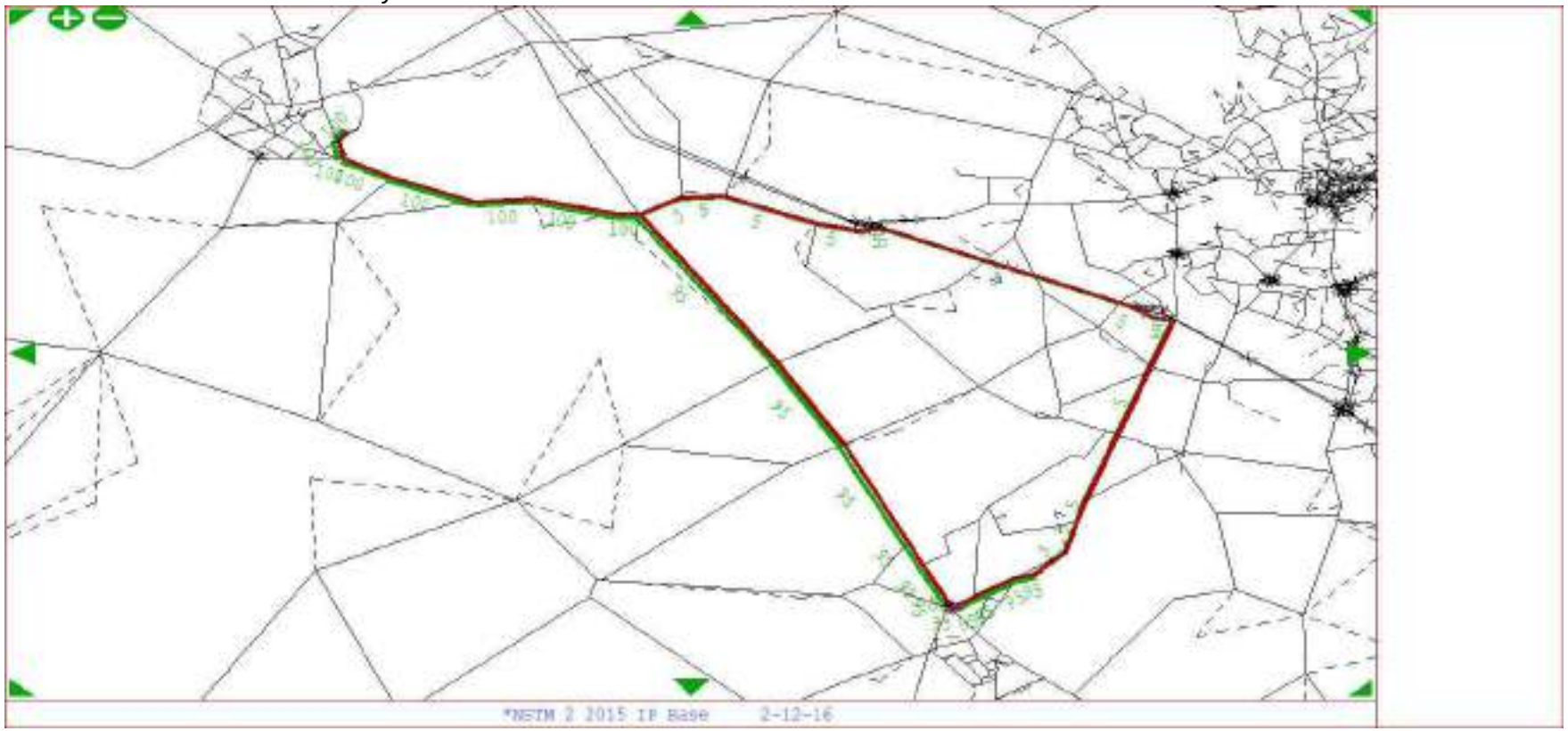
Inter-peak

From Rail Central Area To Daventry - User Class 1



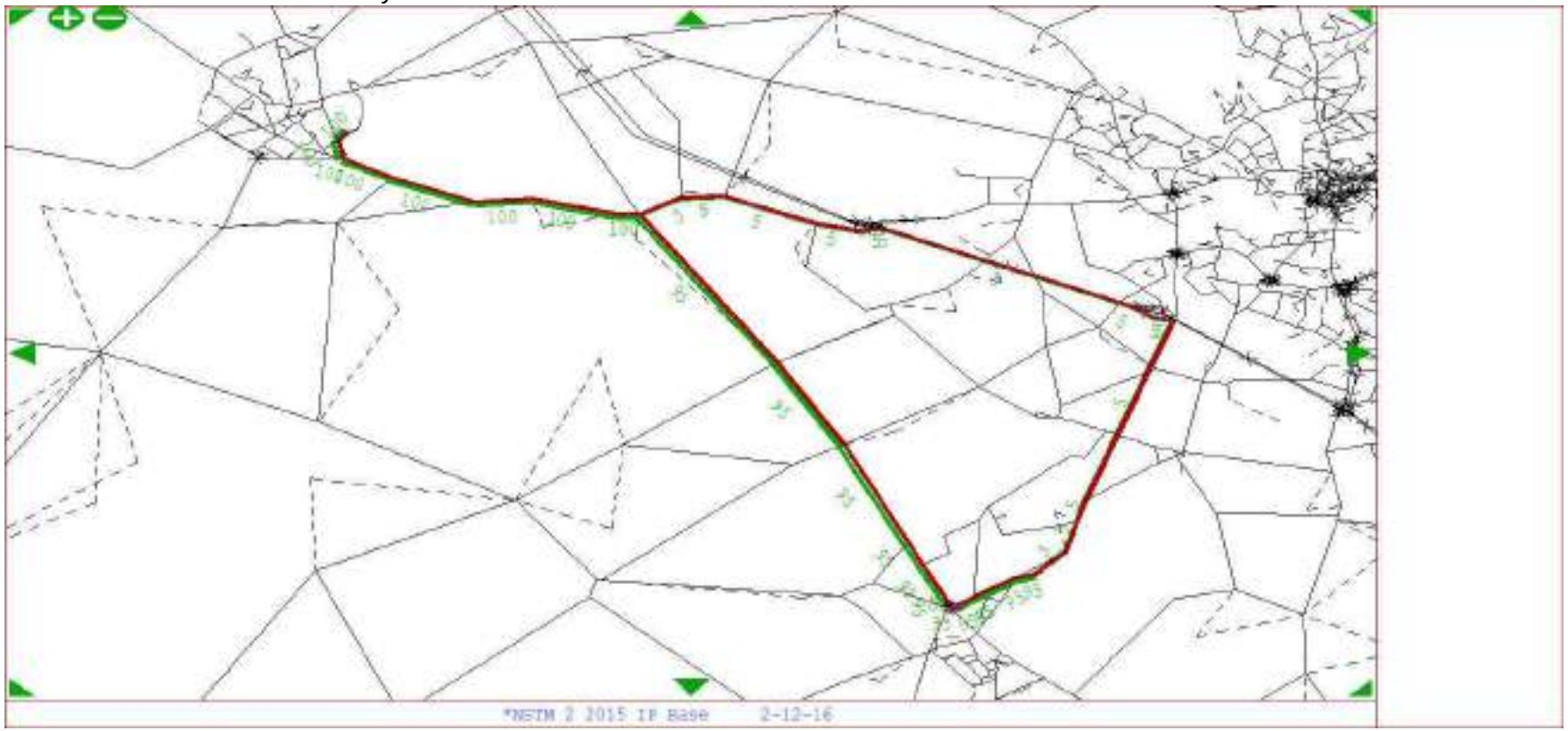
Inter-peak

From Rail Central Area To Daventry - User Class 2



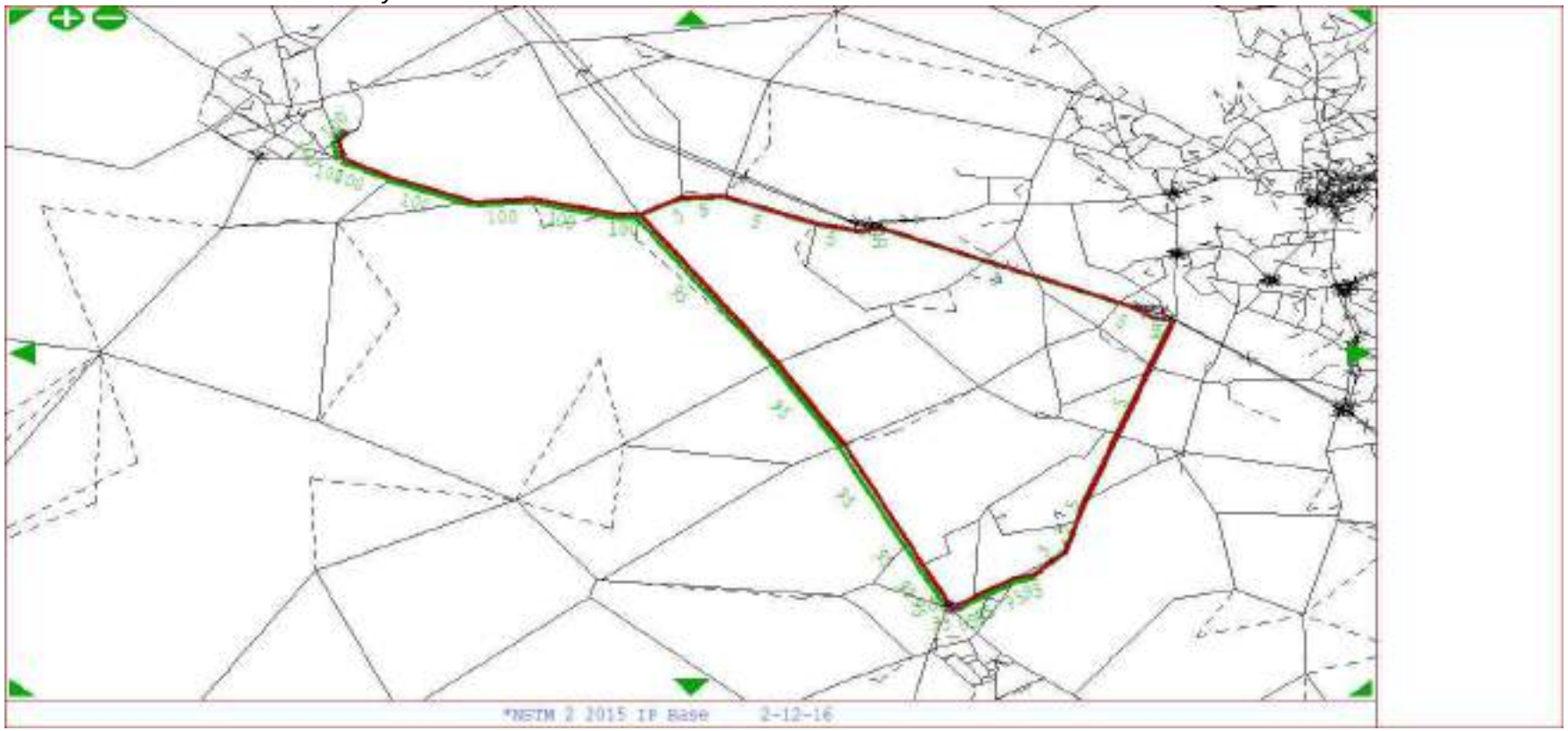
Inter-peak

From Rail Central Area To Daventry - User Class 3



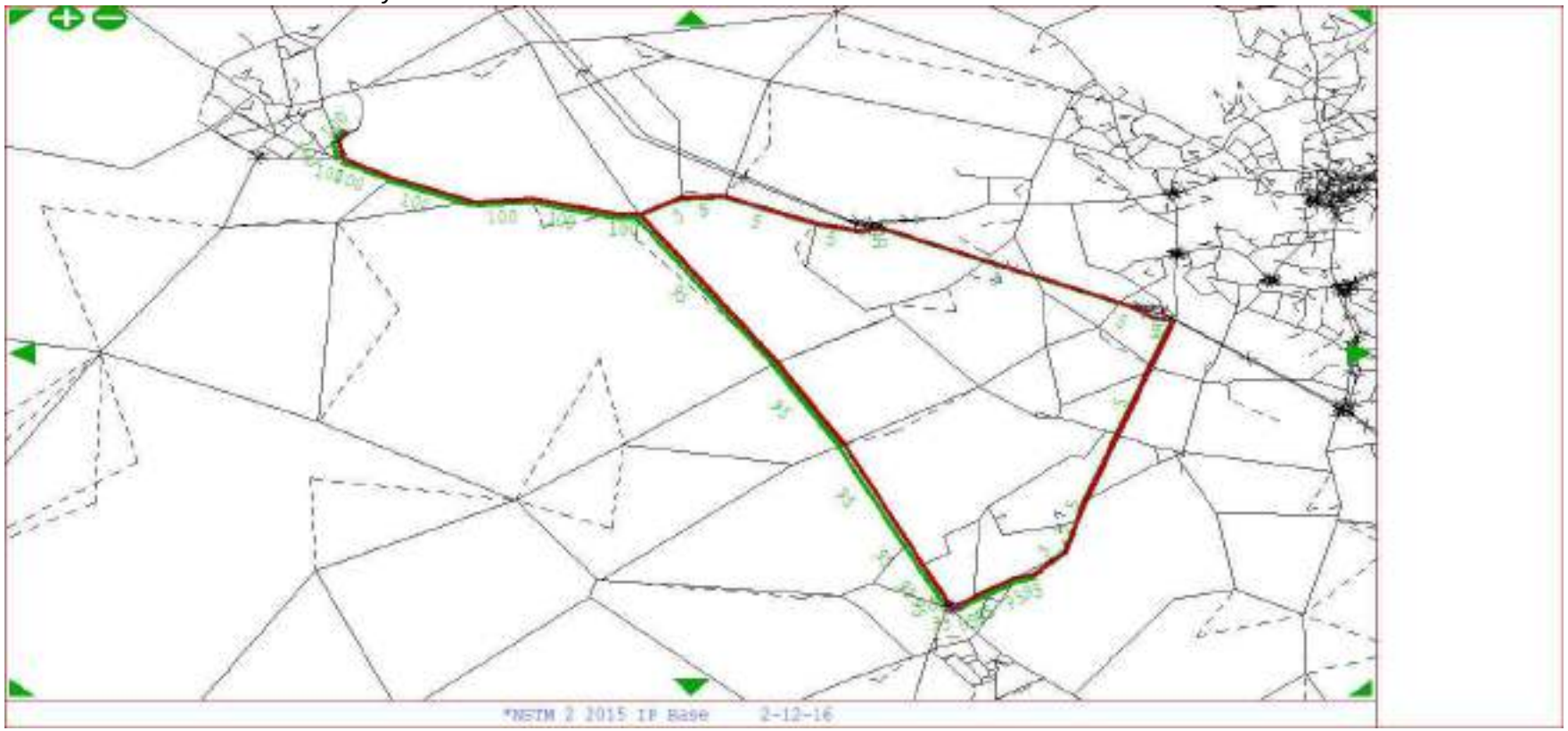
Inter-peak

From Rail Central Area To Daventry - User Class 4



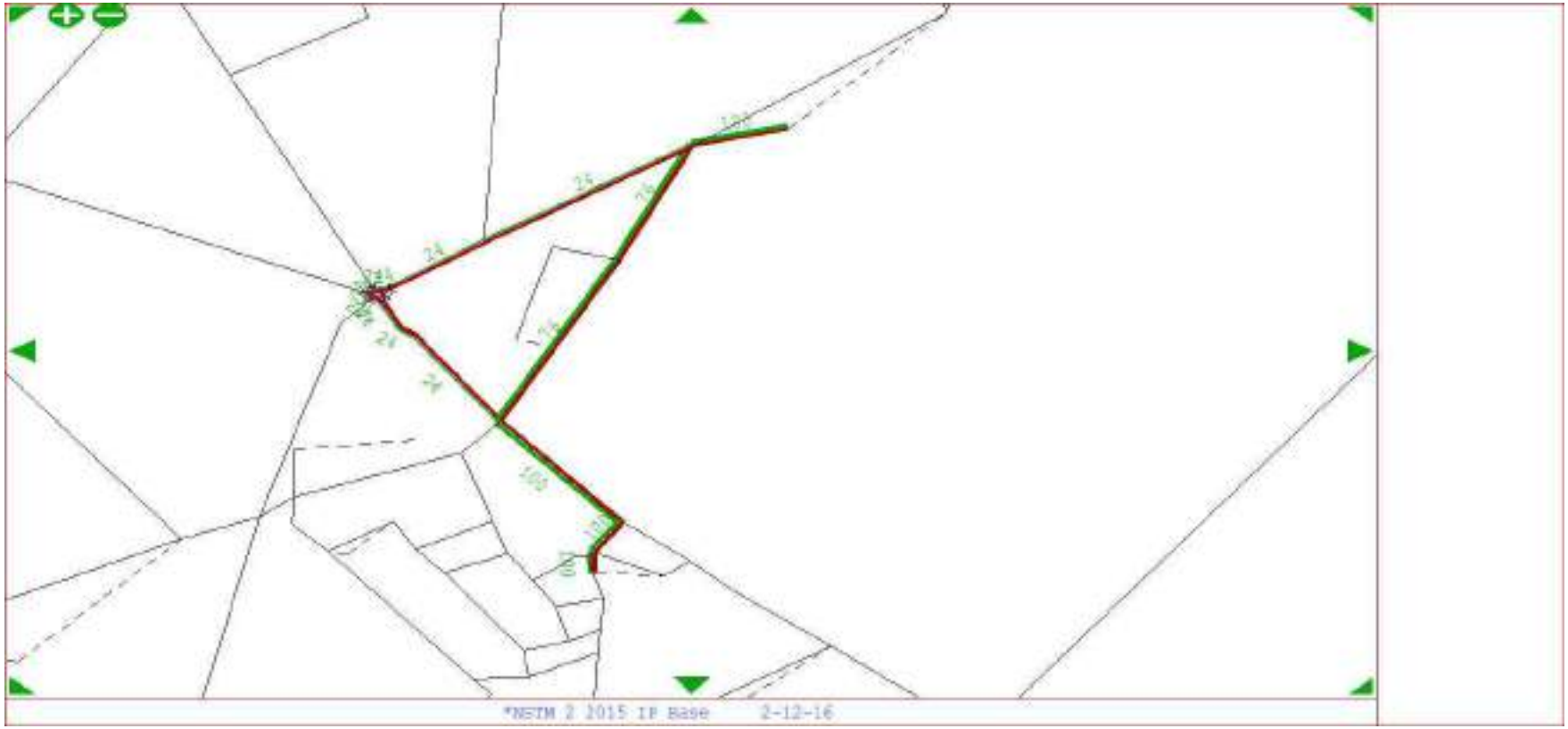
Inter-peak

From Rail Central Area To Daventry - User Class 5



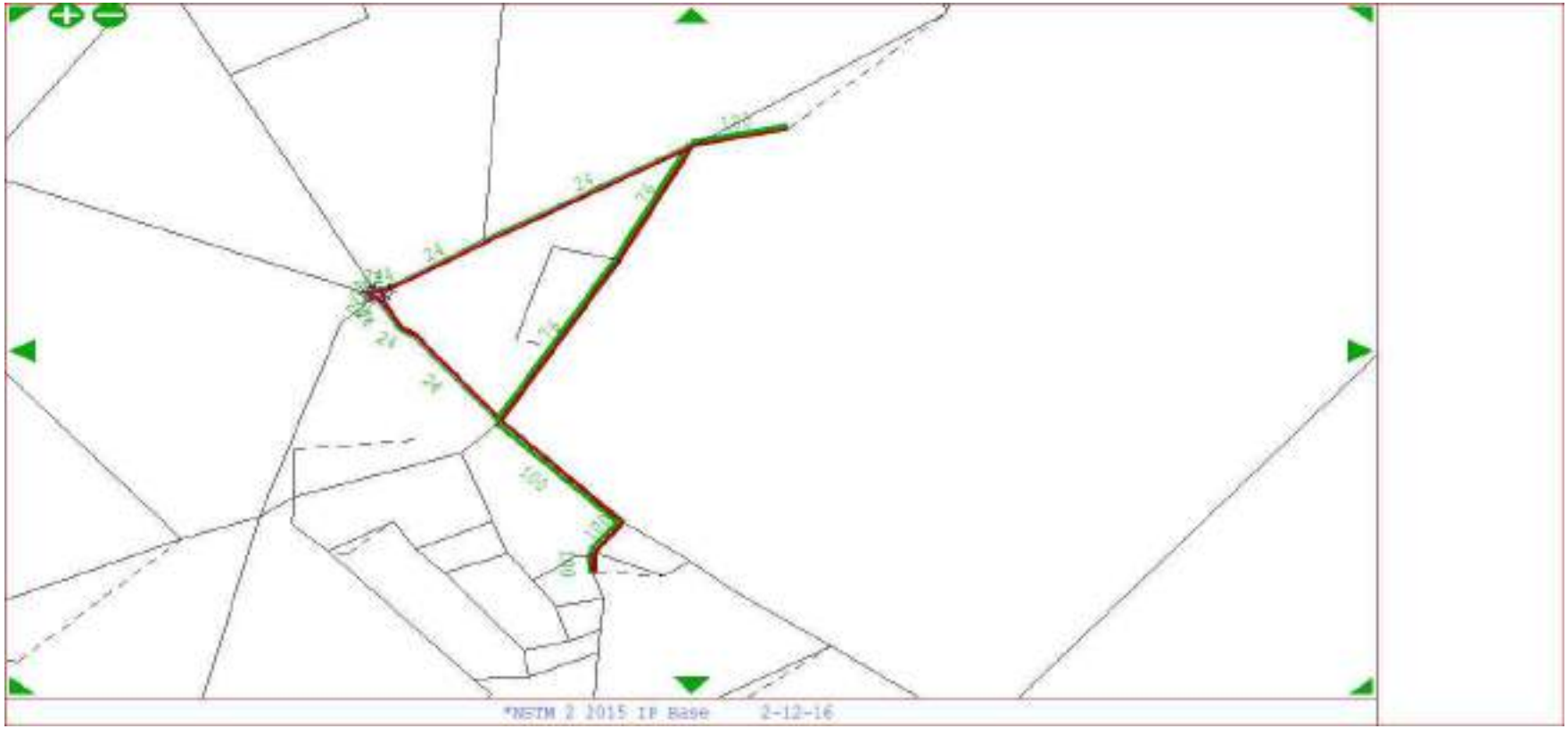
Inter-peak

From Towcester To Rail Central Area - User Class 1



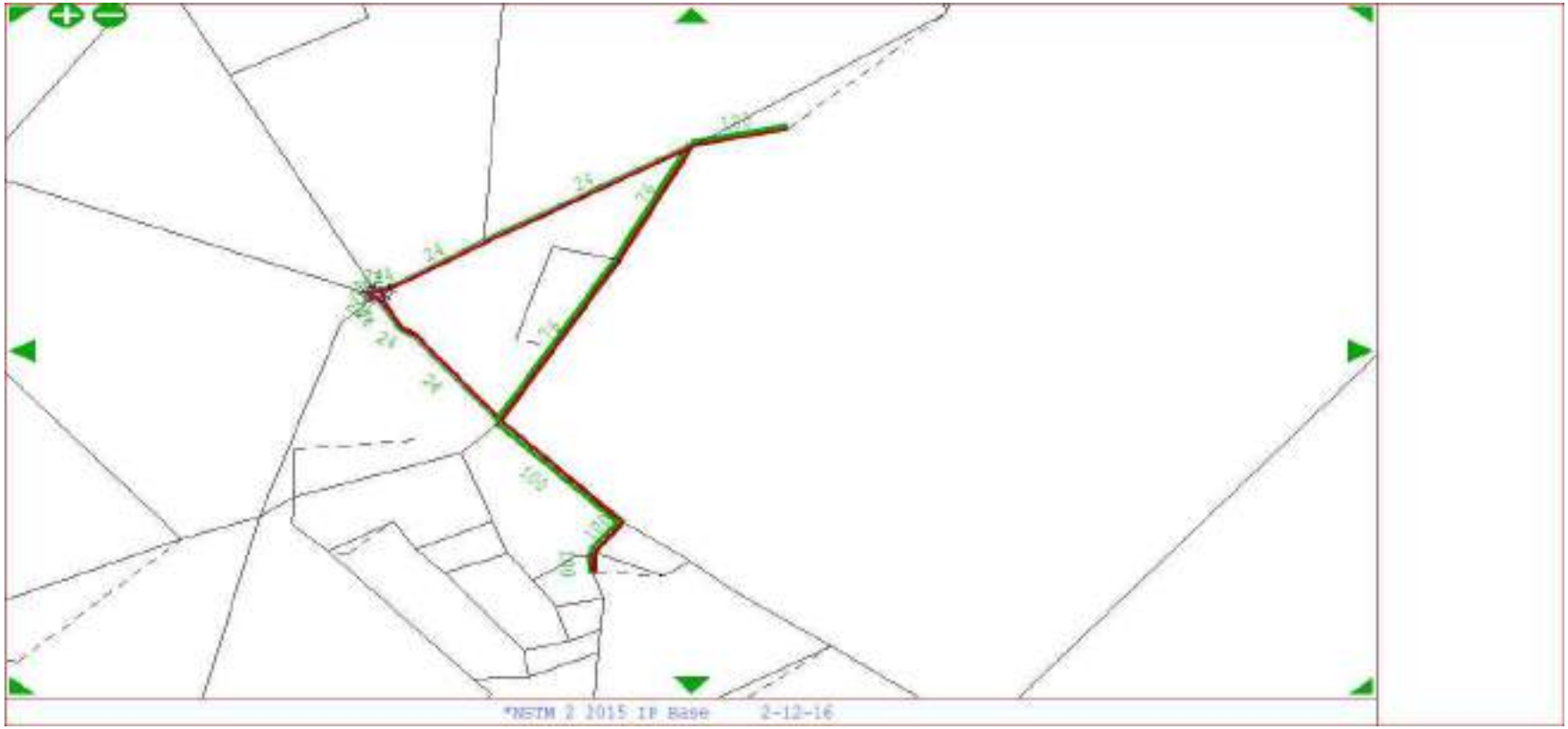
Inter-peak

From Towcester To Rail Central Area - User Class 2



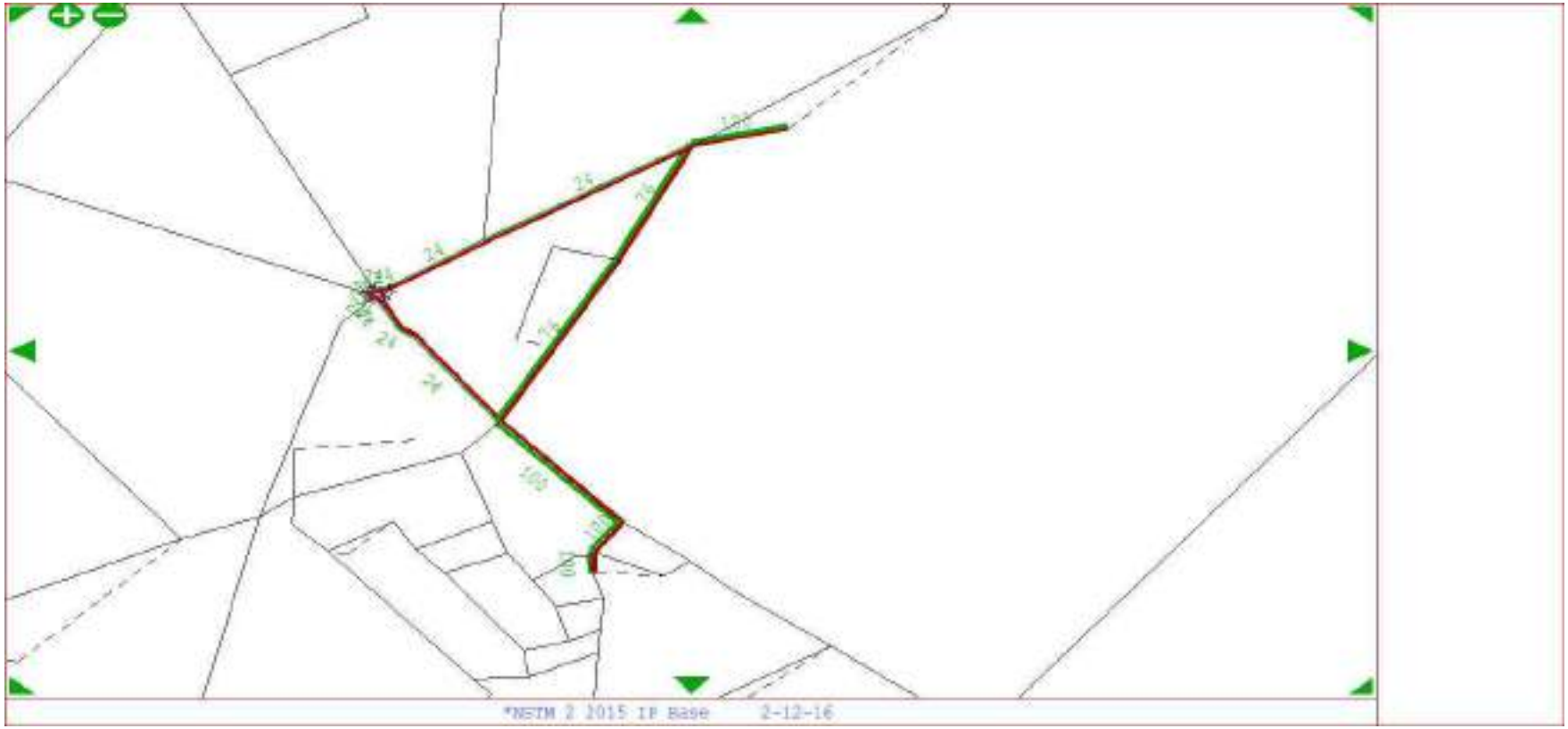
Inter-peak

From Towcester To Rail Central Area - User Class 3



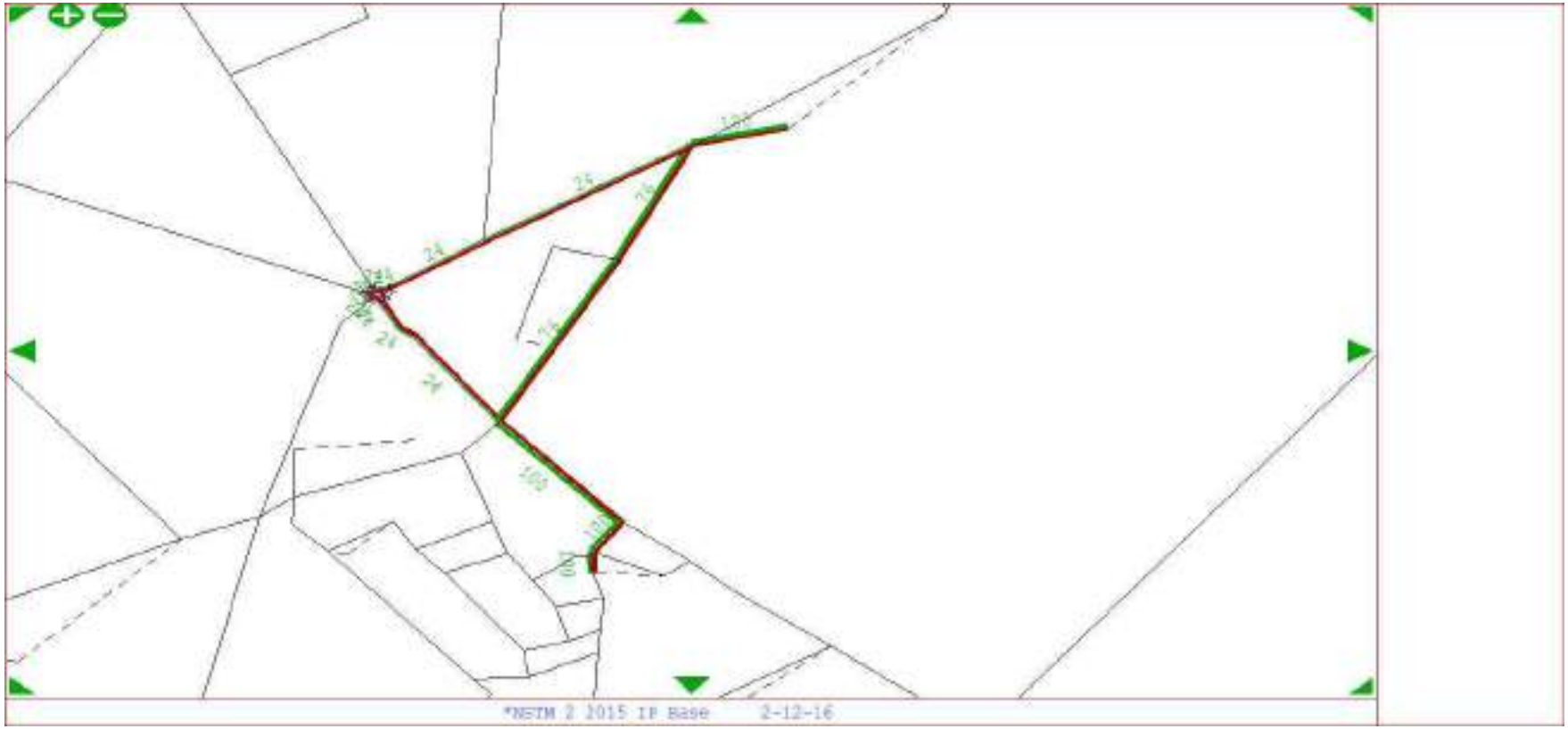
Inter-peak

From Towcester To Rail Central Area - User Class 4



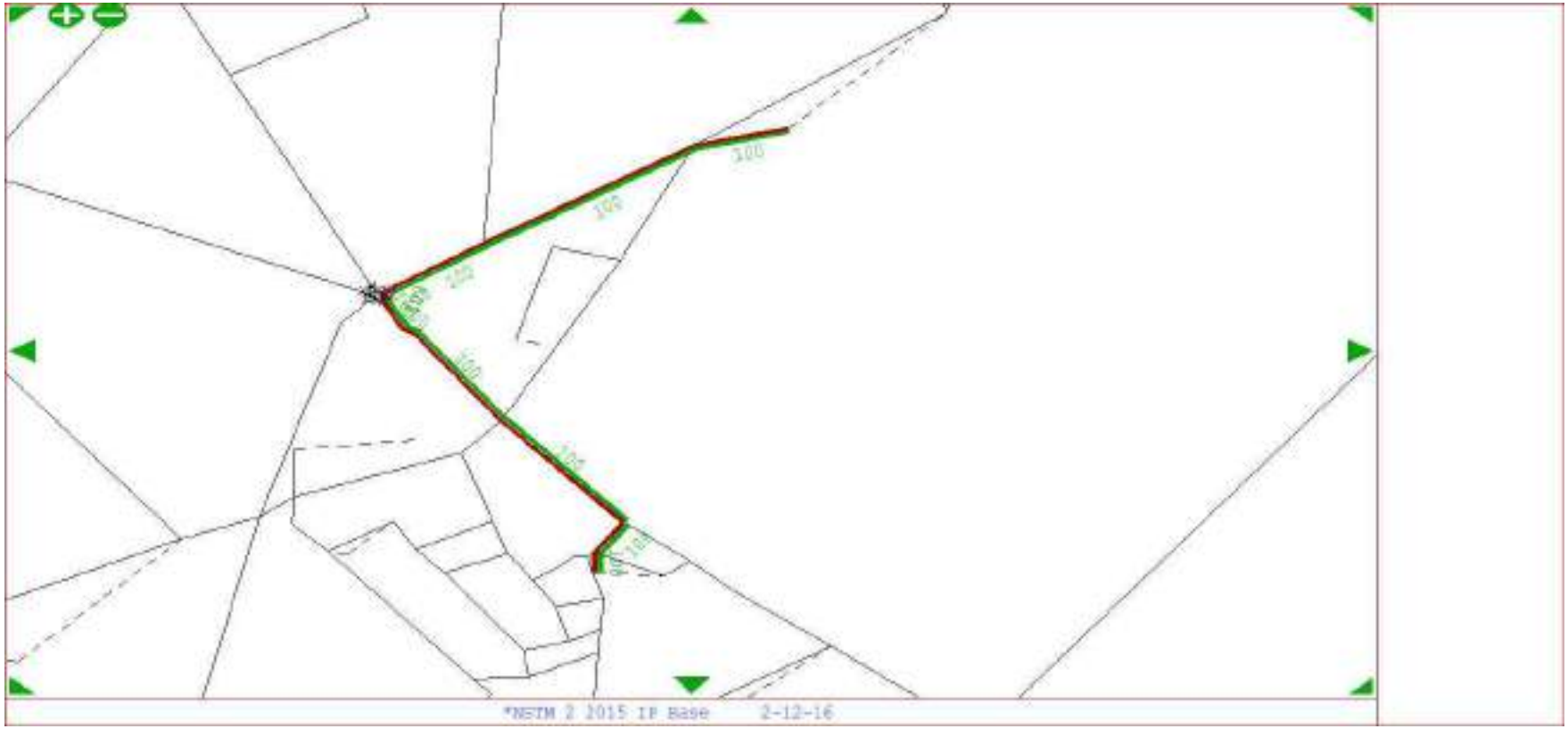
Inter-peak

From Towcester To Rail Central Area - User Class 5



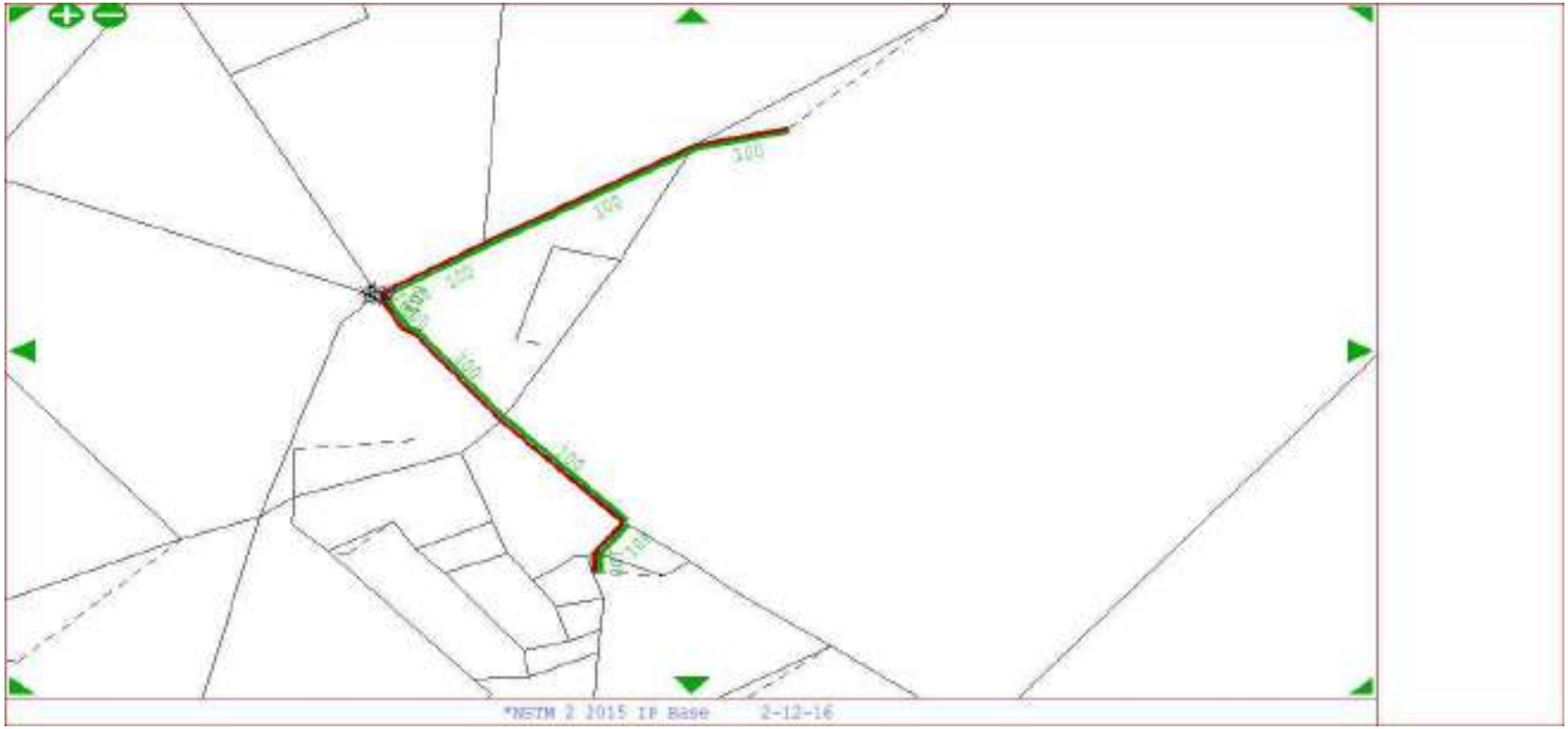
Inter-peak

From Rail Central Area To Towcester - User Class 1



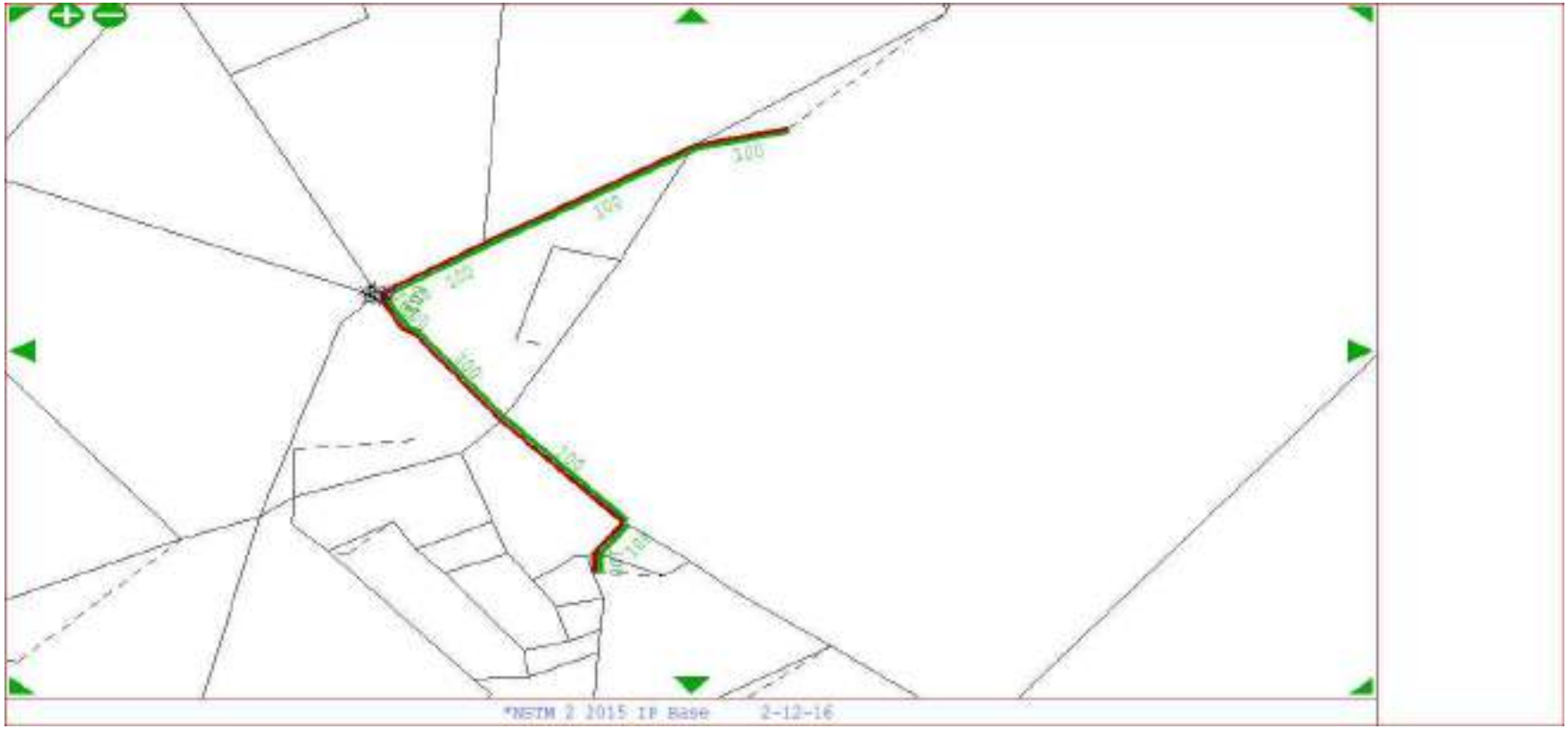
Inter-peak

From Rail Central Area To Towcester - User Class 2



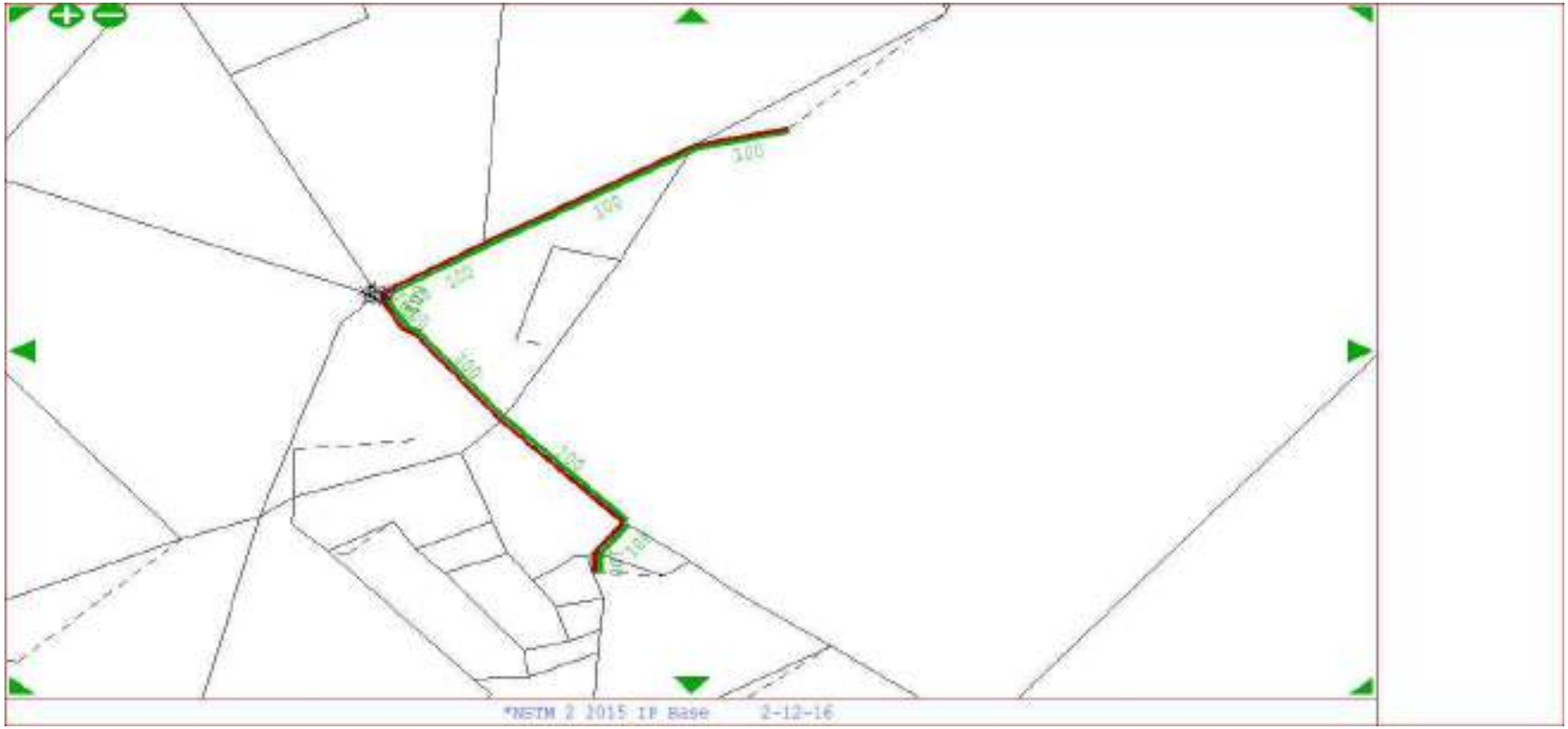
Inter-peak

From Rail Central Area To Towcester - User Class 3



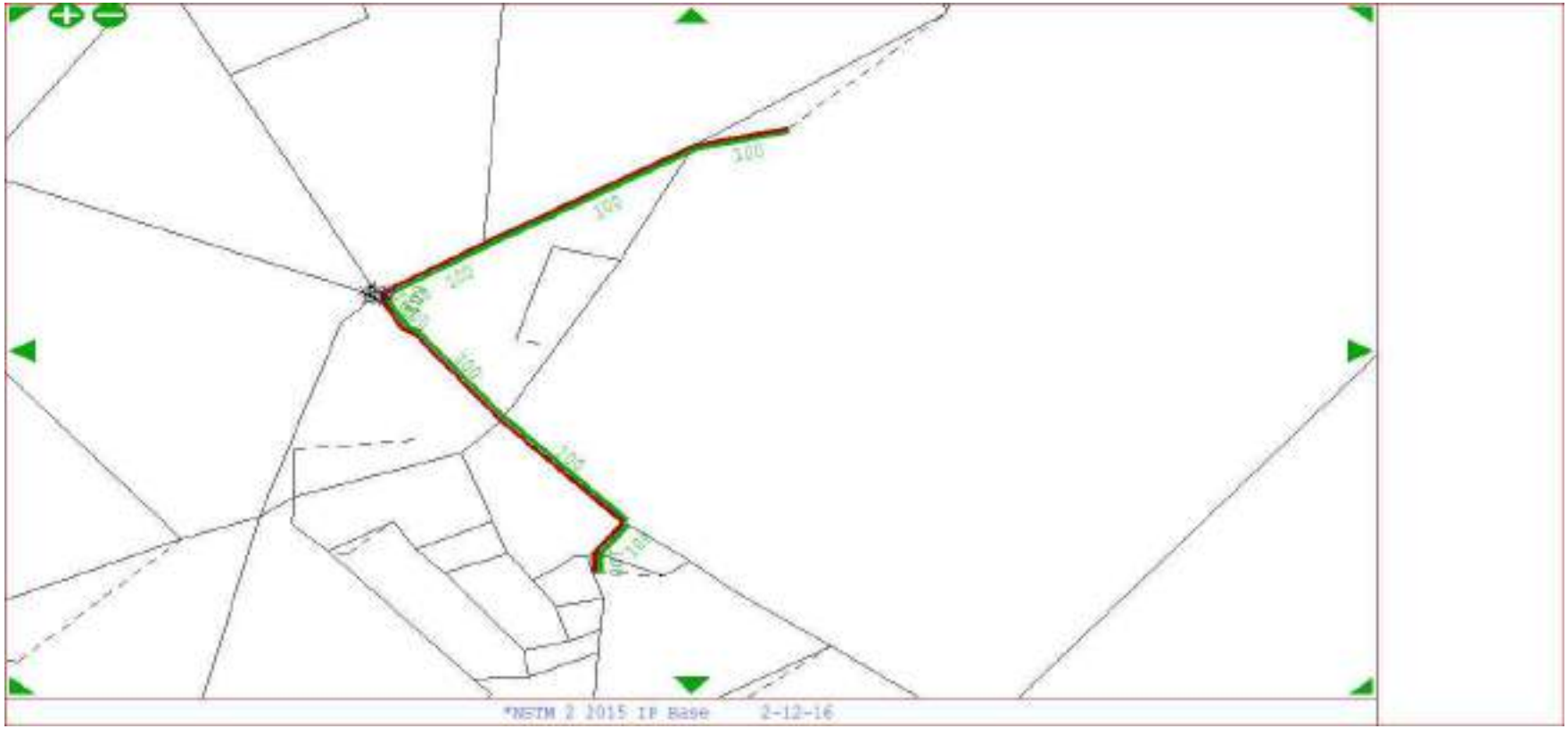
Inter-peak

From Rail Central Area To Towcester - User Class 4



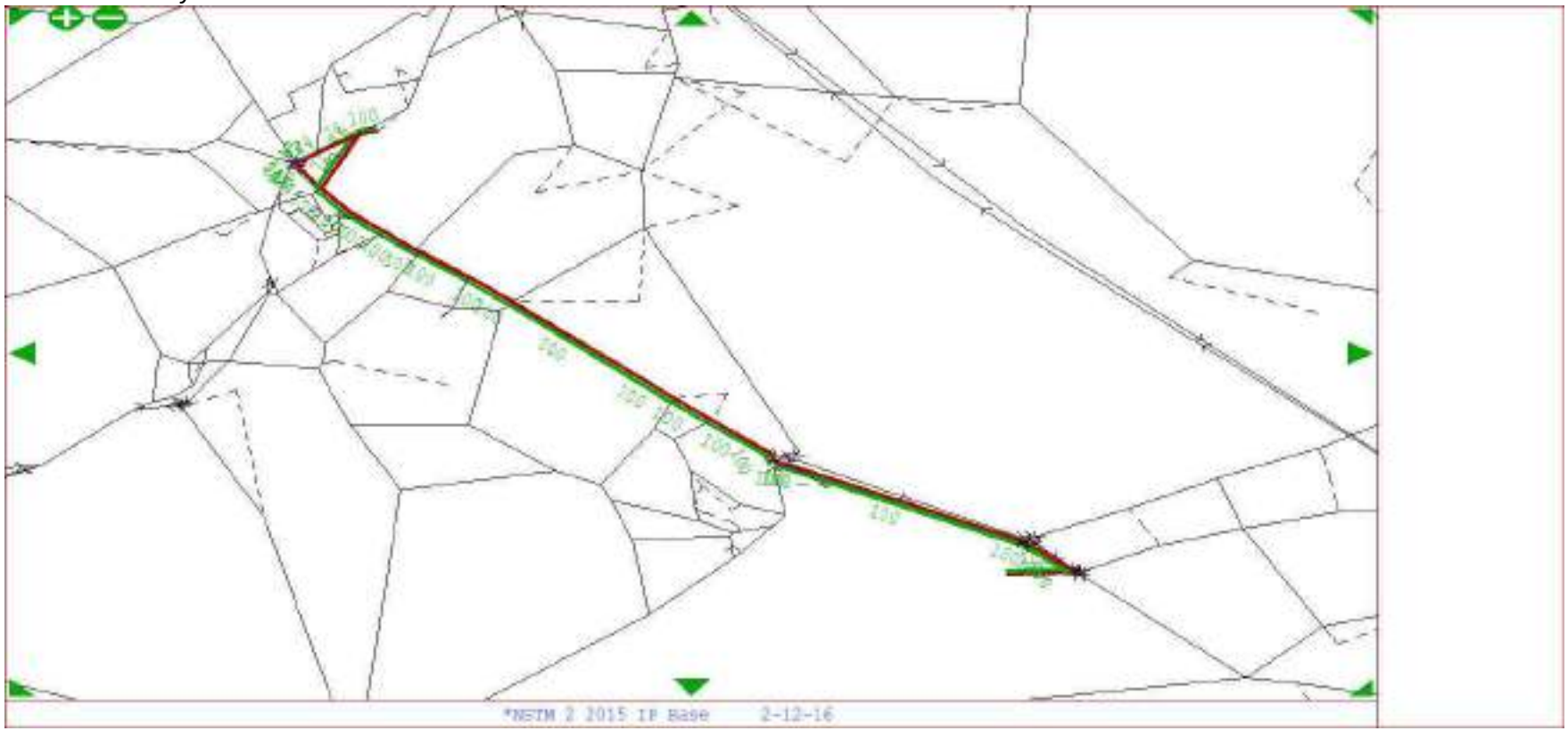
Inter-peak

From Rail Central Area To Towcester - User Class 5



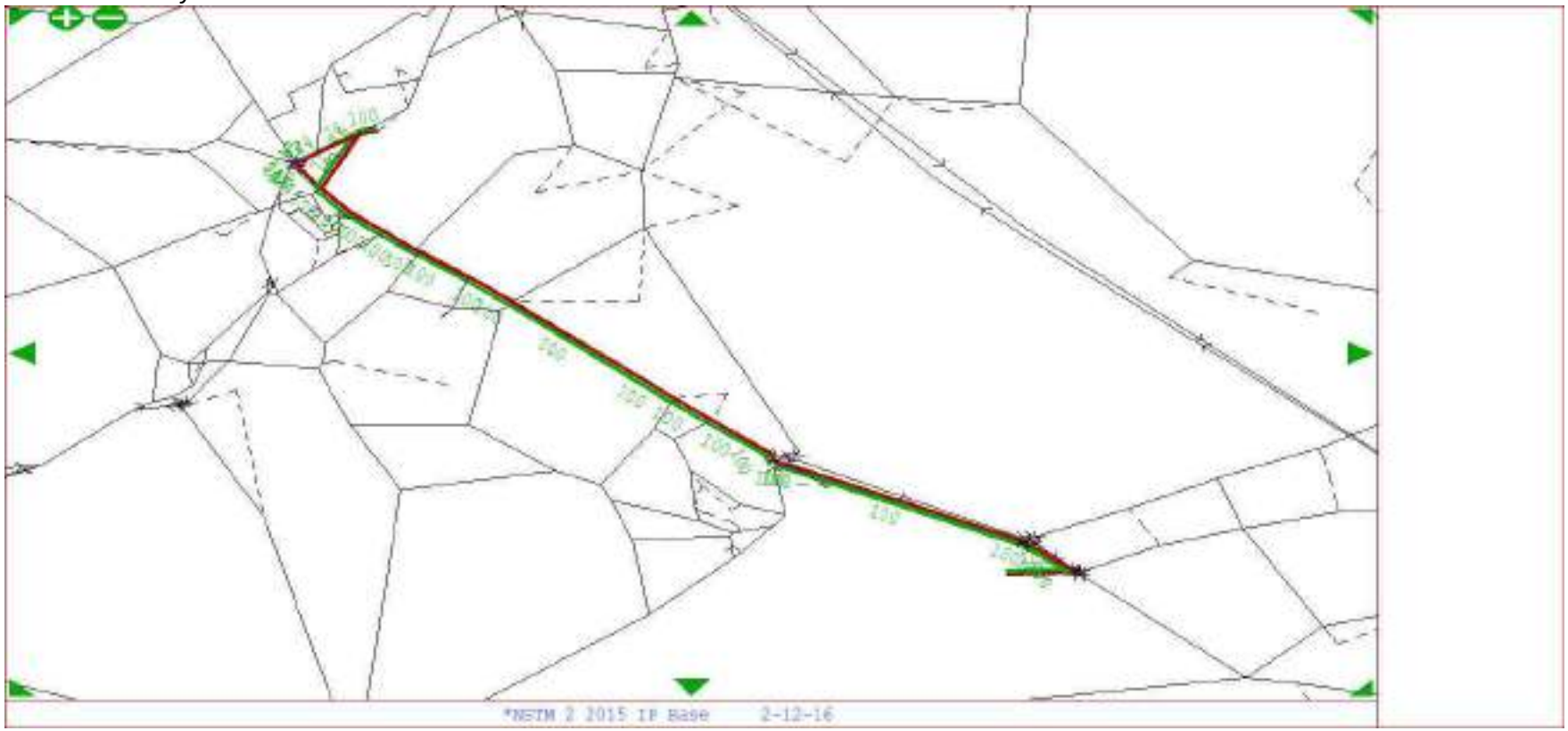
Inter-peak

From Milton Keynes To Rail Central Area - User Class 1



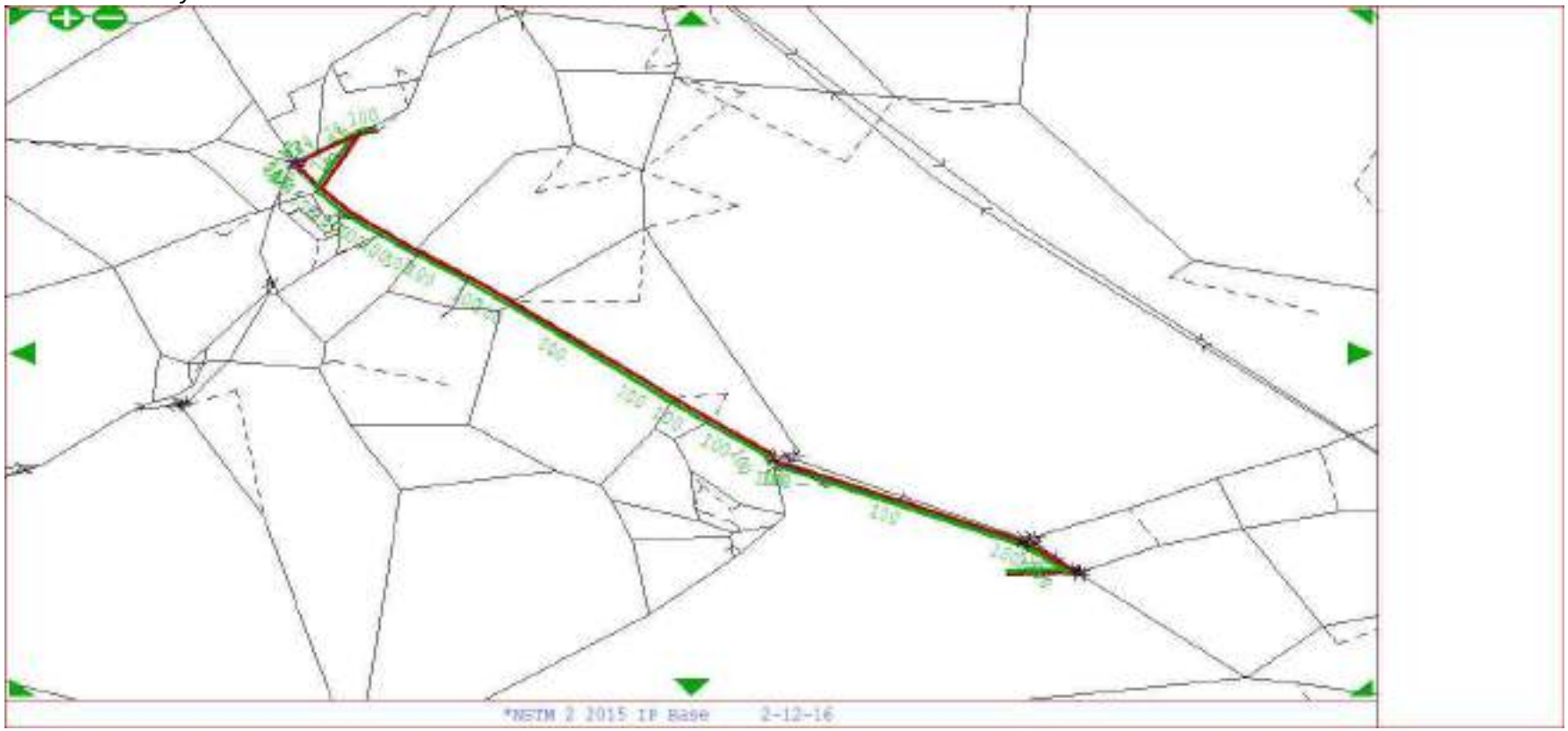
Inter-peak

From Milton Keynes To Rail Central Area - User Class 2



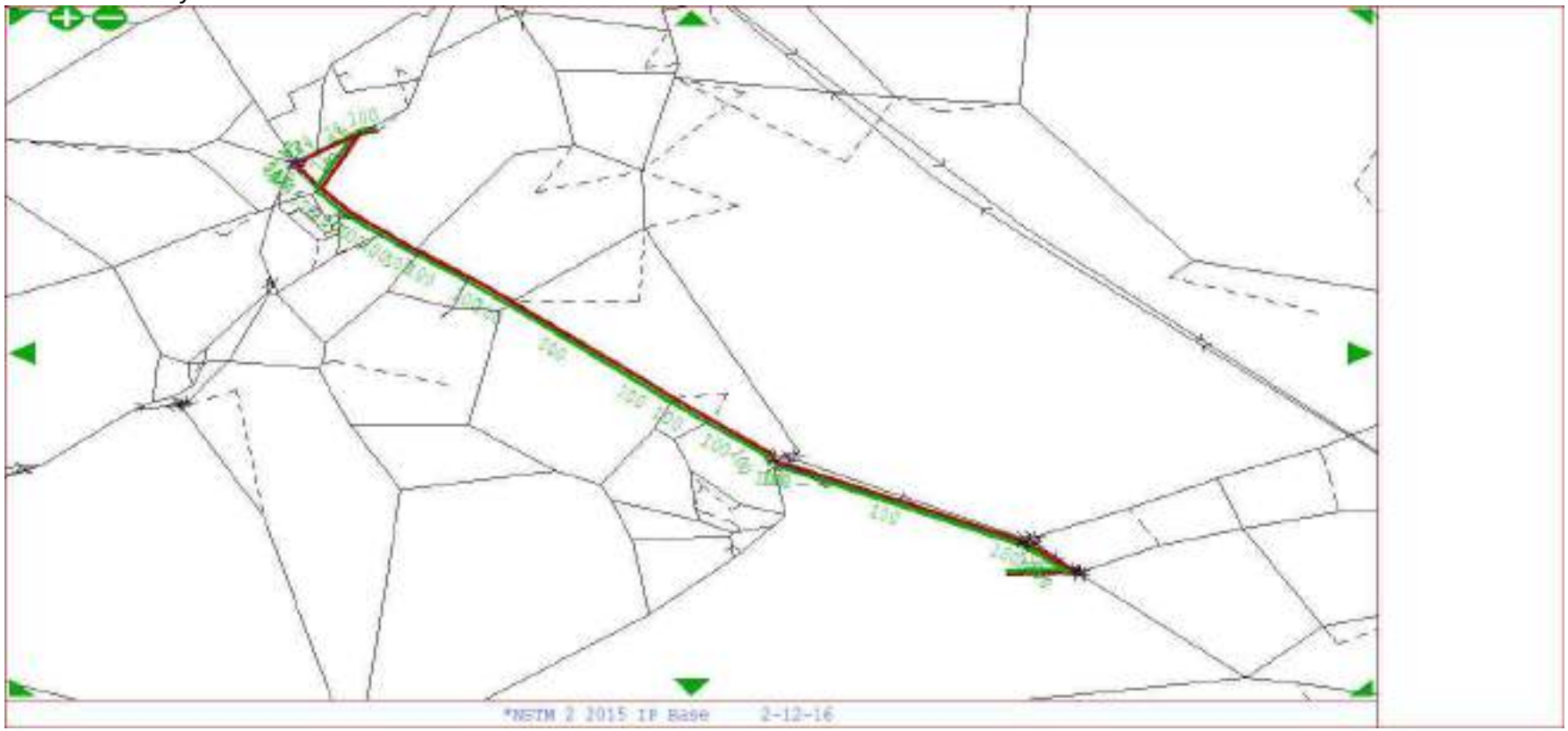
Inter-peak

From Milton Keynes To Rail Central Area - User Class 3



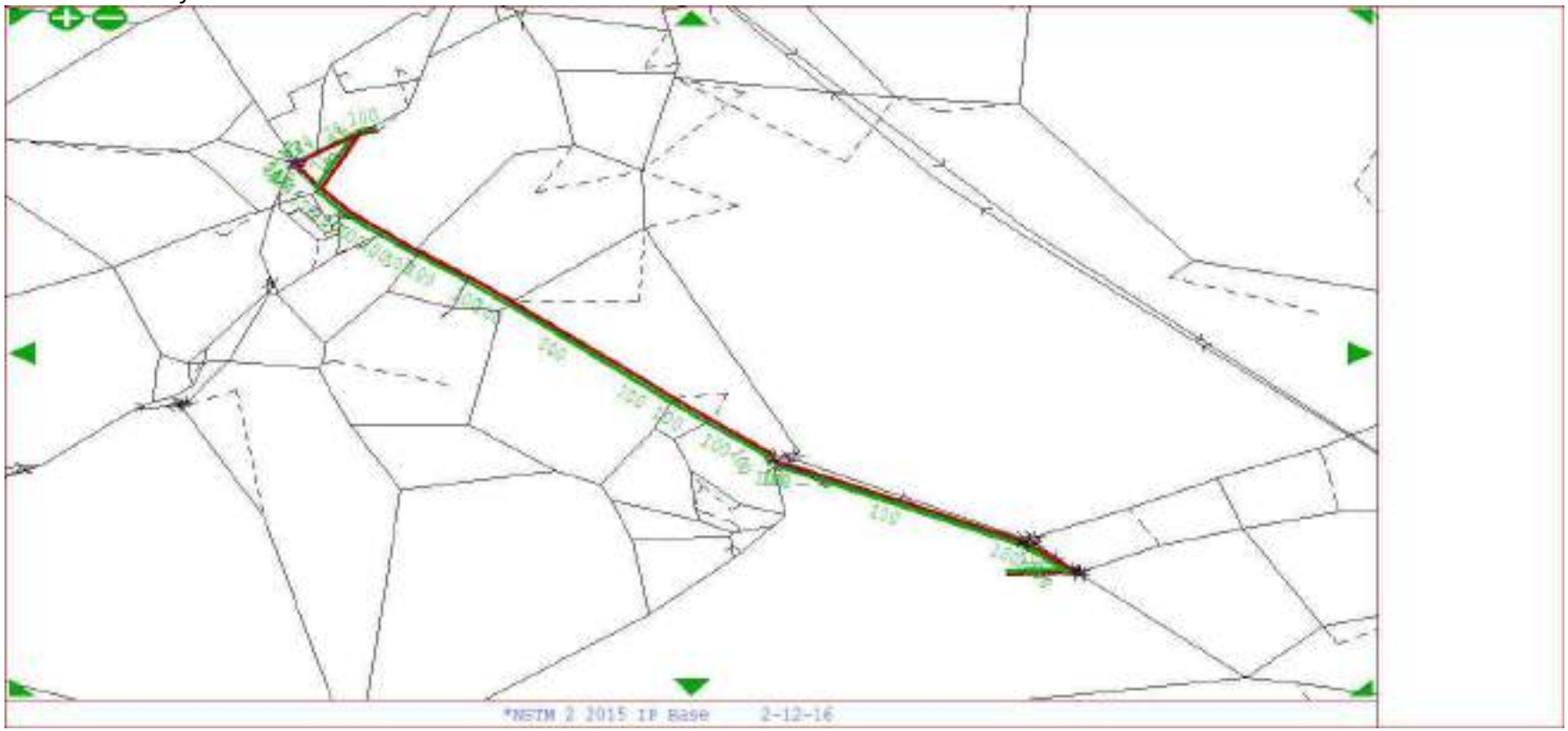
Inter-peak

From Milton Keynes To Rail Central Area - User Class 4



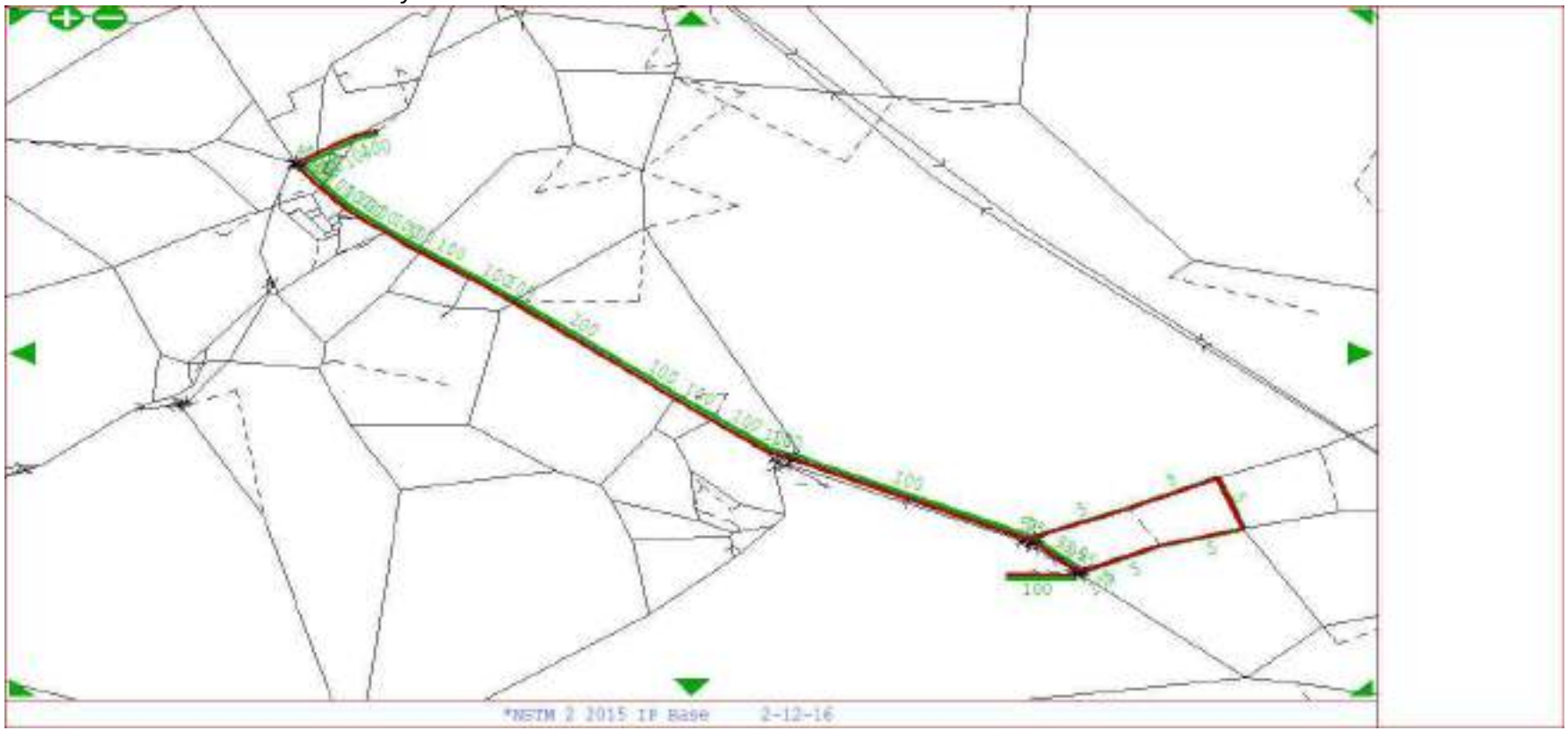
Inter-peak

From Milton Keynes To Rail Central Area - User Class 5



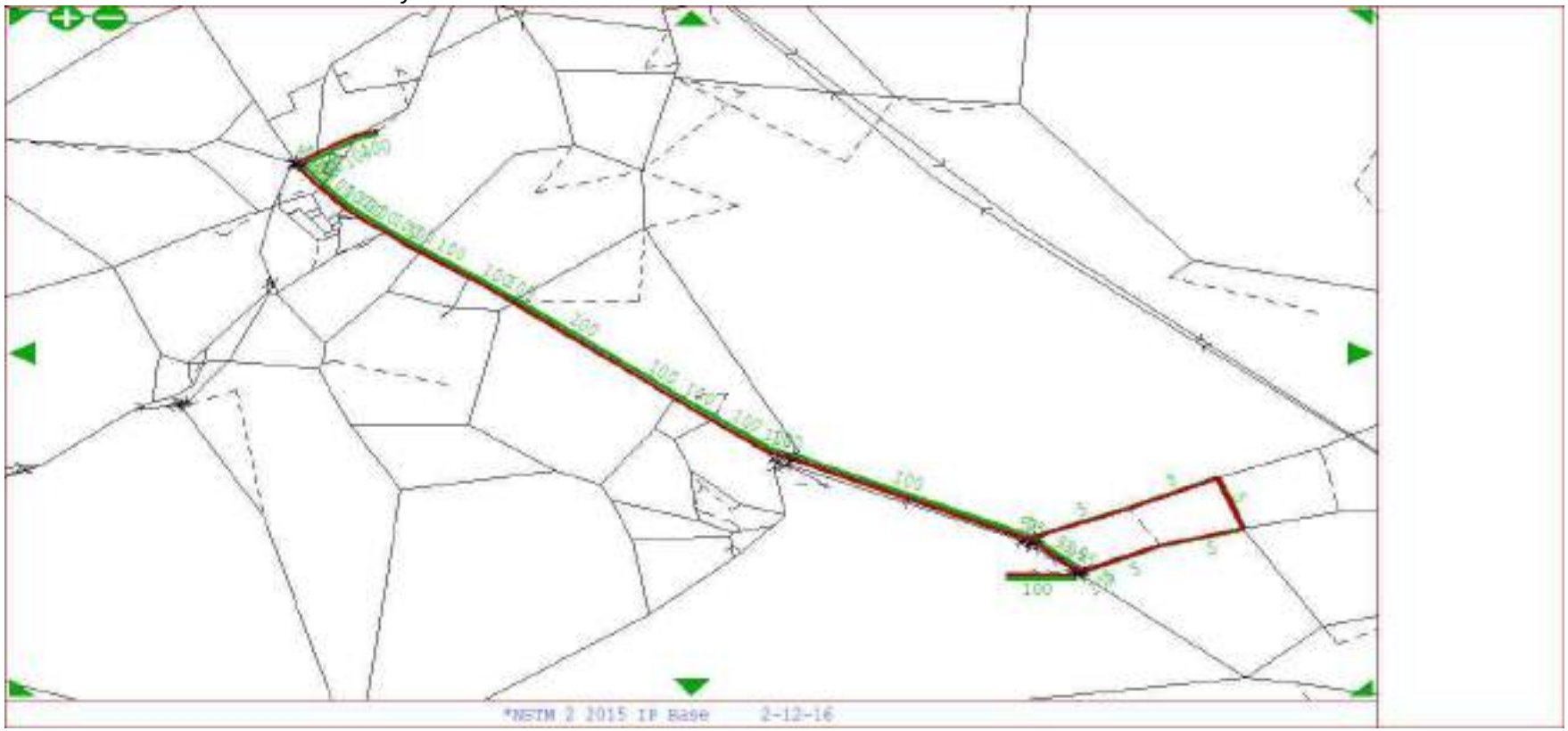
Inter-peak

From Rail Central Area To Milton Keynes - User Class 1



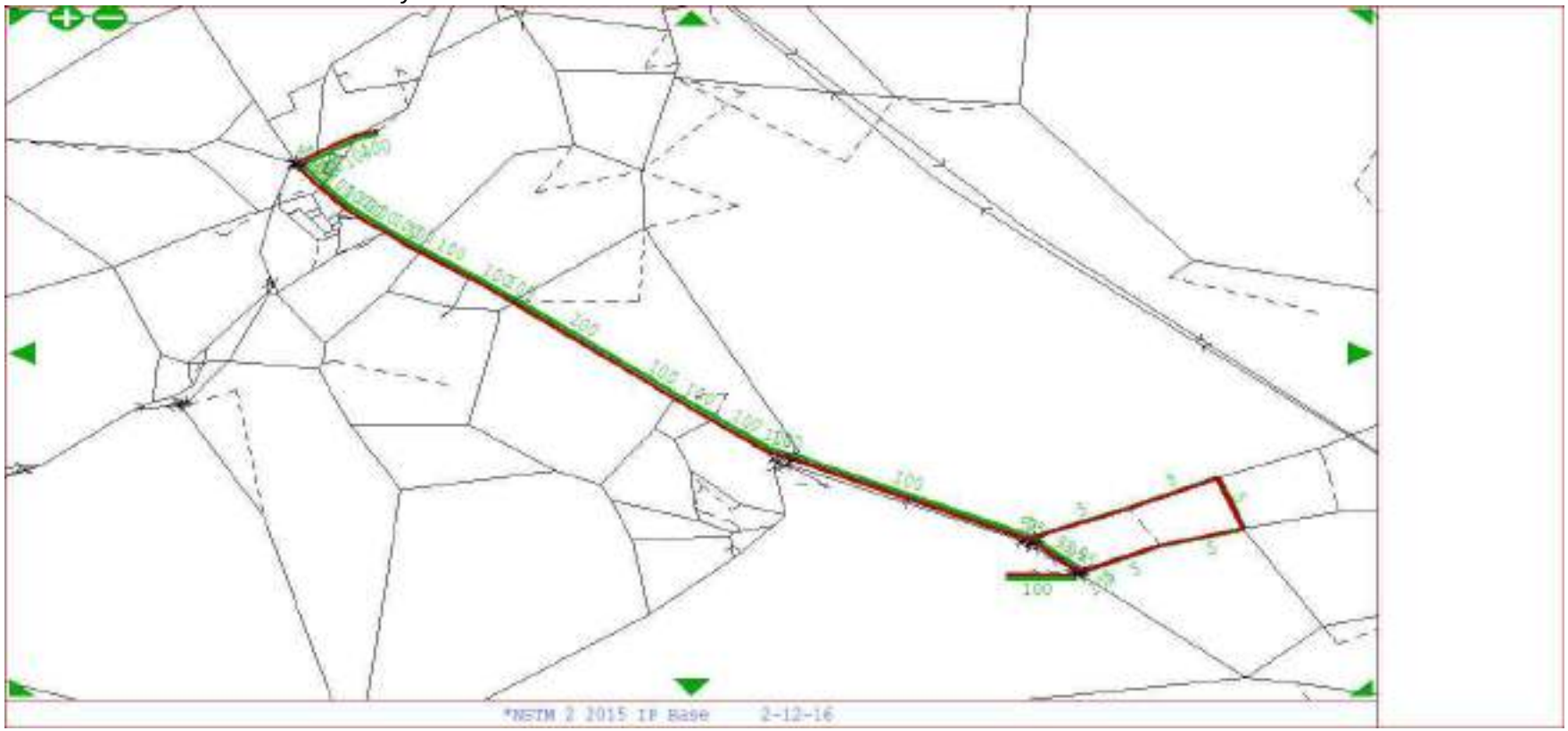
Inter-peak

From Rail Central Area To Milton Keynes - User Class 2



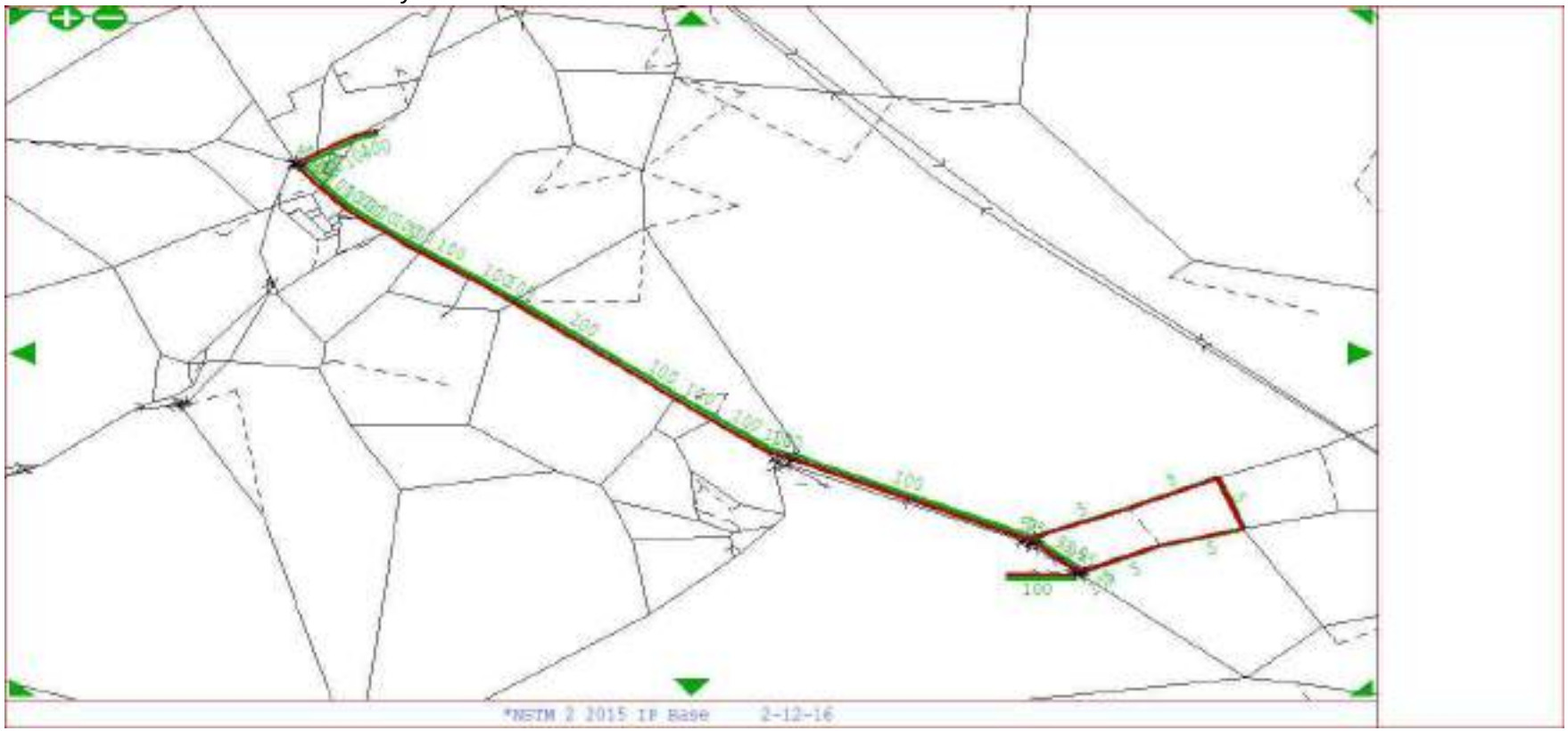
Inter-peak

From Rail Central Area To Milton Keynes - User Class 3



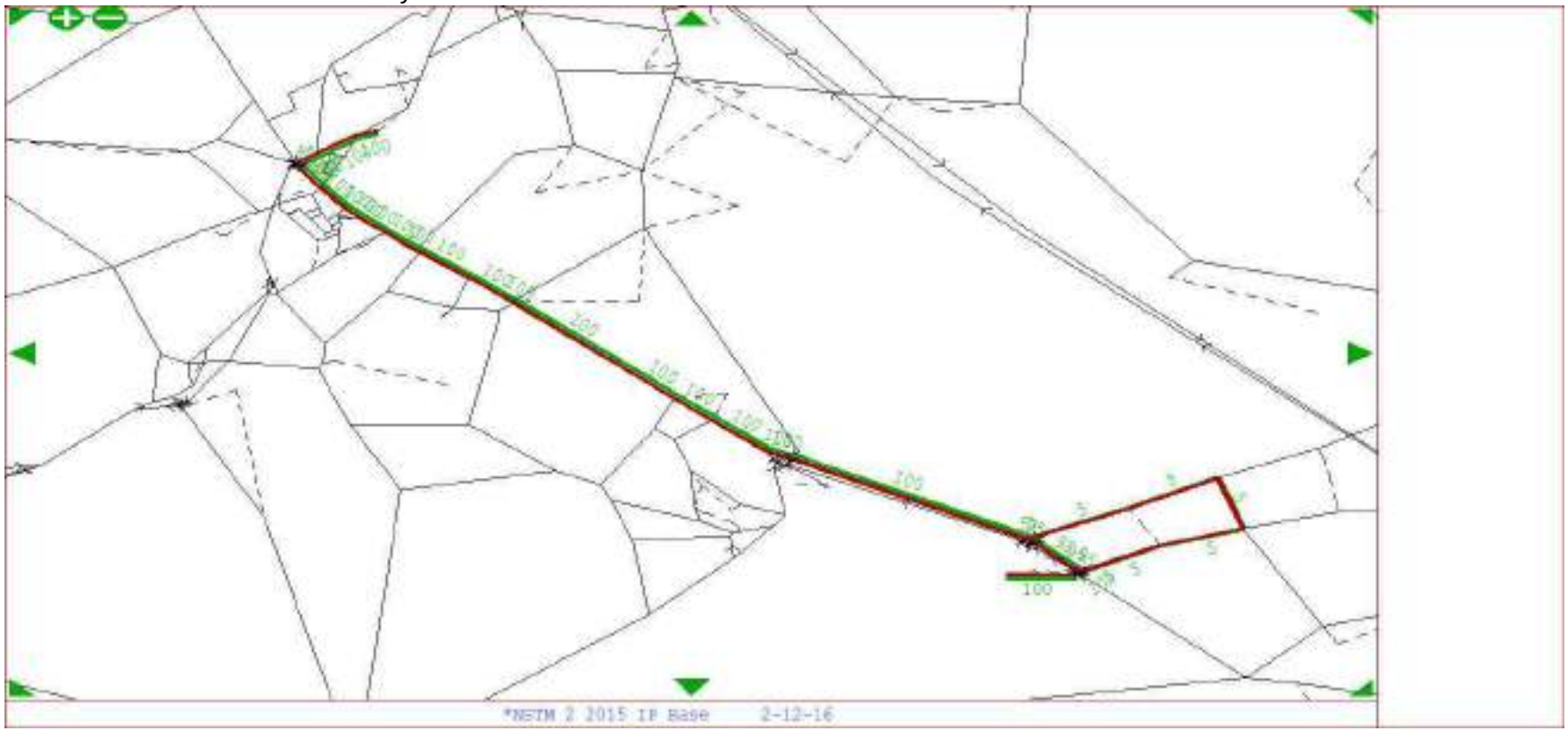
Inter-peak

From Rail Central Area To Milton Keynes - User Class 4



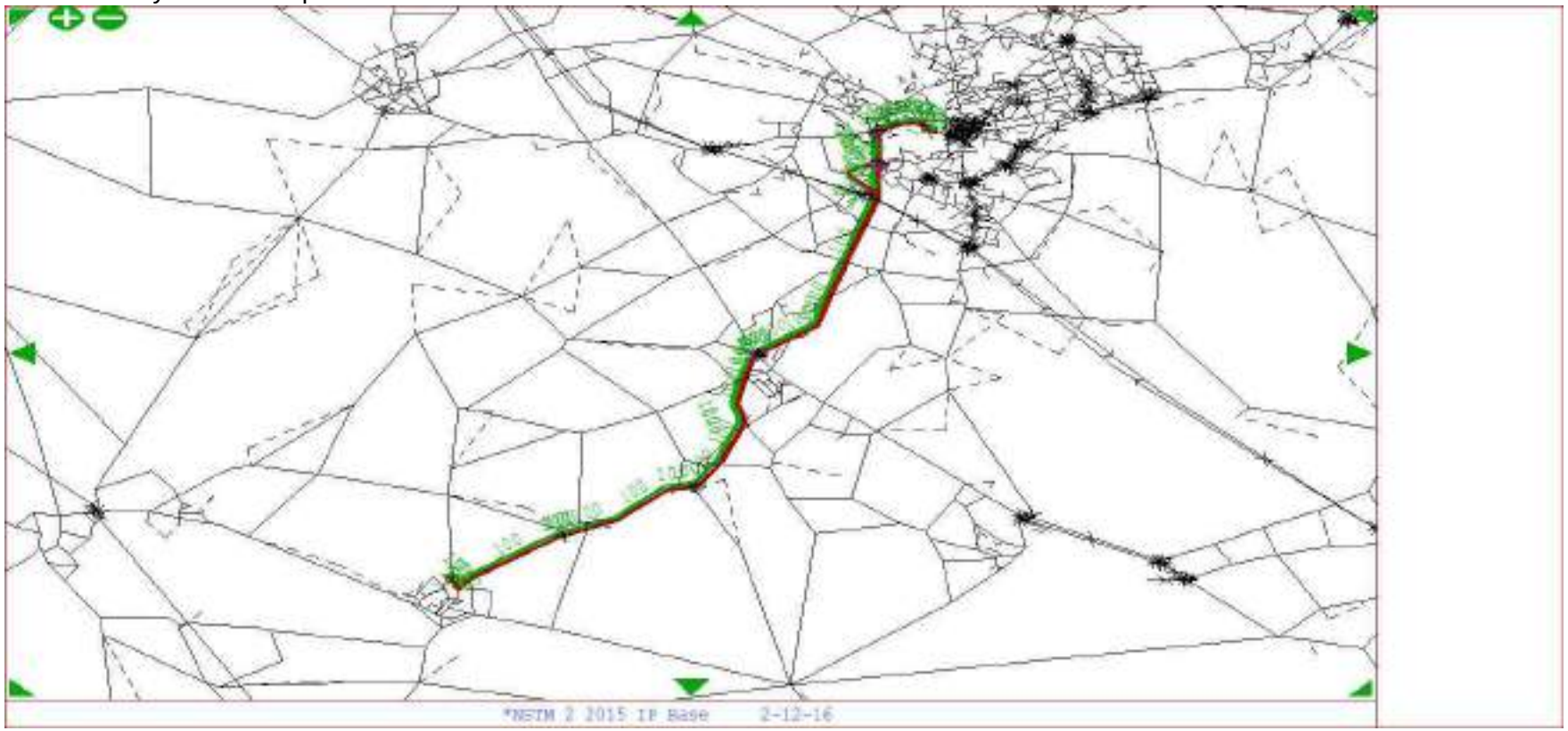
Inter-peak

From Rail Central Area To Milton Keynes - User Class 5



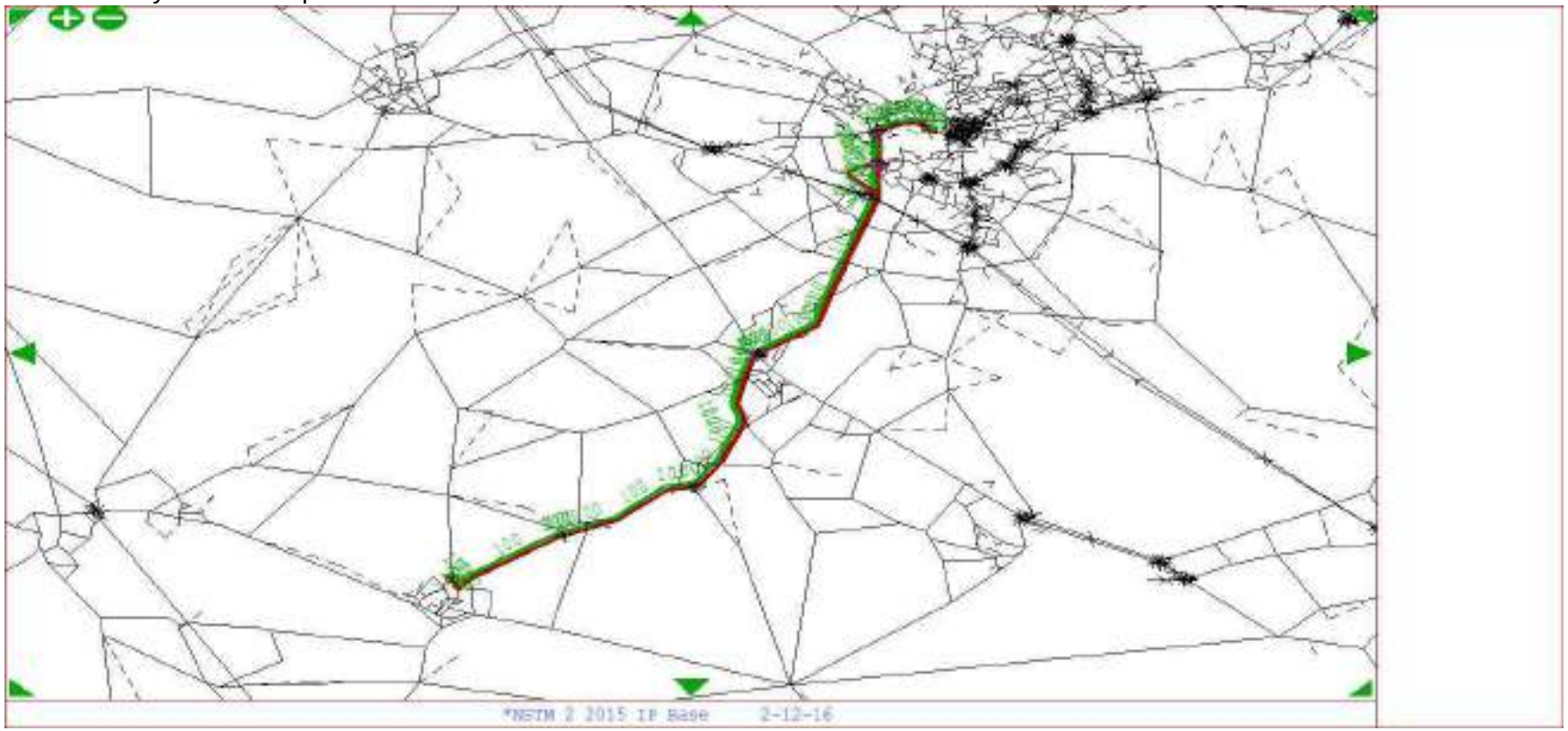
Inter-peak

From Brackley To Northampton - User Class 1



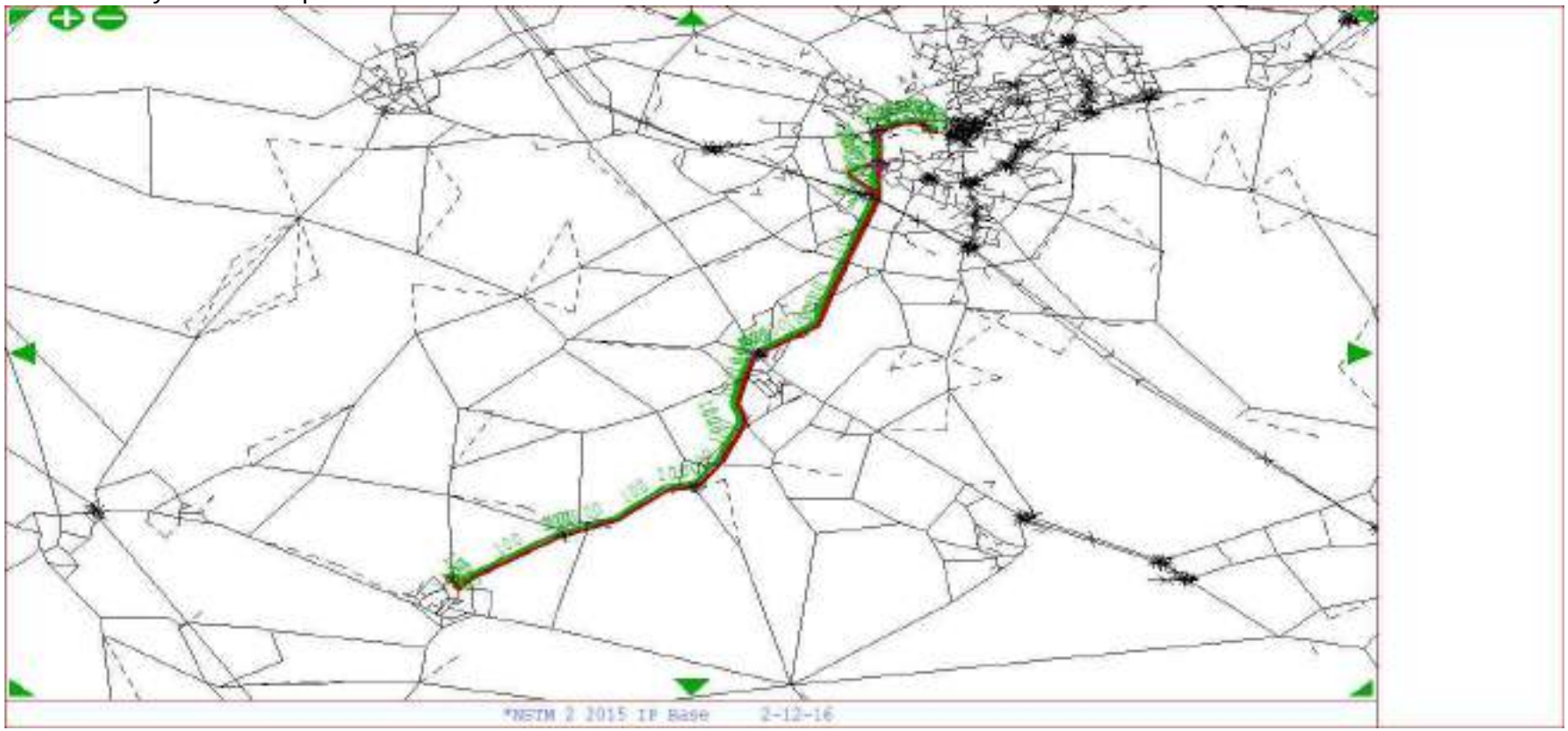
Inter-peak

From Brackley To Northampton - User Class 2



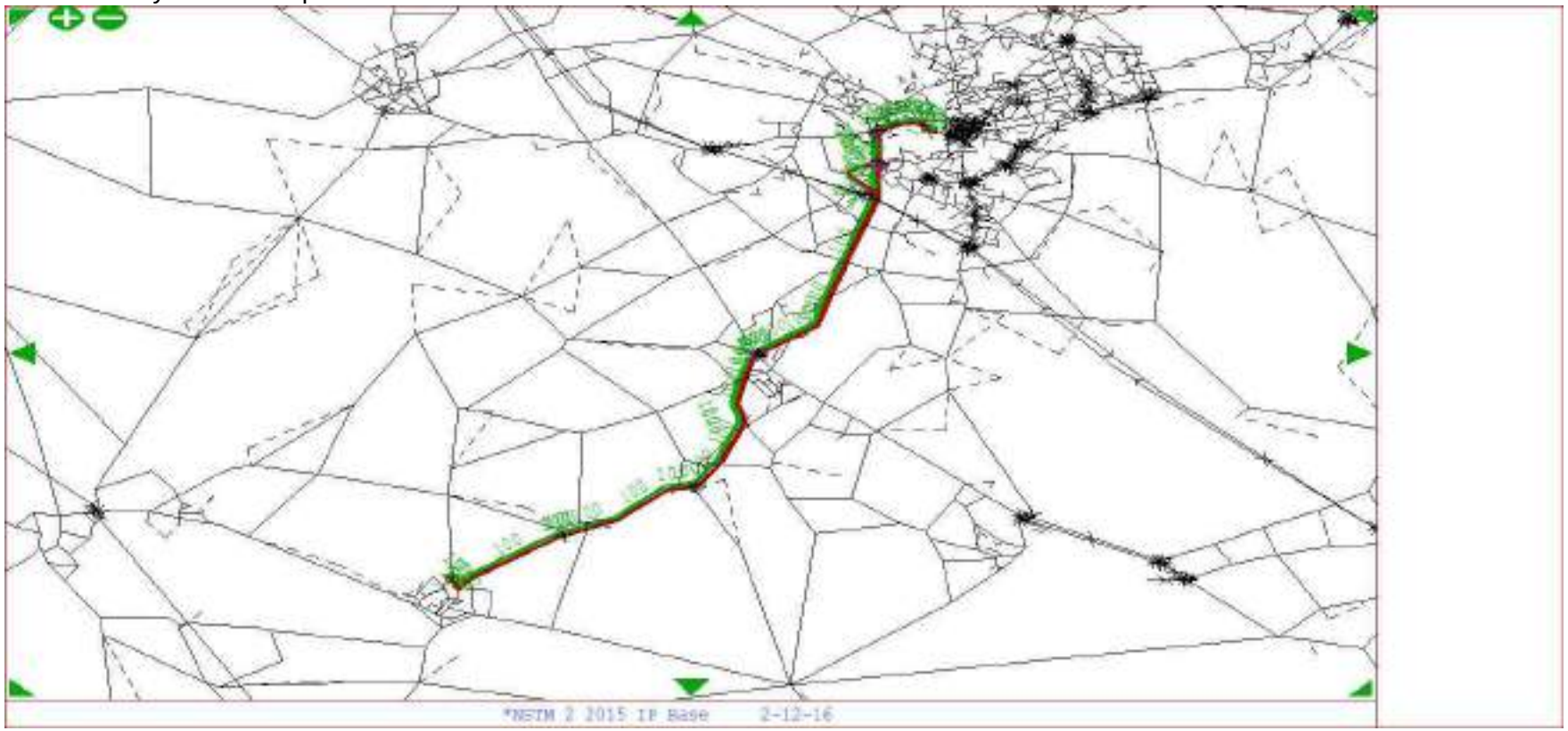
Inter-peak

From Brackley To Northampton - User Class 3



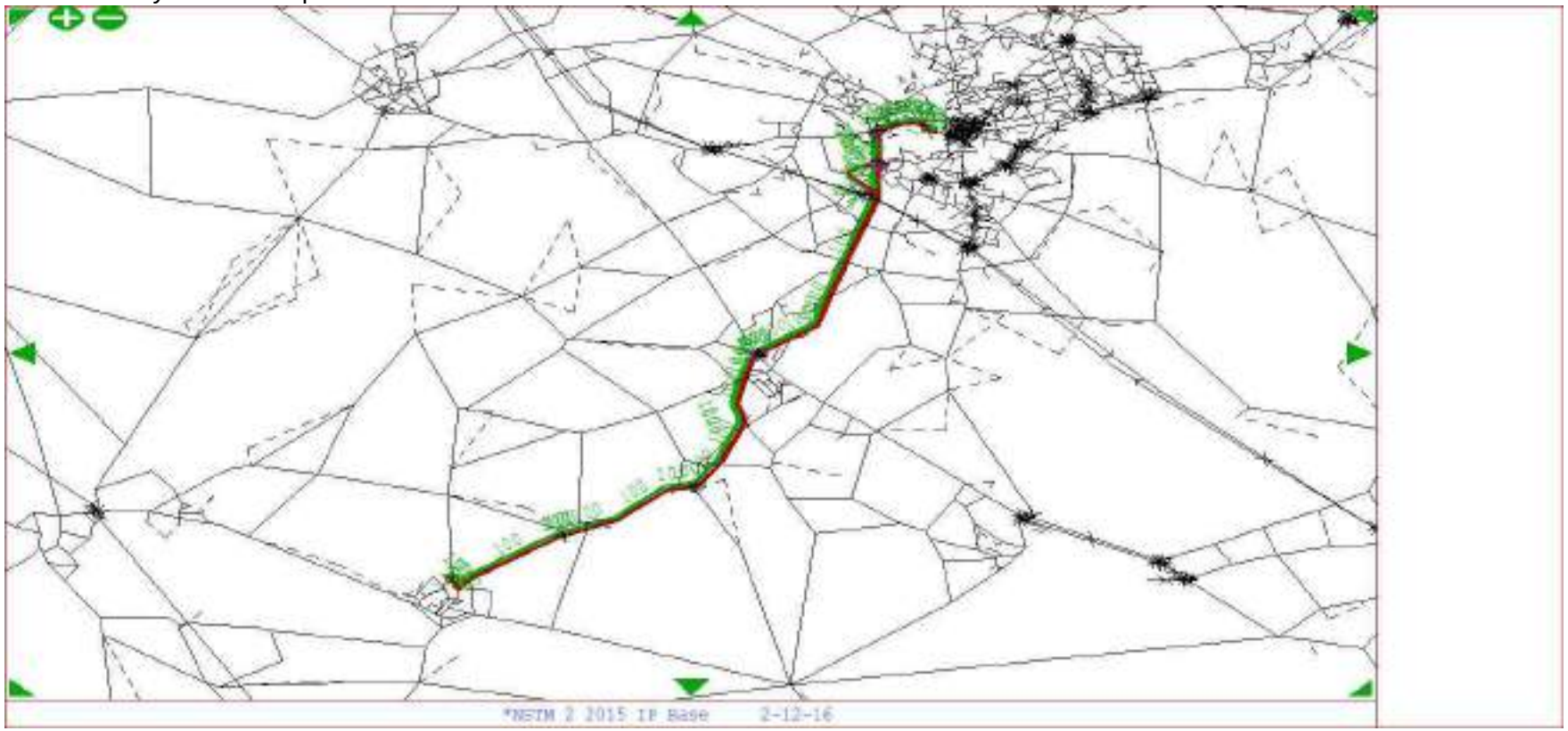
Inter-peak

From Brackley To Northampton - User Class 4



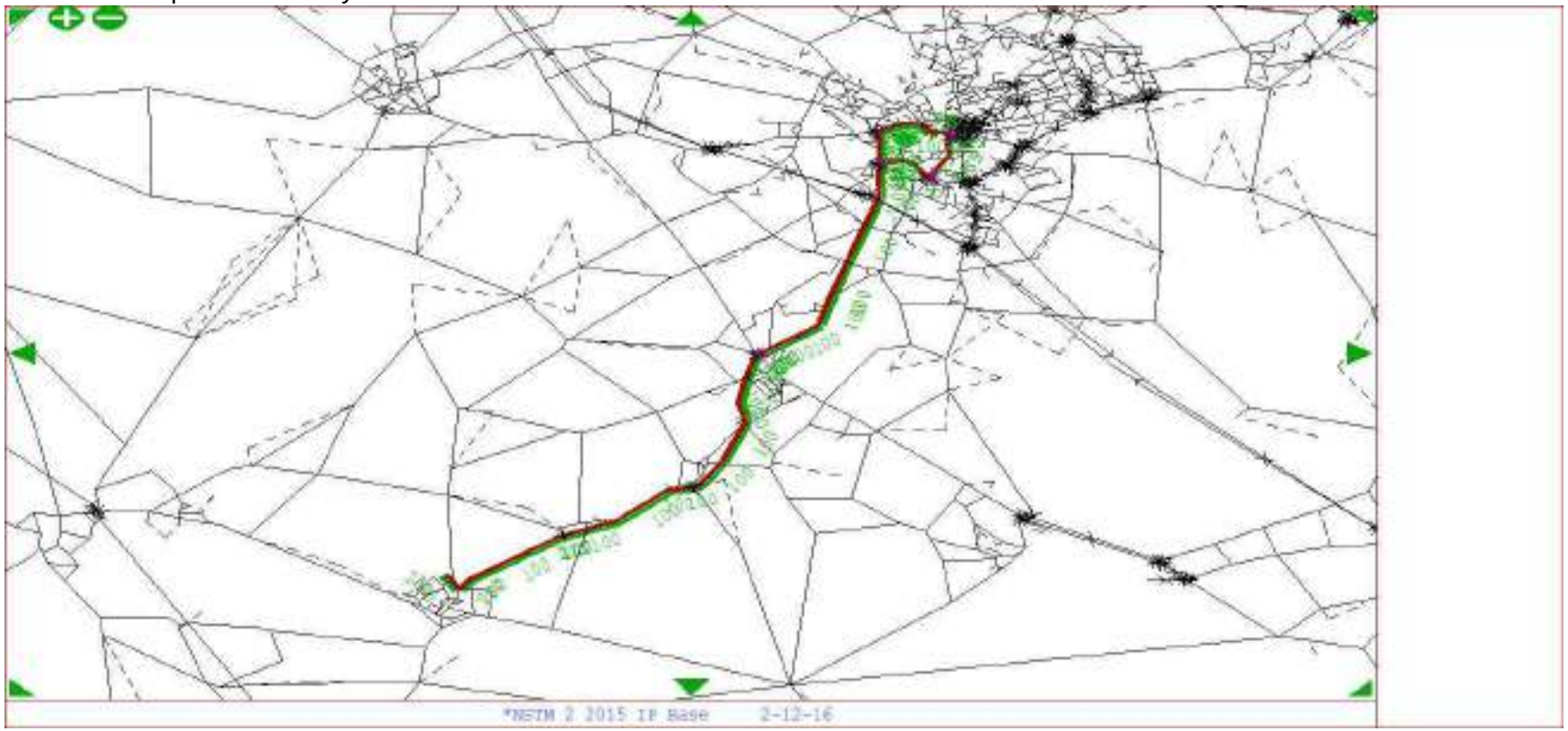
Inter-peak

From Brackley To Northampton - User Class 5



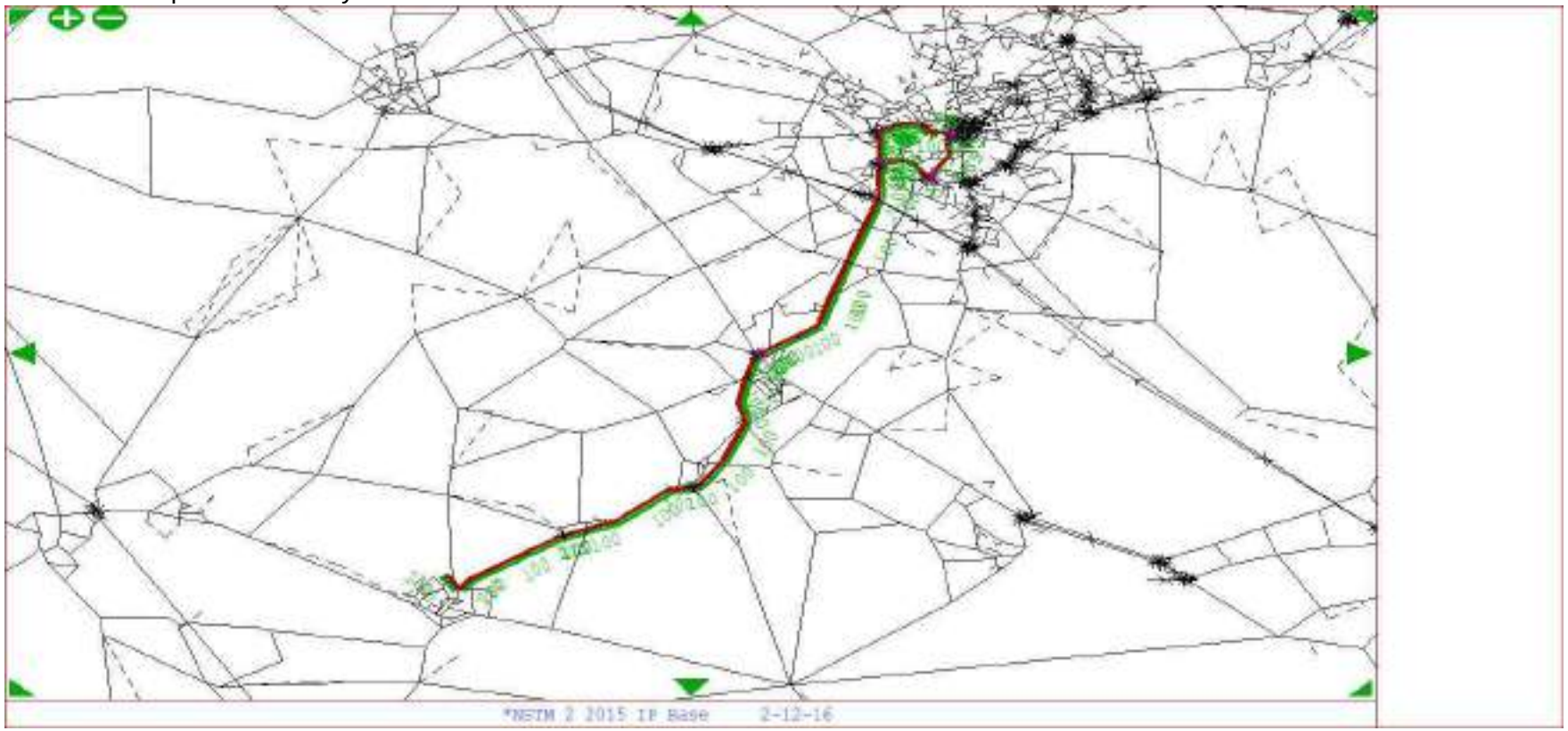
Inter-peak

From Northampton To Brackley - User Class 1



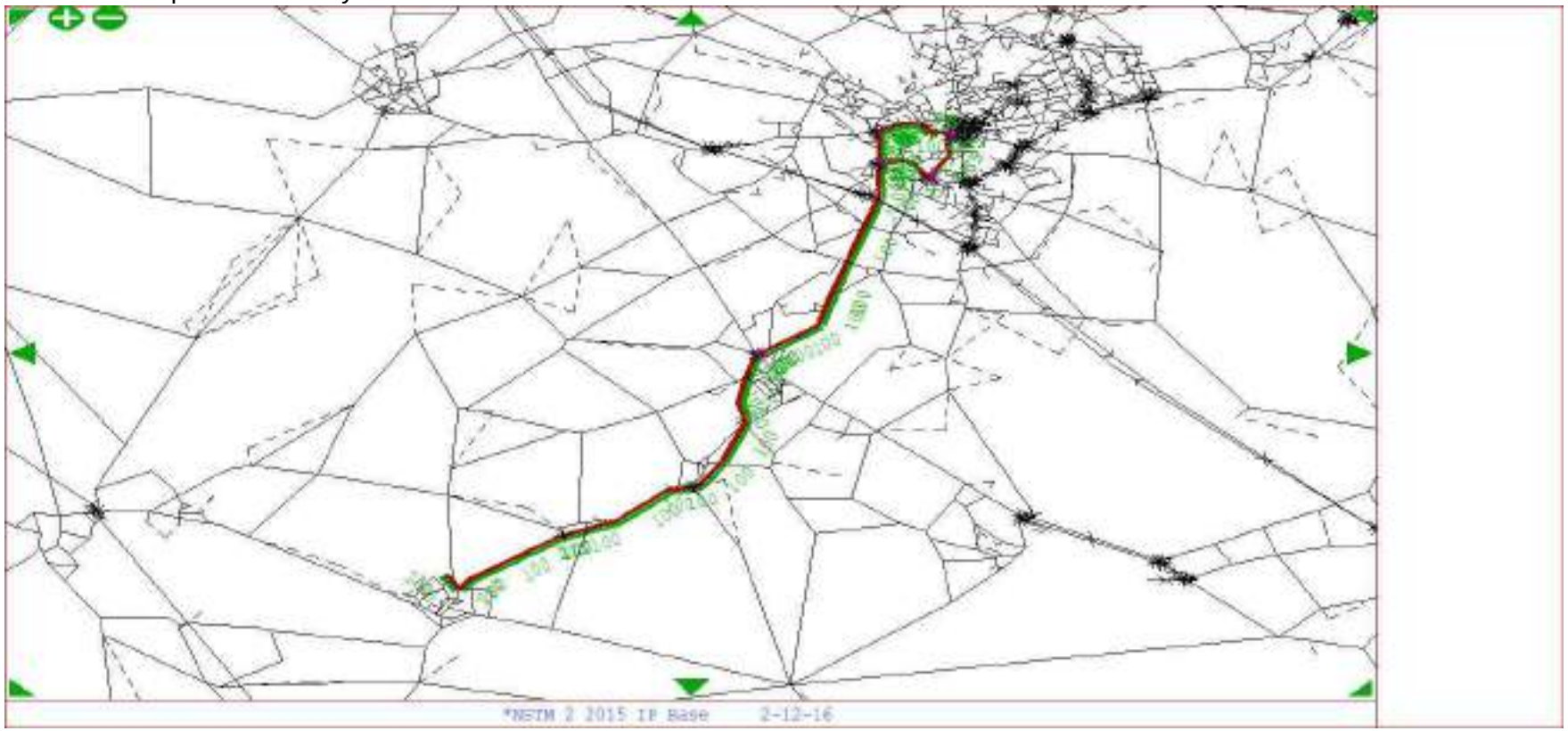
Inter-peak

From Northampton To Brackley - User Class 2



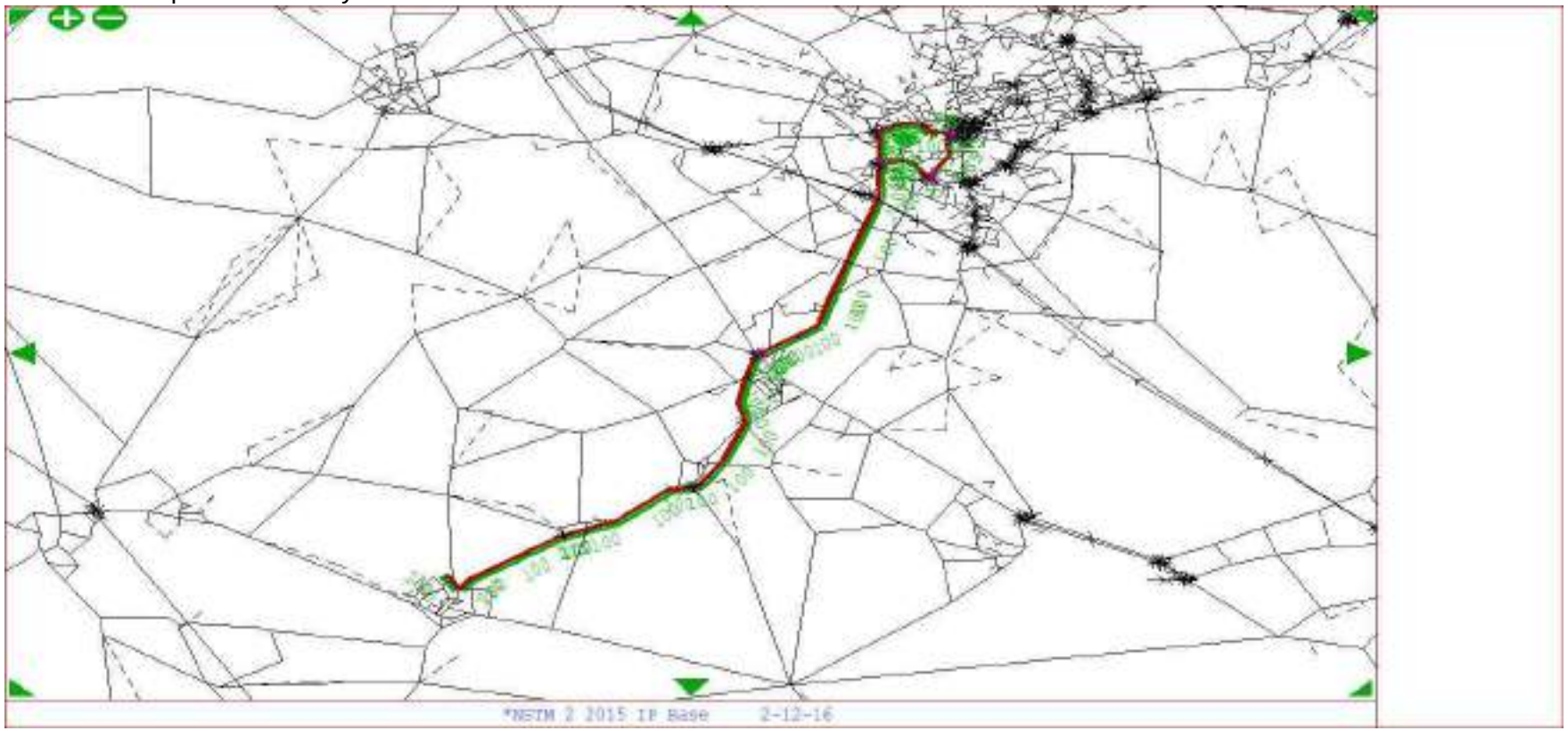
Inter-peak

From Northampton To Brackley - User Class 3



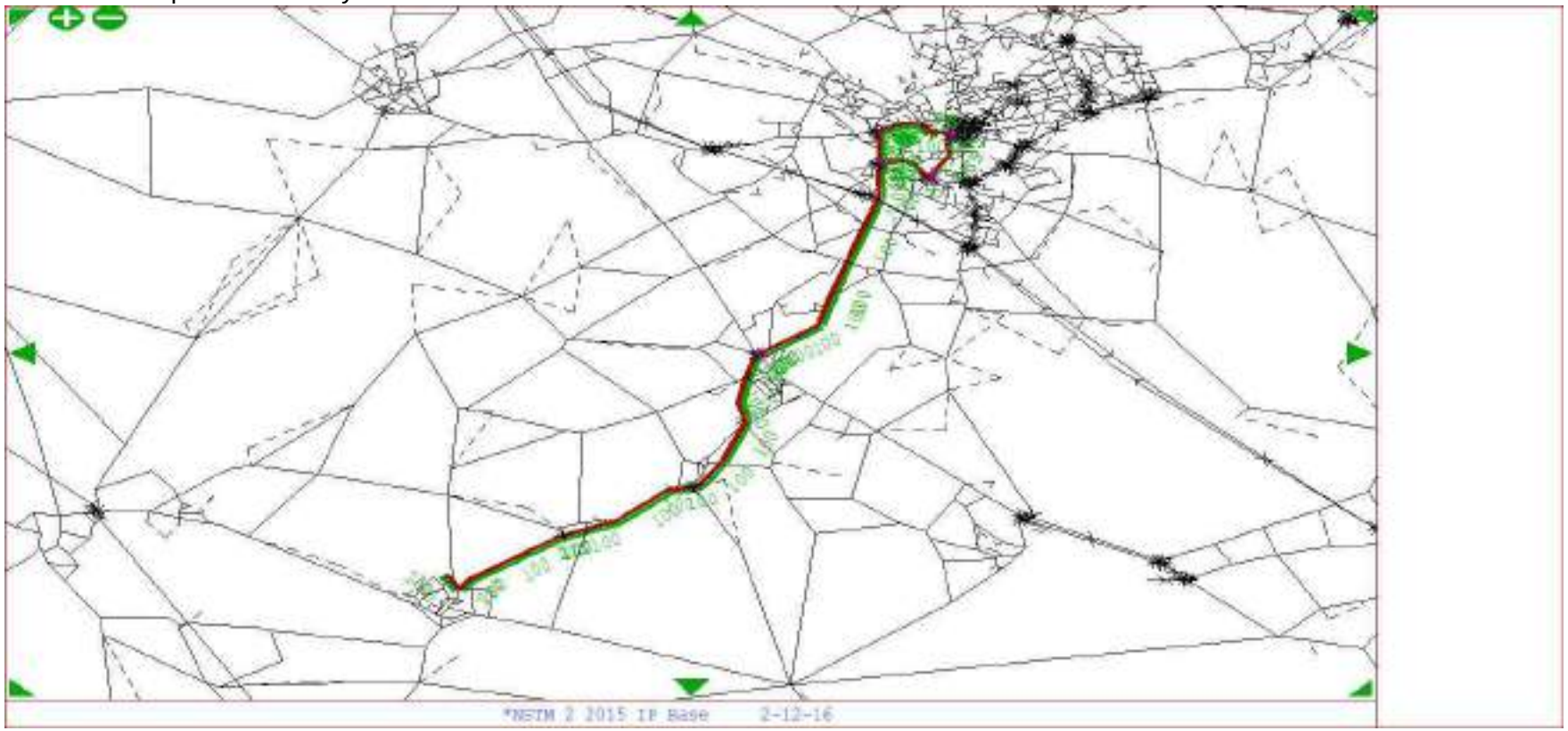
Inter-peak

From Northampton To Brackley - User Class 4



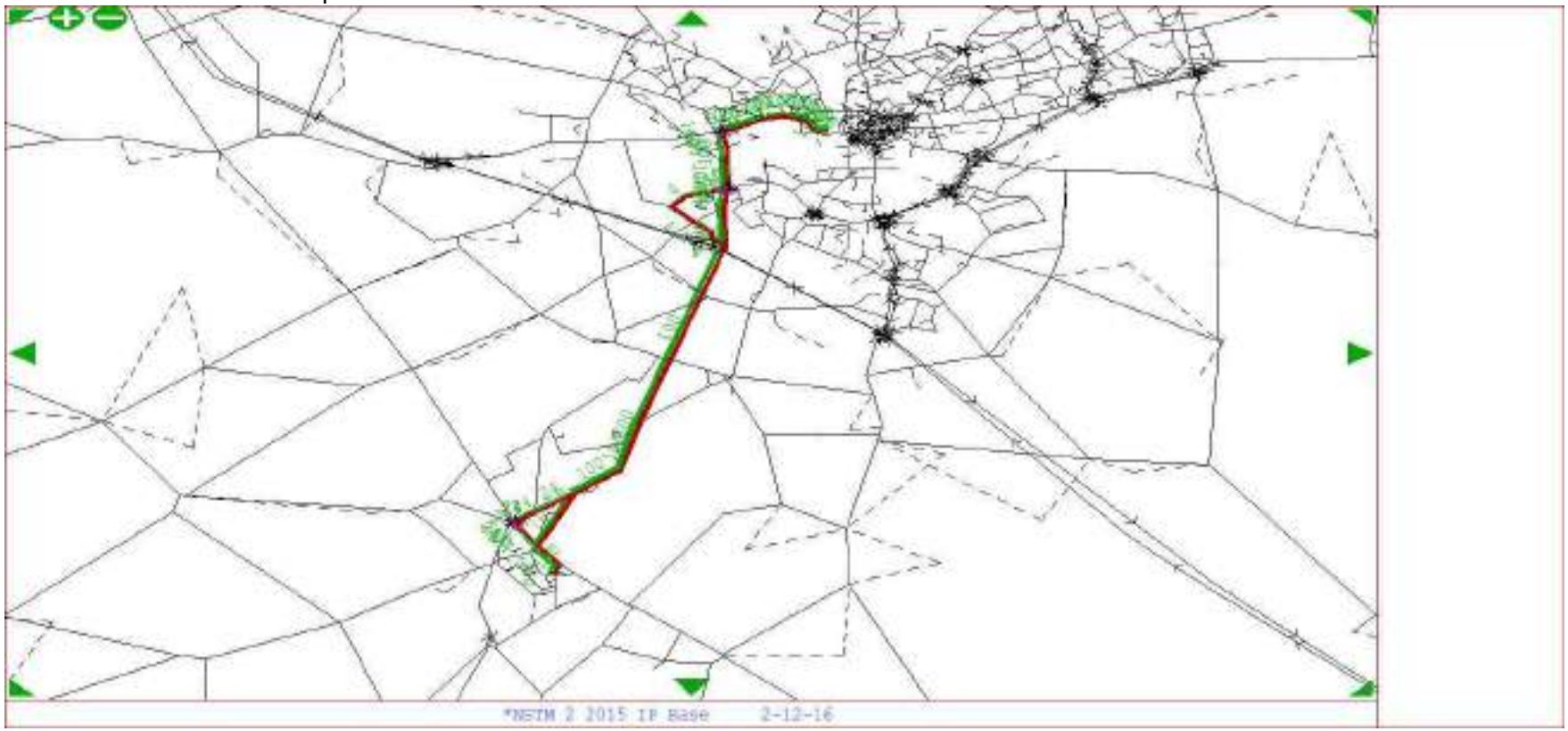
Inter-peak

From Northampton To Brackley - User Class 5



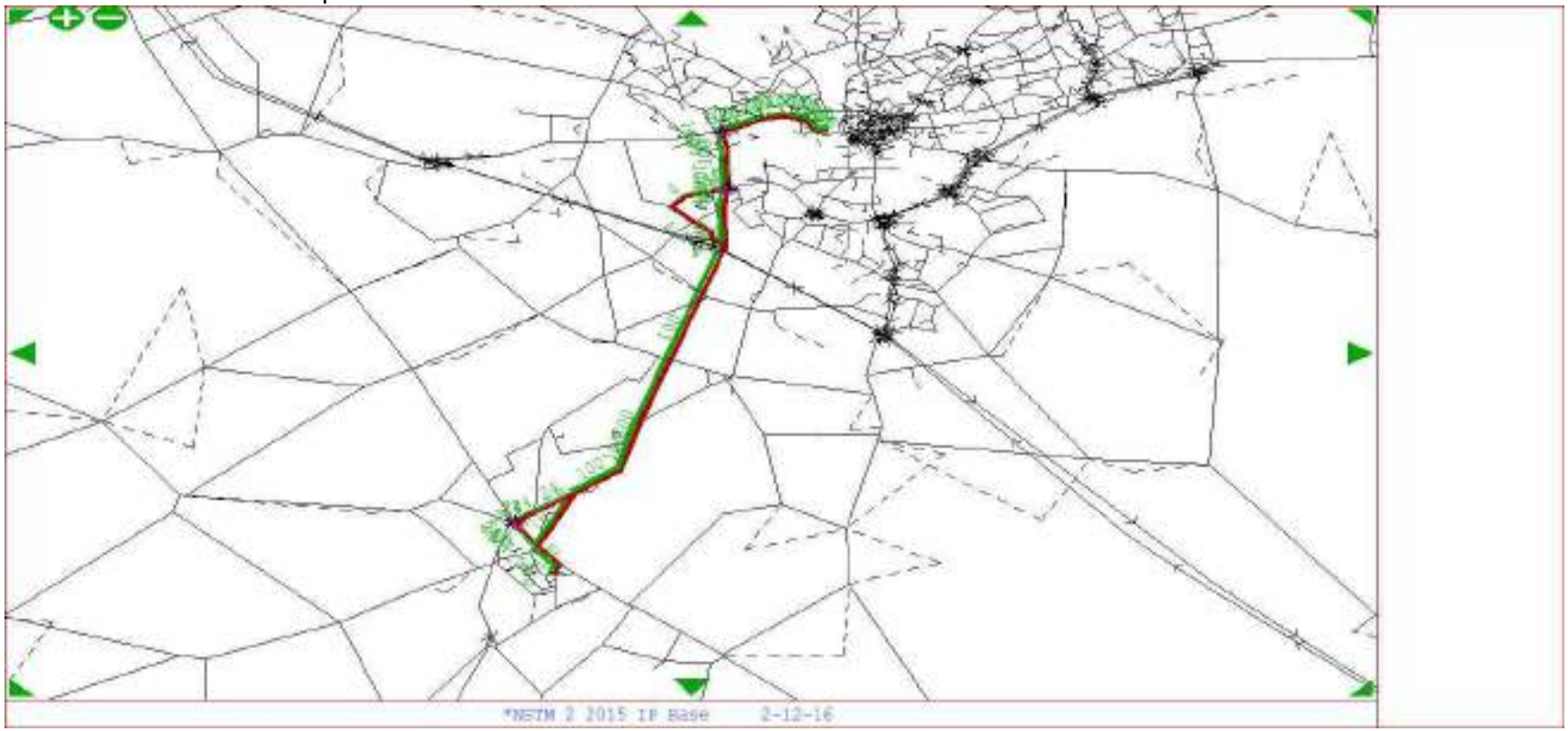
Inter-peak

From Towcester To Northampton - User Class 1



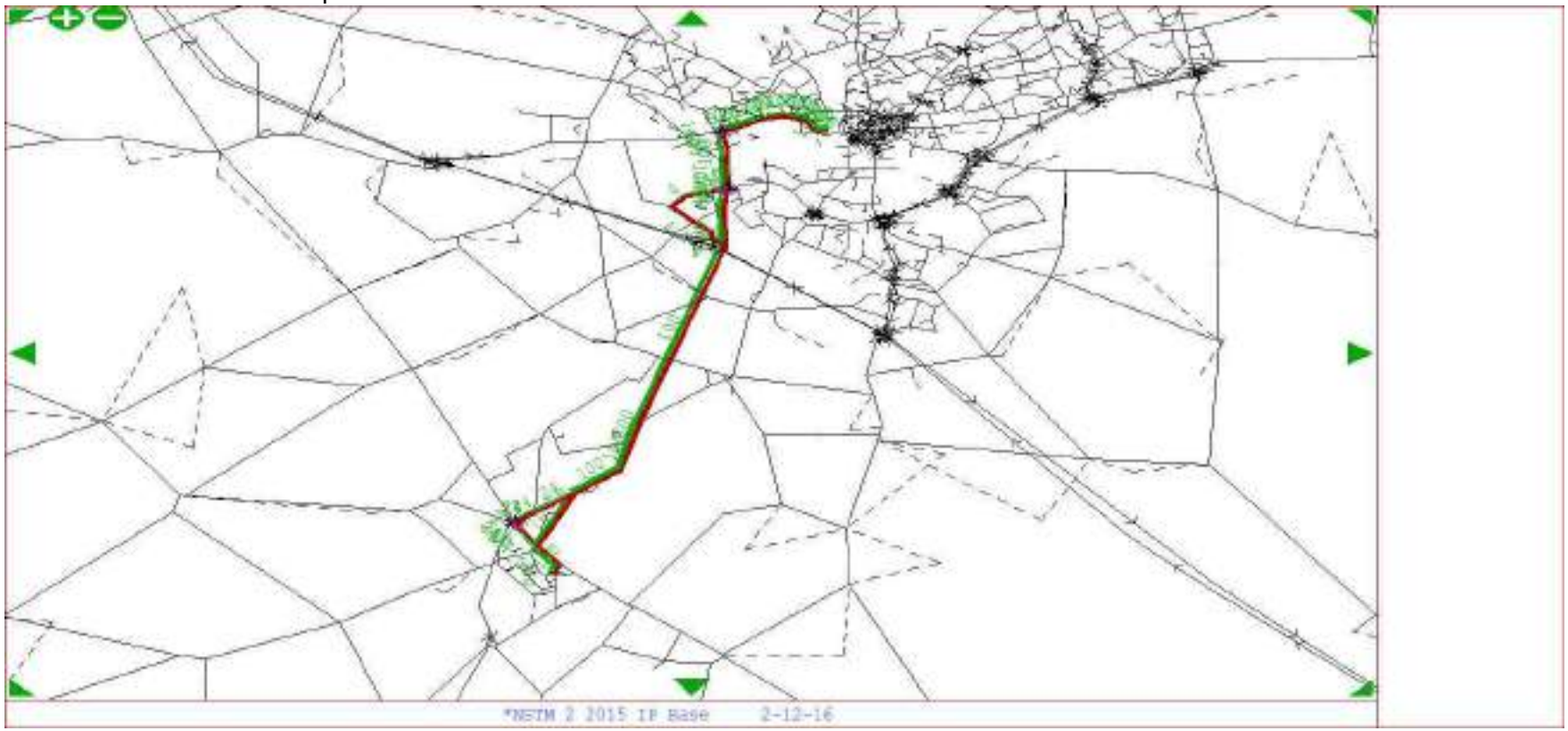
Inter-peak

From Towcester To Northampton - User Class 2



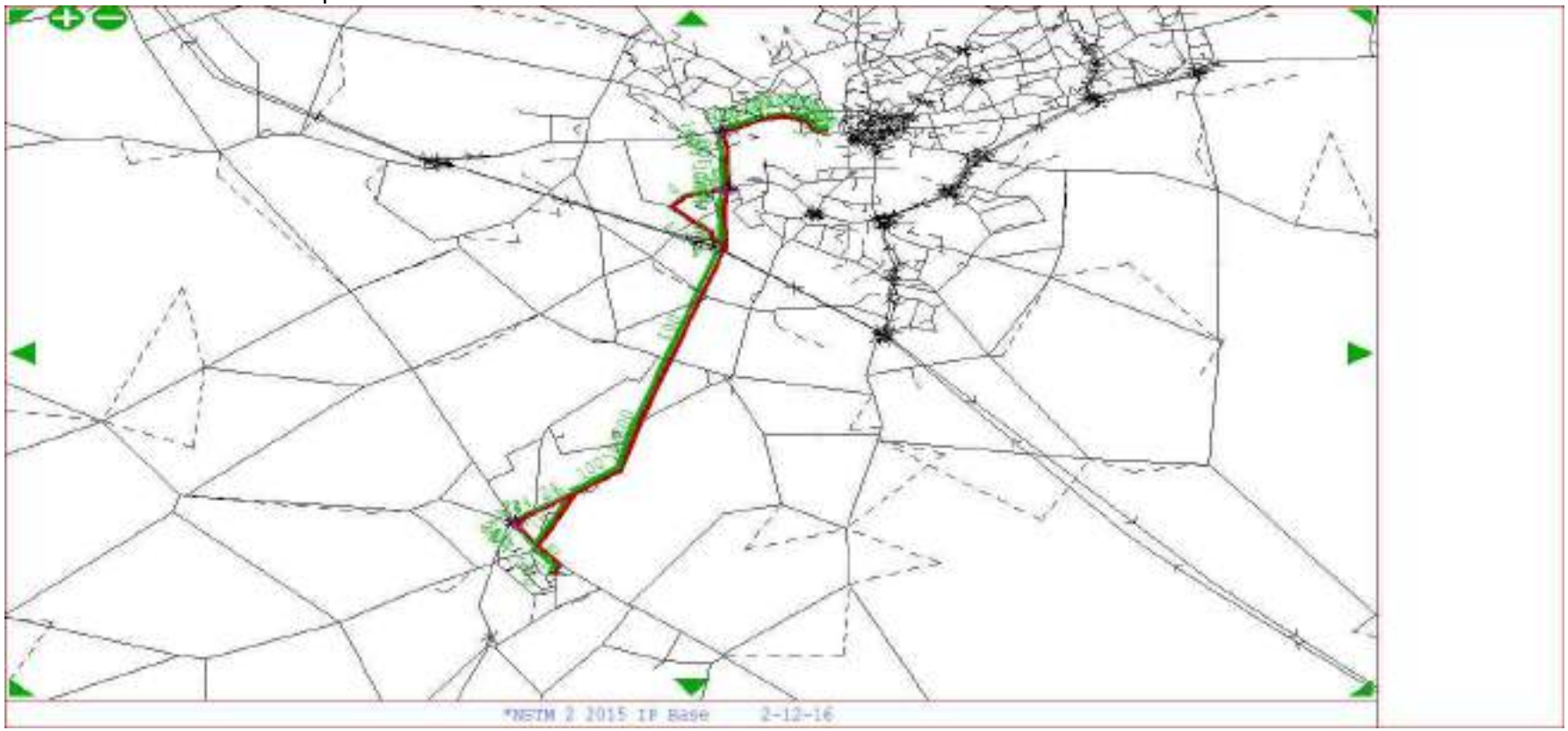
Inter-peak

From Towcester To Northampton - User Class 3



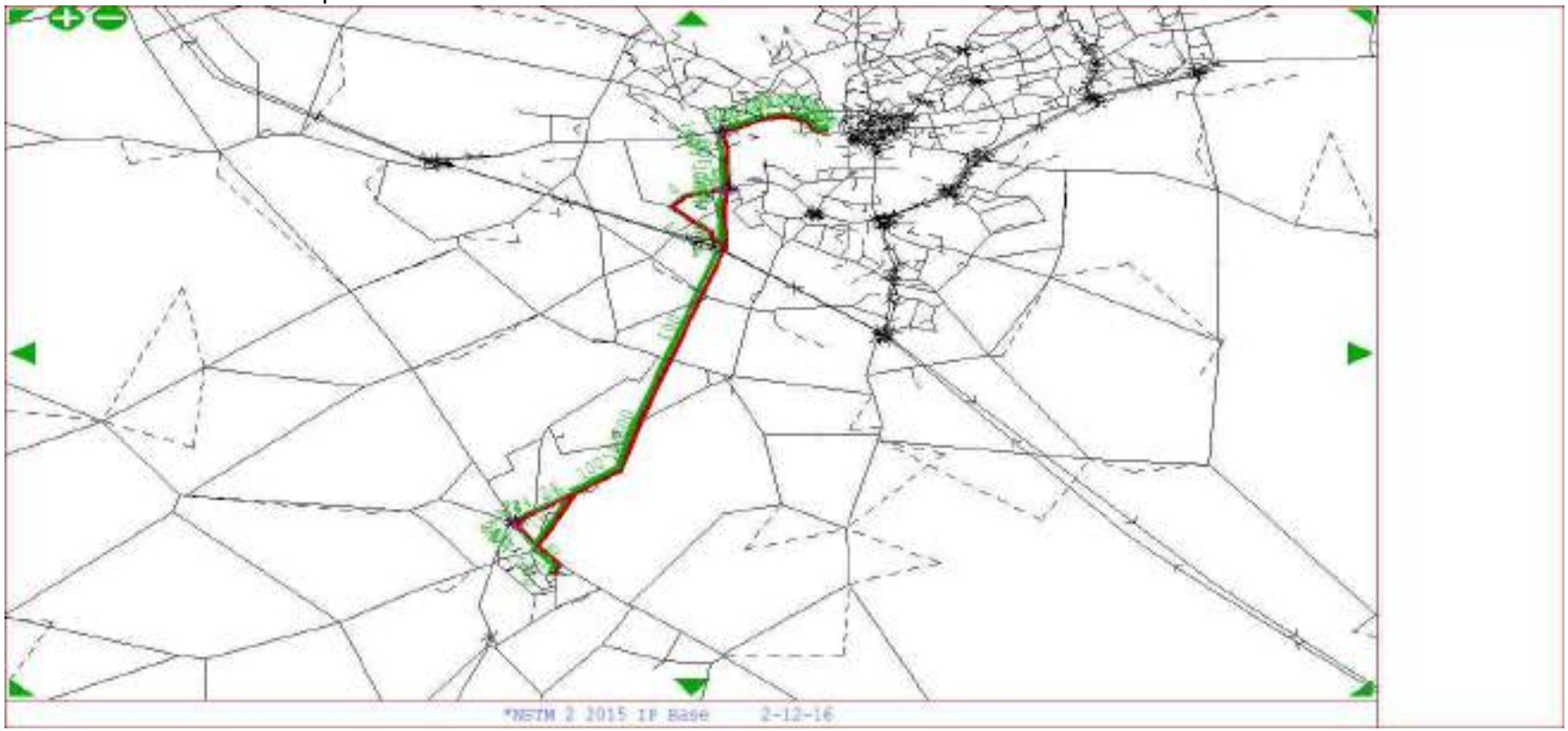
Inter-peak

From Towcester To Northampton - User Class 4



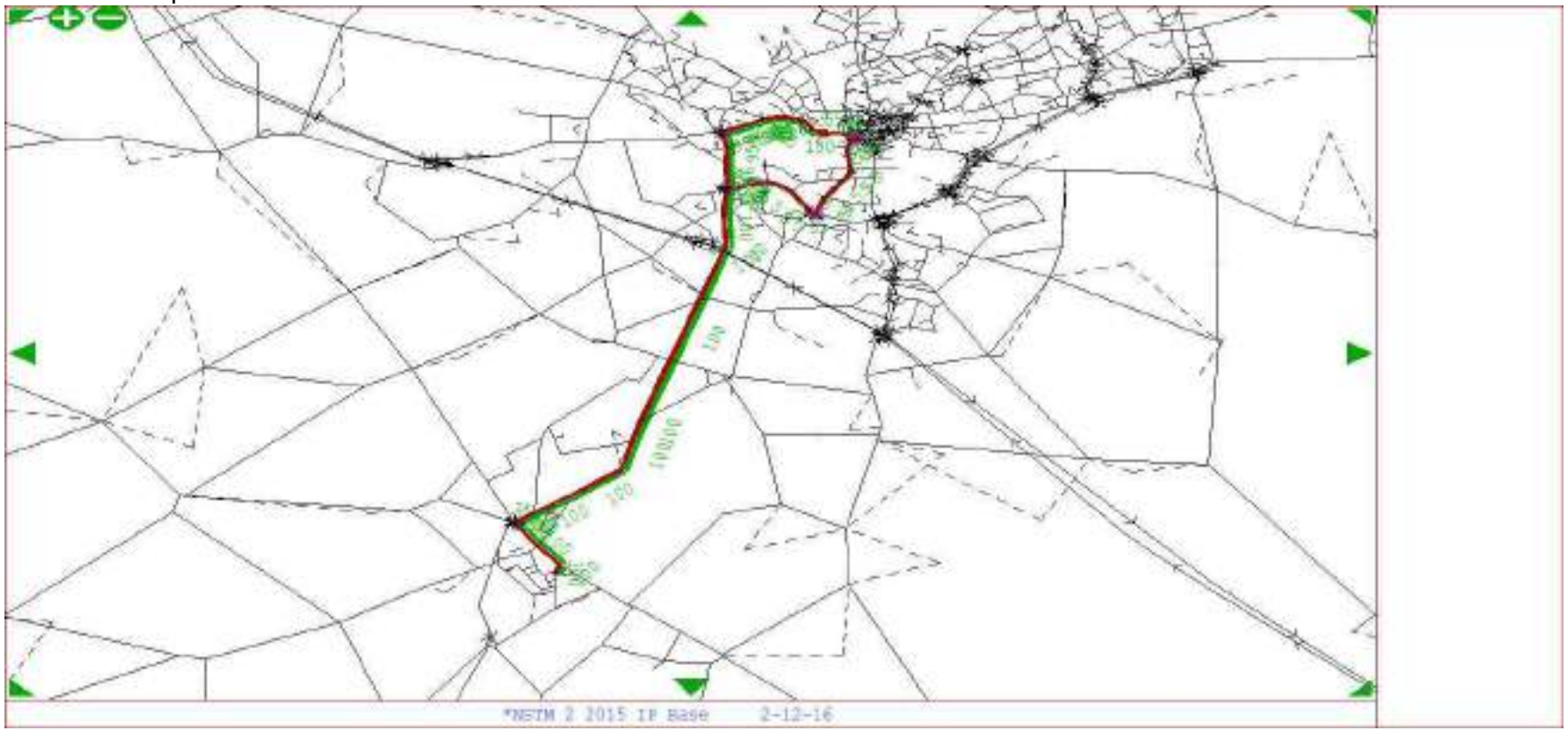
Inter-peak

From Towcester To Northampton - User Class 5



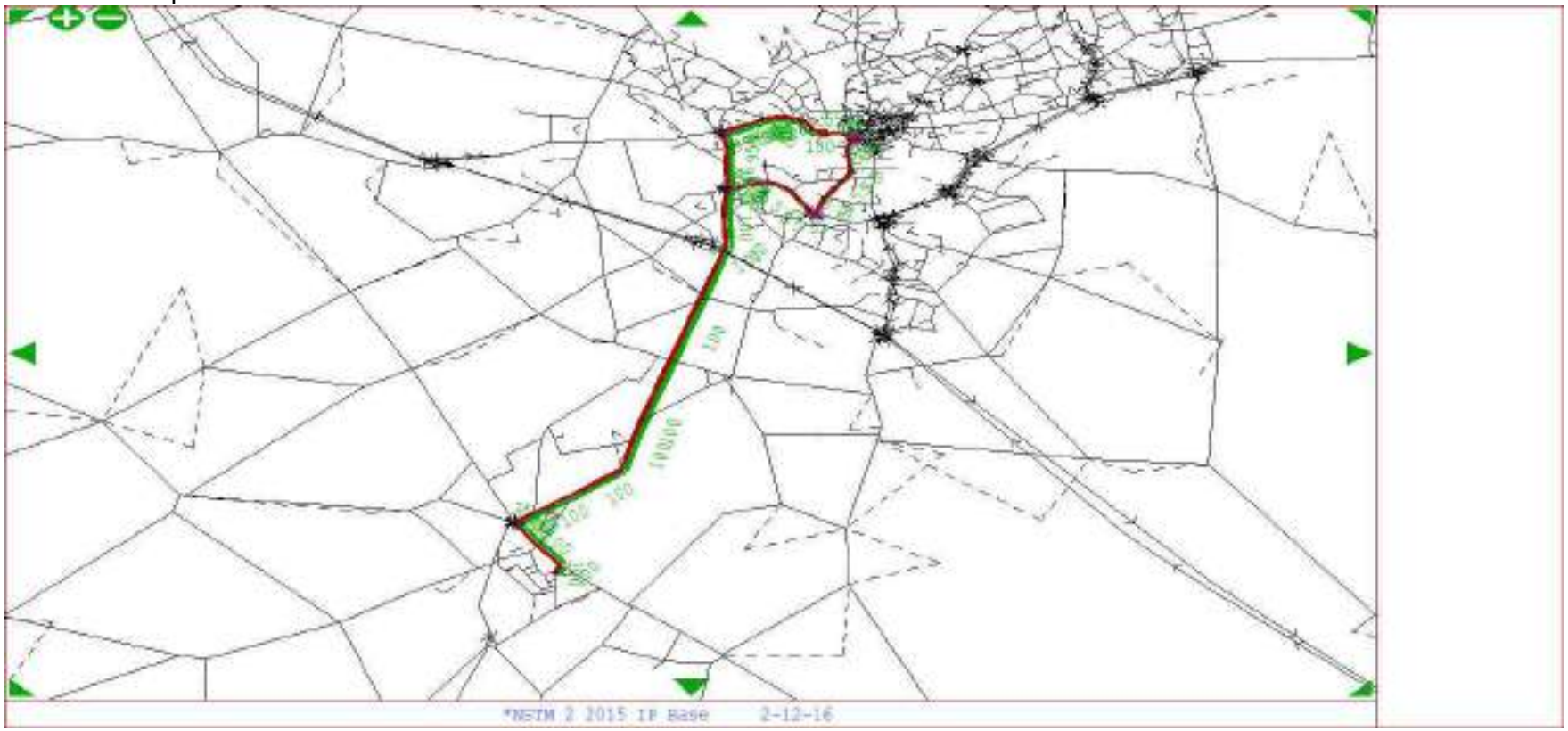
Inter-peak

From Northampton To Towcester - User Class 1



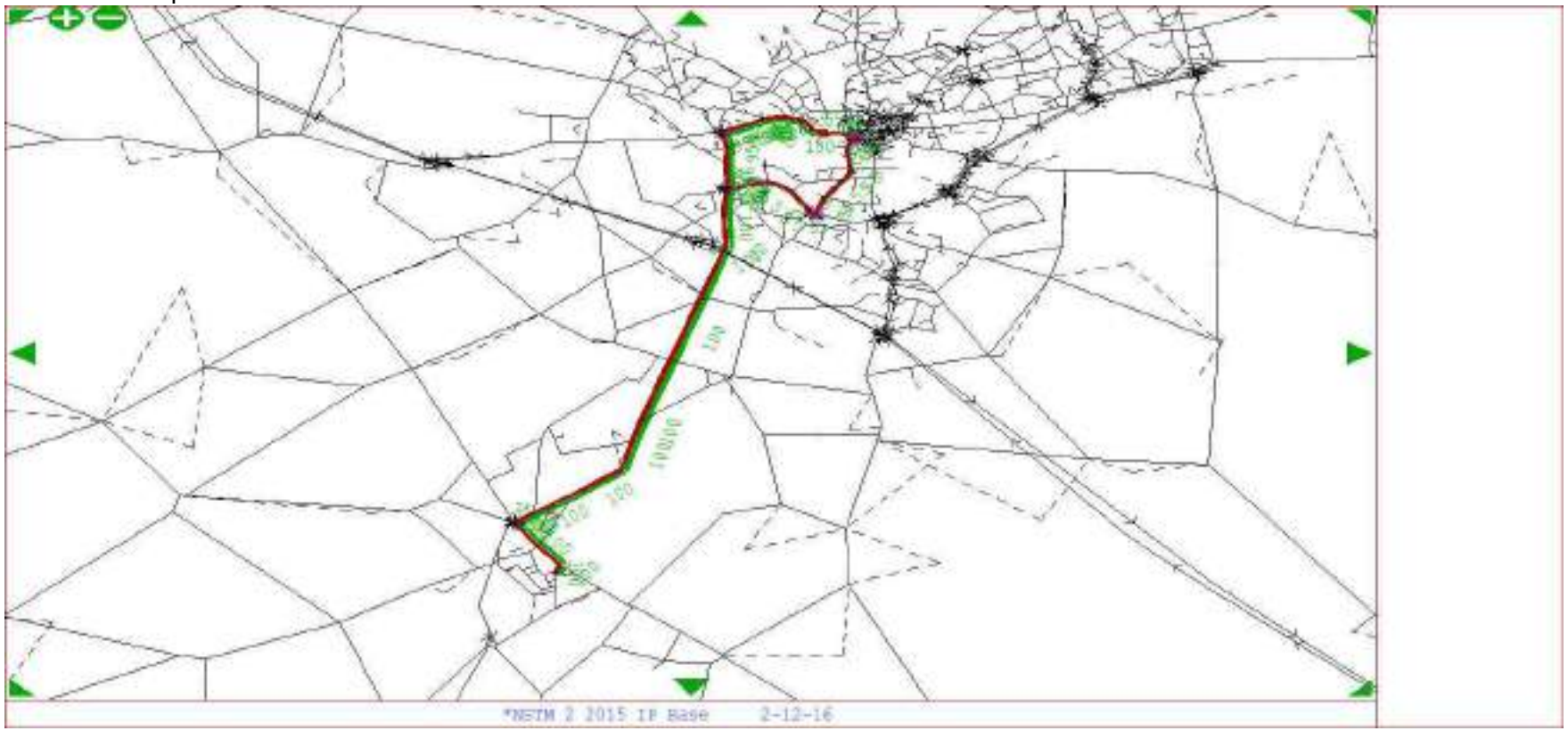
Inter-peak

From Northampton To Towcester - User Class 2



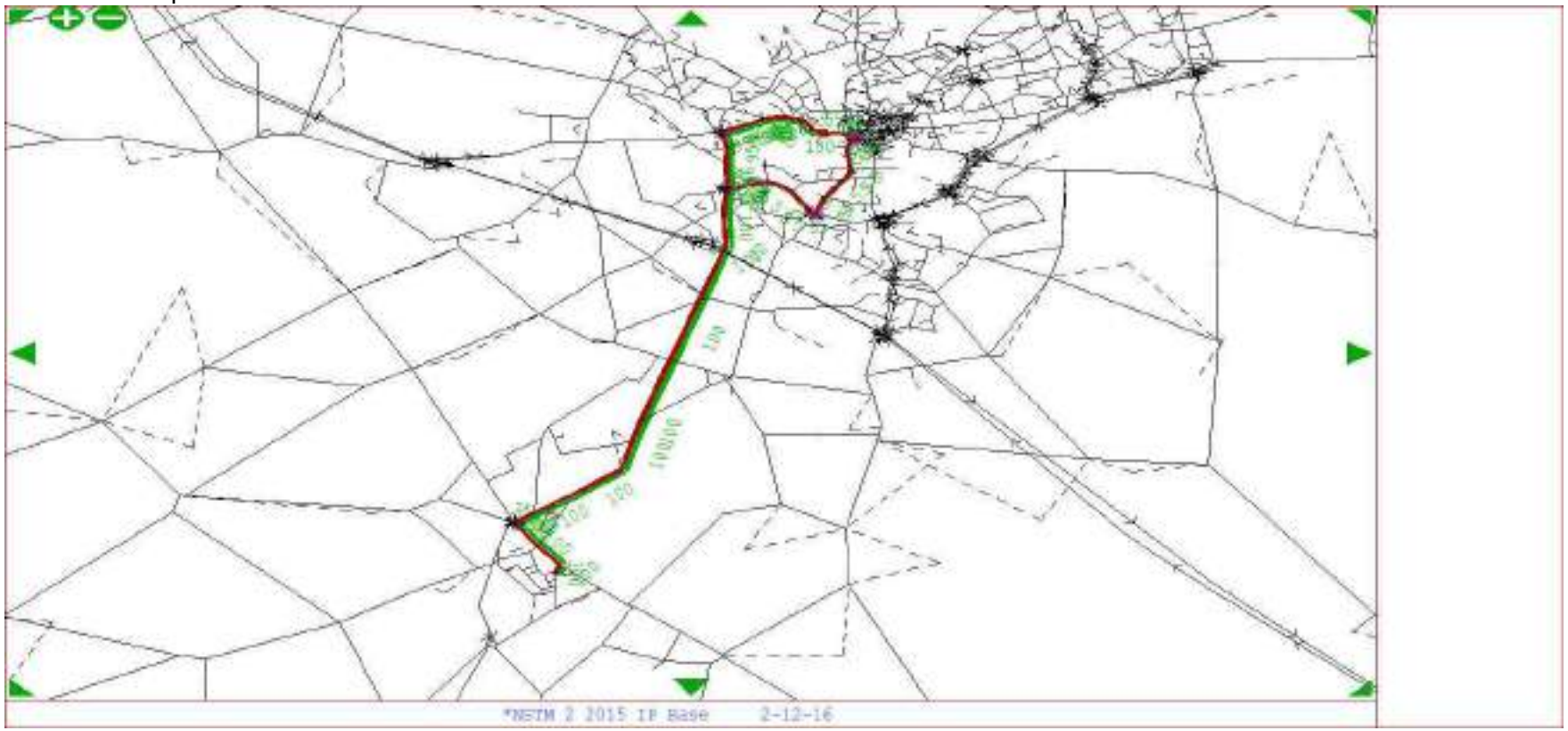
Inter-peak

From Northampton To Towcester - User Class 3



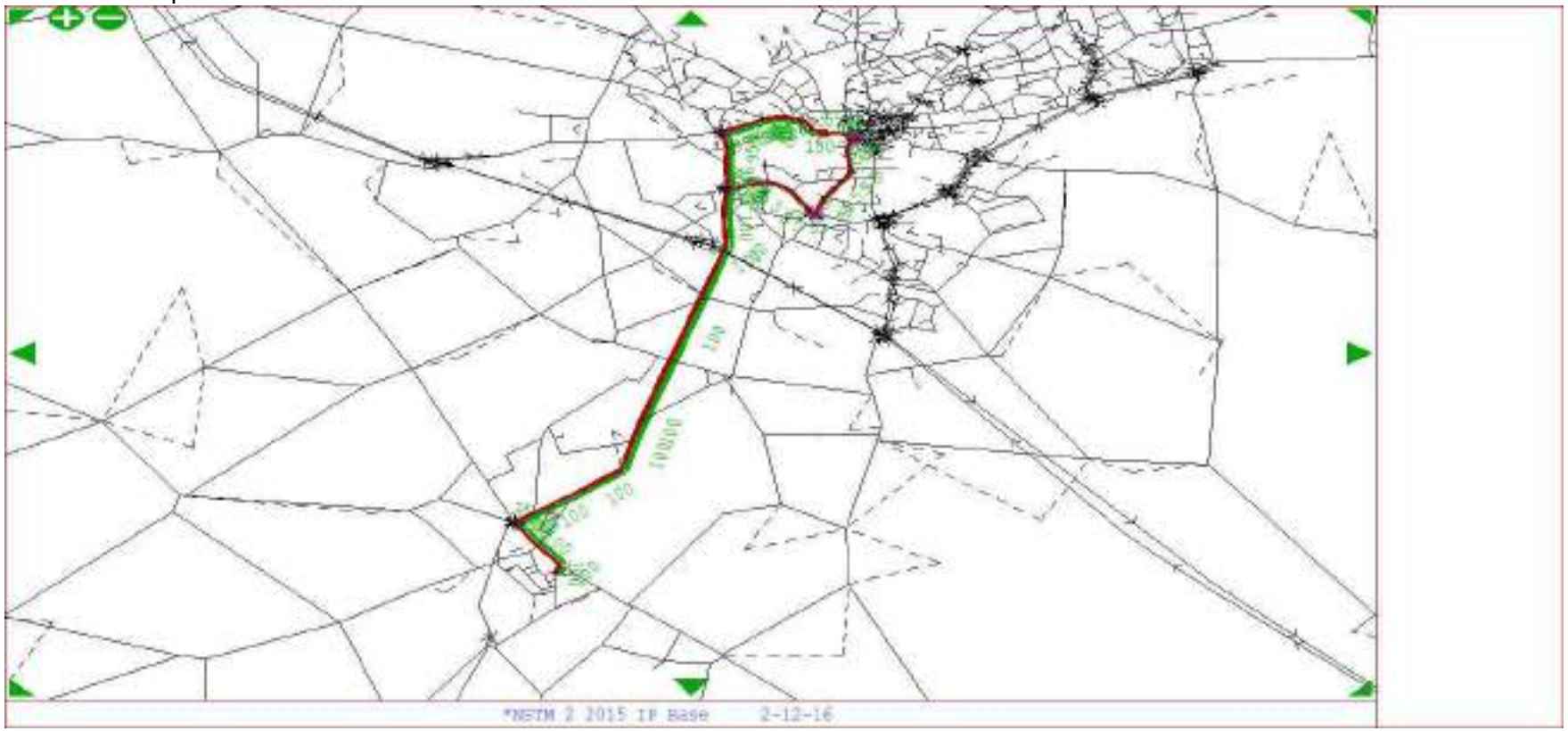
Inter-peak

From Northampton To Towcester - User Class 4



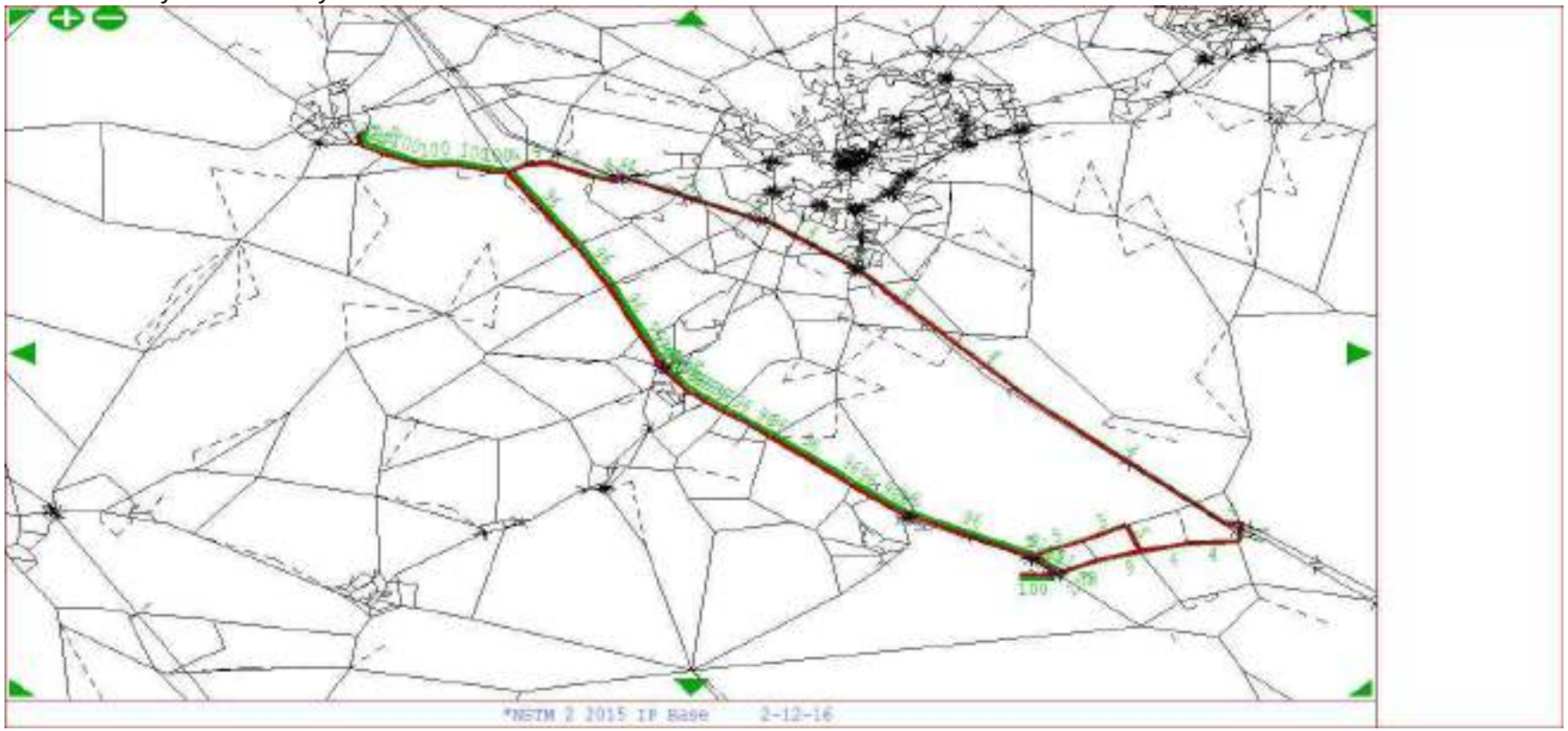
Inter-peak

From Northampton To Towcester - User Class 5



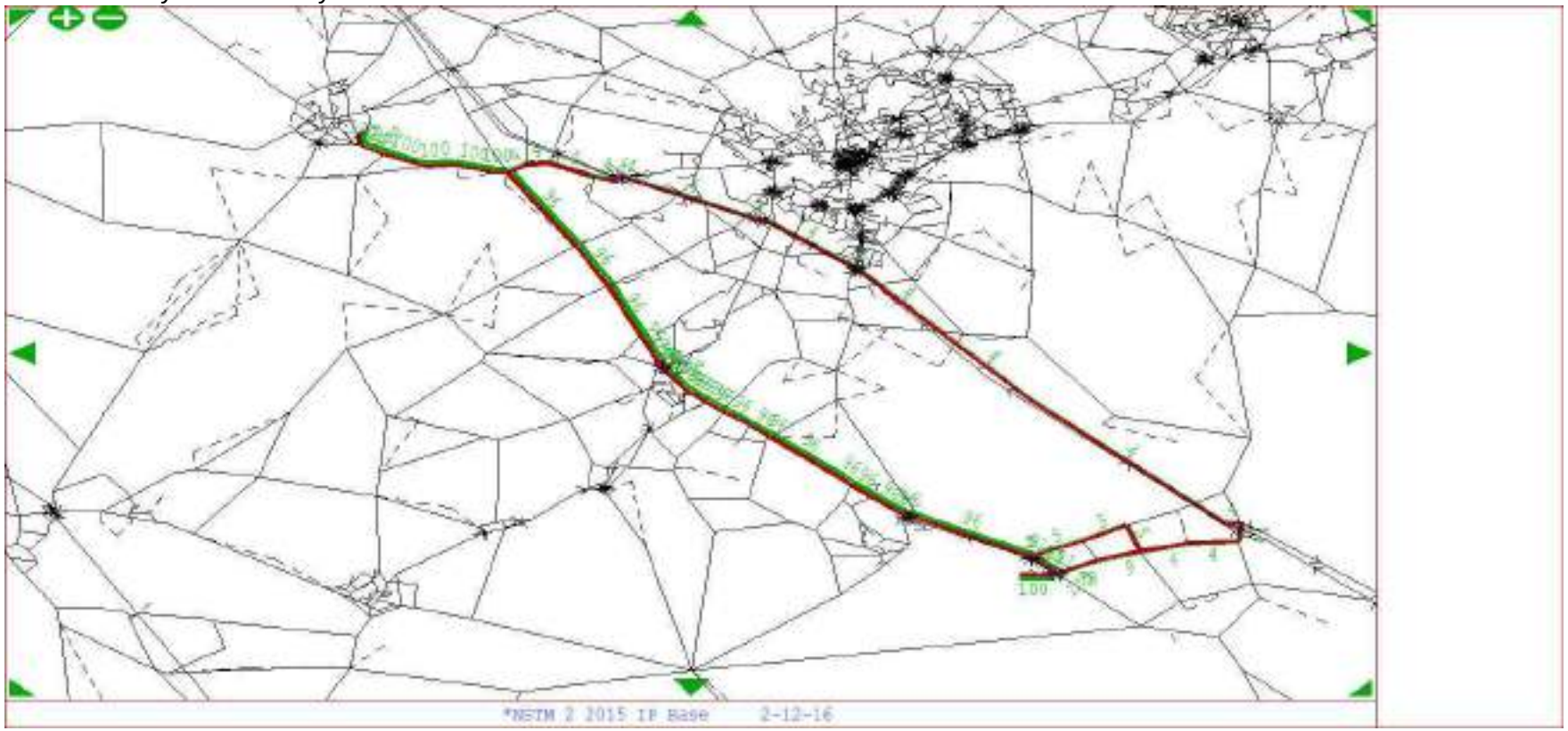
Inter-peak

From Daventry To Milton Keynes - User Class 1



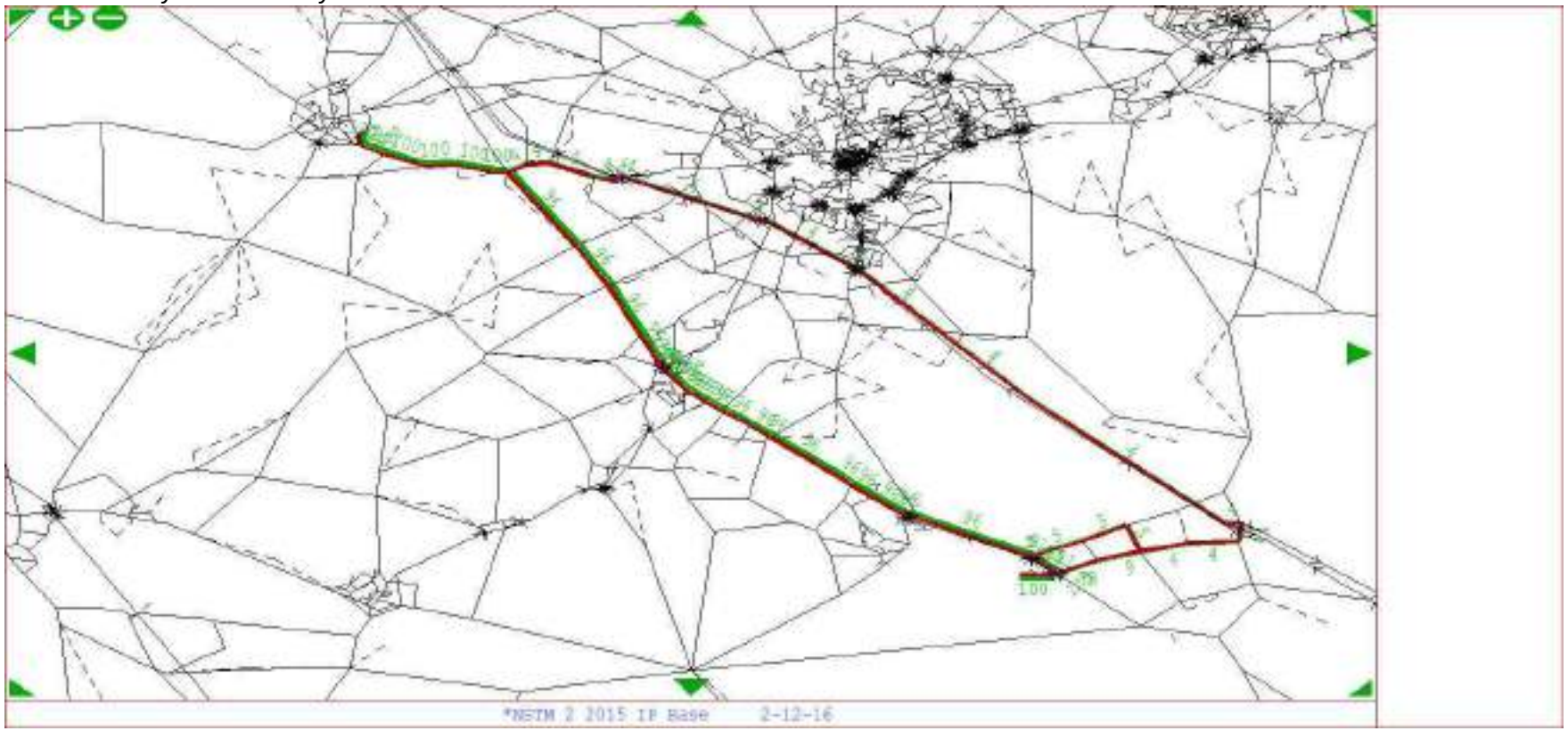
Inter-peak

From Daventry To Milton Keynes - User Class 2



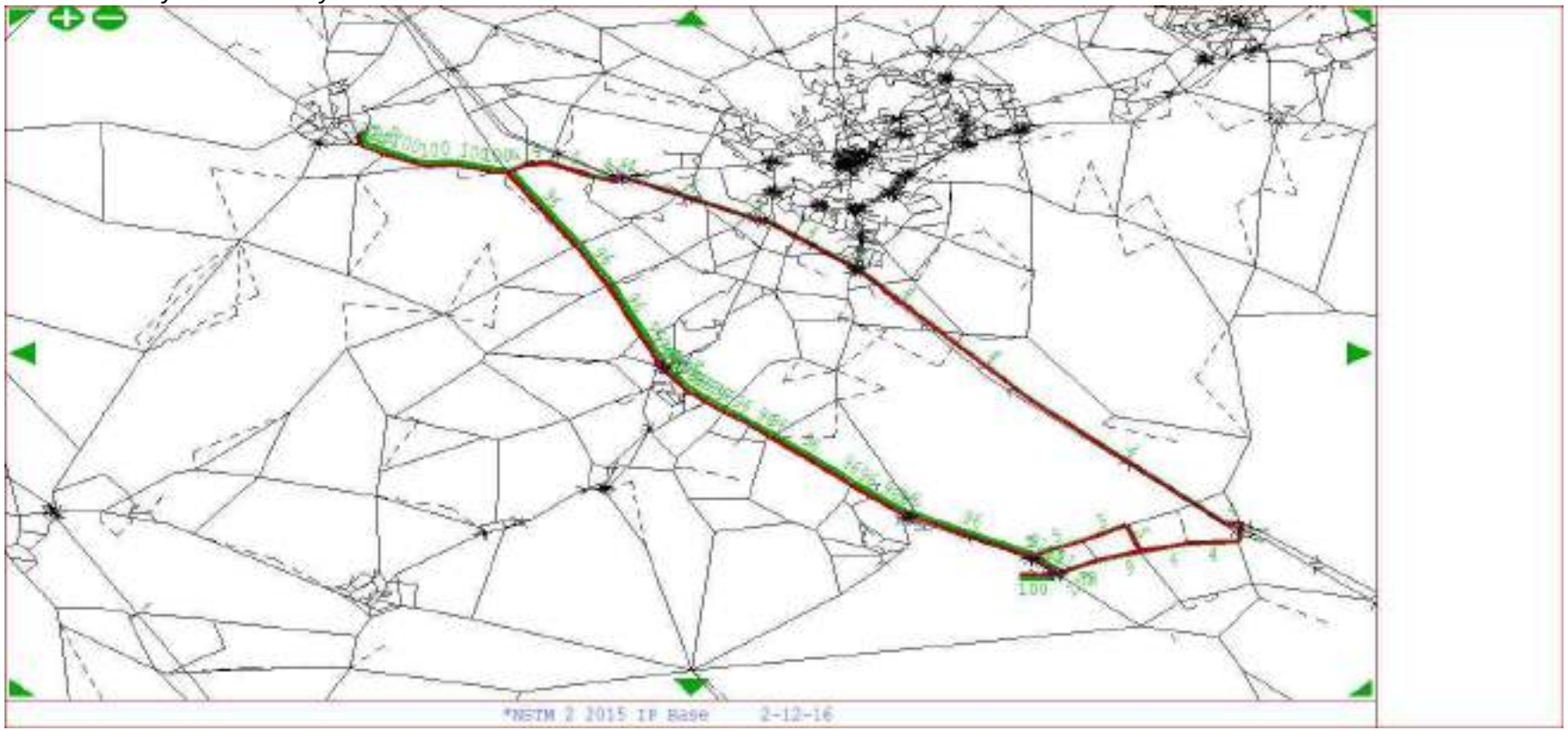
Inter-peak

From Daventry To Milton Keynes - User Class 3



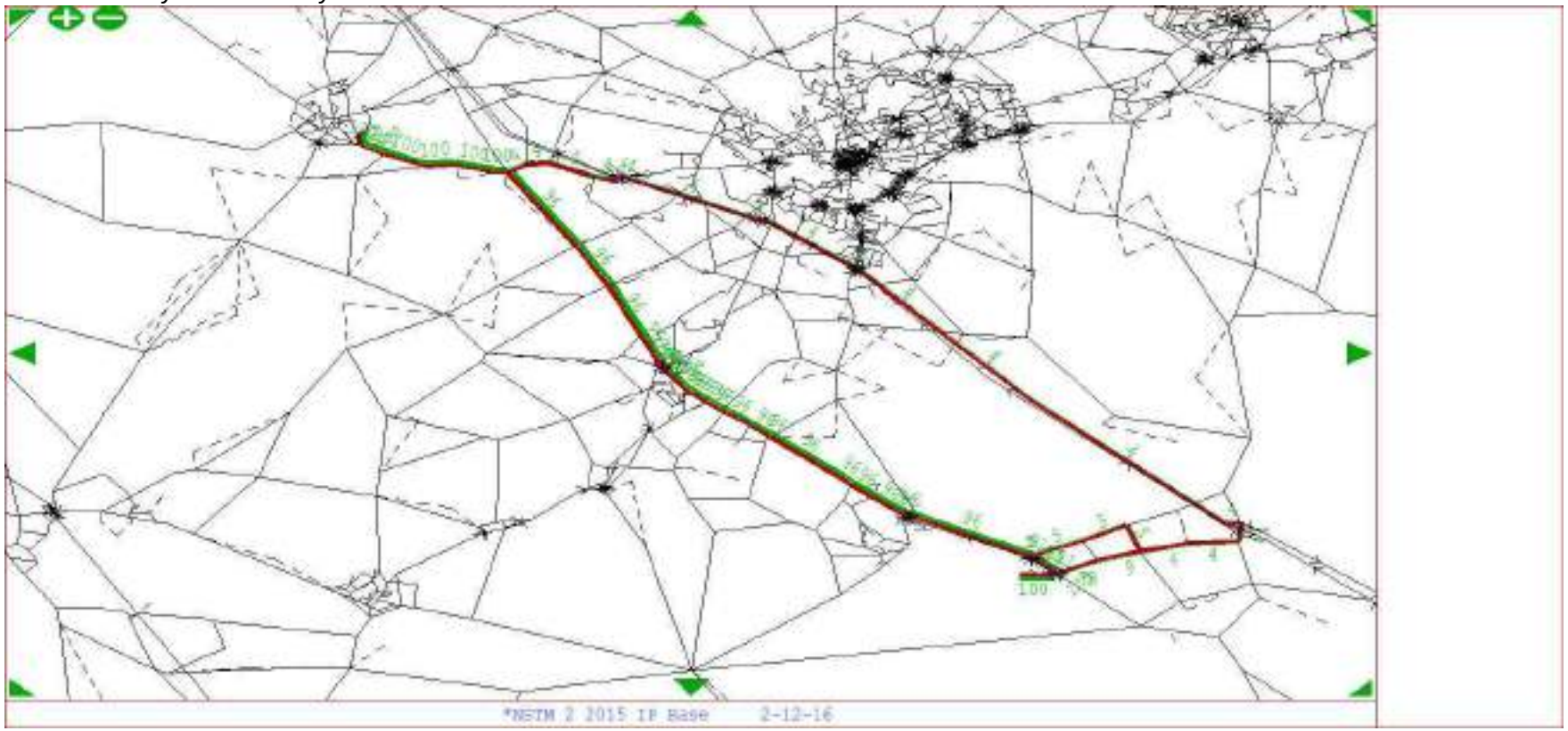
Inter-peak

From Daventry To Milton Keynes - User Class 4



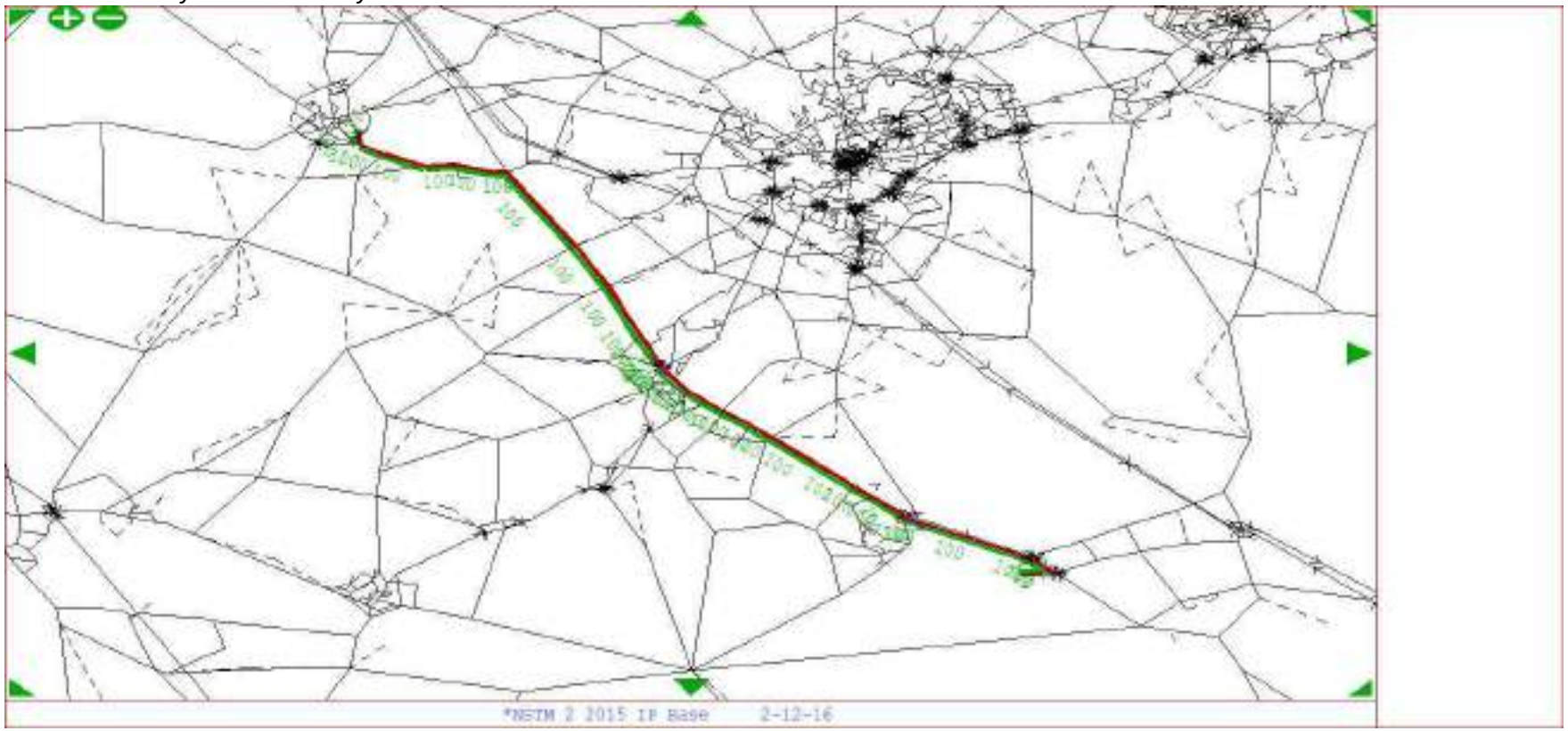
Inter-peak

From Daventry To Milton Keynes - User Class 5



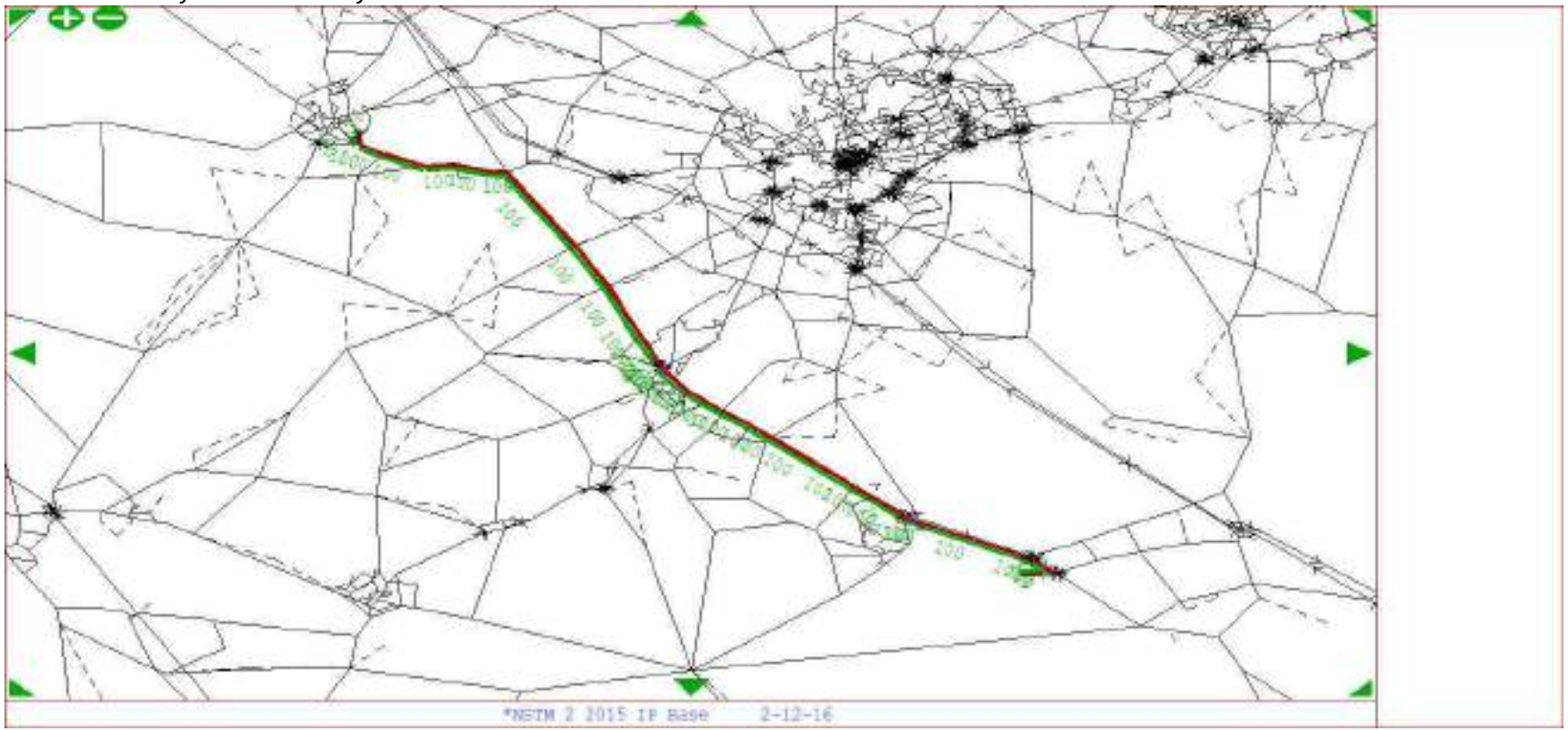
Inter-peak

From Milton Keynes To Daventry - User Class 1



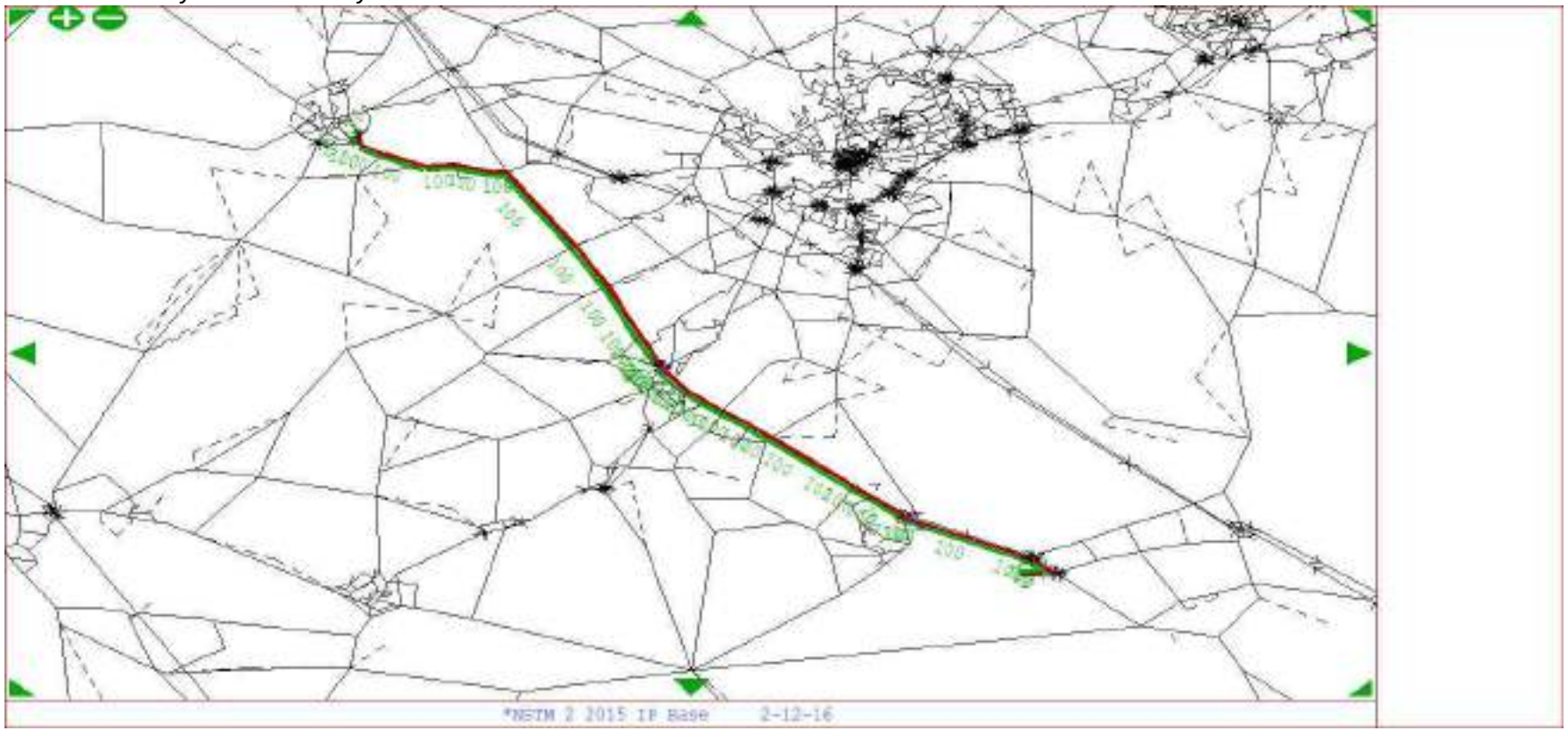
Inter-peak

From Milton Keynes To Daventry - User Class 2



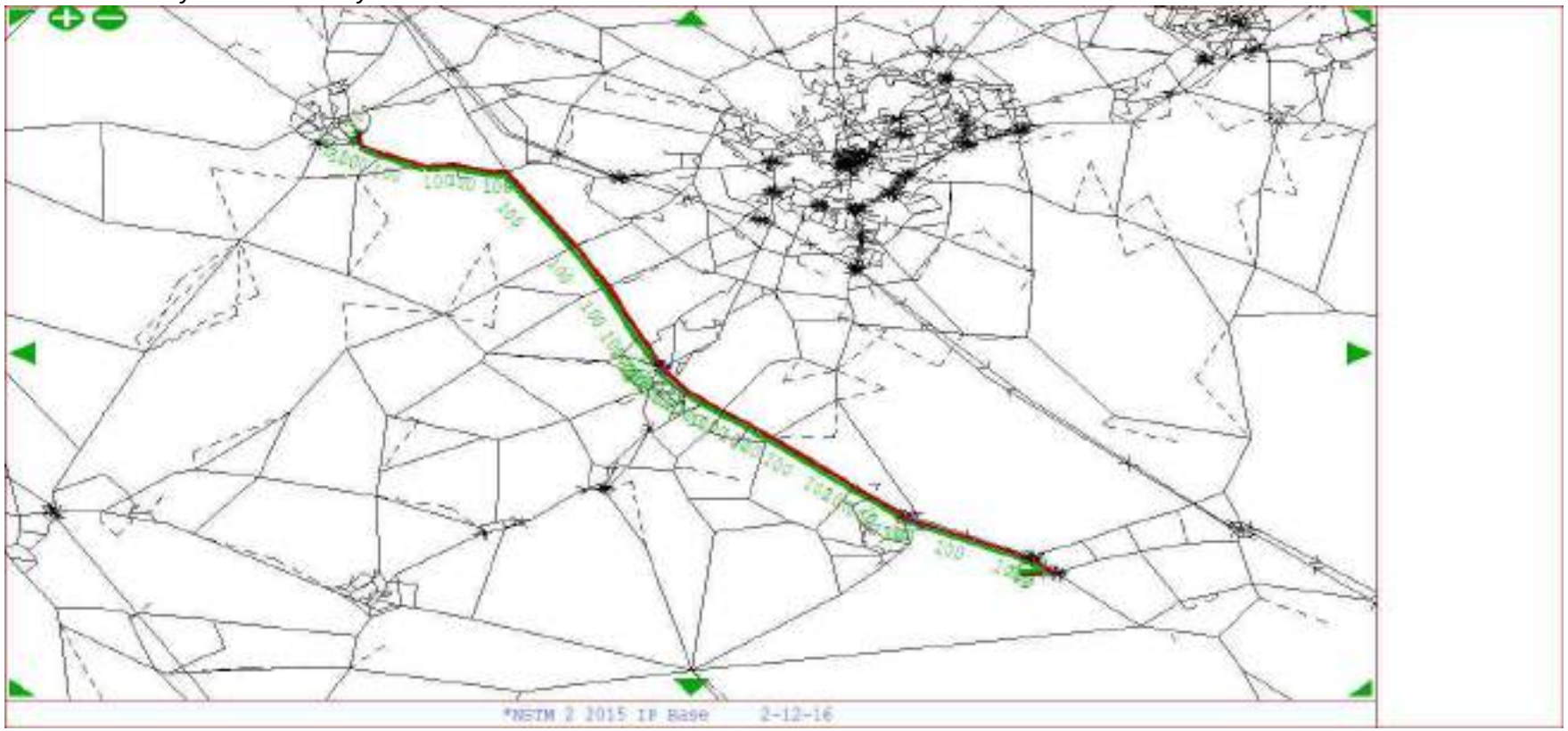
Inter-peak

From Milton Keynes To Daventry - User Class 3



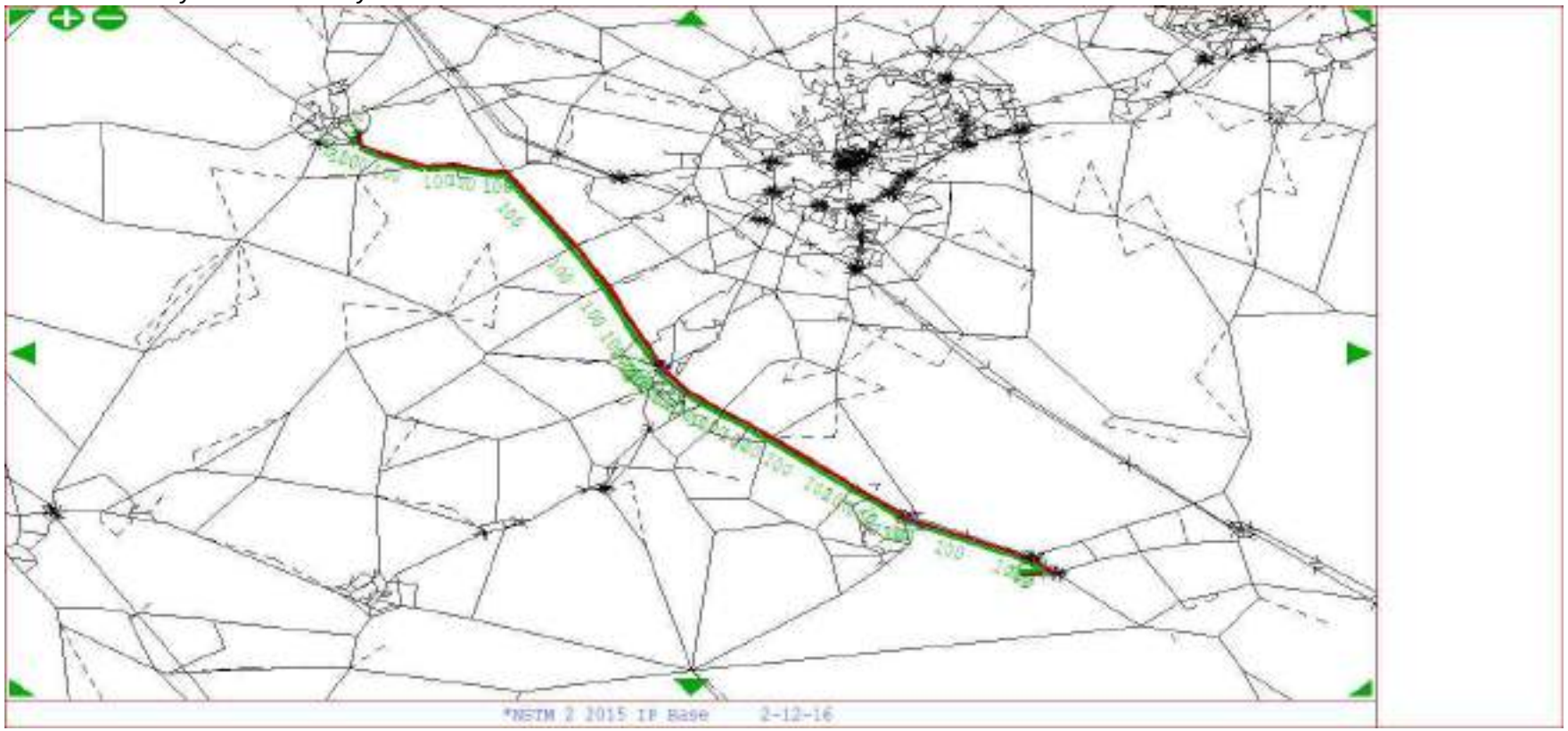
Inter-peak

From Milton Keynes To Daventry - User Class 4



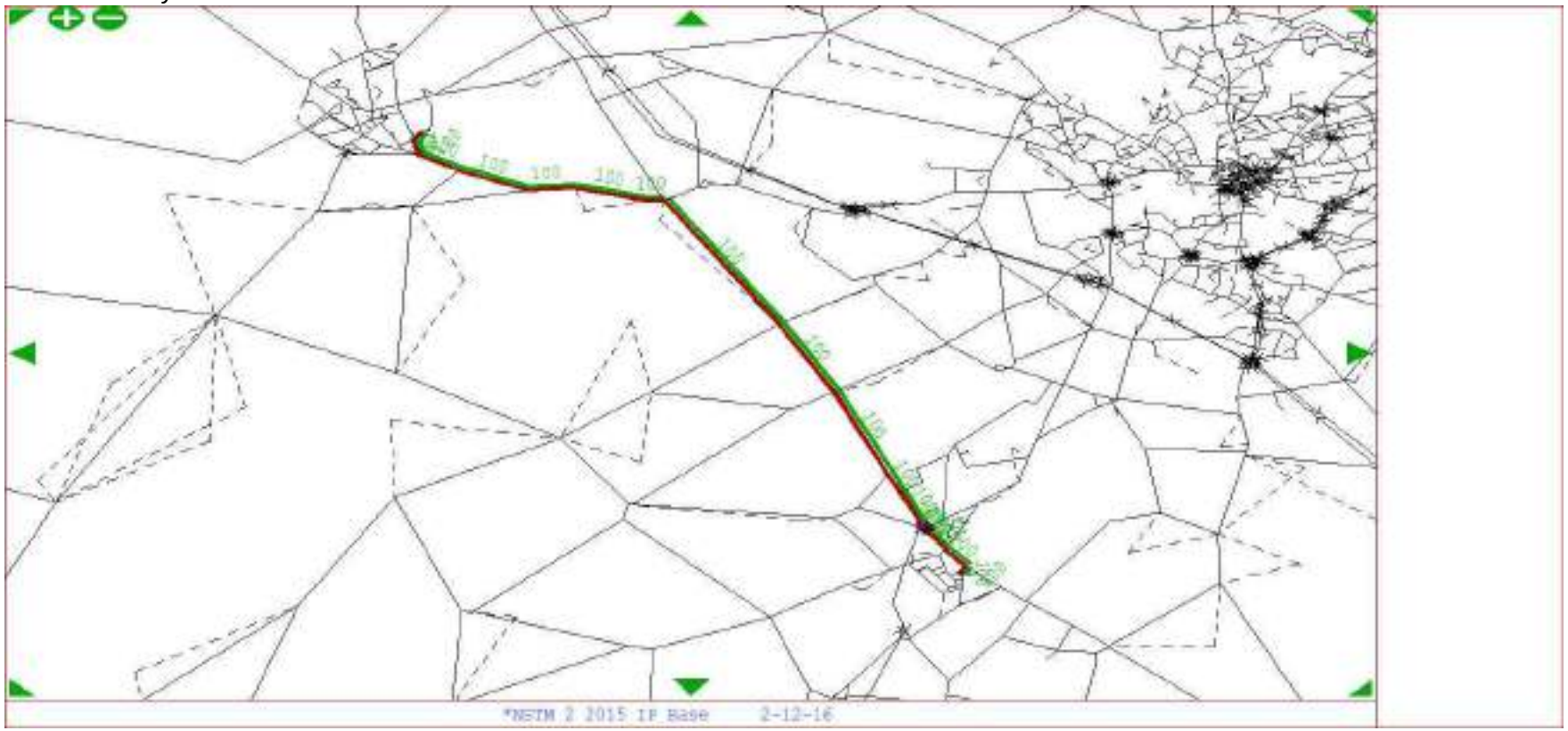
Inter-peak

From Milton Keynes To Daventry - User Class 5



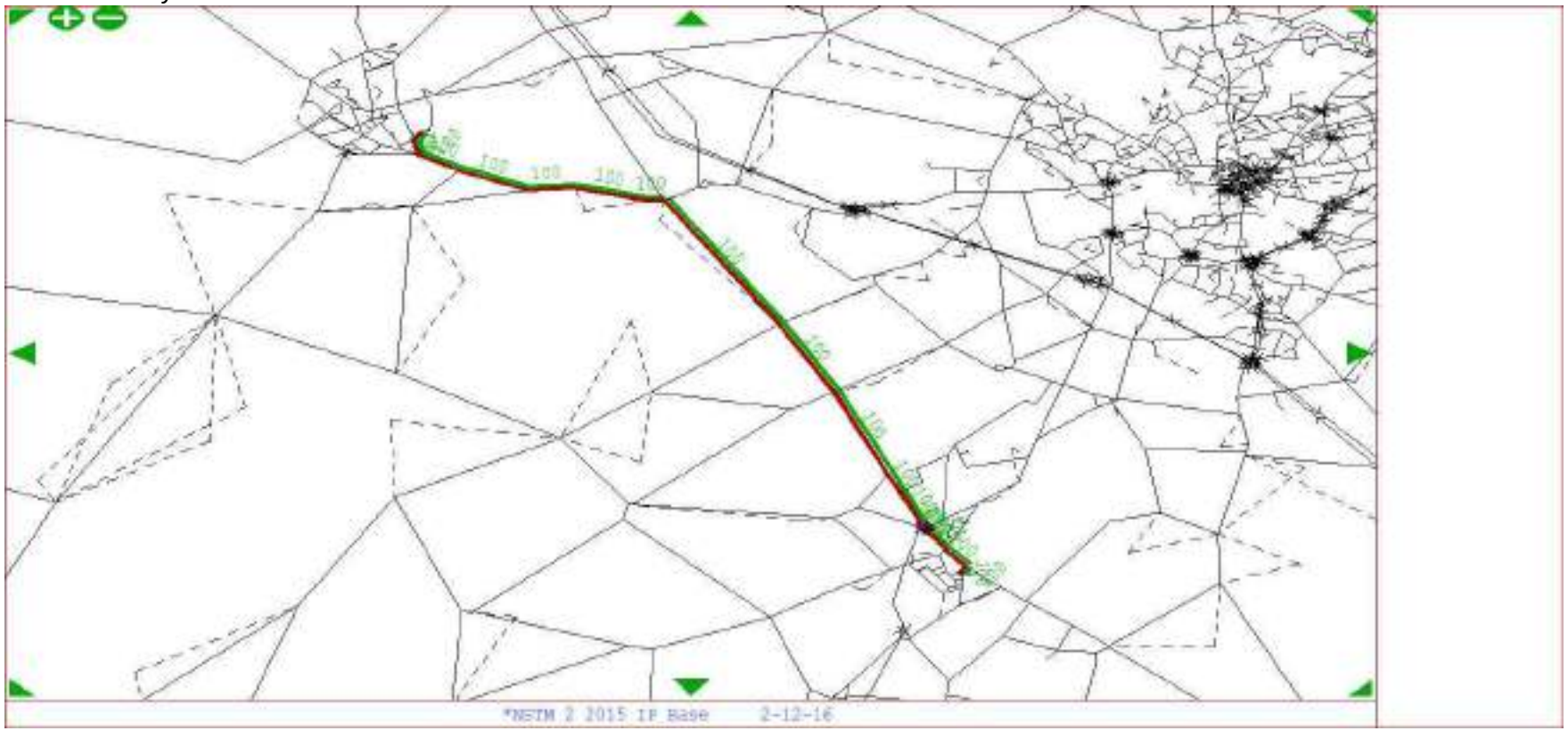
Inter-peak

From Daventry To Towcester - User Class 1



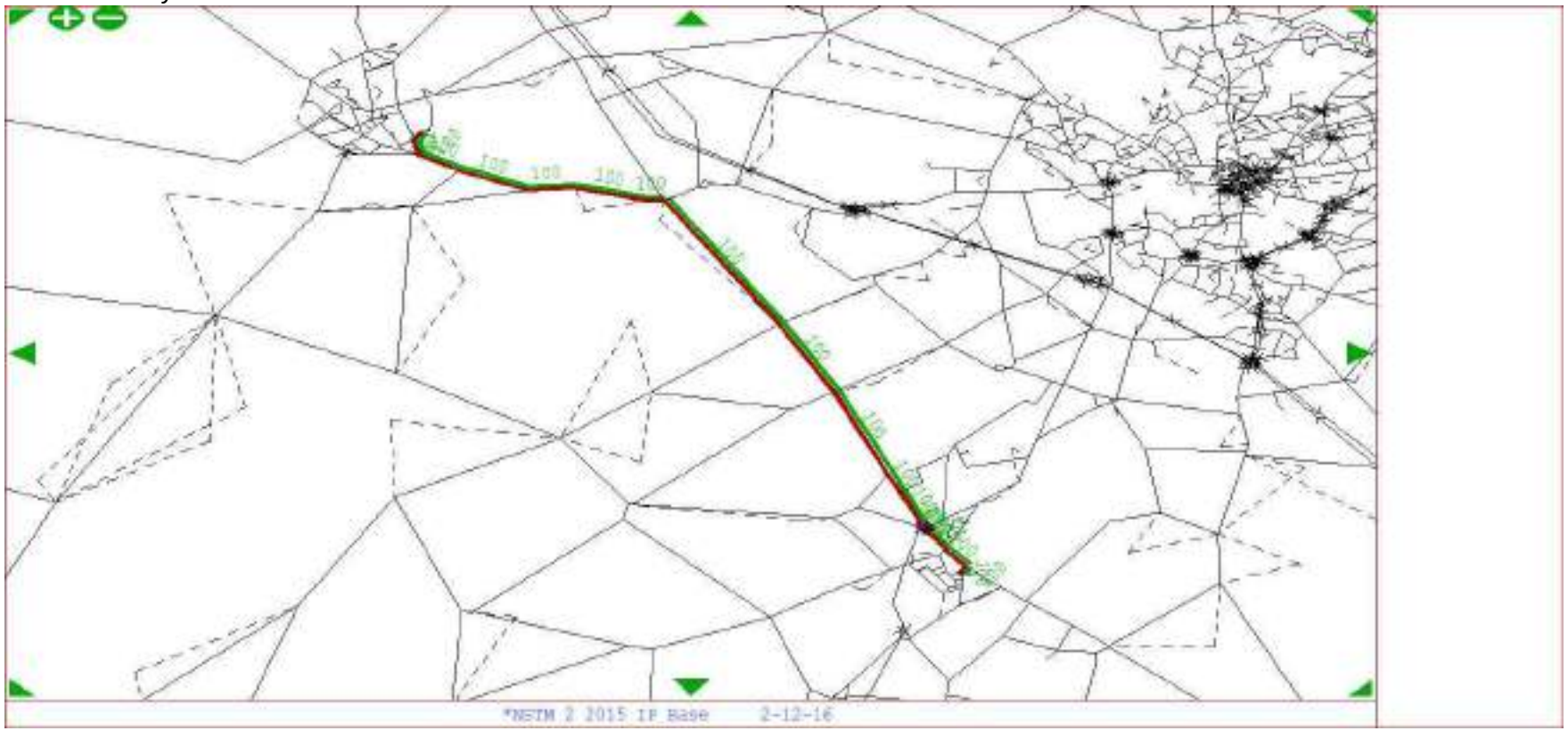
Inter-peak

From Daventry To Towcester - User Class 2



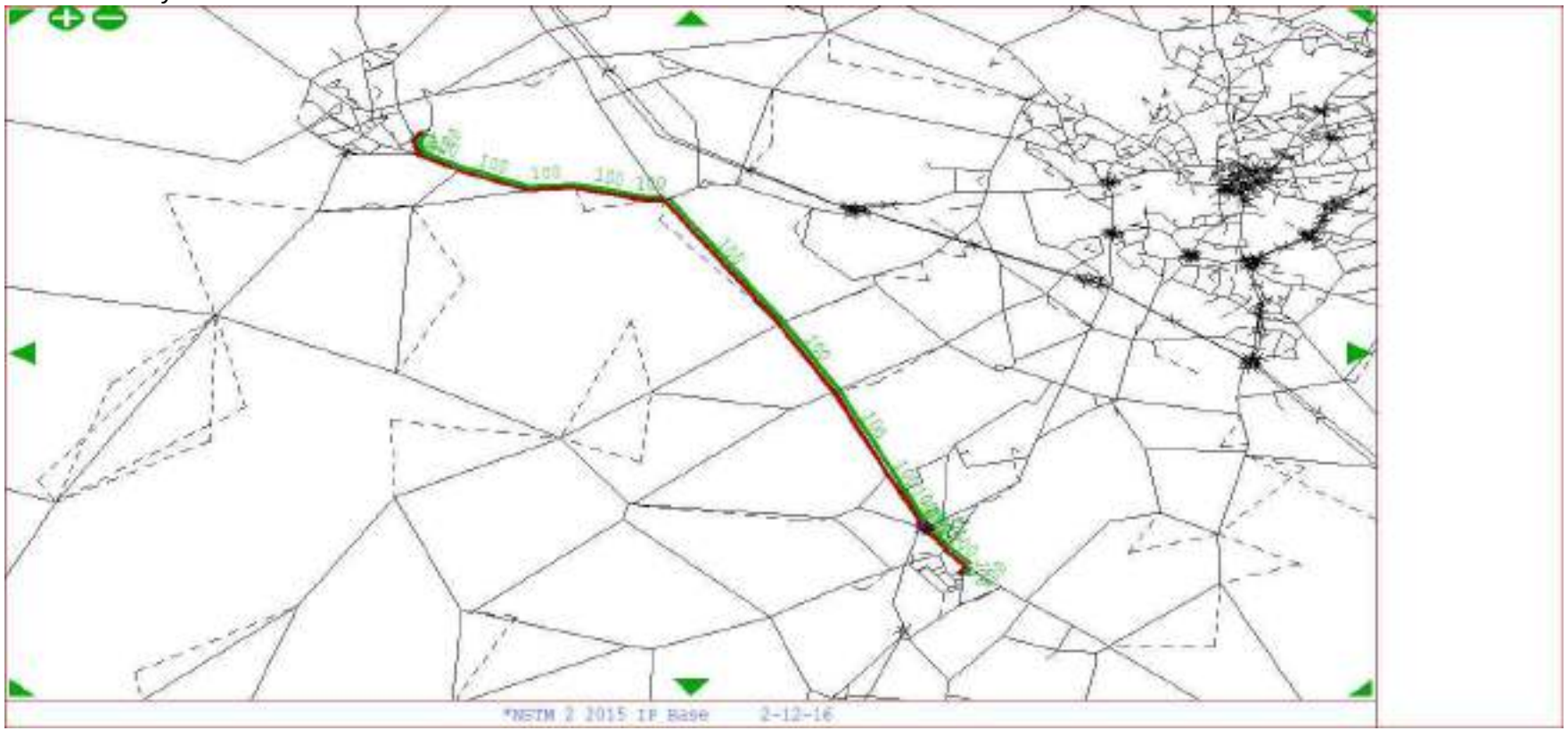
Inter-peak

From Daventry To Towcester - User Class 3



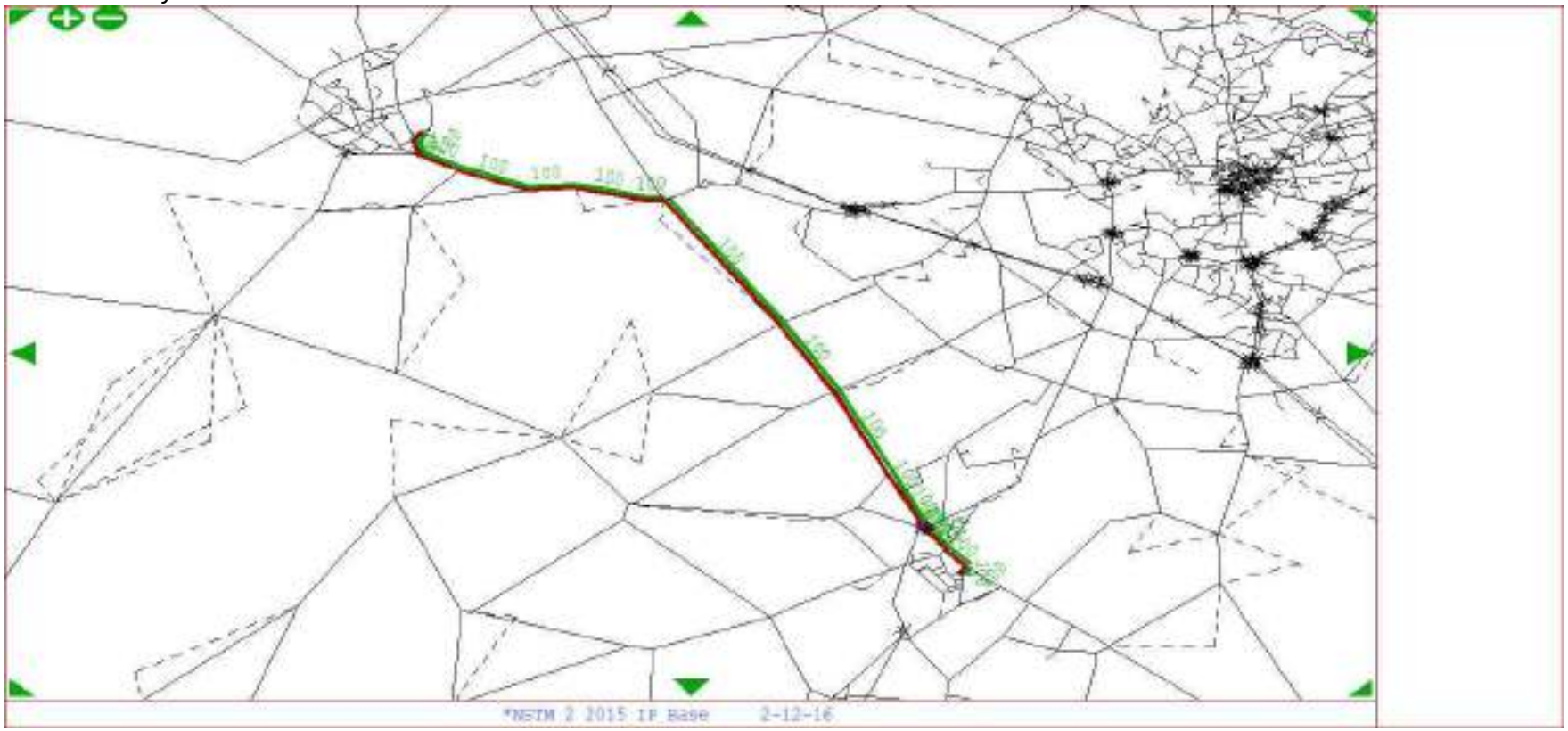
Inter-peak

From Daventry To Towcester - User Class 4



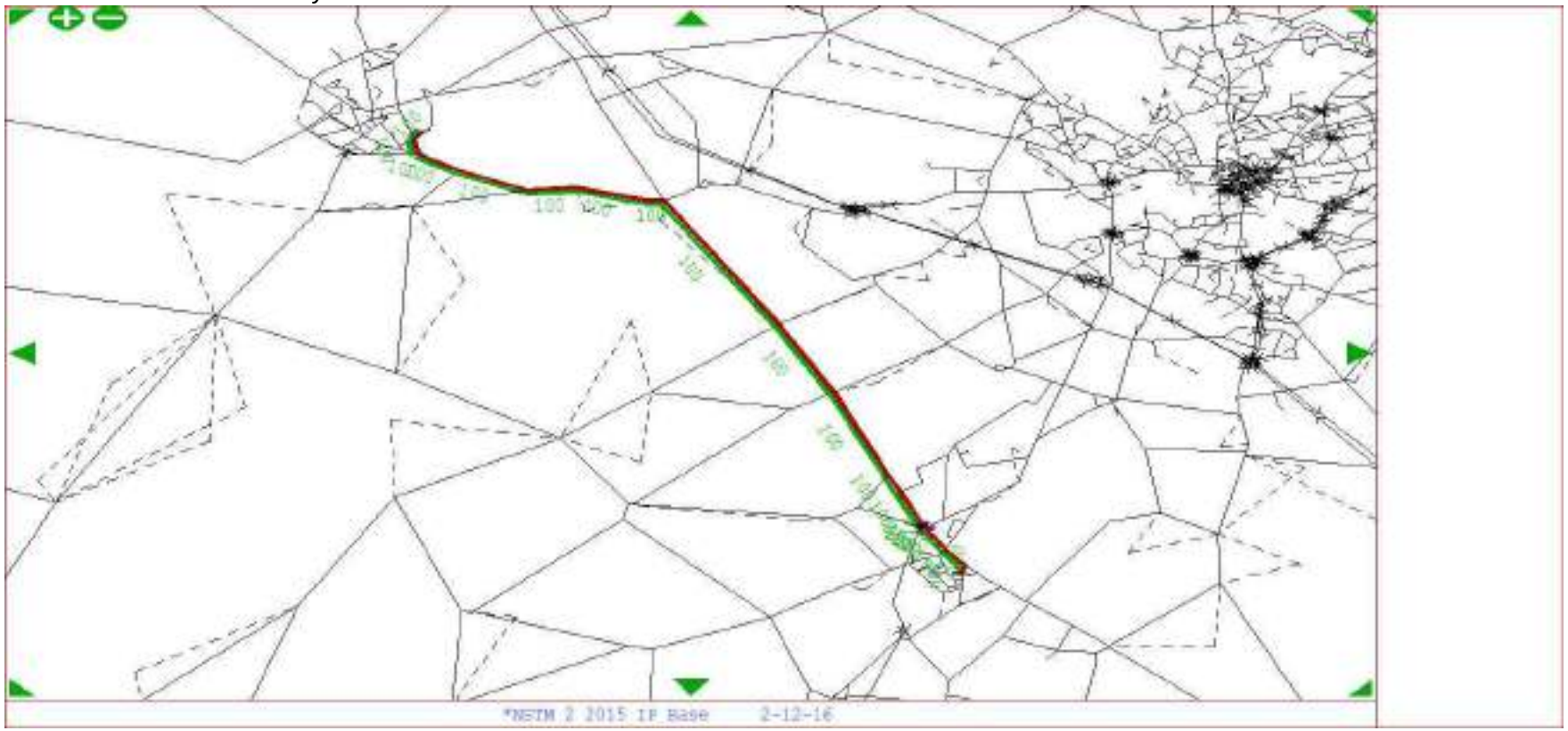
Inter-peak

From Daventry To Towcester - User Class 5



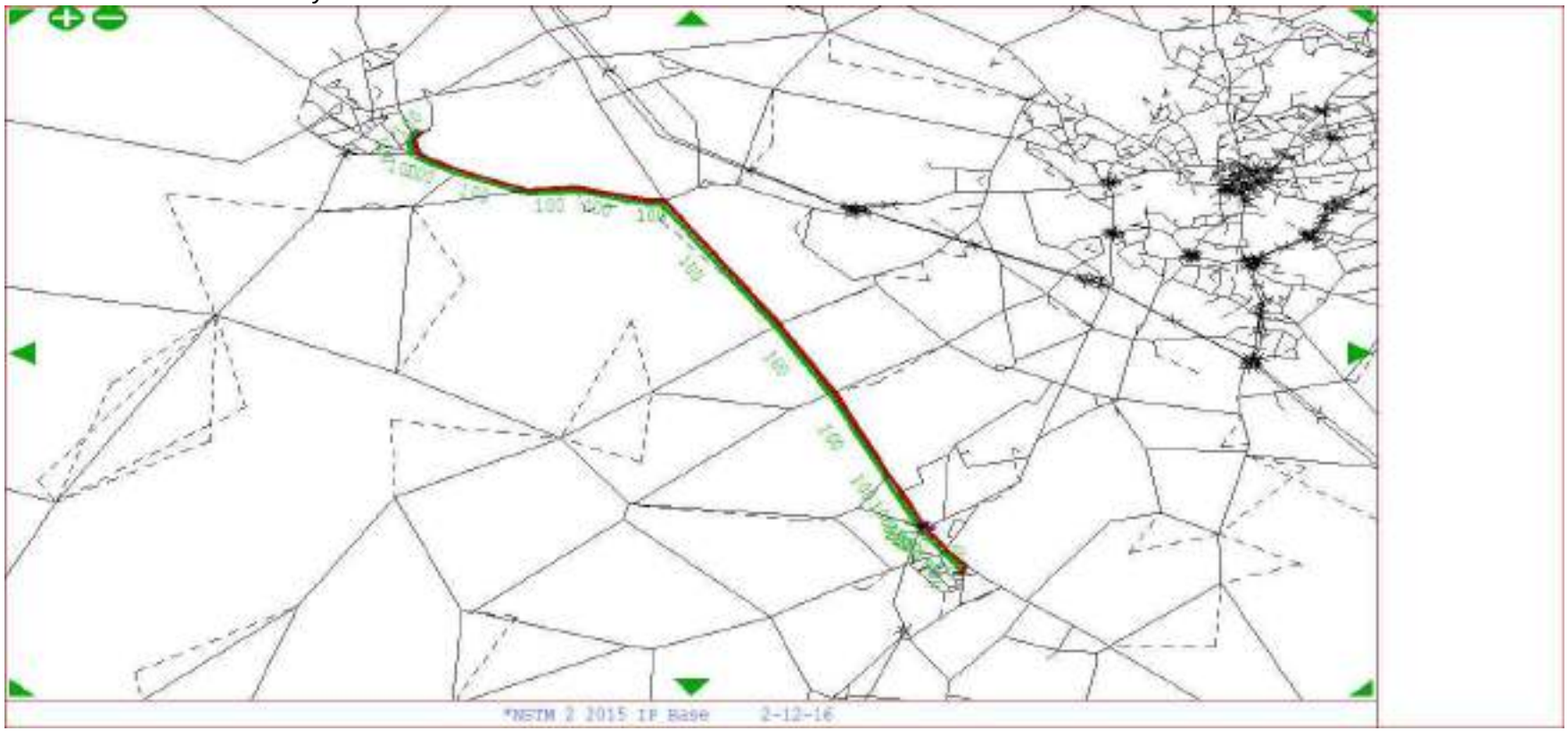
Inter-peak

From Towcester To Daventry - User Class 1



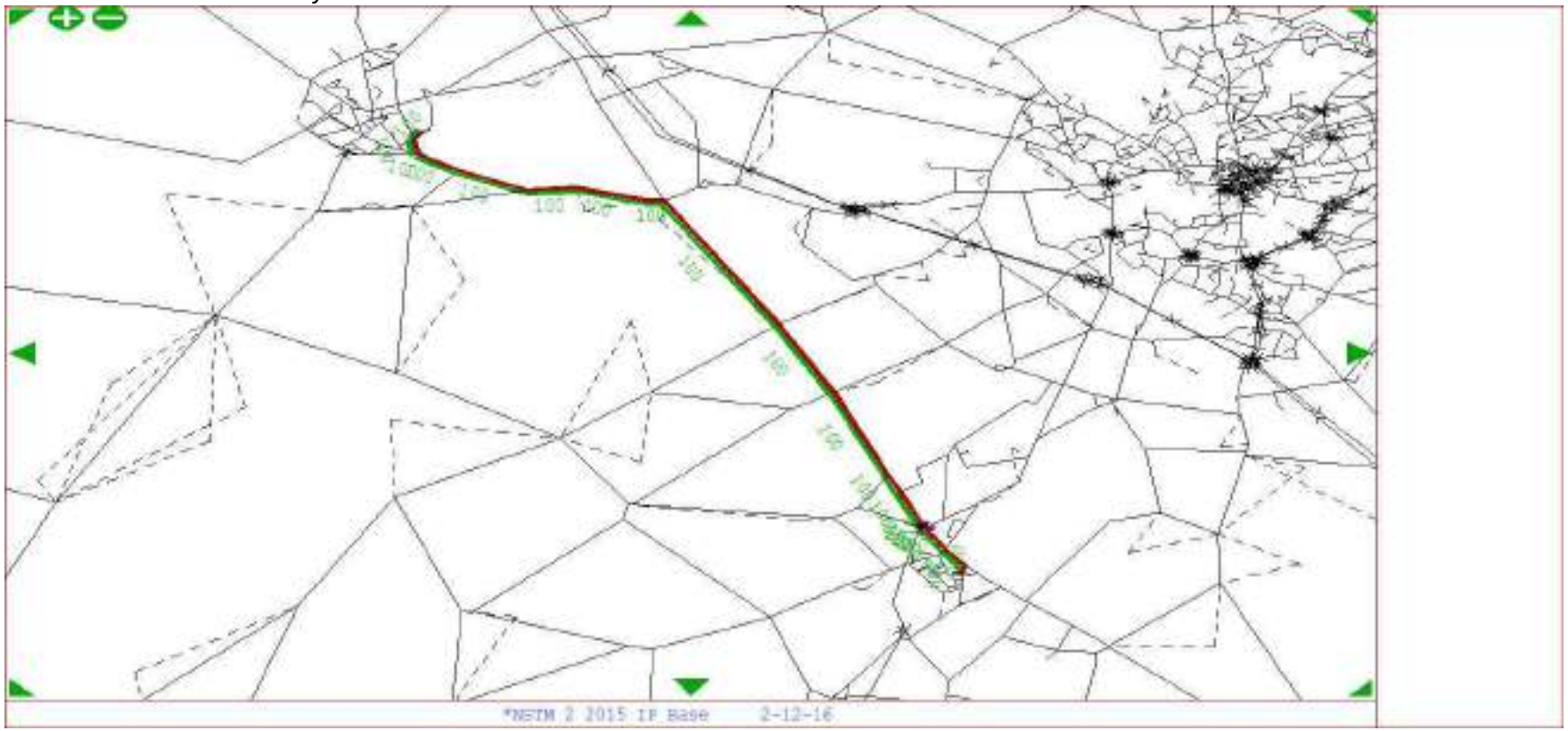
Inter-peak

From Towcester To Daventry - User Class 2



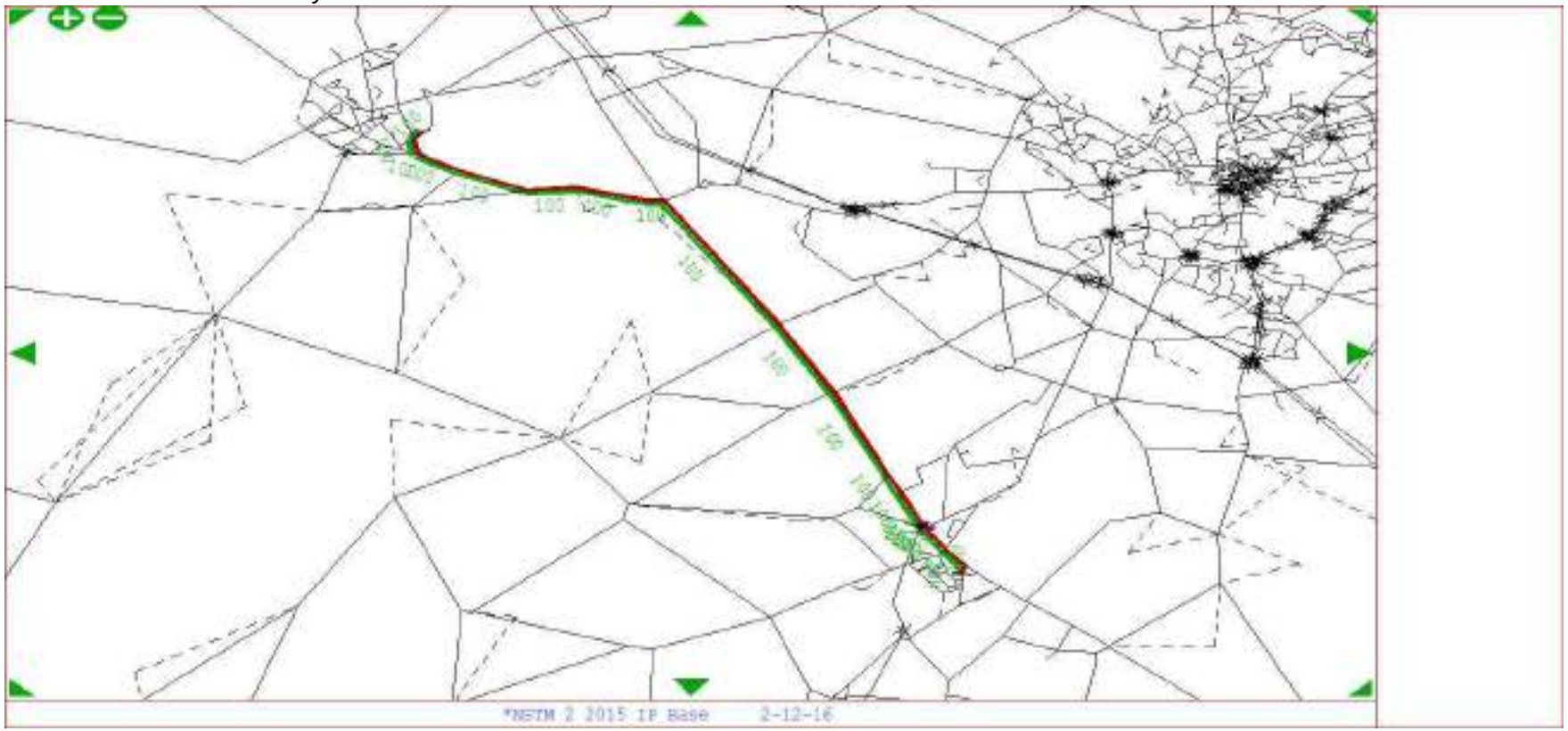
Inter-peak

From Towcester To Daventry - User Class 3



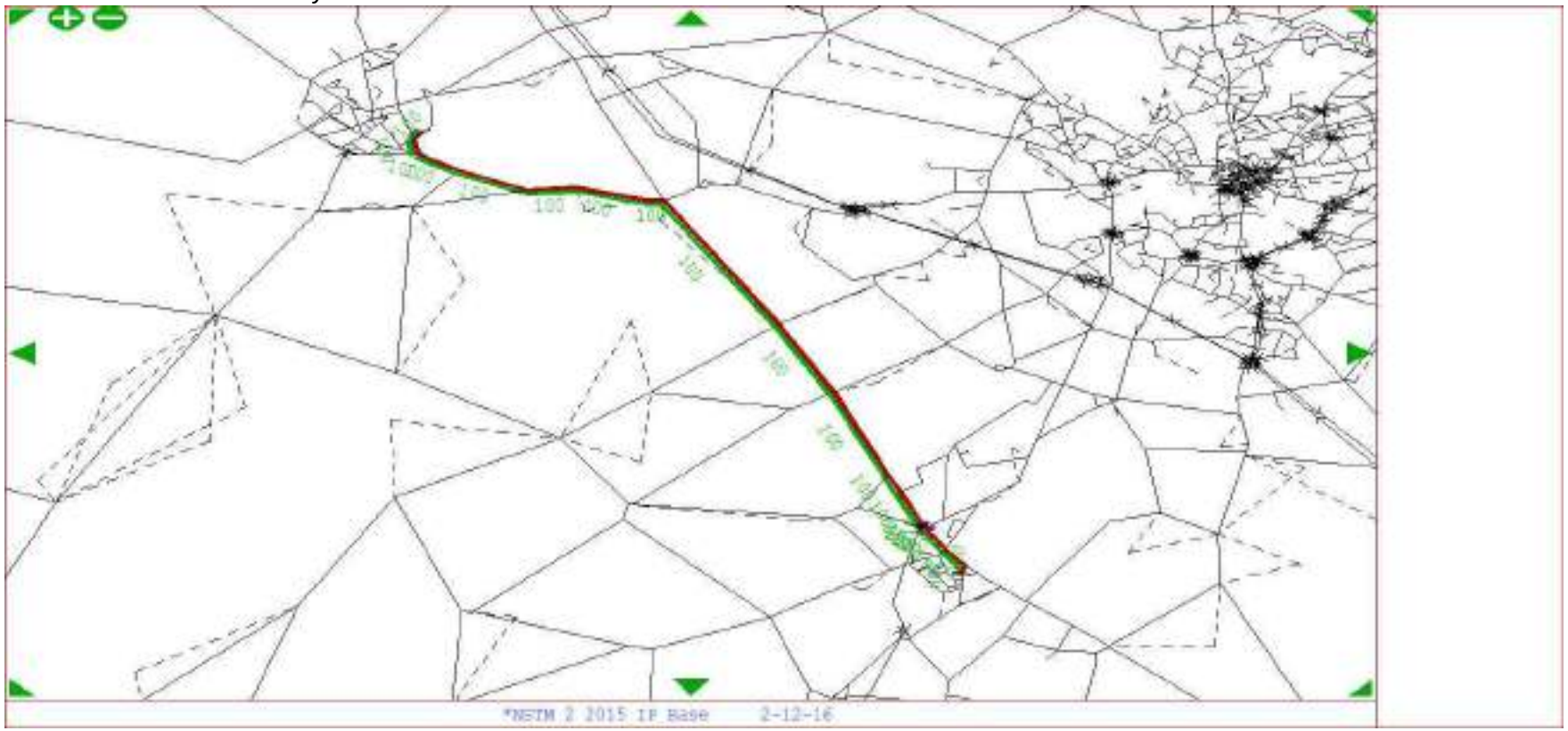
Inter-peak

From Towcester To Daventry - User Class 4



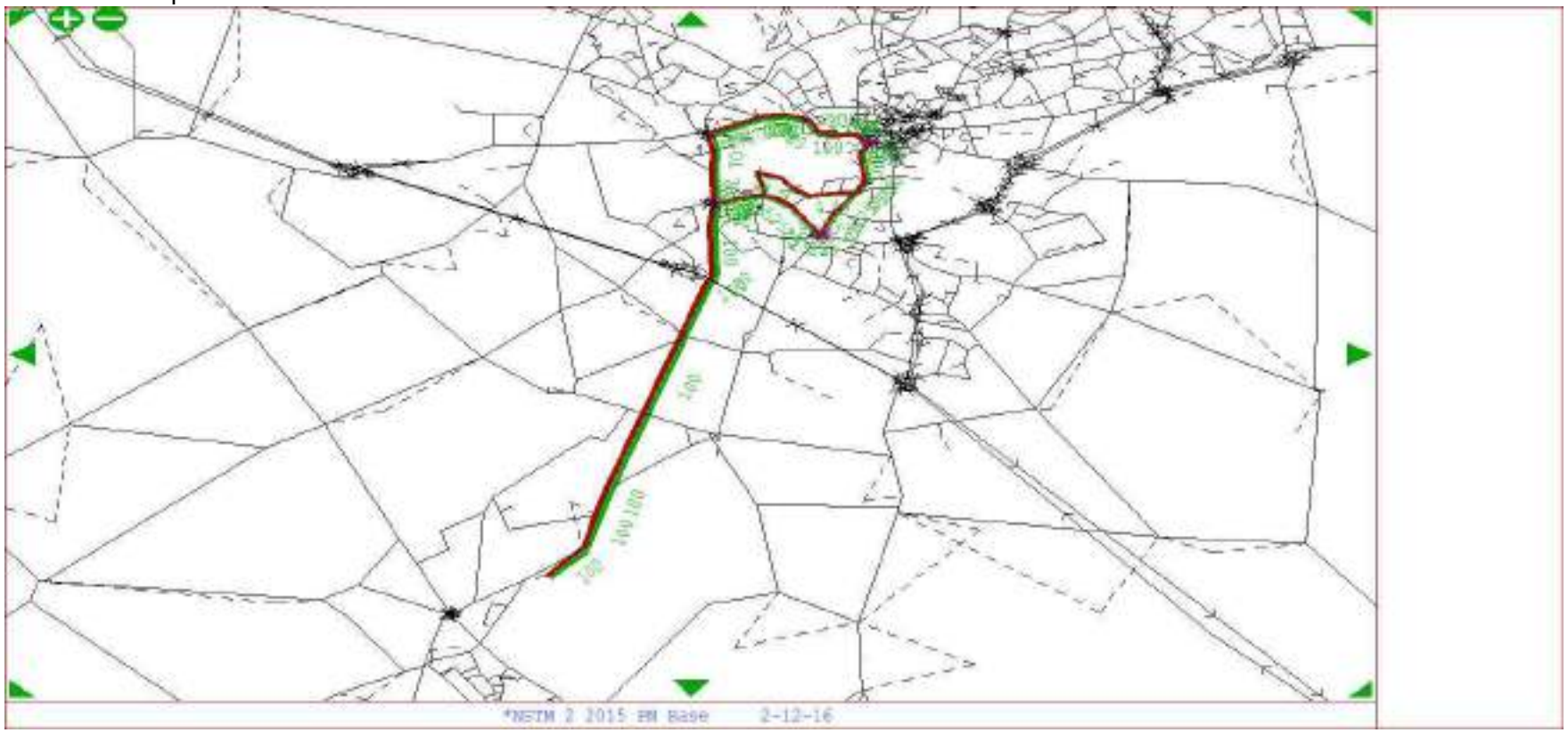
Inter-peak

From Towcester To Daventry - User Class 5



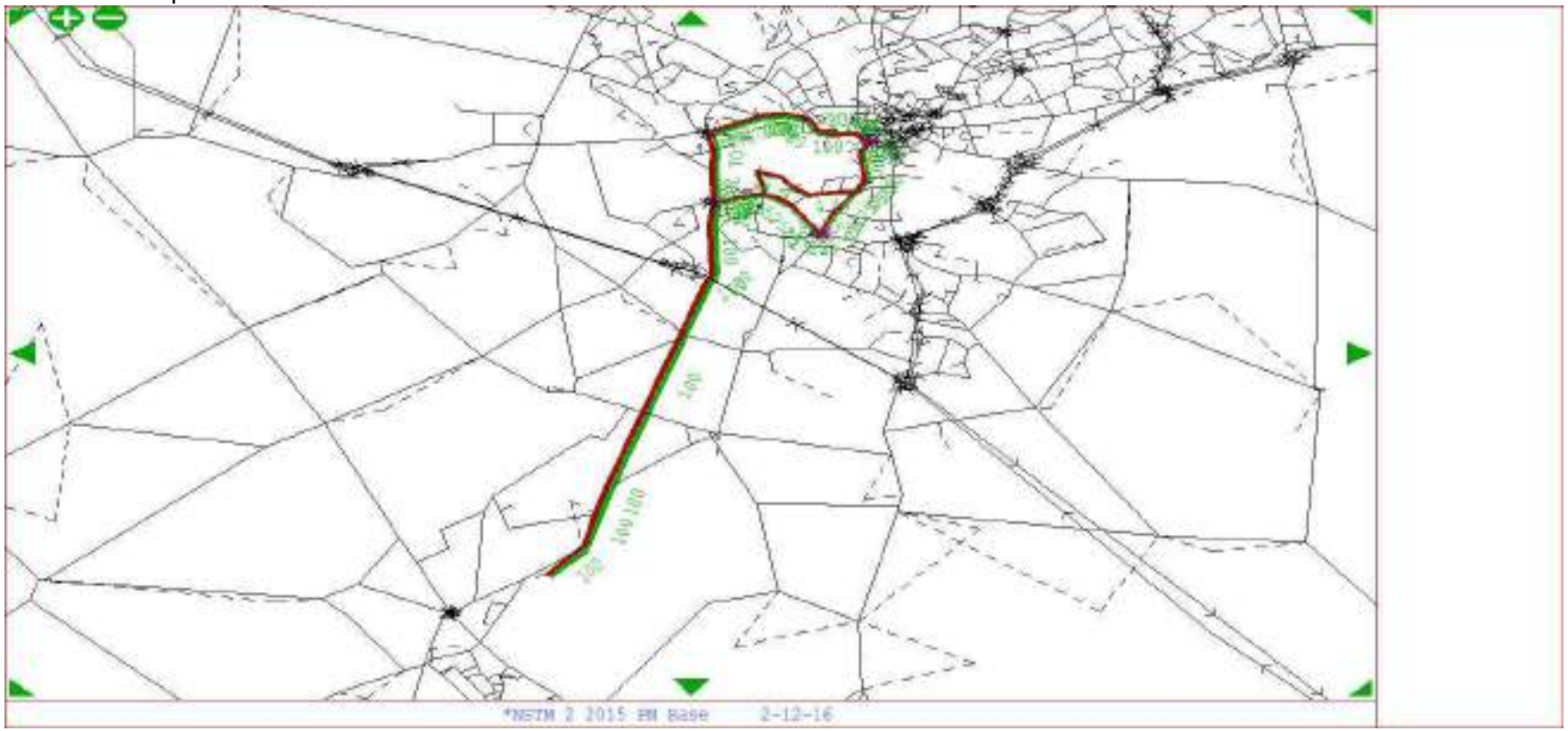
Project Name: OD Tree Plots -

From Northampton To Rail Central Area - User Class 1



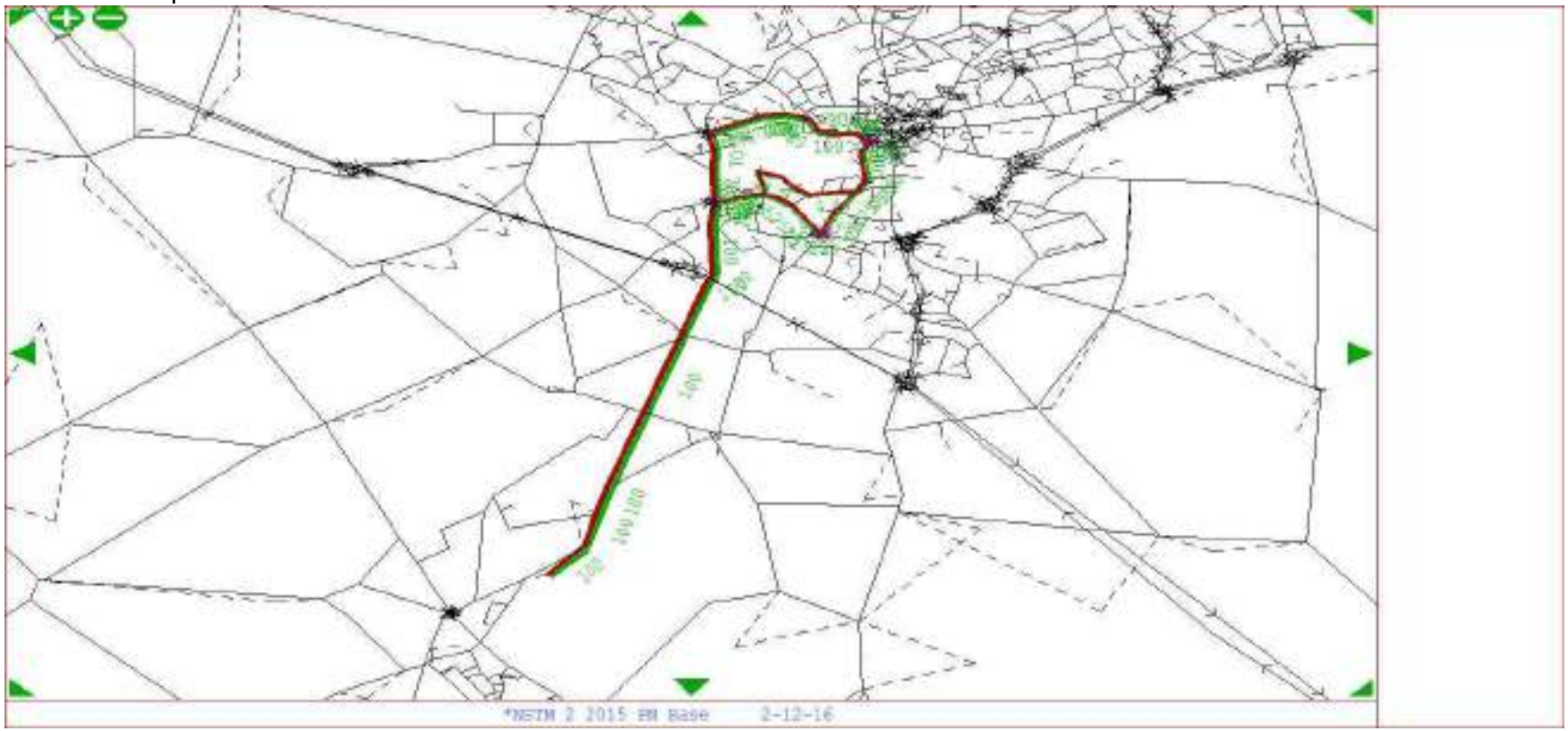
PM Peak

From Northampton To Rail Central Area - User Class 2



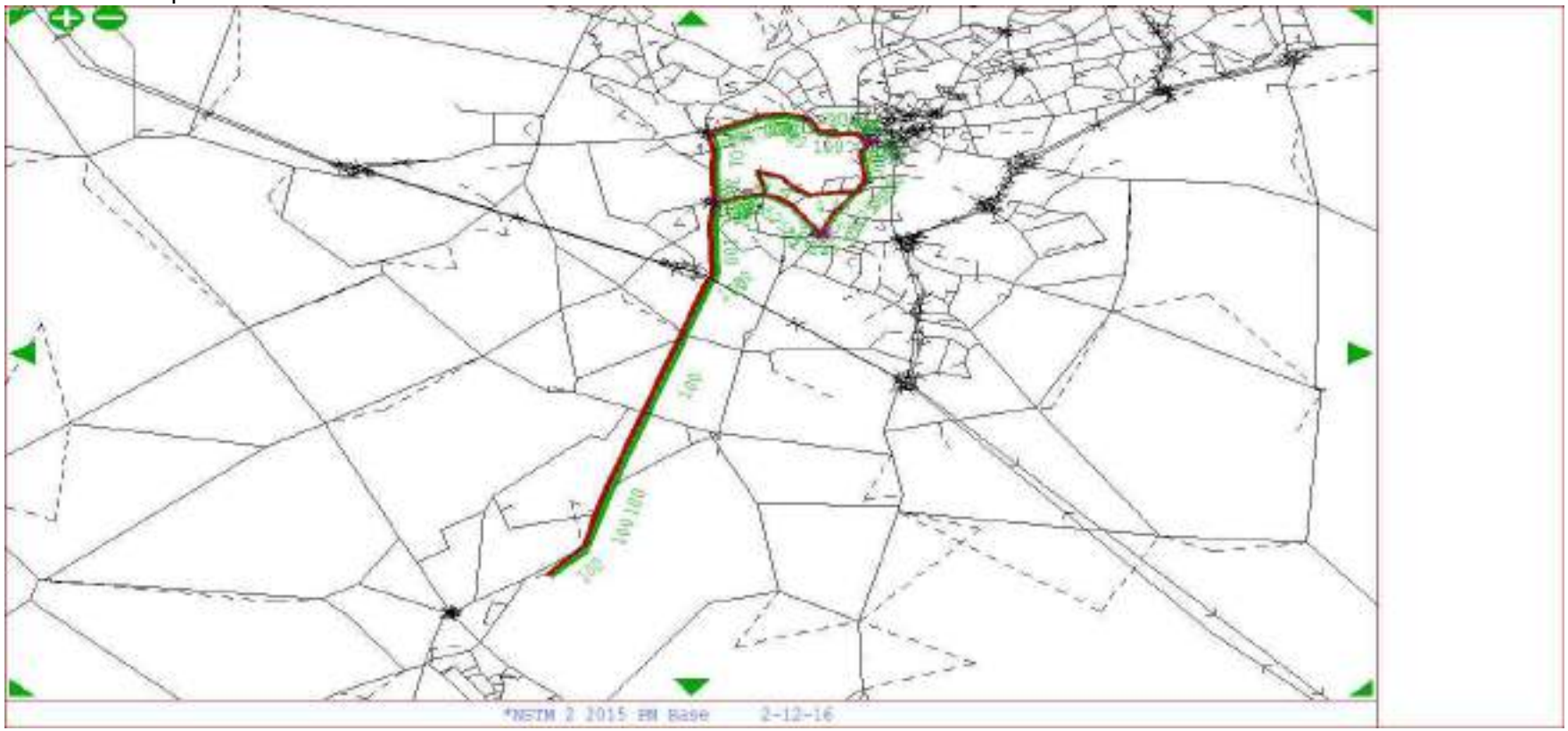
PM Peak

From Northampton To Rail Central Area - User Class 3



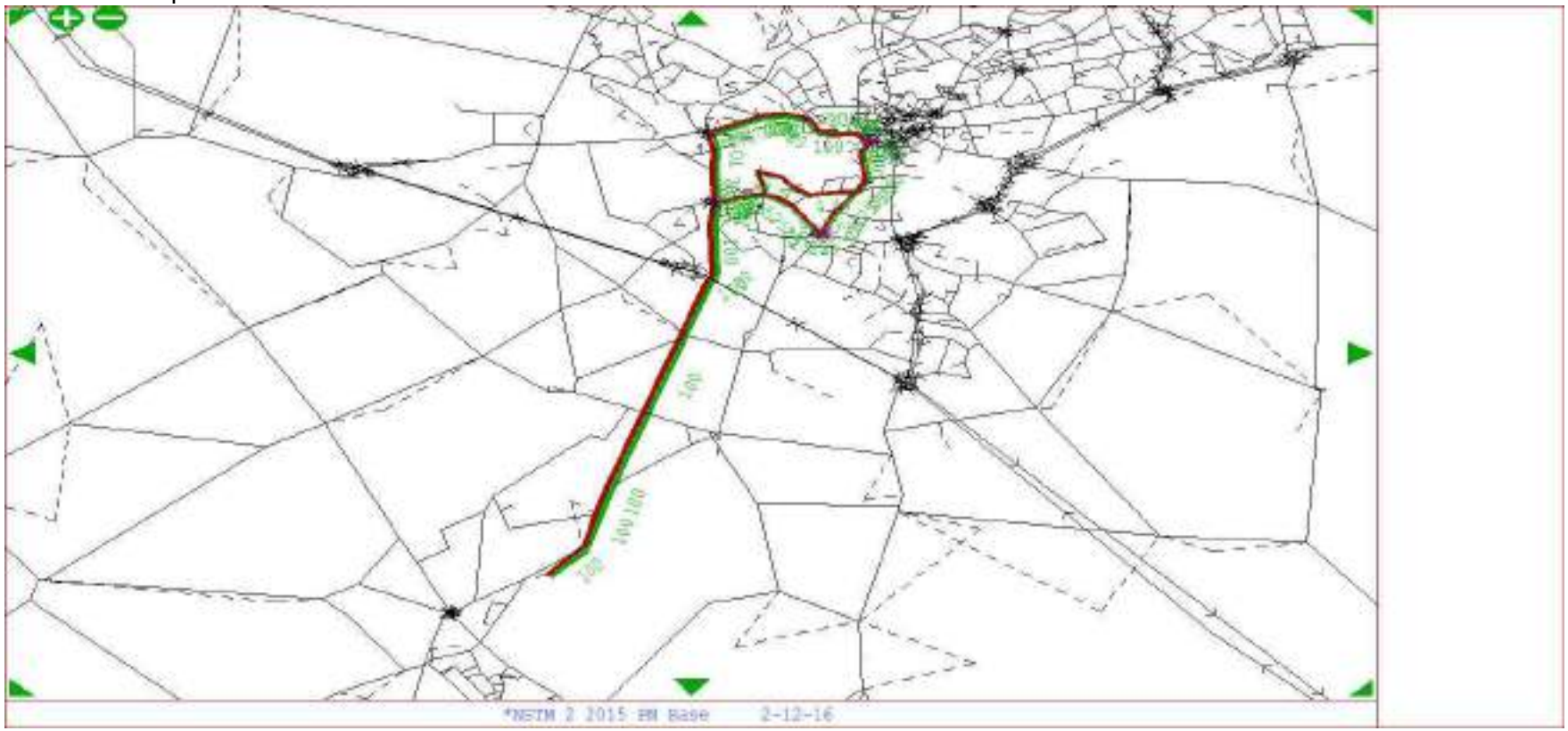
PM Peak

From Northampton To Rail Central Area - User Class 4



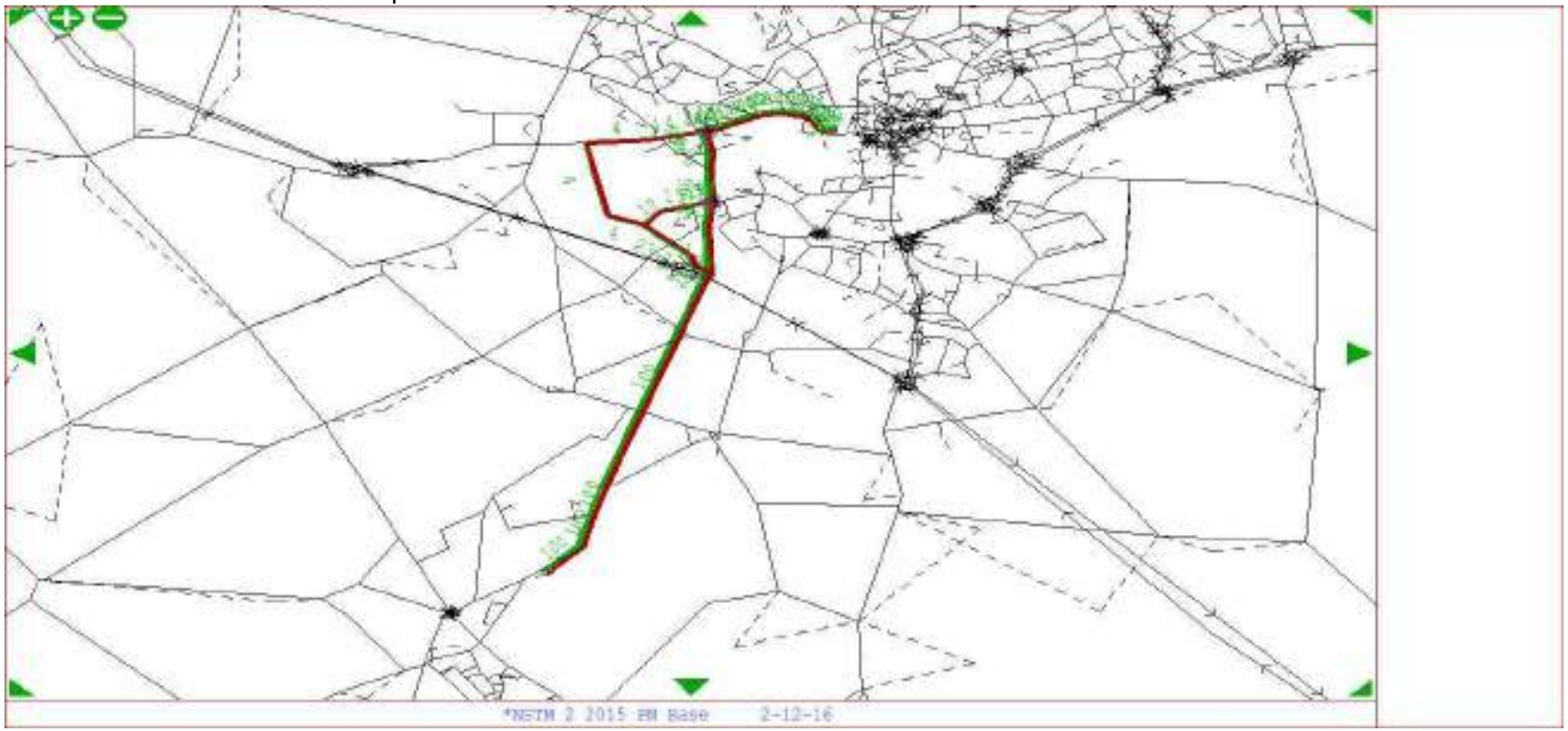
PM Peak

From Northampton To Rail Central Area - User Class 5



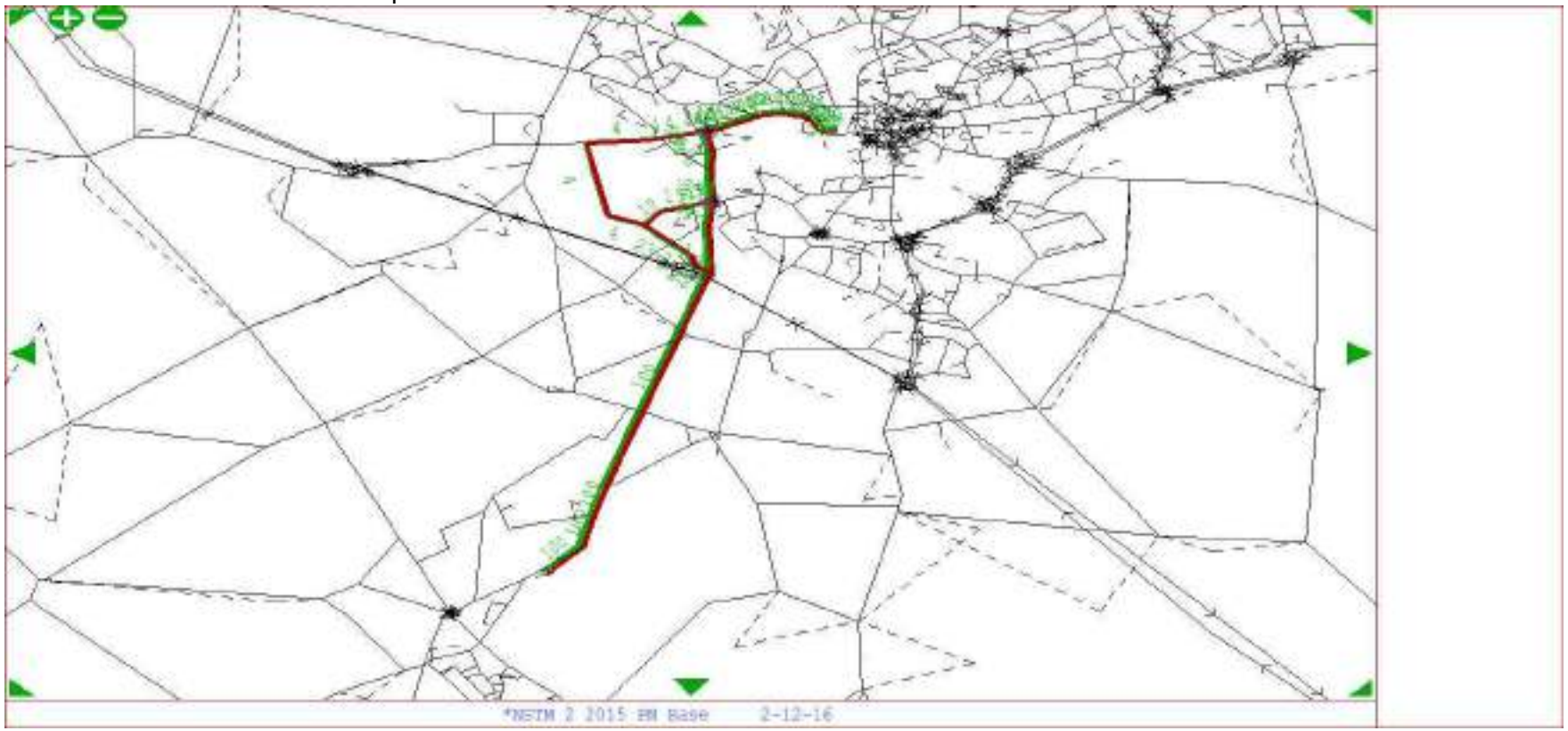
PM Peak

From Rail Central Area To Northampton - User Class 1



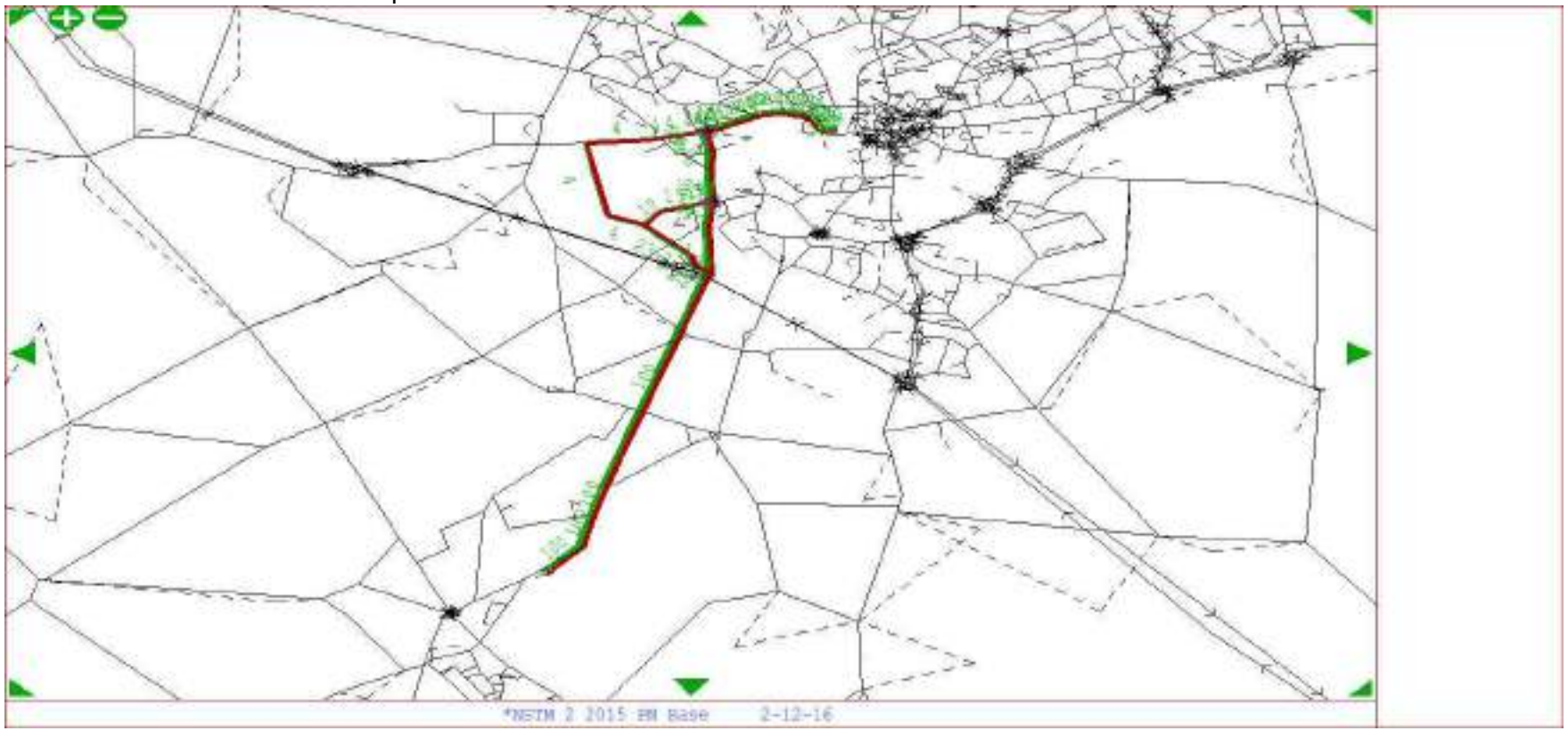
PM Peak

From Rail Central Area To Northampton - User Class 2



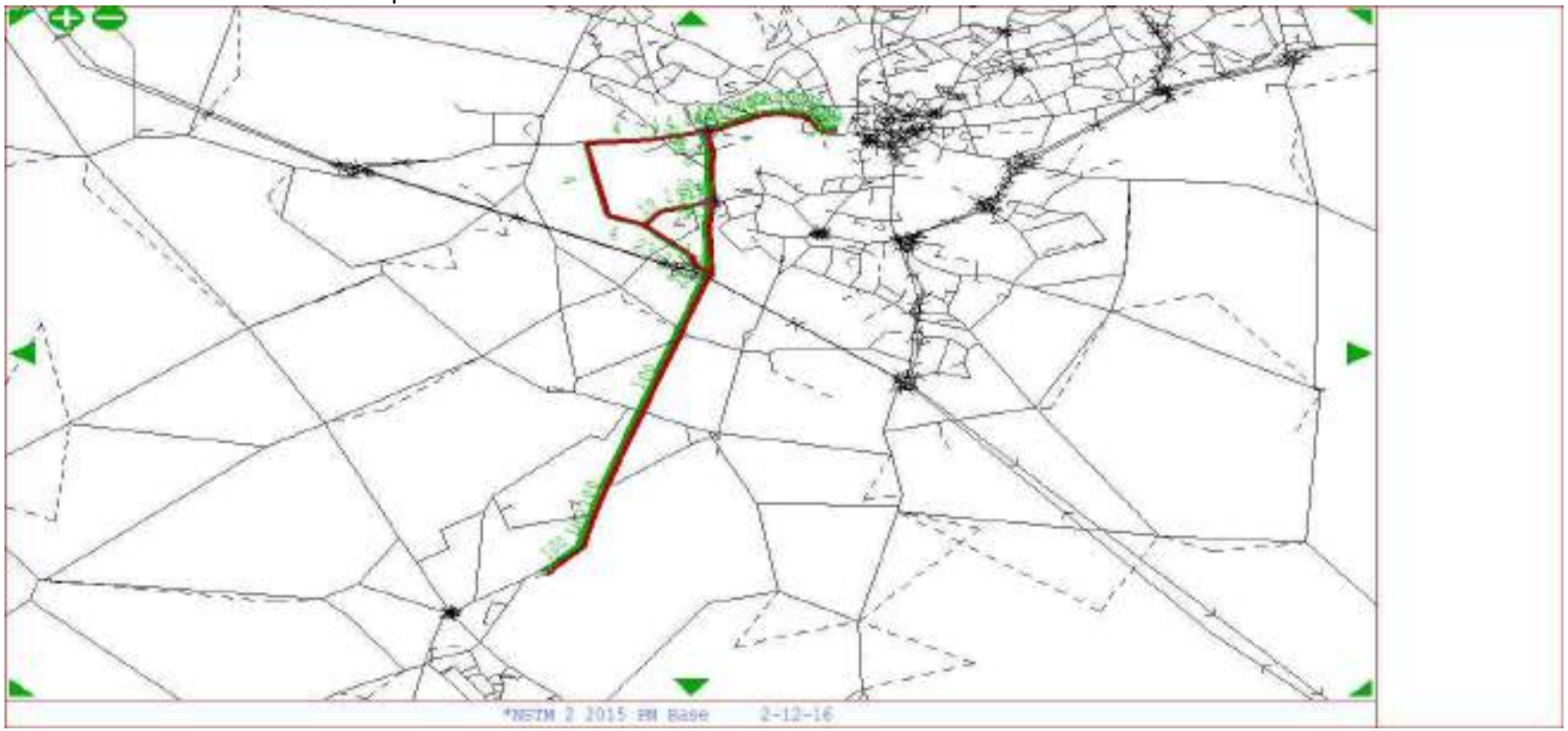
PM Peak

From Rail Central Area To Northampton - User Class 3



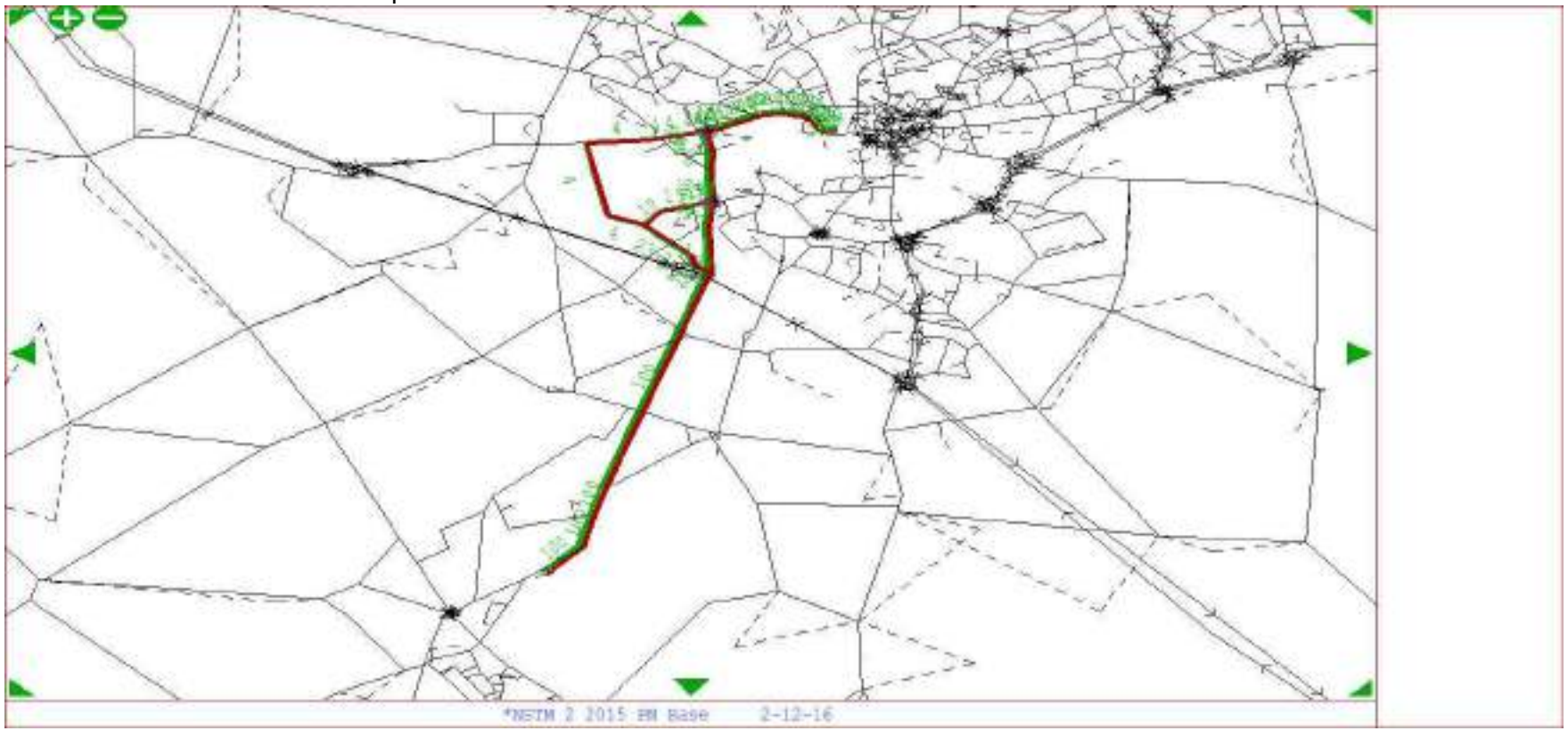
PM Peak

From Rail Central Area To Northampton - User Class 4



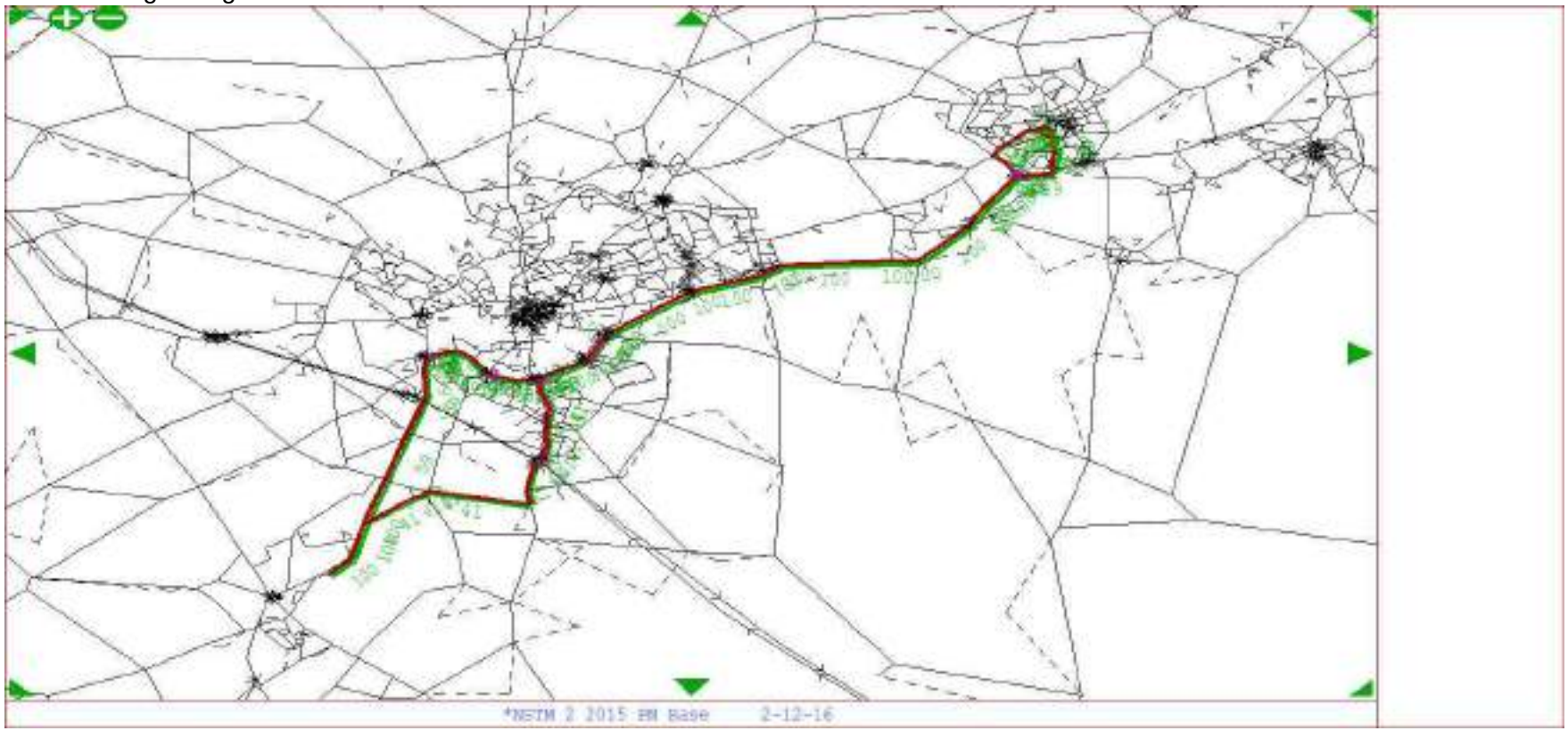
PM Peak

From Rail Central Area To Northampton - User Class 5



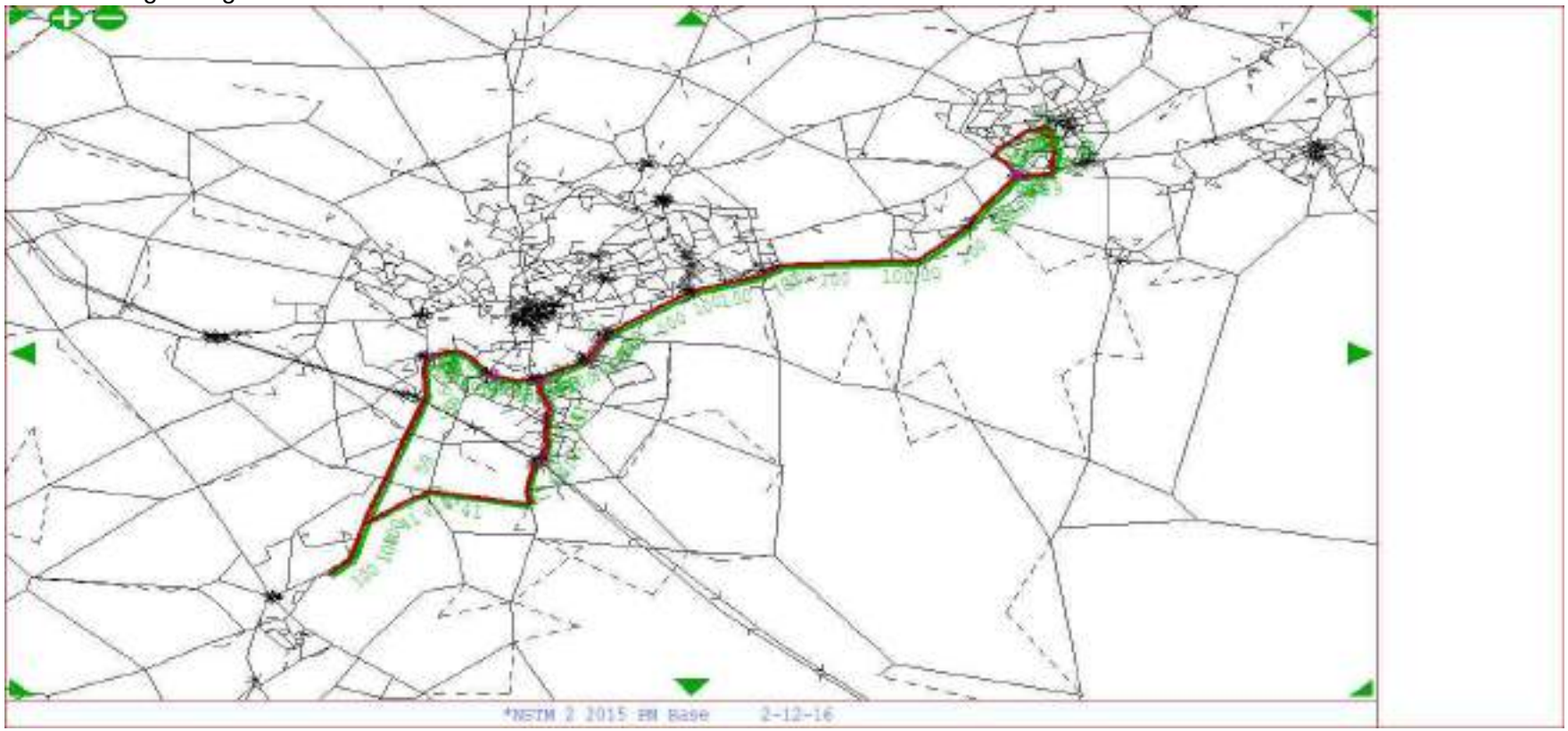
PM Peak

From Wellingborough To Rail Central Area - User Class 1



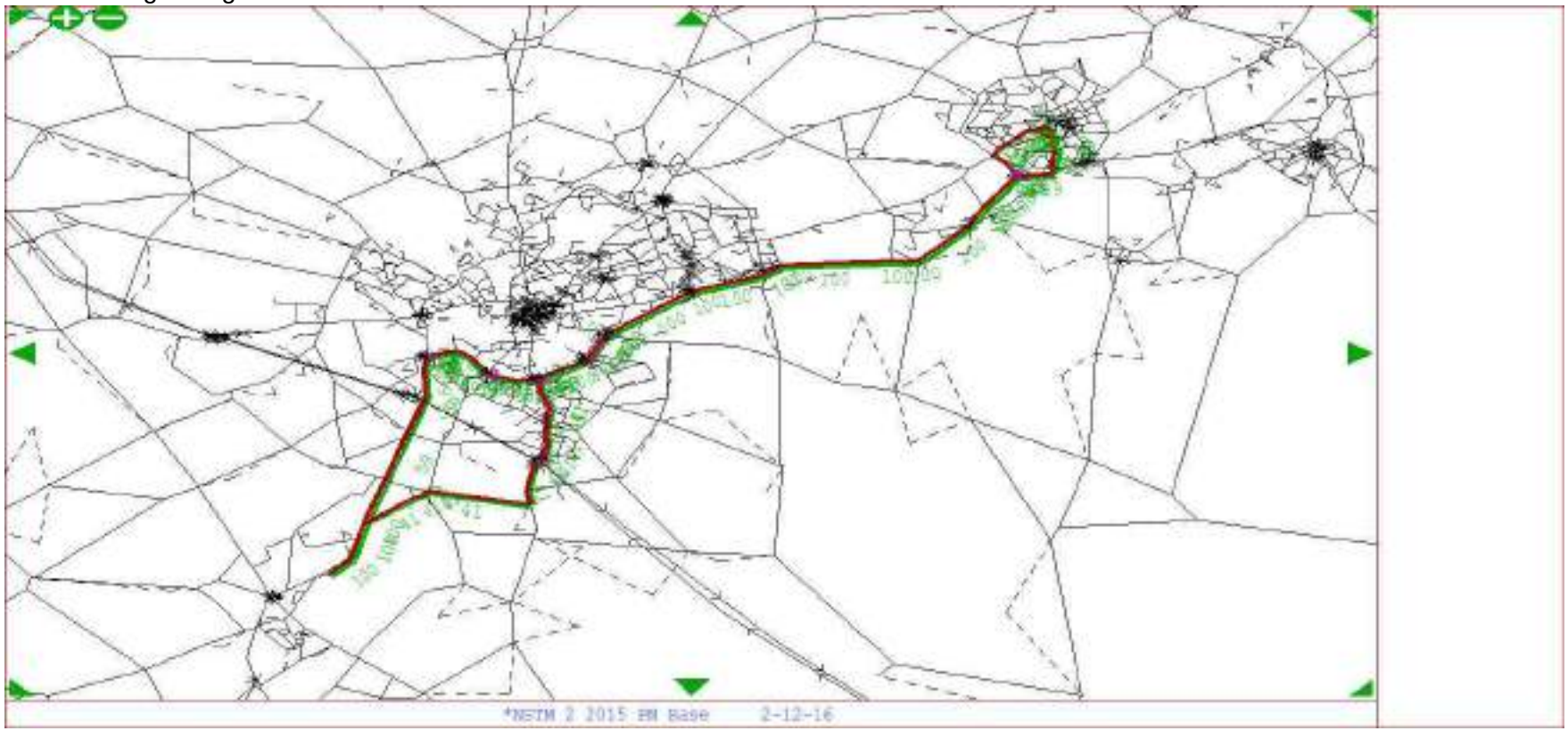
PM Peak

From Wellingborough To Rail Central Area - User Class 2



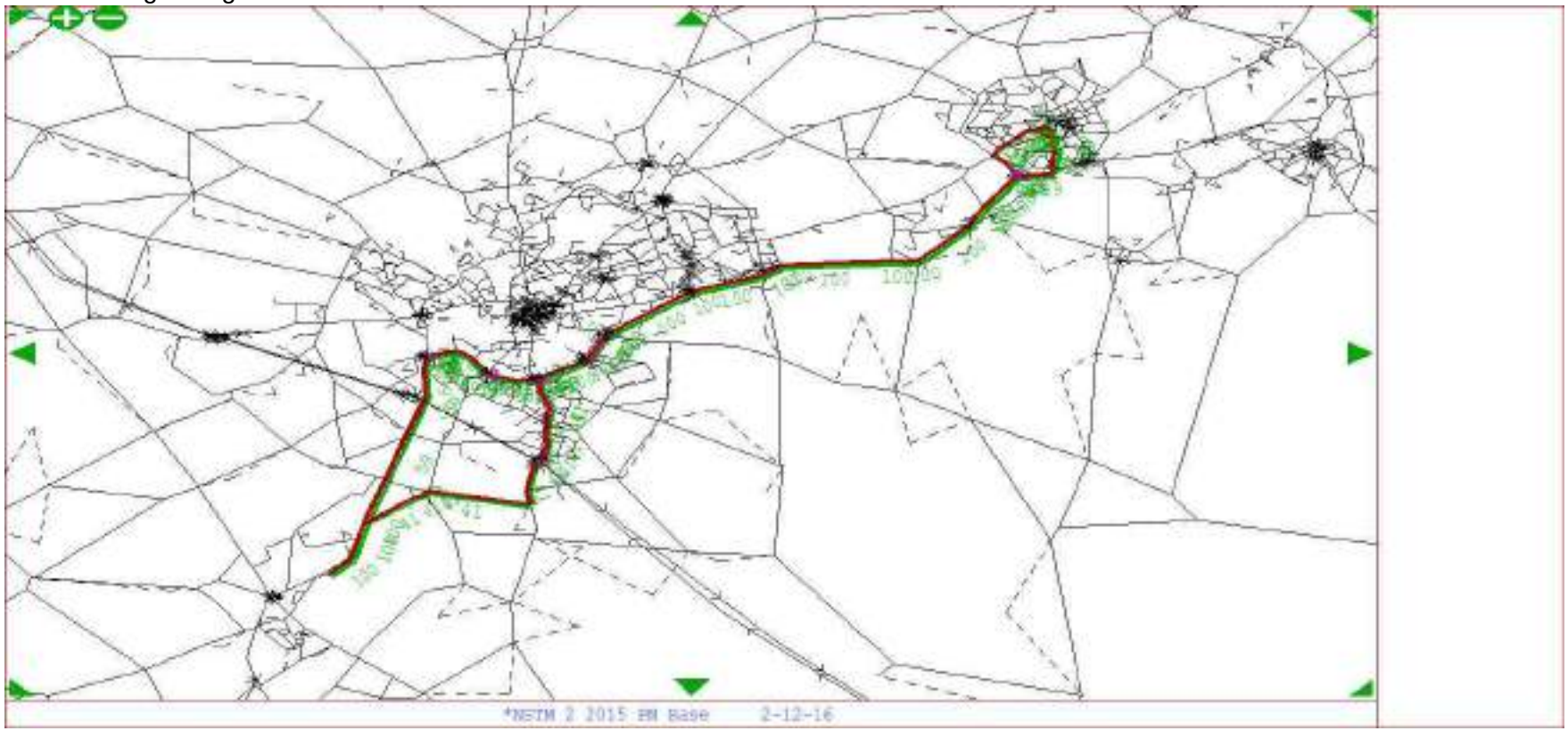
PM Peak

From Wellingborough To Rail Central Area - User Class 3



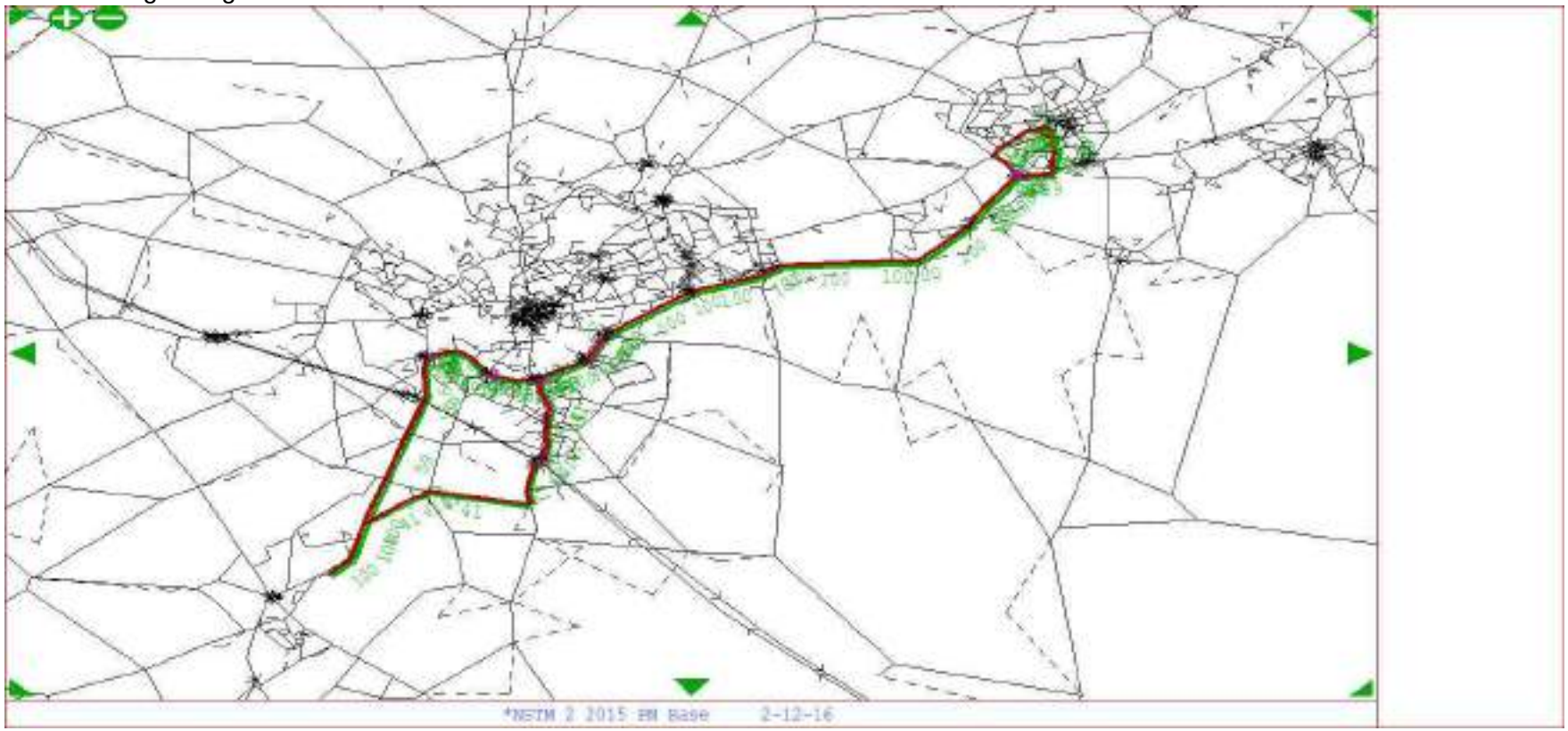
PM Peak

From Wellingborough To Rail Central Area - User Class 4



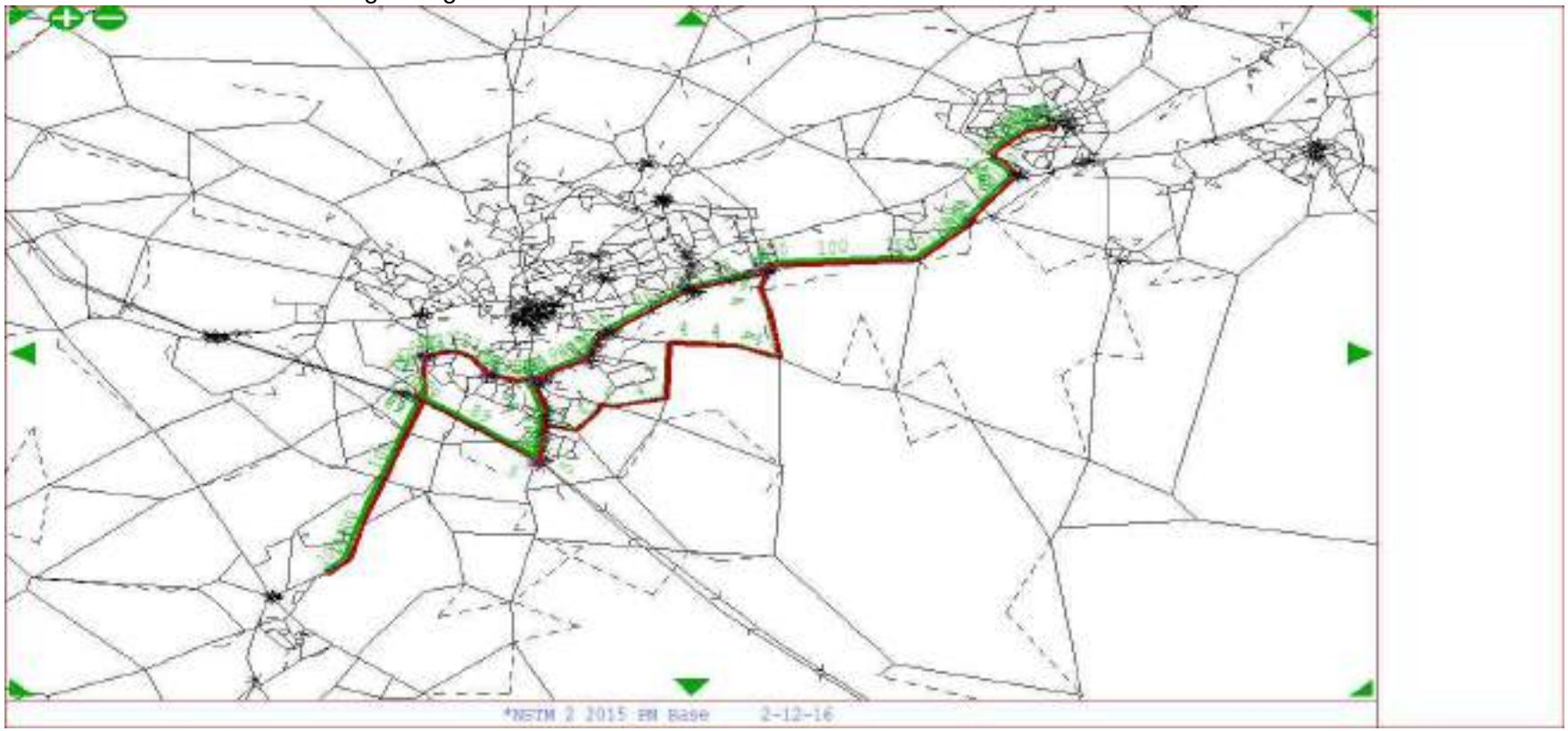
PM Peak

From Wellingborough To Rail Central Area - User Class 5



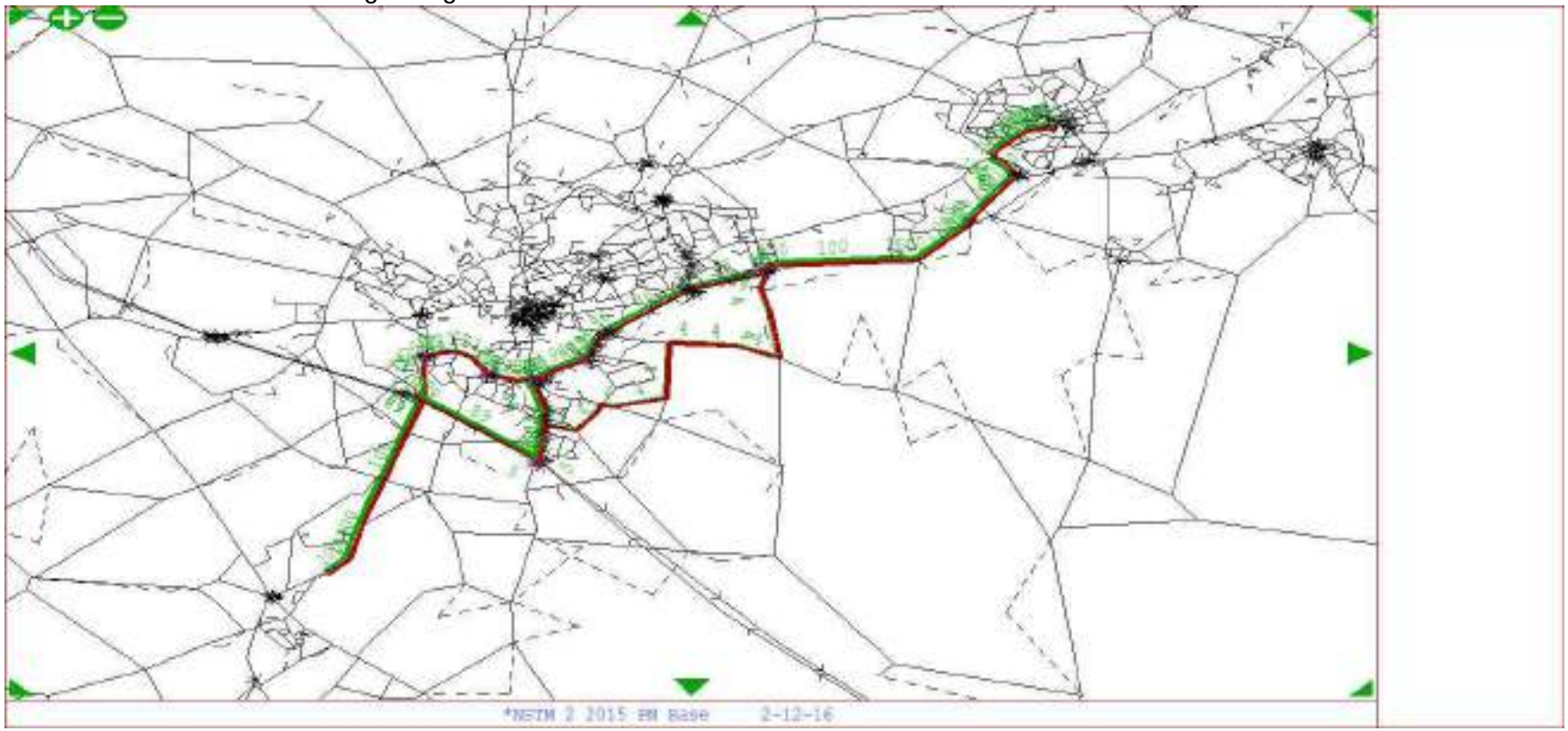
PM Peak

From Rail Central Area To Wellingborough - User Class 1



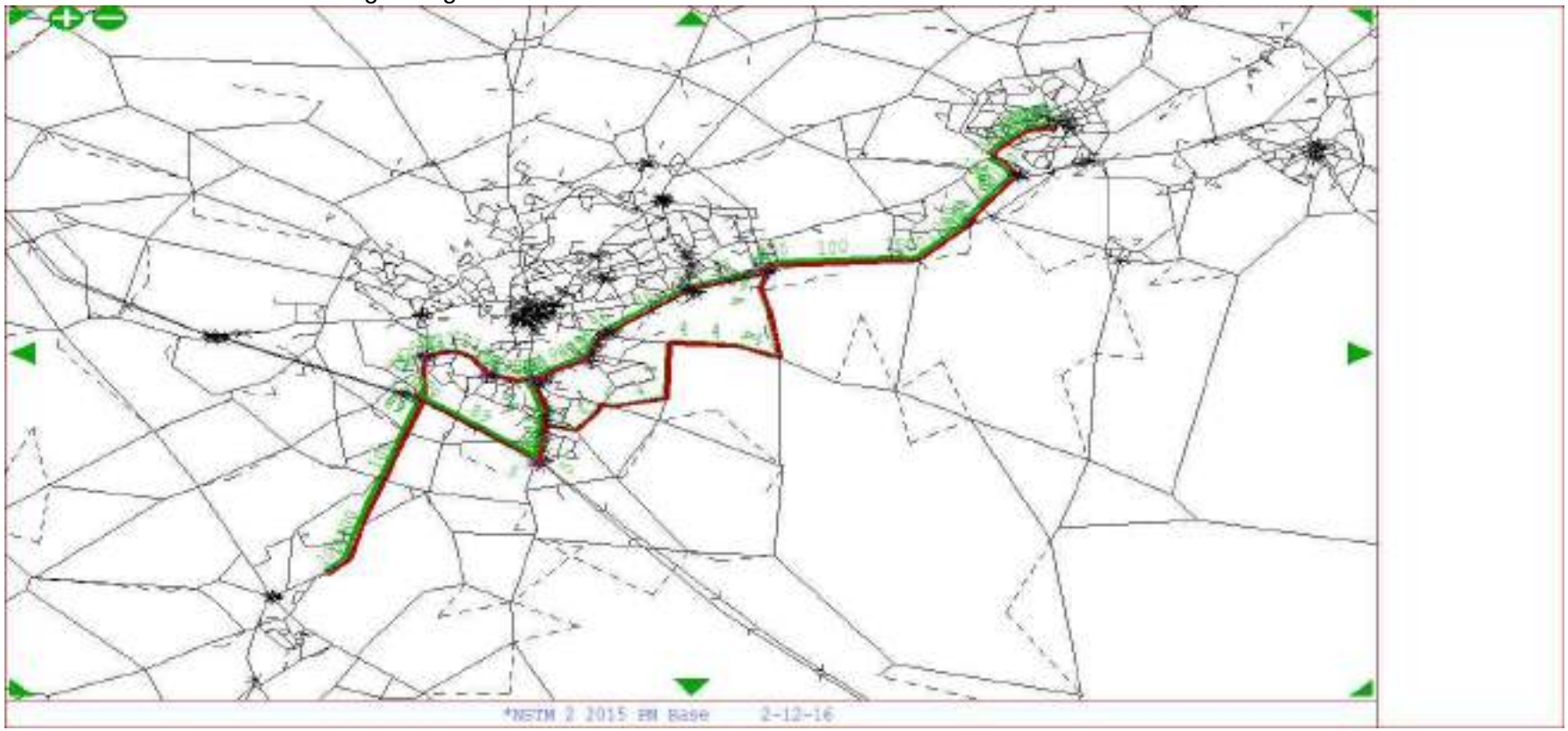
PM Peak

From Rail Central Area To Wellingborough - User Class 2



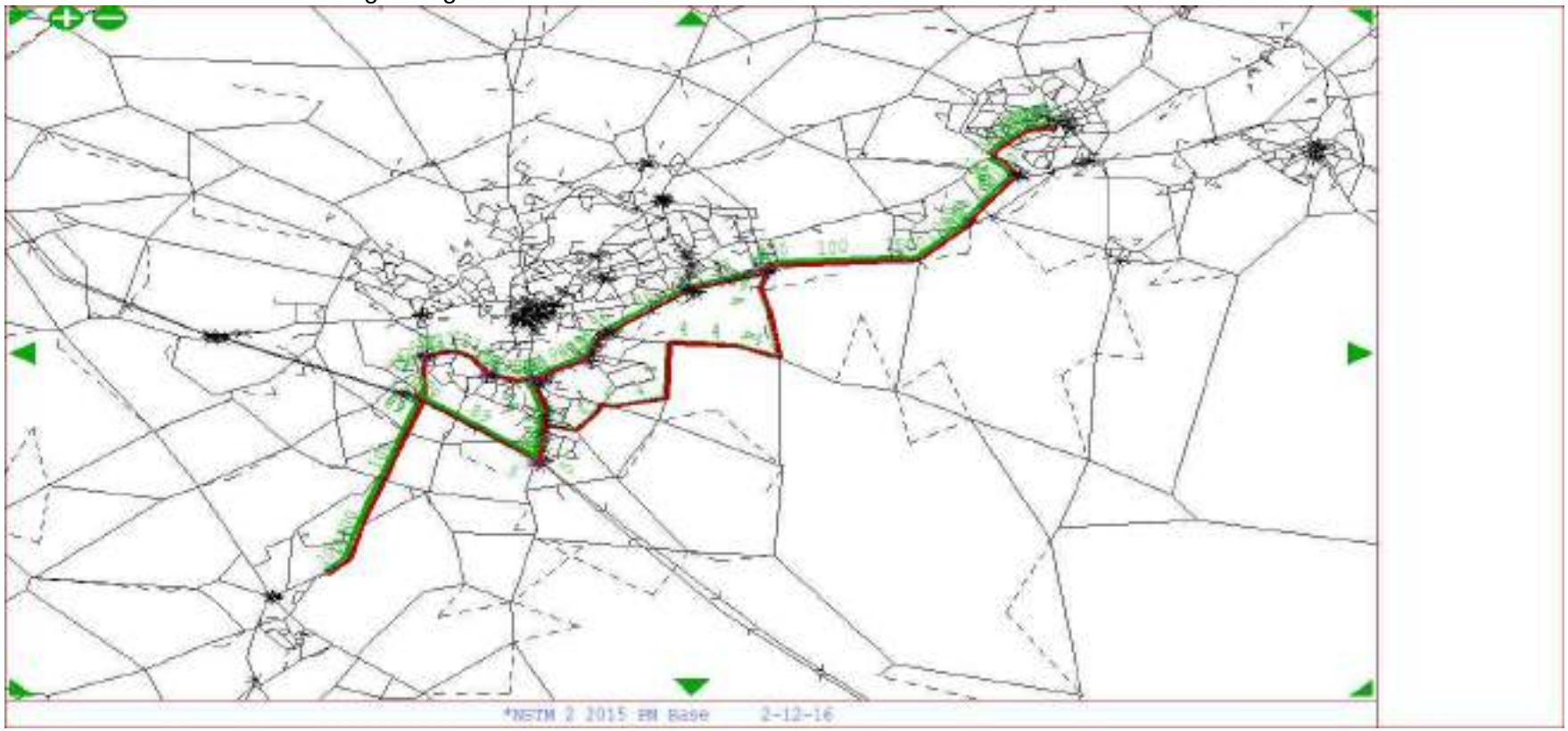
PM Peak

From Rail Central Area To Wellingborough - User Class 3



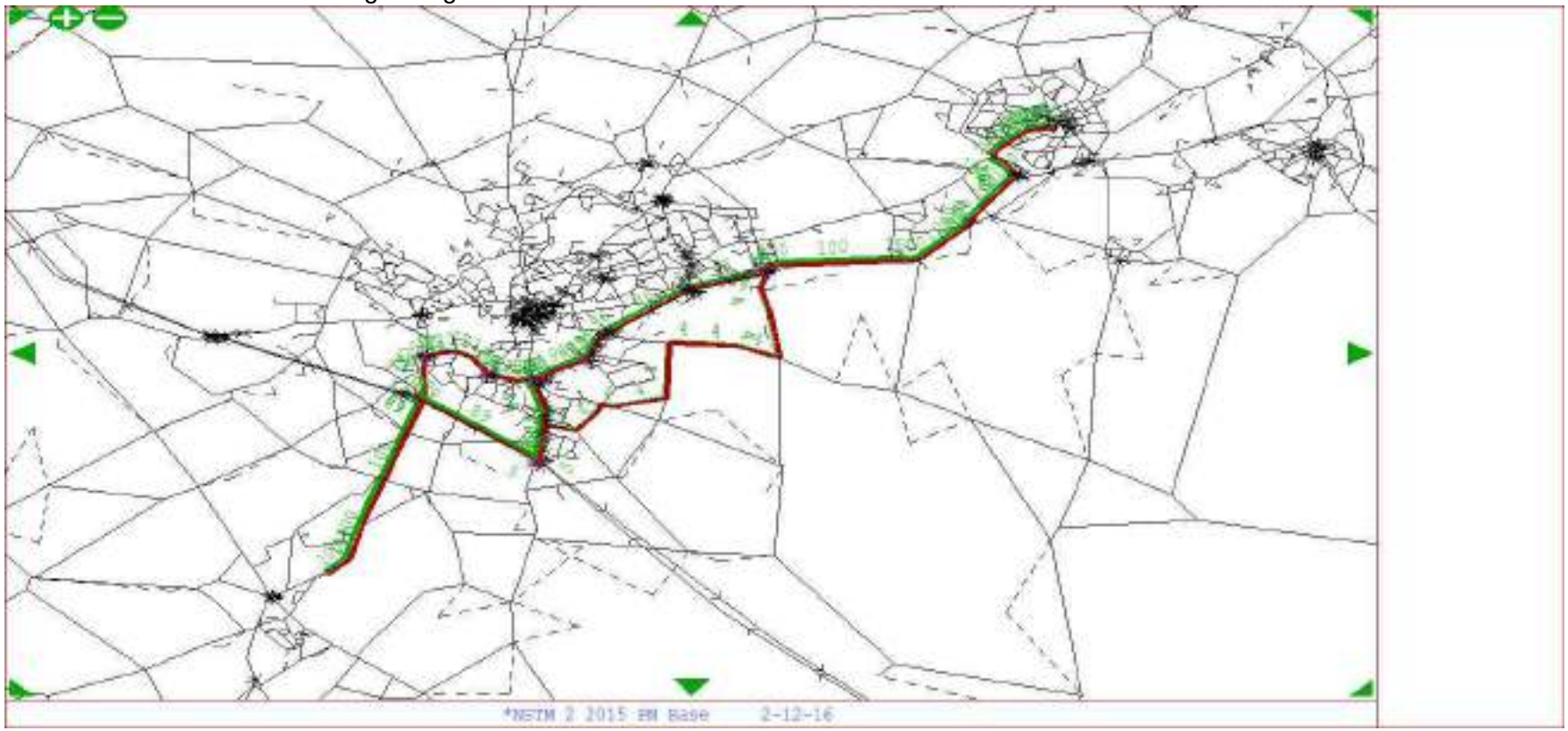
PM Peak

From Rail Central Area To Wellingborough - User Class 4



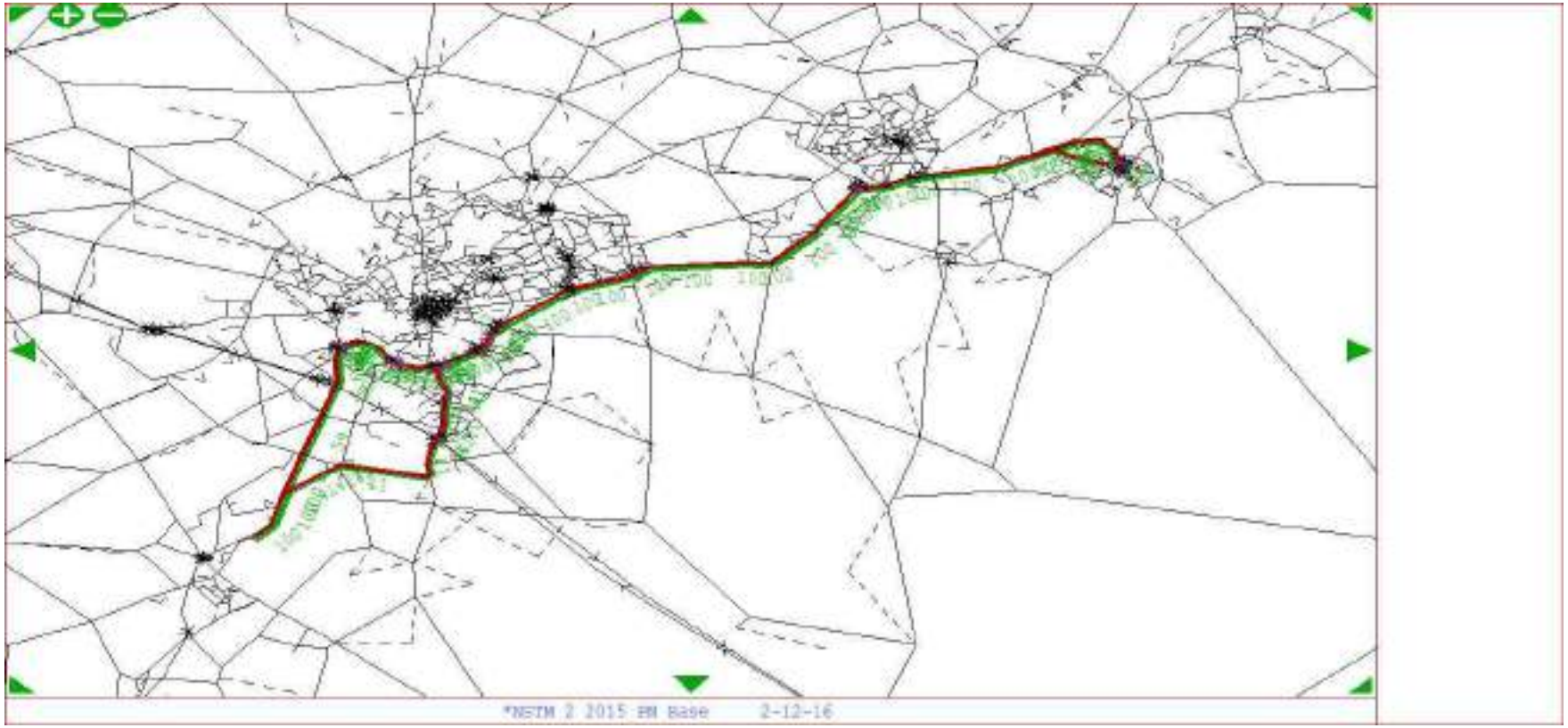
PM Peak

From Rail Central Area To Wellingborough - User Class 5



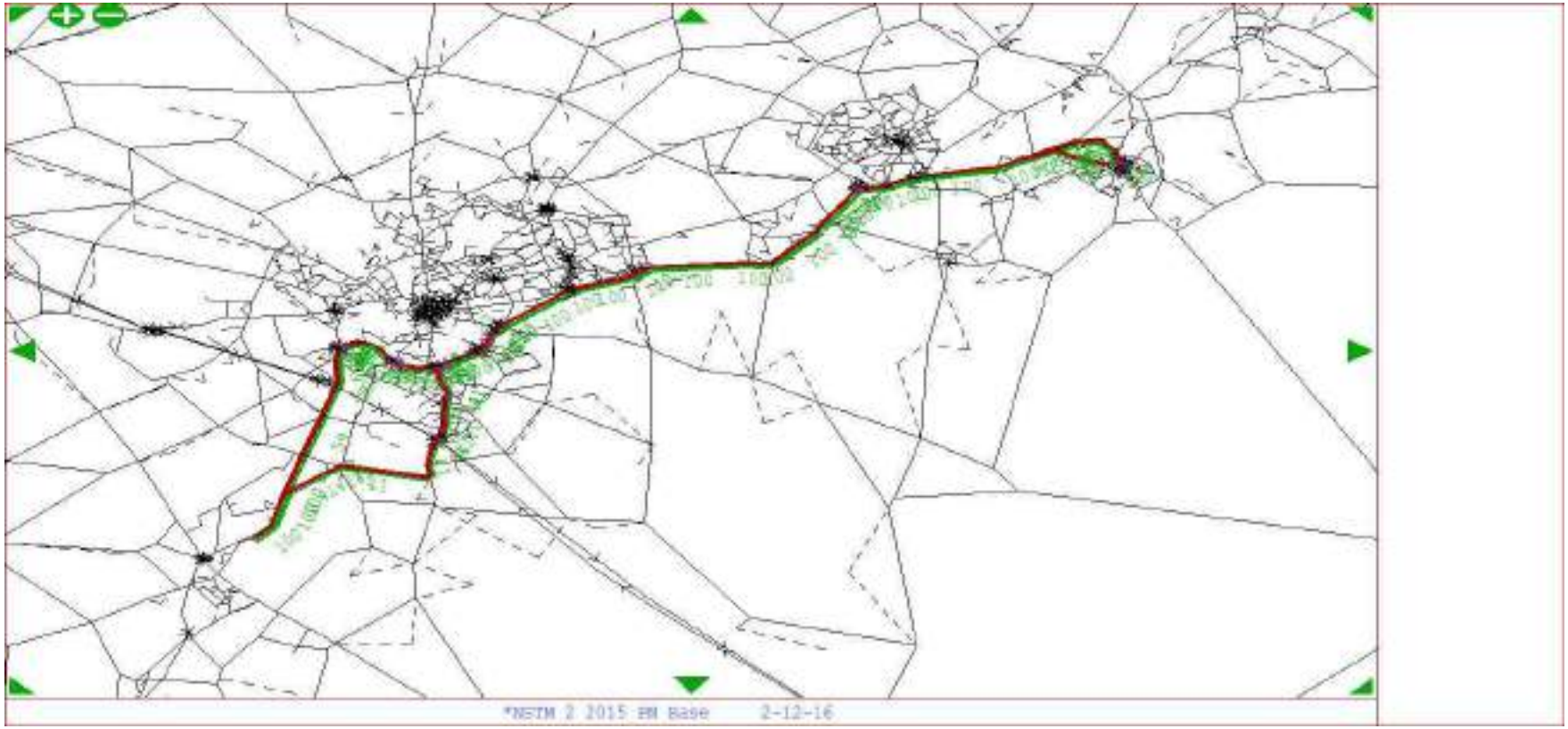
PM Peak

From Rushden To Rail Central Area - User Class 1



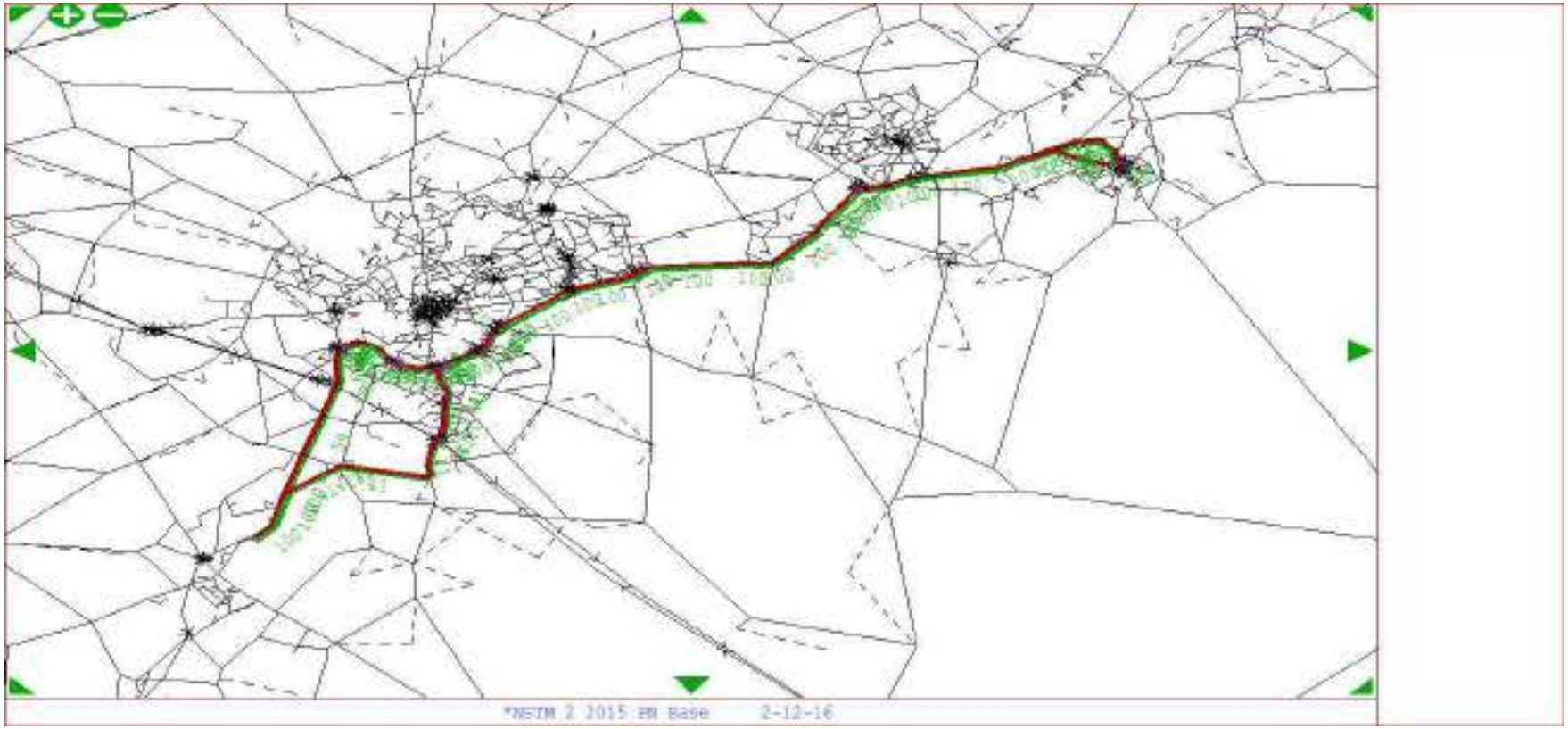
PM Peak

From Rushden To Rail Central Area - User Class 2



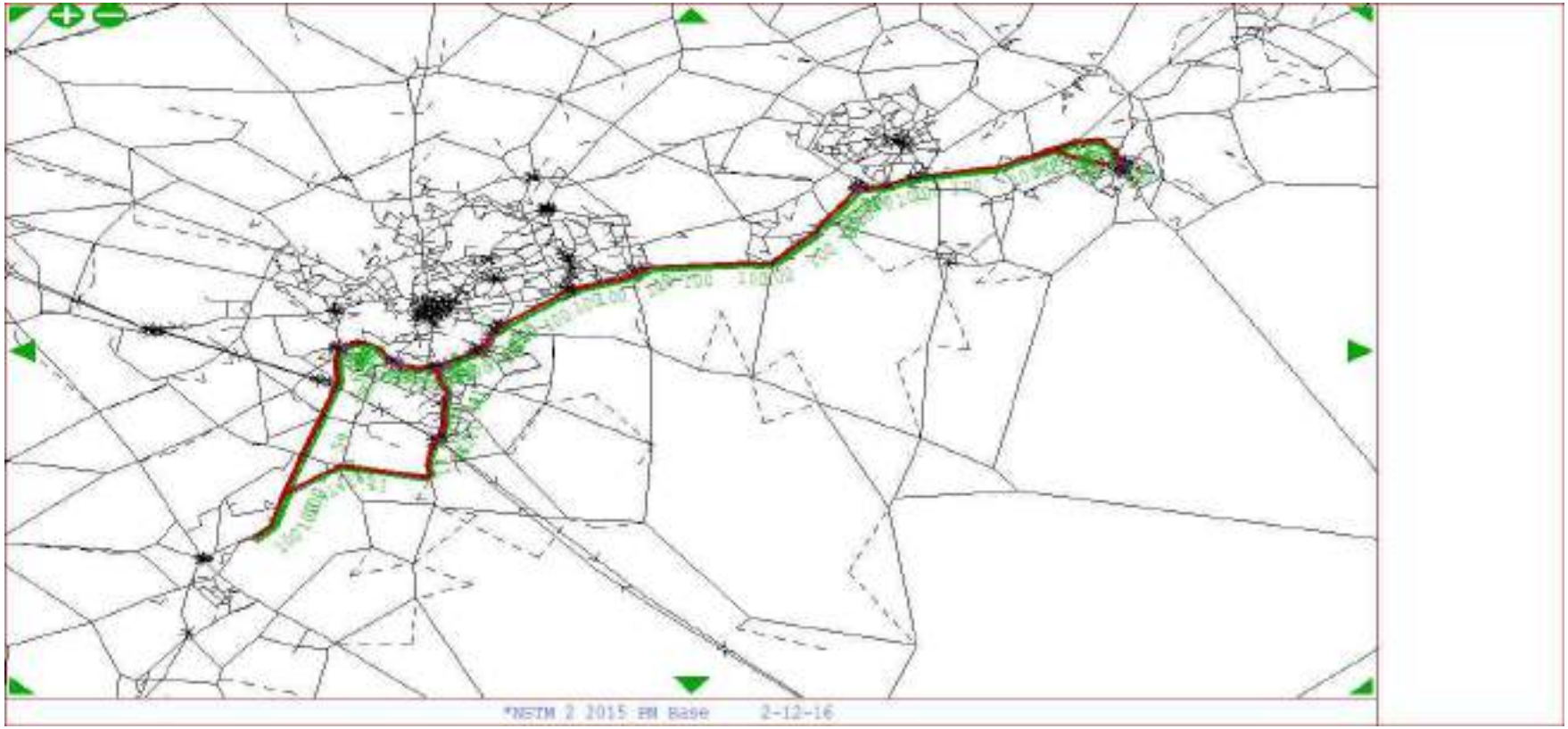
PM Peak

From Rushden To Rail Central Area - User Class 3



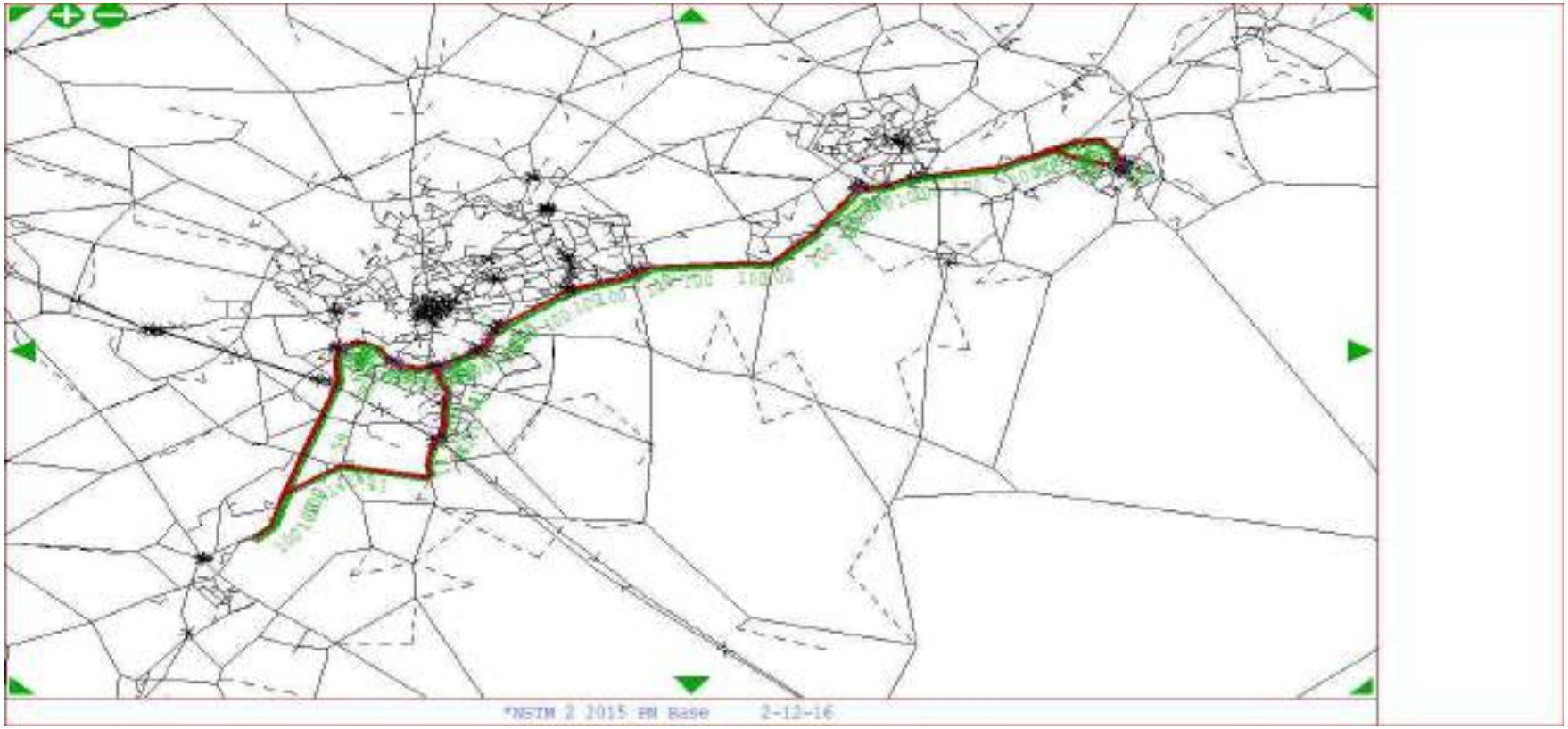
PM Peak

From Rushden To Rail Central Area - User Class 4



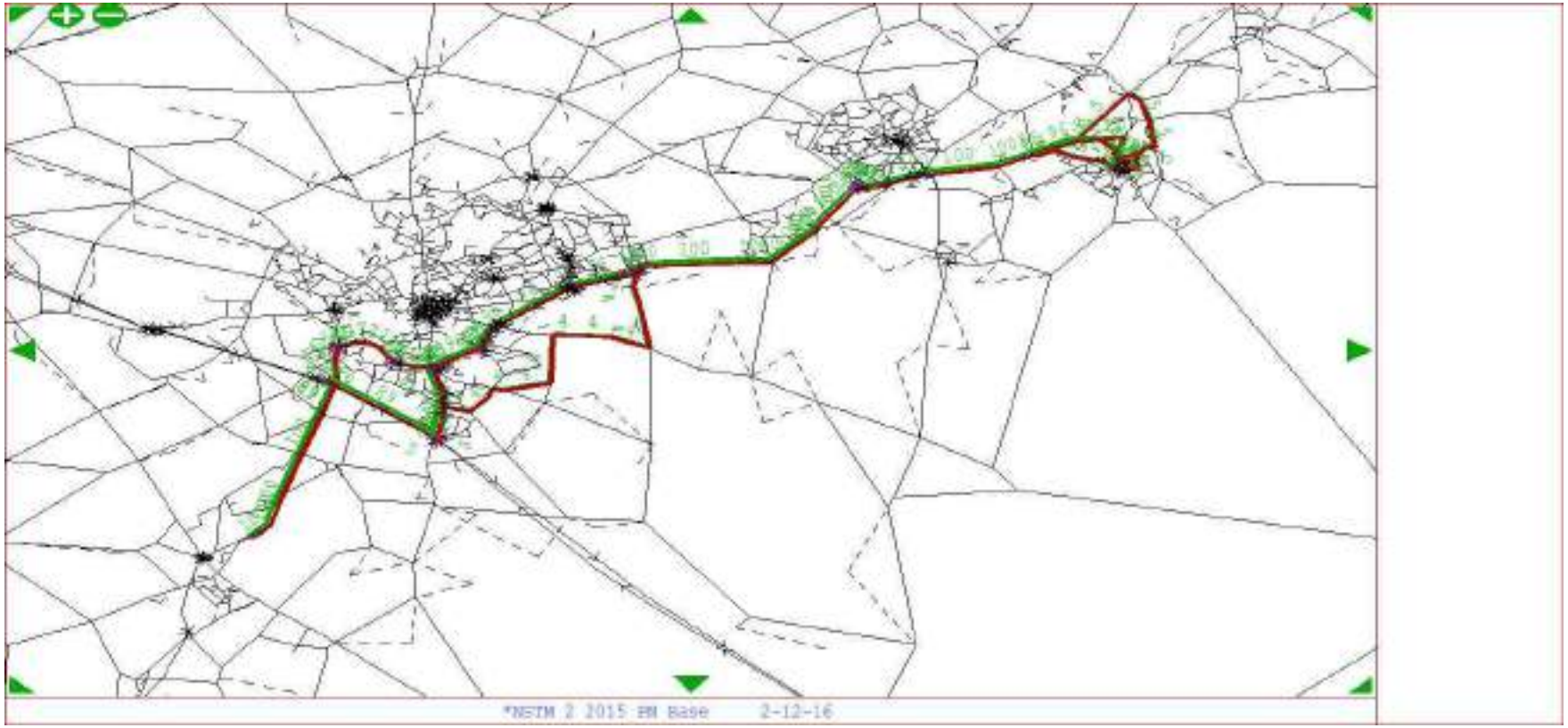
PM Peak

From Rushden To Rail Central Area - User Class 5



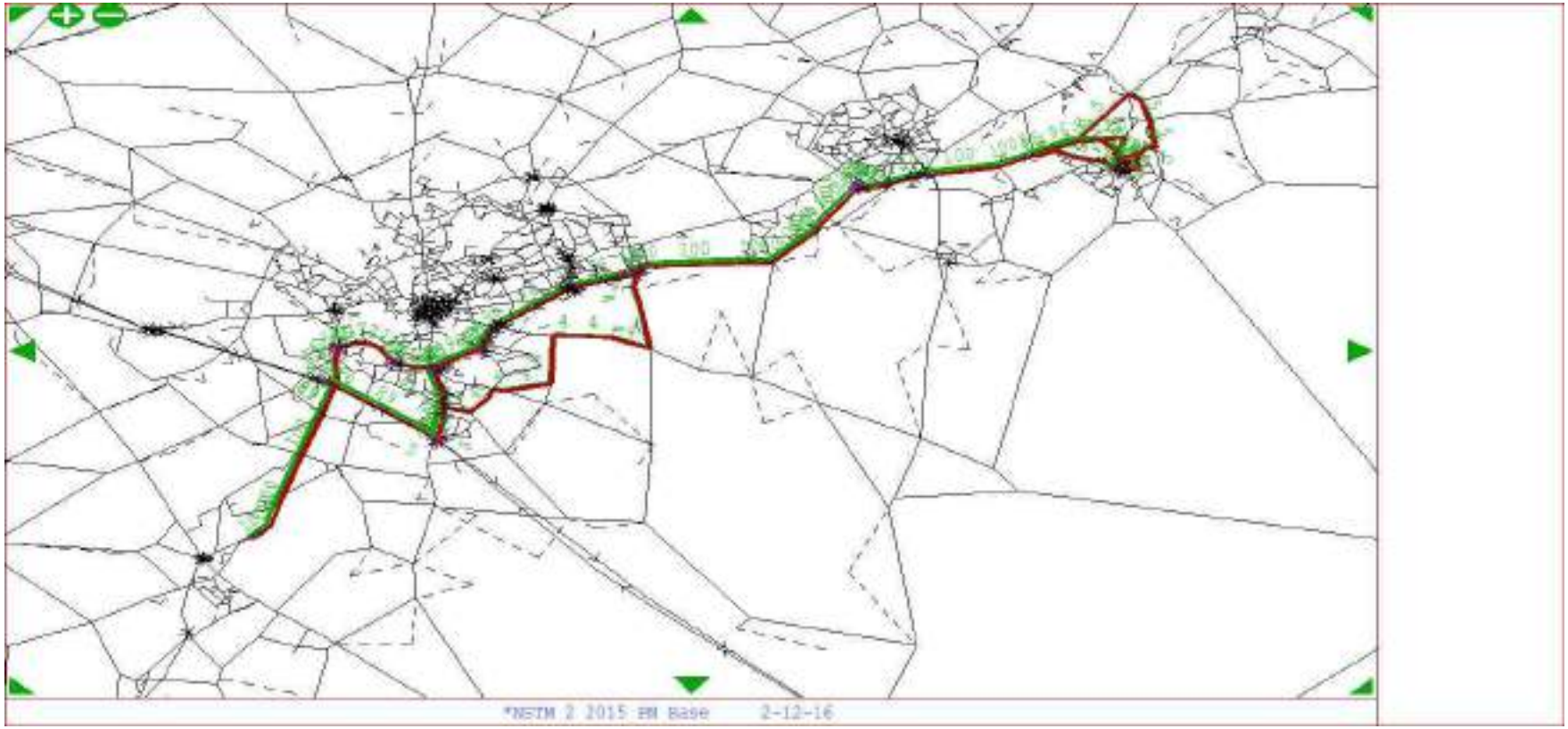
PM Peak

From Rail Central Area To Rushden - User Class 1



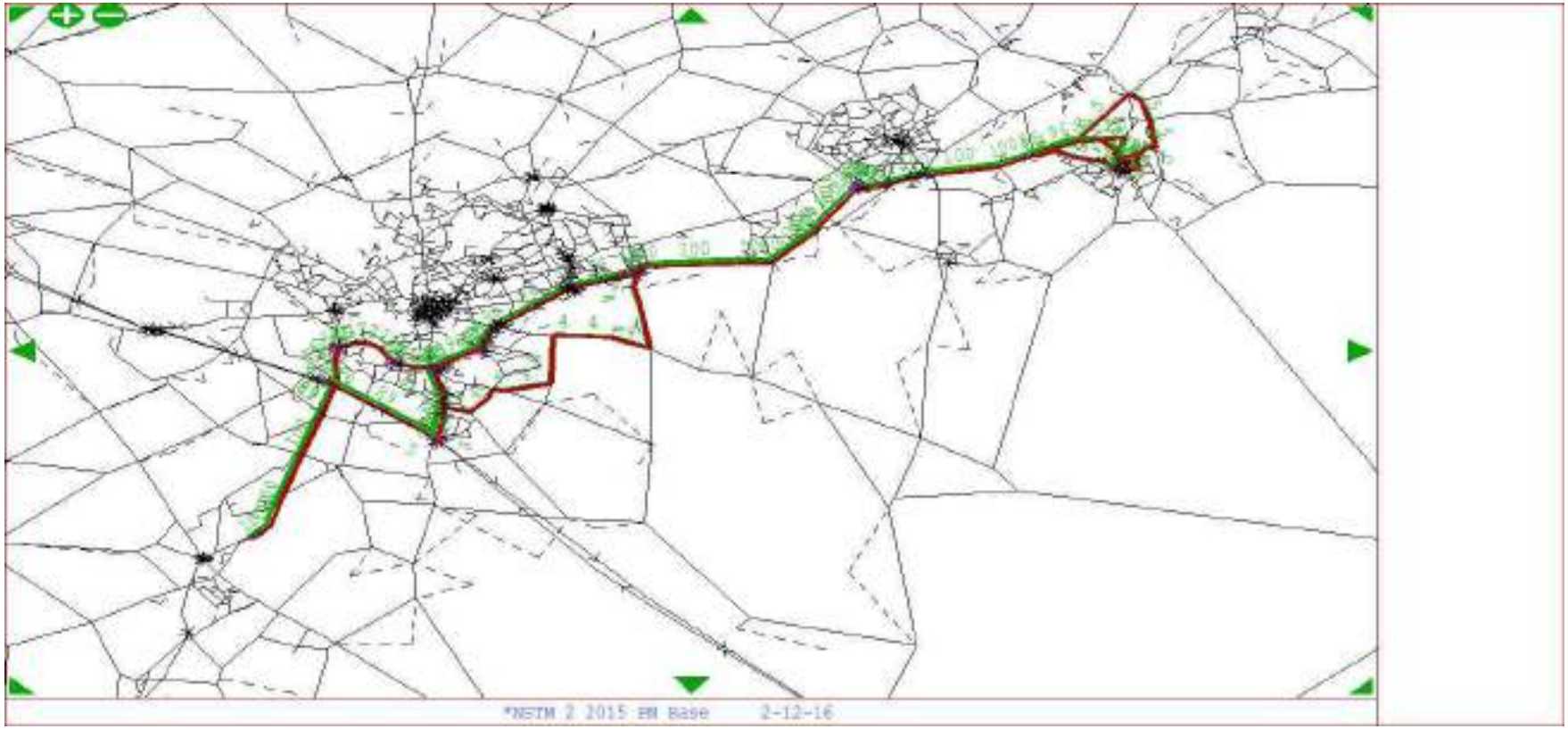
PM Peak

From Rail Central Area To Rushden - User Class 2



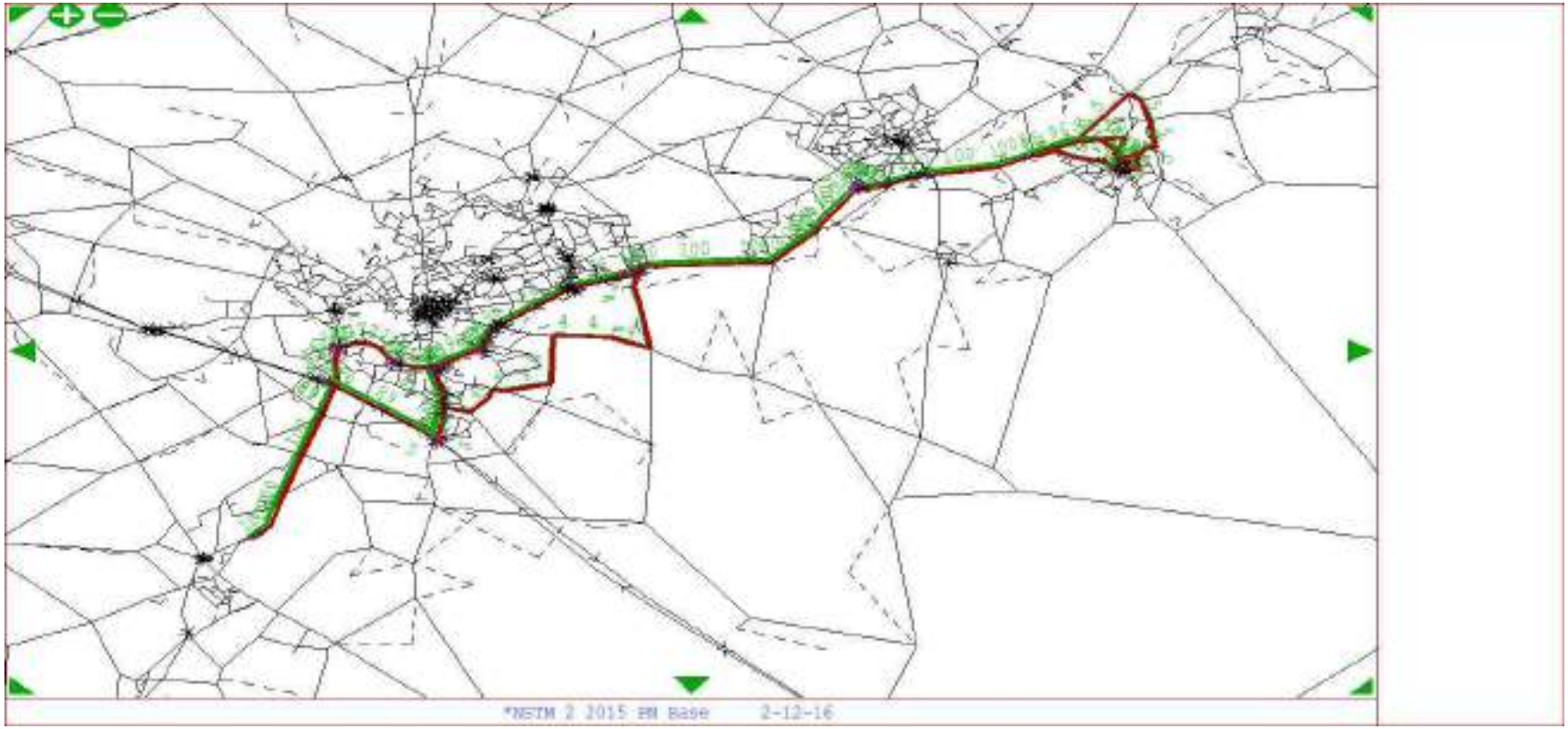
PM Peak

From Rail Central Area To Rushden - User Class 3



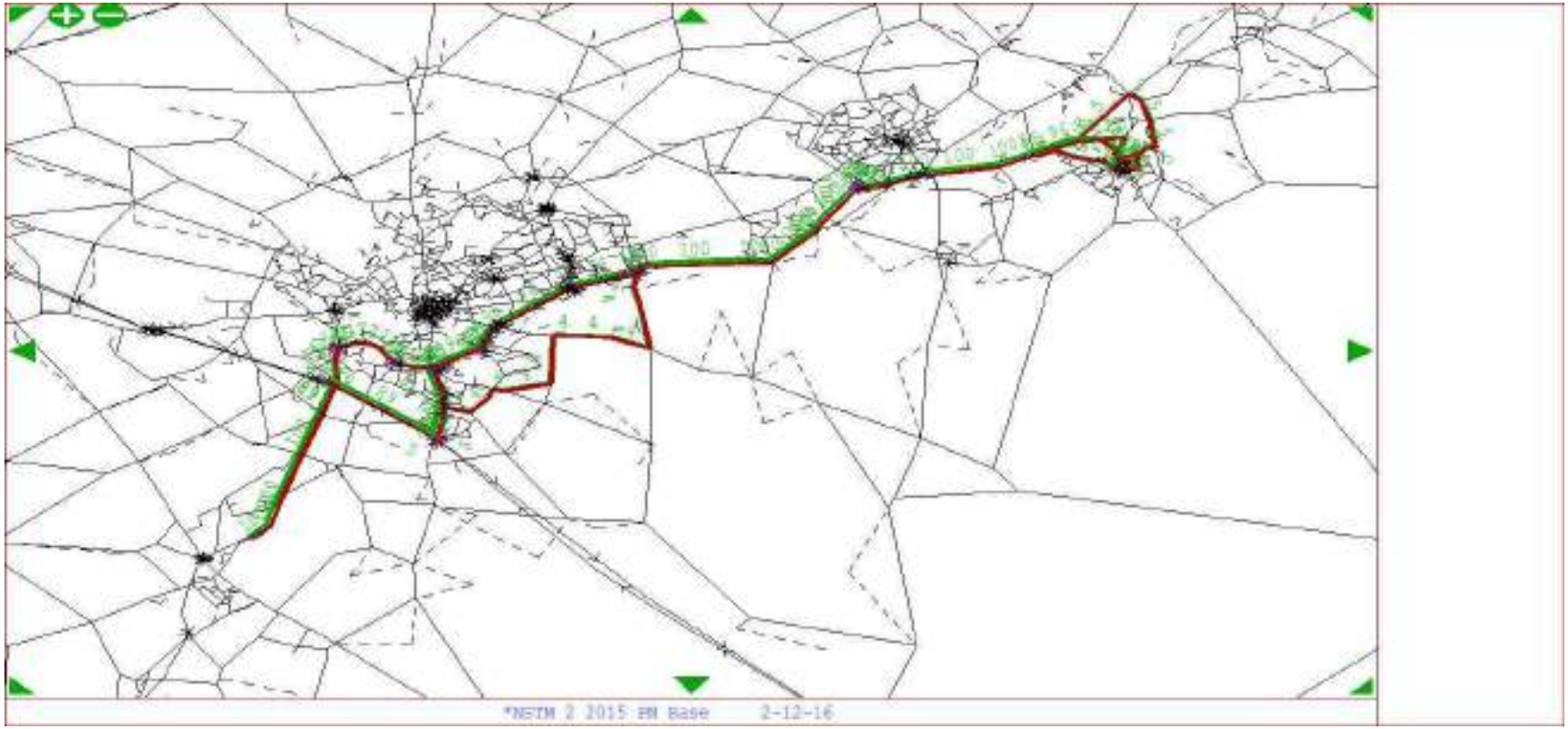
PM Peak

From Rail Central Area To Rushden - User Class 4



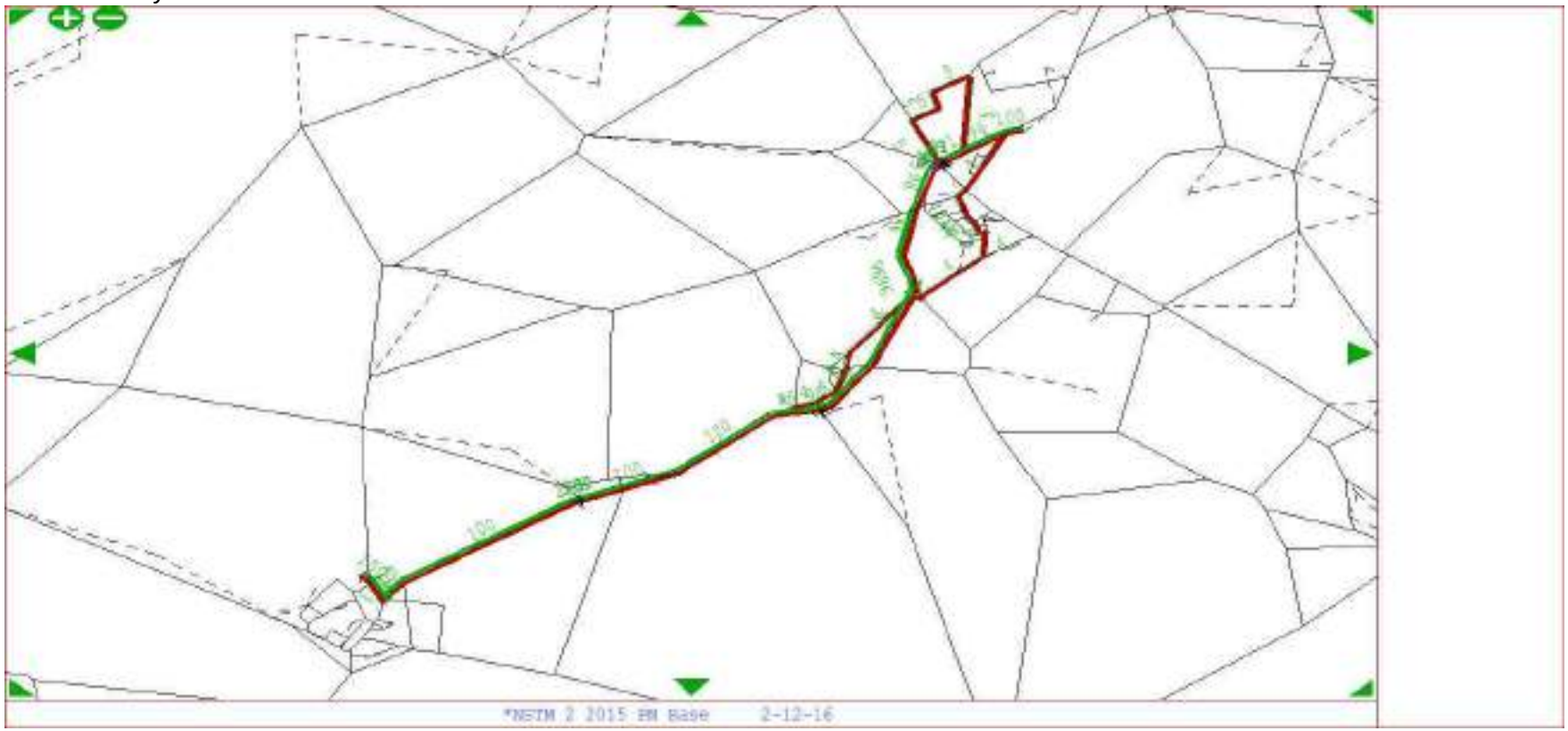
PM Peak

From Rail Central Area To Rushden - User Class 5



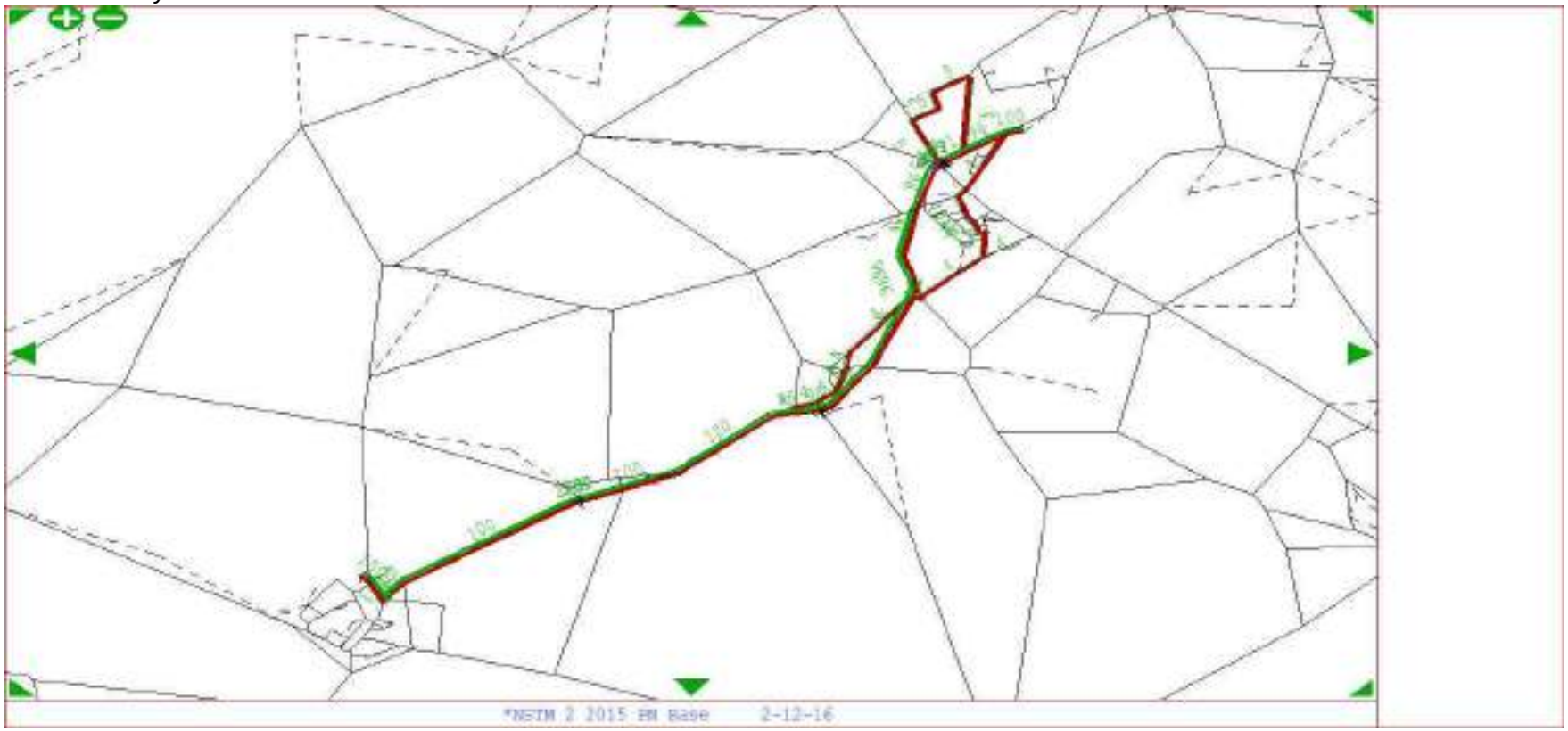
PM Peak

From Brackley To Rail Central Area - User Class 1



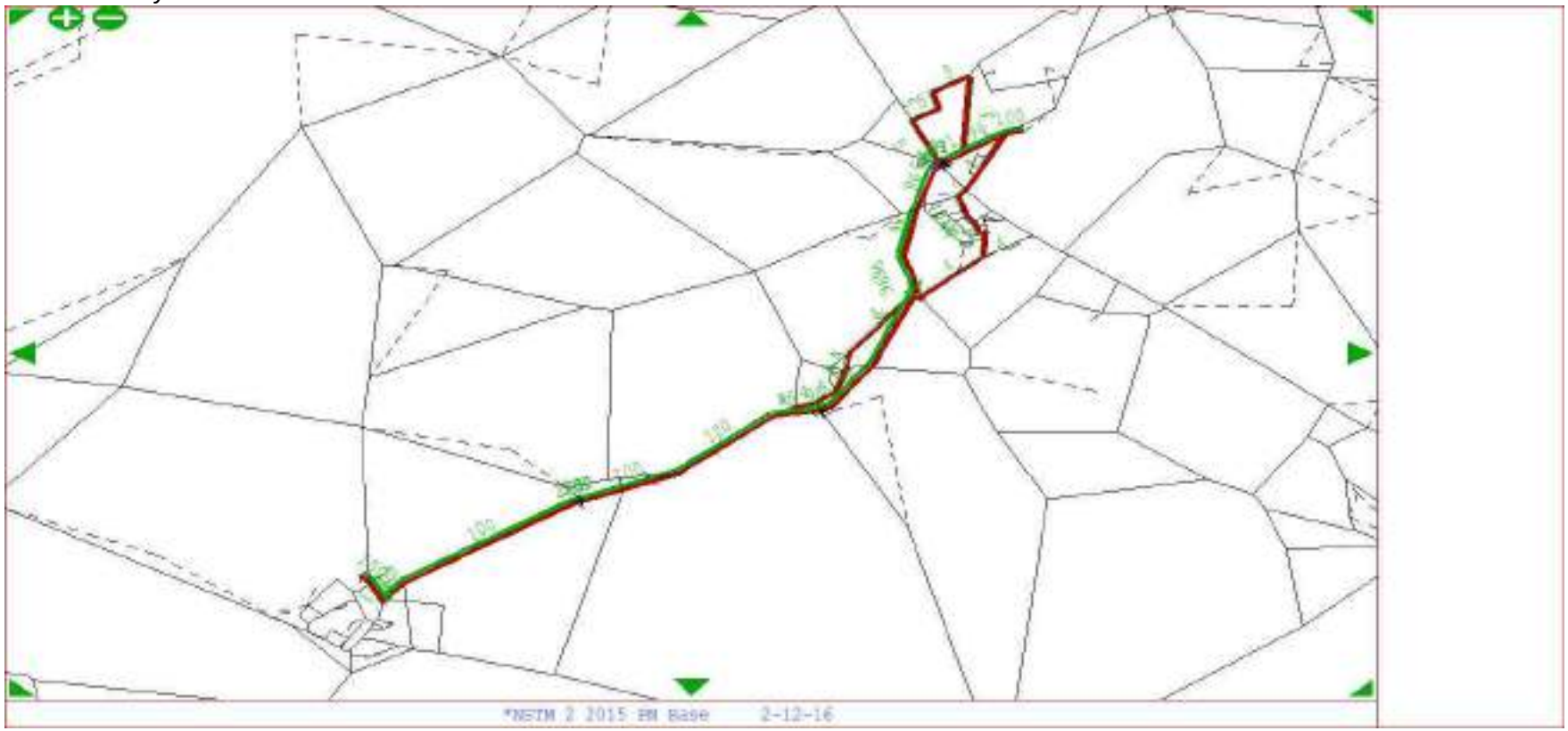
PM Peak

From Brackley To Rail Central Area - User Class 2



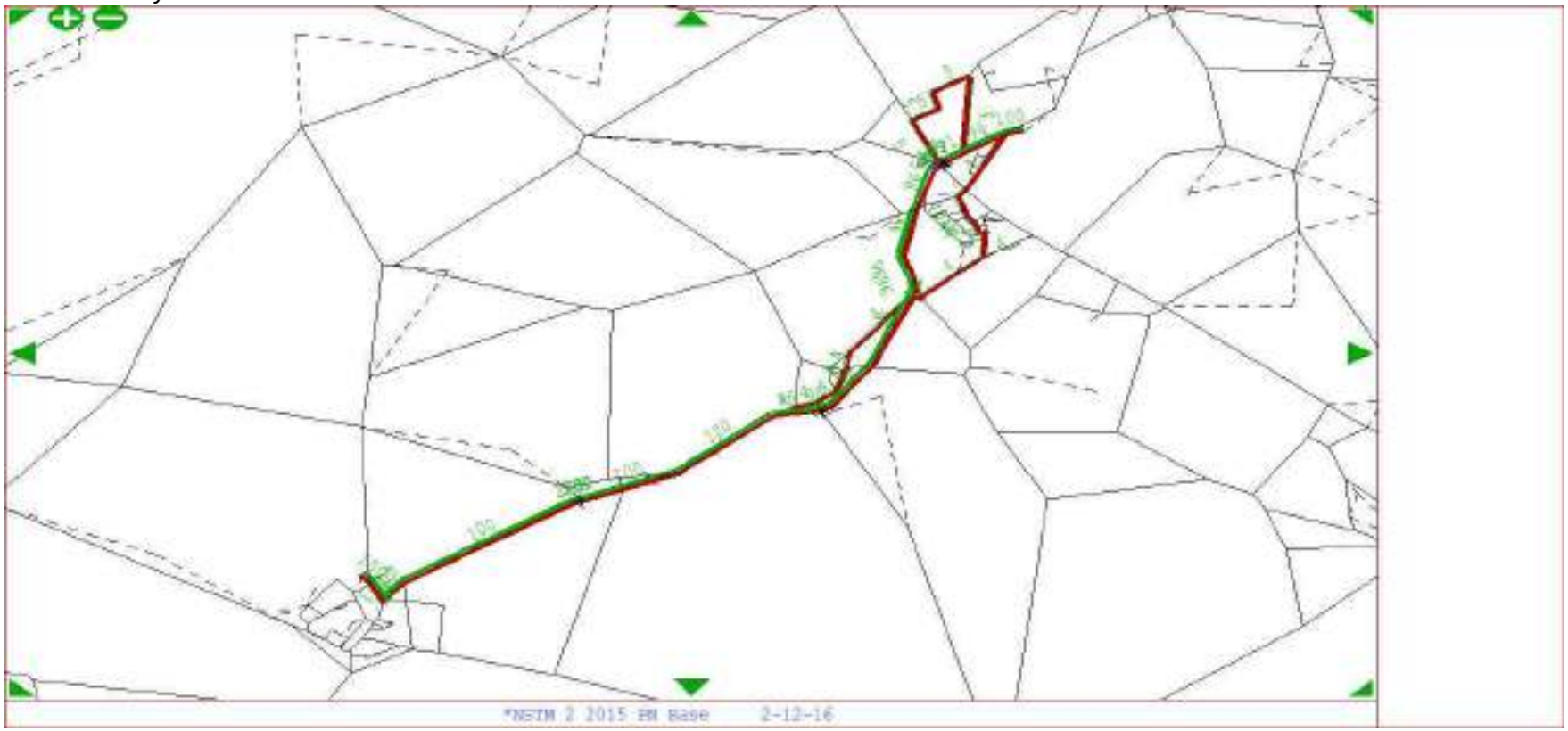
PM Peak

From Brackley To Rail Central Area - User Class 3



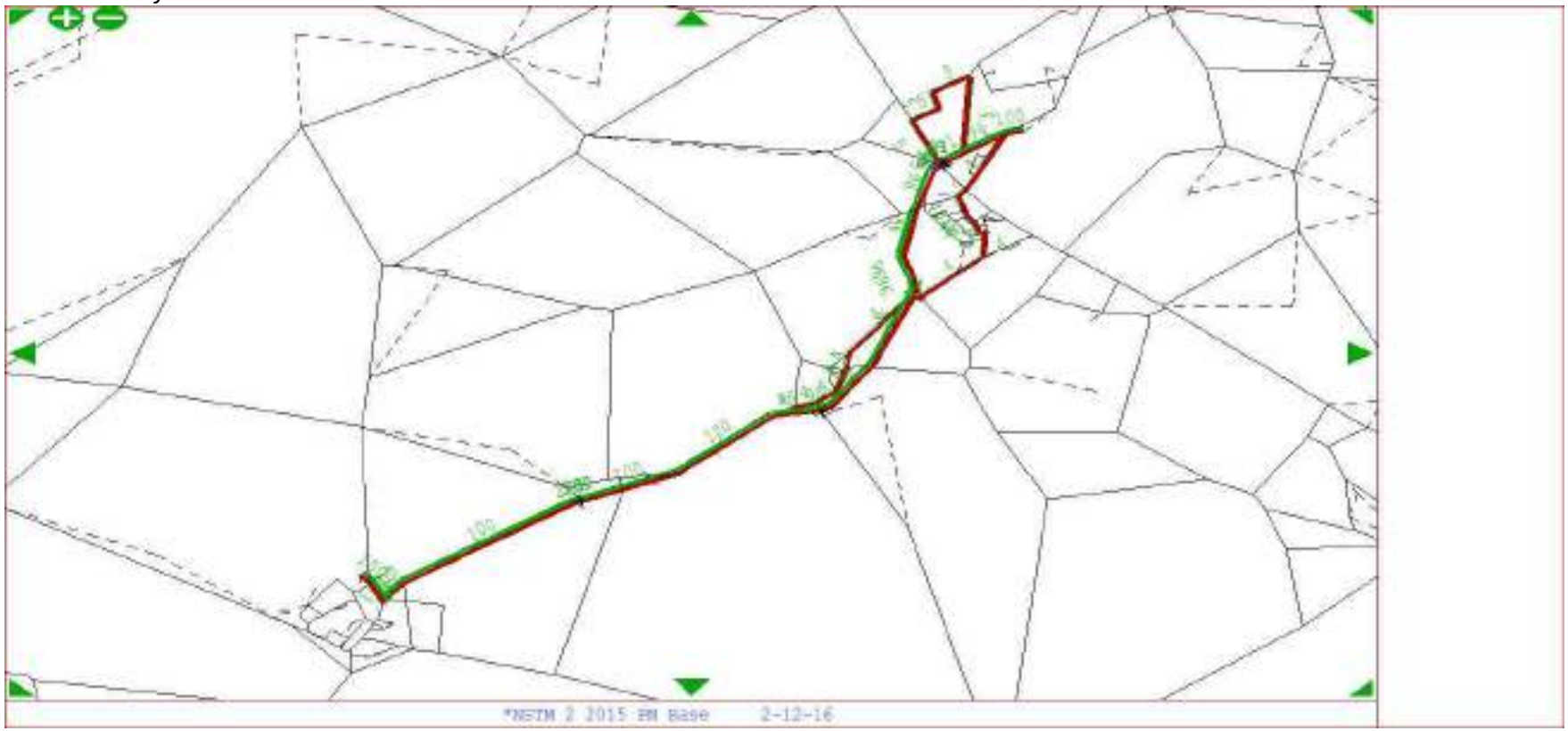
PM Peak

From Brackley To Rail Central Area - User Class 4



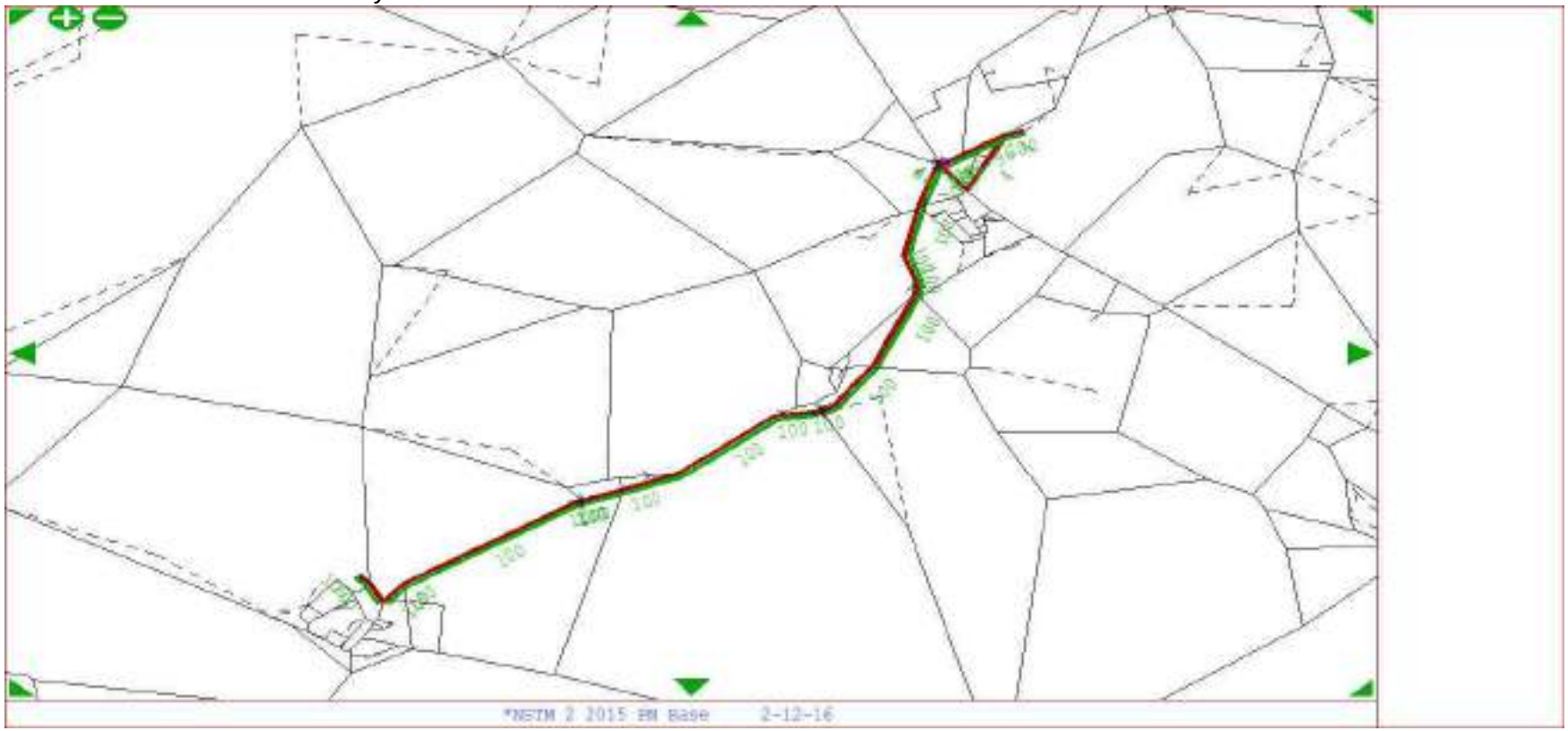
PM Peak

From Brackley To Rail Central Area - User Class 5



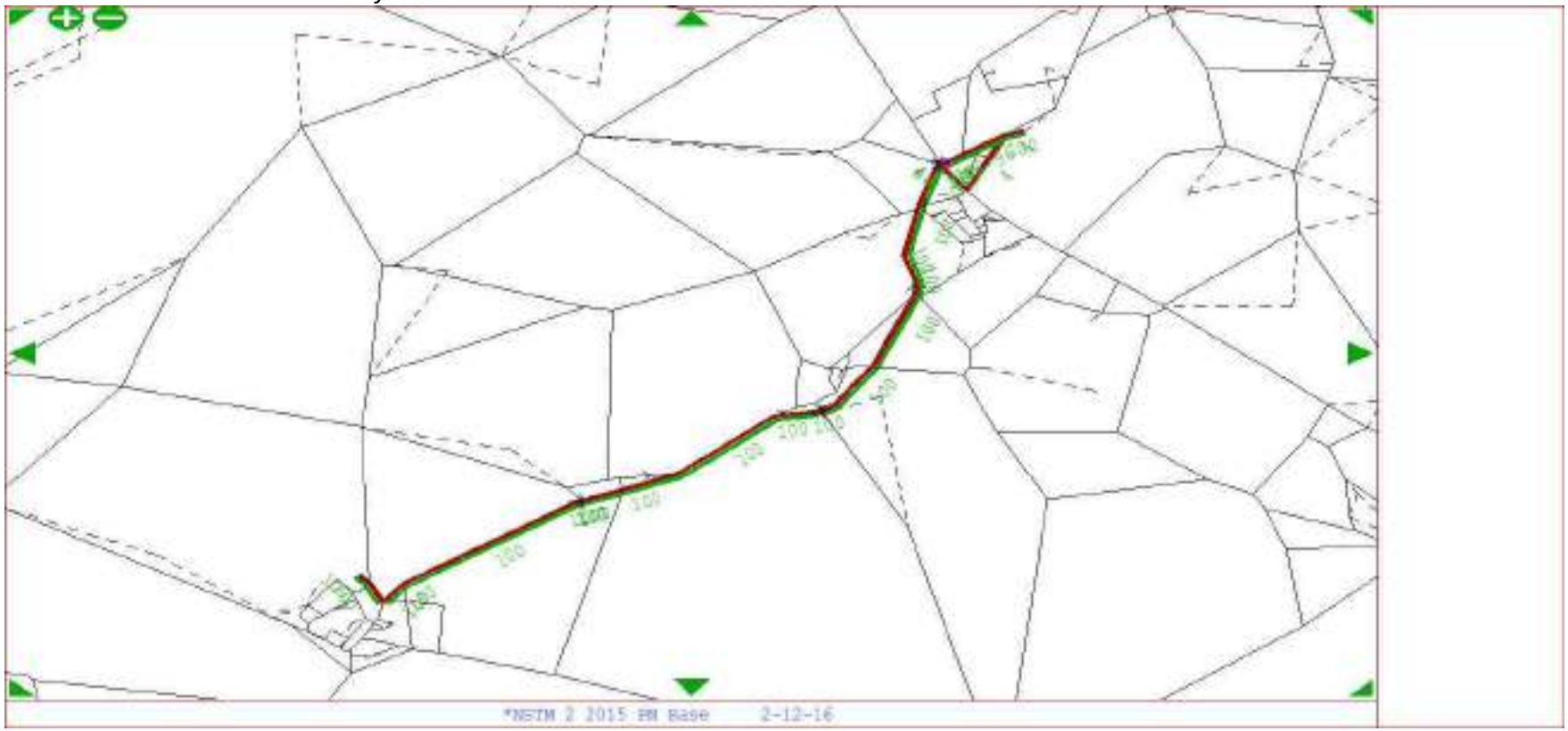
PM Peak

From Rail Central Area To Brackley - User Class 1



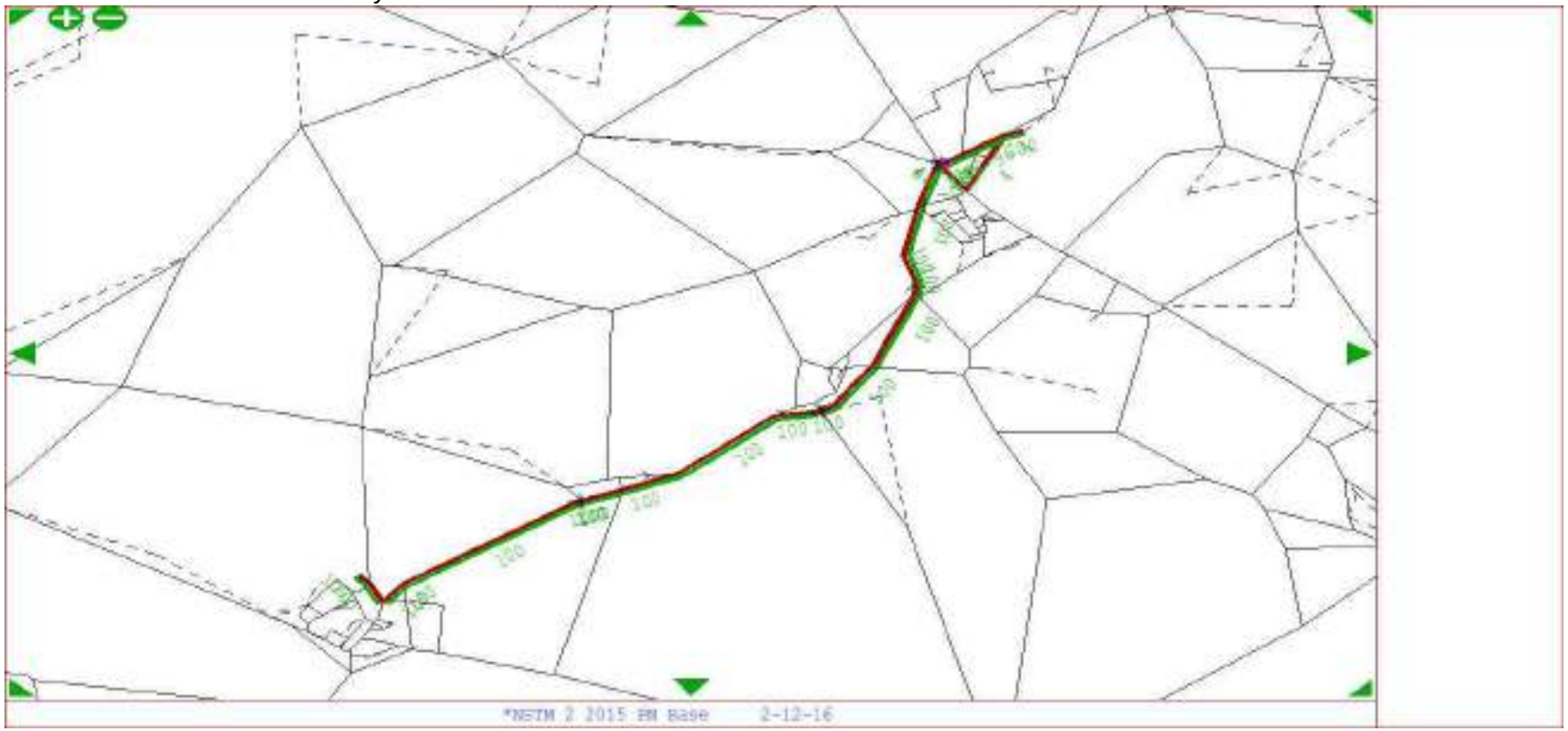
PM Peak

From Rail Central Area To Brackley - User Class 2



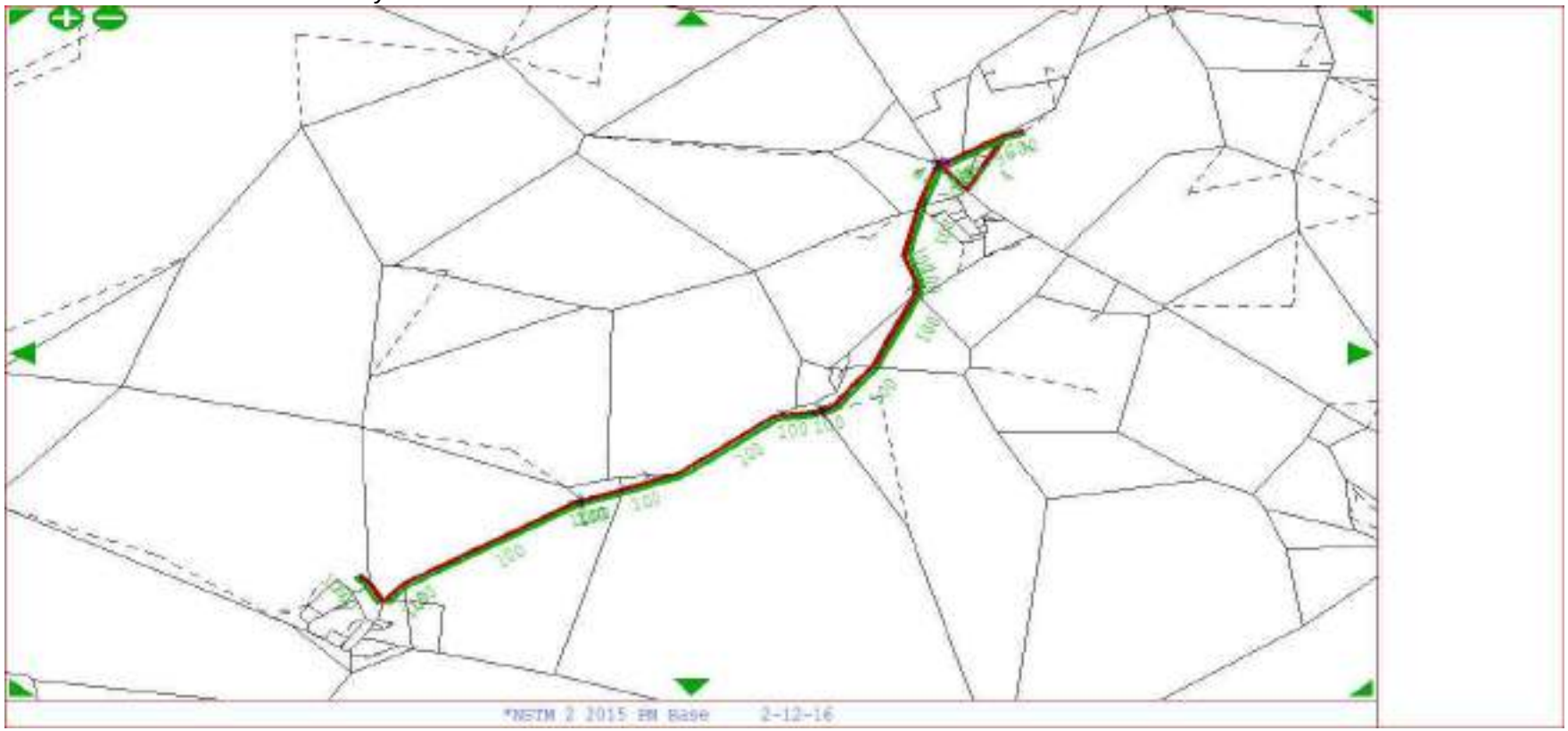
PM Peak

From Rail Central Area To Brackley - User Class 3



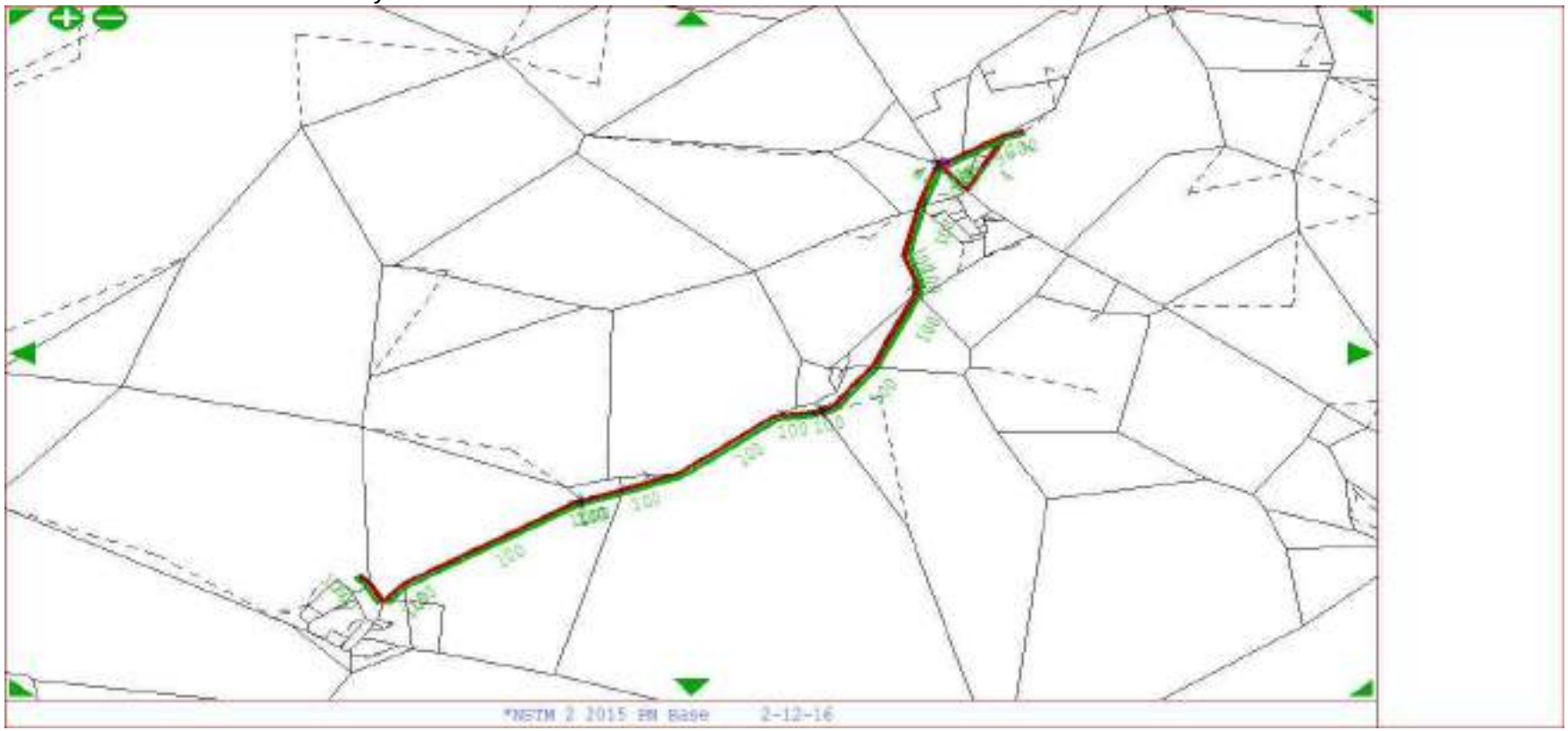
PM Peak

From Rail Central Area To Brackley - User Class 4



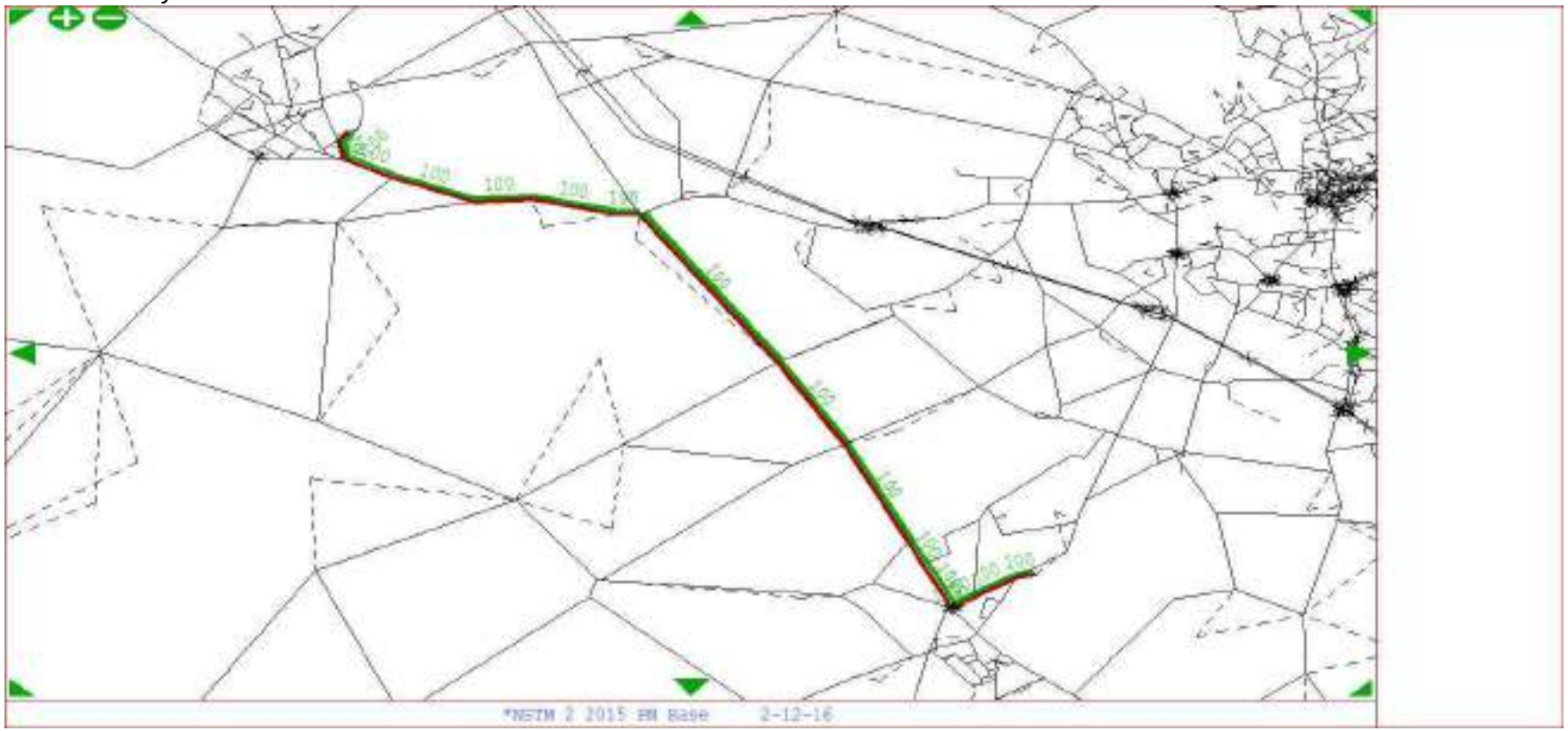
PM Peak

From Rail Central Area To Brackley - User Class 5



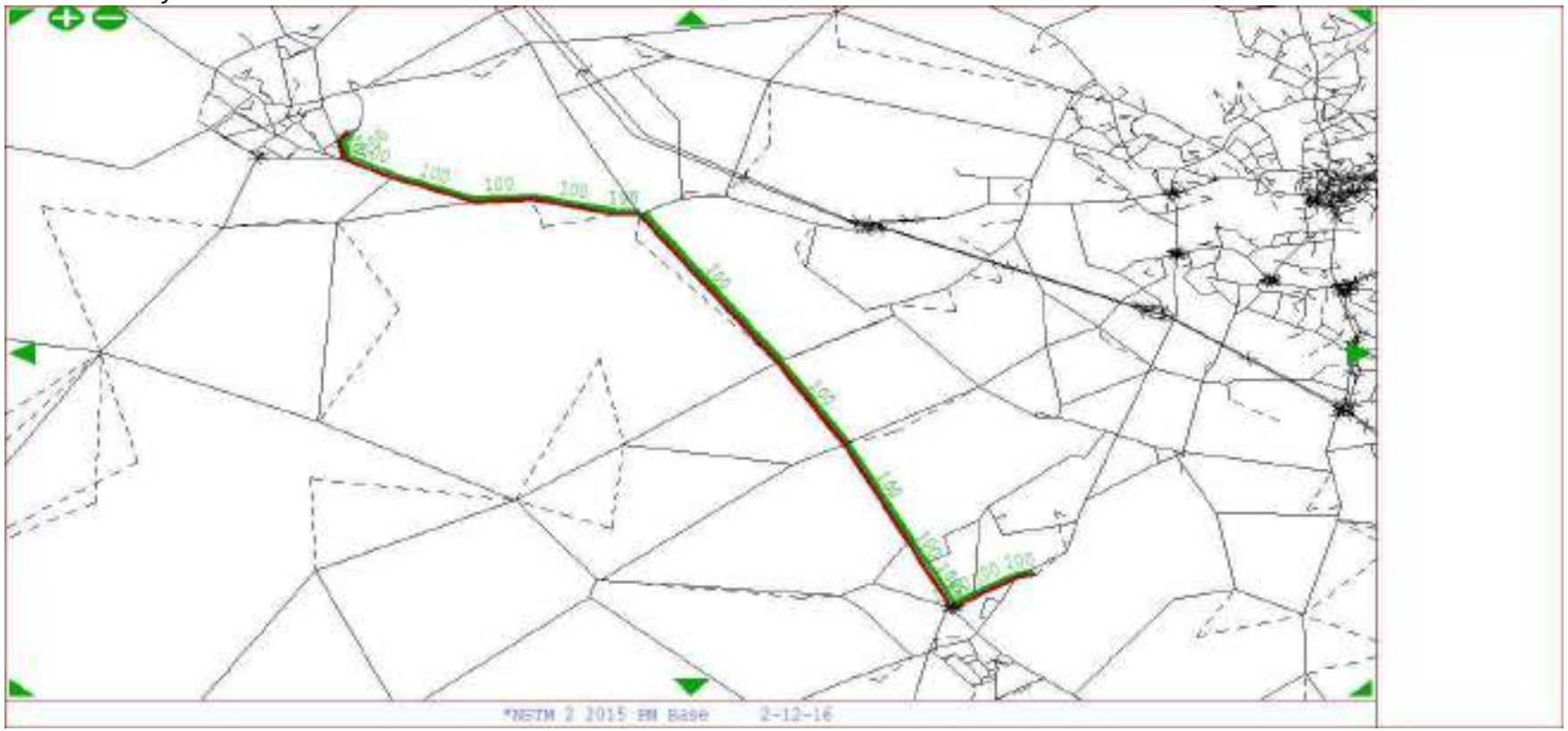
PM Peak

From Daventry To Rail Central Area - User Class 1



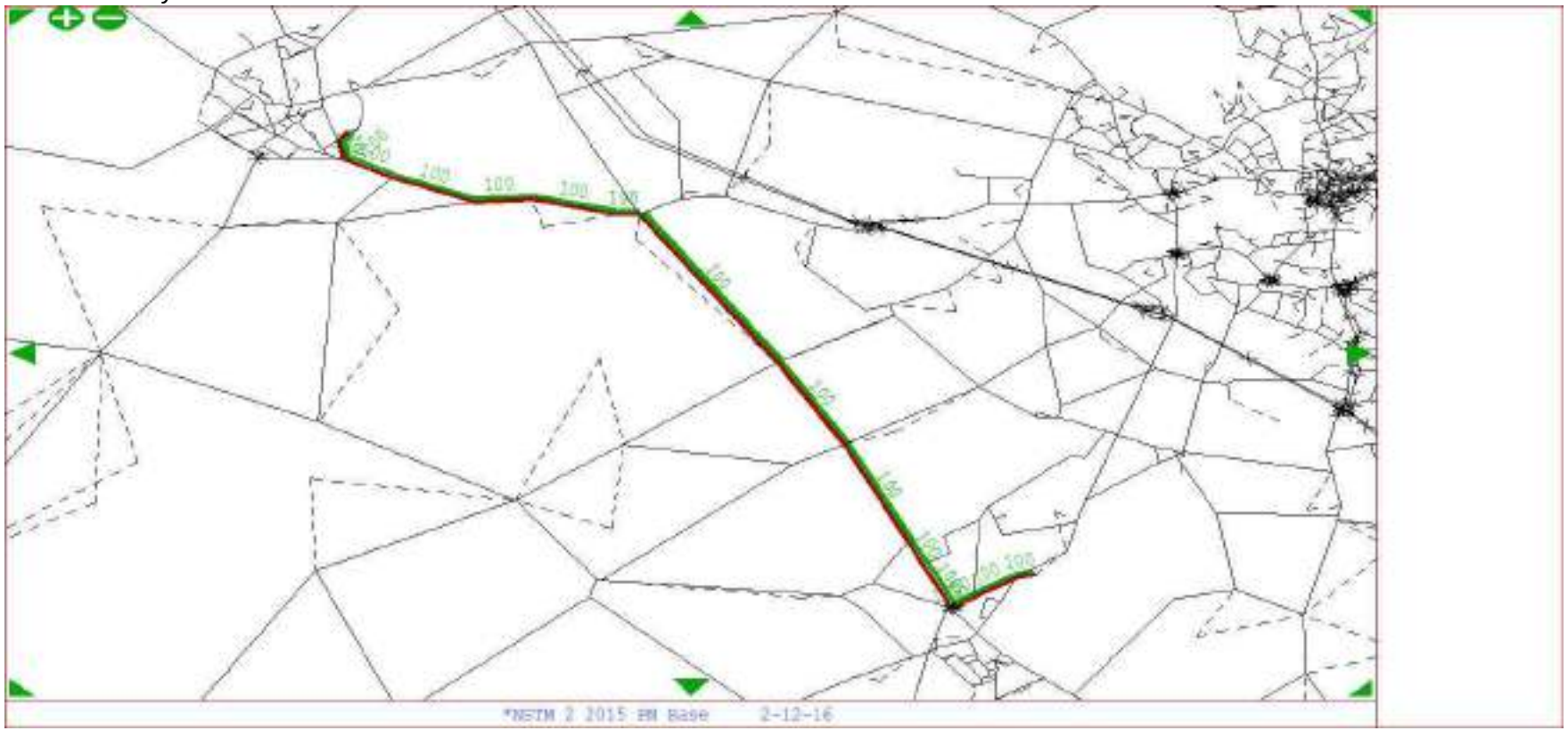
PM Peak

From Daventry To Rail Central Area - User Class 2



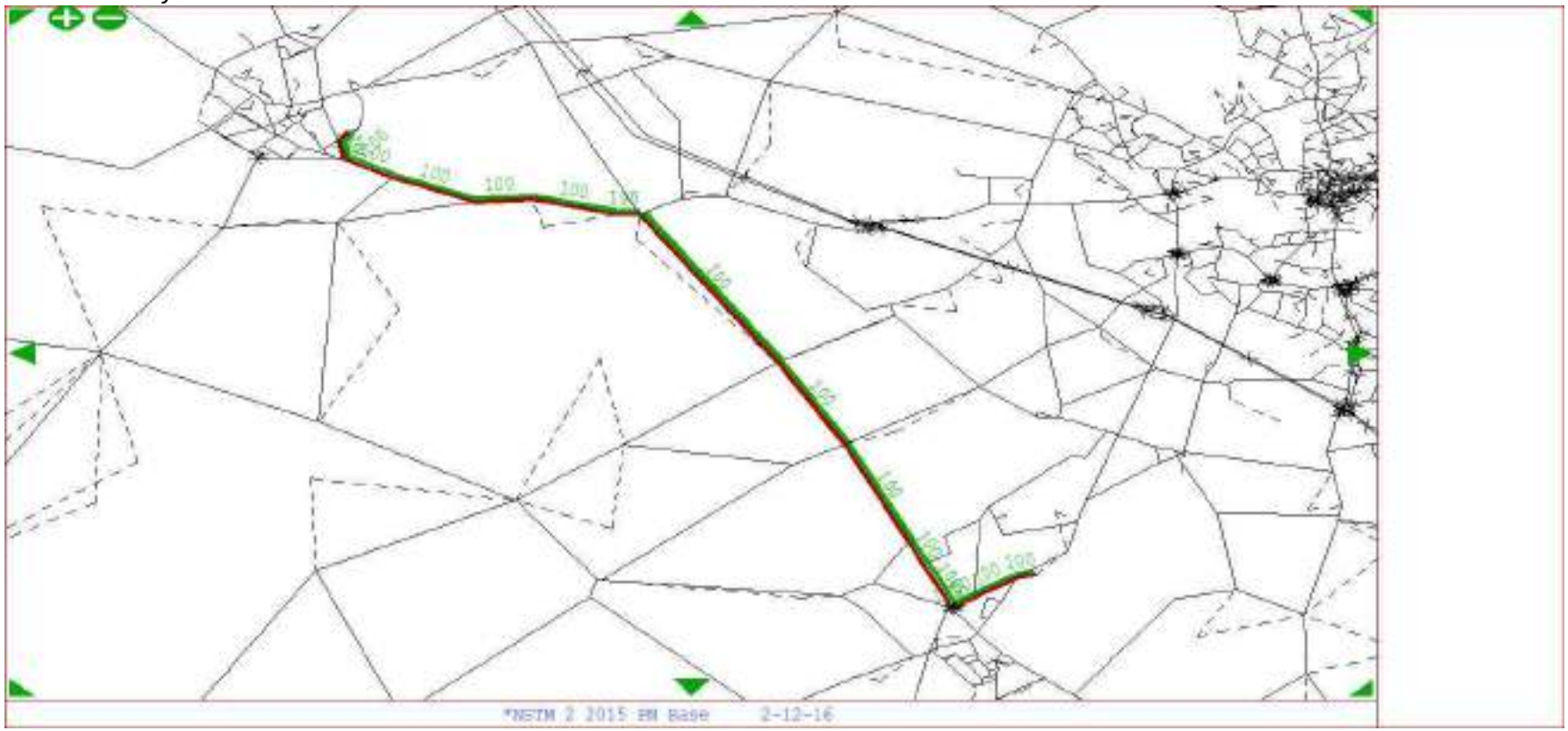
PM Peak

From Daventry To Rail Central Area - User Class 3



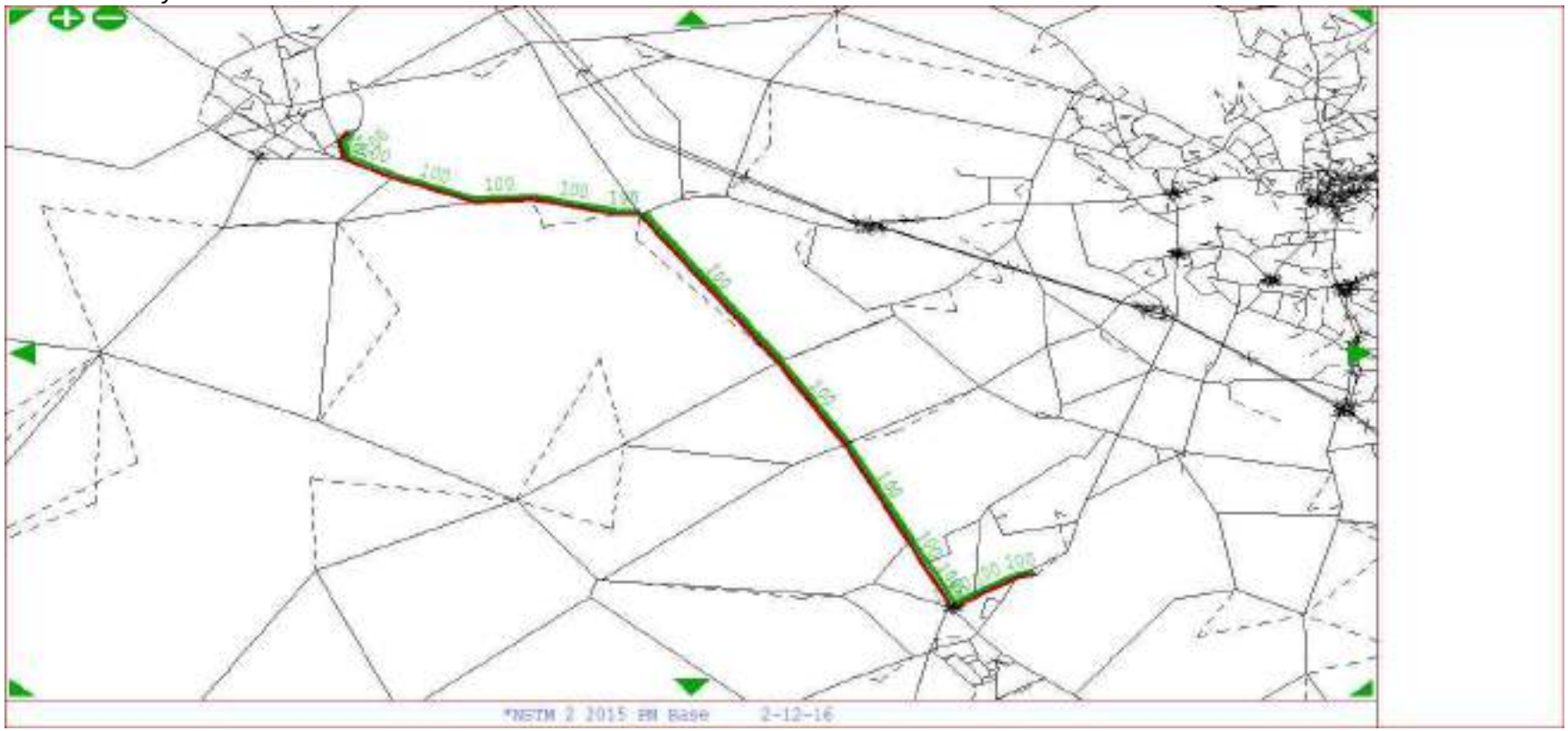
PM Peak

From Daventry To Rail Central Area - User Class 4



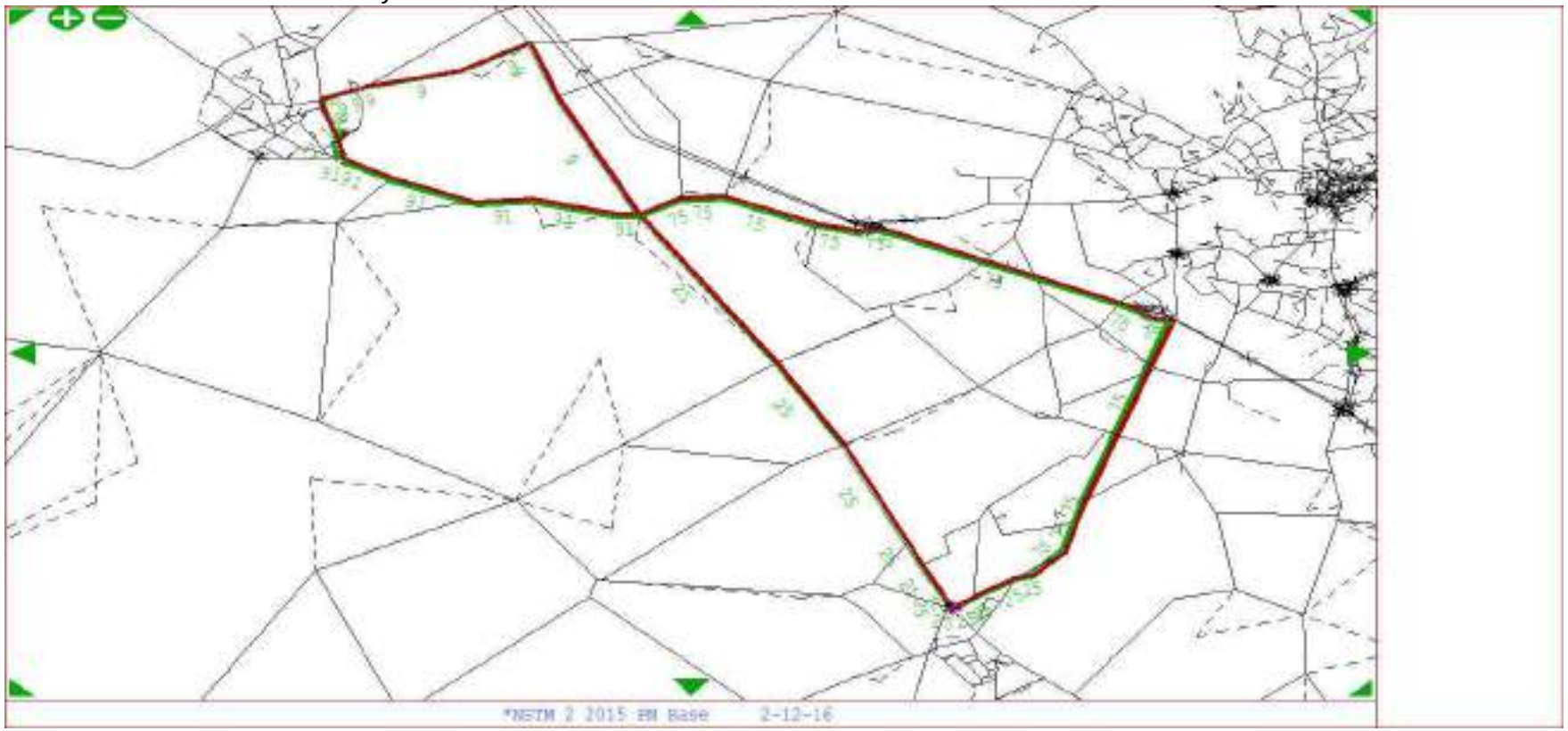
PM Peak

From Daventry To Rail Central Area - User Class 5



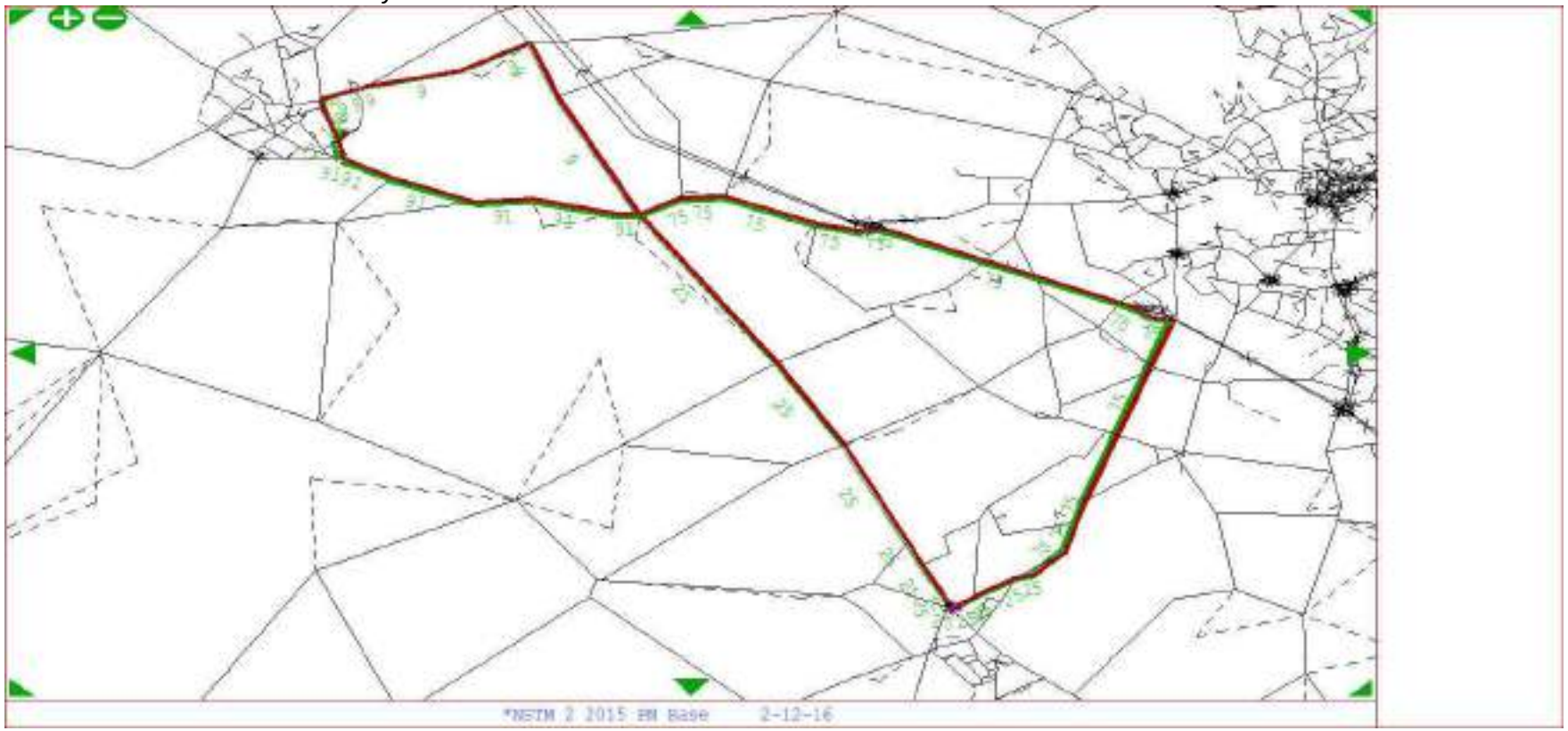
PM Peak

From Rail Central Area To Daventry - User Class 1



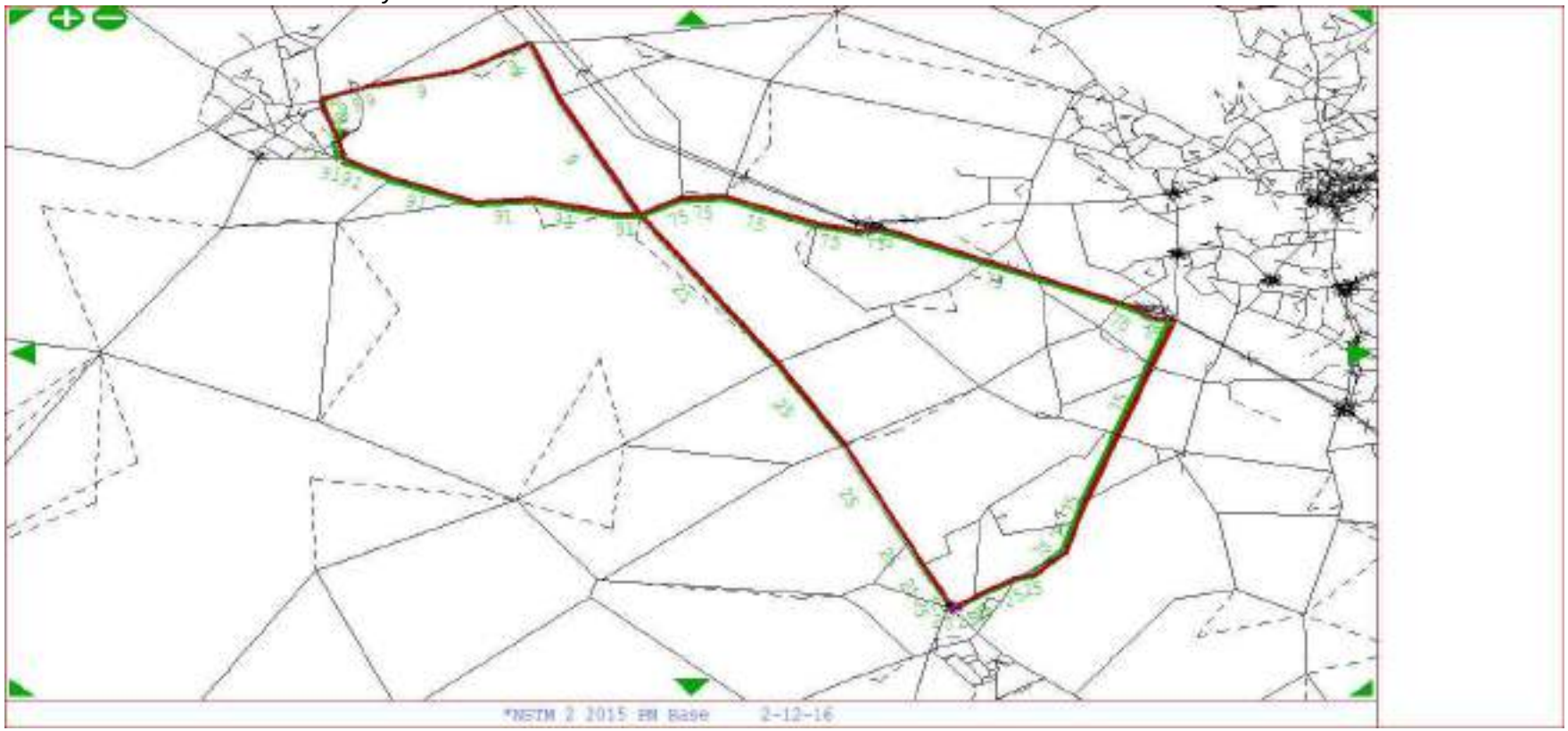
PM Peak

From Rail Central Area To Daventry - User Class 2



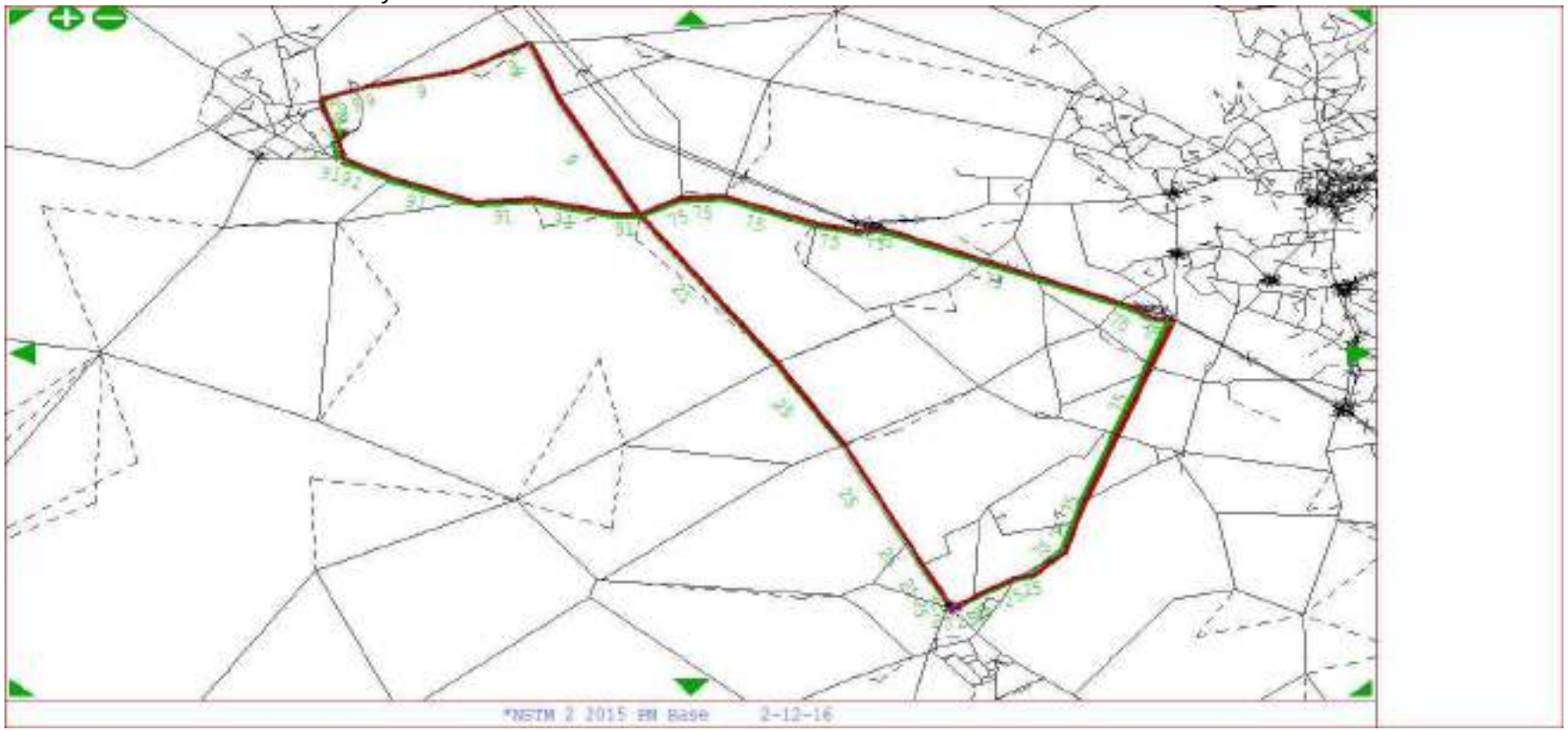
PM Peak

From Rail Central Area To Daventry - User Class 3



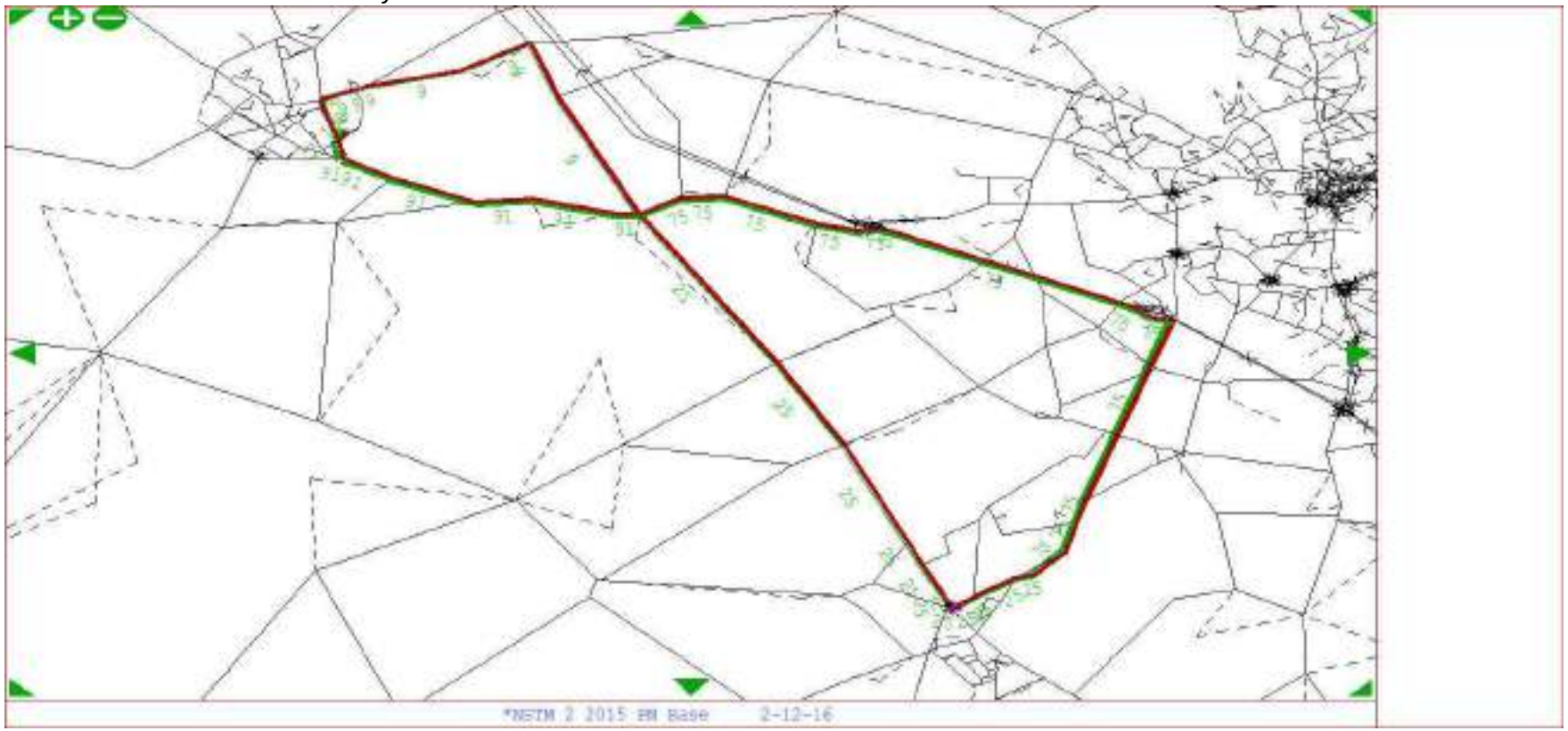
PM Peak

From Rail Central Area To Daventry - User Class 4



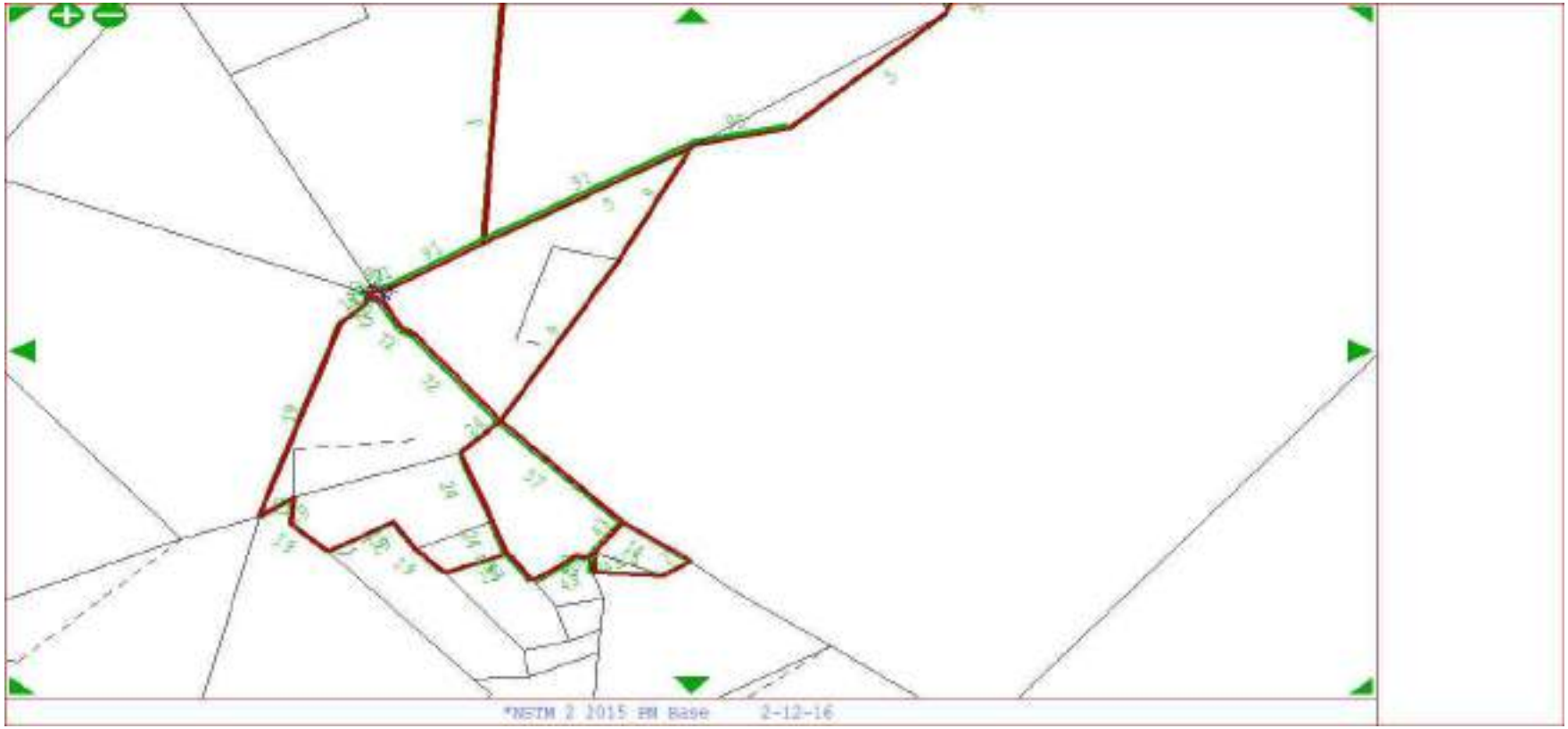
PM Peak

From Rail Central Area To Daventry - User Class 5



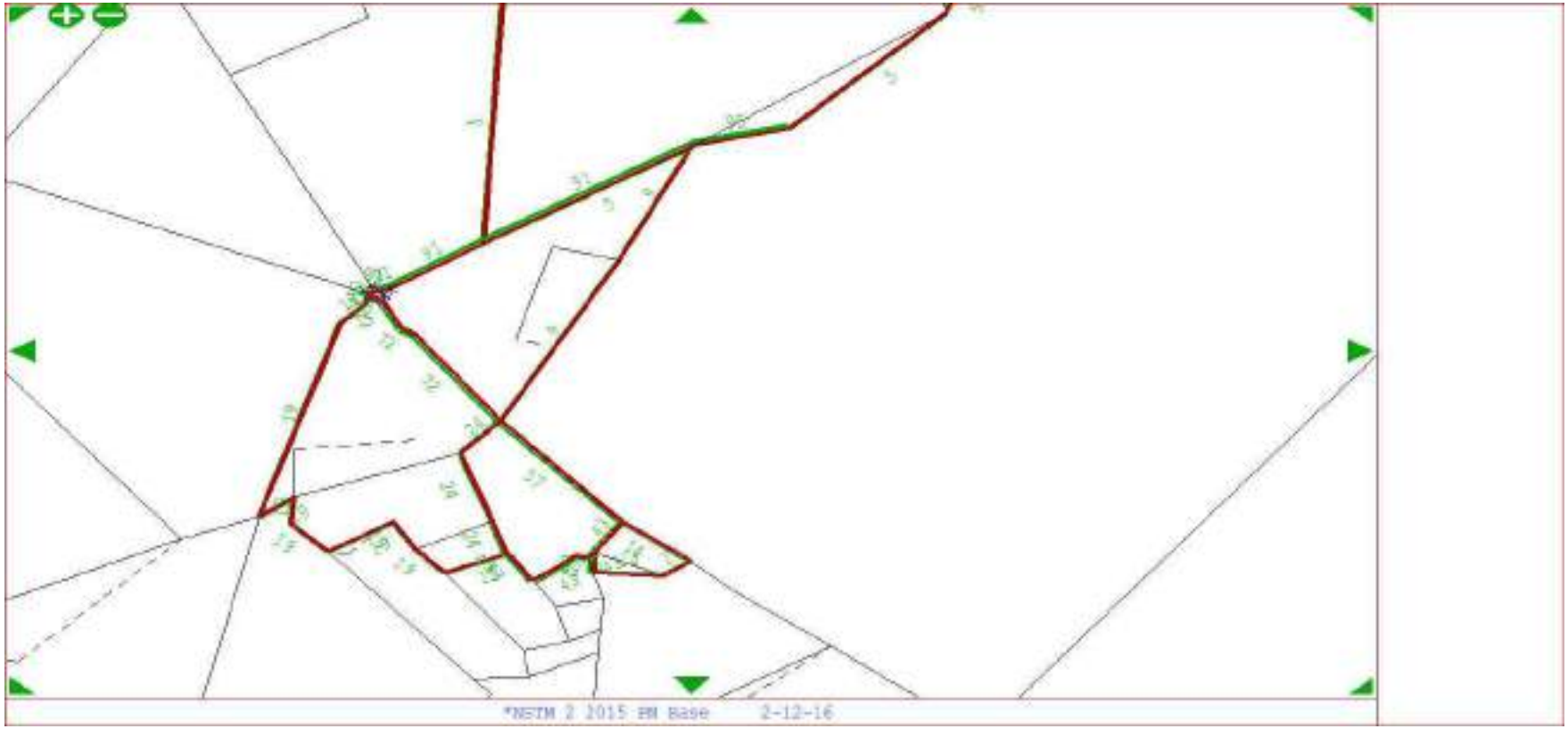
PM Peak

From Towcester To Rail Central Area - User Class 1



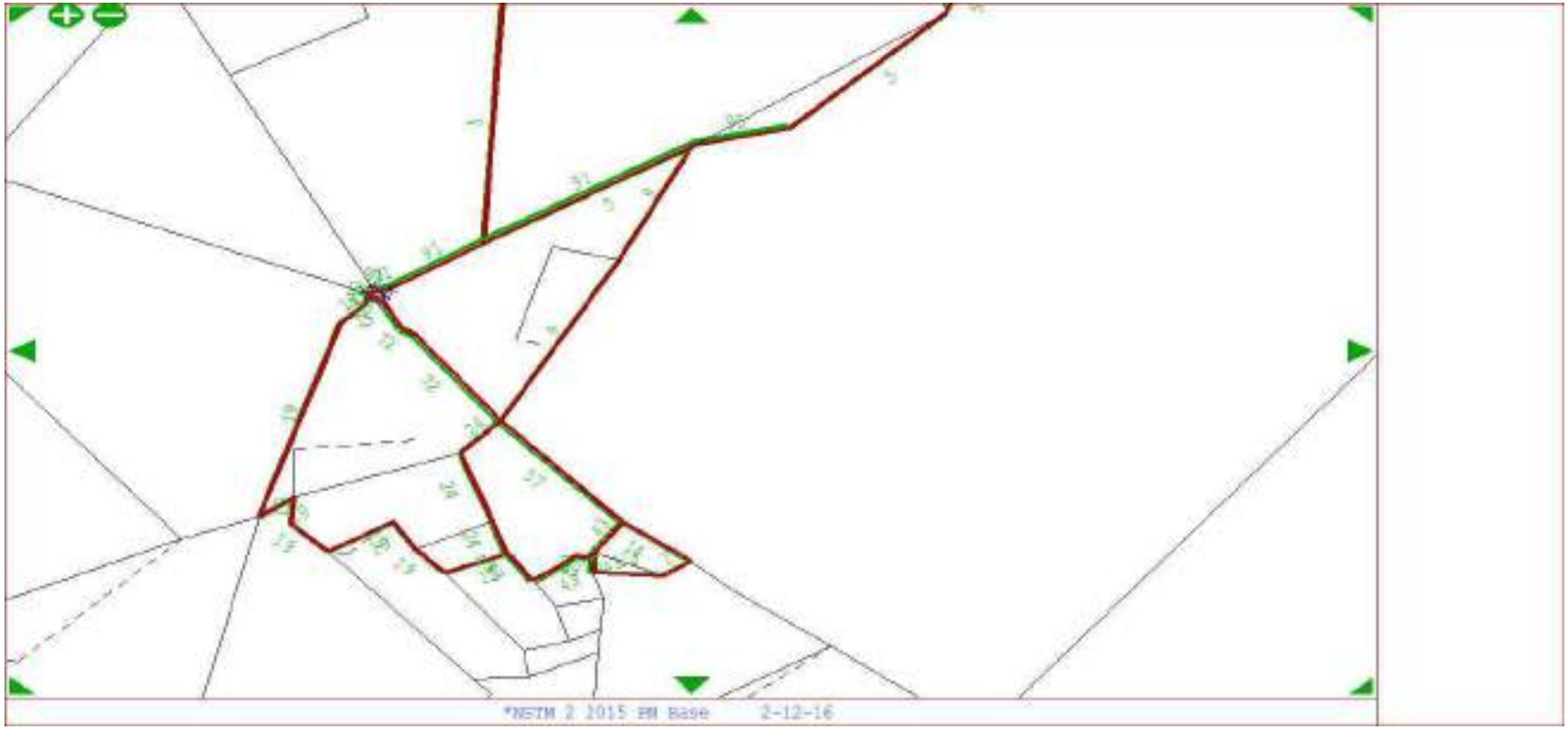
PM Peak

From Towcester To Rail Central Area - User Class 2



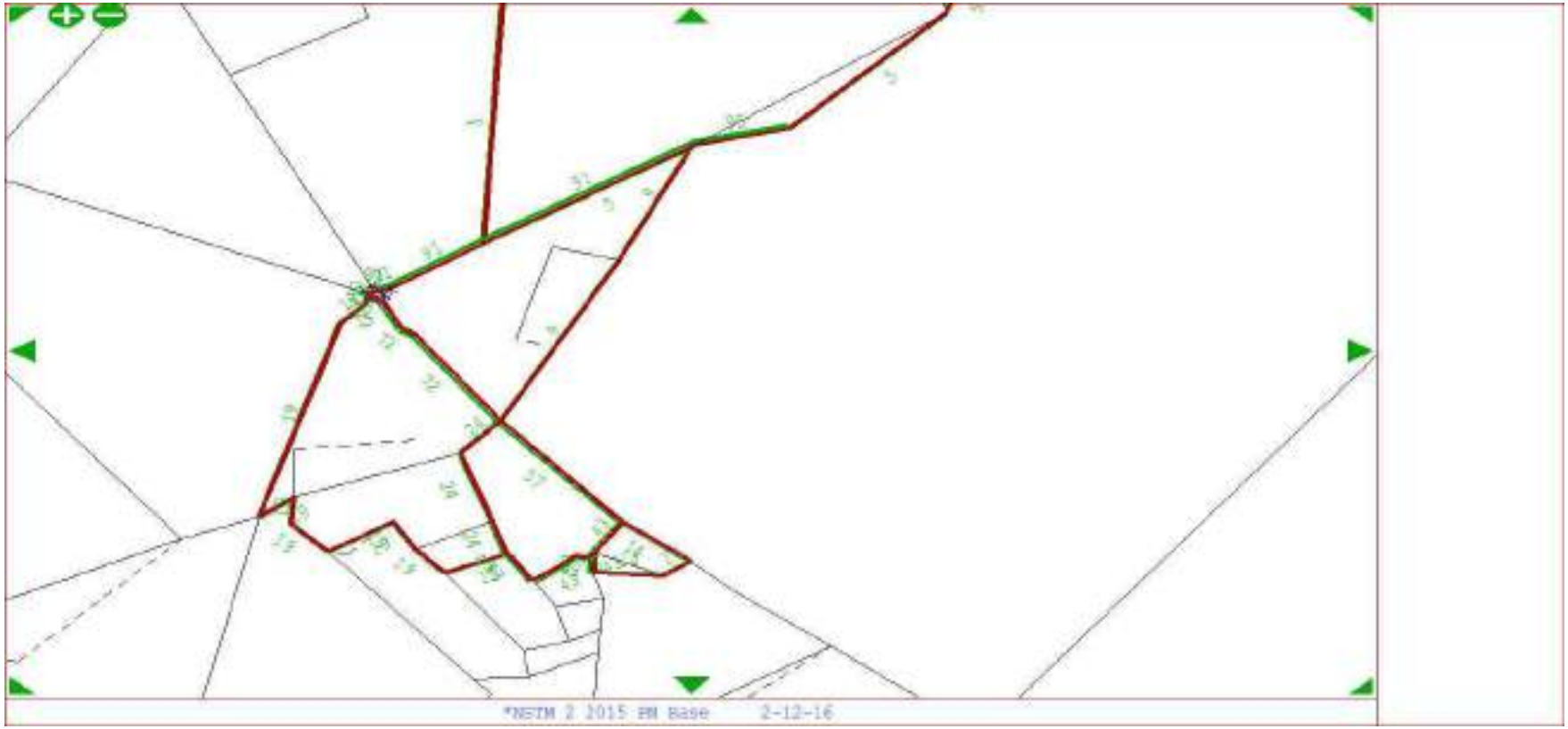
PM Peak

From Towcester To Rail Central Area - User Class 3



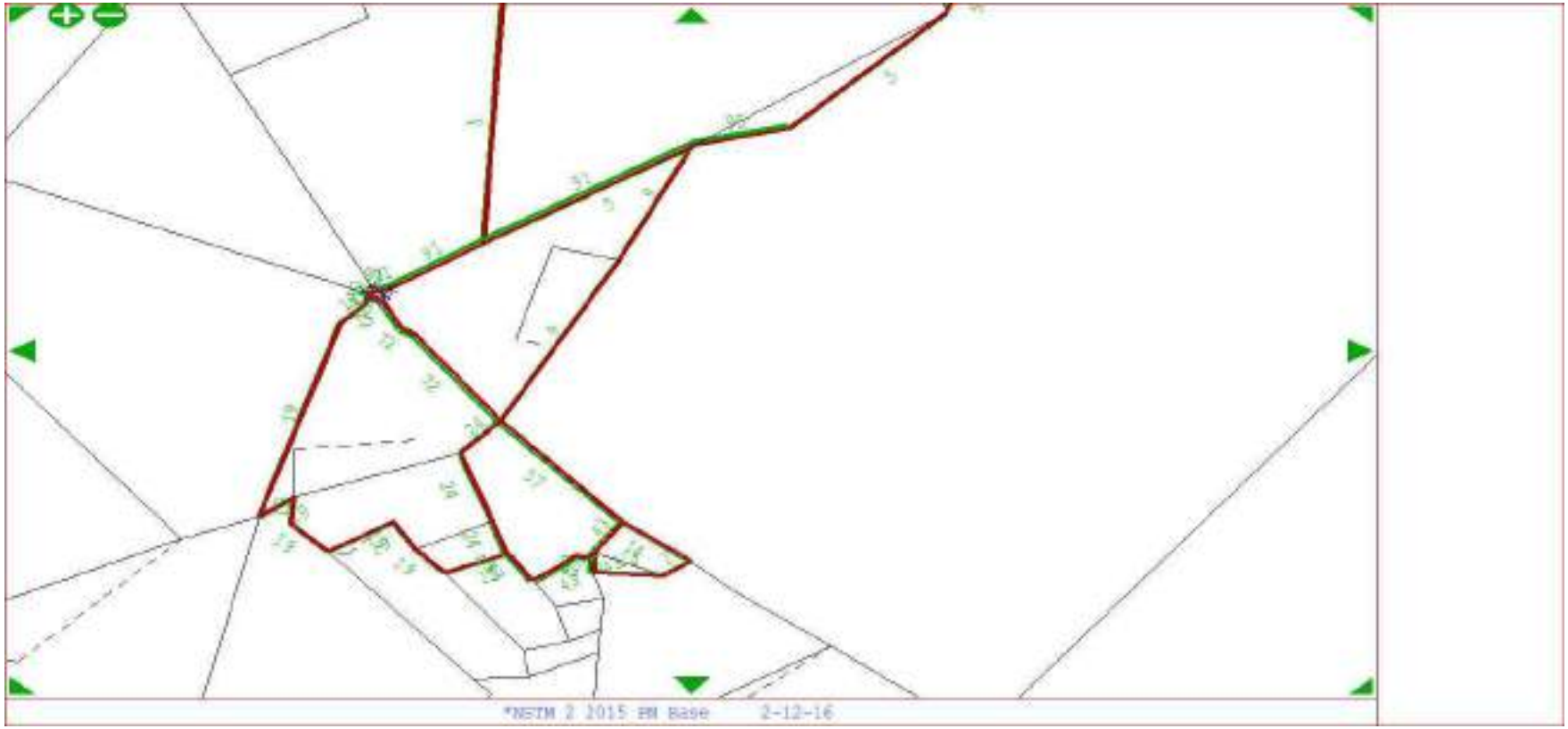
PM Peak

From Towcester To Rail Central Area - User Class 4



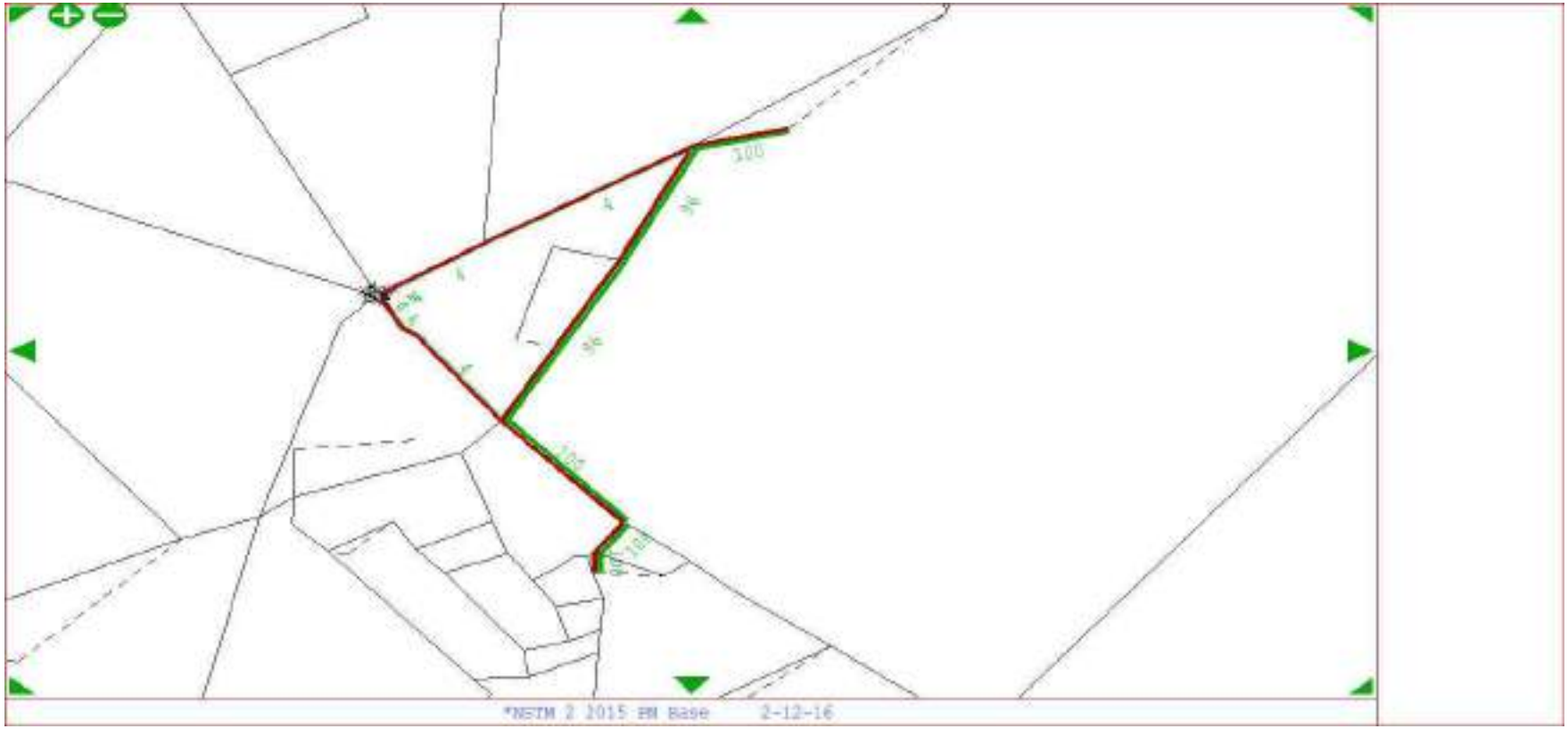
PM Peak

From Towcester To Rail Central Area - User Class 5



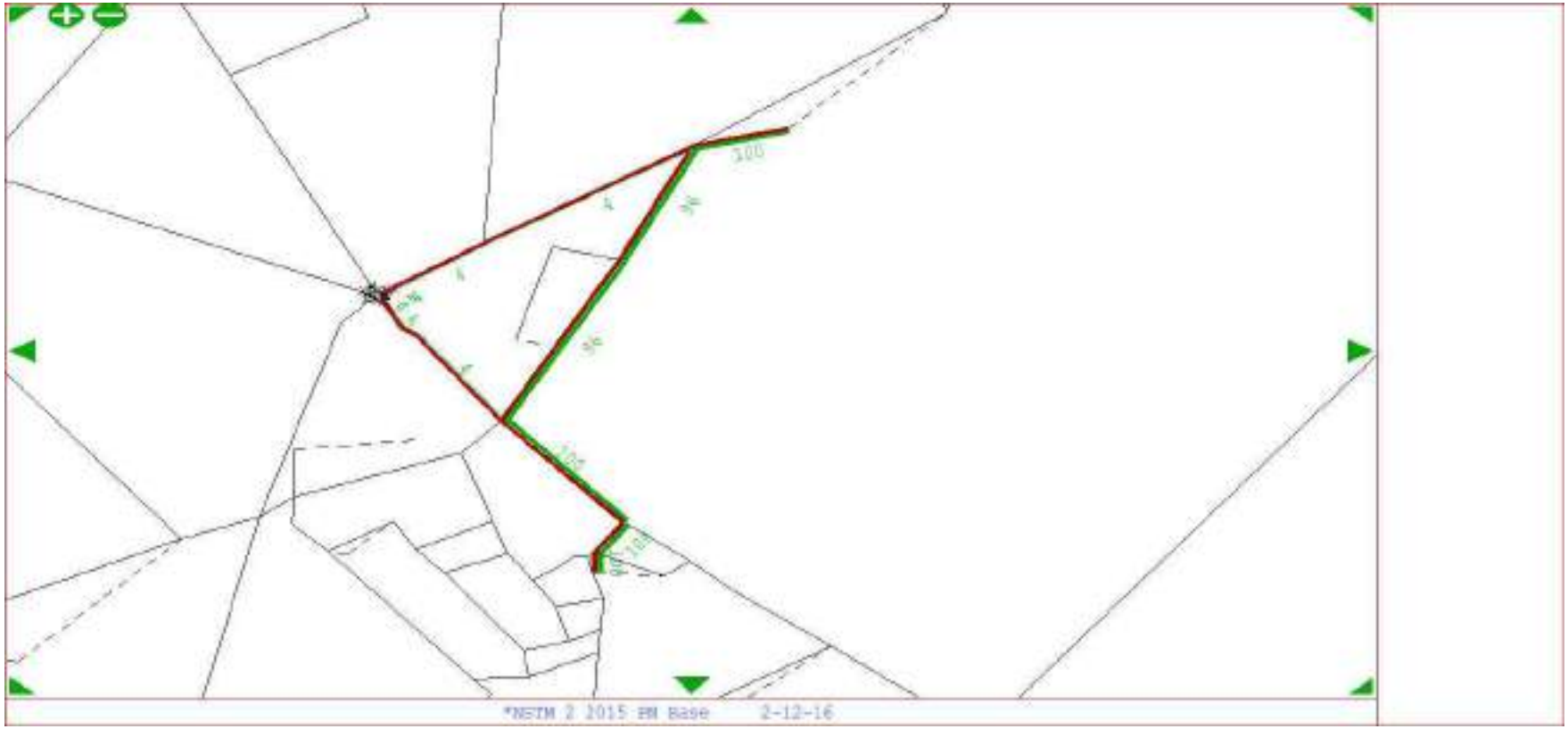
PM Peak

From Rail Central Area To Towcester - User Class 1



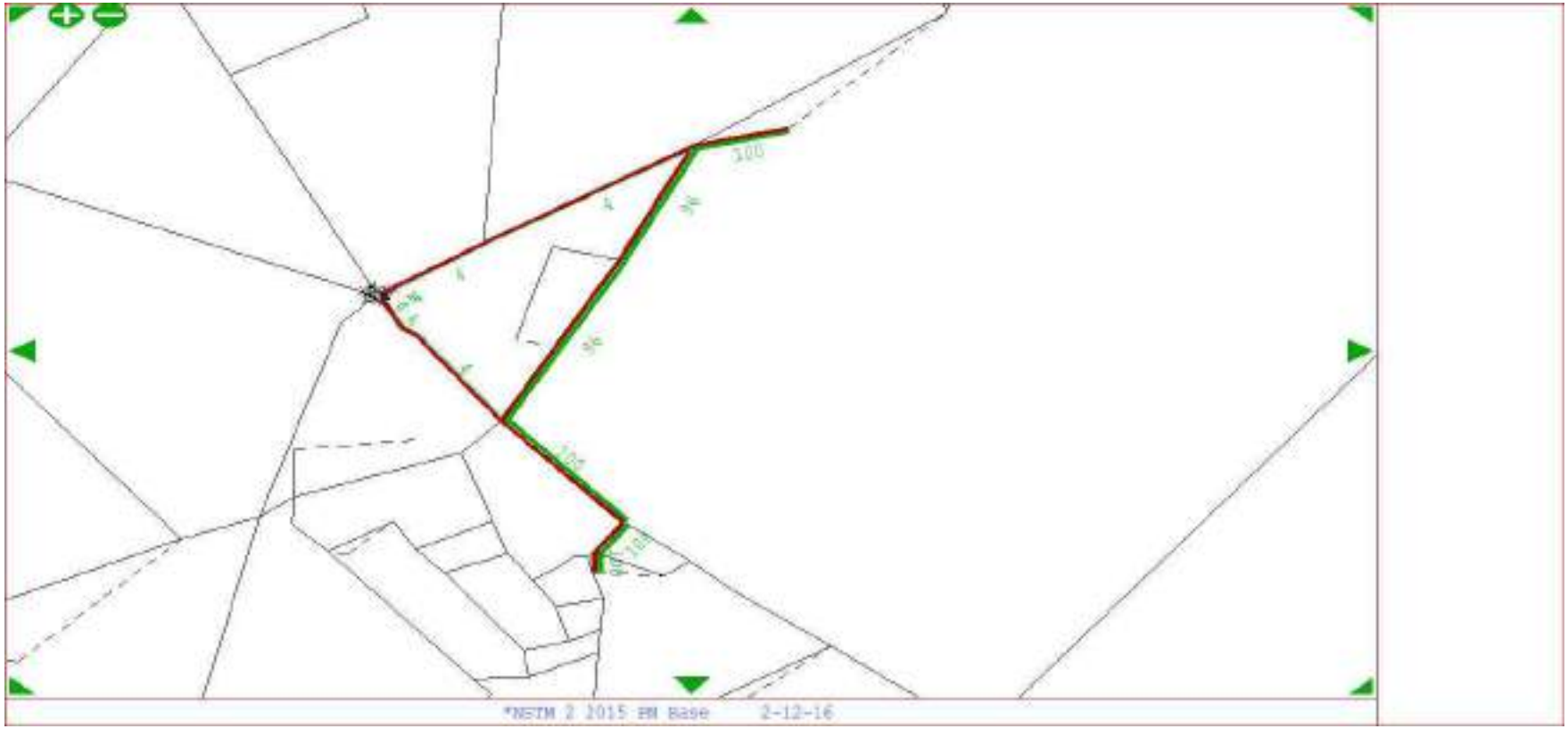
PM Peak

From Rail Central Area To Towcester - User Class 2



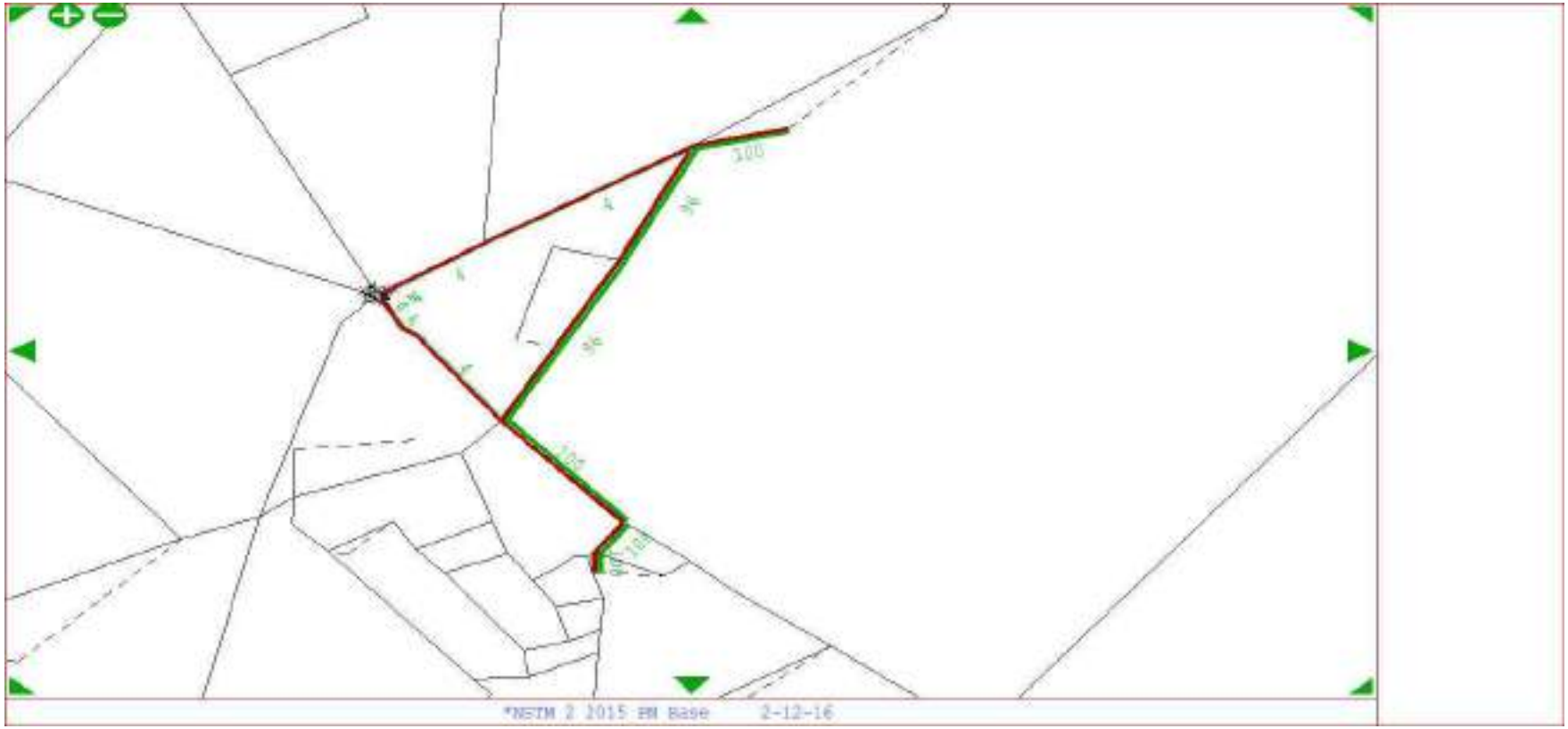
PM Peak

From Rail Central Area To Towcester - User Class 3



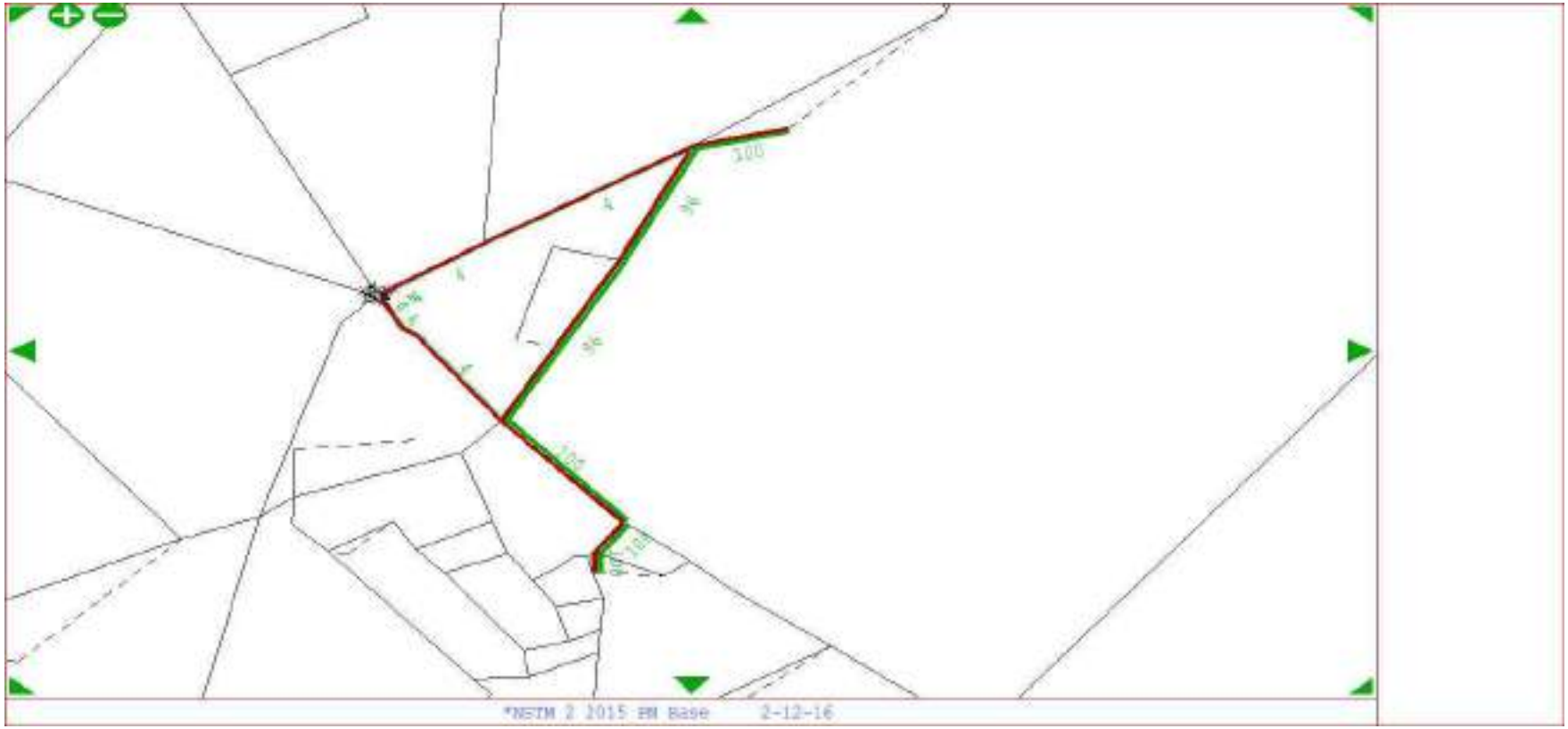
PM Peak

From Rail Central Area To Towcester - User Class 4



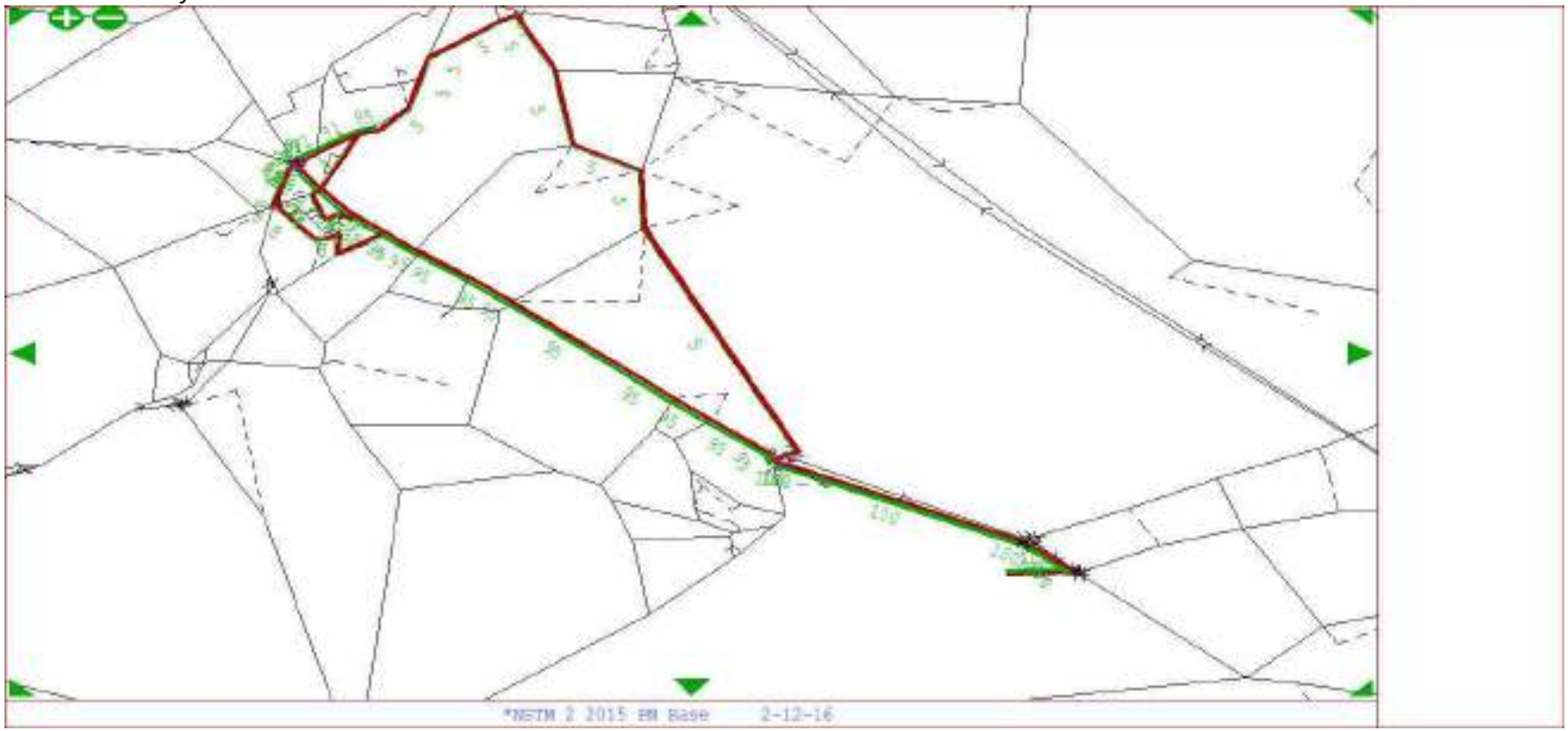
PM Peak

From Rail Central Area To Towcester - User Class 5



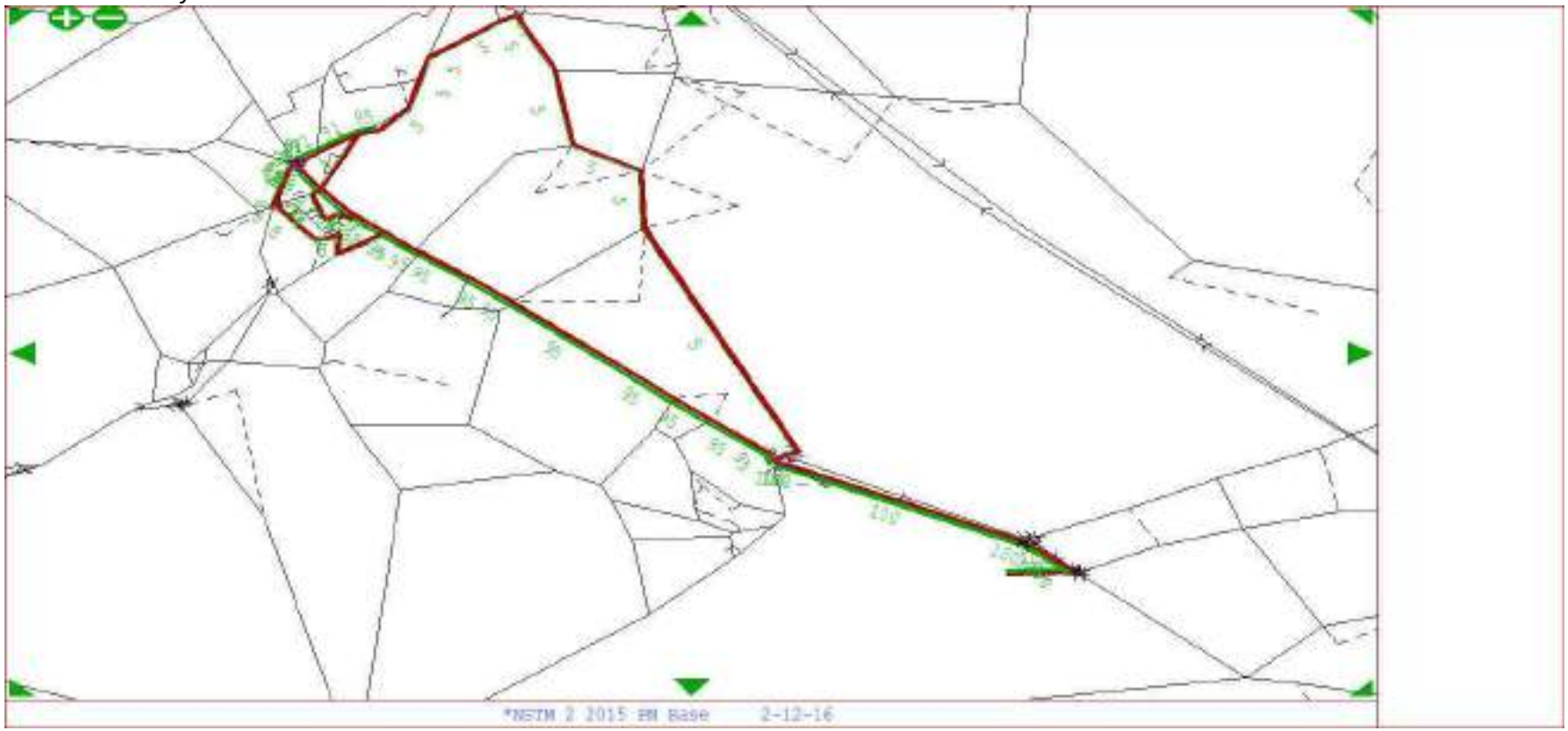
PM Peak

From Milton Keynes To Rail Central Area - User Class 1



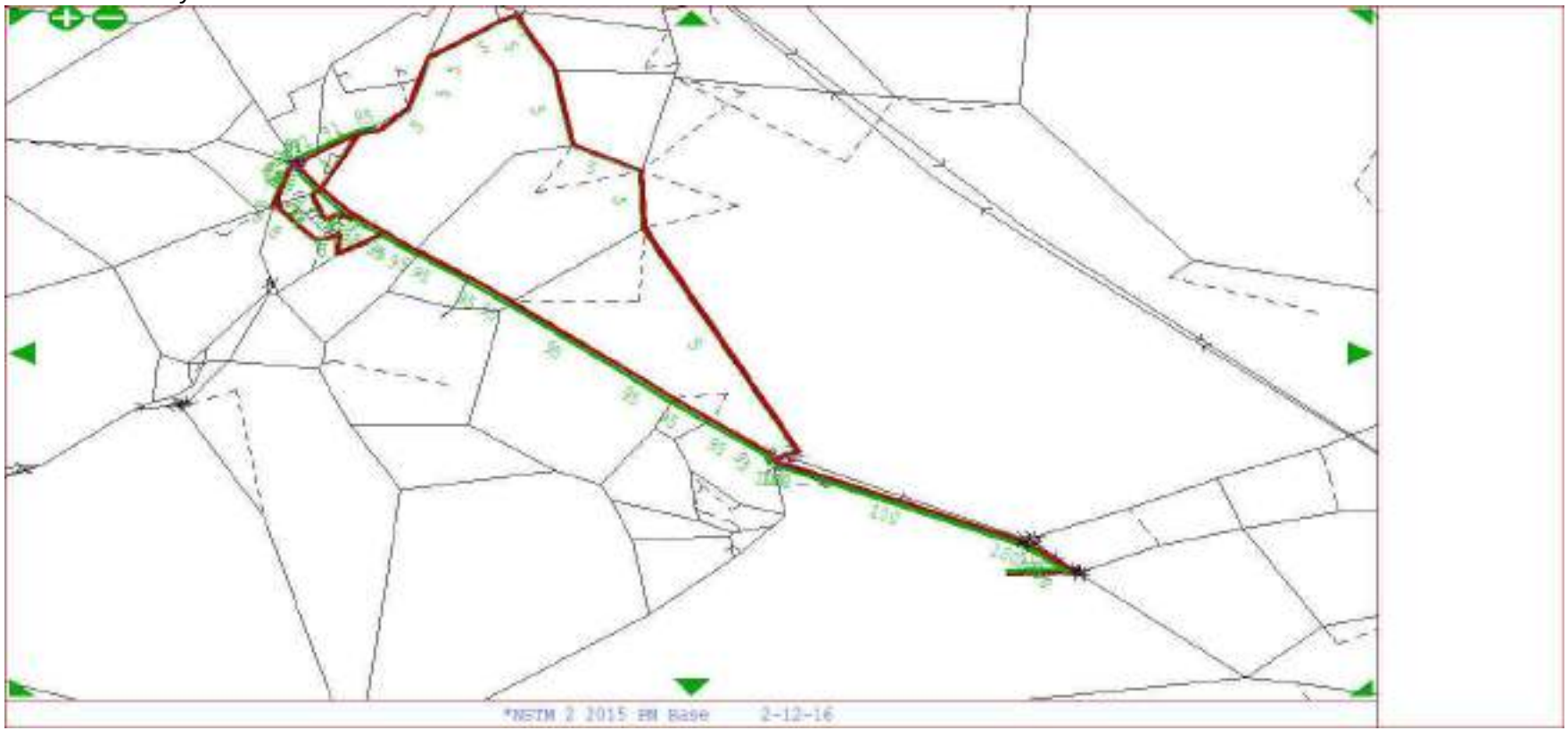
PM Peak

From Milton Keynes To Rail Central Area - User Class 2



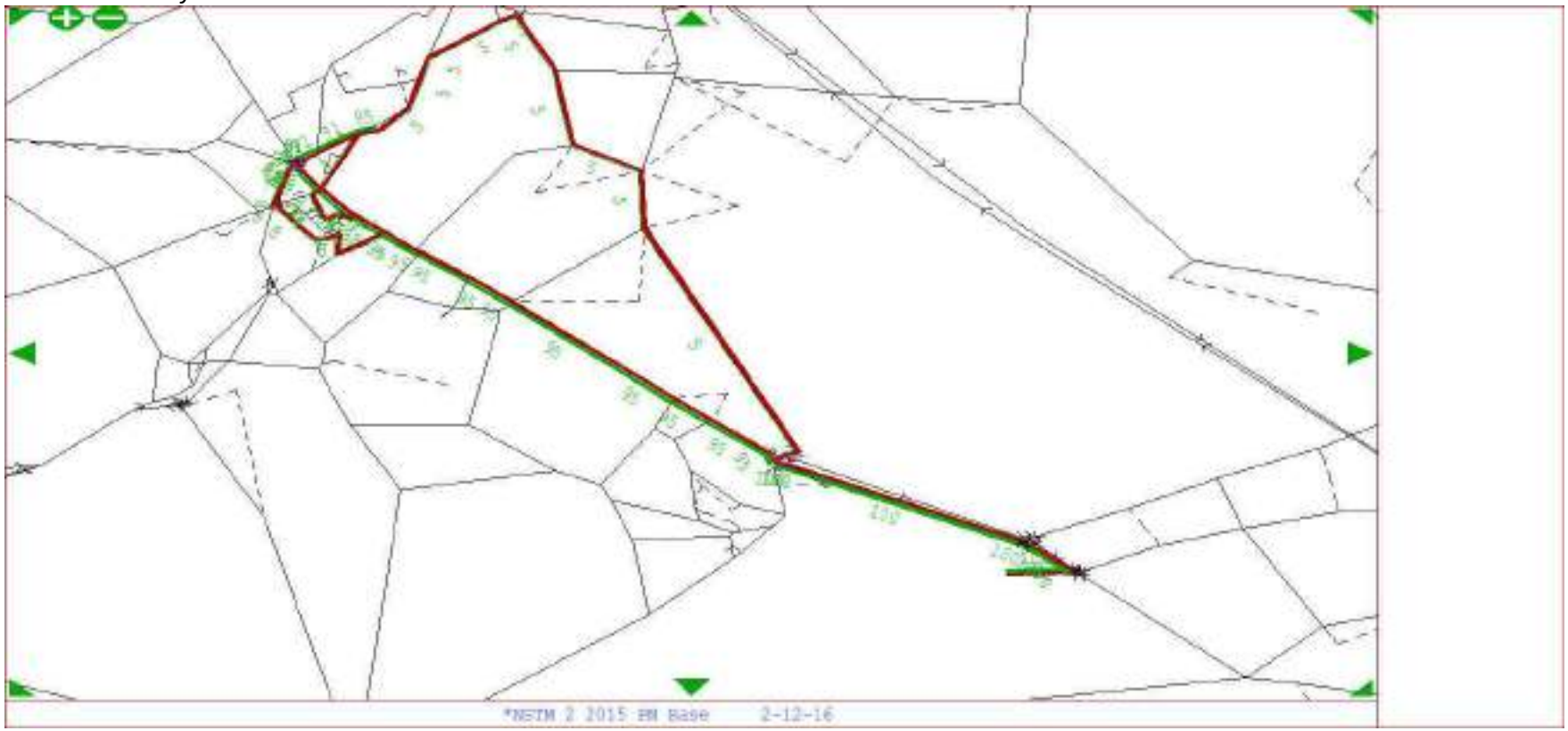
PM Peak

From Milton Keynes To Rail Central Area - User Class 3



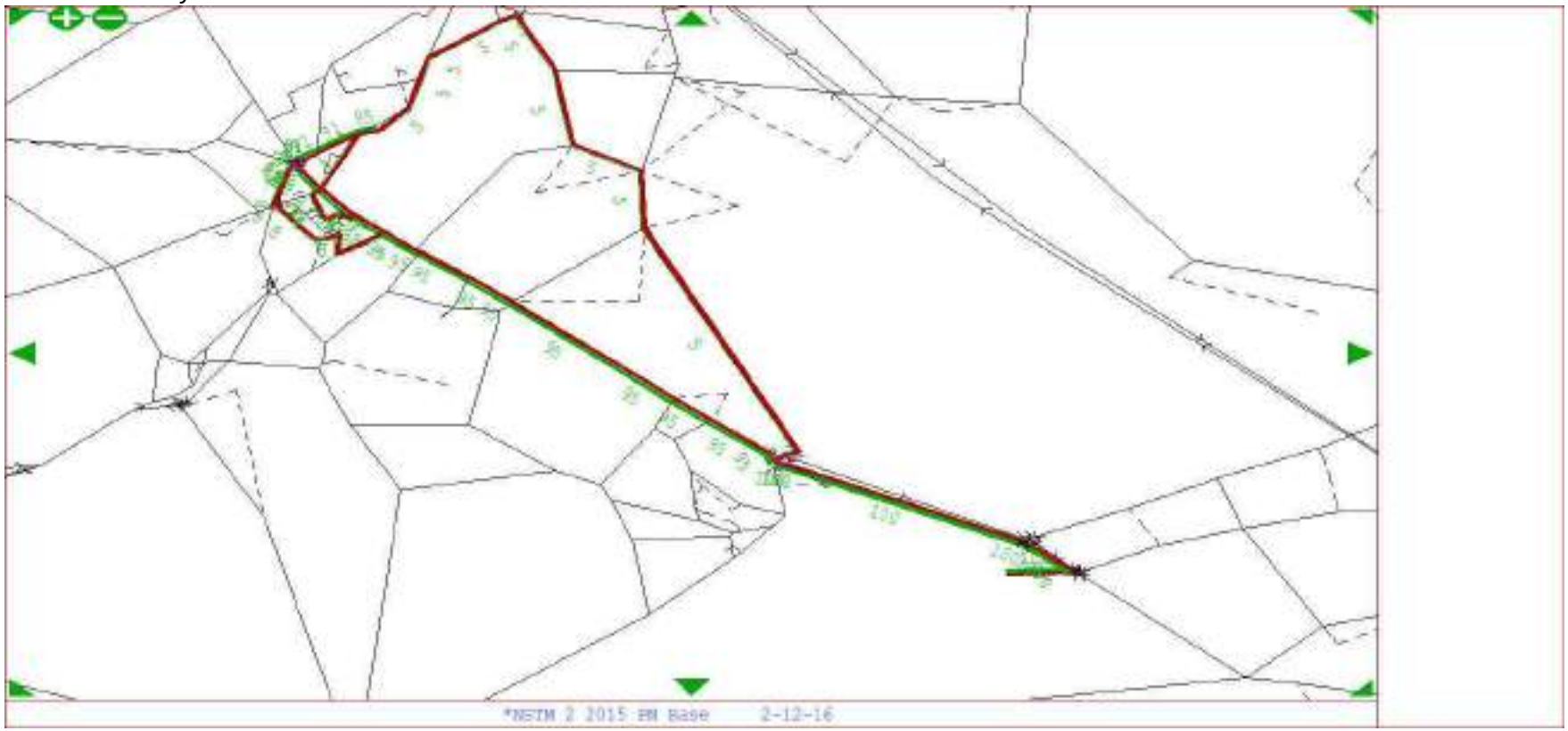
PM Peak

From Milton Keynes To Rail Central Area - User Class 4



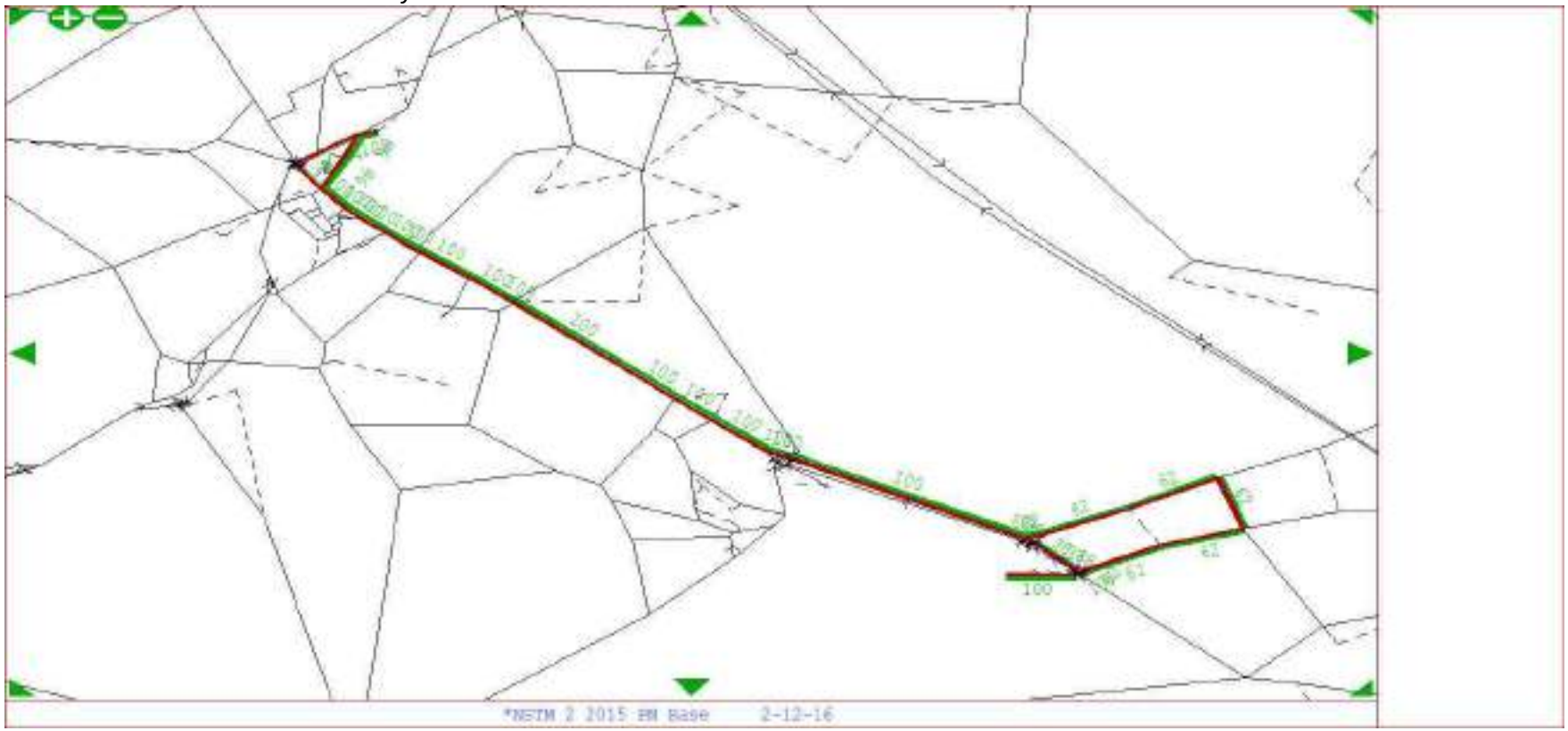
PM Peak

From Milton Keynes To Rail Central Area - User Class 5



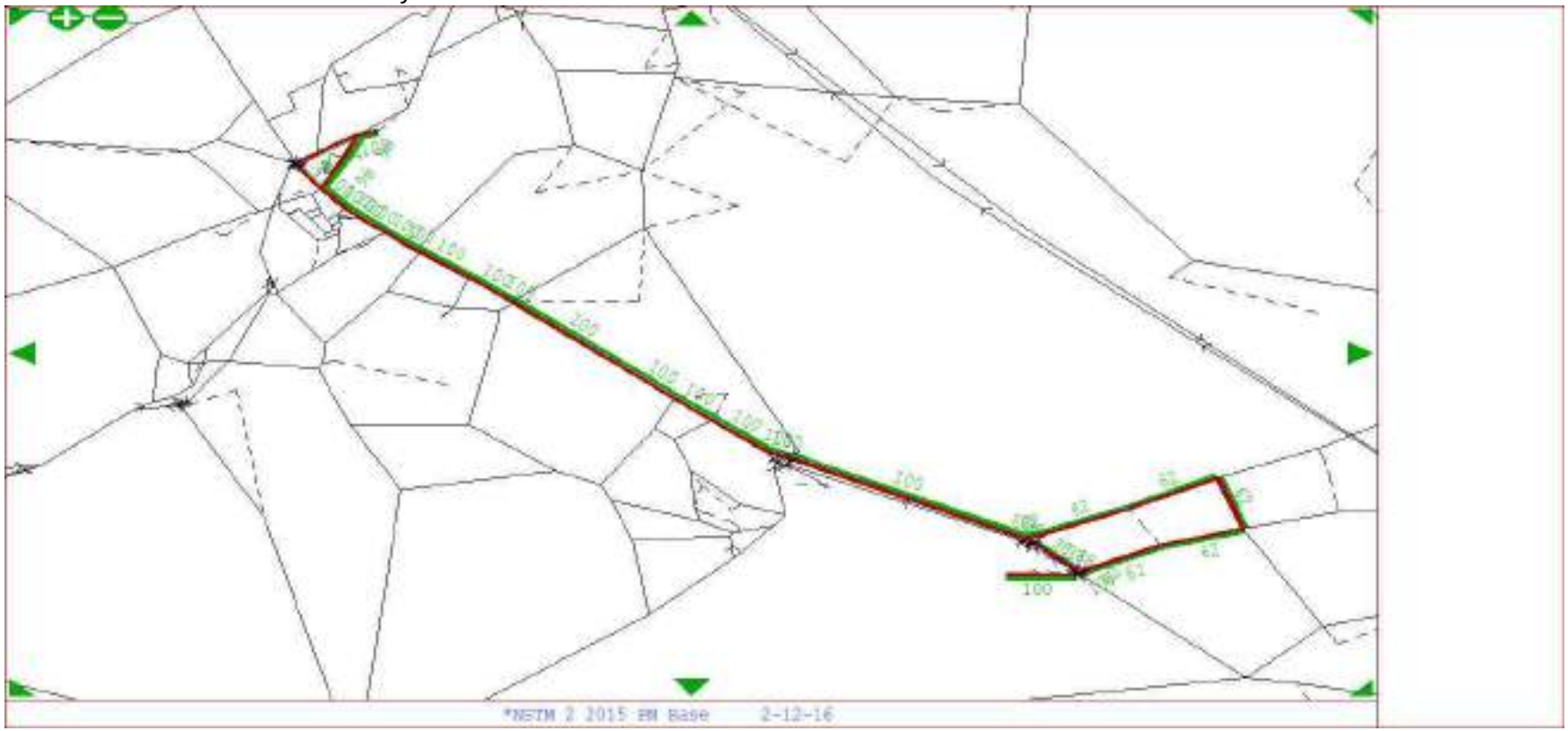
PM Peak

From Rail Central Area To Milton Keynes - User Class 1



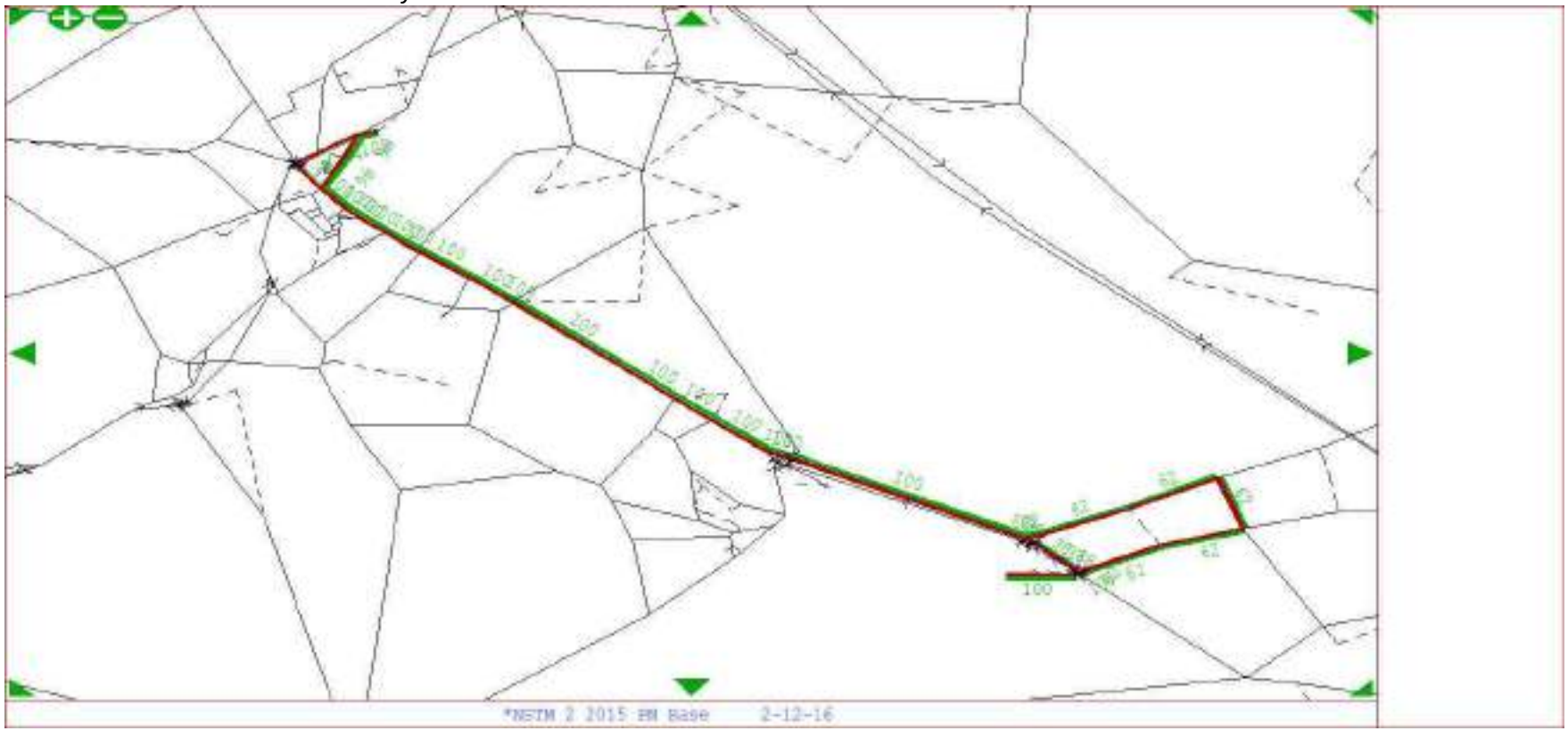
PM Peak

From Rail Central Area To Milton Keynes - User Class 2



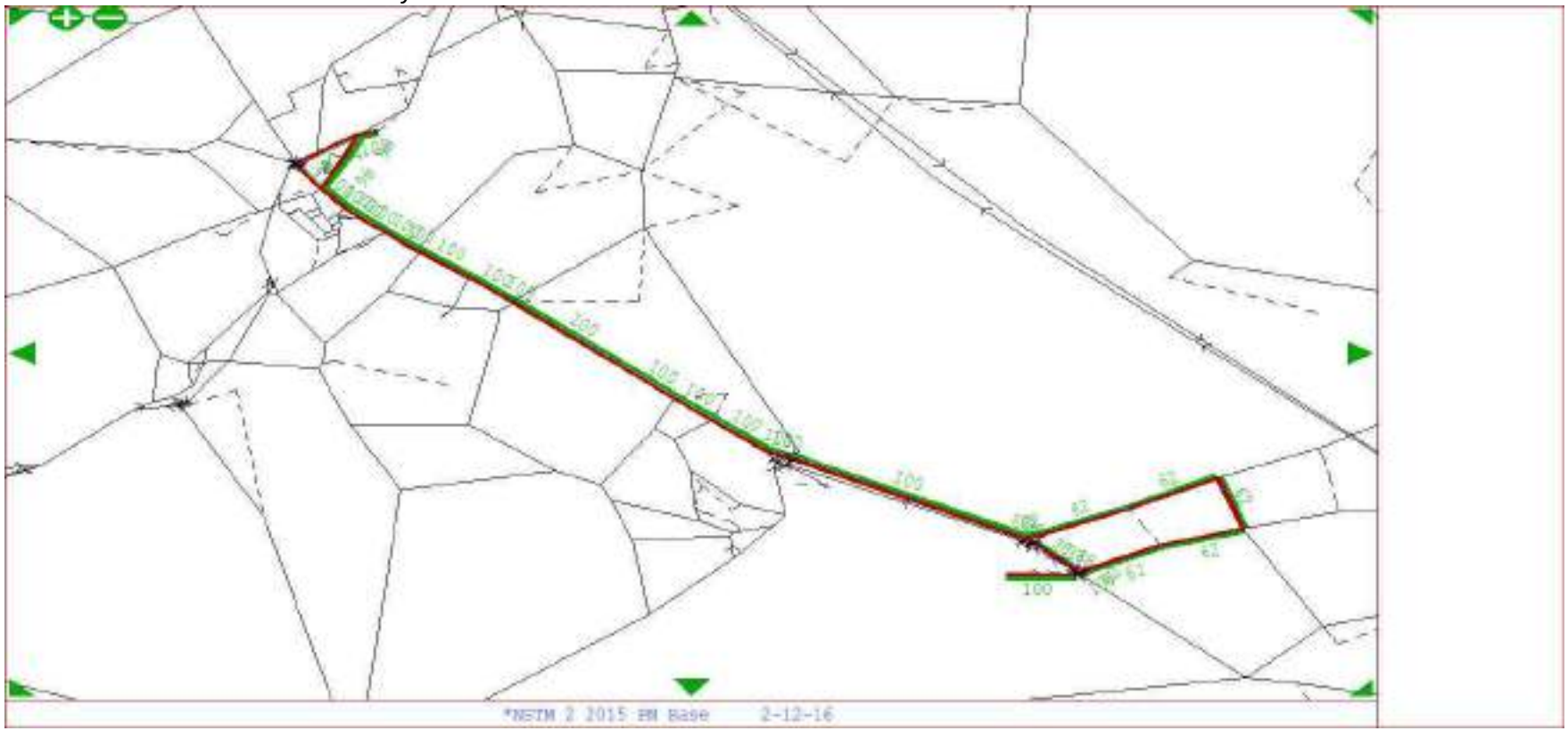
PM Peak

From Rail Central Area To Milton Keynes - User Class 3



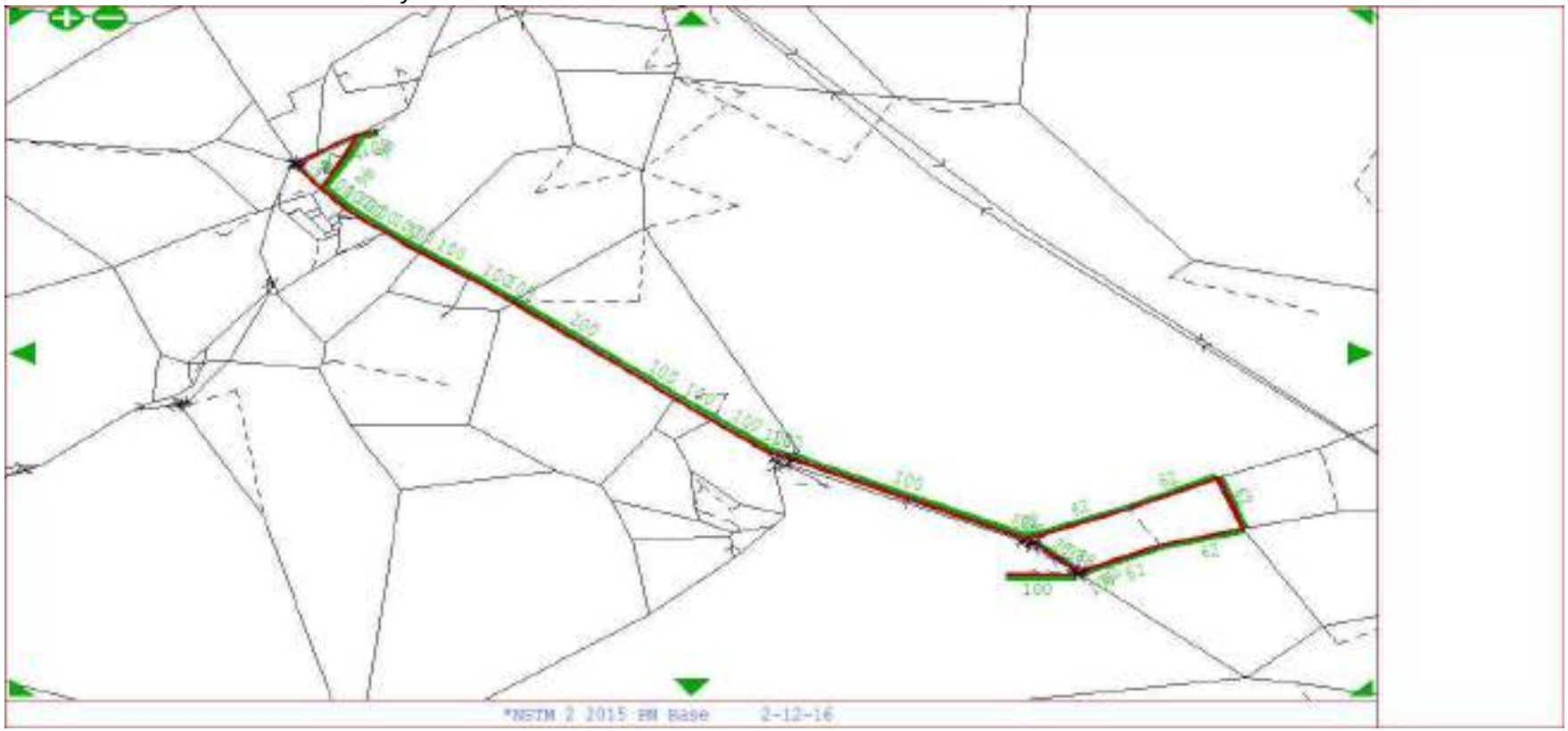
PM Peak

From Rail Central Area To Milton Keynes - User Class 4



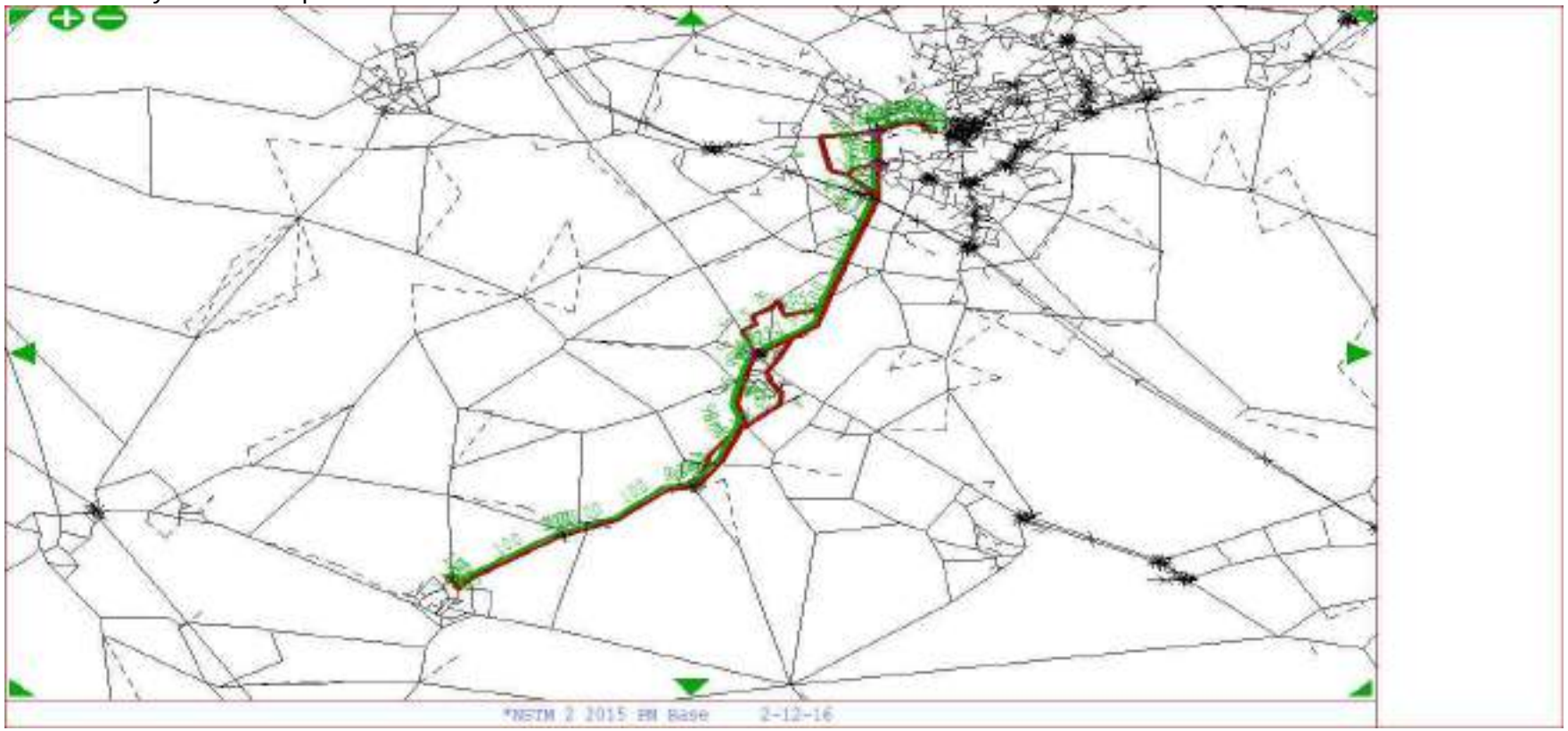
PM Peak

From Rail Central Area To Milton Keynes - User Class 5



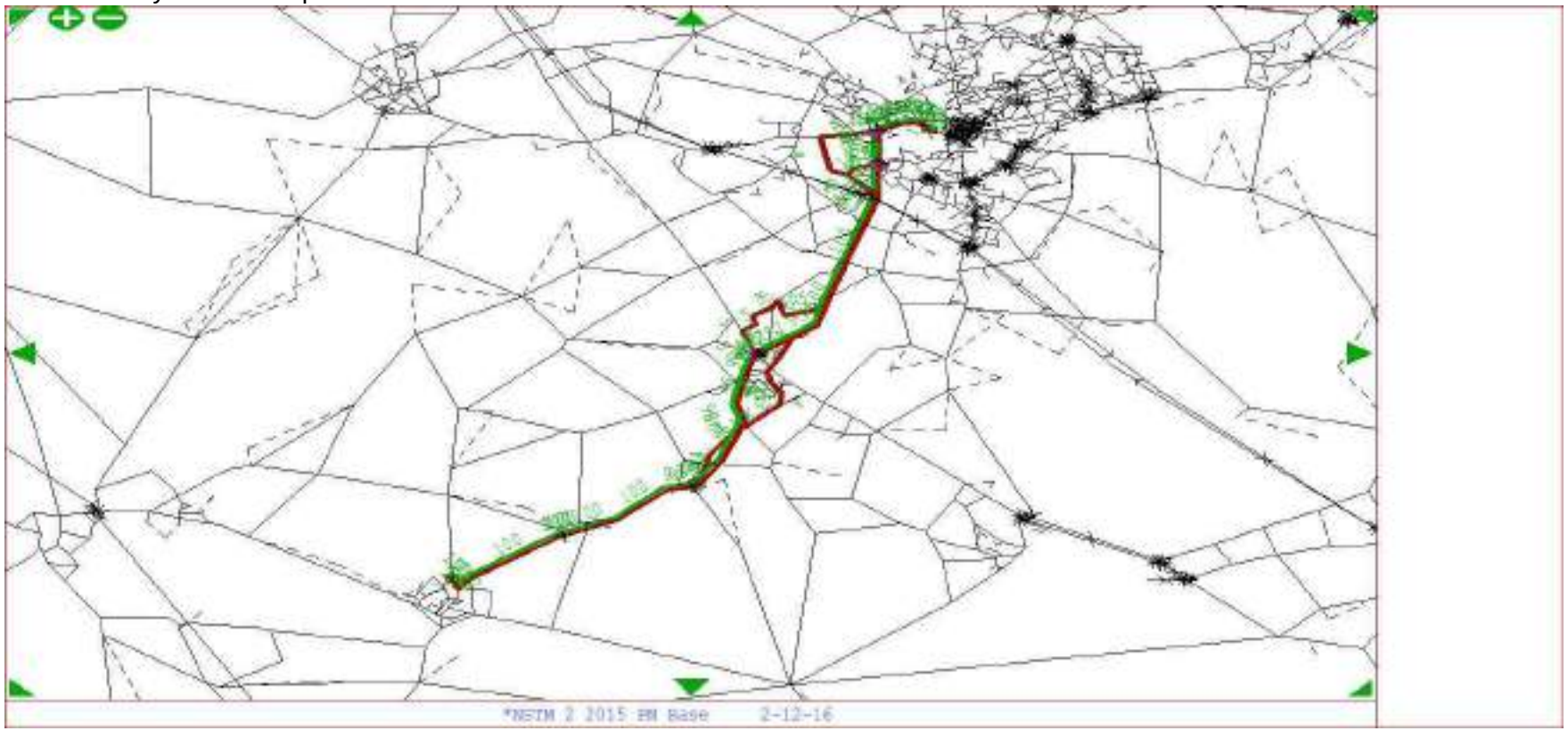
PM Peak

From Brackley To Northampton - User Class 1



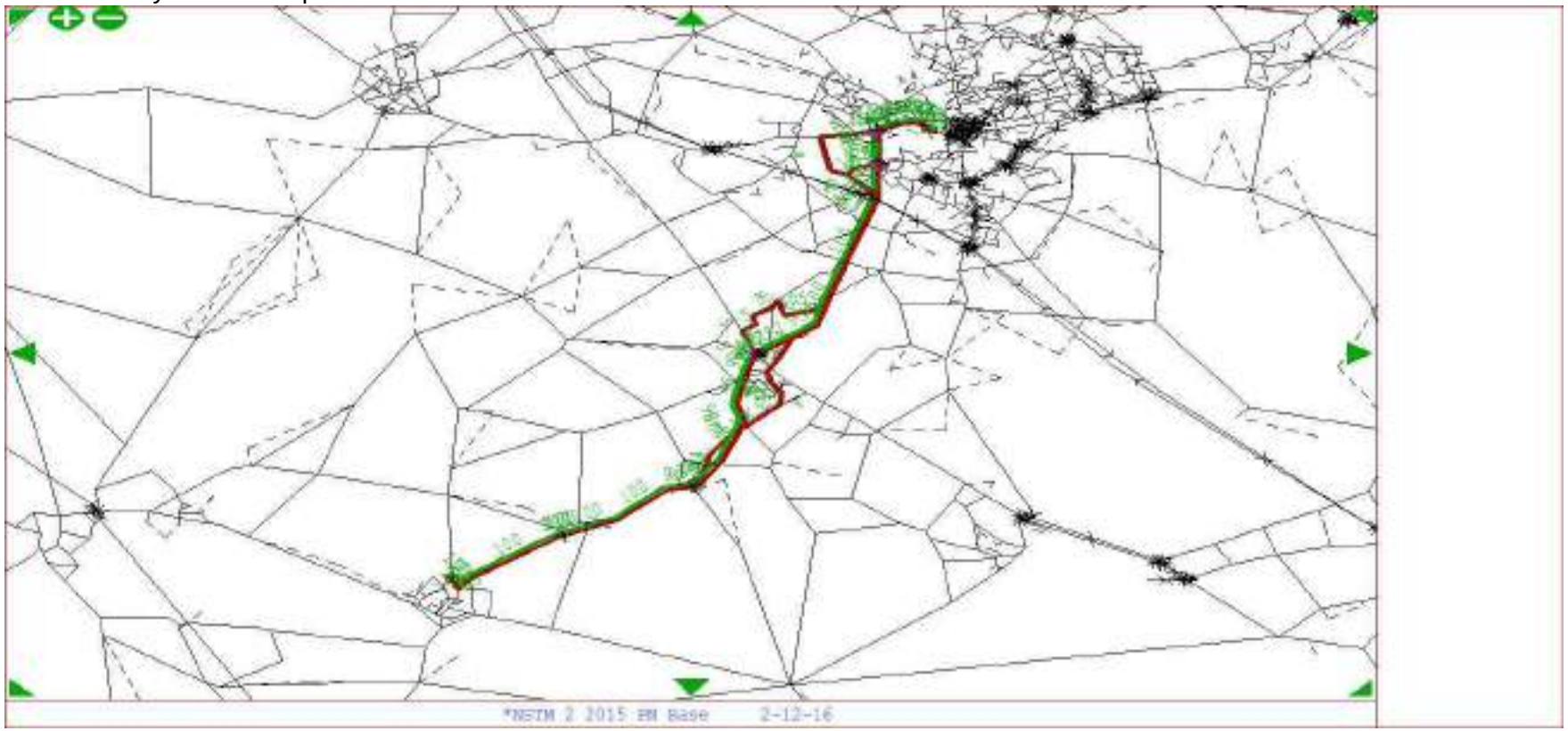
PM Peak

From Brackley To Northampton - User Class 2



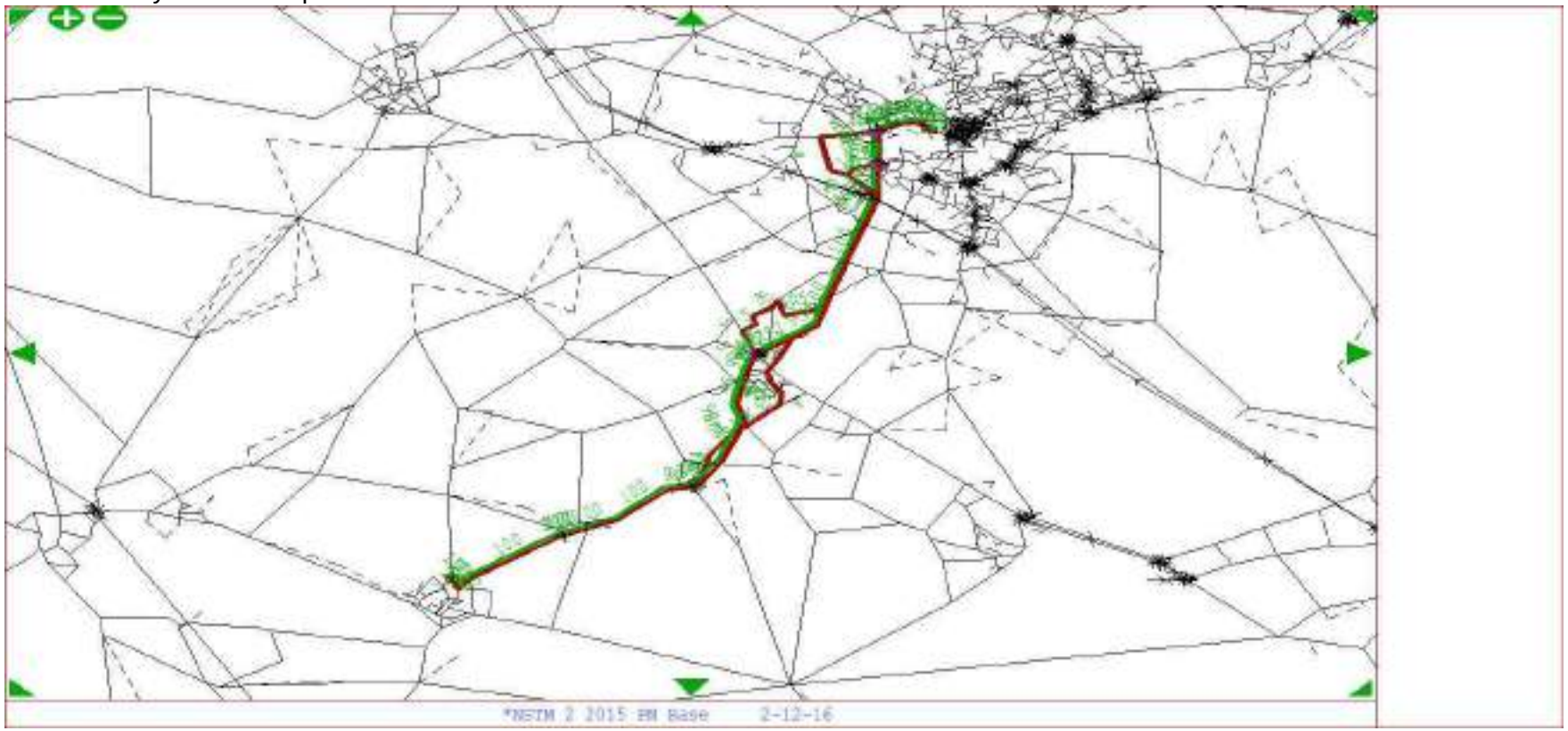
PM Peak

From Brackley To Northampton - User Class 3



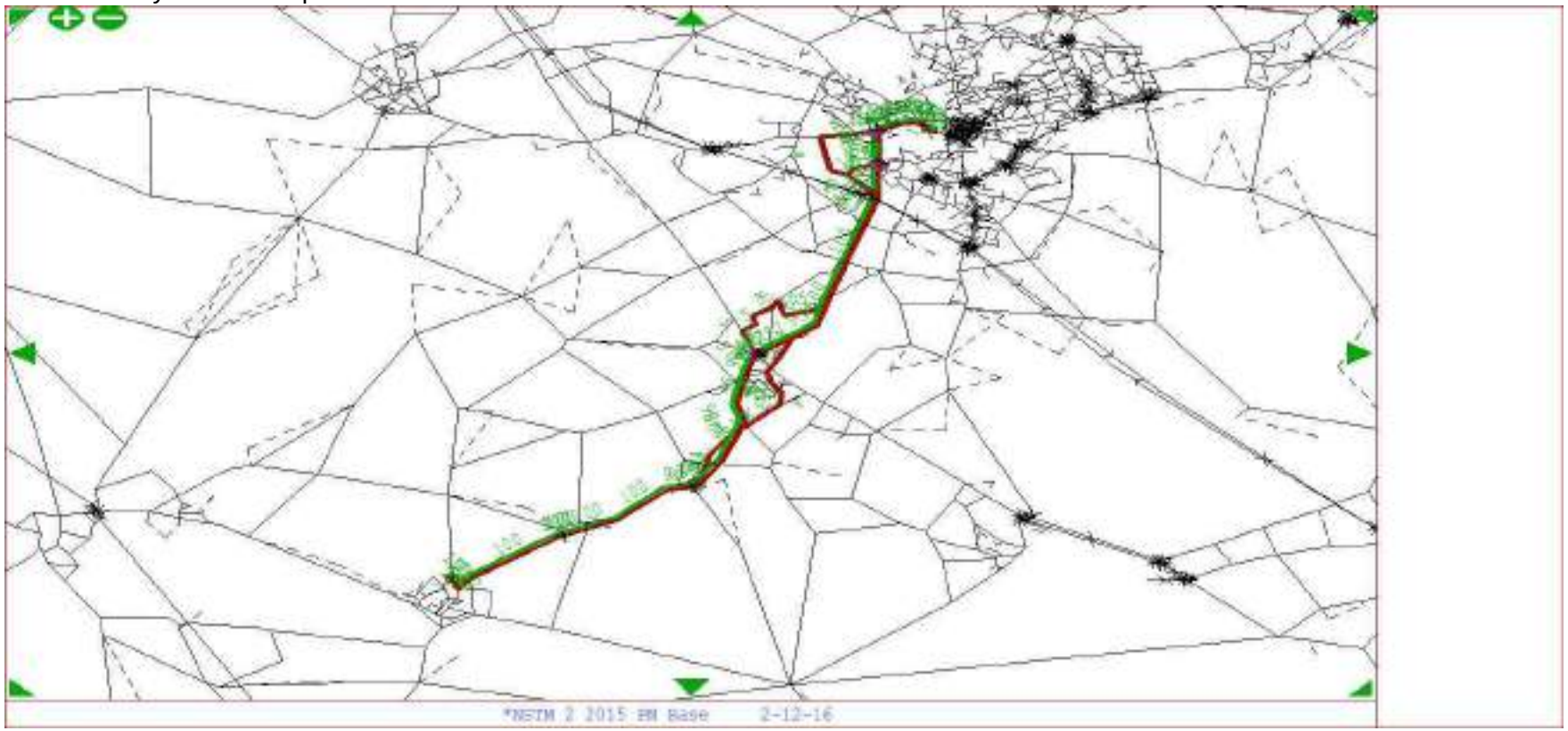
PM Peak

From Brackley To Northampton - User Class 4



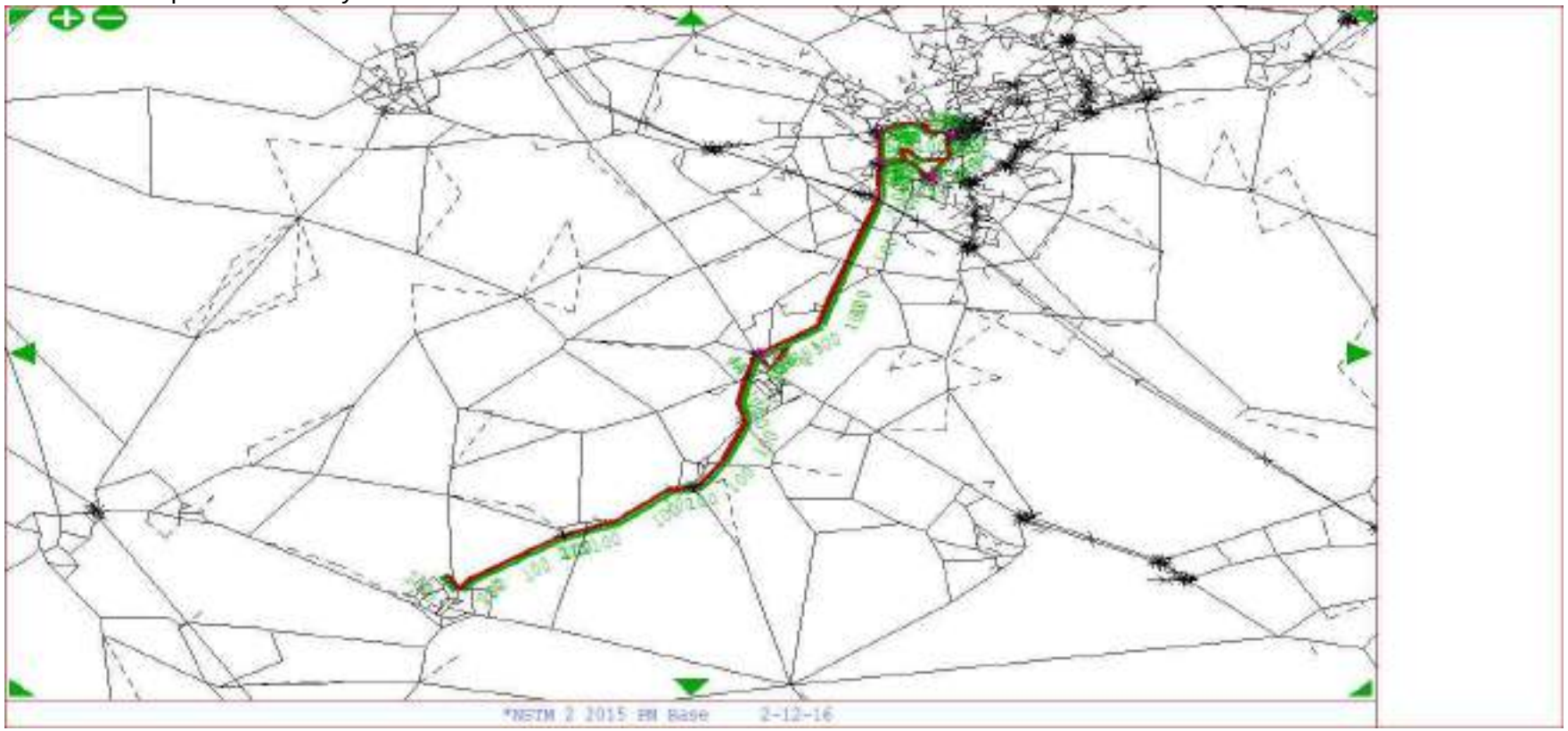
PM Peak

From Brackley To Northampton - User Class 5



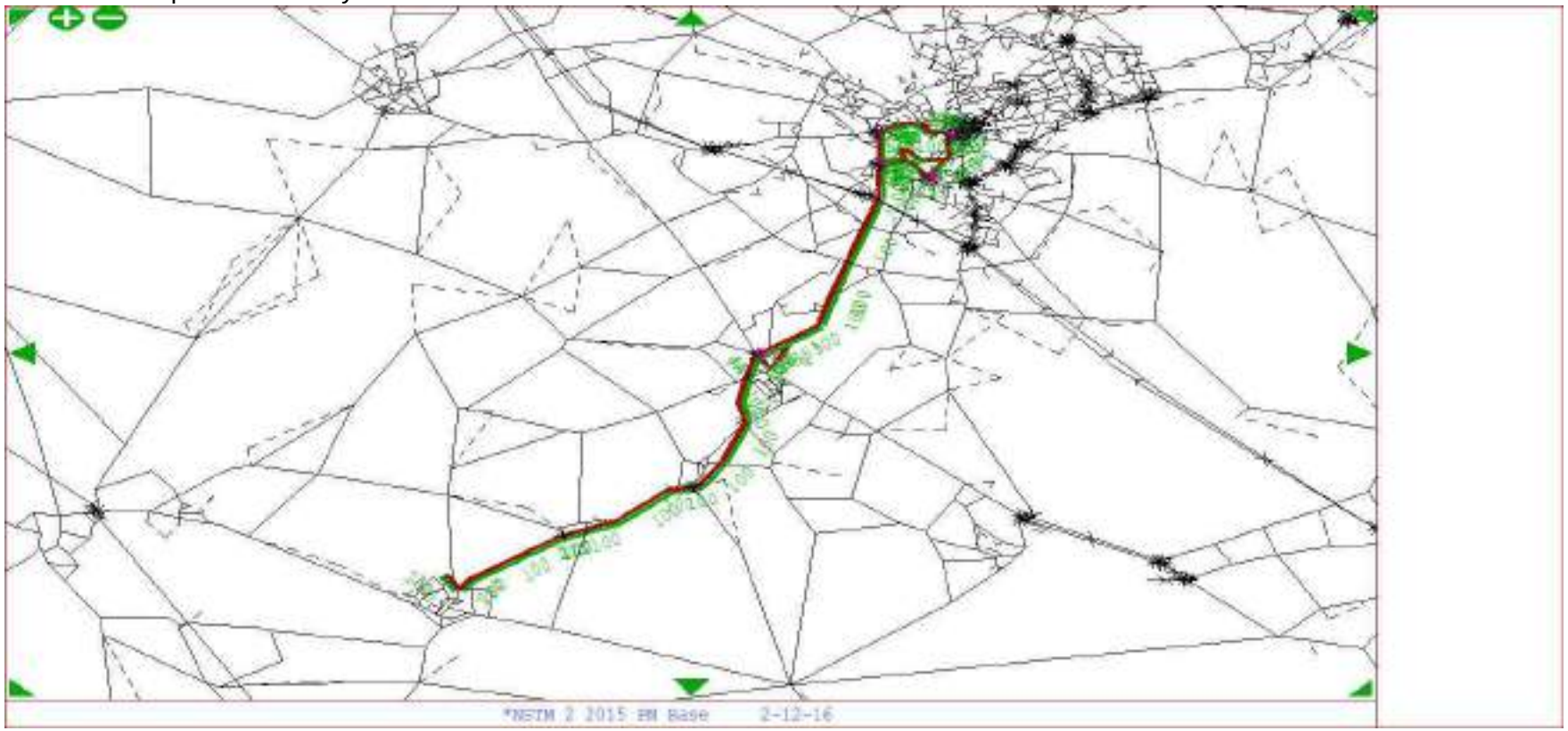
PM Peak

From Northampton To Brackley - User Class 1



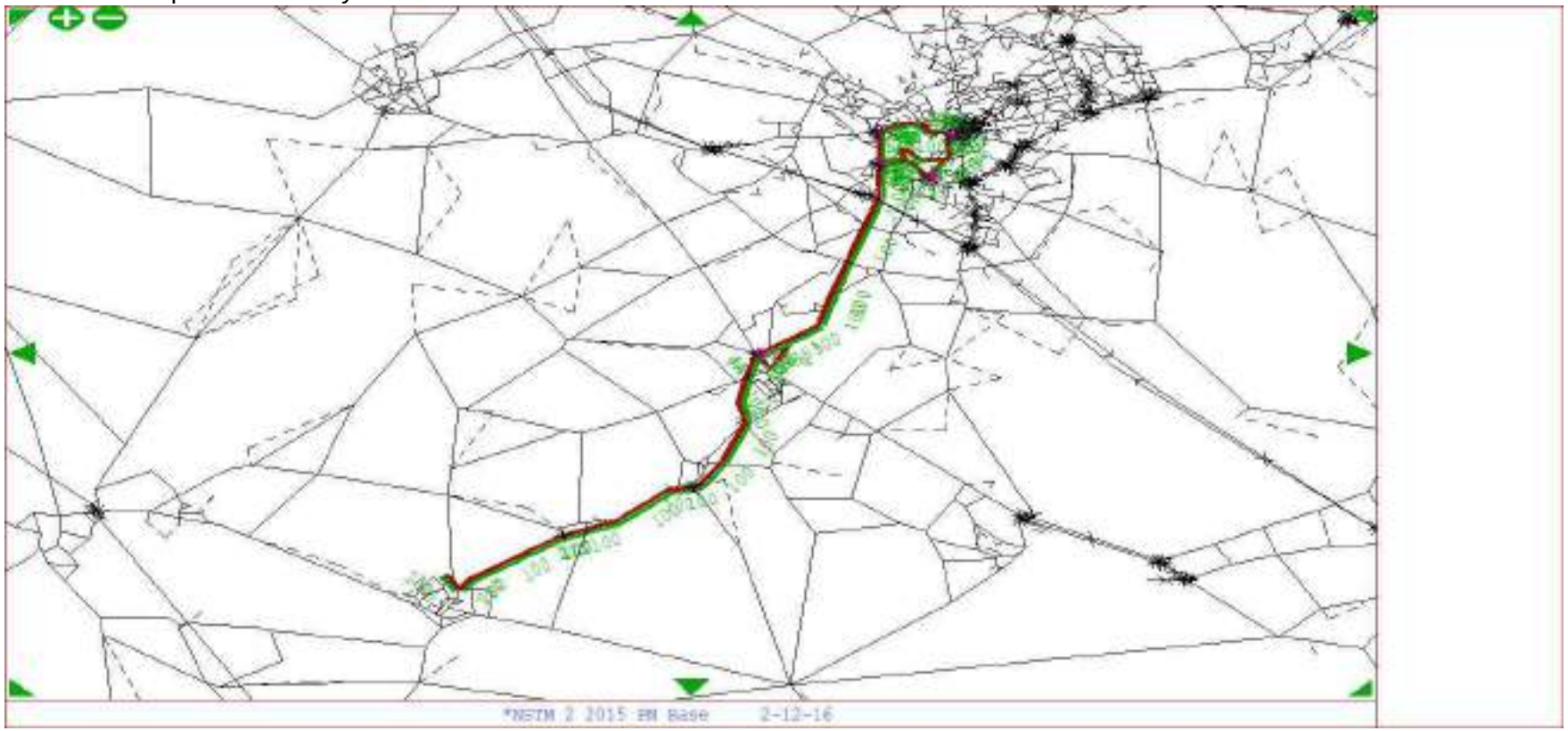
PM Peak

From Northampton To Brackley - User Class 2



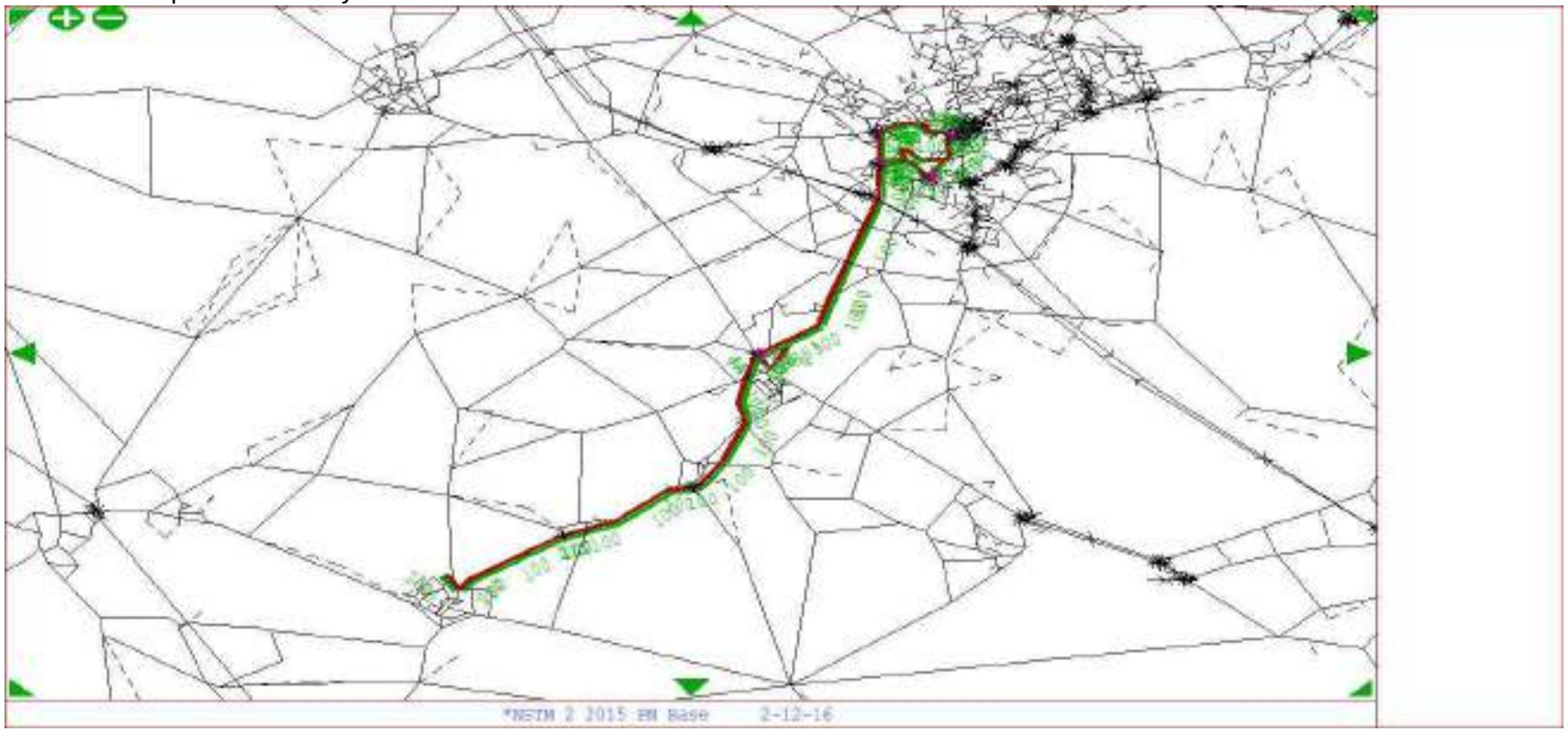
PM Peak

From Northampton To Brackley - User Class 3



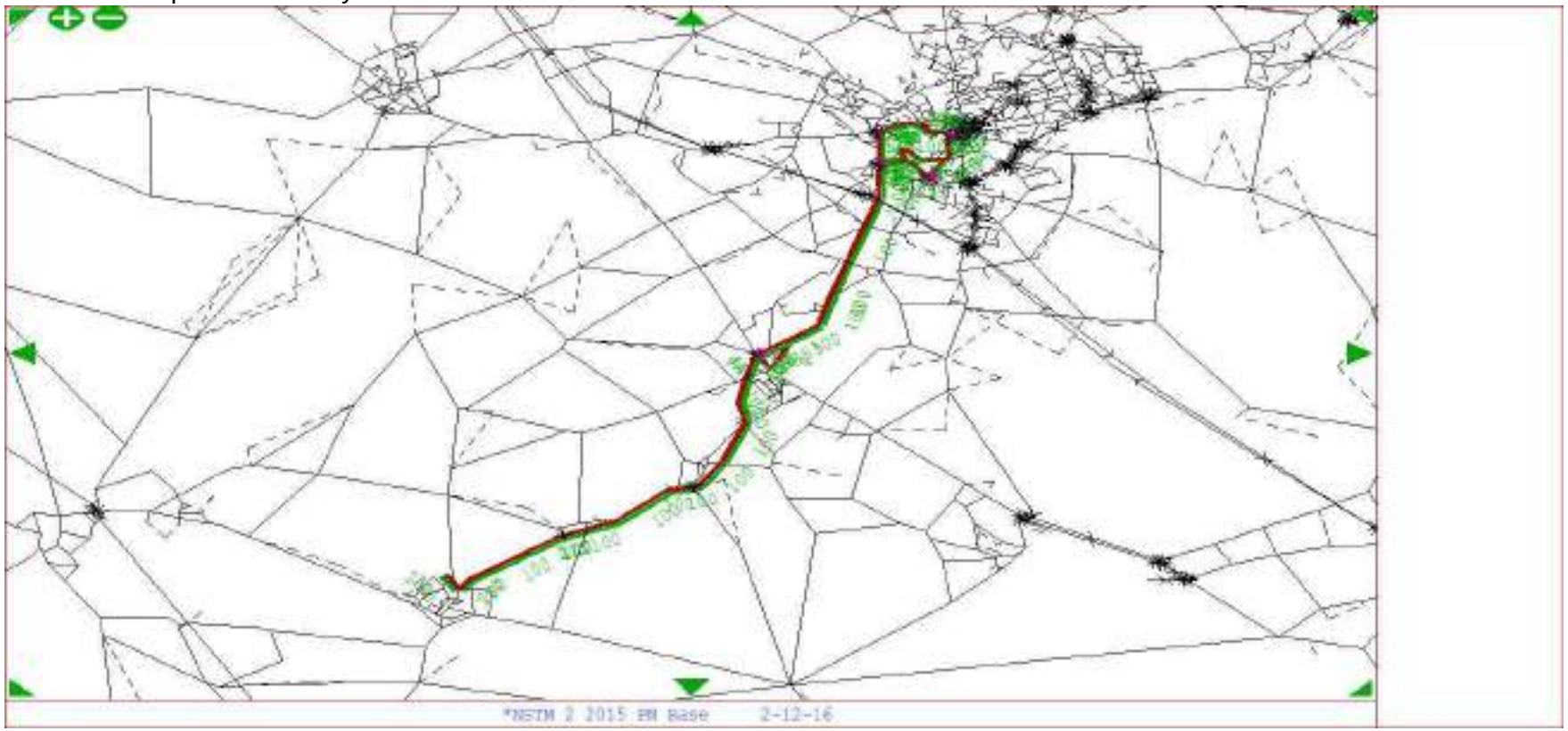
PM Peak

From Northampton To Brackley - User Class 4



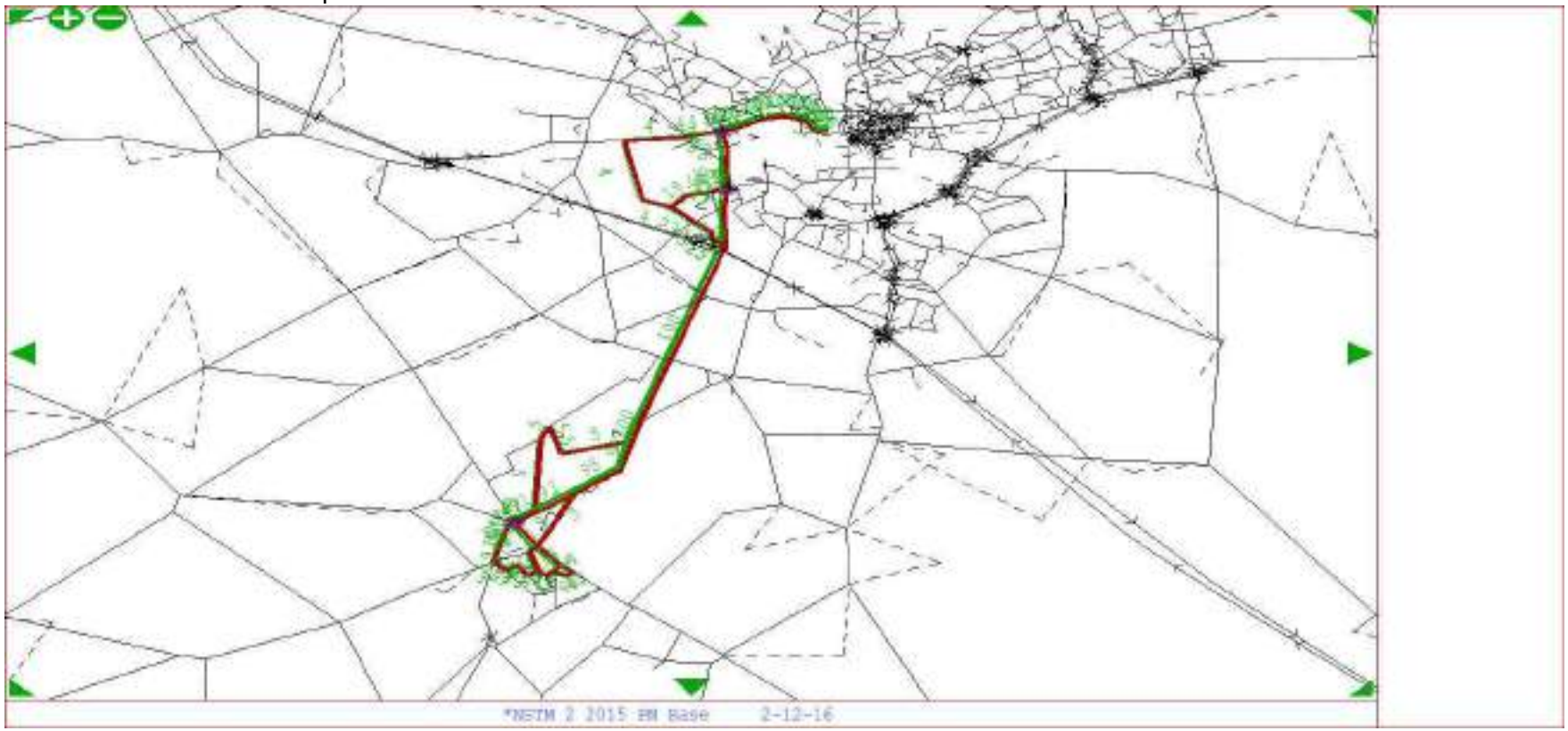
PM Peak

From Northampton To Brackley - User Class 5



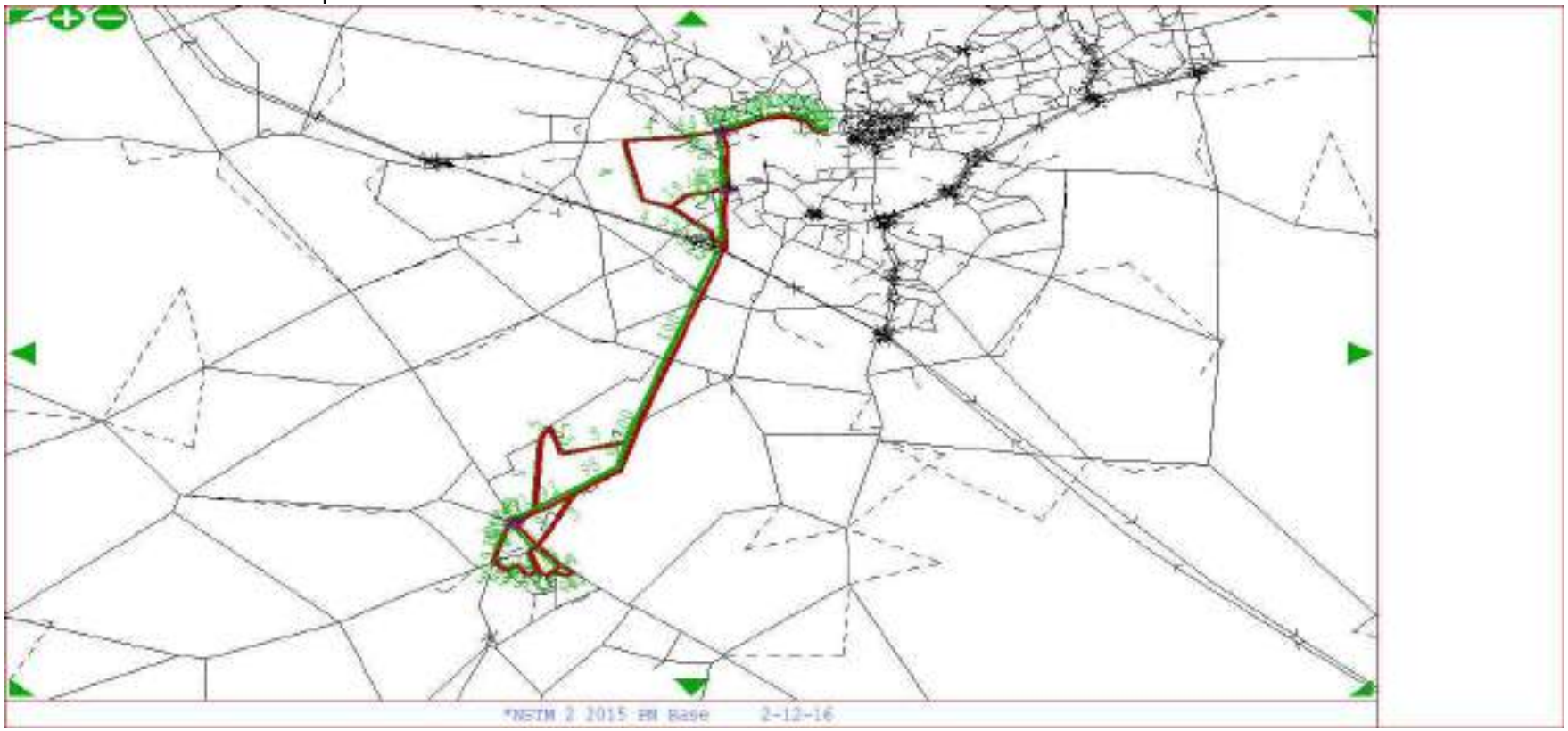
PM Peak

From Towcester To Northampton - User Class 1



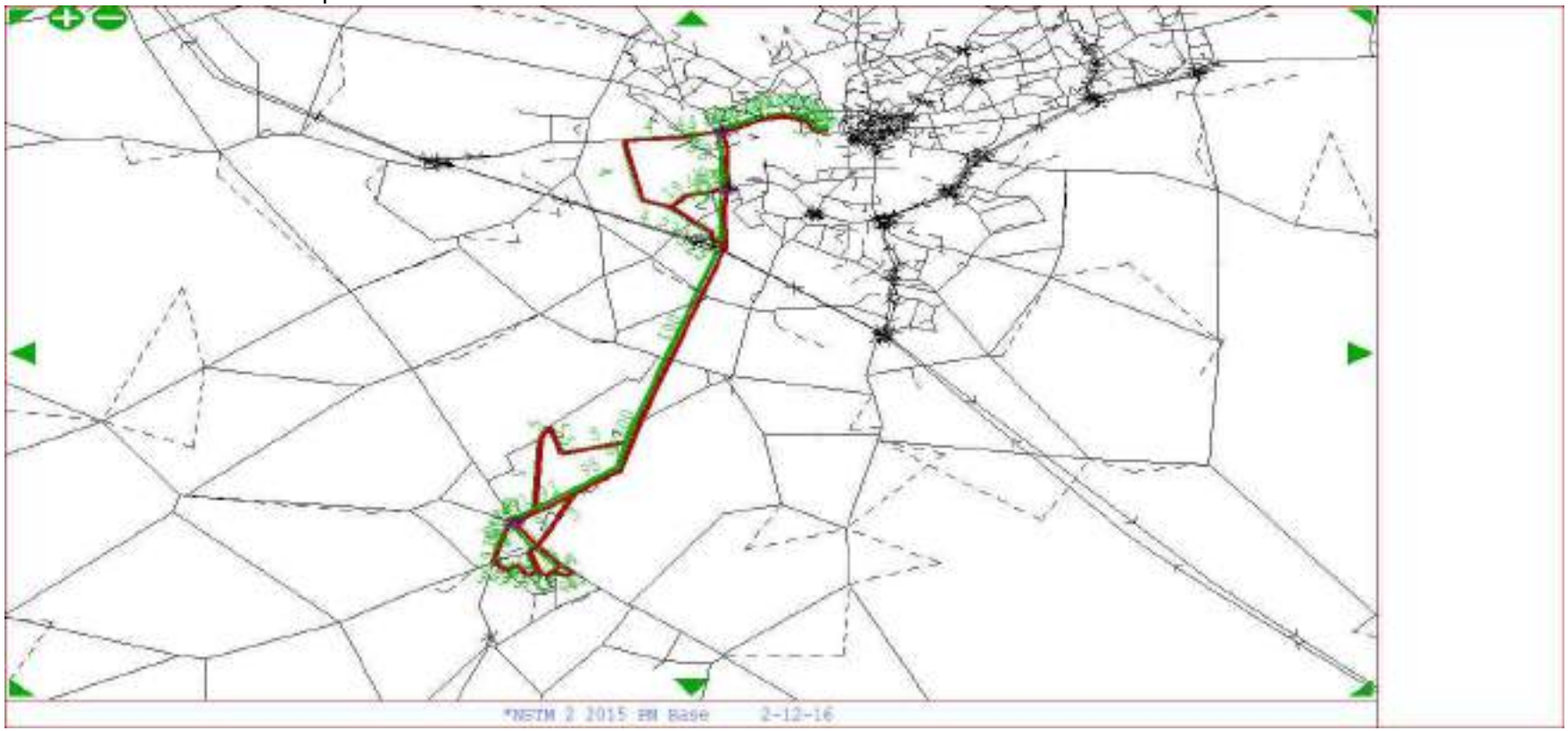
PM Peak

From Towcester To Northampton - User Class 2



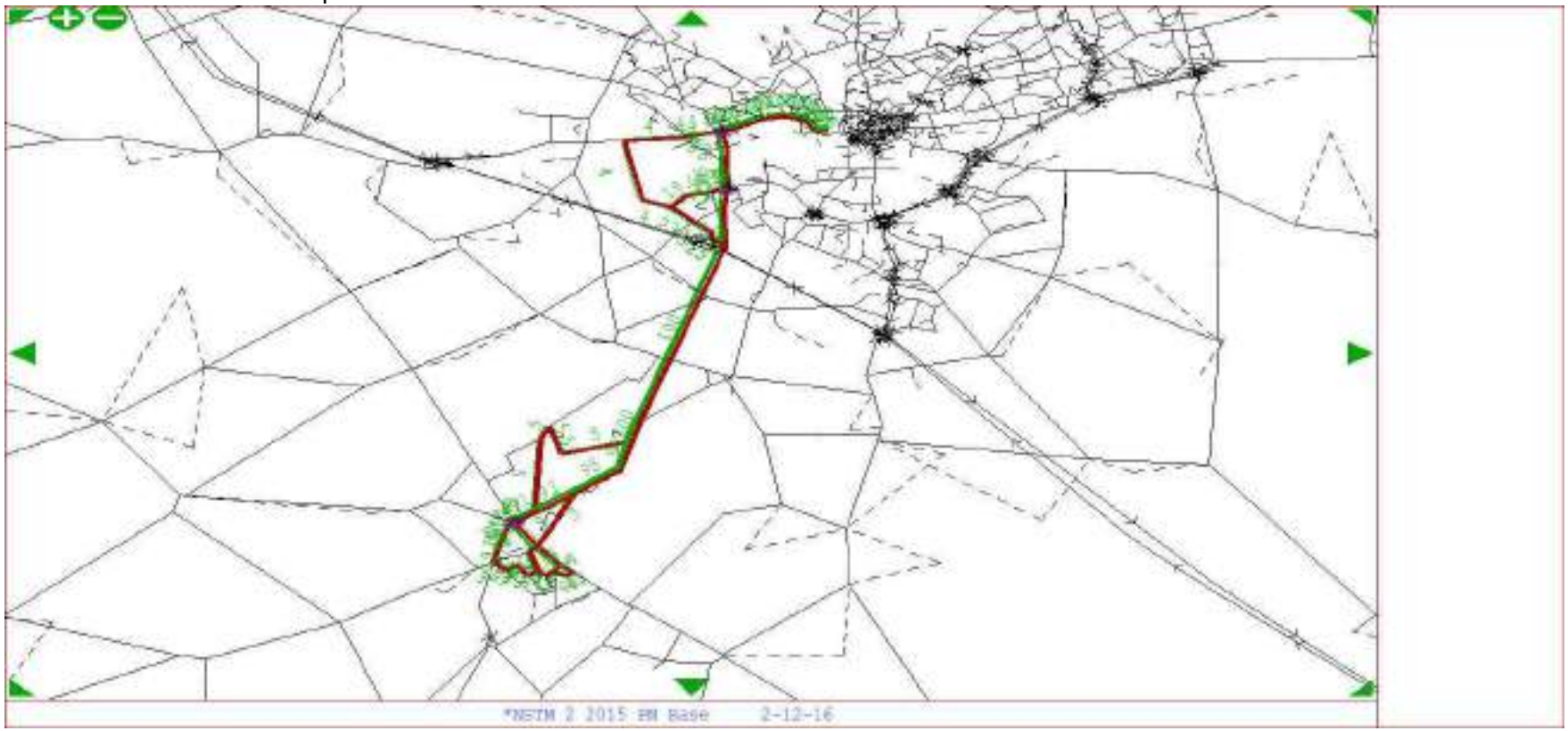
PM Peak

From Towcester To Northampton - User Class 3



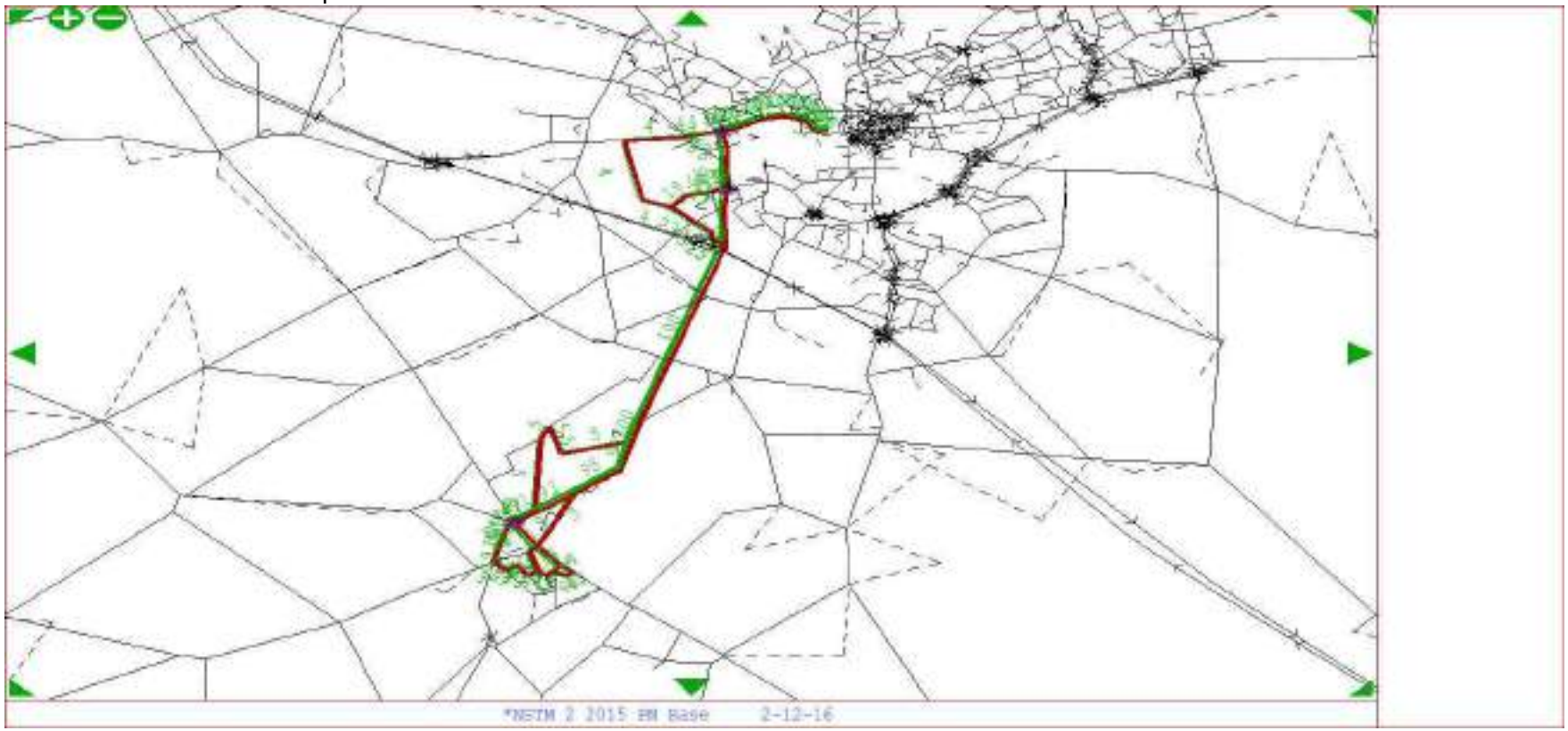
PM Peak

From Towcester To Northampton - User Class 4



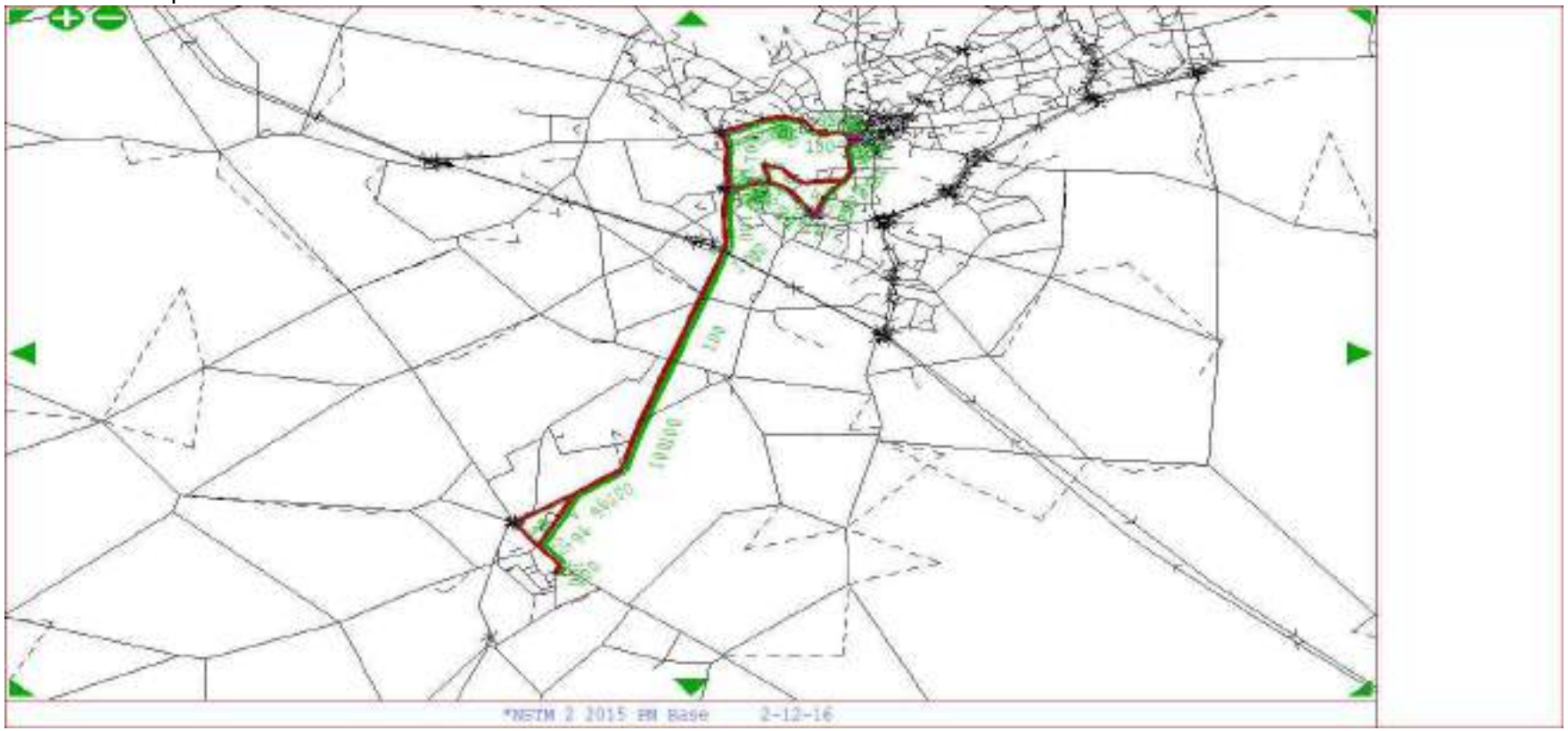
PM Peak

From Towcester To Northampton - User Class 5



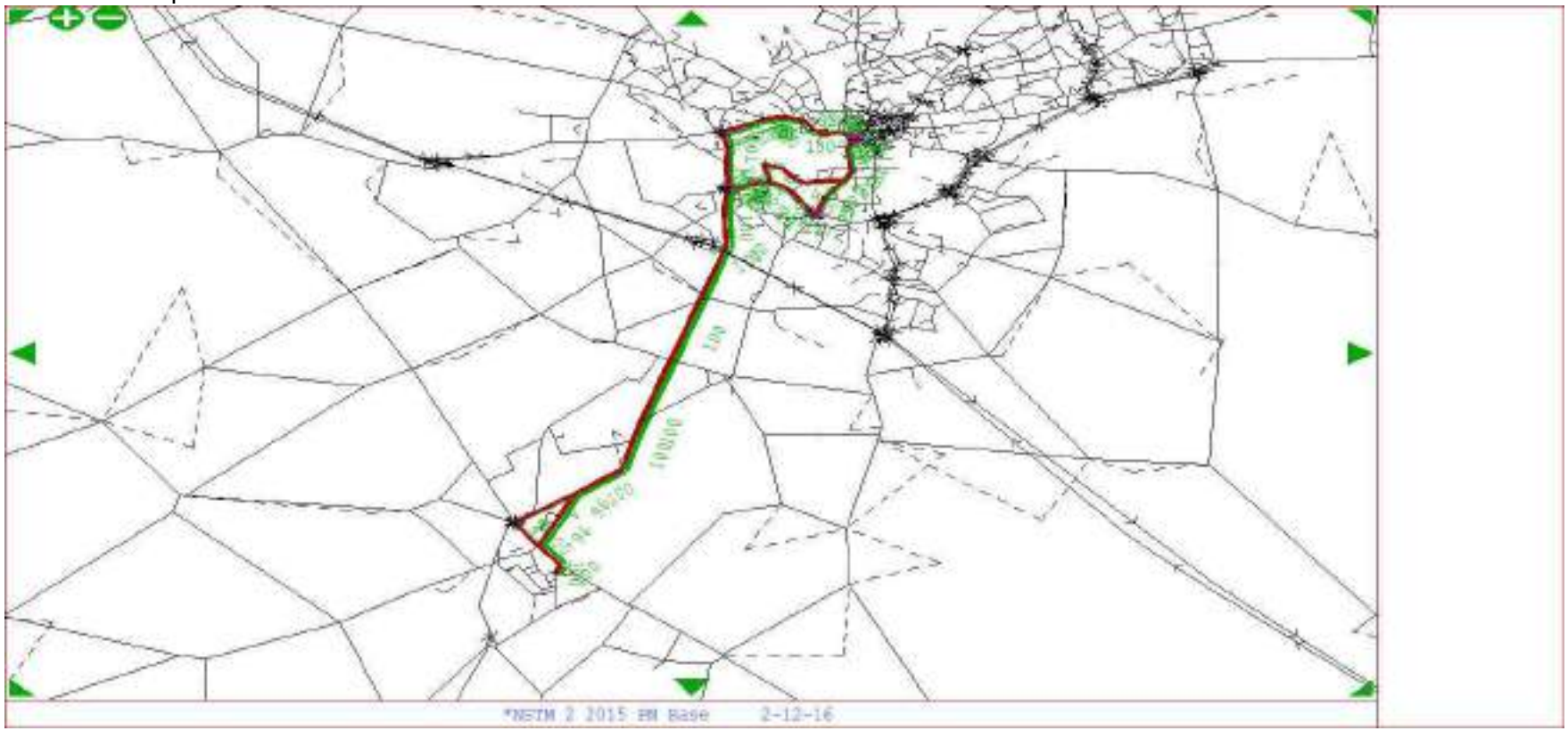
PM Peak

From Northampton To Towcester - User Class 1



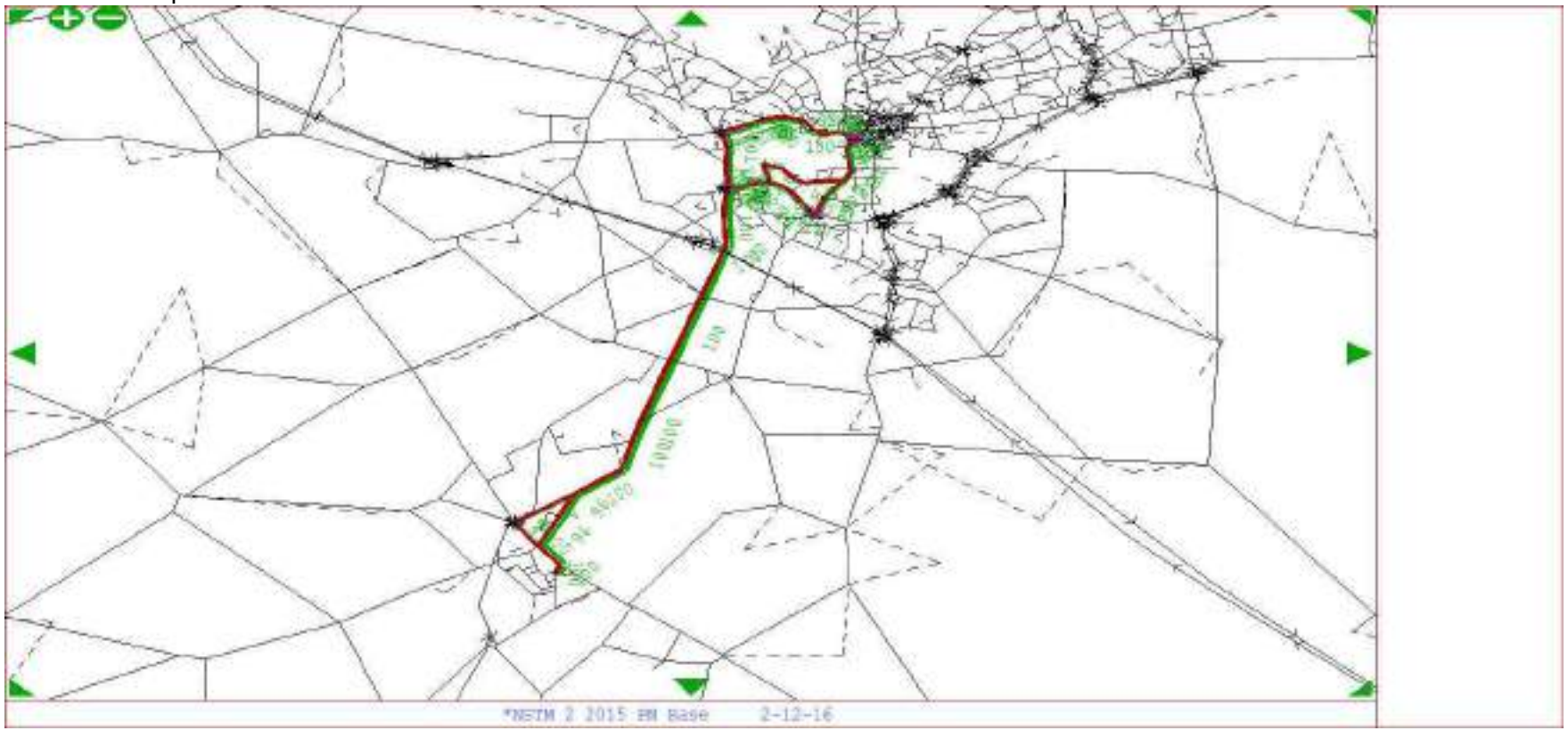
PM Peak

From Northampton To Towcester - User Class 2



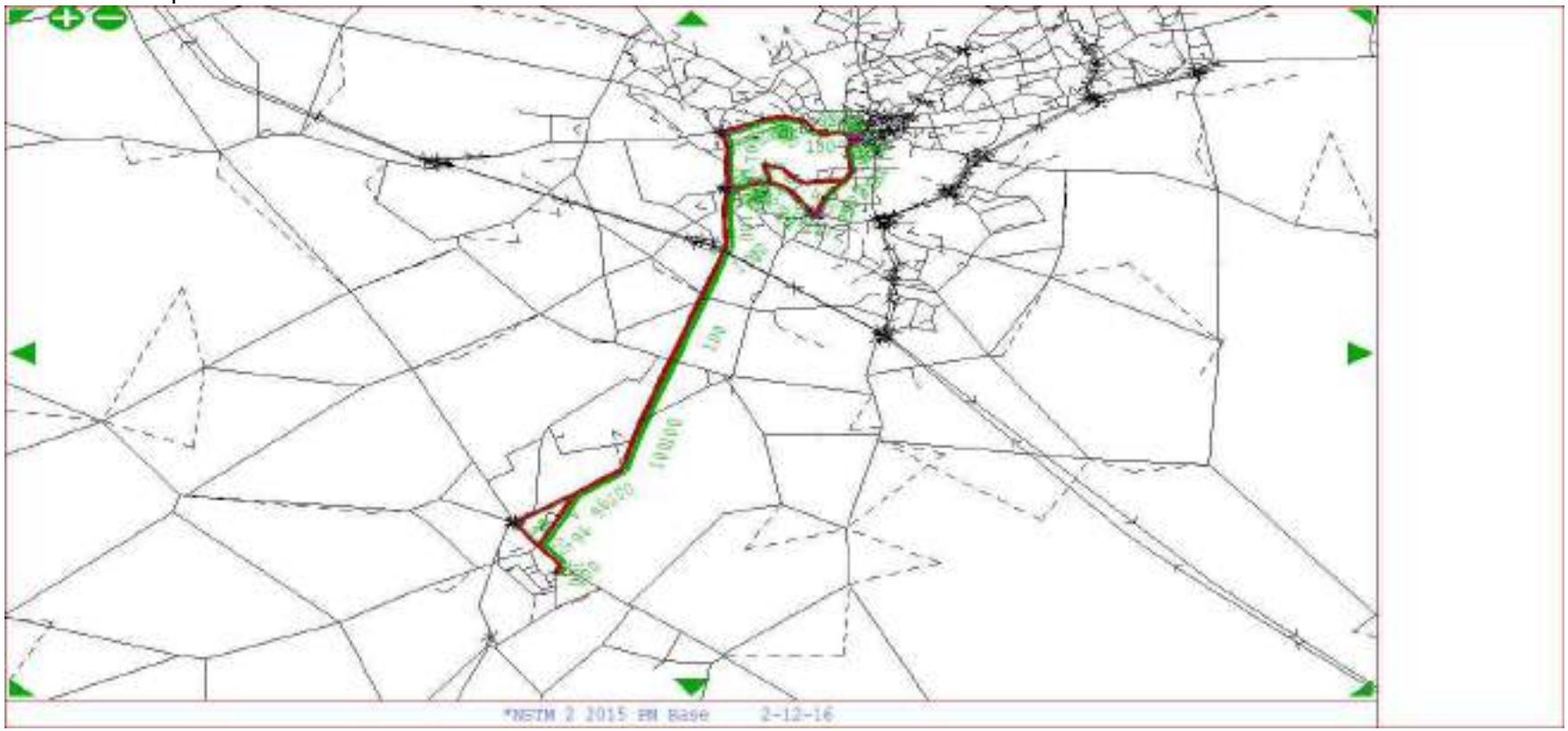
PM Peak

From Northampton To Towcester - User Class 3



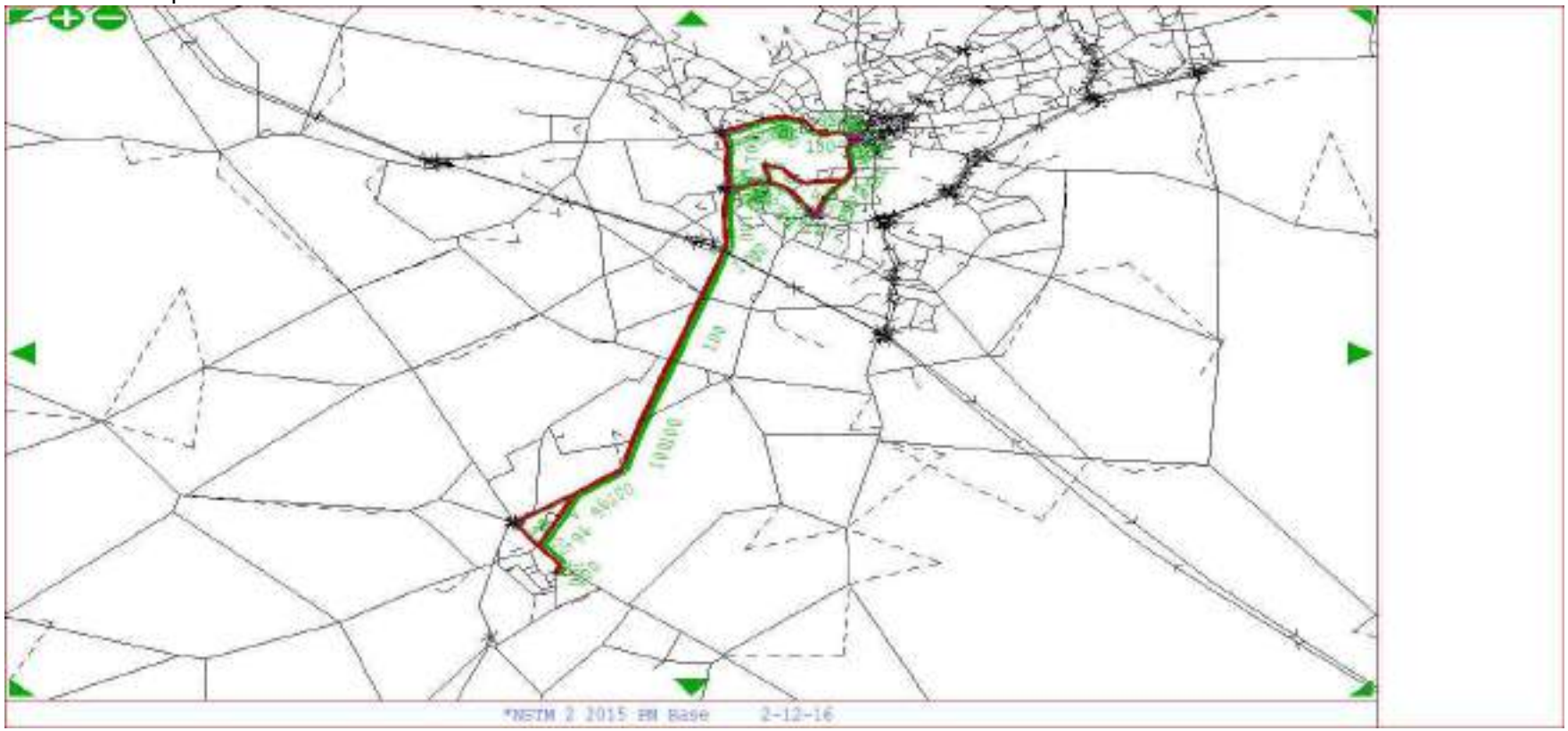
PM Peak

From Northampton To Towcester - User Class 4



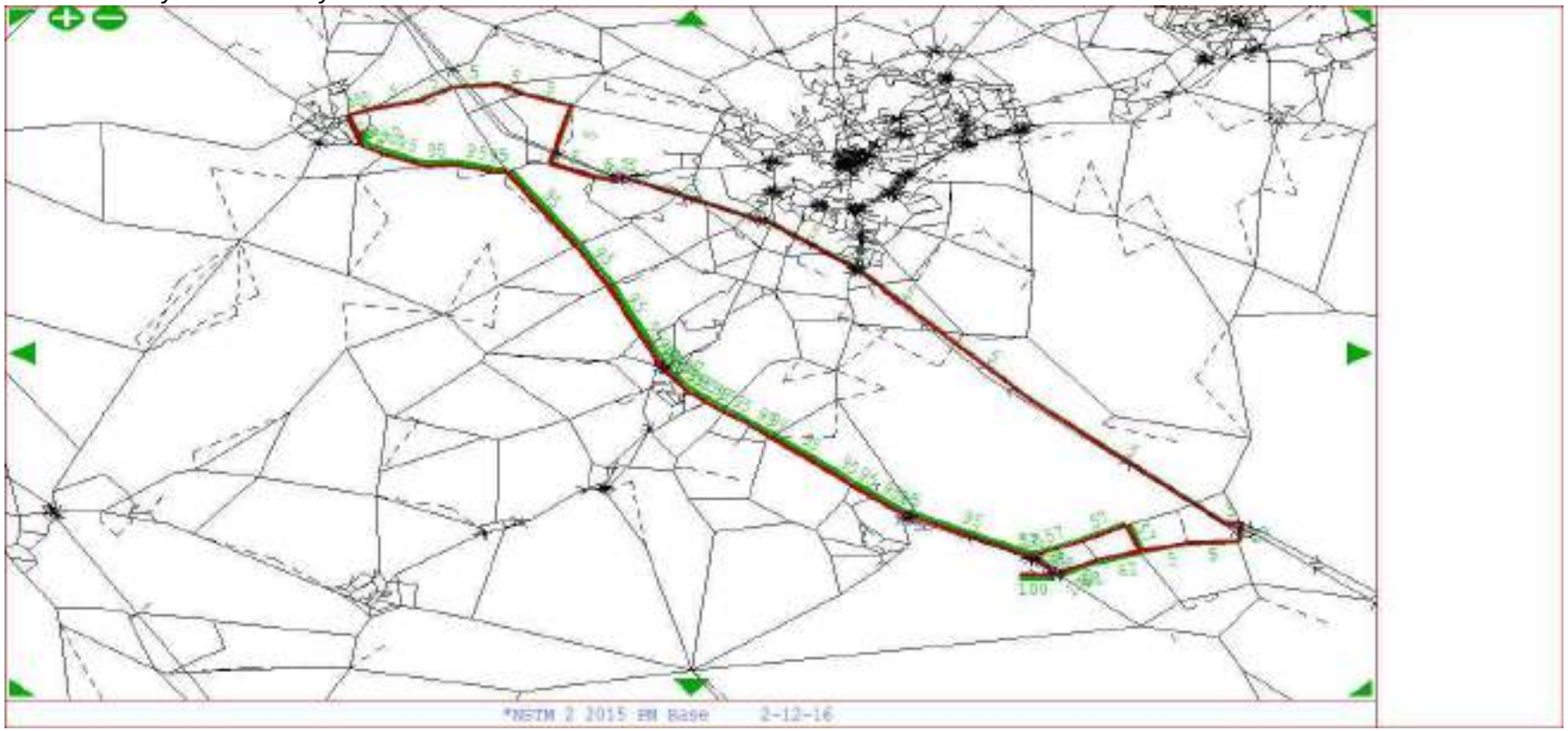
PM Peak

From Northampton To Towcester - User Class 5



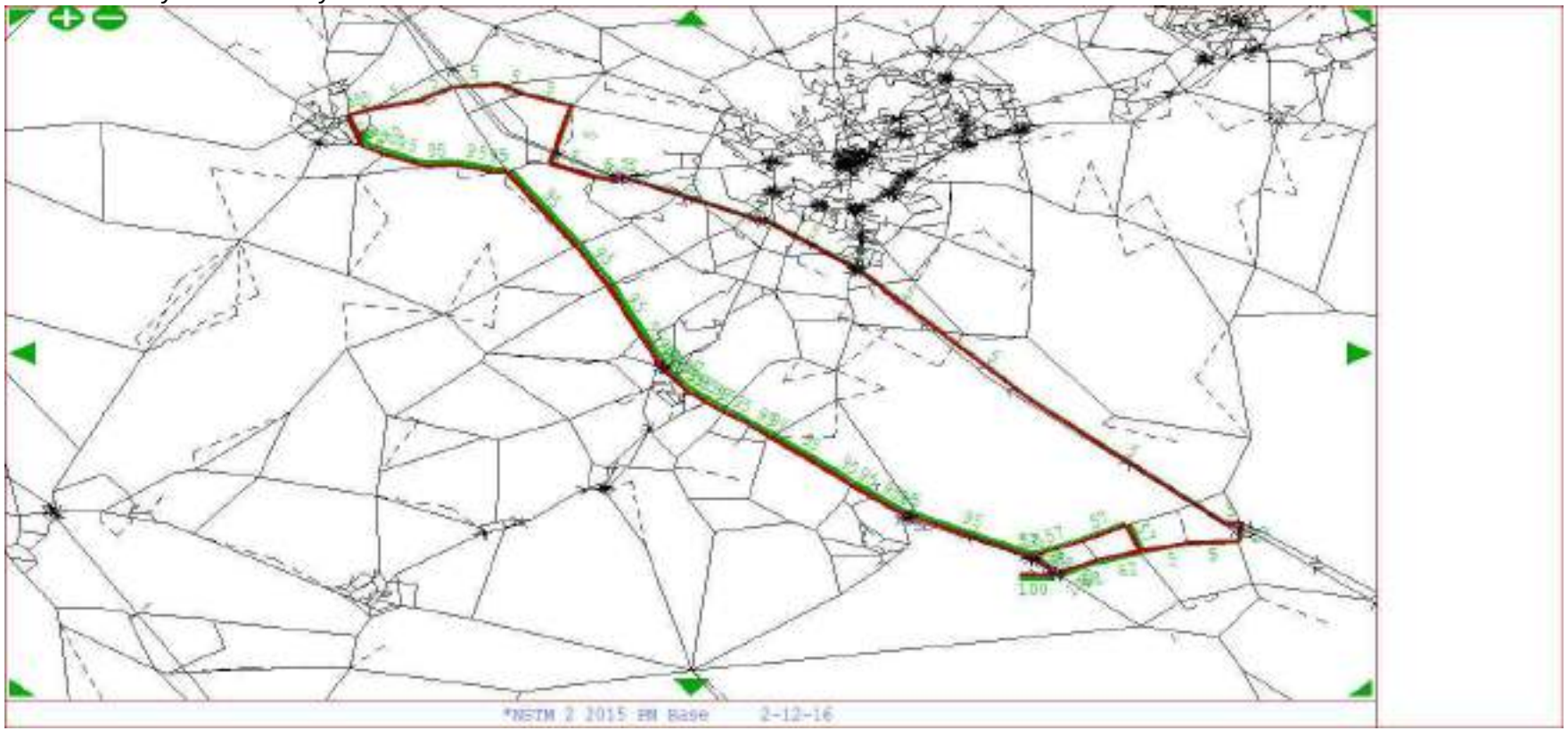
PM Peak

From Daventry To Milton Keynes - User Class 1



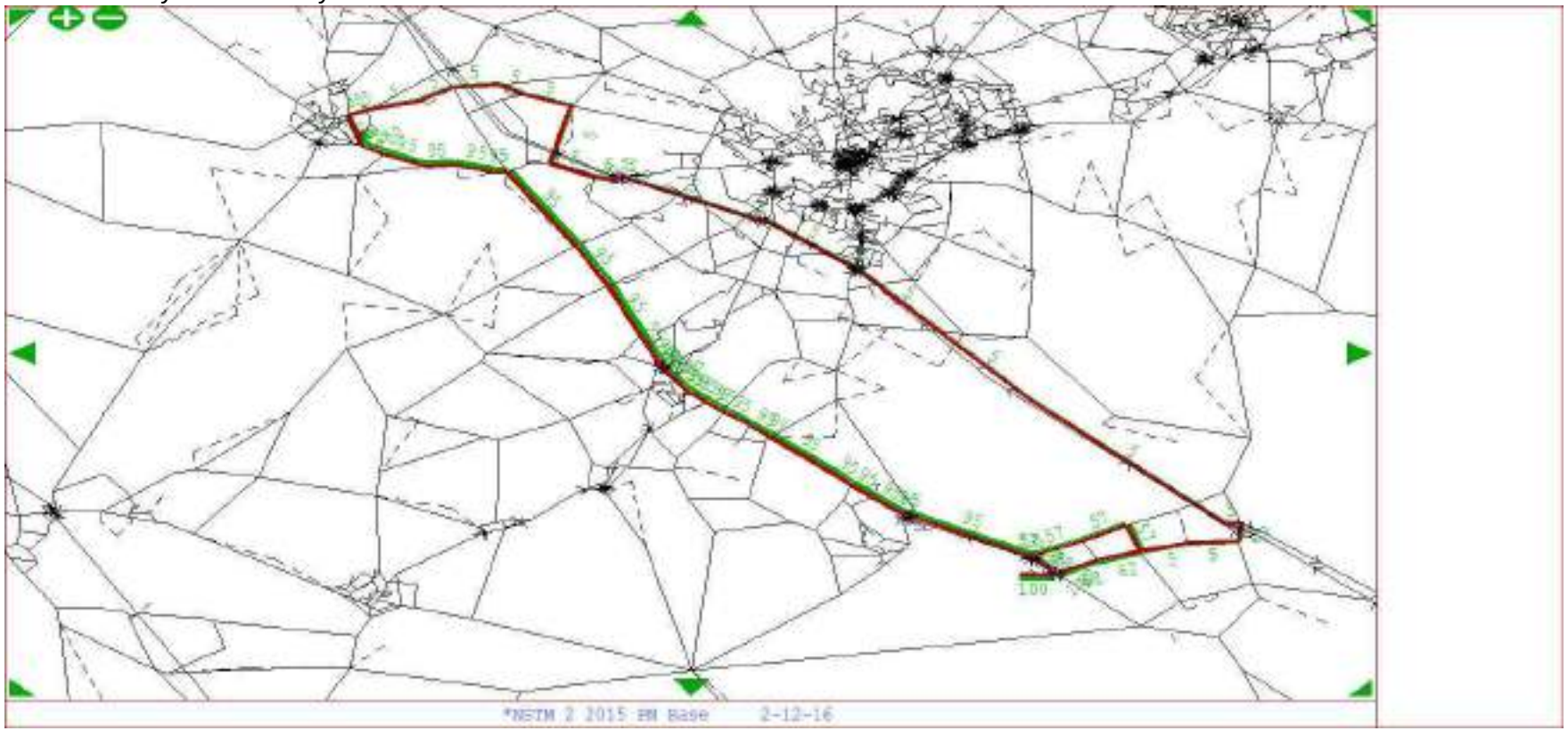
PM Peak

From Daventry To Milton Keynes - User Class 2



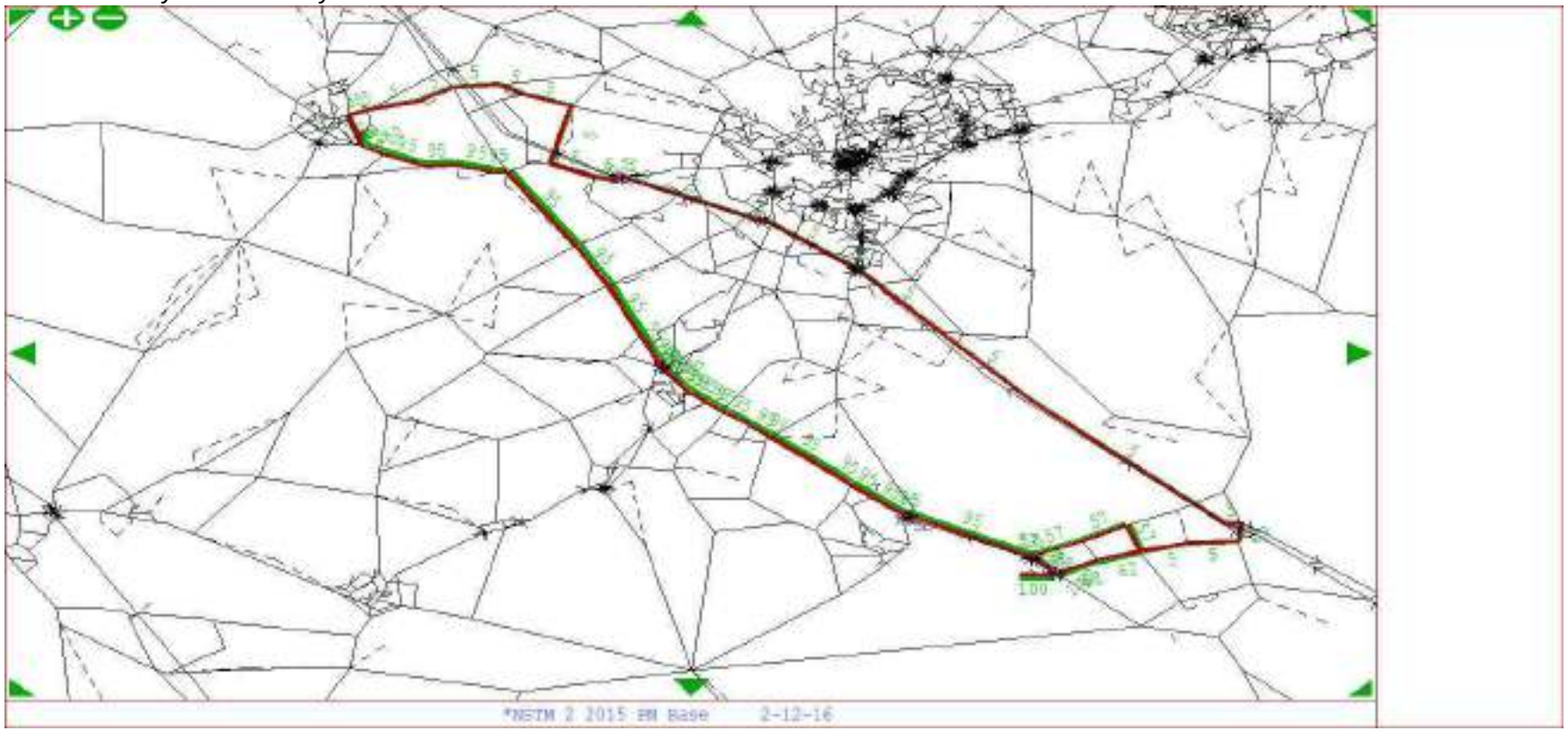
PM Peak

From Daventry To Milton Keynes - User Class 3



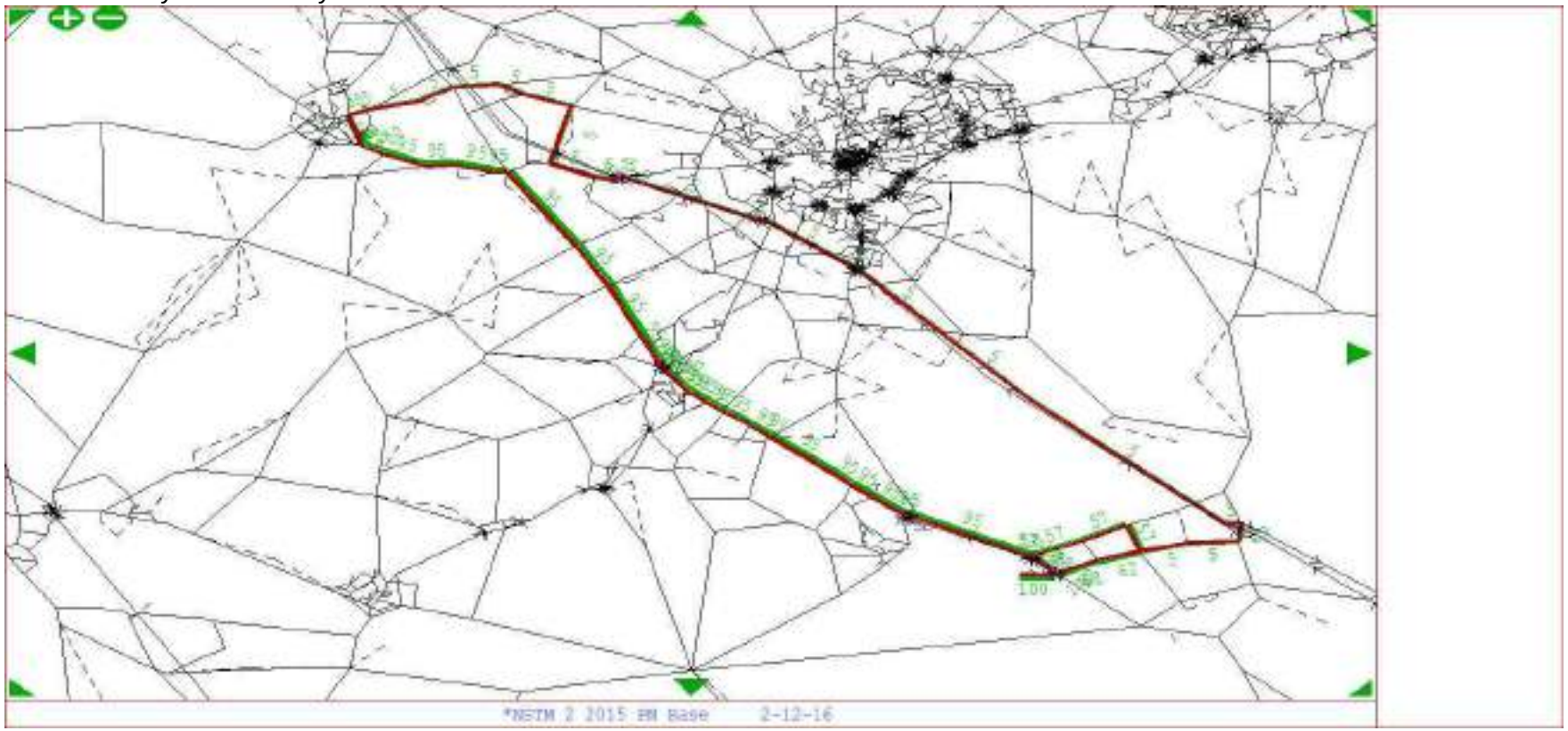
PM Peak

From Daventry To Milton Keynes - User Class 4



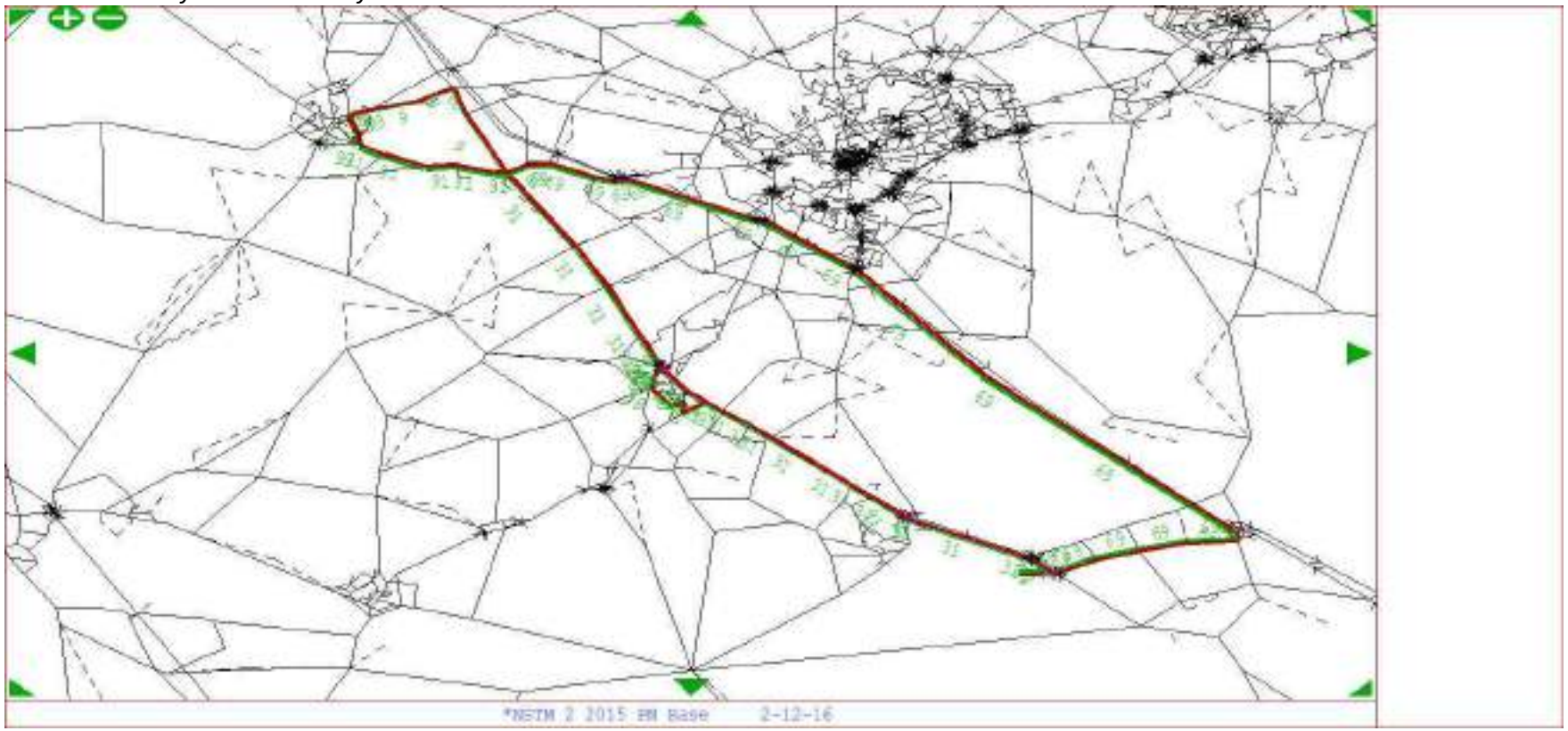
PM Peak

From Daventry To Milton Keynes - User Class 5



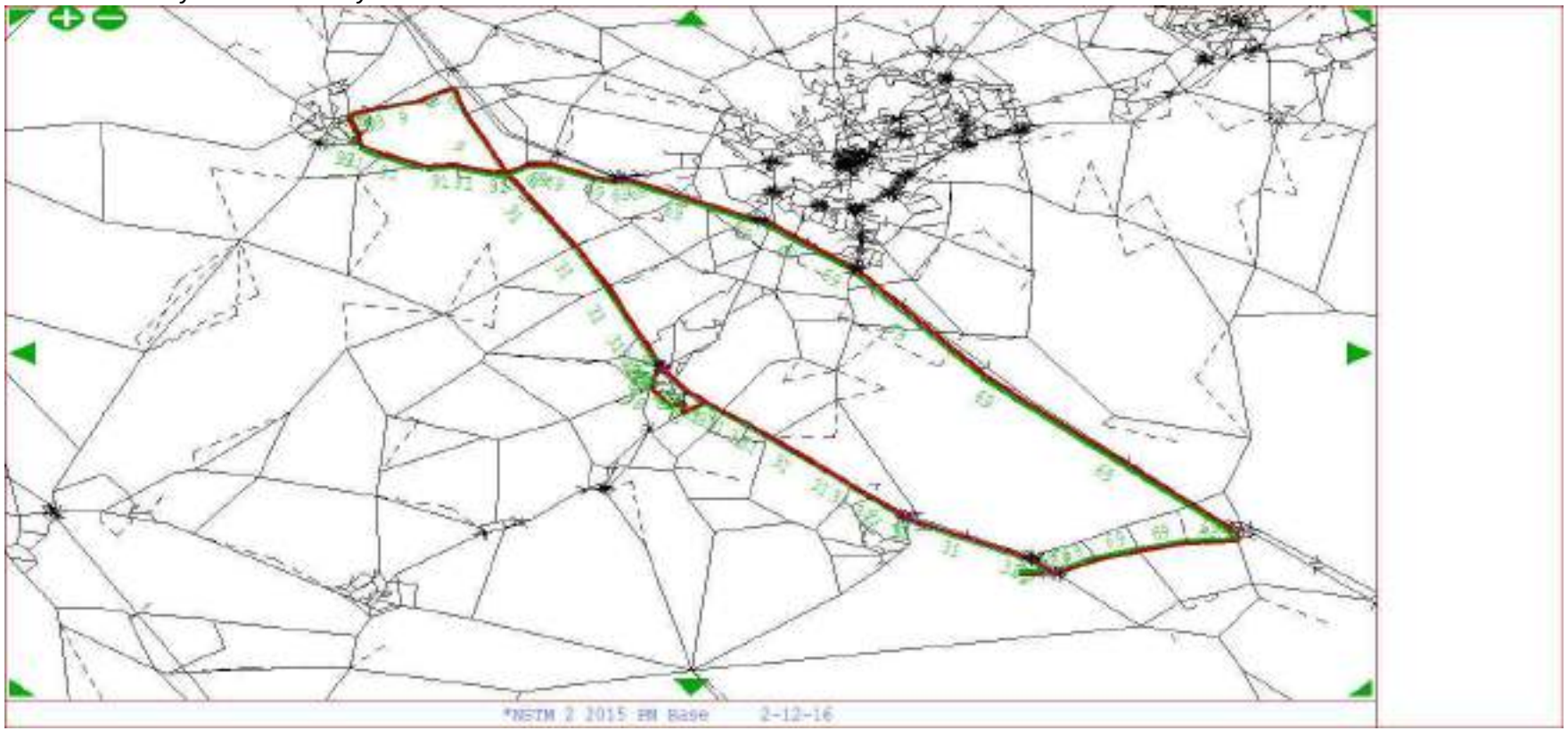
PM Peak

From Milton Keynes To Daventry - User Class 1



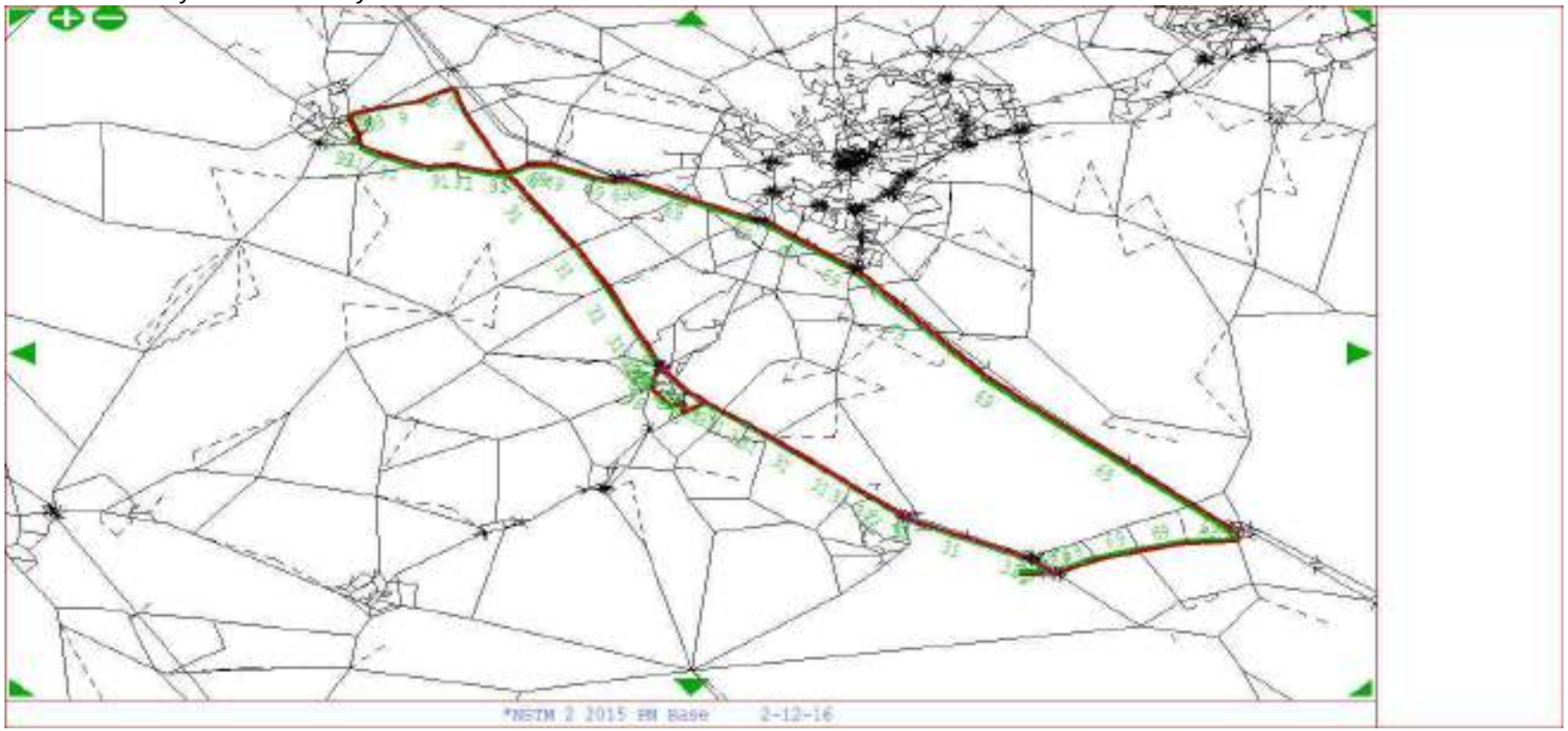
PM Peak

From Milton Keynes To Daventry - User Class 2



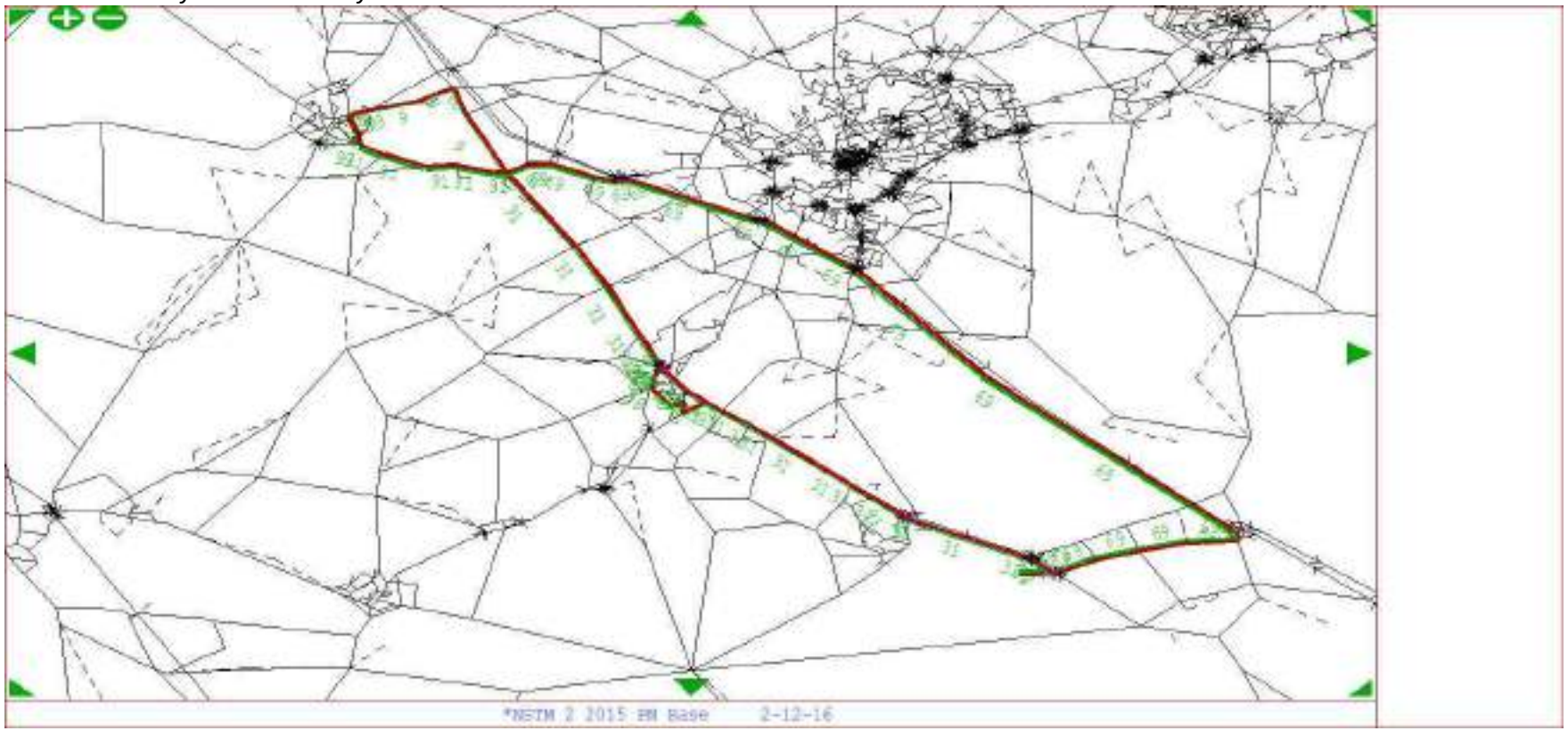
PM Peak

From Milton Keynes To Daventry - User Class 3



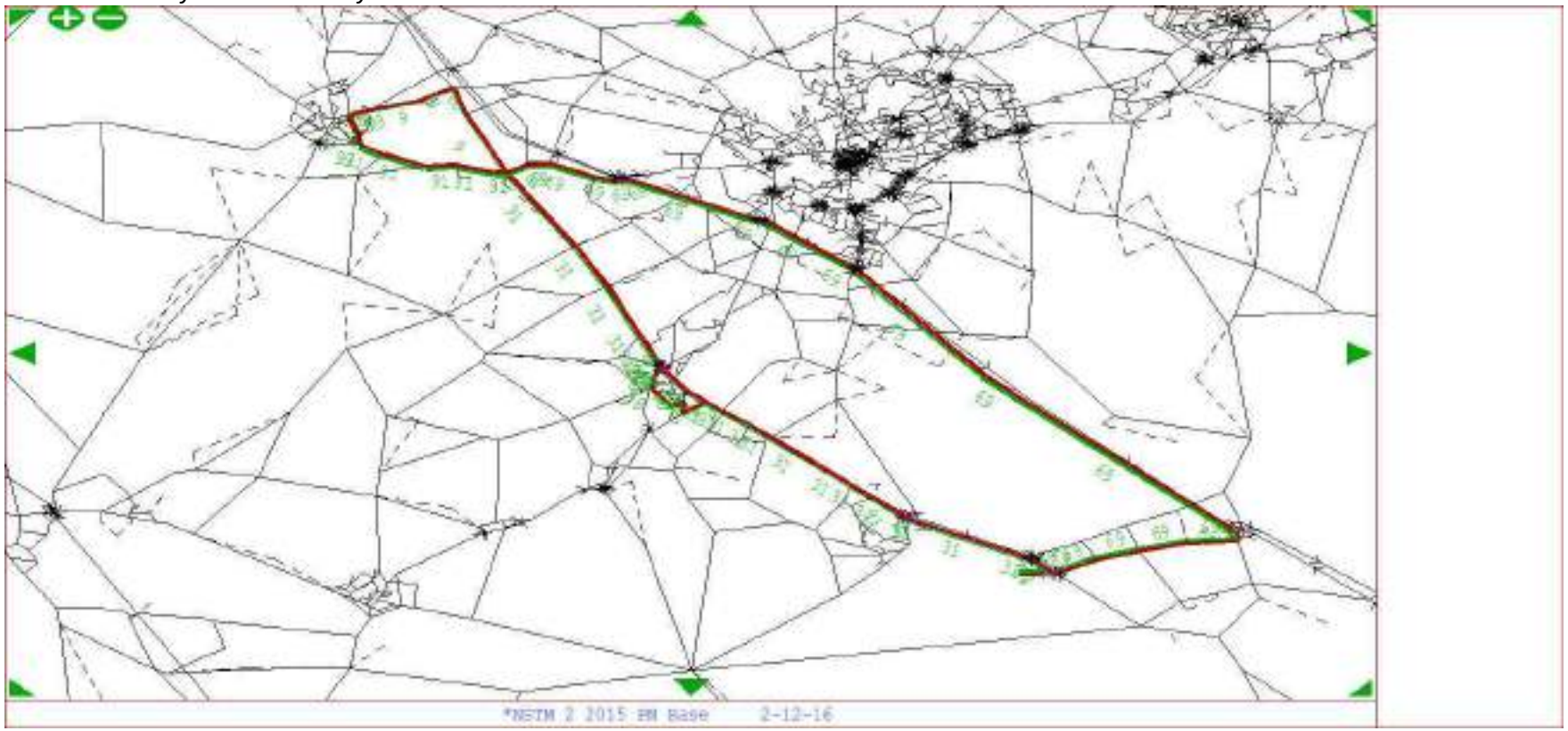
PM Peak

From Milton Keynes To Daventry - User Class 4



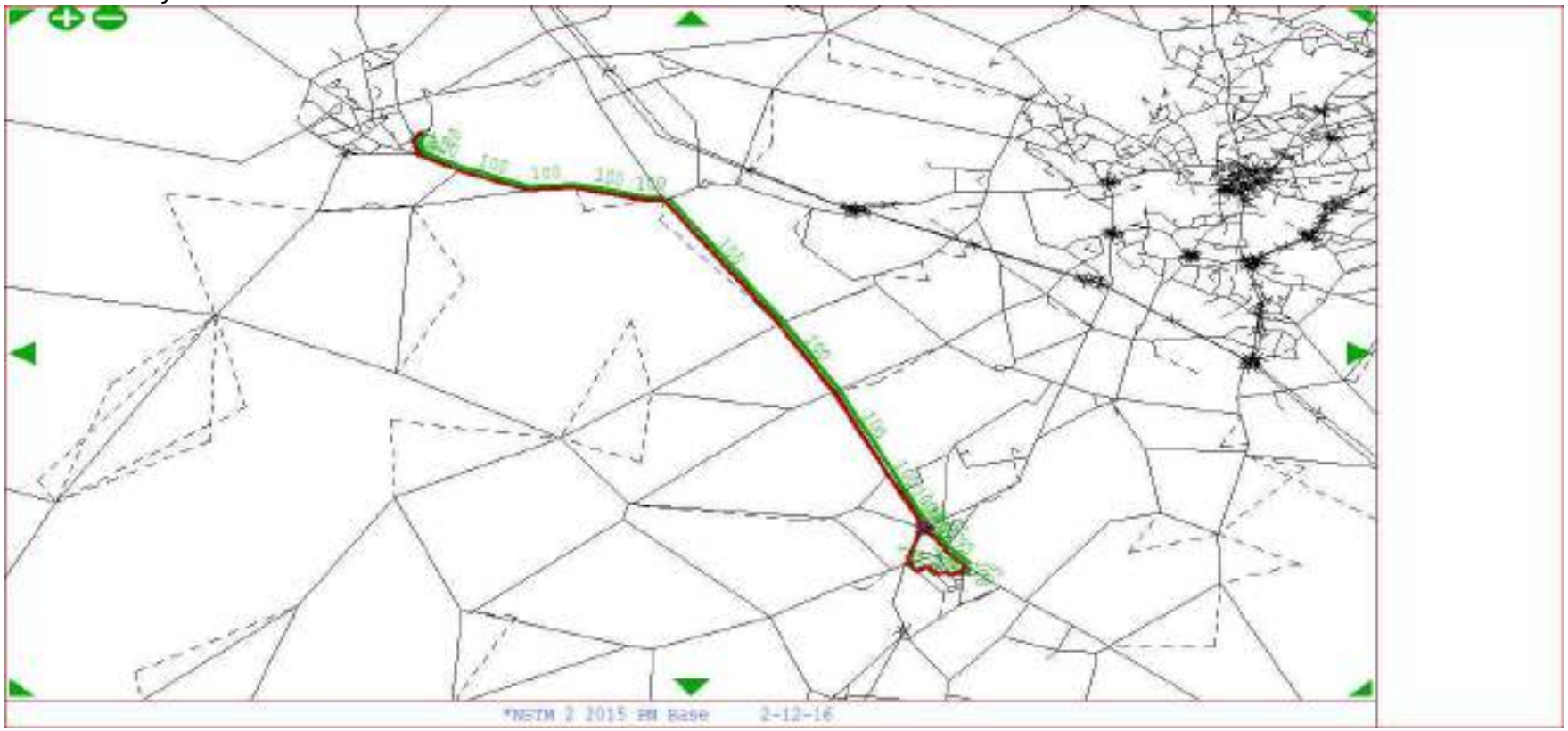
PM Peak

From Milton Keynes To Daventry - User Class 5



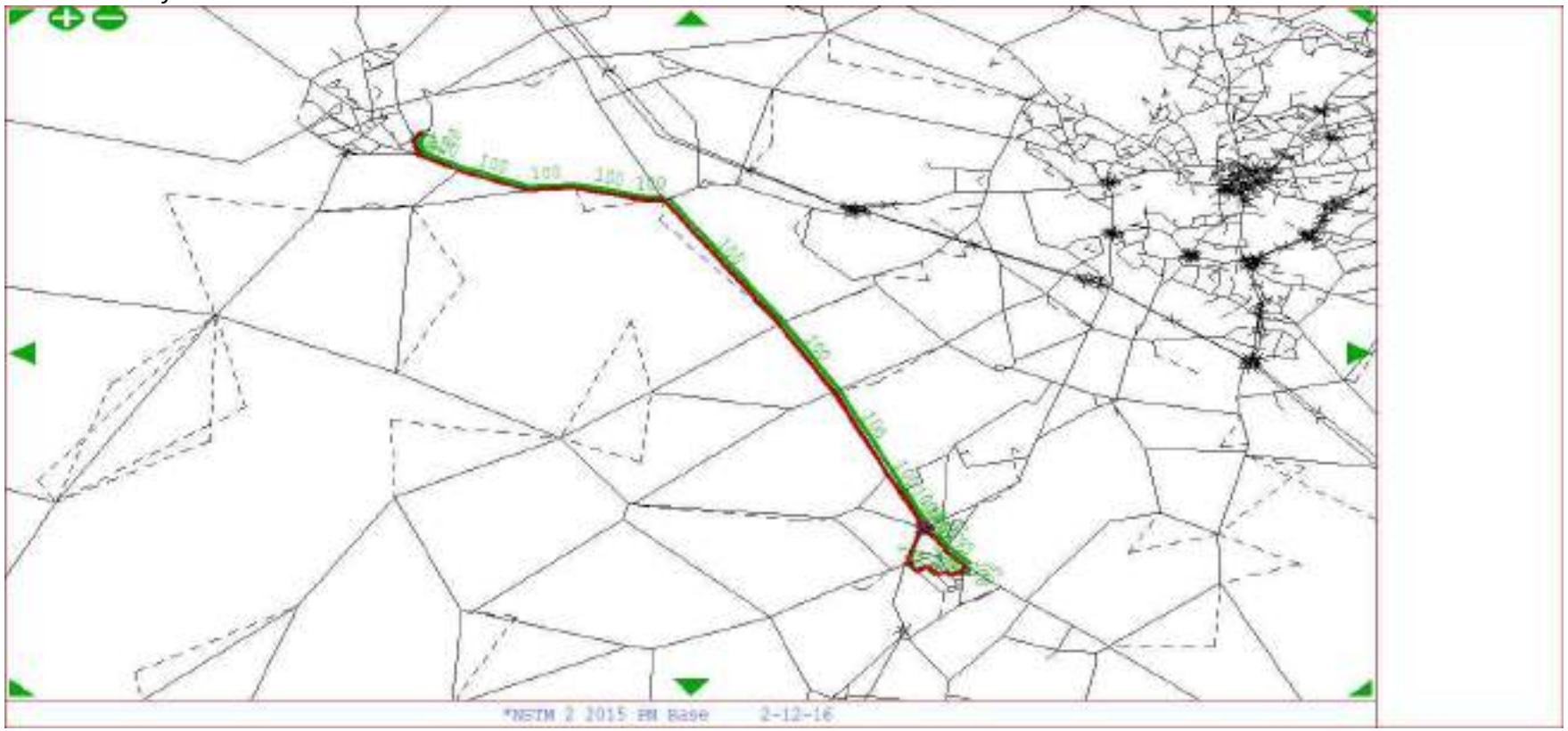
PM Peak

From Daventry To Towcester - User Class 1



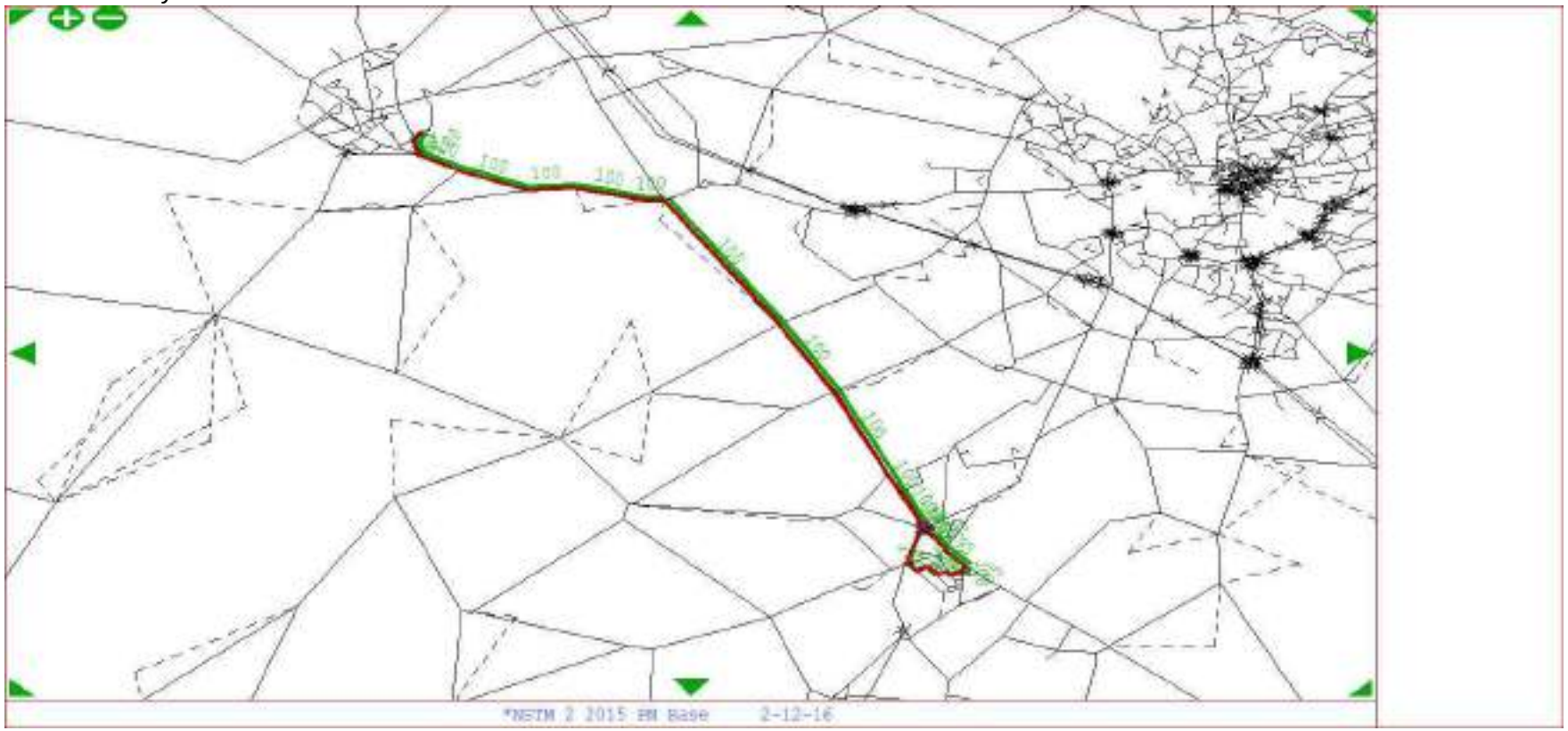
PM Peak

From Daventry To Towcester - User Class 2



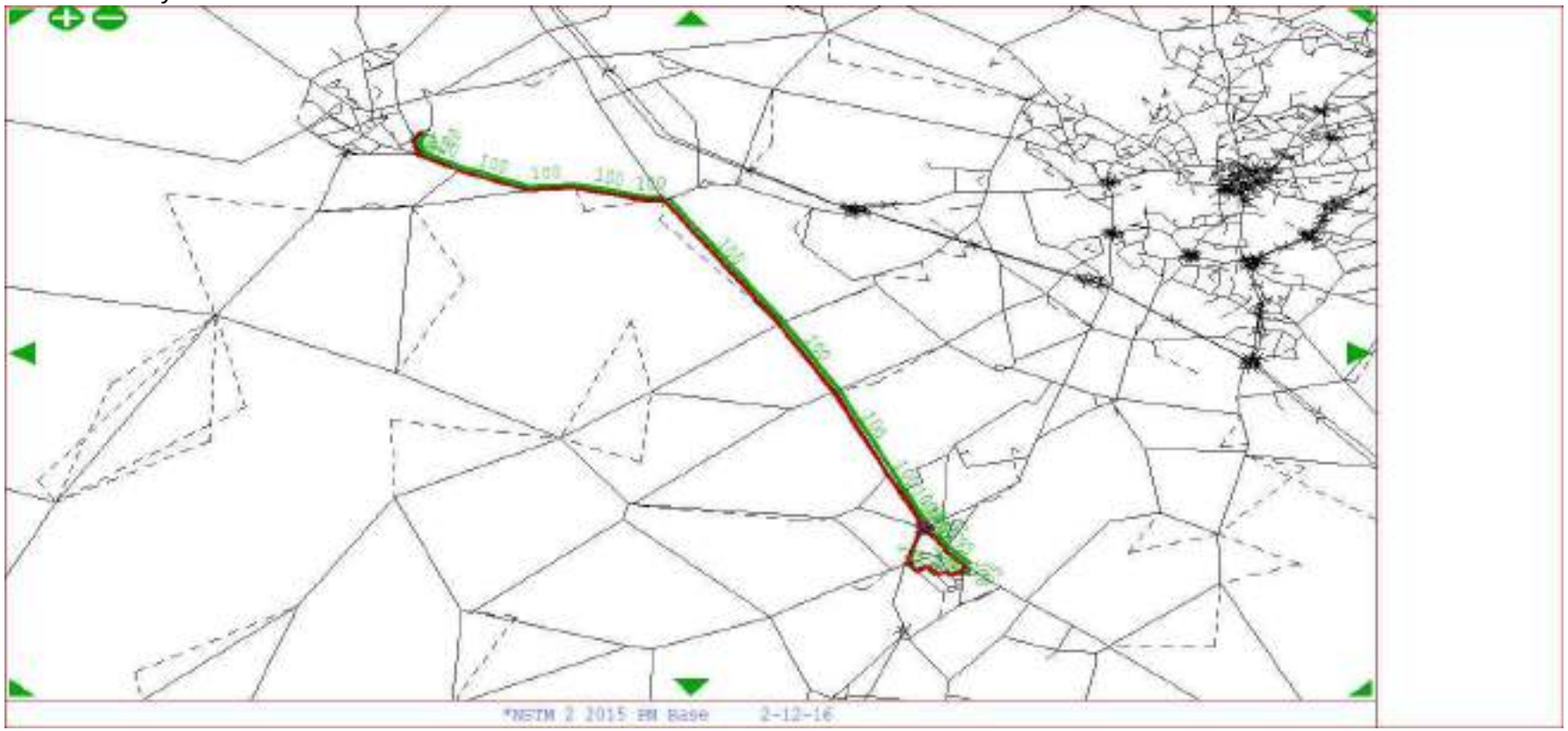
PM Peak

From Daventry To Towcester - User Class 3



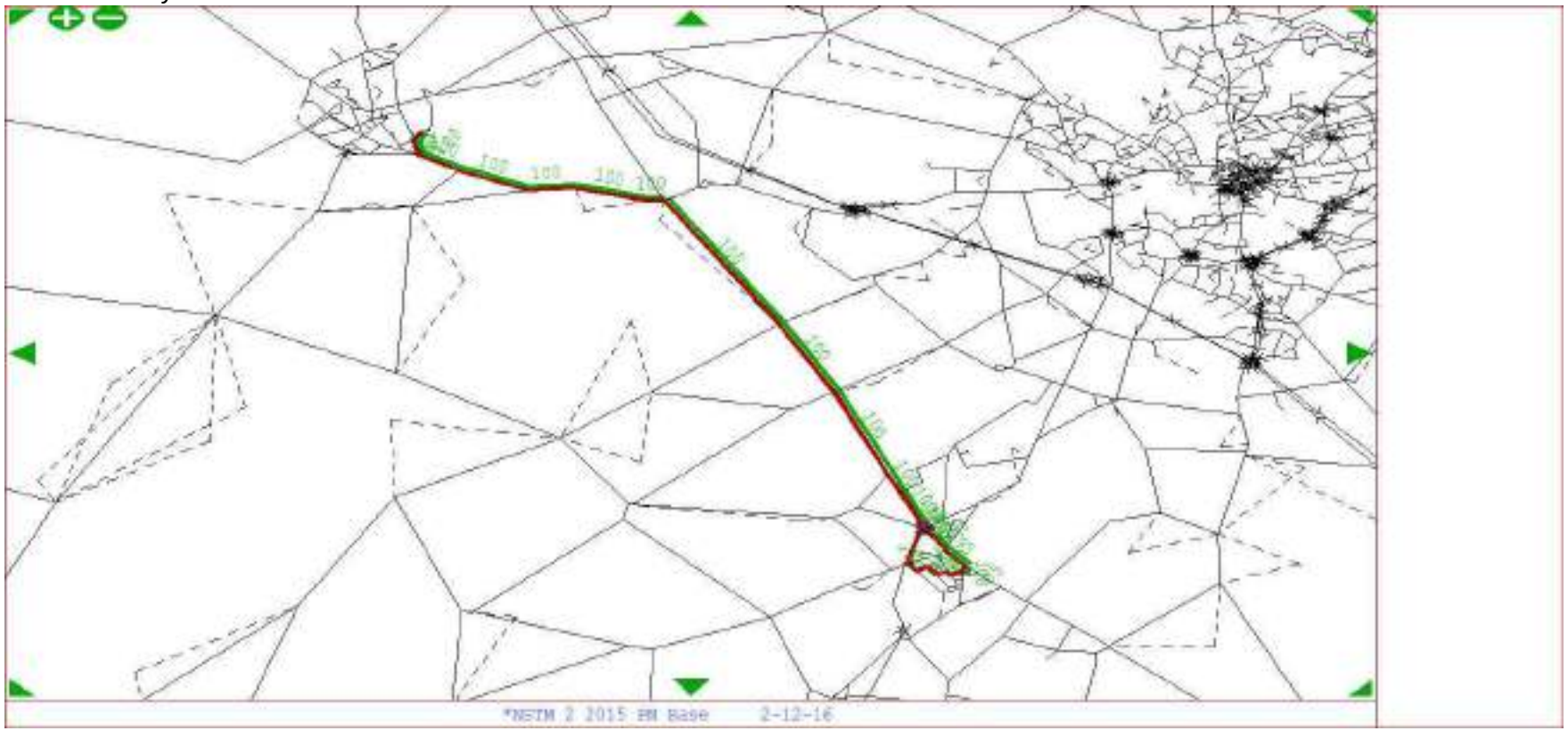
PM Peak

From Daventry To Towcester - User Class 4



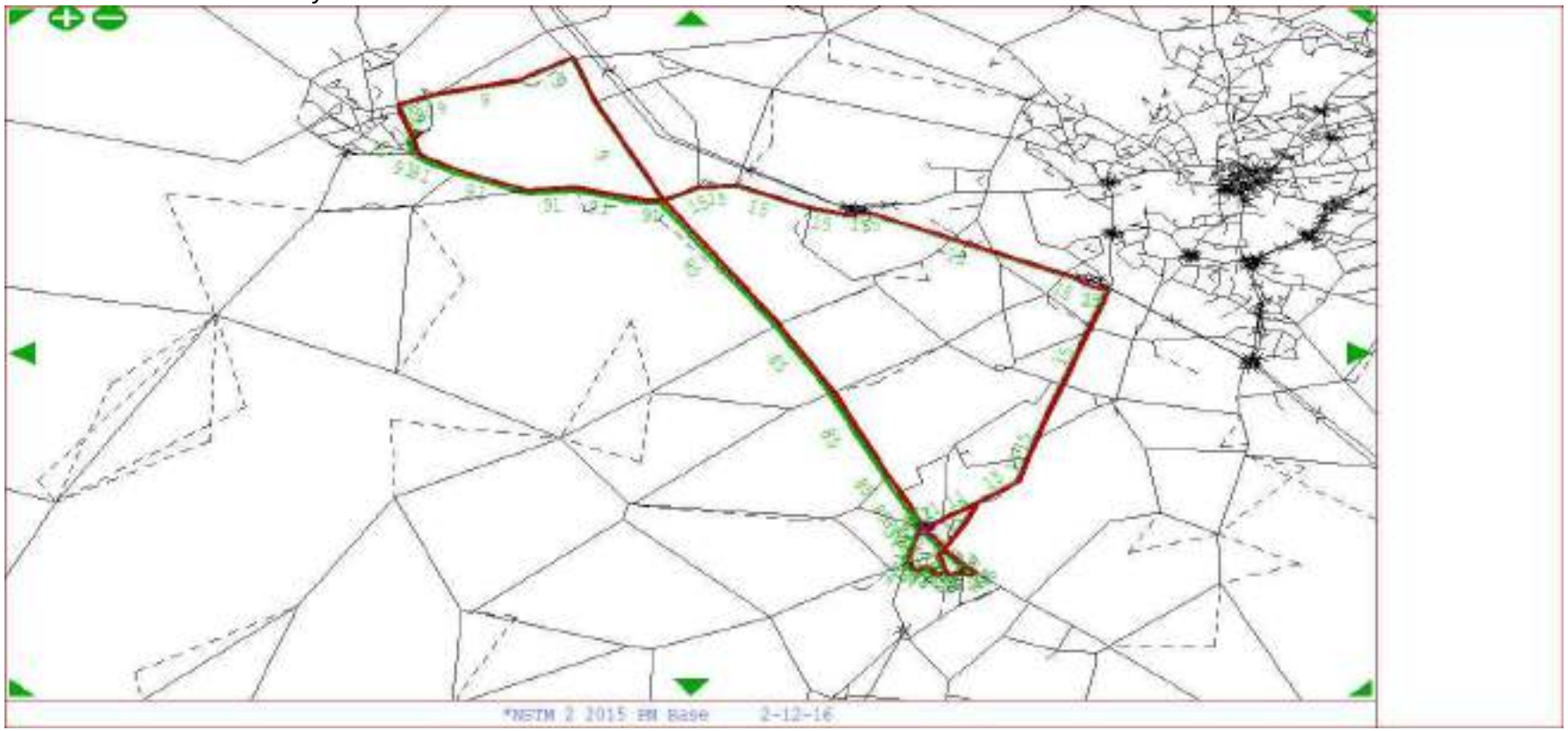
PM Peak

From Daventry To Towcester - User Class 5



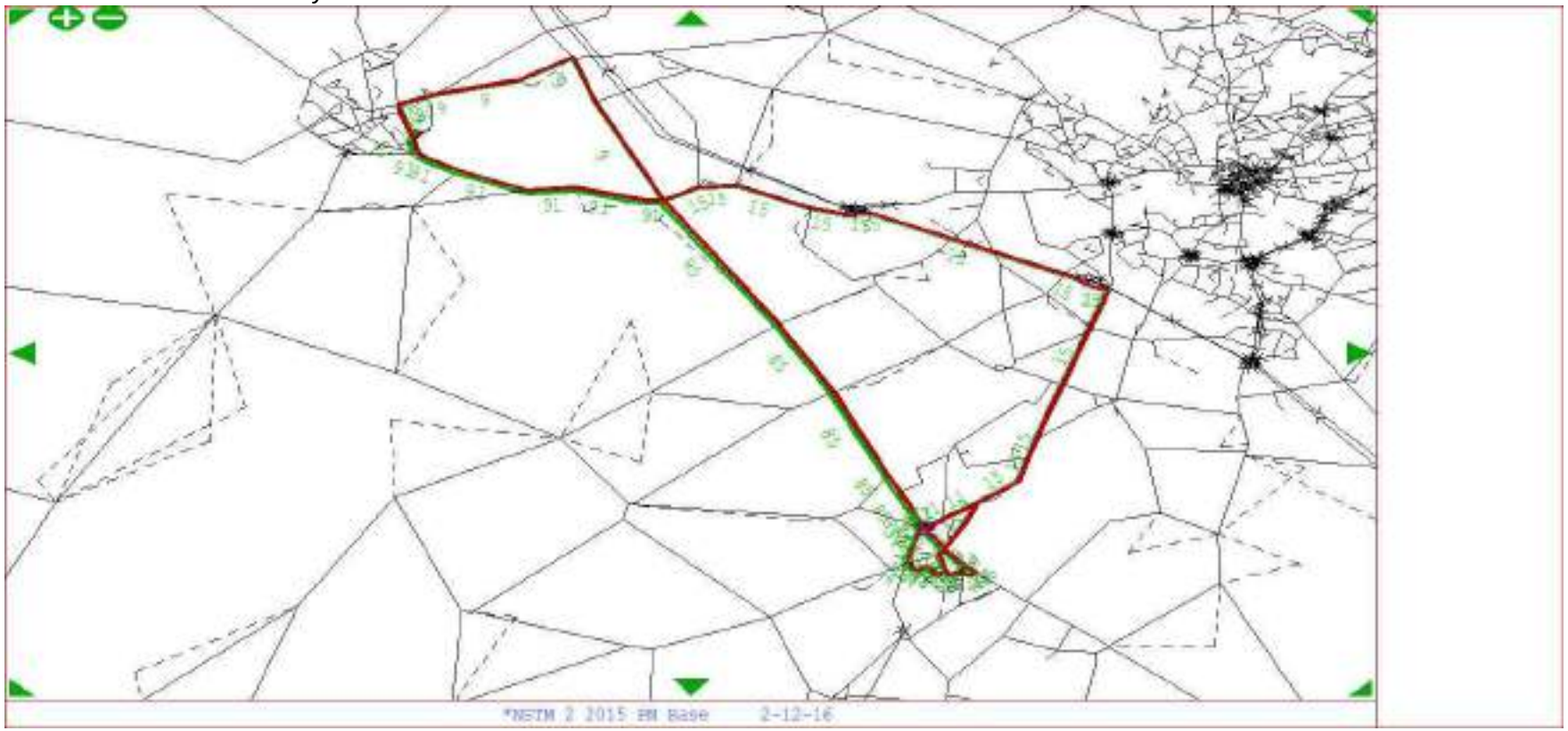
PM Peak

From Towcester To Daventry - User Class 1



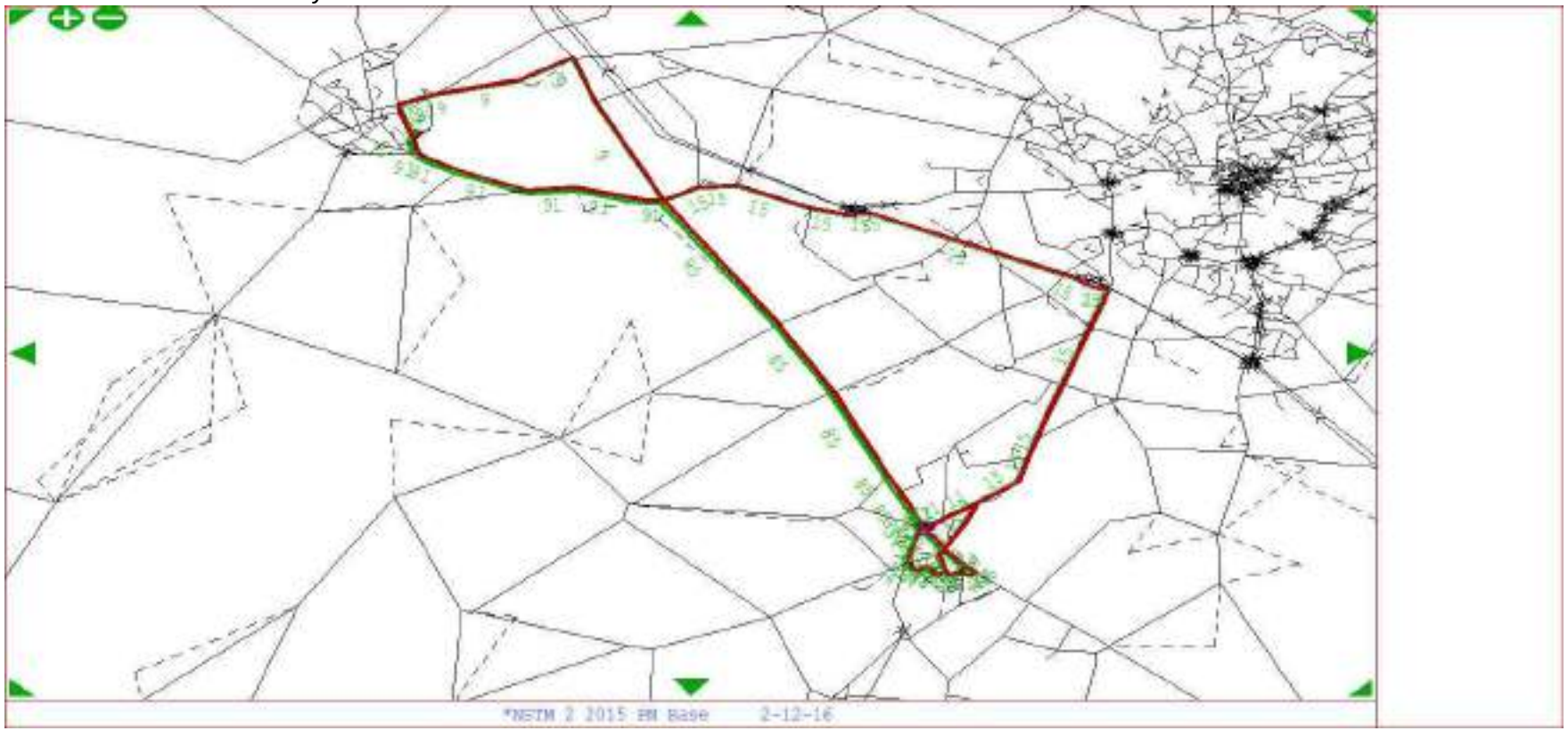
PM Peak

From Towcester To Daventry - User Class 2



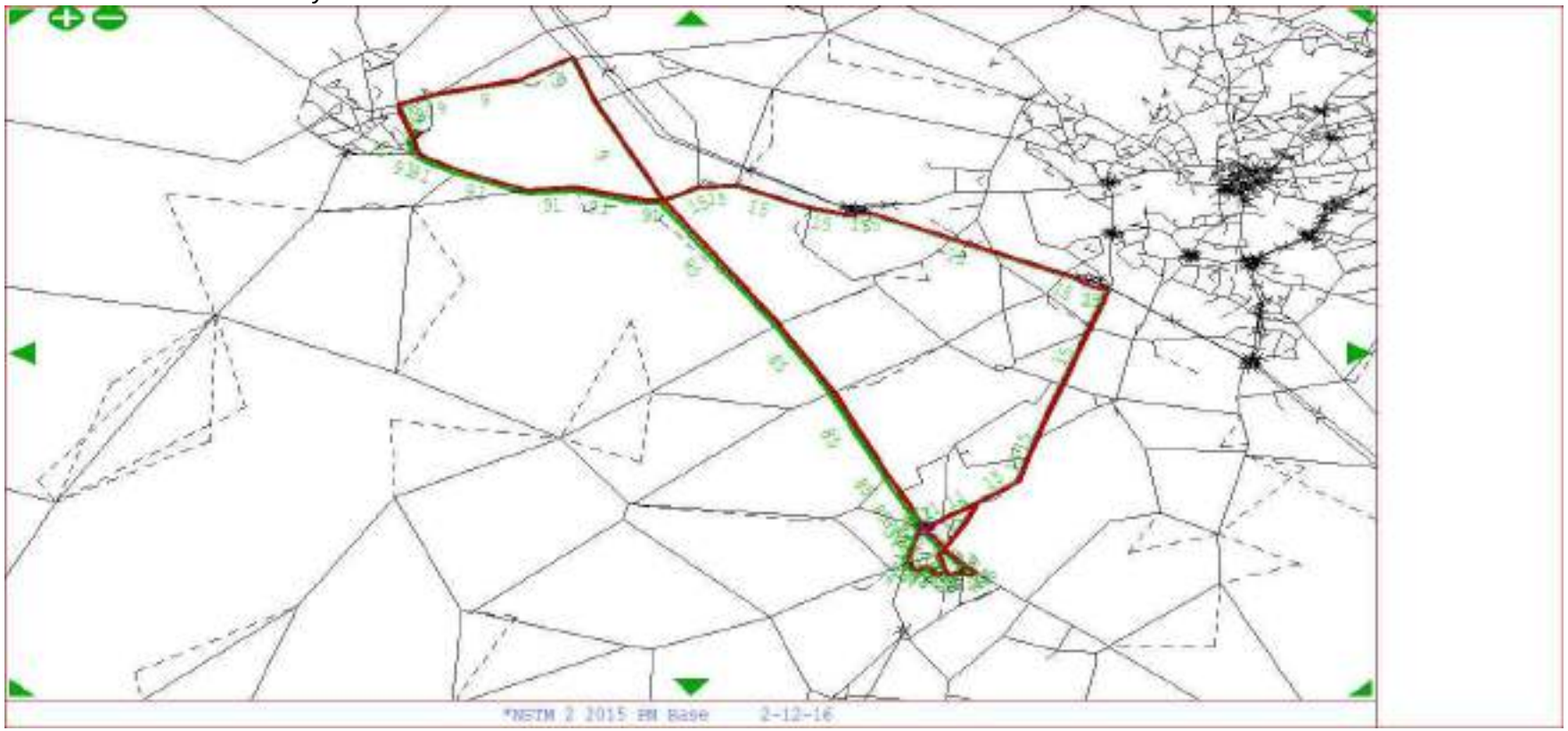
PM Peak

From Towcester To Daventry - User Class 3



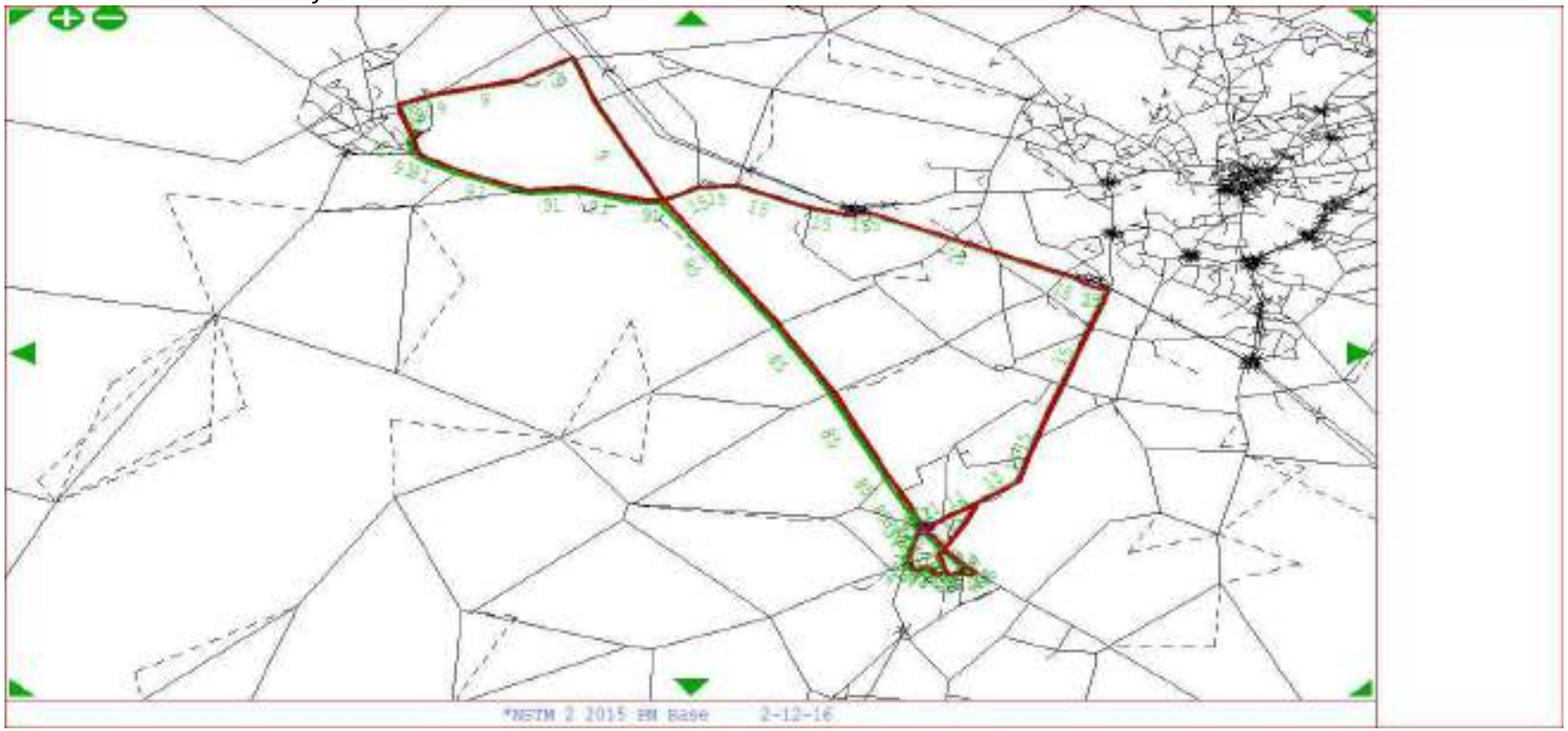
PM Peak

From Towcester To Daventry - User Class 4



PM Peak

From Towcester To Daventry - User Class 5



APPENDIX D

Modelling Methodology Specification Report

DRAFT

INFO NOTE

RAIL CENTRAL NORTHAMPTONSHIRE

MODELLING METHODOLOGY SPECIFICATION REPORT

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates (TPA)
Project	Rail Central Northamptonshire
Title of Document	Modelling Methodology Specification Report
Type of Document	Info Note
Date	13/10/2016
Reference number	104176
Number of pages	23

TABLE OF CONTENTS

1.	**INTRODUCTION**	**3**
1.1	**REPORT BACKGROUND**	**3**
2.	**RAIL CENTRAL DEVELOPMENT PROPOSALS**	**4**
2.1	**SITE LOCATION AND ACCESS**	**4**
2.2	**LAND USE PROPOSALS**	**4**
2.3	**AREA OF INFLUENCE**	**4**
2.4	**MODELLING REQUIREMENTS**	**5**
3.	**NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)**	**7**
3.1	**MODEL OVERVIEW**	**7**
3.1	**MODEL STRUCTURE**	**7**
3.2	**SOFTWARE PLATFORM**	**7**
3.3	**MODELLED AREA**	**8**
3.4	**MODEL TIME PERIODS**	**9**
3.5	**DEMAND SEGMENTATION AND USER CLASSES**	**9**
4.	**STAGE 1: BASE MODEL ENHANCEMENTS AND VALIDATION**	**10**
4.1	**SURVEY DATA**	**10**
4.2	**NETWORK ENHANCEMENTS**	**12**

4.3	NETWORK CHECKS	12
4.4	LOCAL AREA CALIBRATION AND VALIDATION (HIGHWAY)	14
4.5	PUBLIC TRANSPORT MODEL	15
4.6	DEMAND MODEL CALIBRATION	16
4.7	REPORTING	16
5.	STAGE 2: REFERENCE CASE DEVELOPMENT	17
5.1	OVERVIEW	17
5.2	YEAR OF OPENING	17
5.3	FULL CORE STRATEGY MODEL	17
5.4	REPORTING	18
6.	STAGE 3: WITH DEVELOPMENT MODELLING	19
6.1	OVERVIEW	19
6.2	DEVELOPMENT ACCESS	19
6.3	TRAFFIC GENERATION	19
6.4	TRAFFIC DISTRIBUTION	20
6.5	MODELLING OF PUBLIC TRANSPORT	20
6.6	SCHEME PHASING	21
6.7	REPORTING	21
7.	STAGE4: MITIGATION MODELLING	22
7.1	OVERVIEW	22
7.2	REPORTING	22
8.	ENVIRONMENTAL OUTPUTS	23
8.1	GENERAL APPROACH	23

1. INTRODUCTION

1.1 Report Background

1.1.1 This report outlines the suggested strategy associated with the strategic transport modelling of the proposed Rail Central Scheme in Northamptonshire located on land to the south-west of M1 junction 15A adjacent to the A43.

1.1.2 Transport Planning Associates (TPA) are developing the detailed transport related submissions associated with the Rail Central scheme and have commissioned SYSTRA to advise on the strategic modelling aspects of the appraisal.

1.1.3 The scheme is classified as a nationally significant infrastructure project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

1.1.4 A transport model is being developed to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process will be used in the development of a Transport Assessment to be submitted as part of the National Infrastructure Planning (NIP) application.

1.1.5 The Northampton Strategic Transport Model (NSTM) which is currently being rebased and revalidated by WSP Parsons Brinckerhoff has been identified as a suitable tool to form the basis of the strategic transport modelling for the site. Further details of this model are presented in this report. All updates and application of this model will be undertaken by WSP Parsons Brinckerhoff with model outputs being provided to the applicants team for use in their appraisal of the site.



2. RAIL CENTRAL DEVELOPMENT PROPOSALS

2.1 Site Location and Access

2.1.1 The proposed Rail Central site is located on an area of undeveloped land bounded by the village of Milton Malsor to the North, The West Coast Mainline Railway to the south, the Northampton Loop Railway to the east and the A43 Trunk Road to the west.

2.1.2 Access will be gained via a new grade separated junction onto the A43. Northampton Road passes through the site, however there will be no general traffic connections to this route from the developments internal road network, however, emergency, pedestrian and cycle access is to be provided.

2.2 Land Use Proposals

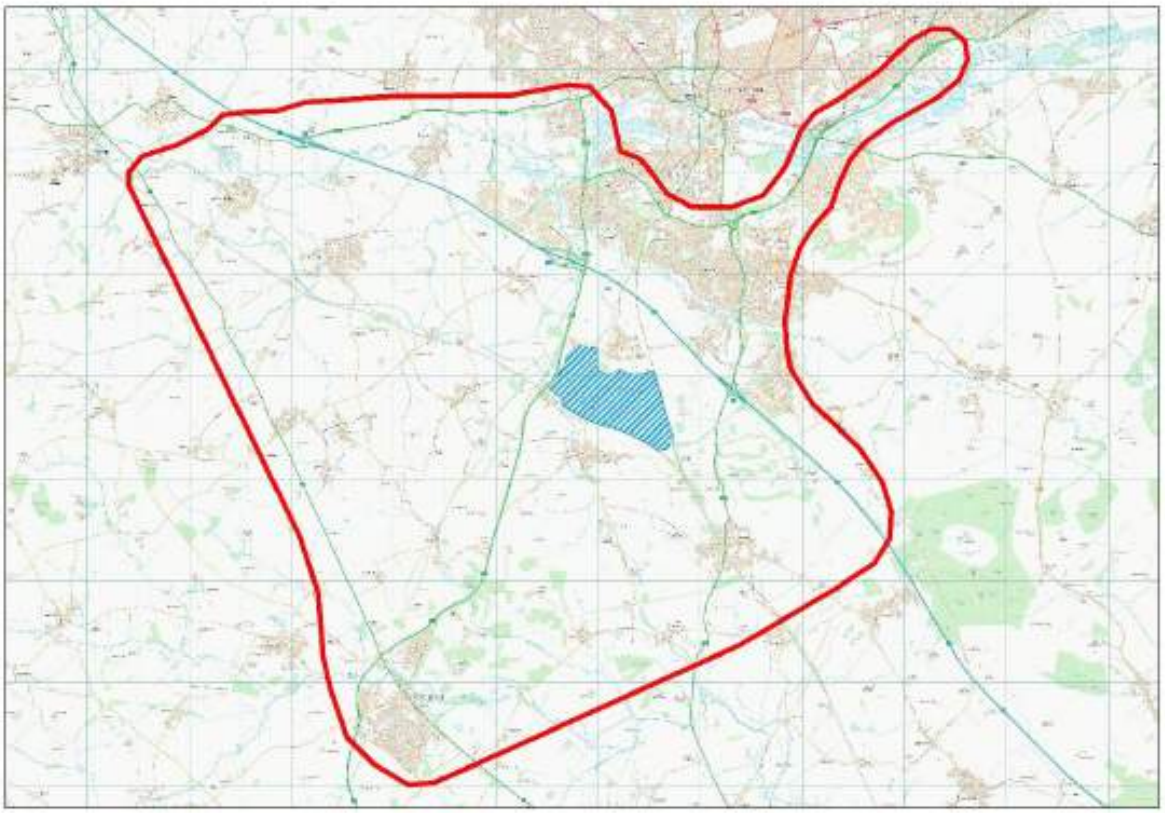
2.2.1 The current land use proposals include:

- An intermodal Park on the Northampton Loop line.
- Up to 8 million sqft of warehouse/distribution units.
- A train maintenance depot.
- A 149 space HGV Truck Park.

2.3 Area of Influence

2.3.1 A strategic modelling Area of Influence has been identified through an initial analysis of the flow impact of the scheme using the current Northamptonshire Transport Model combined with discussions with interested parties regarding other routes and areas that may be affected by the scheme. This AOI is shown in Figure 2.

Figure 1. Strategic Modelling Area of Influence



2.3.2 The Area of Influence for the site is shown in Figure 2 and the transport model is required to model this area in detail. This area has been identified for the purposes of the Local Model Validation and Strategic modelling exercises and not the scope for the Transport Assessment for the scheme. The AOI includes

- the Highways England Routes of the A43, M1, A5 and A45;
- urban routes on the southern side of Northampton; and
- rural routes leading to local villages between the A5 and the M1.

2.4 Modelling Requirements

2.4.1 The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

2.4.2 A transport model is required to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process will be used in the development of a Transport Assessment to be submitted as part of the National Infrastructure Planning (NIP) application.

2.4.3 The mitigation measures are likely to include improvements to the HE routes in the vicinity of the site including an access onto the A43, local highway network improvements and bus based public transport improvements.

2.4.4 As a result of these general requirements we have identified a core list of model functionality that will be required to undertake this assessment as follows:

- Full simulated representation of the highway networks within the identified Area of Influence. This will include detailed representation of the operation of all classified roads and junctions within the network to enable the junction impacts to be assessed.
- Public Transport model capable of assessing the modal implications of new bus services accessing the site with routes serving the main catchment areas.
- Demand model to include mode choice and trip distribution as a minimum, calibrated to a level acceptable by the HE and local highway authorities.
- Separate OGV/HGV matrices that can reflect the regional and sub-regional HGV movements associated with the site.
- High levels of validation on the HE routes in the vicinity of the site and on local routes within the Area of Influence to an agreed level similar to WebTAG guidelines.
- Appropriate zoning system that ensures that local demand is disaggregated to ensure high quality representation of all transport movements between the site and its employment catchment.
- The model and modelling assessment has to be acceptable to all impacted authorities.
- Outputs have to be capable of being used to justify and design improvements to the local highway and public transport networks.
- Outputs robust enough to form the bases of the Transport Assessment to form part of the NSIP application.
- Provision of 16hr AAWT and 24hr AADT flows for assessment of Noise and Air Quality implications of the development by an environmental consultant.

2.4.5 As part of the NSIP application process Statements of Common Ground will be prepared between the development team, the local highway authorities and HE. It is anticipated that the outputs from the modelling process will form a key component of the Statements of Common Ground.

3. NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)

3.1 Model overview

3.1.1 In 2008, the North Northamptonshire Highway Model (SATURN) and the West Northamptonshire Multi-Modal Model (SATURN and EMME/2) were combined and updated to produce the Northamptonshire Strategic Transport Model (NSTM).

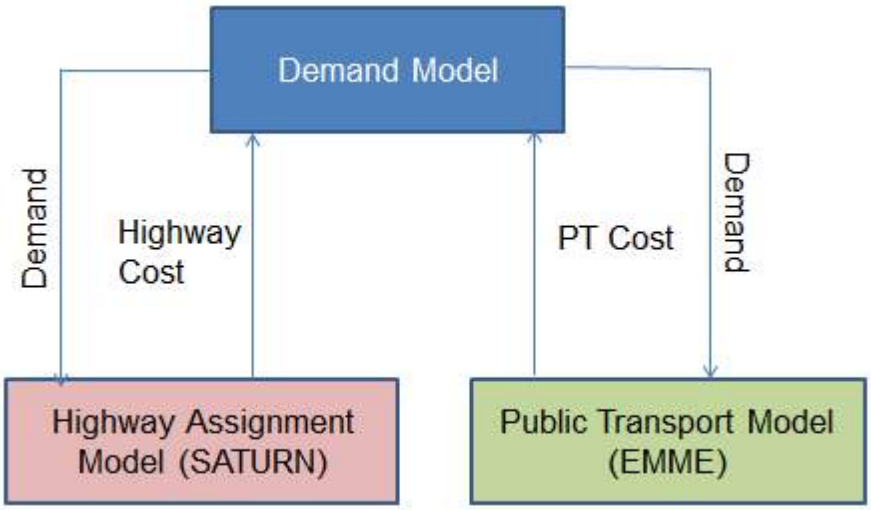
3.1.2 The SATURN suite of programs was used to build the highway model while EMME3 was used to build the Demand Model and the Public Transport Model. The strategic model developed by WSP offered an integrated system for a range of transport modes, representing private and public transport as well as modal interchange behaviour such as walking.

3.1.3 NSTM is currently being rebased to a 2015 base year by WSP Parsons Binckerhoff so that it is consistent with current WebTAG guidance. The resultant model is summarised below.

3.1 Model Structure

3.1.1 The NSTM will comprise a TAG compliant full demand model, with separate highway and public transport assignment models that interact under the control of the demand model. The interaction between the models is shown in Figure 3.

Figure 2. NSTM Model Structure



3.2 Software Platform

3.2.1 The highway assignment model will be run in SATURN (version 11.3.12F) as it is the most widely used and accepted highway assignment software in the UK.

3.2.2 The demand model and public transport assignment model will be run in EMME (version 4.2.3).

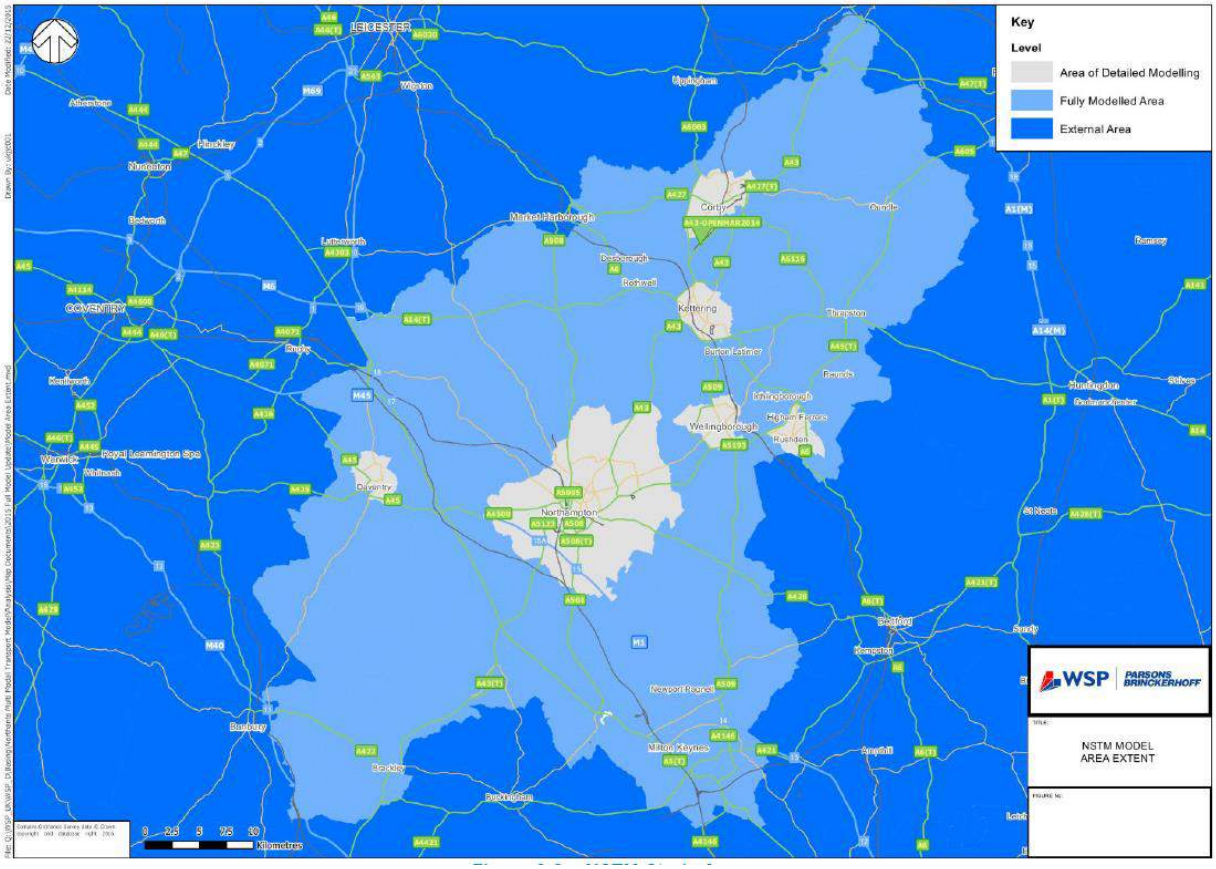
3.3 Modelled Area

3.3.1 The modelled area is set out in terms of a three-tier hierarchy, comprising:

- Area of Detailed Modelling: covers all roads with significant traffic volumes and all realistic route choices available to drivers, with all major junctions modelled
- Rest of Fully Modelled Area: reduced level of detail, with principal strategic routes modelled and capacity restraint through the use of speed/flow curves and strategically important junctions
- External Area: simplified network allowing traffic to enter the Fully Modelled Area at the correct location, without capacity restraint. Skeletal network with approximate distances to allow demand model to capture full trip length.

3.3.2 It encompasses the major motorways of the M1 (junctions 14 to 19) and M45 (from Junction 17).It is shown in Figure 4.

Figure 3. NSTM Coverage



3.4 Model Time Periods

3.4.1 The highway and public transport models include the following fully modelled time periods:

- AM peak hour: (08:00-09:00).
- Average inter-peak hour: (10:00-16:00).
- PM peak hour: (17:00-18:00).

3.4.2 The demand model operates at a 24-hour level in production-attraction format.

3.5 Demand Segmentation and User Classes

3.5.1 In general the trip matrices will be segmented into a series of separate homogenous groups to adhere to current DfT guidance on variable demand modelling in TAG unit M2 (January 2014). In the Demand model, throughout the matrix building process all matrices are disaggregated as follows:

- Purpose: Work (Commute), Employer's Business (EB), and Other.
- Car availability: Car available (CA) and No car available (NCA) (household level).
- Time period: AM peak period; Inter-peak period, and PM peak period.
- Vehicle types: Light vehicles and Heavy vehicles.
- Mode: Private vehicle and Public transport.

3.5.2 This segmentation is consistent with that adopted in the Department for Transport (DfT) modelling tools – namely the National Trip End Model (NTEM) and the National Transport Model (NTM).

3.5.3 For highway assignment, the following user classes will be modelled which is consistent with advice presented in Section 2.6 of TAG Unit M3.1 (January 2014):

- Car – Commuting.
- Car – Employer's Business.
- Car – Other.
- LGV.
- HGV (OGV1 and OGV2).

4. STAGE 1: BASE MODEL ENHANCEMENTS AND VALIDATION

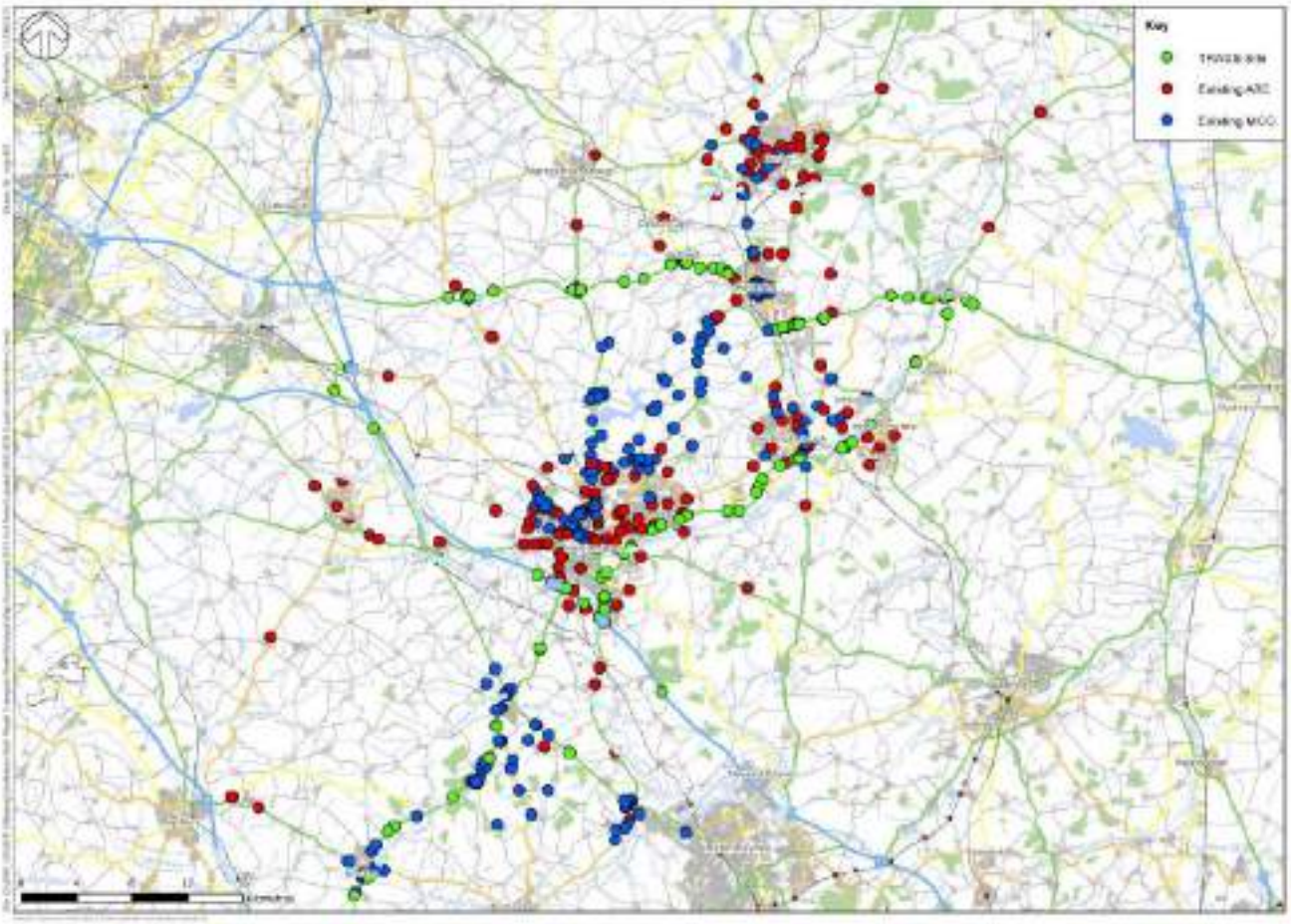
4.1 Survey Data

Vehicle Count Information

4.1.1 Existing traffic count data is required to calibrate/validate the highway model to ensure that it provides a reasonable fit to the traffic conditions during the 2015 Base Year.

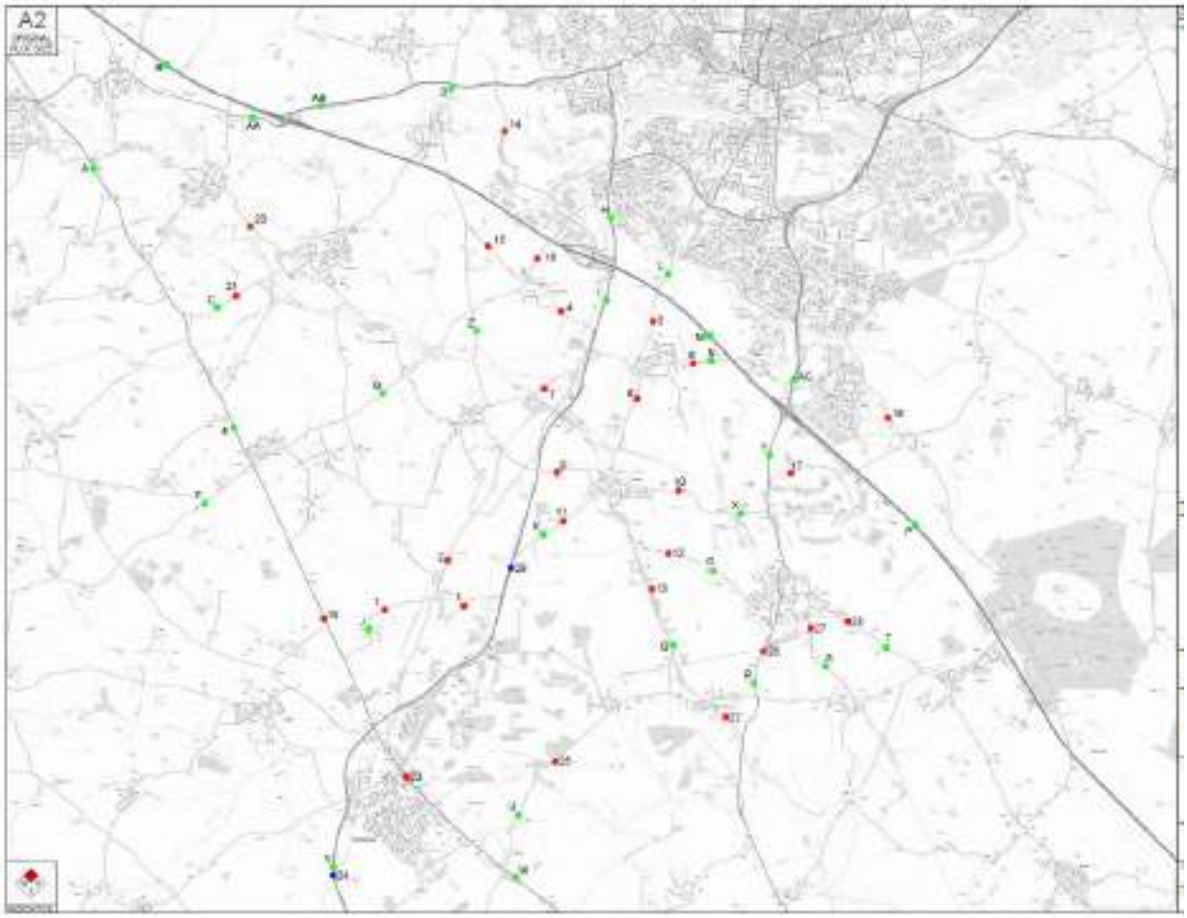
4.1.2 The development of the core model has generally relied on traffic count data from a range of sources which have been obtained by WSP for the validation and calibration of the entire model. The locations of the traffic counts being used in the core calibration/validation of the model are shown in Figure 5.

Figure 4. NSTM Calibration/Validation Count Locations



4.1.3 Within the Development's AOI these counts have been supplemented by additional ATC and ANPR data obtained on behalf of the developer for the Rail Central site. The locations of these counts are shown in Figure 6. These surveys were undertaken in a neutral month in 2016 and as such will be converted to the 2015 base year using factors from TEMPRO 7.

Figure 5. Additional AOI Count Locations



4.1.4 Turning counts have also been obtained for M1 Motorway junctions 15, 15A and 16.

4.1.5 It has been agreed with Northamptonshire and the HE that the survey information provided for the purpose of validating the AOI of the Rail Central scheme (as summarised above) is sufficient for the development of a robust model to assess the impacts of the Rail Central scheme and that no further traffic or public transport data acquisition will be required.

Journey Time Information

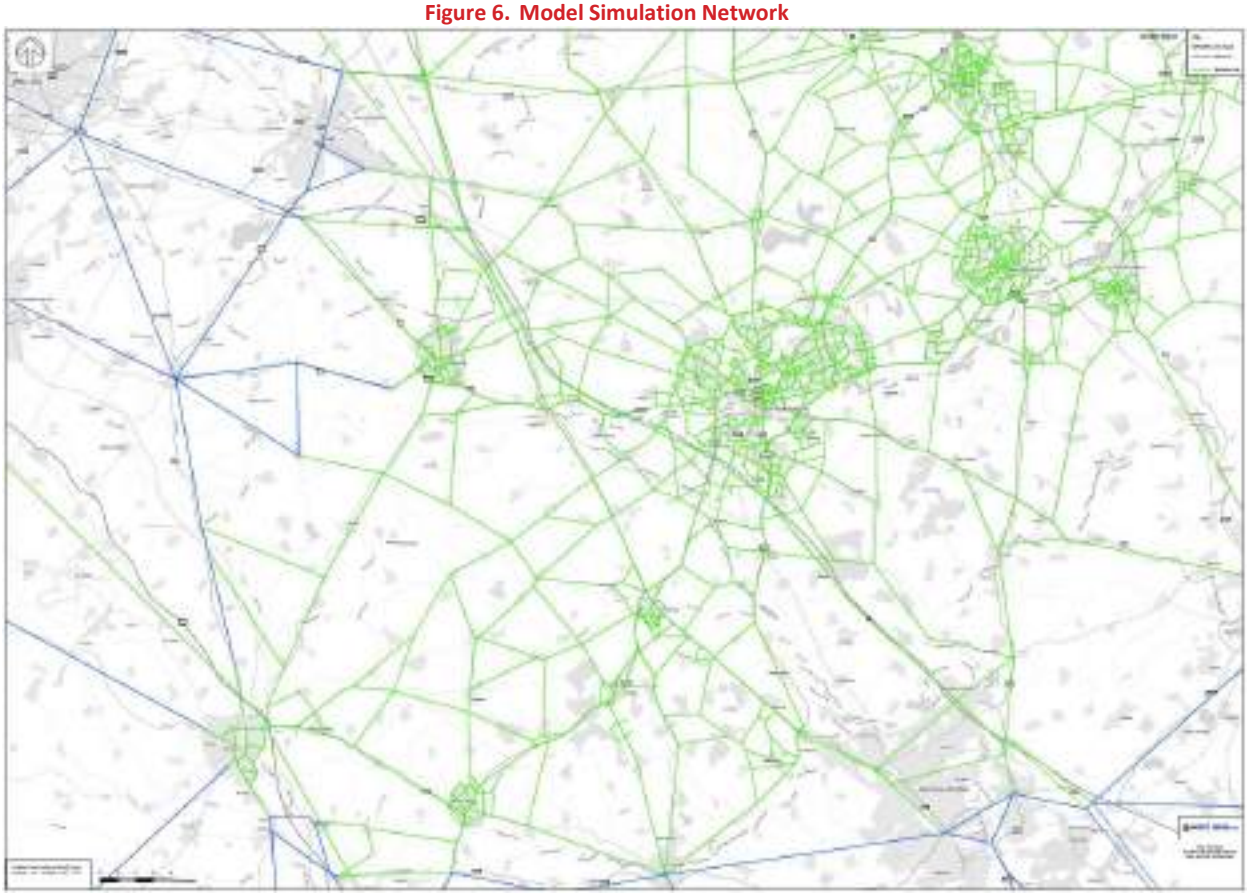
4.1.6 There is no journey time information being used within the developments AOI for the core model validation. However, Journey Times can be obtained from the additional ANPR data that is being obtained on behalf of the developer of the Rail Central site. This will be used to generate Journey times for the following routes:

- A43 between the M1 and the south of Towcester.
- A5 between the count to the south of Weedon Bec and the south of Towcester.
- A508 between the M1 and the south of the village of Roade.
- M1 between the count to the north of Junction 16 to the south of Junction 15.

4.2 Network Enhancements

4.2.1 Figure 7 shows the models simulation area (in green) in the vicinity of the development. The current model includes all the AOI within the fully simulated area and therefore all junctions and road links will be specifically modelled to reflect their current layouts and operation. No expansion of the simulation network is envisaged to assess the Rail Central development.

Figure 6. Model Simulation Network



4.3 Network Checks

Queues

4.3.1 It is important that the delays simulated within the model have a close correlation with reality in order to be able to replicate the highway conditions and provide robust forecast year modelling. If queuing is illogical and mis-represented then forecasts into the future may result in dubious results.

4.3.2 Logic checks will be conducted to ensure that queues are represented in locations where existing congestion has been observed. A list of locations will be developed and agreed with the Northamptonshire and HE.

Routing

4.3.3 Modelled routes will be checked using Select link Analysis and Tree Analysis to ensure integrity. These checks will ensure that the model assigns traffic along logical and expected routes in order for traffic to reach its destination. These will be undertaken between major origins and destinations which are likely to route through the AOI and will include movements between Northampton, Towcester, Milton Keynes and Daventry as well as routes between these towns and the villages that surround the site.

Network Coding

4.3.4 Network coding within the AOI will be checked against mapping and satellite images to ensure that all routes within the AOI have appropriate distances, speeds, lanes numbers and saturation flows.

HGV Restrictions

4.3.5 As HGV movement is a significant part of the generation of the Rail central site HGV restrictions will be reviewed in the vicinity of the site and ensure that they are correctly modelled within the base model. This will ensure that the forecast routings of HGV's comply with current restrictions on the network. This could include weight, height and environmental restrictions on the movement of larger vehicles.

Strategic Road Network Checks

4.3.6 The strategic network will be closely checked against mapping tools to ensure that distances, lanes and lane allocation and speeds were correct. Merge GAP values will also be reviewed to ensure that the slip roads to the motorways are coded correctly and amended where necessary. Particular attention will be paid to M1 Junctions 15 and 15A.

Zone Loading Points

4.3.7 A number of zone loading checks will also be performed to ensure that zones loaded onto the correct parts of the network and all trips associated with the zone were able to get onto the highway network.

4.4 Local Area Calibration and Validation (Highway)

Calibration Procedures

4.4.1 Calibration is the process of adjusting the model to improve the fit to the observed data in two main areas:

- adjustments to the coded links and junctions in the network; and
- adjustments to the elements of the matrix that were synthesised.

4.4.2 The calibration process will be guided by a comparison of modelled flows with observed flows at individual survey sites, and through comparing modelled journey times with observed journey times.

4.4.3 Adjustments to the networks will made in order to improve the fit between modelled link flows and observed link flows as well as improving the fit between modelled and observed journey times. Care will be taken to ensure that any changes made improve the situation by making the model a better representation of conditions on the ground. Unrealistic changes to improve the fit will not be undertaken.

Validation Procedures

4.4.4 A key tool in presenting how well a model performs is to compare the modelled flows against observed vehicle flows from traffic counts. The validation of the model utilises counts that are independent of those used in the calibration process to provide an independent check on how well the model is replicating observed flow conditions on the network.

4.4.5 The DfT guidelines for the calibration/validation of highway models are based on those laid out in the Design Manual for Roads and Bridges (DMRB) Volume 12, Section 2, Part 1, Chapter 4 and WebTAG 3.19. In respect of the individual count comparisons presented in this section there are two separate sets of criteria against which the counts and modelled flow comparison should be measured. The two sets of criteria are:

- GEH Statistic: links should have a GEH value of less than 5;
- Vehicle Flow Comparison (DMRB):
  - where observed flow is less than 700 vehicles per hour, the modelled flow should be within 100 vehicles of the observed flow;
  - where observed flow is between 700 and 2700 vehicles per hour, the modelled flow should be within 15% of observed flow; and
  - where observed flow is greater than 2700 vehicles per hour, the modelled flow should be within 400 vehicles of the observed flow.

4.4.6 With regard to DfT guidelines on the acceptability of validation statistics, WebTAG Unit 3.1 section 3.2.7 discusses validation statistics for counts meeting GEH and DMRB criteria, stating that:

"These two measures are broadly consistent and link flows that meet either criterion should be regarded as satisfactory."

4.4.7 The local area validation for the Rail Central scheme will be conducted in line with these criteria for all count locations within the AOI whilst ensuring that the wider model retains its integrity and has improved on the overall results achieved during the core validation of the NSTM. We will to calibrate/validate against individual link counts rather than using cordons as this is generally a rural area which does not lead itself to the standard cordon approach. All link counts with flows less than 50 vehicles per hour will be excluded from the process.

4.4.8 There are a number of locations where pairs of counts have been obtained for the calibration/validation of the model with ANPR and ATC counts on the road links. Where this has occurred one of these counts will be used in calibration and one in validation.

4.4.9 For the motorway junctions the calibration/validation process will also consider the turning movements at the junctions as well as the link flows leading to and from the junctions.

4.4.10 We will aim to achieve in excess of 80% count validation based on the above criteria. This is slightly below the WebTAG requirements, however, it reflects the nature of the local highway network and is consistent with other similar model validation processes for developments in the East Midlands which have been accepted by the HE and Local Authorities.

4.4.11 The morning and evening peak hours will be the subject to this revalidation process as these represent the main congestion periods on the local network when the greatest impact of the Rail Central scheme will be observed.

Journey Times

4.4.12 WebTAG requires 85% of the modelled end to end journey times along major routes to be within 15% of the observed values. Within the AOI we propose to evaluate Journey Times along the following routes:

- A43 between the M1 and the south of Towcester.
- A5 between the count to the south of Weedon Bec and the south of Towcester.
- A508 between the M1 and the south of the village of Roade.
- M1 between the count to the north of Junction 16 to the south of Junction 15.

4.5 Public Transport Model

4.5.1 Public Transport services that currently pass through the AOI will be checked to ensure the routing and frequency of services is consistent with current timetables.

4.5.2 No further calibration/validation of the public transport model will be undertaken over and above the core modelling work being undertaken by WSP as a result of the limited numbers of routes that pass through the developments AOI and the limited levels of existing demand for buses in the area.

4.6 Demand Model Calibration

4.6.1 Following the validation of the model within the developments AOI the revised highway model parameters will be incorporated into the NSTM demand model. A calibration check will be undertaken to ensure that the Demand Model continues to comply with WebTAG guidelines and if required the demand model will be recalibrated. This demand model check will comply with the requirements of WebTAG.

4.7 Reporting

4.7.1 A comprehensive Local Model Validation Report (LMVR) is being prepared for the core NSTM upgrade.

4.7.2 It is proposed that an addendum LMVR is prepared concentrating on the AOI of the Rail Central development. This will detail the flow and journey time calibration and validation statistics for the entire AOI and also the HE routes separately.

4.7.3 We will also report on the standard impacts that Matrix Estimation (ME) has on the model matrices and the results of the Demand Model recalibration check.

5. STAGE 2: REFERENCE CASE DEVELOPMENT

5.1 Overview

5.1.1 Two Reference Case models will be developed from the revalidated 2015 base year model to represent the following scenarios:

- Year of Opening – assumed to be 2021.
- Full Core Strategy Assessment – 2031 as being developed for Northamptonshire by WSP.

5.1.2 The main data inputs required for the NSTM demand model in relation to developments are as follows:

- Households
- Jobs
- Retail Space Value
- School Pupil Numbers

5.2 Year of Opening

5.2.1 DfT 02/2013 Circular guidance states that the development should be assessed at a year of opening. In order to meet the requirements of this circular and provide a realistic year of opening assessment of the scheme we propose to develop the 'Year of Opening' model with the following assumptions:

- 2021 to be assumed as the year of opening.
- Growth to include the committed development that is envisages to be constructed by this year.
- Growth will be constrained to local growth levels to 2016 using TEMPRO 7.
- All infrastructure schemes to be implemented by 2021 to be included in the assessment.

5.2.2 Details of the land use and infrastructure proposals to be included in this year of opening model will be obtained from Northamptonshire County Council, the HE and the local planning departments. This will be detailed in a technical note to be circulated for approval in advance of the development of the Reference Case.

5.3 Full Core Strategy Model

5.3.1 The Full Core Strategy Reference Case (2031) will be based on the core models Reference Case assumptions for land use and Infrastructure that is being developed for Northamptonshire. Growth in this Reference Case will also be constrained to Tempro 7.

5.3.2 The list of land use and infrastructure schemes that are currently being included by WSP in the 2031 Reference Case will be provided in a separate Technical Note.

5.4 Reporting

5.4.1 In addition to a technical note which outlines the planning and infrastructure assumptions to be included in the two Reference Cases we will also produce a Reference Case Report which will summarise the following:

- Describes the model development and the assumptions used.
- Compares the forecast models with the 2015 base model in terms of:
  - Changes in demand;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics.
- Identify the areas of congestion on the highway network within the AOI even without the Rail Central development.
- Provide peak hour turning movements for junctions in the vicinity of the site split by vehicle type.

6. STAGE 3: WITH DEVELOPMENT MODELLING

6.1 Overview

6.1.1 The Rail Central development will be added to the two reference cases to produce three main assessments as follows:

- **2021 Year of Opening (DfT Circular)** – to include the full development to be compliant with the DfT 2013 circular based on the 2021 Reference Case.
- **2021 Year of Opening (Environmental)** – to include the development envisaged to be occupied at the end of the first year of operation based on the 2021 Reference Case.
- **2031 Full Core Strategy** – to include the full Rail Central development based on the 2031 Reference Case.

6.1.2 For each of these scenarios a sensitivity test will be undertaken without the committed M1 managed motorway scheme which will be included in both the 2021 and 2031 Reference Cases.

6.2 Development Access

6.2.1 The grade separated access onto the A43 will be added to the model for this with development scenario, however, further improvements to the highway network will not be included as these will be considered as part of the Mitigation scenario.

6.2.2 It has been agreed that a full simulated representation of the proposed access junction will be included in the highway model with capacities and other design parameters modelled in a consistent way to other similar junctions within the model.

6.2.3 The development will also be accessible to existing public transport services, with bus stops provided on Northampton Road to serve the site. .

6.2.4 We propose to have two zones for the development replicating the sites on either side of Northampton Road. This will ensure that the variable distances to access public transport are take into account.

6.3 Traffic Generation

6.3.1 The proposed SRFI, comprising both the warehousing and distribution units and the rail terminal, would generate the following type of trips:

- 1. Employee and visitor car trips to and from the B8 units and the rail terminal.
- 2 HGV traffic to and from the B8 units and the Rail terminal.

6.3.2 Person and HGV trip rates for the first three categories of trips will be determined in a separate Technical Note will be produced detailing the derivation of the trip rates to be used in the strategic modelling and Transport Assessment.

6.3.3 The person trip rates will determine the levels of overall employee and visitor movements associated with the site and the model will derive the mode split for the these trips based on the availability of public transport for the origin/destination of the trip and also the relative generalised costs of undertaking the trip by the various available modes. The model will also apply a standard car occupancy ratio to the car borne trips.

6.3.4 The HGV trip movements and distribution will be derived from the GB Freight model. The movements associated with larger GB Freight model zones will be disaggregated based on the existing proportions of HGV movements associated with the smaller NSTM zones.

6.3.5 A technical note will be produced detailing the basis for the developments traffic generations which will be agreed with the HE and the local Authorities in advance of the modelling of the site.

6.4 Traffic Distribution

6.4.1 The distribution of the traffic movements to the local and wider highway network will vary between the various trip categories identified previously.

6.4.2 The distribution of employee and visitor trips will be determined by the model based on zones which contain similar employment land use. This will compared with 2011 Journey to work census data for the identified zones to ensure that the zones that the model is reflecting employee household distributions correctly and will therefore fully represent the likely distribution of employment associated with the site.

6.4.3 As indicated above the distribution of the HGV movements will be derived from the GB Freight model.

6.4.4 A technical note will be produced which details the resultant traffic distributions for cars and HGV's and agree this with the HE and the various local authorities before we proceed with the detailed modelling of the site.

6.5 Modelling of Public Transport

6.5.1 The model includes modal choice between public transport and private vehicle modes. This is determined from the availability of a public transport option for each individual origin/destination, the relative cost of the public transport option compared to the private car for that journey and also the average propensity for employees to use car or public transport modes.

6.5.2 The model can therefore identify the likely levels of public transport usage to and from the site for existing and also future public transport provision to the site.

6.5.3 In parallel with the strategic modelling of public transport access it has been agreed that a separate manual appraisal of the likely public transport access to the site should be undertaken based on the predicted spatial distribution of employees and the levels of public transport provision between the site and these areas. As this is more specific to the site and the potential employees it has been agreed that this will form the core evidence for the predicted mode share of the site rather than the strategic model outputs.

6.6 Scheme Phasing

6.6.1 At this stage it is not envisaged that the strategic model will be used to consider the phasing of the scheme and that if there are phases to the highway network improvements these will be considered using detailed junction models.

6.7 Reporting

6.7.1 During this stage we will prepare two technical notes to be submitted for approval as follows:

- **Traffic Attraction** – detailing the derivation of the traffic generation and the final flows to be used in the strategic modelling.
- **Traffic Distribution** – detailing the resultant traffic distribution for cars and HGV's associated with the site.

6.7.2 We will also add to the Reference Case report with outputs from the various with development model scenarios, which will summarise the impacts of the development compared to the Reference Case and highlight any areas of the network which may require further more detailed assessment and potentially mitigation. This additional section of the report will:

- Describe the derivation of the development scenario and the assumptions used.
- Identification of the impacts of the development in terms of
  - The distribution of development traffic flows;
  - Traffic redistribution for non-development movements;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics.
- Highlight main areas of congestion on the highway network within the AOI with the Rail Central development.
- Provide peak hour turning movements for junctions in the vicinity of the site split by vehicle type.

7. STAGE4: MITIGATION MODELLING

7.1 Overview

7.1.1 The highway and public transport models are capable of simulating at a strategic scale a range of potential mitigation measures to lessen the impact of the development on the local highway networks. Measures could include:

- Highway capacity improvements.
- New/improve public transport routes.
- Traffic management schemes.
- HGV bans and restrictions.

7.1.2 Based on the outputs of the earlier stages of modelling and also more detailed appraisals of the highway network using junction modelling tools we will identify a mitigation strategy in a further technical note to be discussed and agreed with the HE and the Local Authorities.

7.1.3 The agreed strategy will form the basis of the strategic modelling of the impacts of the identified strategy in mitigating the overall impacts of the development using NSTM.

7.2 Reporting

7.2.1 During this stage we will prepare a technical note detailing the proposed mitigation strategy to be discussed with the HE and the Local Authorities.

7.2.2 We will also add to the previous report with outputs from the mitigation model runs, which will summarise the impacts of the mitigation measures compared to the with development scenario. This additional section of the report will:

- Describe the mitigation measures assumed.
- Identify the impacts of the development in terms of:
  - Traffic redistribution for non-development movements;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics and compare these to the Reference Case.
- Highlight any areas of congestion on the highway network within the AOI with the Rail Central development and its mitigation package.
- Provide turning movements for junctions in the vicinity of the site.

8. ENVIRONMENTAL OUTPUTS

8.1 General Approach

8.1.1 Traffic flow and speed information will be generated from the Saturn Highway for use in the air quality and noise assessment which will be submitted as part of the NSIP application for the site.

8.1.2 A separate 2021 Reference Case will be developed that includes the levels of growth that is anticipated by 2021 together with the amount of site development that is envisaged at the end of the first year of operation. This test is to be used for the Environmental assessment only.

8.1.3 Factors to take the average peak hour flows (AM and PM peak combined) to 18 and 24 hr flows as required for these assessments will be derived from the ATC information obtained for the assessment of the development scheme.

APPENDIX E
Model Local Area Validation Report

DRAFT

INFO NOTE

RAIL CENTRAL NORTHAMPTONSHIRE

MODEL LOCAL AREA VALIDATION REPORT

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates (TPA)
Project	Rail Central Northamptonshire
Title of Document	Model Local Area Validation Report
Type of Document	Info Note
Date	14/02/2017
Reference number	104176
Number of pages	28

TABLE OF CONTENTS

1.	**INTRODUCTION**	**3**
1.1	**REPORT BACKGROUND**	**3**
2.	**RAIL CENTRAL DEVELOPMENT PROPOSALS**	**4**
2.1	**SITE LOCATION AND ACCESS**	**4**
2.2	**LAND USE PROPOSALS**	**4**
2.3	**AREA OF INFLUENCE**	**4**
2.4	**MODELLING REQUIREMENTS**	**5**
3.	**NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)**	**7**
3.1	**MODEL OVERVIEW**	**7**
3.1	**MODEL STRUCTURE**	**7**
3.2	**MODELLED AREA**	**8**
3.3	**MODEL TIME PERIODS**	**9**
3.4	**DEMAND SEGMENTATION AND USER CLASSES**	**9**
4.	**SURVEY DATA**	**10**
4.1	**VEHICLE COUNT INFORMATION**	**10**
4.2	**JOURNEY TIME INFORMATION**	**10**
4.3	**NETWORK ENHANCEMENTS**	**11**

5.	**LOCAL AREA CALIBRATION AND VALIDATION**	**12**
5.1	**GENERAL OVERVIEW**	**12**
5.2	**CALIBRATION/VALIDATION PROCESS**	**12**
5.3	**FLOW CALIBRATION RESULTS**	**13**
5.4	**VALIDATION RESULTS**	**17**
5.5	**HIGHWAYS ENGLAND JUNCTIONS**	**21**
5.6	**JOURNEY TIME VALIDATION**	**22**
5.7	**PUBLIC TRANSPORT MODEL**	**26**
6.	**CONCLUSIONS AND RECOMMENDATIONS**	**27**

1. INTRODUCTION

1.1 Report Background

1.1.1 This report outlines the results of the calibration/validation of the Northampton Strategic Transport Model (NSTM) undertaken by WSP Parsons Brinckerhoff for the assessment of the Rail Central development in Northamptonshire.

1.1.2 Transport Planning Associates (TPA) are developing the detailed transport related submissions associated with the Rail Central scheme and have commissioned SYSTRA to advise on the strategic modelling aspects of the appraisal.

1.1.3 The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

1.1.4 The Northampton Strategic Transport Model (NSTM) has been identified as a suitable tool to form the basis of the strategic transport modelling for the site, subject to the approval of its flow and journey time validation within the developments Area of Influence (AOI). All calibration/validation of this model has been undertaken by WSP Parsons Brinckerhoff with model outputs provided to the applicants team for use in their appraisal of the site.



2. RAIL CENTRAL DEVELOPMENT PROPOSALS

2.1 Site Location and Access

2.1.1 The proposed Rail Central site is located on an area of undeveloped land bounded by the village of Milton Malsor to the North, the West Coast Mainline Railway to the south, the Northampton Loop Railway to the east and the A43 Trunk Road to the west.

2.1.2 Access will be gained via a new grade separated junction onto the A43. Northampton Road passes through the site, however there will be no general traffic connections to this route from the developments internal road network. Emergency vehicle, pedestrian and cycle access is, however, to be provided.

2.2 Land Use Proposals

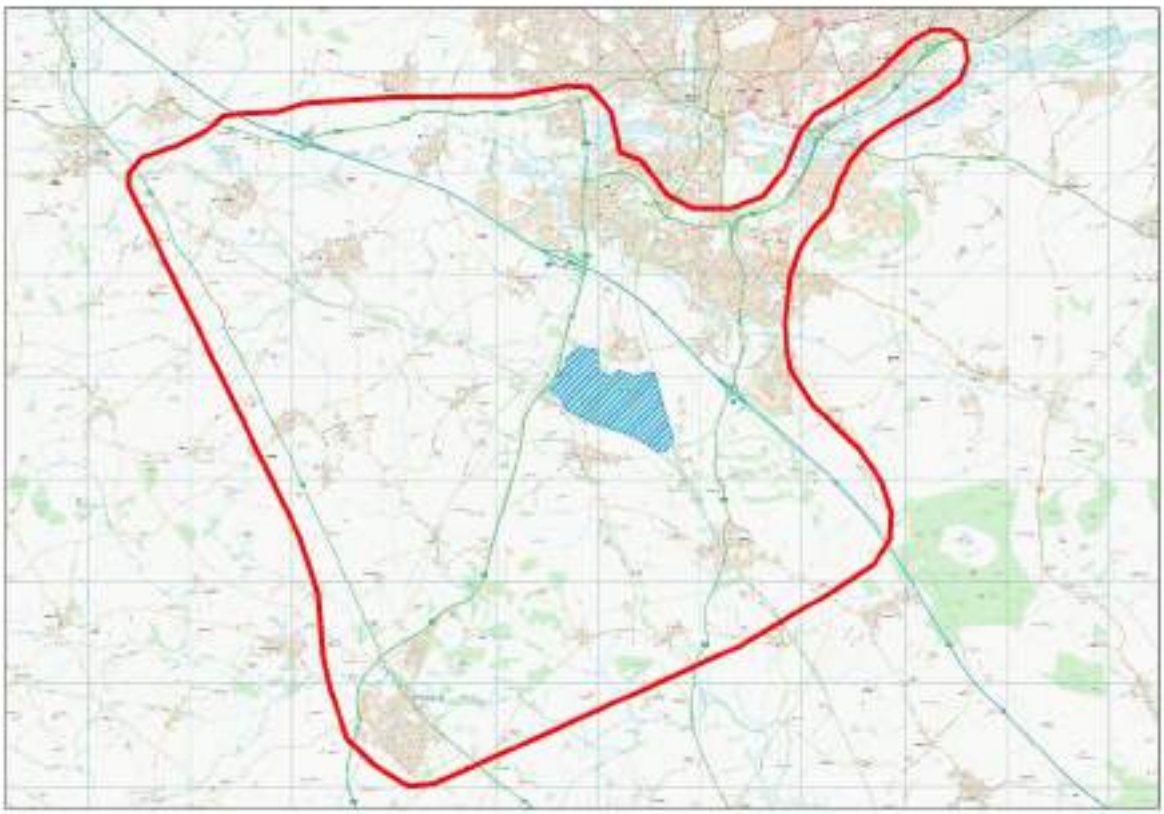
2.2.1 The current land use proposals include:

- An Intermodal Park on the Northampton Loop line.
- Up to 8 million sqft of warehouse/distribution units.
- A train maintenance depot.
- A 149 space HGV truck park.

2.3 Area of Influence

2.3.1 A strategic modelling Area of Influence (AOI) has been identified through an initial analysis of the flow impact of the scheme using the current Northamptonshire Transport Model combined with discussions with interested parties regarding other routes and areas that may be affected by the scheme. This modelling AOI is shown in Figure 1 and is approved by Highways England and Northamptonshire County Council.

Figure 1. Strategic Modelling Area of Influence



2.3.2 This area has been identified for the purposes of the Local Model Validation and Strategic modelling exercises and not the scope for the Transport Assessment for the scheme. The AOI includes:

- the Highways England routes of the A43, M1, A5 and A45;
- urban routes on the southern side of Northampton; and
- rural routes leading to local villages between the A5 and the M1.

2.4 Modelling Requirements

2.4.1 A transport model is required to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process will be used in the development of a Transport Assessment to be submitted as part of the NSIP application.

2.4.2 The mitigation measures are likely to include improvements to the HE routes in the vicinity of the site including an access onto the A43, local highway network improvements and bus based public transport improvements.

2.4.3 As a result of these general requirements we have identified a core list of model functionality that will be required to undertake this assessment as follows:

- Full simulated representation of the highway networks within the identified Area of Influence. This will include detailed representation of the operation of all classified roads and junctions within the network to enable the junction impacts to be assessed.
- Public Transport model capable of assessing the modal implications of new bus services accessing the site with routes serving the main catchment areas.
- Demand model to include mode choice and trip distribution as a minimum, calibrated to a level acceptable by the HE and local highway authorities.
- Separate OGV/HGV matrices that can reflect the regional and sub-regional HGV movements associated with the site.
- High levels of validation on the HE routes in the vicinity of the site and on local routes within the Area of Influence to an agreed level similar to WebTAG guidelines.
- Appropriate zoning system that ensures that local demand is disaggregated to ensure high quality representation of all transport movements between the site and its employment catchment.
- The model and modelling assessment has to be acceptable to all impacted authorities.
- Outputs have to be capable of being used to justify and design improvements to the local highway and public transport networks.
- Outputs robust enough to form the bases of the Transport Assessment to form part of the NSIP application.
- Provision of 16hr AAWT and 24hr AADT flows for assessment of Noise and Air Quality implications of the development by an environmental consultant.

2.4.4 As part of the NSIP application process Statements of Common Ground will be prepared between the development team, the local highway authorities and HE. It is anticipated that the outputs from the modelling process will form a key component of the Statements of Common Ground.

3. NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)

3.1 Model Overview

3.1.1 In 2008, the North Northamptonshire Highway Model (SATURN) and the West Northamptonshire Multi-Modal Model (SATURN and EMME/2) were combined and updated to produce the Northamptonshire Strategic Transport Model (NSTM).

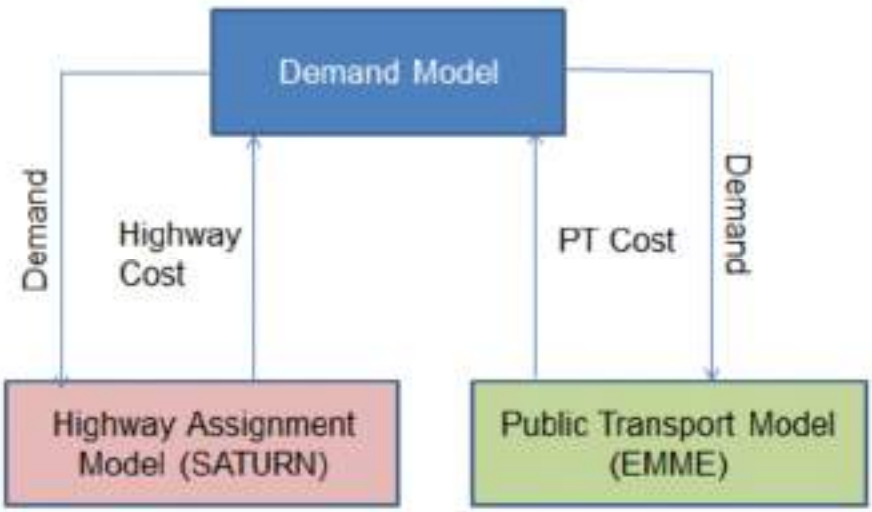
3.1.2 The SATURN suite of programs was used to build the highway model while EMME3 was used to build the Demand Model and the Public Transport Model. The strategic model developed by WSP provides an integrated system for a range of transport modes, representing private and public transport as well as modal interchange behaviour such as walking.

3.1.3 NSTM has been rebased to a 2015 base year by WSP Parsons Binckerhoff so that it is consistent with current WebTAG guidance.

3.1 Model Structure

3.1.1 The NSTM will comprise a TAG compliant full demand model, with separate highway and public transport assignment models that interact under the control of the demand model. The interaction between the models is shown in Figure 2.

Figure 2. NSTM Model Structure



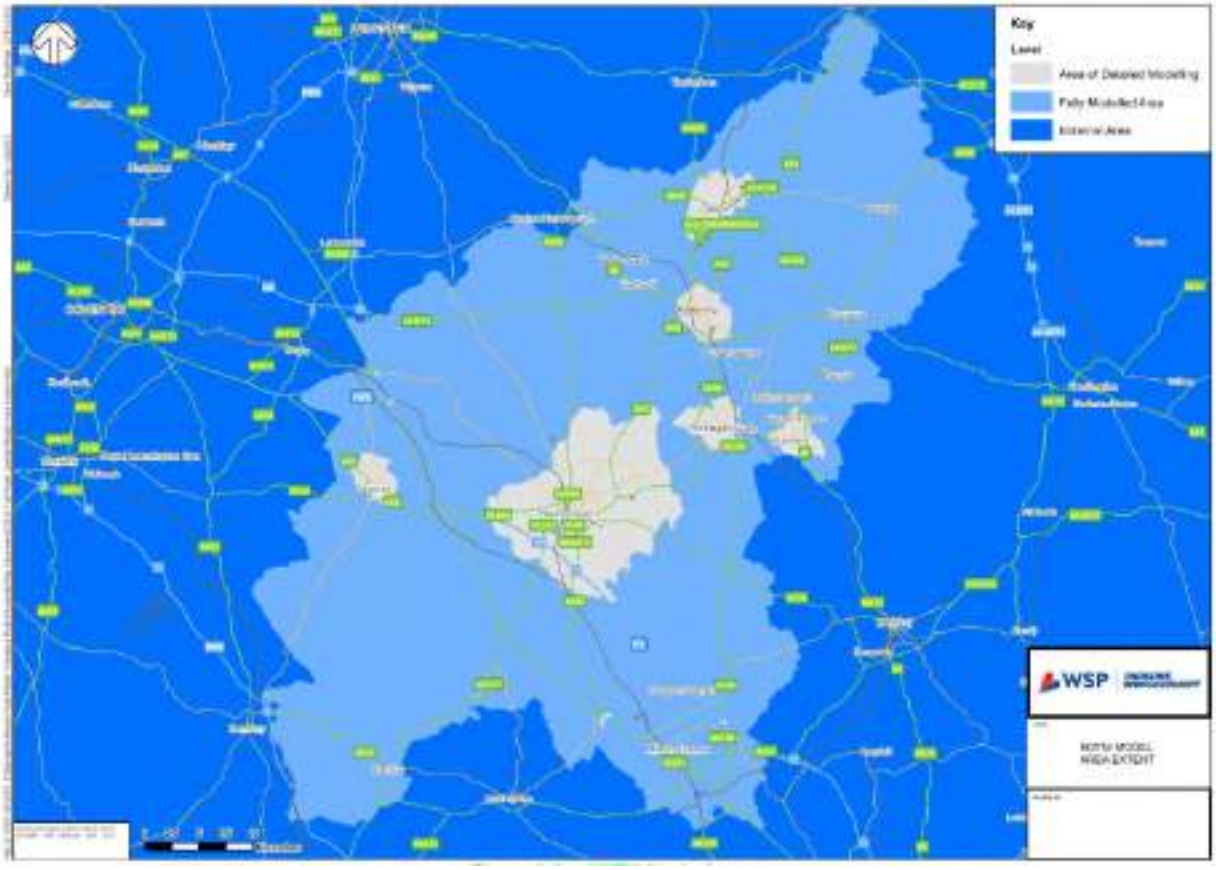
3.2 Modelled Area

3.2.1 The modelled area is set out in terms of a three-tier hierarchy, comprising:

- **Area of Detailed Modelling**: covers all roads with significant traffic volumes and all realistic route choices available to drivers, with all major junctions modelled
- **Rest of Fully Modelled Area:** reduced level of detail, with principal strategic routes modelled and capacity restraint through the use of speed/flow curves and strategically important junctions
- **External Area:** simplified network allowing traffic to enter the Fully Modelled Area at the correct location, without capacity restraint. Skeletal network with approximate distances to allow demand model to capture full trip length.

3.2.2 It encompasses the major motorways of the M1 (junctions 14 to 19) and M45 (from Junction 17). It is shown in Figure 3. The Area of Detailed Modelling covers the entire Rail Central AOI.

Figure 3. NSTM Coverage



3.3 Model Time Periods

3.3.1 The highway and public transport models include the following fully modelled time periods:

- AM peak hour: (08:00-09:00).
- Average inter-peak hour: (10:00-16:00).
- PM peak hour: (17:00-18:00).

3.3.2 The demand model operates at a 24-hour level in production-attraction format.

3.4 Demand Segmentation and User Classes

3.4.1 The trip matrices are segmented into a series of separate homogenous groups to adhere to current DfT guidance on variable demand modelling in TAG unit M2 (January 2014). In the demand model, throughout the matrix building process all matrices are disaggregated as follows:

- Purpose: Work (Commute), Employer's Business (EB), and Other.
- Car availability: Car available (CA) and No car available (NCA) (household level).
- Time period: AM peak period; Inter-peak period, and PM peak period.
- Vehicle types: Light vehicles and Heavy vehicles.
- Mode: Private vehicle and Public transport.

3.4.2 For the highway assignment, the following user classes are modelled which is consistent with advice presented in Section 2.6 of TAG Unit M3.1 (January 2014) and the requirements for the modelling of the Rail Central development:

- Car – Commuting.
- Car – Employer's Business.
- Car – Other.
- LGV.
- HGV (OGV1 and OGV2).

4. SURVEY DATA

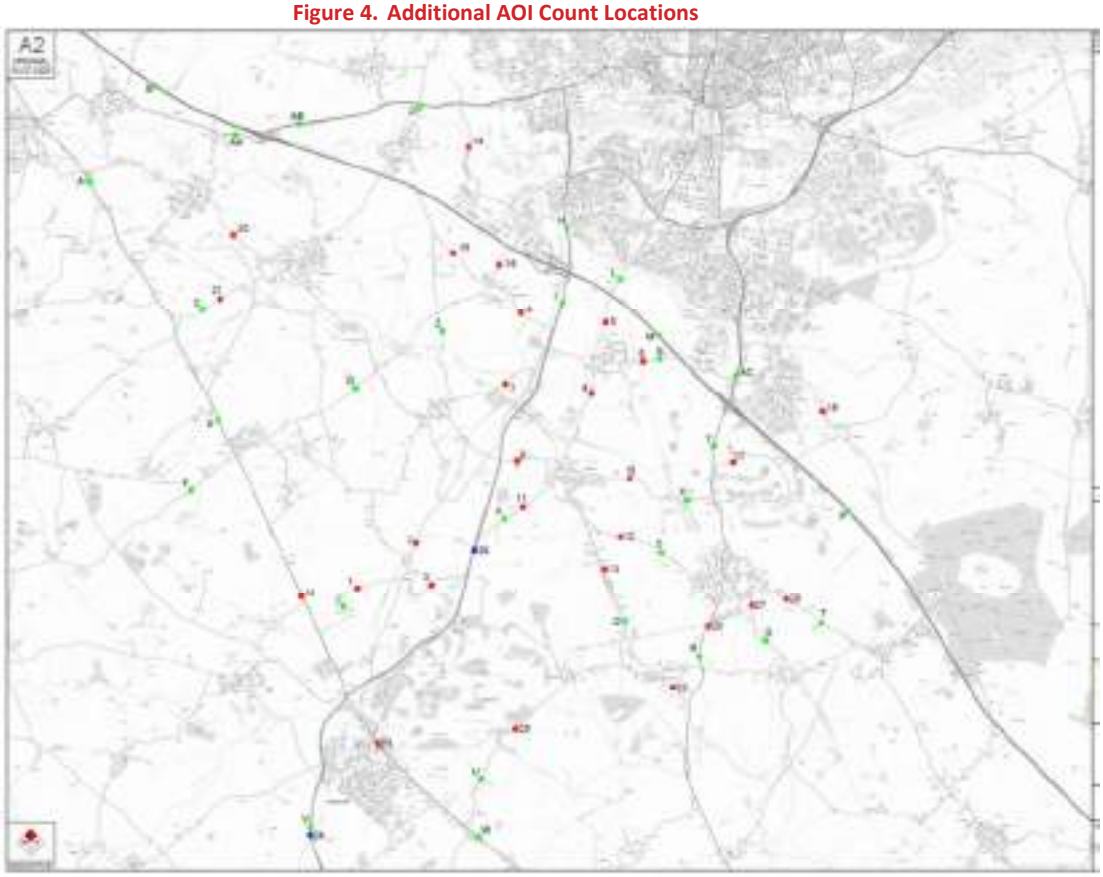
4.1 Vehicle Count Information

4.1.1 Existing traffic count data has been used to calibrate/validate the highway model to ensure that it provides a reasonable fit to the traffic conditions during the 2015 Base Year.

4.1.2 The development of the core model has generally relied on traffic count data from a range of sources which have been obtained by WSP for the validation and calibration of the entire model.

4.1.3 Within the Development's AOI these counts have been supplemented by additional ATC and ANPR data obtained on behalf of the developer for the Rail Central site. The locations of these counts are shown in Figure 4. These surveys were undertaken in a neutral month in 2016 and as such have been converted to the 2015 base year using factors from TEMPRO 7.

Figure 4. Additional AOI Count Locations



4.1.4 Turning counts have also been obtained for M1 Motorway junctions 15 and 15A.

4.1.5 It has been agreed with Northamptonshire and the HE that the survey information provided for the purpose of validating the AOI of the Rail Central scheme (as summarised above) is sufficient for the development of a robust model to assess the impacts of the Rail Central development.

4.2 Journey Time Information

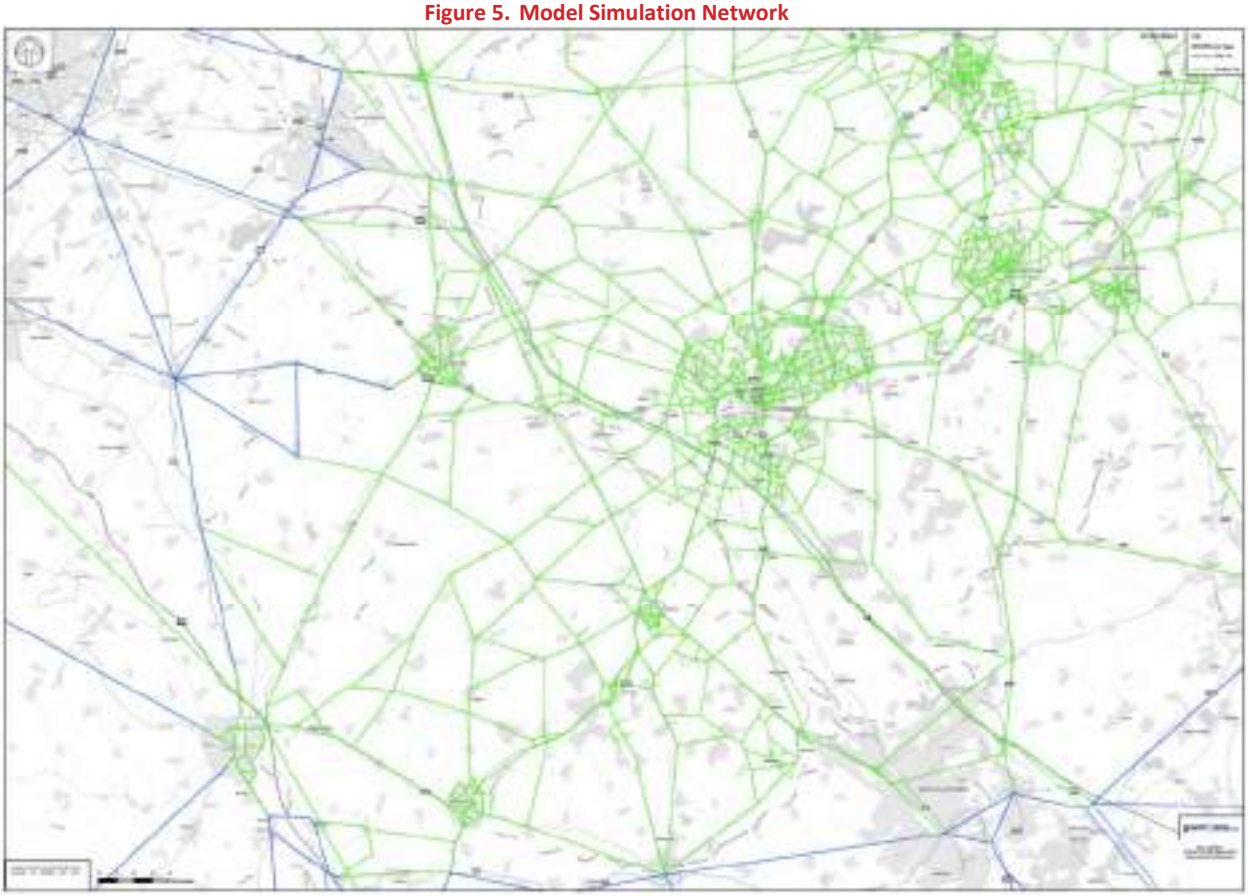
4.2.1 There is no journey time information being used within the developments AOI for the core model validation. However, journey time data has been obtained from the additional

ANPR data that has been on behalf of the developer of the Rail Central site and used as the basis of this validation assessment. These routes are shown in Figure 12.

4.3 Network Enhancements

4.3.1 Figure 5 shows the models simulation area (in green) in the vicinity of the development. The current model includes all the Rail Central developments AOI within the fully simulated area and all junctions and road links have been specifically modelled to reflect their current layouts and operation. No expansion of the simulation network has been required to assess the Rail Central development.

Figure 5. Model Simulation Network



5. LOCAL AREA CALIBRATION AND VALIDATION

5.1 General Overview

5.1.1 The DfT guidelines for the calibration/validation of highway models are based on those laid out in the Design Manual for Roads and Bridges (DMRB) Volume 12, Section 2, Part 1, Chapter 4 and WebTAG 3.19. In respect of the individual count comparisons presented in this section there are two separate sets of criteria against which the counts and modelled flow comparison should be measured. The two sets of criteria are:

- GEH Statistic: links should have a GEH value of less than 5;
- Vehicle Flow Comparison (DMRB):
  - where observed flow is less than 700 vehicles per hour, the modelled flow should be within 100 vehicles of the observed flow;
  - where observed flow is between 700 and 2700 vehicles per hour, the modelled flow should be within 15% of observed flow; and
  - where observed flow is greater than 2700 vehicles per hour, the modelled flow should be within 400 vehicles of the observed flow.

5.1.2 With regard to DfT guidelines on the acceptability of validation statistics, WebTAG Unit 3.1 section 3.2.7 discusses validation statistics for counts meeting GEH and DMRB criteria, stating that:

"These two measures are broadly consistent and link flows that meet either criterion should be regarded as satisfactory."

5.1.3 The local area validation for the Rail Central scheme has been conducted in line with these criteria for all count locations within the AOI. It has been agreed that the model will be calibrated/validated against individual link counts rather than using cordons as this is generally a rural area which does not lead itself to the standard cordon approach. All link counts with flows less than 50 vehicles per hour have been excluded from this process.

5.1.4 In addition, a more detailed calibration/validation process has been undertaken at the M1 Motorway junctions using individual turning movements. This is to ensure that the model is robust enough in these locations to enable traffic flow information to be taken directly from NSTM for use in the more detailed micro-simulation models.

5.1.5 A comprehensive Local Model Validation Report (LMVR) is being prepared for the core NSTM upgrade. A summary of the results of process for the AOI of the Rail Central development has been prepared by WSP and is provided in Appendix A.

5.2 Calibration/Validation Process

5.2.1 Calibration/validation is the process of adjusting the model to improve the fit to the observed data in two main areas:

- adjustments to the coded links and junctions in the network; and
- adjustments to the elements of the matrix that were synthesised.

5.2.2 The calibration/validation has been undertaken by a comparison of modelled flows with observed flows at individual survey sites, and through comparing modelled journey times with observed journey times.

5.2.3 Minor adjustments to the networks have been made to improve the fit between modelled link flows and observed link flows as well as improving the fit between modelled and observed journey times. These have included:

- Addition of a new zone to reflect the movements to and from the motorway service area at Junction 15A of the M1.
- Changes to speed limits to reflect current restrictions where inconsistences were identified.
- Updating of signal timings at signal controlled junctions.
- Adjustment of lane allocations at junctions to better reflect current layouts where inconsistences were identified.

5.3 Flow Calibration Results

5.3.1 Within the Rail Central AOI a total of 120 link counts have been used in the model calibration process. Table 1 identifies the levels of calibration based on the GEH, DMRB and combined criteria for each of the modelled hours.

Table 1. Calibration Statistics

	AM PEAK		INTER PEAK		PM PEAK	
	No. of counts	cal %	No. of counts	cal %	No. of counts	cal %
GEH	106	88%	113	94%	103	86%
DMRB	107	89%	114	95%	117	97%
COMBINED	109	91%	115	96%	117	97%

5.3.2 This shows that within the Rail Central AOI the calibration levels achieved significantly exceed the requirements of WebTAG (85% of links achieving the combined criteria) and therefore in calibration terms the guidelines are achieved.

5.3.3 Figures 6 to 8 show locations where the calibration criteria has been achieved in green and not achieved in red. This indicates that there is no grouping of the locations where calibration has not been achieved and therefore there is no bias in the model calibration.

Figure 6. Calibration Locations AM Peak

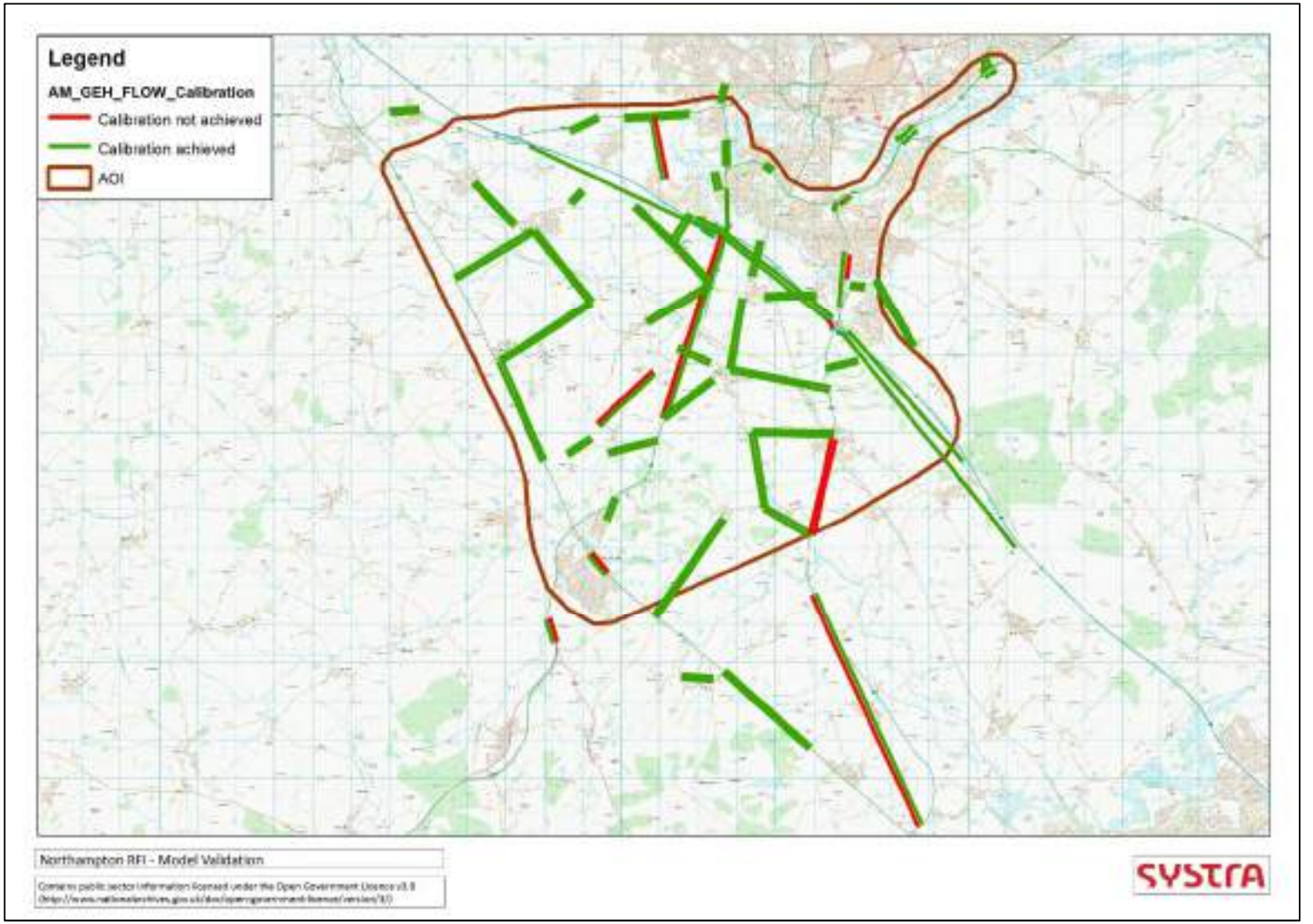


Figure 7. Calibration Locations Inter Peak

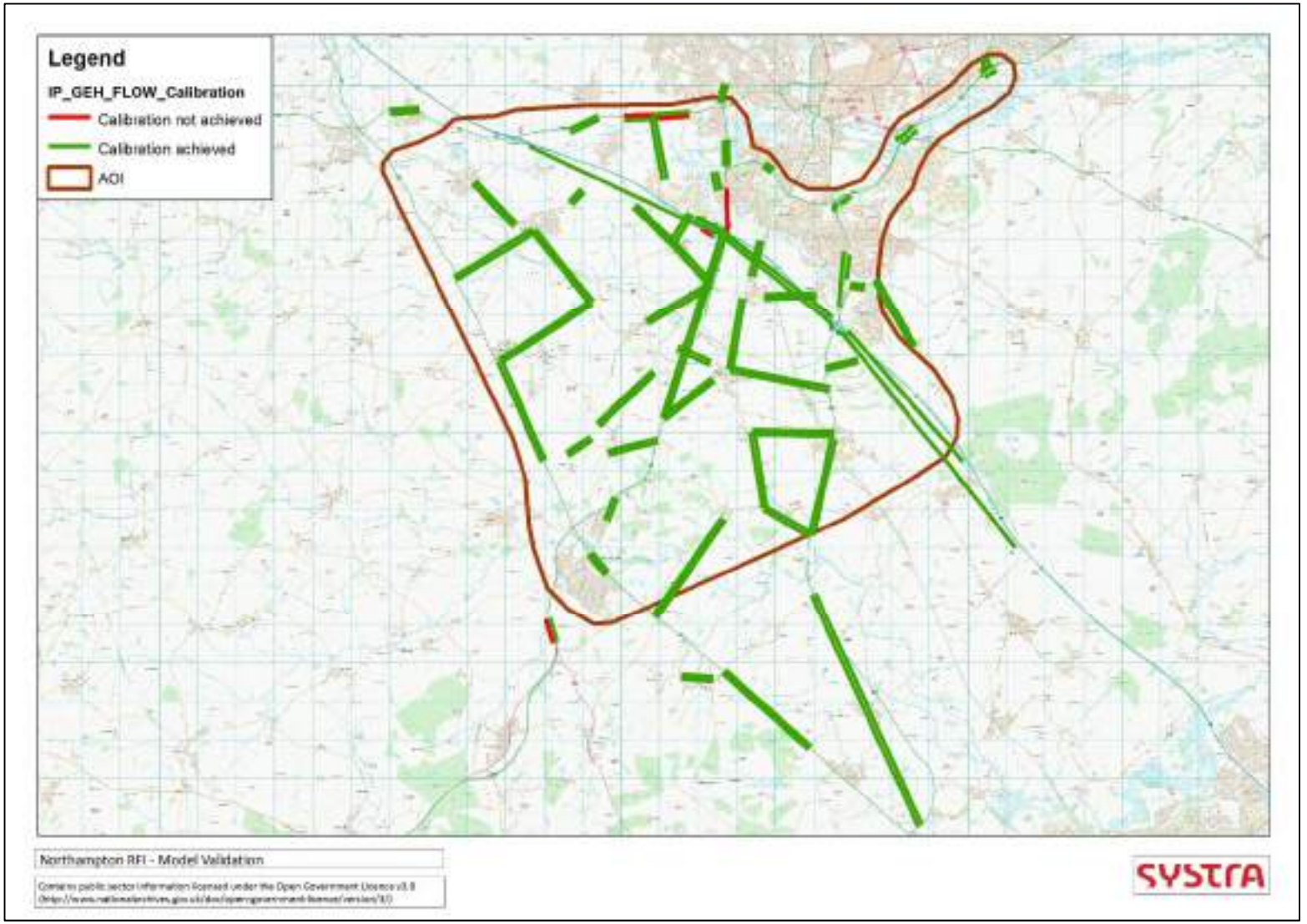
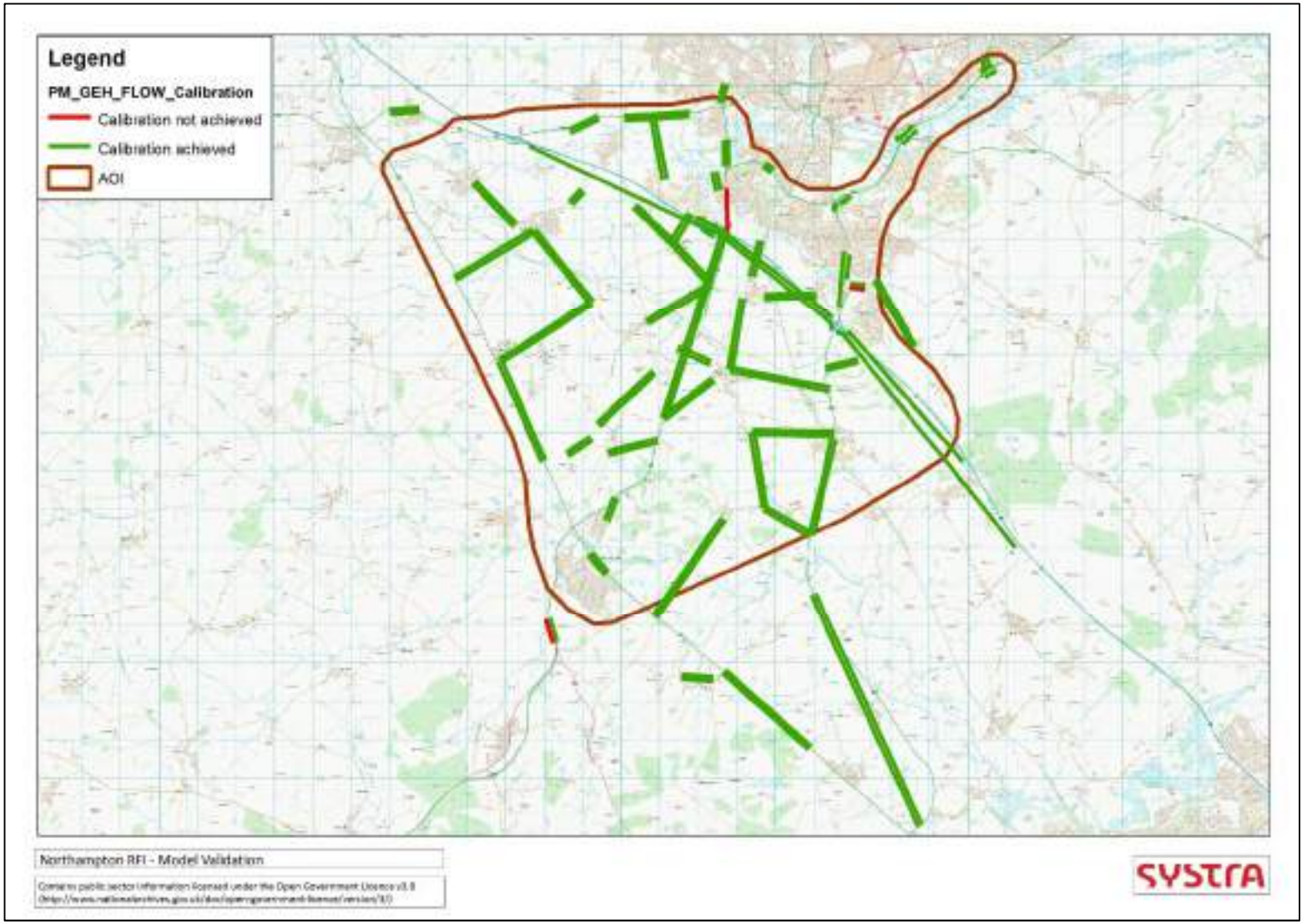


Figure 8. Calibration Locations PM Peak



5.4 Validation Results

5.4.1 Within the Rail Central AOI a total of 68 link counts have been used in the model validation process. All these counts are independent of the calibration process. Table 2 identifies the levels of validation based on the GEH, DMRB and combined criteria for each of the modelled hours.

Table 2. Validation Statistics

	AM PEAK		INTER PEAK		PM PEAK	
	No. of counts	cal %	No. of counts	cal %	No. of counts	cal %
GEH	55	81%	61	90%	57	84%
DMRB	57	84%	59	87%	59	87%
COMBINED	59	87%	63	93%	62	91%

5.4.2 This shows that within the Rail Central AOI the validation levels achieved significantly exceed the requirements of WebTAG (85% of links achieving the combined criteria) and therefore in validation terms the guidelines are achieved.

5.4.3 Figures 9 to 11 show locations where the validation criteria has been achieved in green and not achieved in red. This indicates that there is no grouping of the locations where validation has not been achieved and therefore there is no bias in the model validation.

Figure 9. Validation Locations AM Peak

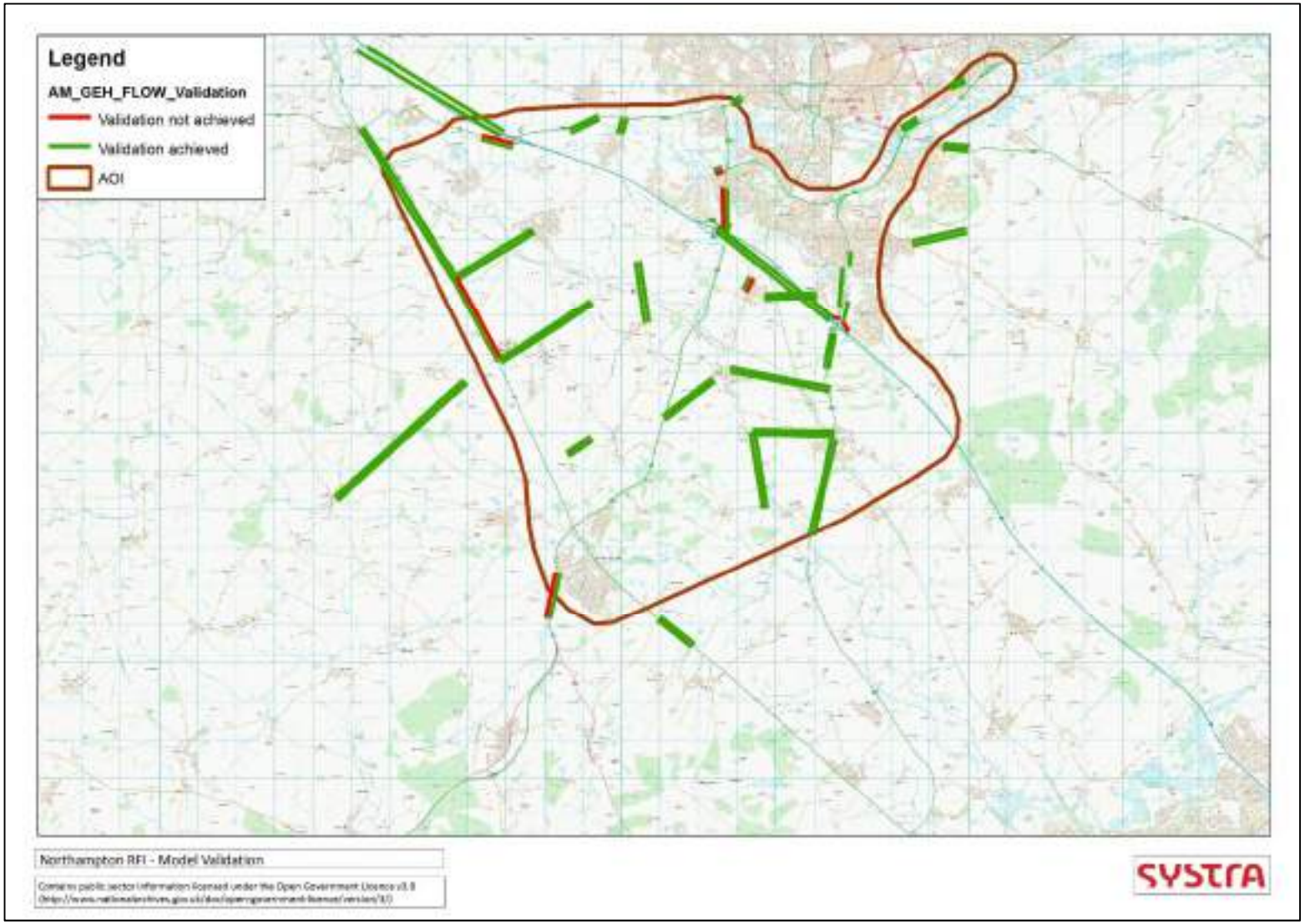


Figure 10. Validation Locations Inter Peak

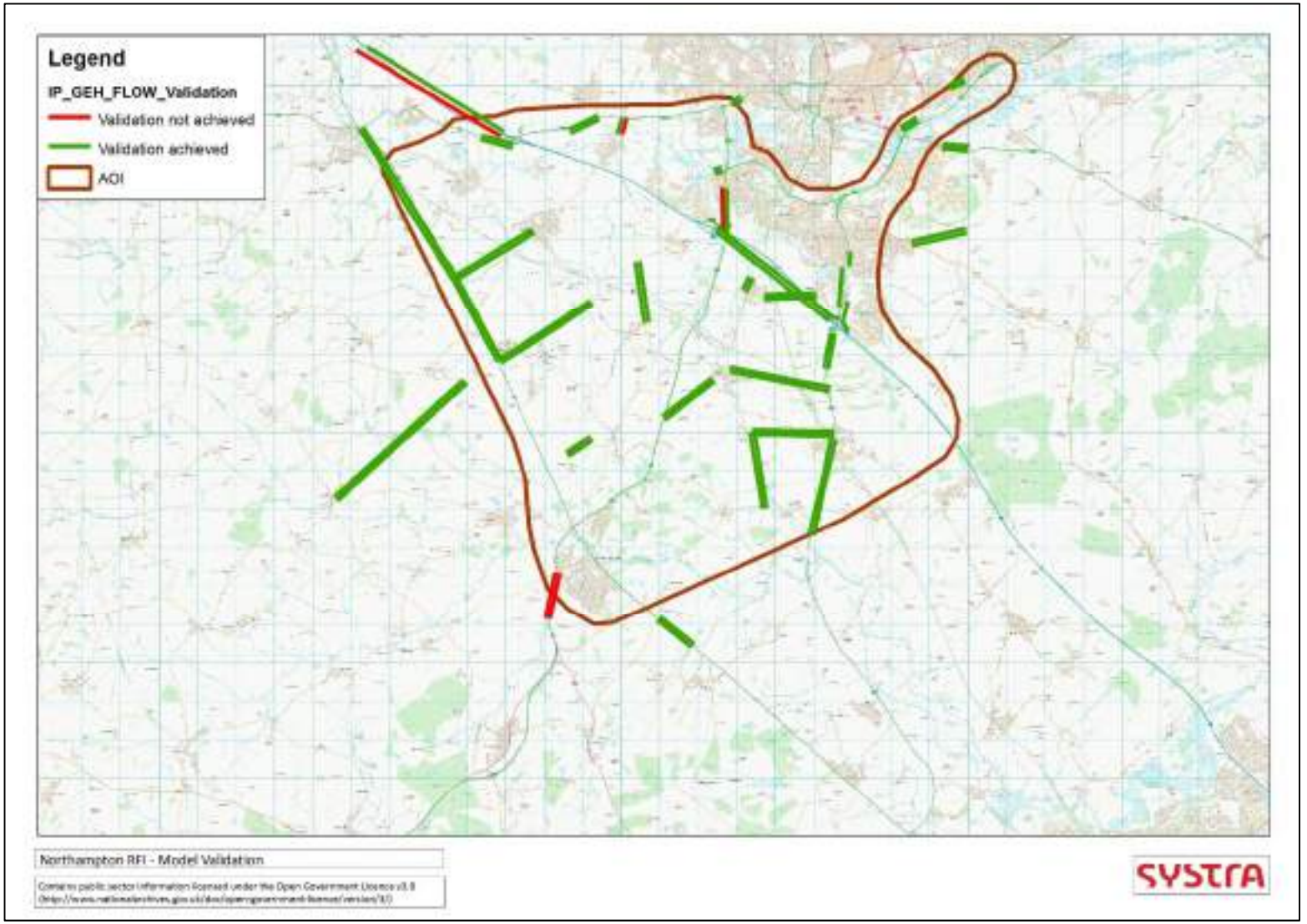
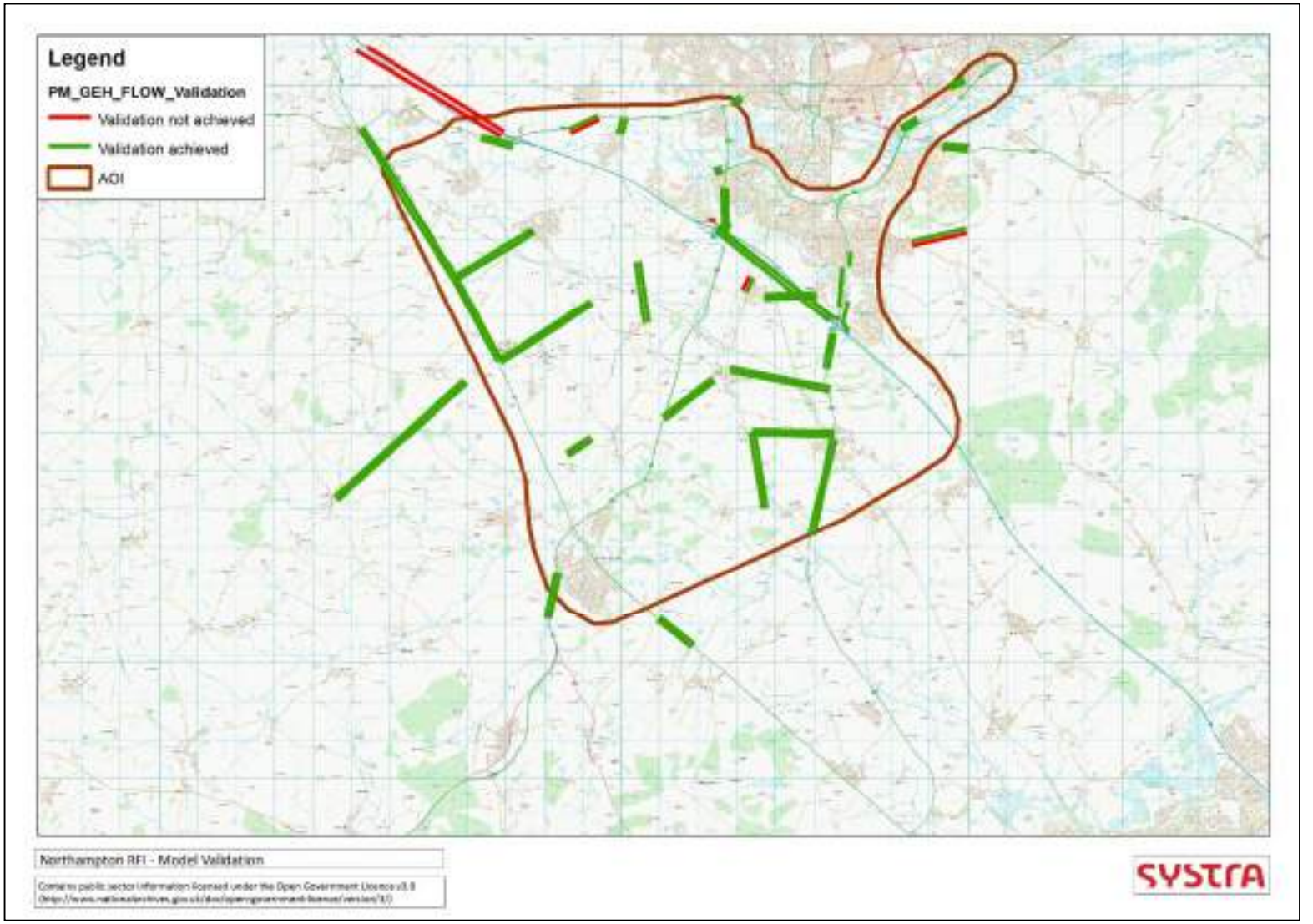


Figure 11. Validation Locations PM Peak



5.5 Highways England Junctions

5.5.1 The validation at M1 junctions 15 and 15A has been considered in greater detail as flows from the model will be used as inputs into the micro-simulation models for these junctions.

5.5.2 This appraisal has been based on junction turning movements rather than link flows and assessed against the WebTAG criteria as identified previously.

5.5.3 As summary of the overall statistics for each junction is provided in Tables 3 and 4 with details of the validation by junction turning movement provided in Appendix A.

Table 3. HE Junction Validation Junction 15A (all 4 internal junctions)

JUNCTION	TOTAL NUMBER OF MOVEMENTS	AM PEAK		PM PEAK	
		No. of counts	cal %	No. of counts	cal %
GEH	30	20	67%	21	70%
DMRB	30	24	75%	25	83%
COMBINED	30	26	87%	28	93%

5.5.4 The WebTAG guidelines are met/exceeded against turning movements at M1 junction 15A. In addition, there are a number of tuning movements that have a GEH of less than 6 and therefore only just miss the WebTAG guidelines. With the GEH maximum value increased to 6 the combines statistic would be 100% in the morning peak and 97% in the evening peak.

5.5.5 This suggests that the model is replicating observed turning movements at M1 junction 15A to a high degree of accuracy and therefore can be relied upon to predict the impacts of the Rail Central scheme at this location.

Table 4. HE Junction Validation Junction 15

JUNCTION	TOTAL NUMBER OF MOVEMENTS	AM PEAK		PM PEAK	
		No. of counts	cal %	No. of counts	cal %
GEH	21	18	86%	19	90%
DMRB	21	95	75%	21	100%
COMBINED	21	95	83%	21	100%

5.5.6 At Junction 15 the model is meeting WebTAG criteria of 85% against turning movements. This suggests that the model is replicating observed turning movements at M1 junction 15 to a very high degree of accuracy and therefore can be relied upon to predict the impacts of the Rail Central scheme at this location.

5.6 Journey Time Validation

5.6.1 WebTAG requires 85% of the modelled end to end journey times along major routes to be within 15% of the observed values. Within the Rail Central AOI 8 routes have been evaluated as shown in Figure 12.

5.6.2 The results of the Journey Time validation of these 8 routes are shown for each modelled hour in Tables 5 to 7. Further details on the individual route validation is provided in Appendix A.

5.6.3 This indicates that all of the journey time routes assessed meet WebTAG criteria and therefore the model meets WebTAG guidance.

Figure 12. Journey Time Route Locations

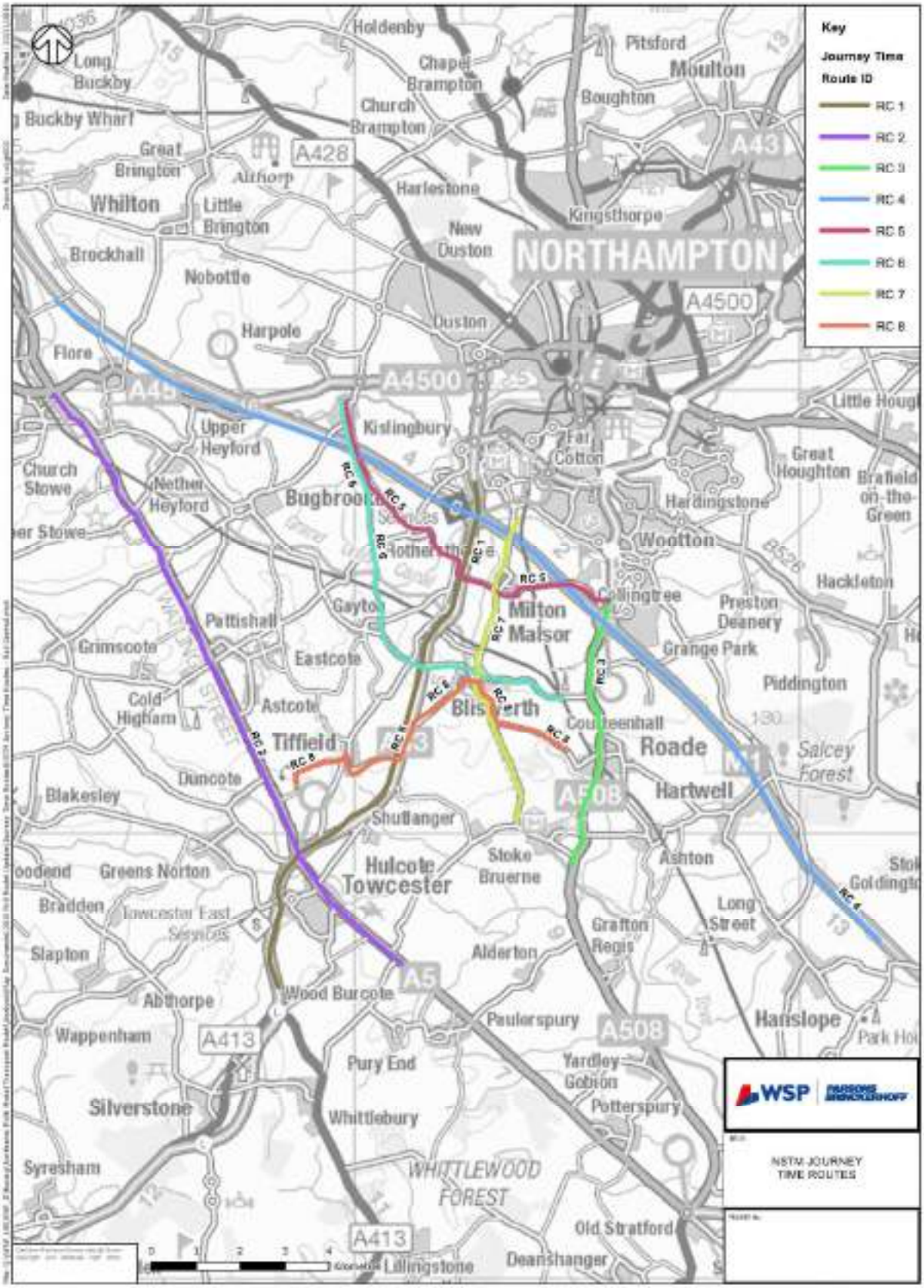


Table 5. Journey Time Validation AM Peak

	OBSERVED (SECS)	MODELLED (SECS)	DIFFERENCE	%	PASS
RC1 -NB	630	575	55	9%	Yes
RC1 -SB	870	864	6	1%	Yes
RC2 – NB	1120	1103	17	2%	Yes
RC2- SB	1300	1156	144	11%	Yes
RC3 -NB	430	389	41	10%	Yes
RC3 – SB	490	434	56	12%	Yes
RC4 - WB	900	886	14	2%	Yes
RC4 - WB	1060	939	121	11%	Yes
RC5 - EB	700	701	-1	0%	Yes
RC5 – WB	680	725	-46	-7%	Yes
RC6 - NB	920	848	72	8%	Yes
RC6 - SB	900	875	25	3%	Yes
RC7 - NB	600	596	4	1%	Yes
RC7 -SB	620	589	31	5%	Yes
RC8 -EB	1020	1020	0	0%	Yes
RC8 -WB	780	779	1	0%	Yes

Table 6. Journey Time Validation Inter Peak

	OBSERVED (SECS)	MODELLED (SECS)	DIFFERENCE	%	PASS
RC1 -NB	600	540	60	10%	Yes
RC1 -SB	600	522	78	13%	Yes
RC2 – NB	1080	1110	-30	-3%	Yes
RC2- SB	1080	970	110	10%	Yes
RC3 -NB	480	533	-53	-11%	Yes
RC3 – SB	380	376	4	1%	Yes
RC4 - WB	1020	927	93	9%	Yes
RC4 - WB	1020	895	125	12%	Yes
RC5 - EB	720	655	65	9%	Yes
RC5 – WB	720	681	39	5%	Yes
RC6 - NB	900	820	80	9%	Yes
RC6 - SB	900	834	66	7%	Yes
RC7 - NB	600	551	49	8%	Yes
RC7 -SB	600	553	47	8%	Yes
RC8 -EB	780	800	-20	-3%	Yes
RC8 -WB	720	753	-33	-5%	Yes

Table 7. Journey Time Validation PM Peak

	OBSERVED (SECS)	MODELLED (SECS)	DIFFERENCE	%	PASS
RC1 -NB	1220	1217	3	0%	Yes
RC1 -SB	700	682	18	3%	Yes
RC2 – NB	1400	1418	18	-1%	Yes
RC2- SB	1080	1015	65	6%	Yes
RC3 -NB	580	588	-8	-1%	Yes
RC3 – SB	480	450	30	6%	Yes
RC4 - WB	1020	923	97	10%	Yes
RC4 - WB	930	927	3	0%	Yes
RC5 - EB	750	674	76	10%	Yes
RC5 – WB	720	694	26	4%	Yes
RC6 - NB	950	890	60	6%	Yes
RC6 - SB	870	876	-6	-1%	Yes
RC7 - NB	570	582	-12	-2%	Yes
RC7 -SB	740	760	-20	-3%	Yes
RC8 -EB	1050	905	145	14%	Yes
RC8 -WB	810	795	15	2%	Yes

5.7 Public Transport Model

5.7.1 Public Transport services that currently pass through the AOI have been checked to ensure the routing and frequency of services is consistent with current timetables.

5.7.2 It has been agreed that no further calibration/validation of the public transport model is required over and above the core modelling work being undertaken by WSP as a result of the limited numbers of routes that pass through the Rail Central developments AOI and the limited levels of existing demand for buses in the area.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1.1 The Northampton Strategic Transport Model (NSTM) has been identified as a suitable tool to form the basis of the strategic transport modelling for the site, subject to the approval of its flow and journey time validation within the developments Area of Influence (AOI). All calibration/validation of this model has been undertaken by WSP Parsons Brinckerhoff with model outputs provided to the applicants team for use in their appraisal of the site.

6.1.2 The results of this calibration/validation process show the model meets/exceeds WebTAG guidance in terms of its correlation with observed traffic flows and journey times within the Rail Central developments agreed modelling Area of Influence. It also meets WebTAG guidance compared to turning movements at the critical Highways Agency M1 motorway junctions (Junctions 15 and 15A).

6.1.3 As a result of this calibration/validation process, the Rail Central version of the Northampton Strategic Transport Model (NSTM) is considered 'Fit for purpose' in the strategic assessment of the Rail Central development proposals and can also be utilised to provide direct flow information to the various future year junction models to be used as the basis for the developments Transport Assessment.

Appendix A – WSP Summary LMVR

Rail Central Strategic Rail Freight Interchange, Milton Malsor / Blisworth

INITIAL NSTM MAJOR MODEL UPDATE VALIDATION RESULTS (V2)

QM

Job Number	Date	Author	Checked	Authorised
70019379	11 January 2017	J. Cassell	M. Parveen	C. Drennan

INTRODUCTION

WSP | Parsons Brinckerhoff has been tasked by Northamptonshire Highways, on behalf of Transport Planning Associates (TPA), to undertake transport modelling for the Rail Central Strategic Rail Freight Interchange (SRFI) development in Milton Malsor / Blisworth, Northamptonshire using the updated Northamptonshire Strategic Traffic Model (NSTM) with a base year of 2015.

Local Automatic Number Plate Recognition (ANPR), Automatic Traffic Count (ATC) and Manual Classified Count (MCC) data was collected in June and July 2016 at various locations around the proposed development. A validation and calibration exercise has been conducted using this local survey data. This report sets out the initial results from this validation exercise.

MODEL OUTPUTS

In the first instance before the Local Model Validation Report (LMVR) is finalised and issued, WSP | Parsons Brinckerhoff is providing TPA with the following model outputs:

- Link flow summary statistics for the:
  - whole of the NSTM
  - TPA Rail Central area
- Detailed link flow data for the TPA Rail Central local study area
- Junction turning count calibration results for M1 Junction 15A and M1 Junction 15
- Journey time route validation results for the:
  - whole of the NSTM
  - TPA Rail Central area
- Screenline calibration results
- Actual flow plots for each peak

CLARIFICATIONS

The models were developed for an average weekday (Monday to Friday) in the AM peak hour (08:00-09:00), in the inter-peak average hour (10:00-16:00) and in the PM peak hour (17:00-18:00).

All directional link flows and turning movements are shown in vehicles, unless otherwise stated.

Link Flow Summary Statistics (Whole of the NSTM)

Link Summary

Model Map

Area

Criteria and Measure		Acceptability Guideline
Flow Criteria		
Observed	Modelled	
< 700 vph	±100 vph	> 85 % of links
700 - 2,700 vph	±15%	> 85 % of links
> 2,700 vph	±400 vph	> 85 % of links
GEH Criteria		
GEH Statistic for individual links < 5		> 85 % of links

AM Peak

ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
282	267	95%	151	141	93%
153	132	86%	65	56	86%
14	13	93%	5	5	100%
449	398	89%	221	200	90%

Interpeak

ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
341	331	97%	189	175	93%
101	96	95%	28	22	79%
7	7	100%	4	3	75%
449	425	95%	221	203	92%

PM Peak

ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
276	245	89%	142	122	86%
162	142	88%	73	62	85%
11	11	100%	6	4	67%
449	377	84%	221	190	86%

GEH Range
GEH < 2
GEH < 4
GEH < 6
GEH < 8
GEH < 10
GEH <5

ALL

Calibration		Validation		Combined	
231	51%	34	15%	265	40%
366	82%	187	85%	553	83%
415	92%	213	96%	628	94%
438	98%	219	99%	657	98%
443	99%	221	100%	664	99%
398	89%	200	90%	598	89%

ALL

Calibration		Validation		Combined	
296	66%	34	15%	330	49%
407	91%	183	83%	590	88%
438	98%	212	96%	650	97%
447	100%	218	99%	665	99%
449	100%	219	99%	668	100%
425	95%	203	92%	628	94%

ALL

Calibration		Validation		Combined	
221	49%	26	12%	247	37%
343	76%	169	76%	512	76%
401	89%	211	95%	612	91%
429	96%	218	99%	647	97%
444	99%	221	100%	665	99%
377	84%	190	86%	567	85%

Area

Criteria and Measure	Acceptability Guideline
Flow or GEH Criteria Met	
Individual links	> 85 % of links

AM Peak

ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
449	416	93%	221	207	94%	670	623	93%

Interpeak

ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
449	436	97%	221	206	93%	670	642	96%

PM Peak

ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
449	406	90%	221	199	90%	670	605	90%

Link Flow Summary Statistics (TPA Rail Central Area)

Link Summary

Model Map

Area TPA Rail Central

Criteria and Measure		Acceptability Guideline
Flow Criteria		
Observed	Modelled	
< 700 vph	±100 vph	> 85 % of links
700 - 2,700 vph	±15%	> 85 % of links
> 2,700 vph	±400 vph	> 85 % of links
GEH Criteria		
GEH Statistic for individual links < 5		> 85 % of links

AM Peak

ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
71	67	94%	45	40	89%
38	29	76%	18	12	67%
11	11	100%	5	5	100%
120	106	88%	68	55	81%

Interpeak

ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
85	81	95%	55	51	93%
28	26	93%	9	5	56%
7	7	100%	4	3	75%
120	113	94%	68	61	90%

PM Peak

ALL

Calibration			Validation		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
69	68	99%	42	38	90%
41	39	95%	21	18	86%
10	10	100%	5	3	60%
120	103	86%	68	57	84%

GEH Range
GEH < 2
GEH < 4
GEH < 6
GEH < 8
GEH < 10
GEH <5

ALL

Calibration		Validation		Combined	
55	46%	34	50%	89	47%
95	79%	48	71%	143	76%
110	92%	61	90%	171	91%
117	98%	66	97%	183	97%
118	98%	68	100%	186	99%
106	88%	55	81%	161	86%

ALL

Calibration		Validation		Combined	
86	72%	34	50%	120	64%
110	92%	53	78%	163	87%
115	96%	64	94%	179	95%
119	99%	67	99%	186	99%
120	100%	67	99%	187	99%
113	94%	61	90%	174	93%

ALL

Calibration		Validation		Combined	
61	51%	26	38%	87	46%
94	78%	51	75%	145	77%
110	92%	65	96%	175	93%
117	98%	67	99%	184	98%
120	100%	68	100%	188	100%
103	86%	57	84%	160	85%

Area TPA Rail Central

Criteria and Measure	Acceptability Guideline
Flow or GEH Criteria Met	
Individual links	> 85 % of links

AM Peak

ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
120	109	91%	68	59	87%	188	168	89%

Interpeak

ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
120	115	96%	68	63	93%	188	178	95%

PM Peak

ALL

Calibration			Validation			Combined		
Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%	Total Counts	Meet Criteria	%
120	117	98%	68	62	91%	188	179	95%

Detailed Link Flow Data
(TPA Rail Central Area)

Link Flows

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
3	Calibration	NCC Data 2014	28	A428 Yardley Hastings	EB	ATC	343	345	0.101	Yes	Yes	223	169	3.880	Yes	Yes	597	646	1.945	Yes	Yes
4	Calibration	NCC Data 2014	28	A428 Yardley Hastings	WB	ATC	633	637	0.181	Yes	Yes	235	284	3.047	Yes	Yes	400	314	4.544	Yes	Yes
5	Validation	NCC Data 2014	142	A5199 Welford Road, Northampton	NB	ATC	520	475	2.009	Yes	Yes	372	326	2.472	Yes	Yes	759	893	4.663	Yes	No
6	Validation	NCC Data 2014	142	A5199 Welford Road, Northampton	SB	ATC	911	883	0.928	Yes	Yes	350	284	3.672	Yes	Yes	581	562	0.772	Yes	Yes
7	Validation	NCC Data 2014	162	C24 West of Church Brampton	WB	ATC	560	637	3.128	Yes	Yes	234	341	6.335	No	No	503	553	2.203	Yes	Yes
8	Validation	NCC Data 2014	162	C24 West of Church Brampton	EB	ATC	498	536	1.665	Yes	Yes	229	288	3.715	Yes	Yes	583	724	5.524	No	No
9	Validation	NCC Data 2014	29	A509 London Road, Wollaston	NB	ATC	616	545	2.926	Yes	Yes	413	425	0.581	Yes	Yes	849	670	6.528	No	No
10	Validation	NCC Data 2014	29	A509 London Road, Wollaston	SB	ATC	712	677	1.332	Yes	Yes	354	377	1.221	Yes	Yes	544	593	2.055	Yes	Yes
13	Validation	NCC Data 2014	34	Weekley	SB	ATC	593	587	0.248	Yes	Yes	358	378	1.026	Yes	Yes	748	653	3.565	Yes	Yes
14	Validation	NCC Data 2014	34	Weekley	NB	ATC	758	694	2.353	Yes	Yes	408	515	5.001	No	No	615	769	5.853	No	No
15	Calibration	NCC Data 2014	36	A510 Wellingborough Road, Finedon	NB	ATC	491	421	3.236	Yes	Yes	507	408	4.632	Yes	Yes	1068	877	6.149	No	No
16	Calibration	NCC Data 2014	36	A510 Wellingborough Road, Finedon	SB	ATC	1072	967	3.306	Yes	Yes	477	407	3.327	Yes	Yes	541	527	0.614	Yes	Yes
17	Calibration	NCC Data 2014	41	North of Rockingham	SB	ATC	483	486	0.137	Yes	Yes	260	267	0.435	Yes	Yes	360	377	0.900	Yes	Yes
18	Calibration	NCC Data 2014	41	North of Rockingham	NB	ATC	362	366	0.215	Yes	Yes	264	314	2.944	Yes	Yes	451	446	0.223	Yes	Yes
19	Calibration	NCC Data 2014	46	Brigstock	NB	ATC	573	505	2.907	Yes	Yes	268	270	0.081	Yes	Yes	398	373	1.243	Yes	Yes
20	Calibration	NCC Data 2014	46	Brigstock	SB	ATC	337	364	1.463	Yes	Yes	270	269	0.065	Yes	Yes	526	537	0.506	Yes	Yes
23	Calibration	NCC Data 2014	84	North of Kettering	NB	ATC	1339	1271	1.867	Yes	Yes	923	881	1.388	Yes	Yes	1596	1581	0.359	Yes	Yes
24	Calibration	NCC Data 2014	84	North of Kettering	SB	ATC	1364	1193	4.794	Yes	Yes	914	888	0.895	Yes	Yes	1203	1071	3.906	Yes	Yes
25	Calibration	NCC Data 2014	201	Warkton Lane, Kettering	WB	ATC	111	98	1.264	Yes	Yes	70	109	4.197	Yes	Yes	114	92	2.144	Yes	Yes
26	Calibration	NCC Data 2014	201	Warkton Lane, Kettering	EB	ATC	116	117	0.071	Yes	Yes	64	61	0.430	Yes	Yes	112	119	0.651	Yes	Yes
27	Validation	NCC Data 2014	202	Barton Road, Kettering	NB	ATC	676	659	0.644	Yes	Yes	585	555	1.275	Yes	Yes	980	1083	3.205	Yes	Yes
28	Validation	NCC Data 2014	202	Barton Road, Kettering	SB	ATC	924	1004	2.561	Yes	Yes	556	595	1.633	Yes	Yes	701	721	0.773	Yes	Yes
29	Validation	NCC Data 2014	205	Northampton Road, Kettering	NB	ATC	752	822	2.490	Yes	Yes	502	632	5.465	No	No	844	967	4.093	Yes	Yes
30	Validation	NCC Data 2014	205	Northampton Road, Kettering	SB	ATC	911	1044	4.266	Yes	Yes	500	434	3.049	Yes	Yes	820	919	3.351	Yes	Yes
31	Validation	NCC Data 2014	206	Rothwell Road, Kettering	EB	ATC	948	917	1.042	Yes	Yes	670	724	2.054	Yes	Yes	661	609	2.041	Yes	Yes
32	Validation	NCC Data 2014	206	Rothwell Road, Kettering	WB	ATC	555	441	5.128	No	No	674	719	1.697	Yes	Yes	908	810	3.329	Yes	Yes
33	Validation	NCC Data 2014	232	Sywell Road, Wellingborough	EB	ATC	247	223	1.574	Yes	Yes	266	255	0.668	Yes	Yes	634	658	0.973	Yes	Yes
34	Validation	NCC Data 2014	232	Sywell Road, Wellingborough	WB	ATC	639	575	2.585	Yes	Yes	276	255	1.290	Yes	Yes	295	314	1.104	Yes	Yes
35	Validation	NCC Data 2014	236	Irthlingborough Road, Wellingborough	EB	ATC	135	167	2.592	Yes	Yes	157	167	0.756	Yes	Yes	253	218	2.279	Yes	Yes
36	Validation	NCC Data 2014	236	Irthlingborough Road, Wellingborough	WB	ATC	241	265	1.548	Yes	Yes	140	112	2.450	Yes	Yes	167	166	0.086	Yes	Yes
37	Validation	NCC Data 2014	238	London Road, Wellingborough	NB	ATC	722	629	3.564	Yes	Yes	716	535	7.228	No	No	685	576	4.318	Yes	Yes
38	Validation	NCC Data 2014	238	London Road, Wellingborough	SB	ATC	646	597	1.965	Yes	Yes	596	427	7.476	No	No	822	677	5.276	No	Yes
39	Calibration	NCC Data 2014	239	Doddington Road, Wellingborough	NB	ATC	364	342	1.175	Yes	Yes	238	197	2.815	Yes	Yes	534	551	0.694	Yes	Yes
40	Calibration	NCC Data 2014	239	Doddington Road, Wellingborough	SB	ATC	577	586	0.387	Yes	Yes	294	325	1.750	Yes	Yes	398	333	3.364	Yes	Yes
41	Validation	NCC Data 2014	261	Oakley Road, Corby	NB	ATC	1007	1010	0.069	Yes	Yes	706	671	1.305	Yes	Yes	773	737	1.325	Yes	Yes
42	Validation	NCC Data 2014	261	Oakley Road, Corby	SB	ATC	505	392	5.349	No	No	704	577	5.025	No	No	1027	1013	0.465	Yes	Yes
43	Calibration	NCC Data 2014	262	Pheonix Parkway, Corby	NB	ATC	505	486	0.826	Yes	Yes	335	403	3.545	Yes	Yes	294	294	0.024	Yes	Yes
44	Calibration	NCC Data 2014	262	Pheonix Parkway, Corby	SB	ATC	343	437	4.775	Yes	Yes	429	463	1.590	Yes	Yes	473	462	0.481	Yes	Yes
45	Calibration	NCC Data 2014	263	Weldon Road, Corby	WB	ATC	937	850	2.903	Yes	Yes	984	967	0.534	Yes	Yes	1416	1274	3.892	Yes	Yes
46	Calibration	NCC Data 2014	263	Weldon Road, Corby	EB	ATC	1279	1390	3.060	Yes	Yes	863	857	0.194	Yes	Yes	966	927	1.286	Yes	Yes
47	Validation	NCC Data 2014	264	Westcott Way, Corby	WB	ATC	515	482	1.479	Yes	Yes	390	459	3.376	Yes	Yes	550	659	4.402	Yes	Yes
48	Validation	NCC Data 2014	264	Westcott Way, Corby	EB	ATC	509	521	0.522	Yes	Yes	375	452	3.756	Yes	Yes	472	588	5.011	No	Yes
51	Calibration	TPA Rail Central	137	C86 Banbury Lane, Northampton	NB	ATC	246	245	0.089	Yes	Yes	110	122	1.113	Yes	Yes	172	158	1.075	Yes	Yes
52	Calibration	TPA Rail Central	137	C86 Banbury Lane, Northampton	SB	ATC	207	215	0.531	Yes	Yes	105	114	0.885	Yes	Yes	185	167	1.321	Yes	Yes
53	Calibration	NCC Data 2014	143	C4 Boughton Green, Northampton	NB	ATC	267	290	1.417	Yes	Yes	163	165	0.126	Yes	Yes	534	360	8.256	No	No
54	Calibration	NCC Data 2014	143	C4 Boughton Green, Northampton	SB	ATC	521	554	1.454	Yes	Yes	157	156	0.112	Yes	Yes	247	285	2.299	Yes	Yes
55	Calibration	NCC Data 2014	144	C36 Northampton Lane South (Moulton) Northampton	NB	ATC	396	316	4.272	Yes	Yes	245	255	0.606	Yes	Yes	456	503	2.140	Yes	Yes
56	Calibration	NCC Data 2014	144	C36 Northampton Lane South (Moulton) Northampton	SB	ATC	838	836	0.064	Yes	Yes	384	385	0.055	Yes	Yes	493	442	2.356	Yes	Yes
57	Validation	NCC Data 2014	147	A4500 Wellingborough Road (Ecton), Northampton	EB	ATC	589	613	0.993	Yes	Yes	346	313	1.849	Yes	Yes	745	604	5.396	No	No
58	Validation	NCC Data 2014	147	A4500 Wellingborough Road (Ecton), Northampton	WB	ATC	796	740	2.031	Yes	Yes	324	335	0.569	Yes	Yes	511	456	2.498	Yes	Yes
59	Validation	NCC Data 2014	150	Great Billing Way, Northampton	SB	ATC	1336	1435	2.656	Yes	Yes	679	782	3.791	Yes	No	848	763	2.989	Yes	Yes
60	Validation	NCC Data 2014	150	Great Billing Way, Northampton	NB	ATC	884	846	1.278	Yes	Yes	697	813	4.200	Yes	No	1455	1424	0.825	Yes	Yes
61	Calibration	NCC Data 2014	152	Wellingborough Road	WB	ATC	829	917	3.008	Yes	Yes	628	563	2.672	Yes	Yes	768	741	0.981	Yes	Yes
62	Calibration	NCC Data 2014	152	Wellingborough Road	EB	ATC	827	743	3.002	Yes	Yes	687	573	4.560	Yes	No	1077	1111	1.030	Yes	Yes
63	Calibration	TPA Rail Central	154	A43 Lumbertubs Way (South), Northampton	SB	ATC	2416	2412	0.073	Yes	Yes	1492	1550	1.497	Yes	Yes	1993	2106	2.496	Yes	Yes
64	Calibration	TPA Rail Central	154	A43 Lumbertubs Way (South), Northampton	NB	ATC	2077	2081	0.077	Yes	Yes	1659	1665	0.155	Yes	Yes	2787	2694	1.785	Yes	Yes
65	Validation	TPA Rail Central	155	C38 Billing Road East, Northampton	EB	ATC	247	217	1.965	Yes	Yes	224	197	1.856	Yes	Yes	369	302	3.631	Yes	Yes
66	Validation	TPA Rail Central	155	C38 Billing Road East, Northampton	WB	ATC	509	504	0.244	Yes	Yes	233	226	0.492	Yes	Yes	330	348	0.993	Yes	Yes
67	Calibration	NCC Data 2014	156	Wellingborough Rd (West), Northampton	WB	ATC	944	873	2.329	Yes	Yes	701	635	2.558	Yes	Yes	775	727	1.738	Yes	Yes
68	Calibration	NCC Data 2014	156	Wellingborough Rd (West), Northampton	EB	ATC	761	635	4.757	Yes	No	712	657	2.071	Yes	Yes	1016	982	1.087	Yes	Yes
69	Validation	NCC Data 2014	157	A5123 Kettering Road, Northampton	NB	ATC	639	569	2.850	Yes	Yes	634	564	2.851	Yes	Yes	811	787	0.828	Yes	Yes
70	Validation	NCC Data 2014	157	A5123 Kettering Road, Northampton	SB	ATC	888	827	2.077	Yes	Yes	659	593	2.625	Yes	Yes	796	701	3.467	Yes	Yes
71	Validation	NCC Data 2014	158	Boughton Green Road	NB	ATC	751	836	3.013	Yes	Yes	425	327	5.058	No	Yes	528	552	1.046	Yes	Yes
72	Validation	NCC Data 2014	158	Boughton Green Road	SB	ATC	654	586	2.727	Yes	Yes	433	501	3.148	Yes	Yes	753	761	0.282	Yes	Yes
73	Validation	NCC Data 2014	159	A5076 Holly Lodge Drive, Northampton	EB	ATC	735	715	0.761	Yes	Yes	346	318	1.572	Yes	Yes	300	260	2.417	Yes	Yes
74	Validation	NCC Data 2014	159	A5076 Holly Lodge Drive, Northampton	WB	ATC	280	325	2.611	Yes	Yes	373	317	3.042	Yes	Yes	673	643	1.170	Yes	Yes
75	Validation	TPA Rail Central	163	A5095 Rushmere Road, Northampton	NB	ATC	581	602	0.856	Yes	Yes	471	480	0.439	Yes	Yes	937	1056	3.745	Yes	Yes
76	Validation	TPA Rail Central	163	A5095 Rushmere Road, Northampton	SB	ATC	1064	913	4.782	Yes	Yes	489	554	2.871	Yes	Yes	637	705	2.656	Yes	Yes
79	Validation	NCC Data 2014	291	B645 Northampton Road, Rushden	EB	ATC	263	219	2.859	Yes	Yes	339	262	4.458	Yes	Yes	785	621	6.167	No	No
80	Validation	NCC Data 2014	291	B645 Northampton Road, Rushden	WB	ATC	616	599	0.682	Yes	Yes	355	361	0.282	Yes	Yes	370	407	1.878	Yes	Yes
81	Calibration	NCC Data 2014	292	A6 Rushden/Higham Ferrers Bypass	NB	ATC	722	732	0.364	Yes	Yes	486	492	0.300	Yes	Yes	864	925	2.020	Yes	Yes
82	Calibration	NCC Data 2014	292	A6 Rushden/Higham Ferrers Bypass	SB	ATC	874	849	0.849	Yes	Yes	509	502	0.278	Yes	Yes	837	796	1.435	Yes	Yes
83	Calibration	NCC Data 2014	2	A4500 Main Road, Wilby	EB	ATC	604	562	1.725	Yes	Yes	292	256	2.183	Yes	Yes	843	651	7.020	No	No
84	Calibration	NCC Data 2014	2	A4500 Main Road, Wilby	WB	ATC	598	544	2.240	Yes	Yes	265	265	0.038	Yes	Yes	429	340	4.532	Yes	Yes
85	Validation	NCC Data 2014	3	A5028 High Street, Rushden	NB	ATC	633	606	1.059	Yes	Yes	585	529	2.363	Yes	Yes	649	654	0.169	Yes	Yes
86	Validation	NCC Data 2014	3	A5028 High Street, Rushden	SB	ATC	472	436	1.676	Yes	Yes	440	387	2.589	Yes	Yes	563	450	5.044	No	No
87	Validation	NCC Data 2014	23	A508 Harborough Road, Great Oxendon (South of)	NB	ATC	281	252	1.775	Yes	Yes	191	161	2.274	Yes	Yes	424	407	0.861	Yes	Yes
88	Validation	NCC Data 2014	23	A508 Harborough Road, Great Oxendon (South of)	SB	ATC	321	350	1.591	Yes	Yes	187	164	1.802	Yes	Yes	280	306	1.534	Yes	Yes
89	Calibration	NCC Data 2014	24	A43 Kettering Road, Broughton Bypass	NB	ATC	1080	964	3.626	Yes	Yes	708	699	0.351	Yes	Yes	1196	1170	0.738	Yes	Yes
90	Calibration	NCC Data 2014	24	A43 Kettering Road, Broughton Bypass	SB	ATC	1038	930	3.421	Yes	Yes	669	705	1.398	Yes	Yes	1050	1022	0.851	Yes	Yes
91	Validation	NCC Data 2014	31	B576 Harborough Road, Desborough	NB	ATC	289	243	2.833	Yes	Yes	163	122	3.391	Yes	Yes	203	179	1.715	Yes	Yes
92	Validation	NCC Data 2014	31	B576 Harborough Road, Desborough	SB	ATC	156	147	0.692	Yes	Yes	162	160	0.136	Yes	Yes	311	357	2.510	Yes	Yes
93	Calibration	NCC Data 2014	35	A6 Burton Road, Finedon (North of)	NB	ATC	715	775	2.170	Yes	Yes	517	530	0.582	Yes	Yes	864	868	0.132	Yes	Yes
94	Calibration	NCC Data 2014	35	A6 Burton Road, Finedon (North of)	SB	ATC	725	755	1.100	Yes	Yes	500	524	1.023	Yes	Yes	680	591	3.525	Yes	Yes
95	Validation	NCC Data 2014	39	A5001 Wellingborough Road, Rushden	EB	ATC	406	399	0.329	Yes	Yes	504	452	2.377	Yes	Yes	656	624	1.262	Yes	Yes
96	Validation	NCC Data 2014	39	A5001 Wellingborough Road, Rushden	WB	ATC	778	728	1.817	Yes	Yes	492	380	5.350	No	No	483	432	2.351	Yes	Yes
99	Calibration	NCC Data 2014	57	A508 Harborough Road, Boughton	NB	ATC	423	402	1.034	Yes	Yes	379	361	0.985	Yes	Yes	770	846	2.667	Yes	Yes
100	Calibration	NCC Data 2014	57	A508 Harborough Road, Boughton	SB	ATC	653	625	1.130	Yes	Yes	360	370	0.565	Yes	Yes	515	575	2.574	Yes	Yes
101	Calibration	TPA Rail Central	65	C151 Tollgate Way, Northampton	NB	ATC	1009	934	2.423	Yes	Yes	676	653	0.882	Yes	Yes	927	979	1.701	Yes	Yes
102	Calibration	TPA Rail Central	65	C151 Tollgate Way, Northampton	SB	ATC	1018	975	1.356	Yes	Yes	660	640	0.798	Yes	Yes	985	933	1.693	Yes	Yes
103	Calibration	NCC Data 2014	79	83 Weekley Wood Lane, Kettering Northern Bypass (E	EB	ATC	713	688	0.957	Yes	Yes	428	430	0.086	Yes	Yes	701	660	1.588	Yes	Yes
104	Calibration	NCC Data 2014	79	83 Weekley Wood Lane, Kettering Northern Bypass (E	WB	ATC	736	665	2.716	Yes	Yes	474	445	1.338	Yes	Yes	730	682	1.803	Yes	Yes
105	Calibration	TPA Rail Central	133	C23 Quinton Road, Wootton (South of)	NB	ATC	286	196	5.815	No	Yes	148	130	1.493	Yes	Yes	550	469	3.593	Yes	Yes
106	Calibration	TPA Rail Central	133	C23 Quinton Road, Wootton (South of)	SB	ATC	414	353	3.130	Yes	Yes	108	77	3.230	Yes	Yes	232	182	3.486	Yes	Yes
108	Calibration	TPA Rail Central	136	A43 Oxford Road, Blisworth Bypass (North of M1)	SB	ATC	1339	1469	3.471	Yes	Yes	637	855	7.962	No	No	924	1132	6.498	No	No
113	Calibration	NCC Data 2014	140	C5 Nobottle Road, Duston	EB	ATC	244	363	6.839	No	No	110	56	5.982	No	Yes	242	230	0.806	Yes	Yes
114	Calibration	NCC Data 2014	140	C5 Nobottle Road, Duston	WB	ATC	235	210	1.675	Yes	Yes	110	116	0.611	Yes	Yes	247	277	1.842	Yes	Yes
115	Calibration	NCC Data 2014	141	U61873 Duston Road, Duston	EB	ATC	39	16	4.468	Yes	Yes	34	28	1.106	Yes	Yes	43	35	1.297	Yes	Yes
116	Calibration	NCC Data 2014	141	U61873 Duston Road, Duston	WB	ATC	22	95	9.499	No	Yes	29	33	0.654	Yes	Yes	44	67	3.087	Yes	Yes
117	Calibration	NCC Data 2014	145	A43 Thorpeville Road, Northampton	NB	ATC	962	894	2.248	Yes	Yes	802	812	0.356	Yes	Yes	1343	1215	3.587	Yes	Yes
118	Calibration	NCC Data 2014	145	A43 Thorpeville Road, Northampton	SB	ATC	1262	1234	0.801	Yes	Yes	714	699	0.550	Yes	Yes	1059	972	2.740	Yes	Yes
119	Validation	NCC Data 2014	146	C24 Billing Lane, Overstone	NB	ATC	311	314	0.187	Yes	Yes	108	103	0.532	Yes	Yes	231	335	6.228	No	No
120	Validation	NCC Data 2014	146	C24 Billing Lane, Overstone	SB	ATC	298	296	0.094	Yes	Yes	102	106	0.414	Yes	Yes	227	281	3.429	Yes	Yes
121	Validation	NCC Data 2014	148	C24 The Causeway, Billing Aquadrome	NB	ATC	508	477	1.421	Yes	Yes	311	332	1.157	Yes	Yes	651	740	3.343	Yes	Yes
122	Validation	NCC Data 2014	148	C24 The Causeway, Billing Aquadrome	SB	ATC	570	556	0.596	Yes	Yes	277	216	3.859	Yes	Yes	459	300	8.147	No	No
123	Calibration	NCC Data 2014	151	A4501 Cliftonville Road, Northampton	NB	ATC	1099	1076	0.683	Yes	Yes	721	697	0.912	Yes	Yes	845	878	1.116	Yes	Yes
124	Calibration	NCC Data 2014	151	A4501 Cliftonville Road, Northampton	SB	ATC	786	734	1.877	Yes	Yes	648	715	2.568	Yes	Yes	912	1141	7.173	No	No
125	Calibration	NCC Data 2014	153	A43 Lumbertubs Way (North), Northampton	NB	ATC	1662	1638	0.587	Yes	Yes	1276	1297	0.592	Yes	Yes	2043	2031	0.260	Yes	Yes

							AM Peak ALL VEHICLES					Interpeak ALL VEHICLES					PM Peak ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
126	Calibration	NCC Data 2014	153	A43 Lumbertubs Way (North), Northampton	SB	ATC	1700	1677	0.549	Yes	Yes	1177	1173	0.118	Yes	Yes	1596	1715	2.936	Yes	Yes
127	Calibration	NCC Data 2014	160	C4 Moulton Lane, Boughton	EB	ATC	417	408	0.455	Yes	Yes	108	91	1.740	Yes	Yes	203	246	2.835	Yes	Yes
128	Calibration	NCC Data 2014	160	C4 Moulton Lane, Boughton	WB	ATC	227	170	4.012	Yes	Yes	127	144	1.416	Yes	Yes	397	529	6.103	No	No
129	Calibration	TPA Rail Central	165	A5076 Danes Camp Way, Northampton	EB	ATC	1933	2072	3.093	Yes	Yes	1278	1202	2.142	Yes	Yes	1797	1721	1.831	Yes	Yes
130	Calibration	TPA Rail Central	165	A5076 Danes Camp Way, Northampton	WB	ATC	1605	1703	2.413	Yes	Yes	1122	1128	0.186	Yes	Yes	1749	1941	4.470	Yes	Yes
131	Validation	NCC Data 2014	167	A4500 Wellingborough Road, Northampton	EB	ATC	514	466	2.170	Yes	Yes	534	500	1.480	Yes	Yes	730	664	2.496	Yes	Yes
132	Validation	NCC Data 2014	167	A4500 Wellingborough Road, Northampton	WB	ATC	725	810	3.051	Yes	Yes	563	536	1.144	Yes	Yes	564	519	1.952	Yes	Yes
133	Validation	NCC Data 2014	168	A5199 Northampton Road, Wellford (South of)	NB	ATC	199	182	1.259	Yes	Yes	115	90	2.382	Yes	Yes	311	293	1.073	Yes	Yes
134	Validation	NCC Data 2014	168	A5199 Northampton Road, Wellford (South of)	SB	ATC	303	209	5.849	No	Yes	100	105	0.498	Yes	Yes	149	148	0.080	Yes	Yes
135	Calibration	NCC Data 2014	203	C136 Polwell Lane, Barton Seagrave	NB	ATC	254	258	0.283	Yes	Yes	147	163	1.281	Yes	Yes	297	289	0.472	Yes	Yes
136	Calibration	NCC Data 2014	203	C136 Polwell Lane, Barton Seagrave	SB	ATC	359	375	0.848	Yes	Yes	166	207	2.943	Yes	Yes	229	341	6.659	No	No
137	Calibration	NCC Data 2014	204	A509 Kettering Road, Kettering	NB	ATC	1187	1151	1.068	Yes	Yes	733	729	0.139	Yes	Yes	934	892	1.413	Yes	Yes
138	Calibration	NCC Data 2014	204	A509 Kettering Road, Kettering	SB	ATC	574	533	1.728	Yes	Yes	706	696	0.364	Yes	Yes	1181	1138	1.279	Yes	Yes
139	Validation	NCC Data 2014	207	A6003 Rockingham Road, Kettering	NB	ATC	640	671	1.191	Yes	Yes	529	577	2.046	Yes	Yes	748	686	2.313	Yes	Yes
140	Validation	NCC Data 2014	207	A6003 Rockingham Road, Kettering	SB	ATC	846	846	0.003	Yes	Yes	557	440	5.265	No	No	839	848	0.307	Yes	Yes
141	Validation	NCC Data 2014	231	A5128 Northampton Road, Wellingborough	EB	ATC	575	531	1.868	Yes	Yes	535	515	0.865	Yes	Yes	879	830	1.679	Yes	Yes
142	Validation	NCC Data 2014	231	A5128 Northampton Road, Wellingborough	WB	ATC	816	650	6.134	No	No	533	461	3.197	Yes	Yes	595	575	0.823	Yes	Yes
143	Validation	NCC Data 2014	233	A5193 Harrowden Road, Wellingborough	NB	ATC	537	505	1.405	Yes	Yes	388	386	0.117	Yes	Yes	563	572	0.369	Yes	Yes
144	Validation	NCC Data 2014	233	A5193 Harrowden Road, Wellingborough	SB	ATC	545	632	3.584	Yes	Yes	344	398	2.812	Yes	Yes	548	587	1.628	Yes	Yes
145	Validation	NCC Data 2014	234	U94805 Nest Lane, Wellingborough	NB	ATC	221	210	0.759	Yes	Yes	136	131	0.425	Yes	Yes	93	84	0.982	Yes	Yes
146	Validation	NCC Data 2014	234	U94805 Nest Lane, Wellingborough	SB	ATC	110	87	2.266	Yes	Yes	138	191	4.194	Yes	Yes	270	247	1.396	Yes	Yes
147	Validation	NCC Data 2014	235	A5128 Finedon Road, Wellingborough	NB	ATC	478	412	3.119	Yes	Yes	428	387	2.011	Yes	Yes	672	644	1.112	Yes	Yes
148	Validation	NCC Data 2014	235	A5128 Finedon Road, Wellingborough	SB	ATC	720	632	3.380	Yes	Yes	438	386	2.572	Yes	Yes	545	510	1.541	Yes	Yes
149	Calibration	NCC Data 2014	237	B573 The Embankment, Wellingborough	NB	ATC	849	835	0.460	Yes	Yes	485	431	2.504	Yes	Yes	728	624	4.014	Yes	Yes
150	Calibration	NCC Data 2014	237	B573 The Embankment, Wellingborough	SB	ATC	456	446	0.468	Yes	Yes	425	410	0.714	Yes	Yes	569	605	1.483	Yes	Yes
151	Validation	NCC Data 2014	293	A6 Rothwell/Desborough Bypass	NB	ATC	462	439	1.091	Yes	Yes	305	274	1.846	Yes	Yes	674	706	1.221	Yes	Yes
152	Validation	NCC Data 2014	293	A6 Rothwell/Desborough Bypass	SB	ATC	666	738	2.733	Yes	Yes	295	246	2.998	Yes	Yes	484	474	0.451	Yes	Yes
153	Validation	NCC Data 2014	576	A361 Chanwelton Road, Byfield, NB	NB	ATC	284	253	1.859	Yes	Yes	182	138	3.497	Yes	Yes	401	345	2.931	Yes	Yes
154	Validation	NCC Data 2014	577	A361 Chanwelton Road, Byfield, SB	SB	ATC	323	284	2.267	Yes	Yes	173	122	4.215	Yes	Yes	282	223	3.743	Yes	Yes
155	Calibration	NCC Data 2014	578	A43 Stamford Road, Bulwick Bypass, NB	NB	ATC	350	434	4.287	Yes	Yes	315	323	0.500	Yes	Yes	531	533	0.110	Yes	Yes
156	Calibration	NCC Data 2014	579	A43 Stamford Road, Bulwick Bypass, SB	SB	ATC	539	462	3.433	Yes	Yes	309	275	2.020	Yes	Yes	392	319	3.835	Yes	Yes
157	Calibration	TPA Rail Central	580	A508 Northampton Road, Yardley Gobion, NB	NB	ATC	521	404	5.442	No	No	438	389	2.431	Yes	Yes	923	928	0.182	Yes	Yes
158	Calibration	TPA Rail Central	581	A508 Northampton Road, Yardley Gobion, SB	SB	ATC	835	793	1.494	Yes	Yes	356	362	0.332	Yes	Yes	553	539	0.609	Yes	Yes
159	Calibration	NCC Data 2014	582	A47 Peterborough Road, Duddington (East of), EB	EB	ATC	647	640	0.293	Yes	Yes	367	354	0.666	Yes	Yes	472	448	1.121	Yes	Yes
160	Calibration	NCC Data 2014	583	A47 Peterborough Road, Duddington (East of), WB	WB	ATC	382	353	1.526	Yes	Yes	374	375	0.049	Yes	Yes	674	653	0.831	Yes	Yes
161	Calibration	NCC Data 2014	584	A605 Peterborough Road, Warmington Bypass, NB	NB	ATC	1059	1067	0.236	Yes	Yes	583	570	0.569	Yes	Yes	836	841	0.165	Yes	Yes
162	Calibration	NCC Data 2014	585	A605 Peterborough Road, Warmington Bypass, SB	SB	ATC	669	661	0.306	Yes	Yes	587	575	0.501	Yes	Yes	975	994	0.602	Yes	Yes
163	Calibration	NCC Data 2014	586	A605 Oundle Road, Barnwell (South of), NB	NB	ATC	919	902	0.556	Yes	Yes	528	542	0.587	Yes	Yes	719	767	1.790	Yes	Yes
164	Calibration	NCC Data 2014	587	A605 Oundle Road, Barnwell (South of), SB	SB	ATC	620	705	3.273	Yes	Yes	540	560	0.867	Yes	Yes	901	940	1.279	Yes	Yes
165	Validation	NCC Data 2014	588	B4525 Thorpe Road, Middleton Cheney (West of), EB	EB	ATC	410	367	2.167	Yes	Yes	272	339	3.847	Yes	Yes	537	487	2.212	Yes	Yes
166	Validation	NCC Data 2014	589	B4525 Thorpe Road, Middleton Cheney (West of), WB	WB	ATC	598	519	3.316	Yes	Yes	239	263	1.536	Yes	Yes	346	358	0.642	Yes	Yes
167	Validation	NCC Data 2014	590	A422 Farthinghoe Road, Middleton Cheney (East of), EB	EB	ATC	492	510	0.783	Yes	Yes	335	265	4.049	Yes	Yes	654	588	2.671	Yes	Yes
168	Validation	NCC Data 2014	591	A422 Farthinghoe Road, Middleton Cheney (East of), WB	WB	ATC	666	534	5.418	No	No	352	366	0.721	Yes	Yes	519	605	3.637	Yes	Yes
169	Calibration	NCC Data 2014	592	A422 Buckingham Road, Old Stratford (South of), NB	NB	ATC	1186	975	6.446	No	No	556	552	0.173	Yes	Yes	751	706	1.658	Yes	Yes
170	Calibration	NCC Data 2014	593	A422 Buckingham Road, Old Stratford (South of), SB	SB	ATC	800	836	1.256	Yes	Yes	574	576	0.104	Yes	Yes	1037	1047	0.297	Yes	Yes
173	Calibration	NCC Data 2014	596	A45 London Road, Daventry (East of), EB	EB	ATC	686	592	3.730	Yes	Yes	525	521	0.189	Yes	Yes	863	802	2.141	Yes	Yes
174	Calibration	NCC Data 2014	597	A45 London Road, Daventry (East of), WB	WB	ATC	901	842	1.983	Yes	Yes	520	484	1.613	Yes	Yes	812	729	2.996	Yes	Yes
175	Calibration	NCC Data 2014	598	A45 The Wharf, Daventry (West of), EB	EB	ATC	513	567	2.325	Yes	Yes	281	288	0.387	Yes	Yes	375	345	1.595	Yes	Yes
176	Calibration	NCC Data 2014	599	A45 The Wharf, Daventry (West of), WB	WB	ATC	353	331	1.224	Yes	Yes	310	340	1.673	Yes	Yes	556	512	1.908	Yes	Yes
177	Calibration	NCC Data 2014	600	A361 Ashby Road, Daventry (North of), NB	NB	ATC	485	459	1.229	Yes	Yes	373	403	1.515	Yes	Yes	781	651	4.865	Yes	No
178	Calibration	NCC Data 2014	601	A361 Ashby Road, Daventry (North of), SB	SB	ATC	787	743	1.584	Yes	Yes	345	355	0.505	Yes	Yes	507	358	7.162	No	No
179	Calibration	NCC Data 2014	602	A43 Stamford Road, Easton on the Hill (North of), NB	NB	ATC	473	448	1.168	Yes	Yes	324	323	0.100	Yes	Yes	507	520	0.578	Yes	Yes
180	Calibration	NCC Data 2014	603	A43 Stamford Road, Easton on the Hill (North of), SB	SB	ATC	494	493	0.021	Yes	Yes	304	304	0.044	Yes	Yes	402	407	0.250	Yes	Yes
181	Validation	TPA Rail Central	604	A428 Bedford Road, Great Houghton (West of), EB	EB	ATC	317	298	1.090	Yes	Yes	318	363	2.429	Yes	Yes	1015	1119	3.185	Yes	Yes
182	Validation	TPA Rail Central	605	A428 Bedford Road, Great Houghton (West of), WB	WB	ATC	984	970	0.467	Yes	Yes	288	301	0.753	Yes	Yes	353	435	4.174	Yes	Yes
183	Validation	TPA Rail Central	606	B526 Newport Pagnell Road, Hardingstone, EB	EB	ATC	291	318	1.550	Yes	Yes	154	118	3.041	Yes	Yes	313	411	5.164	No	Yes
184	Validation	TPA Rail Central	607	B526 Newport Pagnell Road, Hardingstone, WB	WB	ATC	311	352	2.271	Yes	Yes	153	125	2.366	Yes	Yes	323	436	5.793	No	No
185	Calibration	TPA Rail Central	608	A5076 Upton Way, Northampton, NB	NB	ATC	1925	2024	2.232	Yes	Yes	1319	1331	0.305	Yes	Yes	1845	2053	4.702	Yes	Yes
186	Calibration	TPA Rail Central	609	A5076 Upton Way, Northampton, SB	SB	ATC	1813	1816	0.061	Yes	Yes	1365	1327	1.040	Yes	Yes	2135	2147	0.251	Yes	Yes
187	Validation	NCC Data 2014	610	B4038 London Road, Daventry, NB	NB	ATC	271	231	2.522	Yes	Yes	290	266	1.440	Yes	Yes	319	287	1.788	Yes	Yes
188	Validation	NCC Data 2014	611	B4038 London Road, Daventry, SB	SB	ATC	287	269	1.103	Yes	Yes	281	214	4.275	Yes	Yes	286	292	0.329	Yes	Yes
189	Validation	NCC Data 2014	612	A4256 Braunston Road, Daventry, NB	NB	ATC	670	589	3.217	Yes	Yes	440	522	3.729	Yes	Yes	593	711	4.611	Yes	No
190	Validation	NCC Data 2014	613	A4256 Braunston Road, Daventry, SB	SB	ATC	509	479	1.351	Yes	Yes	432	415	0.805	Yes	Yes	727	800	2.644	Yes	Yes
191	Validation	NCC Data 2014	20	A428 Crick, East of	WB	ATC	305	254	3.021	Yes	Yes	143	133	0.841	Yes	Yes	284	246	2.317	Yes	Yes
192	Validation	NCC Data 2014	20	A428 Crick, East of	EB	ATC	307	337	1.655	Yes	Yes	151	130	1.815	Yes	Yes	365	375	0.524	Yes	Yes
193	Calibration	TPA Rail Central	13	A45 Flore	EB	ATC	692	608	3.306	Yes	Yes	432	435	0.154	Yes	Yes	662	620	1.654	Yes	Yes
194	Calibration	TPA Rail Central	13	A45 Flore	WB	ATC	646	658	0.464	Yes	Yes	421	434	0.621	Yes	Yes	741	688	1.995	Yes	Yes
195	Calibration	NCC Data 2014	32	A6003 Rockingham Road, Great Oakley (South of)	NB	ATC	1035	1113	2.365	Yes	Yes	719	737	0.682	Yes	Yes	1386	1457	1.870	Yes	Yes
196	Calibration	NCC Data 2014	32	A6003 Rockingham Road, Great Oakley (South of)	SB	ATC	1278	1232	1.298	Yes	Yes	800	850	1.743	Yes	Yes	1087	1052	1.061	Yes	Yes
197	Calibration	NCC Data 2014	38	A509 Wellingborough Road, Great Harrowden	NB	ATC	772	794	0.783	Yes	Yes	602	698	3.777	Yes	Yes	1109	955	4.796	Yes	Yes
198	Calibration	NCC Data 2014	38	A509 Wellingborough Road, Great Harrowden	SB	ATC	882	930	1.589	Yes	Yes	565	695	5.182	No	No	967	991	0.778	Yes	Yes
199	Calibration	NCC Data 2014	58	A43 Kettering Road, Overstone Grange	NB	ATC	861	749	3.947	Yes	Yes	637	622	0.613	Yes	Yes	1158	1057	3.022	Yes	Yes
200	Calibration	NCC Data 2014	58	A43 Kettering Road, Overstone Grange	SB	ATC	838	851	0.464	Yes	Yes	528	548	0.853	Yes	Yes	946	789	5.332	No	No
201	Calibration	NCC Data 2014	85	A4300 Stamford Road, Geddington	NB	ATC	495	568	3.166	Yes	Yes	319	369	2.721	Yes	Yes	408	578	7.657	No	No
202	Calibration	NCC Data 2014	85	A4300 Stamford Road, Geddington	SB	ATC	409	438	1.397	Yes	Yes	293	247	2.773	Yes	Yes	483	484	0.061	Yes	Yes
203	Calibration	NCC Data 2014	265	A43 Corby Link Road	NB	ATC	436	368	3.390	Yes	Yes	238	385	8.309	No	No	366	481	5.585	No	No
204	Calibration	NCC Data 2014	265	A43 Corby Link Road	SB	ATC	311	361	2.746	Yes	Yes	234	287	3.300	Yes	Yes	508	462	2.101	Yes	Yes
205	Calibration	NCC Data 2014	574	A43 Kettering Business Park (N/B only)	NB	ATC	1549	1396	3.986	Yes	Yes	1159	1207	1.404	Yes	Yes	1896	1814	1.905	Yes	Yes
206	Calibration	NCC Data 2014	575	A43 Kettering Business Park (S/B only)	SB	ATC	1692	1501	4.773	Yes	Yes	1110	1087	0.696	Yes	Yes	1729	1407	8.121	No	No
207	Validation	TPA Rail Central	B	Towcester Road	NB	ATC	374	426	2.623	Yes	Yes	231	209	1.452	Yes	Yes	488	377	5.306	No	No
208	Validation	TPA Rail Central	B	Towcester Road	SB	ATC	578	431	6.528	No	No	264	264	0.003	Yes	Yes	364	429	3.307	Yes	Yes
211	Validation	NDC Data 2013	525	A5095 St Andrews Road	NB	ATC	213	216	0.190	Yes	Yes	209	243	2.221	Yes	Yes	261	253	0.493	Yes	Yes
212	Validation	NDC Data 2013	525	A5095 St Andrews Road	SB	ATC	276	197	5.153	No	Yes	277	286	0.555	Yes	Yes	313	362	2.685	Yes	Yes
213	Validation	NDC Data 2013	530	A5123 York Road	NB	ATC	341	287	3.046	Yes	Yes	360	399	2.014	Yes	Yes	362	500	6.641	No	No
214	Validation	NDC Data 2013	530	A5123 York Road	SB	ATC	454	479	1.160	Yes	Yes	344	288	3.149	Yes	Yes	311	358	2.615	Yes	Yes
215	Validation	NDC Data 2013	533	A4500 Wellingborough Road	NB	ATC	356	347	0.464	Yes	Yes	394	348	2.411	Yes	Yes	599	592	0.275	Yes	Yes
216	Validation	NDC Data 2013	533	A4500 Wellingborough Road	SB	ATC	717	624	3.584	Yes	Yes	479	463	0.735	Yes	Yes	496	448	2.248	Yes	Yes
217	Calibration	NDC Data 2013	534	A5095 Park Avenue South	NB	ATC	449	464	0.685	Yes	Yes	413	420	0.360	Yes	Yes	692	622	2.734	Yes	Yes
218	Calibration	NDC Data 2013	534	A5095 Park Avenue South	SB	ATC	797	772	0.883	Yes	Yes	430	414	0.806	Yes	Yes	568	527	1.715	Yes	Yes
219	Validation	NDC Data 2013	535	C151 Mill Lane	EB	ATC	1085	1015	2.144	Yes	Yes	800	787	0.468	Yes	Yes	1127	1278	4.343	Yes	Yes
220	Validation	NDC Data 2013	535	C151 Mill Lane	WB	ATC	977	981	0.139	Yes	Yes	825	792	1.152	Yes	Yes	1021	973	1.512	Yes	Yes
221	Validation	NDC Data 2013	536	A428 Harlestone Road	NB	ATC	559	512	2.045	Yes	Yes	496	543	2.059	Yes	Yes	610	642	1.289	Yes	Yes
222	Validation	NDC Data 2013	536	A428 Harlestone Road	SB	ATC	696	633	2.440	Yes	Yes	419	415	0.184	Yes	Yes	433	508	3.427	Yes	Yes
223	Calibration	NDC Data 2013	540	A5123 Kettering Road	NB	ATC	515	480	1.579	Yes	Yes	454	450	0.188	Yes	Yes	607	662	2.158	Yes	Yes
224	Calibration	NDC Data 2013	540	A5123 Kettering Road	SB	ATC	556	581	1.054	Yes	Yes	447	425	1.051	Yes	Yes	518	514	0.168	Yes	Yes
225	Validation	NDC Data 2013	541	A5101 Park Avenue North	NB	ATC	393	380	0.677	Yes	Yes	341	320	1.173	Yes	Yes	400	358	2.187	Yes	Yes
226	Validation	NDC Data 2013	541	A5101 Park Avenue North	SB	ATC	511	525	0.628	Yes	Yes	351	406	2.841	Yes	Yes	377	477	4.861	Yes	No
227	Calibration	NDC Data 2013	549	A428 Bedford Road	EB	ATC	682	627	2.147	Yes	Yes	668	607	2.446	Yes	Yes	933	992	1.891	Yes	Yes
228	Calibration	NDC Data 2013	549	A428 Bedford Road	WB	ATC	1183	1102	2.397	Yes	Yes	709	670	1.493	Yes	Yes	872	803	2.386	Yes	Yes
229	Calibration	NDC Data 2013	551	A508 Barrack Road	NB	ATC	729	656	2.777	Yes	Yes	656	678	0.859	Yes	Yes	1062	893	5.386	No	No
230	Calibration	NDC Data 2013	552	A508 Barrack Road	SB	ATC	1177	1214	1.060	Yes	Yes	687	718	1.194	Yes	Yes	885	719	5.860	No	No
231	Validation	NCC Data 2013	20130018	Grangeway, Rushden	NB	ATC	244	312	4.067	Yes	Yes	130	119	0.993	Yes	Yes	171	220	3.537	Yes	Yes
232	Validation	NCC Data 2013	20130018	Grangeway, Rushden	SB	ATC	244	253	0.592	Yes	Yes	151	165	1.118	Yes	Yes	308	352	2.397	Yes	Yes
675	Calibration	Stanton Cross	1	B571	NEB	ATC	192	157	2.619	Yes	Yes	203	273	4.540	Yes	Yes	425	441	0.733	Yes	Yes
676	Calibration	Stanton Cross	1	B571	SWB	ATC	457	435	1.037	Yes	Yes	202	153	3.653	Yes	Yes	394	414	0.981	Yes	Yes
677	Calibration	Stanton Cross	2	Ditchford Road	NB	ATC	291	318	1.525	Yes	Yes	216	315	6.075	No	Yes	382	424	2.084	Yes	Yes
678	Calibration	Stanton Cross	2	Ditchford Road	SB	ATC	411	377	1.738	Yes	Yes	245	227	1.147	Yes	Yes	614	632	0.687	Yes	Yes
679	Calibration	Stanton Cross	3	Sidegate Lane	NWB	ATC	306	315	0.544	Yes	Yes	173	168	0.437	Yes	Yes	264	269	0.330	Yes	Yes
680	Calibration	Stanton Cross	3	Sidegate Lane	SEB	ATC	287	322	2.019	Yes	Yes	200	190	0.694	Yes	Yes	357	313	2.383	Yes	Yes
710	Calibration	TPA Rail Central	C	C: On high Street west of Paulerspury	EB	ATC	64	63	0.156	Yes	Yes	45	23	3.850	Yes	Yes	77	87	1.172	Yes	Yes
711	Calibration	TPA Rail Central	C	C: On high Street west of Paulerspury	WB	ATC	88	92	0.377	Yes	Yes	37	42	0.764	Yes	Yes	54	26	4.501	Yes	Yes
712	Calibration	Silverstone	D	D: On Dadford Road, Silverstone to the south of the A43	SB	ATC	712	803	3.289	Yes	Yes	241	204	2.444	Yes	Yes	178	75	9.142	No	No
713	Calibration	Silverstone	D	D: On Dadford Road, Silverstone to the south of the A43	NB	ATC	144	142	0.169	Yes	Yes	229	195	2.326	Yes	Yes	631	695	2.499	Yes	Yes
714	Calibration	Silverstone	E	Hackley Road east of A43/Dadford Road Interchange, Sil	EB	ATC	368	380	0.577	Yes	Yes	132	138	0.556	Yes	Yes	199	196	0.228	Yes	Yes

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
715	Calibration	Silverstone	E	ackley Road east of A43/Dadford Road Interchange, Sil	WB	ATC	200	218	1.213	Yes	Yes	123	120	0.275	Yes	Yes	362	443	4.041	Yes	Yes
828	Calibration	Dallington Grange	1	A428	NB	ATC	575	589	0.588	Yes	Yes	325	466	7.097	No	No	818	958	4.725	Yes	No
829	Calibration	Dallington Grange	1	A428	SB	ATC	894	845	1.650	Yes	Yes	314	427	5.895	No	No	646	646	0.002	Yes	Yes
830	Validation	Dallington Grange	2	New Sandy Lane	NB	ATC	501	501	0.006	Yes	Yes	249	263	0.880	Yes	Yes	529	618	3.744	Yes	Yes
831	Validation	Dallington Grange	2	New Sandy Lane	SB	ATC	552	491	2.670	Yes	Yes	237	312	4.567	Yes	Yes	515	446	3.140	Yes	Yes
832	Validation	Dallington Grange	3	Sandy Lane	NB	ATC	461	546	3.796	Yes	Yes	259	323	3.743	Yes	Yes	637	729	3.521	Yes	Yes
833	Validation	Dallington Grange	3	Sandy Lane	SB	ATC	466	500	1.579	Yes	Yes	466	554	3.933	Yes	Yes	466	491	1.168	Yes	Yes
834	Calibration	TPA Rail Central	4	Weedon Road A4500	EB	ATC	1312	1392	2.168	Yes	Yes	669	890	7.924	No	No	919	888	1.029	Yes	Yes
835	Calibration	TPA Rail Central	4	Weedon Road A4500	WB	ATC	856	832	0.809	Yes	Yes	733	796	2.289	Yes	Yes	1258	1260	0.049	Yes	Yes
836	Validation	Dallington Grange	5	A428 Harlestone Road	NB	ATC	673	563	4.399	Yes	No	621	435	8.127	No	No	652	560	3.741	Yes	Yes
837	Validation	Dallington Grange	5	A428 Harlestone Road	SB	ATC	779	737	1.512	Yes	Yes	534	481	2.362	Yes	Yes	865	745	4.236	Yes	Yes
838	Validation	Dallington Grange	6	Harlestone Road	NB	ATC	507	522	0.645	Yes	Yes	533	466	2.980	Yes	Yes	593	581	0.515	Yes	Yes
839	Validation	Dallington Grange	6	Harlestone Road	SB	ATC	697	635	2.419	Yes	Yes	453	408	2.164	Yes	Yes	486	519	1.441	Yes	Yes
840	Validation	Dallington Grange	7	Mill Lane	NB	ATC	985	1004	0.624	Yes	Yes	828	763	2.321	Yes	Yes	1040	1149	3.278	Yes	Yes
841	Validation	Dallington Grange	7	Mill Lane	SB	ATC	890	888	0.067	Yes	Yes	874	869	0.180	Yes	Yes	1171	1123	1.420	Yes	Yes
842	Validation	Dallington Grange	8	Mill Lane	EB	ATC	987	915	2.343	Yes	Yes	799	713	3.118	Yes	Yes	1108	1095	0.382	Yes	Yes
843	Validation	Dallington Grange	8	Mill Lane	WB	ATC	1011	922	2.878	Yes	Yes	805	722	2.981	Yes	Yes	960	833	4.238	Yes	Yes
844	Validation	Dallington Grange	9	Harbourough Road	NB	ATC	607	605	0.070	Yes	Yes	541	523	0.765	Yes	Yes	745	851	3.739	Yes	Yes
845	Validation	Dallington Grange	9	Harbourough Road	SB	ATC	599	569	1.240	Yes	Yes	479	461	0.823	Yes	Yes	546	509	1.630	Yes	Yes
846	Validation	Dallington Grange	10	Kingsthorpe Road	NB	ATC	706	595	4.347	Yes	No	684	599	3.371	Yes	Yes	930	765	5.675	No	No
847	Validation	Dallington Grange	10	Kingsthorpe Road	SB	ATC	1018	1088	2.163	Yes	Yes	645	597	1.946	Yes	Yes	762	607	5.924	No	No
848	Calibration	TPA Rail Central	11	Weedon Road	EB	ATC	1180	1301	3.437	Yes	Yes	806	731	2.697	Yes	Yes	853	885	1.080	Yes	Yes
849	Calibration	TPA Rail Central	11	Weedon Road	WB	ATC	662	693	1.173	Yes	Yes	882	697	6.603	No	No	1066	1075	0.294	Yes	Yes
850	Validation	Dallington Grange	12a	Horse Market A508	SB	ATC	811	824	0.467	Yes	Yes	789	719	2.573	Yes	Yes	978	815	5.457	No	No
851	Validation	Dallington Grange	12b	Horse Market A508	NB	ATC	737	589	5.749	No	No	641	547	3.845	Yes	Yes	875	925	1.653	Yes	Yes
852	Validation	Dallington Grange	13a	Kingsthorpe Road	SB	ATC	1018	1118	3.078	Yes	Yes	645	637	0.316	Yes	Yes	762	658	3.906	Yes	Yes
853	Validation	Dallington Grange	13b	Kingsthorpe Road	NB	ATC	710	675	1.355	Yes	Yes	694	681	0.530	Yes	Yes	1051	1045	0.210	Yes	Yes
913	Calibration	West Corby SUE	1	B670 Rockingham Road, north of Ripley Rd.	NB	ATC	86	85	0.091	Yes	Yes	35	12	4.605	Yes	Yes	48	27	3.452	Yes	Yes
914	Calibration	West Corby SUE	1	B670 Rockingham Road, north of Ripley Rd.	SB	ATC	51	45	0.885	Yes	Yes	47	23	3.945	Yes	Yes	95	98	0.298	Yes	Yes
915	Calibration	West Corby SUE	2	Uppingham Rd. north of Vian Way	NB	ATC	859	865	0.205	Yes	Yes	522	529	0.317	Yes	Yes	570	554	0.686	Yes	Yes
916	Calibration	West Corby SUE	2	Uppingham Rd. north of Vian Way	SB	ATC	562	563	0.061	Yes	Yes	548	556	0.335	Yes	Yes	918	1024	3.375	Yes	Yes
917	Calibration	West Corby SUE	3	Corby Rd. near New Coppile	EB	ATC	483	474	0.412	Yes	Yes	266	246	1.230	Yes	Yes	430	309	6.301	No	No
918	Calibration	West Corby SUE	3	Corby Rd. near New Coppile	WB	ATC	354	411	2.931	Yes	Yes	297	271	1.556	Yes	Yes	503	615	4.764	Yes	No
919	Validation	West Corby SUE	4	Uppingham Rd. near Beanfield Lawn Cottage	NB	ATC	1003	985	0.583	Yes	Yes	602	562	1.650	Yes	Yes	907	902	0.173	Yes	Yes
920	Validation	West Corby SUE	4	Uppingham Rd. near Beanfield Lawn Cottage	SB	ATC	883	866	0.560	Yes	Yes	629	556	3.004	Yes	Yes	1011	936	2.401	Yes	Yes
921	Calibration	West Corby SUE	5	Pipewell Rd. north of Oakley Rd. junction	NB	ATC	18	10	2.151	Yes	Yes	12	9	1.169	Yes	Yes	17	25	1.561	Yes	Yes
922	Calibration	West Corby SUE	5	Pipewell Rd. north of Oakley Rd. junction	SB	ATC	17	12	1.230	Yes	Yes	20	20	0.008	Yes	Yes	33	12	4.484	Yes	Yes
923	Validation	West Corby SUE	6	Oakley Rd. near Lees R and L	EB	ATC	155	134	1.734	Yes	Yes	69	74	0.629	Yes	Yes	104	102	0.117	Yes	Yes
924	Validation	West Corby SUE	6	Oakley Rd. near Lees R and L	WB	ATC	79	90	1.151	Yes	Yes	75	78	0.301	Yes	Yes	138	147	0.687	Yes	Yes
925	Calibration	West Corby SUE	7	Cottingham Rd. between Essex Close and Dorset Rd.	EB	ATC	769	615	5.845	No	No	514	486	1.291	Yes	Yes	541	566	1.068	Yes	Yes
926	Calibration	West Corby SUE	7	Cottingham Rd. between Essex Close and Dorset Rd.	WB	ATC	500	493	0.352	Yes	Yes	531	509	0.944	Yes	Yes	839	745	3.327	Yes	Yes
927	Validation	West Corby SUE	8	Beanfield Av. between Seaford Walk, Mantlefield Rd	EB	ATC	209	192	1.183	Yes	Yes	173	183	0.745	Yes	Yes	272	184	5.772	No	Yes
928	Validation	West Corby SUE	8	Beanfield Av. between Seaford Walk, Mantlefield Rd	WB	ATC	295	333	2.160	Yes	Yes	155	194	2.991	Yes	Yes	215	254	2.588	Yes	Yes
931	Validation	West Corby SUE	10	Sowerleys Rd. outside Lowry Close	NB	ATC	611	663	2.058	Yes	Yes	286	140	10.007	No	No	483	387	4.578	Yes	Yes
932	Validation	West Corby SUE	10	Sowerleys Rd. outside Lowry Close	SB	ATC	319	332	0.736	Yes	Yes	298	247	3.085	Yes	Yes	634	529	4.345	Yes	No
933	Validation	West Corby SUE	11	A6014 near Tesco opticians	NB	ATC	744	726	0.676	Yes	Yes	552	581	1.227	Yes	Yes	703	732	1.056	Yes	Yes
934	Validation	West Corby SUE	11	A6014 near Tesco opticians	SB	ATC	500	515	0.694	Yes	Yes	554	548	0.272	Yes	Yes	729	726	0.095	Yes	Yes
935	Validation	West Corby SUE	12	Cottingham Rd west of Lime Trees Grove	EB	ATC	481	510	1.305	Yes	Yes	335	280	3.143	Yes	Yes	433	505	3.320	Yes	Yes
936	Validation	West Corby SUE	12	Cottingham Rd west of Lime Trees Grove	WB	ATC	371	293	4.237	Yes	Yes	329	294	1.973	Yes	Yes	671	667	0.138	Yes	Yes
937	Calibration	West Corby SUE	13	Weldon Rd west of industrial estate	EB	ATC	805	801	0.133	Yes	Yes	512	531	0.836	Yes	Yes	462	835	14.638	No	No
938	Calibration	West Corby SUE	13	Weldon Rd west of industrial estate	WB	ATC	428	427	0.018	Yes	Yes	440	493	2.416	Yes	Yes	678	447	9.719	No	No
939	Calibration	West Corby SUE	14	Bangrave Rd. South. North of Stamford Rd.	NB	ATC	743	742	0.056	Yes	Yes	371	394	1.191	Yes	Yes	369	445	3.776	Yes	Yes
940	Calibration	West Corby SUE	14	Bangrave Rd. South. North of Stamford Rd.	SB	ATC	404	518	5.305	No	No	357	385	1.475	Yes	Yes	656	935	9.896	No	No
941	Calibration	West Corby SUE	15	A43 between roundabout to NE and to SW	NB	ATC	577	368	9.623	No	No	347	385	1.977	Yes	Yes	494	481	0.582	Yes	Yes
942	Calibration	West Corby SUE	15	A43 between roundabout to NE and to SW	SB	ATC	468	361	5.218	No	No	324	287	2.090	Yes	Yes	574	462	4.925	Yes	No
943	Validation	West Corby SUE	16	A4300 Stamford Rd. south out Kettering Rd.	NB	ATC	562	488	3.241	Yes	Yes	257	251	0.416	Yes	Yes	294	312	1.026	Yes	Yes
944	Validation	West Corby SUE	16	A4300 Stamford Rd. south out Kettering Rd.	SB	ATC	298	289	0.566	Yes	Yes	250	230	1.301	Yes	Yes	469	582	4.931	Yes	No
1217	Calibration	Norwood Farm	ATC A	Sandy Lane	NB	ATC	529	571	1.799	Yes	Yes	269	321	3.036	Yes	Yes	694	545	5.972	No	No
1218	Calibration	Norwood Farm	ATC A	Sandy Lane	SB	ATC	613	590	0.939	Yes	Yes	273	323	2.930	Yes	Yes	521	522	0.042	Yes	Yes
1223	Validation	Norwood Farm	ATC D	Berrywood Road	EB	ATC	316	297	1.069	Yes	Yes	172	226	3.826	Yes	Yes	421	372	2.498	Yes	Yes
1224	Validation	Norwood Farm	ATC D	Berrywood Road	WB	ATC	407	311	5.094	No	Yes	170	114	4.730	Yes	Yes	272	436	8.740	No	No
1225	Calibration	TPA Rail Central	ATC E	Tollgate Way	NB	ATC	861	996	4.421	Yes	No	645	620	1.006	Yes	Yes	853	914	2.068	Yes	Yes
1226	Calibration	TPA Rail Central	ATC E	Tollgate Way	SB	ATC	851	823	0.956	Yes	Yes	648	666	0.698	Yes	Yes	800	762	1.362	Yes	Yes
1227	Validation	TPA Rail Central	ATC F	A4500	EB	ATC	924	915	0.265	Yes	Yes	820	835	0.510	Yes	Yes	998	1077	2.465	Yes	Yes
1228	Validation	TPA Rail Central	ATC F	A4500	WB	ATC	671	609	2.437	Yes	Yes	840	787	1.843	Yes	Yes	989	869	3.911	Yes	Yes
1229	Calibration	TPA Rail Central	ATC G	A4500	WB	ATC	723	649	2.854	Yes	Yes	618	560	2.392	Yes	Yes	713	738	0.948	Yes	Yes
1230	Calibration	TPA Rail Central	ATC G	A4500	EB	ATC	858	889	1.055	Yes	Yes	599	632	1.330	Yes	Yes	776	794	0.612	Yes	Yes
1231	Validation	Norwood Farm	ATC H	Larkhall Lane	EB	ATC	53	59	0.793	Yes	Yes	42	27	2.578	Yes	Yes	63	70	0.926	Yes	Yes
1232	Validation	Norwood Farm	ATC H	Larkhall Lane	WB	ATC	119	97	2.071	Yes	Yes	44	39	0.709	Yes	Yes	104	136	2.867	Yes	Yes
1233	Calibration	TPA Rail Central	Aug-49	NB, A45, NORTH OF M1 J15	NB	TRADS	2688	2565	2.397	Yes	Yes	1491	1548	1.464	Yes	Yes	2291	2454	3.348	Yes	Yes
1235	Calibration	TPA Rail Central	8/30016080	xit at a minor junction between M1 J15/A508 and A508 (	EB	TRADS	248	228	1.313	Yes	Yes	186	212	1.801	Yes	Yes	450	451	0.037	Yes	Yes
1236	Calibration	TPA Rail Central	8/30016081	t a minor junction between M1 J15 and A508 near Nort	EB	TRADS	2440	2337	2.100	Yes	Yes	1538	1336	5.337	No	Yes	2251	2003	5.371	No	Yes
1237	Calibration	TPA Rail Central	8/30016079	A45 WB between A508 near Northampton and M1 J15	WB	TRADS	2135	1783	7.956	No	No	1676	1537	3.472	Yes	Yes	2688	2345	6.840	No	Yes
1238	Validation	TPA Rail Central	8/30016078	xit at a minor junction between A508 (N)/A5076 and M1	WB	TRADS	252	256	0.252	Yes	Yes	236	197	2.639	Yes	Yes	499	600	4.318	Yes	No
1239	Calibration	TPA Rail Central	8/30016076	A45 EB exit for A508 near Northampton	EB	TRADS	374	351	1.205	Yes	Yes	340	311	1.597	Yes	Yes	401	342	3.055	Yes	Yes
1240	Calibration	TPA Rail Central	8/30016077	A45 EB within the A508 near Northampton junction	EB	TRADS	2879	2717	3.066	Yes	Yes	1497	1469	0.716	Yes	Yes	2221	2141	1.723	Yes	Yes
1241	Calibration	TPA Rail Central	8/30015996	A45 WB within the A508 near Northampton junction	WB	TRADS	1919	1591	7.829	No	No	1445	1441	0.114	Yes	Yes	2609	2422	3.722	Yes	Yes
1242	Calibration	TPA Rail Central	8/30015995	A45 WB exit for A508 near Northampton	WB	TRADS	1761	1768	0.163	Yes	Yes	1341	1360	0.522	Yes	Yes	2249	1967	6.135	No	Yes
1243	Calibration	TRADS Data 2015	Aug-68	SB, A43, Brackley between A422 (W) and A422 (E)	SB	TRADS	1561	1237	8.662	No	No	951	794	5.343	No	No	1327	1377	1.346	Yes	Yes
1244	Calibration	TRADS Data 2015	Aug-67	NB, A43, Brackley between A422 (W) and A422 (E)	NB	TRADS	1277	1060	6.362	No	No	1006	909	3.129	Yes	Yes	1519	1284	6.280	No	No
1245	Calibration	TRADS Data 2015	Aug-65	NB, A43, Between A421 & A422 at Evenley	NB	TRADS	1217	1728	13.324	No	No	995	1212	6.515	No	No	1672	2020	8.096	No	No
1246	Calibration	TRADS Data 2015	Aug-66	SB, A43, Between A421 & A422 at Evenley	SB	TRADS	1500	1932	10.436	No	No	875	1058	5.893	No	No	1153	1512	9.838	No	No
1247	Calibration	TPA Rail Central	8/30013672	A5 NB between A422/A508 and A43	NB	TRADS	802	828	0.915	Yes	Yes	423	408	0.739	Yes	Yes	657	670	0.488	Yes	Yes
1248	Calibration	TPA Rail Central	8/30013673	A5 SB between A43 and A422/A508	SB	TRADS	623	618	0.218	Yes	Yes	462	456	0.281	Yes	Yes	957	901	1.848	Yes	Yes
1249	Validation	TPA Rail Central	8/30013859	A5 NB between A43 and A45	NB	TRADS	463	423	1.883	Yes	Yes	346	328	0.975	Yes	Yes	560	547	0.562	Yes	Yes
1250	Validation	TPA Rail Central	8/30013860	A5 SB between A45 and A43	SB	TRADS	543	536	0.300	Yes	Yes	313	320	0.386	Yes	Yes	475	431	2.082	Yes	Yes
1251	Calibration	TRADS Data 2015	8/30014757	A5 NB between A45 and A361	NB	TRADS	333	368	1.865	Yes	Yes	261	291	1.826	Yes	Yes	426	425	0.058	Yes	Yes
1252	Calibration	TRADS Data 2015	8/30014758	A5 SB between A361 and A45	SB	TRADS	401	368	1.659	Yes	Yes	209	243	2.270	Yes	Yes	370	321	2.647	Yes	Yes
1253	Calibration	TRADS Data 2015	8/30015321	A5 NB between A361 and A428 near Rugby (W)	NB	TRADS	595	573	0.912	Yes	Yes	348	389	2.107	Yes	Yes	579	568	0.440	Yes	Yes
1254	Calibration	TRADS Data 2015	8/30015320	A5 SB between A428 near Rugby (W) and A361	SB	TRADS	617	606	0.446	Yes	Yes	411	415	0.182	Yes	Yes	683	658	0.964	Yes	Yes
1255	Calibration	TRADS Data 2015	8/30013677	A428 EB between A5 near Rugby (E) and M1/A5	EB	TRADS	908	890	0.599	Yes	Yes	621	629	0.334	Yes	Yes	1003	973	0.941	Yes	Yes
1256	Calibration	TPA Rail Central	8/30022767	M1 NB between J15A and J16	NB	TRADS	3380	3395	0.260	Yes	Yes	3398	3755	5.968	No	Yes	4019	4032	0.205	Yes	Yes
1257	Calibration	TPA Rail Central	8/30020395	M1 J15A SB exit	SB	TRADS	654	633	0.839	Yes	Yes	548	481	2.959	Yes	Yes	630	681	1.992	Yes	Yes
1258	Calibration	TPA Rail Central	8/30020418	M1 J15A NB access	NB	TRADS	636	539	4.008	Yes	Yes	595	831	8.837	No	No	589	541	2.013	Yes	Yes
1259	Calibration	TPA Rail Central	8/30020417	M1 NB within J15A	NB	TRADS	2744	2837	1.763	Yes	Yes	2820	2905	1.599	Yes	Yes	3452	3466	0.242	Yes	Yes
1260	Calibration	TPA Rail Central	8/30020421	M1 SB within J15A	SB	TRADS	3373	3502	2.200	Yes	Yes	2726	2777	0.969	Yes	Yes	3361	3329	0.554	Yes	Yes
1261	Validation	TPA Rail Central	Aug-75	A43, EB off slip from M1 J15a	EB	TRADS	507	546	1.684	Yes	Yes	400	441	2.023	Yes	Yes	496	618	5.151	No	No
1262	Validation	TPA Rail Central	8/30020422	M1 J15A SB access	SB	TRADS	785	734	1.835	Yes	Yes	515	483	1.439	Yes	Yes	743	706	1.365	Yes	Yes
1263	Validation	TPA Rail Central	8/30020394	M1 J15A NB exit	NB	TRADS	683	456	9.505	No	No	557	667	4.435	Yes	No	763	651	4.217	Yes	Yes
1264	Calibration	TPA Rail Central	8/30023183	M1 SB between J15A and J15	SB	TRADS	4189	4237	0.741	Yes	Yes	3265	3260	0.085	Yes	Yes	4136	4042	1.470	Yes	Yes
1265	Calibration	TPA Rail Central	8/30020420	M1 NB between J15 and J15A	NB	TRADS	3492	3293	3.412	Yes	Yes	3474	3572	1.653	Yes	Yes	4402	4117	4.365	Yes	Yes
1266	Calibration	TPA Rail Central	8/30020428	M1 J15 NB access	NB	TRADS	966	811	5.183	No	No	751	811	2.140	Yes	Yes	1197	1149	1.416	Yes	Yes
1267	Validation	TPA Rail Central	8/30020397	M1 J15 SB exit	SB	TRADS	1377	1651	7.040	No	No	750	689	2.242	Yes	Yes	1199	1066	3.937	Yes	Yes
1268	Validation	TPA Rail Central	8/30020424	M1 J15 SB access	SB	TRADS	924	1166	7.477	No	No	623	693	2.743	Yes	Yes	907	978	2.309	Yes	Yes
1269	Calibration	TPA Rail Central	8/30023627	M1 NB between J14 and J15	NB	TRADS	3361	3454	1.598	Yes	Yes	3364	3507	2.431	Yes	Yes	4184	4036	2.311	Yes	Yes
1270	Calibration	TPA Rail Central	8/30023597	M1 SB between J15 and J14	SB	TRADS	3900	3753	2.375	Yes	Yes	3141	3264	2.176	Yes	Yes	3836	3959	1.962	Yes	Yes
1271	Calibration	TRADS Data 2015	8/30015979	A45 WB within the A509 (S) junction	WB	TRADS	1668	1687	0.459	Yes	Yes	911	921	0.338	Yes	Yes	1402	1461	1.560	Yes	Yes
1272	Calibration	TRADS Data 2015	8/30015980	A45 EB exit for A509 (S)	EB	TRADS	677	727	1.892	Yes	Yes	512	521	0.431	Yes	Yes	701	662	1.510	Yes	Yes
1273	Calibration	TRADS Data 2015	8/30015981	A45 EB within the A509 (S) junction	EB	TRADS	1196	1117	2.316	Yes	Yes	920	940	0.653	Yes	Yes	1791	1675	2.786	Yes	Yes
1274	Validation	TRADS Data 2015	8/30015381	A14 WB between J1 and M1/M6	WB	TRADS	1417	1499	2.144	Yes	Yes	1382	1300	2.233	Yes	Yes	1463	1345	3.160	Yes	Yes
1275	Validation	TRADS Data 2015	8/30015382	A14 EB between M1/M6 and J1	EB	TRADS	1565	1389	4.592	Yes	Yes	1320	1192	3.606	Yes	Yes	1625	1500	3.157	Yes	Yes
1276	Calibration	TRADS Data 2015	8/30013616	A14 WB within J1	WB	TRADS	1358	1651	7.561	No	No	1311	1342	0.855	Yes	Yes	1464	1471	0.188	Yes	Yes
1277	Calibration	TRADS Data 2015	8/30013620	A14 EB within J1	EB	TRADS	1448	1442	0.147	Yes	Yes	1252	1272	0.565	Yes	Yes	1481	1508	0.700	Yes	Yes
1278	Validation	TRADS Data 2015	8/30015383	A14 EB between J1 and J2	EB	TRADS	1724	1693	0.740	Yes	Yes	1372	1387	0.402	Yes	Yes	1871	1864	0.160	Yes	Yes

							AM Peak ALL VEHICLES					Interpeak ALL VEHICLES					PM Peak ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
1279	Validation	TRADS Data 2015	9/30015384	A14 WB between J2 and J1	WB	TRADS	1754	1651	2.497	Yes	Yes	1440	1342	2.624	Yes	Yes	1704	1471	5.843	No	Yes
1280	Validation	TRADS Data 2015	9/30013625	A14 EB within J2	EB	TRADS	1610	1586	0.603	Yes	Yes	1306	1270	0.987	Yes	Yes	1693	1679	0.350	Yes	Yes
1281	Validation	TRADS Data 2015	9/30013626	A14 WB within J2	WB	TRADS	1594	1607	0.324	Yes	Yes	1342	1296	1.274	Yes	Yes	1524	1430	2.450	Yes	Yes
1282	Calibration	TRADS Data 2015	9/30015386	A14 WB between J3 and J2	WB	TRADS	1682	1784	2.447	Yes	Yes	1402	1349	1.437	Yes	Yes	1623	1621	0.044	Yes	Yes
1283	Calibration	TRADS Data 2015	9/30032477	A14 EB between J2 and J3	EB	TRADS	1730	1614	2.845	Yes	Yes	1374	1337	0.995	Yes	Yes	1764	1741	0.546	Yes	Yes
1284	Validation	TRADS Data 2015	9/30032514	A14 J3 EB exit	EB	TRADS	78	75	0.390	Yes	Yes	56	62	0.751	Yes	Yes	198	219	1.482	Yes	Yes
1285	Calibration	TRADS Data 2015	9/30013630	A14 EB between J3 and J4	EB	TRADS	2415	2281	2.757	Yes	Yes	1622	1626	0.094	Yes	Yes	2115	2182	1.436	Yes	Yes
1286	Calibration	TRADS Data 2015	9/30032472	A14 J3 WB exit	WB	TRADS	295	278	1.002	Yes	Yes	356	346	0.535	Yes	Yes	697	645	2.007	Yes	Yes
1287	Calibration	TRADS Data 2015	9/30032471	A14 WB between J4 and J3	WB	TRADS	2026	2085	1.292	Yes	Yes	1673	1621	1.270	Yes	Yes	2294	2224	1.466	Yes	Yes
1288	Calibration	TRADS Data 2015	9/30032469	A14 WB between J7 and J4	WB	TRADS	2305	2363	1.192	Yes	Yes	2014	1967	1.043	Yes	Yes	2947	2869	1.441	Yes	Yes
1289	Calibration	TRADS Data 2015	9/30032466	A14 EB between J4 and J7	EB	TRADS	2991	2990	0.016	Yes	Yes	1970	2080	2.433	Yes	Yes	2493	2602	2.156	Yes	Yes
1290	Calibration	TRADS Data 2015	9/30032515	A14 EB between J4 and J7	EB	TRADS	3008	2990	0.326	Yes	Yes	2009	2080	1.570	Yes	Yes	2543	2602	1.159	Yes	Yes
1291	Calibration	TRADS Data 2015	9/30032516	A14 J7 EB exit	EB	TRADS	1147	1033	3.462	Yes	Yes	665	664	0.040	Yes	Yes	817	819	0.054	Yes	Yes
1292	Calibration	TRADS Data 2015	9/30013629	A14 EB within J7	EB	TRADS	1813	1957	3.326	Yes	Yes	1370	1416	1.242	Yes	Yes	1675	1783	2.603	Yes	Yes
1293	Calibration	TRADS Data 2015	9/30032498	A14 WB between J10 and J9	WB	TRADS	2260	2421	3.327	Yes	Yes	1690	1870	4.272	Yes	Yes	2024	2296	5.844	No	Yes
1294	Calibration	TRADS Data 2015	9/30032497	A14 EB between J9 and J10	EB	TRADS	1913	2027	2.571	Yes	Yes	1680	1713	0.810	Yes	Yes	2484	2215	5.550	No	Yes
1295	Calibration	TRADS Data 2015	9/30032494	A14 J10 EB exit	EB	TRADS	760	828	2.430	Yes	Yes	628	625	0.133	Yes	Yes	1014	919	3.047	Yes	Yes
1296	Calibration	TRADS Data 2015	9/30032493	A14 EB within J10	EB	TRADS	1248	1198	1.415	Yes	Yes	1124	1089	1.061	Yes	Yes	1537	1296	6.410	No	No
1297	Calibration	TRADS Data 2015	9/30013614	A14 WB within J10	WB	TRADS	1352	1354	0.045	Yes	Yes	1135	1089	1.393	Yes	Yes	1282	1271	0.312	Yes	Yes
1298	Validation	TRADS Data 2015	9/30032518	A14 J10 WB exit	WB	TRADS	158	187	2.192	Yes	Yes	137	159	1.866	Yes	Yes	257	322	3.830	Yes	Yes
1299	Calibration	TRADS Data 2015	9/30032481	A14 EB between J10 and J11	EB	TRADS	1483	1575	2.349	Yes	Yes	1243	1361	3.290	Yes	Yes	1716	1740	0.587	Yes	Yes
1300	Calibration	TRADS Data 2015	9/30032482	A14 WB between J11 and J10	WB	TRADS	1484	1540	1.451	Yes	Yes	1255	1248	0.196	Yes	Yes	1519	1593	1.877	Yes	Yes
1301	Calibration	TRADS Data 2015	9/30013621	A14 WB between J12 and J11	WB	TRADS	1545	1518	0.678	Yes	Yes	1294	1277	0.486	Yes	Yes	1665	1632	0.801	Yes	Yes
1302	Calibration	TRADS Data 2015	9/30032510	A14 EB between J11 and J12	EB	TRADS	1597	1585	0.303	Yes	Yes	1259	1272	0.357	Yes	Yes	1660	1660	0.007	Yes	Yes
1303	Validation	TRADS Data 2015	9/30032509	A14 EB between J12 and J13	EB	TRADS	1665	1780	2.779	Yes	Yes	1295	1387	2.498	Yes	Yes	1702	1816	2.709	Yes	Yes
1304	Validation	TRADS Data 2015	9/30015394	A14 WB between J13 and J12	WB	TRADS	1605	1683	1.933	Yes	Yes	1343	1393	1.346	Yes	Yes	1756	1789	0.794	Yes	Yes
1305	Validation	TRADS Data 2015	9/30032519	A14 J13 EB exit	EB	TRADS	593	693	3.955	Yes	No	396	485	4.249	Yes	Yes	619	731	4.317	Yes	No
1306	Calibration	TRADS Data 2015	9/30013619	A14 EB within J13	EB	TRADS	1063	1087	0.733	Yes	Yes	888	902	0.462	Yes	Yes	1068	1084	0.502	Yes	Yes
1307	Calibration	TRADS Data 2015	9/30013624	A14 J13 WB exit	WB	TRADS	298	281	0.981	Yes	Yes	261	270	0.548	Yes	Yes	452	396	2.740	Yes	Yes
1308	Calibration	TRADS Data 2015	9/30013623	A14 WB within J13	WB	TRADS	1005	1096	2.802	Yes	Yes	934	961	0.852	Yes	Yes	1186	1196	0.282	Yes	Yes
1309	Calibration	TRADS Data 2015	9/30032504	A14 WB between J16 and J13	WB	TRADS	1307	1327	0.544	Yes	Yes	1204	1228	0.700	Yes	Yes	1640	1571	1.727	Yes	Yes
1310	Calibration	TRADS Data 2015	9/30032505	A14 WB between J16 and J13	WB	TRADS	1303	1327	0.655	Yes	Yes	1202	1231	0.842	Yes	Yes	1653	1571	2.048	Yes	Yes
1311	Calibration	TPA Rail Central	9/30015989	A45 EB exit for A43	EB	TRADS	1450	1418	0.845	Yes	Yes	1321	1313	0.216	Yes	Yes	2057	1947	2.452	Yes	Yes
1312	Calibration	TPA Rail Central	9/30015990	A45 EB within the A43 junction	EB	TRADS	1798	1705	2.216	Yes	Yes	1591	1628	0.921	Yes	Yes	3189	3028	2.882	Yes	Yes
1313	Calibration	TPA Rail Central	9/30015992	A45 WB between A428/A5095 and A508 (N)/A5076	WB	TRADS	3450	3186	4.583	Yes	Yes	1840	1874	0.780	Yes	Yes	2676	2769	1.781	Yes	Yes
1314	Calibration	TPA Rail Central	9/30015991	A45 WB exit for A428/A5095	WB	TRADS	1712	1699	0.320	Yes	Yes	843	847	0.138	Yes	Yes	802	785	0.604	Yes	Yes
1315	Calibration	TPA Rail Central	9/30015993	A45 EB exit for A428/A5095	EB	TRADS	1657	1546	2.768	Yes	Yes	903	921	0.602	Yes	Yes	1439	1252	5.111	No	Yes
1316	Calibration	TPA Rail Central	9/30015994	A45 EB within the A428/A5095 junction	EB	TRADS	2718	2549	3.299	Yes	Yes	2000	1976	0.539	Yes	Yes	3409	3171	4.155	Yes	Yes
1317	Calibration	TPA Rail Central	9/30013657	A43 SB between M1 and A5	SB	TRADS	1544	1650	2.660	Yes	Yes	937	923	0.469	Yes	Yes	1262	1283	0.585	Yes	Yes
1318	Calibration	TPA Rail Central	9/30013656	A43 NB between A5 and M1	NB	TRADS	1276	1525	6.653	No	No	1006	1108	3.162	Yes	Yes	1476	1556	2.055	Yes	Yes
1319	Calibration	TPA Rail Central	Aug-71	NB, A43, West of Towcester, S of A5, N of A413	NB	TRADS	1490	1317	4.624	Yes	Yes	1231	1479	6.733	No	No	1882	1520	8.777	No	No
1320	Calibration	TPA Rail Central	Aug-72	SB, A43, West of Towcester, S of A5, N of A413	SB	TRADS	1958	1629	7.764	No	No	1140	1131	0.267	Yes	Yes	1414	1224	5.227	No	Yes
1321	Calibration	TRADS Data 2015	9/30014846	A43 NB between B4525 and A413	NB	TRADS	1146	1104	1.257	Yes	Yes	1033	1021	0.400	Yes	Yes	1629	1518	2.804	Yes	Yes
1322	Calibration	TRADS Data 2015	9/30014847	A43 SB between A413 and B4525	SB	TRADS	1670	1496	4.362	Yes	Yes	946	904	1.387	Yes	Yes	1148	1150	0.047	Yes	Yes
1323	Calibration	TRADS Data 2015	9/30016038	A43 SB between A413 and B4525	SB	TRADS	1635	1663	0.690	Yes	Yes	975	1096	3.769	Yes	Yes	1402	1400	0.052	Yes	Yes
1324	Calibration	TRADS Data 2015	9/30013652	A43 NB between A422 near Brackley (E) and B4525	NB	TRADS	1134	964	5.236	No	Yes	963	957	0.182	Yes	Yes	1443	1509	1.725	Yes	Yes
1325	Calibration	TRADS Data 2015	9/30016036	A43 SB between B4525 and A422 near Brackley (E)	SB	TRADS	1504	1550	1.173	Yes	Yes	893	1008	3.729	Yes	Yes	1185	1318	3.759	Yes	Yes
1326	Calibration	TRADS Data 2015	9/30014845	A43 SB between A421 and B4100	SB	TRADS	1532	1478	1.395	Yes	Yes	962	962	0.014	Yes	Yes	1235	1117	3.453	Yes	Yes
1327	Calibration	TRADS Data 2015	9/30014844	A43 NB between B4100 and A421	NB	TRADS	1222	1092	3.817	Yes	Yes	1007	1013	0.207	Yes	Yes	1586	1578	0.198	Yes	Yes
1328	Calibration	TRADS Data 2015	9/30032521	A45 EB between B663 and A14	EB	TRADS	912	933	0.706	Yes	Yes	606	554	2.138	Yes	Yes	852	789	2.185	Yes	Yes
1329	Calibration	TRADS Data 2015	9/30013658	A45 EB between A6 and B663	EB	TRADS	909	933	0.781	Yes	Yes	716	657	2.259	Yes	Yes	1079	1046	1.008	Yes	Yes
1330	Calibration	TRADS Data 2015	9/30013659	A45 WB between B663 and A6	WB	TRADS	826	1027	6.594	No	No	694	743	1.831	Yes	Yes	990	1071	2.511	Yes	Yes
1331	Calibration	TRADS Data 2015	9/30016039	A45 EB between A5001 (W) and A6	EB	TRADS	1120	1121	0.019	Yes	Yes	1000	1040	1.259	Yes	Yes	1603	1647	1.099	Yes	Yes
1332	Calibration	TRADS Data 2015	9/30016040	A45 WB between A6 and A5001 (W)	WB	TRADS	1625	1695	1.712	Yes	Yes	974	990	0.526	Yes	Yes	1213	1364	4.211	Yes	Yes
1333	Calibration	TRADS Data 2015	9/30016041	A45 WB between A5001 (W) and A5001 (E)	WB	TRADS	1561	1705	3.575	Yes	Yes	916	824	3.110	Yes	Yes	1289	1364	2.073	Yes	Yes
1334	Calibration	TRADS Data 2015	9/30015976	A45 EB exit for A5001 (E)	EB	TRADS	526	596	2.974	Yes	Yes	492	457	1.625	Yes	Yes	832	847	0.525	Yes	Yes
1335	Calibration	TRADS Data 2015	9/30015977	A45 EB between A5001 (E) and A5001 (W)	EB	TRADS	1152	1155	0.086	Yes	Yes	927	933	0.205	Yes	Yes	1790	1665	3.017	Yes	Yes
1336	Calibration	TRADS Data 2015	9/30015978	A45 WB exit for A509 (S)	WB	TRADS	780	832	1.823	Yes	Yes	515	514	0.048	Yes	Yes	592	579	0.551	Yes	Yes
1337	Calibration	TRADS Data 2015	9/30015982	A5 WB between B573 near Little Irchester and A509 (N	WB	TRADS	2285	2281	0.090	Yes	Yes	1374	1482	2.871	Yes	Yes	2151	2154	0.065	Yes	Yes
1338	Calibration	TRADS Data 2015	9/30016082	A45 EB between B573 near Earls Barton and A509 (N)	EB	TRADS	1739	1541	4.889	Yes	Yes	1398	1380	0.462	Yes	Yes	2482	2410	1.457	Yes	Yes
1339	Calibration	TRADS Data 2015	9/30016068	A45 WB within the B573 near Earls Barton junction	WB	TRADS	2279	2132	3.123	Yes	Yes	1309	1442	3.573	Yes	Yes	1893	2045	3.416	Yes	Yes
1340	Validation	TRADS Data 2015	9/30016067	A45 WB exit for B573 near Earls Barton	WB	TRADS	85	125	3.889	Yes	Yes	74	118	4.488	Yes	Yes	104	156	4.558	Yes	Yes
1341	Validation	TRADS Data 2015	9/30016069	A45 EB exit for B573 near Earls Barton	EB	TRADS	149	195	3.477	Yes	Yes	98	91	0.701	Yes	Yes	328	387	3.130	Yes	Yes
1342	Calibration	TRADS Data 2015	9/30016070	A45 EB within the B573 near Earls Barton junction	EB	TRADS	1652	1607	1.103	Yes	Yes	1346	1366	0.526	Yes	Yes	2439	2691	4.971	Yes	Yes
1343	Calibration	TRADS Data 2015	9/30016072	5 WB at a minor junction between B573 near Earls Bar	WB	TRADS	2546	2584	0.755	Yes	Yes	1351	1386	0.957	Yes	Yes	1958	1990	0.712	Yes	Yes
1344	Validation	TRADS Data 2015	9/30016071	WB exit at a minor junction between B573 near Earls Ba	WB	TRADS	91	80	1.236	Yes	Yes	46	51	0.776	Yes	Yes	54	73	2.396	Yes	Yes
1345	Calibration	TRADS Data 2015	9/30016074	EB at a minor junction between A5076 near Northampto	EB	TRADS	1721	1691	0.731	Yes	Yes	1381	1496	3.033	Yes	Yes	2686	2972	5.379	No	Yes
1346	Calibration	TRADS Data 2015	9/30016073	exit at a minor junction between A5076 near Northamp	EB	TRADS	202	171	2.241	Yes	Yes	211	206	0.306	Yes	Yes	444	444	0.006	Yes	Yes
1347	Calibration	TRADS Data 2015	9/30015984	A45 WB within the A5076 near Northampton (E) junctior	WB	TRADS	2741	2290	8.982	No	No	1295	1111	5.300	No	Yes	1825	1739	2.040	Yes	Yes
1348	Validation	TRADS Data 2015	9/30015983	A45 WB exit for A5076 near Northampton (E)	WB	TRADS	318	294	1.385	Yes	Yes	226	275	3.092	Yes	Yes	352	251	5.830	No	No
1349	Validation	TRADS Data 2015	9/30015985	A45 EB exit for A5076 near Northampton (E)	EB	TRADS	653	693	1.524	Yes	Yes	697	641	2.142	Yes	Yes	1020	1013	0.223	Yes	Yes
1350	Validation	TRADS Data 2015	9/30015986	A45 EB within the A5076 near Northampton (E) junction	EB	TRADS	1600	1473	3.228	Yes	Yes	1370	1243	3.497	Yes	Yes	2757	2415	6.730	No	Yes
1351	Calibration	TPA Rail Central	9/30015988	A45 WB within the A43 junction	WB	TRADS	3289	3076	3.770	Yes	Yes	1414	1435	0.563	Yes	Yes	1786	1753	0.790	Yes	Yes
1352	Calibration	TPA Rail Central	9/30015987	A45 WB exit for A43	WB	TRADS	694	569	4.978	Yes	No	511	463	2.161	Yes	Yes	738	726	0.437	Yes	Yes
1353	Calibration	TPA Rail Central	9/30020396	M1 J15 NB exit	NB	TRADS	932	973	1.318	Yes	Yes	728	745	0.649	Yes	Yes	1192	1070	3.632	Yes	Yes
1587	Calibration	NCC Data 2015	A_02	Preston Deanery Road (N) to The Crescent (S)	SB (A - B)	ATC	262	367	5.891	No	No	131	155	2.045	Yes	Yes	269	292	1.351	Yes	Yes
1588	Calibration	NCC Data 2015	A_02	Preston Deanery Road (N) to The Crescent (S)	NB (B - A)	ATC	285	269	0.956	Yes	Yes	126	112	1.283	Yes	Yes	228	230	0.077	Yes	Yes
1589	Calibration	TPA Rail Central	A_04	Herbert Gardens (S) to A43 (N)	SB (B - A)	ATC	266	256	0.656	Yes	Yes	96	105	0.870	Yes	Yes	205	184	1.499	Yes	Yes
1590	Calibration	TPA Rail Central	A_04	Herbert Gardens (S) to A43 (N)	NB (A - B)	ATC	115	201	6.819	No	Yes	44	74	3.918	Yes	Yes	126	169	3.593	Yes	Yes
1591	Calibration	NCC Data 2015	A_05	Purse Lane (S) to Hatch Lane (N)	SB (B - A)	ATC	462	441	0.984	Yes	Yes	90	114	2.324	Yes	Yes	205	196	0.652	Yes	Yes
1592	Calibration	NCC Data 2015	A_05	Purse Lane (S) to Hatch Lane (N)	NB (A - B)	ATC	219	246	1.763	Yes	Yes	104	116	1.118	Yes	Yes	518	594	3.211	Yes	Yes
1593	Calibration	NCC Data 2015	A_07	West Haddon Road (S) to Northampton Road (N)	SB (B - A)	ATC	383	307	4.130	Yes	Yes	152	117	3.009	Yes	Yes	331	369	2.028	Yes	Yes
1594	Calibration	NCC Data 2015	A_07	West Haddon Road (S) to Northampton Road (N)	NB (A - B)	ATC	296	209	5.469	No	Yes	147	210	4.666	Yes	Yes	346	467	5.981	No	No
1595	Calibration	NCC Data 2015	A_08	Grooms Lane (S) to Teeton Lane (N)	SB (B - A)	ATC	484	362	5.904	No	No	151	128	1.947	Yes	Yes	214	185	2.049	Yes	Yes
1596	Calibration	NCC Data 2015	A_08	Grooms Lane (S) to Teeton Lane (N)	NB (A - B)	ATC	265	251	0.851	Yes	Yes	180	144	2.823	Yes	Yes	406	397	0.438	Yes	Yes
1597	Calibration	NCC Data 2015	A_09	Church Street (S) to Brixworth Road (N)	SB (B - A)	ATC	102	92	0.991	Yes	Yes	60	64	0.531	Yes	Yes	105	93	1.231	Yes	Yes
1598	Calibration	NCC Data 2015	A_09	Church Street (S) to Brixworth Road (N)	NB (A - B)	ATC	120	121	0.087	Yes	Yes	58	51	0.931	Yes	Yes	108	145	3.295	Yes	Yes
1599	Calibration	NCC Data 2015	A_10_B	Kilsby Road (S) to Foxhill Road (N)	SB (B - A)	ATC	231	232	0.025	Yes	Yes	79	83	0.421	Yes	Yes	123	101	2.157	Yes	Yes
1600	Calibration	NCC Data 2015	A_10_B	Kilsby Road (S) to Foxhill Road (N)	NB (A - B)	ATC	154	167	1.007	Yes	Yes	81	104	2.401	Yes	Yes	206	220	0.980	Yes	Yes
1601	Calibration	NCC Data 2015	A_11	Princewood Road (W) to A6116 Phoenix Parkway (E)	EB (A - B)	ATC	673	690	0.658	Yes	Yes	447	491	2.039	Yes	Yes	502	538	1.598	Yes	Yes
1602	Calibration	NCC Data 2015	A_11	Princewood Road (W) to A6116 Phoenix Parkway (E)	WB (B - A)	ATC	581	580	0.045	Yes	Yes	556	564	0.347	Yes	Yes	772	865	3.242	Yes	Yes
1603	Calibration	NCC Data 2015	A_12	Phoenix Parkway (W) to Corby Road (E)	EB (A - B)	ATC	73	80	0.749	Yes	Yes	86	62	2.784	Yes	Yes	168	108	5.074	No	Yes
1604	Calibration	NCC Data 2015	A_12	Phoenix Parkway (W) to Corby Road (E)	WB (B - A)	ATC	130	80	4.894	Yes	Yes	73	115	4.305	Yes	Yes	75	94	2.037	Yes	Yes
1605	Calibration	NCC Data 2015	A_13	Arkwright Road (W) to Curver Way (E)	EB (A - B)	ATC	635	554	3.334	Yes	Yes	350	265	4.815	Yes	Yes	461	249	11.252	No	No
1606	Calibration	NCC Data 2015	A_13	Arkwright Road (W) to Curver Way (E)	WB (B - A)	ATC	470	395	3.615	Yes	Yes	404	346	2.965	Yes	Yes	569	758	7.358	No	No
1607	Calibration	NCC Data 2015	A_14	Newton Road (S) to Mill Hill (N)	SB (B - A)	ATC	50	17	5.761	No	Yes	22	6	4.177	Yes	Yes	23	7	3.973	Yes	Yes
1608	Calibration	NCC Data 2015	A_14	Newton Road (S) to Mill Hill (N)	NB (A - B)	ATC	30	87	7.475	No	Yes	27	17	2.049	Yes	Yes	49	48	0.021	Yes	Yes
1609	Calibration	NCC Data 2015	A_16	Kettering Road (SW) to Orion Way (NE)	SWB (B - A)	ATC	114	213	7.750	No	Yes	84	74	1.073	Yes	Yes	138	155	1.432	Yes	Yes
1610	Calibration	NCC Data 2015	A_16	Kettering Road (SW) to Orion Way (NE)	NEB (A - B)	ATC	141	106	3.124	Yes	Yes	84	72	1.335	Yes	Yes	145	189	3.420	Yes	Yes
1611	Calibration	NCC Data 2015	A_17	Cransley Road (W) to Church Way (E)	EB (A - B)	ATC	94	142	4.345	Yes	Yes	43	30	2.049	Yes	Yes	43	42	0.160	Yes	Yes
1612	Calibration	NCC Data 2015	A_17	Cransley Road (W) to Church Way (E)	WB (B - A)	ATC	67	63	0.495	Yes	Yes	47	51	0.693	Yes	Yes	69	124	5.532	No	Yes
1613	Calibration	NCC Data 2015	A_18	Loddington Road (S) to Eagle Lane (N)	SB (B - A)	ATC	3	9	2.387	Yes	Yes	0	1	0.579	Yes	Yes	1	3	1.832	Yes	Yes
1614	Calibration	NCC Data 2015	A_18	Loddington Road (S) to Eagle Lane (N)	NB (A - B)	ATC	9	7	0.671	Yes	Yes	3	9	2.503	Yes	Yes	3	9	2.478	Yes	Yes
1617	Calibration	NCC Data 2015	A_20	Hermitage Road (W) to Stoke Hill (E)	EB (A - B)	ATC	489	455	1.549	Yes	Yes	248	220	1.836	Yes	Yes	481	330	7.520	No	No
1618	Calibration	NCC Data 2015	A_20	Hermitage Road (W) to Stoke Hill (E)	WB (B - A)	ATC	421	459	1.818	Yes	Yes	255	247	0.520	Yes	Yes	452	553	4.490	Yes	No
1619	Calibration	NCC Data 2015	A_21	Swift Close (S) to Oakley Road (N)	SB (B - A)	ATC	135	81	5.162	No	Yes	62	64	0.288	Yes	Yes	106	120	1.371	Yes	Yes
1620	Calibration	NCC Data 2015	A_21	Swift Close (S) to Oakley Road (N)	NB (A - B)	ATC	86	118	3.116	Yes	Yes	65	55	1.303	Yes	Yes	143	110	2.913	Yes	Yes
1621	Calibration	NCC Data 2015	A_22	B669 Stoke Road (S) to Harborough Road (N)	SB (B - A)	ATC	83	106	2.385	Yes	Yes	46	54	1.141	Yes	Yes	71	60	1.442	Yes	Yes
1622	Calibration	NCC Data 2015	A_22	B669 Stoke Road (S) to Harborough Road (N)	NB (A - B)	ATC	84	92	0.796	Yes	Yes	48	43	0.679	Yes	Yes	74	75	0.126	Yes	Yes
1623	Calibration	NCC Data 2015	A_23	Rushton Road (W) to High Street (E)	EB (A - B)	ATC	80	104	2.556	Yes	Yes	80	120	3.990	Yes	Yes	155	152	0.236	Yes	Yes
1624	Calibration	NCC Data 2015	A_23	Rushton Road (W) to High Street (E)	WB (B - A)	ATC	161	181	1.551	Yes	Yes	72	70	0.222	Yes	Yes	85	39	5.741	No	Yes
1625	Calibration	NCC Data 2015	A_24	Shotwell Mill Lane (W) to Desborough Road (E)	EB (A - B)	ATC	104	74	3.137	Yes	Yes	66	47	2.585	Yes	Yes	138	108	2.733	Yes	Yes
1626	Calibration	NCC Data 2015	A_24	Shotwell Mill Lane (W) to Desborough Road (E)	WB (B - A)	ATC	138	104	3.055	Yes	Yes	64	62	0.260	Yes	Yes	107	69	4.082	Yes	Yes
1627	Calibration	NCC Data 2015	A_25	Violet Lane (E) to Dempsey Drive (W)	EB (B - A)	ATC	167	203	2.628	Yes	Yes	75	83	0.905	Yes	Yes	92	83	0.950	Yes	Yes

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
1628	Calibration	NCC Data 2015	A_25	Violet Lane (E) to Dempsey Drive (W)	WB (A - B)	ATC	79	87	0.835	Yes	Yes	89	123	3.300	Yes	Yes	170	210	2.886	Yes	Yes
1629	Calibration	NCC Data 2015	A_26	High Street (N) to Top End (S)	SB (A - B)	ATC	177	147	2.356	Yes	Yes	71	55	1.996	Yes	Yes	107	92	1.505	Yes	Yes
1630	Calibration	NCC Data 2015	A_26	High Street (N) to Top End (S)	NB (B - A)	ATC	114	103	1.116	Yes	Yes	69	44	3.358	Yes	Yes	138	143	0.444	Yes	Yes
1631	Calibration	NCC Data 2015	A_27	Midland Road (S) to Mickle Hill (N)	SB (B - A)	ATC	19	8	2.809	Yes	Yes	19	6	3.604	Yes	Yes	45	121	8.329	No	Yes
1632	Calibration	NCC Data 2015	A_27	Midland Road (S) to Mickle Hill (N)	NB (A - B)	ATC	35	3	7.273	No	Yes	15	3	4.129	Yes	Yes	22	3	5.371	No	Yes
1633	Calibration	NCC Data 2015	A_28	Midland Road (S) to A45 (N)	SB (B - A)	ATC	8	3	2.064	Yes	Yes	8	3	2.051	Yes	Yes	11	3	3.231	Yes	Yes
1634	Calibration	NCC Data 2015	A_28	Midland Road (S) to A45 (N)	NB (A - B)	ATC	10	3	2.941	Yes	Yes	8	1	3.455	Yes	Yes	12	12	0.150	Yes	Yes
1635	Validation	NCC Data 2015	A_29	Church Street (N) to A45 (S)	SB (A - B)	ATC	262	248	0.916	Yes	Yes	175	125	4.060	Yes	Yes	322	317	0.299	Yes	Yes
1636	Validation	NCC Data 2015	A_29	Church Street (N) to A45 (S)	NB (B - A)	ATC	280	257	1.376	Yes	Yes	180	125	4.452	Yes	Yes	268	247	1.294	Yes	Yes
1637	Calibration	NCC Data 2015	A_31	A605 (E) to Causin Way (W)	WB (A - B)	ATC	77	73	0.444	Yes	Yes	37	44	1.104	Yes	Yes	70	100	3.233	Yes	Yes
1638	Calibration	NCC Data 2015	A_31	A605 (E) to Causin Way (W)	EB (B - A)	ATC	90	86	0.448	Yes	Yes	37	59	3.266	Yes	Yes	68	55	1.640	Yes	Yes
1639	Calibration	NCC Data 2015	A_32	A6116 (W) to Benefield Road (E)	EB (A - B)	ATC	24	13	2.398	Yes	Yes	19	0	6.161	No	Yes	24	0	6.918	No	Yes
1640	Calibration	NCC Data 2015	A_32	A6116 (W) to Benefield Road (E)	WB (B - A)	ATC	32	0	7.975	No	Yes	17	0	5.894	No	Yes	29	0	7.653	No	Yes
1641	Calibration	NCC Data 2015	A_33	Causin Way (NW) to Harley Way (SE)	SEB (A - B)	ATC	94	77	1.866	Yes	Yes	70	57	1.717	Yes	Yes	133	116	1.481	Yes	Yes
1642	Calibration	NCC Data 2015	A_33	Causin Way (NW) to Harley Way (SE)	NWB (B - A)	ATC	143	231	6.456	No	Yes	69	74	0.621	Yes	Yes	89	118	2.832	Yes	Yes
1643	Calibration	NCC Data 2015	A_34	Hatchdoyle Lane (S) to Warren Bridge (N)	SB (B - A)	ATC	55	27	4.372	Yes	Yes	39	38	0.173	Yes	Yes	70	49	2.702	Yes	Yes
1644	Calibration	NCC Data 2015	A_34	Hatchdoyle Lane (S) to Warren Bridge (N)	NB (A - B)	ATC	93	73	2.142	Yes	Yes	38	47	1.334	Yes	Yes	46	36	1.630	Yes	Yes
1645	Calibration	NCC Data 2015	A_39	High Street (S) to Deene Road (N)	SB (B - A)	ATC	29	33	0.695	Yes	Yes	23	45	3.721	Yes	Yes	31	37	1.056	Yes	Yes
1646	Calibration	NCC Data 2015	A_39	High Street (S) to Deene Road (N)	NB (A - B)	ATC	26	34	1.544	Yes	Yes	22	5	4.585	Yes	Yes	28	63	5.168	No	Yes
1647	Validation	NCC Data 2015	A_40	Wood Street (S) to Cemetary Lane (N)	SB (B - A)	ATC	516	476	1.773	Yes	Yes	396	388	0.387	Yes	Yes	482	390	4.381	Yes	Yes
1648	Validation	NCC Data 2015	A_40	Wood Street (S) to Cemetary Lane (N)	NB (A - B)	ATC	400	331	3.607	Yes	Yes	436	422	0.639	Yes	Yes	659	744	3.220	Yes	Yes
1649	Calibration	NCC Data 2015	A_41	Boundary Avenue (N) to Arkwright Road (S)	SB (A - B)	ATC	396	451	2.652	Yes	Yes	197	191	0.398	Yes	Yes	243	211	2.156	Yes	Yes
1650	Calibration	NCC Data 2015	A_41	Boundary Avenue (N) to Arkwright Road (S)	NB (B - A)	ATC	285	309	1.364	Yes	Yes	256	265	0.567	Yes	Yes	537	436	4.581	Yes	No
1651	Calibration	NCC Data 2015	A_43	Manor Lane (S) to Oxford Street (N)	SB (B - A)	ATC	75	107	3.361	Yes	Yes	78	104	2.690	Yes	Yes	129	100	2.645	Yes	Yes
1652	Calibration	NCC Data 2015	A_43	Manor Lane (S) to Oxford Street (N)	NB (A - B)	ATC	133	135	0.240	Yes	Yes	72	73	0.082	Yes	Yes	84	76	0.873	Yes	Yes
1653	Calibration	NCC Data 2015	A_44	Wymington Lane (S) to Bedford Road (N)	SB (B - A)	ATC	1069	1182	3.361	Yes	Yes	409	401	0.401	Yes	Yes	471	495	1.103	Yes	Yes
1654	Calibration	NCC Data 2015	A_44	Wymington Lane (S) to Bedford Road (N)	NB (A - B)	ATC	469	502	1.487	Yes	Yes	446	431	0.695	Yes	Yes	1094	1224	3.831	Yes	Yes
1655	Calibration	NCC Data 2015	A_45	Avenue Road (S) to A6 (N)	SB (B - A)	ATC	88	96	0.805	Yes	Yes	62	62	0.008	Yes	Yes	78	88	1.087	Yes	Yes
1656	Calibration	NCC Data 2015	A_45	Avenue Road (S) to A6 (N)	NB (A - B)	ATC	87	53	4.091	Yes	Yes	57	43	2.011	Yes	Yes	83	35	6.188	No	Yes
1657	Calibration	NCC Data 2015	A_46_A	Newton Road (W) to Bidwell Lane (E)	EB (A - B)	ATC	369	286	4.582	Yes	Yes	200	204	0.319	Yes	Yes	430	407	1.107	Yes	Yes
1658	Calibration	NCC Data 2015	A_46_A	Newton Road (W) to Bidwell Lane (E)	WB (B - A)	ATC	408	394	0.709	Yes	Yes	195	184	0.752	Yes	Yes	317	339	1.206	Yes	Yes
1659	Calibration	NCC Data 2015	A_47	A6 (S) to High Street (N)	SB (B - A)	ATC	73	49	3.128	Yes	Yes	14	10	1.071	Yes	Yes	16	14	0.527	Yes	Yes
1660	Calibration	NCC Data 2015	A_47	A6 (S) to High Street (N)	NB (A - B)	ATC	5	15	3.290	Yes	Yes	6	11	1.916	Yes	Yes	10	17	1.995	Yes	Yes
1661	Calibration	NCC Data 2015	A_49_A	The Leys (S) to A509 (N)	SB (B - A)	ATC	73	106	3.494	Yes	Yes	40	44	0.668	Yes	Yes	41	37	0.561	Yes	Yes
1662	Calibration	NCC Data 2015	A_49_A	The Leys (S) to A509 (N)	NB (A - B)	ATC	73	41	4.293	Yes	Yes	45	50	0.787	Yes	Yes	83	72	1.205	Yes	Yes
1663	Calibration	NCC Data 2015	A_50_A	Finedon Station (S) to Orlingbury Road (N)	SB (B - A)	ATC	867	1040	5.580	No	No	616	678	2.419	Yes	Yes	808	926	4.004	Yes	Yes
1664	Calibration	NCC Data 2015	A_50_A	Finedon Station (S) to Orlingbury Road (N)	NB (A - B)	ATC	1025	1005	0.622	Yes	Yes	660	625	1.381	Yes	Yes	1092	1078	0.424	Yes	Yes
1665	Calibration	NCC Data 2015	A_51	Station Road (S) to Riverview (N)	SB (B - A)	ATC	482	421	2.865	Yes	Yes	150	170	1.652	Yes	Yes	184	183	0.063	Yes	Yes
1666	Calibration	NCC Data 2015	A_51	Station Road (S) to Riverview (N)	NB (A - B)	ATC	152	158	0.483	Yes	Yes	152	185	2.552	Yes	Yes	457	395	2.987	Yes	Yes
1667	Calibration	NCC Data 2015	A_52	Eastlands Road (S) to Wold Road (N)	SB (B - A)	ATC	263	363	5.622	No	Yes	121	145	2.063	Yes	Yes	210	212	0.156	Yes	Yes
1668	Calibration	NCC Data 2015	A_52	Eastlands Road (S) to Wold Road (N)	NB (A - B)	ATC	184	224	2.777	Yes	Yes	115	136	1.889	Yes	Yes	225	252	1.779	Yes	Yes
1669	Calibration	NCC Data 2015	A_53	Westfields (W) to Niort Way (E)	EB (A - B)	ATC	46	145	10.150	No	Yes	15	11	1.253	Yes	Yes	22	72	7.297	No	Yes
1670	Calibration	NCC Data 2015	A_53	Westfields (W) to Niort Way (E)	WB (B - A)	ATC	10	77	10.106	No	Yes	10	13	1.060	Yes	Yes	25	127	11.748	No	No
1671	Calibration	NCC Data 2015	A_54	A43 (W) to Harwich Road (E)	EB (A - B)	ATC	15	4	3.638	Yes	Yes	8	1	3.618	Yes	Yes	8	3	2.001	Yes	Yes
1672	Calibration	NCC Data 2015	A_54	A43 (W) to Harwich Road (E)	WB (B - A)	ATC	5	3	0.892	Yes	Yes	7	1	3.004	Yes	Yes	10	1	3.729	Yes	Yes
1673	Calibration	NCC Data 2015	A_55	Highfield Road (W) to Sywell Road (E)	EB (A - B)	ATC	249	200	3.230	Yes	Yes	176	162	1.142	Yes	Yes	517	402	5.334	No	No
1674	Calibration	NCC Data 2015	A_55	Highfield Road (W) to Sywell Road (E)	WB (B - A)	ATC	667	650	0.694	Yes	Yes	158	145	1.089	Yes	Yes	300	291	0.546	Yes	Yes
1675	Calibration	NCC Data 2015	A_56	Duchess End (W) to Mears Ashby Road (E)	EB (A - B)	ATC	86	126	3.845	Yes	Yes	52	59	0.973	Yes	Yes	117	102	1.508	Yes	Yes
1676	Calibration	NCC Data 2015	A_56	Duchess End (W) to Mears Ashby Road (E)	WB (B - A)	ATC	144	198	4.153	Yes	Yes	48	53	0.612	Yes	Yes	92	138	4.312	Yes	Yes
1677	Calibration	NCC Data 2015	A_57	A4500 (S) to Washbrook Lane (N)	SB (B - A)	ATC	230	194	2.521	Yes	Yes	92	66	2.874	Yes	Yes	187	194	0.512	Yes	Yes
1678	Calibration	NCC Data 2015	A_57	A4500 (S) to Washbrook Lane (N)	NB (A - B)	ATC	158	123	2.923	Yes	Yes	94	75	2.114	Yes	Yes	200	205	0.382	Yes	Yes
1679	Calibration	NCC Data 2015	A_58	Wellingborough Road (W) to Mears Ashby Road (E)	EB (A - B)	ATC	418	356	3.113	Yes	Yes	294	245	2.963	Yes	Yes	590	392	8.951	No	No
1680	Calibration	NCC Data 2015	A_58	Wellingborough Road (W) to Mears Ashby Road (E)	WB (B - A)	ATC	693	617	2.986	Yes	Yes	269	219	3.159	Yes	Yes	439	357	4.096	Yes	Yes
1681	Calibration	NCC Data 2015	A_59	A45 (N) to Whiston Road (S)	SB (A - B)	ATC	219	185	2.442	Yes	Yes	73	52	2.612	Yes	Yes	129	97	2.989	Yes	Yes
1682	Calibration	NCC Data 2015	A_59	A45 (N) to Whiston Road (S)	NB (B - A)	ATC	125	123	0.156	Yes	Yes	68	56	1.556	Yes	Yes	163	85	6.974	No	Yes
1683	Calibration	NCC Data 2015	A_60	Napier Close (W) to A509 Park Farm Way (E)	EB (A - B)	ATC	184	187	0.195	Yes	Yes	232	228	0.205	Yes	Yes	499	579	3.463	Yes	Yes
1684	Calibration	NCC Data 2015	A_60	Napier Close (W) to A509 Park Farm Way (E)	WB (B - A)	ATC	616	581	1.444	Yes	Yes	212	210	0.126	Yes	Yes	145	209	4.880	Yes	Yes
1685	Validation	NCC Data 2015	A_61	Enstone CT (N) to Higham Road (S)	SB (A - B)	ATC	358	436	3.897	Yes	Yes	189	173	1.135	Yes	Yes	257	176	5.506	No	Yes
1686	Validation	NCC Data 2015	A_61	Enstone CT (N) to Higham Road (S)	NB (B - A)	ATC	170	124	3.773	Yes	Yes	167	132	2.853	Yes	Yes	290	303	0.774	Yes	Yes
1687	Calibration	NCC Data 2015	A_62	Edmonds Close (N) to Turnells Mill (S)	SB (A - B)	ATC	155	210	4.072	Yes	Yes	145	172	2.155	Yes	Yes	351	346	0.306	Yes	Yes
1688	Calibration	NCC Data 2015	A_62	Edmonds Close (N) to Turnells Mill (S)	NB (B - A)	ATC	260	245	0.917	Yes	Yes	92	120	2.668	Yes	Yes	65	118	5.512	No	Yes
1689	Calibration	NCC Data 2015	A_63_S	Cotswold Drive (N) to A45 (S)	SB (A - B)	ATC	1283	1084	5.759	No	No	805	732	2.635	Yes	Yes	1251	1198	1.524	Yes	Yes
1690	Calibration	NCC Data 2015	A_64	Turnells Mill Lane (S) to Denington Road (N)	SB (B - A)	ATC	426	597	7.578	No	No	464	427	1.778	Yes	Yes	518	677	6.500	No	No
1691	Calibration	NCC Data 2015	A_64	Turnells Mill Lane (S) to Denington Road (N)	NB (A - B)	ATC	531	573	1.782	Yes	Yes	530	513	0.740	Yes	Yes	527	549	0.963	Yes	Yes
1692	Calibration	NCC Data 2015	A_65	Deer Park Road (N) to Brickyard Spinney Road (S)	SB (A - B)	ATC	717	688	1.097	Yes	Yes	274	271	0.178	Yes	Yes	230	244	0.934	Yes	Yes
1693	Calibration	NCC Data 2015	A_65	Deer Park Road (N) to Brickyard Spinney Road (S)	NB (B - A)	ATC	1659	1572	2.156	Yes	Yes	585	556	1.231	Yes	Yes	663	580	3.346	Yes	Yes
1694	Calibration	NCC Data 2015	A_66	Overstone Lane (W) to Woodland Avenue (E)	EB (A - B)	ATC	215	223	0.545	Yes	Yes	164	104	5.183	No	Yes	401	313	4.636	Yes	Yes
1695	Calibration	NCC Data 2015	A_66	Overstone Lane (W) to Woodland Avenue (E)	WB (B - A)	ATC	676	702	0.971	Yes	Yes	168	144	1.865	Yes	Yes	257	236	1.309	Yes	Yes
1696	Calibration	NCC Data 2015	A_67	Northampton Road (E) to Golf Lane (W)	EB (B - A)	ATC	404	417	0.678	Yes	Yes	176	202	1.881	Yes	Yes	366	419	2.661	Yes	Yes
1697	Calibration	NCC Data 2015	A_67	Northampton Road (E) to Golf Lane (W)	WB (A - B)	ATC	305	282	1.303	Yes	Yes	179	261	5.538	No	Yes	348	403	2.881	Yes	Yes
1698	Calibration	NCC Data 2015	A_68	Main Road (S) to St James Mill Road E (N)	SB (B - A)	ATC	664	693	1.115	Yes	Yes	797	906	3.762	Yes	Yes	1034	1107	2.221	Yes	Yes
1699	Calibration	NCC Data 2015	A_68	Main Road (S) to St James Mill Road E (N)	NB (A - B)	ATC	891	765	4.382	Yes	Yes	723	809	3.094	Yes	Yes	828	983	5.159	No	No
1700	Calibration	NCC Data 2015	A_69	Ransome Road (S) to Old Towcester Road (N)	SB (B - A)	ATC	578	649	2.871	Yes	Yes	567	437	5.811	No	No	712	698	0.504	Yes	Yes
1701	Calibration	NCC Data 2015	A_69	Ransome Road (S) to Old Towcester Road (N)	NB (A - B)	ATC	867	919	1.730	Yes	Yes	571	514	2.449	Yes	Yes	767	682	3.175	Yes	Yes
1702	Calibration	NCC Data 2015	A_70	Cliftonville Road (W) to Lower Thrift Street (E)	EB (A - B)	ATC	283	351	3.797	Yes	Yes	340	270	4.004	Yes	Yes	559	545	0.593	Yes	Yes
1703	Calibration	NCC Data 2015	A_70	Cliftonville Road (W) to Lower Thrift Street (E)	WB (B - A)	ATC	536	687	6.110	No	No	315	295	1.179	Yes	Yes	292	379	4.781	Yes	Yes
1704	Calibration	NCC Data 2015	A_71	Spencer Road (S) - Clare Street (N)	SB (B - A)	ATC	659	713	2.056	Yes	Yes	438	369	3.431	Yes	Yes	438	365	3.658	Yes	Yes
1705	Calibration	NCC Data 2015	A_71	Spencer Road (S) - Clare Street (N)	NB (A - B)	ATC	342	288	3.069	Yes	Yes	449	355	4.689	Yes	Yes	666	495	7.109	No	No
1706	Calibration	NCC Data 2015	A_75	Brook Street (S) to Uppingham Street (N)	SB (B - A)	ATC	509	525	0.715	Yes	Yes	381	415	1.694	Yes	Yes	459	468	0.408	Yes	Yes
1707	Calibration	NCC Data 2015	A_75	Brook Street (S) to Uppingham Street (N)	NB (A - B)	ATC	396	387	0.487	Yes	Yes	322	312	0.544	Yes	Yes	500	648	6.155	No	No
1708	Calibration	NCC Data 2015	A_76	Gladstone Road (W) to A509 St Andrews Road (E)	EB (A - B)	ATC	1289	1308	0.522	Yes	Yes	898	912	0.490	Yes	Yes	1090	1238	4.325	Yes	Yes
1709	Calibration	NCC Data 2015	A_76	Gladstone Road (W) to A509 St Andrews Road (E)	WB (B - A)	ATC	920	828	3.099	Yes	Yes	916	909	0.258	Yes	Yes	1182	1255	2.072	Yes	Yes
1710	Calibration	NCC Data 2015	A_77	St James' Hill Road (W) to Mare Fair (E)	EB (A - B)	ATC	992	840	5.000	No	No	710	688	0.824	Yes	Yes	767	548	8.536	No	No
1711	Calibration	NCC Data 2015	A_77	St James' Hill Road (W) to Mare Fair (E)	WB (B - A)	ATC	735	688	1.772	Yes	Yes	869	907	1.299	Yes	Yes	1056	766	9.588	No	No
1712	Validation	TPA Rail Central	A_79	Banbury Lane (W) to A5123 (E)	EB (A - B)	ATC	570	531	1.663	Yes	Yes	352	402	2.563	Yes	Yes	461	428	1.542	Yes	Yes
1713	Validation	TPA Rail Central	A_79	Banbury Lane (W) to A5123 (E)	WB (B - A)	ATC	494	369	5.983	No	No	361	358	0.130	Yes	Yes	660	624	1.403	Yes	Yes
1714	Calibration	TPA Rail Central	A_80	Saxon Avenue (E) to A45 London Road (W)	EB (B - A)	ATC	429	488	2.750	Yes	Yes	212	220	0.580	Yes	Yes	456	371	4.180	Yes	Yes
1715	Calibration	TPA Rail Central	A_80	Saxon Avenue (E) to A45 London Road (W)	WB (A - B)	ATC	632	612	0.811	Yes	Yes	240	180	4.129	Yes	Yes	466	294	8.799	No	No
1716	Calibration	NCC Data 2015	A_81	Daventry Road (N) to Marston Way (S)	SB (A - B)	ATC	255	158	6.686	No	Yes	117	81	3.642	Yes	Yes	166	118	4.012	Yes	Yes
1717	Calibration	NCC Data 2015	A_81	Daventry Road (N) to Marston Way (S)	NB (B - A)	ATC	184	157	2.058	Yes	Yes	112	88	2.421	Yes	Yes	227	124	7.765	No	No
1718	Calibration	NCC Data 2015	A_82	Badby Lane (S) to A45 Stefan Way (N)	SB (B - A)	ATC	395	427	1.557	Yes	Yes	221	235	0.928	Yes	Yes	342	341	0.039	Yes	Yes
1719	Calibration	NCC Data 2015	A_82	Badby Lane (S) to A45 Stefan Way (N)	NB (A - B)	ATC	428	404	1.186	Yes	Yes	235	269	2.184	Yes	Yes	419	443	1.132	Yes	Yes
1720	Calibration	NCC Data 2015	A_83	Staverton Road (S) to Stefan Road (N)	SB (B - A)	ATC	484	381	4.918	Yes	No	254	245	0.585	Yes	Yes	414	483	3.287	Yes	Yes
1721	Calibration	NCC Data 2015	A_83	Staverton Road (S) to Stefan Road (N)	NB (A - B)	ATC	392	384	0.417	Yes	Yes	243	270	1.668	Yes	Yes	461	401	2.923	Yes	Yes
1724	Calibration	NCC Data 2015	A_85	High March (W) to B4037 (E)	EB (A - B)	ATC	674	598	3.016	Yes	Yes	534	538	0.151	Yes	Yes	827	821	0.208	Yes	Yes
1725	Calibration	NCC Data 2015	A_85	High March (W) to B4037 (E)	WB (B - A)	ATC	924	941	0.539	Yes	Yes	548	505	1.864	Yes	Yes	766	739	0.979	Yes	Yes
1726	Calibration	NCC Data 2015	A_86	Admirals Way (W) to Daventry Road (E)	EB (A - B)	ATC	343	474	6.518	No	No	241	193	3.259	Yes	Yes	496	605	4.655	Yes	No
1727	Calibration	NCC Data 2015	A_86	Admirals Way (W) to Daventry Road (E)	WB (B - A)	ATC	497	496	0.030	Yes	Yes	237	238	0.104	Yes	Yes	389	588	9.028	No	No
1728	Calibration	NCC Data 2015	A_87	Poppyfields Way (S) to B4525 (N)	SB (B - A)	ATC	102	84	1.844	Yes	Yes	51	46	0.817	Yes	Yes	65	82	1.968	Yes	Yes
1729	Calibration	NCC Data 2015	A_87	Poppyfields Way (S) to B4525 (N)	NB (A - B)	ATC	90	57	3.822	Yes	Yes	54	64	1.303	Yes	Yes	95	74	2.218	Yes	Yes
1730	Calibration	NCC Data 2015	A_89	Whilton Road (S) to Holdenby Road (N)	SB (B - A)	ATC	422	413	0.402	Yes	Yes	305	316	0.625	Yes	Yes	644	644	0.006	Yes	Yes
1731	Calibration	NCC Data 2015	A_89	Whilton Road (S) to Holdenby Road (N)	NB (A - B)	ATC	539	508	1.365	Yes	Yes	179	187	0.575	Yes	Yes	241	273	2.000	Yes	Yes
1732	Validation	NCC Data 2015	A_90	Kettering Road (S) to Highlands Avenue (N)	SB (B - A)	ATC	770	827	2.044	Yes	Yes	635	593	1.698	Yes	Yes	753	701	1.910	Yes	Yes
1733	Validation	NCC Data 2015	A_90	Kettering Road (S) to Highlands Avenue (N)	NB (A - B)	ATC	650	569	3.276	Yes	Yes	645	564	3.282	Yes	Yes	814	787	0.947	Yes	Yes
1736	Calibration	NCC Data 2015	A_92	Mill Hill (W) to A43 (E)	EB (A - B)	ATC	53	53	0.096	Yes	Yes	22	42	3.447	Yes	Yes	24	27	0.653	Yes	Yes
1737	Calibration	NCC Data 2015	A_92	Mill Hill (W) to A43 (E)	WB (B - A)	ATC	23	37	2.507	Yes	Yes	24	31	1.311	Yes	Yes	59	231	14.268	No	No
1740	Calibration	NCC Data 2015	A_94	The Green (S) to Orlingbury Road (N)	SB (B - A)	ATC	368	507	6.673	No	No	59	26	5.002	No	Yes	101	118	1.615	Yes	Yes
1741	Calibration	NCC Data 2015	A_94	The Green (S) to Orlingbury Road (N)	NB (A - B)	ATC	102	144	3.746	Yes	Yes	67	38	4.009	Yes	Yes	299	356	3.187	Yes	Yes
1742	Calibration	NCC Data 2015	A_95	Swallow Close (W) to High Street (E)	EB (A - B)	ATC	115	101	1.327	Yes	Yes	79	104	2.640	Yes	Yes	110	129	1.750	Yes	Yes
1743	Calibration	NCC Data 2015	A_95	Swallow Close (W) to High Street (E)	WB (B - A)	ATC	146	122	2.023	Yes	Yes	79	84	0.506	Yes	Yes	121	91	2.918	Yes	Yes
1744	Calibration	NCC Data 2015	A_97	Northfield Road (W) to Gypsy Lane (E)	EB (A - B)	ATC	127	129	0.180	Yes	Yes	58	18	6.449	No	Yes	61	43	2.440	Yes	Yes
1745	Calibration	NCC Data 2015	A_97	Northfield Road (W) to Gypsy Lane (E)	WB (B - A)	ATC	76	139	6.110	No	Yes	64	80	1.929	Yes	Yes	98	127	2.708	Yes	Yes
1748	Calibration	NCC Data 2015	A_99	A43 Stamford Road (E) to The Grove (W)	EB (B - A)	ATC	526	448	3.535	Yes	Yes	486	431	2.596	Yes	Yes	757	443	12.813	No	No
1749	Calibration	NCC Data 2015	A_99	A43 Stamford Road (E) to The Grove (W)	WB (A - B)	ATC	889	854	1.209	Yes	Yes	531	570	1.647	Yes	Yes	615	566	1.994	Yes	Yes

							AM Peak					Interpeak					PM Peak				
							ALL VEHICLES					ALL VEHICLES					ALL VEHICLES				
ID	Calibration / Validation	Area	Ref	Site Location	Dir	Data Type	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?	Observed	Modelled	GEH	GEH Pass?	Flow Pass?
1750	Calibration	NCC Data 2015	A_100	Market Street (W) to West Street (E)	EB (A - B)	ATC	490	511	0.937	Yes	Yes	569	522	1.998	Yes	Yes	744	630	4.336	Yes	No
1751	Calibration	NCC Data 2015	A_100	Market Street (W) to West Street (E)	WB (B - A)	ATC	768	665	3.849	Yes	Yes	558	498	2.586	Yes	Yes	532	502	1.300	Yes	Yes
1752	Calibration	NCC Data 2015	A_101	Mill Street (W) to Stamford Road (E)	EB (A - B)	ATC	485	545	2.612	Yes	Yes	257	249	0.473	Yes	Yes	316	322	0.352	Yes	Yes
1753	Calibration	NCC Data 2015	A_101	Mill Street (W) to Stamford Road (E)	WB (B - A)	ATC	299	317	1.010	Yes	Yes	286	298	0.705	Yes	Yes	494	555	2.665	Yes	Yes
1754	Calibration	TPA Rail Central	TPA_19	A5 (Greens Northon to Butchers Lane)	SB	ATC	1272	1138	3.861	Yes	Yes	454	513	2.659	Yes	Yes	630	560	2.880	Yes	Yes
1755	Calibration	TPA Rail Central	TPA_19	A5 (Greens Northon to Butchers Lane)	NB	ATC	630	614	0.654	Yes	Yes	500	519	0.818	Yes	Yes	1128	1082	1.397	Yes	Yes
1758	Calibration	TPA Rail Central	TPA_23	A5 (Brackely Road to Chantry Lane)	SB	ATC	1498	1220	7.547	No	No	532	489	1.892	Yes	Yes	819	724	3.445	Yes	Yes
1759	Calibration	TPA Rail Central	TPA_23	A5 (Brackely Road to Chantry Lane)	NB	ATC	717	636	3.115	Yes	Yes	611	511	4.228	Yes	No	1364	1184	5.045	No	Yes
1760	Calibration	TPA Rail Central	TPA_25	Road Southwest of Showsley Road/Main Road	NB	ATC	133	137	0.355	Yes	Yes	63	50	1.753	Yes	Yes	49	121	7.792	No	Yes
1761	Calibration	TPA Rail Central	TPA_25	Road Southwest of Showsley Road/Main Road	SB	ATC	93	114	2.122	Yes	Yes	84	81	0.314	Yes	Yes	182	169	0.952	Yes	Yes
1762	Calibration	TPA Rail Central	TPA_30	Banbury Lane (Southwest of Bugbrooke Road junction)	NB	ATC	161	151	0.803	Yes	Yes	84	81	0.282	Yes	Yes	148	83	6.088	No	Yes
1763	Calibration	TPA Rail Central	TPA_30	Banbury Lane (Southwest of Bugbrooke Road junction)	SB	ATC	130	99	2.980	Yes	Yes	84	79	0.585	Yes	Yes	131	98	3.090	Yes	Yes
1764	Calibration	TPA Rail Central	TPA_32	Camp Hill (Southeast of Camp Close junction)	SB	ATC	115	145	2.635	Yes	Yes	43	43	0.026	Yes	Yes	56	38	2.566	Yes	Yes
1765	Calibration	TPA Rail Central	TPA_32	Camp Hill (Southeast of Camp Close junction)	NB	ATC	52	81	3.479	Yes	Yes	54	54	0.091	Yes	Yes	121	150	2.511	Yes	Yes
1766	Calibration	TPA Rail Central	TPA_21	Road (A5 to Great Lane)	NB	ATC	99	75	2.623	Yes	Yes	50	53	0.314	Yes	Yes	47	37	1.642	Yes	Yes
1767	Calibration	TPA Rail Central	TPA_21	Road (A5 to Great Lane)	SB	ATC	88	108	2.003	Yes	Yes	47	50	0.375	Yes	Yes	95	113	1.779	Yes	Yes
1768	Calibration	TPA Rail Central	TPA_20	Bugbrooke Road (Middle Street to Church Lane)	SB	ATC	117	124	0.597	Yes	Yes	91	91	0.014	Yes	Yes	113	103	0.971	Yes	Yes
1769	Calibration	TPA Rail Central	TPA_20	Bugbrooke Road (Middle Street to Church Lane)	NB	ATC	105	92	1.326	Yes	Yes	80	77	0.351	Yes	Yes	154	127	2.270	Yes	Yes
1770	Calibration	TPA Rail Central	TPA_31	Kingsbury Road (Mill Lane to M1)	NB	ATC	429	349	4.061	Yes	Yes	236	208	1.913	Yes	Yes	338	289	2.799	Yes	Yes
1771	Calibration	TPA Rail Central	TPA_31	Kingsbury Road (Mill Lane to M1)	SB	ATC	448	413	1.692	Yes	Yes	239	215	1.569	Yes	Yes	289	247	2.562	Yes	Yes
1772	Calibration	TPA Rail Central	TPA_15	Rothersthrope Road (M1 to Banbury Lane)	SB	ATC	190	130	4.757	Yes	Yes	70	66	0.468	Yes	Yes	92	84	0.850	Yes	Yes
1773	Calibration	TPA Rail Central	TPA_15	Rothersthrope Road (M1 to Banbury Lane)	NB	ATC	134	128	0.490	Yes	Yes	70	70	0.036	Yes	Yes	170	175	0.427	Yes	Yes
1774	Calibration	TPA Rail Central	TPA_16	Banbury Lane (Kislingbury Road to M1)	NB	ATC	198	253	3.686	Yes	Yes	140	139	0.048	Yes	Yes	190	188	0.130	Yes	Yes
1775	Calibration	TPA Rail Central	TPA_16	Banbury Lane (Kislingbury Road to M1)	SB	ATC	268	309	2.409	Yes	Yes	133	124	0.830	Yes	Yes	163	180	1.309	Yes	Yes
1776	Calibration	TPA Rail Central	TPA_4	North Street (Banbury Street to A43)	SB	ATC	116	79	3.735	Yes	Yes	47	45	0.377	Yes	Yes	55	54	0.216	Yes	Yes
1777	Calibration	TPA Rail Central	TPA_4	North Street (Banbury Street to A43)	NB	ATC	71	70	0.059	Yes	Yes	50	61	1.488	Yes	Yes	124	138	1.231	Yes	Yes
1778	Calibration	TPA Rail Central	TPA_7	Milton Road (Blisworth Road to A43)	NB	ATC	62	76	1.592	Yes	Yes	28	23	1.044	Yes	Yes	31	25	1.092	Yes	Yes
1779	Calibration	TPA Rail Central	TPA_7	Milton Road (Blisworth Road to A43)	SB	ATC	33	22	2.003	Yes	Yes	31	27	0.733	Yes	Yes	53	18	5.855	No	Yes
1780	Calibration	TPA Rail Central	TPA_9	Gayton Road (Blisworth Road to Chapel Lane)	SB	ATC	117	138	1.894	Yes	Yes	42	38	0.651	Yes	Yes	53	11	7.503	No	Yes
1781	Calibration	TPA Rail Central	TPA_9	Gayton Road (Blisworth Road to Chapel Lane)	NB	ATC	49	40	1.364	Yes	Yes	38	32	1.072	Yes	Yes	102	76	2.691	Yes	Yes
1782	Calibration	TPA Rail Central	TPA_8	Towcester Road (Rectory Lane to Northampton Road)	SB	ATC	331	304	1.527	Yes	Yes	231	240	0.533	Yes	Yes	643	598	1.820	Yes	Yes
1783	Calibration	TPA Rail Central	TPA_8	Towcester Road (Rectory Lane to Northampton Road)	NB	ATC	541	509	1.382	Yes	Yes	218	223	0.376	Yes	Yes	270	304	2.008	Yes	Yes
1784	Calibration	TPA Rail Central	TPA_5	Towcester Road (M1 to Lower Road)	SB	ATC	398	434	1.776	Yes	Yes	307	343	1.983	Yes	Yes	658	672	0.530	Yes	Yes
1785	Calibration	TPA Rail Central	TPA_5	Towcester Road (M1 to Lower Road)	NB	ATC	681	610	2.796	Yes	Yes	344	346	0.130	Yes	Yes	450	434	0.744	Yes	Yes
1786	Calibration	TPA Rail Central	TPA_14	Upton Valley Way North (A4500 to Camp Lane)	SB	ATC	264	139	8.776	No	No	261	300	2.323	Yes	Yes	143	117	2.337	Yes	Yes
1787	Calibration	TPA Rail Central	TPA_14	Upton Valley Way North (A4500 to Camp Lane)	NB	ATC	154	188	2.593	Yes	Yes	195	240	3.060	Yes	Yes	361	299	3.397	Yes	Yes
1788	Calibration	TPA Rail Central	TPA_6	Collingtree Road (Towcester Road to M1)	EB	ATC	212	213	0.076	Yes	Yes	74	74	0.075	Yes	Yes	129	158	2.430	Yes	Yes
1789	Calibration	TPA Rail Central	TPA_6	Collingtree Road (Towcester Road to M1)	WB	ATC	73	37	4.883	Yes	Yes	45	40	0.694	Yes	Yes	60	10	8.299	No	Yes
1790	Calibration	TPA Rail Central	TPA_18	Wootton Road (Wooldale Road to Preston Deanery Road	SB	ATC	327	353	1.414	Yes	Yes	98	77	2.212	Yes	Yes	214	182	2.269	Yes	Yes
1791	Calibration	TPA Rail Central	TPA_18	Wootton Road (Wooldale Road to Preston Deanery Road	NB	ATC	255	196	3.979	Yes	Yes	117	130	1.235	Yes	Yes	483	469	0.630	Yes	Yes
1792	Calibration	TPA Rail Central	TPA_17	Road (A508 Northampton Road to M1)	EB	ATC	100	123	2.228	Yes	Yes	27	32	0.911	Yes	Yes	94	137	4.020	Yes	Yes
1793	Calibration	TPA Rail Central	TPA_17	Road (A508 Northampton Road to M1)	WB	ATC	51	50	0.144	Yes	Yes	25	43	3.000	Yes	Yes	62	68	0.731	Yes	Yes
1794	Calibration	TPA Rail Central	TPA_10	Kingsthorpenhall Road (Northampton Road to A508 Northampton	EB	ATC	156	140	1.261	Yes	Yes	96	66	3.308	Yes	Yes	124	138	1.159	Yes	Yes
1795	Calibration	TPA Rail Central	TPA_10	Kingsthorpenhall Road (Northampton Road to A508 Northampton	WB	ATC	208	181	1.985	Yes	Yes	140	138	0.196	Yes	Yes	286	263	1.379	Yes	Yes
1796	Calibration	TPA Rail Central	TPA_11	Towcester Road (A43 to Stoke Road)	NB	ATC	333	263	4.041	Yes	Yes	217	202	1.020	Yes	Yes	303	226	4.773	Yes	Yes
1797	Calibration	TPA Rail Central	TPA_11	Towcester Road (A43 to Stoke Road)	SB	ATC	248	221	1.773	Yes	Yes	170	196	1.894	Yes	Yes	293	266	1.575	Yes	Yes
1798	Calibration	TPA Rail Central	TPA_13	Stoke Road (Knock Lane to Shutlanger Road)	SB	ATC	213	250	2.388	Yes	Yes	48	53	0.782	Yes	Yes	72	54	2.277	Yes	Yes
1799	Calibration	TPA Rail Central	TPA_13	Stoke Road (Knock Lane to Shutlanger Road)	NB	ATC	82	109	2.780	Yes	Yes	60	79	2.181	Yes	Yes	237	230	0.422	Yes	Yes
1800	Calibration	TPA Rail Central	TPA_22	Road (Bridge Lane to Northampton Road)	EB	ATC	154	156	0.166	Yes	Yes	33	35	0.403	Yes	Yes	54	23	5.035	No	Yes
1801	Calibration	TPA Rail Central	TPA_22	Road (Bridge Lane to Northampton Road)	WB	ATC	43	82	4.958	Yes	Yes	35	40	0.837	Yes	Yes	193	166	2.031	Yes	Yes
1802	Calibration	TPA Rail Central	TPA_26	A508 Stratford Road (Rockery Lane to High Street)	SB	ATC	914	749	5.713	No	No	473	418	2.628	Yes	Yes	658	639	0.757	Yes	Yes
1803	Calibration	TPA Rail Central	TPA_26	A508 Stratford Road (Rockery Lane to High Street)	WB	ATC	703	531	6.912	No	No	538	443	4.293	Yes	Yes	811	741	2.535	Yes	Yes
1804	Calibration	TPA Rail Central	TPA_1	Road (A5 to High Street)	EB	ATC	14	10	0.985	Yes	Yes	10	10	0.035	Yes	Yes	17	0	5.703	No	Yes
1805	Calibration	TPA Rail Central	TPA_1	Road (A5 to High Street)	WB	ATC	22	6	4.174	Yes	Yes	13	11	0.430	Yes	Yes	14	10	1.248	Yes	Yes
1806	Calibration	TPA Rail Central	TPA_2	High Street North (Eastcote Road to Tiffield Road)	NB	ATC	25	138	12.565	No	No	19	17	0.452	Yes	Yes	26	3	6.185	No	Yes
1807	Calibration	TPA Rail Central	TPA_2	High Street North (Eastcote Road to Tiffield Road)	SB	ATC	35	32	0.453	Yes	Yes	12	12	0.038	Yes	Yes	17	6	3.034	Yes	Yes
1808	Calibration	TPA Rail Central	TPA_3	St Johns Road (High Street South to A43)	EB	ATC	11	9	0.729	Yes	Yes	11	10	0.157	Yes	Yes	19	4	4.470	Yes	Yes
1809	Calibration	TPA Rail Central	TPA_3	St Johns Road (High Street South to A43)	WB	ATC	13	86	10.346	No	Yes	8	18	2.625	Yes	Yes	9	6	1.151	Yes	Yes
1810	Calibration	TPA Rail Central	TPA_12	Knock Lane (Stoke Road to Blisworth Road	EB	ATC	62	65	0.418	Yes	Yes	45	54	1.279	Yes	Yes	91	117	2.533	Yes	Yes
1811	Calibration	TPA Rail Central	TPA_12	Knock Lane (Stoke Road to Blisworth Road	WB	ATC	69	55	1.842	Yes	Yes	34	24	1.959	Yes	Yes	44	37	1.061	Yes	Yes
1814	Validation	TPA Rail Central	TPA_A	A5 Heyford Ln South of Church St	NB	ANPR	410	423	0.655	Yes	Yes	368	328	2.148	Yes	Yes	635	547	3.629	Yes	Yes
1815	Validation	TPA Rail Central	TPA_A	A5 Heyford Ln South of Church St	SB	ANPR	574	536	1.612	Yes	Yes	313	320	0.376	Yes	Yes	432	431	0.063	Yes	Yes
1816	Validation	TPA Rail Central	TPA_B	M1 West of Jctn 16	EB	ANPR	4065	3776	4.617	Yes	Yes	3142	3301	2.806	Yes	Yes	4224	3819	6.392	No	No
1817	Validation	TPA Rail Central	TPA_B	M1 West of Jctn 16	WB	ANPR	3465	3080	6.730	No	Yes	4216	3718	7.914	No	No	4171	3612	8.965	No	No
1818	Validation	TPA Rail Central	TPA_C	Road (A5 to Great Lane)	NB	ANPR	87	75	1.387	Yes	Yes	42	53	1.554	Yes	Yes	47	37	1.600	Yes	Yes
1819	Validation	TPA Rail Central	TPA_C	Road (A5 to Great Lane)	SB	ANPR	70	108	4.002	Yes	Yes	39	50	1.660	Yes	Yes	89	113	2.351	Yes	Yes
1820	Validation	TPA Rail Central	TPA_D	Sandy Ln South of A4500	NB	ANPR	486	549	2.775	Yes	Yes	200	256	3.699	Yes	Yes	351	382	1.615	Yes	Yes
1821	Validation	TPA Rail Central	TPA_D	Sandy Ln South of A4500	SB	ANPR	401	418	0.830	Yes	Yes	241	350	6.344	No	No	443	497	2.502	Yes	Yes
1822	Validation	TPA Rail Central	TPA_E	A5 South of Mill Ln	NB	ANPR	388	398	0.507	Yes	Yes	377	343	1.784	Yes	Yes	696	652	1.700	Yes	Yes
1823	Validation	TPA Rail Central	TPA_E	A5 South of Mill Ln	SB	ANPR	661	801	5.189	No	No	333	343	0.525	Yes	Yes	440	421	0.927	Yes	Yes
1824	Validation	TPA Rail Central	TPA_F	Banbury Ln west of Litchborough Rd	EB	ANPR	56	24	5.067	No	Yes	34	10	5.006	No	Yes	95	68	2.958	Yes	Yes
1825	Validation	TPA Rail Central	TPA_F	Banbury Ln west of Litchborough Rd	WB	ANPR	96	108	1.163	Yes	Yes	40	17	4.398	Yes	Yes	75	100	2.645	Yes	Yes
1826	Validation	TPA Rail Central	TPA_G	Banbury Lane (Southwest of Bugbrooke Road junction)	NB	ANPR	155	151	0.346	Yes	Yes	68	81	1.519	Yes	Yes	138	83	5.249	No	Yes
1827	Validation	TPA Rail Central	TPA_G	Banbury Lane (Southwest of Bugbrooke Road junction)	SB	ANPR	118	99	1.872	Yes	Yes	71	79	0.878	Yes	Yes	123	98	2.366	Yes	Yes
1828	Validation	TPA Rail Central	TPA_H	A5123	NB	ANPR	927	1218	8.898	No	No	741	891	5.265	No	No	1329	1305	0.672	Yes	Yes
1829	Validation	TPA Rail Central	TPA_H	A5123	SB	ANPR	1339	1469	3.477	Yes	Yes	716	855	4.953	Yes	No	972	1132	4.930	Yes	No
1832	Validation	TPA Rail Central	TPA_J	Road (A5 to High Street)	NB	ANPR	19	10	2.255	Yes	Yes	10	10	0.054	Yes	Yes	14	0	5.112	No	Yes
1833	Validation	TPA Rail Central	TPA_J	Road (A5 to High Street)	SB	ANPR	13	6	2.229	Yes	Yes	8	11	1.042	Yes	Yes	16	10	1.756	Yes	Yes
1834	Validation	TPA Rail Central	TPA_K	Towcester Road (A43 to Stoke Road)	NB	ANPR	224	263	2.519	Yes	Yes	139	202	4.858	Yes	Yes	257	226	2.017	Yes	Yes
1835	Validation	TPA Rail Central	TPA_K	Towcester Road (A43 to Stoke Road)	SB	ANPR	300	221	4.898	Yes	Yes	168	196	2.064	Yes	Yes	269	266	0.154	Yes	Yes
1838	Validation	TPA Rail Central	TPA_M	M1 East of Jctn 15A	EB	ANPR	4249	4237	0.183	Yes	Yes	3262	3260	0.041	Yes	Yes	4156	4042	1.781	Yes	Yes
1839	Validation	TPA Rail Central	TPA_M	M1 East of Jctn 15A	WB	ANPR	3508	3293	3.682	Yes	Yes	3816	3572	4.009	Yes	Yes	4211	4117	1.455	Yes	Yes
1840	Validation	TPA Rail Central	TPA_N	Collingtree Road (Towcester Road to M1)	EB	ANPR	197	213	1.119	Yes	Yes	53	74	2.680	Yes	Yes	110	158	4.175	Yes	Yes
1841	Validation	TPA Rail Central	TPA_N	Collingtree Road (Towcester Road to M1)	WB	ANPR	77	37	5.339	No	Yes	22	40	3.246	Yes	Yes	40	10	5.890	No	Yes
1842	Validation	TPA Rail Central	TPA_O	Knock Lane (Stoke Road to Blisworth Road	EB	ANPR	58	65	0.935	Yes	Yes	29	54	3.846	Yes	Yes	92	117	2.428	Yes	Yes
1843	Validation	TPA Rail Central	TPA_O	Knock Lane (Stoke Road to Blisworth Road	WB	ANPR	63	55	1.091	Yes	Yes	22	24	0.333	Yes	Yes	43	37	0.963	Yes	Yes
1846	Validation	TPA Rail Central	TPA_Q	Stoke Road (Knock Lane to Shutlanger Road)	NB	ANPR	76	109	3.428	Yes	Yes	42	79	4.704	Yes	Yes	215	230	1.032	Yes	Yes
1847	Validation	TPA Rail Central	TPA_Q	Stoke Road (Knock Lane to Shutlanger Road)	SB	ANPR	195	250	3.658	Yes	Yes	37	53	2.417	Yes	Yes	71	54	2.175	Yes	Yes
1848	Validation	TPA Rail Central	TPA_R	A508 Stratford Road (Rockery Lane to High Street)	NB	ANPR	617	531	3.572	Yes	Yes	477	443	1.578	Yes	Yes	747	741	0.229	Yes	Yes
1849	Validation	TPA Rail Central	TPA_R	A508 Stratford Road (Rockery Lane to High Street)	SB	ANPR	804	749	1.963	Yes	Yes	405	418	0.633	Yes	Yes	637	639	0.086	Yes	Yes
1852	Validation	TPA Rail Central	TPA_V	A43 North of Silverstone Bypass	NB	ANPR	1079	1317	6.870	No	No	1023	1479	12.893	No	No	1676	1520	3.902	Yes	Yes
1853	Validation	TPA Rail Central	TPA_V	A43 North of Silverstone Bypass	SB	ANPR	1473	1629	3.966	Yes	Yes	960	1131	5.279	No	No	1222	1224	0.062	Yes	Yes
1854	Validation	TPA Rail Central	TPA_W	A5 West of Pury Road	EB	ANPR	813	847	1.179	Yes	Yes	426	463	1.776	Yes	Yes	646	721	2.874	Yes	Yes
1855	Validation	TPA Rail Central	TPA_W	A5 West of Pury Road	WB	ANPR	596	714	4.628	Yes	No	497	441	2.568	Yes	Yes	1064	1186	3.629	Yes	Yes
1856	Validation	TPA Rail Central	TPA_X	Kingsthorpenhall Road (Northampton Road to A508 Northampton	EB	ANPR	155	140	1.220	Yes	Yes	96	66	3.358	Yes	Yes	123	138	1.294	Yes	Yes
1857	Validation	TPA Rail Central	TPA_X	Kingsthorpenhall Road (Northampton Road to A508 Northampton	WB	ANPR	200	181	1.404	Yes	Yes	116	138	1.941	Yes	Yes	236	263	1.711	Yes	Yes
1858	Validation	TPA Rail Central	TPA_Y	A5088 Northampton Rd	NB	ANPR	758	639	4.515	Yes	No	620	617	0.115	Yes	Yes	787	655	4.922	Yes	No
1859	Validation	TPA Rail Central	TPA_Y	A5088 Northampton Rd	SB	ANPR	859	914	1.846	Yes	Yes	529	522	0.318	Yes	Yes	867	772	3.306	Yes	Yes
1860	Validation	TPA Rail Central	TPA_Z	Unnamed Rd North of Milton Road	NB	ANPR	21	7	3.812	Yes	Yes	5	9	1.472	Yes	Yes	11	2	3.767	Yes	Yes
1861	Validation	TPA Rail Central	TPA_Z	Unnamed Rd North of Milton Road	SB	ANPR	18	1	5.692	No	Yes	9	6	1.022	Yes	Yes	15	15	0.038	Yes	Yes
1862	Validation	TPA Rail Central	TPA_AA	A45 West of Jctn 16	EB	ANPR	860	1043	5.947	No	No	479	585	4.600	Yes	No	841	795	1.605	Yes	Yes
1863	Validation	TPA Rail Central	TPA_AA	A45 West of Jctn 16	WB	ANPR	723	762	1.445	Yes	Yes	636	594	1.710	Yes	Yes	906	977	2.309	Yes	Yes
1864	Validation	TPA Rail Central	TPA_AB	A4500 West of Northampton Road	EB	ANPR	910	889	0.708	Yes	Yes	530	632	4.248	Yes	No	795	794	0.051	Yes	Yes
1865	Validation	TPA Rail Central	TPA_AB	A4500 West of Northampton Road	WB	ANPR	652	649	0.132	Yes	Yes	573	560	0.553	Yes	Yes	923	738	6.419	No	No
1866	Validation	TPA Rail Central	TPA_AC	A45 London Road North of M1 Jctn 15	NB	ANPR	2774	2565	4.043	Yes	Yes	1813	1548	6.471	No	Yes	2717	2454	5.171	No	Yes
1867	Validation	TPA Rail Central	TPA_AC	A45 London Road North of M1 Jctn 15	SB	ANPR	2443	2404	0.793	Yes	Yes	1846	1805	0.956	Yes	Yes	2581	2586	0.091	Yes	Yes

ANPR Link Flow Data
(Comparison to ATC/TRADS Data)

Date Modified: 21/11/2016

Drawn By: ukjjd001

Key

ATC and TRADS Counts

Calibration

Validation

Whilton
Little Brington
Althorp
Harlestone
Kingsthorpe
New Duston
Brockhall
Nobottle
Harpole
Duston
Flore
Upper Heyford
Church Stowe
Nether Heyford
Bugbrooke
Far Cotton
Great Houghton
Hardingstone
Wootton
Preston Deanery
Milton Malsor
Grange Park
Gayton
Pattishall
Grimscote
Eastcote
Cold Higham
Astcote
Blisworth
Courteenhall
Tiffield
Roade
Piddington
Hartwell
Duncote
Blakesley
Shutlanger
Hulcote
Towcester
Stoke Bruerne
Ashton
Greens Norton
Bradden
Towcester East Services
Grafton Regis
Long Street
Alderton
Slapton
Wood Burcote
Abthorpe
Wappenham
Paulerspury
Hanslope
Pury End
Yardley Gobion
Silverstone
Whittlebury
WHITTLEWOOD FOREST
Syresham
Biddlesden
Lillingstone Lovell
Lillingstone Dayrell
Deanshanger
Passenham
Wicken

A45 A43 A5 A413 A508 M1

193 194 1230 1229 834 835 848 849 1787 1786 101 102 63 64 65 66 75 76 181 182 185 186 51 52 129 130 1241 1256 1250 1249 1768 1769 1770 1771 1772 1773 1775 1260 108 183 184 1236 1237 1233 105 106 1790 1791 1785 207 1264 1265 1788 1789 1266 1268 1778 1779 1318 1317 1783 1782 1781 1792 1793 1794 1795 1270 1754 1755 1762 1763 1764 1765 1766 1767 1806 1807 1796 1797 1804 1805 1808 1809 1810 1811 1798 1799 1803 1802 1800 1801 1269 1590 1589 1758 1759 1760 1761 1320 1319 710 711 1248 1247 157 158

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 1 2 3 4 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

RAIL CENTRAL
ATC AND TRADS
COUNT ID

FIGURE No:

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central_MVR\Calibration and Validation Links - ATC and TRADS.mxd

Date Modified: 21/11/2016

Drawn By: ukjjd001

Key

ANPR Counts

Validation

1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867

Long Buckby
Long Buckby Wharf
Great Brington
Whilton
Little Brington
Brockhall
Nobottle
Harpole
Flore
Upper Heyford
Church Stowe
Nether Heyford
Upper Stowe
Bugbrooke
Services
Rothersthorpe
Grimscote
Pattishall
Eastcote
Astcote
Tiffield
Duncote
Blakesley
Kislingbury
Chapel Brampton
Church Brampton
Althorp
Harlestone
New Duston
Duston
Kingsthorpe
NORTHAMPTON
Far Cotton
Boughton
Pitsford
Moulton
Great Houghton
Hardingstone
Wootton
Milton Malsor
Preston Deanery
Grange Park
Piddington
Courteenhall
Blisworth
Roade
Hartwell
Gayton
Hulcote
Towcester
Towcester East Services
Stoke Bruerne
Ashton
Long Street
Grafton Regis
Alderton
Wood Burcote
Paulerspury
Hanslope
Abthorpe
Wappenham
Pury End
Yardley Gobion
Silverstone
Whittlebury
Syresham
Woodend
Greens Norton
Bradden
Slapton
WHITTLEWOOD FOREST
Shutlanger
Old Stratford
A428
A43
A4500
A45
A413
A508
M1

Contains Ordnance Survey data © Crown copyright and database right 2016.

0 1 2 3 4 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

RAIL CENTRAL
ANPR
COUNT ID

FIGURE No:

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central\LMVR\Calibration and Validation Links - ANPR.mxd

Status	Site Location	Direction	ANPR Site	AM Peak				Interpeak				PM Peak			
				ANPR Observed	ATC/TRADS Observed	ATC/TRADS - ANPR	% Difference	ANPR Observed	ATC/TRADS Observed	ATC/TRADS - ANPR	% Difference	ANPR Observed	ATC/TRADS Observed	ATC/TRADS - ANPR	% Difference
Validation	*A5 Heyford Ln South of Church St*	*NB*	A	410	463	53	-11%	368	346	-22	6%	635	560	-75	13%
Validation	*A5 Heyford Ln South of Church St*	*SB*	A	574	543	-31	6%	313	313	0	0%	432	475	43	-9%
Validation	*M1 West of Jctn 16*	*EB*	B	4065				3142				4224			
Validation	*M1 West of Jctn 16*	*WB*	B	3465				4216				4171			
Validation	*Road (A5 to Great Lane)*	*NB*	C	87	99	12	-12%	42	50	8	-17%	47	47	0	-1%
Validation	*Road (A5 to Great Lane)*	*SB*	C	70	88	18	-20%	39	47	8	-18%	89	95	6	-6%
Validation	*Sandy Ln South of A4500*	*NB*	D	486				200				351			
Validation	*Sandy Ln South of A4500*	*SB*	D	401				241				443			
Validation	*A5 South of Mill Ln*	*NB*	E	388				377				696			
Validation	*A5 South of Mill Ln*	*SB*	E	661				333				440			
Validation	*Banbury Ln west of Litchborough Rd*	*EB*	F	56				34				94			
Validation	*Banbury Ln west of Litchborough Rd*	*WB*	F	96				40				75			
Validation	*Banbury Lane (Southwest of Bugbrooke Road junction)*	*NB*	G	155	161	6	-4%	68	84	16	-19%	138	148	10	-7%
Validation	*Banbury Lane (Southwest of Bugbrooke Road junction)*	*SB*	G	118	130	12	-10%	71	84	13	-15%	123	131	8	-6%
Validation	*A5123*	*NB*	H	927				741				1329			
Validation	*A5123*	*SB*	H	1339	1339	0	0%	716	637	-79	12%	972	924	-48	5%
Exclude	*A43 North of Gayton Rd*	*NB*	I	1355	1276	-79	6%	1074	1006	-69	7%	2188	1476	-712	48%
Exclude	*A43 North of Gayton Rd*	*SB*	I	1746	1544	-202	13%	1012	937	-75	8%	1330	1262	-68	5%
Validation	*Road (A5 to High Street)*	*NB*	J	19	14	-5	38%	10	10	0	-3%	13	17	4	-24%
Validation	*Road (A5 to High Street)*	*SB*	J	13	22	9	-40%	8	13	5	-37%	16	14	-2	14%
Validation	*Towcester Road (A43 to Stoke Road)*	*NB*	K	224	333	109	-33%	139	217	78	-36%	257	303	46	-15%
Validation	*Towcester Road (A43 to Stoke Road)*	*SB*	K	300	248	-52	21%	168	170	2	-1%	269	293	24	-8%
Exclude	*Towcester Road (M1 to Lower Road)*	*NB*	L	367	681	314	-46%	263	344	81	-23%	596	450	-146	32%
Exclude	*Towcester Road (M1 to Lower Road)*	*SB*	L	629	398	-231	58%	262	307	45	-15%	405	658	253	-38%
Validation	*M1 East of Jctn 15A*	*EB*	M	4249	4189	-60	1%	3262	3265	3	0%	4156	4136	-20	0%
Validation	*M1 East of Jctn 15A*	*WB*	M	3508	3492	-16	0%	3816	3474	-342	10%	4211	4402	191	-4%
Validation	*Collingtree Road (Towcester Road to M1)*	*EB*	N	197	212	15	-7%	53	74	21	-28%	110	129	19	-15%
Validation	*Collingtree Road (Towcester Road to M1)*	*WB*	N	77	73	-4	6%	22	45	23	-51%	40	60	20	-33%
Validation	*Knock Lane (Stoke Road to Blisworth Road*	*EB*	O	58	62	4	-6%	29	45	16	-35%	91	91	0	0%
Validation	*Knock Lane (Stoke Road to Blisworth Road*	*WB*	O	63	69	6	-9%	22	34	12	-36%	43	44	1	-1%
Exclude	*M1 South of Jctn 15*	*EB*	P	4319	3900	-419	11%	3281	3141	-140	4%	3975	3836	-139	4%
Exclude	*M1 South of Jctn 15*	*WB*	P	3165	3361	196	-6%	3838	3364	-474	14%	4176	4184	8	0%
Validation	*Stoke Road (Knock Lane to Shutlanger Road)*	*NB*	Q	76	82	6	-7%	42	60	18	-30%	215	237	22	-9%
Validation	*Stoke Road (Knock Lane to Shutlanger Road)*	*SB*	Q	195	213	18	-9%	37	48	11	-22%	71	72	1	-1%
Validation	*A508 Stratford Road (Rockery Lane to High Street)*	*NB*	R	617	703	86	-12%	477	538	61	-11%	747	811	64	-8%
Validation	*A508 Stratford Road (Rockery Lane to High Street)*	*SB*	R	804	914	110	-12%	405	473	68	-14%	637	658	21	-3%
Exclude	*Road Southwest of Showsley Road/Main Road*	*NB*	U	89	133	44	-33%	79	63	-16	25%	161	49	-112	229%
Exclude	*Road Southwest of Showsley Road/Main Road*	*SB*	U	134	93	-41	45%	47	84	37	-44%	36	182	146	-80%
Validation	*A43 North of Silverstone Bypass*	*NB*	V	1079				1023				1676			
Validation	*A43 North of Silverstone Bypass*	*SB*	V	1473				960				1222			
Validation	*A5 West of Pury Road*	*EB*	W	813				426				646			
Validation	*A5 West of Pury Road*	*WB*	W	596				497				1064			
Validation	*Courteenhall Road (Northampton Road to A508 Northampton Road)*	*EB*	X	155	156	1	0%	96	96	0	1%	123	124	1	-1%
Validation	*Courteenhall Road (Northampton Road to A508 Northampton Road)*	*WB*	X	200	208	8	-4%	116	140	24	-17%	236	286	50	-17%
Validation	*A5088 Northampton Rd*	*NB*	Y	758				620				787			
Validation	*A5088 Northampton Rd*	*SB*	Y	859				529				867			
Validation	*Unnamed Rd North of Milton Road*	*NB*	Z	21				4				10			
Validation	*Unnamed Rd North of Milton Road*	*SB*	Z	18				9				15			
Validation	*A45 West of Jctn 16*	*EB*	AA	860				479				841			
Validation	*A45 West of Jctn 16*	*WB*	AA	723				636				906			
Validation	*A4500 West of Northampton Road*	*EB*	AB	910	858	-52	6%	530	599	69	-12%	795	776	-19	2%
Validation	*A4500 West of Northampton Road*	*WB*	AB	652	723	71	-10%	573	618	45	-7%	923	713	-211	30%
Validation	*A45 London Road North of M1 Jctn 15*	*NB*	AC	2774	2688	-86	3%	1813	1491	-322	22%	2717	2291	-426	19%
Validation	*A45 London Road North of M1 Jctn 15*	*SB*	AC	2443				1846				2581			

Junction Turning Count Calibration (M1 Junction 15A and M1 Junction 15)

JTC 1

Model Map

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	21265	21266	21266	21265	*Swan valley Way*
B	5266	21266	21266	5266	*A43 (E)*
C	82001	21266	21266	82001	*Unamed Road*
D	82003	21266	21266	82003	*A43 (W)*
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	16	
GEH < 5.0	10	63%
GEH < 7.5	15	94%
GEH < 10.0	16	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	43	75	29				147	
	B	152	0	582	31				765	
	C	11	65	0	0				76	
	D	34	428	7	0				469	*507*
	E									
	F									
	G									
	TOTAL	197	536	664	60				1457	
	ATC			*785*						

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	100	151	4				254
	B	136	0	584	9				729
	C	50	41	0	0				92
	D	0	546	0	0				546
	E								
	F								
	G								
	TOTAL	187	687	734	13				1621

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	6.748	7.119	6.302				7.572
	B	1.309	0.000	0.070	4.836				1.307
	C	7.119	3.262	0.000	0.000				1.714
	D	8.246	5.331	3.742	0.000				3.402
	E								
	F								
	G								
		0.740	6.104	2.659	7.809				4.177

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	57	76	-25				107
	B	-16	0	2	-22				-36
	C	39	-24	0	0				16
	D	-34	118	-7	0				77
	E								
	F								
	G								
	TOTAL	-10	151	70	-47				164

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		133%	101%	-88%				73%
	B	-10%		0%	-70%				-5%
	C	359%	-37%						21%
	D	-100%	27%	-100%					16%
	E								
	F								
	G								
		-5%	28%	11%	-79%				11%

PM Peak

Include? Yes

Total Turns	16	
GEH < 5.0	9	56%
GEH < 7.5	14	88%
GEH < 10.0	16	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	79	83	18				180	
	B	112	0	524	21				657	
	C	3	52	0	0				55	
	D	16	433	14	0				463	
	E									
	F									
	G									
	TOTAL	131	564	621	39				1355	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	12	151	1				164
	B	179	0	556	1				736
	C	5	74	0	0				79
	D	86	532	0	0				618
	E								
	F								
	G								
	TOTAL	271	617	707	1				1596

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	9.890	6.290	5.653				1.223
	B	5.591	0.000	1.360	6.213				2.982
	C	1.077	2.727	0.000	0.000				2.908
	D	9.802	4.486	5.292	0.000				6.648
	E								
	F								
	G								
		9.856	2.195	3.324	8.400				6.273

ABSOLUTE DIFFERENCE

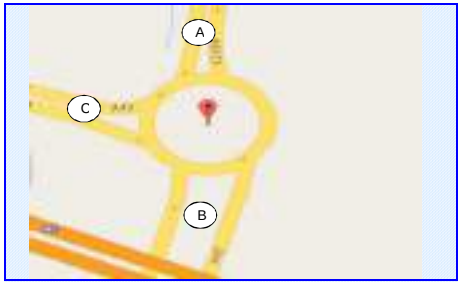
All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	-67	68	-17				-16
	B	67	0	32	-20				79
	C	2	22	0	0				24
	D	70	99	-14	0				155
	E								
	F								
	G								
	TOTAL	140	53	86	-38				241

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		-85%	82%	-96%				-9%
	B	60%		6%	-97%				12%
	C	73%	42%						43%
	D	437%	23%	-100%					33%
	E								
	F								
	G								
		107%	9%	14%	-97%				18%

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	2102	3246	3246	2102	*A5123*
B	7246	3246	3246	7246	*A43 (S)*
C	5266	3246	3246	5266	*A43 (W)*
D					
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	7	78%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	1025	321					1346	*1339*
	B	916	0	444					1360	
	C	97	439	0					536	
	D									
	E									
	F									
	G									
	TOTAL	1013	1464	765					3242	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	1149	321					1469
	B	1090	0	409					1499
	C	128	559	0					687
	D								
	E								
	F								
	G								
	TOTAL	1218	1707	729					3655

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	3.751	0.021					3.286
	B	5.498	0.000	1.710					3.672
	C	2.951	5.358	0.000					6.106
	D								
	E								
	F								
	G								
		6.151	6.111	1.305					7.035

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	124	0					123
	B	174	0	-35					139
	C	31	120	0					151
	D								
	E								
	F								
	G								
	TOTAL	205	243	-36					413

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		12%	0%					9%
	B	19%		-8%					10%
	C	32%	27%						28%
	D								
	E								
	F								
	G								
		20%	17%	-5%					13%

PM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	8	89%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	714	236					950	
	B	1345	0	421					1766	
	C	157	407	0					564	
	D									
	E									
	F									
	G									
	TOTAL	1502	1121	657					3280	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	815	317					1132
	B	1105	0	417					1523
	C	198	420	0					618
	D								
	E								
	F								
	G								
	TOTAL	1303	1235	734					3273

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	3.652	4.865					5.637
	B	6.842	0.000	0.173					5.993
	C	3.062	0.642	0.000					2.215
	D								
	E								
	F								
	G								
		5.306	3.323	2.933					0.128

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	101	81					182
	B	-240	0	-4					-243
	C	41	13	0					54
	D								
	E								
	F								
	G								
	TOTAL	-199	114	77					-7

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		14%	34%					19%
	B	-18%		-1%					-14%
	C	26%	3%						10%
	D								
	E								
	F								
	G								
		-13%	10%	12%					0%

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	7246	4246	4246	7246	*A43 (N)*
B	2309	4246	4246	2309	*A43 (S)*
C	24120	4246	4246	24120	*A43 (W)*
D					
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	7	78%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	1294	170					1464	
	B	1103	0	304					1407	*1276*
	C	257	265	0					522	
	D									
	E									
	F									
	G									
	TOTAL	1360	1559	474					3393	
	ATC		*1544*							

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	1484	225					1709
	B	1208	0	317					1525
	C	291	166	0					457
	D								
	E								
	F								
	G								
	TOTAL	1499	1650	542					3691

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	5.105	3.882					6.146
	B	3.083	0.000	0.748					3.081
	C	2.077	6.754	0.000					2.926
	D								
	E								
	F								
	G								
		3.681	2.276	3.004					5.008

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	190	55					245
	B	105	0	13					118
	C	34	-99	0					-65
	D								
	E								
	F								
	G								
	TOTAL	139	91	68					298

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		15%	32%					17%
	B	9%		4%					8%
	C	13%	-37%						-12%
	D								
	E								
	F								
	G								
		10%	6%	14%					9%

PM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	8	89%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle		To Arm								
		A	B	C	D	E	F	G	TOTAL	ATC
From Arm	A	0	860	261					1121	
	B	1393	0	222					1615	
	C	373	254	0					627	
	D									
	E									
	F									
	G									
	TOTAL	1766	1114	483					3363	
	ATC									

MODELLED

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	972	265					1237
	B	1271	0	285					1556
	C	292	359	0					651
	D								
	E								
	F								
	G								
	TOTAL	1563	1331	550					3444

GEH

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A	0.000	3.698	0.240					3.373
	B	3.353	0.000	3.980					1.481
	C	4.445	5.993	0.000					0.945
	D								
	E								
	F								
	G								
		4.986	6.202	2.960					1.383

ABSOLUTE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	TOTAL
From Arm	A	0	112	4					116
	B	-122	0	63					-59
	C	-81	105	0					24
	D								
	E								
	F								
	G								
	TOTAL	-203	217	67					81

PERCENTAGE DIFFERENCE

All Vehicle		To Arm							
		A	B	C	D	E	F	G	
From Arm	A		13%	1%					10%
	B	-9%		29%					-4%
	C	-22%	41%						4%
	D								
	E								
	F								
	G								
		-12%	19%	14%					2%

Junction Turning Flows

Junction: M1 Junction 15



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	27014	27015	3104	27014	*Saxon Avenue*
B	9116	9221	27015	9107	*J15 On Slip Eastbou*
C	1252	9117	9221	1252	*Unnamed Road*
D	9106	9220	9117	9118	*J15 Off Slip Eastbou*
E	3355	3104	9220	2104	*A45 London Road*
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	25	
GEH < 5.0	22	88%
GEH < 7.5	23	92%
GEH < 10.0	25	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	77	26	32	155			290	
B	65	0	31	0	870			966	*932*
C	28	60	0	104	352			544	*703*
D	133	0	222	0	1069			1424	*1377*
E	76	939	555	661	0			2231	*2443*
F									
G									
TOTAL	302	1076	834	797	2446			5455	
ATC		*924*	*914*	*966*					

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	51	18	39	185			293
B	8	0	20	0	943			971
C	23	91	0	214	310			638
D	157	0	241	0	1254			1652
E	113	1055	657	571	7			2403
F								
G								
TOTAL	301	1197	936	824	2699			5957

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	3.250	1.706	1.175	2.301			0.176
B	9.435	0.000	2.178	0.000	2.425			0.161
C	0.990	3.568	0.000	8.724	2.309			3.867
D	1.993	0.000	1.249	0.000	5.428			5.814
E	3.806	3.674	4.143	3.626	3.742			3.573
F								
G								
	0.058	3.589	3.429	0.948	4.988			6.646

ABSOLUTE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	-26	-8	7	30			3
B	-57	0	-11	0	73			5
C	-5	31	0	110	-42			94
D	24	0	19	0	185			228
E	37	116	102	-90	7			172
F								
G								
TOTAL	-1	121	102	27	253			502

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		-34%	-31%	22%	19%			1%
B	-88%		-35%		8%			1%
C	-18%	52%		106%	-12%			17%
D	18%		9%		17%			16%
E	49%	12%	18%	-14%				8%
F								
G								
	0%	11%	12%	3%	10%			9%

PM Peak

Include? Yes

Total Turns	25	
GEH < 5.0	23	92%
GEH < 7.5	24	96%
GEH < 10.0	25	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	38	21	26	197			282	
B	63	0	38	0	909			1010	
C	33	38	0	235	501			807	
D	65	0	147	0	958			1170	
E	98	885	760	873	0			2616	
F									
G									
TOTAL	259	961	966	1134	2565			5885	
ATC									

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	9	8	22	137			176
B	30	0	45	0	994			1069
C	10	34	0	192	419			655
D	67	0	177	0	823			1067
E	108	886	656	888	47			2585
F								
G								
TOTAL	215	929	886	1102	2420			5552

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	5.982	3.414	0.816	4.643			7.005
B	4.839	0.000	1.087	0.000	2.756			1.830
C	4.960	0.667	0.000	2.943	3.823			5.622
D	0.246	0.000	2.357	0.000	4.524			3.080
E	0.985	0.034	3.909	0.506	9.695			0.608
F								
G								
	2.858	1.041	2.629	0.957	2.904			4.404

ABSOLUTE DIFFERENCE

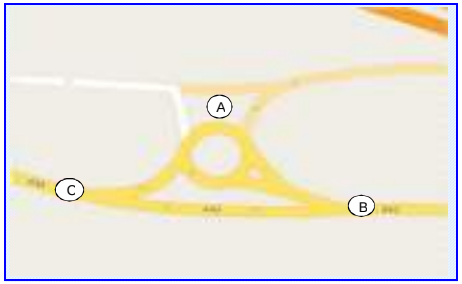
All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	-29	-13	-4	-60			-106
B	-33	0	7	0	85			59
C	-23	-4	0	-43	-82			-152
D	2	0	30	0	-135			-103
E	10	1	-104	15	47			-31
F								
G								
TOTAL	-44	-32	-80	-32	-145			-333

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		-76%	-62%	-15%	-30%			-38%
B	-52%		18%		9%			6%
C	-70%	-11%		-18%	-16%			-19%
D	3%		20%		-14%			-9%
E	10%	0%	-14%	2%				-1%
F								
G								
	-17%	-3%	-8%	-3%	-6%			-6%

Junction Turning Flows

Junction: M1 Junction 15A



Survey Date:

Status: Calibration

Arm Description

Arm	Inbound		Outbound		Description
	A-Node	B-Node	A-Node	B-Node	
A	82005	82006	82006	82007	*M1 WB Off Slip*
B	4246	24120	24120	4246	*A43 (E)*
C	82004	24121	24121	82004	*A43 (W)*
D					
E					
F					
G					

Growth Factors

Vehicle	Growth
Car	*1*
LGV	*1*
HGV	*1*

AM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	9	100%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	486	0					486	
B	0	0	439					439	
C	0	0	0					0	
D									
E									
F									
G									
TOTAL	0	486	439					925	
ATC									

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	456	0					456
B	2	0	538					540
C	0	0	0					0
D								
E								
F								
G								
TOTAL	2	456	538					996

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	1.382	0.000					1.382
B	2.000	0.000	4.479					4.565
C	0.000	0.000	0.000					0.000
D								
E								
F								
G								
	2.000	1.382	4.479					2.291

ABSOLUTE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	-30	0					-30
B	2	0	99					101
C	0	0	0					0
D								
E								
F								
G								
TOTAL	2	-30	99					71

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		-6%						-6%
B			23%					23%
C								
D								
E								
F								
G								
		-6%	23%					8%

PM Peak

Include? Yes

Total Turns	9	
GEH < 5.0	9	100%
GEH < 7.5	9	100%
GEH < 10.0	9	100%

OBSERVED

All Vehicle	To Arm								
From Arm	A	B	C	D	E	F	G	TOTAL	ATC
A	0	596	0					596	
B	0	0	450					450	
C	0	0	0					0	
D									
E									
F									
G									
TOTAL	0	596	450					1046	
ATC									

MODELLED

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	651	0					651
B	11	0	542					553
C	0	0	0					0
D								
E								
F								
G								
TOTAL	11	651	542					1204

GEH

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A	0.000	2.203	0.000					2.203
B	4.690	0.000	4.131					4.599
C	0.000	0.000	0.000					0.000
D								
E								
F								
G								
	4.690	2.203	4.131					4.711

ABSOLUTE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	TOTAL
A	0	55	0					55
B	11	0	92					103
C	0	0	0					0
D								
E								
F								
G								
TOTAL	11	55	92					158

PERCENTAGE DIFFERENCE

All Vehicle	To Arm							
From Arm	A	B	C	D	E	F	G	
A		9%						9%
B			20%					23%
C								
D								
E								
F								
G								
		9%	20%					15%

Journey Time Route Validation (Whole of the NSTM)

Date Modified: 22/11/2016

Drawn By: ukjjd001

Key

Journey Time

Route ID

4	12	23	29	34	38
7	16	24	30	35	39
10	17	26	31	36	
	18	27	33	37	

Contains Ordnance Survey data © Crown copyright and database right 2016.

0 1.5 3 4.5 6 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM JOURNEY TIME ROUTES

FIGURE No:

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\2015 Full Model Update\Journey Time Routes\NSTM Journey Time Routes.mxd

Date Modified: 22/11/2016

Drawn By: ukjjd001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\2015 Full Model Update\Journey Time Routes\NSTM Journey Time Routes - Rail Central.mxd

Key

Journey Time Route ID

- RC 1
- RC 2
- RC 3
- RC 4
- RC 5
- RC 6
- RC 7
- RC 8

Holdenby
Pitsford
Moulton
Long Buckby
Chapel Brampton
Boughton
Buckby Wharf
Church Brampton
A43
Great Brington
A428
Althorp
Harlestone
Whilton
Little Brington
Kingsthorpe
New Duston
NORTHAMPTON
Brockhall
Nobottle
A4500
Duston
Harpole
Flore
A45
A4500
Little Hougl
Upper Heyford
Kislingbury
Far Cotton
Great Houghton
Brafield-on-the-Green
Church Stowe
Nether Heyford
Bugbrooke
Hardingstone
Wootton
Hackleton
Rothersthorpe
Milton Malsor
Collingtree
Preston Deanery
Gayton
Pattishall
Grimscote
Eastcote
Grange Park
Piddington
Cold Higham
Astcote
Blisworth
Tiffield
Roade
Salcey Forest
Duncote
Blakesley
Hartwell
Shutlanger
Hulcote
Towcester
Stoke Bruerne
Ashton
Greens Norton
Bradden
Towcester East Services
Grafton Regis
Long Street
Slapton
Alderton
A5
Wood Burcote
Abthorpe
Paulerspury
A508
Hanslope
Wappenham
A413
Pury End
Yardley Gobion
Silverstone
Whittlebury
Potterspury
Syresham
WHITTLEWOOD FOREST
Old Stratford
A413
Deanshanger
Lillingstone

RC 1 RC 2 RC 3 RC 4 RC 5 RC 6 RC 7 RC 8

Contains Ordnance Survey data © Crown copyright and database right 2016.

0 1 2 3 4 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM JOURNEY TIME ROUTES

FIGURE No:

JT Summary

Model Map

	AM Peak					Interpeak					PM Peak				
Routes	58					58					58				
Passed	52	90%				52	90%				52	90%			
ID	Name	Observed (s)	Modelled (s)	Diff	%	Pass?	Observed (s)	Modelled (s)	Diff	%	Pass?	Observed (s)	Modelled (s)	Diff	%	Pass?
1	4 - Eastbound	894	822	72	8%	Yes	765	637	128	17%	No	740	675	65	9%	Yes
2	4 - Westbound	741	639	102	14%	Yes	838	796	41	5%	Yes	957	971	-14	-1%	Yes
3	7 - Clockwise	1077	1039	38	4%	Yes	949	1025	-76	-8%	Yes	1118	1039	79	7%	Yes
4	7 - Anticlockwise	1085	1008	77	7%	Yes	962	981	-19	-2%	Yes	1152	994	158	14%	Yes
5	10 - Eastbound	1015	911	104	10%	Yes	880	850	30	3%	Yes	1016	869	147	14%	Yes
6	10 - Westbound	1020	889	131	13%	Yes	1002	849	153	15%	No	1135	844	291	26%	No
7	12 - Clockwise	772	830	-58	-7%	Yes	740	789	-49	-7%	Yes	754	842	-88	-12%	Yes
8	12 - Anti-clockwise	793	813	-20	-3%	Yes	723	763	-40	-5%	Yes	785	798	-13	-2%	Yes
9	16 - Northbound	654	680	-26	-4%	Yes	590	602	-12	-2%	Yes	633	629	4	1%	Yes
10	16 - Southbound	634	596	37	6%	Yes	614	612	2	0%	Yes	648	652	-4	-1%	Yes
11	17 - Eastbound	245	218	26	11%	Yes	253	217	35	14%	Yes	290	219	71	24%	No
12	17 - Westbound	254	213	41	16%	Yes	293	213	81	28%	No	378	356	22	6%	Yes
13	18 - Eastbound	182	138	44	24%	Yes	184	130	54	29%	Yes	183	139	44	24%	Yes
14	18 - Westbound	149	140	9	6%	Yes	148	138	10	7%	Yes	263	251	12	4%	Yes
15	23 - Eastbound	1576	2016	-439	-28%	No	1272	1178	94	7%	Yes	1469	1513	-44	-3%	Yes
16	23 - Westbound	1383	1324	59	4%	Yes	1387	1266	121	9%	Yes	1610	1767	-157	-10%	Yes
17	24 - Northbound	779	690	89	11%	Yes	700	640	60	9%	Yes	921	895	26	3%	Yes
18	24 - Southbound	727	631	97	13%	Yes	840	611	228	27%	No	848	719	129	15%	No
19	26 - Northbound	503	443	60	12%	Yes	422	401	21	5%	Yes	412	418	-6	-2%	Yes
20	26 - Southbound	508	439	69	14%	Yes	391	390	1	0%	Yes	374	416	-42	-11%	Yes
21	27 - Northbound	278	268	11	4%	Yes	276	256	20	7%	Yes	289	279	10	4%	Yes
22	27 - Southbound	362	303	59	16%	Yes	301	266	34	11%	Yes	311	275	36	12%	Yes
23	29 - Clockwise	704	616	87	12%	Yes	708	623	85	12%	Yes	672	637	35	5%	Yes
24	29 - Anti-clockwise	695	609	86	12%	Yes	692	605	87	13%	Yes	664	608	56	8%	Yes
25	30 - Eastbound	822	763	59	7%	Yes	666	613	53	8%	Yes	701	657	44	6%	Yes
26	30 - Westbound	955	734	221	23%	No	675	634	41	6%	Yes	1007	998	9	1%	Yes
27	31 - North Eastbound	861	834	26	3%	Yes	827	784	43	5%	Yes	822	792	30	4%	Yes
28	31 - South Westbound	900	867	33	4%	Yes	862	868	-6	-1%	Yes	1056	928	128	12%	Yes
29	33 - Eastbound	735	712	22	3%	Yes	660	658	1	0%	Yes	694	693	1	0%	Yes
30	33 - Westbound	703	654	49	7%	Yes	695	656	38	6%	Yes	899	1022	-123	-14%	Yes
31	34 - North Eastbound	1272	1029	243	19%	No	1073	920	153	14%	Yes	1350	1201	149	11%	Yes
32	34 - South Westbound	1032	1047	-15	-1%	Yes	1006	892	114	11%	Yes	1256	976	280	22%	No
33	35 - North Eastbound	2318	2341	-22	-1%	Yes	2189	2081	107	5%	Yes	3080	2681	399	13%	Yes
34	35 - South Westbound	2720	2576	144	5%	Yes	2185	2087	97	4%	Yes	2578	2258	320	12%	Yes
35	36 - Clockwise	1698	1427	271	16%	No	1071	1098	-26	-2%	Yes	1445	1264	181	13%	Yes
36	36 - Anti-clockwise	1565	1217	348	22%	No	1014	1091	-77	-8%	Yes	1689	1468	221	13%	Yes
37	37 - Clockwise	987	925	62	6%	Yes	956	717	239	25%	No	1047	943	104	10%	Yes
38	37 - Anti-clockwise	728	567	161	22%	No	675	534	142	21%	No	845	691	154	18%	No
39	38 - Clockwise	1137	1086	52	5%	Yes	1130	973	157	14%	Yes	1120	952	168	15%	Yes
40	38 - Anti-clockwise	916	987	-71	-8%	Yes	852	811	41	5%	Yes	1024	807	217	21%	No
41	39 - Northbound	1983	1750	233	12%	Yes	1568	1573	-5	0%	Yes	2008	1744	264	13%	Yes
42	39 - Southbound	1966	1779	187	10%	Yes	1734	1608	126	7%	Yes	1978	1738	240	12%	Yes
43	Rail Central 1 - NB	630	575	55	9%	Yes	600	540	60	10%	Yes	1220	1217	3	0%	Yes
44	Rail Central 1 - SB	870	864	6	1%	Yes	600	522	78	13%	Yes	700	682	18	3%	Yes
45	Rail Central 2 - NB	1120	1103	17	2%	Yes	1080	1110	-30	-3%	Yes	1400	1418	-18	-1%	Yes
46	Rail Central 2 - SB	1300	1156	144	11%	Yes	1080	970	110	10%	Yes	1080	1015	65	6%	Yes
47	Rail Central 3 - NB	430	389	41	10%	Yes	480	533	-53	-11%	Yes	580	588	-8	-1%	Yes
48	Rail Central 3 - SB	490	434	56	12%	Yes	380	376	4	1%	Yes	480	450	30	6%	Yes
49	Rail Central 4 - WB	900	886	14	2%	Yes	1020	927	93	9%	Yes	1020	923	97	10%	Yes
50	Rail Central 4 - EB	1060	939	121	11%	Yes	1020	895	125	12%	Yes	930	927	3	0%	Yes
51	Rail Central 5 - EB	700	701	-1	0%	Yes	720	655	65	9%	Yes	750	674	76	10%	Yes
52	Rail Central 5 - WB	680	726	-46	-7%	Yes	720	681	39	5%	Yes	720	694	26	4%	Yes
53	Rail Central 6 - NB	920	848	72	8%	Yes	900	820	80	9%	Yes	950	890	60	6%	Yes
54	Rail Central 6 - SB	900	875	25	3%	Yes	900	834	66	7%	Yes	870	876	-6	-1%	Yes
55	Rail Central 7 - NB	600	596	4	1%	Yes	600	551	49	8%	Yes	570	582	-12	-2%	Yes
56	Rail Central 7 - SB	620	589	31	5%	Yes	600	553	47	8%	Yes	740	760	-20	-3%	Yes
57	Rail Central 8 - EB	1020	1020	0	0%	Yes	780	800	-20	-3%	Yes	1050	905	145	14%	Yes
58	Rail Central 8 - WB	780	779	1	0%	Yes	720	753	-33	-5%	Yes	810	795	15	2%	Yes

Screenline Calibration (Whole of the NSTM)

Date Modified: 21/11/2016

Drawn By: ukjjd001

Key

Screenlines and Cordons

Name

- Brackley Cordon
- Corby Cordon
- Daventry Cordon
- East-West Screenline
- Inner Northampton Cordon
- Kettering Cordon
- North-South Screenline
- North Northamptonshire Screenline
- Outer Northampton Cordon
- Rushden Cordon
- South Northamptonshire Screenline
- Towcester Cordon
- Wellingborough Cordon

Contains Ordnance Survey data © Crown copyright and database right 2016.

0 2.5 5 7.5 10 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM SCREENLINES AND CORDONS

FIGURE No:

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\2015 Full Model Update\Proposed Screenlines v2.mxd

Screenline Summary

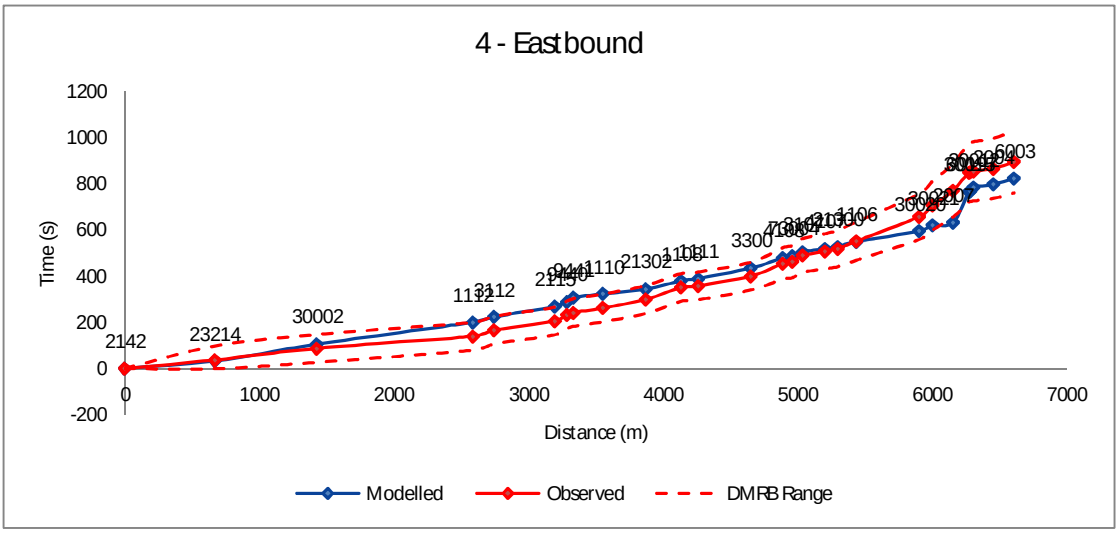
Model Map

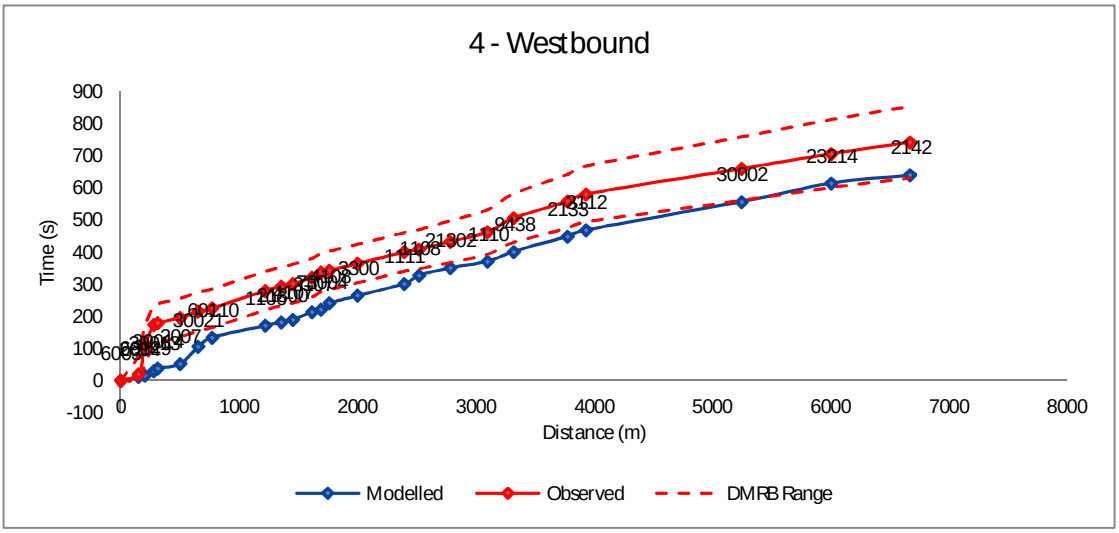
Screenline			AM Peak				Interpeak				PM Peak		
			All				All				All		
ID	Name	Type	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference	GEH	Observed	Modelled	Difference
1	Brackley Cordon Inbound	Calibration	4384	4599	5%	3.215	2891	3059	6%	3.078	4249	4796	13%
2	Brackley Cordon Outbound	Calibration	4001	4013	0%	0.198	2896	2987	3%	1.673	4210	4379	4%
3	Corby Cordon Inbound	Calibration	4300	4281	0%	0.297	3075	3197	4%	2.188	4808	4880	2%
4	Corby Cordon Outbound	Calibration	4845	4443	-8%	5.892	3127	3188	2%	1.096	4273	4299	1%
5	Daventry Cordon Inbound	Calibration	3796	3694	-3%	1.675	2005	2005	0%	0.001	3083	2992	-3%
6	Daventry Cordon Outbound	Calibration	2918	2827	-3%	1.703	2046	2042	0%	0.088	3643	3538	-3%
7	East-West Screenline NB	Calibration	5790	5829	1%	0.514	4292	4299	0%	0.110	7415	7452	0%
8	East-West Screenline SB	Calibration	6541	6340	-3%	2.498	3374	3417	1%	0.738	4744	4575	-4%
9	Inner Northampton Cordon Inbound	Calibration	9970	9814	-2%	1.565	6711	6586	-2%	1.538	7775	7565	-3%
10	Inner Northampton Cordon Outbound	Calibration	6605	6411	-3%	2.405	6801	6619	-3%	2.226	9359	9170	-2%
11	Kettering Cordon Inbound	Calibration	10711	10568	-1%	1.385	7502	7677	2%	2.008	10232	10257	0%
12	Kettering Cordon Outbound	Calibration	7257	7441	3%	2.150	5526	5883	6%	4.720	8240	8241	0%
13	North-South Screenline EB	Calibration	8972	8861	-1%	1.181	5748	5734	0%	0.186	9894	9795	-1%
14	North-South Screenline WB	Calibration	7070	7091	0%	0.252	4347	4289	-1%	0.883	7098	6973	-2%
15	North Northamptonshire Screenline EB	Calibration	1595	1620	2%	0.630	1029	1034	0%	0.127	1548	1570	1%
16	North Northamptonshire Screenline WB	Calibration	1494	1530	2%	0.927	1035	1036	0%	0.042	1583	1564	-1%
17	Outer Northampton Cordon Inbound	Calibration	11997	11878	-1%	1.090	5883	5878	0%	0.058	10008	9662	-3%
18	Outer Northampton Cordon Outbound	Calibration	12066	11669	-3%	3.643	8077	8115	0%	0.418	14476	14296	-1%
19	Rushden Cordon Inbound	Calibration	3586	3745	4%	2.614	2744	2761	1%	0.329	5098	5205	2%
20	Rushden Cordon Outbound	Calibration	3773	3925	4%	2.441	2154	2142	-1%	0.255	3354	3346	0%
21	South Northamptonshire Screenline NB	Calibration	5238	5160	-1%	1.085	4561	4650	2%	1.313	6692	6479	-3%
22	South Northamptonshire Screenline SB	Calibration	8132	7901	-3%	2.582	5239	5333	2%	1.286	7018	7083	1%
23	Towcester Cordon Inbound	Calibration	1845	1664	-10%	4.303	1364	1626	19%	6.760	2141	1730	-19%
24	Towcester Cordon Outbound	Calibration	2138	1894	-11%	5.440	1229	1228	0%	0.038	1616	1481	-8%
25	Wellingborough Cordon Inbound	Calibration	8902	8733	-2%	1.792	5751	5781	1%	0.400	9477	9327	-2%
26	Wellingborough Cordon Outbound	Calibration	6523	6587	1%	0.791	4281	4423	3%	2.157	6597	6652	1%

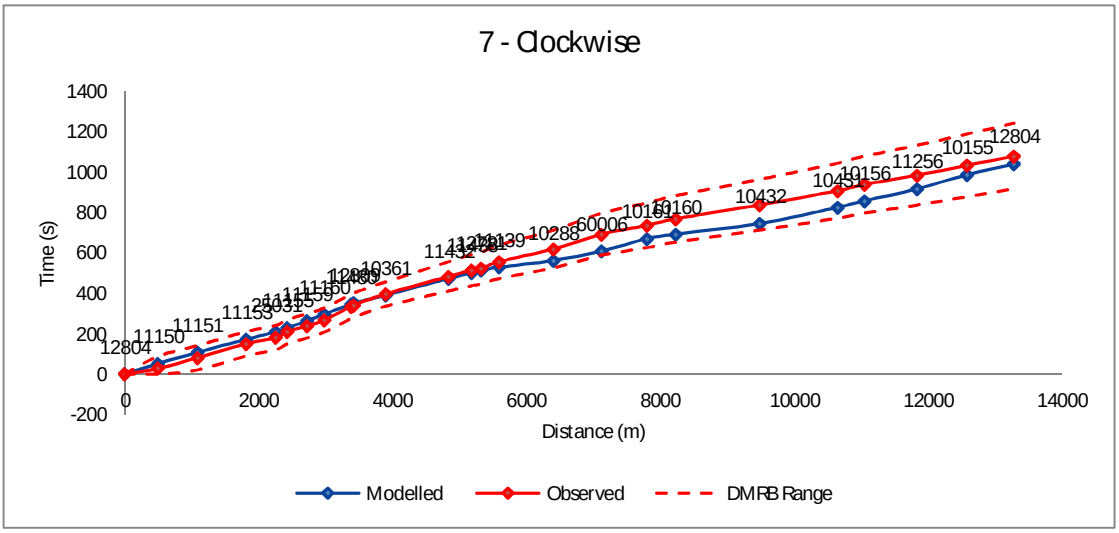
JT Graphs AM Peak

Model Map

Redraw Graphs



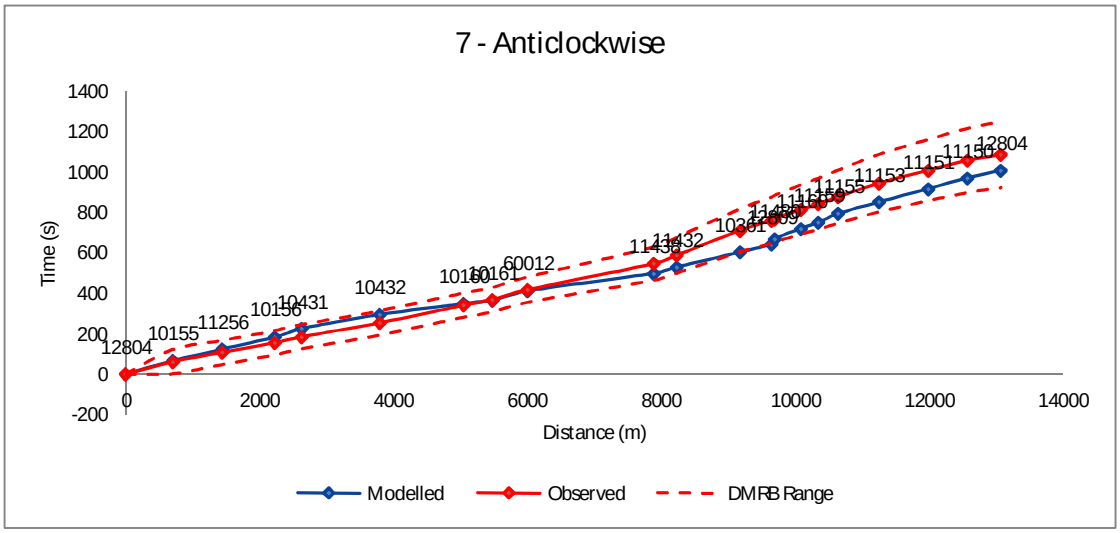


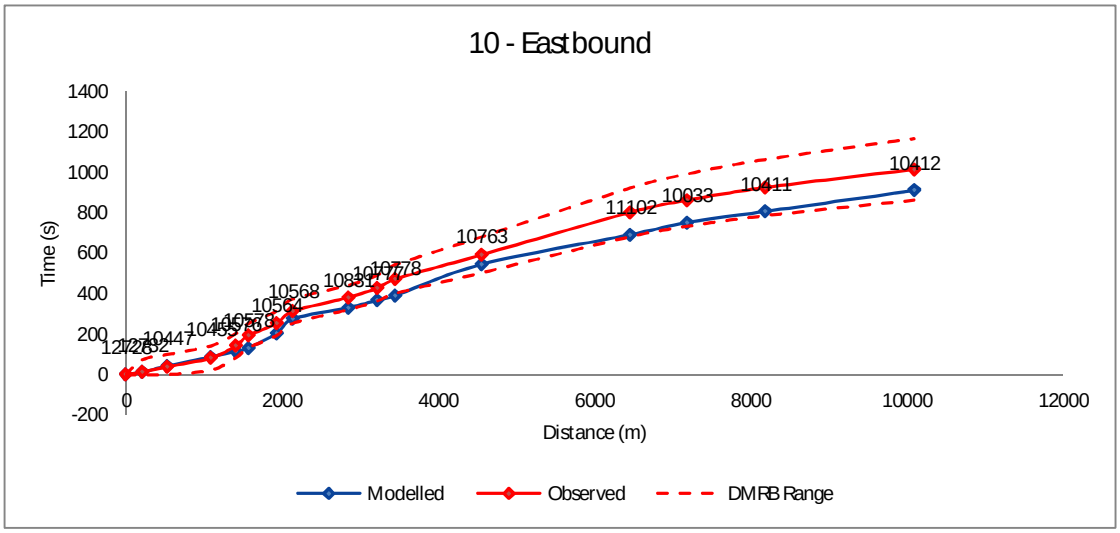


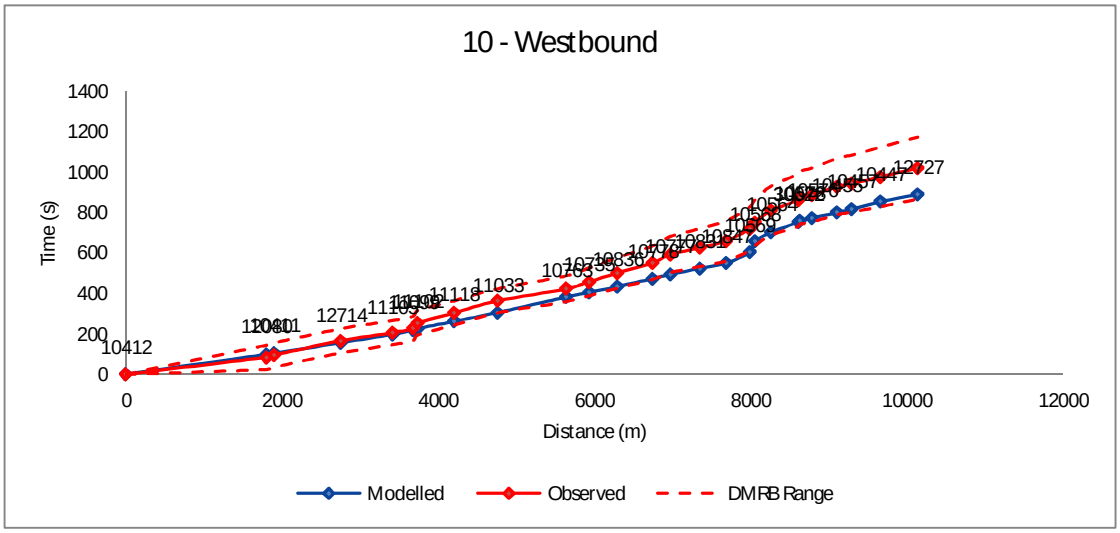
JT Graphs AM Peak

Model Map

Redraw Graphs



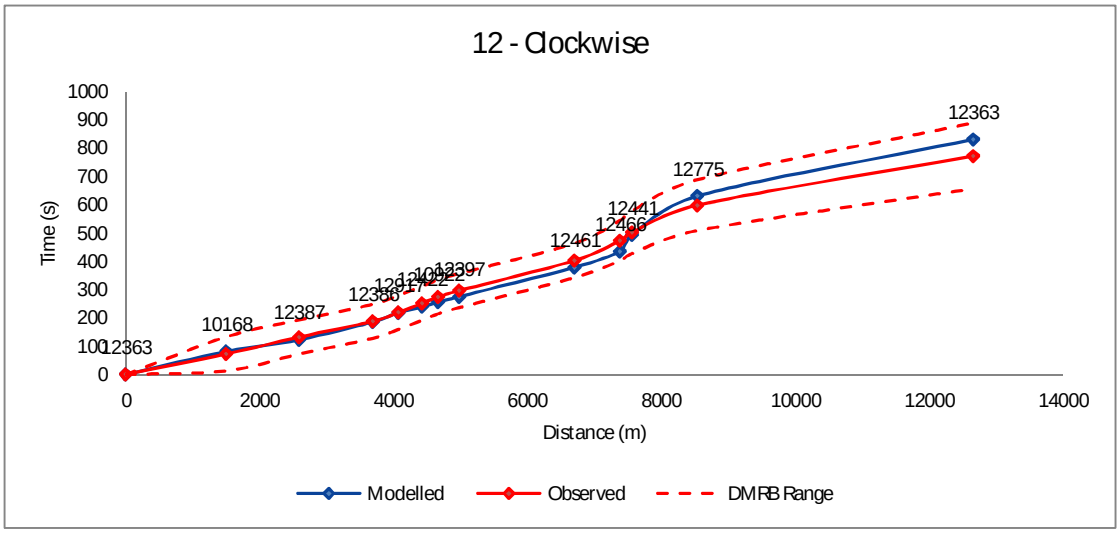


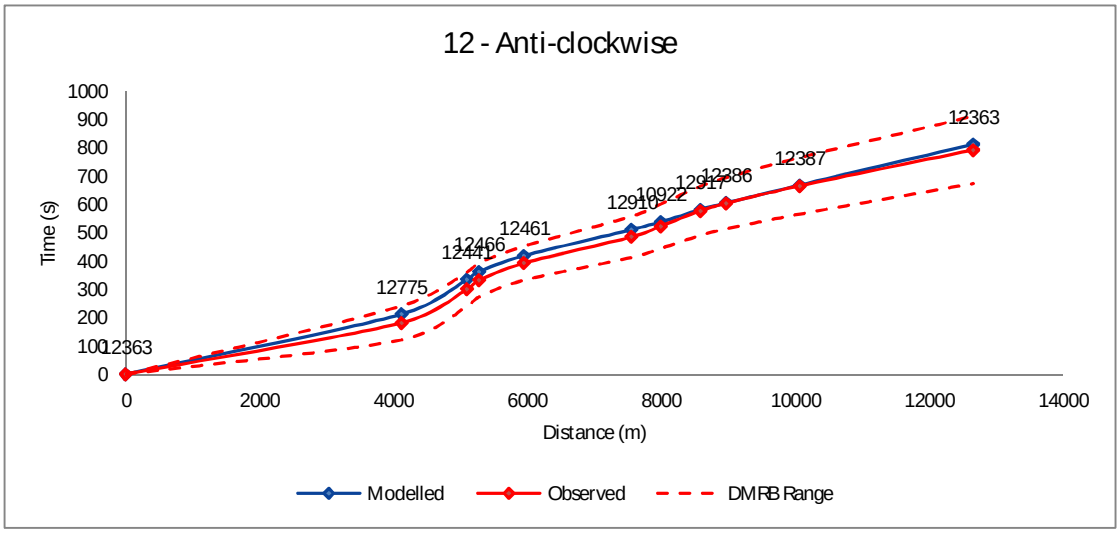


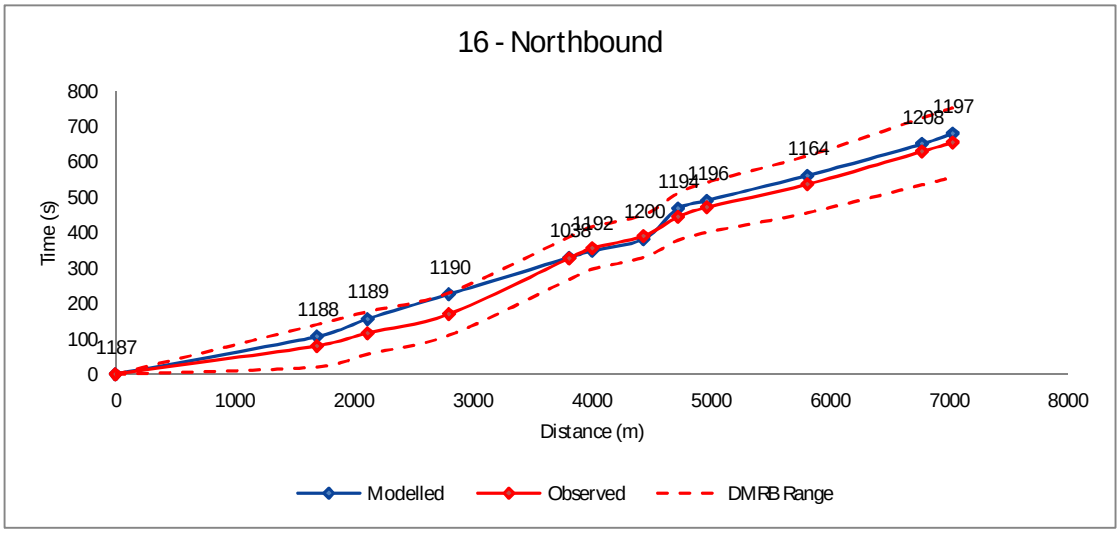
JT Graphs AM Peak

Model Map

Redraw Graphs



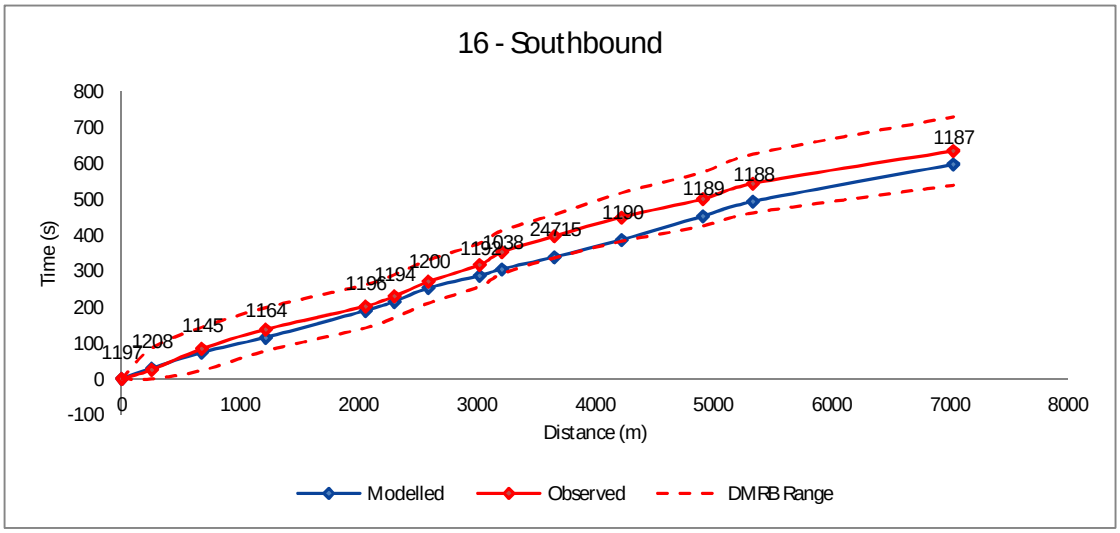


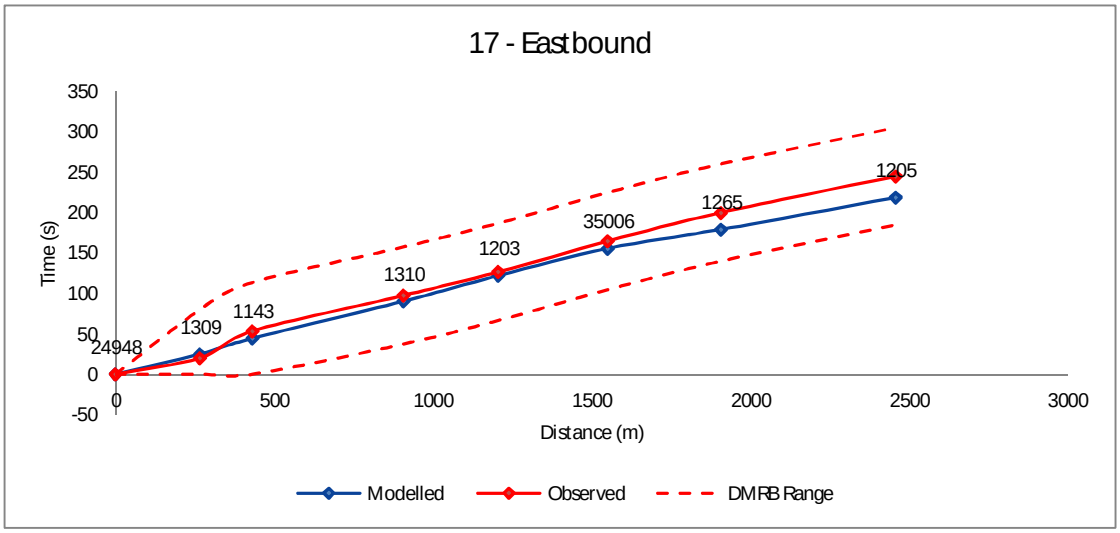


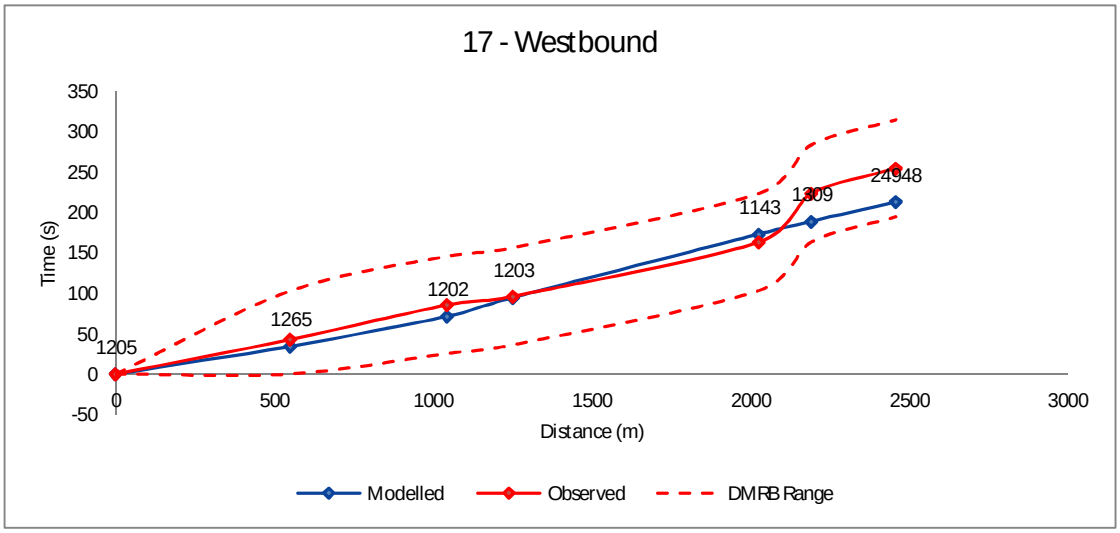
JT Graphs AM Peak

Model Map

Redraw Graphs



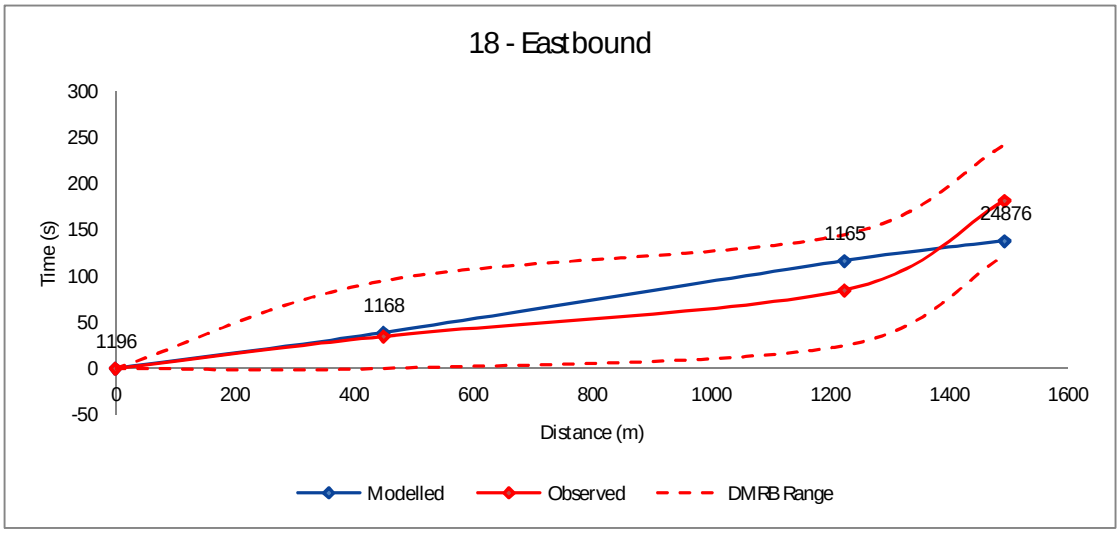


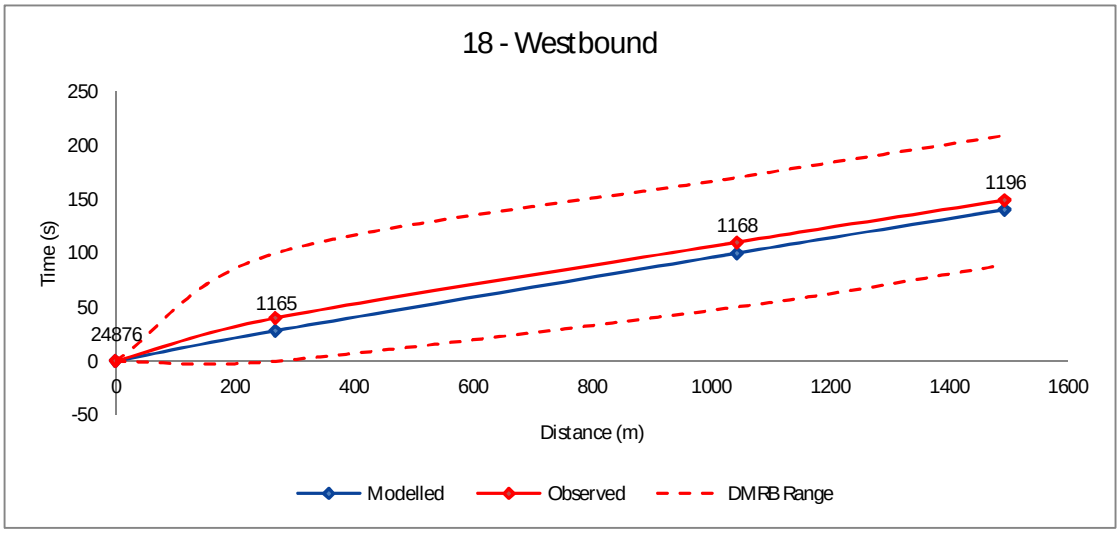


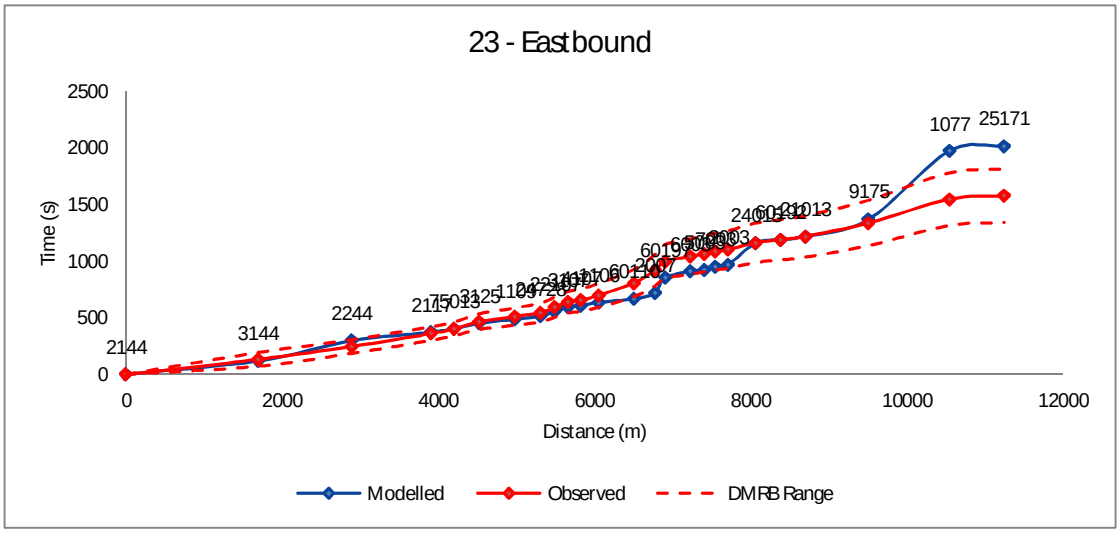
JT Graphs AM Peak

Model Map

Redraw Graphs



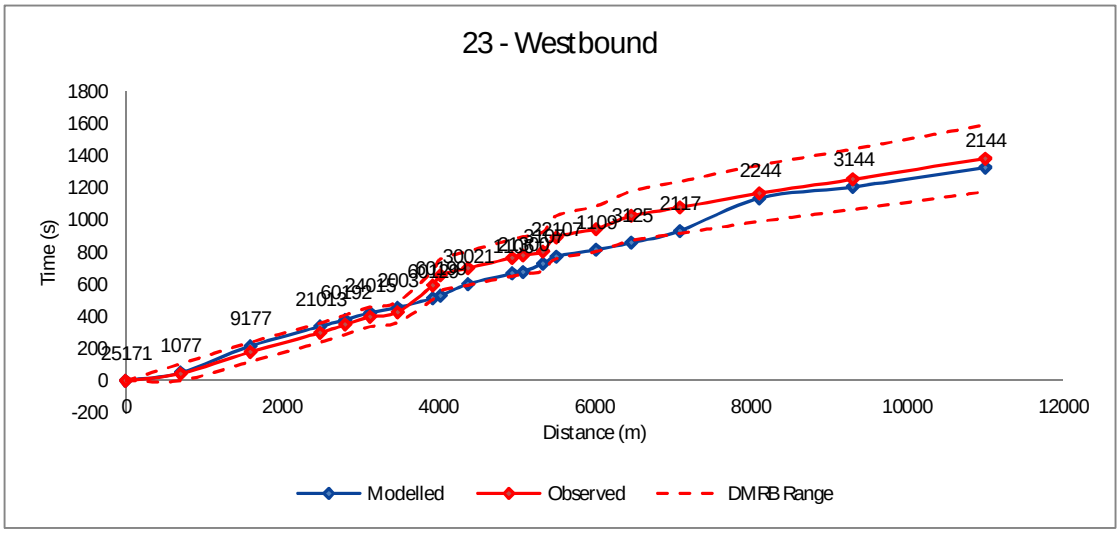


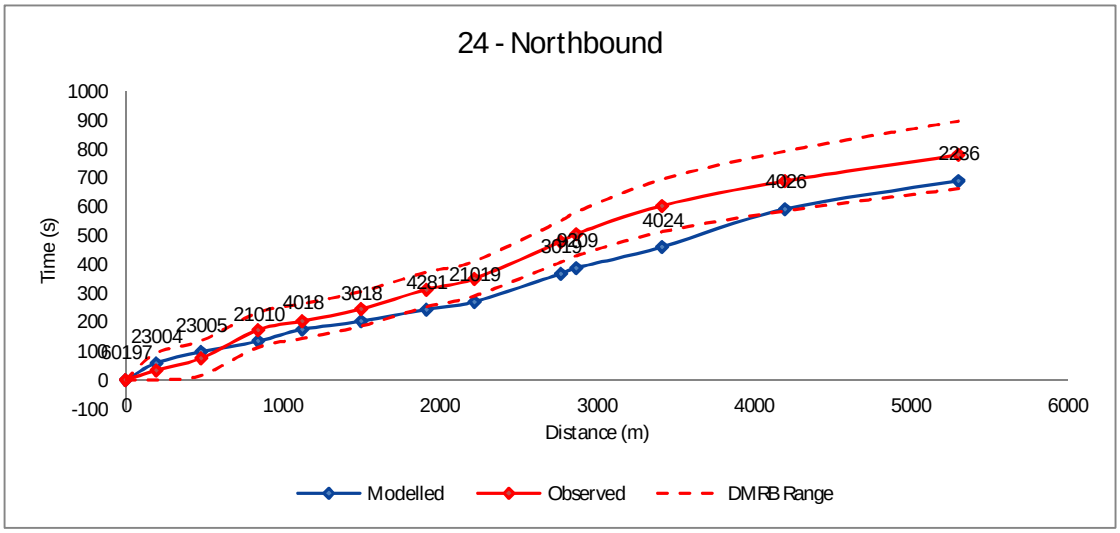


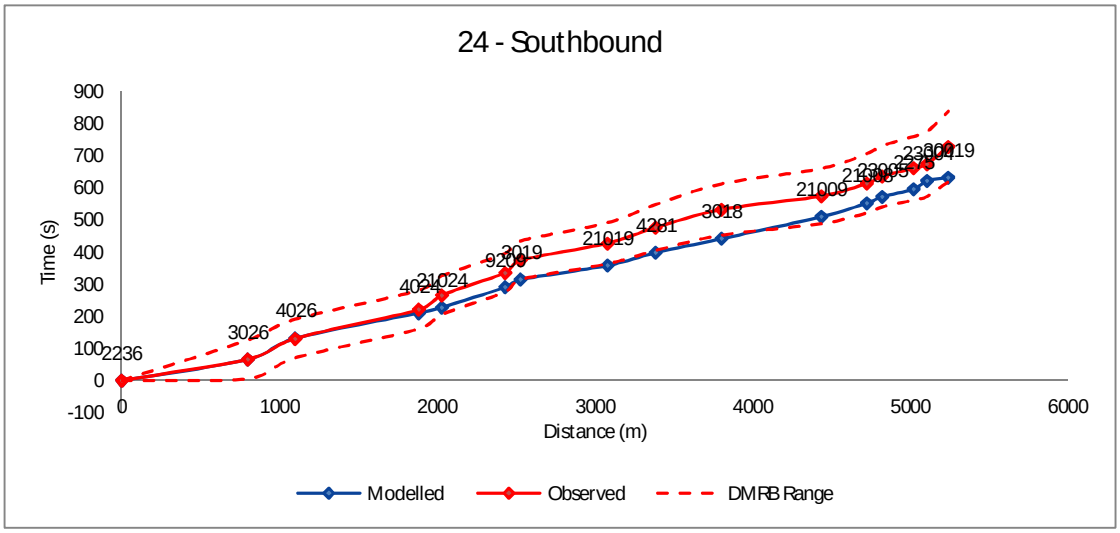
JT Graphs AM Peak

Model Map

Redraw Graphs



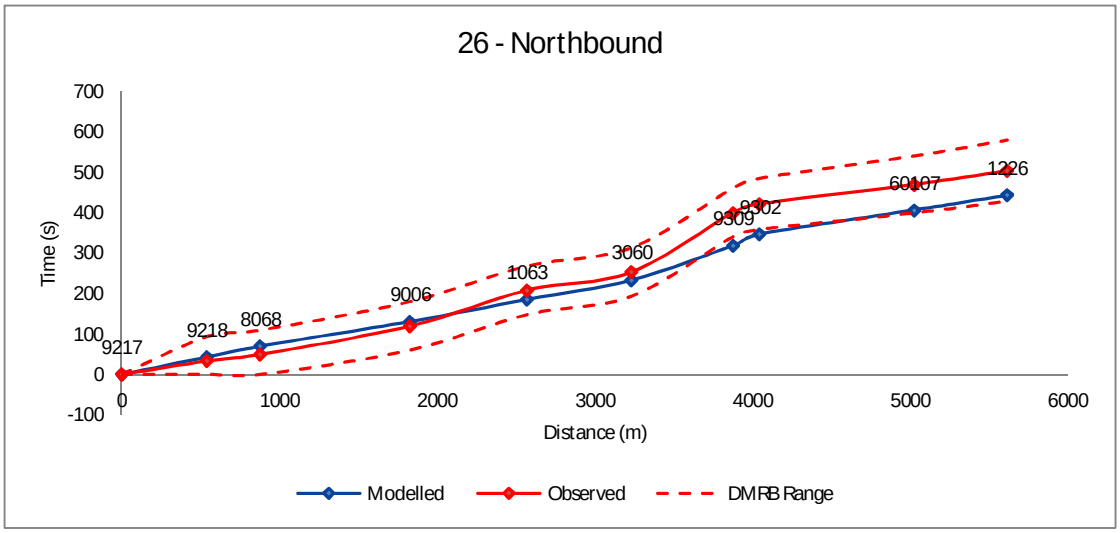


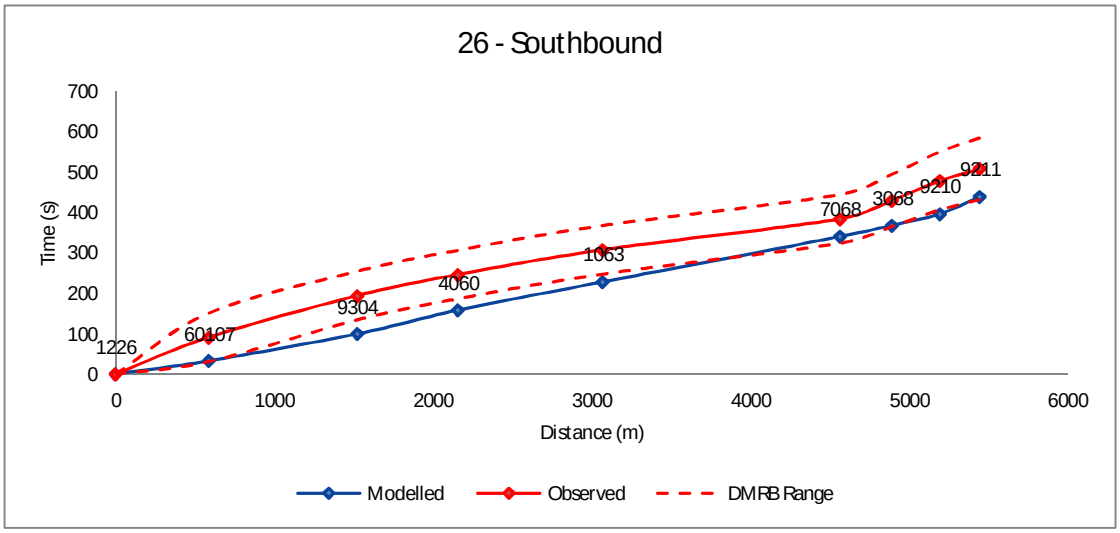


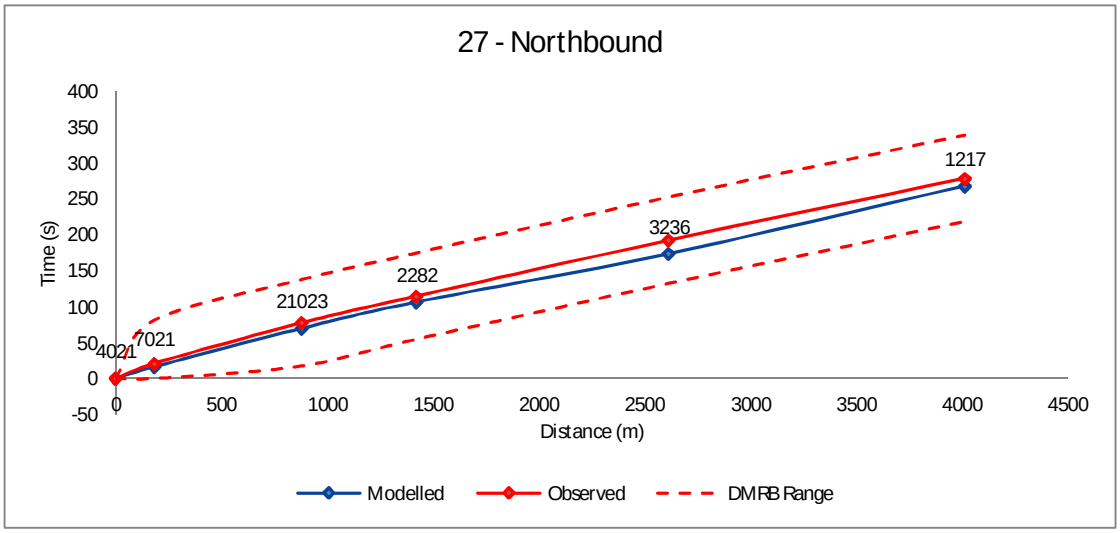
JT Graphs AM Peak

Model Map

Redraw Graphs



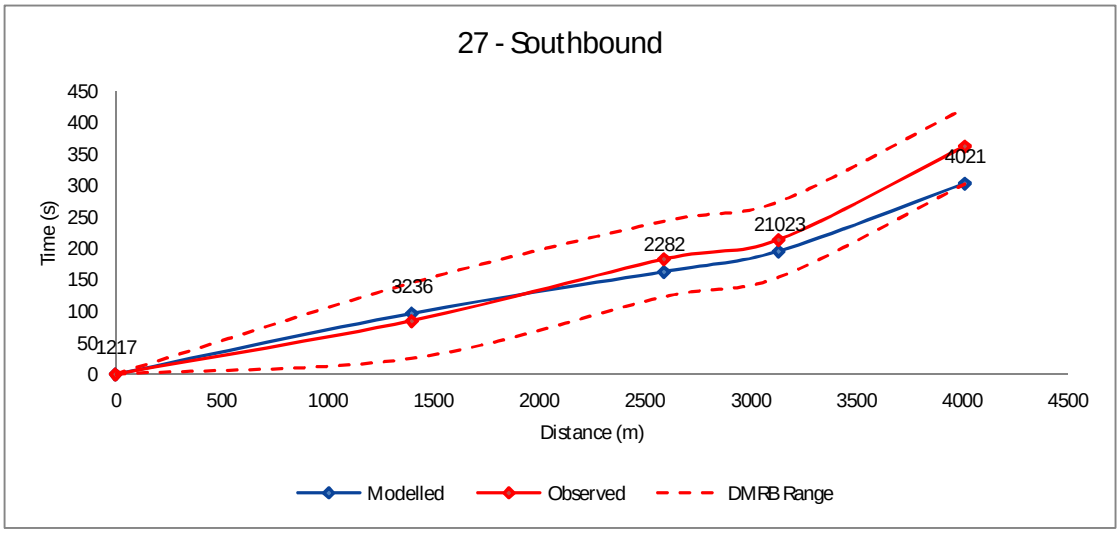


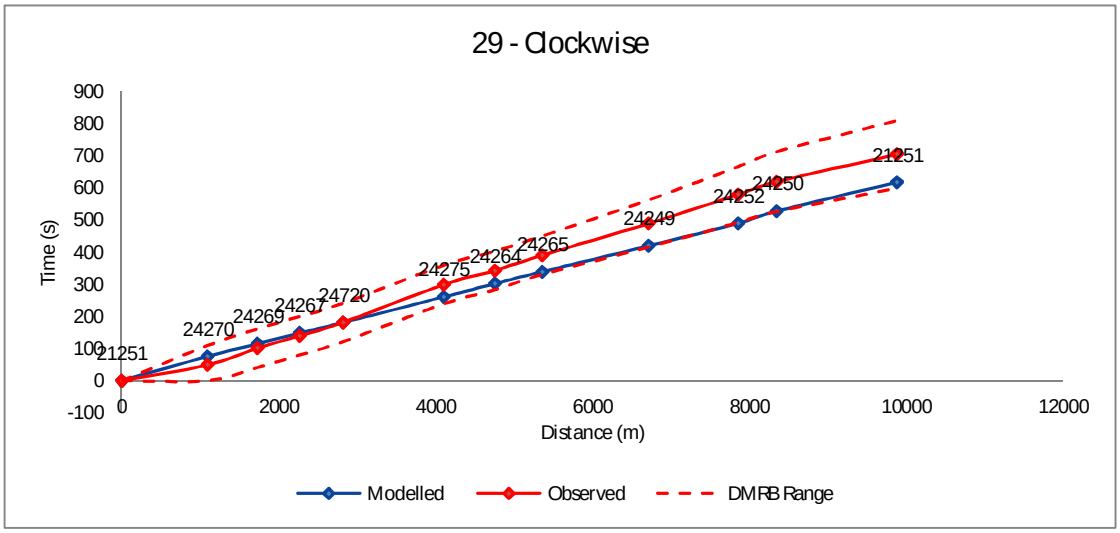


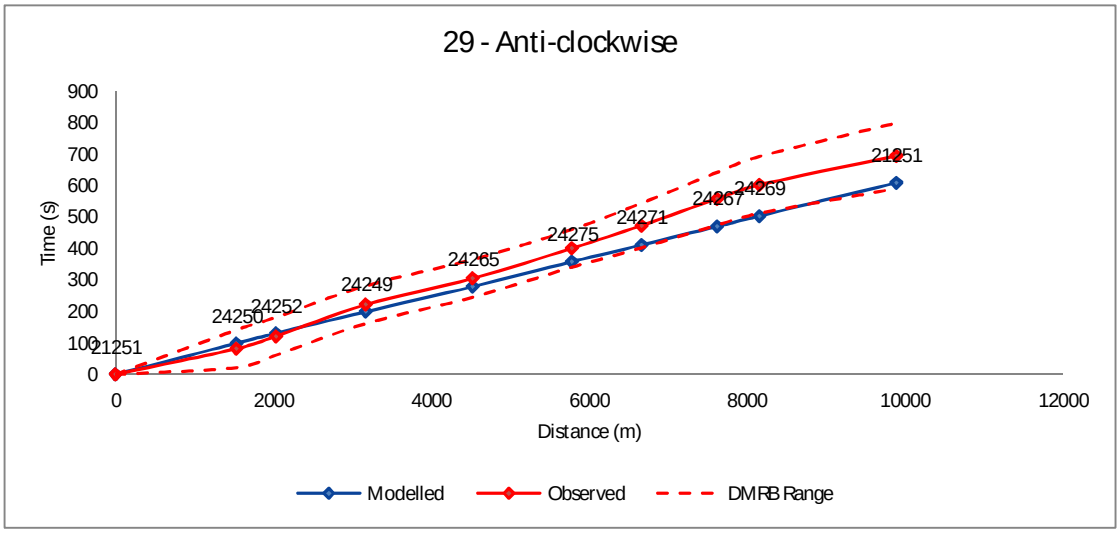
JT Graphs AM Peak

Model Map

Redraw Graphs



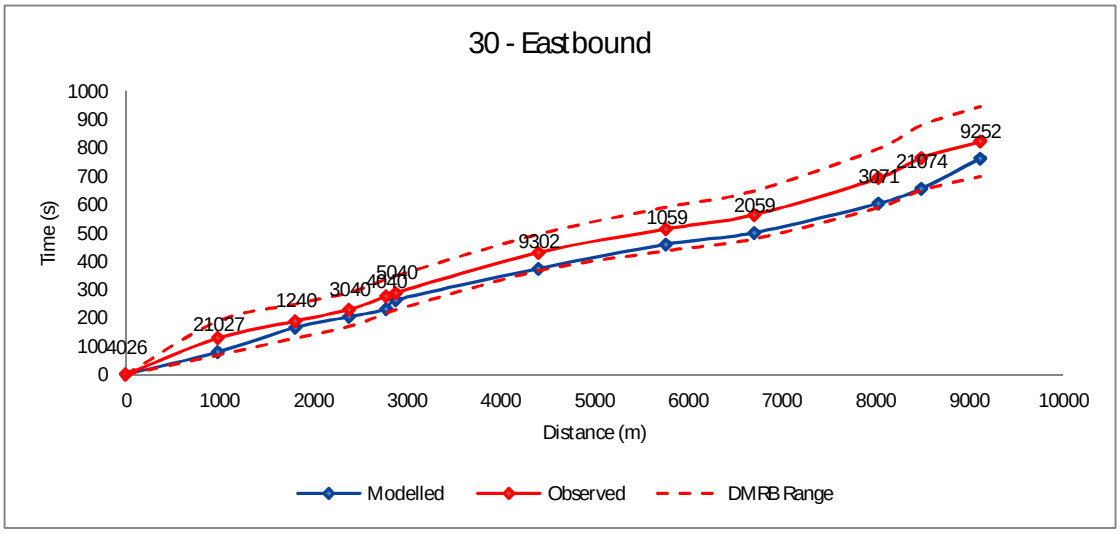


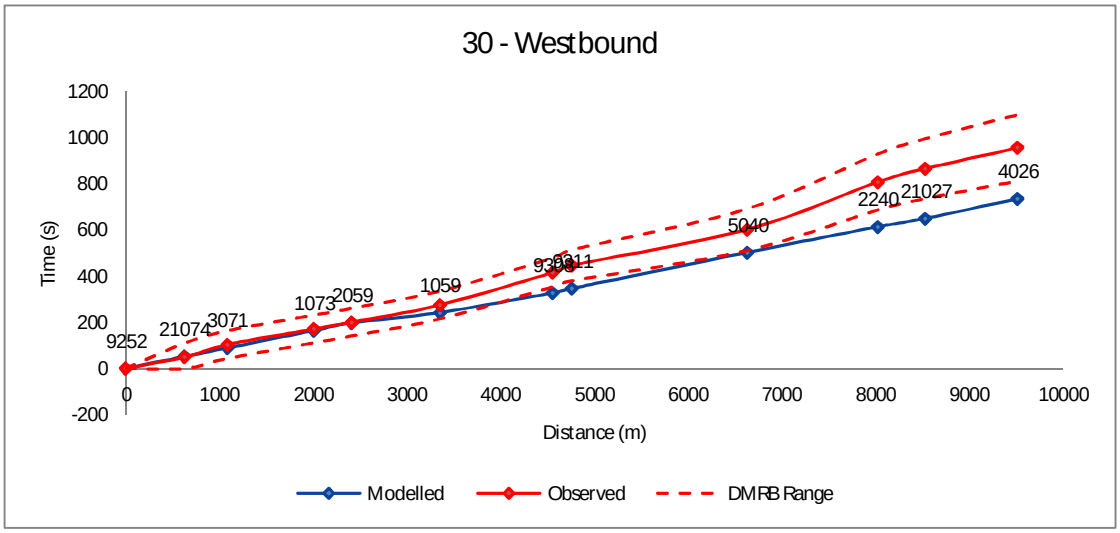


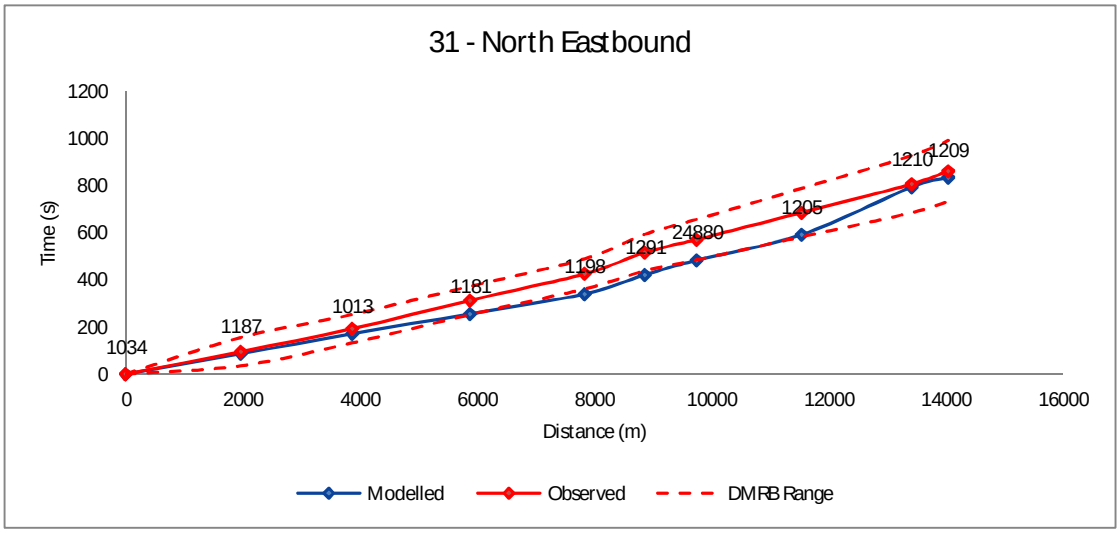
JT Graphs AM Peak

Model Map

Redraw Graphs



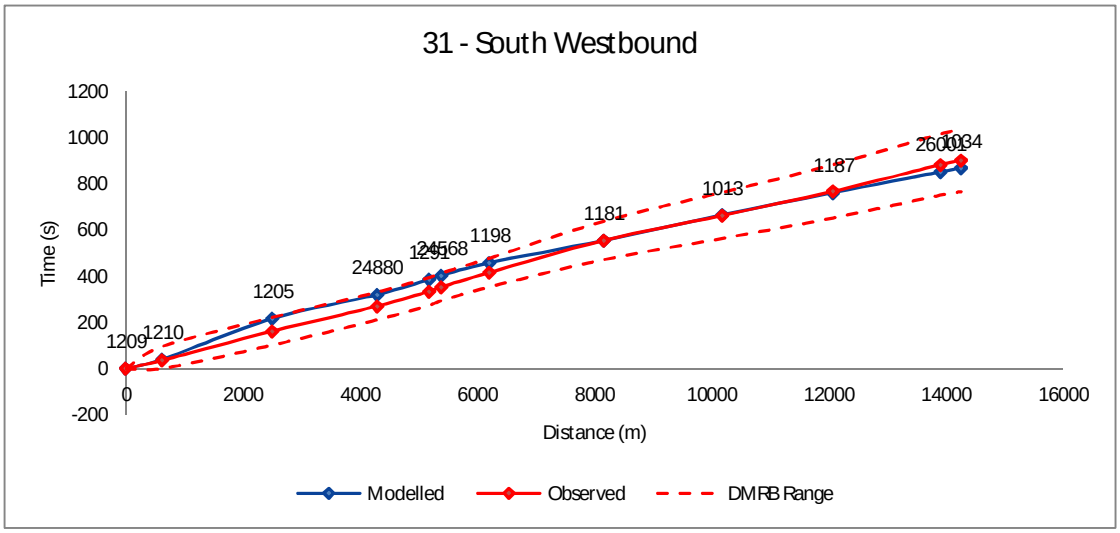


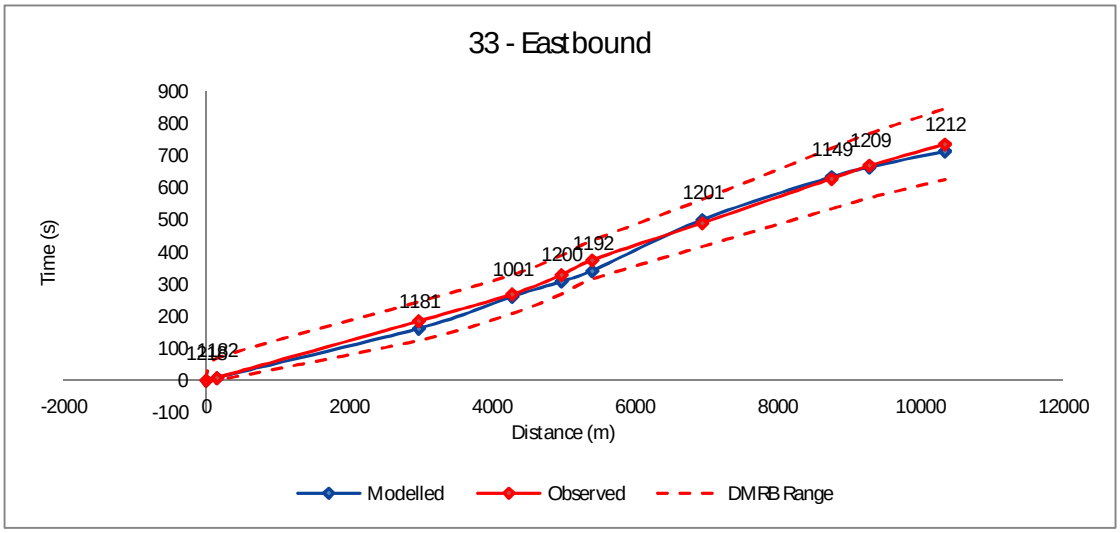


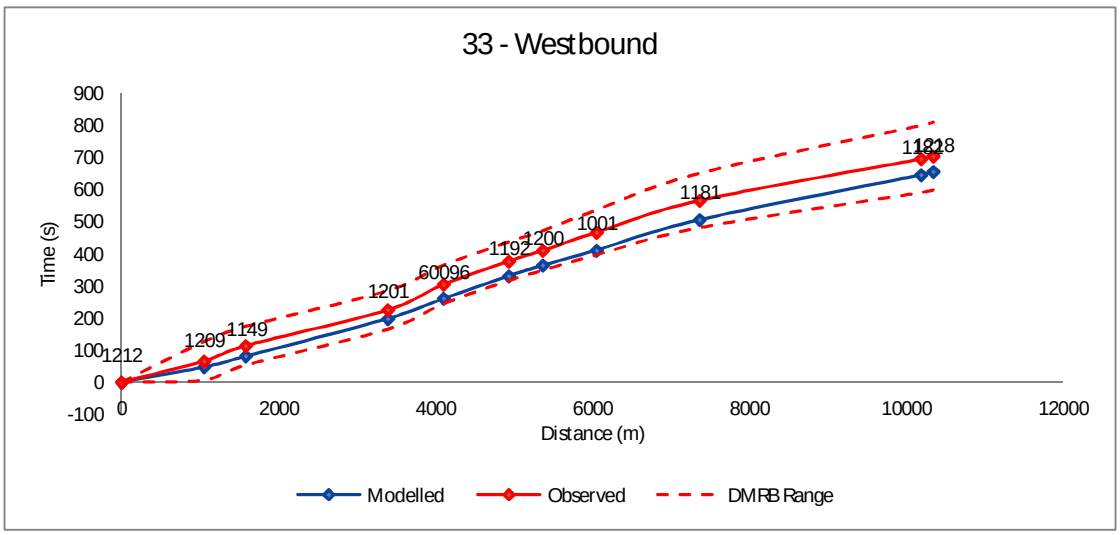
JT Graphs AM Peak

Model Map

Redraw Graphs



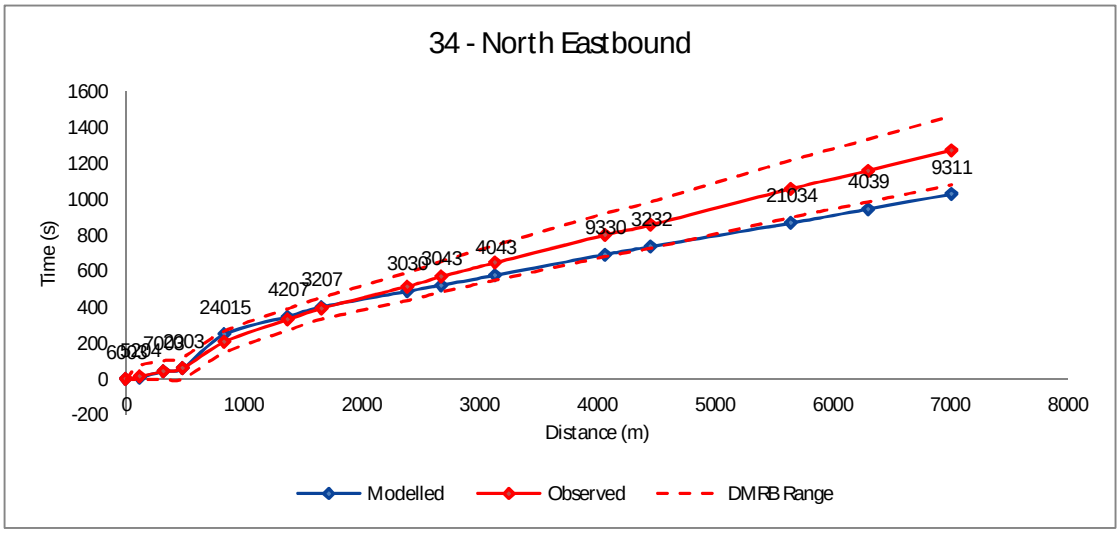


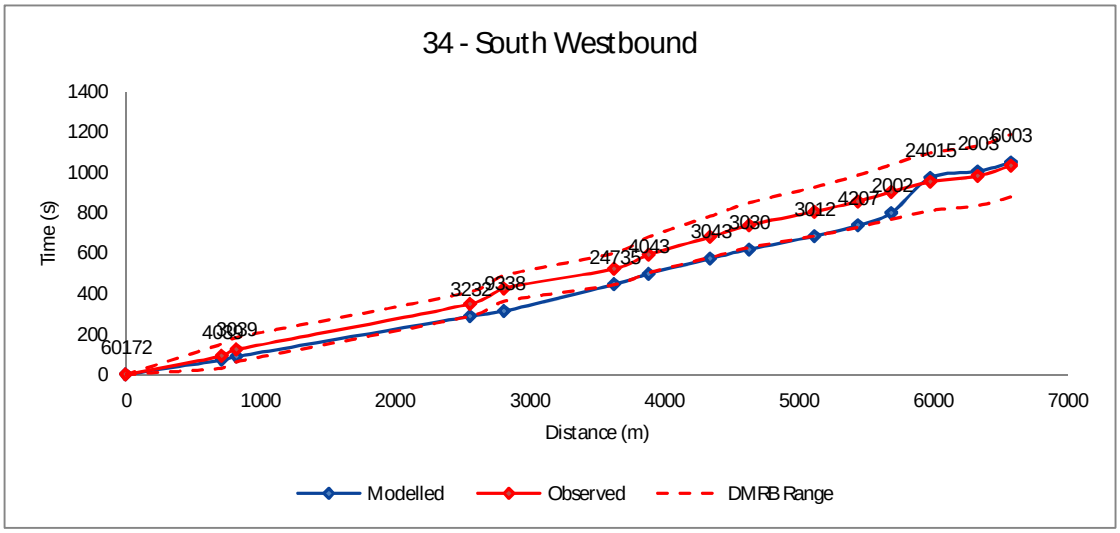


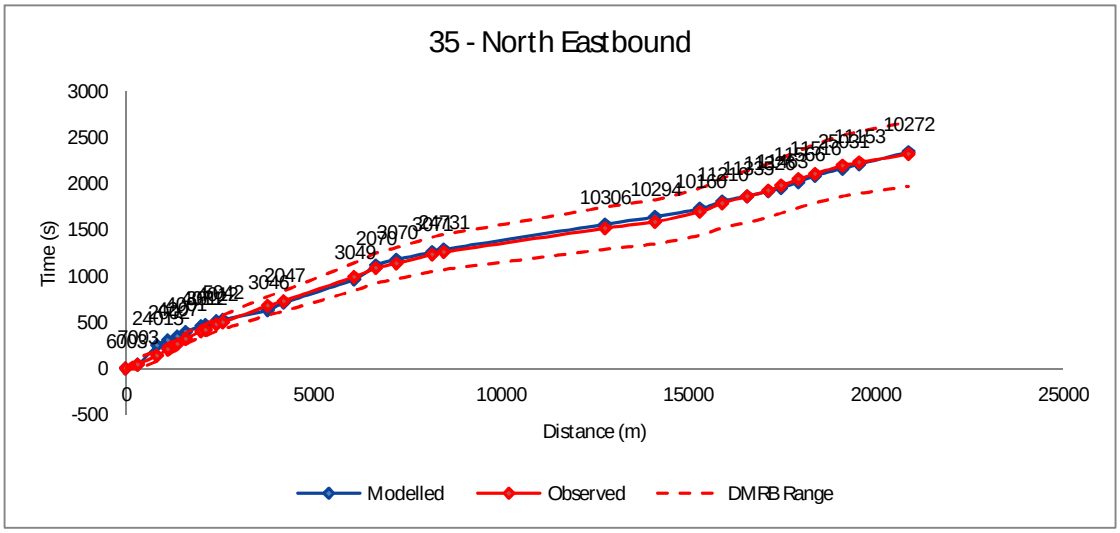
JT Graphs AM Peak

Model Map

Redraw Graphs



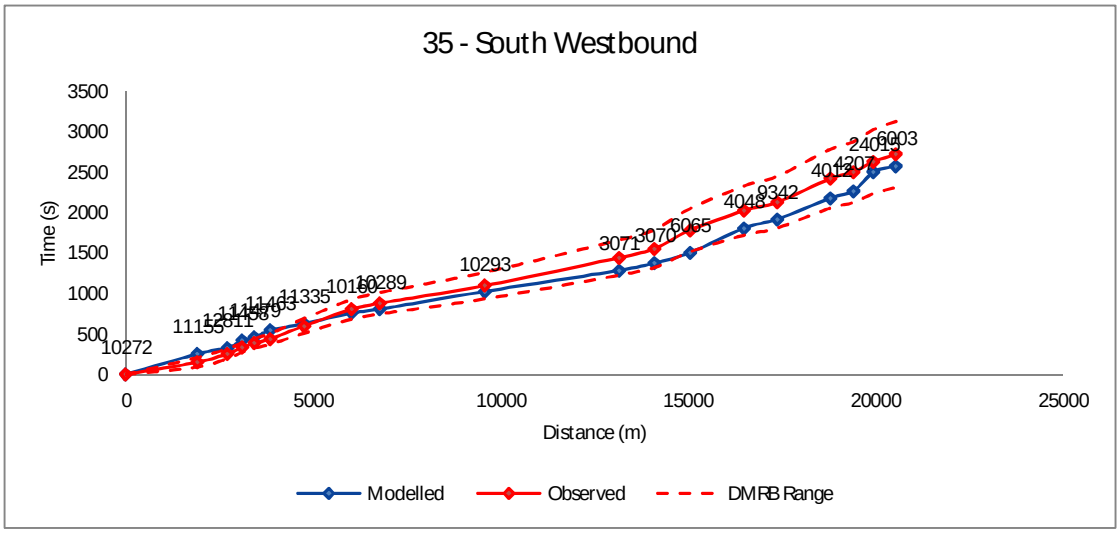


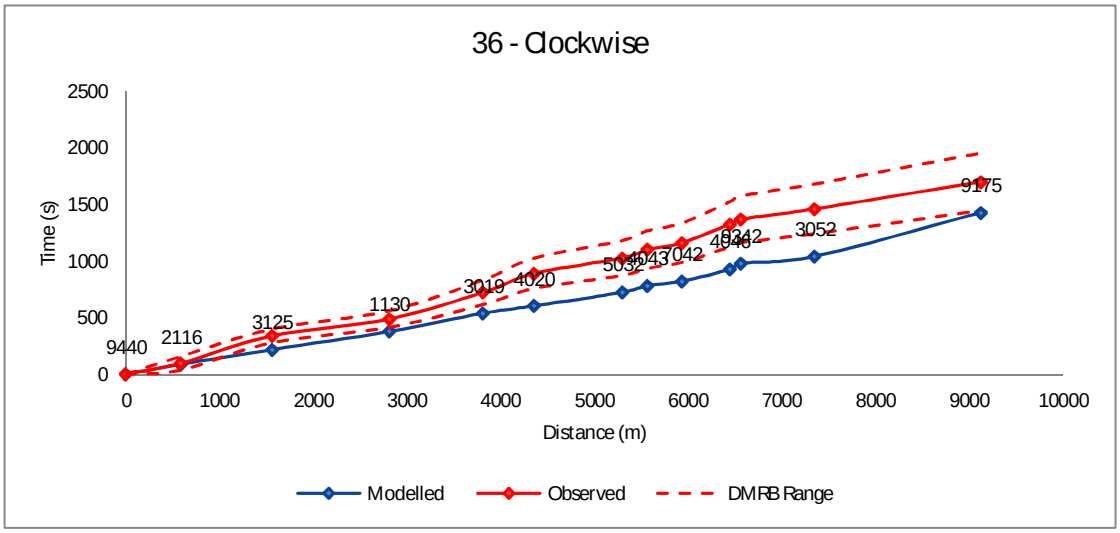


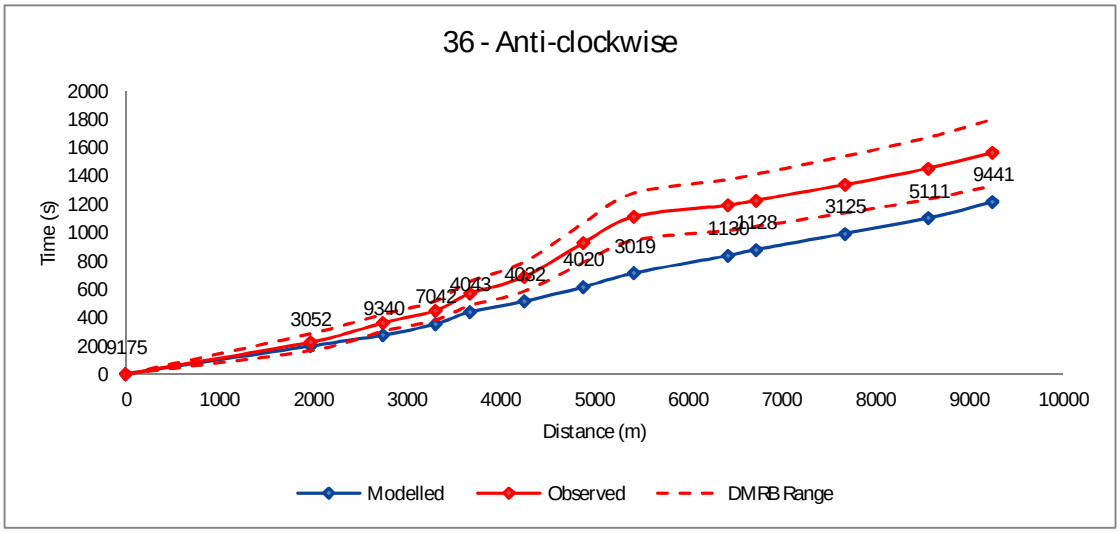
JT Graphs AM Peak

Model Map

Redraw Graphs



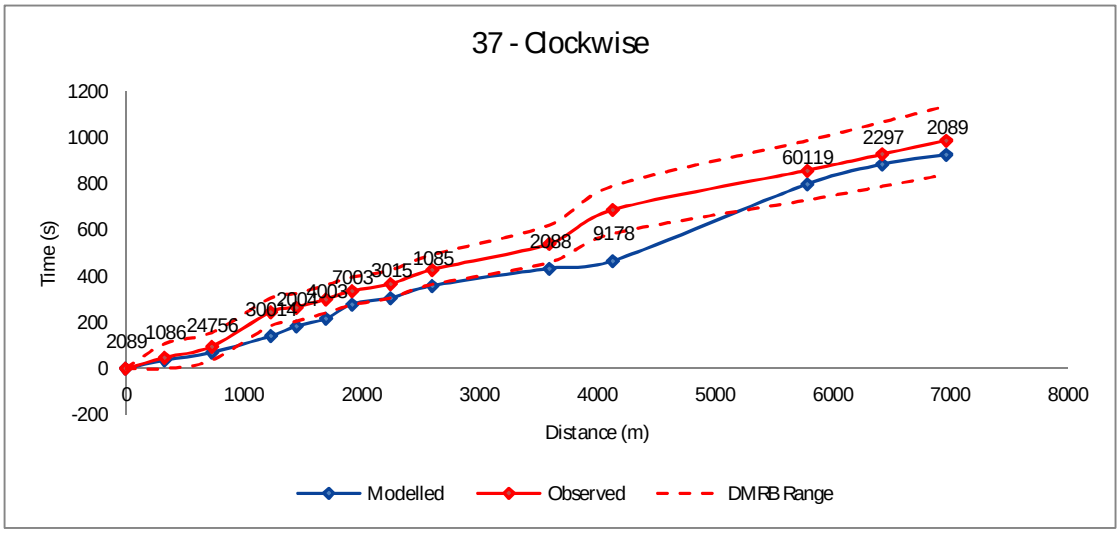


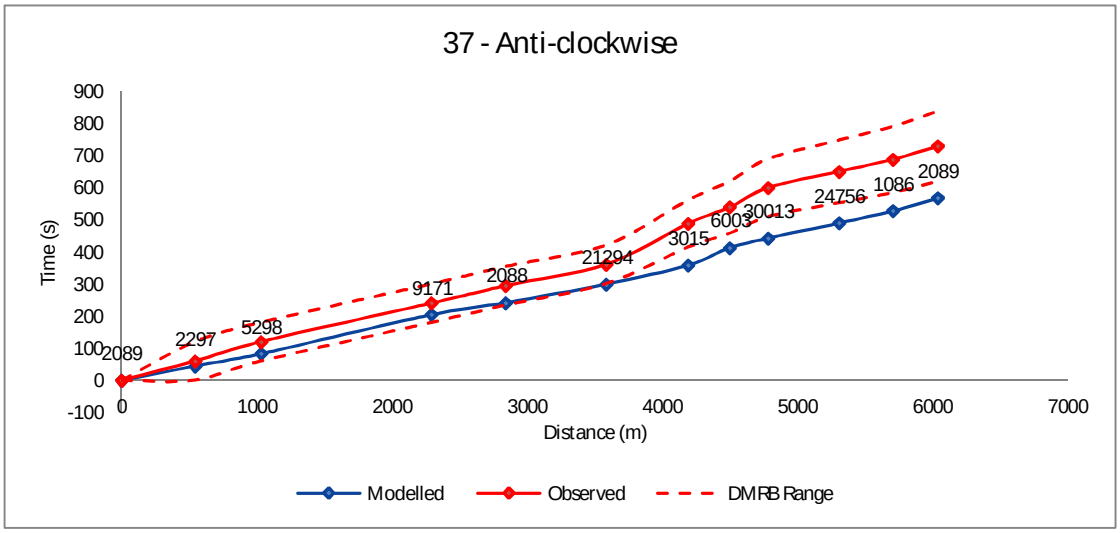


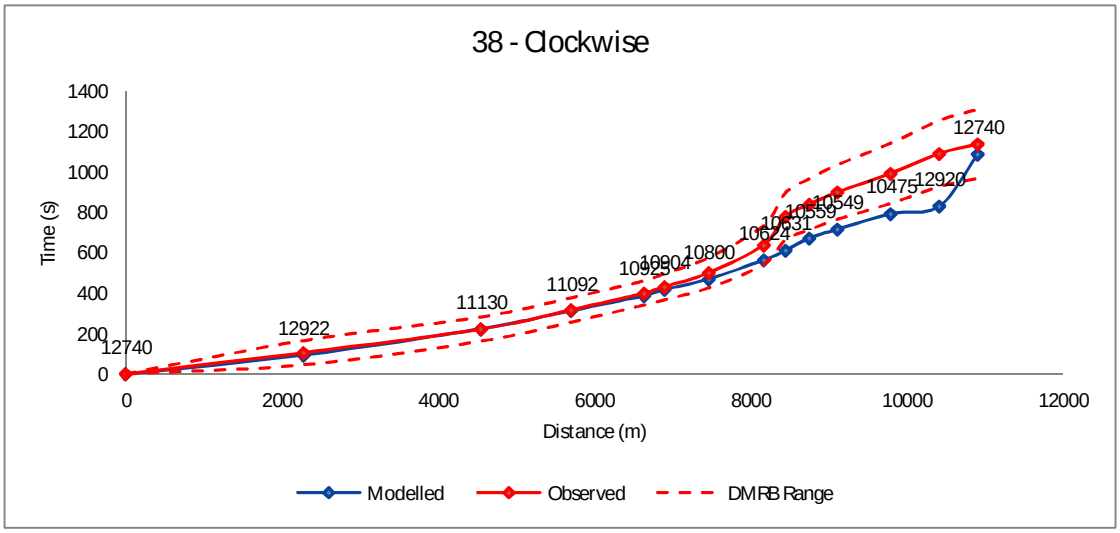
JT Graphs AM Peak

Model Map

Redraw Graphs



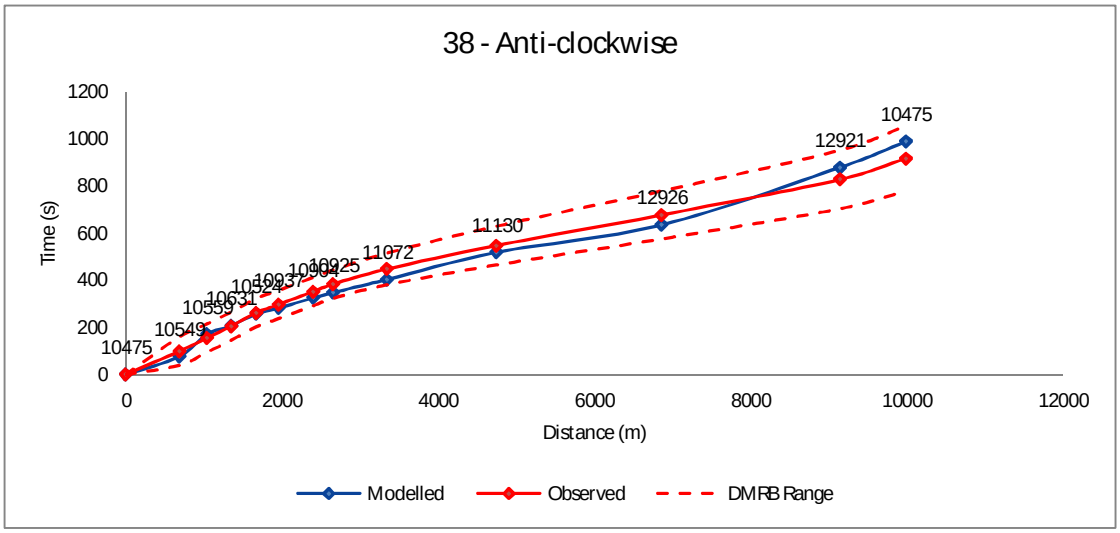


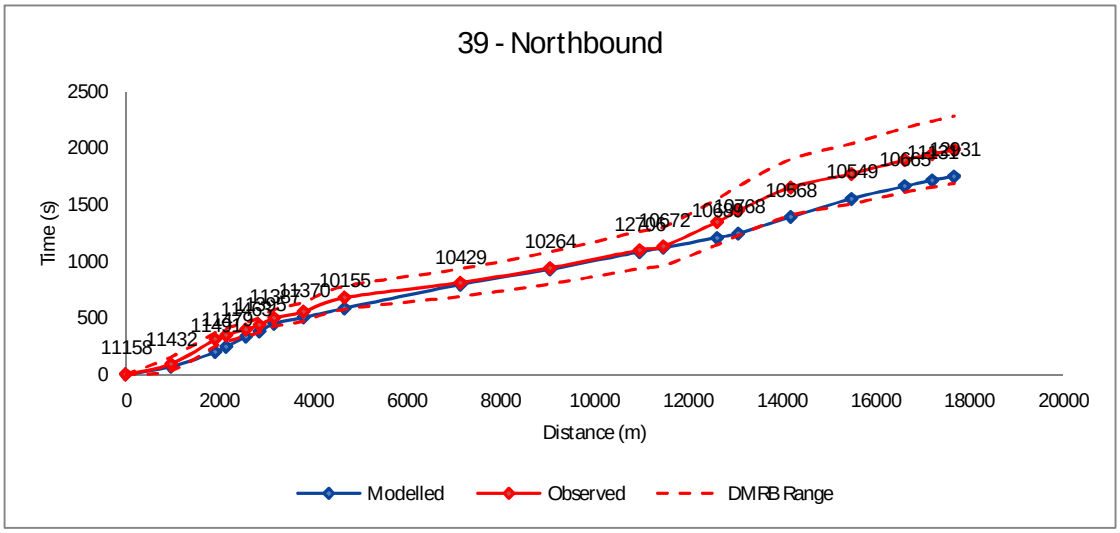


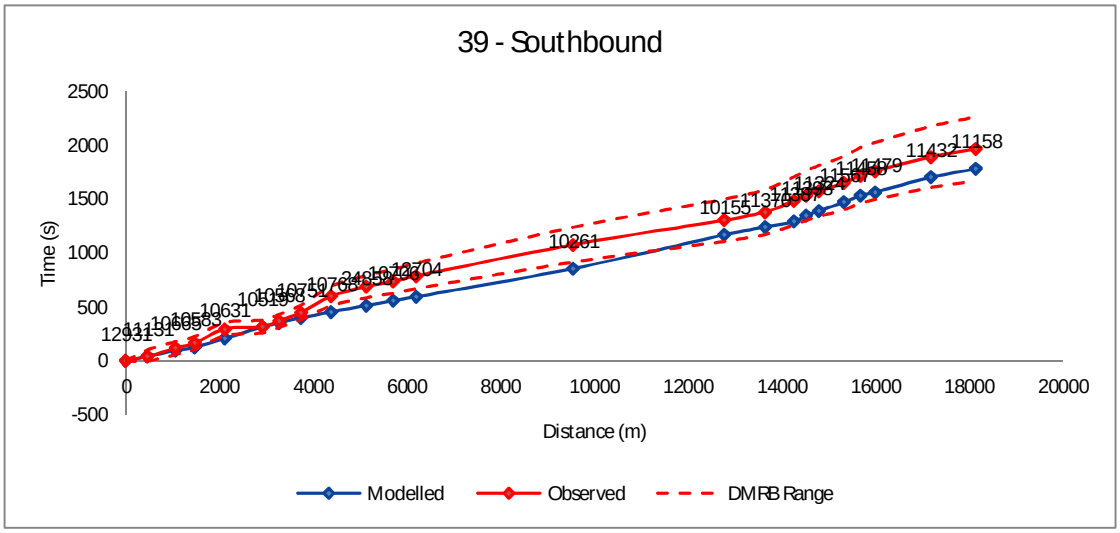
JT Graphs AM Peak

Model Map

Redraw Graphs



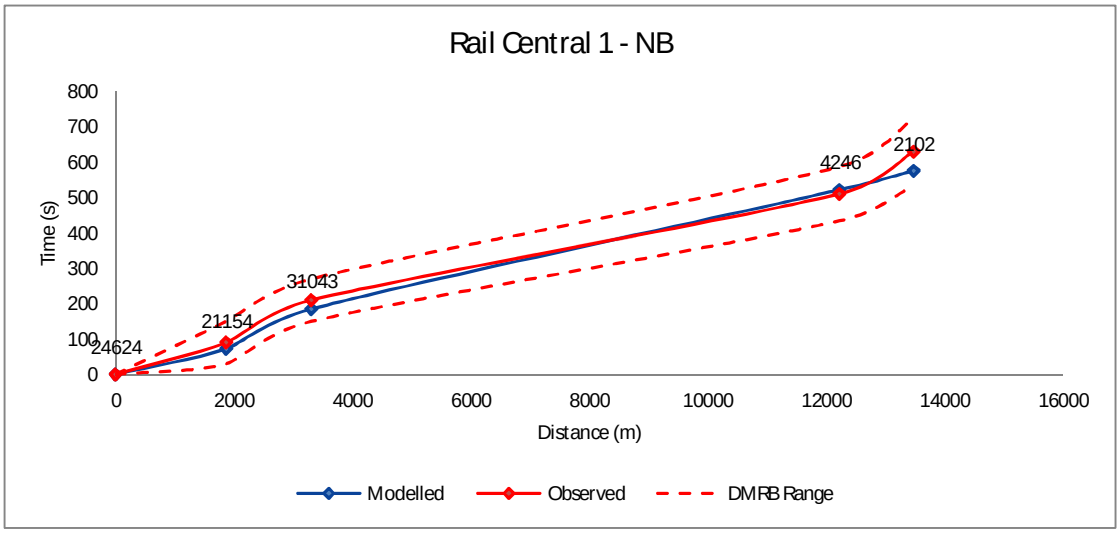


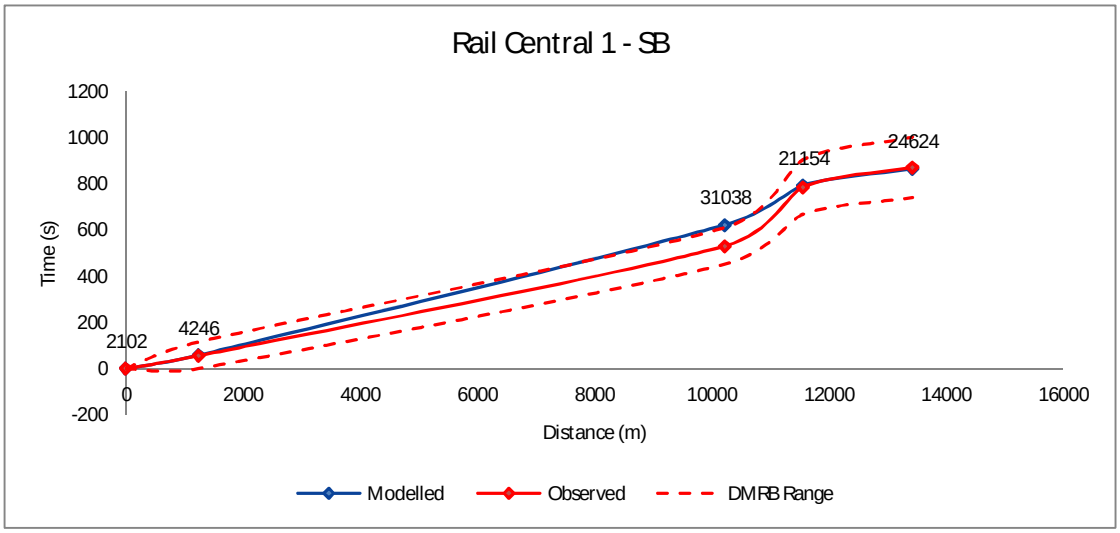


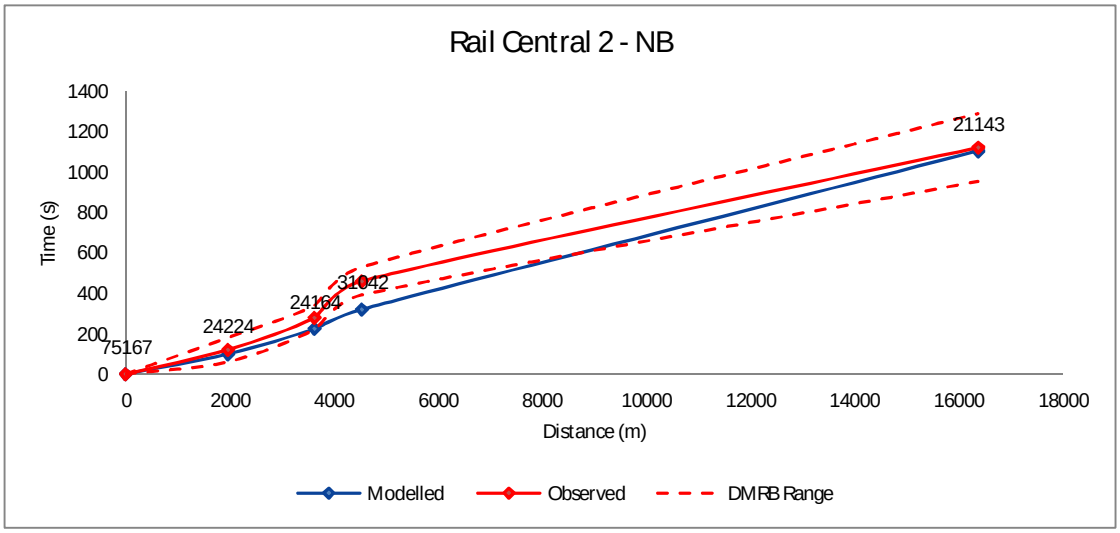
JT Graphs AM Peak

Model Map

Redraw Graphs



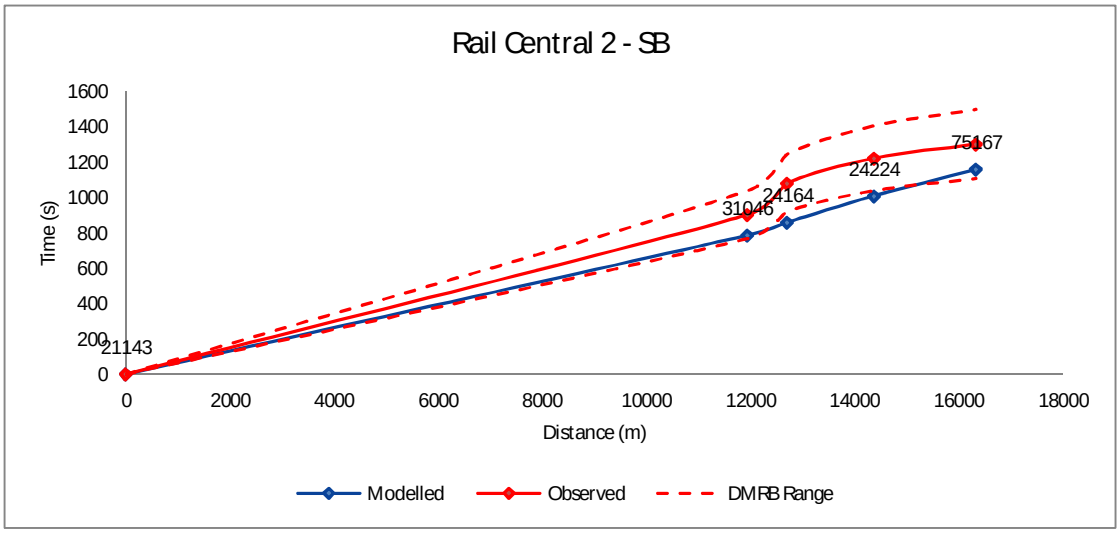


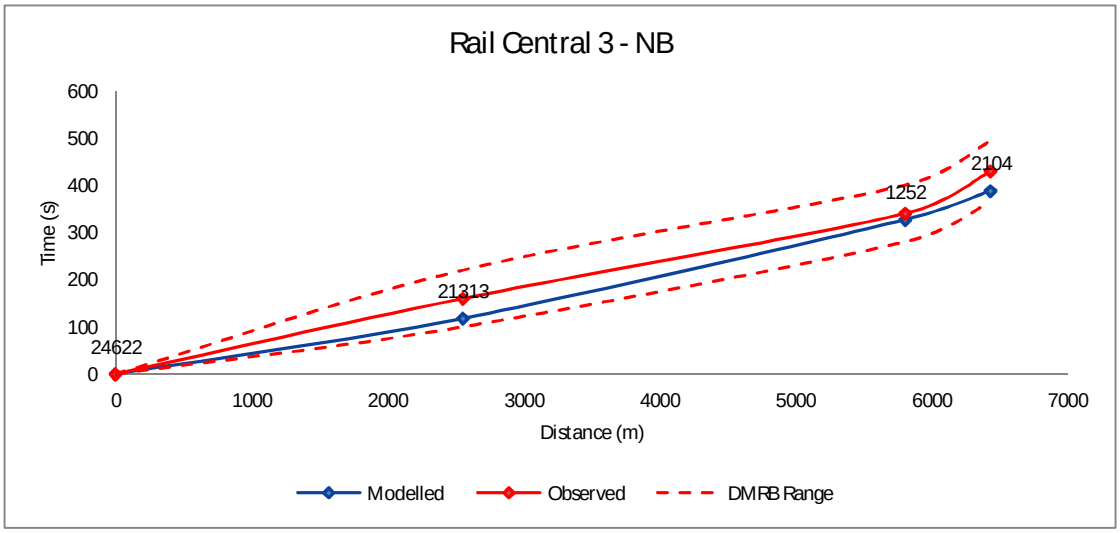


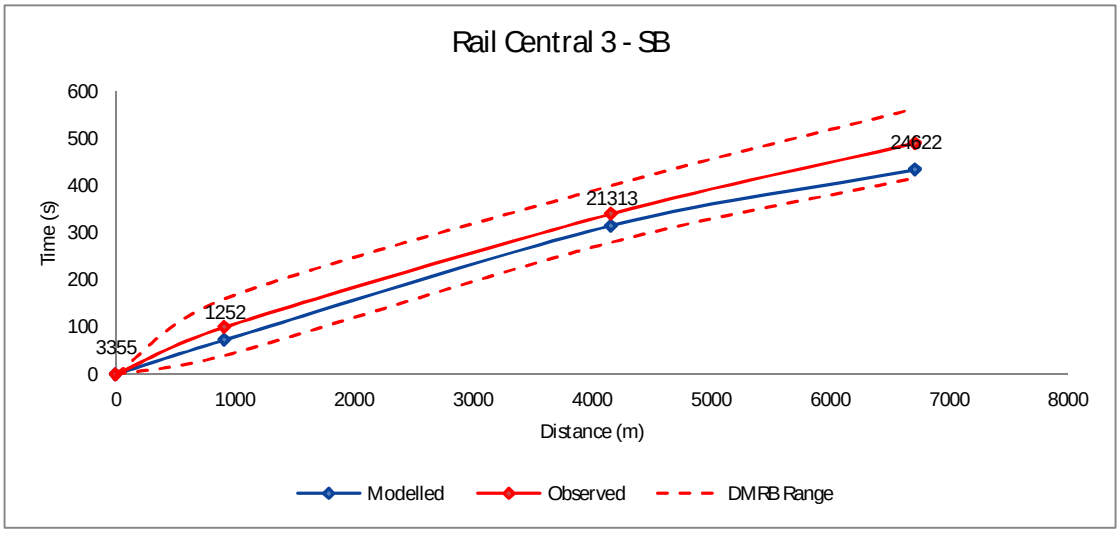
JT Graphs AM Peak

Model Map

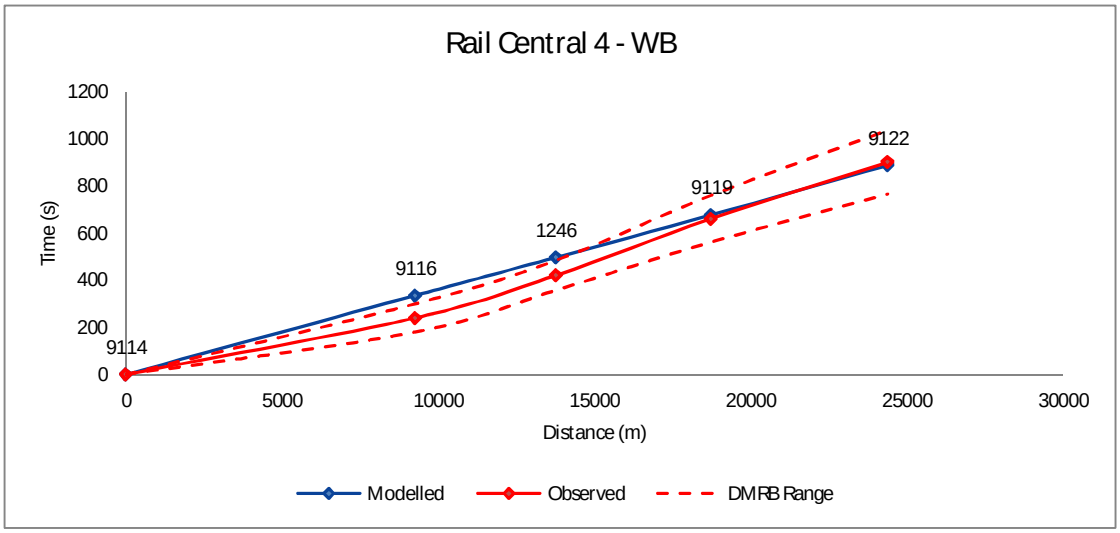
Redraw Graphs

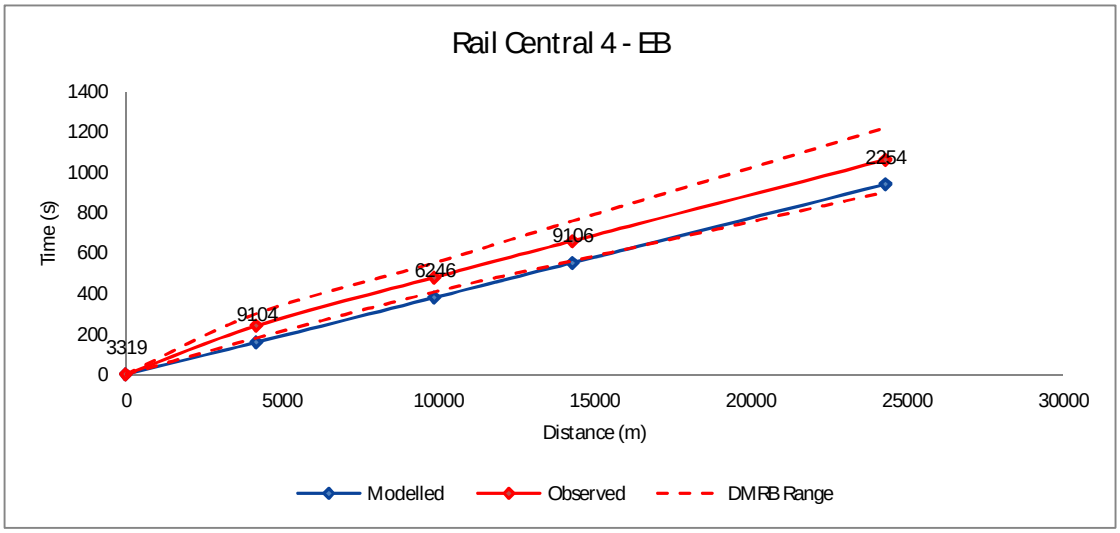


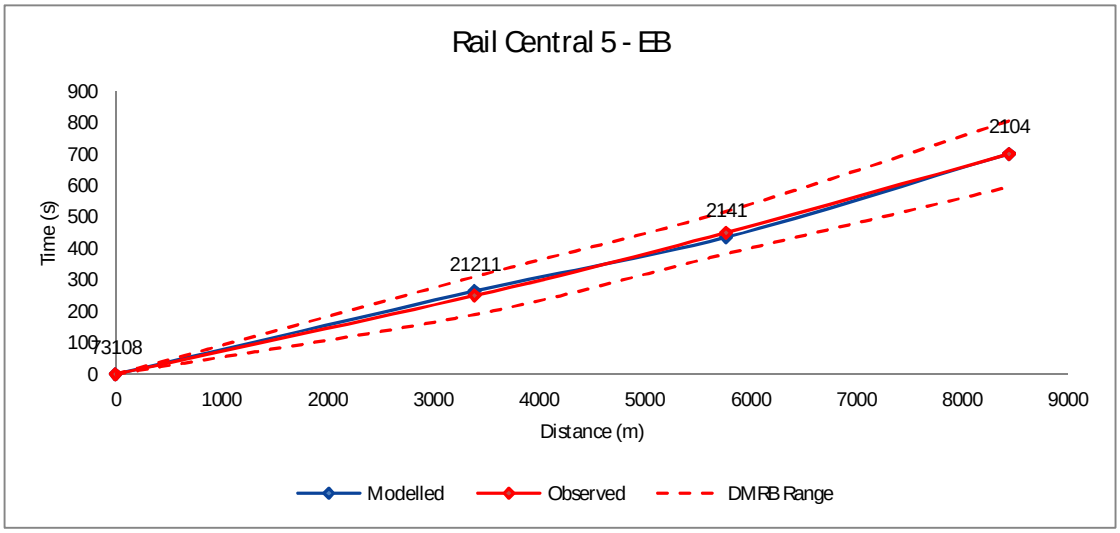




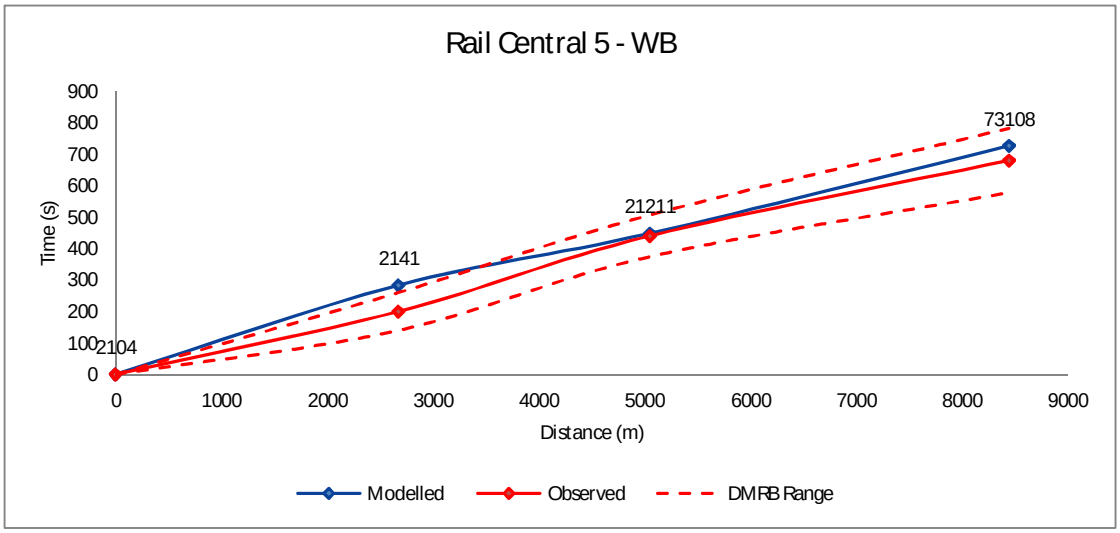
JT Graphs AM Peak

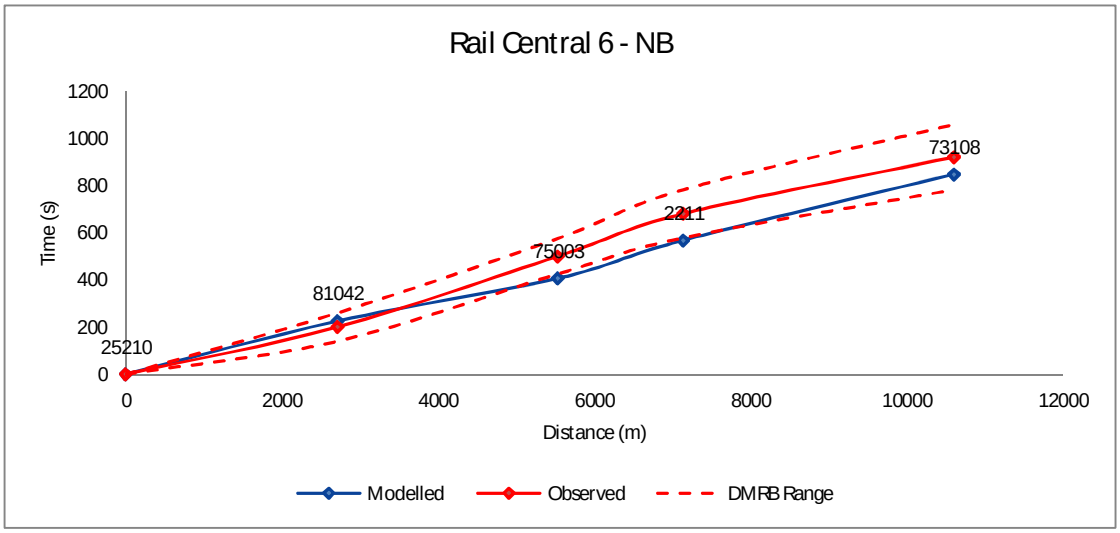


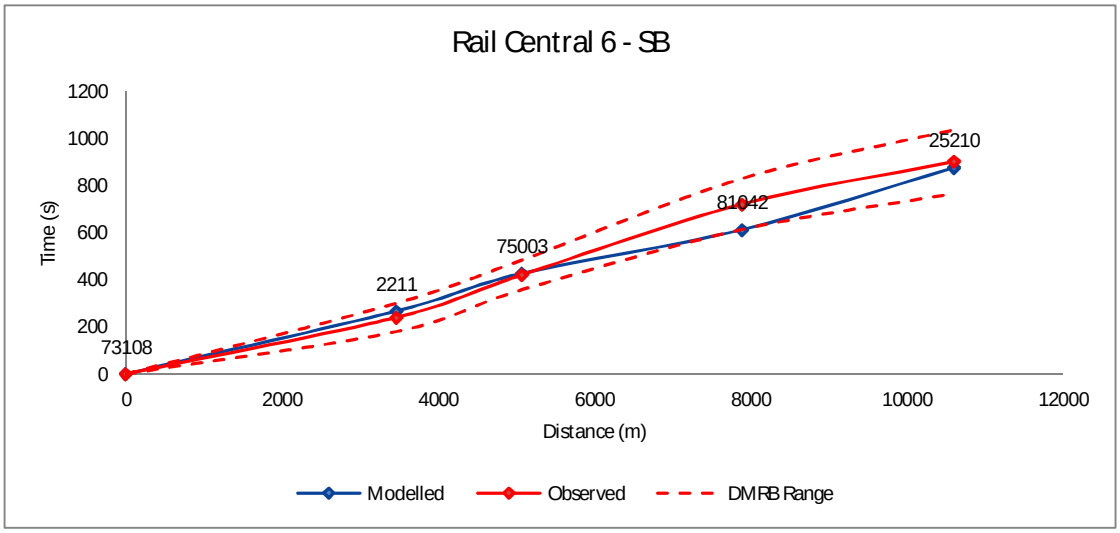




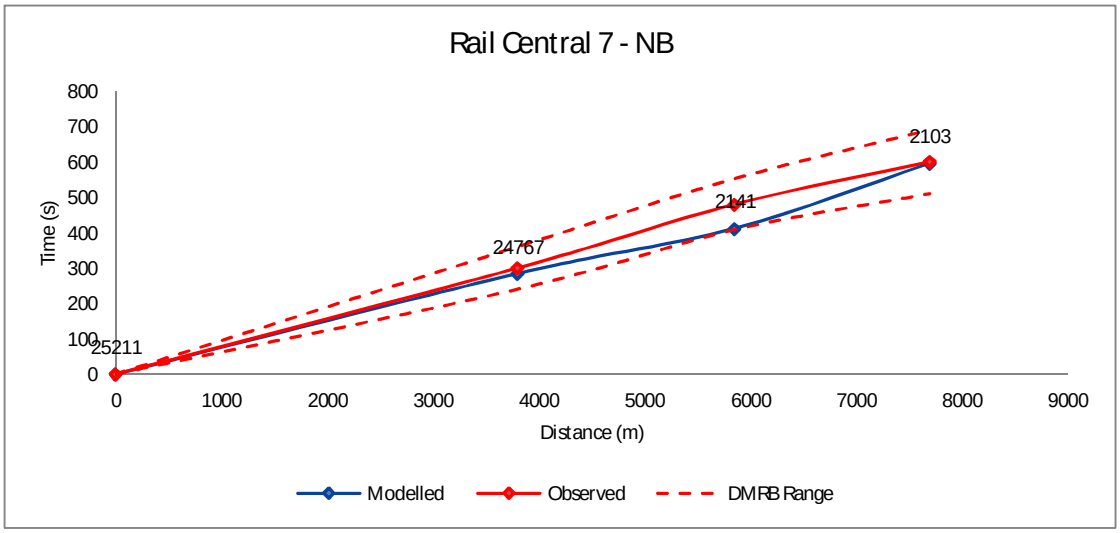
JT Graphs AM Peak

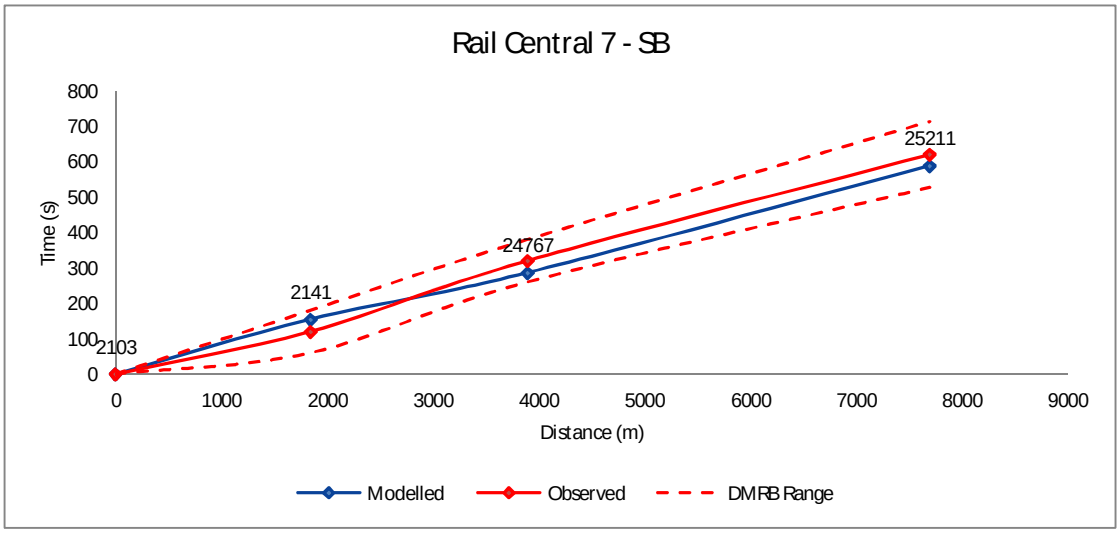


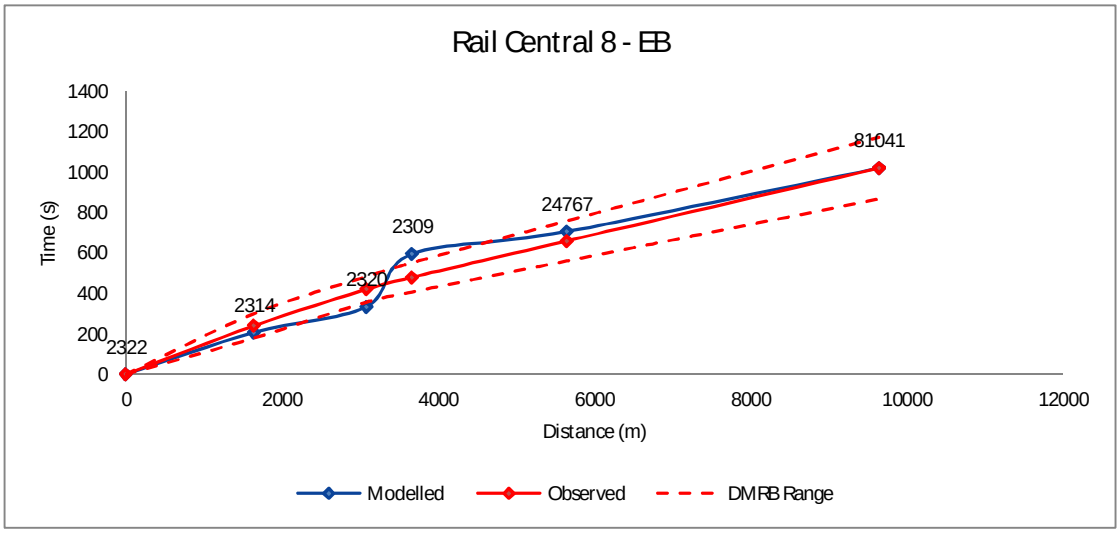




JT Graphs AM Peak



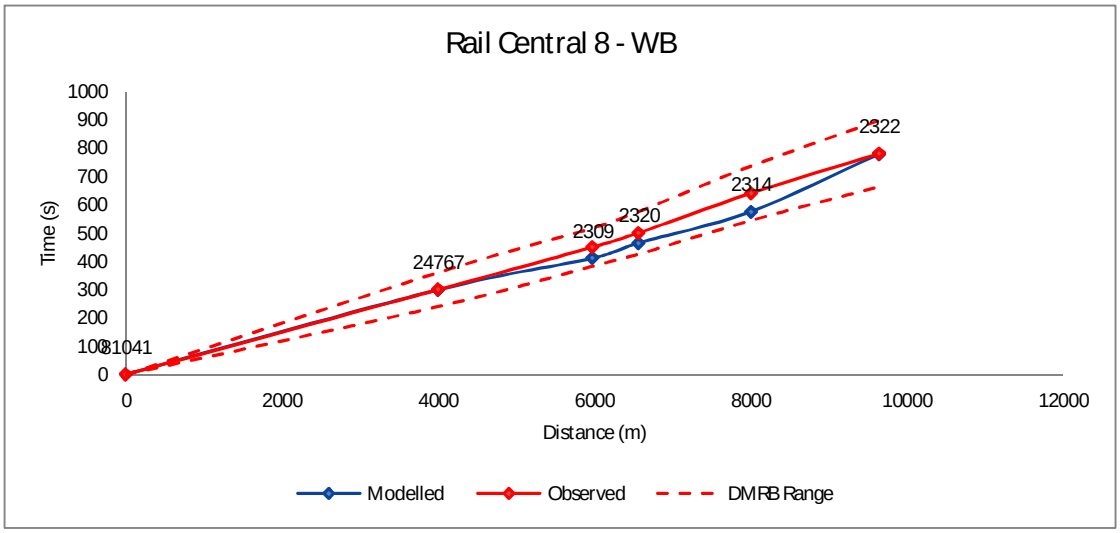




JT Graphs AM Peak

Model Map

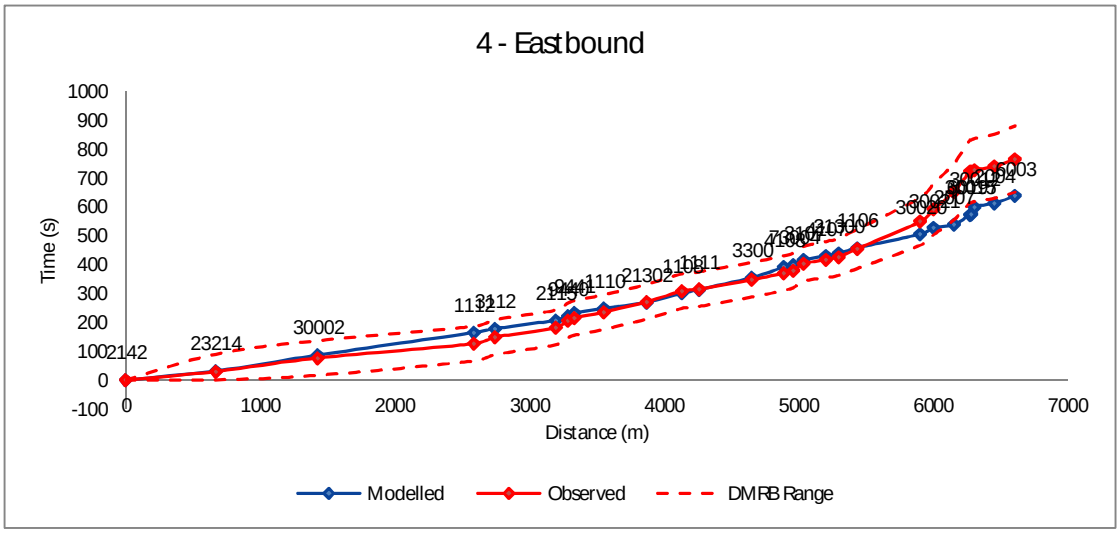
Redraw Graphs

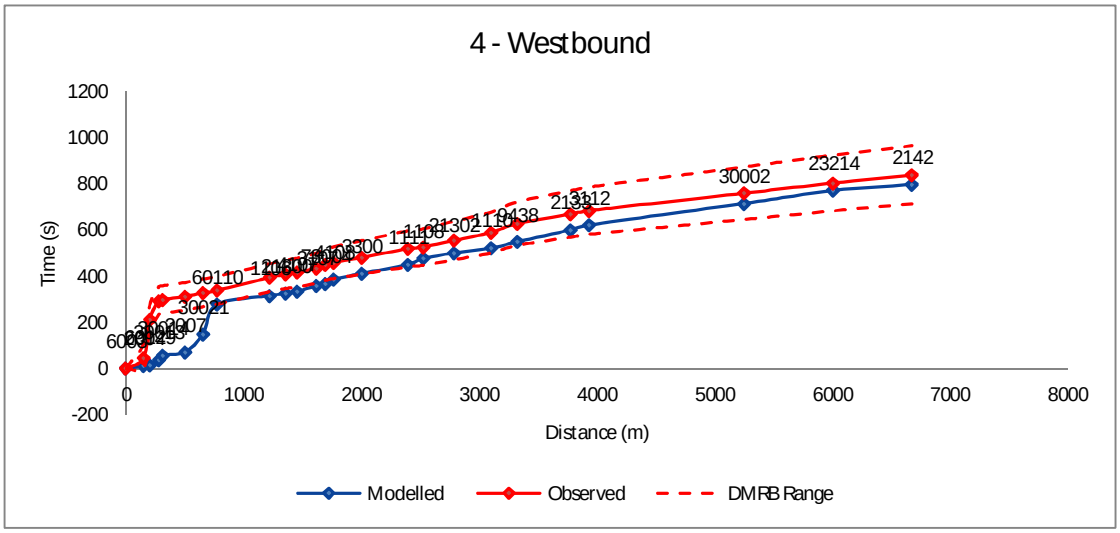


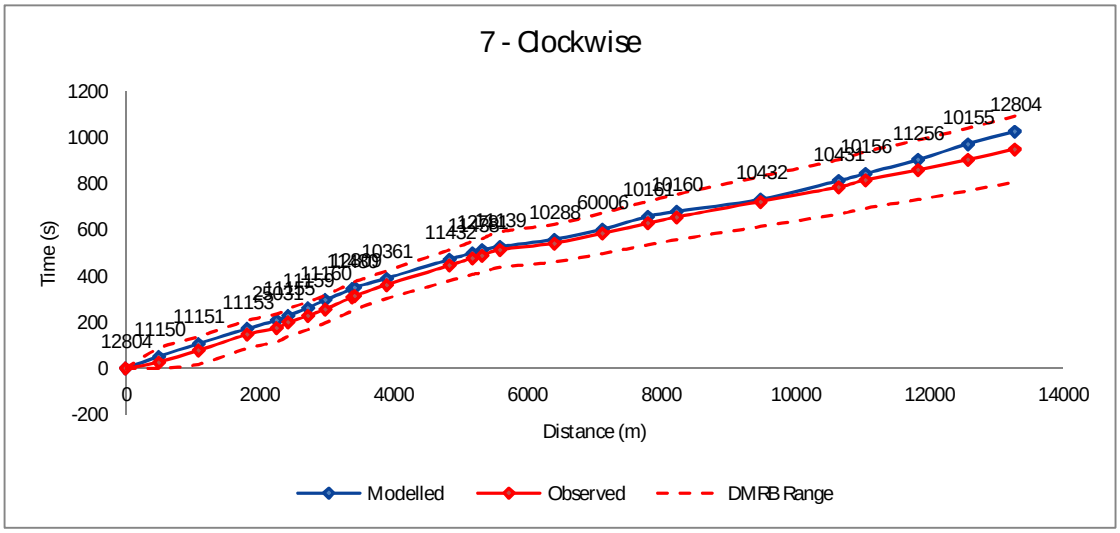
JT Graphs Interpeak

Model Map

Redraw Graphs



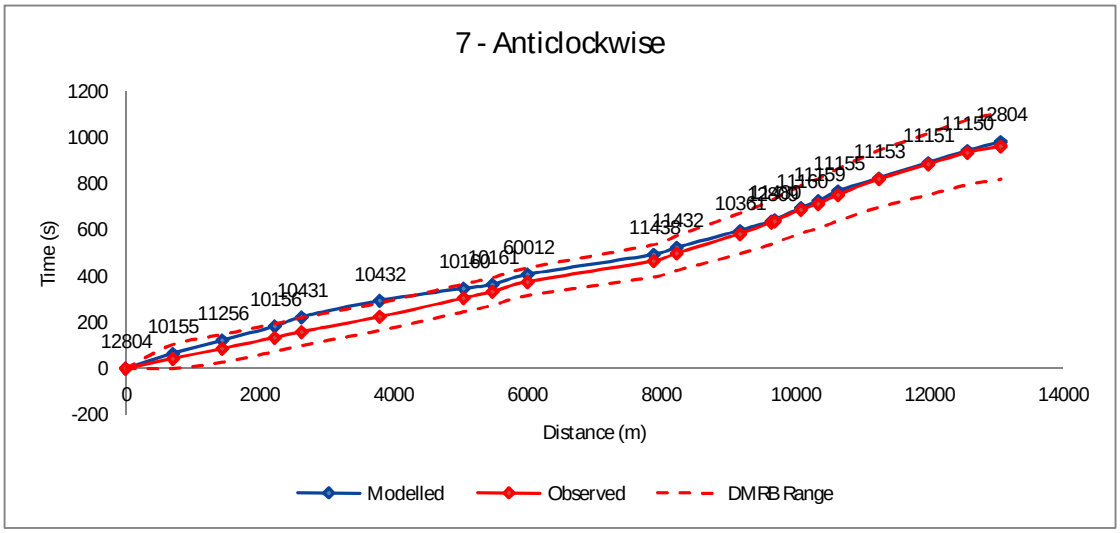


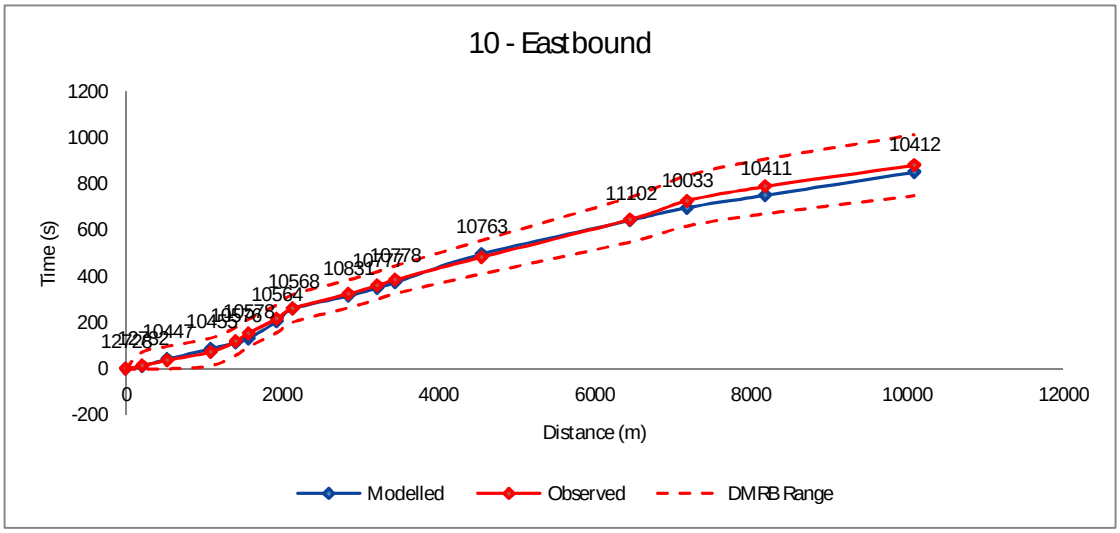


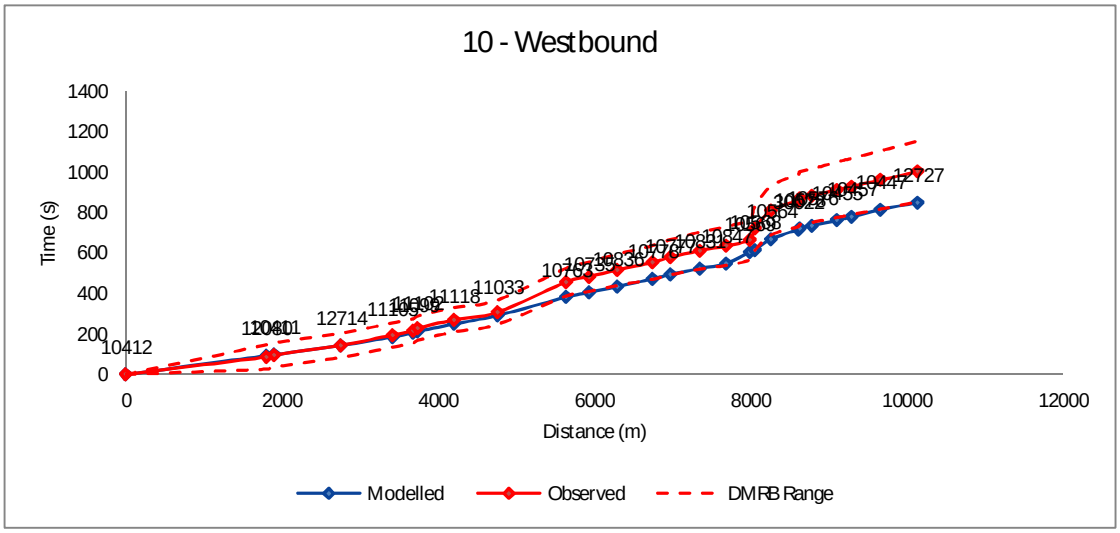
JT Graphs Interpeak

Model Map

Redraw Graphs



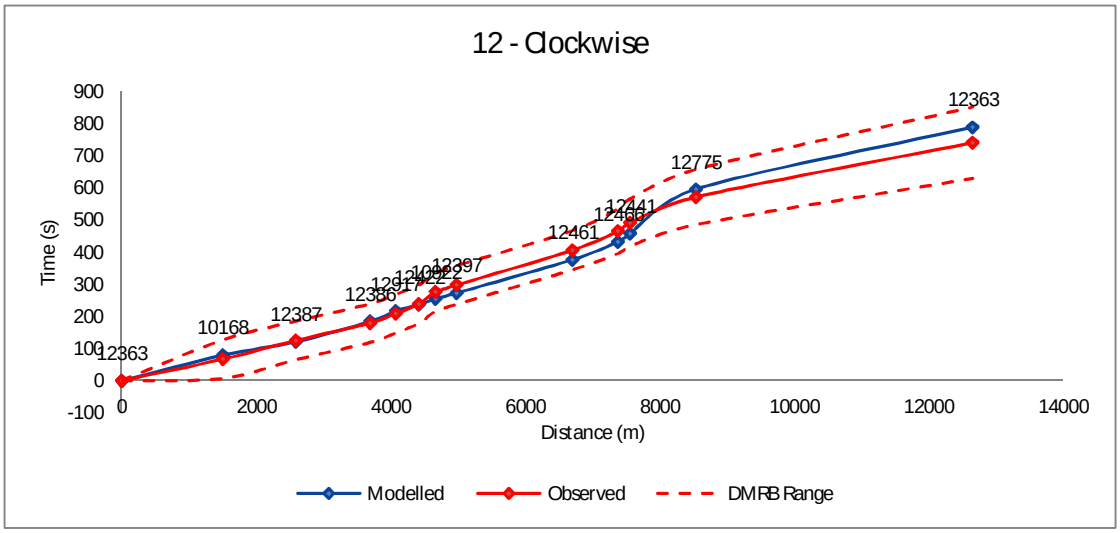


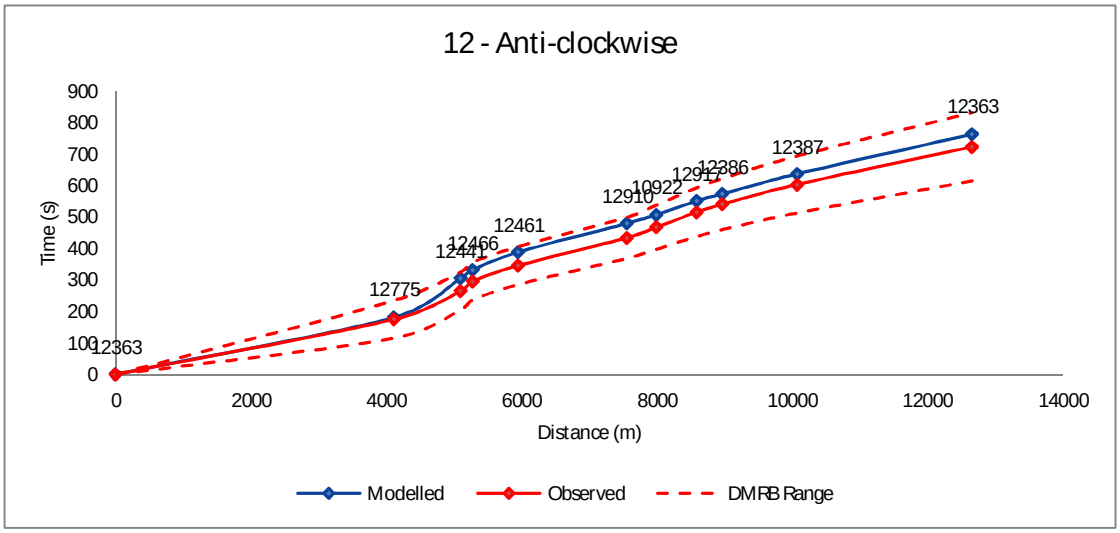


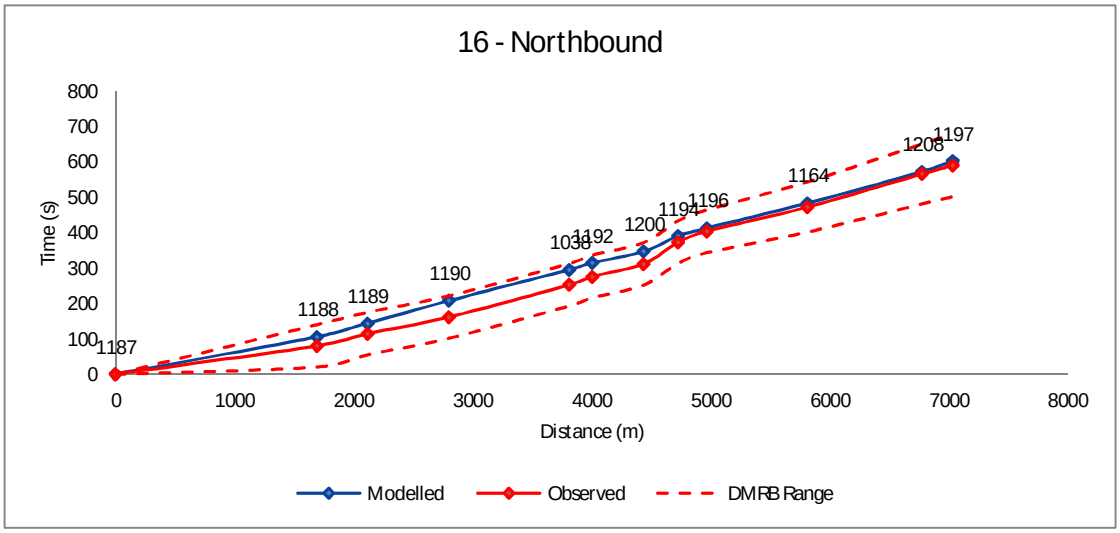
JT Graphs Interpeak

Model Map

Redraw Graphs



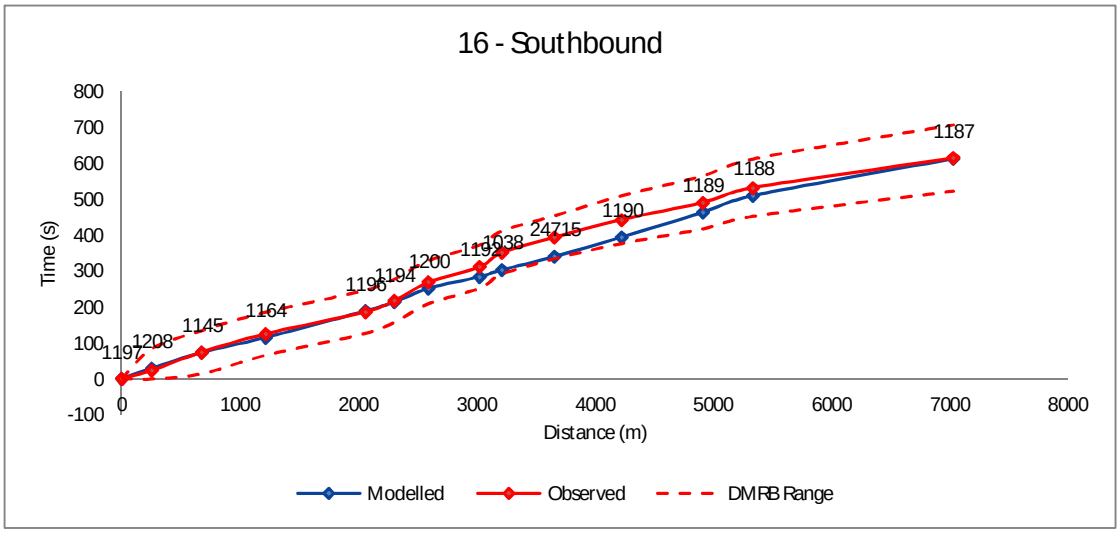


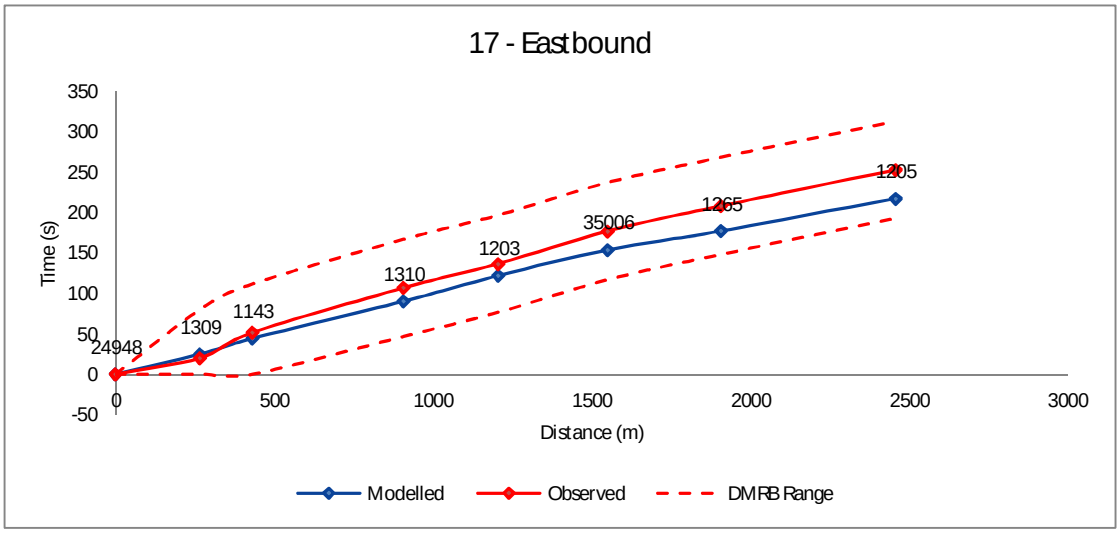


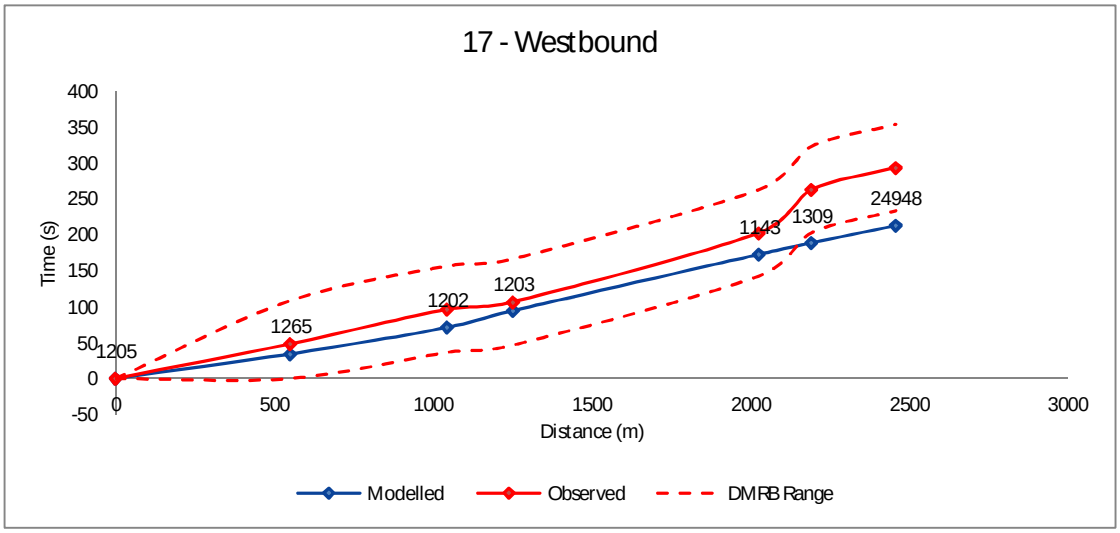
JT Graphs Interpeak

Model Map

Redraw Graphs



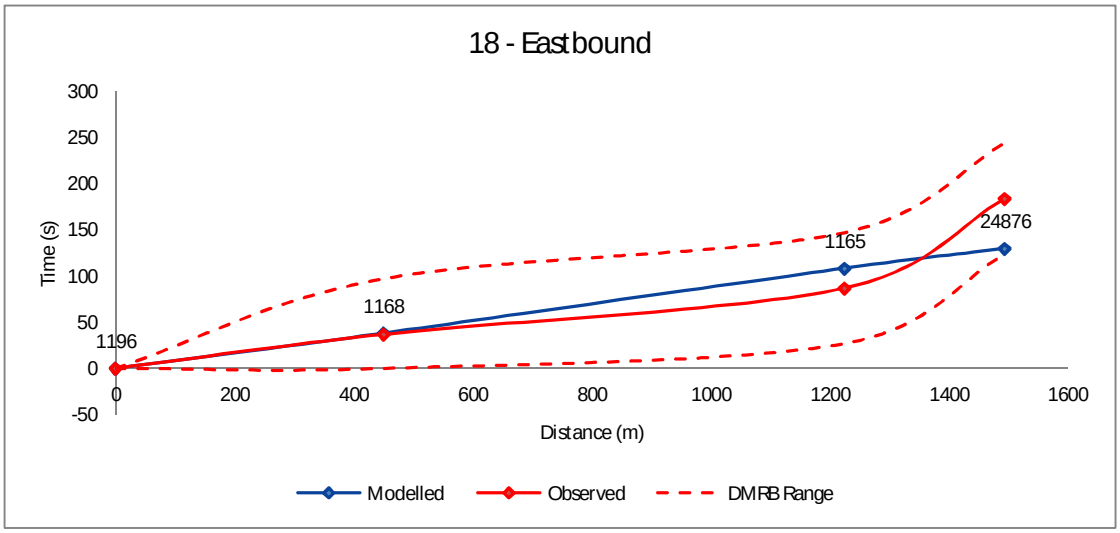


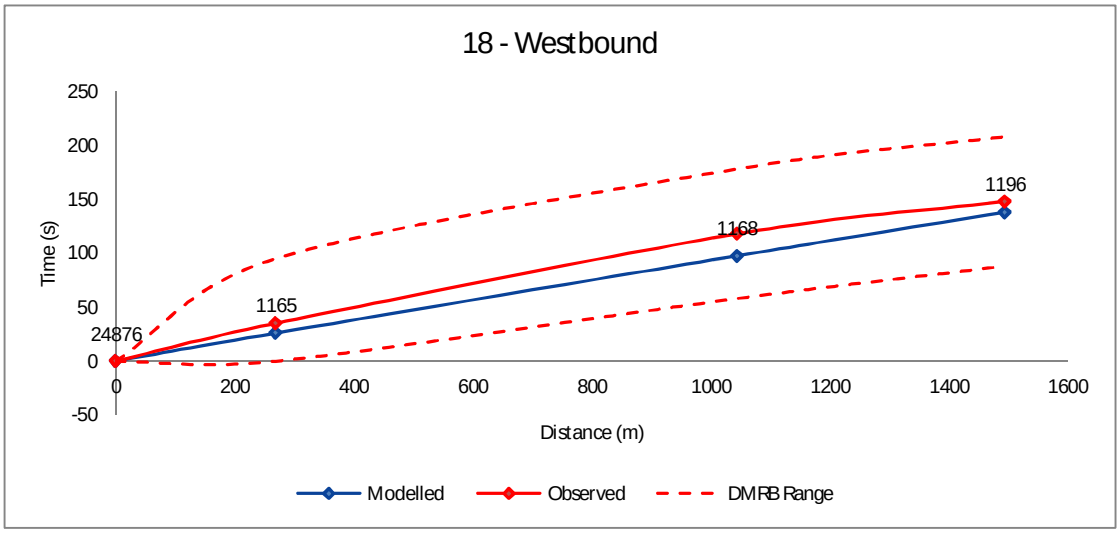


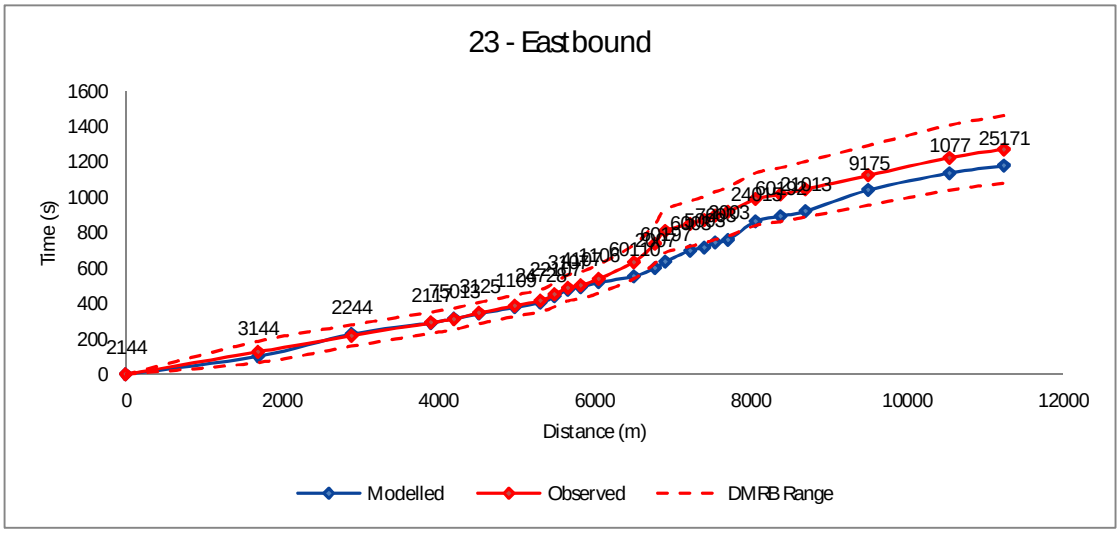
JT Graphs Interpeak

Model Map

Redraw Graphs



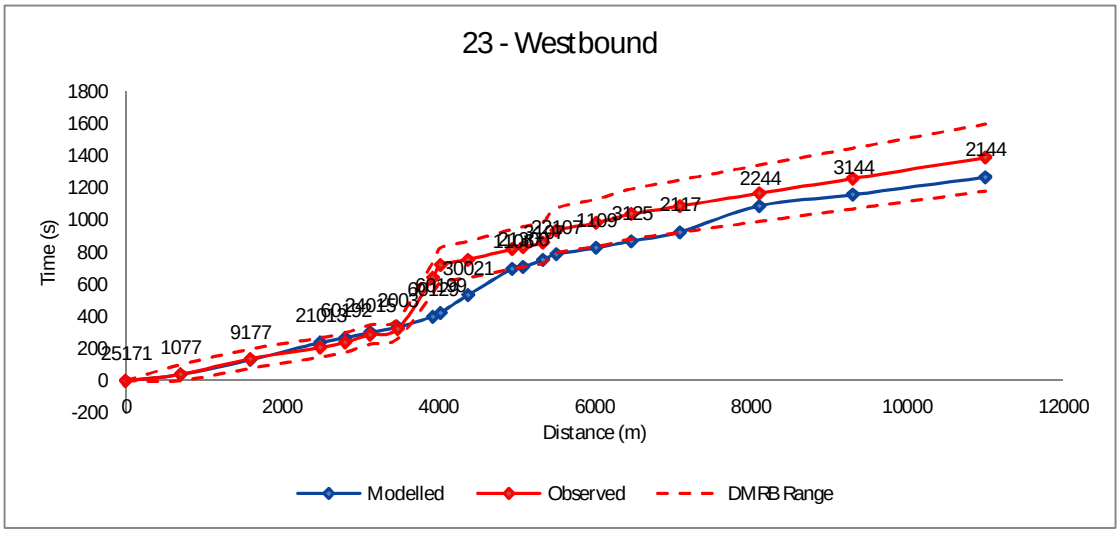


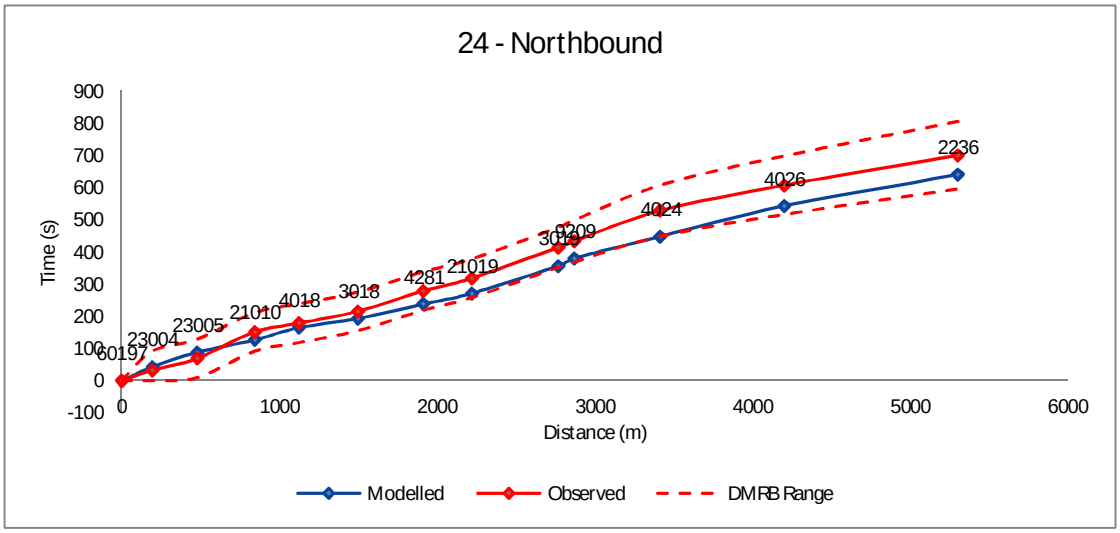


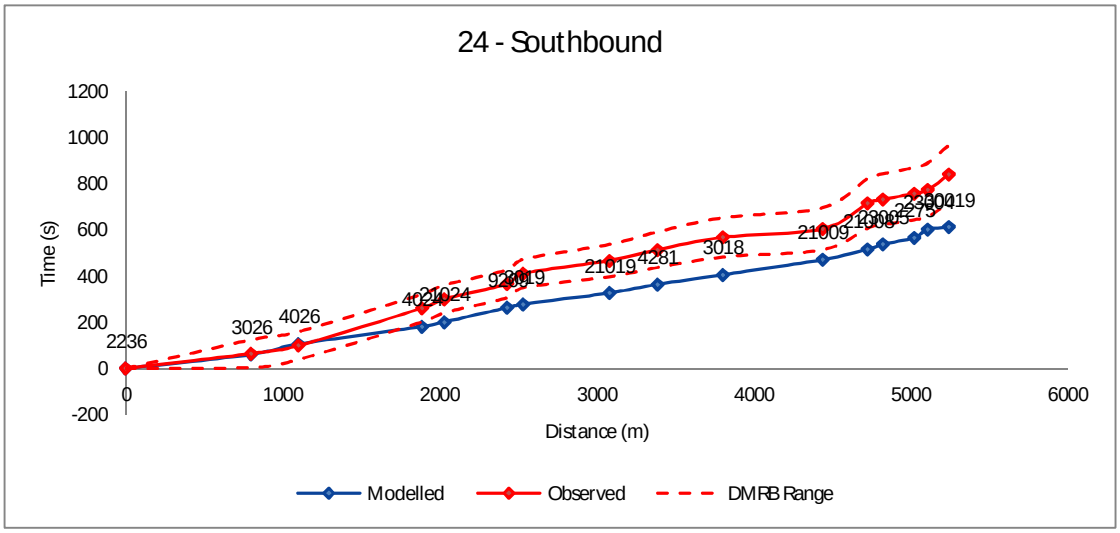
JT Graphs Interpeak

Model Map

Redraw Graphs



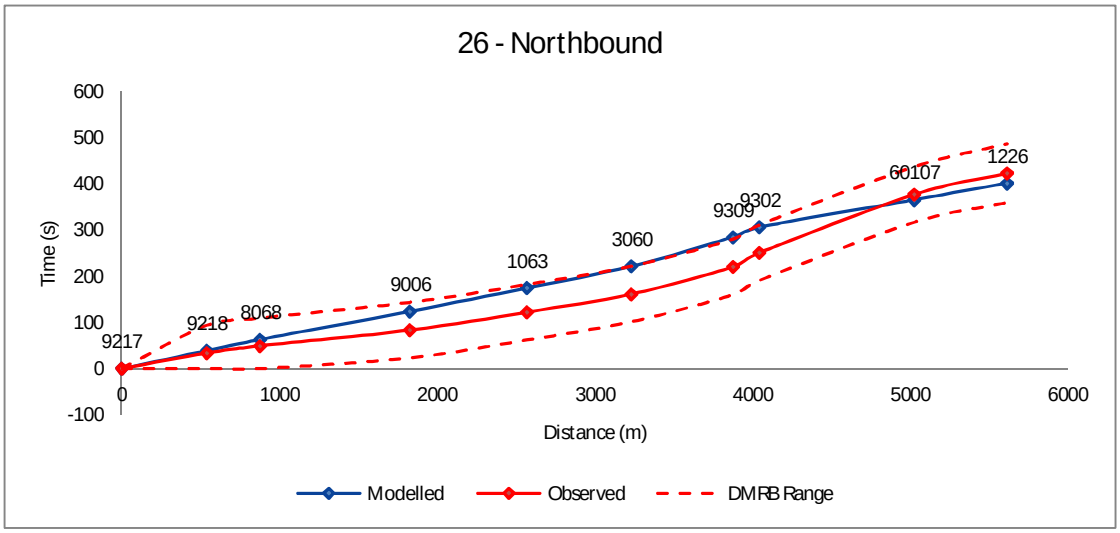


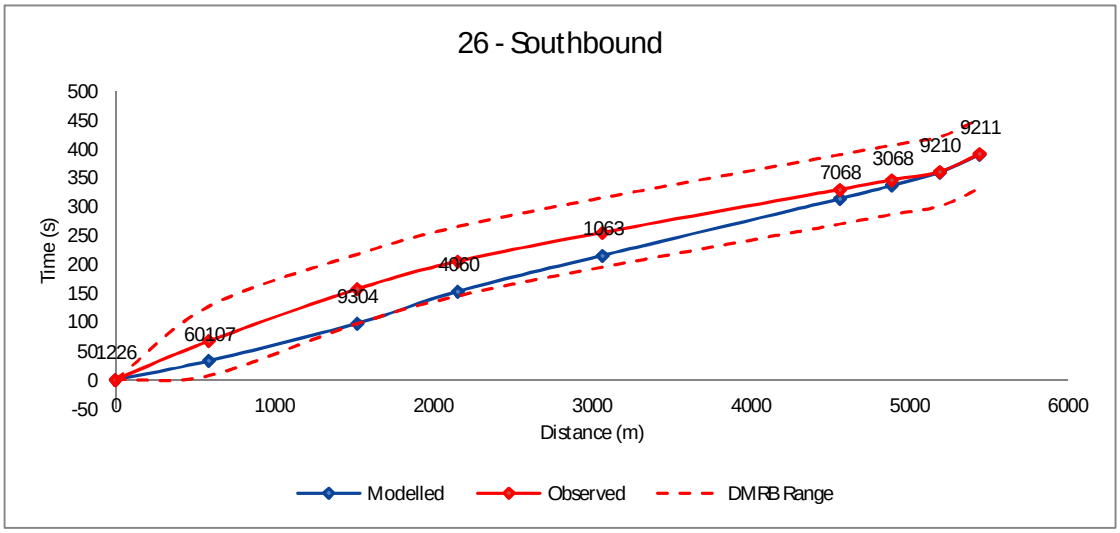


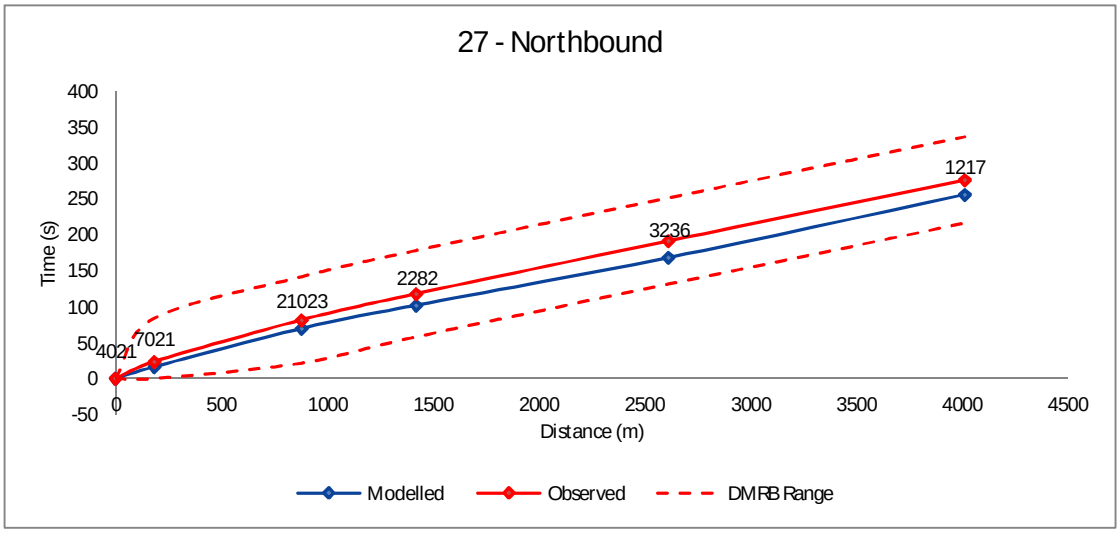
JT Graphs Interpeak

Model Map

Redraw Graphs



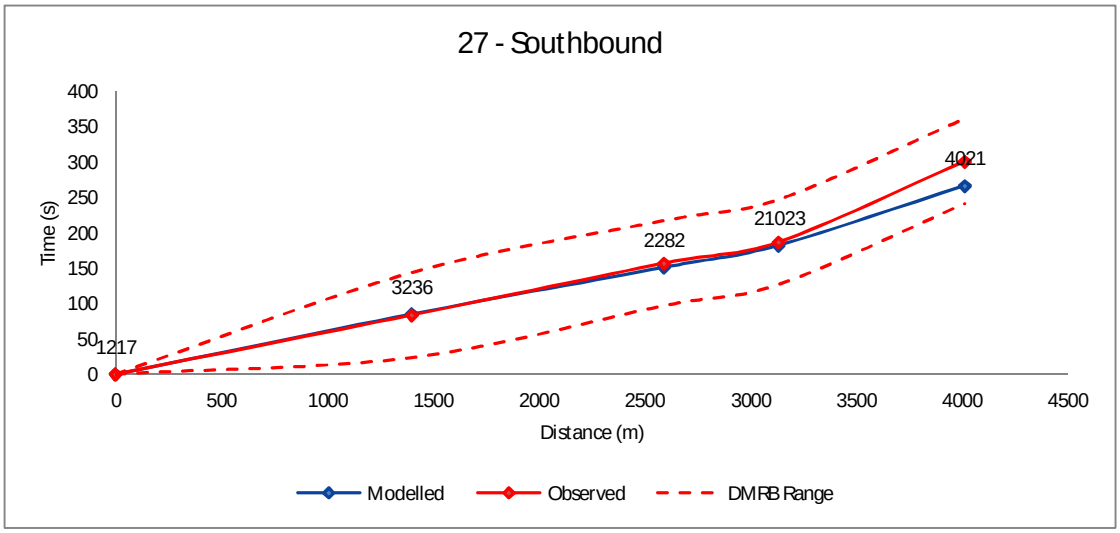


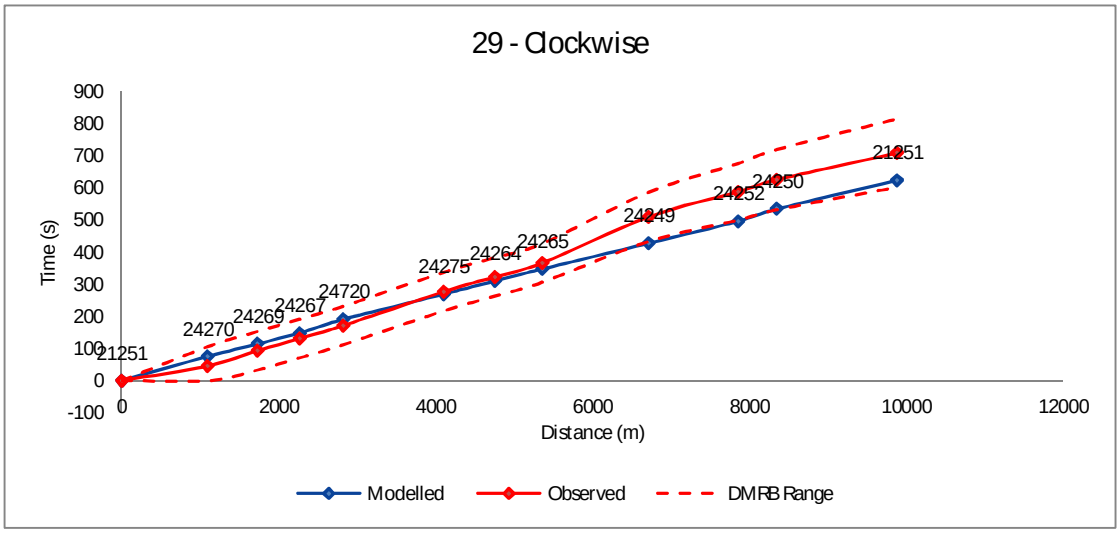


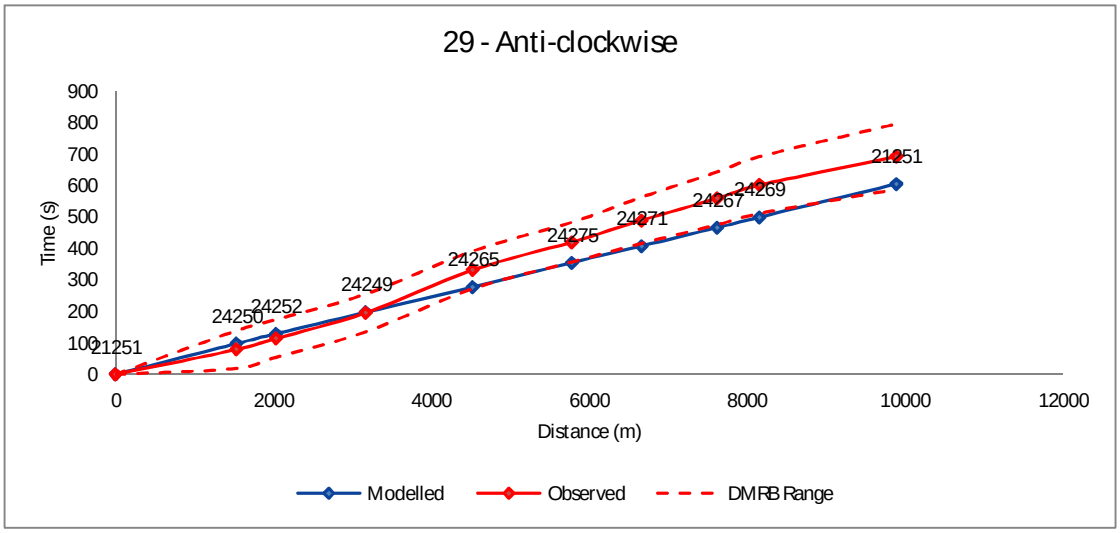
JT Graphs Interpeak

Model Map

Redraw Graphs



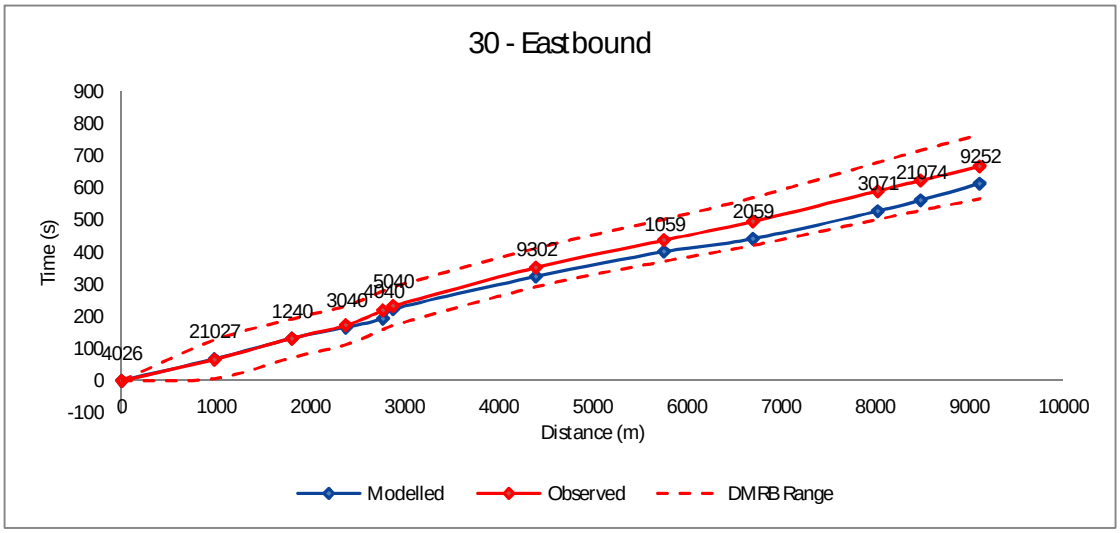


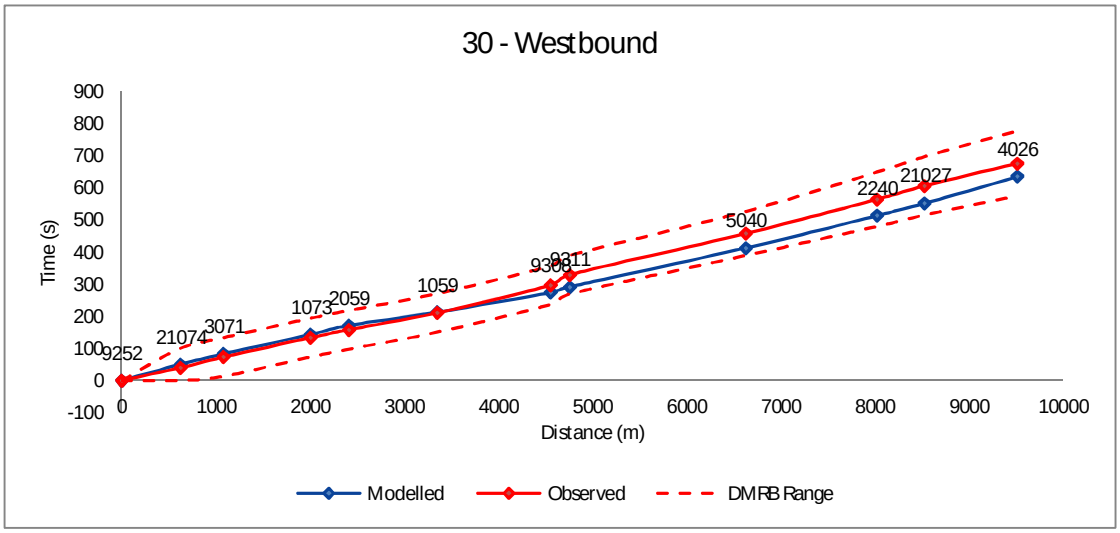


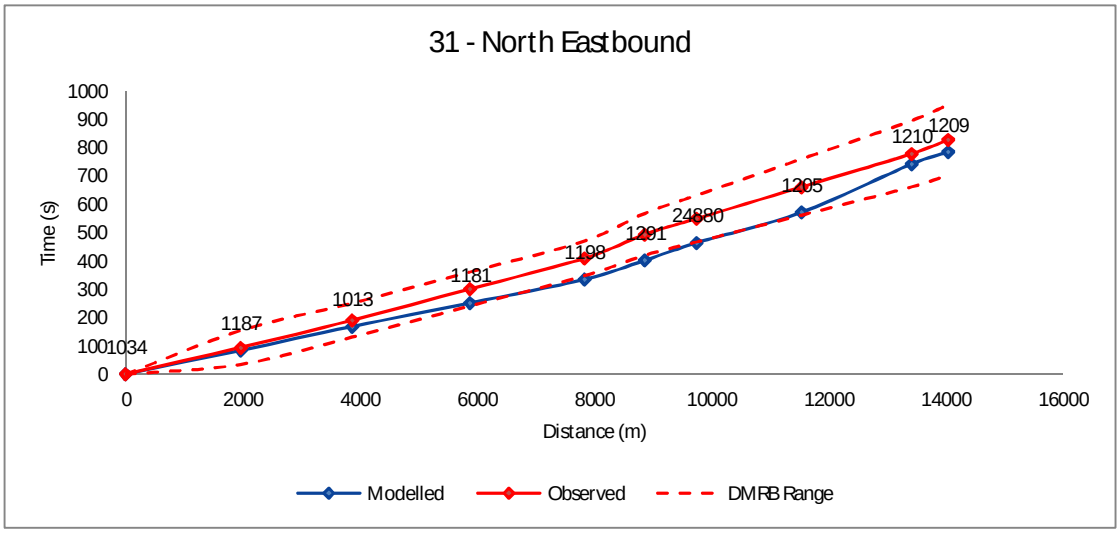
JT Graphs Interpeak

Model Map

Redraw Graphs



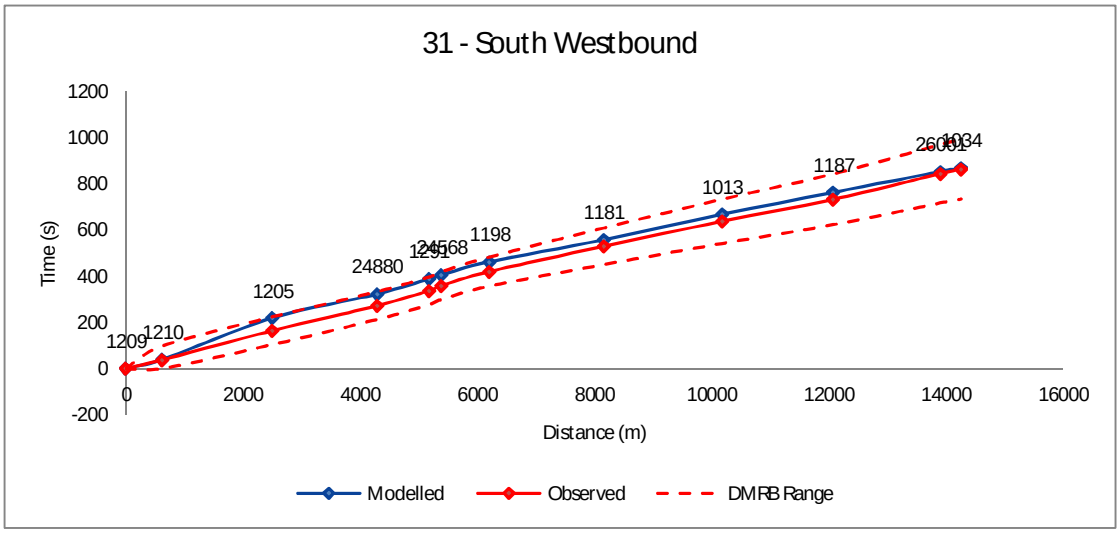


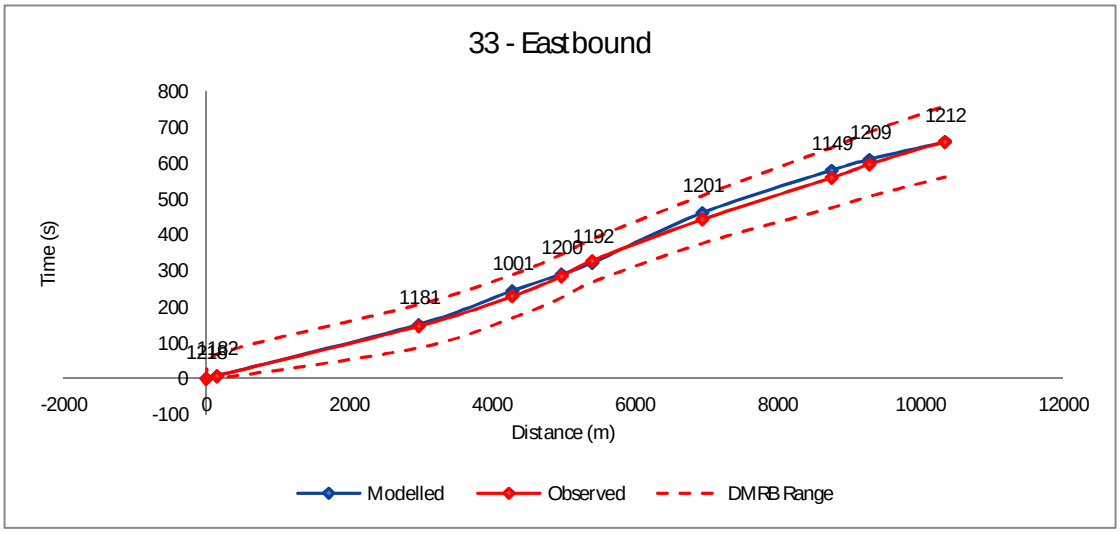


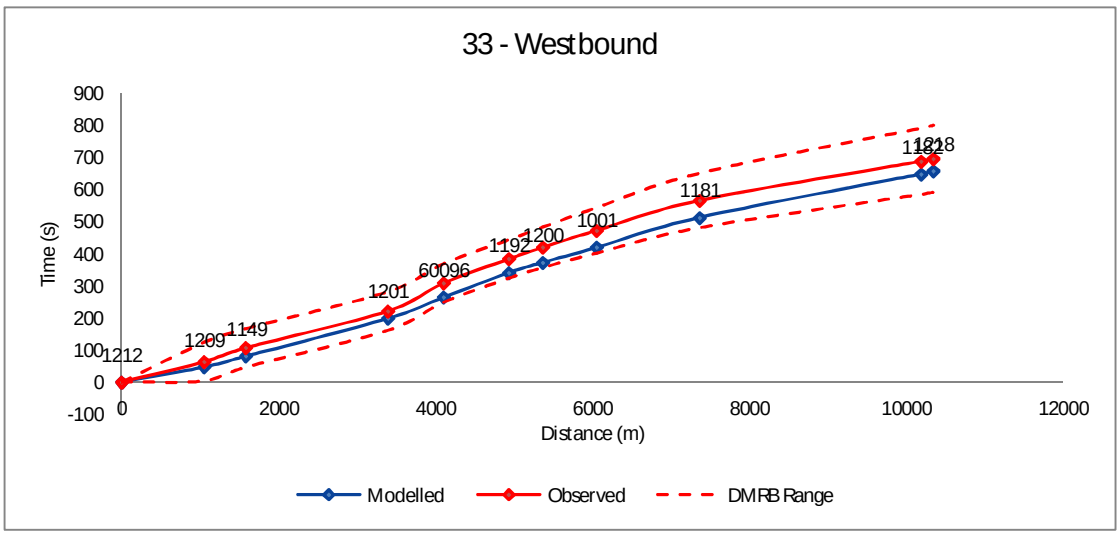
JT Graphs Interpeak

Model Map

Redraw Graphs



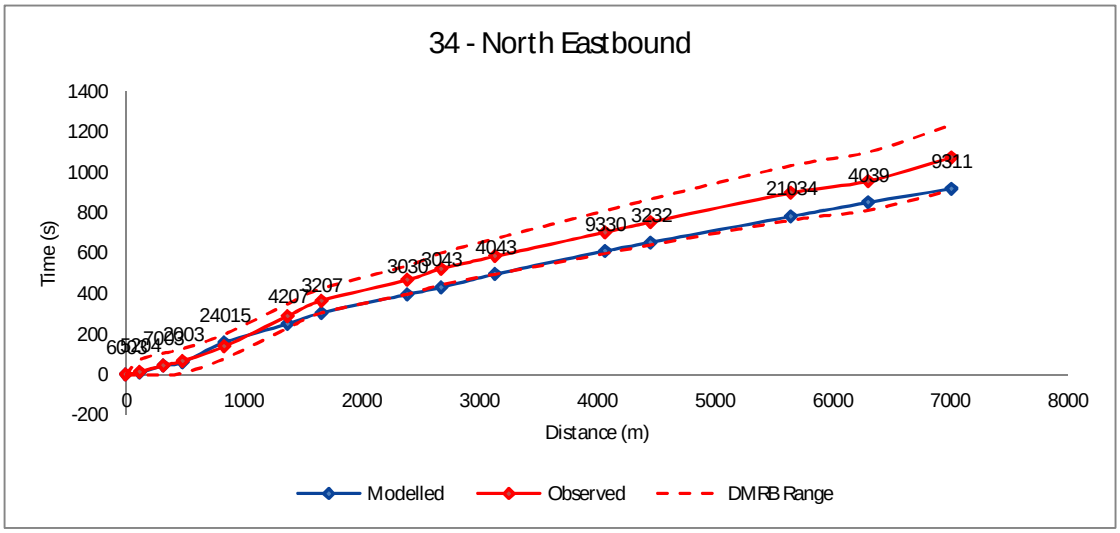


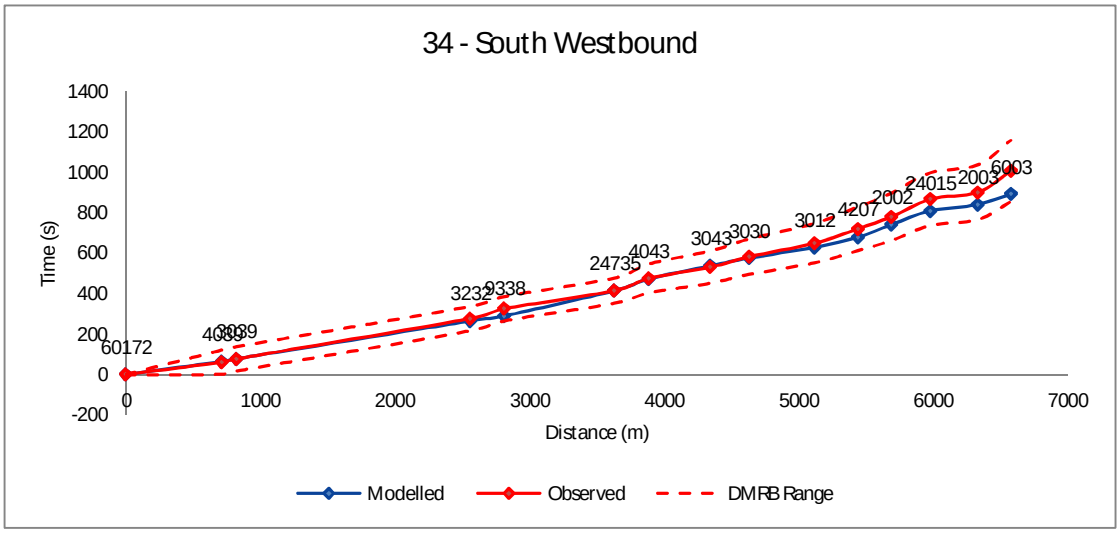


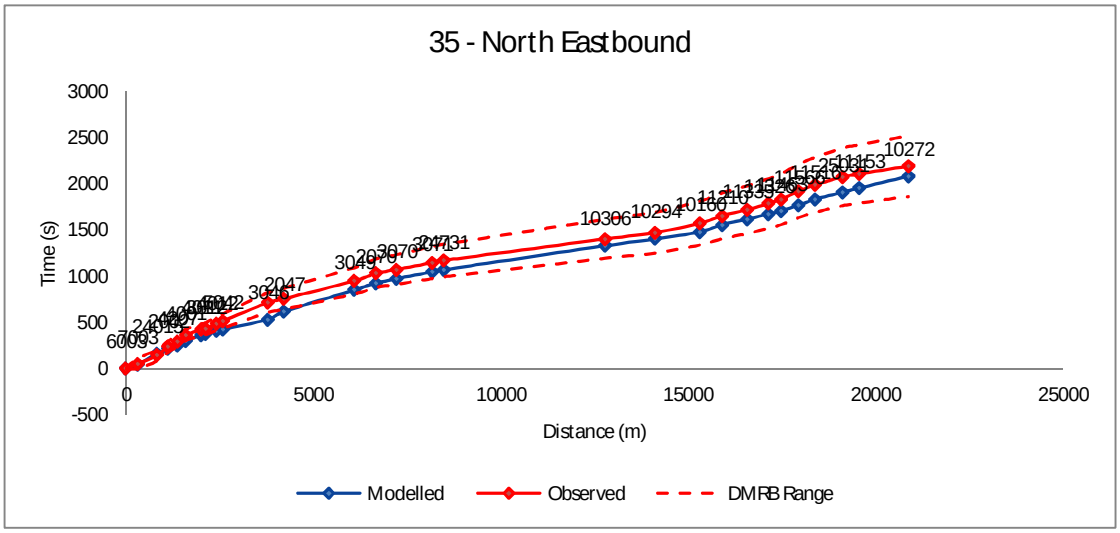
JT Graphs Interpeak

Model Map

Redraw Graphs



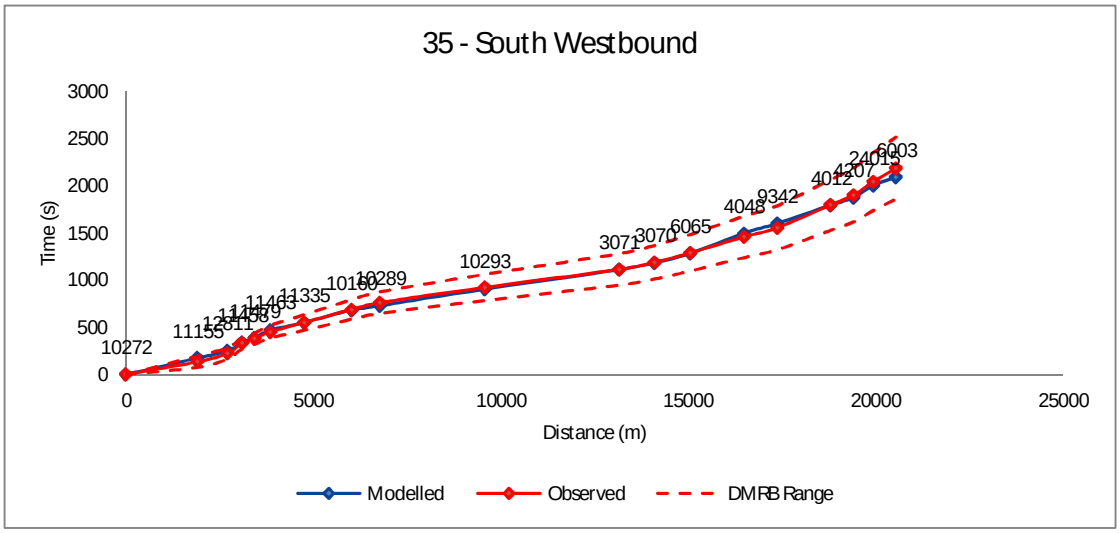


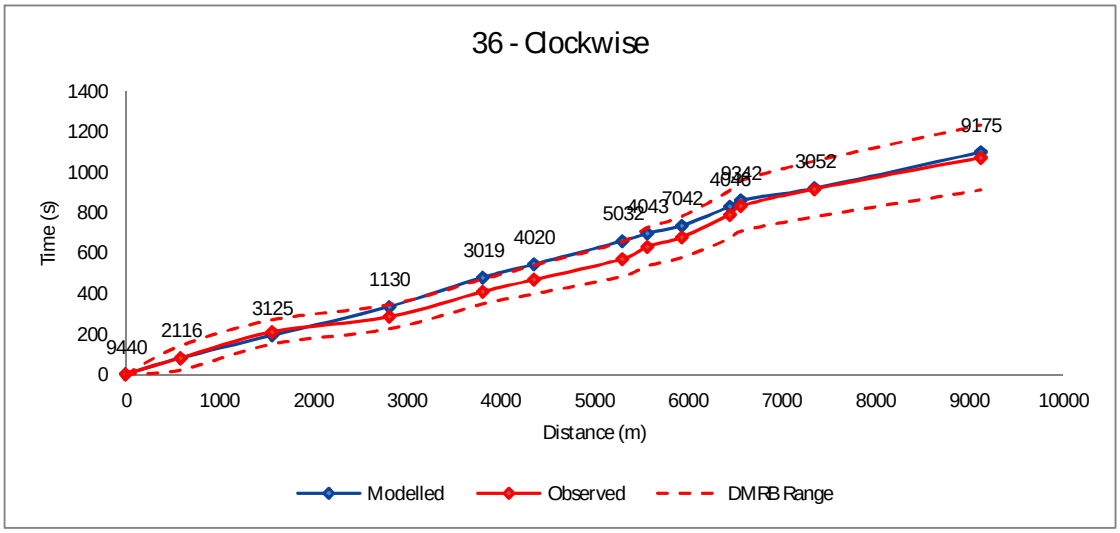


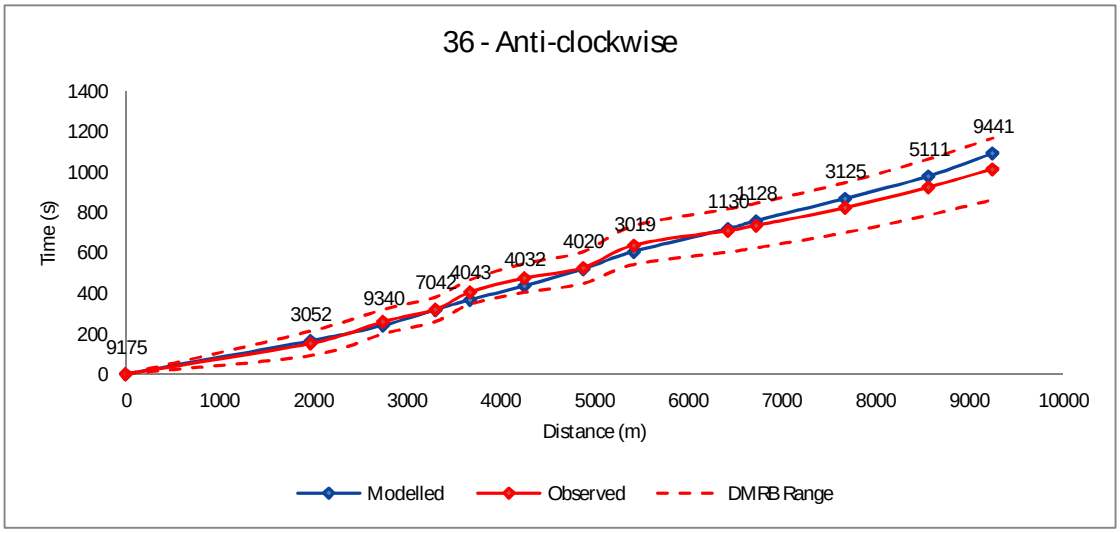
JT Graphs Interpeak

Model Map

Redraw Graphs



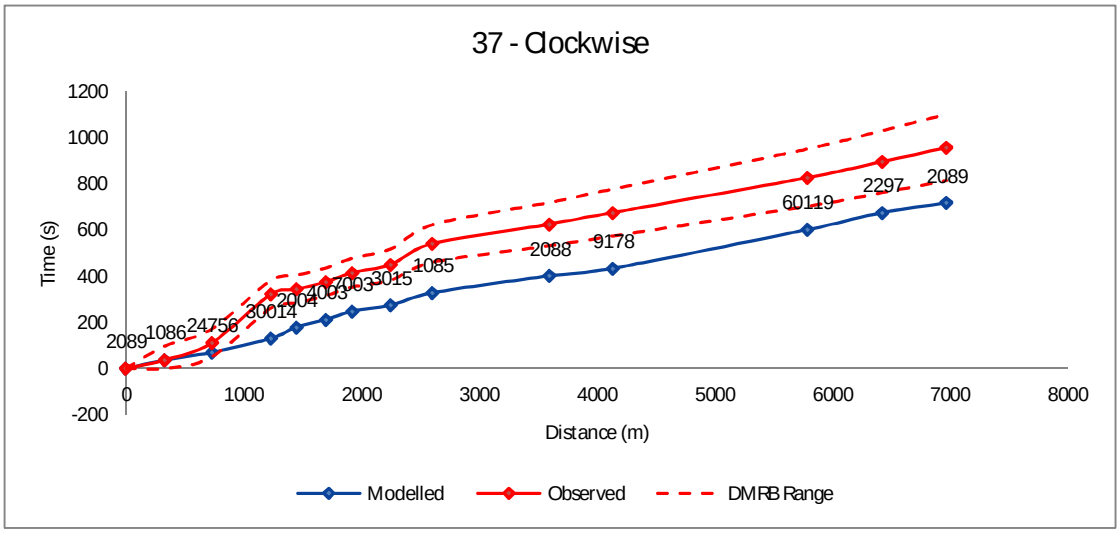


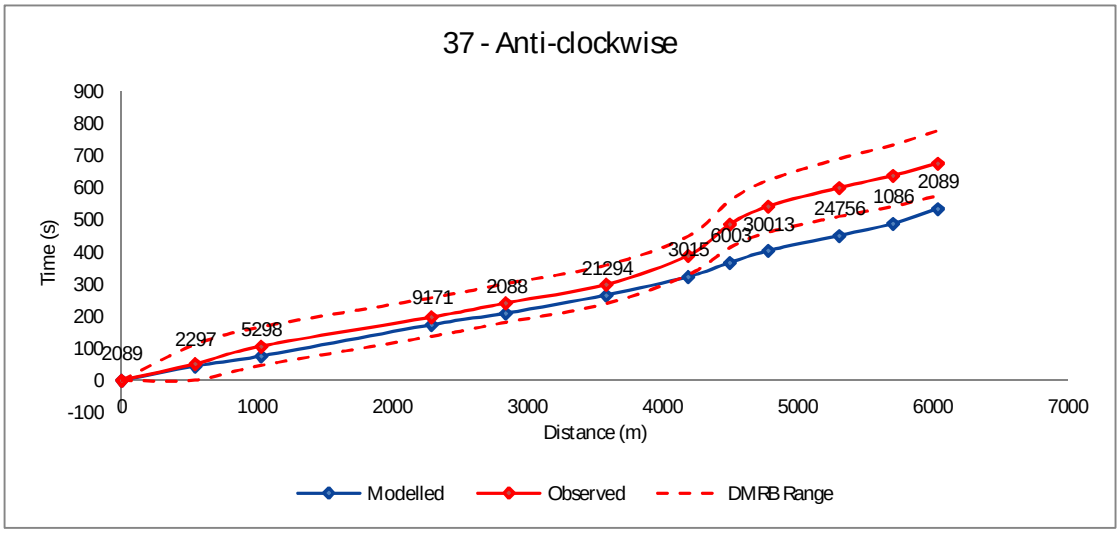


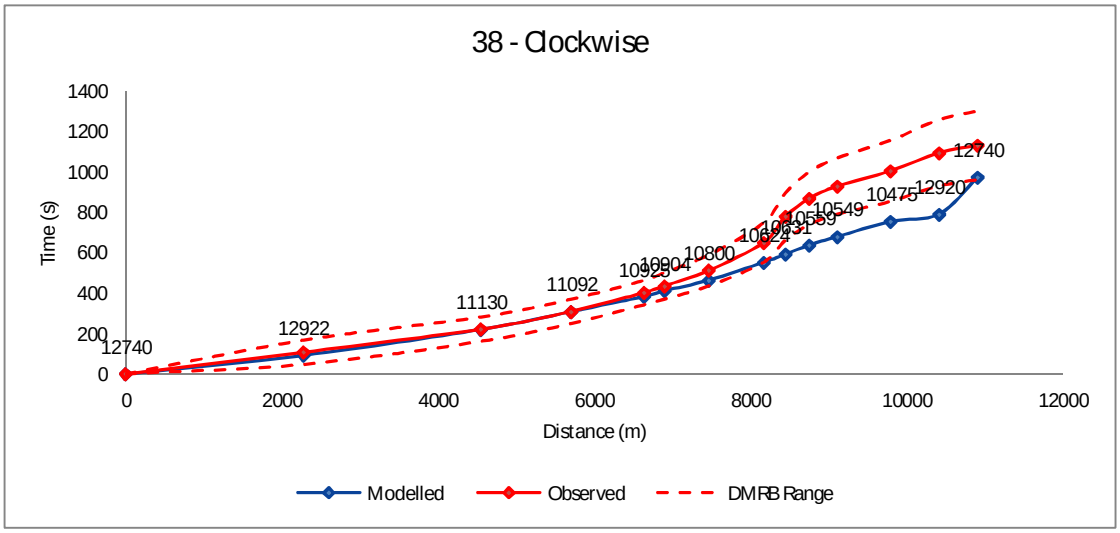
JT Graphs Interpeak

Model Map

Redraw Graphs



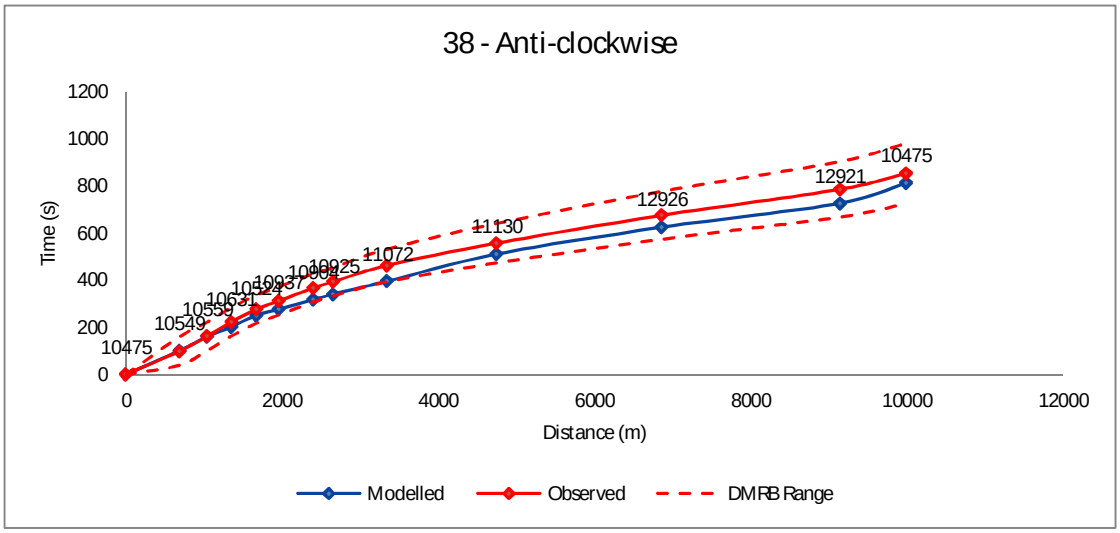


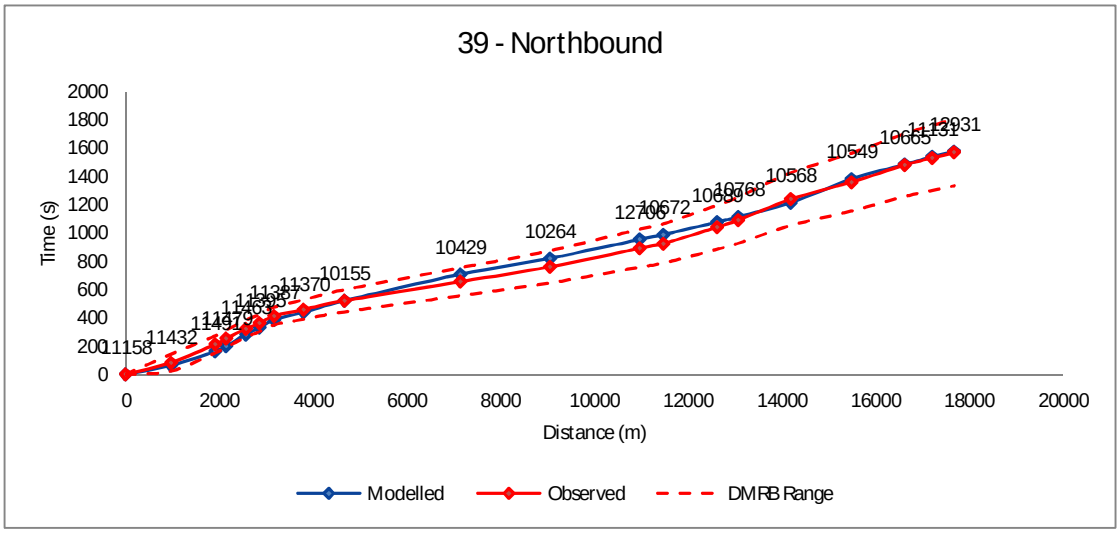


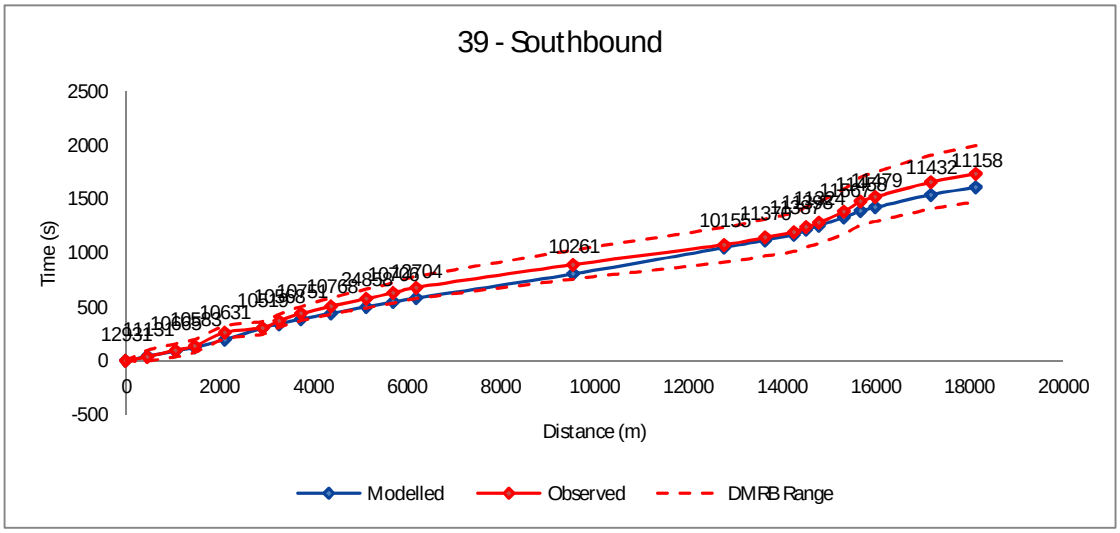
JT Graphs Interpeak

Model Map

Redraw Graphs



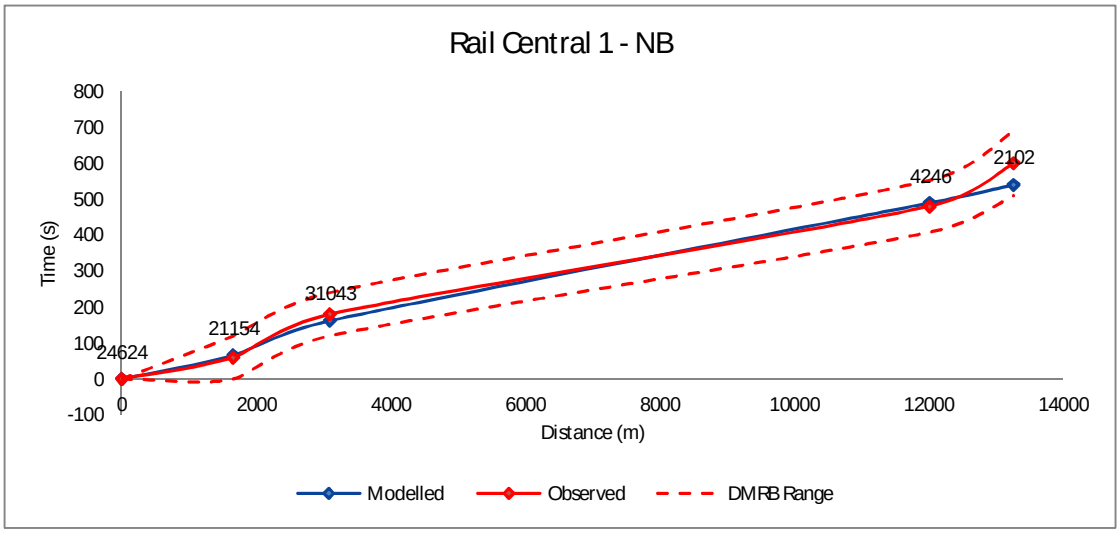


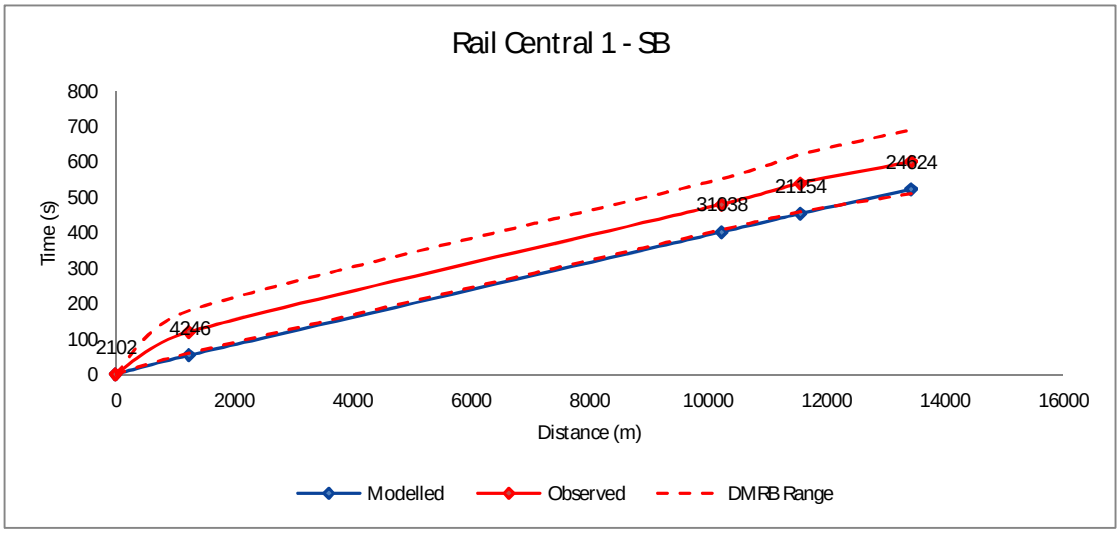


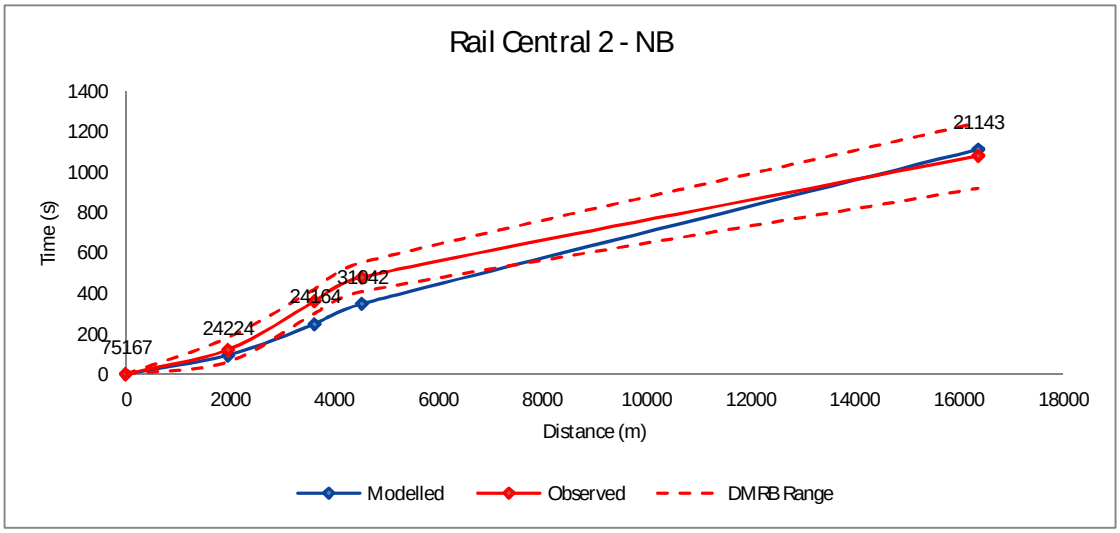
JT Graphs Interpeak

Model Map

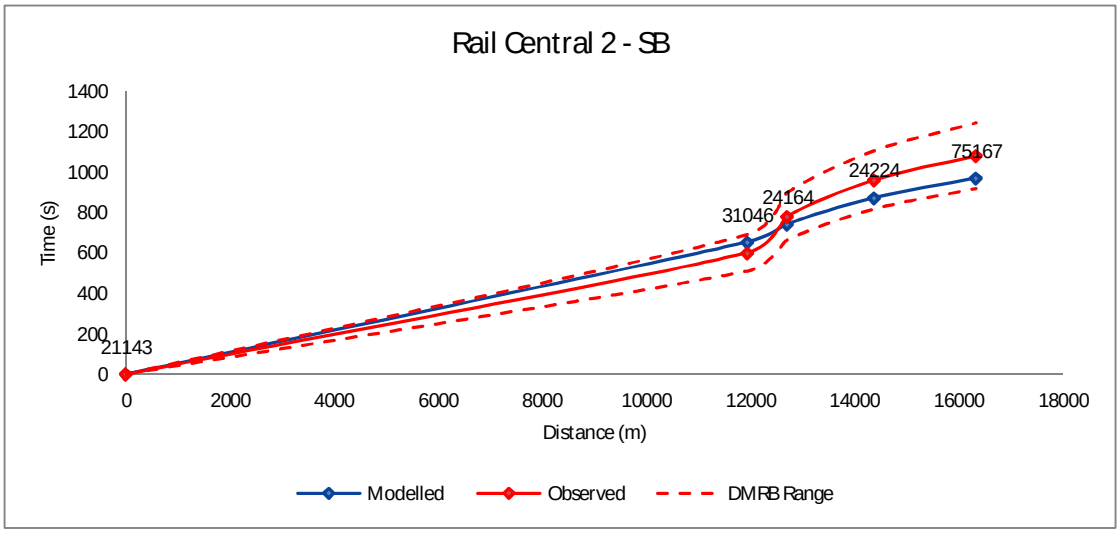
Redraw Graphs

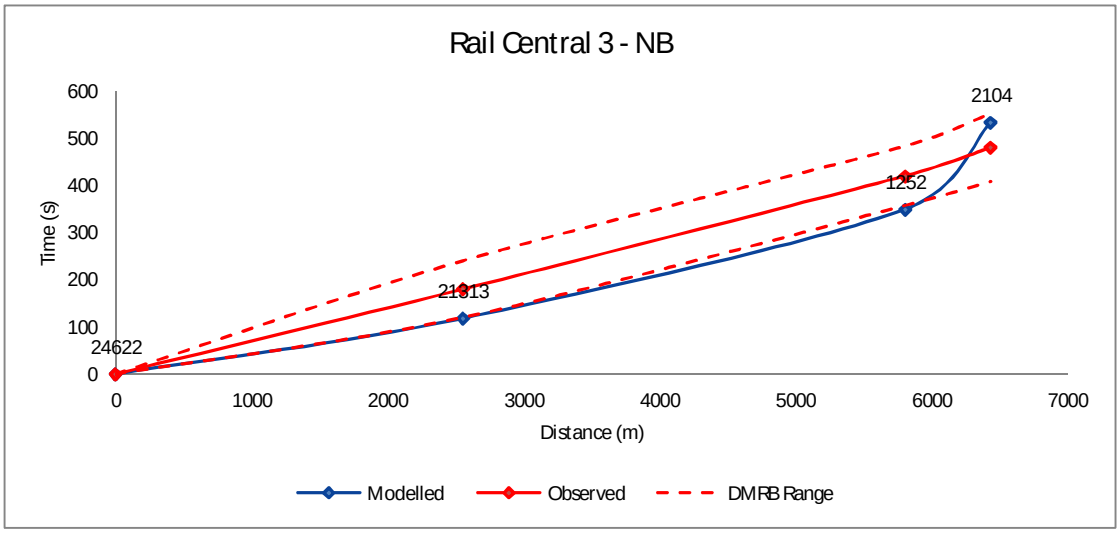


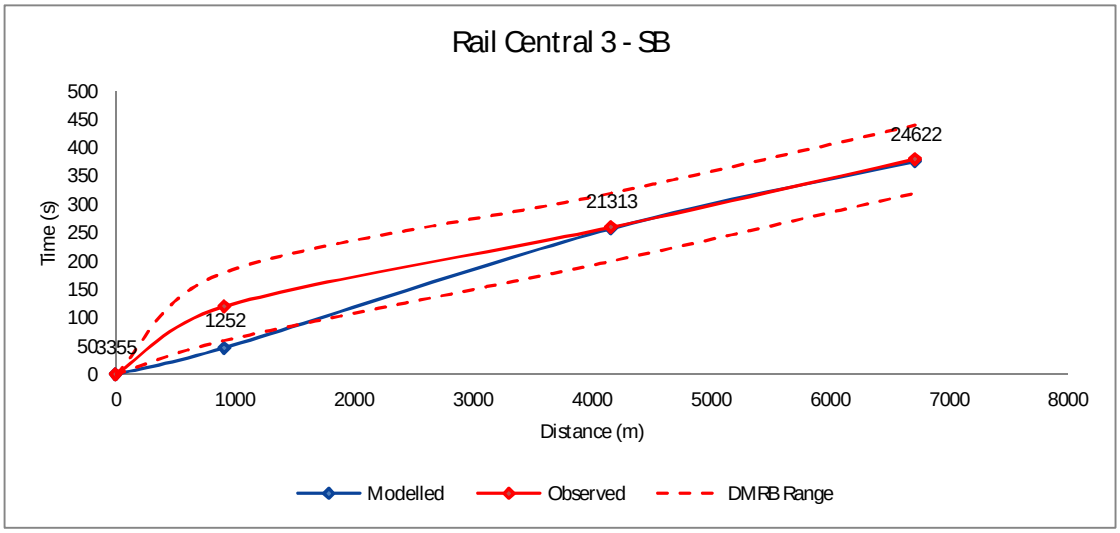




JT Graphs Interpeak



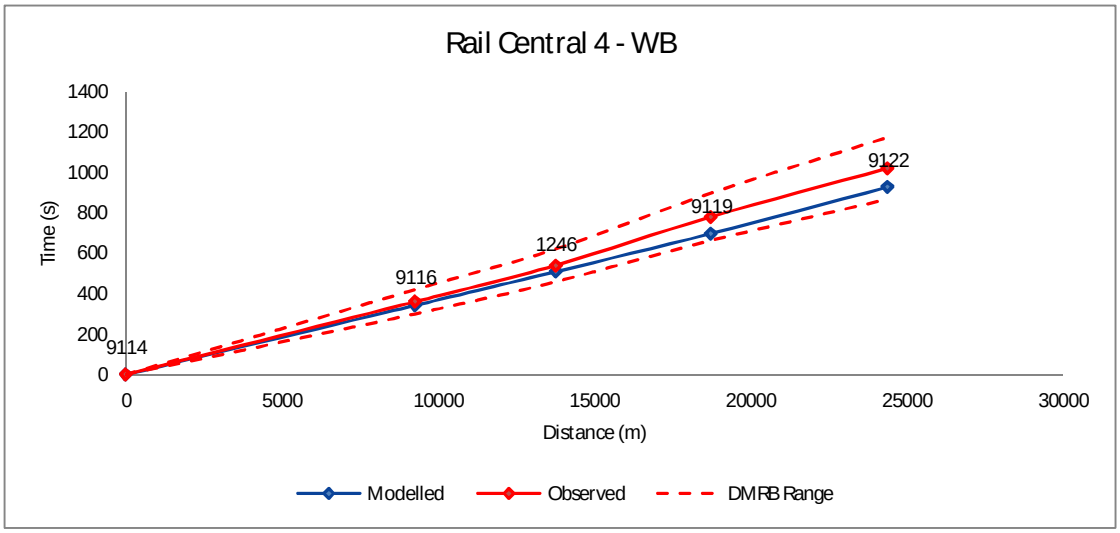


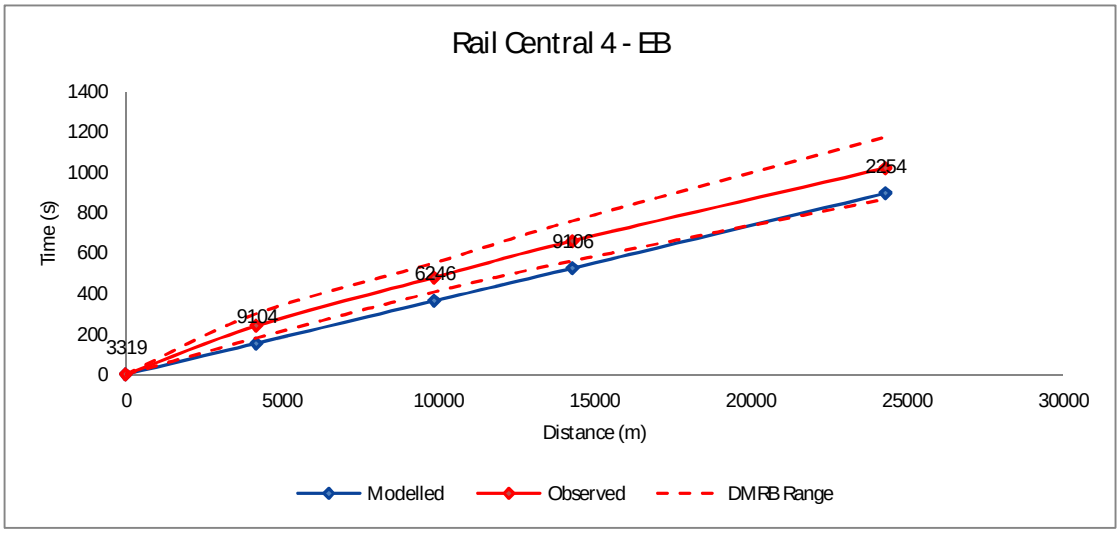


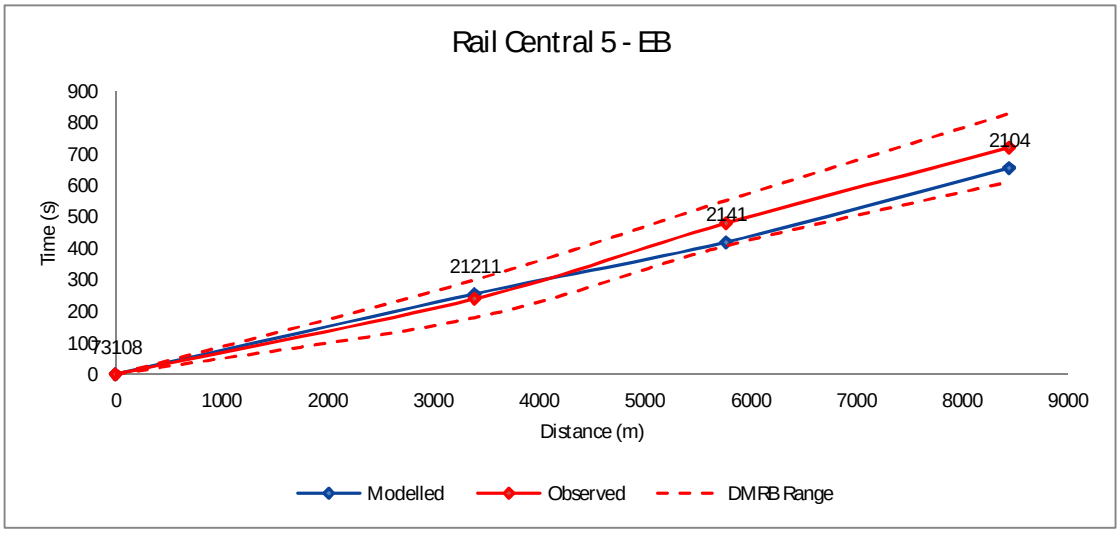
JT Graphs Interpeak

Model Map

Redraw Graphs



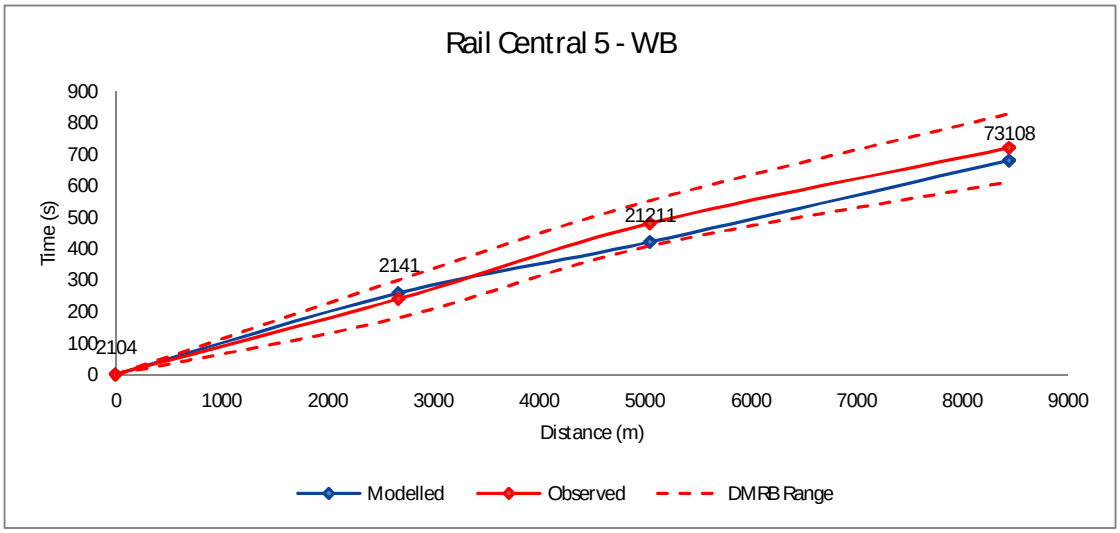


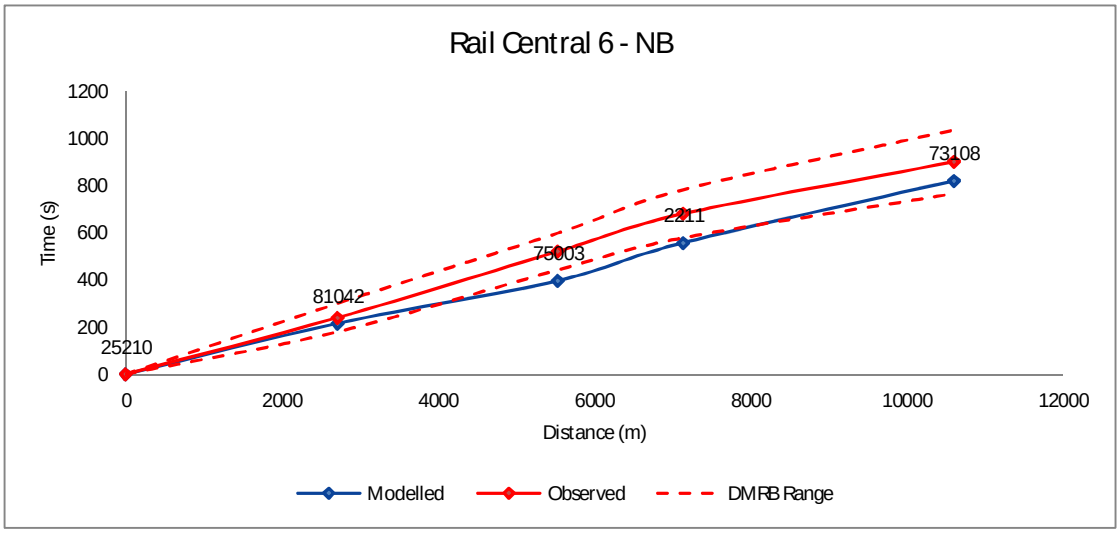


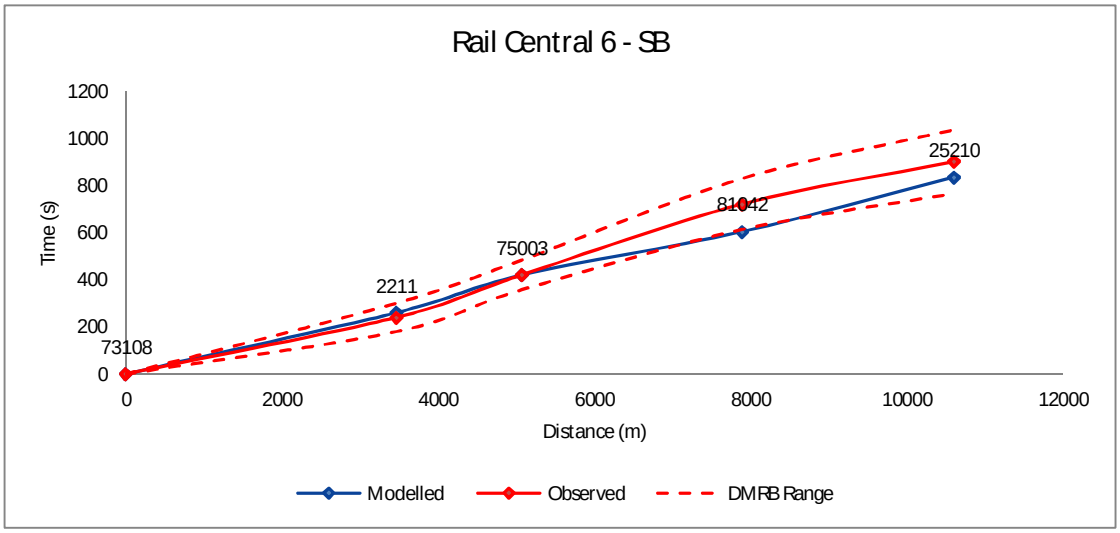
JT Graphs Interpeak

Model Map

Redraw Graphs



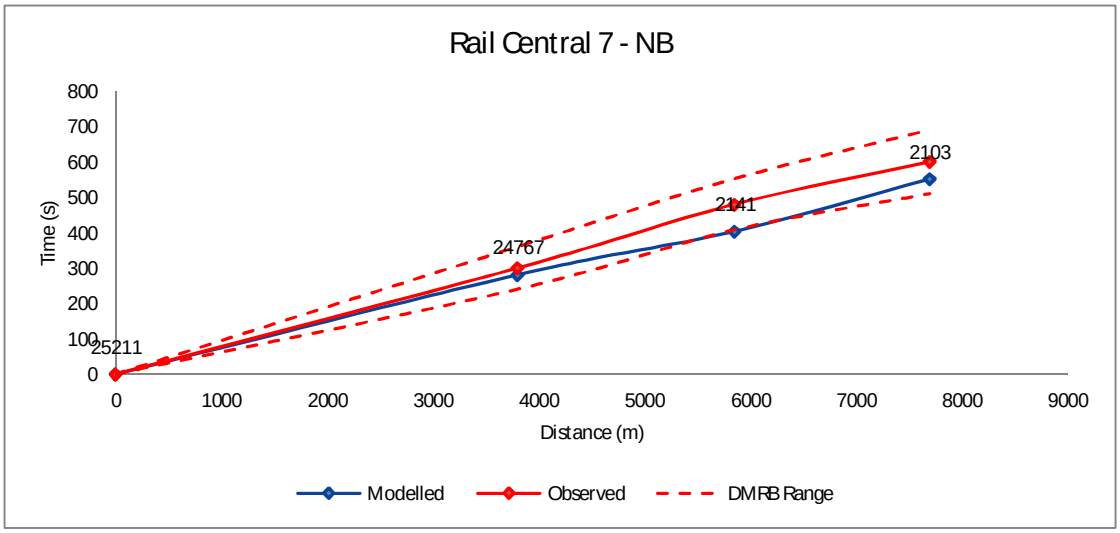


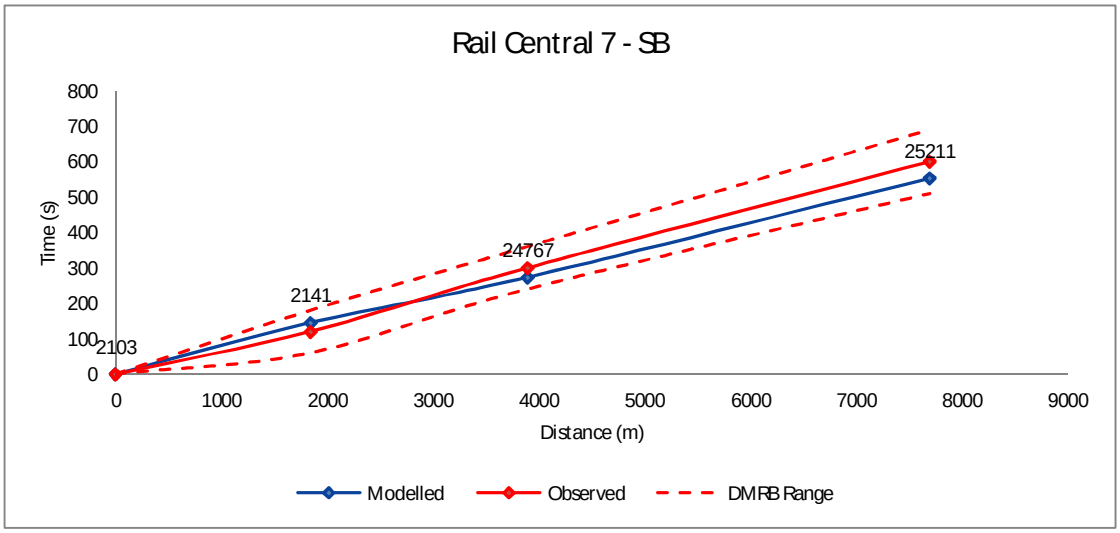


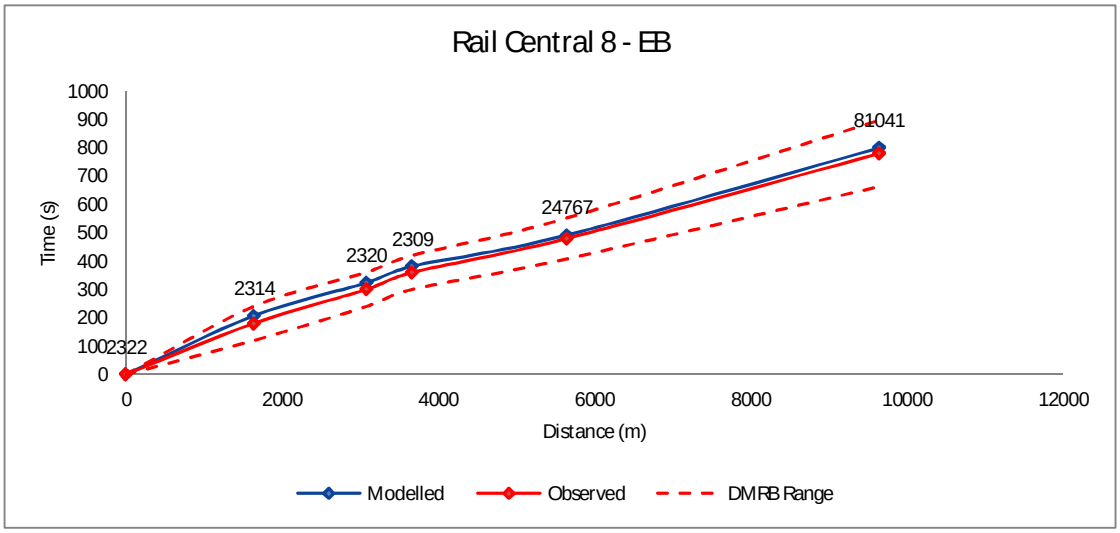
JT Graphs Interpeak

Model Map

Redraw Graphs



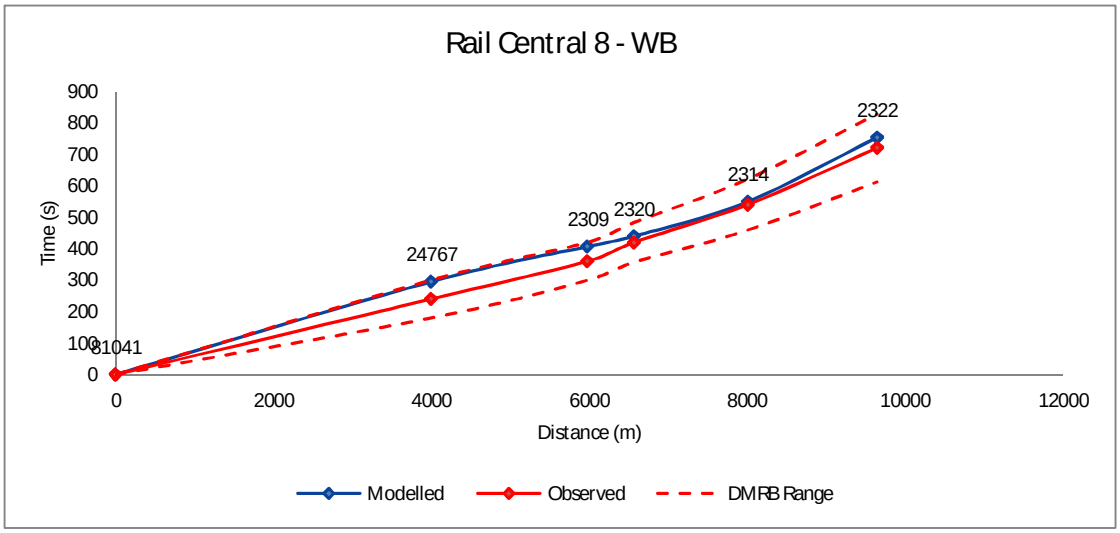




JT Graphs Interpeak

Model Map

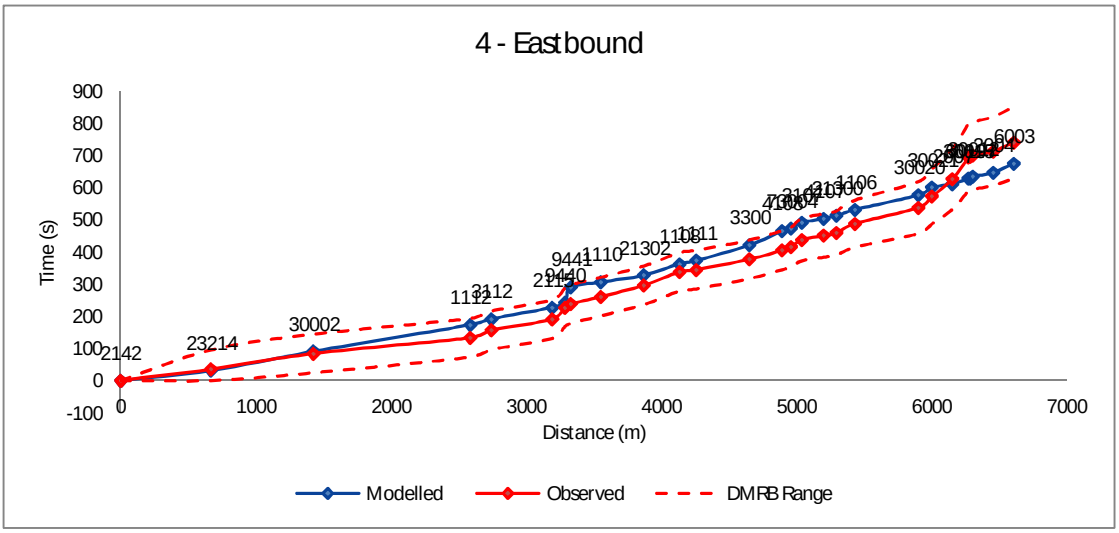
Redraw Graphs

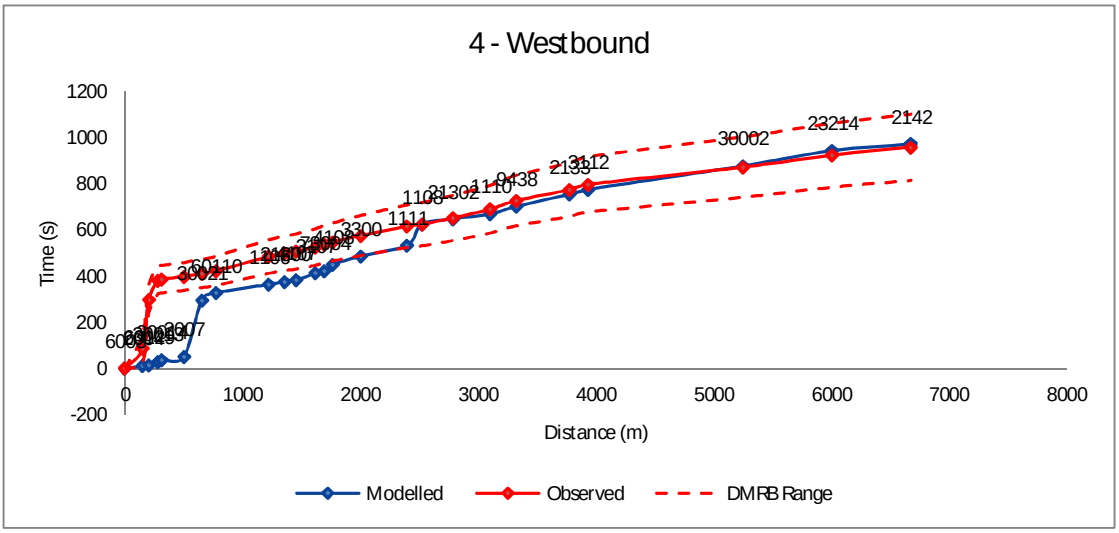


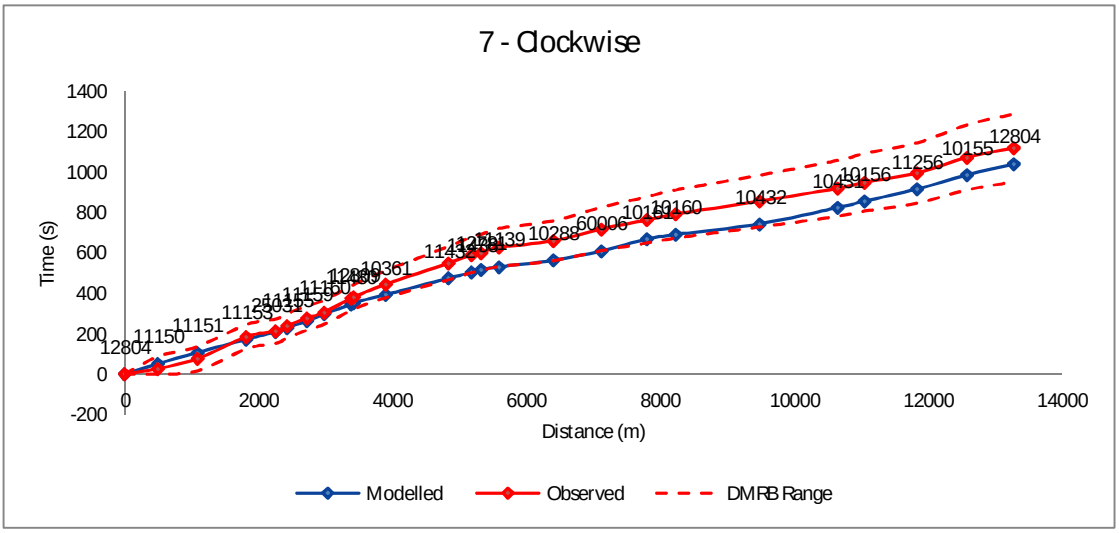
JT Graphs PM Peak

Model Map

Redraw Graphs



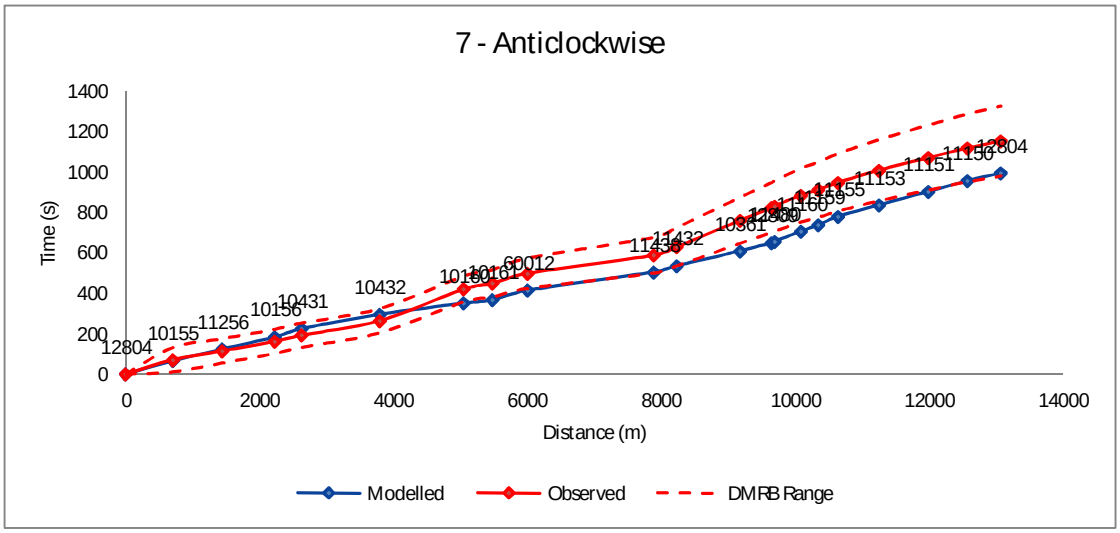


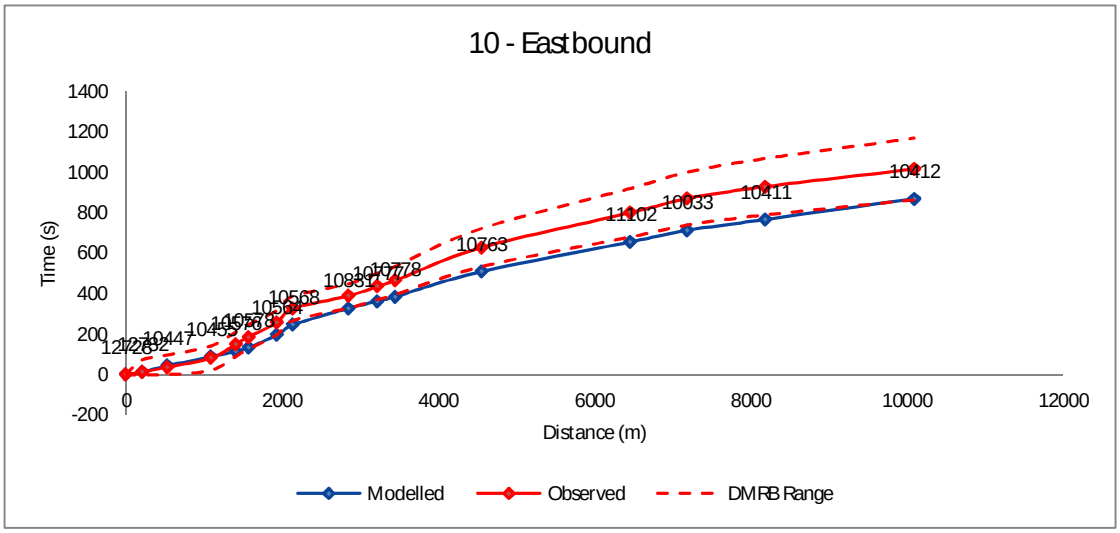


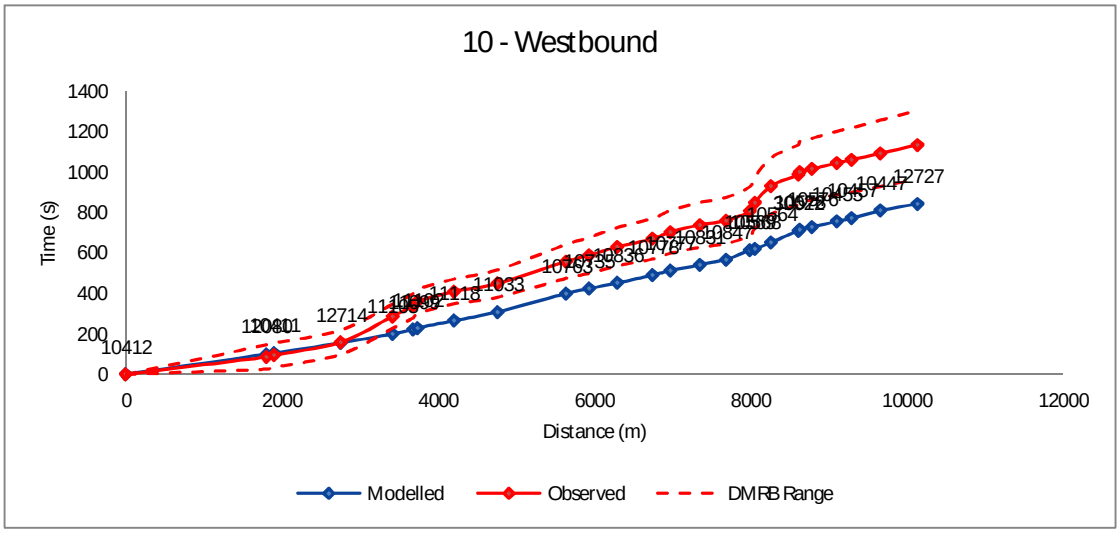
JT Graphs PM Peak

Model Map

Redraw Graphs



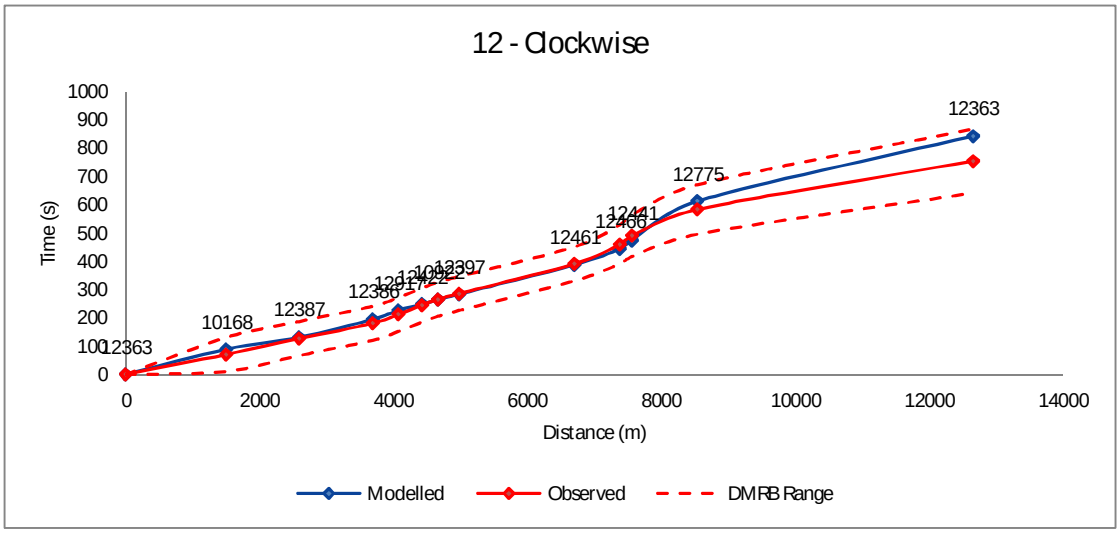


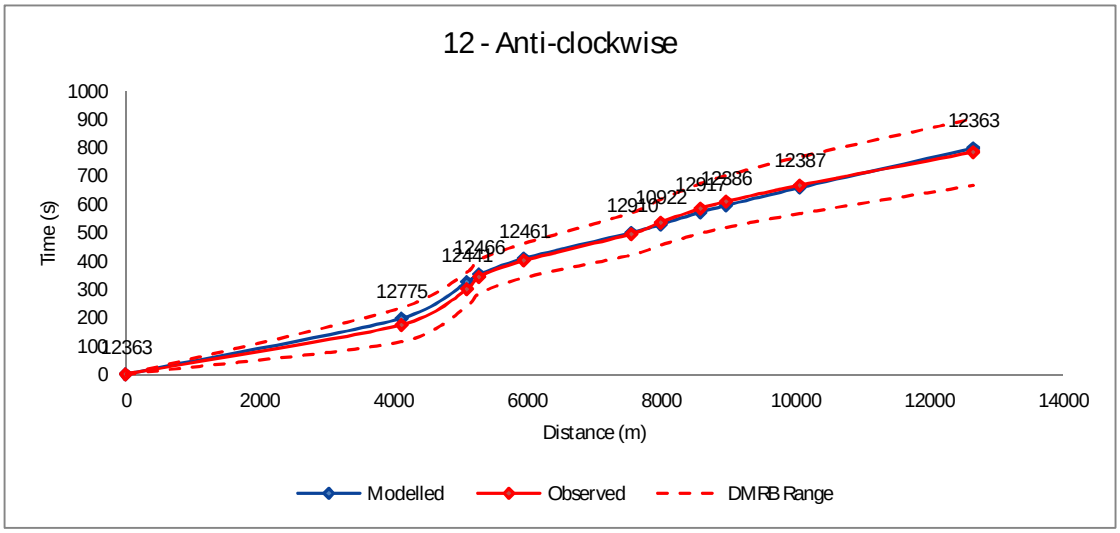


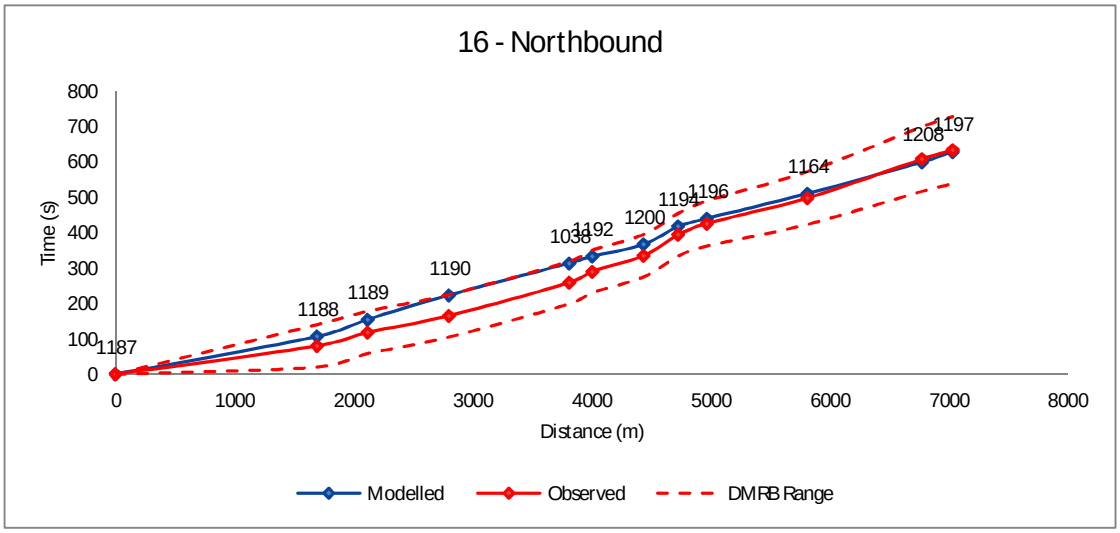
JT Graphs PM Peak

Model Map

Redraw Graphs



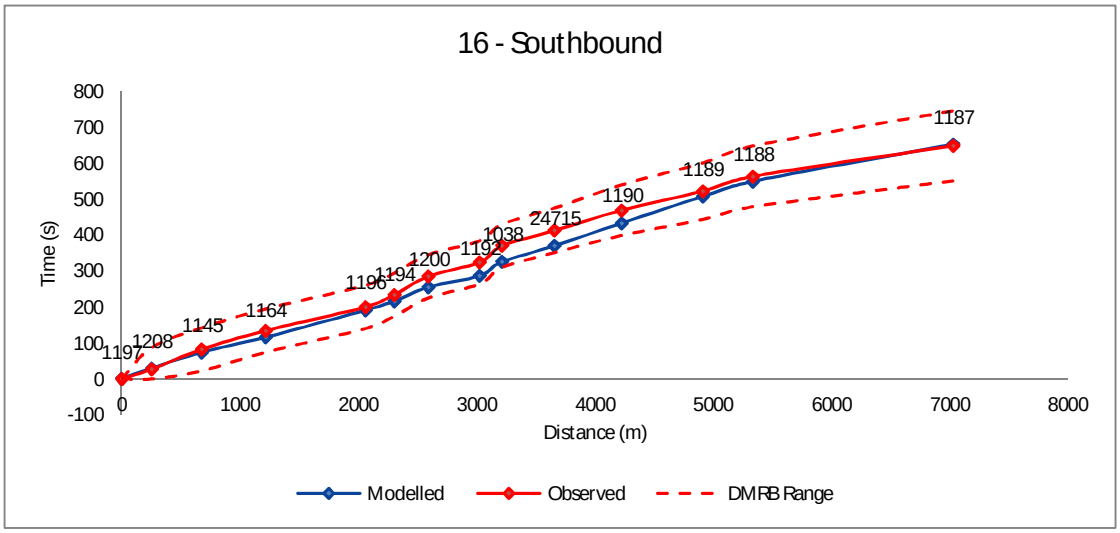


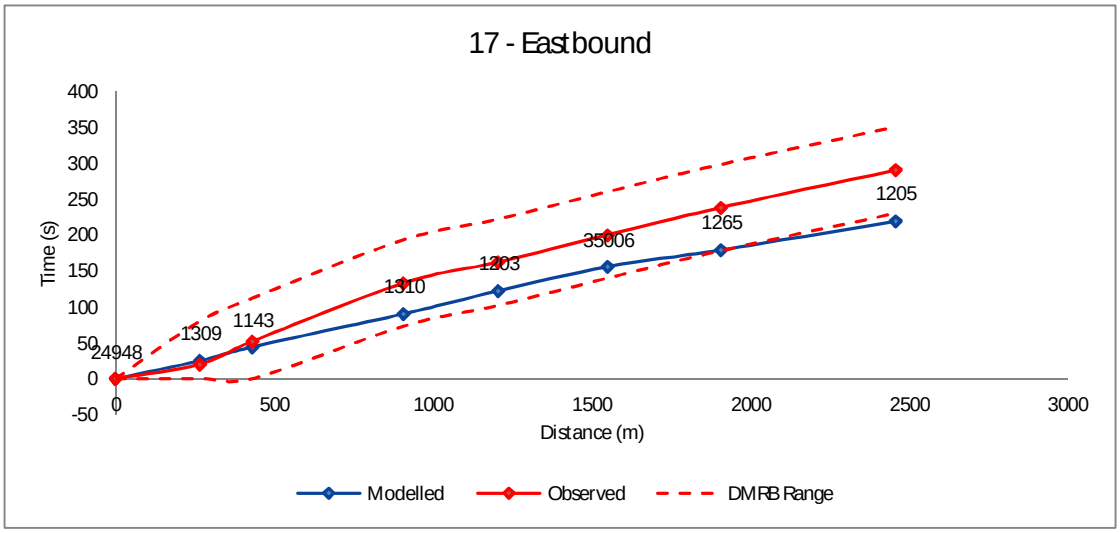


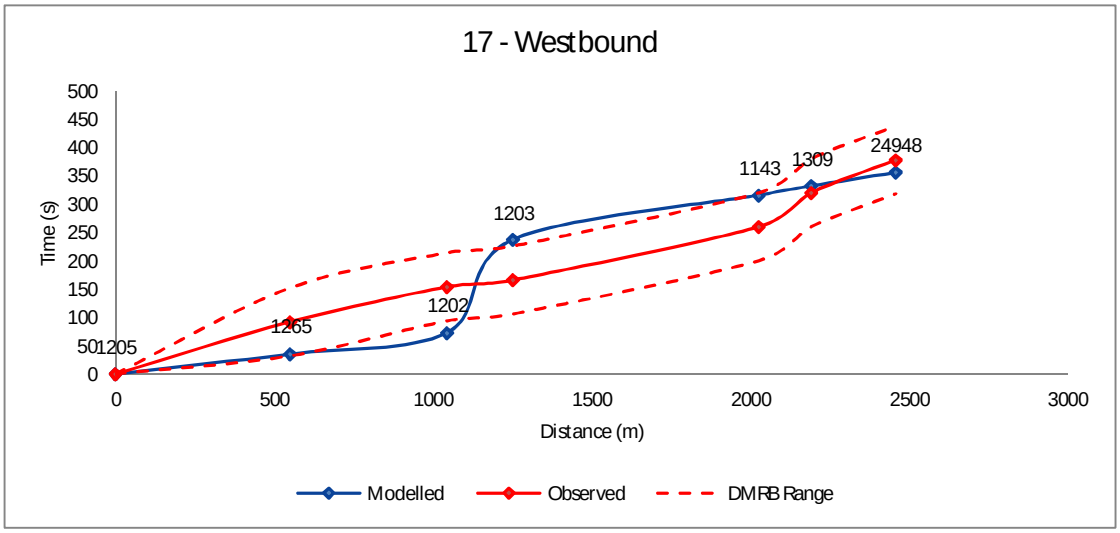
JT Graphs PM Peak

Model Map

Redraw Graphs



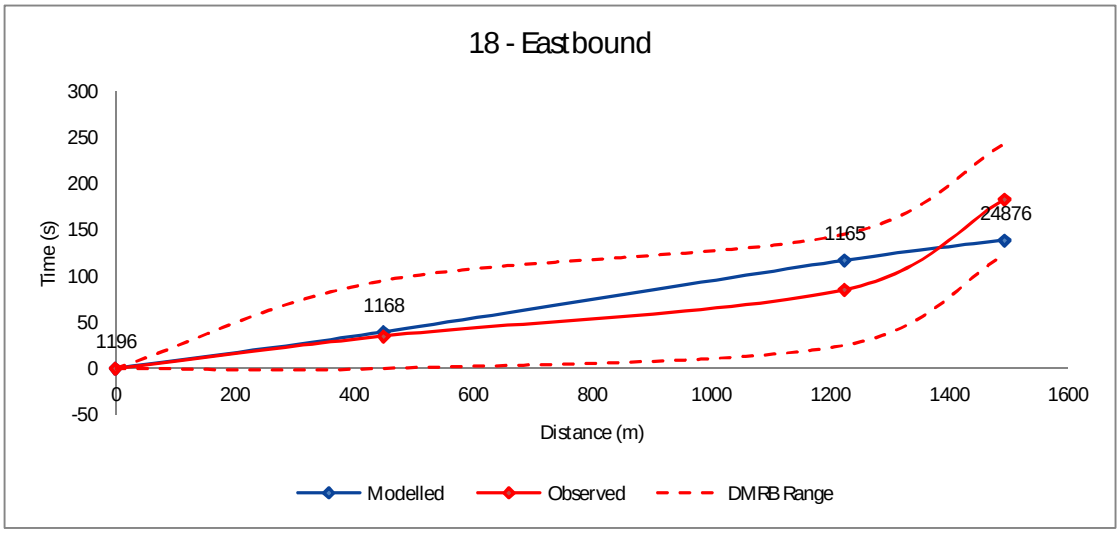


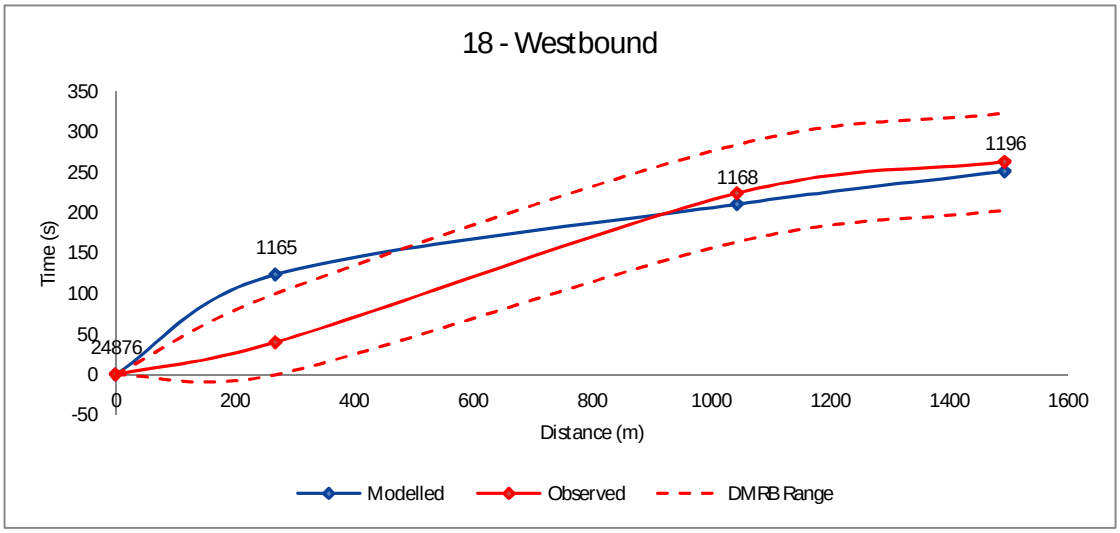


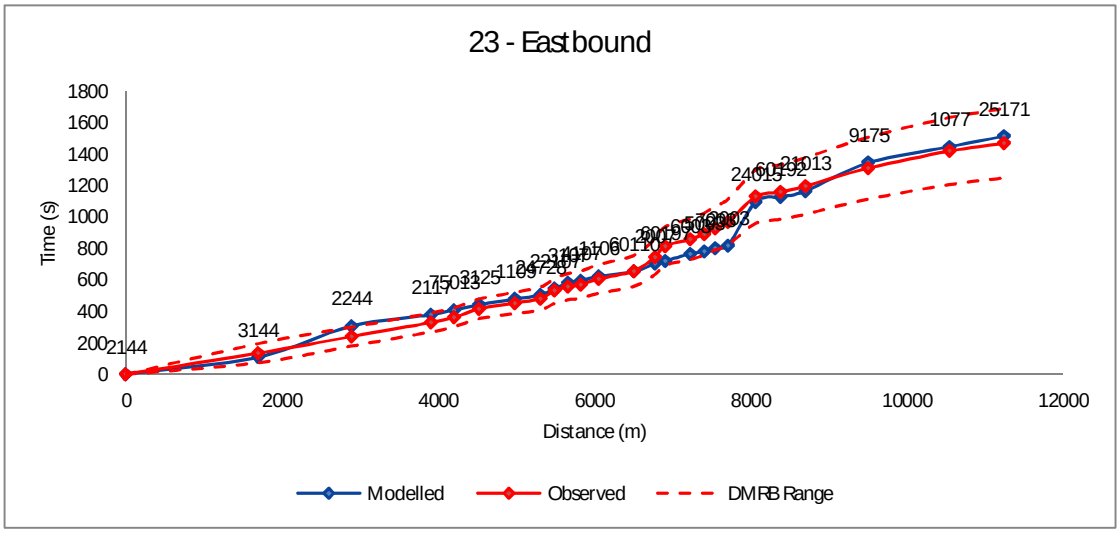
JT Graphs PM Peak

Model Map

Redraw Graphs



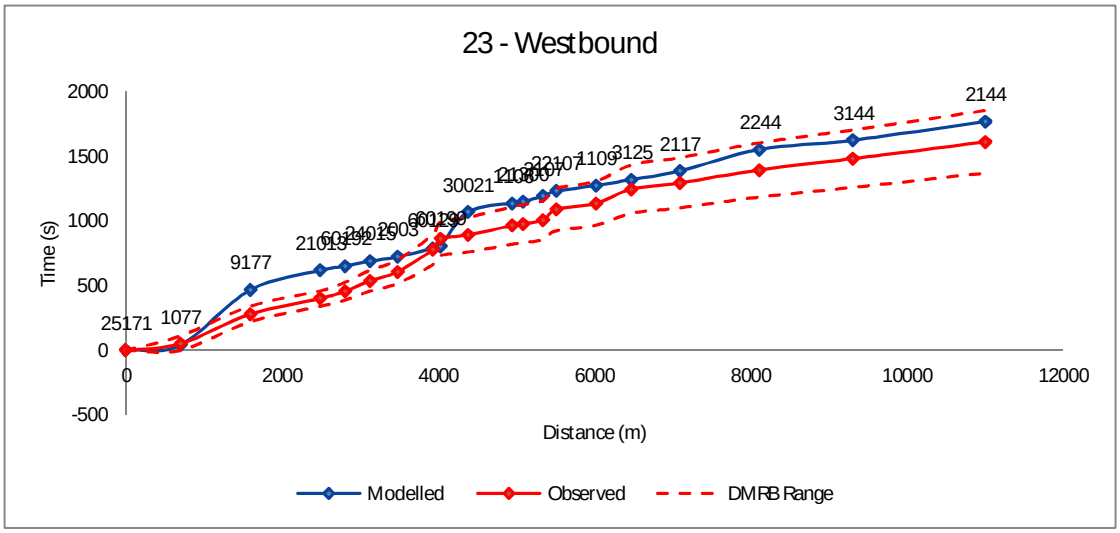


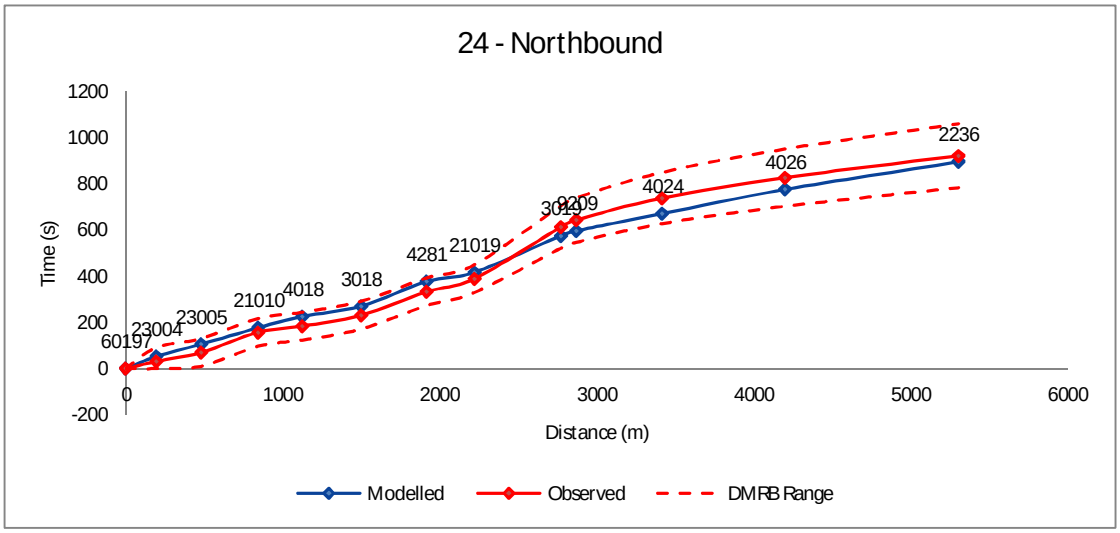


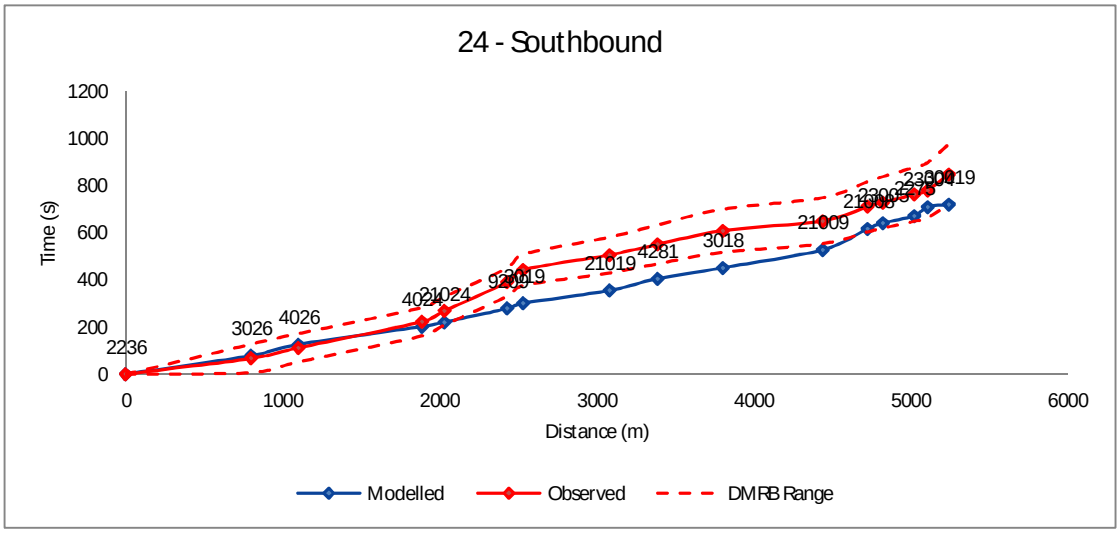
JT Graphs PM Peak

Model Map

Redraw Graphs



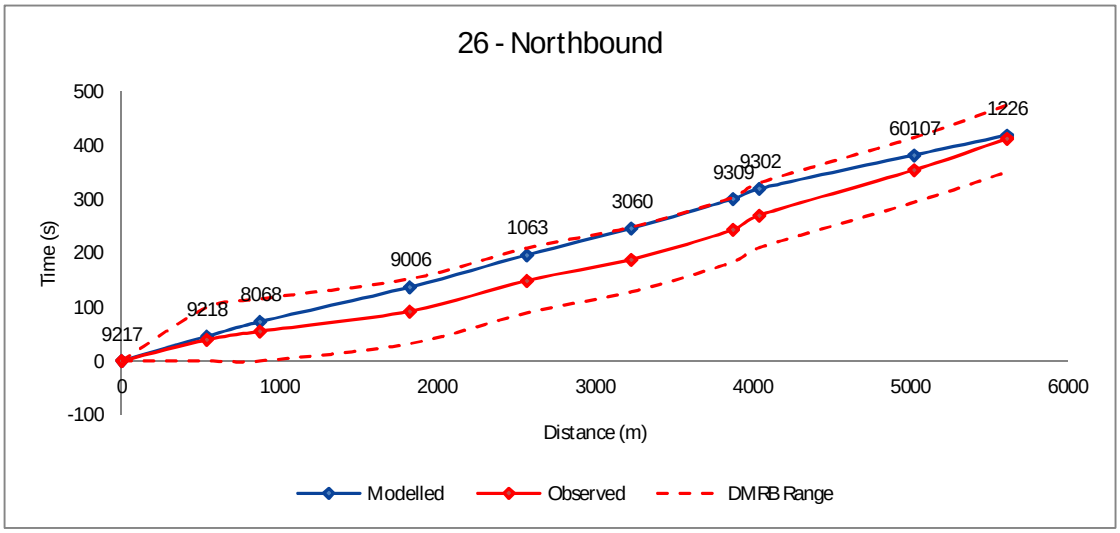


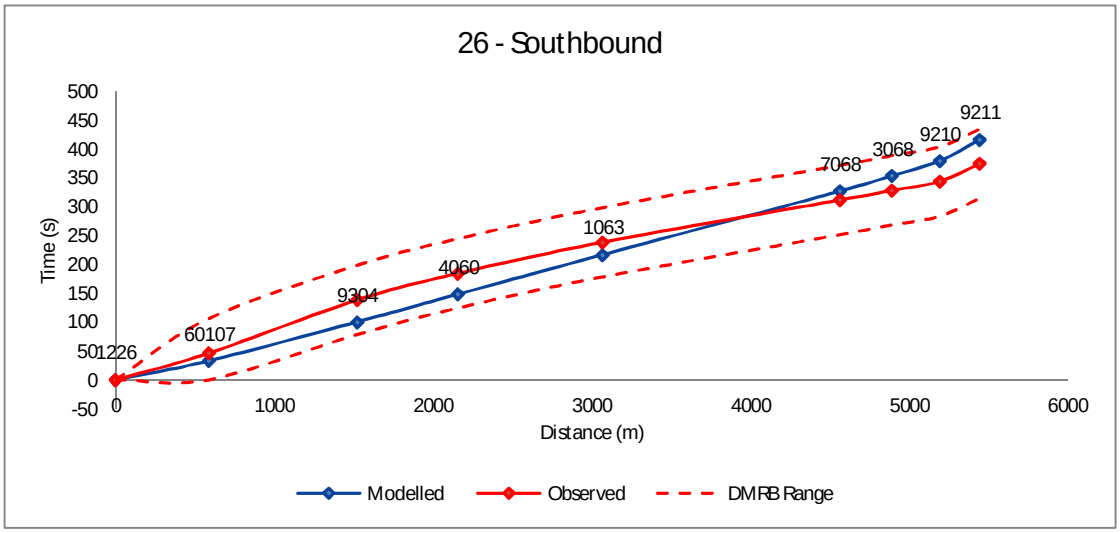


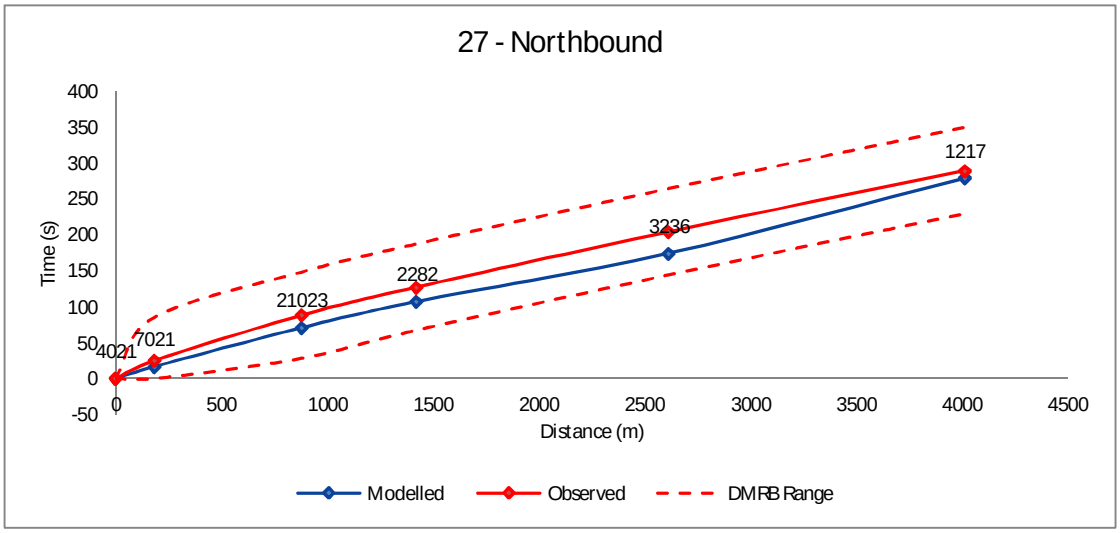
JT Graphs PM Peak

Model Map

Redraw Graphs



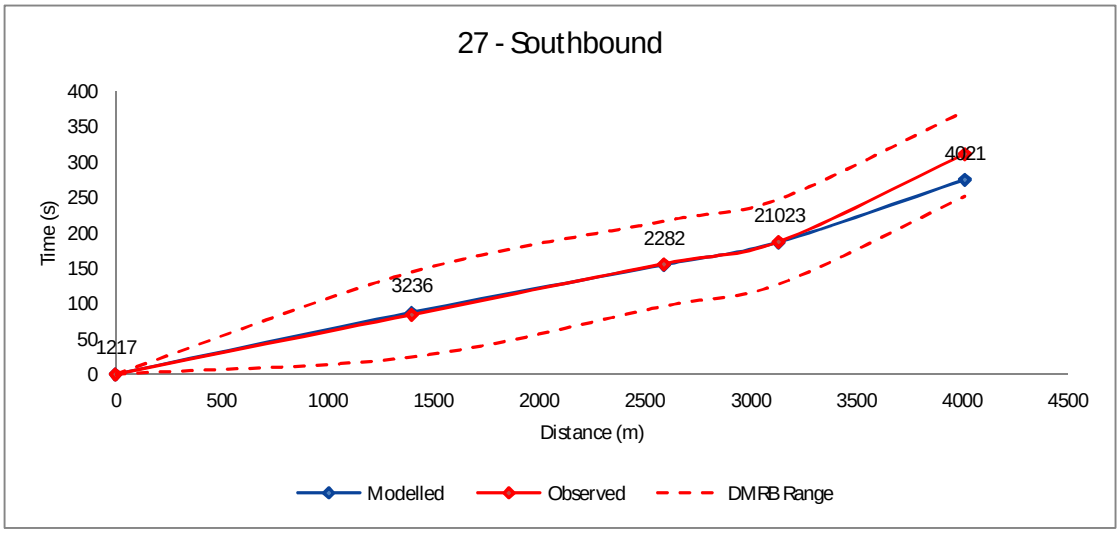


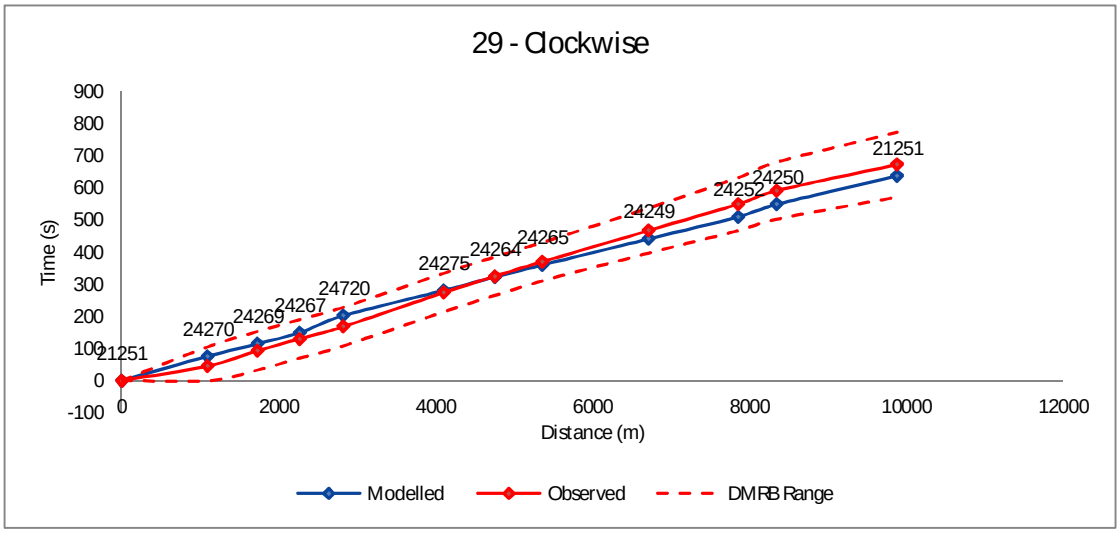


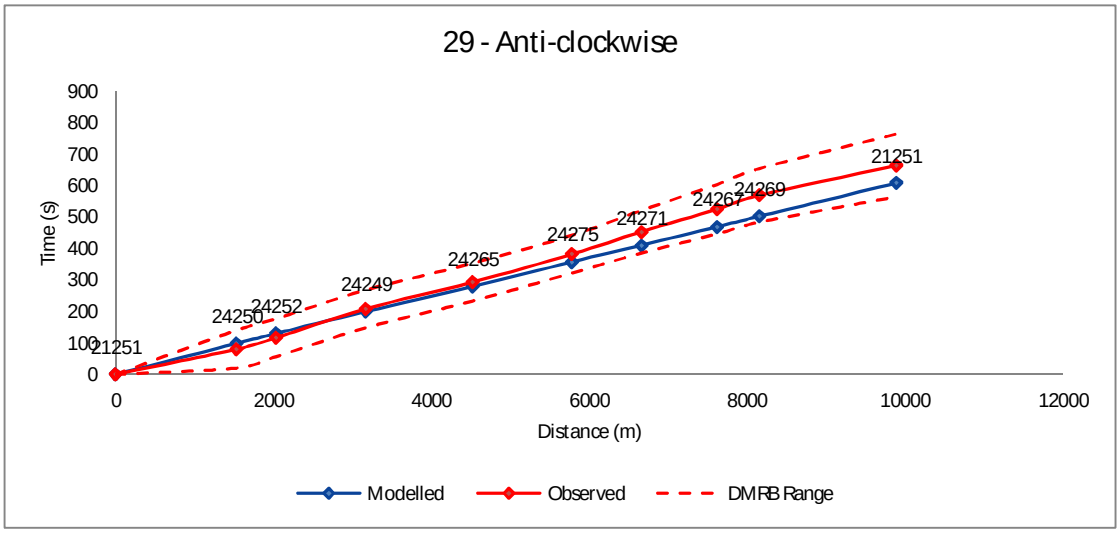
JT Graphs PM Peak

Model Map

Redraw Graphs



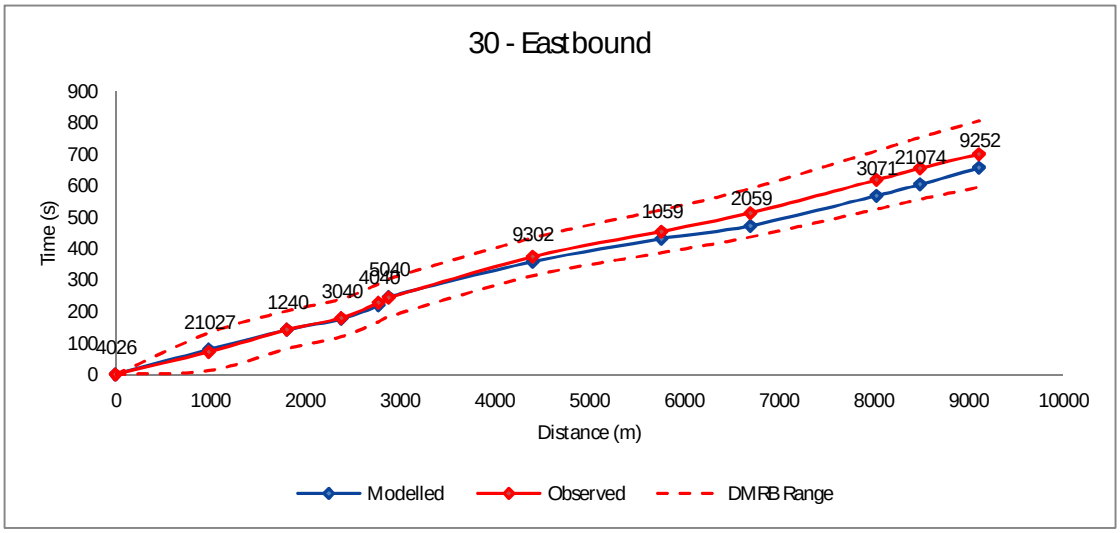


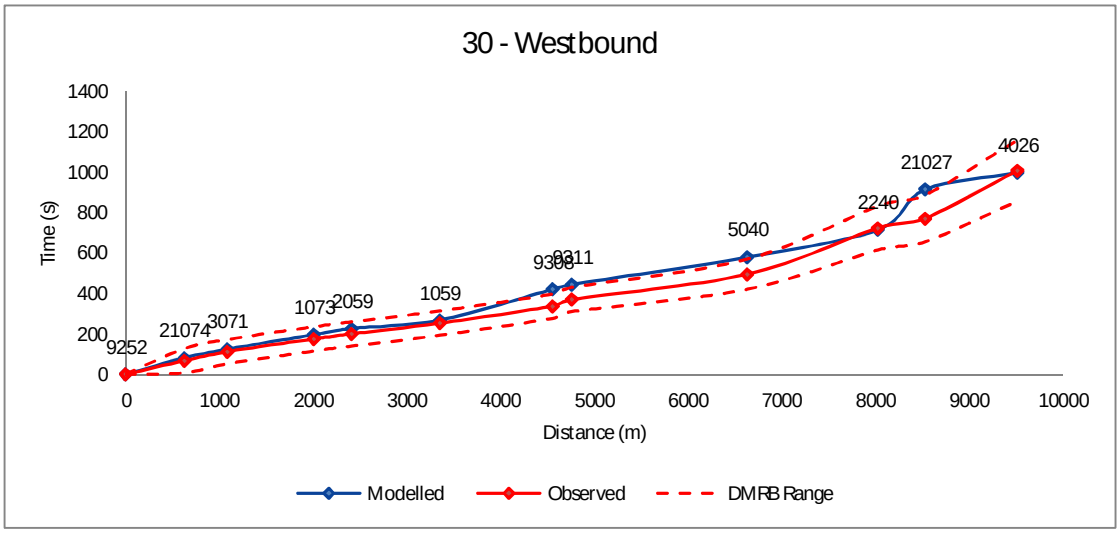


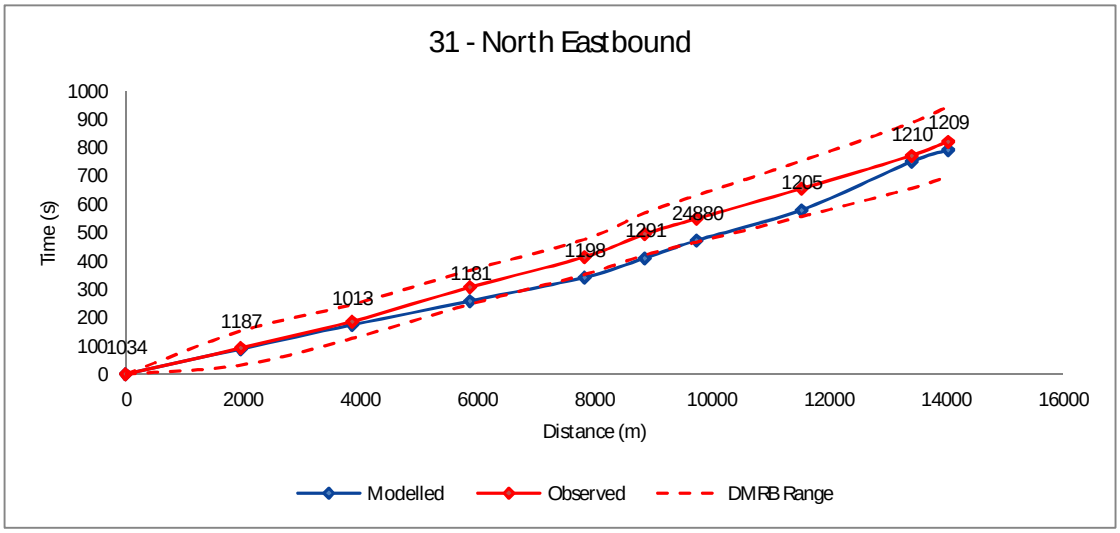
JT Graphs PM Peak

Model Map

Redraw Graphs



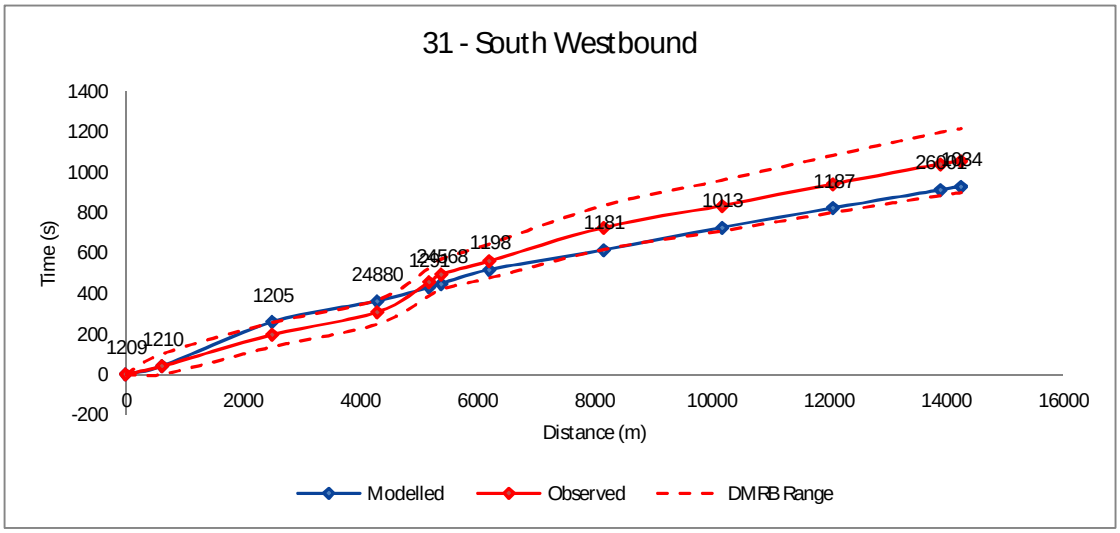


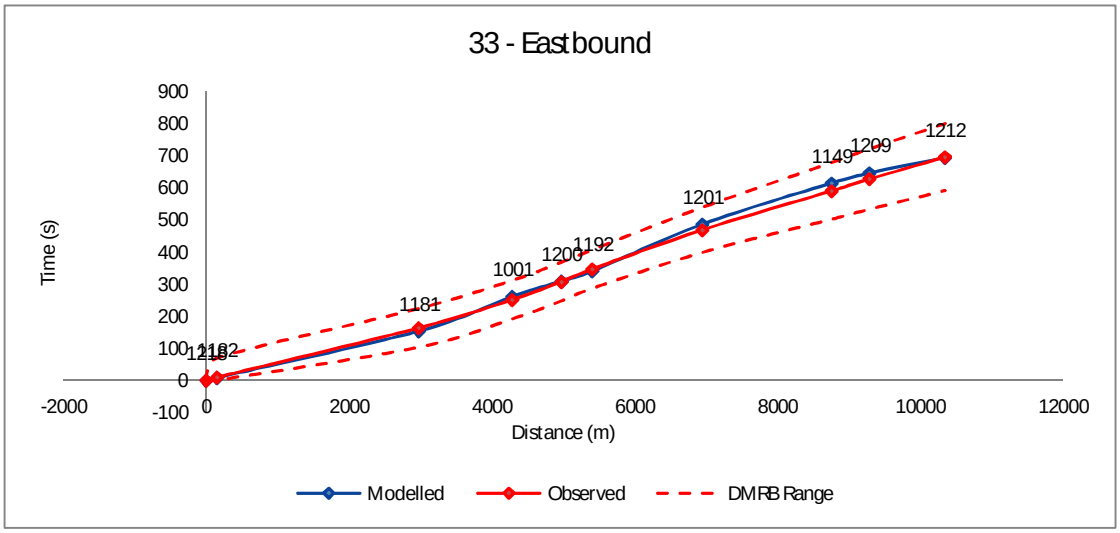


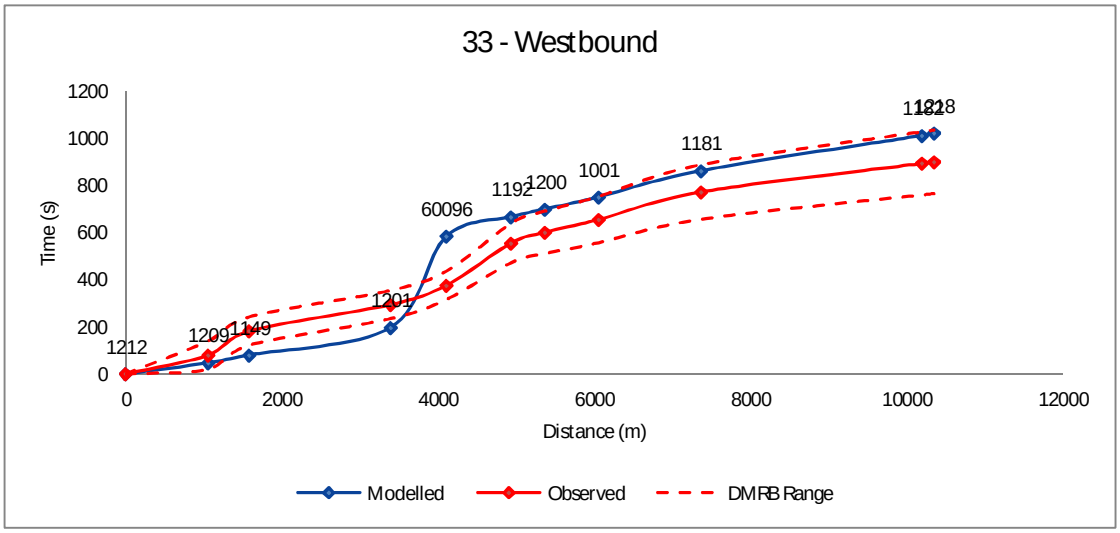
JT Graphs PM Peak

Model Map

Redraw Graphs



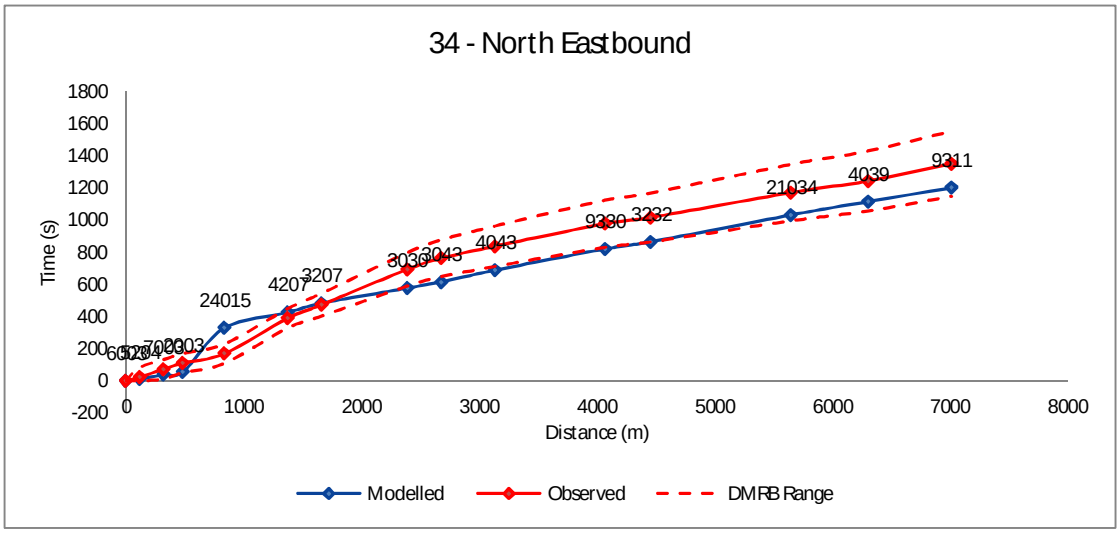


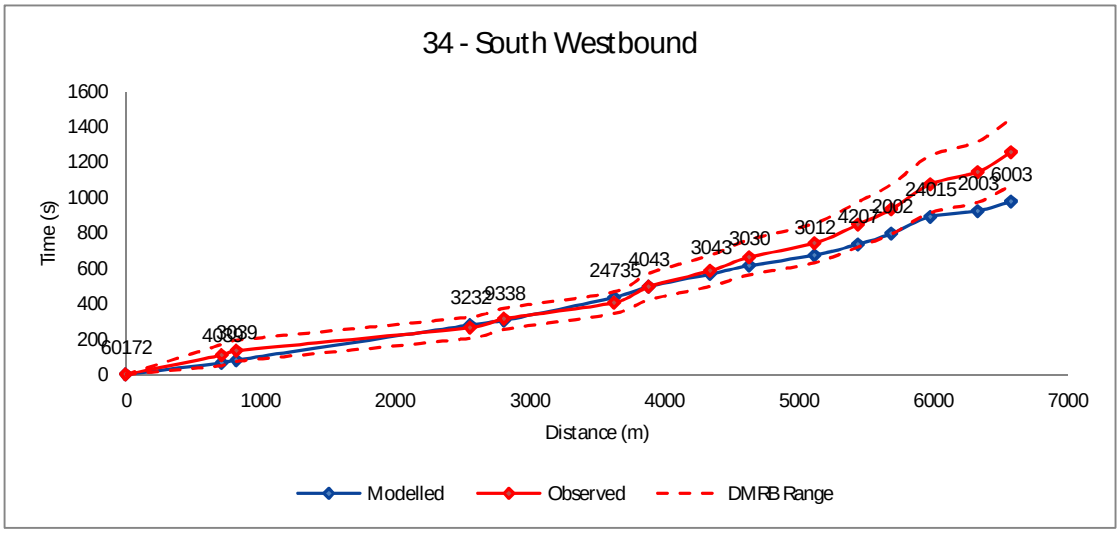


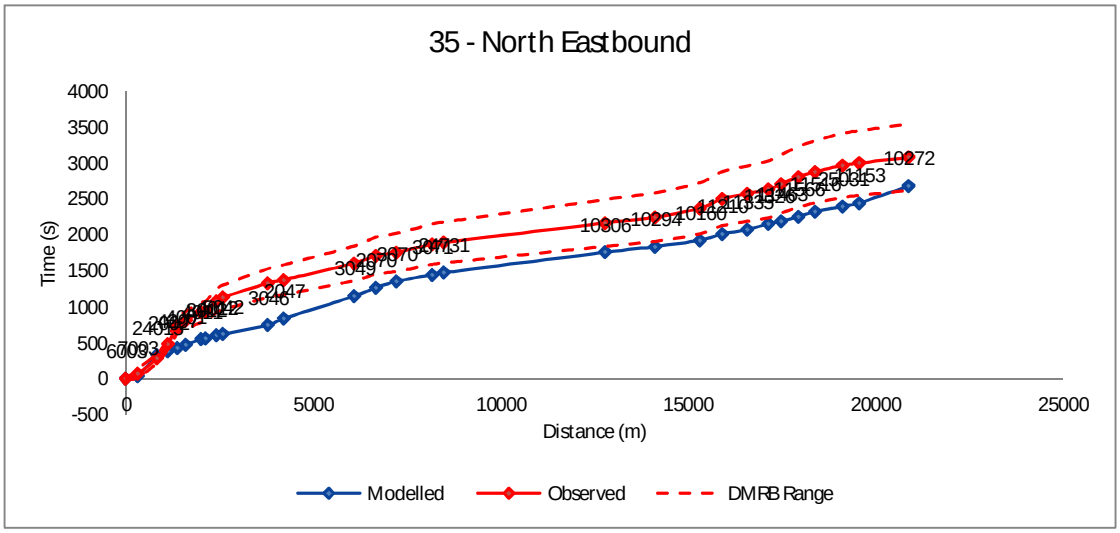
JT Graphs PM Peak

Model Map

Redraw Graphs



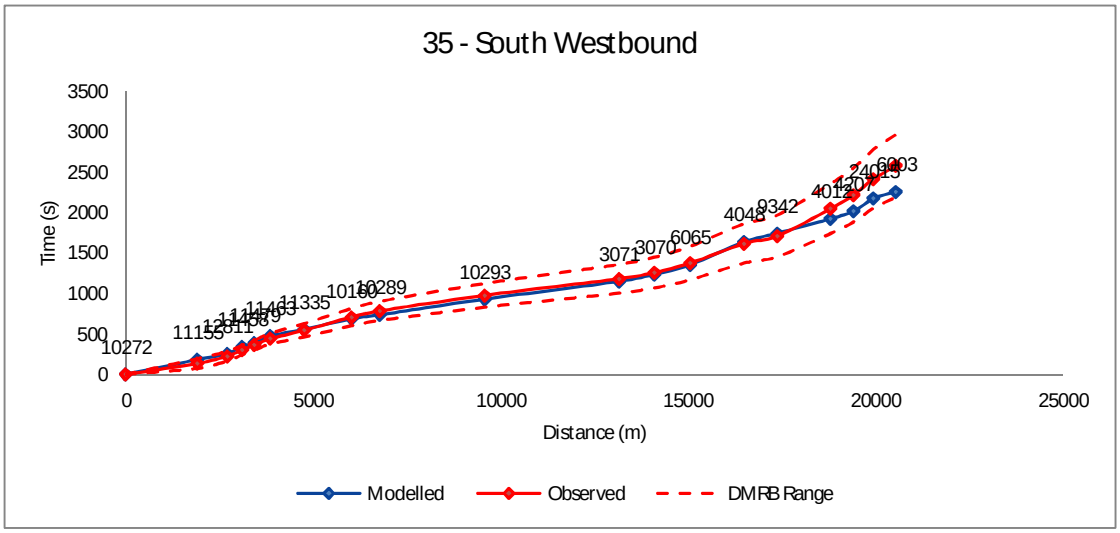


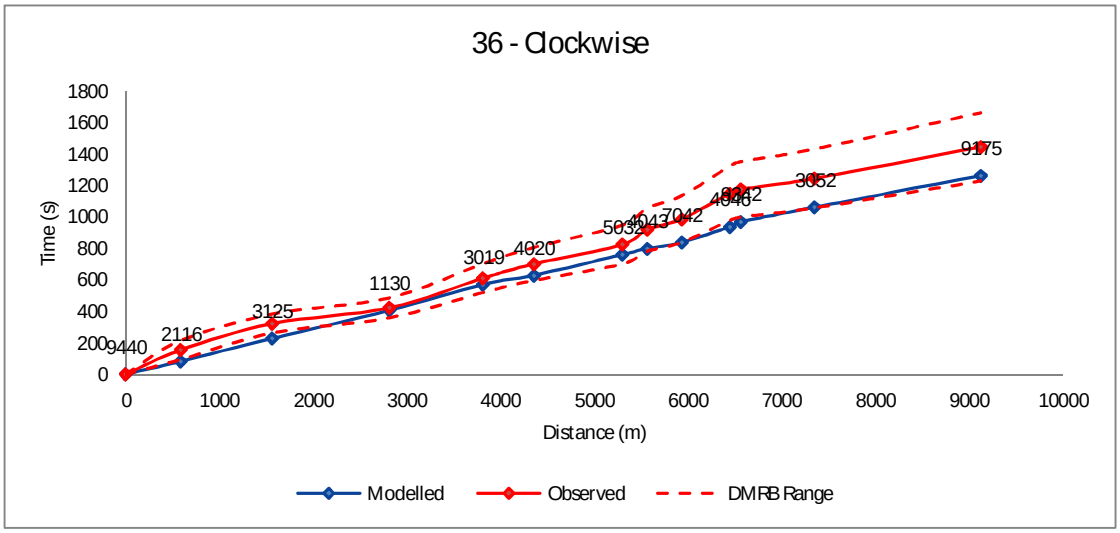


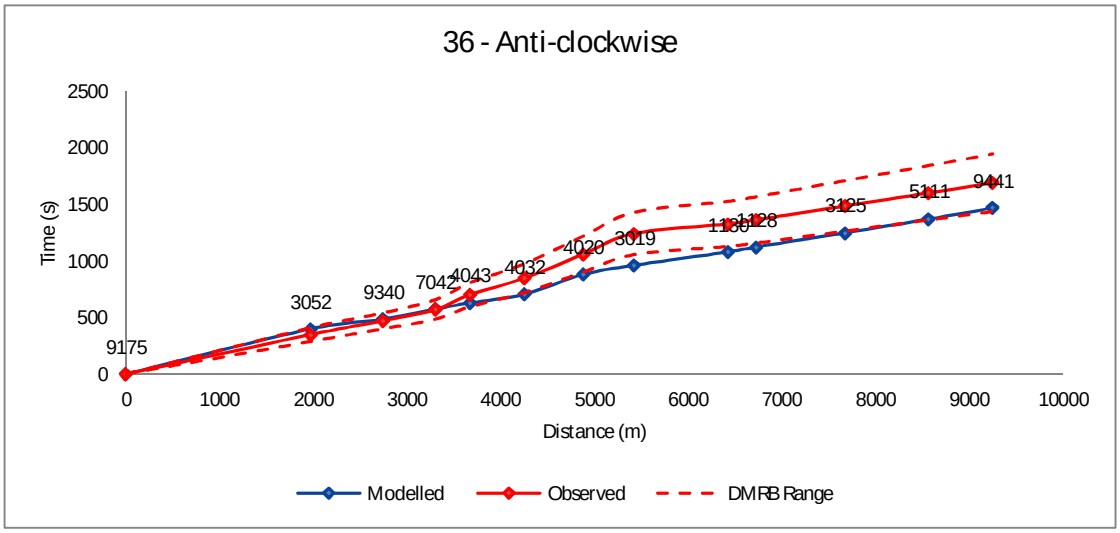
JT Graphs PM Peak

Model Map

Redraw Graphs



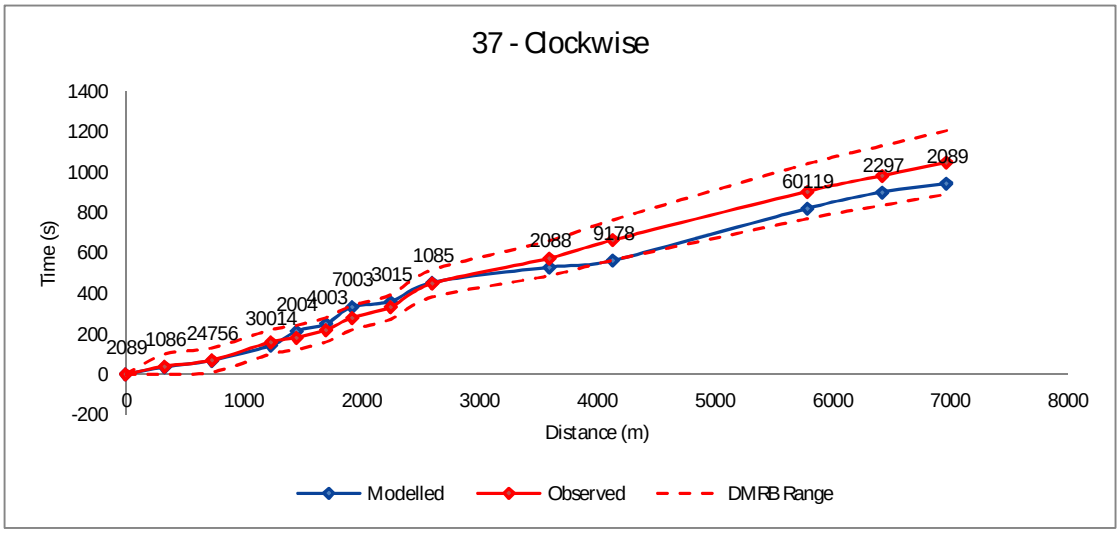


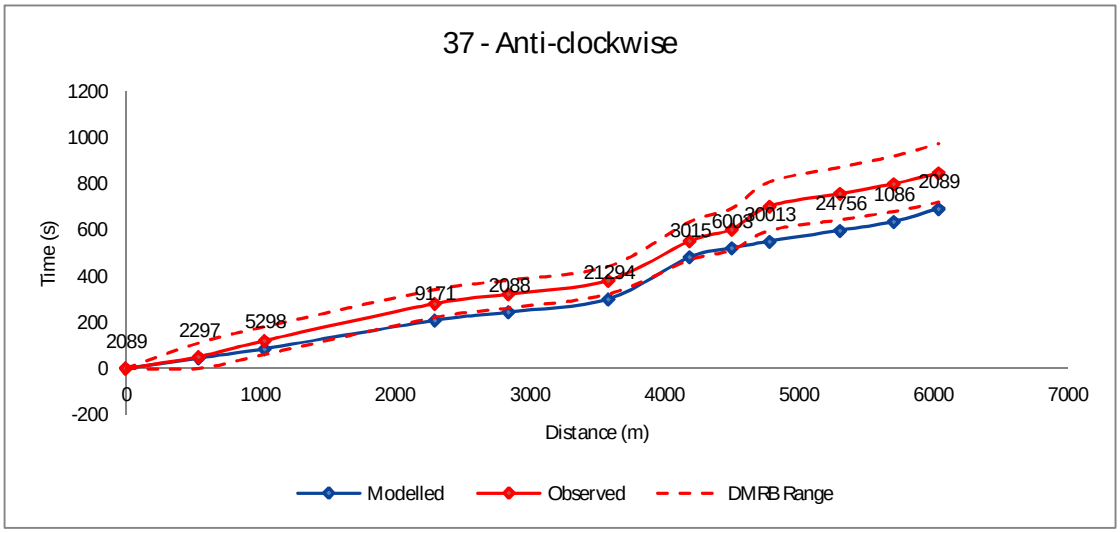


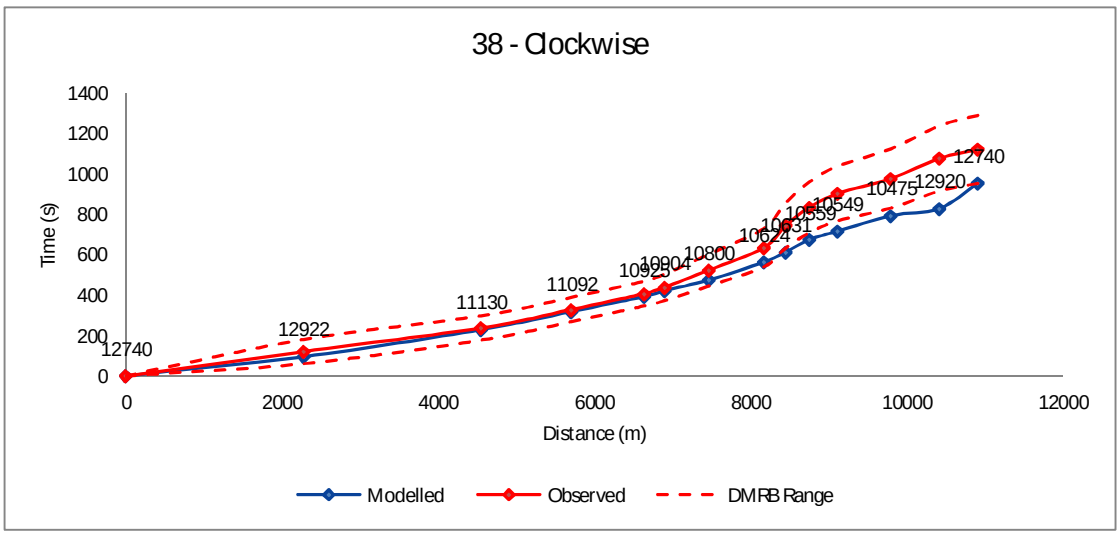
JT Graphs PM Peak

Model Map

Redraw Graphs



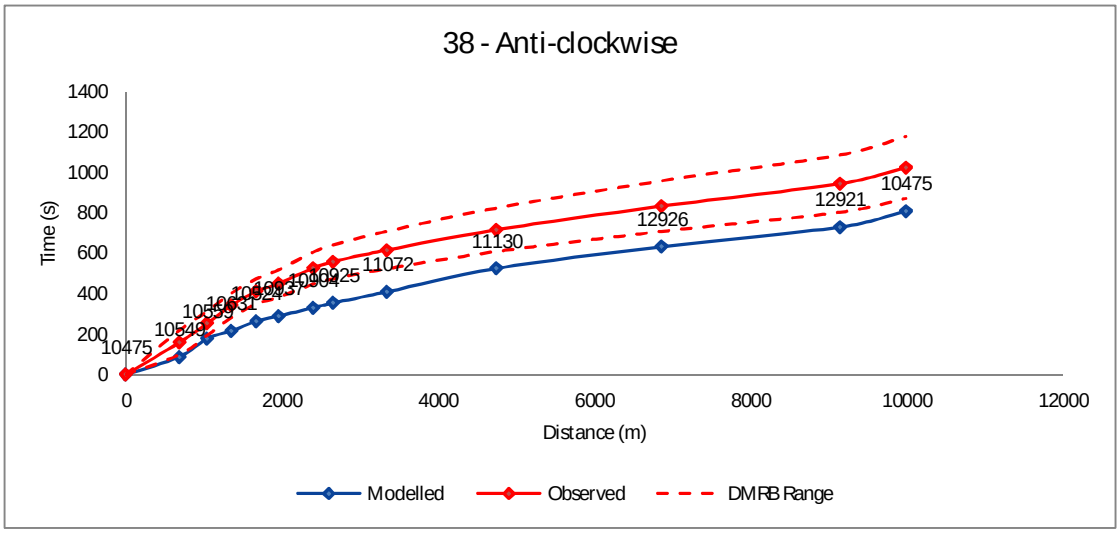


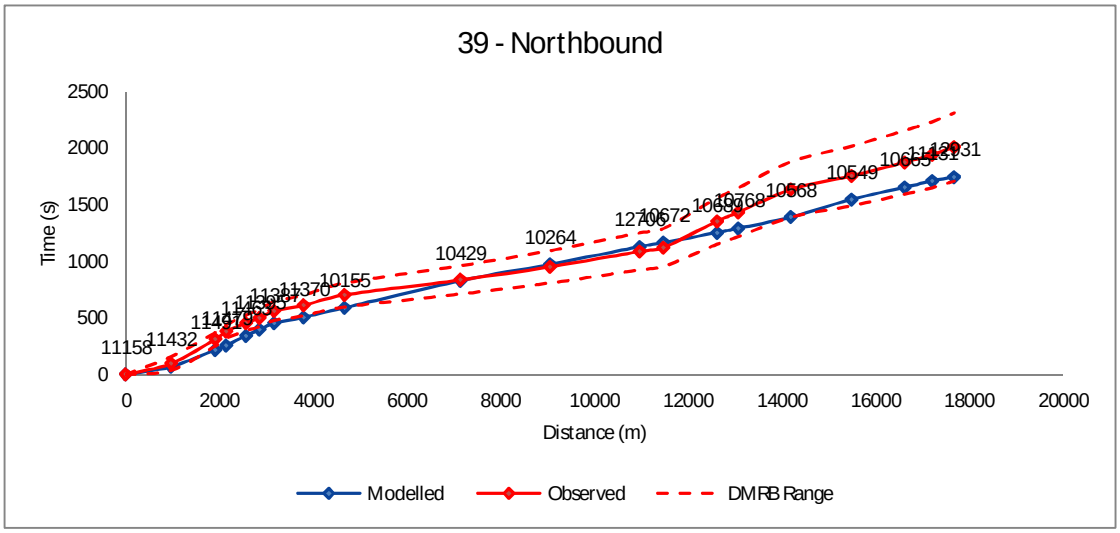


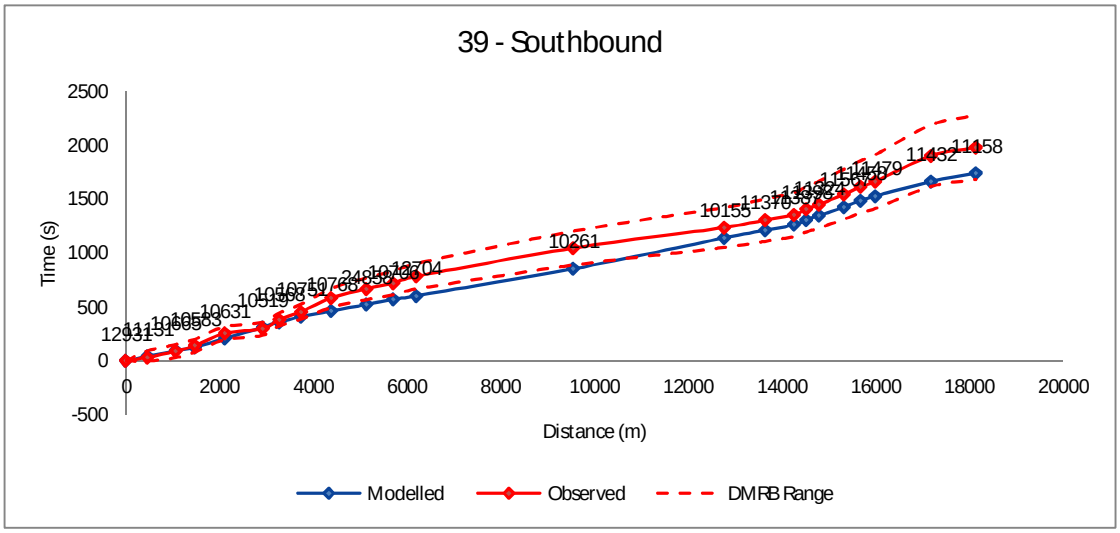
JT Graphs PM Peak

Model Map

Redraw Graphs



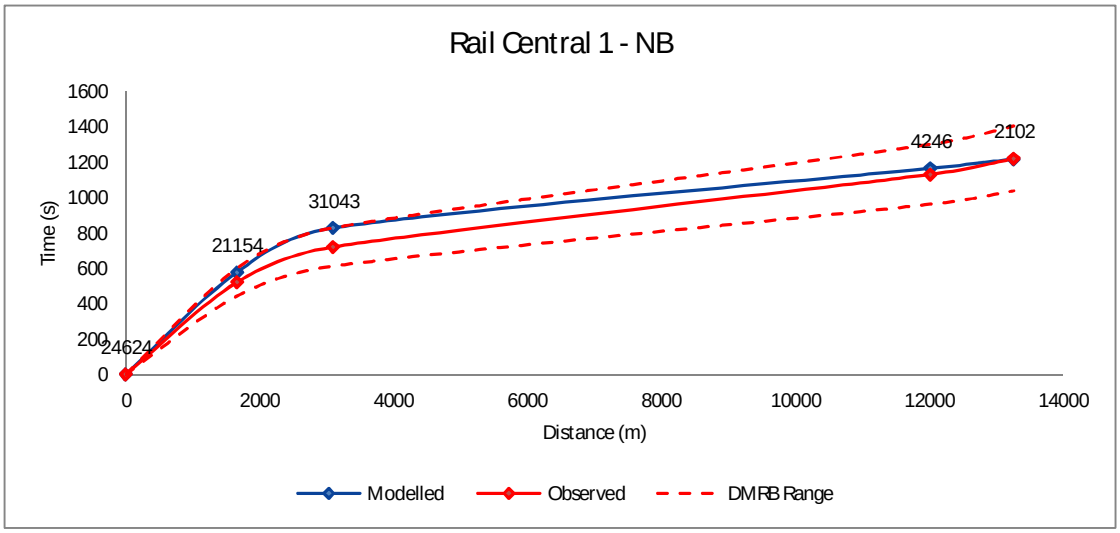


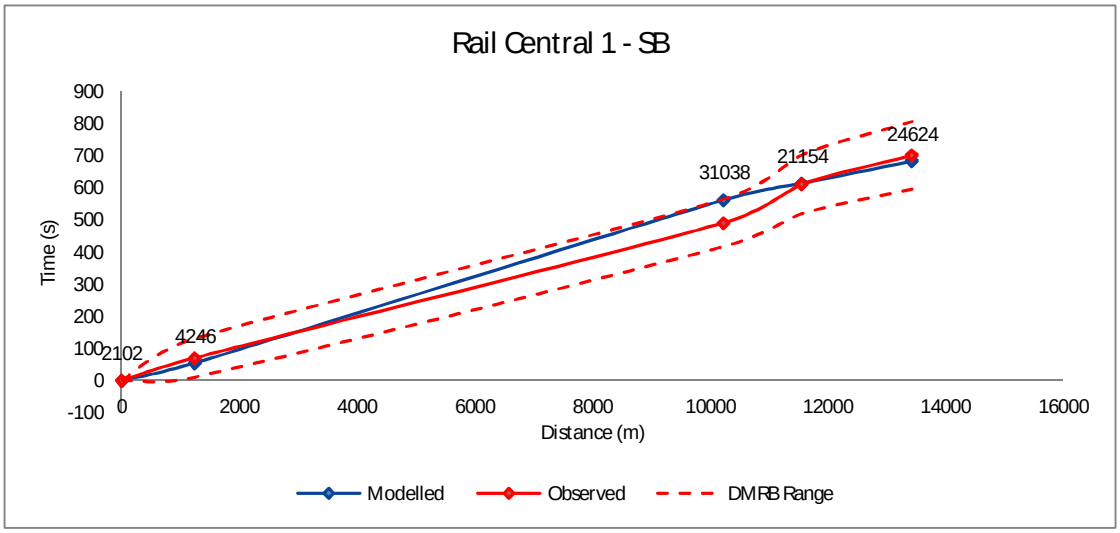


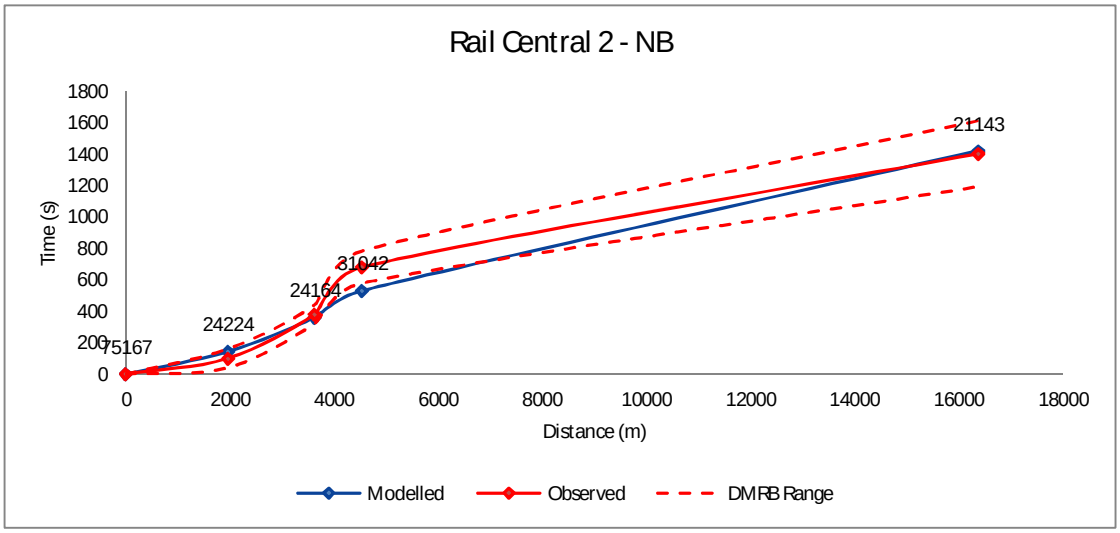
JT Graphs PM Peak

Model Map

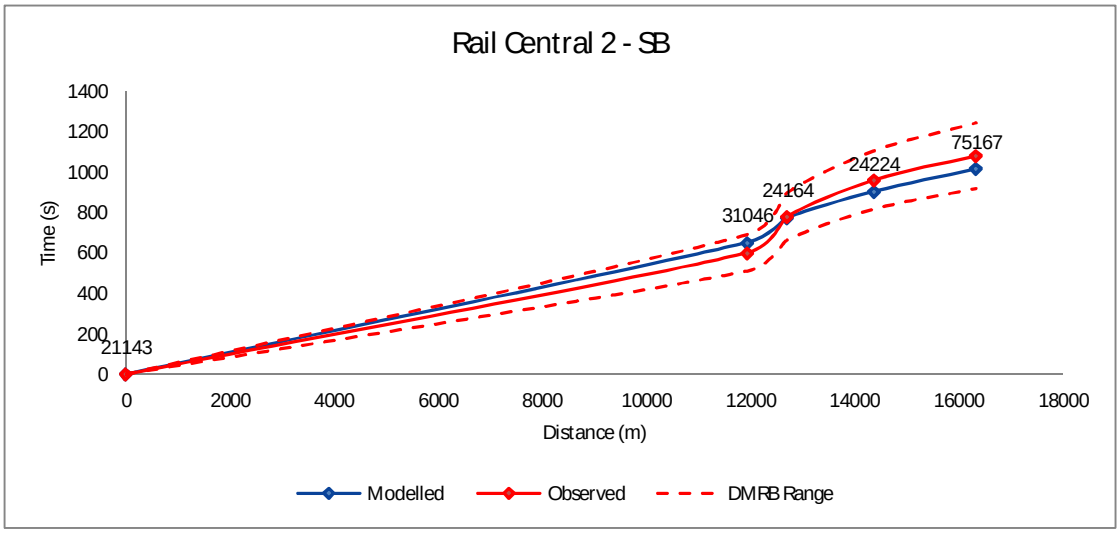
Redraw Graphs

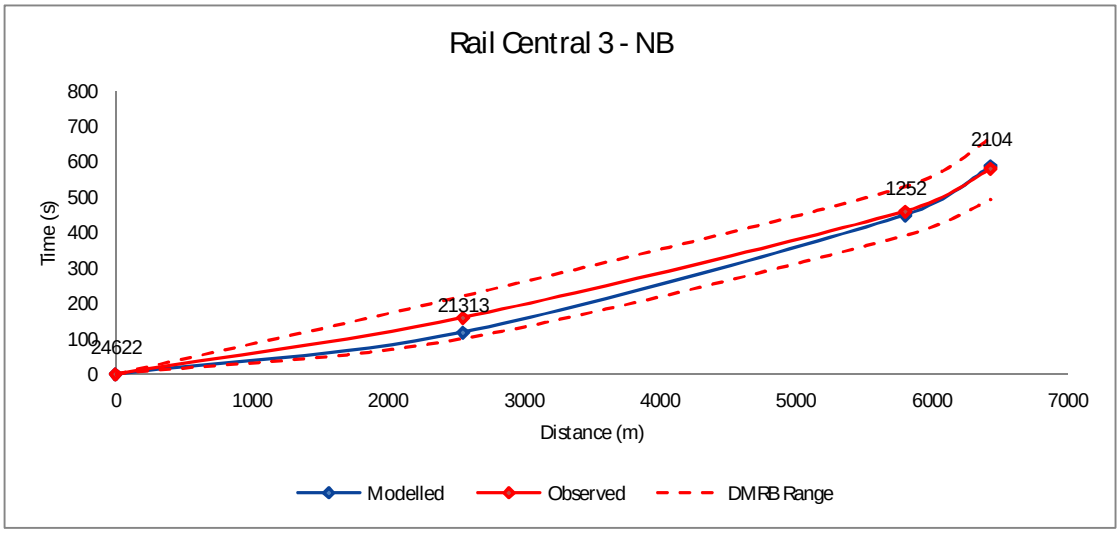


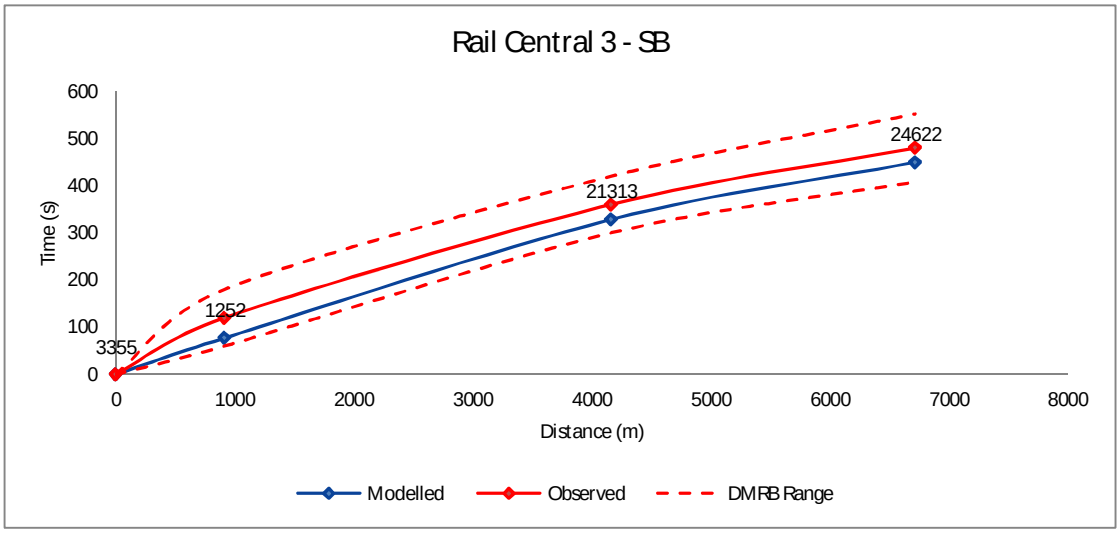




JT Graphs PM Peak



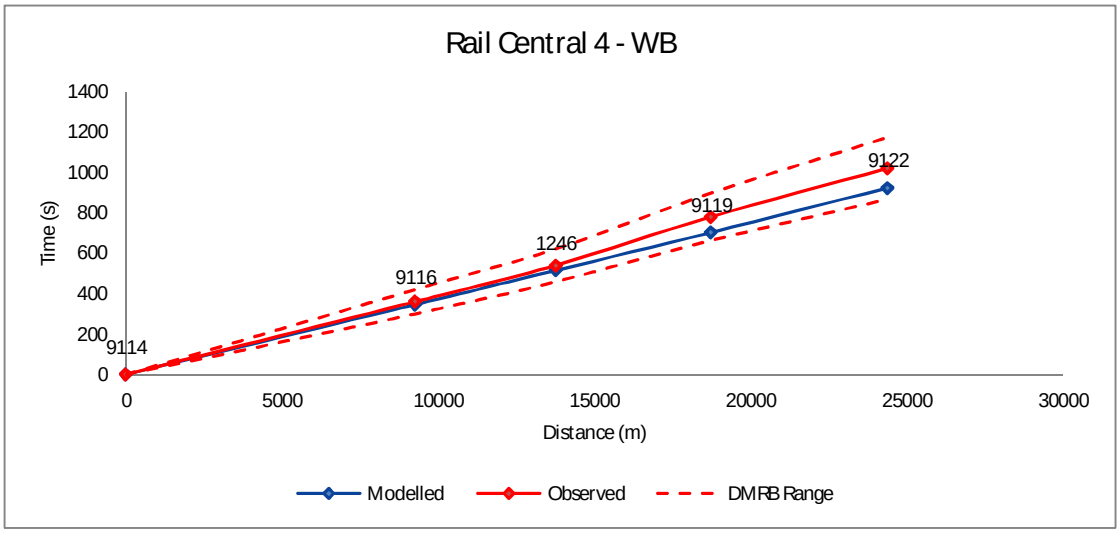


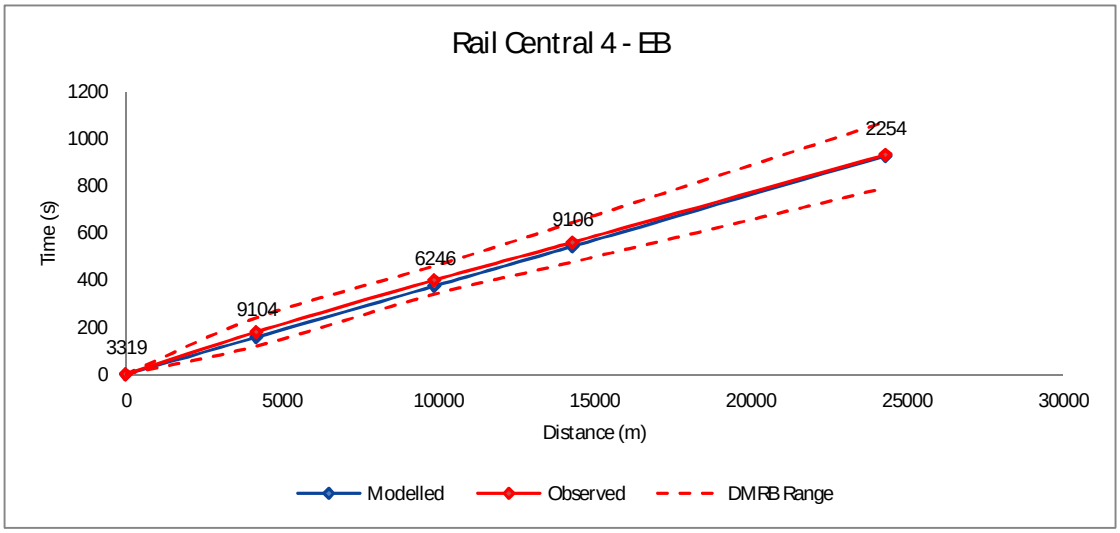


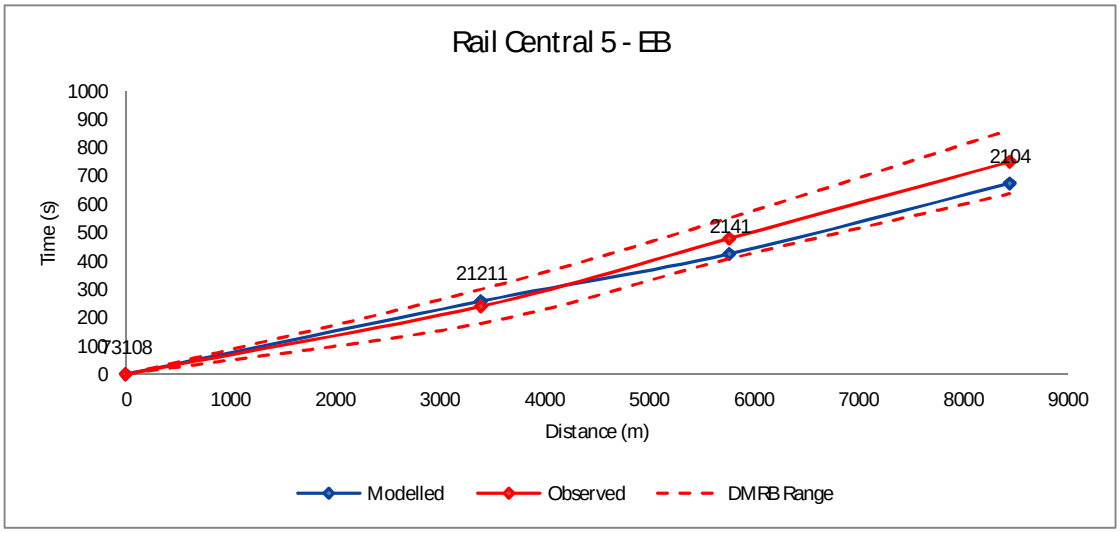
JT Graphs PM Peak

Model Map

Redraw Graphs



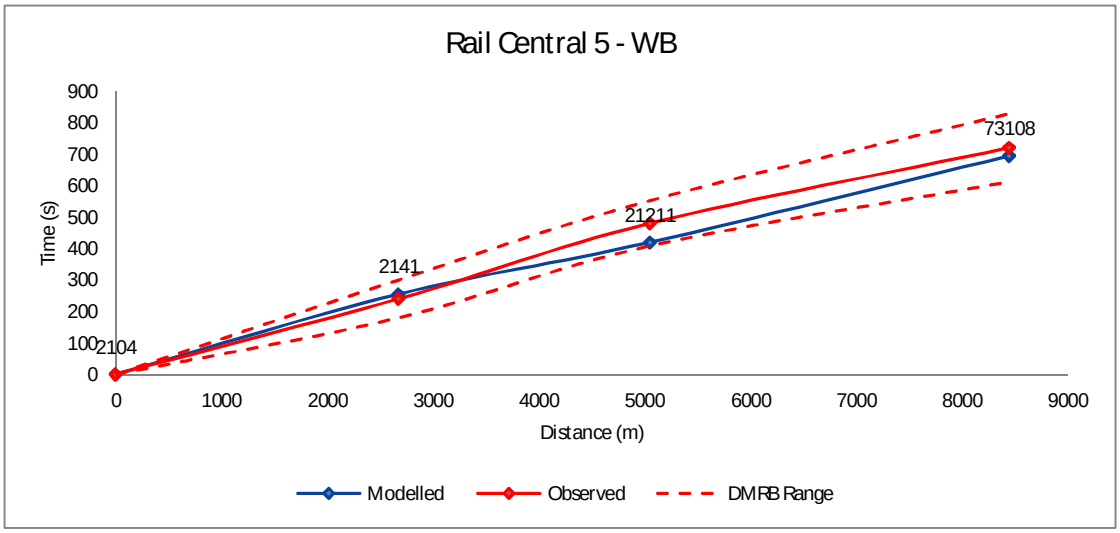


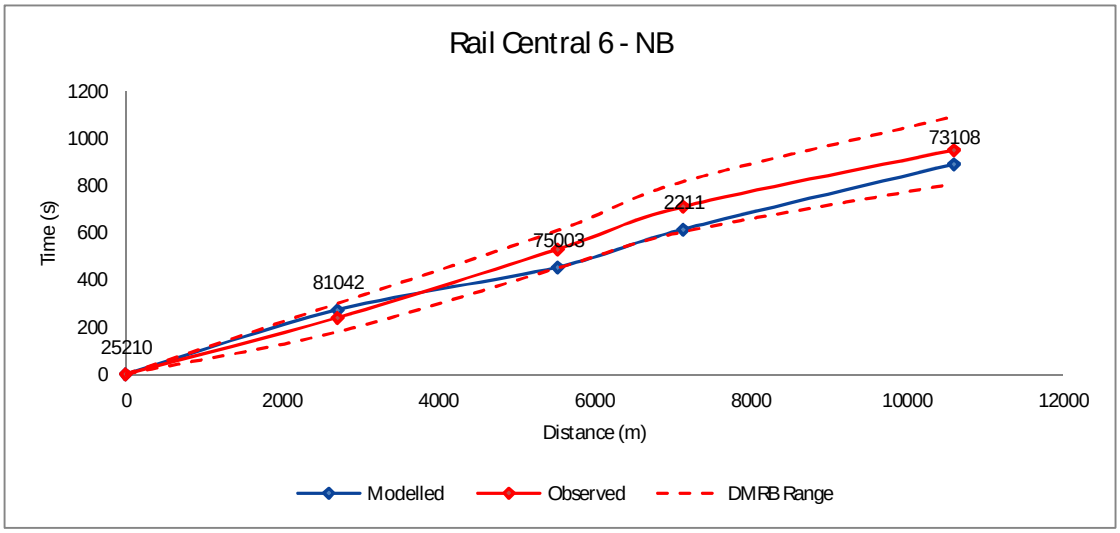


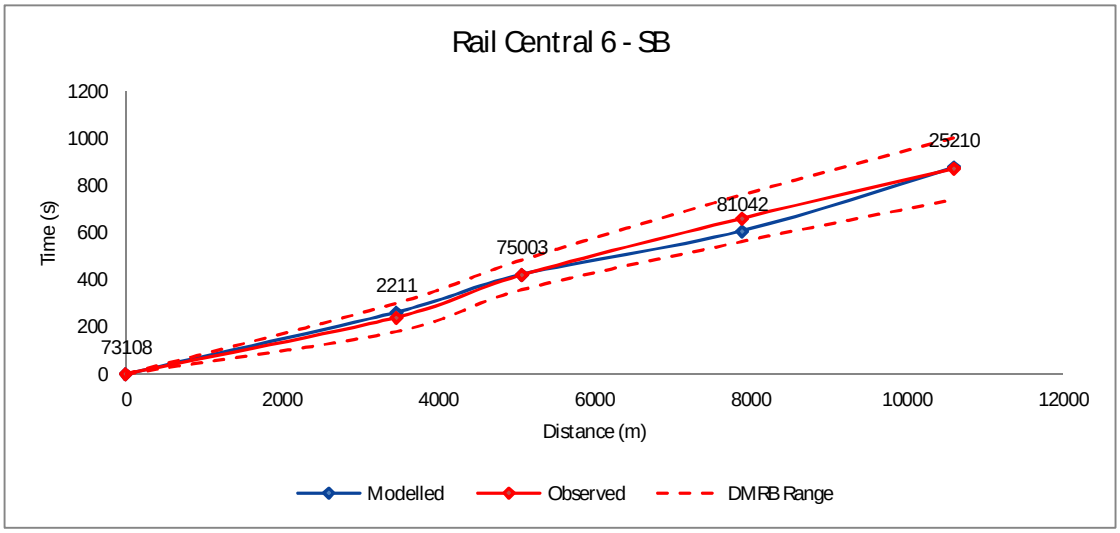
JT Graphs PM Peak

Model Map

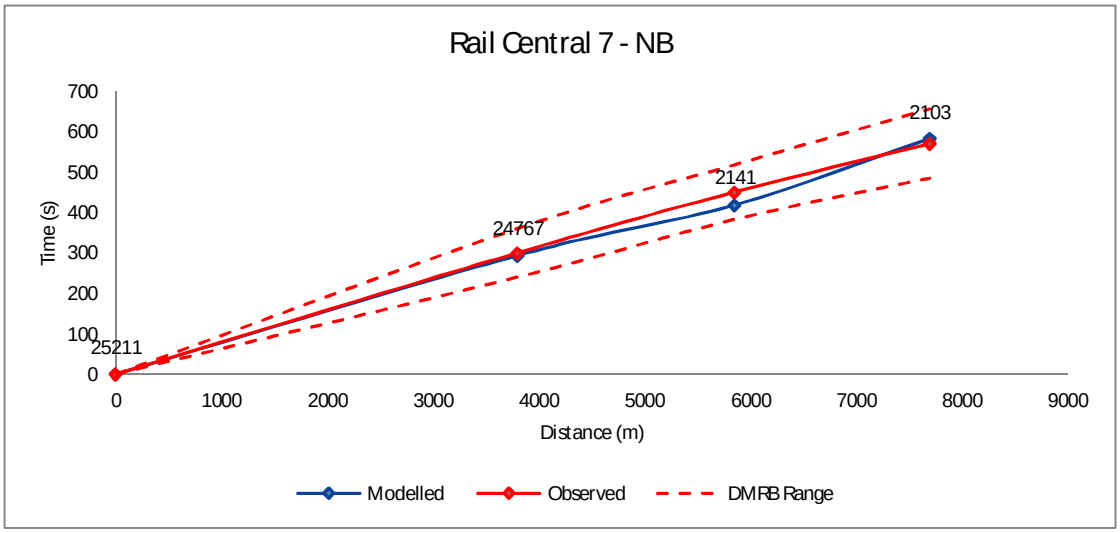
Redraw Graphs

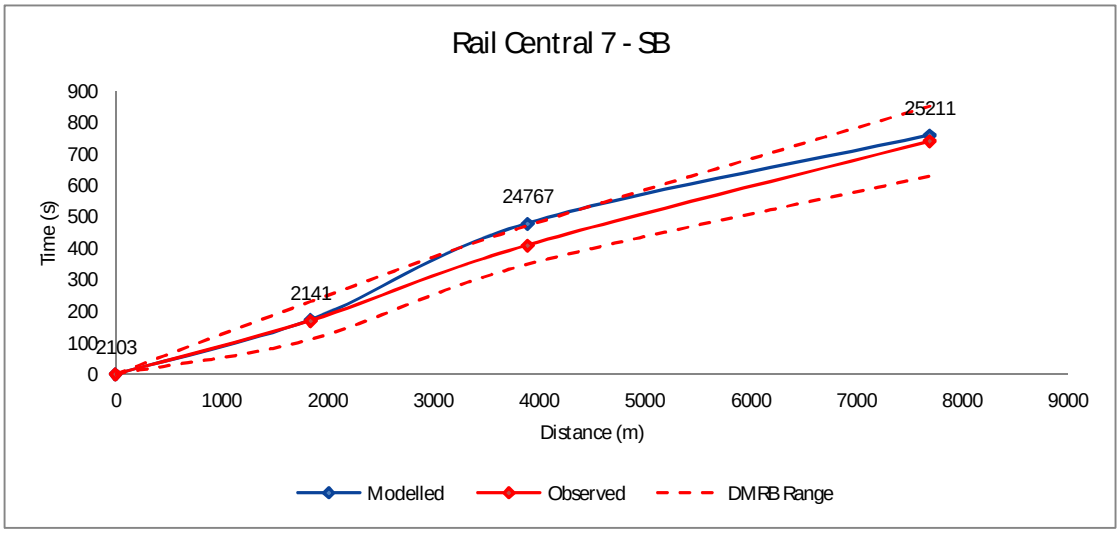


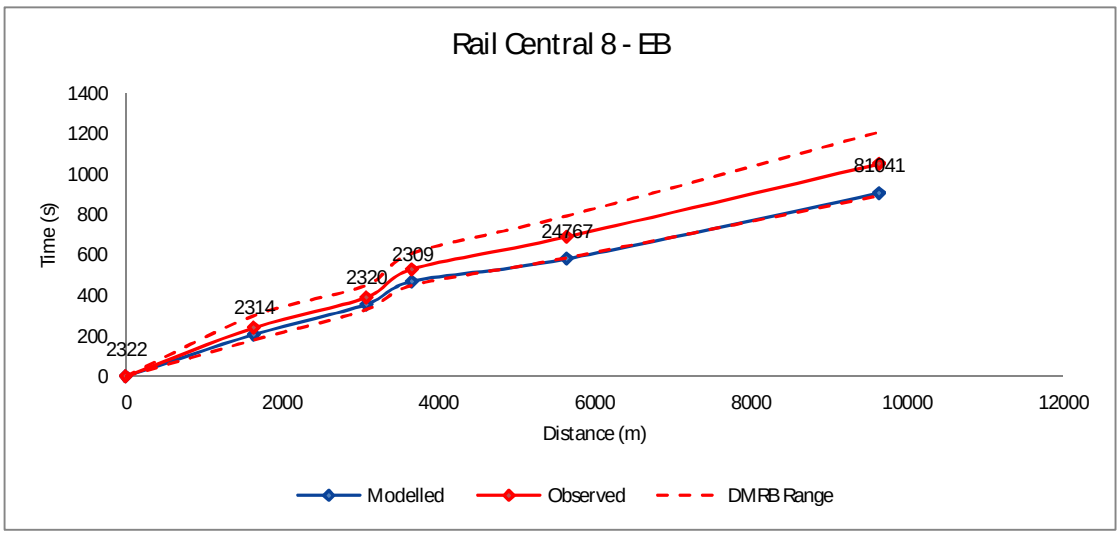




JT Graphs PM Peak



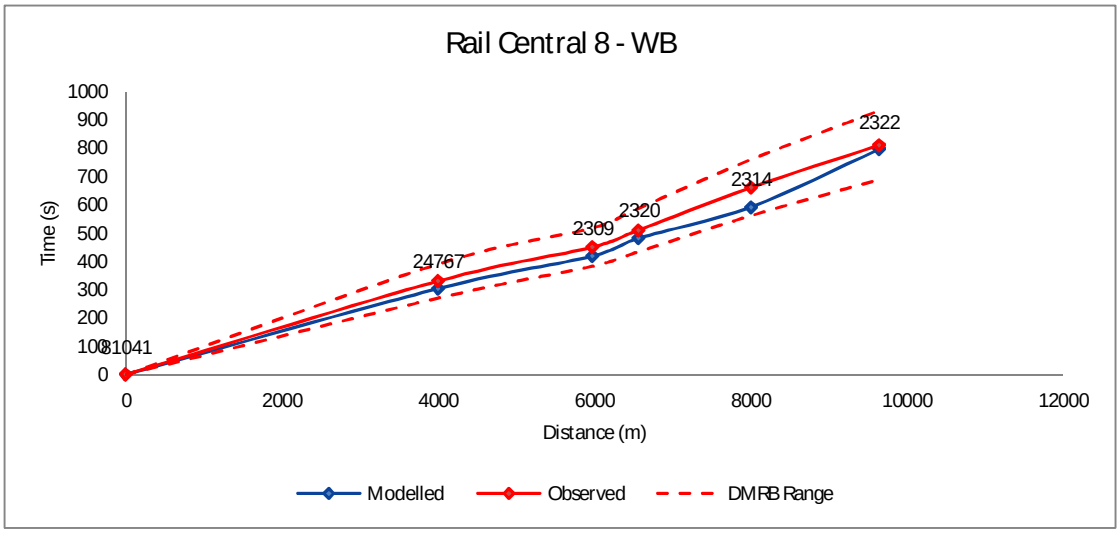




JT Graphs PM Peak

Model Map

Redraw Graphs



Actual Flow Plots
(TPA Rail Central Area)

Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central\LMVR\Actual Flow Plots.mxd

Key

AM Peak

Actual Flow (PCU)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 0.5 1 1.5 2 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM ACTUAL FLOWS
RAIL CENTRAL AREA
(PASSENGER CAR UNITS)

FIGURE No:

Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central\LMVR\Actual Flow Plots.mxd

Key

Inter-peak

Actual Flow (PCU)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 0.5 1 1.5 2 Kilometres

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM ACTUAL FLOWS
RAIL CENTRAL AREA
(PASSENGER CAR UNITS)

FIGURE No:

Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\TPA Rail Central\LMVR\Actual Flow Plots.mxd

Key

PM Peak

Actual Flow (PCU)

0 0.5 1 1.5 2 Kilometres

Contains Ordnance Survey data © Crown copyright and database right 2017.

WSP | PARSONS BRINCKERHOFF

TITLE:

NSTM ACTUAL FLOWS
RAIL CENTRAL AREA
(PASSENGER CAR UNITS)

FIGURE No:

APPENDIX F

NSTM Committed & Allocated Development and Infrastructure Schemes

DRAFT

NSTM 2021 AND 2031 FORECAST REPORT

INITIAL OUTPUTS TECHNICAL NOTE

2021/2031 LARGE COMMITTED DEVELOPMENT ASSUMPTIONS AND LOCATIONS

WSP | PARSONS BRINCKERHOFF

District	Reference	Development	Zone	Dwellings By 2031	Employees By 2031	A1 Floorspace By 2031 (sqm)	Schools By 2031	Dwellings By 2021	Employees By 2021	A1 Floorspace By 2021 (sqm)	Schools By 2021
Corby	C11	Priors Hall (Housing & b-class employment)	701	1659	205		300	1399			
Corby	C12	Priors Hall (Housing & b-class employment)	702	871	107						
Corby	C13	Priors Hall (Housing & b-class employment)	703	367	45			175			
Corby	C14	Priors Hall (Housing & b-class employment)	704	1996	246						
Corby	C15	Priors Hall (Non b-class employment)	701		83	1661					
Corby	C16	Priors Hall (Non b-class employment)	702		44	872					
Corby	C17	Priors Hall (Non b-class employment)	703		18	368					
Corby	C18	Priors Hall (Non b-class employment)	704		100	1999					
Corby	C19	Land West of Stanion (Little Stanion)	705	594	51	1016		468			
Corby	C20	Stanion Lane Plantation, Corby	705		3009				1504		
Corby	C21	Former Gefco automative site	696		1066				533		
Corby	C22	Land at Cockerell Road, Corby	58		525				263		
Corby	C23	Seymour Plantation, Rockingham Road, Corby	206		417				208		
Corby	C26	Weldon Park (housing & non b-class jobs)	706	991	72	804		530			
Corby	C3	TC & R03 - Retail Expansion	57		775	15500					
Corby	C59	Land South of Brooke Weston Academy	404	530				170			
Corby	C66	Rockingham Enterprise Zone	665		6133						
Corby	C7	West Corby	658	3495	726		2391	300			
Corby	C8	West Corby	678	471	205		677	300			
Daventry	D13	Land at Monkmoor Farm	710	1000	83	1200		80		1200	
Daventry	D18	Daventry North East SUE	825	2600	572	300		600			
Daventry	D19	Mickle Well Park	743	450				450			
Daventry	D20	Daventry Town Centre	720	300	1300			165			
Daventry	D22	DIRFT Phase III (Daventry International Rail Freight Interchange)	730		9000				2700		
Daventry	D23	Weedon Depot (Policy B6 in the JCS)	739		400				400		
East Northants	EN20	Irthlingborough West	407	672	849			185			
East Northants	EN21	North Raunds(West End), Raunds	547	230	527			230	263		
East Northants	EN27	Rushden Lakes (retail proposal)	691		1714	50800			857	25400	
East Northants	EN28	Warth Park Extension (Phase 2), Raunds	694		783				391		
East Northants	EN29	Rushden Strategic Site (Rushden East - RUS3)	729	1600	770			250			
East Northants	EN30	Vehicle Depot and Ajacent Land, Islip	648		788				394		
East Northants	EN31	Nene Valley Farm, Northampton Road, Rushden	657		700				350		
East Northants	EN64	Thrapston South (Phases 1 and 2)	479	150							
East Northants	EN65	Thrapston South (Phases 3 and 4)	479	499				275			
East Northants	EN76	Darsdale Farm, Chelveston Road	822	431				340			
East Northants	EN88	Deenethorpe Airfield Garden Village	693	1250	210			300			
Kettering	K22	Desborough North	659	560				450			
Kettering	K23	Rothwell North	660	791	236			490			
Kettering	K24	East of Kettering	662	825				825			
Kettering	K25	East of Kettering	675		103						
Kettering	K26	East of Kettering	689	953				953			
Kettering	K27	East of Kettering	690	670				117			
Kettering	K28	East of Kettering	722	937	129						
Kettering	K31	A14 J10 Business Park	717		699				349		
Kettering	K35	Weekley Wood Development Area, Kettering	733		801				401		
Kettering	K36	Kettering South (A14 jcn 9/A509)	724		822				411		
Kettering	K37	Kettering South (A14 jcn 9/A509)	725		281				141		
Kettering	K39	North Kettering	731		785				392		
Kettering	K48	Westhill (land at)	663	460				460			
Kettering	K6	SHQ1 Wadcroft/Newlands Phase 1	661		800	16000					

District	Reference	Development	Zone	Dwellings By 2031	Employees By 2031	A1 Floorspace By 2031 (sqm)	Schools By 2031	Dwellings By 2021	Employees By 2021	A1 Floorspace By 2021 (sqm)	Schools By 2021
Northampton	N54	Northampton North SUE (Policy N3) 1	666	150				150			
Northampton	N55	Northampton West SUE (Policy N4)	667	2500		1200	1050	300			1050
Northampton	N56	Northampton South SUE (Policy N5) 1	668	1000		700		350			
Northampton	N57	Northampton South of Brackmills SUE (Policy N6)	669	1300		700	420	400			420
Northampton	N59	Northampton North SUE (Policy N3) 2	679	1850	1316	2000	840	675			840
Northampton	N61	The Waterside: St Peter's Way	709	270	2389						
Northampton	N62	Northampton North of Whitehills	711	1050	236	700	300	250			
Northampton	N64	Upton Park (Policy N9)	713	1000		700	420	350			
Northampton	N65	Dallington Grange (Policies H1, H5 - Policy N8)	714	3000	1432	1800	840	350			
Northampton	N66	Upton Lodge (excluding Norwood Farm) (Policy H4)	715	1801				500			
Northampton	N67	Upton Lodge (Norwood Farm)	716	1699		1800	1050	500			
Northampton	N68	Ransome Road	718	400				200			
Northampton	N69	University Nunn Mills	748		1806				1806		
Northampton	N70	Princess Marina Hospital	719	550				550			
Northampton	N71	Pineham (Policy D13,14)	723	646							
Northampton	N72	Northampton South SUE (Policy N5) 2	728	1000			420	250			
Northampton	N73	Northampton North SUE (Policy N3) 3	737	1500				250			
Northampton	N74	Castle Station	738	270	1663						
Northampton	N75	Bridge St/ St John/ Angel St Masterplan	740	561	2500			561	2500		
Northampton	N78	Northampton Junction 16 Employment	732		4556				4556		
Northampton	N79	University of Northampton, Park Campus	821	750				250			
Northampton	N81	Milton Ham (land east of M1 J15a)	676		826				826		
South Northants	SN1	Silverstone Circuit	746		2683						
South Northants	SN2	Silverstone Circuit	747		2683						
South Northants	SN3	Silverstone Circuit	749		2007						
South Northants	SN33	Towcester South SUE	671		1102	500					
South Northants	SN34	Towcester South SUE	680	2310				340			
South Northants	SN35	Radstone Fields (Policy B3)	721	1000	53	500	300	350			
South Northants	SN36	Land North of Turweston Road	726		422						
South Northants	SN39	South Northants - Roade Masterplan 1	823	307				250			
South Northants	SN40	South Northants - Roade Masterplan 2	824	125				75			
Wellingborough	W19	Sites E1 and E2 (Market Square and Tresham Institute)	664		909	18182					
Wellingborough	W20	Wellingborough East SUE	649		430						
Wellingborough	W21	Wellingborough East SUE	673	180				180			
Wellingborough	W22	Wellingborough East SUE	651	666				666			
Wellingborough	W23	Wellingborough East SUE	652	666				219			
Wellingborough	W24	Wellingborough East SUE	653	133							
Wellingborough	W25	Wellingborough East SUE	654	1190	430						
Wellingborough	W26	Wellingborough East SUE	655		430						
Wellingborough	W27	Wellingborough East SUE	656		430						
Wellingborough	W28	Park Farm Way/ Shelley Road	672	496				320			
Wellingborough	W29	Wellingborough North	674	278				278			
Wellingborough	W30	Wellingborough North	683	275				275			
Wellingborough	W31	Wellingborough North	684	275				275			
Wellingborough	W32	Wellingborough North	685	225				225			
Wellingborough	W33	Wellingborough North	686	87				87			
Wellingborough	W34	Wellingborough North	687		227						
Wellingborough	W35	Wellingborough North	688	175				175			
Wellingborough	W36	Wellingborough North	735	261				261			
Wellingborough	W37	Appleby Lodge, Wellingborough	692		1826				913		

Drawn By: ukjis001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Committed Developments (Residential) v2.mxd

Key

- Large Committed Development
- District Boundary

Priors Hall (4893 Dwellings)
Deenethorpe Airfield Garden Village (1250 Dwellings)
Weldon Park (991 Dwellings)
West Corby SUE (3996 Dwellings)
Land West of Stanion (594 Dwellings)
South of Brooke Weston Academy (530 Dwellings)
Desborough North (500 Dwellings)
Rothwell North (791 Dwellings)
Westhill (460 Dwellings)
East of Kettering (3385 Dwellings)
Thrapston South (649 Dwellings)
Darsdale Farm, Chelveston Road (431 Dwellings)
Wellingborough North (1577 Dwellings)
Irthlingborough West (672 Dwellings)
WEAST Development (2836 Dwellings)
Rushden East SUE (1600 Dwellings)
Northampton North SUE (1500 Dwellings)
Park Farm Way / Shelley Road (496 Dwellings)
Northampton North SUE (2000 Dwellings)
Northampton North of Whitehills (1050 Dwellings)
Mickle Well Park (450 Dwellings)
Land at Monkmoor Farm (1000 Dwellings)
Daventry North East SUE (2600 Dwellings)
Dallington Grange (3000 Dwellings)
Park Campus (750 Dwellings)
Northampton West SUE (2500 Dwellings)
Upton Lodge (1801 Dwellings)
Princess Marina Hospital (550 Dwellings)
Bridge St/St John/Angel St (561 Dwellings)
Norwood Farm (1699 Dwellings)
Upton Park (1000 Dwellings)
Ransome Road (400 Dwellings)
Pineham (646 Dwellings)
Northampton South of Brackmills (1300 Dwellings)
Northampton South SUE (2000 Dwellings)
Roade Masterplan (432 Dwellings)
Towcester South SUE (2310 Dwellings)
Radstone Fields (1000 Dwellings)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 2 4 6 8 Kilometres

WSP | PARSONS BRINCKERHOFF

LARGE COMMITTED DEVELOPMENTS IN NORTHAMPTONSHIRE

Drawn By: ukjjs001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Committed Developments (Employment) v2.mxd

Key

- Large Committed Development
- District Boundary

Seymour Plantation (417 Jobs)
Rockingham Enterprise Zone (6133 Jobs)
Priors Hall (849 Jobs)
Land at Cockerell Road (525 Jobs)
TC & R03 - Retail Expansion (775 Jobs)
Former Gefco Automative Site (1066 Jobs)
West Corby SUE (931 Jobs)
Stanion Lane Plantation (3009 Jobs)
North Kettering (785 Jobs)
Weekley Wood (801 Jobs)
Newlands Phase 1 (800 Jobs)
Vehicle Depot, Islip (788 Jobs)
A14 J10 Business Park (699 Jobs)
Kettering South (1103 Jobs)
North Raunds (527 Jobs)
Warth Park Extension Phase 2 (783 Jobs)
Irthlingborough West (649 Jobs)
WEAST Development (1722 Jobs)
Nene Valley Farm (700 Jobs)
Appleby Lodge (1826 Jobs)
Sites E1 and E2 (909 Jobs)
Rushden Lakes (1714 Jobs)
Rushden East SUE (770 Jobs)
Northampton North SUE (1316 Jobs)
DIRFT Phase III (9000 Jobs)
Daventry North East SUE (572 Jobs)
Daventry Town Centre (1300 Jobs)
Dallington Grange (1432 Jobs)
Castle Station (1663 Jobs)
Bridge St/St John/Angel St (2500 Jobs)
University Nunn Mills (1806 Jobs)
The Waterside: St Peter's Way (2389 Jobs)
Junction 16 (4556 Jobs)
Weedon Depot (400 Jobs)
Milton Ham (826 Jobs)
Towcester South SUE (1102 Jobs)
Silverstone Circuit (7374 Jobs)
Land North of Turweston Road (422 Jobs)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 2 4 6 8 Kilometres

WSP | PARSONS BRINCKERHOFF

LARGE COMMITTED DEVELOPMENTS IN NORTHAMPTONSHIRE

NSTM 2021 AND 2031 FORECAST REPORT

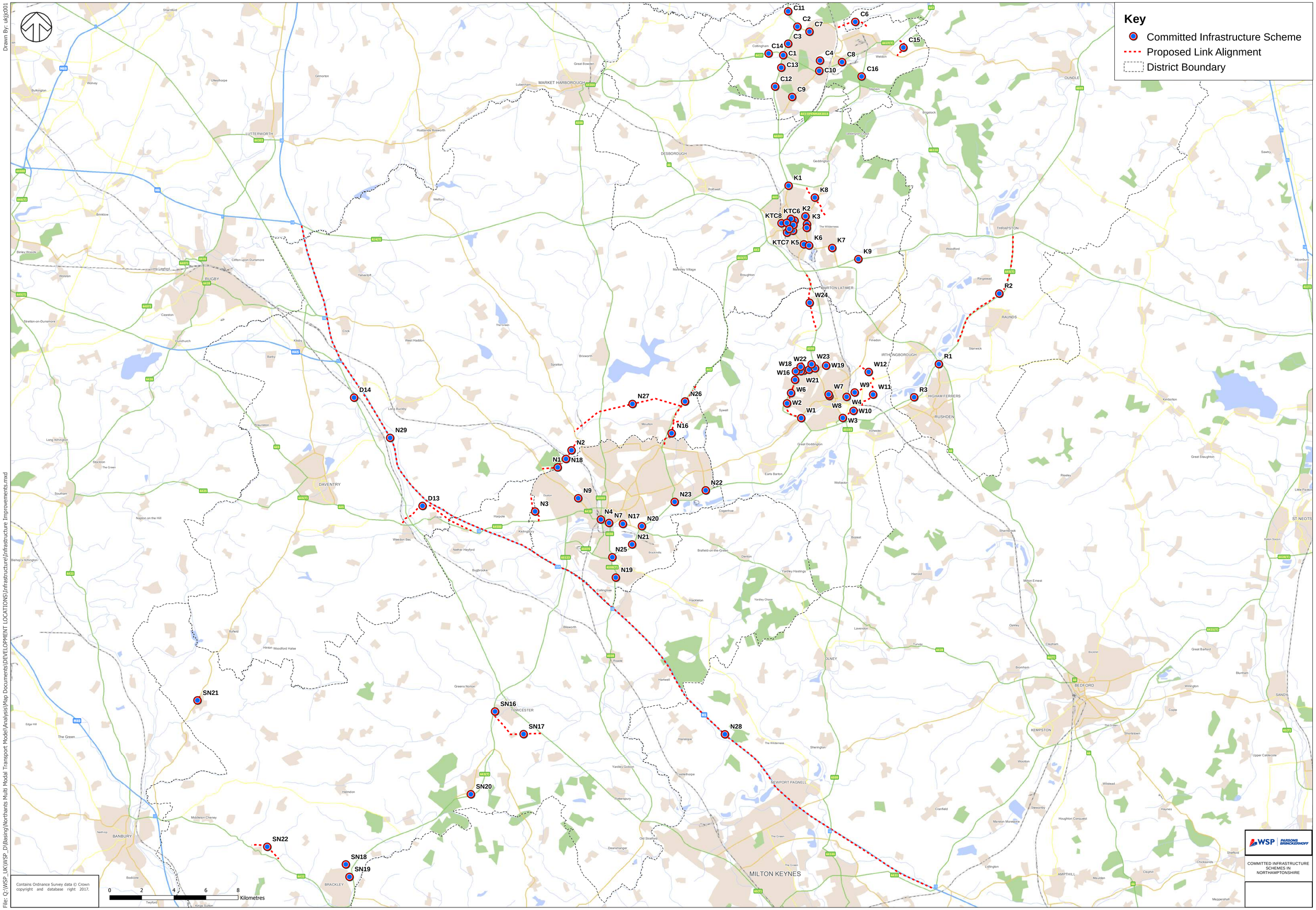
INITIAL OUTPUTS TECHNICAL NOTE

2021/2031 COMMITTED INFRASTRUCTURE SCHEMES AND LOCATIONS

WSP | PARSONS BRINCKERHOFF

District	Reference	Description	Mitigation	Built by 2031?	Built by 2021?
Corby	C1	A427 / Uppingham Road	Minor widening to northern Uppingham Road approach	Yes	Yes
Corby	C2	A6003 Rockingham Road / Uppingham Road	Minor widening to Rockingham Road approaches	Yes	Yes
Corby	C3	Vian Way / Uppingham Road	Three arm roundabout	Yes	No
Corby	C4	Elizabeth Street / Cottingham Road	Minor widening to eastern Cottingham Road arm	Yes	Yes
Corby	C6	Corby Northern Orbital – Phase 2	Between Rockingham Motor Speedway and Willowbrook East Industrial Estate	Yes	Yes
Corby	C7	Gretton Brook Road / A6116	Minor widening to western Rockingham Road approach	Yes	Yes
Corby	C8	A427 Weldon Road/ A6086 Lloyds Road/ A6086 Geddington Road	Minor widening to Lloyds Road and eastern A427 Weldon Road approach	Yes	No
Corby	C9	A6014 Oakley Road/ Danesholme Road/ Lewin Road	Minor widening to northern A6014 Oakley Road approach	Yes	No
Corby	C10	A427 Oakley Road/ A427 Westcott Way/ Oakley Road/ Elizabeth Street	Minor widening to all approaches	Yes	No
Corby	C11	A6003 Caldecott Road/A6003 Main Street/Gretton Road/Cottingham Road	Additional right turn lane on A6003 Caldecott Road	Yes	No
Corby	C12	Corby West - A6003 / Danesholme Road access	Four arm roundabout	Yes	Yes
Corby	C13	Corby West - Northern A6003 access / A427 access	Three arm roundabouts	Yes	No
Corby	C14	Corby West - A427 access	Three arm aroundabout	Yes	No
Corby	C15	A427 Weldon Relief Road		Yes	Yes
Corby	C16	A43 Stamford/ A6086 Geddington Road	Junction improvement for Stanion Plantation	Yes	Yes
Kettering	K1	A43/A6003 Rockingham Road/ Rockingham Road	Roundabout improvements	Yes	No
Kettering	K2	Montague Street/ Stamford Road/ Central Avenue/ Windmill Avenue	East of Kettering - Junction Improvement a	Yes	No
Kettering	K3	Windmill Avenue/ St Mary's Road	East of Kettering - Junction Improvement b	Yes	No
Kettering	K4	Windmill Avenue/Deeble Road	East of Kettering - Junction Improvement c	Yes	Yes
Kettering	K5	London Road/Barton Road/ Pytchley Road	East of Kettering - Junction Improvement	Yes	No
Kettering	K6	Barton Road/ Windmill Avenue	East of Kettering - Junction Improvement	Yes	No
Kettering	K7	Barton Road/Warkton Lane	East of Kettering - Access Junction E	Yes	No
Kettering	K8	Warkton-Weekley Avenue	Part of Phase 3 of East of Kettering development	Yes	No
Kettering	K9	Junction 10a	Improvement Scheme	Yes	No
Rushden	R1	Chowns Mill	Improvement Scheme	Yes	Yes
Rushden	R2	Stanwick to Thrapston	Online widening of the A45	Yes	No
Rushden	R3	A45 Skewbridge	Junction improvement for Rushden Lakes	Yes	Yes
Kettering Town Centre	KTC1	Northampton Road/ Station Road/ Bowling Green Road	Altered to take into account bus only links on Sheep Street	Yes	Yes
Kettering Town Centre	KTC2	Bowling Green Road/ London Road	Altered to take into account bus only links on Sheep Street / Market Street	Yes	No
Kettering Town Centre	KTC3	London Road/ Market Street	Altered to take into account Queen Street becoming two-way link	Yes	No
Kettering Town Centre	KTC4	Silver Street/ High Street	Altered to take into account new two-way links in town centre	Yes	No
Kettering Town Centre	KTC5	Montagu Street/ Victoria Street	Altered to take into account Victoria Street becoming two-way link	Yes	No
Kettering Town Centre	KTC6	Northall Street/ Eskdaill Street	Altered to take into account new two-way links in town centre	Yes	Yes
Kettering Town Centre	KTC7	Station Road	Made into two-way link	Yes	No
Kettering Town Centre	KTC8	Trafalgar Road to Northfield Avenue	Link road	Yes	No
Kettering Town Centre	KTC9	Queen Street	Made into two-way link	Yes	No
Kettering Town Centre	KTC10	20mph zone in city centre	Within Northall Street / Victoria Street / Northfield Avenue	Yes	No
Kettering Town Centre	KTC11	Sheep Street / Market Street	Made bus only; no through traffic	Yes	No
Wellingborough	W1	A4500/A509/Northampton Rd	Four arm signalised roundabout	Yes	No
Wellingborough	W2	A509 / Rutherford Drive	Improved capacity to A509 northern arm, taking into account Park Farm Way dualling	Yes	No
Wellingborough	W3	A509/Turnells Mill Lane/ Embankment	Four arm signalised roundabout	Yes	No
Wellingborough	W4	Senwick Road/ Elsden Road/ Midland Road	Signalised junction	Yes	Yes
Wellingborough	W6	Park Farm Way dualling	Included by changes to junction saturation flows	Yes	No
Wellingborough	W7	Northern Interceptor Road	Four arm junction with Alma Road / Park Road	Yes	No

District	Reference	Description	Mitigation	Built by 2031?	Built by 2021?
Wellingborough	W8	Church Street	Becomes bus only as part of TCAAP and introduction of one way system with interceptor road	Yes	No
Wellingborough	W9	Route 4 to WEAST	Part of the WEAST development	Yes	Yes
Wellingborough	W10	Route 2 to WEAST	Part of the WEAST development	Yes	No
Wellingborough	W11	Route 2 to WEAST extension	Part of the WEAST development	Yes	No
Wellingborough	W12	Eastern Relief Road (along Sidegate Lane)	Part of the WEAST development	Yes	No
Wellingborough	W14	A509 Niort Way / Kettering Road / A510 Northern Way / Harrowden Road	Northern arm changed to link related to IWIMP, A509 severed and downgraded	Yes	No
Wellingborough	W15	A509 Niort Way / Gleneagles Drive	Four arm roundabout	Yes	No
Wellingborough	W16	A509 Niort Way / Hardwick Road	Exit southbound into A509 dual carriageway	Yes	No
Wellingborough	W17	A509 Niort Way - Wellingborough North priority access	Between Gleneagles Drive & A509 / A510 / Harrowden Rd roundabouts	Yes	No
Wellingborough	W18	A509 Niort Way / IWIMP	Four arm roundabout	Yes	No
Wellingborough	W19	A510 Northern Way / Nest Farm Road	Four arm roundabout	Yes	No
Wellingborough	W21	A509 Niort Way	Upgraded to dual carriageway	Yes	No
Wellingborough	W22	IWIMP link	Connecting Isham Bypass to A509 Niort Way	Yes	No
Wellingborough	W23	IWIMP link / Red Hill Street	Through Wellingborough North development	Yes	Yes
Wellingborough	W24	Isham Bypass	Bypasses A509 Kettering Road	Yes	No
Northampton	N1	North – west bypass Phase 1	New Link between A428 to Grange Farm development	Yes	Yes
Northampton	N2	North – west bypass Phase 2	New Link between Grange Farm Development A5199	Yes	Yes
Northampton	N3	Sandy Lane Relief Road Phase 2	New Link between Weedon Road and the existing part of Sandy Lane	Yes	Yes
Northampton	N4	St Peters Way / Green Street	One signalised junction	Yes	Yes
Northampton	N7	Plough Junction Improvement	Allowing 2 way movement through Victoria Promenade and left hand filter lane onto Bridge St	Yes	Yes
Northampton	N9	Harlestone Road/Mill Lane Road Junction	Signalisation of junction	Yes	No
Northampton	N16	Moulton Bypass	Construction of the Moulton Bypass	Yes	Yes
Northampton	N17	Northampton University Bedford Road Access	New Northampton University Bedford Road site signalised access junction	Yes	Yes
Northampton	N18	Dallington Grange Roundabout	New roundabout as part of Dallington Grange	Yes	Yes
Northampton	N19	NGMS: A45 Wootton Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	Yes	No
Northampton	N20	NGMS: A45 Barnes Meadow Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	Yes	No
Northampton	N21	NGMS: A45 Brackmills Interchange	Junction upgrade as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes
Northampton	N22	NGMS: A45 Great Billing Interchange	Junction upgrade (with MOVA controlled traffic signals) as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes
Northampton	N23	NGMS: A45 Lumbertubs Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	Yes	No
Northampton	N25	NGMS: A45 Queen Eleanor Interchange	Junction upgrade as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes
Northampton	N26	A43 Phase 2 and 3	Dualling to Holcot/Sywell	Yes	Yes
Northampton	N27	Northern Orbital		Yes	No
Northampton	N28	M1 Smart Motorway Junction 13 to 16	All lane running	Yes	Yes
Northampton	N29	M1 Smart Motorway Junction 16 to 19	All lane running	Yes	Yes
Daventry	D13	Daventry Development Link (Flore Bypass)	Bypass around Flore to avoid the A45/A5 junction	Yes	Yes
Daventry	D14	A5/B5385 Junction Improvement	Signalisation of junction	Yes	Yes
South Northants	SN16	Abthorpe Roundabout (Towcester)	Part signalisation of roundabout with widening of roundabout and approaches	Yes	Yes
South Northants	SN17	A5 Relief Road and Junction associated with SUE	New link road between A43 and A5 to the South of Towcester	Yes	Yes
South Northants	SN18	Halse Road Link	New link between the A43 and Radstone Road at Brackley	Yes	Yes
South Northants	SN19	Traffic Calming at Turweston Road	Speed limit dropped to 20mph	Yes	No
South Northants	SN20	A43 Dadford Road Junction at Silverstone	Signalisation of eastbound on slip	Yes	Yes
South Northants	SN21	Chipping Warden Relief Road	Bypass of Chipping Warden to west of village (HS2 scheme)	Yes	No
South Northants	SN22	A422 Farthinghoe Bypass	Bypass of Farthinghoe village	Yes	No



Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Infrastructure\Infrastructure Improvements.mxd

Contains Ordnance Survey data © Crown copyright and database right 2017.

WSP | PARSONS BRINCKERHOFF

COMMITTED INFRASTRUCTURE SCHEMES IN NORTHAMPTONSHIRE

DRAFT

APPENDIX G

Junction Capacity Improvement Schemes

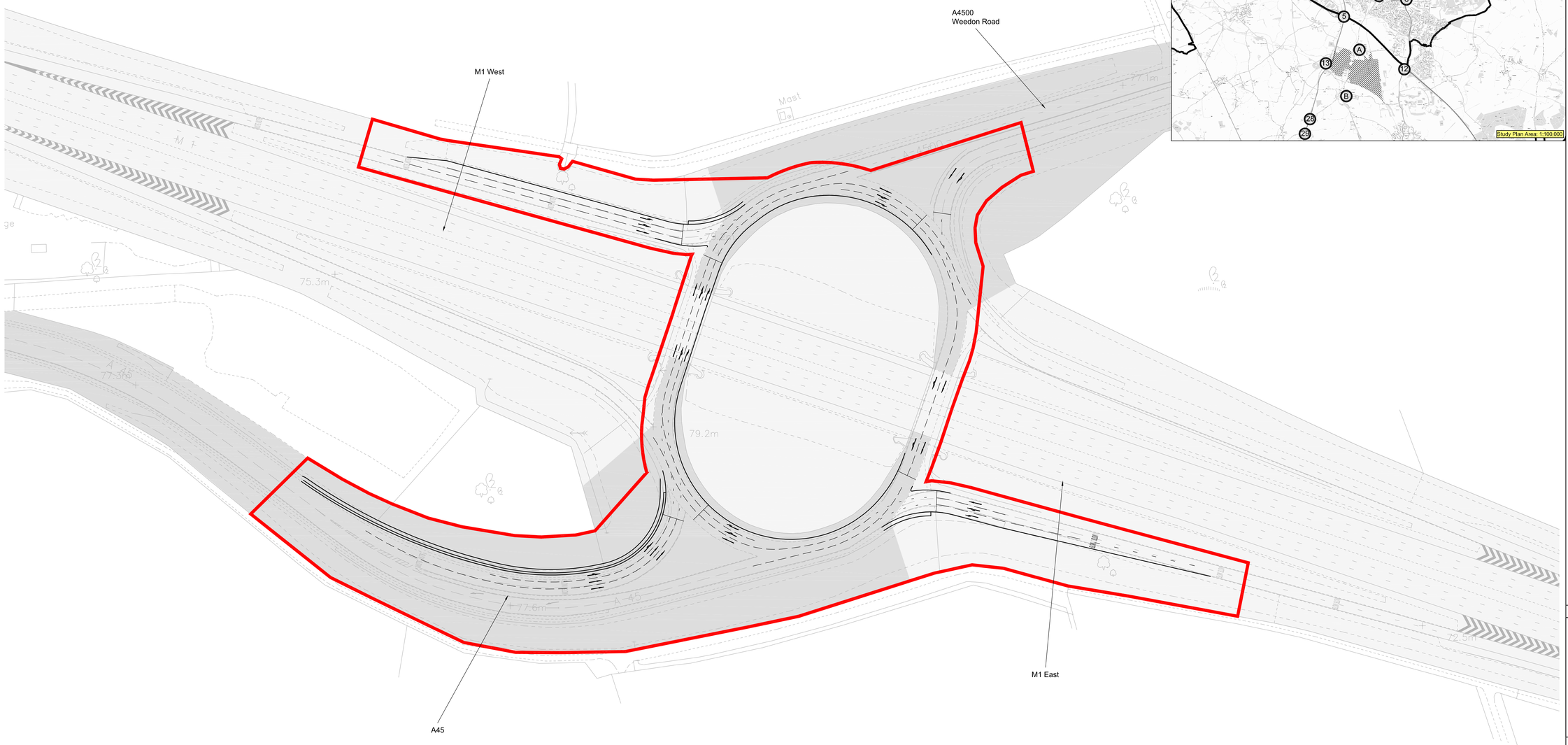
APPENDIX G.1

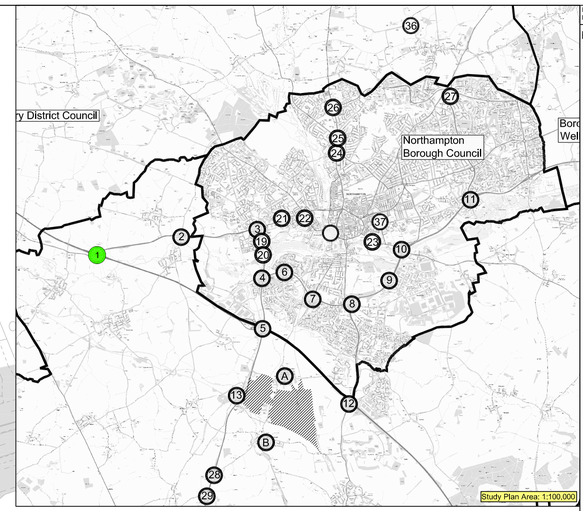
Junction 1

Proposed Mitigation

DRAFT

A1
ORIGINAL
PLOT SIZE





Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England
- Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
E	16.01.18	Proposed improvements updated further to HE comments dated 05.01.18.	PSW	AJS	RL
D	27.11.17	Proposed improvements updated at A4500 entry to roundabout and Red Line Boundary revised.	PSW	AJS	MB
C	18.09.17	Proposed improvements updated and segregated left turn lane from M1 westbound slip road removed.	PSW	AJS	MB
B	05.07.17	Study Plan Area Added	DR	AJS	MB
A	22.06.17	Red Line Junction Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northampton/Wellingborough

TITLE:
M1 Junction 16 - Proposed Improvements

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	02.06.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL01	E

INDICATIVE

RESERVED COPYRIGHT

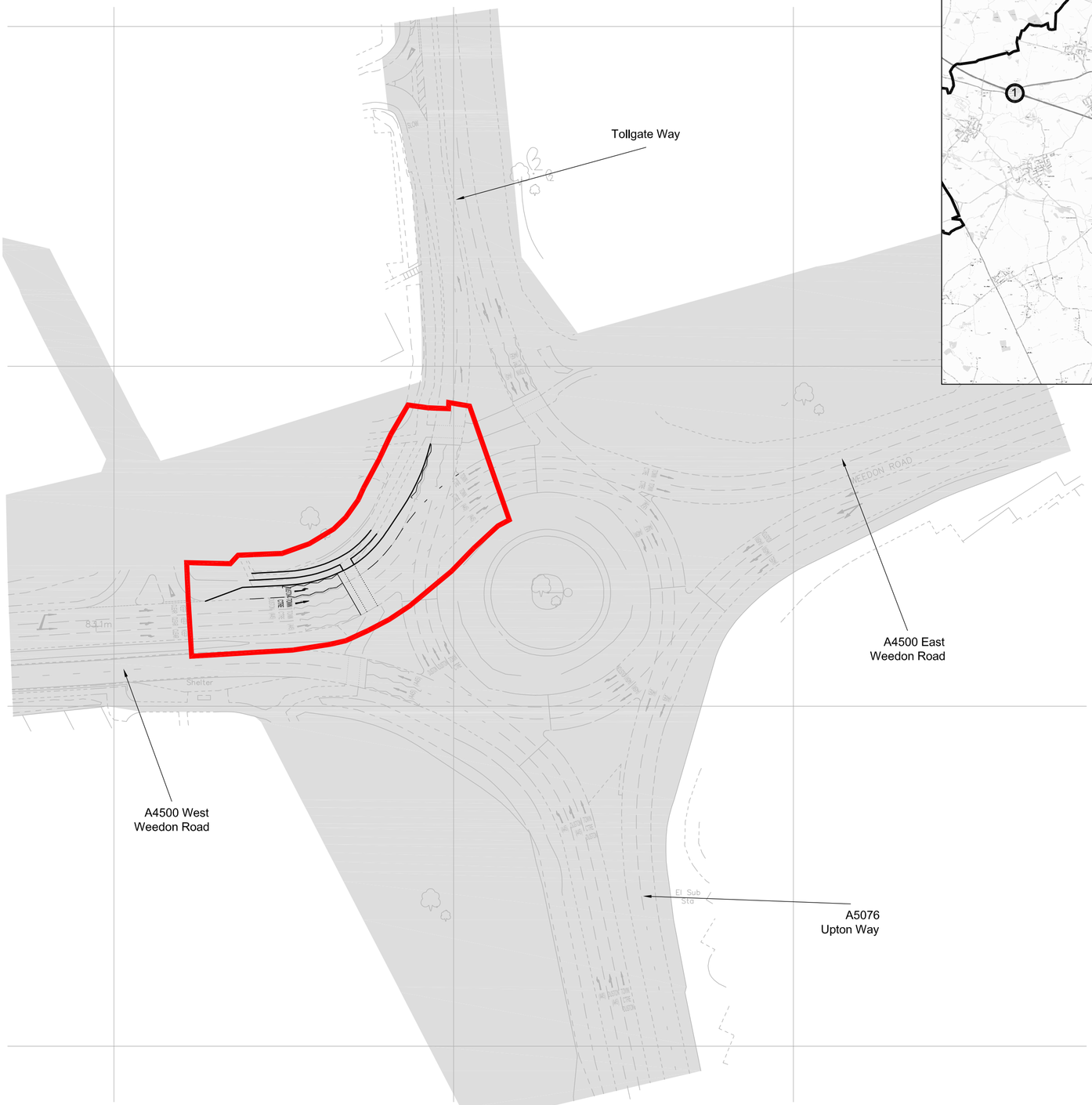
APPENDIX G.2

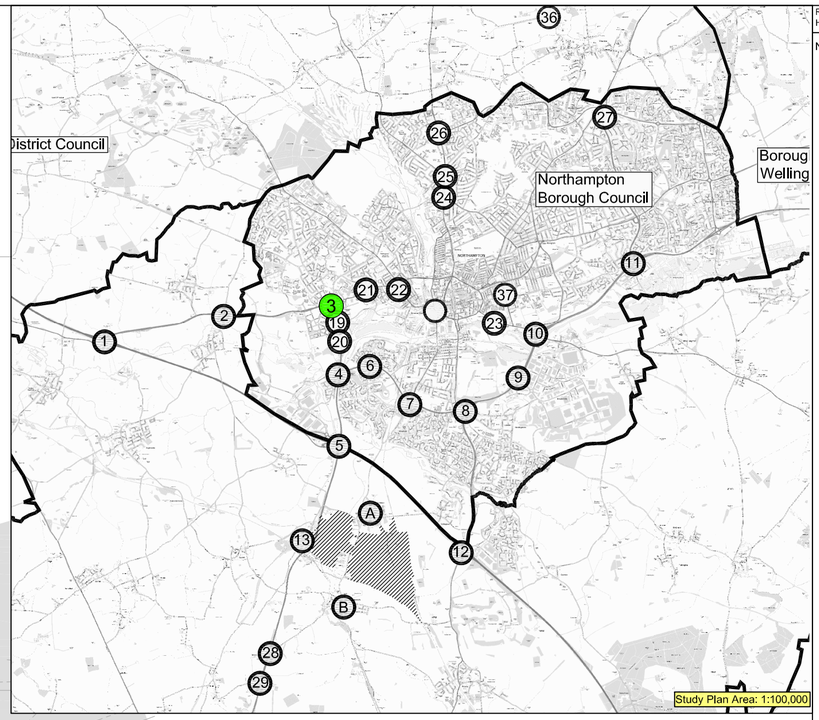
Junction 3

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE





Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
C	27.11.17	Proposed Improvements on Tollgate Way removed and Red Line Boundary revised.	PSW	AJS	MB
B	05.07.17	Study Plan Area Added	DR	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A4500/Upton Way/Tollgate Way Roundabout - Potential Improvements

STATUS:
PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	07.06.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL03	C

W E S

INDICATIVE

RESERVED COPYRIGHT

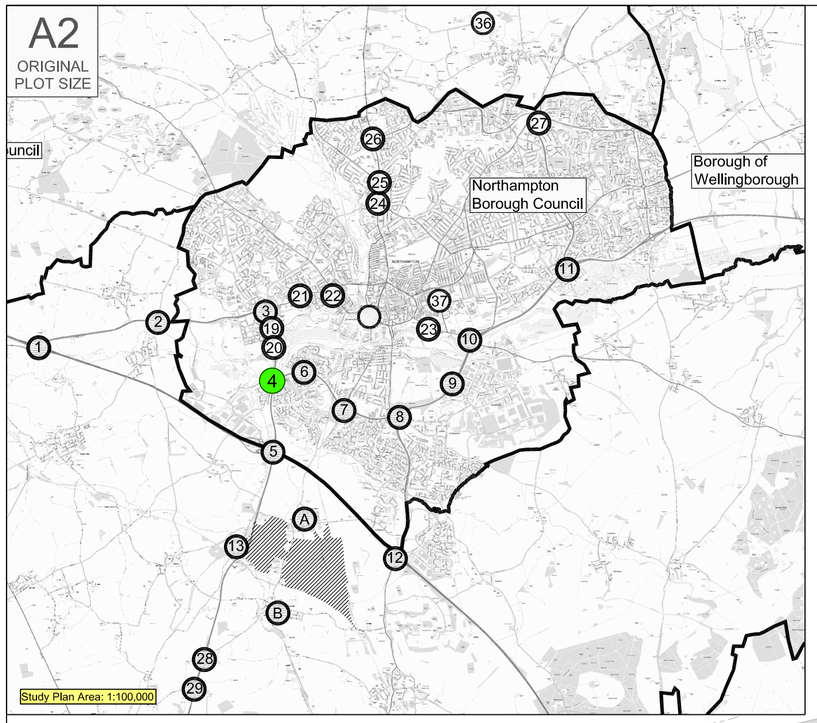
APPENDIX G.3

Junction 4

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
E	27.11.17	Red Line Boundary revised.	PSW	AJS	MB
D	08.09.17	Entry lanes on southbound approach to roundabout realigned.	PSW	AJS	MB
C	05.07.17	Study Plan Area Added	DR	AJS	MB
B	22.06.17	Red Line Added	DR	AJS	MB
A	20.06.17	Additonal lanes added	SL	RC	RC

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A5076/A5123/Upton Way Roundabout - Potential Improvements

STATUS:
PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	07.06.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL04	E

W E S

INDICATIVE

RESERVED COPYRIGHT

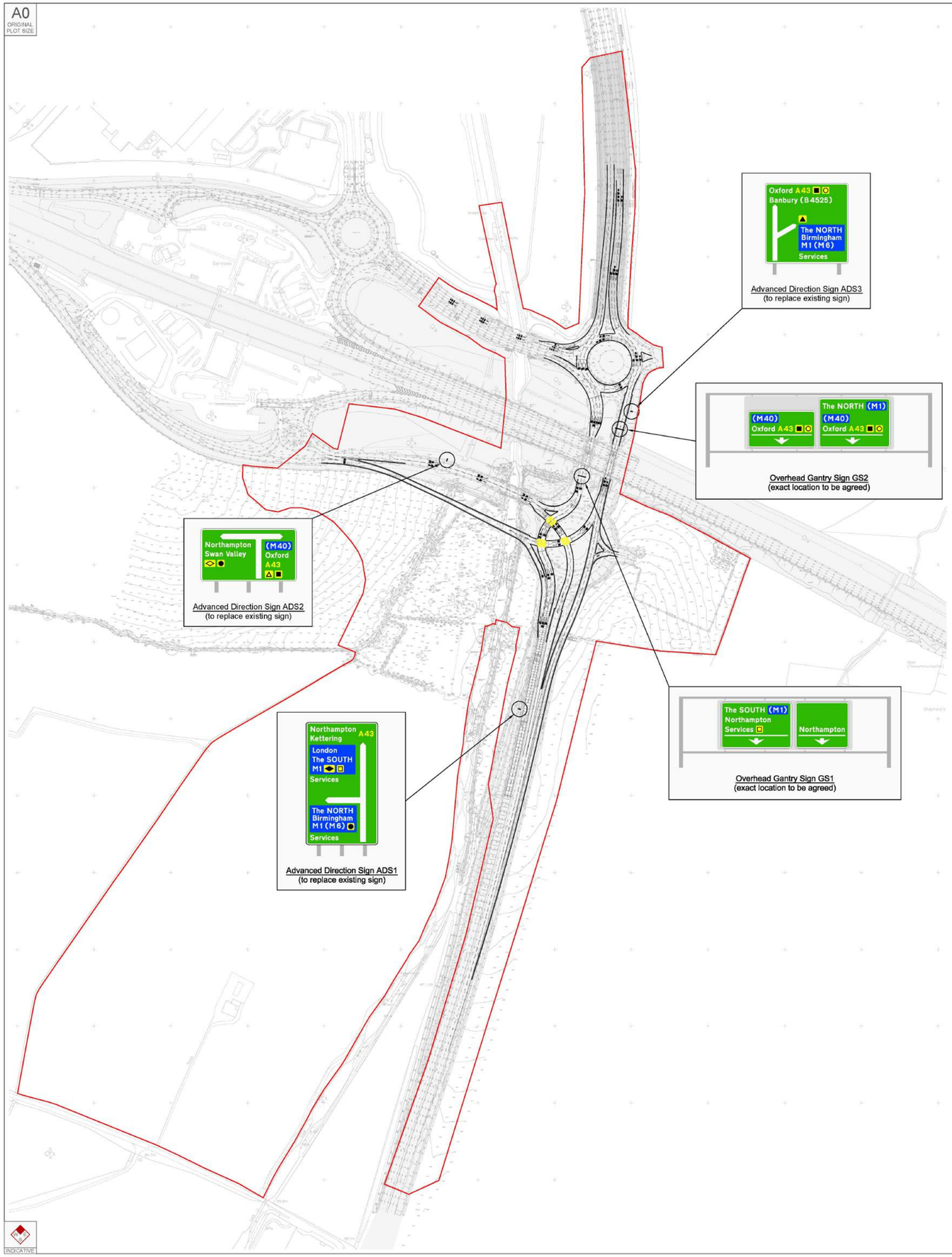
APPENDIX G.4

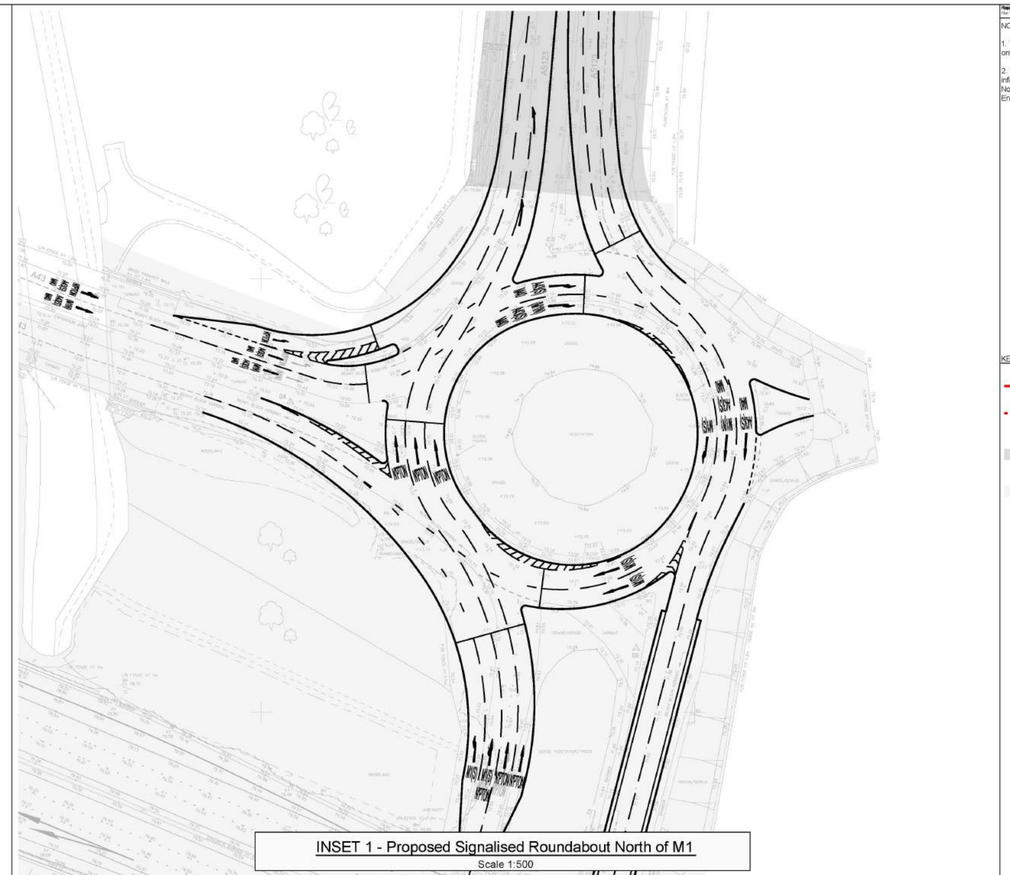
Junction 5

Proposed Mitigation

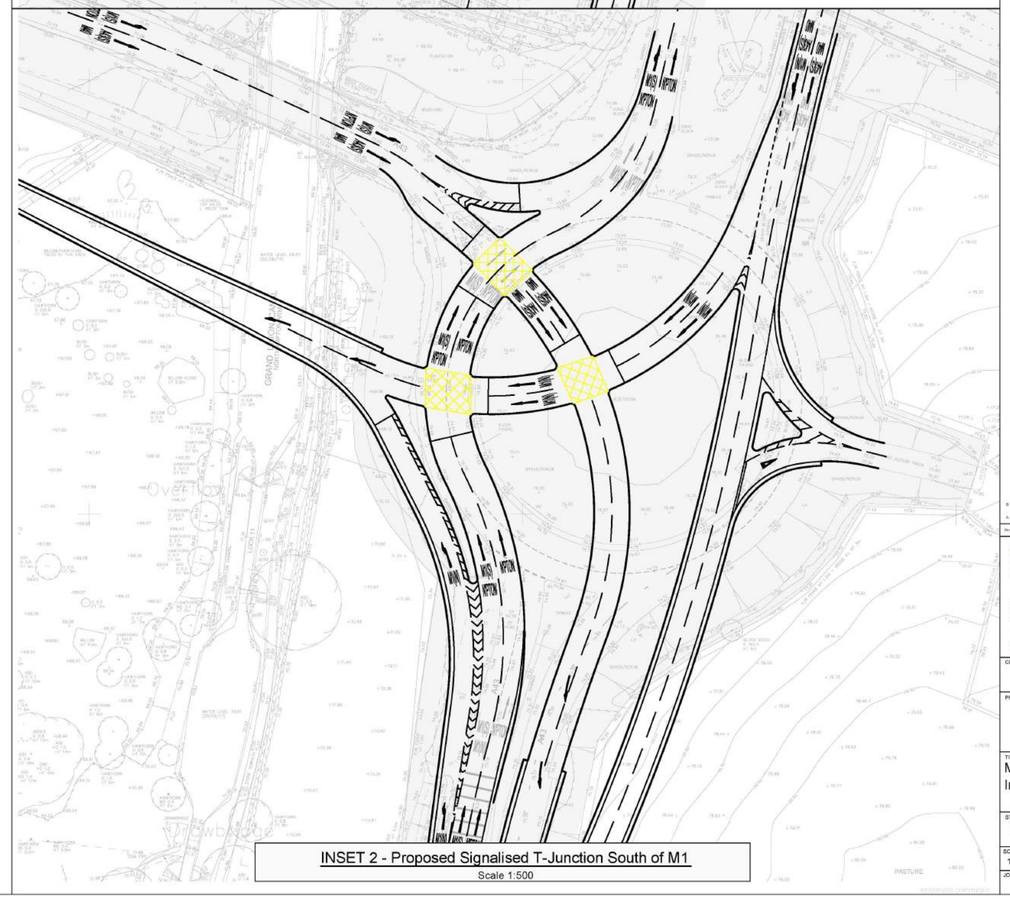
DRAFT

A0
ORIGINAL PLOT SIZE





INSET 1 - Proposed Signalised Roundabout North of M1
Scale 1:500



INSET 2 - Proposed Signalised T-Junction South of M1
Scale 1:500

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of The Majesty's Stationery Office. Crown Copyright - Licence No. AL 100034021

NOTES:

1. The signs shown are not to scale and are indicative only.

2. The exact location of signs and the destination information displayed are to be agreed with Northamptonshire County Council and Highways England.

KEY

- Redline boundary
- Potential reduced Red Line Boundary (subject to change and comments)
- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn By	Checked By	Approved By
B	11.01.18	Red line boundary updated	PSW	AJS	MB
A	18.01.18	Potential junction improvements updated and traffic signs added	PSW	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa
Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9800

www.tpa.uk.com

CLIENT:
ASHFIELD LAND

PROJECT:
Rail Central

TITLE:
M1 Junction 15A - Potential Improvements

STATUS:
PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	07.06.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL05	B

INDICATIVE

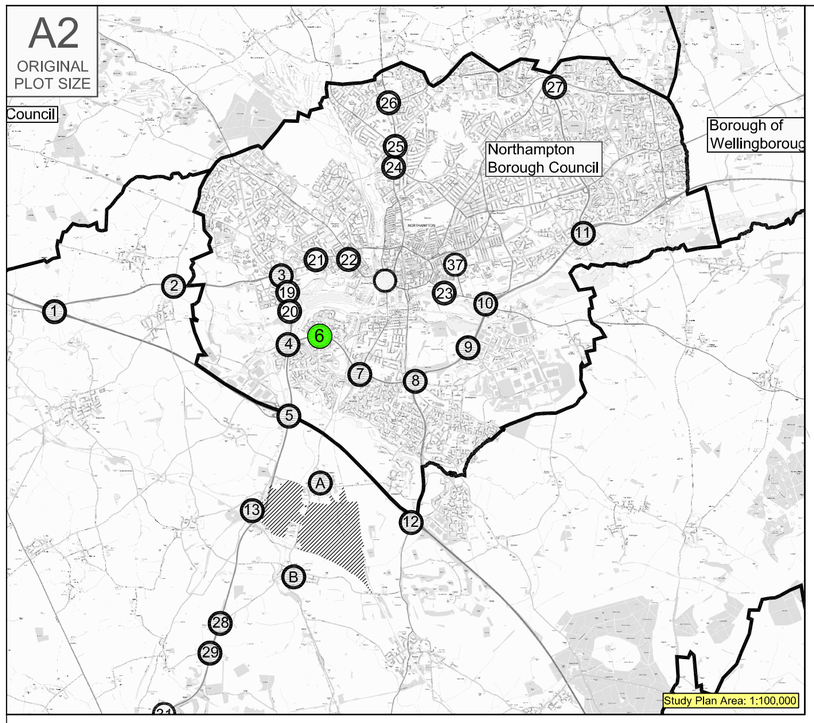
APPENDIX G.5

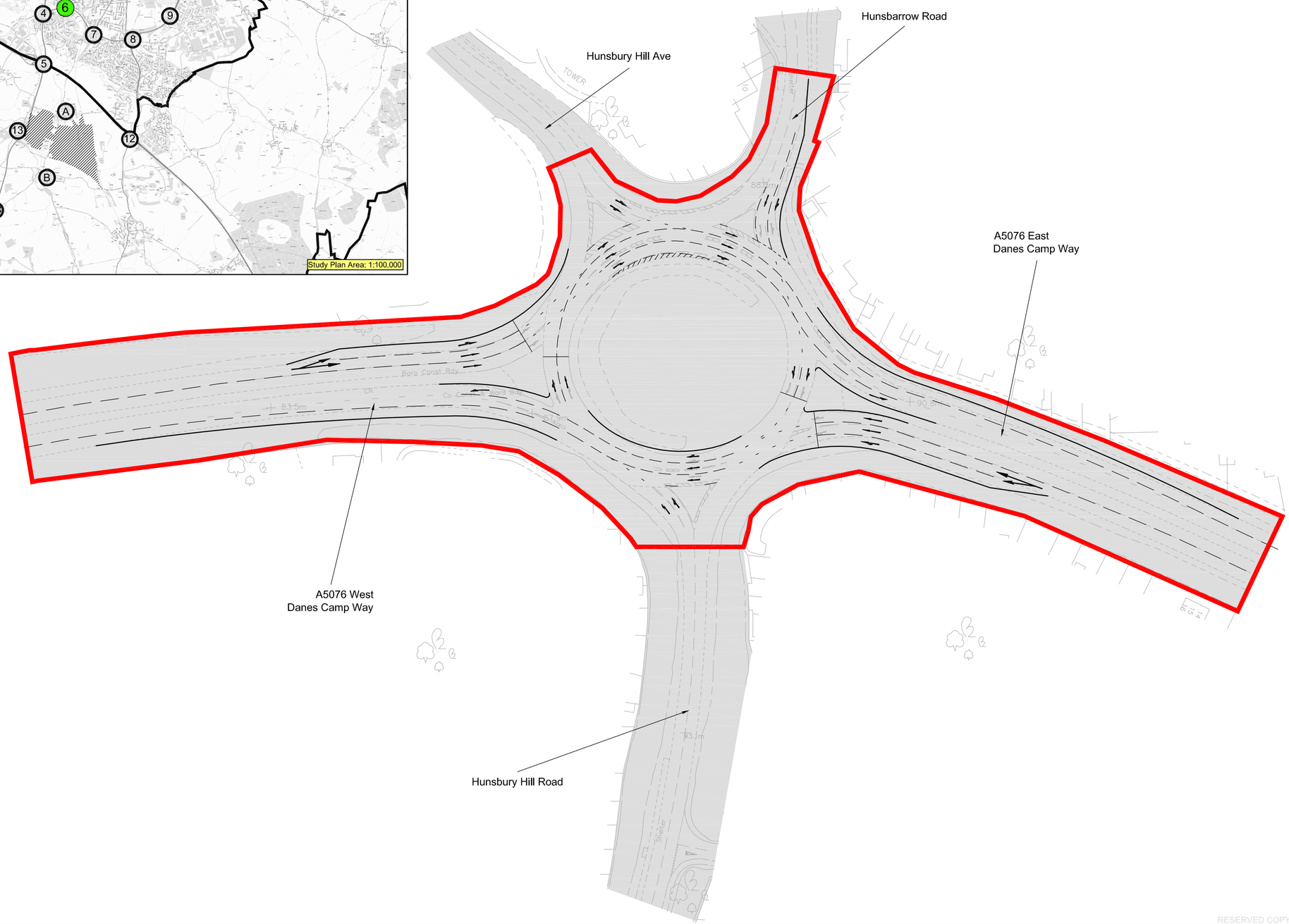
Junction 6

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE





INDICATIVE

RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
C	27.11.17	Proposed improvements updated on A5076 (East and West).	PSW	AJS	MB
B	05.07.17	Study Plan Area Added	DR	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A5076/Hunsbury Hill Road Roundabout - Potential Improvements

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	07.06.17	RC	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL06	C

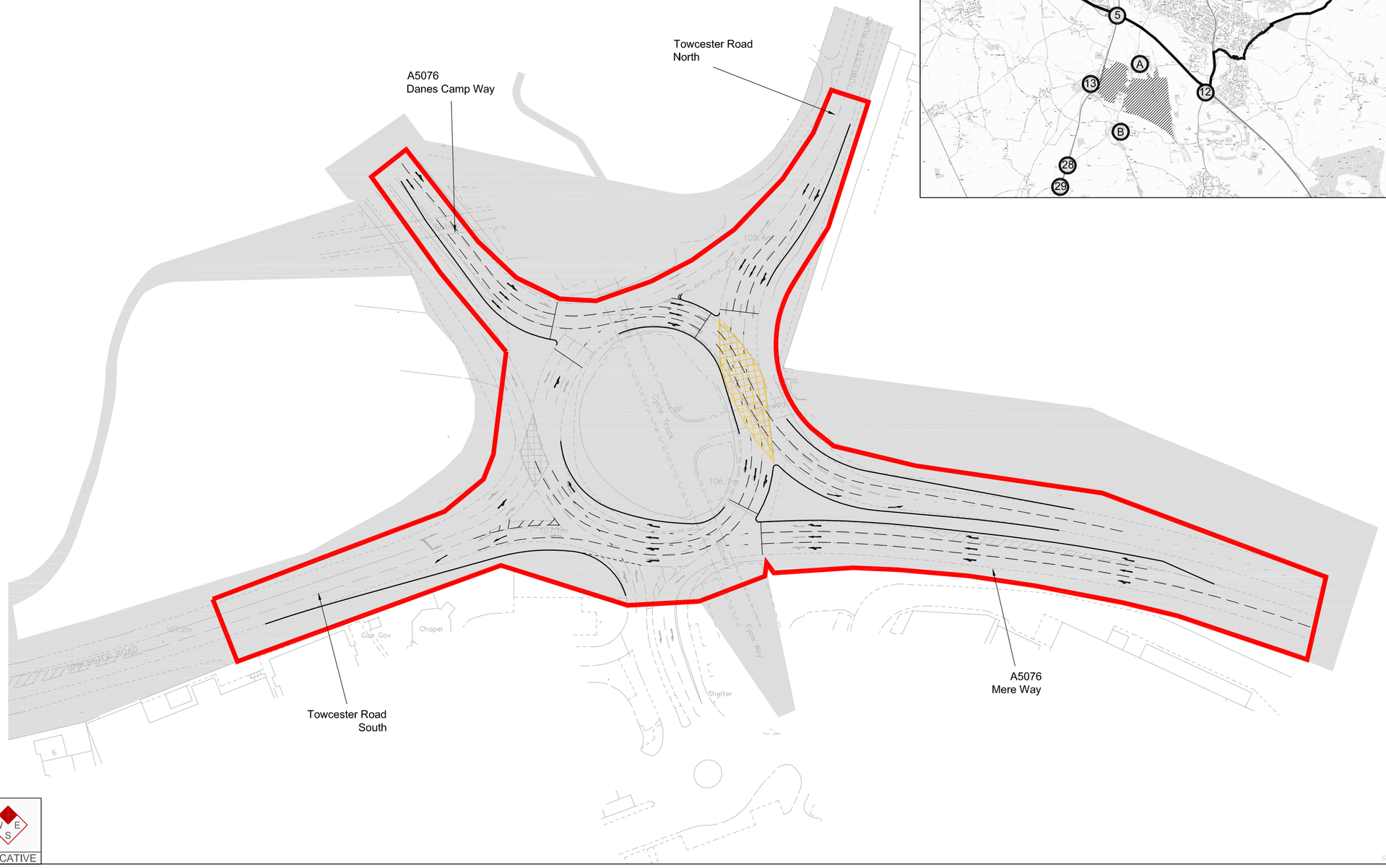
APPENDIX G.6

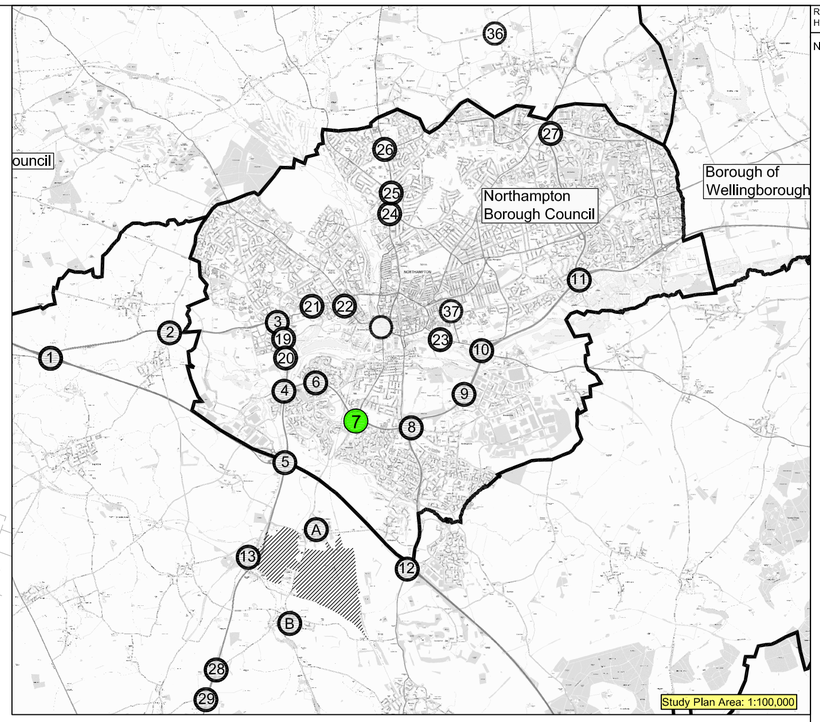
Junction 7

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE





Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
D	25.01.18	Road markings updated and Red Line Boundary extended.	PSW	AJS	JD
C	27.11.17	Red Line Boundary revised.	PSW	AJS	MB
B	05.07.17	Study Plan Area Added	DR	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A5076/Towcester Road/ Tesco Roundabout - Potential Improvements

STATUS:
PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	07.06.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL07	D

W E S

INDICATIVE

RESERVED COPYRIGHT

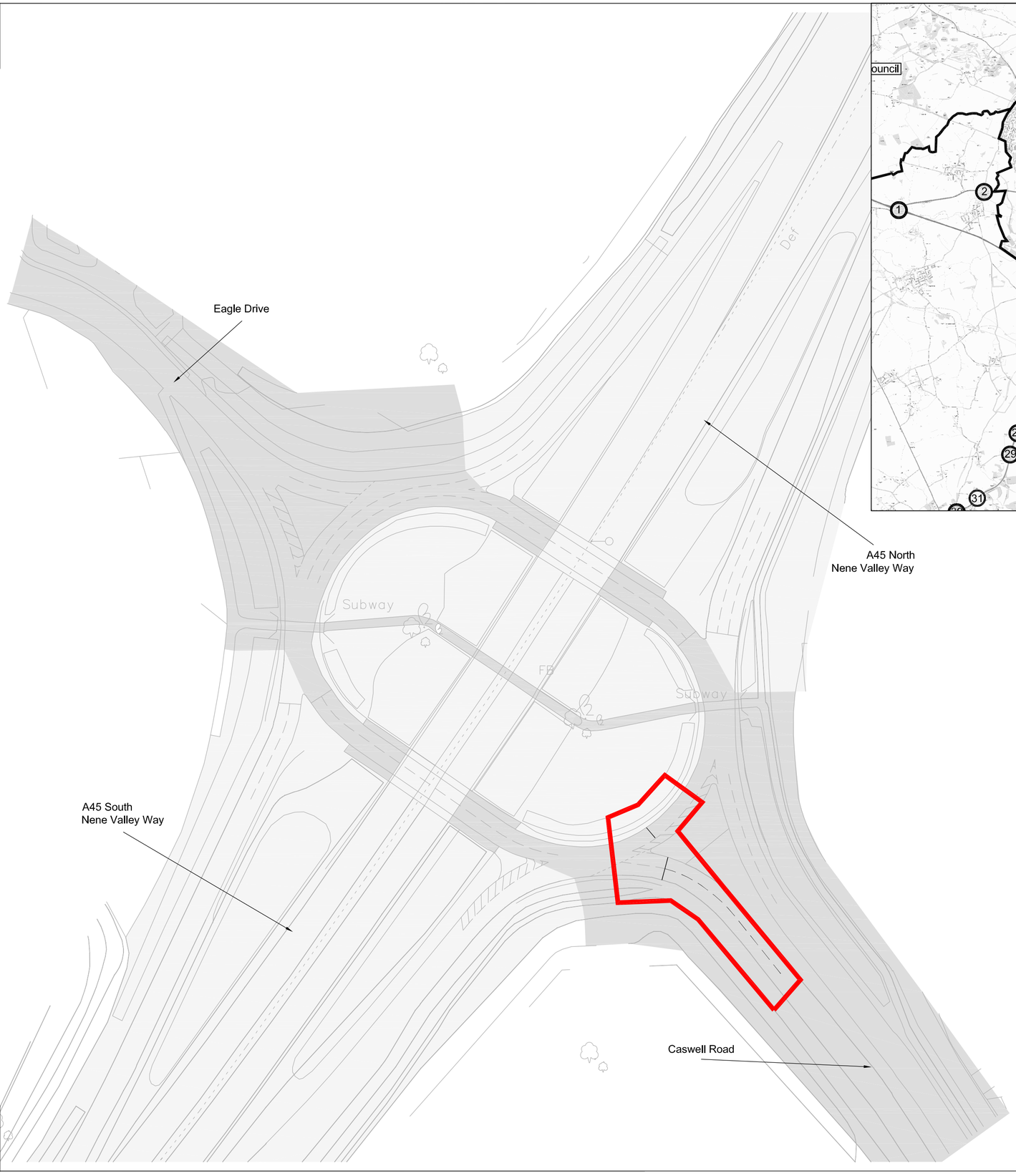
APPENDIX G.7

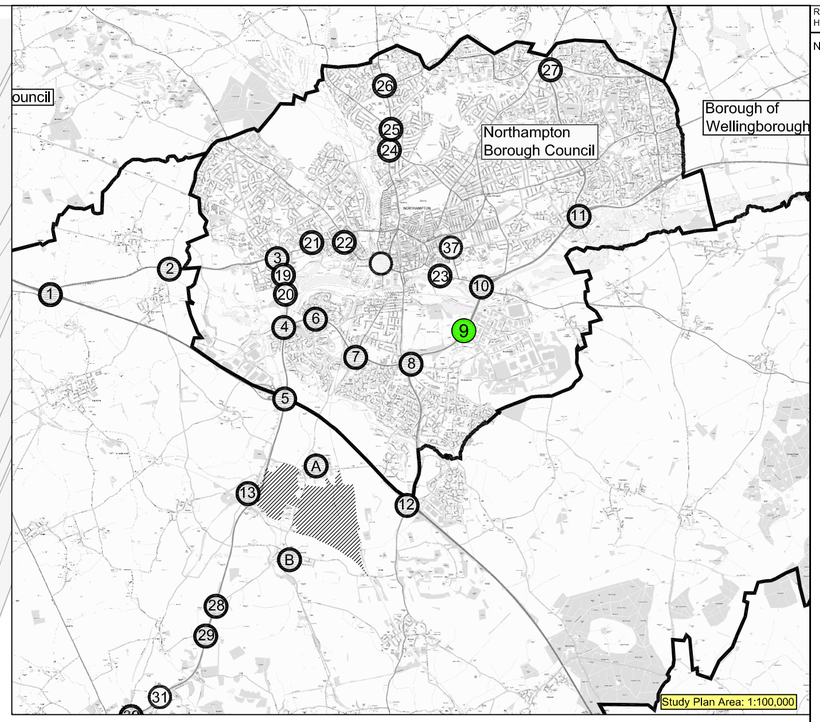
Junction 9

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE





Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England
- Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
B	27.11.17	Study Plan Area added,	PSW	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A45 Brackmills Roundabout - Potential Improvements

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	07.06.17	RC	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL09	B

W E S

INDICATIVE

RESERVED COPYRIGHT

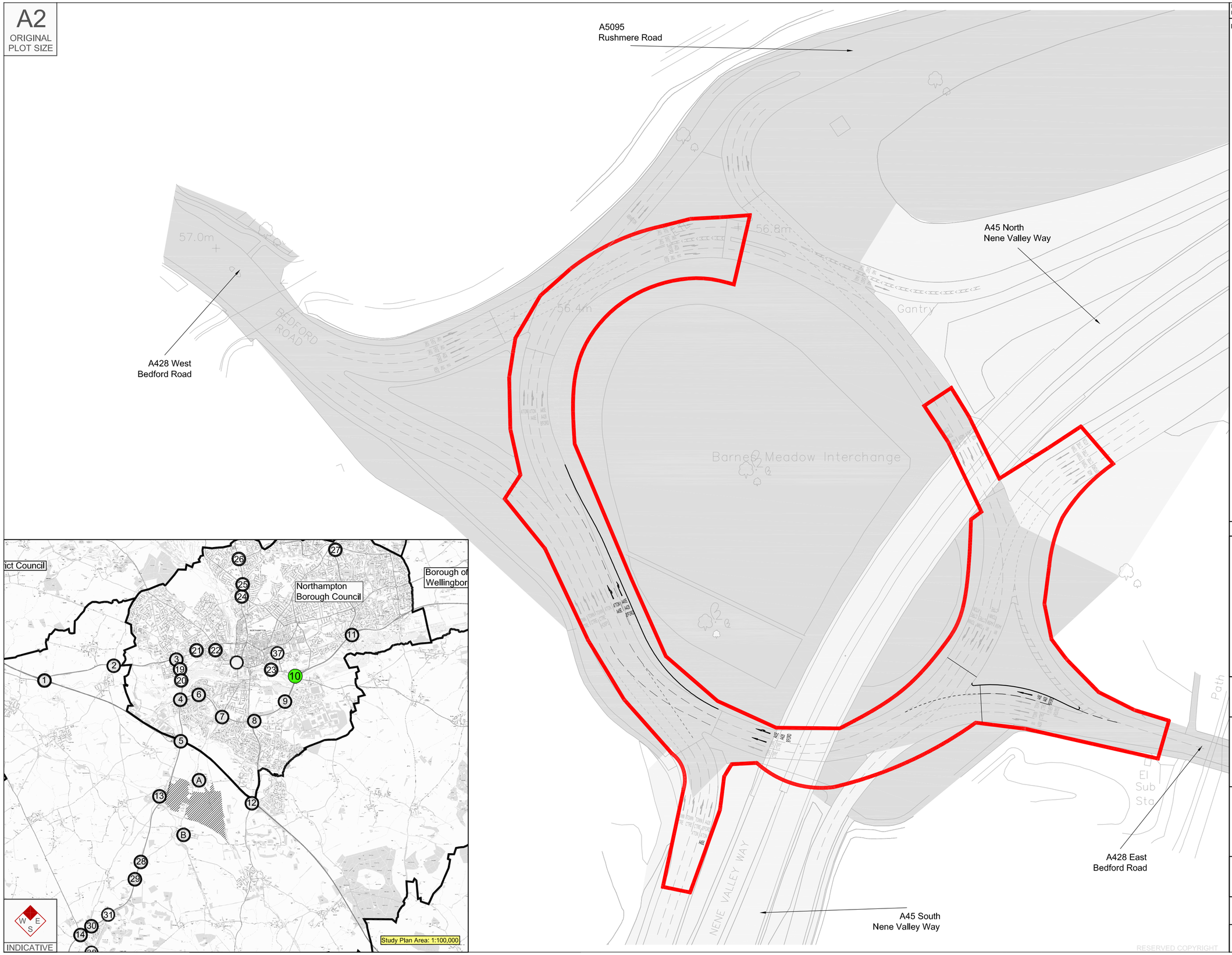
APPENDIX G.8

Junction 10

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England
- Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
D	27.11.17	Proposed Improvements on circulatory carriageway amended.	PSW	AJS	MB
C	19.09.17	Proposed improvements updated.	PSW	AJS	MB
B	05.07.17	Study Plan Area Added	DR	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A45 Barnes Meadow Interchange - Potential Improvements

STATUS:
PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	07.06.17	RC	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL10	D

RESERVED COPYRIGHT

APPENDIX G.9

Junction 11

Proposed Mitigation

DRAFT

A1
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England
- Redline Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
A	27.11.17	Proposed improvements on A45 North slip road removed and Red Line Boundary revised.	PSW	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northampton/Wellingborough

TITLE:
A45/A43 Roundabout Lumbertubs - Proposed Improvements

STATUS: INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	19.09.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL11	A

INDICATIVE

RESERVED COPYRIGHT

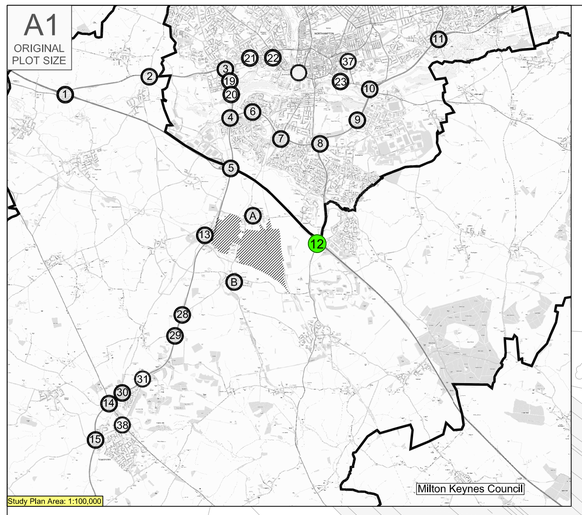
APPENDIX G.10

Junction 12

Proposed Mitigation

DRAFT

A1
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

1. The redline boundary will need to be reviewed on receipt of topographical survey for this junction.

A45 London Road

M1 North

Saxon Avenue

M1 South

A508
Northampton Road

KEY

- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England
- Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
E	19.01.18	Proposed layout amended, Red Line Boundary extended and drawing frame reduced from A0 to A1.	PSW	AJS	MB
D	06.12.17	Proposed layout amended and red line boundary updated.	DR	AJS	MB
C	28.11.17	Proposed improvements updated and Red Line Boundary revised.	PSW	AJS	MB
B	06.11.17	Proposed improvements updated and location plan added.	PSW	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
M1 Junction 15 - Proposed Improvements

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	08.06.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL12	E

INDICATIVE

RESERVED COPYRIGHT

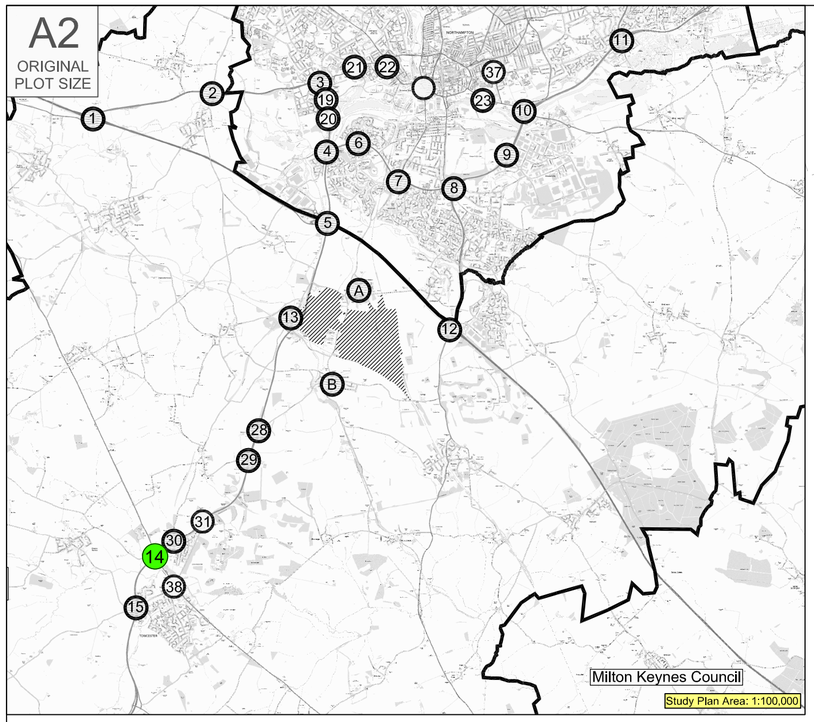
APPENDIX G.11

Junction 14

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE



INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY

- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England
- Red Line Boundary
- Potential extended Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
E	24.01.18	Proposed improvements updated further to meeting with HE on 23.01.18 and Red Line Boundary extended.	PSW	AJS	RL
D	15.01.18	Proposed Improvements updated further to HE comments dated 05.01.18 and drawing title revised.	PSW	AJS	RL
C	24.11.17	Proposed improvements updated.	PSW	AJS	MB
B	06.11.17	Proposed improvements updated and location plan added.	PSW	AJS	MB
A	22.06.17	Red Line Boundary Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Tove Roundabout - Potential Improvements

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	31.05.17	DR	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL14	E

RESERVED COPYRIGHT

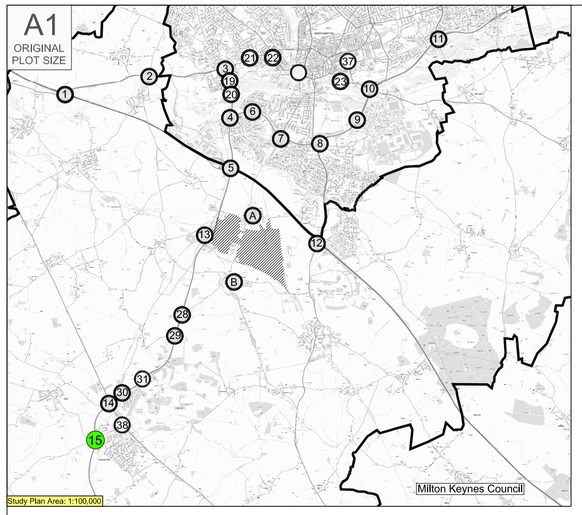
APPENDIX G.12

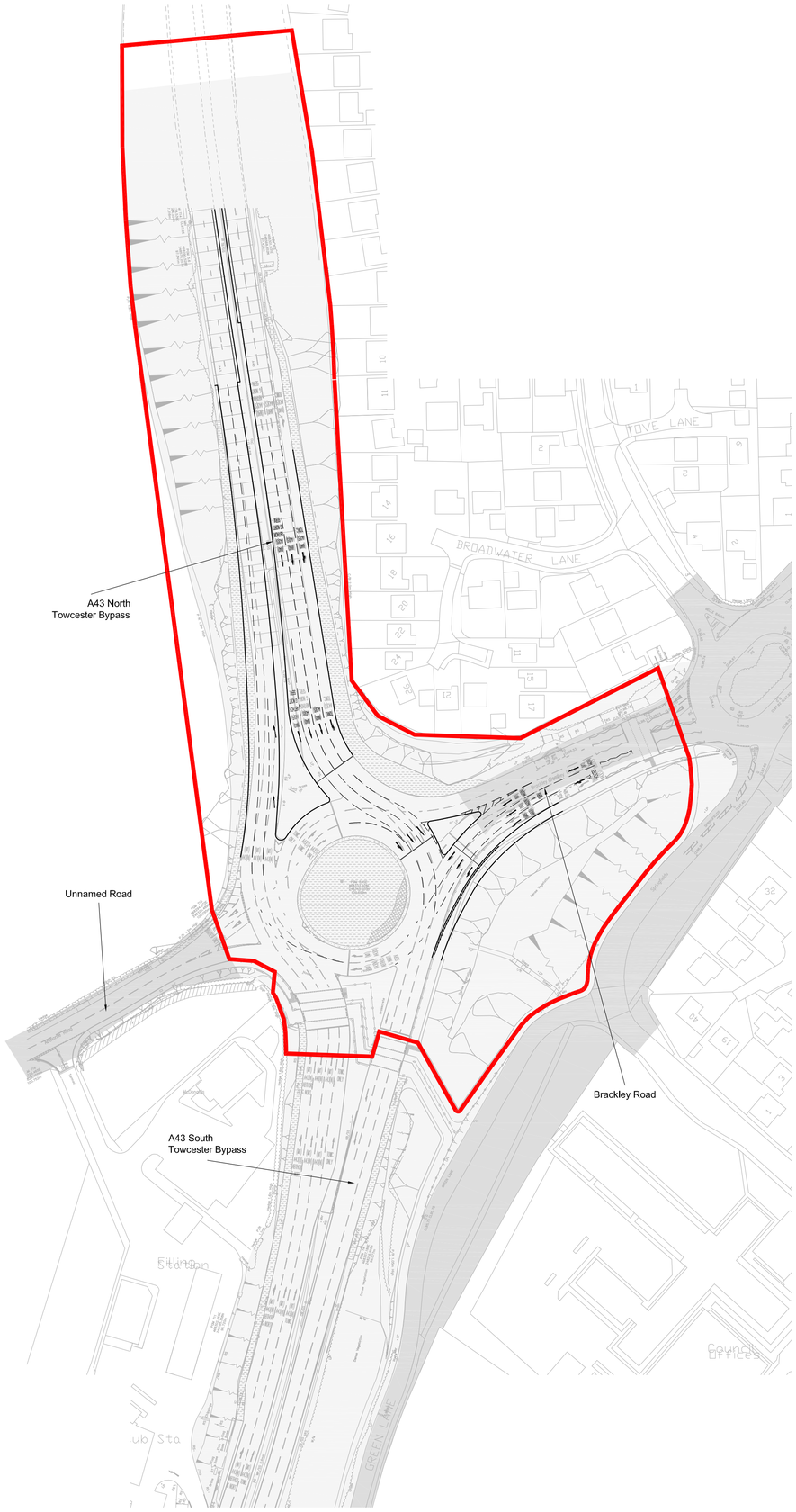
Junction 15

Proposed Mitigation

DRAFT

A1
ORIGINAL
PLOT SIZE





Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY

- Approximate extent of adopted highway - Northamptonshire
- Approximate extent of adopted highway - Highways England
- Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
E	16.01.18	A43 southbound approach lane tiering updated further to HE comments dated 05.01.18.	PSW	AJS	RL
D	28.11.17	Proposed Improvements updated and Red Line Boundary revised.	PSW	AJS	MB
C	06.11.17	Proposed improvements updated.	PSW	AJS	MB
B	11.09.17	Potential improvements updated.	PSW	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A43 Abthorpe Roundabout - Potential Improvements

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	08.06.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL15	E

INDICATIVE

RESERVED COPYRIGHT

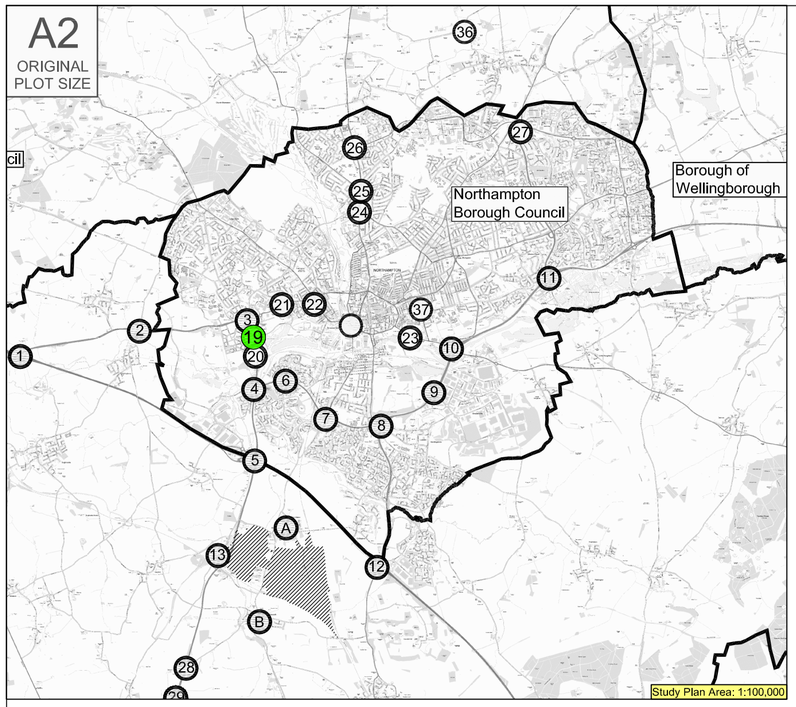
APPENDIX G.13

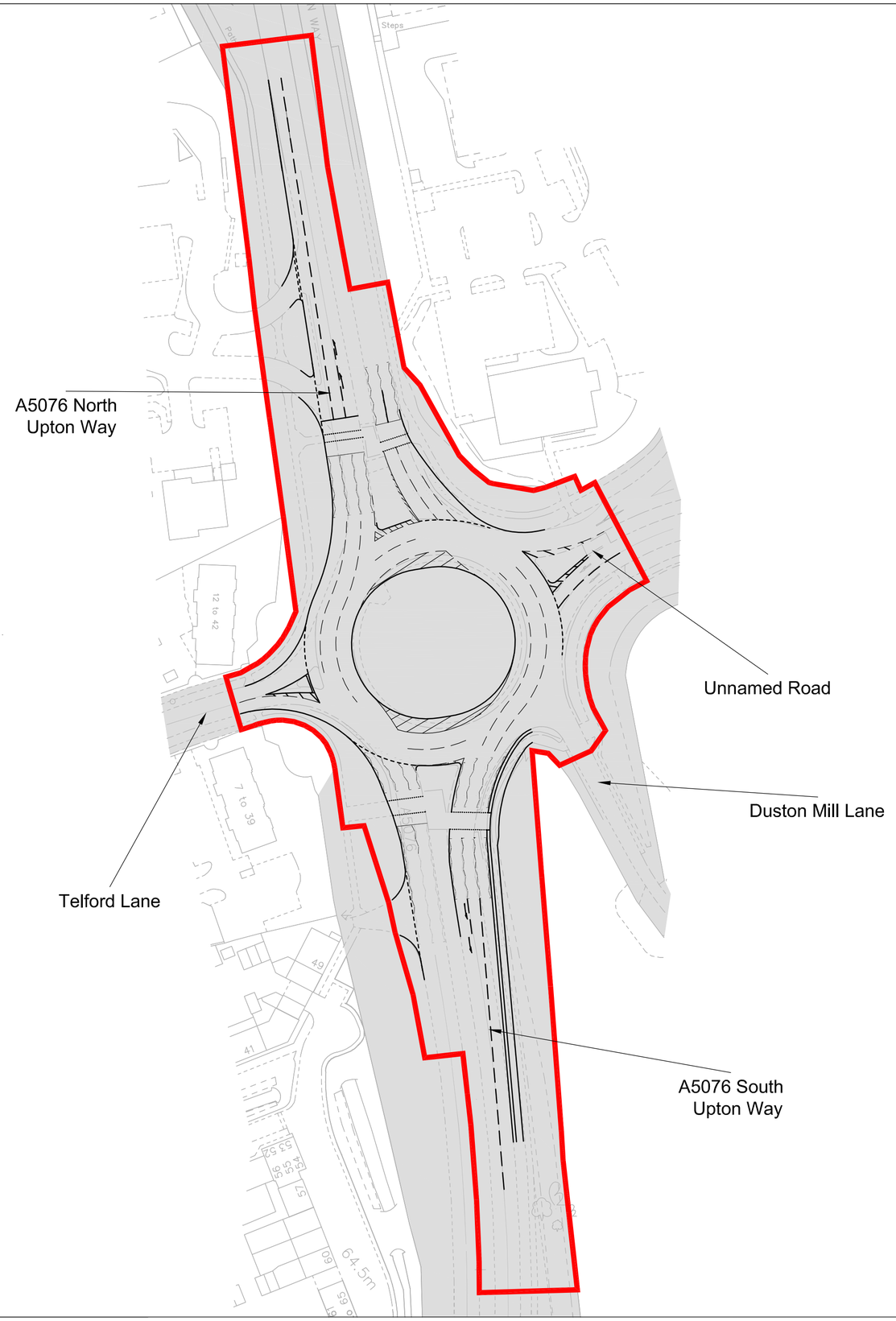
Junction 19

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE





INDICATIVE

RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
Upton Way/Telford Way Roundabout - Proposed Improvements

STATUS:
PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	04.12.17	DR	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL19	

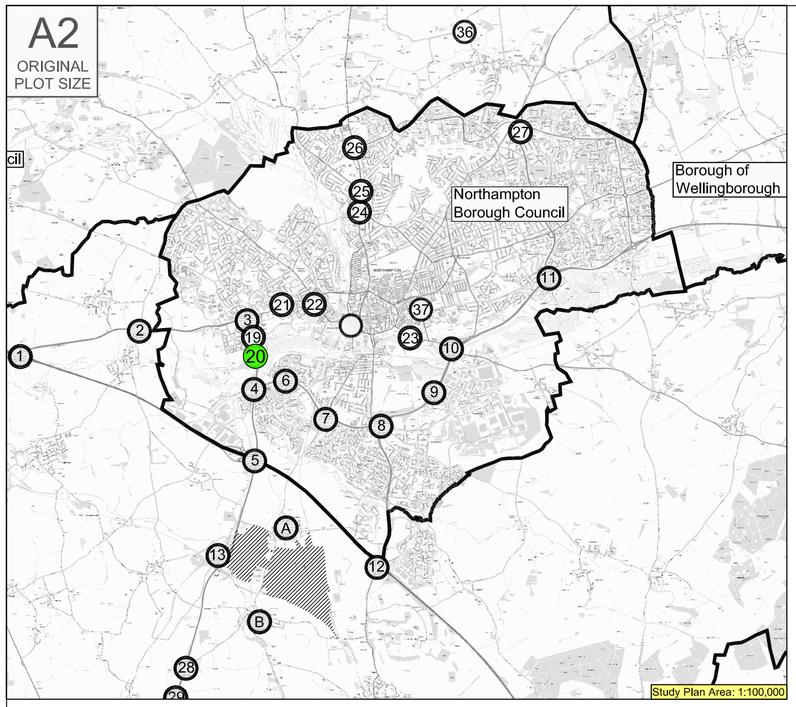
APPENDIX G.14

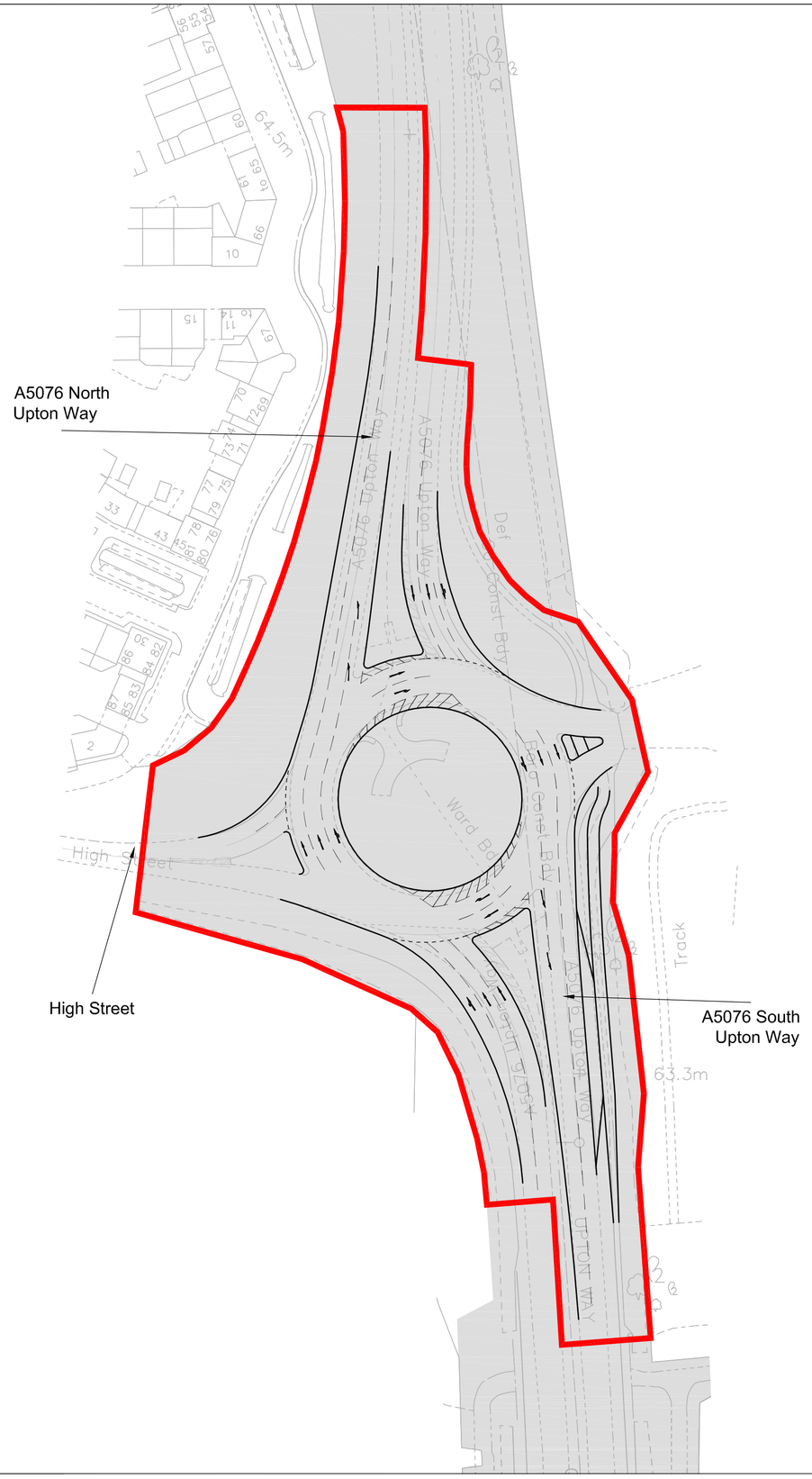
Junction 20

Proposed Mitigation

DRAFT

A2
ORIGINAL
PLOT SIZE





INDICATIVE

RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Upton Way / High Street Roundabout - Proposed Improvements

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	05.12.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL20	

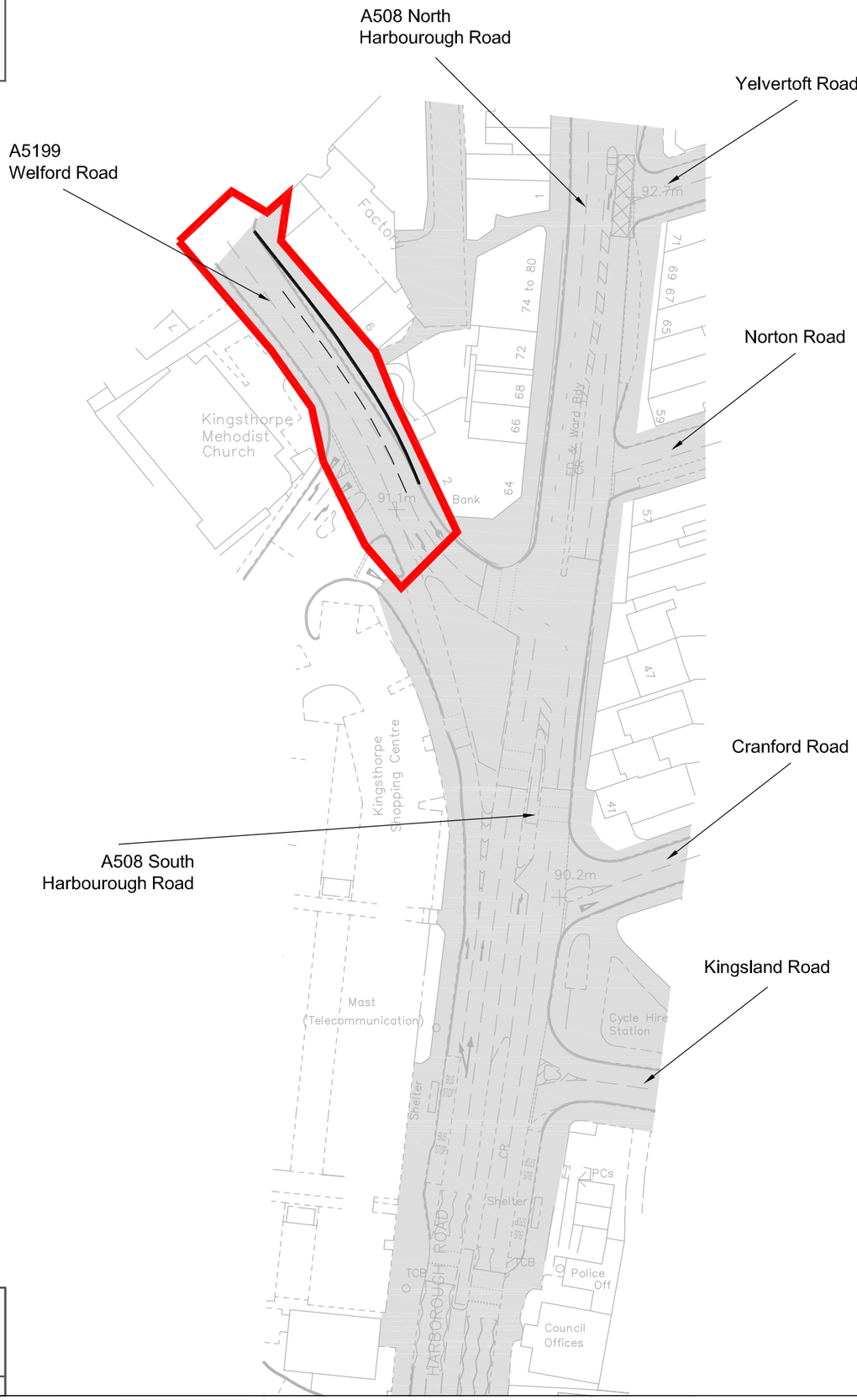
APPENDIX G.15

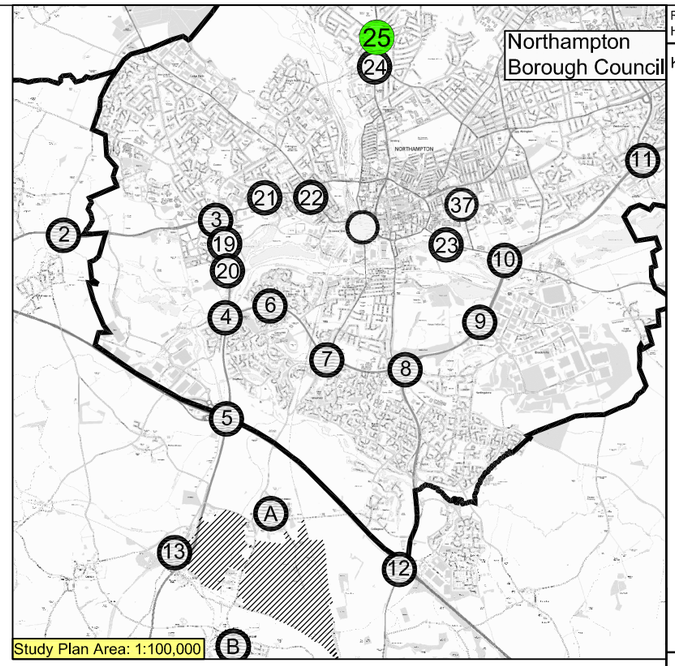
Junction 25

Proposed Mitigation

DRAFT

A3
ORIGINAL
PLOT SIZE





Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY:

Approximate extent of adopted highway - Northamptonshire

Red Line Boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
B	28.11.17	Study Plan Area added and Red Line Boundary revised.	PSW	AJS	MB
A	22.06.17	Red Line Added	DR	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A508 Harborough Road/ A5199 Welford Road - Potential Improvements

STATUS:
PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	12.06.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	PL25	B

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX H

Proposed Road Safety Schemes and Review of Collision Data

DRAFT

APPENDIX H.1

Junction 28
Highway Safety Review
and Proposed Mitigation

DRAFT

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

Technical Note No. 28

1 JUNCTION 28 – A43 / TOWCESTER ROAD (BLISWORTH)

Site Description

1.1 Junction 28 is a priority junction of the A43 with Towcester Road approximately 1.7km south west of Blisworth and 3.1km south of the proposed site access.

1.2 The A43 is designated as a trunk road and is a dual carriageway between the M40 and the M1. The location of the junction, in its geographical context, can been seen on **Figure EL28**.

1.3 Towcester Road is the southern section of the road which becomes Northampton Road approximately 2.1km north of Junction 28. To the north, it links with Milton Malsor and Northampton Town Centre approximately 4.5km and 10km to the north, respectively.

1.4 The southbound approach on the A43 to its junction with Towcester Road appears to have restricted visibility due to the junction being located on the peak of a crest curve.

Collision Data

1.5 Northamptonshire County Council (NCC) has provided Personal Injury Collision (PIC) data for the most resent five year period between 01 May 2011 and 31 December 2016. The collision records are contained at **Appendix A.**

1.6 A total of four incidents resulting in five Personal Injury Collisions (PICs) were reported to have occurred at the junction. Three of the incidents recorded in the study period were classified as slight with one being classified as serious. A summary of the PICs at this location is contained at **Appendix B**.

1.7 Three of the incidents involved vehicles turning right from the A43 towards Towcester Road and occurred in dark conditions, with no street lighting present. The remaining incident was a rear end shunt involving vehicles turning left from Towcester Road on to the A43.

DRAFT

Summary of Safety Problems

1.8 Below is a brief summary of what is considered to be the main causes of collisions at Junction 28:

i.) right turn manoeuvres; and

ii.) darkness with no street lighting.

1.9 At this location, Towcester Road connects with the A43, which is a 60 mph road and therefore could be fully illuminated to allow drivers to be fully aware of their surroundings.

Options for Treatment

1.10 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location (and at other central reserve junctions along the A43) recorded up to 2011 and recommendations were made for improvements to the junction following a committee review. These were:

(i) 'The addition of 'Junction Ahead' warning signs on the southbound approach to the Towcester Road junction. The junction warning signs are to be incorporated with the 300yds, 200yds and 100yd countdown signs (located within the nearside verge and central reserve) and positioned on yellow backing board; and

(ii) The stack-type direction sign on the southbound approach to the Towcester Road junction is to be removed and replaced with a map=type advance direction sign.'

1.11 The above measures were provided at the junction in 2015.

1.12 A total of two of the collisions occurred before the HE improvements to the junction and it is therefore not clear whether there is still an issue at this junction. However, should this junction continue to present a highway safety issue, the applicant would be willing to make a reasonable financial contribution to further improvements.

FIGURES

A3
ORIGINAL
LOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A43/ Towcester Road
Blisworth
Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	13.06.17	DR	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL28	

W E S

DICATIVE

RESERVED COPYRIGHT

APPENDIX A

Number	Reference	Severity	Easting	Northing
1	WS400511	Slight	471140	252393
2	WS250013	Serious	471139	252391
3	WS052815	Slight	471115	252314
4	WS005416	Slight	471141	252395

Date	Police_ref	Easting	Northing	Severity	Road_cond	Visibility	Manoeuvre	Time	Vehicles
16/11/2011	WS400511	471140	252393	3. Slight	1. Dry	6. Darkness: no street lighting	2. Right turn	16:45	2
30/10/2013	WS250013	471139	252391	2. Serious	1. Dry	6. Darkness: no street lighting	2. Right turn	18:54	2
27/02/2015	WS052815	471115	252314	3. Slight	1. Dry	1. Daylight	1. Left turn	15:45	2
04/01/2016	WS005416	471141	252395	3. Slight	2. Wet/Damp	6. Darkness: no street lighting	2. Right turn	17:10	2

Roadclass1	Roadnum1	Road_type	Speed_lim	Junct_det	Junct_ctrl	Roadclass2	Roadnum2	Cross_ctrl
3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	5. C	188	0. None
3. A	43	3. Dual 2 lanes	70	5. Slip Road	4. Give way or Uncontrolled	5. C	188	0. None
3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	5. C	188	0. None
3. A	43	3. Dual 2 lanes	70	6. Crossroads	4. Give way or Uncontrolled	5. C	188	0. None

Cross_fac	Weather	Spcond	Carr_haz	Location
0. None within 50m	1. Fine (without high wind)	0. None	0. None	A43, TIFFIELD. AT THE JCT WITH THE C188, TOWCESTER ROAD.
0. None within 50m	1. Fine (without high wind)	0. None	0. None	JUNC WITH A43 WESTBOUND & C188, TOWCESTER RD, TIFFIELD.
0. None within 50m	1. Fine (without high wind)	0. None	0. None	A43, OXFORD RD & C188, TOWCESTER RD JUNC, BLISWORTH.
0. None within 50m	2. Raining (without high wind)	0. None	0. None	A43, OXFORD RD & C188, TOWCESTER RD JUNC, BLISWORTH.

Local_auth	Parish
E07000155. SOUTH NORTHAMPTONSHIRE	225. Tiffield
E07000155. SOUTH NORTHAMPTONSHIRE	225. Tiffield
E07000155. SOUTH NORTHAMPTONSHIRE	225. Tiffield
E07000155. SOUTH NORTHAMPTONSHIRE	225. Tiffield

Acc_desc	Day	Reportedat
V1 HAS TURNED RIGHT INTO TOWCESTER ROAD AND INTO THE PATH OF V2 WHICH WAS TRAVELLING S ALONG THE A43.	4. Wednesday	1. Yes
V1 PULLS AWAY FROM SLIP ROAD INTO PATH OF V2 TRAVELLING WESTBOUND ALONG A43.	4. Wednesday	1. Yes
V1 COLLIDES WITH R/O V2 AT JUNC.	6. Friday	1. Yes
V1 TURNING RIGHT COLLIDES WITH V2 TRAVELLING SW.	2. Monday	1. Yes

Pol_force	Status	Statusdate	Cf1	Vcu1	Conf1	Cf2
34	33	20140304	. Not coded	. Not Coded	. Not Coded	. Not coded
34	22	20160609	405. Failed to look properly	V. Vehicle	A. Very likely	. Not coded
34	22	20160609	405. Failed to look properly	V. Vehicle	A. Very likely	410. Loss of control
34	33	20160629	302. Disobeyed Give Way or Stop sign or markings	V. Vehicle	A. Very likely	403. Poor turn or manoeuvre

Vcu2	Vcuref2	Conf2	Cf3	Vcu3	Vcuref3	Conf3
. Not Coded		. Not Coded	. Not coded	. Not Coded		. Not Coded
. Not Coded		. Not Coded	. Not coded	. Not Coded		. Not Coded
V. Vehicle		1 A. Very likely	501. Impaired by alcohol	V. Vehicle		1 A. Very likely
V. Vehicle		1 A. Very likely	405. Failed to look properly	V. Vehicle		1 A. Very likely

Cf4	Vcu4	Vcuref4	Conf4	Cf5	Vcu5	Conf5	Cf6
. Not coded	. Not Coded		. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded
. Not coded	. Not Coded		. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded
. Not coded	. Not Coded		. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded
406. Failed to judge other persons path or speed	V. Vehicle		1 A. Very likely	. Not coded	. Not Coded	. Not Coded	. Not coded

Vcu6	Conf6	Time_Range
. Not Coded	. Not Coded	16:00 - 16:59
. Not Coded	. Not Coded	18:00 - 18:59
. Not Coded	. Not Coded	15:00 - 15:59
. Not Coded	. Not Coded	17:00 - 17:59

Date	**Police_ref**		Veh_ref	Type	Tow	Manvres	Movef
16/11/2011	WS400511	FALSE	1	9. Car	0. No tow or articulation	9. Turning right	6. SW
16/11/2011	WS400511	FALSE	2	9. Car	4. Single trailer	18. Going ahead other	2. NE
30/10/2013	WS250013	FALSE	1	9. Car	0. No tow or articulation	9. Turning right	6. SW
30/10/2013	WS250013	FALSE	2	9. Car	0. No tow or articulation	18. Going ahead other	2. NE
27/02/2015	WS052815	FALSE	1	5. Motorcycle over 500cc	0. No tow or articulation	7. Turning left	2. NE
27/02/2015	WS052815	FALSE	2	21. Goods 7.5 tonnes mgw and over	1. Articulated vehicle	18. Going ahead other	2. NE
04/01/2016	WS005416	FALSE	1	9. Car	0. No tow or articulation	9. Turning right	6. SW
04/01/2016	WS005416	FALSE	2	9. Car	0. No tow or articulation	18. Going ahead other	2. NE

Movet	Locn_road	Locn_lane	Junct_locn	Skid	Obj_in
3. E	3. On the main road	0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None
6. SW	3. On the main road	0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None
3. E	3. On the main road	0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None
6. SW	3. On the main road	0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None
6. SW		0. On main carriageway	7. Entering from slip road	1. Skidded	0. None
6. SW		0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None
2. NE		0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None
6. SW		0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None

Leave	Obj_off	Impact	Other	Damage1	Damage2	Drvsex	Drvage	Hit_run
0. Did not leave carr	0. None	4. Nearside	2	2. Back	4. Nearside	1. Male	77	0. Not hit and run
0. Did not leave carr	0. None	1. Front	1	1. Front	4. Nearside	1. Male	50	0. Not hit and run
0. Did not leave carr	0. None	1. Front	2	1. Front		1. Male	39	0. Not hit and run
0. Did not leave carr	0. None	1. Front	1	1. Front		1. Male	51	0. Not hit and run
0. Did not leave carr	0. None	1. Front	2	0. None		1. Male	28	0. Not hit and run
0. Did not leave carr	0. None	2. Back	1	0. None		1. Male	46	0. Not hit and run
0. Did not leave carr	0. None	3. Offside	2	0. None		1. Male	73	0. Not hit and run
1. Nearside	0. None	1. Front	1	0. None		1. Male	29	0. Not hit and run

Frv	Journey	Insurance	Make	Model	DLforV	LHD
0. Not foreign registered vehicle	6. Unknown		. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	2. Commuting to/from work		. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	2. Commuting to/from work	1	. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	1. Journey as part of work	1	. Not Coded		. Not Coded	. Not Coded
9. Unknown	6. Unknown		Kawasaki. -	ZX600	1. Full	1. No
9. Unknown	1. Journey as part of work		. Not Coded	IVECO FLAT LORRY	1. Full	1. No
9. Unknown	5. Other		Mercedes-Benz. -	B200	. Not Coded	1. No
9. Unknown	5. Other		Renault. -	MEGANE	. Not Coded	1. No

Veh_Group
Car
Car
Car
Car
Motorcycle
HGV
Car
Car

Date	Police_ref	Severity	Veh_ref	Cas_ref	Class	Sex	Age	Ped_locn	Ped_mvmt
16/11/2011	WS400511	3. Slight	1	1	1. Driver / Rider	1. Male	77	. Not pedestrian	. Not pedestrian
16/11/2011	WS400511	3. Slight	2	2	1. Driver / Rider	1. Male	50	. Not pedestrian	. Not pedestrian
30/10/2013	WS250013	2. Serious	2	1	2. Vehicle Passenger	1. Male	20	. Not pedestrian	. Not pedestrian
27/02/2015	WS052815	3. Slight	1	1	1. Driver / Rider	1. Male	28	. Not pedestrian	. Not pedestrian
04/01/2016	WS005416	3. Slight	1	1	1. Driver / Rider	1. Male	73	. Not pedestrian	. Not pedestrian

Ped_dirn	Pupil	Car_pass	Psv_pass	Seatbelt	Ped_inj
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	1. Front seat	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	0. Not applicable	. Not Coded
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	1. Worn and independently confirmed	. Not Coded

Cas_ethnic	Cas_type	Serious	CycHelmet	Time_Range	Veh_Type	Veh_Group
W1. White British	0	. Not coded	. Not coded	16:00 - 16:59	9. Car	Car
W1. White British	0	. Not coded	. Not coded	16:00 - 16:59	9. Car	Car
W1. White British	0	. Not coded	. Not coded	18:00 - 18:59	9. Car	Car
W1. White British	0	. Not coded	0. Not a cyclist	15:00 - 15:59	5. Motorcycle ov	Motorcycle
A9. Any other Asian background	0	. Not coded	0. Not a cyclist	17:00 - 17:59	9. Car	Car

APPENDIX B

Junction 28: A43 / Towcester Road (Blisworth) (01/01/2011 to 31/12/2016)

Collision No.	**1**	**2**	**3**	**4**
Reference No.	WS400511	WS250013	WS052815	WS005416
Date	16/11/2011	30/10/2013	27/02/2015	04/01/2016
Day	Wednesday	Wednesday	Friday	Monday
Time	16:45	18:54	15:45	17:10
Severity	Slight	Serious	Slight	Slight
Dark/Light	Dark – No Street Lighting	Dark – No Street Lighting	Light	Dark – No street Lighting
Road Surface	Dry	Dry	Dry	Wet
No. Vehicles	2	2	2	Car
Vehicle 1	Car	Car	Motorcycle – over 500cc	Car
Vehicle2	Car – With Single Trailer	Car	HGV (7.5T and over)	-
Vehicle 3	-	-	-	-
No. casualties		1	1	1
Casualty 1	(Slight) Car Driver – M – 77	(Serious) Car Passenger – M - 20	(Slight) Motorcycle Rider – M - 28	(Slight) Car Driver – M - 73
Casualty 2	(Slight) Car Driver – M - 50	-	-	-
Casualty 3	-	-	-	-
Casualty 4	-	-	-	-
Casualty 5	-	-	-	-
Causation	V1 has turned right into Towcester Road and into the path of v2 which was travelling south on the A43.	V1 pulls away from slip road into path of v2 travelling westbound along A43.	V1 collides with rear of v2 at the junction.	V1 turning right collides with v2 travelling south west.
Manoeuvre	Turning right / going ahead	Turning right / going ahead	Going ahead	Turning right / going ahead
Location	A43 / Towcester Road	A43 / Towcester Road	A43 / Towcester Road	A43 / Towcester Road

APPENDIX H.2

Junction 29
Highway Safety Review
and Proposed Mitigation

DRAFT

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

Technical Note No. 29

1 JUNCTION 29 – A43 / ST JOHN'S ROAD

Site Description

1.1 Junction 29 is a priority controlled crossroads junction of the A43 with St John's Road approximately 1.1km east of Tiffield and 2.5km south west of Blisworth.

1.2 The A43 is designated as a trunk road and is a dual carriageway between the M40 and the M1. The location of the junction, in its geographical context, can been seen on **Figure EL29**.

1.3 St John's Road provides access to the settlement of Tiffield and becomes High Street adjacent to Pigeon Hill, approximately 1.2km west of Junction 29. It measures approximately 5.4 metres wide and is subject to the National Speed Limit.

1.4 The eastern arm of the junction is an unnamed road and measures approximately 3.5 metres wide. It provides access to Wood Farm to the west and Top Farm to the north, where it terminates. Both of the routes are designated Public Right of Way (PRoW) Bridleways.

Collision Data

1.5 Northamptonshire County Council (NCC) has provided Personal Injury Collision (PIC) data for the most resent five year period between 01 May 2011 and 31 December 2016. The collision records are contained at **Appendix A.**

1.6 A total of four incidents Personal Injury Collisions (PICs) resulting in 10 casualties were reported to have occurred at Junction 29. Two of the incidents recorded in the study period were classified as slight with one being classified as serious and one resulting in a fatality. A summary of the PICs at this location are contained at **Appendix B**.

1.7 Two of the incidents involved right turners from the central reservation onto the A43 and one left turn from the unnamed road to the A43 and one left turn from St john's Road to the A43.

DRAFT

1.8 The serious PIC occurred on Thursday 26 July 2012 at 0915 in dry, light conditions. The incident appears to have occurred when V1 (car) joined the A43 from the central reservation and collided with V2 (car) travelling northbound on the A43. V2 was then shunted into V3 (car) which was on St John's Road to enter the A43. This incident resulted in one serious (female, 70 years) and two slight injuries.

1.9 The fatal incident occurred on Thursday 19th September 2013 at 1705 in dry, light conditions. The PIC appeared to have occurred when V1 (car) emerged from St John's Road onto the A43 into the path of V2 (car). V2 collided with V1 causing the car driver (C1) to eject from the vehicle. It appears as though the driver of V1 was not wearing a seatbelt. This resulted in one fatality (female, 89) and one serious injury (male, 43).

1.10 None of the PICs involved vulnerable road users such as cyclists or pedestrians.

Summary of Safety Problems

1.11 Three of the four incidents involved vehicles emerging from the minor arms colliding with northbound vehicles on the A43. There is no obvious pattern to the time, date or road and lighting conditions of the recorded PICs.

Option for Treatment

1.12 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location recorded up to 31st December 2011 (and at other central reserve junctions along the A43) and recommendations were made for improvements to the junction following a committee review.

1.13 The reports recommended that due to the severity of the PICs that have occurred at this junction, improved signage should be provided on the A43 southbound approach to the junction. The reports finally noted that if the measures did not reduce accident rates then it would be necessary to consider further measures or closing the gap.

1.14 Whilst a sufficient period of time has not passed since the implementation of the HE measures to determine their effectiveness, it has been noted that further incidents have now been recorded since 2012 that suggest an issue involving turning vehicles colliding with vehicles travelling on the A43 northbound. The proposals therefore include junction ahead warning signs and countdown markers as well as high friction surfacing for northbound vehicles on the A43, similar to the improvements implemented by HE on the A43 southbound. The proposed improvements are illustrated on **Figure PL29**.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Appr b
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT:
ASHFIELD LAND

PROJECT:
Rail Central

TITLE:
A43/ St John's Road Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVEI
1:1000	12.06.17	DR	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL2	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

Number	Reference	Serverity	Easting	Northing
1	WS187212	Serious	470898	251691
2	TS801813	Fatal	470894	251700
3	WS218314	Slight	470943	251682
4	WS300215	Slight	470898	251696

Date	Police_ref	Easting	Northing	Severity	Road_cond	Visibility	Manoeuvre	Time
26/07/2012	WS187212	470898	251691	2. Serious	1. Dry	11. Daylight: street lights present - Pre 2011	2. Right turn	09:15:00
19/09/2013	TS801813	470894	251700	1. Fatal	1. Dry	11. Daylight: street lights present - Pre 2011	0. No turn	17:05:00
06/09/2014	WS218314	470943	251682	3. Slight	1. Dry	1. Daylight	2. Right turn	14:51:00
23/11/2015	WS300215	470898	251696	3. Slight	1. Dry	4. Darkness: street lights present and lit	0. No turn	17:35:00

Vehicles	Roadclass1	Roadnum1	Road_type	Speed_lim	Junct_det	Junct_ctrl	Roadclass2	Roadnum2	Cross_ctrl
3	3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	6. Unclassified	4122	0. None
2	3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	6. Unclassified	4122	0. None
2	3. A	43	3. Dual 2 lanes	70	9. Other	4. Give way or Uncontrolled	6. Unclassified	4122	0. None
2	3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	6. Unclassified	4122	0. None

Cross_fac	Weather	Spcond	Carr_haz	Dftsp
0. None within 50m	1. Fine (without high wind)	0. None	0. None	
0. None within 50m	1. Fine (without high wind)	0. None	0. None	
8. Central reservation	1. Fine (without high wind)	0. None	0. None	
0. None within 50m	1. Fine (without high wind)	0. None	0. None	

Location	Local_auth	Parish
A43, TIFFIELD. AT THE JCT WITH THE U4122, ST JOHN'S ROAD.	E07000155. SOUTH NORTHAMPTONSHIRE	225. Tiffield
JUNC WITH U4122. ST JOHN'S RD & A43 BRACKLEY TO NPTON, TIFFIELD	E07000155. SOUTH NORTHAMPTONSHIRE	225. Tiffield
A43 SOUTHBOUND & U4122, ST JOHN'S RD, TIFFIELD.	E07000155. SOUTH NORTHAMPTONSHIRE	82. Easton Neston
A43, OXFORD RD & U4122, ST JOHN'S RD JUNC, TIFFIELD.	E07000155. SOUTH NORTHAMPTONSHIRE	225. Tiffield

Acc_desc

V1 HAS PULLED OUT ONTO THE A43 FROM CENTAL RESERVATION AND HAS COLLIDED WITH V2 WHICH WAS TRAVELLING N ALONG A43. V2 IS THEN PUSHED INTO V3

V1 PULLS OUT INTO PATH OF V2 HEADING TOWARDS NPTON. V2 COLLIDES WITH V1 CAUSING V1 TO EJECT FROM CAR.

V1 PULLS OUT FROM JUNC & COLLIDES WITH V2 TRAVELLING SW.

V1 COLLIDES WITH V2 AT JUNC.

Acc_desc2	Day	Reportedat	Pol_force	Status	Statusdate
3 WHICH WAS WAITING ON ST JOHNS ROAD TO ENTER THE A43.	5. Thursday	1. Yes	34	33	20150506
	5. Thursday	1. Yes	34	22	20160609
	7. Saturday	1. Yes	34	22	20160609
	2. Monday	1. Yes	34	22	20160609

Cf1	Vcu1	Conf1	Cf2	Vcu2
302. Disobeyed Give Way or Stop sign or markings	V. Vehicle	A. Very likely	701. Stationary or parked vehicle	V. Vehicle
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded
406. Failed to judge other persons path or speed	V. Vehicle	A. Very likely	403. Poor turn or manoeuvre	V. Vehicle
405. Failed to look properly	V. Vehicle	A. Very likely	406. Failed to judge other persons path or speed	V. Vehicle

Vcuref2	Conf2	Cf3	Vcu3	Vcuref3	Conf3	Cf4
1	A. Very likely	402. Junction restart	V. Vehicle	1	A. Very likely	. Not coded
.	Not Coded	. Not coded	. Not Coded	.	Not Coded	. Not coded
1	A. Very likely	405. Failed to look properly	V. Vehicle	1	A. Very likely	. Not coded
1	A. Very likely	602. Careless/Reckless/In a hurry	V. Vehicle	1	B. Possible	605. Inexperienced or learner driver/rider

Vcu4	Vcuref4	Conf4	Cf5	Vcu5	Vcuref5	Conf5	Cf6	Vcu6
. Not Coded		. Not Coded	. Not coded	. Not Coded		. Not Coded	. Not coded	. Not Coded
. Not Coded		. Not Coded	. Not coded	. Not Coded		. Not Coded	. Not coded	. Not Coded
. Not Coded		. Not Coded	. Not coded	. Not Coded		. Not Coded	. Not coded	. Not Coded
V. Vehicle	1	B. Possible	606. Inexperience of driving on the left	V. Vehicle	1	B. Possible	. Not coded	. Not Coded

Conf6	Time_Range
. Not Coded	09:00 - 09:59
. Not Coded	17:00 - 17:59
. Not Coded	14:00 - 14:59
. Not Coded	17:00 - 17:59

Date	Police_ref	Veh_ref	Type	Tow	Manvres	Movef	Movet	Locn_road
26/07/2012	WS187212	1	9. Car	0. No tow or articulation	9. Turning right	1. N	7. W	3. On the main road
26/07/2012	WS187212	2	9. Car	0. No tow or articulation	18. Going ahead other	6. SW	1. N	3. On the main road
26/07/2012	WS187212	3	9. Car	0. No tow or articulation	3. Going ahead but held up	7. W	3. E	3. On the main road
19/09/2013	TS801813	1	9. Car	0. No tow or articulation	18. Going ahead other	7. W	2. NE	3. On the main road
19/09/2013	TS801813	2	9. Car	0. No tow or articulation	18. Going ahead other	5. S	1. N	3. On the main road
06/09/2014	WS218314	1	9. Car	4. Single trailer	9. Turning right	8. NW	6. SW	
06/09/2014	WS218314	2	9. Car	0. No tow or articulation	18. Going ahead other	2. NE	6. SW	
23/11/2015	WS300215	1	9. Car	0. No tow or articulation	18. Going ahead other	6. SW	4. SE	
23/11/2015	WS300215	2	9. Car	0. No tow or articulation	18. Going ahead other	6. SW	2. NE	

Locn_lane	Junct_locn	Skid	Obj_in	Leave	Obj_off
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	1. Jct Approach	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None
0. On main carriageway	8. Mid Junction - on roundabout or main road	0. No skidding / overturning	0. None	0. Did not leave carr	0. None

Impact	Other		Damage1	Damage2	Damage3	Drvsex	Drvage	Hit_run	Frv
1. Front		2	1. Front			2. Female	80	0. Not hit and run	0. Not foreign registered vehicle
1. Front		1	1. Front			1. Male	70	0. Not hit and run	0. Not foreign registered vehicle
1. Front		1	1. Front			2. Female	32	0. Not hit and run	0. Not foreign registered vehicle
1. Front		2	1. Front	3. Offside		2. Female	89	0. Not hit and run	0. Not foreign registered vehicle
1. Front		1	1. Front			1. Male	43	0. Not hit and run	0. Not foreign registered vehicle
1. Front		2	0. None			1. Male	69	0. Not hit and run	9. Unknown
1. Front		1	0. None			1. Male	32	0. Not hit and run	9. Unknown
3. Offside		2	0. None			2. Female	65	0. Not hit and run	9. Unknown
1. Front		1	0. None			1. Male	49	0. Not hit and run	9. Unknown

Journey	Insurance	Make	Model	DLforV	LHD	Veh_Group
6. Unknown		. Not Coded		. Not Coded	. Not Coded	Car
6. Unknown		. Not Coded		. Not Coded	. Not Coded	Car
6. Unknown		. Not Coded		. Not Coded	. Not Coded	Car
6. Unknown	1	. Not Coded		. Not Coded	. Not Coded	Car
2. Commuting to/from work	1	. Not Coded		. Not Coded	. Not Coded	Car
5. Other		Citroen. -	C4VTR	1. Full	1. No	Car
5. Other		Bmw. -	330 ESTATE	1. Full	1. No	Car
6. Unknown		Hyundai. -	MATRIX GSI	1. Full	1. No	Car
2. Commuting to/from work		Bmw. -	330D	1. Full	1. No	Car

Date	Police_ref	Severity	Veh_ref	Cas_ref	Class	Sex	Age	Ped_locn	Ped_mvmt
26/07/2012	WS187212	3. Slight	1	1	1. Driver / Rider	2. Female	80	. Not pedestrian	. Not pedestrian
26/07/2012	WS187212	3. Slight	2	2	1. Driver / Rider	1. Male	70	. Not pedestrian	. Not pedestrian
26/07/2012	WS187212	2. Serious	2	3	2. Vehicle Passenger	2. Female	70	. Not pedestrian	. Not pedestrian
19/09/2013	TS801813	1. Fatal	1	1	1. Driver / Rider	2. Female	89	. Not pedestrian	. Not pedestrian
19/09/2013	TS801813	2. Serious	2	2	1. Driver / Rider	1. Male	43	. Not pedestrian	. Not pedestrian
06/09/2014	WS218314	3. Slight	2	1	2. Vehicle Passenger	2. Female	32	. Not pedestrian	. Not pedestrian
23/11/2015	WS300215	3. Slight	1	1	1. Driver / Rider	2. Female	65	. Not pedestrian	. Not pedestrian
23/11/2015	WS300215	3. Slight	1	2	2. Vehicle Passenger	2. Female	8	. Not pedestrian	. Not pedestrian
23/11/2015	WS300215	3. Slight	1	3	2. Vehicle Passenger	1. Male	6	. Not pedestrian	. Not pedestrian
23/11/2015	WS300215	3. Slight	2	4	1. Driver / Rider	1. Male	49	. Not pedestrian	. Not pedestrian

Ped_dirn	Pupil	Car_pass	Psv_pass	Seatbelt
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011
. Not pedestrian	0. Not a pupil	1. Front seat	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	12. Safety Belt Fitted - Not In Use - Pre 2011
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	14. Child Safety Belt Or Harness Fitted - In Use - Pre 2011
. Not pedestrian	0. Not a pupil	1. Front seat	0. Not a PSV Passenger	1. Worn and independently confirmed
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	1. Worn and independently confirmed
. Not pedestrian	0. Not a pupil	2. Back seat	0. Not a PSV Passenger	1. Worn and independently confirmed
. Not pedestrian	0. Not a pupil	2. Back seat	0. Not a PSV Passenger	1. Worn and independently confirmed
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	1. Worn and independently confirmed

Ped_inj	Cas_ethnic	Cas_type	Serious	CycHelmet	Time_Range	Veh_Type	Veh_Group
0. Not applicable	W1. White British	0	. Not coded	. Not coded	09:00 - 09:59	9. Car	Car
0. Not applicable	W1. White British	0	. Not coded	. Not coded	09:00 - 09:59	9. Car	Car
0. Not applicable	W1. White British	0	. Not coded	. Not coded	09:00 - 09:59	9. Car	Car
0. Not applicable	W1. White British	0	. Not coded	. Not coded	17:00 - 17:59	9. Car	Car
0. Not applicable	1. White	0	. Not coded	. Not coded	17:00 - 17:59	9. Car	Car
. Not Coded	W1. White British	0	. Not coded	0. Not a cyclist	14:00 - 14:59	9. Car	Car
. Not Coded	W9. Any other White background	0	. Not coded	0. Not a cyclist	17:00 - 17:59	9. Car	Car
. Not Coded	W9. Any other White background	0	. Not coded	0. Not a cyclist	17:00 - 17:59	9. Car	Car
. Not Coded	W9. Any other White background	0	. Not coded	0. Not a cyclist	17:00 - 17:59	9. Car	Car
. Not Coded	W1. White British	0	. Not coded	0. Not a cyclist	17:00 - 17:59	9. Car	Car

APPENDIX B

Junction 29: A43 / St John's Road (01/01/2011 to 31/12/2016)

Collision No.	**1**	**2**	**3**	**4**
Reference No.	WS187212	TS801813	WS218314	WS300215
Date	26/07/2012	19/09/2013	06/09/2014	23/11/2015
Day	Thursday	Thursday	Saturday	Monday
Time	09:15	17:05	14:51	17:35
Severity	Serious	Fatal	Slight	Slight
Dark/Light	Light	Light	Light	Dark – Street Lights Lit
Road Surface	Dry	Dry	Dry	Dry
No. Vehicles	3	2	2	2
Vehicle 1	Car	Car	Car with Single Trailer	Car
Vehicle2	Car	Car	Car	Car
Vehicle 3	Car	-	-	-
No. casualties	3	2	1	4
Casualty 1	(Serious) Car Passenger – F - 70	(Fatal) Car Driver – F - 89	(Slight) Car Passenger – F - 32	(Slight) Car Driver – F - 68
Casualty 2	(Slight) Car Driver – M – 70	(Serious) Car Driver – M - 43	-	(Slight) Car Passenger – F -8
Casualty 3	(Slight) Car Driver – F – 80	-	-	(Slight) Car Passenger – M - 6
Casualty 4	-	-	-	(Slight) Car Driver – M -49
Casualty 5	-	-	-	-
Causation	V1 has pulled out onto the A43 from central reservation and collided with v2 which was travelling north on A43. V2 is then pushed into v3 which was waiting on St John's Road to enter the A43.	V1 emerges into path of v2. V2 collides with v1 causing c1 to eject from car.	V1 emerges from the junction and collides with v2 travelling south west.	V1 collides with v2 at the junction.
Manoeuvre	Turning right / going ahead	Turning left / going ahead	Turning right / going ahead	Turning right / going ahead
Location	St John's Road	A43 / St John's Road junction	A43 / St John's Road junction	A43 / St John's Road junction

APPENDIX H.3

Junction 31
Highway Safety Review
and Proposed Mitigation

DRAFT

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

Technical Note No. 31

1 JUNCTION 31 – A43 / NORTHAMPTON ROAD

Site Description

1.1 Junction 31 is a priority controlled junction of the A43 with Northampton Road approximately two kilometres north of Towcester.

1.2 The A43 is designated as a trunk road and is a dual carriageway between the M40 and the M1. The location of the junction, in its geographical context, can been seen on **Figure EL31**.

1.3 Northampton Road is the northern section of the road which becomes Brackley Road approximately 1.6km south of Junction 31, and where it meets the A5 within Towcester. It connects to the A5 via a signalised crossroads junction to the north east of the Towcester settlement. The A5 links with Telford via Tamworth to the northwest and to the east, connects to the M1 junction 11A via Milton Keynes.

1.4 To the south of Junction 31, the A43 connects to Tove Roundabout (Junction 14), a five arm roundabout connecting the A43 to the A5 and Towcester Road.

Collision Data

1.5 Northamptonshire County Council (NCC) has provided Personal Injury Collision (PIC) data for the most resent five year period between 01 May 2011 and 31 December 2016. The collision records are contained at **Appendix A.**

1.6 A total of six incidents Personal Injury Collisions (PICs) resulting in eight casualties were reported to have occurred at Junction 31 of the study area, the A43 / Northampton Road Road junction. Four of the incidents recorded in the study period were classified as slight with one being classified as serious and one resulting in a fatality. A summary of the PICs at this location are contained at **Appendix B**.

1.7 All of the incidents involved right turners, one of which was a rear end shunt.

1.8 One of the incidents resulted in a serious injury. It occurred on Thursday 12 November 2015 at 1750 in dry, light conditions. The incident occurred as V1 (HGV 7.5T and over) was waiting

in the central refuge to join the carriageway and V2 (car) collided with the rear of V1. This PIC resulted in one serious injury (car driver, male, 67).

1.9 One of the recorded PICs resulted in a fatality (car driver, male, 78). It occurred on Monday 27 April 2015 at 2236 in dry, dark conditions (street lighting unknown). The incident appears to have occurred due to V2 (car) colliding with the rear of V1 (car) making a right turn onto the A43, and shunting the vehicle off the carriageway.

1.10 None of the PICs involved vulnerable road users such as cyclists or pedestrians.

Summary of Safety Problems

1.11 The main cause of collisions at Junction 31 is considered to relate to right turning movements from the A43 towards Northampton Road.

Option for Treatment

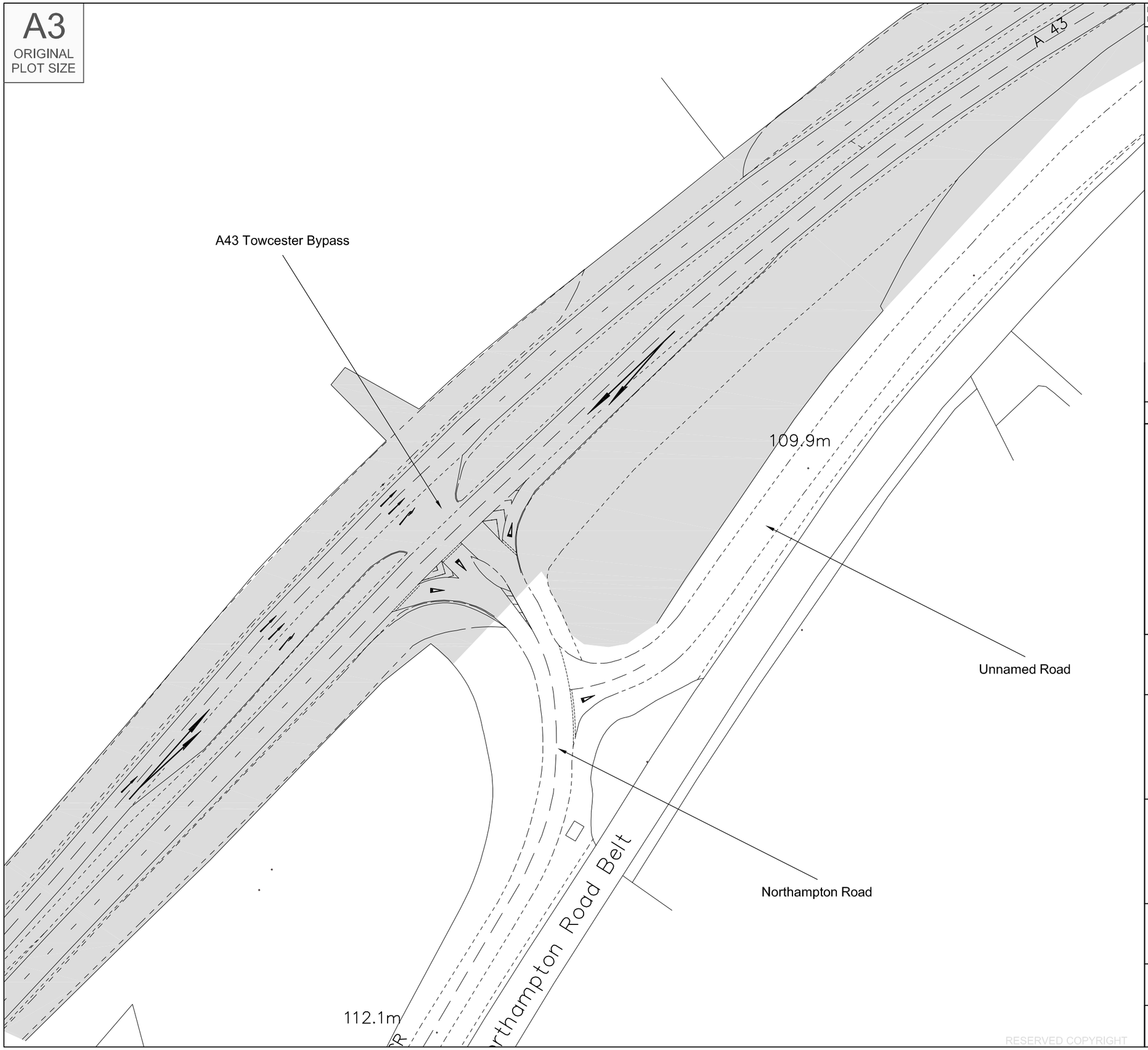
1.12 An initial Collision Investigation Study was undertaken by Highways England (HE) in 2013, and a further study in 2015, to address the PICs at this location (and at other central reserve junctions along the A43) recorded up to 2011 and recommendations were made for improvements to the junction following a committee review.

1.13 The report concluded that there was a higher than average number of PICs occurring in darkness and a site inspection revealed that the road studs had very limited amounts of reflectivity. Therefore, a programme of works for the studs to be replaced was included in future maintenance.

1.14 From review of the form of the junction, it appears that the prominence of the junction to vehicles travelling southbound on the A43 is low. Therefore, a signage scheme is proposed to be provided to include junction ahead warning signs with associated countdown markers. Similar schemes have been recently implemented by Highways England (HE) at Junction 28 and Junction 29. The proposed junction improvements are shown on **Figure PL31**.

FIGURES

A3
ORIGINAL
PLOT SIZE



RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A43 / Northampton Road Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	27.06.17	DR	KSS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL31	

APPENDIX A

Number	Reference	Severity	Easting	Northing
1	WS210512	Slight	469847	250290
2	WS303512	Slight	469855	250293
3	WS288413	Slight	470135	250511
4	WS293714	Slight	469848	250297
5	TS800715	Fatal	469842	250313
6	WS289515	Serious	469839	250293
7	WS065516	Slight	469849	250288

Date	Police_ref	Easting	Northing	Severity	Road_cond	Visibility	Manoeuvre	Time
24/08/2012	WS210512	469847	250290	3. Slight	1. Dry	11. Daylight: street lights present - Pre 2011	2. Right turn	17:50:00
05/11/2012	WS303512	469855	250293	3. Slight	1. Dry	6. Darkness: no street lighting	2. Right turn	17:08:00
10/11/2013	WS288413	470135	250511	3. Slight	2. Wet/Damp	12. Daylight: no street lighting - Pre 2011	0. No turn	10:10:00
13/11/2014	WS293714	469848	250297	3. Slight	1. Dry	6. Darkness: no street lighting	0. No turn	18:49:00
27/04/2015	TS800715	469842	250313	1. Fatal	1. Dry	7. Darkness: street lighting unknown	2. Right turn	22:36:00
12/11/2015	WS289515	469839	250293	2. Serious	1. Dry	1. Daylight	0. No turn	17:50:00
01/04/2016	WS065516	469849	250288	3. Slight	1. Dry	1. Daylight	2. Right turn	10:20:00

Vehicles	Roadclass1	Roadnum1	Road_type	Speed_lim	Junct_det	Junct_ctrl	Roadclass2
2	3. A	43	3. Dual 2 lanes	70	6. Crossroads	4. Give way or Uncontrolled	5. C
2	3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	5. C
3	3. A	43	3. Dual 2 lanes	70	0. Not within 20m of junction	. Not applicable	. Not applicable
2	3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	6. Unclassified
2	3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	5. C
2	3. A	43	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	5. C
2	6. Unclassified	4121	3. Dual 2 lanes	70	3. T & Stag Jct	4. Give way or Uncontrolled	3. A

Roadnum2	Cross_ctrl	Cross_fac	Weather	Spcond	Carr_haz
188	0. None	0. None within 50m	1. Fine (without high wind)	0. None	0. None
188	0. None	0. None within 50m	1. Fine (without high wind)	0. None	0. None
	0. None	0. None within 50m	1. Fine (without high wind)	0. None	0. None
4121	0. None	0. None within 50m	1. Fine (without high wind)	0. None	0. None
188	0. None	0. None within 50m	1. Fine (without high wind)	0. None	0. None
188	0. None	0. None within 50m	1. Fine (without high wind)	0. None	0. None
43	0. None	0. None within 50m	1. Fine (without high wind)	0. None	0. None

Location	Local_auth	Parish
A43 S/W, C188 NORTHAMPTON RD	E07000155. SOUTH NORTHAMPTONSHIRE	227. Towcester
AT JUNC OF A43 AND C188 NORTHAMPTON ROAD TOWCESTER	E07000155. SOUTH NORTHAMPTONSHIRE	82. Easton Neston
20M NE OF JUNC U4121, TO HULCOTE & A43, TOWCESTER.	E07000155. SOUTH NORTHAMPTONSHIRE	82. Easton Neston
A43, OXFORD RD & U4121, NORTHAMPTON RD, HULCOTE.	E07000155. SOUTH NORTHAMPTONSHIRE	82. Easton Neston
A43, OXFORD RD & C188, NORTHAMPTON RD JUNC, TOWCESTER.	E07000155. SOUTH NORTHAMPTONSHIRE	82. Easton Neston
A43, OXFORD RD & C188, NORTHAMPTON RD JUNC, HULCOTE.	E07000155. SOUTH NORTHAMPTONSHIRE	227. Towcester
U4121, NORTHAMPTON RD & A43, OXFORD RD JUNC, HULCOTE.	E07000155. SOUTH NORTHAMPTONSHIRE	227. Towcester

Acc_desc	Day	Reportedat	Pol_force	Status	
V1 HAS ENTERED THE JUNCTION AND COLLIDED WITH V2	6. Friday	1. Yes	34		33
V1 N/B ON A43 TURNS RIGHT INTO NPTON RD AND COLLIDES WITH V2 S/B ON A43	2. Monday	1. Yes	34		33
V2 & 3 STATIONARY WHEN V1 UNABLE TO STOP COLLIDES WITH R/O V2, V2 THEN COLLIDES WITH V3.	1. Sunday	1. Yes	34		22
V1 PULLED ACROSS JUNC INTO PATH OF V2 TRAVELLING SW.	5. Thursday	1. Yes	34		22
V2 COLLIDES WITH R/O V1 SHUNTING V OFF C/WAY TO N/S AT JUNC.	2. Monday	1. Yes	34		22
V1 WAITING IN CENTRAL REFUGE TO JOIN C/WAY, V2 IN L2 OPP C/WAY COLLIDES WITH R/O V1.	5. Thursday	1. Yes	34		22
V1 COLLIDES WITH V2 AT JUNC.	6. Friday	1. Yes	34		33

Statusdate	Cf1	Vcu1	Conf1	Cf2	Vcu2	Conf2	Cf3	Vcu3	Conf3
20150506	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded
20151008	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded
20160609	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded
20160609	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded
20160609	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded
20160609	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded
20160629	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded

Cf4	Vcu4	Conf4	Cf5	Vcu5	Conf5	Cf6	Vcu6	Conf6	N_feature	Dist_feat
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded		
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded		
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	U4121	20M
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded		
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded		
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded		
. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded	. Not coded	. Not Coded	. Not Coded		

Dir_feat	Time_Range
	17:00 - 17:59
	17:00 - 17:59
NE	10:00 - 10:59
	18:00 - 18:59
	22:00 - 22:59
	17:00 - 17:59
	10:00 - 10:59

Date	Police_ref	Veh_ref	Type	Tow	Manvres	Movef	Movet	Locn_road	Locn_lane	Junct_locn	Skid	Obj_in	Leave
24/08/2012	WS210512	1	9. Car	0. No tow c	9. Turning i	4. SE	2. NE	3. On the n	0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
24/08/2012	WS210512	2	9. Car	0. No tow c	18. Going a	2. NE	6. SW	3. On the n	0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
05/11/2012	WS303512	1	9. Car	0. No tow c	9. Turning i	5. S	3. E	1. Leaving t	0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
05/11/2012	WS303512	2	9. Car	0. No tow c	18. Going a	1. N	5. S	3. On the n	0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
10/11/2013	WS288413	1	20. Goods (	0. No tow c	18. Going a	6. SW	2. NE	3. On the n	0. On main	0. Not at, o	0. No skidd	0. None	0. Did not l
10/11/2013	WS288413	2	9. Car	0. No tow c	3. Going ah	6. SW	2. NE	3. On the n	0. On main	0. Not at, o	0. No skidd	0. None	0. Did not l
10/11/2013	WS288413	3	9. Car	0. No tow c	3. Going ah	6. SW	2. NE	3. On the n	0. On main	0. Not at, o	0. No skidd	0. None	0. Did not l
13/11/2014	WS293714	1	9. Car	0. No tow c	18. Going a	4. SE	8. NW		0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
13/11/2014	WS293714	2	9. Car	0. No tow c	18. Going a	2. NE	6. SW		0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
27/04/2015	TS800715	1	9. Car	0. No tow c	9. Turning i	4. SE	2. NE		0. On main	8. Mid Junc	0. No skidd	0. None	1. Nearside
27/04/2015	TS800715	2	9. Car	0. No tow c	18. Going a	6. SW	2. NE		0. On main	8. Mid Junc	1. Skidded	0. None	0. Did not l
12/11/2015	WS289515	1	21. Goods '	0. No tow c	18. Going a	4. SE	8. NW		0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
12/11/2015	WS289515	2	9. Car	0. No tow c	18. Going a	2. NE	6. SW		0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l
01/04/2016	WS065516	1	9. Car	0. No tow c	9. Turning i	4. SE	2. NE		0. On main	8. Mid Junc	0. No skidd	7. Bollard /	1. Nearside
01/04/2016	WS065516	2	9. Car	0. No tow c	18. Going a	2. NE	6. SW		0. On main	8. Mid Junc	0. No skidd	0. None	0. Did not l

Obj_off	Impact	Other	Damage1	Damage2	Damage3	Drvsex	Drvage	Hit_run
0. None	1. Front	2	1. Front	3. Offside		1. Male	26	0. Not hit and run
0. None	1. Front		1. Front			1. Male	48	0. Not hit and run
0. None	1. Front	2	1. Front	4. Nearside	. Not applicable	1. Male	67	0. Not hit and run
0. None	1. Front	1	1. Front	. Not applicable	. Not applicable	2. Female	67	0. Not hit and run
0. None	1. Front	2	1. Front			1. Male	46	0. Not hit and run
0. None	1. Front	3	1. Front	2. Back		2. Female	58	0. Not hit and run
0. None	2. Back	2	2. Back			1. Male	51	0. Not hit and run
0. None	2. Back	2	0. None			2. Female	44	0. Not hit and run
0. None	1. Front	1	0. None			1. Male	43	0. Not hit and run
0. None	2. Back	2	0. None			1. Male	78	0. Not hit and run
0. None	1. Front	1	0. None			1. Male	56	0. Not hit and run
0. None	2. Back	2	0. None			1. Male	53	0. Not hit and run
0. None	1. Front	1	0. None			1. Male	67	0. Not hit and run
0. None	1. Front	2	0. None			1. Male	63	0. Not hit and run
0. None	1. Front	1	0. None			1. Male	93	0. Not hit and run

Frv	Journey	Insurance	Make	Model	DLforV	LHD
0. Not foreign registered vehicle	2. Commuting to/from work		. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	1. Journey as part of work		. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	6. Unknown		. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	6. Unknown		. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	1. Journey as part of work		. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	1. Journey as part of work	1	. Not Coded		. Not Coded	. Not Coded
0. Not foreign registered vehicle	2. Commuting to/from work		. Not Coded		. Not Coded	. Not Coded
9. Unknown	5. Other		Hyundai. -	PREMIUM 4WD	1. Full	1. No
9. Unknown	2. Commuting to/from work		Audi. -	A6 S LINE	1. Full	1. No
9. Unknown	6. Unknown		Toyota. -	YARIS	1. Full	1. No
9. Unknown	2. Commuting to/from work		Vauxhall. -	ASTRA	1. Full	1. No
9. Unknown	1. Journey as part of work		. Not Coded	DAF	1. Full	1. No
9. Unknown	5. Other		Honda. -	CIVIC	1. Full	1. No
9. Unknown	1. Journey as part of work		Toyota. -	DYNA	. Not Coded	1. No
9. Unknown	5. Other		Vauxhall. -	ASTRA	1. Full	1. No

Veh_Group
Car
Car
Car
Car
HGV
Car
Car
Car
Car
Car
Car
HGV
Car
Car
Car

Date	Police_ref	Severity	Veh_ref	Cas_ref	Class	Sex	Age	Ped_locn	Ped_mvmt
24/08/2012	WS210512	3. Slight	1	1	1. Driver / Rider	1. Male	26	. Not pedestrian	. Not pedestrian
24/08/2012	WS210512	3. Slight	2	2	1. Driver / Rider	1. Male	48	. Not pedestrian	. Not pedestrian
05/11/2012	WS303512	3. Slight	2	1	1. Driver / Rider	2. Female	67	. Not pedestrian	. Not pedestrian
05/11/2012	WS303512	3. Slight	2	2	2. Vehicle Passenger	2. Female	67	. Not pedestrian	. Not pedestrian
10/11/2013	WS288413	3. Slight	2	1	1. Driver / Rider	2. Female	58	. Not pedestrian	. Not pedestrian
10/11/2013	WS288413	3. Slight	3	2	1. Driver / Rider	1. Male	51	. Not pedestrian	. Not pedestrian
13/11/2014	WS293714	3. Slight	2	1	1. Driver / Rider	1. Male	43	. Not pedestrian	. Not pedestrian
27/04/2015	TS800715	1. Fatal	1	1	1. Driver / Rider	1. Male	78	. Not pedestrian	. Not pedestrian
12/11/2015	WS289515	2. Serious	2	1	1. Driver / Rider	1. Male	67	. Not pedestrian	. Not pedestrian
01/04/2016	WS065516	3. Slight	2	1	1. Driver / Rider	1. Male	93	. Not pedestrian	. Not pedestrian

Ped_dirn	Pupil	Car_pass	Psv_pass	Seatbelt	Ped_inj
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	1. Front seat	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	11. Safety Belt In Use - Pre 2011	0. Not applicable
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	1. Worn and independently confirmed	. Not Coded
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	4. Unknown	. Not Coded
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	1. Worn and independently confirmed	. Not Coded
. Not pedestrian	0. Not a pupil	0. Not a car passenger	0. Not a PSV Passenger	1. Worn and independently confirmed	. Not Coded

Cas_ethnic	Cas_type	Serious	CycHelmet	Time_Range	Veh_Type	Veh_Group
W1. White British	0	. Not coded	. Not coded	17:00 - 17:59	9. Car	Car
W1. White British	0	. Not coded	. Not coded	17:00 - 17:59	9. Car	Car
1. White	0	. Not coded	. Not coded	17:00 - 17:59	9. Car	Car
1. White	0	. Not coded	. Not coded	17:00 - 17:59	9. Car	Car
W1. White British	0	. Not coded	. Not coded	10:00 - 10:59	9. Car	Car
W1. White British	0	. Not coded	. Not coded	10:00 - 10:59	9. Car	Car
W1. White British	0	. Not coded	0. Not a cyclist	18:00 - 18:59	9. Car	Car
W1. White British	0	. Not coded	0. Not a cyclist	22:00 - 22:59	9. Car	Car
W1. White British	0	. Not coded	0. Not a cyclist	17:00 - 17:59	9. Car	Car
W1. White British	0	. Not coded	0. Not a cyclist	10:00 - 10:59	9. Car	Car

APPENDIX B

Junction 31: A43 / Northampton Road (01/01/2011 to 31/12/2016)

Collision No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Reference No.	WS210512	WS303512	WS288413	WS293714	TS800715	WS289515	WS065516
Date	24/08/2012	05/11/2012	10/11/2013	13/11/2014	27/04/2015	12/11/2015	01/04/2016
Day	Friday	Monday	Sunday	Thursday	Monday	Thursday	Friday
Time	17:50	17:08	10:10	18:49	22:36	17:50	10:20
Severity	Slight	Slight	Slight	Slight	Fatal	Serious	Slight
Dark/Light	Light	Dark – No Street Lights	Light	Dark	Dark – street Lighting unknown	Light	Light
Road Surface	Dry	Dry	Wet	Dry	Dry	Dry	Dry
No. Vehicles	2	2	3	2	2	2	2
Vehicle 1	Car	Car	LGV (over 3.5T and under 7.5T)	Car	Car	HGV (7.5T and over)	Car
Vehicle2	Car	Car	Car	Car	Car	Car	Car
Vehicle 3	-	-	Car	-	-	-	-
No. casualties	2	2	2	1	1	1	1
Casualty 1	Car Driver – M - 26	Car Driver – F - 67	Car Driver – F - 58	Car Driver – M - 43	Car Driver – M - 78	Car Driver – M - 67	Car Driver – M - 93
Casualty 2	Car Driver – M - 48	Car Passenger – F - 67	Car Driver – M - 51	-	-	-	-
Casualty 3	-	-	-	-	-	-	-
Casualty 4	-	-	-	-	-	-	-
Casualty 5	-	-	-	-	-	-	-
Causation	V1 has entered carriageway and collided with v2.	V1 n/b on A43 turns right into Northampton road and collides with v2 s/b on A43.	V2 and v3 stationary when v1 unable to stop collides with rear of v2, v2 then collides with v3.	V1 pulled across junction into path of v2 travelling south west.	V2 collides with rear of v1 shunting the vehicle off the carriageway.	V1 waiting in central refuge to join carriageway, v2 in lane2 opposite carriageway collides with rear of v1.	V1 turning right collides with v2 at junction.
Manoeuvre	Right turn / ahead	Right turn / ahead	Going ahead	Going ahead	Turning right / ahead	Going ahead	Turning right / ahead
Location	A43 / Northampton Road junction	A43 / Northampton Road junction	Hulcote / A43, Towcester	A43 / Northampton Road junction	A43 / Northampton Road junction	A43 / Northampton Road junction	Northampton / Oxford Road

APPENDIX I

Proposed Pedestrian and Cycle Strategy

DRAFT

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

Rail Central

Job Number: 1211-80

Technical Note No.08 – Pedestrian and Cyclist Accessibility

---

1. Introduction

1.1. This Technical Note (TN) has been prepared by Transport Planning Associates (TPA) and outlines the proposed infrastructure improvements required to provide suitable pedestrian and cycling links between the proposed site and the surrounding residential areas.

2. Pedestrian and Cyclist Infrastructure Proposals

2.1. The pedestrian and cyclist infrastructure proposals look to link the site with the surrounding villages and the southern residential areas of Northampton.

Proposed footway/cycleway along Towcester Road

2.2. To facilitate pedestrian and cycle movement along Towcester Road the existing footway on the west side of the carriageway will be widened to accommodate a suitable footway/cycleway. The proposed footway/cycleway will measure 3.0 metres in width with a minimum 0.5m wide margin along the carriageway edge. The carriageway of Towcester Road/Northampton Road will be realigned in sections with a minimum width of 6.5m. For reference, the proposed measures are included at **Appendix A**.

2.3. Towcester Road will provide the main link for pedestrians/cyclists accessing the site from the southern residential areas of Northampton. Providing direct links from existing cycle and pedestrian infrastructure, including the on-road cycle lanes provide along Rowtree Road from the residential areas of East Hunsbury and Wooton. A plan showing the areas located within 5km cycle of the centre of the proposed development is provided at **Appendix B** for reference.

Proposed crossing points over Towcester Road/Rectory Lane

2.4. There are currently no crossing points provided at the junction of Towcester Road and Rectory Lane. Given that employees could access the site from Milton Malsor via Rectory Lane and Towcester Road, it is considered that pedestrian crossing facilities will be required at this point.

2.5. It is considered that pedestrians would likely look to take the shortest route possible. It is therefore proposed that a two metre wide footway will be provided on the nearside corner of the junction, as shown at **Appendix A**. To facilitate pedestrian movement, a dropped kerb crossing point with tactile paving will be provided on Towcester Road immediately south of the junction with Rectory

Lane. In addition a dropped kerb crossing with tactile paving will be provided on Rectory Lane immediately east of the junction with Towcester Road.

Pedestrian Link onto Barn Lane

2.6. As part of the proposed masterplan, a pedestrian route provided within the site will provide a link to an existing Public Rights of Way which emerges onto Barn Lane. Barns Lane currently accommodates a footway on the eastern side of the carriageway, which provides a route to Collingtree Road located to the north.

2.7. The footway currently measures approximately 1.0 metres in width, however it is considered that there is sufficient highway land available to widen the footway. It is therefore proposed that the footway is widened to approximately 2.0 metres to accommodate pedestrian movements between the site and Milton Mensor. A plan of the proposed footway improvements is provided at **Appendix C**. As shown, the footway improvements will form part of wider off-site highway measures.

3. Other Potential Improvements Reviewed

Pedestrian Link to Blisworth, Northampton Road

3.1. To the south of the site a footway is provided on the western side of the carriageway of Northampton Road, this provides a direct link into the village of Blisworth, located approximately 750 metres to the south of the site.

3.2. Given the provision of the existing footway to the village of Blisworth and the limited number of employees expected to use this link, it is considered that the provision of cycling specific infrastructure towards Blisworth is not required. For reference a plan showing the areas located within 2km walk of the centre of the proposed development is provided at **Appendix D** for reference.

Collingtree Road Footway/Cycleway

3.3. Collingtree Road provides a potential route for pedestrians and cyclist to access the site from Collingtree and east Wooton. However, it is considered that considerable level of infrastructure would be required to provide an off carriageway footway/cycleway at this point.

3.4. A dropped kerb crossing point is currently provided over Collingtree Road adjacent to the junction with Barn Lane. To the west the footway continues into Milton Malsor and to the east a footway is provided on the northern side of the carriageway for approximately 190m.

3.5. To the east, there is only highway verge provided either side of the carriageway, with no existing footway or cycle for approximately 820m. A footway is then present on the northern side of the carriageway into Collingtree, although the first 100m of footway would need to be upgraded for pedestrian use. The road is a two-way single carriageway road subject to the national speed limit. The provision of a new footway/cycleway along Collingtree Road would require significant infrastructure improvement and be subject to the availability of highway land.

3.6. **Appendix E** provides a comparison of accessibility for cycling to and from the site. One scenario includes for cycle accessibly along Collingtreen Road, while the other scenario prevents the use of Collingtree Road by cyclists. As shown, the difference in the coverage of residential areas is minimal.

3.7. Given the level of work required for these improvements, the provision of a cycleway/footway on Collingtree Road is not considered to be cost effective given the existing infrastructure and the limited number of people who would use this route for walking and cycling. It is also considered that cyclist wanting to access the site from Collingtree Road, will able to do so on carriageway if desired.

4. Conclusions

4.1. The proposed footway/cycleway along Towcester Road to the north would provide a link to the site for employees in the southern residential areas of Northampton.

4.2. The pedestrian crossing points at Towcester Road and Rectory Lane would benefit employees from the eastern parts of the site looking to head north along Towcester Road and access Milton Malsor. The highway boundary would need to be reviewed to see if the crossings and footpath link are deliverable within highway land.

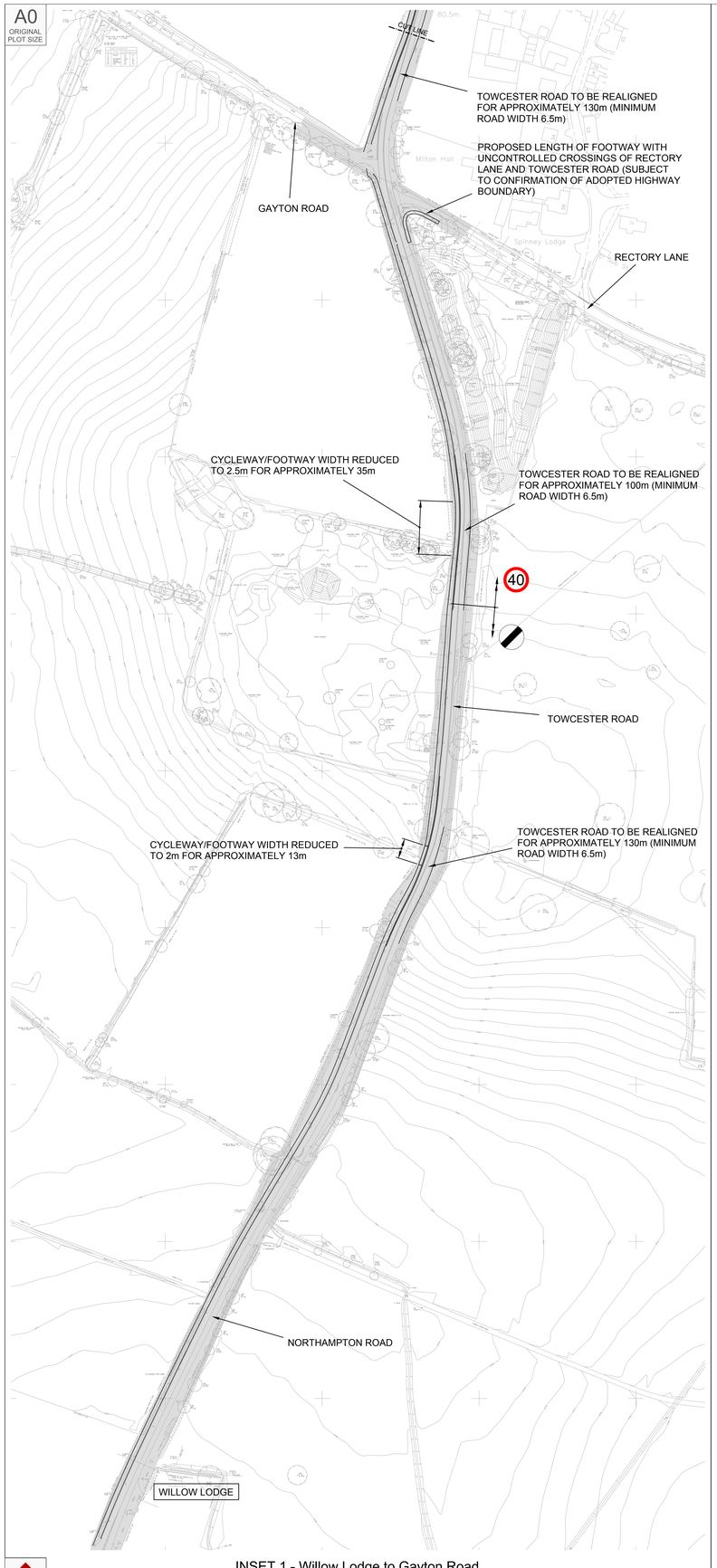
4.3. A footway already runs along Northampton Road to the south of the site into the village of Blisworth, it is considered that providing pedestrian/cycling improvements along the road is not required.

4.4. Widening along Barn Lane could be provided up to Collingtree Road, although given a route is already provided and the pedestrian use would be low, it would not be essential.

4.5. Given the limited number of residents any potential walking/cycle improvements on Collingtree Road would benefit, the delivery of such a scheme is not considered to be a cost effective solution

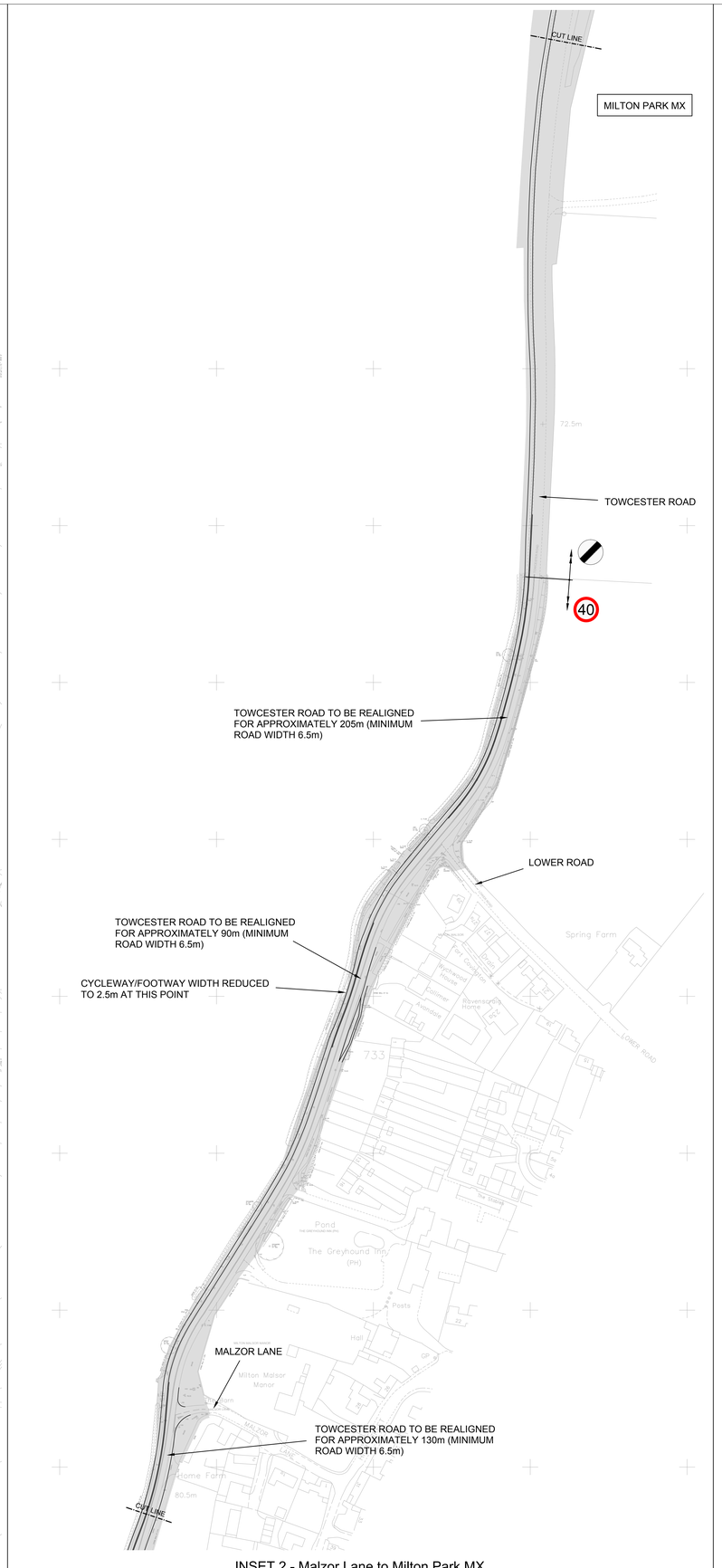
Appendix A

A0
ORIGINAL
PLOT SIZE



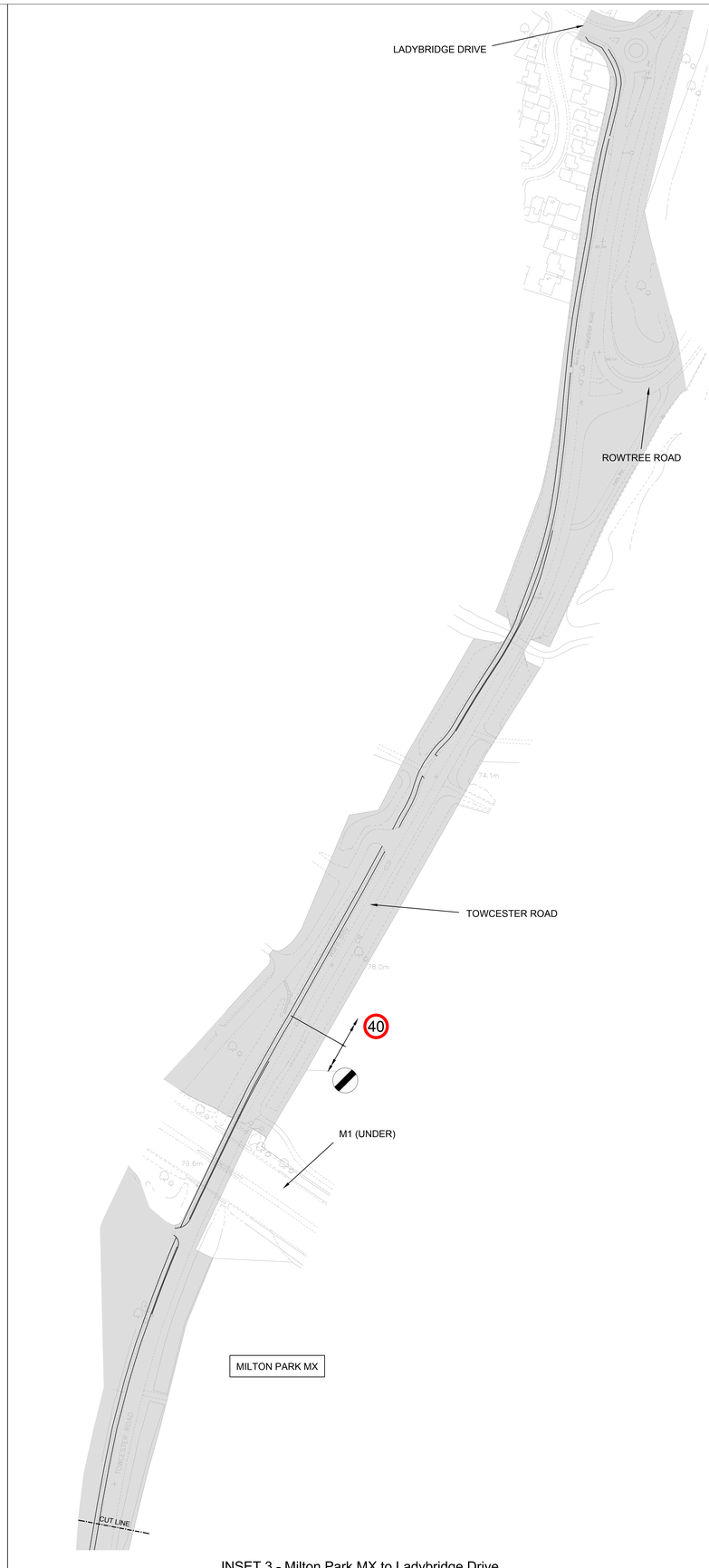
INSET 1 - Willow Lodge to Gayton Road

Scale 1:1,250



INSET 2 - Malzor Lane to Milton Park MX

Scale 1:1,250



INSET 3 - Milton Park MX to Ladybridge Drive

Scale 1:1,250

Reproduced from Ordnance Survey Supercplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034031

NOTES:

1. The proposed cycleway/footway is to be 3m wide with a minimum 0.5m wide margin along the carriageway edge, unless noted otherwise.

2. Realigned Towcester Road and Northampton Road to have a minimum carriageway width of 6.5m.

3. Existing drainage ditches along the route may be affected in some locations and will need to be considered in more detail.

4. The proposed cycleway/footway is indicative only and is subject to a full topographical survey along the complete route and confirmation of adopted highway/private ownership boundaries.

5. The extent of adopted highway shown has been taken from 1:1,250 scale Ordnance Survey based highway record plans received from Northamptonshire County Council in September 2015. The adopted highway boundary has been matched to existing topographical features where possible and is indicative only.

KEY

- 40 — Existing 40mph speed limit
- Existing national speed limit (60mph)
- Approximate extent of adopted highway maintainable at public expense by Northamptonshire County Council



Location Plan

Scale 1:10,000

No.	Date	Details	Drawn by	Checked by	Approved by
A	05.12.17	Footway added at junction of Rectory Lane/Towcester Road with associated note.	PSW	AJS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE: Potential Off-Street Unsegregated Cycleway/Footway Route Along Towcester Road/Northampton Road

STATUS: PRELIMINARY

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
As Shown	03.10.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	SK189	A

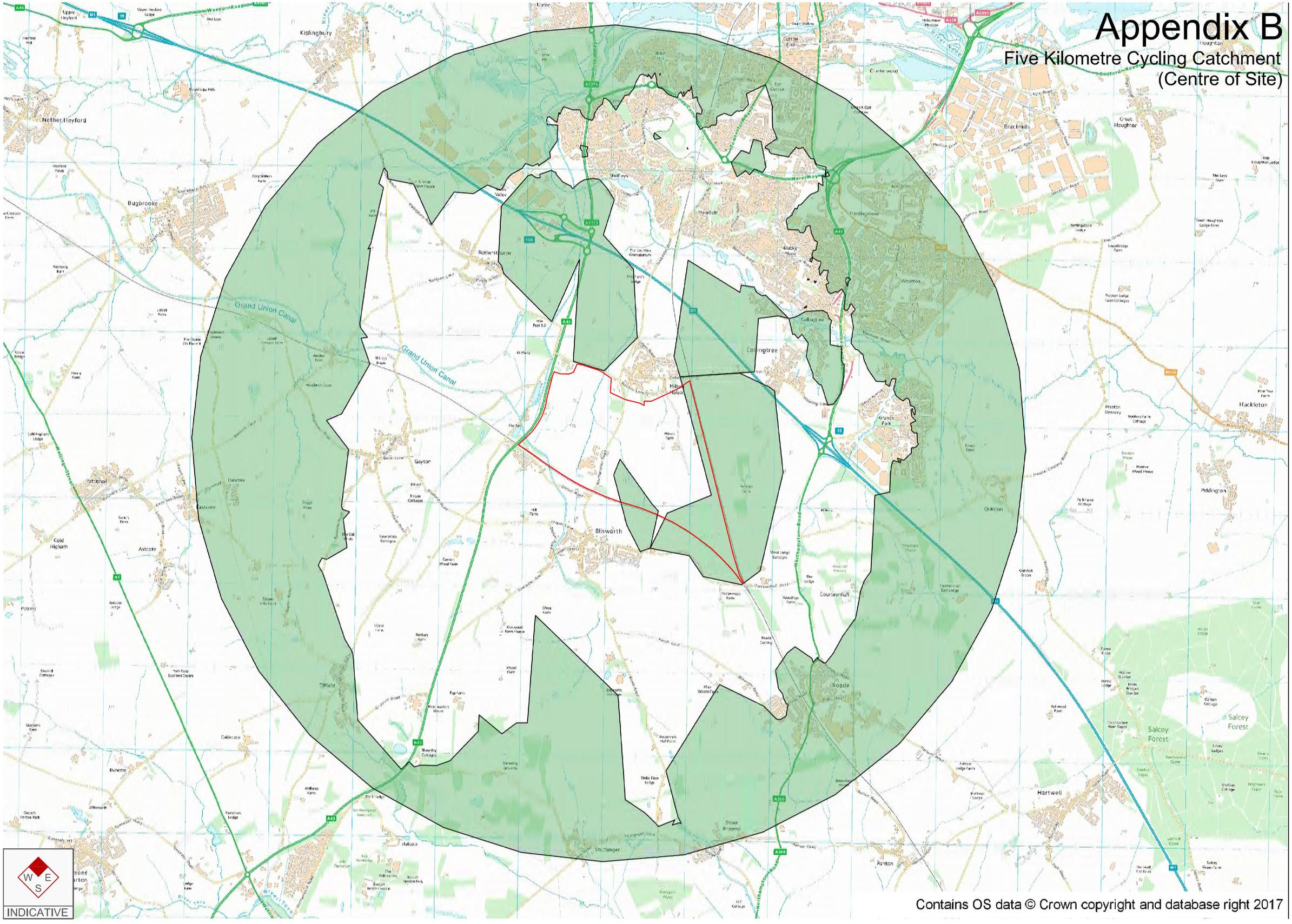
INDICATIVE

dimensions not to be scaled

Appendix B

Appendix B

Five Kilometre Cycling Catchment
(Centre of Site)



Contains OS data © Crown copyright and database right 2017

Appendix C

A1
ORIGINAL
PLOT SIZE

PROPOSED ENHANCED GATEWAY FEATURE AT EXISTING 30mph SPEED LIMIT

PROPOSED NO-PRIORITY RAISED JUNCTION

PROPOSED TREE PIT PROTECTED SHELTERED PARKING (SINGLE WAY CARRIAGEWAY)

EXISTING FOOTWAY ALONG BARN LANE/COLLINGTREE ROAD TO BE WIDENED

PROPOSED CONTRASTING BLOCKWORK RAISED NO-PRIORITY ROUNDABOUT FEATURE

PROPOSED WIDENED FOOTWAY AND SINGLE CARRIAGEWAY NO-PRIORITY SECTIONS

PROPOSED FLUSH PAVED SHARED SURFACE

COLLINGTREE ROAD
CUT LINE
BARN LANE
RECTORY LANE
Beech Cottage
Pavilion
Beech
Maple Tree House
Manor Lodge
Manor House
The Old Barn
Post
El Sub Sta
GP
FB
83.5m
81.7m

INSET 1 - Gateway Feature

INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY

- New asphalt footway.
- Block paved carriageway.
- Granite sett ramps.
- Landscape verge/tree planting.
- Tree pit.
- Existing bus stop location
- Red line boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
D	05.12.17	Footway widening added and red line boundary extended to suit,	PSW	AJS	MB
C	03.07.17	Colour background removed and red line boundary added,	PSW	AJS	PCP
B	21.06.17	Environmental enhancements updated at bus stop locations,	PSW	AJS	MB
A	03.05.17	Colour added,	JA	AS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Proposed Environmental Enhancement In Milton Malsor Village

STATUS: DRAFT

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	22.06.16	PSW	PCP	MB

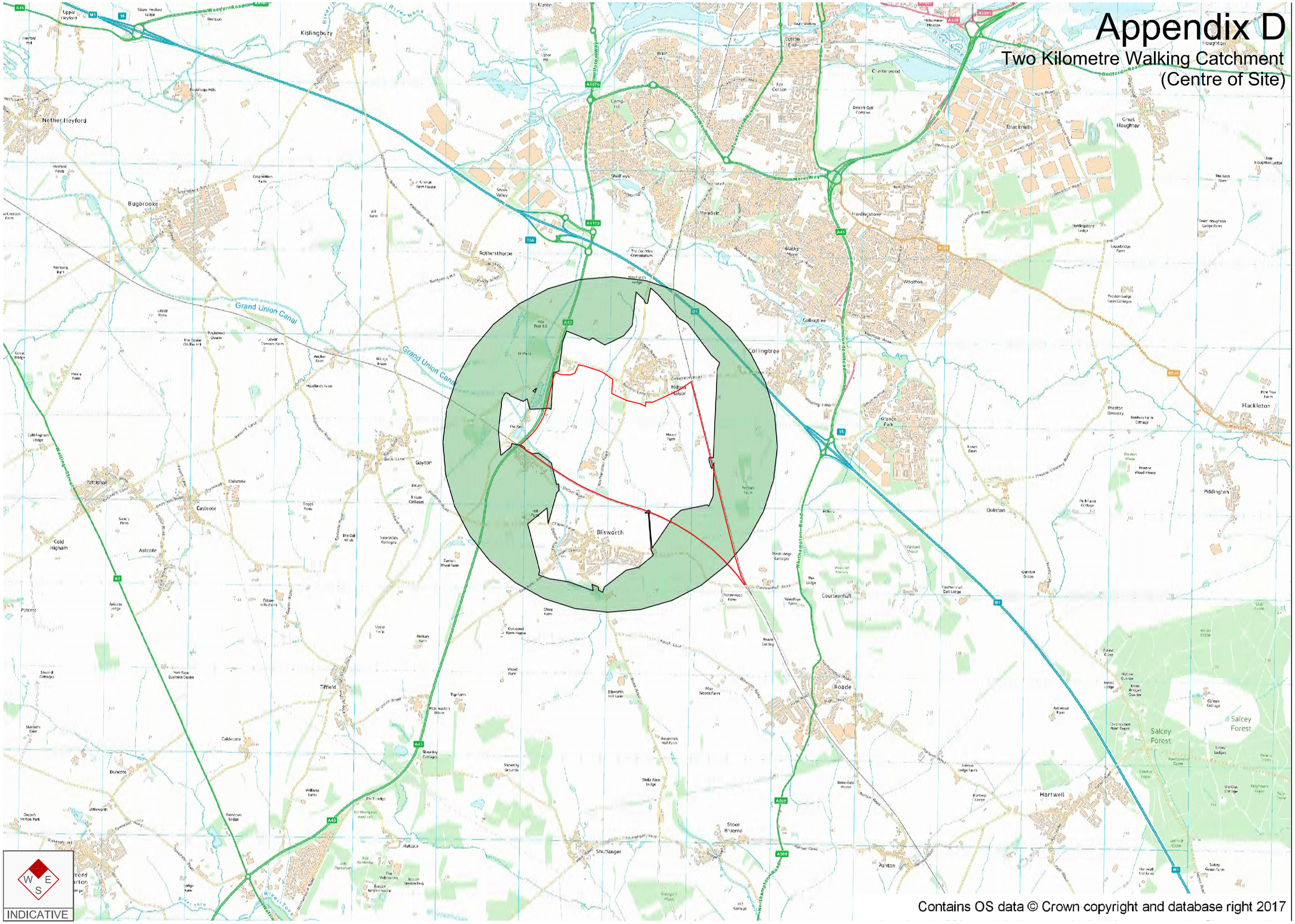
JOB NO:	DRAWING NO:	REVISION:
1211-80	SK58	D

RESERVED COPYRIGHT

Appendix D

Appendix D

Two Kilometre Walking Catchment
(Centre of Site)



Contains OS data © Crown copyright and database right 2017

Appendix E

Appendix E1

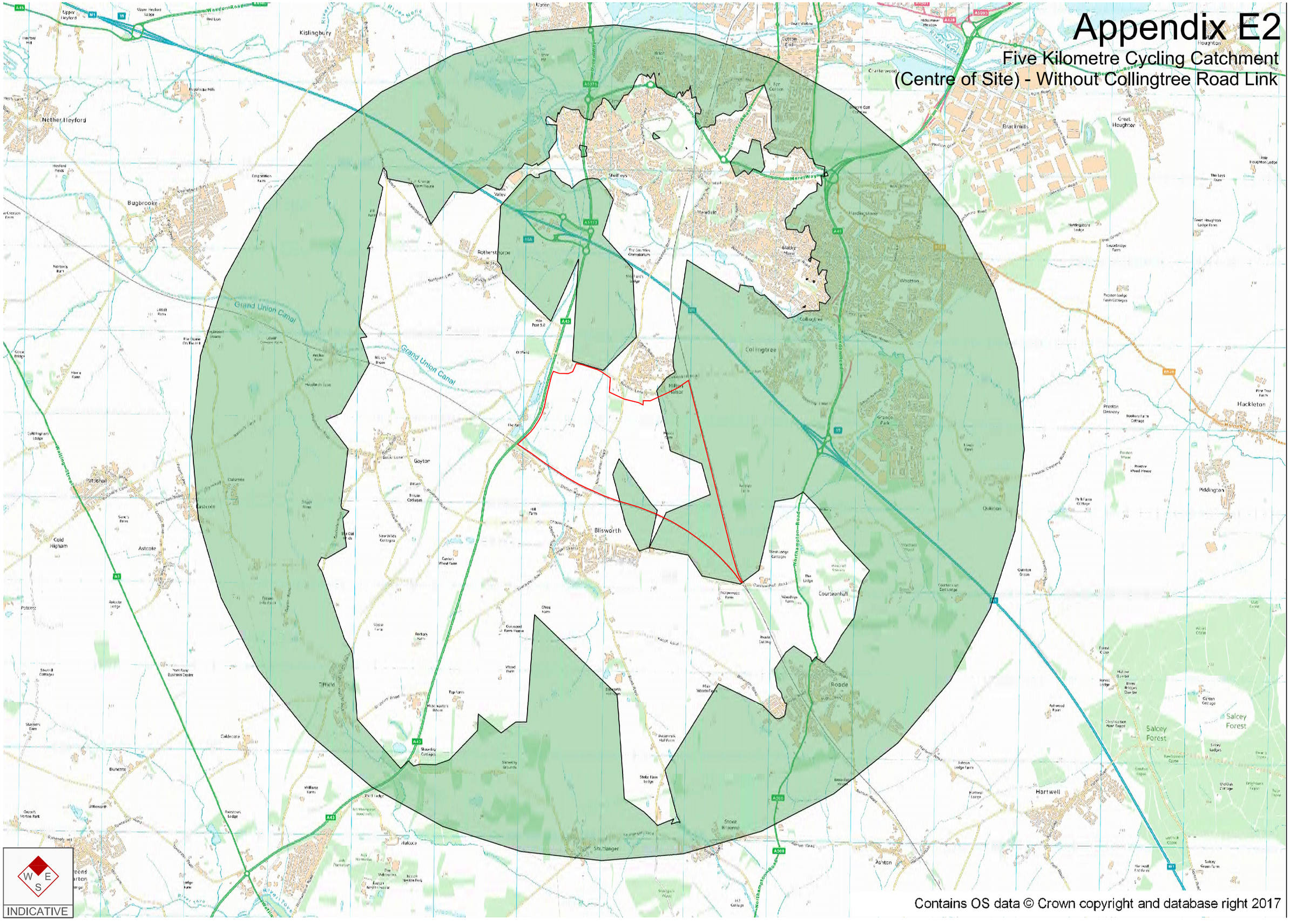
Five Kilometre Cycling Catchment
(Centre of Site) - With Collingtree Road Link

INDICATIVE

Contains OS data © Crown copyright and database right 2017

Appendix E2

Five Kilometre Cycling Catchment
(Centre of Site) - Without Collingtree Road Link



APPENDIX J

Potential Environmental Enhancement Schemes

DRAFT

A1
ORIGINAL
PLOT SIZE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office, Crown Copyright - Licence No. AL100034021

KEY

Environmental enhancement feature.

Red line boundary (to be confirmed).

New gateway treatment at existing 30mph speed limit

New supplementary gateway treatment

Courteenhall Road (see drawing 1211-80/SK57)

High Street - Church Lane to Courteenhall Road (see drawing 1211-80/SK56)

New supplementary gateway treatment

New gateway treatment at existing 30mph speed limit

High Street - Gayton Road to Church Lane (see drawing 1211-80/SK56)

Stoke Road (see drawing 1211-80/SK57)

New supplementary gateway treatment

New gateway treatment at existing gateway location

Blisworth

INDICATIVE

Rev	Date	Details	Drawn by	Checked by	Approved by
B	03.07.17	Colour background removed and red line boundary added,	PSW	AJS	MB
A	04.05.17	Colour added,	JA	AS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Proposed Environmental Enhancement In Blisworth Village - Gateway Features and Location Plan

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	22.06.16	PSW	PCP	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	SK55	B

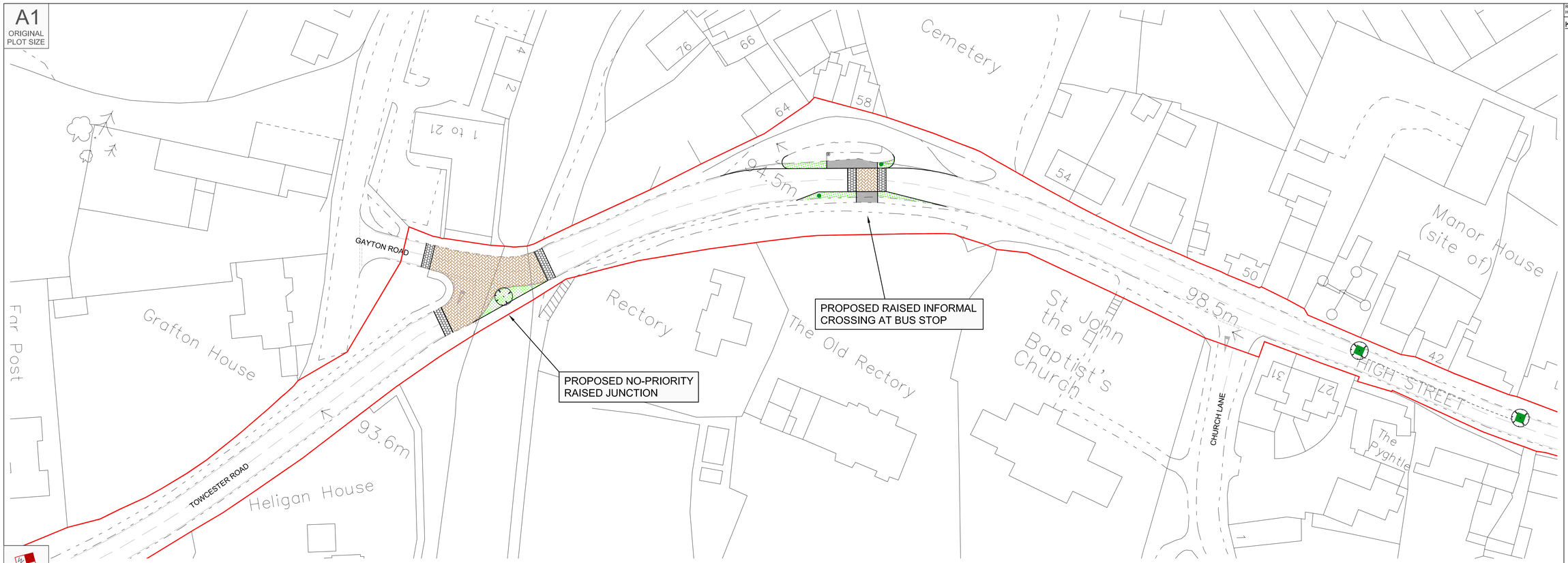
RESERVED COPYRIGHT

A1
ORIGINAL
PLOT SIZE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office, Crown Copyright - Licence No. AL100034021

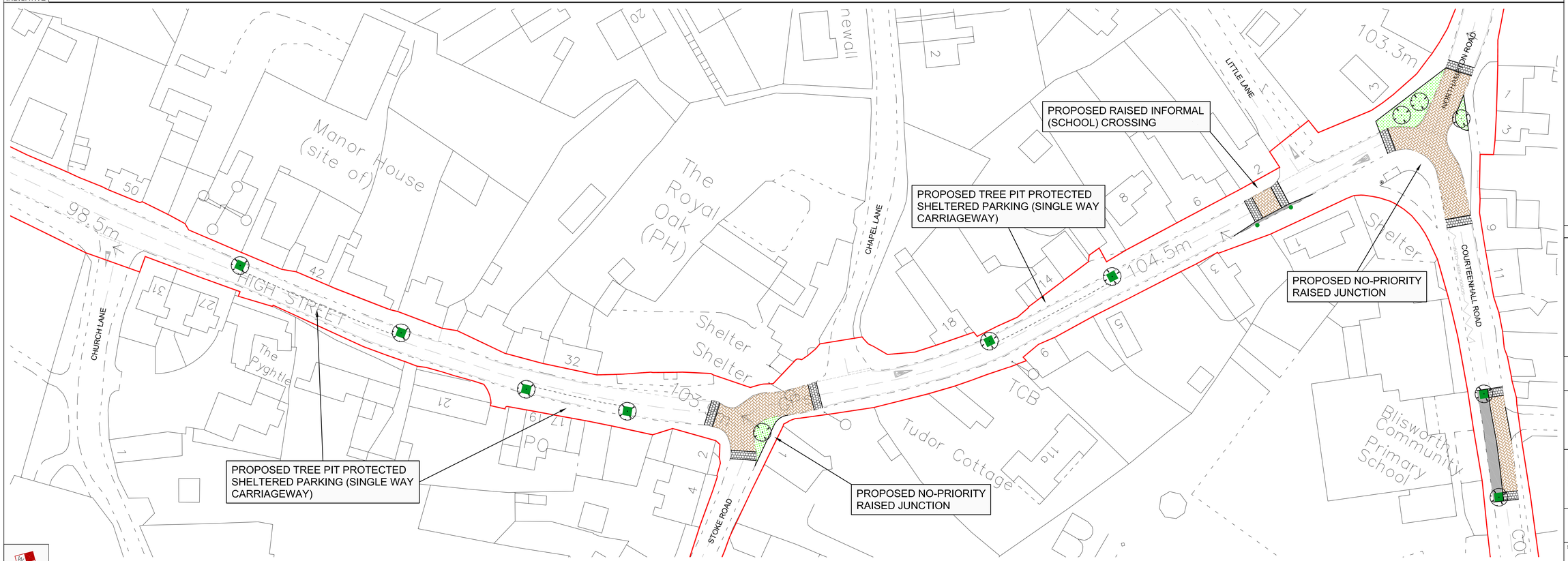
KEY

- New asphalt footway.
- Block paved carriageway.
- Granite sett ramps.
- Landscape verge/tree planting.
- 900mm diameter planter.
- Tree pit.
- Bus stop.
- Red line boundary (to be confirmed).



INDICATIVE

High Street Environmental Enhancement - Gayton Road To Church Lane



INDICATIVE

High Street Environmental Enhancement - Church Lane To Courteenhall Road

Rev	Date	Details	Drawn by	Checked by	Approved by
B	03.07.17	Colour background removed and red line boundary added.	PSW	AJS	MB
A	04.05.17	Colour added.	JA	AS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE: Proposed Environmental Enhancement In Blisworth Village - Sheet 1 of 2

STATUS: INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	22.06.16	PSW	PCP	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	SK56	B

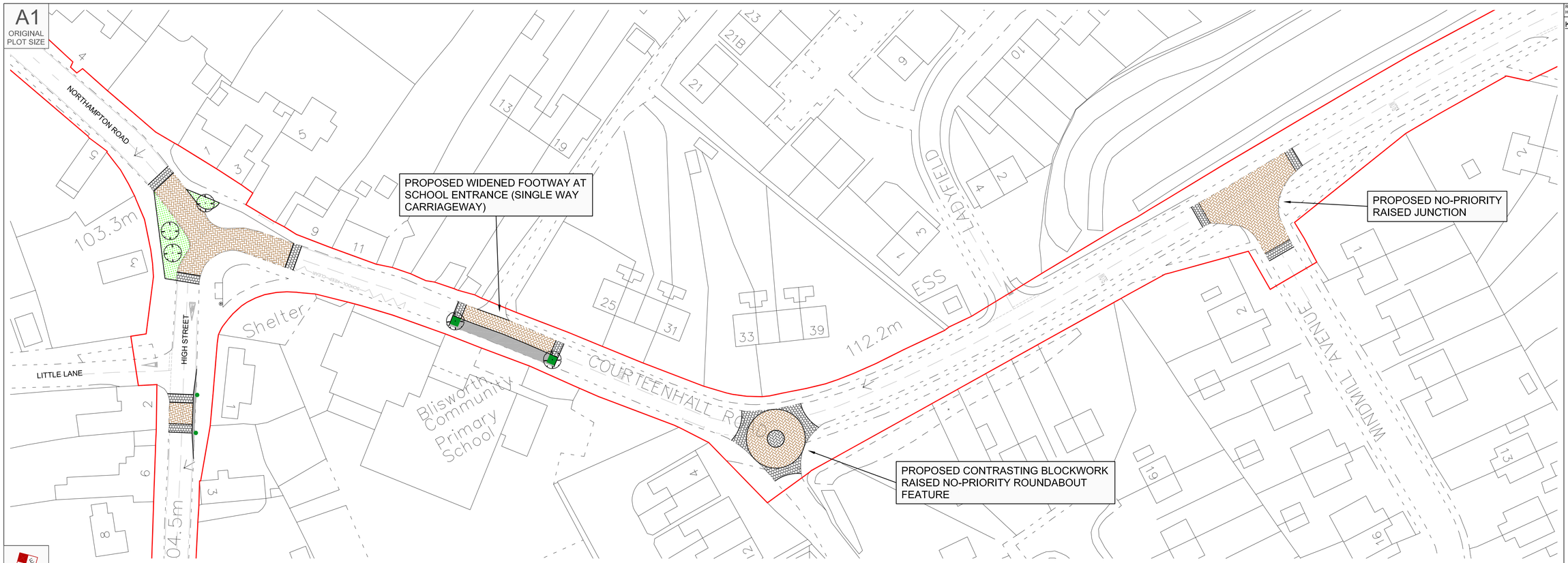
RESERVED COPYRIGHT

A1
ORIGINAL
PLOT SIZE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office, Crown Copyright - Licence No. AL100034021

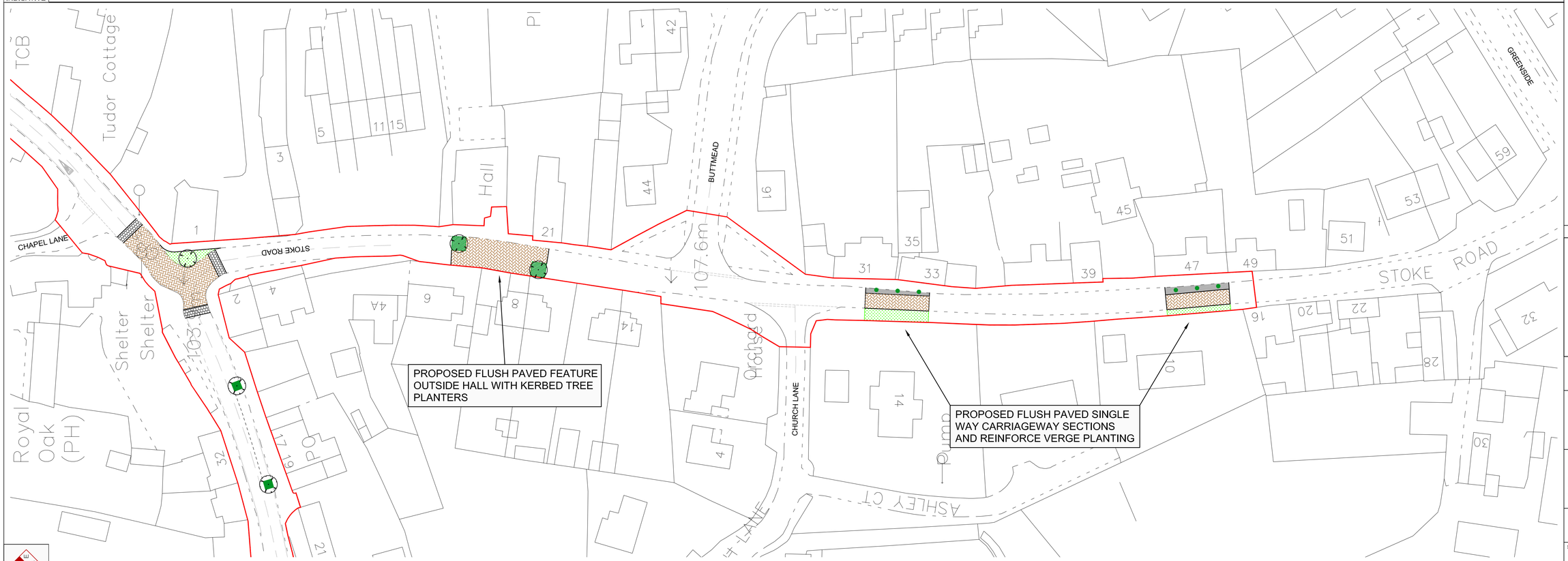
KEY

- New asphalt footway.
- Block paved carriageway.
- Granite sett ramps.
- Landscape verge/tree planting.
- 900mm diameter planter.
- Tree pit.
- Bus stop.
- Red line boundary (to be confirmed).



Courteenhall Road Environmental Enhancement - High Street To Windmill Avenue

INDICATIVE



Stoke Road Environmental Enhancement - High Street To Greenside

INDICATIVE

Rev	Date	Details	Drawn by	Checked by	Approved by
B	03.07.17	Colour background removed and red line boundary added.	PSW	AJS	MB
A	04.05.17	Colour added.	JA	AS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE: Proposed Environmental Enhancement In Blisworth Village - Sheet 2 of 2

STATUS: INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	22.06.16	PSW	PCP	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	SK57	B

RESERVED COPYRIGHT

A1
ORIGINAL
PLOT SIZE

PROPOSED ENHANCED GATEWAY FEATURE AT EXISTING 30mph SPEED LIMIT

PROPOSED NO-PRIORITY RAISED JUNCTION

PROPOSED TREE PIT PROTECTED SHELTERED PARKING (SINGLE WAY CARRIAGEWAY)

EXISTING FOOTWAY ALONG BARN LANE/COLLINGTREE ROAD TO BE WIDENED

PROPOSED CONTRASTING BLOCKWORK RAISED NO-PRIORITY ROUNDABOUT FEATURE

PROPOSED WIDENED FOOTWAY AND SINGLE CARRIAGEWAY NO-PRIORITY SECTIONS

PROPOSED FLUSH PAVED SHARED SURFACE

COLLINGTREE ROAD
CUT LINE
BARN LANE
RECTORY LANE
Beech Cottage
Pavilion
Beech
Maple Tree House
Manor Lodge
Manor House
The Old Barn
Post
GP
FB
El Sub Sta
83.5m
81.7m

INSET 1 - Gateway Feature

INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY

- New asphalt footway.
- Block paved carriageway.
- Granite sett ramps.
- Landscape verge/tree planting.
- Tree pit.
- Existing bus stop location
- Red line boundary

Rev	Date	Details	Drawn by	Checked by	Approved by
D	05.12.17	Footway widening added and red line boundary extended to suit,	PSW	AJS	MB
C	03.07.17	Colour background removed and red line boundary added,	PSW	AJS	PCP
B	21.06.17	Environmental enhancements updated at bus stop locations,	PSW	AJS	MB
A	03.05.17	Colour added,	JA	AS	MB

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Proposed Environmental Enhancement In Milton Malsor Village

STATUS: DRAFT

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	22.06.16	PSW	PCP	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	SK58	D

RESERVED COPYRIGHT

DRAFT

APPENDIX K
Proposed Public Transport Strategy

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l.

Rail Central

Job Number: 1211-80

DRAFT Technical Note No. 9 – Public Transport Strategy

1 INTRODUCTION

1.1 This Technical Note (TN) has been prepared by Transport Planning Associates (TPA) to detail the operational viability of enhancing bus services for the proposed development of a Strategic Rail Freight Interchange (SRFI) known as Rail Central.

1.2 The SRFI comprises up to 687,4833sq.m (7.4M sq.ft) Gross Internal Area (GIA) of high bay warehousing with ancillary offices and the number of employees onsite is anticipated to be around 8,000.

1.3 The site currently comprises undeveloped land located to the immediate south of Milton Malsor. The site is considered to be optimally located next to rail and trunk road infrastructure. It is located to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north.

1.4 The scheme would be served by a primary vehicular access point via the A43, along with pedestrian, cycle and emergency / bus only connections to Northampton Road.

1.5 This strategy has been produced further to extensive discussions held between Northamptonshire County Council (NCC) Public Transport Officers, Stagecoach Midlands and TPA.

2 EXISTING PUBLIC TRANSPORT PROVISION

Bus Services

2.1 The closest northbound and southbound bus stops to the site are located on Northampton Road adjacent to the JBJ Business Park, approximately 200 metres south of the site boundary. The bus stops compromise a flag and pole with timetable information and a bench at both stops. A bus shelter is provided at the northbound stop.

2.2 Additional bus stops are located on Northampton Road opposite and adjacent to Station Road, approximately 300 metres south of the site boundary. The location of the bus stops within the vicinity of the site is shown on **Figure 1**.

2.3 The bus operators serving these stops are Uno and Stagecoach Northamptonshire. The stops are served by 86, 88, 89 and X89 services which provide access to Northampton, Milton Keynes, Towcester and Brackley. The 88 and 89 service provide a connection to Northampton Railway Station.

2.4 Bus service details and timetable information at the bus stops identified above have been obtained from the service providers, and are presented in **Table 2.1.** Local bus routes are illustrated on **Figure 1**.

DRAFT

Table 2.1 – Summary of Bus Services from Northampton Road (Opposite Business Park)

Service	Route	Monday to Friday			Saturday			Sunday		
		First Bus	Frequency (mins)	Last Bus	First Bus	Frequency (mins)	Last Bus	First Bus	Frequency (mins)	Last Bus
86[1]	Towcester / Stony Stratford to Northampton (via Roade)	0733	120-180 (five services)	1737	0733	120-180	1737	No Service		
	Northampton to Towcester / Stony Stratford (via Roade)	0919	120 (five services)	1823	0919	120 (five services)	1823			
88[2]	Brackley to Northampton (via Silverstone and Towcester)	0752	2 AM services and 2PM services	1937	0752	2 AM services and 2 PM services	1941	0932	90	1832
	Northampton to Brackley (via Towcester and Silverstone)	0815/0821	1 AM service	-	0633	1 AM service	-	1023	90	1923
89[2]	Milton Keynes to Northampton (via Deanshanger and Towcester)	0702	3 AM services and 3 PM services	2113	0817	2 AM services and 2 PM services	2013	No service		
	Northampton to Milton Keynes (via Towcester and Deanshanger)	0649	2 AM services and 4 PM services	1835	0649	2 AM services and 4 PM services	1835			
X89[2]	Milton Keynes to Northampton (via Deanshanger and Towcester)	1122	60	1745	1122	60	1745	No service		
	Northampton to Milton Keynes (via Towcester and Deanshanger	0912	60	1412	0912	60	1412			

1 – Operated by Uno; 2 – Operated by Stagecoach

2.5 Northampton Bus Station, also known as North Gate Bus Station, consists of 14 departure bays with 12 on its western side and two on its southern side. A further eight bays for southbound journeys out of Northampton are located on the Drapery immediately adjacent to the bus station, also known as Northampton Bus Interchange. Within the bus station are facilities including a café, convenience store and toilets.

2.6 Travelling between Northampton bus station and the site takes between approximately 18 and 23 minutes depending on the service used. From Northampton bus station, bus services link to locations including Bedford, Kettering, Leicester, Rugby and Wellingborough.

2.7 Bus service 86 provides a service between Northampton and Towcester from 0733 until 1738 every two to three hours, Monday to Friday. On a Saturday the bus service runs from 0733 until 1415. This service runs through Milton Malsor, east through Collingtree and north along the A45 to the bus interchange, with an approximate journey time of 18 minutes between Northampton Road and Northampton Bus Interchange.

2.8 Bus 88 provides four services a day, Monday-Saturday, between Brackley and Northampton and a 90 minute service on a Sunday between 0923 and 1832. Between Northampton and Brackley, one morning service runs Monday to Saturday and a 90 minute service between 1023 and 1923.

2.9 Bus services 89 and X89 provide hourly services between Northampton and Milton Keynes. The 89 service runs during the morning between 0748 and 1020 and in the evening between 1858 and 2113 and the X89 service runs during the day between 1122 and 1742.

2.10 The 88, 89 and X89 services route towards Northampton along Towcester Road / Northampton Road passing through Blisworth and Milton Malsor. These services route through the residential areas of East Hunsbury along Rowtree Road in south Northampton before continuing to Northampton bus station. The service takes approximately 23 minutes Northampton Road (opposite bus stop) and Northampton Bus Interchange.

2.11 Currently, services 88, 89 and 89X provide a combined service at an approximate 30 minute frequency and the Northamptonshire Bus Strategy indicates that bus services 88 and 89 are anticipated to be operating every 15 minutes by approximately 2026 to 2031.

Existing Local Passenger Rail Services

2.12 Northampton Railway Station is located approximately eight kilometres to the north of the site in Northampton. Facilities include 85 cycle stands, 813 car parking spaces (including 13 disabled spaces) and a taxi rank. A café, shops and toilets are also provided. Northampton Railway Station is located on the main rail network between London and Birmingham. The line is served by London Midland and Virgin Trains.

2.13 During the daytime there are approximately three daytime trains per hour in each direction Monday to Sunday between Northampton and London Euston. In the evenings there are approximately two trains per hour in each direction.

2.14 There are approximately three datytime trains per hour in each direction between Northampton and Birmingham New Street and approximately two trains per hour in the evening in each direction.

2.15 Services call at local stations including Wolverton and Long Buckby, with approximate 10 minute journey times.

3 PROPOSED PUBLIC TRANSPORT PROVISION

3.1 Each individual unit will be required to be within 400 metres of a bus stop, as set out in NCC's Bus Strategy, and estimated that this could be around four to five stops within the site.

3.2 Based on sites with similar operations, buses are required to be onsite 20 minutes before a shift starts and finishes as it is more effective than buses running dead miles. A bus interchange, where buses can turn or wait, is proposed to be provided adjacent to the Northampton Road Access.

3.3 A turning area will also be provided at the eastern end of the site adjacent to Units 6 and 7 which will allow buses to travel the length of the site.

Proposed Services

3.4 Extensive discussions have been held between Northamptonshire County Council (NCC) Public Transport Officers, Stagecoach Midlands and TPA during the course of the project to discuss the bus strategy at the site.

3.5 The following points have been agreed in principle:

i.) it has been agreed that extending the existing 88/89 service from Northampton Road into the site would be the most appropriate approach. Supplementary (out of hours) buses would run along the A43(T) for a quicker journey time to/from Northampton and limit disruption to residents of Milton Malsor and Blisworth, especially if running through the night;

ii.) employees could utilise the existing half hourly buses diverted from Northampton Road and additional buses would be provided if required to accommodate shifts;

iii.) buses would enter the site via the A43(T) and/or Northampton Road and will take employees to the proposed bus interchange and either end of the site;

iv.) Stagecoach will seek to divert existing services into the site from the A43(T) and Northampton Road, subject to suitable turning facilities, or provide an equivalent service in and out of the site;

v.) the number of services running daily would depend on the phasing at the site and would be worked out incrementally; and

vi.) triggers will be identified and the number of buses provided to and from the site will be enhanced when there are a certain number of employees onsite.

Incentives for Bus Use

3.6 When looking at sites comprising of similar land-uses to the proposals in the Northamptonshire area, bus use is considered to provide the largest potential for modal shift for a site of this type and this could be up to 20 percent.

3.7 Stagecoach confirmed that they would derive a special offer potentially including discounted weekly prices for employees travelling to and from the site.

3.8 Smartcards and a simplified ticketing structure could be implemented along the route. This allows for more efficient flows of passengers boarding and alighting buses. This has the knock-on effect of enabling quicker journey times and generally a more reliable service operation.

3.9 A quicker security clearance at the site for those who can present a valid bus ticket could be allowed to provide an incentive for bus use.

3.10 A Travel Plan will be submitted and will include methods proposed to show how bus passenger transport within the development would be promoted, so that bus service use for the employees will become a viable mode of transportation as a feasible alternative to private car travel for local trips. This method will be promoted from the start of the development's occupation.

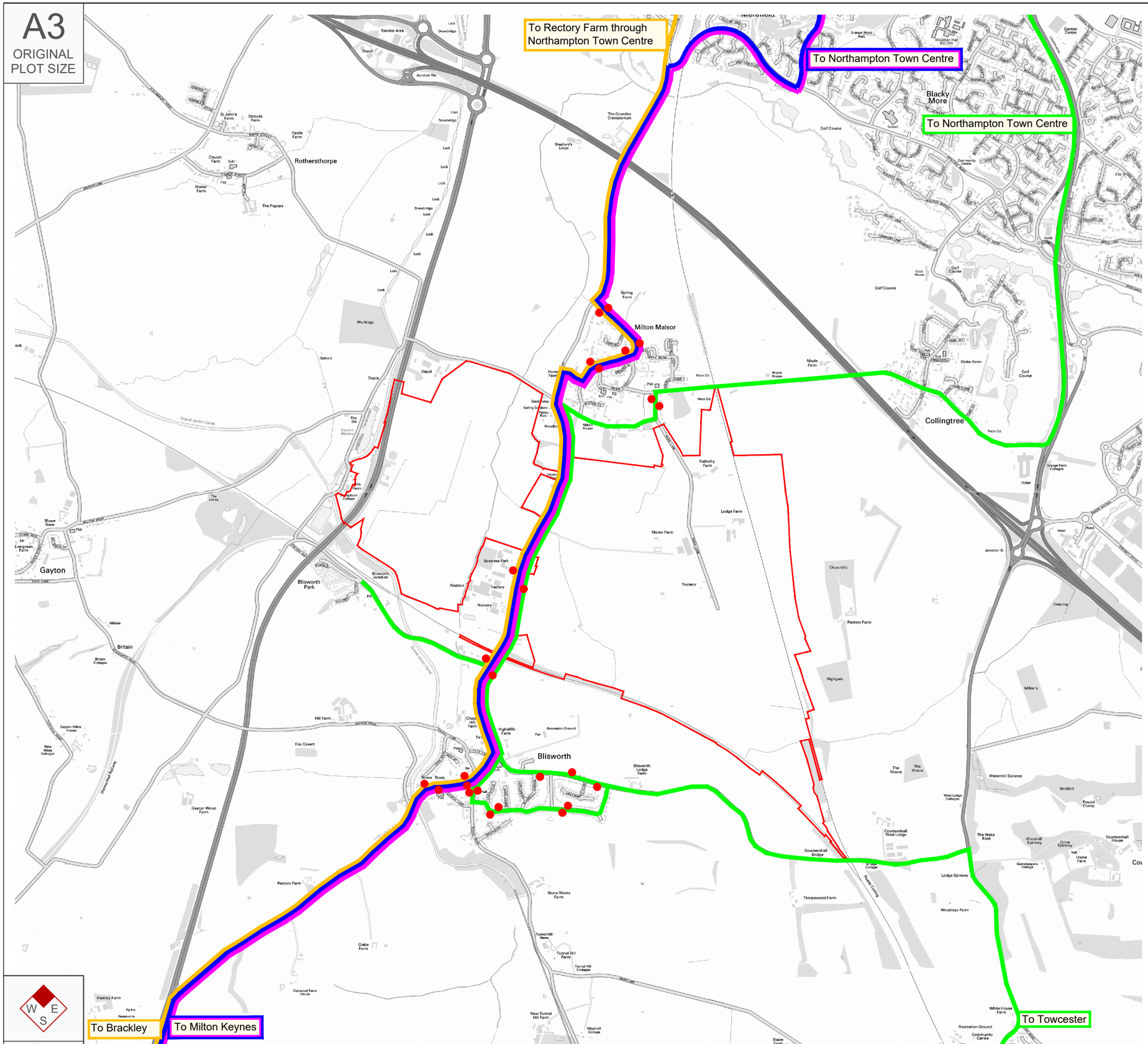
3.11 Bus 'taster' tickets could be offered to employees within the Travel Plan.

DRAFT

FIGURES

DRAFT

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

KEY

- Approximate site boundary
- Bus route 86 - Northampton - Towcester / Stony Stratford
- Bus route 88 - Northampton - Brackley
- Bus route 8 - Northampton - Milton Keynes
- Bus route X8 - Northampton - Milton Keynes
- Bus Stop

Rev	Date	Details	Drawn by	Checked by	Approved by

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Local Bus Routes

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:20000	26.01.18	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 1	

RESERVED COPYRIGHT

DRAFT

APPENDIX L

BN01 – Person Trip Attraction

Transport Planning Associates

ASHFIELD LAND LTD

Rail Central

Briefing Note 01: Person Trip Attraction

Transport Model Stage 1: Trip Attraction

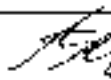
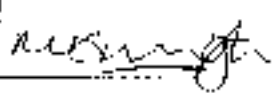
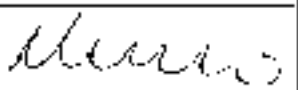
January 2018



DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Central		
Project No.:	1211-80	**Report No.:**	1211-80/BN/01
Client:	Ashfield Land Ltd		

	Prepared By:	Checked By:	Approved for issue
Name	A. Snowden	M. Bennington	R. Lyons
Signature			
Date	January 2018	January 2018	January 2018

Issued by

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates
25 King Street
Bristol
BS1 4PB

0117 925 9400
bristol@tpa.uk.com
www.tpa.uk.com

CONTENTS PAGE

1 INTRODUCTION 1
2 PROPOSAL FOR RAIL CENTRAL 3
3 DAILY AND PEAK HOUR TRIP ATTRACTION 4

LIST OF TABLES

Table 3.1 Summary of Rail Central Person Movements – DIRFT Methodology
Table 3.2 Summary of Rail Central Person Movements – EMGSRFI Methodology
Table 3.3 Summary of Rail Central Person Movements – Radlett Methodology
Table 3.4 Summary of Rail Central Person Movements – Similar Facilities
Table 3.5 First Principles Trip Attraction

LIST OF APPENDICES

A DIRFT III Socio-Economic Assessment Extract

B DIRFT Total Person Trips

C EMGSRFI Total Trips

D Radlett SRFI Trip Rates

E 1211-80/TN/05 – First Principles Person Trip Attraction

1 INTRODUCTION

1.1 Transport Planning Associates (TPA) is working on behalf of Ashfield Land Ltd in order to address the transportation aspects of a proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central. The site is located to the south of Milton Malsor, to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north.

1.2 The site is considered to be optimally located next to rail and trunk road infrastructure. The proposed SRFI will be progressed as a Nationally Significant Infrastructure Project (NSIP) and as such an application for the scheme will be taken through the Development Consent Order (DCO) process.

1.3 This briefing note forms part of a four stage transport model which can be summarised as follows:

(i) Stage 1: Trip Attraction;

(ii) Stage 2: Trip Distribution;

(iii) Stage 3: Mode Choice; and

(iv) Stage 4: Route Assignment.

1.4 This briefing note forecasts person trip attraction (excluding HGVs). It forms part of a stepped approach to confirming Stage 1 of the four stage transport model, along with information provided by MDS Transmodal relating to HGV trip attraction. Stages 2, 3 and 4 will be considered as part of subsequent briefing notes.

1.5 The briefing notes will inform scoping work required in advance of a full Transportation Assessment. They adhere to the principles of the 'Rochdale Envelope', which is used when the final details of the project are not fixed at the time of assessment work; and where there is a need for flexibility within clearly defined parameters that consider a range of likely possibilities. The assessment will be precautionary and will therefore consider the worst case. However, regard will be given to the worst case which *is likely to* occur to avoid the potential for the assessment to become over precautionary. The assessment work considers the measures that would be necessary to mitigate likely significant effects. Essentially, this means that the work is predicated on a range of scenarios which are presented in a way that aids decision making.

1.6 These briefing notes will be agreed with the highway authority at Northamptonshire County Council (NCC) and with Highways England (HE) as appropriate and through collaborative working.

1.7 In forecasting person trip attraction, this briefing note sets out a reference case methodology with reference to person trip rates at similar SRFI facilities, for each of the peak and daily periods. It also refers to a first principles based assessment, as a means of confirming that the anticipated level of trip attraction is reasonable for the purpose of the forthcoming assessment work.

1.8 This report concludes by presenting what is considered to be a likely worst case for the number of people travelling at the times when it is agreed with NCC and HE that the highway network will be operating at its busiest. It is these time periods that are agreed to be used to assess the trip impact of the scheme.

2 PROPOSAL FOR RAIL CENTRAL

Accommodation Schedule

2.1 The development masterplan is not fixed at this stage. Therefore, it is considered reasonable for a total of 687,4833sq.m (7.4M sq.ft) Gross Internal Area (GIA) of high bay warehousing with ancillary offices to be applied as a robust assessment. This is the largest quantum of development that is anticipated at the site.

2.2 The Architect has advised that the GIA of the proposed scheme equates to 98% of Gross External Area (GEA). The proposals therefore equate to up to 701,513sq.m GEA of high bay warehousing.

2.3 It is anticipated that the site would operate three eight-hour shifts each day, in addition to a traditional working day shift (0800 to 1600 or similar).

2.4 As set out later in this note, the number of employees likely to be associated with the scheme may vary according to its level of rail linkages. For the purpose of this Briefing Note and for ongoing work in relation to the Rail Central development, the following definitions will be used:

(i) **Rail-Served** – warehouses within the SRFI which are indirectly served by the rail freight interchange facilities, with goods moved by road between the interchange facilities and the warehouses using the internal estate roads; and

(ii) **Rail-Connected** – warehouses within the SRFI which can be directly connected to the rail network through provision of rail sidings into or alongside the warehouse.

3 DAILY AND PEAK HOUR TRIP ATTRACTION

3.1 In order to determine the level of (non-HGV) trip attraction to the proposed development, it is considered reasonable for the trip attraction methodologies adopted for similar SRFI facilities elsewhere (DIRFT, EMGSRFI and Radlett) to be used for the purpose of this assessment. It is an industry standard approach for trip attraction to be determined based on trip rates of similar facilities (for example using the TRICS database). Trip rates were agreed with Highways England and the local highway authority for Radlett, DIRFT and EMGSRFI, which were recently approved in 2014, 2014 and 2016 respectively.

3.2 Each of the similar facilities set out below calculated total person movements based on surveyed vehicular trip rates. These therefore inherently include trips by visitors and delivery vehicles, in addition to employees.

'DIRFT' Strategic Rail Freight Interchange

3.3 The Daventry International Rail Freight Terminal (DIRFT) is a rail-road intermodal freight terminal with an associated warehousing estate. The facility is located in Northamptonshire at the junctions between the M1 motorway, the A5 and the A428. It is located approximately six kilometres to the east of Rugby and 10 kilometres to the north of Daventry. Parts of the site are also connected by rail via the line known as the 'Northampton Loop' which is provided off the West Coast Main Line.

3.4 The original DIRFT estate includes 354,351sq.m of distribution warehousing and a rail port (the 'intermodal area') with associated rail sidings. A second phase known as DIRFT II consists of 180,741sq.m of directly rail-connected buildings, accommodating three occupiers; Tesco, Sainsbury's and Eddie Stobart. The Tesco building was completed in 2011 and the remaining two buildings were completed in 2015. A third phase known as DIRFT III is approved for construction and includes a rail freight interchange with 730,665sq.m of warehouse floorspace. This forms an expansion to the established rail freight facility and involves the development of a number of rail-served large warehouse units. The site currently employs some 4,000 people, and it is anticipated that this would increase to around 12,500 employees with 1,265,757sq.m of warehousing once DIRFT II and DIRFT III are fully completed and occupied. The DIRFT III proposals suggested a ratio of 70:30 rail-served to rail-connected warehousing. The relevant extracts are contained at **Appendix A**.

3.5 The TA submitted to support the DIRFT III proposals included trip rates for Cars/LGVs throughout the day, which were used to determine the total person trips associated with the site based on a modal share of 83% car drivers. The trip rates were based on surveys carried out at the existing DIRFT I site with mode share determined from 2001 Census travel to work data. HGV trip rates were provided separately.

3.6 The total person trips as set out within the DIRFT TA are contained at **Appendix B** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.1**.

Table 3.1 Summary of Rail Central Person Movements – DIRFT Methodology

701,513sq.m GEA B8 Warehousing – DIRFT Trip Rates	Car / LGV Trip Rates (per 100sq.m GFA)			Total Car / LGV Trips			Rail Central Total Person Trips (assuming 83% car drivers)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)	0.081	0.014	0.095	568	98	666	685	118	803
PM Peak (1700 – 1800)	0.054	0.086	0.140	379	603	982	456	727	1,183
Daily (24 hours)	1.048	1.036	2.084	7,352	7,268	14,620	8,858	8,756	17,614

East Midlands Gateway Strategic Rail Freight Interchange

3.7 The East Midlands Gateway Strategic Rail Freight Interchange (EMGSRFI) is a DCO application approved in 2016 for an intermodal freight terminal with up to 557,414sq.m of warehousing and ancillary B1 Office use. It is considered to be situated in a broadly similar location to Rail Central, being served by the Strategic Road Network at the M1 Junction 24 and the Rail Network in the form of the Castle Donington Branch freight-only railway line.

3.8 Technical Note Four – Trip Rates and Traffic Generation, submitted as part of the EMGSRFI application, set out trip rates for motorised persons (Car Driver, Car Passenger and Public Transport) throughout the day. These were calculated based on surveys carried out at the Pineham Park Industrial Area, immediately to the north of M1 Junction 15A near to Rail Central. The TA submitted to support the EMGSRFI proposals subsequently confirmed that an additional 3% would be added to the motorised person trips, to determine the overall person trips (including pedestrians and cyclists).HGV trip rates were provided separately.

3.9 The TA also confirmed that the busiest PM peak hour of the development was surveyed to be 1600-1700, and this was therefore applied to the typical network PM peak hour of 1700-1800 in order to provide a robust assessment.

3.10 The relevant extracts of the EMGSRFI submission are contained at **Appendix C** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.2**.

Table 3.2 Summary of Rail Central Person Movements – EMGSRFI Methodology

701,513sq.m GEA B8 Warehousing – EMGSRFI Trip Rates		Motorised Person Trip Rate (per 100sq.m GFA)			Motorised Person Trips (Car Driver, Car Passenger & Public Transport)			Pedestrian and Cycle Trips (3%)			Total Person Trips		
		Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)		0.128	0.014	0.142	898	98	996	27	3	30	925	101	1,026
PM Peak	1600-1700	0.042	0.147	0.189	295	1,031	1,326	9	31	40	303	1,062	1,366
	1700-1800	0.031	0.114	0.145	217	800	1,017	7	24	31	224	824	1,048
Daily (24 hours)		1.126	1.108	2.234	7,899	7,773	15,672	237	233	470	8,136	8,006	16,142

**Note EMGSRFI PM trips are based on 1600-1700 as a worst case assessment*

Radlett Strategic Rail Freight Interchange

3.11 The Radlett SRFI is a planning consent approved in 2014 for a Strategic Rail Freight Interchange including approximately 331,665sq.m of warehousing.

3.12 The Radlett SRFI is considered to be situated in a broadly similar location to the proposed development, being served by the Strategic Road Network including the M25 and M10, and close to the Rail Network in the form of the Midland Main Line.

3.13 The TA submitted to support the Radlett proposals set out separate trip rates for both light vehicles and HGVs. Separate trip rate scenarios were provided depending on the type of warehousing and distribution centre provided. These included rail related uses, with trip rates based on surveys carried out at DIRFT in 2005, and road based distribution, based on data from the Magna Park distribution site in Lutterworth.

3.14 As the Rail Central proposals are for a Strategic Rail Freight Interchange, with rail-served and rail-connected warehouses, it is considered appropriate for the rail related trip rate scenario to be used for the purpose of this assessment.

3.15 In order to determine the total person trips, the baseline mode share of car drivers set out within the Radlett TA (65.4%) has been used.

3.16 The trip rates as set out within the Radlett submission are contained at **Appendix D** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.3**.

Table 3.3 Summary of Rail Central Person Movements – Radlett Methodology

701,513sq.m GEA B8 Warehousing – Radlett Trip Rates	Light Vehicle Trip Rates (per 100sq.m)			Rail Central Light Vehicle Trips			Rail Central Total Person Trips (assuming 65.4% car drivers)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)	0.074	0.013	0.087	519	91	610	794	139	933
PM Peak (1700 – 1800)	0.027	0.073	0.100	189	512	702	290	783	1,073
Daily (24 hours)	0.831	0.770	1.601	5,830	5,402	11,231	8,914	8,259	17,173

Summary of Similar Facilities Trip Attraction

3.17 A summary of the total trips at Rail Central, based on each of the similar facilities trip rates, is set out in **Table 3.4** below.

Table 3.4 Summary of Rail Central Person Movements – Similar Facilities

Total Person Trips	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
DIRFT (Ref. Table 3.1)	685	118	803	456	727	1,183	8,858	8,756	17,614
EMGSRFI (Ref. Table 3.2)	925	101	1,026	303*	1,062*	1,366*	8,136	8,006	16,142
Radlett (Ref. Table 3.3)	794	139	933	290	783	1,073	8,914	8,259	17,173
Average	**801**	**119**	**921**	**350**	**857**	**1,207**	**8,636**	**8,340**	**16,976**

**Note EMGSRFI PM trips are based on 1600-1700 as a worst case assessment*

3.18 It is considered reasonable for the EMGSRFI trip attraction shown in **Table 3.4** to be taken forward for further assessment work, as these are based on an industry standard approach using trip rates that have previously been agreed as appropriate by Highways England and the relevant local highway authorities. They would also provide a worst case assessment in comparison to the other trip attraction forecasts derived.

Alternate First Principles Assessment

3.19 An assessment of trip attraction has been undertaken for comparison purposes, based on first principles. This considered employee trip attraction based on anticipated employment densities, attendance patterns and working patterns. Realistic and robust assessments have been carried out to account for different forecast employment densities. The full details of the first principles assessment are set out in 1211-80/TN/05, included at **Appendix E**.

3.20 A summary of the total trips at Rail Central, based on the first principles assessment, is set out in **Table 3.5** below.

Table 3.5 First Principles Trip Attraction

Total Person Trips		AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
		Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
First Principles (Ref. Appendix E)	**Scenario 1 (Realistic)**	548	217	765	377	582	959	6,510	6,510	13,020
	Scenario 2 (Robust)	658	261	919	453	699	1,152	7,819	7,819	15,638

3.21 The first principles based assessment results in a broadly similar level of peak hour trip attraction to both the DIRFT and Radlett methodologies, although is less than the EMGSRFI methodology.

Conclusion on Peak Hour and Daily Trip Attraction

3.22 It is concluded that the EMGSRFI based trip attraction provides a robust assessment of trip attraction as it uses PM peak trip rates for the 1600-1700 period (when the site's trip attraction is highest) applied to the typical network peak period of 1700-1800, and is also shown to result in a higher trip attraction than each of the Radlett, DIRFT and First Principles methodologies. It is therefore appropriate for use to ensure that the assessment can be considered to be a realistic worst case.

3.23 HGV trip attraction will be considered separately by MDS Transmodal, in order to finalise the first stage (Trip Attraction) of the four stage Transport Model.

APPENDIX A

DIRFT III

Environmental Statement

Chapter L

Socio-Economics

February 2013

Nathaniel Lichfield &
Partners
14 Regent's Wharf, London,
N1 9RL

Tel. 020 7837 4477
www.nlpplanning.com

proportion of construction workers drawn locally, it is difficult to identify the likely source of workers to fill these construction jobs before contracts have been let. However, based on experience elsewhere it would be reasonable to expect a proportion of the construction jobs created by the proposed development could be taken up by the local workforce, particularly if measures are in place to encourage local recruitment and to raise local skills levels.

L5.6 In addition, it is also likely that some businesses in the local area, as well as the Midlands economy, would benefit from the trade linkages that would be established to construct the development. This means that further indirect jobs would be supported locally in suppliers of construction materials and equipment. Local businesses would generally also benefit to some extent from temporary increases in expenditure as a result of the direct and indirect employment effects of the construction phase, for example, as construction workers spend wages in local shops and other facilities.

L5.7 Applying an employment multiplier of 1.2 to the FTE construction employment[4] indicates that up to a further 89 FTE indirect/induced jobs could be supported in the local area as a result of such construction-related expenditure.

L5.8 Drawing together these various effects of the construction phase, the construction of the new development could generate up to 4,433 person-years of temporary construction work (equivalent to 443 FTE jobs). 89 additional FTE jobs would be created from indirect impacts in the main impact area, many of which would be based in the local area.

After Completion

Economic Impacts

Direct Employment Impacts

L5.9 The level of direct employment associated with the likely form of B8 development has been estimated from consideration of the ratio between jobs and distribution floorspace of similar existing facilities, as well as from published studies of employment density of such schemes. Based on information provided by occupying companies at a range of RFI developments, including DIRFT, in 2008, the average employment density of those firms occupying rail-connected floorspace was approximately 1 job per 130 m^2 of floorspace (Appendix L1, Table 12). By comparison, HCA/OffPat's Employment Densities Second Edition

[4] Broadly derived from English Partnerships Additionality Guide Third Edition (Oct 2008) and NLP's experience of construction schemes and their economic impacts.

(2010) suggests employment densities of 1 FTE job per 50 m^2 GEA for general B8 uses and 1 FTE job per 80 m^2 GEA for large scale or high bay B8 warehousing. Survey work by Prologis in 2010 estimated that overall employment density across their portfolio of warehouses totalled 1 job (full time and part time) per 77 m^2.

L5.10 Assuming a density range of 1 job per 130 m^2 for rail-linked warehousing and 1 job per 80 m^2 for general strategic and rail-served warehousing at DIRFT III, the number of jobs can be estimated based upon the potential split of rail-linked and other rail-served warehousing. The scheme includes the ability for up to circa 30% to be rail-linked and with the remaining circa 70% being rail-served, with the ability to use the rail freight terminal without being directly linked. These additional jobs would be expected to have a broadly similar profile of employment in terms of full-time (91%) and part-time (9%) jobs and occupation types to those seen at DIRFT currently, as identified by information provided by occupying companies in 2001 and 2008.

Table L5.1 Direct Job Generation

Type	Floorspace (m^2)	Job Density	Jobs	PT:FT Split	PT Jobs	FT Jobs	FTE Jobs
Rail-linked B8 Warehouse	219,200	1 job per 130m^2	1,686	9:91	151	1,534	1,610
Rail-served B8 Warehouse	511,465	1 job per 80m^2	6,393	9:91	575	5,818	6,103
Total	730,665		8,079		686	6,936	7,713

Note: Floorspace split between 'rail-linked' and 'rail-served' floorspace is estimated based on current proposals.

L5.11 The table above demonstrates that applying these ratios to the proposed floorspace for the scheme will support circa 8,080 jobs or 7,710 FTE jobs.

L5.12 This represents a worst case scenario of job creation. If all of the floorspace were to come forward as rail-served warehousing, rather than directly linked, this level of direct job creation could increase to 9,133 jobs or 8,722 FTE jobs.

Net Additional Employment

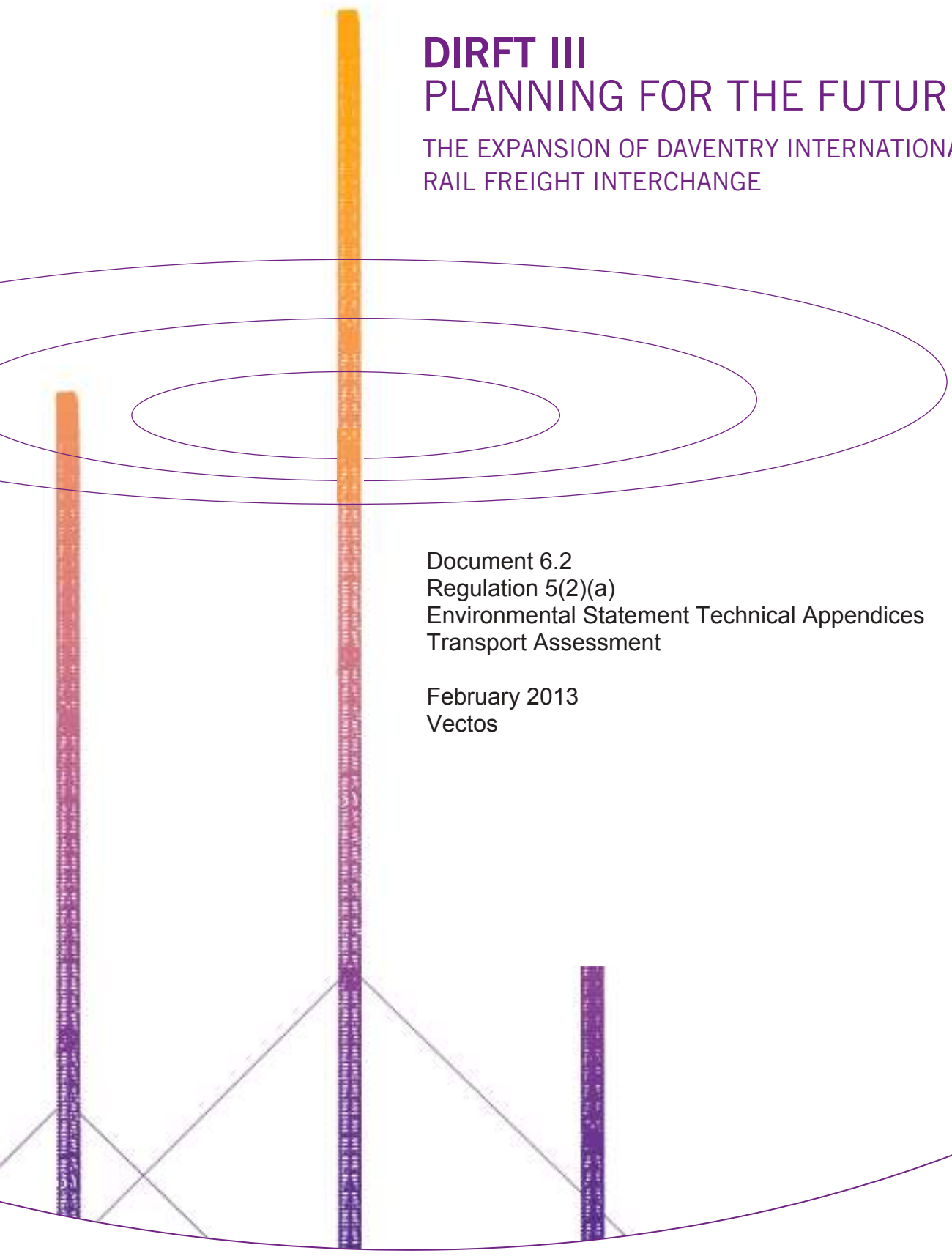
L5.13 As the application site is currently largely undeveloped, very few existing jobs, if any, will be lost, meaning all these job opportunities would be additional to current employment levels on the site.

L5.14 Net employment impacts in the main impact area have also been estimated by considering the extent to which the proposed development would displace some jobs from existing local businesses, or prevent other employment development proceeding. Consideration also needs

APPENDIX B

DIRFT III
PLANNING FOR THE FUTURE

THE EXPANSION OF DAVENTRY INTERNATIONAL RAIL FREIGHT INTERCHANGE



Document 6.2
Regulation 5(2)(a)
Environmental Statement Technical Appendices
Transport Assessment

February 2013
Vectos

www.DIRFTIII.com

BT

AVIVA INVESTORS

PROLOGIS

6 TRIP GENERATION

Introduction

6.1 During 2011 detailed discussions took place between Vectos and the relevant highway authorities in order to seek agreement on the baseline level of vehicular trips anticipated to be generated by the development proposals (i.e. before the effects of any subsequent modal shift resulting from transport improvements and incentives to travel by non-car modes).

6.2 These discussions culminated in the preparation of a Technical Note to provide details of the proposed methodology, which was based on surveys undertaken at the existing DIRFT I facilities, including the existing Intermodal Terminal. The Technical Note was submitted to the highway authorities for review in November 2011 and the derived baseline trip rates were subsequently agreed by NCC, WCC, and the HA, with LCC deferring to the other authorities. The agreed traffic methodology and associated calculations are provided below.

Trip Rate Methodology

6.3 In March 2011 a comprehensive set of surveys was undertaken at all parts of DIRFT I (East, Central and South) and included the existing Intermodal Terminal. Furthermore, all roads leading to and from the DIRFT I area were surveyed, including:

- M1 northbound and southbound off-slip roads at Junction 18;
- A5 north of DIRFT I;
- Lilbourne Road (west of A5);
- A428 east of M1 Junction 18 and also east of the main route into Crick (i.e. on the A428 Crick bypass);
- A428 west of DIRFT I and DIRFT II;
- A5 east of junction with A361 (i.e. to the east of Kilsby);
- A361 south of Kilsby (to the south of junction with The Ridgeway); and

- The Ridgway (immediately west of the A361).

6.4 The surveys combined volumetric counts at all locations as well as ANPR data. The former was used in deriving appropriate trip rates for DIRFT I to be applied to the DIRFT III proposals. The ANPR results provided information on internal trips, i.e. DIRFT I to/from the Intermodal Terminal and internal DIRFT I trips (excluding those made within the same area, such as DIRFT (East)) and the distribution of trips on the wider road network.

6.5 Trips to and from the existing Eddie Stobart facility that forms part of the DIRFT II site on the west side of the A5 were assessed separately from the rest of DIRFT I.

Warehouse Trips

6.6 The baseline trip rates derived from the whole of DIRFT I are summarised in **Table 6.1** below. **Table 6.2** then provides the resultant DIRFT III trips for each peak period, based on an assessment total floor area of 730,665sqm. The time periods included in the tables below include the traditional morning and evening peak hours (08:00 – 09:00 and 17:00 – 18:00) as well as the longer three hour morning and evening peak periods. The latter three hour peak periods were used in the derivation of the Paramics model matrices. The Paramics model also includes information for each three hour peak to provide suitable profiles for the release of vehicles onto the network that represent changes in flow throughout the modelled period.

Table 6.1: DIRFT I Warehouse Baseline Trip Rates (March 2011 Surveys)

Trips per 100 sqm	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	0.088	0.017	0.227	0.075	0.056	0.091	0.132	0.254
HGV	0.020	0.022	0.063	0.065	0.025	0.030	0.077	0.071
Totals	0.108	0.039	0.290	0.140	0.081	0.121	0.209	0.325
	0.147		0.430		0.202		0.534	

Table 6.2: DIRFT III Warehouse Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	643	124	1,659	548	410	665	964	1,856
HGV	146	161	460	475	183	219	563	519
Totals	796	285	2,119	1,030	592	884	1,527	2,382
	1,081		3,149		1,476		3,909	

Based on assessment of 730,665 sqm of DIRFT III warehousing

6.7 It is noteworthy that over the whole of the DIRFT I estate, rail-linked warehouses account for up to 19% of the total warehouse floorspace. As a general principle, it is anticipated that rail-linked warehouses generate fewer external road-based trips, particularly by HGVs, than a traditional stand-alone warehouse, since a number of inbound movements (with goods) and outbound movements (empty containers) are undertaken using trains rather than conventional HGVs.

6.8 The proposals for DIRFT III allow for the provision of approximately 40% direct rail-linked warehouses. However, for the purposes of the assessment, no additional allowance has been made for the significant increase in rail-linked warehouses. The trip rates and resultant trips as set out in **Tables 6.1** and **6.2** above, based on the whole of the existing DIRFT I estate, have been used in future assessments.

Intermodal Terminal Trips

6.9 The March 2011 surveys separately considered trips to and from the existing Intermodal Terminal. The resultant baseline trip rates, based on the existing number of container lifts (71,531 per year), are summarised in **Table 6.3** below. **Table 6.4** then provides the projections for the replacement facility, based on an assumption of up to 510,000 future lifts per year (as set out in Section 5.3 of the 'Rail Operations Report' (Document No. 7.8)).

Table 6.3: Intermodal Terminal Baseline Trip Rates (March 2011 Surveys)

Trips per 1,000 lifts	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	0.169	0.042	0.352	0.197	0.084	0.084	0.112	0.225
HGV	0.085	0.099	0.366	0.338	0.155	0.169	0.366	0.549
Totals	0.254	0.141	0.718	0.535	0.239	0.254	0.479	0.775
	0.395		1.253		0.493		1.254	

Table 6.4: New Intermodal Terminal Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	86	21	178	100	43	43	57	114
HGV	43	50	185	171	79	86	185	278
Totals	129	71	364	271	121	129	242	392
	200		635		250		634	

Based on projection of 510,000 lifts per year at new Intermodal Terminal

DIRFT III Combined Trips

6.10 In summary, **Table 6.5** below provides the total baseline trips associated with the overall development of DIRFT III, including warehousing and replacement Intermodal Terminal, before the effects of any modal shift assumptions or internal trips are applied.

Table 6.5: DIRFT III Total Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	729	145	1,837	648	453	708	1,021	1,970
HGV	189	211	645	646	262	305	748	797
Totals	925	356	2,483	1,301	713	1,013	1,769	2,774
	1,281		3,784		1,726		4,543	

6.11 The highway authorities have agreed the use of the total baseline trips derived from the surveys at DIRFT I and the existing Intermodal Terminal as set out above.

6.12 The assessment of total trips associated with the DIRFT III proposals is based on an assumption of 730,665 sqm of warehouse floorspace across the whole of the Site. However, not all of this floorspace would be located on the

main area of the Site to the east of the A5. The indicative Masterplan and associated Parameters assumes that up to 17,187 sqm of warehouse accommodation would be provided on the Site of the existing Intermodal Terminal within DIRFT South.

6.13 It has been established that the levels of trips during both peak periods within the zone that represents the existing Intermodal Terminal (Paramics zone 136) are broadly similar to the levels that would be expected should that area of the Site be developed for up to 17,187 sqm of warehousing.

6.14 Therefore, in order to simplify the Paramics matrix derivation process, the traffic flows that would be associated with the small element of DIRFT III on the site of the existing Intermodal Terminal have been excluded from the assessment, but the trips associated with the existing Intermodal Terminal have not been removed from the Paramics matrices. This approach has been agreed with the highway authorities. The resultant DIRFT III traffic flows (before modal shift or internalisation) are shown in **Table 6.6** below:

Table 6.6: DIRFT III Warehouse Baseline Trips – Main Site

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	628	121	1,619	535	399	650	941	1,812
HGV	143	157	449	464	178	214	549	507

Based on assessment of 713,478 sqm of DIRFT III warehousing on main site

Modal Shift

6.15 DIRFT I was built in the 1990's and does not benefit from a significant level of public transport services. Only bus route 96, which operates between Rugby and Northampton via Crick, passes close to the Site and is only hourly during the working day. As such, there are few opportunities to travel to DIRFT I by bus. Furthermore, it is understood that there is no Travel Plan in effect at DIRFT I and there are very few, if any, incentives to travel to the site by means other than the car.

6.16 In addition, NCC has determined a target of a 20% reduction in single occupancy car journeys based on "*challenging but realistic targets following a review of best practice".* This is based on research undertaken by the Council as part of their 'Transport Strategy for Growth' of 2007. To achieve this target the Council suggest that *"higher quality alternatives to the private car need to be introduced"* and provide examples of 'Smarter Choice' techniques that could be implemented to achieve the targets.

6.17 It has therefore been assumed in the assessment of DIRFT III that there will be a 20% reduction in single occupancy car journeys when compared with the baseline levels established from the surveys of DIRFT I and that this would be achieved as a result of the sustainable transport initiatives being proposed as part of the development, including the introduction of a Travel Plan and improved public transport provision.

6.18 In order to establish the mode shift, journey to work data of people working in the Crick Ward has been extracted from 2001 Census Data. The Crick Ward has been selected as the majority of DIRFT I is located in the ward, therefore providing the most representative basis for the analysis. The analysis of the census data is included as **Appendix 6.1**, along with the derivation of the modal split percentages of people travelling to work in the Crick Ward. It should be noted that the 'Work from Home' respondents have been excluded from the analysis as they are not representative of the likely employees at the Site.

6.19 The existing modal split of journeys to work in the Crick Ward is presented in **Table 6.7**. The results of the census data analysis revealed that 83% of people who work in the Crick Ward travel to work as a car driver. The analysis also reveals only 3% of people who work in the ward travel to work by bus.

Table 6.7: Existing Modal Split of Journeys to Work in the Crick Ward

Mode	Existing Split (%)
Car Driver	83%
Car Passenger	9%
Bus	3%
Train	0%
Walk	1%
Cycle	1%
Other	3%
Total	100%

6.20 To ensure a robust assessment it has been assumed that, of the target of 20% reduction in single occupancy car journeys, 67% of people would choose to travel to the Site by bus and the remaining 33% of people would shift to car share. These are only working assumptions and it may be that the split between the sustainable modes is different in reality. Furthermore when baseline travel surveys are undertaken during the early occupation stages of DIRFT III, it may be that the modal split has already moved some way towards the achievement of the proposed modal share targets.

6.21 The potential modal split of journeys to work at DIRFT III is presented in **Table 6.8**.

Table 6.8: Proposed Modal Split of Journeys to Work at DIRFT III

Mode	Proposed Split (%)
Car Driver	66%
Car Passenger	14%
Bus	15%
Train	0%
Walk	1%
Cycle	1%
Other	3%
Total	100%

8.6 The total person trips to and from the Site for each hour can be calculated by dividing the car driver trips presented in **Table 6.6** by the car driver modal split percentage presented in **Table 6.7** (i.e. prior to the 20% reduction in single occupancy car trips). A summary of the total person trips for each hour of the day is provided in **Table 8.1** below.

Table 8.1: DIRFT III Total Person Trips

Time	IN			OUT		
	DIRFT I Trip Rate per 100sqm of GFA	DIRFT III Cars (730,665sqm GFA)	DIRFT III Total Person Trips	DIRFT I Trip Rate per 100sqm of GFA	DIRFT III Cars (730,665sqm GFA)	DIRFT III Total Person Trips
00:00-01:00	0.015	110	132	0.031	227	273
01:00-02:00	0.012	88	106	0.041	300	361
02:00-03:00	0.009	66	79	0.018	132	159
03:00-04:00	0.022	161	194	0.019	139	167
04:00-05:00	0.021	153	184	0.016	117	141
05:00-06:00	0.183	1337	1609	0.054	395	475
06:00-07:00	0.068	497	598	0.079	577	694
07:00-08:00	0.066	482	580	0.033	241	290
08:00-09:00	0.081	592	712	0.014	102	123
09:00-10:00	0.055	402	484	0.016	117	141
10:00-11:00	0.023	168	202	0.018	132	159
11:00-12:00	0.030	219	264	0.023	168	202
12:00-13:00	0.035	256	308	0.031	227	273
13:00-14:00	0.098	716	862	0.044	321	386
14:00-15:00	0.036	263	316	0.129	943	1135
15:00-16:00	0.029	212	255	0.048	351	422
16:00-17:00	0.023	168	202	0.074	541	651
17:00-18:00	0.054	395	475	0.086	628	756
18:00-19:00	0.045	329	396	0.076	555	668
19:00-20:00	0.028	205	247	0.037	270	325
20:00-21:00	0.021	153	184	0.026	190	229
21:00-22:00	0.068	497	598	0.029	212	255
22:00-23:00	0.015	110	132	0.073	533	641
23:00-24:00	0.011	80	96	0.019	139	167
Total	**1.048**	**7657**	**9214**	**1.036**	**7570**	**9110**

8.7 It has been assumed that a 20% reduction in single occupancy car journeys would be achieved as a result of the sustainable transport initiatives being proposed as part of the development, including the introduction of a Site Wide Travel Plan and improved public transport provision. This is

APPENDIX C

BWB

CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

TRANSPORT AND INFRASTRUCTURE PLANNING

East Midlands Gateway Strategic Rail Freight Interchange

Technical Note 4

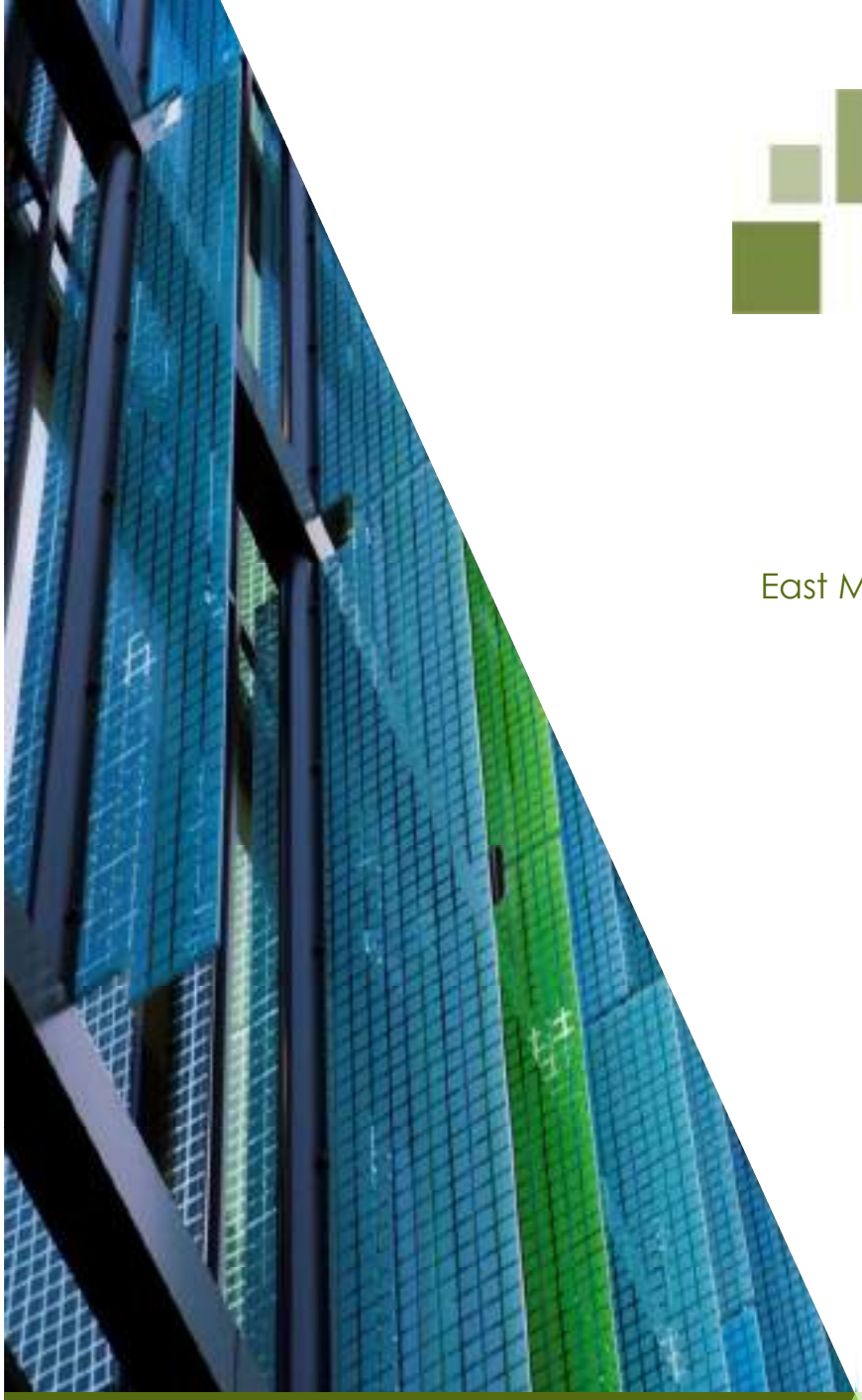
Trip Rates and Traffic Generation



Time Window	Motorised Person Trip Rates* (excluding heavy vehicles) per 100 sqm GFA			Motorised Person Trips* (excluding heavy vehicles)			Total external HGVs SRFI			Motorised Person Trips including HGV drivers		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way
00.00-01.00	0.011	0.008	0.018	60	43	103	54	85	139	114	128	242
01.00-02.00	0.007	0.002	0.009	39	13	52	81	81	162	119	94	214
02.00-03.00	0.005	0.018	0.022	26	99	125	86	87	173	112	185	297
03.00-04.00	0.008	0.010	0.018	43	56	99	60	91	150	103	146	249
04.00-05.00	0.025	0.012	0.036	137	64	202	83	57	140	220	121	342
05.00-06.00	0.175	0.083	0.257	978	464	1441	135	88	223	1113	552	1665
06.00-07.00	0.082	0.063	0.145	459	355	815	154	86	240	613	441	1054
07.00-08.00	0.094	0.030	0.124	528	167	696	154	191	345	682	358	1040
08.00-09.00	0.128	0.014	0.142	717	77	794	118	138	256	835	216	1051
09.00-10.00	0.061	0.019	0.081	344	107	451	143	133	277	487	241	728
10.00-11.00	0.048	0.029	0.077	266	163	429	170	180	351	437	344	780
11.00-12.00	0.036	0.027	0.063	202	150	352	152	147	299	354	298	651
12.00-13.00	0.052	0.058	0.110	292	326	618	138	127	266	430	453	884
13.00-14.00	0.088	0.061	0.149	492	344	836	113	160	273	605	504	1109
14.00-15.00	0.041	0.096	0.138	232	540	772	118	169	287	350	709	1059
15.00-16.00	0.024	0.118	0.142	133	661	794	97	149	246	230	810	1040
16.00-17.00	0.042	0.147	0.189	236	824	1061	164	118	282	400	942	1342
17.00-18.00	0.031	0.114	0.145	172	640	812	135	155	290	307	795	1102
18.00-19.00	0.094	0.094	0.188	528	524	1052	152	132	284	680	656	1336
19.00-20.00	0.014	0.035	0.049	77	198	275	122	90	213	200	288	488
20.00-21.00	0.016	0.018	0.035	90	103	193	119	98	217	209	201	410
21.00-22.00	0.040	0.014	0.053	222	77	299	72	104	176	294	181	475
22.00-23.00	0.003	0.029	0.032	17	162	179	65	80	146	82	242	325
23.00-00.00	0.002	0.008	0.011	13	47	60	74	85	160	87	132	220
Totals	**1.126**	**1.108**	**2.234**	**6304**	**6205**	**12509**	**2759**	**2834**	**5593**	**9063**	**9039**	**18102**

*Motorised person trips include: vehicle drivers, vehicle passengers, and public transport users

Table 14: Motorised Person Trips



CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

TRANSPORT & INFRASTRUCTURE

Roxhill (Kegworth) Ltd
East Midlands Gateway Strategic Rail Freight Interchange

TRANSPORT ASSESSMENT

Employee numbers

6.10 Based on published data from the Home and Communities Agency, and empirical data collected by ProLogis, the proposed 560,000sqm of B8 use at East Midlands Gateway SRFI could create around 7,270 full time equivalent jobs.

6.11 All the B8 units are likely to operate on a 24-hour basis, seven days a week. The main shifts are therefore likely to be 0600-1400 hours, 1400-2200 hours and 2200-0600 hours, although there will be some variation depending on the individual occupier requirements. Some occupiers may operate a 12 hour shift, from 0700-1900 hours and 1900-0700 hours.

6.12 The rail terminal would also employ a small number of staff, typically between 10 to 20 employees per shift. Therefore an average of 15 staff per shift (0600 – 1400 hours, 1400 - 2200 hours, and 2200 - 0600 hours) has been assumed.

Person trip generation

6.13 The TCM used in the assessment of the scheme (see Section 4.0) is a multi-modal model capable of allocating person trips to either highway or public transport modes. Car occupancy factors are also applied within the model to the highway person trips to obtain trips in vehicles. The model does not include for pedestrian and cyclist trips and therefore these modes were accounted for separately, with a worst case (for the purposes of traffic generation calculations) of a 3% mode share defined in TN4.

6.14 Based on the calculations in TN4 the total person trip generation the East Midlands Gateway SRFI development is given at **Table 6.1**.

Table 6.1: Total person trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	858	217	1,075
1700-1800	408	967	1,375
Daily	9,258	9,231	18,489

6.15 The person trips, broken down into car occupants and public transport trips (non HGV motorised person trips), HGV trips, and pedestrian and cyclists trips are shown at **Table 6.2**, **Table 6.3** and **Table 6.4** respectively.

Table 6.2: Car driver, car passenger and public transport person trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	717	77	794
1700-1800	236	824	1,060
Daily	6,304	6,205	12,509

Table 6.3: HGV trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	118	138	256
1700-1800	164	118	282
Daily	2,759	2,834	5,593

Table 6.4: Pedestrian and cyclist person trips

Time period	Arrivals	Departures	Two-way
0800-0900	23	1	24
1700-1800	8	25	33
Daily	195	192	387

6.16 HGV trips are modelled separately within the strategic transport model as it is assumed that the purpose of a HGV movement is the transportation of its cargo. Therefore HGV driver trips are assumed not to undergo modal shift.

6.17 It should be noted that for the motorised trips, the shoulder peak period 1600 to 1700 hours was found to have a higher departure rate than the traditional 1700 to 1800 hours highway network peak hour. Therefore, to ensure a robust assessment, the higher shoulder peak hour trip generations have been used in the assessment of the development as a proxy for the 1700 to 1800 hour period.

6.18 Based on the output from the TCM, **Table 6.5**, **Table 6.6** and **Table 6.7** summarise the peak hour highway trip generations examined in this TA.

Table 6.5: Non HGV highway trips (car and public transport)

Time period	Arrivals	Departures	Two-way
0800-0900	628	62	690
1700-1800	201	724	925

Table 6.6: HGV highway trips

Time period	Arrivals	Departures	Two-way
0800-0900	118	138	256
1700-1800	164	118	282

Table 6.7: Total highway trips

Time period	Arrivals	Departures	Two-way
0800-0900	864	200	946
1700-1800	365	842	1207

6.19 Overall, it can be seen that the East Midlands Gateway SRFI is forecast to generation approximately 950 and 1210 two-way trips during the morning and evening peak hour periods, respectively. Of which, approximately 260 and 280 two-way trips will be HGVs.

Highway trip distribution

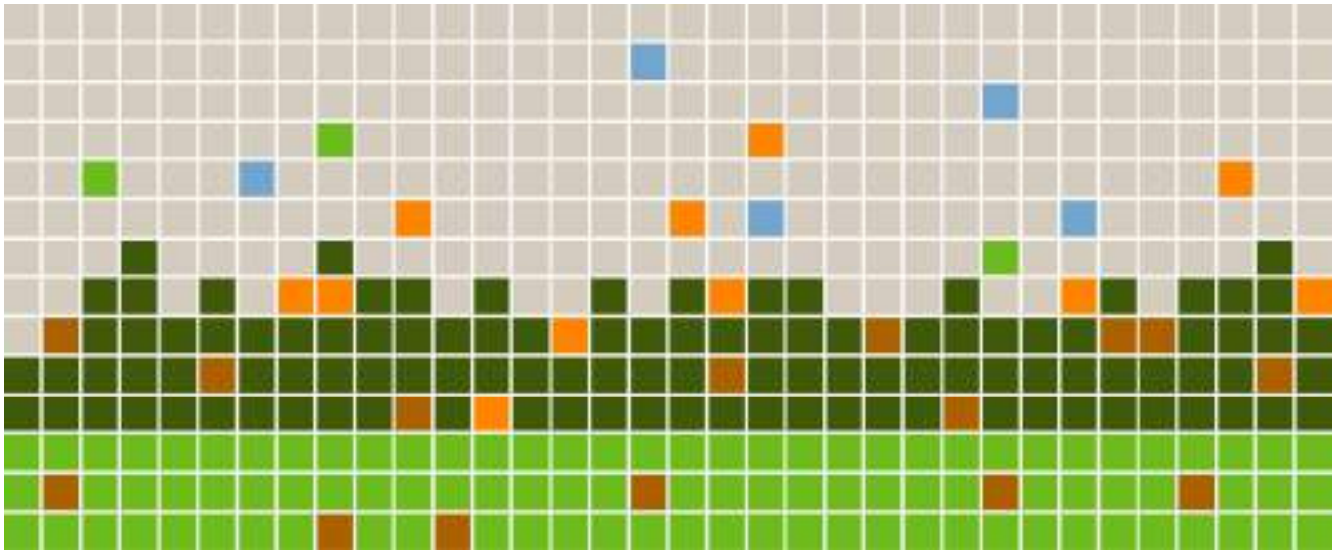
6.20 The distribution of non-HGV highway trips (effectively the employee trip distribution) was determined by the TCM based on the attractiveness of the proposed development. The resulting distribution shows that the SRFI is forecast to draw trips from a large number of districts across the East Midlands and beyond. A significant number of trips are associated with North West Leicestershire, Loughborough, Charnwood, as well as Derby City and Nottingham City. The attractiveness of the proposed SRFI diminishes as the distance from the site increase.

6.21 The distribution of HGV traffic was derived from the detailed assessment undertaken in TN7 (**Appendix J**).

6.22 The distribution of regional HGV trips was based on workplace population Census data and covers a 25 mile catchment area. The majority of regional trips to Derbyshire, Nottinghamshire and Leicestershire are therefore contained within the regional distribution. National HGV trips primarily use the SRN and travel further than the East Midlands. The proportion of trips associated with the national distribution was based on the top 10 busiest ports.

6.23 The resulting distribution plots are included in TMR2 and TMR3 (**Appendices N and O**). Overall the SRFI is forecast to have a wide distribution covering most parts of the AOI

APPENDIX D



Former Aerodrome, North Orbital Road, Hertfordshire

Transport Assessment

Helioslough

March 2009

WSP

Table 7.3: Traffic Generation – using rail based distribution trip rates (161,193 sqm)

	Rail Based Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	45	54	120	21	165	75
PM Peak (1700-1800)	57	33	44	117	101	150
24 Hour (0000-2400)	540	586	1340	1241	1880	1827

Table 7.4: Traffic Generation – using road based distribution trip rates (170,472 sqm)

	Road Based Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	51	52	268	85	319	138
PM Peak (1700-1800)	50	45	56	275	106	319
24 Hour (0000-2400)	1052	1019	2190	2286	3242	3305

7.2.10 The total traffic generation, as agreed with the Highways Agency, is summarised in **Table 7.5.**

Table 7.5: Total Traffic Generation (331,665 sqm)

	Total Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	96	106	388	106	484	213
PM Peak (1700-1800)	107	78	99	392	206	469
24 Hour (0000-2400)	1592	1605	3530	3527	5122	5132

7.2.11 It can be seen that, of the total daily traffic movements generated by the proposals, 36% arises from the rail based distribution, with 64% arising from the road based distribution. In the case of HGV's, the rail based distribution would generate 35% of the total HGV movements.

Land in and around the Former Aerodrome,
North Orbital Road, Upper Colne Valley,
Hertfordshire

Travel Plan and Freight Management Plan

January 2009

- To reduce negative environmental impact of fleet vehicles, business travel and deliveries.

6.5 Travel Plan Targets

6.5.1 Clearly, at present no specific information is available regarding the journey to work modal splits of employees to the site. The target for the modal share for car drivers has therefore been set using 2001 National Census Journey to Work data for Hertfordshire as a baseline and this will need to be reviewed following initial staff surveys.

6.5.2 To set the context of the target for car journeys to and from the site, **Table 5** shows the modal split for Hertfordshire from the 2001 Census data. It should be noted that the baseline data excludes people working from home.

Table 5: Baseline – Modal Split for Hertfordshire

Mode	Bus	Train	M/C	Cycle	Walk	Car Driver	Car Pass
Baseline Modal Share	3.5	9.8	1.2	2.0	9.7	65.4	5.7

6.5.3 The target figure for journeys to work by car drivers has therefore been set at 65%. Whilst the target may change following initial and ongoing survey work, the broad principle of the target is to achieve a 15% reduction in the number of sole occupancy commuter car journeys to the site over 10 years, with an ultimate target of 50%.

6.5.4 In addition to the above overall targets for single occupancy car use, it is anticipated that there may be a range of staged targets over the life of the plan across all modes. These will be developed by the Travel Plan Working Group as considered appropriate. Staged targets and those targets relating to specific modes may be determined by the Travel Plan Working Group following detailed consultation with the local authorities and the Highways Agency.

APPENDIX E

Technical Note 05:

First Principles Person Trip Attraction

Transport Model Stage 1: Trip Attraction

Bound separately

APPENDIX M

TN06 – Ancillary Person Trip Attraction

DRAFT

Transport Planning Associates

ASHFIELD LAND LTD

Rail Central

Technical Note 06: Ancillary Person Trip Attraction

Transport Model Stage 1: Trip Attraction

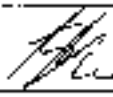
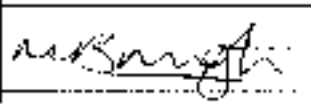
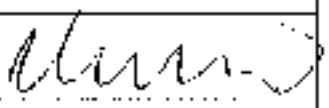
January 2018



DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Centra		
Project No.:	1211-80	**Report No.:**	1211-80/TN/06
Client:	Ashfield Land Ltd		

	Prepared By:	Checked By:	Approved for issue
Name	A. Snowden	M. Berrington	R. Lyons
Signature			
Date	January 2018	January 2018	January 2018

Issued by

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates
25 King Street
Bristol
BS1 4PB

0117 925 9400
bristol@tpa.uk.com
www.tpa.uk.com

CONTENTS PAGE

1 INTRODUCTION 1

2 TRAIN MAINTENANCE DEPOT 2

1 INTRODUCTION

1.1 Transport Planning Associates (TPA) is working on behalf of Ashfield Land Ltd in order to address the transportation aspects of a proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central. The site is located to the south of Milton Malsor, to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north.

1.2 The site is considered to be optimally located next to rail and trunk road infrastructure. The proposed SRFI will be progressed as a Nationally Significant Infrastructure Project (NSIP) and as such an application for the scheme will be taken through the Development Consent Order (DCO) process.

1.3 This technical note forms part of a four stage transport model which can be summarised as follows:

(i) Stage 1: Trip Attraction;

(ii) Stage 2: Trip Distribution;

(iii) Stage 3: Mode Choice; and

(iv) Stage 4: Route Assignment.

1.4 This technical note forecasts person trip attraction (excluding HGVs) associated with ancillary uses in the site (i.e. other than the proposed warehousing and intermodal terminal). It includes an assessment of the person trip attraction associated with the train maintenance depot.

Accommodation Schedule

1.5 The development masterplan is not fixed at this stage. Therefore, it is considered reasonable for a total of 687,483 sq.m (7.4M sq.ft) Gross Internal Area (GIA) of high bay warehousing with ancillary offices to be applied as a robust assessment. This is the largest quantum of development that is anticipated at the site.

1.6 The Architect has advised that the GIA of the proposed scheme equates to 98% of Gross External Area (GEA). The proposals therefore equate to up to 701,513sq.m GEA of high bay warehousing.

2 TRAIN MAINTENANCE DEPOT

2.1 As part of the scheme, it is proposed that a Train Maintenance Depot (TMD) will be included adjacent to the intermodal terminal. This will provide a dedicated area where trains can be serviced and maintained. As such, there will be a number of employees at the site associated with this which have not previously been accounted for.

2.2 In order to determine the level of trip attraction associated with the TMD, an assessment of similar facilities elsewhere has been carried out. Specifically, the DB Cargo Toton maintenance depot has been used. DB Cargo Toton is the largest dedicated, single-site Traction Maintenance Depot operated by any of the licensed rail freight operating companies (FOCs), with other FOCs tending to subcontract and/or have more dispersed TMD facilities. It is therefore considered appropriate to provide a direct comparison to the proposed TMD, as it is the largest facility likely to be required at Rail Central and therefore provides a worst case assessment.

2.3 There are currently approximately 290 employees at the DB Cargo Toton maintenance depot operating a three shift pattern of 0600-1400, 1400-2200 and 2200-0600. Staff are split approximately equally across the three shifts (i.e 97 per shift), which therefore accounts for 97 person arrivals prior to each shift start time, and 97 person departures following each shift end time.

2.4 It is considered reasonable to assume that all employees would arrive during the hour before the shift start time and depart within the hour following the shift end time. There would therefore be no impact during the typical peak hours of the local highway network (0800-0900 and 1700-1800).

DRAFT

APPENDIX N
BN02 – Baseline Mode Share

Transport Planning Associates

ASHFIELD LAND LTD

Rail Central

Briefing Note 02: Baseline Mode Choice

Transport Model Stage 3: Mode Choice

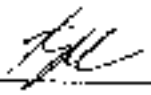
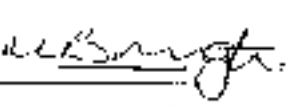
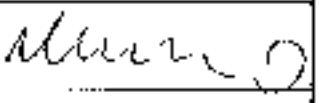
January 2018



DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Central		
Project No.:	1211-80	**Report No.:**	1211-80/BN/02
Client:	Ashfield Land Ltd		

	Prepared By:	Checked By:	Approved for issue
Name	A. Snowden	M. Bennington	R. Lyons
Signature			
Date	January 2018	January 2018	January 2018

Issued by:

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates
25 King Street
Bristol
BS1 4PB

0117 925 9403
bristol@tpa.uk.com
www.tpa.uk.com

CONTENTS PAGE

1 INTRODUCTION 1

2 MODE CHOICE 3

LIST OF TABLES

Table 2.1 Summary of Person Trip Attraction from BN01
Table 2.2 Summary of Person Trip Attraction including Ancillary Uses
Table 2.3 2011 Census Mode Shares
Table 2.4 Summarised 2011 Census Mode Shares
Table 2.5 Rail Central Baseline Mode Shares
Table 2.6 Summary of Baseline Multi-Modal Trips

LIST OF FIGURES

Figure 2.1 2011 Census Workplace Zones

Figure 2.2 Walking Distances between Units and Bus Stops on Northampton Road

LIST OF APPENDICES

A 2011 Census Method of Travel to Work data

B South Northamptonshire Mid-Layer Super Output Area data

1 INTRODUCTION

1.1 Transport Planning Associates (TPA) is working on behalf of Ashfield Land Ltd in order to address the transportation aspects of a proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central. The site is located to the south of Milton Malsor, to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north.

1.2 The site is considered to be optimally located next to rail and trunk road infrastructure. The proposed SRFI will be progressed as a Nationally Significant Infrastructure Project (NSIP) and as such an application for the scheme will be taken through the Development Consent Order (DCO) process.

1.3 This briefing note forms part of a four stage transport model which can be summarised as follows:

(i) Stage 1: Trip Attraction;

(ii) Stage 2: Trip Distribution;

(iii) Stage 3: Mode Choice; and

(iv) Stage 4: Route Assignment.

1.4 The briefing notes will inform scoping work required in advance of a full Transportation Assessment. They adhere to the principles of the 'Rochdale Envelope', which is used when the final details of the project are not fixed at the time of assessment work; and where there is a need for flexibility within clearly defined parameters that consider a range of likely possibilities. The assessment will be precautionary and will therefore consider the worst case. However, regard will be given to the worst case which *is likely to* occur to avoid the potential for the assessment to become over precautionary. The assessment work considers the measures that would be necessary to mitigate likely significant effects. Essentially, this means that the work is predicated on a range of scenarios which are presented in a way that aids decision making.

1.5 These briefing notes will be agreed with the highway authority at Northamptonshire County Council (NCC) and with Highways England (HE) as appropriate and through collaborative working.

1.6 Briefing Note 1211-80/BN/01 (BN01) forecast the total number of person trips (excluding HGVs) that are anticipated to arrive and depart at the site each day, including delivery vehicles and visitors, associated with the proposed warehousing units. In addition, technical note 1211-80/TN/06 examined the person trip attraction that would be associated with ancillary uses on the site. In combination, these addressed Stage one of the four stage transport model set out above.

1.7 Stage Two will ultimately be informed by the outputs of the Northamptonshire Strategic Transport Model (NSTM). This is a trip distribution model applied to car driver, car passenger and public transport users. It is therefore necessary to first determine a baseline mode share for pedestrians and cyclists that can be removed prior to use of the NSTM, as well as the resultant number of car driver, car passenger and public transport user trips that will be entered into the model.

1.8 The NSTM assigns trips between vehicles and public transport users, and it is therefore considered appropriate for a baseline mode share of public transport to be determined as part of this briefing note for comparison purposes.

1.9 Following receipt of the initial trip distribution, the baseline mode share as set out within this briefing note will be reassessed.

1.10 In determining the baseline mode share, this briefing note sets out a reference case methodology using 2011 Census travel to work data for a number of comparator areas. This briefing note does not examine the forecast mode share that is likely to occur following the implementation of any Travel Plan measures, which will follow in a subsequent technical note.

1.11 This note concludes by presenting what is considered to be a likely worst case baseline mode share, thereby leading to the highest number of vehicle movements at the times when it is agreed with NCC and HE that the highway network will be operating at its busiest. It is these time periods that are agreed to be used to assess the trip impact of the scheme.

2 MODE CHOICE

Person Trip Attraction

2.1 The anticipated person trip attraction at Rail Central is set out within BN01, and this has been agreed as appropriate with HE and NCC.

2.2 For ease of reference, a summary of the agreed person trip attraction for each of the AM peak (0800-0900), PM peak (1700-1800) and daily (24hr) periods is set out in **Table 2.1** below.

Table 2.1 Summary of Person Trip Attraction from BN01

	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Person Trips	925	101	1,026	303	1,062	1,366	8,136	8,006	16,142

2.3 Technical note 1211-80/TN/06 sets out the anticipated person trip attraction associated with ancillary uses on the site. This confirms that these would not have any impact on the typical peak hours of the local highway network, and this has been agreed with HE and NCC.

2.4 For completeness, the overall person trip attraction, including daily trips associated with the ancillary uses, is set out in **Table 2.2** below.

Table 2.2 Summary of Person Trip Attraction including Ancillary Uses

	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Person Trips	925	101	1,026	303	1,062	1,366	8,426	8,296	16,722

2.5 For the purpose of the NSTM, only the network peak hours will be assessed. The mode share on a daily basis will be considered in due course as part of subsequent briefing notes.

2011 Census Mode Share

2.6 In order to determine a suitable baseline mode share to be applied for forthcoming assessment work, a review of 2011 Census data has been carried out to establish the existing method of travel to work for a number of comparable areas.

2.7 The method of travel to work for people who work in the Census workplace zones in the vicinity of the site (Blisworth and Milton Malsor) has been examined, as these are likely to have similar characteristics to the site in terms of accessibility, and are therefore considered to provide a reasonable assessment of the baseline mode share. However, it is also noted that a scheme of this type is likely to exhibit different travel characteristics due to the measures it can bring forward, which influence travel behaviour. HE and NCC have therefore requested for the method of travel to work for people who work at similar facilities at Pineham Park and DIRFT to be examined.

2.8 The areas examined are illustrated in **Figure 2.1** and summarised as follows:

(i) People who work within Blisworth (2011 Census Workplace Zone E33017413);

(ii) People who work within Milton Malsor (2011 Census Workplace Zone E33017409);

(iii) People who work at Pineham Park (2011 Census Workplace Zones E33014992, E33014749 and E33014748);

(iv) People who work at DIRFT (2011 Census Workplace Zones E33014649 and E33014654).

2.9 A summary of the existing mode share for each of the areas set out above is shown on **Table 2.3** and the Census data is included at **Appendix A**.

Table 2.3 2011 Census Mode Shares

Method of Travel to Work	Blisworth		Milton Malsor		Pineham Park		DIRFT	
	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)
Underground, metro, light rail, tram	0	0.0%	1	0.4%	6	0.2%	1	0.0%
Train	1	0.2%	1	0.4%	27	0.8%	4	0.1%
Bus, minibus or coach	5	1.1%	11	4.7%	234	7.0%	26	0.9%
Taxi	1	0.2%	2	0.9%	14	0.4%	3	0.1%
Motorcycle, scooter or moped	3	0.7%	1	0.4%	23	0.7%	37	1.3%
Driving a car or van	375	85.2%	200	85.8%	2,488	74.2%	2,200	79.6%
Passenger in a car or van	19	4.3%	8	3.4%	388	11.6%	414	15.0%
Bicycle	6	1.4%	1	0.4%	90	2.7%	42	1.5%

Method of Travel to Work	Blisworth		Milton Malsor		Pineham Park		DIRFT	
	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)
On foot	29	6.6%	7	3.0%	70	2.1%	31	1.1%
Other method of travel to work	1	0.2%	1	0.4%	11	0.3%	7	0.3%
Total	**440**	**100.0%**	**233**	**100.0%**	**3,351**	**100.0%**	**2,765**	**100.0%**

2.10 The mode shares in **Table 2.3** have been summarised into the wider travel modes of Single Occupancy Vehicles, Car Share, Public Transport, Walking, Cycling and Other, as set out in **Table 2.4** and can be summarised as follows:

(i) Total Vehicles includes the following travel modes from **Table 2.3**:

a. 'Motorcycle, scooter or moped'; and

b. 'Driving a car or van'.

It should be noted that as the total number of vehicles is based on the travel modes set out above, it is not affected by the proportions of single occupancy and car sharing vehicles set out below.

(ii) Single Occupancy Vehicles includes the following travel modes from **Table 2.3**:

a. 'Motorcycle, scooter or moped'; and

b. 'Driving a car or van' minus 'Passenger in a car or van' (assuming there is a maximum of one passenger per car or van, although on average there would likely be more than one passenger in car sharing vehicles).

(iii) Car Share includes the 'Passenger in a car or van' travel mode (from **Table 2.3**) multiplied by two (assuming there is a maximum of one passenger per car or van, although on average there would likely be more than one passenger in car sharing vehicles);

(iv) Public Transport includes the following travel modes from **Table 2.3**:

a. 'Underground, metro, light rail or tram;

b. 'Train';

c. 'Bus, minibus or coach'; and

d. 'Taxi'

(v) Walking ('On foot'), Cycling ('Bicycle') and Other ('Other method of travel to work') are as stated on **Table 2.3**.

Table 2.4 Summarised 2011 Census Mode Shares

Method of Travel to Work	Blisworth	Milton Malsor	Pineham Park	DIRFT
Total Vehicles	85.9%	86.3%	74.9%	80.9%
(Single Occupancy Vehicles)	*(81.6%)*	*(82.8%)*	*(63.3%)*	*(65.9%)*
(Car Share)	*(8.6%)*	*(6.9%)*	*(23.2%)*	*(30.0%)*
Public Transport (incl. Taxi)	1.6%	6.4%	8.4%	1.1%
Walking	6.6%	3.0%	2.1%	1.1%
Cycling	1.4%	0.4%	2.7%	1.5%
Other	0.2%	0.4%	0.3%	0.3%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note: Figures are subject to rounding

2.12 The Census data illustrated in **Table 2.4** confirms that the proportion of trips made by private vehicles is relatively similar at each of Blisworth, Milton Malsor and at DIRFT (ranging between 80.9% at DIRFT to 86.3% at Milton Malsor), although the proportion at Pineham Park is lower at 74.9%. This may be due to Pineham Park being served by a regular bus service to Northampton Town Centre, noting also that the proportion of public transport trips at Pineham Park is higher than at the other locations examined.

2.13 **Table 2.4** also shows that the proportion of trips by car sharing is significantly higher at Pineham Park (23.2%) and DIRFT (30.0%) than at Blisworth (8.6%) and Milton Malsor (6.9%). This likely occurs as a result of these locations being large employment areas where many employees would work the same shift patterns, thereby making car sharing an easier and more attractive option. This may also be the result of Travel Plans at those sites, which are likely to encourage car sharing.

Rail Central Baseline Mode Share

2.14 It is considered appropriate for baseline mode shares to be determined as set out below, further to discussions with HE and NCC.

Public Transport

2.15 It is considered reasonable for the baseline public transport mode share to be determined based on the existing travel to work data at Milton Malsor and Blisworth. An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 3.3% public transport trips (22 public transport trips out of 673 total trips at Milton Malsor and Blisworth combined).

2.16 During the AM peak, the existing bus services stop on Northampton Road at 0814 and 0842 from Northampton, at 0817 from Milton Keynes, and at 0847 from Towcester. During the PM peak, the existing bus services stop on Northampton Road at 1737, 1742 and 1758 towards Northampton, at 1732 towards Milton Keynes, and at 1746 towards Towcester.

2.17 It is considered that there is sufficient opportunity for future employees at Rail Central to use existing bus services to travel to the site, such that a baseline 3.3% mode share is considered reasonable.

2.18 It is noted that the existing public transport usage at Milton Malsor and Blisworth is influenced by the number of houses within a 400m walking distance of a bus stop. It is therefore considered that the public transport mode share at Rail Central should be reduced to reflect the proportion of the site that can be accessed within a 400m walk of the proposed bus stops on Northampton Road and existing bus services.

2.19 The parameters plan, rather than the masterplan, would be a Requirement of any granted DCO. This identifies a number of development zones within the site, within which individual units may be arranged in a number of different ways. It is therefore considered appropriate that the 400m walking distance to the bus stops is measured to the entrance to each parameters plan development zone.

2.20 As shown in **Figure 2.2**, the parameter plan development zones 1, 2, 3 and 4 can be accessed within a 400m walking distance of the Northampton Road bus stops. These zones comprise 67.4% of the total proposed development area. The current development masterplan indicates that the units contained within each development zone are as follows:

(i) Development Zone 1 – Units 8, 9 and 10;

(ii) Development Zone 2 – Units 11, 12 and 13;

(iii) Development Zone 3 – Units 1 and 2; and

(iv) Development Zone 4 – Units 3 and 4.

2.21 In order to provide a robust assessment, only the units shown on the current development masterplan, as opposed to the parameter plan, that are approximately 400m walking distance from the Northampton Road bus stops, as shown in **Figure 2.2**, will be included. These are units 1 (106m), 2 (381m), 3 (284m), 8 (268m), 9 (414m) and 11 (342m), which equates to 46.8% of the total development area.

2.22 It is therefore considered appropriate for the baseline mode share of 3.3% to be applied to the areas of the proposed development that can be accessed within approximately 400m walking distance (46.8% of the total development area) with the remainder of the site assumed to have no public transport trips in the baseline situation. This equates to an average of 1.5% public transport trips across the site, which is broadly in accordance with the proportion of public transport trips at Blisworth, and is therefore considered appropriate.

Walking

2.23 It is considered appropriate for the baseline proportion of trips by walking to be determined with reference to the existing proportions at Milton Malsor and Blisworth. An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 5.3% walking trips (36 walking trips out of 673 total trips at Milton Malsor and Blisworth combined).

2.24 The appropriateness of the calculated 5.3% walking trips noted above has been considered further with respect to 2011 Census data. The distance travelled to work by method of travel and specifically walking has been assessed. This data is not available for workplace zones and has therefore been examined for people who live in the mid-layer super output area, South Northamptonshire 003 (where Rail Central is located), which is illustrated on **Figure 2.1**.

2.25 The data indicates that 67.5% of walking trips are less than 2km, 8.0% are between 2km to 5km, and 21.5% of walking trips are 5km and over (the remaining 2.7% of walking trips were identified as having no fixed place of work). This therefore suggests that a significant proportion of walking trips (up to 29.5%) to Rail Central could be expected to originate from residential areas to the south of Northampton, and north of the M1, with the edges of Milton Malsor and Blisworth being located approximately 0.66 kilometres and 1.19 kilometres walking distance from the site respectively. The edge of the Northampton urban area is located approximately 2.55 kilometres walking distance from the site. The supporting Census data is provided at **Appendix B.**

2.26 Therefore, whilst it is still considered that the average of 5.3% walking trips is reasonable in the context of current walking patterns in the South Northamptonshire area, it is considered appropriate for the baseline proportion of walking to be based on the existing proportion at Milton Malsor (3.0%), in order to ensure a robust assessment in line with the principles of a 'Rochdale Envelope'.

Cycling

2.27 It is considered appropriate for the baseline proportion of cycling trips to be determined with reference to the existing proportions at Milton Malsor and Blisworth. An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 1.0% cycling trips (seven cycling trips out of 673 total trips at Milton Malsor and Blisworth combined). It is considered reasonable for this proportion to be applied to Rail Central for the purpose of the baseline mode share. In reality, the proportions at Pineham Park and DIRFT demonstrate that this type of employment would likely attract a higher proportion of cycling, although it is also noted that these are well established sites where Travel Plan measures will have encouraged an increase in cycling compared to the baseline situation.

Vehicles

Car Share

2.28 An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 8.0% car share trips (54 car share trips out of 673 total trips at Milton Malsor and Blisworth combined). It is considered reasonable for this proportion to be applied to Rail Central for the purpose of the baseline mode share. In reality, the proportions at Pineham Park and DIRFT demonstrate that this type of employment would likely attract a much higher proportion of car sharing, although it is also noted that these are well established sites where Travel Plan measures will have encouraged an increase in car sharing compared to the baseline situation.

Single Occupancy Vehicles

2.29 On average the areas examined showed 0.3% of trips allocated to 'other method of travel to work'. To ensure that all trips are accounted for within the assessments, these are included within the proportion of single occupancy vehicle trips, and this is considered to provide a robust assessment.

2.30 Using the baseline mode shares as set out above results in a remainder of 86.5% single occupancy vehicle trips, and 90.5% total vehicle trips. This is higher than all of the areas set out in **Table 2.4** and is therefore considered to provide a robust assessment which is in accordance with the principles of a Rochdale Envelope.

2.31 A summary of the baseline mode shares to be applied at Rail Central is set out in **Table 2.5**.

Table 2.5 Rail Central Baseline Mode Shares

Method of Travel to Work	**Rail Central (Baseline)**
Total Vehicles	90.5%
(Single Occupancy Vehicles)	*(86.5%)*
(Car Share)	*(8.0%)*
Public Transport (incl. Taxi)	1.5%
Walking	3.0%
Cycling	1.0%
Total	**100.0%**

2.32 A summary of the resultant baseline multi-modal trips at Rail Central is set out in **Table 2.6.**

Table 2.6 Summary of Baseline Multi-Modal Trips

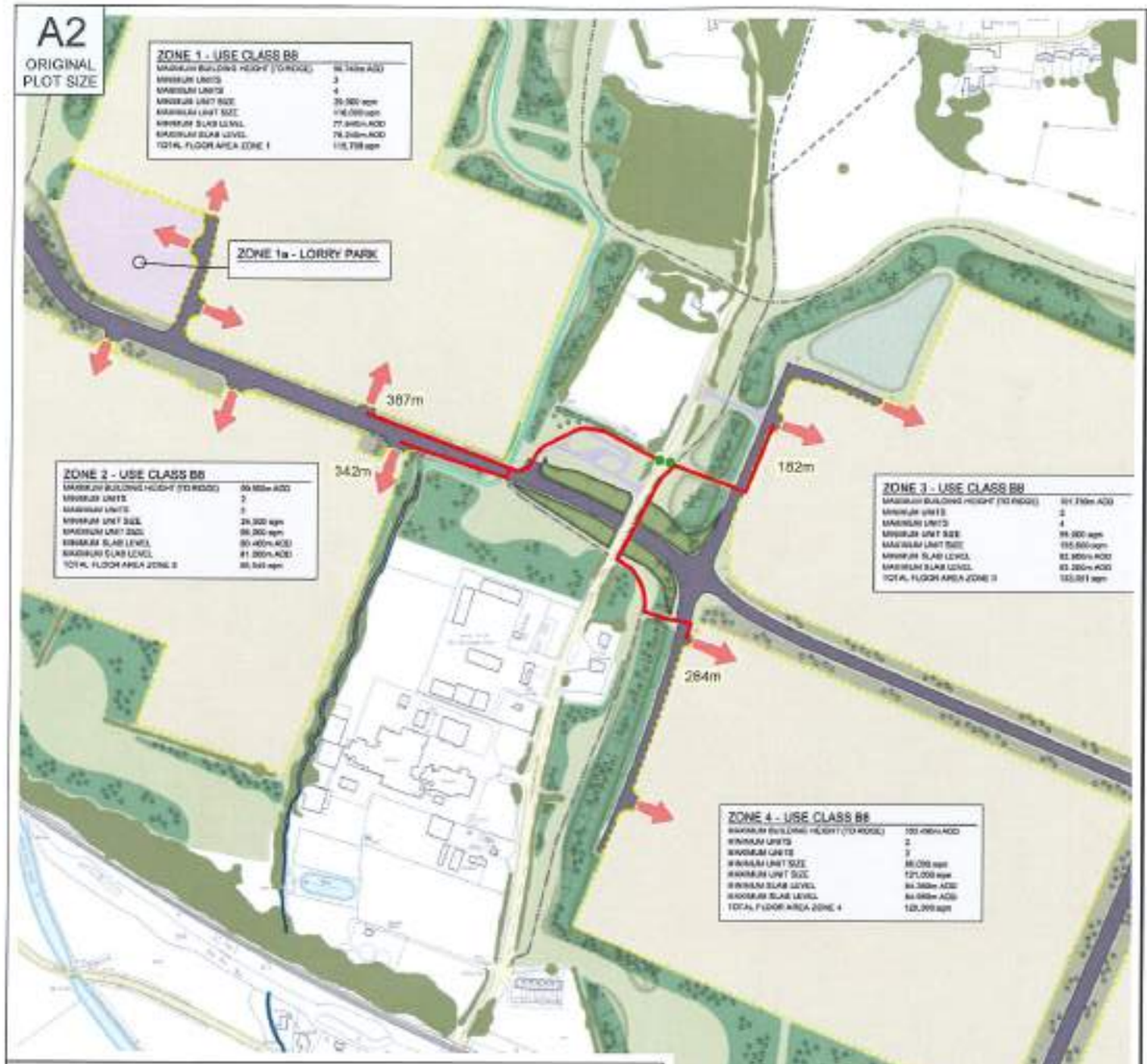
	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Vehicles	837	91	929	274	961	1,236
(Single Occupancy Vehicles)	*(800)*	*(87)*	*(887)*	*(262)*	*(919)*	*(1,182)*
(Car Share)	*(74)*	*(8)*	*(82)*	*(24)*	*(85)*	*(109)*
Public Transport (incl. Taxi)	14	2	15	5	16	20
Walking	28	3	31	9	32	41
Cycling	9	1	10	3	11	14
Total Person Trips	**925**	**101**	**1,026**	**303**	**1,062**	**1,366**

2.33 The baseline multi-modal trips set out in **Table 2.6** will be taken forward for future modelling work. They are agreed with HE and NCC for this purpose.

2.34 The forecast modal shares, taking into account any proposed measures, will be determined as part of a subsequent briefing note.

FIGURES

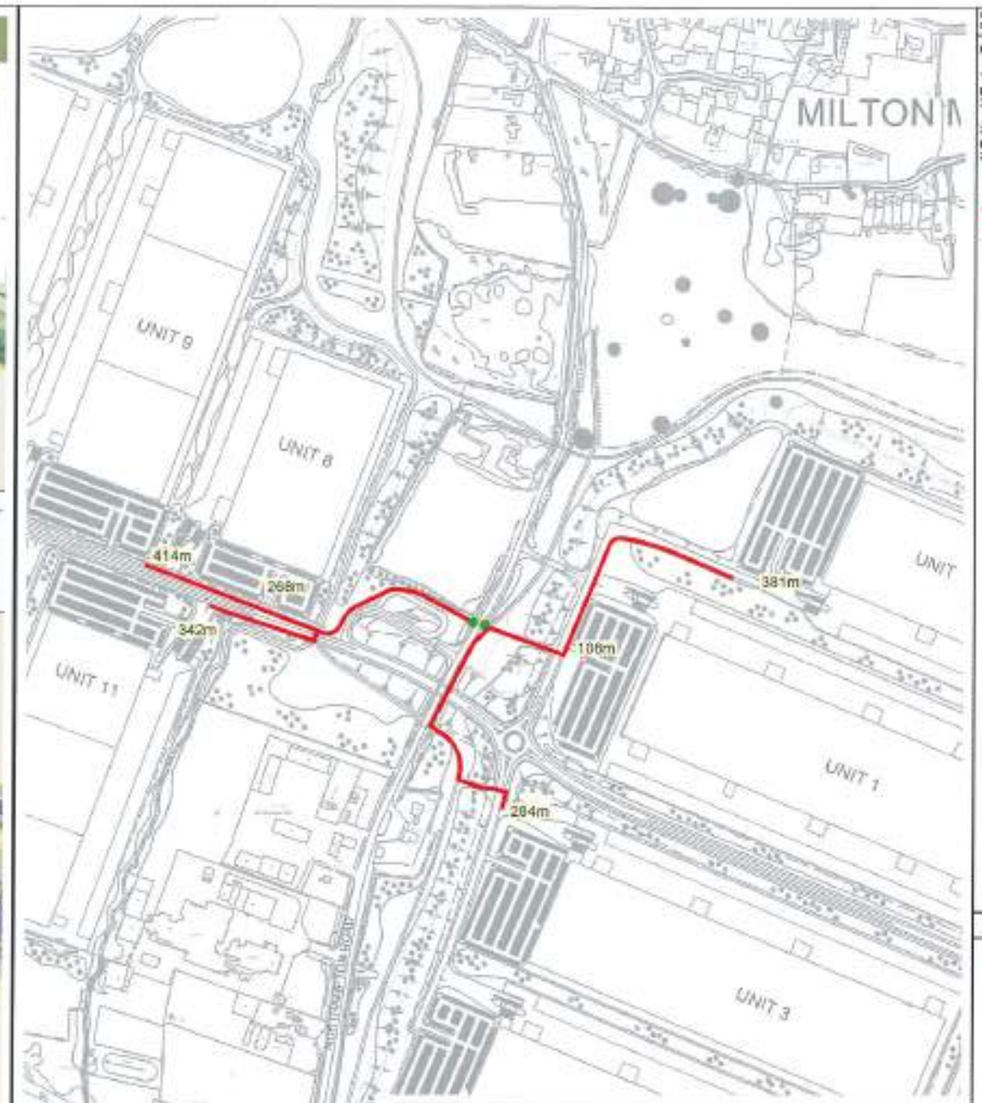
A2
ORIGINAL
PLOT SIZE





Parameters Plan Zone Locations
Scale 1:25,000

Isochrones Overlaid onto Parameters Plan
Scale 1:2000



Isochrones Overlaid onto Masterplan
Scale 1:2000



Master Plan Unit Locations
Scale 1:25,000

Reproduced from Ordnance Survey Superplan Data with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100032331

NOTES:

1. The Parameters Plan has been taken from drawing 30705-PE-TSD produced by Michael Sparks Associates and was received on 26th January 2017.

2. The Site Masterplan has been taken from drawing 30705/PE-76A produced by Michael Sparks Associates and was received on 12th August 2016.

- Bus Stop
- Isochrone from Bus Stop
- 382m Distance from Bus Stop to Access Point

No.	Date	Notes	Drawn by	Checked by	Approved by

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9403
www.tpa.uk.com

CLIENT:
ASHFIELD LAND LTD

PROJECT:
RAIL CENTRAL

TITLE:
Walking Distances from Bus Stops on Northampton Road

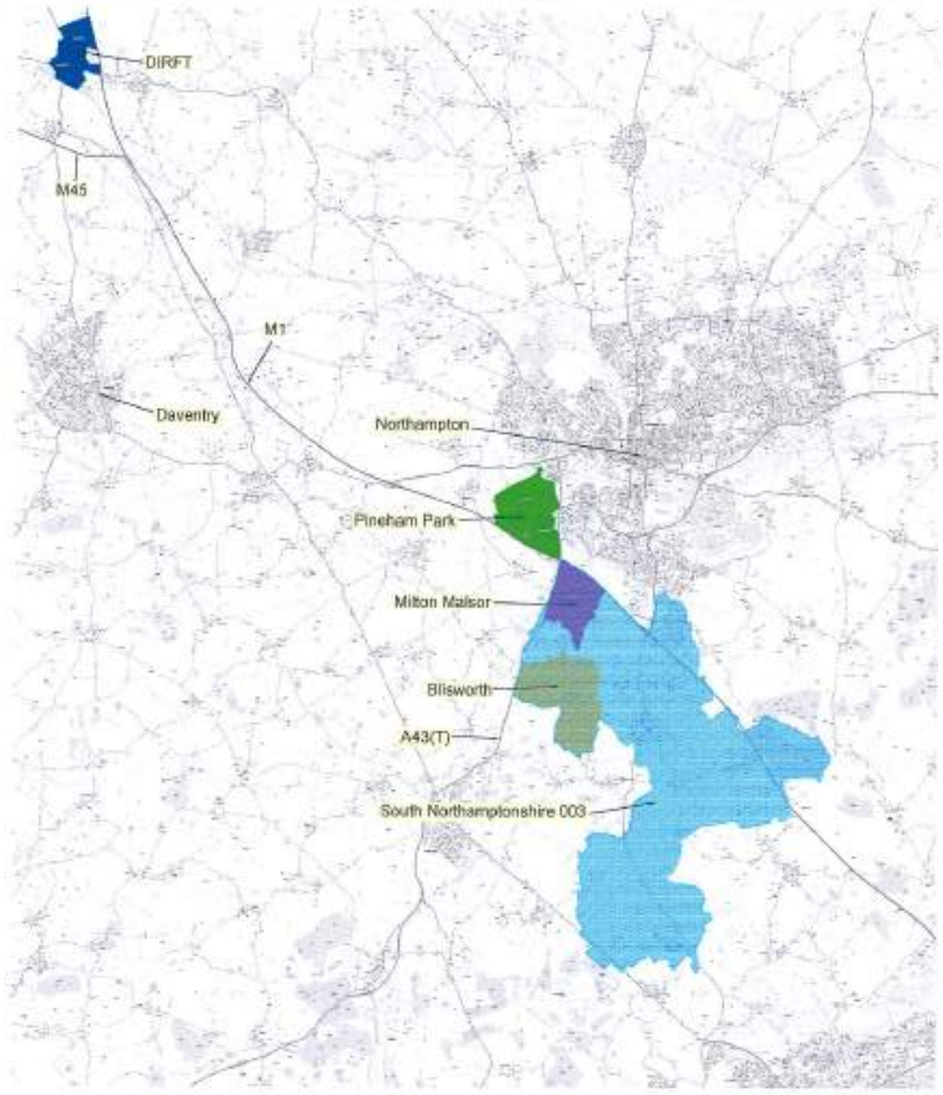
STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
As Shown	25.01.17	RNJ	AJS	MB

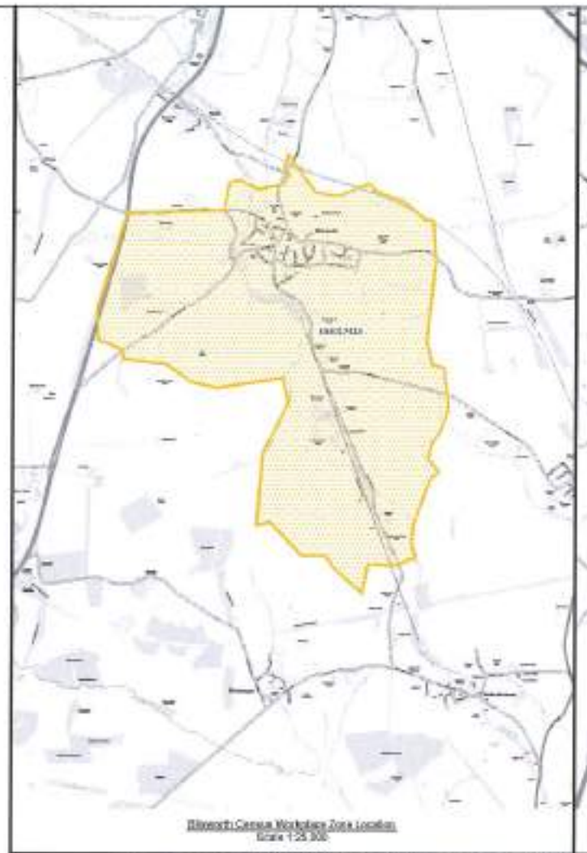
JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 2.2	

INDICATIVE

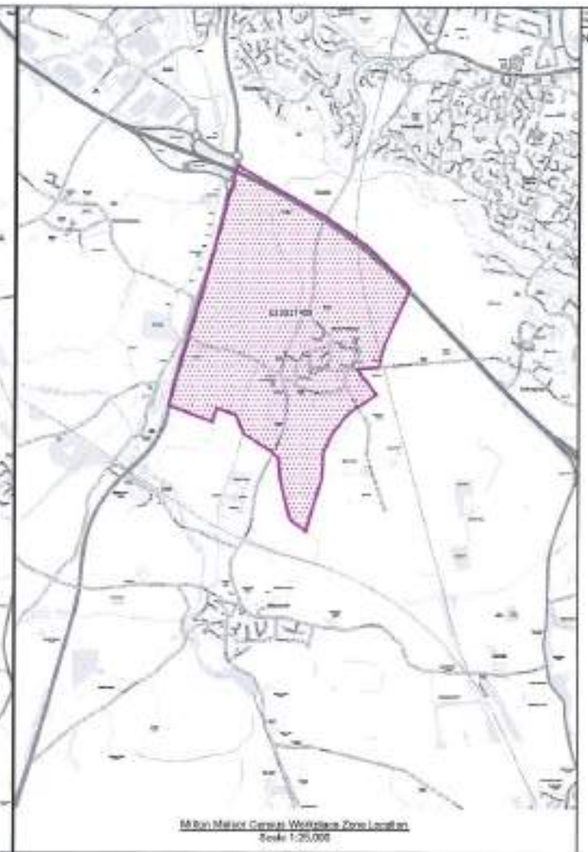
A1
ORIGINAL PLOT SIZE



Census Area Locations
Scale 1:100,000



Blisworth Census Workplace Zone Location
Scale 1:25,000



Milton Malsor Census Workplace Zone Location
Scale 1:25,000

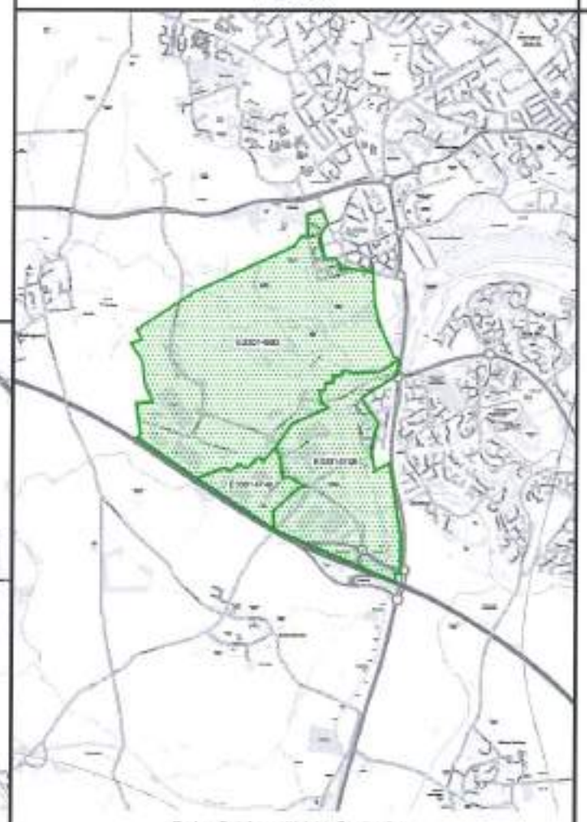
NOTES:



Walking Distances from Approximate Centre of Site to the North
Scale 1:25,000



Walking Distances from Approximate Centre of Site to the South
Scale 1:25,000



Pineham Park Census Workplace Zone Locations
Scale 1:25,000



Daventry International Rail Freight Terminal (DIRFT) Census Workplace Zone Locations
Scale 1:25,000

tpa

ASHFIELD LAND LTD

RAIL CENTRAL

2011 Census Workplace Zones

INFORMATION

SCALE	DATE	DRAWN	CHECKED	APPROVED
As Shown	02.02.17	RHJ	AJS	MB

JOB NO	DRAWING NO.	REVISION
1211-80	Figure 2.1	

APPENDIX A

WP703EW - Method of travel to work (2001 specification) (Workplace population)

ONS Crown Copyright Reserved [from Nomis on 16 February 2017]

population: All usual residents aged 16 to 74 in employment in the area the week before the census
units: Persons
date: 2011

	Milton Malsor	Blisworth	Pineham Park			DIRFT	
Method of travel to work	**E33017409**	**E33017413**	**E33014748**	**E33014749**	**E33014992**	**E33014649**	**E33014654**
All categories: Method of travel to work (2001 specification)	291	536	1,665	944	794	1,456	1,313
Work mainly at or from home	58	96	39	0	13	0	4
Underground, metro, light rail or tram	1	0	5	0	1	1	0
Train	1	1	12	7	8	2	2
Bus, minibus or coach	11	5	70	90	74	16	10
Taxi	2	1	1	13	0	3	0
Motorcycle, scooter or moped	1	3	7	6	10	22	15
Driving a car or van	200	375	1,238	719	531	1,134	1,066
Passenger in a car or van	8	19	205	80	103	234	180
Bicycle	1	6	42	16	32	21	21
On foot	7	29	41	10	19	17	14
Other method of travel to work	1	1	5	3	3	6	1

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

APPENDIX B

WP7701EW - Method of travel to work (2001 specification) by distance travelled to work (Workplace population)

ONS Crown Copyright Reserved [from Nomis on 9 February 2017]

population	All usual residents aged 16 to 74 in employment in the area the week before the census
units	Persons
date	2011
area type	2011 super output areas - middle layer
area name	E02005683 : South Northamptonshire 003

Distance travelled to work	All categories: Method of travel to work (2001 specification)	Work mainly at or from home	Train, underground, metro, light rail, tram, bus, minibus or coach	Driving a car or van	Bicycle	On foot		All other methods of travel to work
All categories: Distance	4,661	882	159	3,021	67	274		258
Less than 2km	472	0	10	235	27	185	67.5%	15
2km to less than 5km	410	0	18	320	14	22	8.0%	36
5km to less than 10km	867	0	59	680	16	21	7.7%	91
10km to less than 20km	675	0	14	602	5	14	5.1%	40
20km to less than 30km	354	0	14	311	0	14	5.1%	15
30km to less than 40km	120	0	3	109	0	6	2.2%	2
40km to less than 60km	94	0	0	89	1	2	0.7%	2
60km and over	220	0	14	186	1	2	0.7%	17
Work mainly at or from	882	882	0	0	0	0	0.0%	0
No fixed place	567	0	27	489	3	8	2.9%	40

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

APPENDIX O

MDS Transmodal Report – HGV Trip Attraction

DRAFT

RAIL CENTRAL – SITE TRAFFIC FORECASTS

1. MDS Transmodal have prepared site traffic forecasts for the proposed Strategic Rail Freight Interchange (SRFI) on the basis that ***687,483 square metres*** (circa 7.4 million sq ft) of distribution centre floor space is developed at *Rail Central* alongside an intermodal terminal capable of handling 750m trailing-length trains. This technical note reports on the methodology adopted for the production of these forecasts.

2. The underlying basis of these forecasts is that the large scale warehouse units planned for the site will receive, store and then re-distribute finished consumer cargo. Inbound cargo will be from a combination of domestic and international sources, with outbound flows being to receivers across the British Isles. From the outset Rail Central will be developed as a SRFI, with the rail terminal handling a significant proportion of the inbound and outbound cargo. Therefore both road haulage and intermodal rail freight will be utilised for inbound and outbound flows. In addition, the on-site intermodal terminal will also be handling traffic for off-site distributors and shippers in the wider Northampton hinterland.

3. The inherent nature of forecasts such as these is that they have to be produced by means of a staged process. In summary, these forecasts have been produced in a four stage process, namely:

    - Estimation of traffic likely to pass through the warehouses planned for Rail Central on a 'first principles' and mode-neutral basis;
    - Use of the GB Freight Model to estimate the distribution of the warehouse cargo and its mode of arrival/departure;
    - Use of the GB Freight Model to estimate the off-site intermodal traffic that will pass through the Rail Central intermodal terminal; and
    - The hourly distribution of road traffic across the 24 hour period.

4. The forecasts therefore estimate both HGV trips and rail volumes on a daily basis.

Baseline Assumptions – Warehouse Traffic

5. The baseline assumptions adopted in the traffic forecasts are outlined in the table below.

Table 1: Traffic Forecasts Baseline Assumptions

Pallets per sq m	1.5
Floor Space utilisation	90%
% floor space NDC	63%
% floor space RDC	37%
Stock turnover per annum NDC	13
Stock turnover per annum RDC	25
Stock turn over pa total site (weighted average)	17.4
Pallets per HGV-equivalent load	25
Days per annum	335

6. The warehouses could be expected to accommodate up to 1.5 pallets per square metre of floor space (standard GB pallets measuring 1.2m x 1.0m), although it is assumed that, on average, 90% of such capacity would be occupied at any one time, which would be normal for large distribution buildings.

7. In order to ensure a worse case assessment, an assumption has been made that around 63% of the floor space will be occupied as National Distribution Centres (NDCs) i.e. outbound traffic being re-distributed across the British Isles, with stock turning over 13 times per annum i.e. an average dwell time of 4 weeks. The remainder of the floor space (37%) is assumed to be occupied as Regional Distribution Centres (RDCs) i.e. serving the southern Midlands, with stock turning over 25 times per annum (approximately 2 weeks dwell time). For the entire site, therefore, this equates to a stock turnover of 17.4 times per annum on a weighted average basis.

8. It should be noted that for the overall volume of freight that passes through the stock of major warehouses in Great Britain (around 40 million square metres and 250-300 million tonnes of goods per annum), each performs 2-3 legs between ports/plants, distribution centres and retail outlets. A 335 day year has been assumed and this is considered to be consistent with rail freight forecast assumptions and Network Rail's stated aim, whereby the current typical level of rail activity (280 days per annum) is forecast to rise by 20% (to 335 days per annum) as weekend track possessions are reduced.

9. A maximum of 26 pallets (when single stacked) can be fitted into a 45ft foot 'pallet wide' container or 13.6m HGV semi-trailer. Given that some units would be 40ft maritime containers and given that some HGVs will not be fully laden, a mean of 25 pallets per unit load has been

assumed in order to estimate the overall volume of freight moving to and from the warehousing on a HGV-equivalent load basis. Although Rail Central is a (rail-served) SRFI project it has been assumed, in order to ensure a robust assessment, that stock turnover is not less than at distribution centre sites which are not rail-served.

NDC/RDC Split

10. Stock generally turns-over twice as quickly at a RDC (on average around 25 times per annum) when compared with a NDC (circa 13 times per annum). The implications, in traffic terms, is that a RDC will generate around twice as many HGV trips per square metre of floor space. Further, RDCs generally have a higher proportion of domestically sourced cargo, and outbound flows are over short/medium distances. Consequently, a site dominated by RDCs would be expected to have a lower proportion of rail traffic compared with a similar site predominantly occupied by NDCs. The assumed NDC/RDC split is therefore an important consideration.

11. The southern East Midlands, given its central location in relation to the main ports, the major urban conurbations and the strategic transport networks (M1, M6, West Coast Main Line), has become the location of choice when sourcing and distributing on a national basis. For this reason, B8 developments in the southern East Midlands, such as Rail Central, are dominated by floor space acting at NDCs. Reference should be made to the accompanying technical note *'212008n_floor space function comparator sites_ver3'*. It shows that the DIRFT SRFI is dominated by NDCs, and likewise Magna Park, which is not rail-served, but is in close proximity to DIRFT and occupiers are known to make use of the terminal e.g. Asda operates daily trains to Scotland from DIRFT but served from their NDC at Magna Park.

12. Given Rail Central's southern East Midlands location, that NDCs handle significant volumes of imported cargo and the main ports are also rail-served, it is more than likely that Rail Central will attract a high proportion of NDC floor space in line with that recorded at DIRFT or Magna Park. However, taking all the above into account and to ensure a robust worse case assessment, the assumed proportion of NDC/RDC floor space is based on that currently recorded at the Swan Valley development i.e. 63% NDC 37% RDC, which is not rail-served.

Forecast Freight Movements - Warehousing

13. Using the above assumptions, the table below estimates the annual and daily cargo throughput via the on-site warehousing (in HGV-equivalent loads).

Table 2: Estimated Throughput at Rail Central Warehousing[1]

Pallets in stock at any one time*	928,102
Pallet throughput per annum**	16,148,976
HGV-equivalent loads per annum	645,959
HGV-equivalent loads per day	1,928

** (Floor space x 1.5 pallets) x 90%*

*** Pallets in stock at anyone time x 17.4 stockturns per annum*

14. On that basis, it is forecast that the Rail Central warehousing will receive and despatch 1,928 HGV-equivalent loads of cargo per day. At this stage, these volumes are forecast on a mode neutral basis, though for presentational purposes they have been shown in the table as 'HGV-equivalent' loads. Neither do they account for any empty transport movements to/from the development. Both issues are assessed further below.

Forecast Rail Traffic

15. The illustrative Masterplan proposes an on-site intermodal terminal, with some of the warehousing units also capable of having rail sidings installed directly alongside. Therefore, a proportion of the cargo handled at the warehouses can be expected to arrive or depart by rail (intermodal units shunted to the warehousing via private haul roads using off-road yard tractor equipment). Further, the intermodal terminal would also serve distributors and shippers located off-site in the wider Northampton area. For example, a warehouse in Northampton (e.g. at Swan Valley) might be importing containerised cargo via the deep-sea ports. The development of the intermodal terminal would allow the imported containers to be transported to the site by rail, with only the final (short distance) delivery to the warehouse undertaken by road haulage. Similarly, this operation could be reversed for an exporter in Northamptonshire.

16. The MDS Transmodal *GB Freight Model* has consequently been employed to estimate both the distribution of cargo to and from Rail Central and modal choice. The *GB Freight Model* consists of several modules, including:

- A multi-dimensional base matrix, built up from several sources, which describes freight flows within Great Britain and to/from Great Britain by origin/destination and commodity;
- Freight transport cost models, validated against industry data, which replicate transport rates in the market and can be adjusted for different scenarios;

[1] Throughout this note and accompanying spreadsheet files, figures in tables may not exactly sum or match due to rounding

- A mode-choice assignment model, which assigns origin/destination freight flows to transport modes (road or rail for inland flows);
- A vehicle choice and load factor model used to 'convert' road freight outputs from the GBFM, which are initially expressed as annual tonnes-lifted, into HGV numbers;
- A road assignment model, which subsequently assigns generated HGV numbers between each origin/destination pair onto specific routes on the national highway network; and
- On a similar basis, a rail assignment model based upon current operating behaviour (route choice, tonnes/trains by commodity).

17. An accompanying Technical Note (*212008n_GBFreightModel_ver2*) provides a summary description of the GB Freight Model. Derived from the model, daily rail traffic volumes are therefore estimated in the following table, both to/from the Rail Central warehousing plus to/from distributors and shippers located off-site in the wider Northampton area. For the off-site traffic, the GB Freight Model estimates this to be 1,080,000 tonnes per annum inbound and outbound, equating to 165 HGV-equivalent units per day. In other words, there is currently 1,080,000 tonnes per annum lifted and delivered in the Northampton area moving by road, but given the availability of the intermodal terminal at Rail Central the mode-choice assignment model estimates that this will in future move by rail via Rail Central's intermodal terminal.

Table 3: Estimated Daily Rail Traffic (HGV-equivalent units)

687,483 sq m			
Inbound by rail	**Units**	**Outbound by rail**	**Units**
Deep-sea/Ch Tunnel			
To warehousing loaded	158	From warehousing loaded	0
To warehousing empty	0	From warehousing empty	158
To off-site loaded (by HGV)	89	From off-site loaded (by HGV)	66
To off-site empty (by HGV)	0	From off-site empty (by HGV)	23
Domestic			
To warehousing loaded	138	From warehousing loaded	106
To warehousing empty	15	From warehousing empty	25
To off-site loaded (by HGV)	76	From off-site loaded (by HGV)	99
To off-site empty (by HGV)	23	From off-site empty (by HGV)	23
Total	**499**	**Total**	**499**

NB: The off-site traffic has both international and domestic origins/destinations e.g. for inbound by rail, international origin 89 + domestic origin 76 = total 165 HGVs per day

18. This level of rail traffic equates to 15 trains per day per direction. This is less than the nominal capacity of Rail Central, which is designed to be able to receive and despatch at least one train per hour. Network Rail would generally assume that an hourly path offers 18 paths per day per

direction (allowing for passenger peaks etc.) and that 90% of intermodal paths would actually be used, which implies that an hourly path equates to a daily capacity of 16 actual trains per day per direction.

Forecast HGV and Rail Traffic

19. Table 2 above estimates that the warehousing will receive and despatch 1,928 HGV-equivalent loads of cargo per day. Once the above forecast rail traffics to/from the warehousing are accounted for, the implication in terms of Rail Central's HGV traffic is shown in the table below i.e. the forecast rail traffic has been deducted from the total expected daily throughput, with the balance expected to arrive or depart by road. Likewise, off-site intermodal traffic is expected to arrive or depart by road. Empty HGV arrivals and departures are also accounted for. Around 3,344 HGVs per day are forecast to pass into and out of the site per day on the basis that 687,483 square metres of floor space is developed at the Rail Central SRFI.

Table 4: Estimated Daily HGV and Rail Traffic to/from Site, Rail-served

687,483 sq m			
Inbound	**Units**	**Outbound**	**Units**
HGVs			
Loaded to warehouses	1,637	Loaded from warehouses - backload	409
Empty to warehouses	1,418	Loaded from warehouses - empty inbound	1,418
Loaded to intermodal terminal	165	Empty from warehouses - loaded inbound	1,228
Empty to intermodal terminal	124	Loaded from intermodal terminal	165
		Empty from intermodal terminal	124
Total HGVs	***3,344***	***Total HGVs***	***3,344***
Rail			
Loaded to warehouses	296	Loaded from warehouses	106
Empty to warehouses	15	Empty from warehouses	183
Loaded for off-site	165	Loaded from off-site	165
Empty for off-site	23	Empty from off-site	46
Total Rail	***499***	***Total Rail***	***499***

20. These figures are based on the following assumptions:

- 25% of the HGVs arriving with goods from domestic or international suppliers collect a backload from the site, the others leave empty;
- The remaining requirement for loaded outbound HGV traffic is met from HGVs arriving at the site empty (e.g. HGV delivering to a retail outlet then returning to site empty).;
- Similarly, 25% of loaded containers leaving for off-site distributors will collect a backload elsewhere in the wider Northampton area and return to the site loaded. The remaining loaded containers leaving for off-site distributors will return to the site empty;
- Likewise, 75% of loaded containers arriving from off-site shippers leave the site empty before collecting cargo; and
- Intermodal units destined for the on-site warehousing never leave the site by HGV and are re-positioned empty by rail.

21. It is worth noting that this approach generates a two-way trip rate across the 24 hour period of 0.97 HGV-equivalent loads per 100 square metres of floor space. The approach agreed and adopted for the East Midlands Gateway SRFI DCO application traffic analysis (see below also) was 0.93 HGVs per 100 square metres of floor space. The consistency between these figures suggests that the assumptions we have adopted with respect to the mix of NDC and RDC activity, degree of backloading and stock throughput per square metre are collectively representative for SRFIs in the Midlands, particularly given that a survey of the Hams Hall SRFI (a mature development of nearly 20 years) was used to validate the East Midlands Gateway application .

Rail Network Capacity

22. The afore-mentioned technical note (*212008n_GBFreightModel_ver2*) notes that the modal assignment process is undertaken on an unconstrained basis (i.e. it assumes rail paths on the network are available to accommodate trains at approximately the same speed and implied flexibility as is available currently) and does not account for any increasing congestion on the highway network. Operators will apply for rail paths once the scheme is operational.

23. In this context it is worth noting that:

1. MDS Transmodal has undertaken a rail network pathing and capacity exercise for Ashfield Land which was subsequently assessed and agreed by Network Rail. This, amongst other factors, lead to the supply of a letter of support to Ashfield Land for the scheme from Network Rail, allowing Ashfield to progress to subsequent development work, based upon Network Rail believing that adequate capacity would be available to cater for planned traffic as Rail Central developed.

2. Network Rail undertook a Freight Market Study in 2013 to inform its long term planning process (which subsequently directs their future enhancement plans). Likely demand to/from

Rail Central and other SRFIs in development was included in the forecasts used to inform that study (in total circa 10 million square metres of new SRFI floor space was included in the forecast assumptions). The future network infrastructure enhancements set out in Network Rail's Freight Network Study of August 2016 are planned on the basis that a number of SRFI (including Rail Central) will proceed.

Forecast HGVs – Hourly Distribution

24. The forecast daily HGV traffic from Table 4 above has been distributed across a standard 24 hour period on an hourly basis, including in the AM and PM peaks. The recent *East Midlands Gateway SRFI* decision was examined to ascertain the approach agreed and adopted on that scheme (the most recent SRFI to receive consent via the DCO process). The HGV traffic to/from the warehousing units were assessed separately from those moving between the intermodal terminal and off-site shippers and distributors (remembering that intermodal units arriving at the intermodal terminal but destined for on-site warehousing never leave the site). The hourly distribution for each of these two elements was then added together to produce a forecast hourly distribution for the whole scheme. As this approach was subsequently agreed as common ground with all the highway authorities concerned (inc Highways England), it was felt appropriate to adopt the same methodology at Rail Central. In general, HGV movements are well distributed over the day and night as hauliers will avoid the costs of operating in congested conditions wherever possible and are often required to make overnight deliveries which are completed before peak passenger demand builds up.

25. To estimate the hourly distribution of HGV traffic to/from the East Midlands Gateway SRFI warehousing, the promoters used adjusted trip rates derived from a 24 hour traffic survey undertaken at the *Swan Valley Northampton* development. It is considered appropriate to use the same hourly distribution over a 24 hour period at Rail Central, for a combination of the following reasons:

- The East Midlands Gateway SRFI is broadly a similar type of SRFI to that planned for Rail Central;
- The close proximity of Swan Valley to Rail Central; and
- It has been built-out with large scale warehouse units similar in size and function to those planned for Rail Central. The accompanying technical note *'212008n_floor space function comparator sites_ver3'* provides evidence to support this position. Research undertaken for this note indicates that Swan Valley is predominantly a logistics/distribution site, albeit with some B1 but on a very small scale (which in any case would not be attracting HGV traffic). The Technical Note shows that Swan Valley has 11 large scale warehouse units providing 253,000 square metres of warehouse floor space and relatively little manufacturing so that its overall trip generation would be similar to that which would be expected on the application site.

26. The adjusted Swan Valley trip-rates over a 24 hour period and adopted by East Midlands Gateway are attached to the end of this note.

27. Similarly, the East Midlands Gateway promoters adopted a traffic survey undertaken at the *Hams Hall SRFI* intermodal terminal in order to estimate the distribution of HGV traffic over a 24 hour period moving between the intermodal terminal and off-site shippers. Again, as this was common ground and concerns a similar (active) intermodal terminal to that planned for Rail Central, it is considered appropriate to use the same hourly distribution over a 24 hour period at Rail Central. These are also attached to the end of this note. They show that:

    - The busiest hour at the Hams Hall rail terminal was between 12.00 and 13.00 and only 12.5% of daily freight traffic passed during the two passenger peak hours of 08.00 – 09.00 and 17.00 – 18.00 when taken together; and
    - The busiest hour at Swan Valley was between 06.00 and 07.00 but even that only accounted for 9.8% of total freight throughput. The two peak passenger hours (08.00 – 09.00 and 17.00 – 18.00) accounted for only 11.9% of daily freight traffic when taken together.

28. Based on the above, the total forecast daily HGV traffic distributed across a standard 24 hour period on an hourly basis is presented in the table below (i.e. based upon survey work in the public domain presented for *East Midlands Gateway)*.

Table 5: Estimated Daily HGVs by Hour

To/from Warehousing				To/from Intermodal		Total	
		687,483 sq m					
		Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
00:00	01:00	73	110	1	1	74	110
01:00	02:00	106	103	1	1	108	104
02:00	03:00	113	110	1	1	114	111
03:00	04:00	80	123	1	1	81	124
04:00	05:00	106	71	2	2	109	73
05:00	06:00	166	97	7	7	174	104
06:00	07:00	166	71	17	17	184	88
07:00	08:00	153	200	23	23	176	223
08:00	09:00	126	149	15	15	141	163
09:00	10:00	160	142	15	15	174	157
10:00	11:00	180	187	21	21	200	208
11:00	12:00	160	149	19	19	179	168
12:00	13:00	126	103	26	26	152	129
13:00	14:00	100	161	21	21	120	182
14:00	15:00	126	187	15	15	141	202
15:00	16:00	80	149	21	21	100	169
16:00	17:00	166	97	23	23	190	120
17:00	18:00	133	155	21	21	154	176
18:00	19:00	160	129	19	19	179	149
19:00	20:00	140	90	12	12	151	102
20:00	21:00	153	123	5	5	158	127
21:00	22:00	93	136	2	2	95	138
22:00	23:00	87	103	1	1	88	104
23:00	00:00	100	110	1	1	100	110
	Total	**3,055**	**3,055**	**289**	**289**	**3,344**	**3,344**

Origin and Destination of Road Traffic

29. Derived from the GB Freight Model, an Origin/Destination matrix has been produced estimating the likely origins and destinations of the 3,344 inbound and outbound HGVs. This is by Post Code District (PCD) to and from Rail Central. This data can subsequently be fed into a highway assignment model outside of the GB Freight Model.

30. As noted in the accompanying Technical Note (*212008n_GBFreightModel_ver2*), the GBFM was employed to establish the distribution of cargo nationally by commodity to and from the Northampton area (derived from the GBFM's base matrix). The HGV traffic related to the NDC floor space (63% of the total floor space) was subsequently distributed nationally in proportion with that from the wider Northampton area. It has therefore been assumed that cargo from the Rail Central warehouses will broadly have the same origins and destinations of cargo as that currently experienced by existing distribution centres in Northampton i.e. some of the NDC traffic will be serving RDCs located in the Northampton area, while the remaining traffic will be serving RDCs located in other regions (the GBFM distributes cargo to and from PCDs local/adjacent to Northampton and PCDs more distant; likewise the estimated Rail Central traffic, meaning it is capturing both local and longer distance flows).

31. For the 'RDC warehouse floor space' at Rail Central (which assumes 37% of the total floor space as a worst case), a defined market area reflecting the hinterland that a typical RDC in Northampton might serve was identified. For each PCD in this market area, the quantum of retail floor space was identified (as outbound flows from RDCs are typically to retail outlets), derived from the Valuation Office Agency's (VOA's) *Non-domestic Rating List* for England and Wales (the VOA records the amount of floor space by function within commercial properties, and this data is held in-house by MDS Transmodal). The number of HGVs departing loaded from the 'RDC warehouse floor space' was subsequently distributed to each PCD in the defined market area in proportion to that retail floor space. Further, it is assumed that all these HGVs return empty to Rail Central.

32. Similarly for the off-site intermodal traffic a defined market area can be identified. In this case, for each PCD the quantum of warehouse floor space was identified (including warehousing attached to factories, again from the VOA data). The number of HGVs departing loaded from the intermodal terminal was subsequently distributed to each PCD in proportion to that warehouse floor space (and empty HGVs returning to Rail Central). Other empty HGVs either arriving or departing Rail Central are assumed to arrive from or depart to Northampton e.g. a HGV delivering into another NDC in Northampton (e.g. Swan Valley) can then re-position empty to Rail Central to collect a backload. Again, these HGVs have been distributed from/to each PCD in proportion with warehouse floor space.

Swan Valley Trip Rates (as adopted by East Midlands Gateway SRFI)



Table 7: Forecast vehicle trips for proposed warehousing and distribution uses at East Midlands Gateway SRFI (based on adjusted Swan Valley trip rates)

Hams Hall Intermodal Terminal Traffic Survey (as adopted by East Midlands Gateway SRFI)

Rail Terminal		
60% external HGVs**		
Arrive	Depart	Two-way
1	1	2
2	2	4
2	2	4
2	2	3
4	4	8
14	14	29
33	33	66
44	44	87
28	28	56
28	28	56
39	39	77
37	37	73
49	49	97
39	39	78
28	28	56
39	39	77
44	44	87
40	40	80
37	37	74
22	22	44
9	9	17
4	4	8
2	2	4
1	1	2
545	**545**	**1091**

** Based on Hams Hall Train Arrivals

WAREHOUSE FUNCTION AT SWAN VALLEY, DIRFT AND MAGNA PARK

1. The traffic forecasts methodology needs to consider whether the particular site being tested will be occupied by *National Distribution Centres (NDCs)* i.e. outbound traffic being re-distributed across the British Isles, *Regional Distribution Centres (RDCs)* i.e. outbound traffic serving the southern Midlands, or a mixture of both types. This is important, as stock generally turns-over twice as quickly at a RDC (on average around 25 times per annum) when compared with a NDC (circa 13 times per annum). The implications, in traffic terms, is that a RDC will generate around twice as many HGV trips per square metre of floor space.

2. It is generally accepted that large scale warehouses located in the southern East Midlands are predominantly serving the national market, albeit that some distributors are also known to operate RDCs in the area. In the case of Rail Central, therefore, we can expect a mixture of both types, though with NDC floor space forming the larger proportion. However, the forecast outputs are being used to assess junction and highway capacities, meaning that they need to be produced on a 'worst case scenario' basis i.e. maximum potential HGV trip generation from the site.

3. In order to quantify the percentage split between the two types of warehousing subsequently adopted and to ensure that it is robust, an assessment of existing large scale floor space occupied at three comparable B8 developments in the southern East Midlands has been undertaken, namely at:

    - Swan Valley, Northampton;
    - Daventry International Rail Freight Terminal (DIRFT); and
    - Magna Park, Lutterworth.

4. In each case, all three B8 developments have been built-out with large scale warehouse units similar in size to those planned for Rail Central. DIRFT was developed as a Strategic Rail Freight Interchange (SRFI) from the outset; it is therefore of a similar form/structure to that planned for Rail Central (i.e. large warehouse units served by an on-site intermodal terminal). Magna Park is not rail-served, albeit it is located close to DIRFT, with many of the site occupiers known to access to its rail terminal facilities. It was also developed for and marketed at occupiers seeking large scale facilities to serve the national distribution market. Likewise, Swan Valley was developed with a range plot sizes for B8, albeit is adjacent to an urban area and is the closest of the three sites to London and the South East. Also, it is not rail-linked and is located the furthest away from an existing rail terminal. We have therefore identified for each warehouse unit at the three B8 developments the following:

    - Quantum of internal floor space undertaking warehouse, storage and similar functions;
    - Occupier; and
    - Whether the warehouse unit is operated as a NDC or RDC.

5. The quantum of floor space within each unit undertaking warehouse, storage and similar functions and the current occupier have been sourced from the *Valuation Office Agency's (VOA's) Non-domestic Rating List* for England and Wales. The VOA records the amount of floor space by function within commercial properties across England and Wales for Business Rates purposes, and MDS Transmodal holds a copy of the VOA's Rating List database in-house. It has therefore been interrogated, with the relevant information extracted.

6. The warehouse function information has been derived from the following sources, namely:

   - Consultant's extensive knowledge and experience in this sector; and
   - On-line research from company websites, developer press releases and property agent publications.

7. The table below presents a summary of this analysis. In total, 1.1 million square metres of floor space is identified at the three B8 developments (45 individual warehouse units), of which 84% is considered to be performing a NDC function. The actual data is presented below for the three sites.

Table: Floor Space by Function at Swan Valley, Magna Park and DIRFT

NDC	924,700	84%
RDC	181,099	16%
Total	*1,105,799*	

Source: VOA and consultant's knowledge and online-research

8. The detailed data below shows that DIRFT, an SRFI similar to that being planned for Rail Central, is dominated by NDCs. Likewise Magna Park, which is not rail-served, but is in close proximity to DIRFT and occupiers are known to make use of the terminal e.g. Asda operates daily trains to Scotland from DIRFT but served from their NDC at Magna Park. It might therefore be realistic to expect the proportion of NDC floor space at Rail Central to be similar to those two sites. It is worth noting that for new East Midlands rail-served warehousing within the national rail freight demand forecasts, produced by MDS Transmodal to inform Network Rail's Freight Market Study, a 70:30 split was assumed.

9. However, despite that position and to ensure a robust worse case assessment, the assumed proportion of NDC/RDC floor space subsequently adopted in the traffic forecasts has been based on that currently recorded at the Swan Valley development i.e. 63% NDC 37% RDC.

Table: Warehouse Units by Floor Space, Occupier and Function at Swan Valley

Warehouse Address	Postcode	Occupier	sq m*	NDC/RDC	
Swan Valley Way	NN4	Pets at Home	16,000	NDC	
Swan Valley Way	NN4	Morrisons	22,000	RDC	
Swan Valley Way	NN4	Levi Straus	11,300	NDC	
Tithe Barn Way	NN4	Carlsberg	26,000	NDC	
Cob Drive	NN4	Morrisons	41,000	RDC	
Cob Drive	NN4	Blacks Leisure	23,500	NDC	
Corolla Way	NN4	BWM	37,500	NDC	
Style Way	NN4	99p Stores	32,700	NDC	
Style Way	NN4	Dalepak	10,600	NDC	
Nectar Way	NN4	Sainsburys	30,000	RDC	
Upper Valley Way E	NN4	EBC Brakes	2,800	NDC	
		NDC	160,400		63%
		RDC	93,000		37%

Source: VOA, consultant's knowledge and online-research

*The VOA records the amount of floor space by function within commercial properties across England and Wales for Business Rates purposes. The quantum of internal floor space identified above is that undertaking warehousing, storage and similar functions. Floor space accommodating ancillary functions has not been recorded, meaning that the 'headline' size of a unit quoted in press releases or property agent publications may be larger.

Table: Warehouse Units by Floor Space, Occupier and Function at DIRFT

Warehouse Address	Postcode	Occupier	sq m	NDC/RDC
Danes Way	NN6	Tesco - Frozen DC	12,500	NDC
Danes Way	NN6	NFT	14,000	NDC
Danes Way	NN6	DHL	9,000	NDC
Danes Way	NN6	Mothercare	21,000	NDC
Celtic Way	NN6	DHL	23,000	NDC
Celtic Way	NN6	WH Malcolm	21,500	NDC
Railport Approach	NN6	DHL	10,000	NDC
Railport Approach	NN6	Stobart	40,000	NDC
A428 Crick Road	NN6	Tesco	65,000	NDC
A428 Crick Road	NN6	Tesco	73,000	NDC
A5	NN6	Sainsburys	92,000	NDC
Parklands	NN6	Ingram Micro	21,700	NDC
Parklands	NN6	Nissan UK	12,500	NDC
		NDC	415,200	100%

Source: VOA, consultant's knowledge and online-research

Table: Warehouse Units by Floor Space, Occupier and Function at Magna Park

Warehouse Address	Postcode	Occupier	sq m	NDC/RDC
Buccaneer Way	LE17	BSS Group	11,000	NDC
Wellington Parkway	LE17	Britvic	22,500	NDC
Shackleton Way	LE17	Toyota	13,000	NDC
Vulcan Way	LE17	CML	17,000	NDC
Hunter Boulevard	LE17	VWR International	14,500	NDC
Hunter Boulevard	LE17	Harveys	26,000	NDC
Wellington Parkway	LE17	Lidl	17,000	RDC
Harrier Parkway	LE17	Disney Store	14,000	NDC
Vulcan Way	LE17	Syncreon	19,000	NDC
Hawke Way	LE17	Primark	40,600	NDC
Hunter Boulevard	LE17	Asda	45,000	NDC
Wellington Parkway	LE17	DHL	13,000	RDC
Hunter Boulevard	LE17	Stobart	19,000	NDC
Hunter Boulevard	LE17	Asda	31,599	RDC
Vulcan Way	LE17	Unipart	16,500	NDC
Wellington Parkway	LE17	Cbutt Logistics	15,500	NDC
Hunter Boulevard	LE17	Nissan Parts	22,000	NDC
Vulcan Way	LE17	DHL	10,500	RDC
Harrier Parkway	LE17	VOW Europe	16,000	RDC
Hunter Boulevard	LE17	BT	29,500	NDC
Wellington Parkway	LE17	Argos	24,000	NDC
		NDC	349,100	80%
		RDC	88,099	20%

Source: VOA, consultant's knowledge and online-research

APPENDIX P

MDS Transmodal Report – GB Freight Model

DRAFT

GREAT BRITAIN FREIGHT MODEL

1. The *Great Britain Freight Model (GBFM)* is a comprehensive freight transport model that has been developed by MDS Transmodal. In broad terms, it has two main functions, namely:

    - Describing current GB-domestic and GB-international freight flows by mode, commodity and origin/destination (including port of entry/departure for international traffics). Inland road and rail freight flows are assigned to the national highway and railway networks respectively; and
    - Producing forecasts for future GB-domestic and GB-international freight flows by mode, commodity and origin/destination (including port of entry/departure for international traffics). User-defined scenarios or assumptions, reflecting changes to transport costs, infrastructure and new origins/destinations for freight, can be 'tested' and their impact on mode share/shift estimated. Inland road and rail freight flows are assigned to the national highway and railway networks respectively.

2. MDS Transmodal retains ownership of the GBFM, and uses it to undertake analysis in response to client requirements. Unlike other models, it is not licenced to third party users; clients of MDS Transmodal purchase 'outputs' from the model which address their requirements.

3. The GBFM actually consists of a number of inter-linked components, namely:

    - A multi-dimensional base matrix, built up from several sources, which describes freight flows within Great Britain and to/from Great Britain by origin/destination and commodity;
    - Freight transport cost models, validated against industry data, which replicate transport rates in the market and can be adjusted for different scenarios;
    - A mode-choice assignment model, which assigns origin/destination freight flows to transport modes (road or rail for inland flows);
    - A vehicle choice and load factor model used to 'convert' road freight outputs from the GBFM, which are initially expressed as annual tonnes-lifted, into HGV numbers;
    - A road assignment model, which subsequently assigns generated HGV numbers between each origin/destination pair onto specific routes on the national highway network; and
    - On a similar basis, a rail assignment model based upon current operating behaviour (route choice, tonnes/trains by commodity).

4. The multi-dimensional base matrix is generated from the following principal data-sources:

    - The DfT's Continuing Survey of Road Goods Transport (CSRGT). This is a DfT sample survey of British registered HGV activity. Each week, circa 300 HGVs are randomly selected, and their operators are subsequently required to record all activity undertaken during that week. This includes collection and delivery locations, commodities conveyed and tonnes-lifted. The

survey data is then extrapolated to estimate and describe the volume of goods lifted/moved by road haulage annually.

- Network Rail billing data. Network Rail records all rail freight movements across its network in order to levy track access charges on the freight operators (charges are essentially based on distance moved and the weight of wagons). Every freight wagon movement, the origin and destination siding, wagon type, commodity conveyed and wagon/commodity weight is recorded by Network Rail. MDS Transmodal process this billing data, allowing a complete record of annual rail freight activity to be produced.
- HM Revenue and Customs trade data. This records the origin and destination of international trade.
- DfT Maritime Statistics – the DfT's published record of freight traffic passing through British ports, by port, traffic type/commodity and tonnes-lifted/units handled; and
- Ferry industry data. Alongside the DfT's Maritime Statistics data, this allows the volume of goods lifted/moved by foreign registered HGVs to be estimated.

5. Freight flows in the base matrix are subsequently disaggregated down to Post Code District (PCD) level; there are in total 2,600 PCDs in Great Britain, meaning a large freight O/D matrix with 2,600 potential origins and 2,600 potential destinations for freight. The base matrix therefore describes annual current GB-domestic and GB-international freight flows by commodity between each of the 2,600 PCD origins/destinations (including port of entry/departure for international traffics). Outputs, in tonnes-lifted or tonne-km, can be generated and presented at national, regional and county levels together with user-defined groups of PCDs. For a given location e.g. Northampton, it can therefore describe the current distribution of cargo nationally by commodity.

6. The mode-choice assignment model subsequently assigns the base matrix flows between each of the 2,600 PCD origins/destinations as described to transport modes (road or rail for inland). This is based on a lowest 'generalised cost' approach, which takes into account transport costs (from the cost models) alongside other factors such as speed, flexibility and reliability. A calibration process is undertaken which ensures that the outputs replicate current mode shares. The assignment is undertaken on an unconstrained basis i.e. it assumes rail network capacity is available and does not account for changes in congestion on the wider highway network.

7. Each origin to destination road freight flow (tonnes-lifted) from the base matrix is then 'converted' to annual HGV numbers (using the vehicle choice and load factor component). The road assignment model subsequently assigns the generated HGV numbers between each origin/destination pair onto specific routes on the national highway network. Assignment is an 'all or nothing' process based on the lowest cost route between each origin and destination. For each link on the road network, it is therefore possible to estimate HGV numbers alongside their origin and destination. However, it should be noted that the derived HGV trips for Rail Central will be assigned onto the local highway network within NCC's SATURN model, which allows for local traffic conditions.

8. Likewise, the rail assignment model allocates rail flows from the base matrix to the national railway network, based upon current operating behaviour (route choice, tonnes/trains by commodity).

9. Freight flows in future years are forecast as follows:

    - GB-domestic freight flows – trend based forecasting, with growth rates subsequently applied to the GB-domestic elements of the base matrix; and
    - GB-international freight flows – growth rates by commodity, sector and country are derived from external trade forecasting models developed and operated by MDS Transmodal. These are then applied to the GB-international elements of the base matrix.

10. Effectively, a 'new' matrix of origin/destination freight flows is generated based on the respective growth rates as described applied to the base matrix. New freight infrastructure can also be included in this process, such as the likely traffic generated by a new container port or Strategic Rail Freight Interchanges (SRFIs). As per above, the forecast matrix therefore describes future GB-domestic and GB-international freight flows by commodity between each of the 2,600 PCD origins/destinations (including port of entry/departure for international traffics). Again, outputs, in tonnes-lifted or tonne-km, can be generated and presented at national, regional and county levels together with user-defined groups of PCDs.

11. As per above, the mode-choice assignment model subsequently assigns the forecast flows between each of the 2,600 PCD origins/destinations as described to transport modes (road or rail for inland). This is also based on a 'generalised cost' approach. User-defined scenarios or assumptions can be 'tested' in terms of their potential impact on mode share/shift. This could include higher fuel costs (due to oil price rises or taxation), distance based road user charging, higher driver wages and new road or railway infrastructure (including SRFIs). However, in this case we have assumed 'no-change' except for increases in labour and energy costs consistent with WEBTAG.

12. As per above, each origin to destination forecast road freight flow (tonnes-lifted) is then 'converted' to annual HGV numbers (using the vehicle choice and load factor component). The road assignment model subsequently assigns the forecast HGV numbers between each origin/destination pair onto specific routes on the national highway network. Likewise, the rail assignment model allocates future rail flows from the base matrix to the national railway network.

13. The recent project work for Transport for the North (TfN Freight and Logistics Strategy) is perhaps a good example of the type of analysis and outputs undertaken by the GBFM at the strategic level. Current (baseline) freight movements to/from the north of England (both domestic and international) by origin and destination, commodity and mode were established.

Assignment of the inland road and rail freight flows to the national highway and railway networks respectively was then undertaken.

14. Forecasts were then undertaken (again for domestic and international traffics) for the years 2033 and 2043. The mode-choice assignment model subsequently assigned these forecast flows to transport modes (road or rail for inland) under various user-defined strategy scenarios. These included a significant increase in the level of distribution floor space developed at rail or water served sites, alongside enhanced railway and highway infrastructure. A do-nothing scenario was also tested. Assignment of the inland road and rail freight flows to the national highway and railway networks respectively was then undertaken. The mode-shift potential of the various user-defined strategy scenarios (compared with baseline and do-nothing) were therefore tested and quantified. This included estimating the 'global' reduction in tonne-km moved by road, but also identifying the change in HGV number at key links on the national road network and the increase in the number of freight trains along links in the railway network.

15. With specific reference to ***Rail Central***, the GBFM has been used to estimate both the distribution of cargo nationally and the modal choice to and from the planned development (and by implication the impact on the national road network). Reference at this stage should be made to the attached note '*212008n_traffic forecasts_ver12 Nov2016*'.

16. Initially, the total daily volume of traffic to/from the warehousing planned for Rail Central was estimated from 'first principles' i.e. outside the GBFM. This is fully described in pages 2-4 of the attached note.

17. The GBFM was then employed to establish the distribution of cargo nationally by commodity to and from the Northampton area (from the GBFM's base matrix as described). The estimated daily inbound and outbound traffic passing through the warehousing at Rail Central (i.e. that shown in Table 2 from the attached technical note) was subsequently distributed nationally in proportion with that from the wider Northampton area. It has been assumed that cargo from the Rail Central warehouses will broadly have the same origins and destinations of cargo as that experienced by existing distribution centres in Northampton. The GBFM distributes cargo to and from PCDs local/adjacent to Northampton and PCDs more distant. Likewise the estimated Rail Central traffic, meaning it is capturing both local and longer distance flows.

18. The GBFM's mode-choice assignment model, as described, was then employed to estimate the modal choice to and from Rail Central. There were two elements to this process. Firstly, the forecast traffic to/from the planned warehousing (as estimated and distributed nationally) was inputted into the mode-choice assignment model, with the road-rail modal split subsequently established (outputs shown in Table 3 of the traffic forecasting attached note).

19. Secondly, there will be existing non rail-served warehouses in the Northampton area currently receiving/despatching goods by road. Given the availability of the intermodal terminal at Rail Central, some of these flows could in future arrive/depart by rail via Rail Central (with the short

final delivery leg undertaken by road). The GBFM's mode-choice assignment model was therefore run both with and without the Rail Central intermodal terminal included in the user-defined assumptions, with the level of rail traffic to/from off-site distributors that potentially will be generated subsequently established. The model estimates this to be 1,080,000 tonnes per annum inbound and outbound, equating to 165 HGV-equivalent units per day (i.e. 1.080,000 tonnes collected/delivered currently by road, but would switch to intermodal rail via Rail Central). The two elements were then added together to estimate total rail traffic to/from the development.

20. In order to calculate the mode share of traffic to/from locations across the country, assumptions need to be made about whether the other ends of journeys are rail-connected or not. If the other end of the journey is a rail-served warehouse, the whole journey can be by rail and there is no need for a local road haul, thus making rail a more viable option. It has been assumed that several sites for rail-served warehousing across the country will be built in the coming decades. Given that some planned sites may not be built, while other nearby sites may be brought forward, the assumptions include typical locations suitable for rail-served warehousing which are representative of specific projects and plans.

21. It should be noted that the baseline assumptions adopted in this mode-choice assignment process (including the approach to other rail-served warehousing across the country) reflect those used for the national rail freight demand forecasts produced by the GBFM to inform Network Rail's Freight Market Study in 2013. These were subsequently used to underpin the policy conclusions contained in the National Planning Statement for National Networks (NPS); it states that the forecasts, and the measures used to produce them, are considered robust and that the Government accepts them for planning purposes (see paragraph 2.49 of the NPS). The rail freight demand forecasts included some 10 million square metres of new SRFI floor space being developed nationally, including DIRFT Phase 3, East Midlands Gateway and Rail Central. The freight traffic projections for Rail Central assume that other SRFI included in the Network Rail forecasts have been built. The modelling process therefore undertaken for Rail Central includes these 'nearby' sites. In broad terms, the model will route such off-site intermodal traffic via the nearest rail terminal. However, the growth nationally in SRFI floor space, particularly increasing the quantum of rail-served floor space in the north of England, Scotland and the South West, encourages more domestic flows by rail (flows between two rail-served sites, apart from over very short distances, should always be more cost competitive by rail.

GBFM – Project Applications

22. The GBFM and the methodology used to produce the traffic forecasts for Rail Central (as described above and in the accompanying technical note '*212008n_traffic forecasts_ver10 Oct2016*') has previously been adopted on other SRFI schemes. In particular, traffic forecasts for the proposed SRFI at Slough (*SIFE*, promoted by Goodman) were prepared using the GBFM and

methodology as described. This scheme was examined at a Public Inquiry in September 2015 with highways issues, including the forecasting tools and methodologies adopted to assess HGV trip generation, being common ground between Goodman and the respective highway authorities (i.e. Slough BC and Highways England).

23. HGV trip generation was initially forecast using the same methodology for Rail Central (i.e. using the GBFM as acknowledged at para 6.28 of the Planning Inspector's report), though traffic data from DIRFT and the TRICS database was also referenced to ensure the outputs were robust. This approach was subsequently agreed with Slough BC and Highways England. The Inspector concluded "There is no contrary technical evidence to cast doubt on the results" (para 12.52). The Secretary of State agreed with this position (para 19 of Decision Letter).

24. The Inspector also concluded that the forecasts provided by MDST (for Goodman) "indicate a significant modal shift within 15 years of operation" (para 12.144). Overall the Inspector concluded "All the indicators are that the risk of not attaining a high level of rail use would be low" (para 12.148). The Secretary of State agreed with this position (para 28 of Decision Letter, see also paras 19 and 27). In summary, therefore, use of the GBFM in forecasting HGV trip generation (and rail freight) has recently been accepted by highway authorities for a scheme similar in nature to Rail Central, and was subsequently accepted by the Planning Inspectorate and the Secretary of State.[1]

25. Other examples of where the GBFM have been used include:

- Providing the freight inputs into the DfT's National Transport Model (NTM). MDS Transmodal have recently begun work on supplying updated freight inputs to the NTM as part of an upgrade process;
- Providing national rail freight demand forecasts (to 2033 and 2043) which supported the preparation and under-pinned the conclusions contained in Network Rail's Freight Market Study in 2013 (http://www.networkrail.co.uk/improvements/planning-policies-and-plans/long-term-planning-process/market-studies/freight/)
- The national rail freight demand forecasts were subsequently used to underpin the policy conclusions contained in the National Planning Statement for National Networks (NPS) (i.e. 'there is a compelling need for an expanded network of SRFIs');
- Transport for the North's Freight and Logistics Report (a major study for TfN undertaken by MDS Transmodal and Mott MacDonald). The GBFM was used to produce base line freight analysis and to test the potential strategy options emerging from the study (http://www.transportforthenorth.com/news/North-could-deliver-the-goods-for-the-UK-economy.html)
- Producing the economic case for longer semi-trailers (for DfT). MDS Transmodal advised the DfT on the economic case for introducing longer HGV semi-trailers in Great Britain. The

[1] Planning consent for SIFE was refused by the Secretary of State in July 2016 which was due to greenbelt policy rather than highway connectivity issues which, as noted, were common ground between all parties

GBFM was used to undertake forecasts demonstrating wider economic and environmental benefits. A trial has since been undertaken, with the DfT recently reporting significant benefits (https://www.gov.uk/government/news/more-efficient-lorries-cut-road-congestion-and-improve-air-quality)

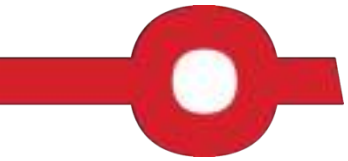
APPENDIX Q
Strategic Modelling Assessment Report

DRAFT

Rail Central Northampton **17/01/2018**

Reference number 104176

RAIL CENTRAL : STRATEGIC MODELLING ASSESSMENT



tpa Transport Planning Associates 20 1997-2017

SYSTRA

RAIL CENTRAL NORTHAMPTON

RAIL CENTRAL : STRATEGIC MODELLING ASSESSMENT

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates
Project	Rail Central Northampton
Study	Rail Central : Strategic Modelling Assessment
Date	17/01/2018
File name	RP001a-104176-Rail Central Strategic Modelling Assessment - Report - Final V2.docx
Reference number	104176
Number of pages	46

APPROVAL

Version	Name		Position	Date	Modifications
1	Author	Saiful Islam	Consultant	03/10/2017	
	Checked by	Dave Cope	Senior Consultant	06/10/2017	
	Approved by	Duncan Irons	Director	09/10/2017	
2	Author	Saiful Islam	Consultant	16/01/2018	
	Checked by	Rhian Turgoose	Associate	17/01/2018	
	Approved by	Duncan Irons	Director	17/01/2018	

TABLE OF CONTENTS

1.	**INTRODUCTION**	**6**
1.1	BACKGROUND	6
1.2	PREVIOUS TECHNICAL NOTES	7
2.	**RAIL CENTRAL DEVELOPMENT PROPOSALS**	**8**
2.1	SITE LOCATION AND ACCESS	8
2.2	LAND USE PROPOSALS	8
2.3	ASSESSMENT YEARS AND TIME PERIODS	9
2.4	TRIP GENERATION	9
2.5	TRAFFIC DISTRIBUTION	10
2.6	AREA OF INFLUENCE	10
2.7	MODELLING REQUIREMENTS	11
3.	**NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)**	**13**
3.1	MODEL OVERVIEW	13
3.2	MODEL STRUCTURE	13
3.3	SOFTWARE PLATFORM	14
3.4	MODELLED AREA	14
3.5	MODEL TIME PERIODS	15
3.6	DEMAND SEGMENTATION AND USER CLASSES	15
4.	**BASE YEAR VALIDATION**	**16**
4.1	BACKGROUND	16
4.2	VALIDATION AND CALIBRATION COUNTS	16
4.3	RAIL CENTRAL CALIBRATION AND VALIDATION	19
5.	**REFERENCE CASE ASSUMPTIONS**	**24**
5.1	OVERVIEW	24
5.2	2021 AND 2031 REFERENCE CASES	24
5.3	GROWTH IN HIGHWAY TRIPS	24
5.4	JUNCTION CONGESTION	25
6.	**2021 (DS1) WITH RAIL CENTRAL SCENARIO**	**26**
6.1	OVERVIEW OF CHAPTER	26

6.2	TRIP DISTRIBUTION	26
6.3	REASSIGNMENT IMPACT	27
6.4	FLOW CHANGE	27
6.5	JUNCTION CONGESTION	28
6.6	NETWORK STATISTICS	29
7.	2031 (DS1) WITH RAIL CENTRAL SCENARIO	31
7.1	OVERVIEW OF CHAPTER	31
7.2	TRIP DISTRIBUTION	31
7.3	REASSIGNMENT IMPACT	32
7.4	FLOW CHANGE	33
7.5	JUNCTION CONGESTION	33
7.6	NETWORK STATISTICS	35
8.	2021 (DS2) WITH RAIL CENTRAL AND M1 JUNCTION 15A MITIGATION	36
8.1	OVERVIEW	36
8.2	PROPOSED M1 JUNCTION 15A MITIGATION SCHEME	36
8.3	TRIP DISTRIBUTION	36
8.4	FLOW CHANGE	37
8.5	JUNCTION CONGESTION	37
9.	2031 (DS2) WITH RAIL CENTRAL AND M1 JUNCTION 15A MITIGATION	39
9.1	OVERVIEW	39
9.2	TRIP DISTRIBUTION	39
9.3	FLOW CHANGE	39
9.4	JUNCTION CONGESTION	40
10.	CONCLUSIONS	41
10.1	OVERVIEW	41
10.2	2021 AND 2031 NO MITIGATION CONCLUSIONS	41
10.3	2021 AND 2031 WITH M1 JUNCTION 15A MITIGATION CONCLUSIONS	42

LIST OF FIGURES

Figure 1.	Site Location	8
Figure 2.	Strategic Modelling Area of Influence	11
Figure 3.	NSTM Model Structure	13
Figure 4.	NSTM Coverage	14
Figure 5.	Strategic Rail Freight Interchange ATC and TRADS count locations	17
Figure 6.	Strategic Rail Freight Interchange ANPR count locations	18
Figure 7.	Journey Time Routes	22

LIST OF TABLES

Table 1.	Employee/visitor Movements associated with Rail Central	9
Table 2.	HGV Trips associated with Rail Central (vehicles)	10
Table 3.	Total Highway Trips associated with Rail Central (vehicles)	10
Table 4.	Rail Central AOI Calibration Statistics	20
Table 5.	Rail Central AOI Validation Statistics	20
Table 6.	Growth in highway trips between Base and Reference Cases	25
Table 7.	2021 Core Scenario - Network Statistics	30
Table 8.	2031 Core Scenario - Network Statistics	35

1. INTRODUCTION

1.1 Background

1.1.1 SYSTRA has been commissioned to assess the strategic highway impacts of the proposed Rail Central Intermodal Park located on land to the south-west of M1 junction 15A adjacent to the A43 West of Northampton. The development will contain circa 7.5 million sqft of commercial development consisting mainly of distribution warehousing with associated office and industrial activities. The site is also to include a rail intermodal terminal.

1.1.2 Transport Planning Associates (TPA) are developing the detailed transport related submissions associated with the Rail Central scheme and have commissioned SYSTRA to advise on the strategic modelling aspects of the appraisal.

1.1.3 The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

1.1.4 Strategic transport modelling has been undertaken to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process have been used in the development of a Transport Assessment to be submitted as part of the NSIP planning application.

1.1.5 The Northampton Strategic Transport Model (NSTM) developed by WSP Parsons Brinckerhoff has been identified as a suitable tool to form the basis of the strategic transport modelling for the site. Further details of this model are presented in this report. All updates and application of this model have been undertaken by WSP Parsons Brinckerhoff with model outputs being provided to the applicants team for use in the appraisal of the site.

1.1.6 This report details the outputs of the strategic modelling process, which will be used in the development of a Transport Assessment to be submitted as part of the planning application. It is designed to be read in conjunction with the supplementary Figures document titled 'RP001b-104176-Rail Central Strategic Modelling Assessment - Figures Document - 1.1'. All figures referred to in this report can be found in this supplementary figures document.

1.2 Previous Technical Notes

1.2.1 This report builds upon a series of agreed technical notes and reports including:

- **Technical Note 1 – Data Requirements** – which identified the survey data required to develop and validate the Rail Central specific version of NSTM.
- **Technical Note 2 – Modelling Methodology** which presented the **modelling approach** adopted for this study. This approach was agreed by all the relevant local authorities and Highways England (HE).
- **Technical Note 3 Model Development and Validation Report** which provided detail on the enhancements to the NSTM model and reported the calibration and validation statistics. This report has been agreed by all the relevant local authorities and HE.

1.2.2 The above notes are contained within Appendix A.

2. RAIL CENTRAL DEVELOPMENT PROPOSALS

2.1 Site Location and Access

2.1.1 The proposed Rail Central site is located on an area of undeveloped land bounded by the village of Milton Malsor to the North, the West Coast Mainline railway to the south, the Northampton Loop railway to the east and the A43 to the west. The location of the site is shown in Figure 1.

Figure 1. Site Location



2.1.2 Access will be gained via a new grade separated junction onto the A43. Northampton Road passes through the site, however there will be no general traffic connections to this route from the developments internal road network, however , emergency, pedestrian and cycle access is to be provided from this road.

2.2 Land Use Proposals

2.2.1 The current land use proposals include:

- An Intermodal Park on the Northampton Loop line.
- Up to 7.5 million sqft (696,750 sqm) of warehouse/distribution units.
- A 149 space HGV truck park.

2.3 Assessment Years and Time Periods

2.3.1 The predicted first occupancy date for any part of Rail Central is 2021. This has, therefore, been assumed as the 'year of opening' assessment year. The development has also been appraised in a 2031 assessment year in order to establish the likely transportation situation following the full occupation of Rail Central and implementation of all local Core Strategies.

2.4 Trip Generation

2.4.1 The employee/visitor trip generations for Rail Central with their baseline modal splits are shown in Table 1. These have been taken from Technical Notes 'BN01 Person Trip Attraction' and 'BN02 Mode Choice' (see Appendix B) prepared by TPA. A total of 1,026 person trips are forecast to be generated by the Rail Central development in the morning peak, and 1,365 person trips in the evening peak.

Table 1. Employee/visitor Movements associated with Rail Central

TIME PERIOD	MORNING PEAK (0800-0900)			EVENING PEAK (1700-1800)		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Cars (vehicles)	837	91	928	274	961	1,235
Public Transport	14	2	16	5	16	21
Walking	28	3	31	9	32	41
Cycling	9	1	10	3	11	14
Total (person trips)	925	101	1,026	303	1,062	1,365

2.4.2 These employee trip generations rates have been agreed with HE and NCC and have been used in the strategic transport modelling for the Rail Central site.

2.4.3 In addition to the employee trips, Rail Central will generate regional and national HGV traffic. Table 2 summarises the HGV trips associated with Rail Central. These have been extracted from a report by MDS Transmodal entitled 'Rail Central – Site Traffic Forecasts' (see appendix B).

2.4.4 The Rail Central site is predicted to generate 305 HGV movements in the morning peak and 330 in the evening peak. These HGV trip generations rates have been agreed with HE and NCC and have been used in the strategic transport modelling for the Rail Central site.

Table 2. HGV Trips associated with Rail Central (vehicles)

TIME PERIOD	MORNING PEAK (0800-0900)			EVENING PEAK (1700-1800)		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Warehousing	126	149	275	133	155	288
Rail Intermodal	15	15	30	21	21	42
Total	141	164	305	154	176	330

2.4.5 The resultant total highway trips generated by the development are shown in Table 3. In summary, the development is expected to generate 1,233 two way vehicle trips in the morning peak and 1,565 vehicle trips in the evening peak.

Table 3. Total Highway Trips associated with Rail Central (vehicles)

TIME PERIOD	ARRIVE	DEPART	TOTAL
Morning (08:00-09:00)	978	255	1,233
Evening (17:00-18:00)	428	1,137	1,565

2.5 Traffic Distribution

2.5.1 The distribution of the traffic movements to the local and wider highway network varies between the employees/visitors and HGVs.

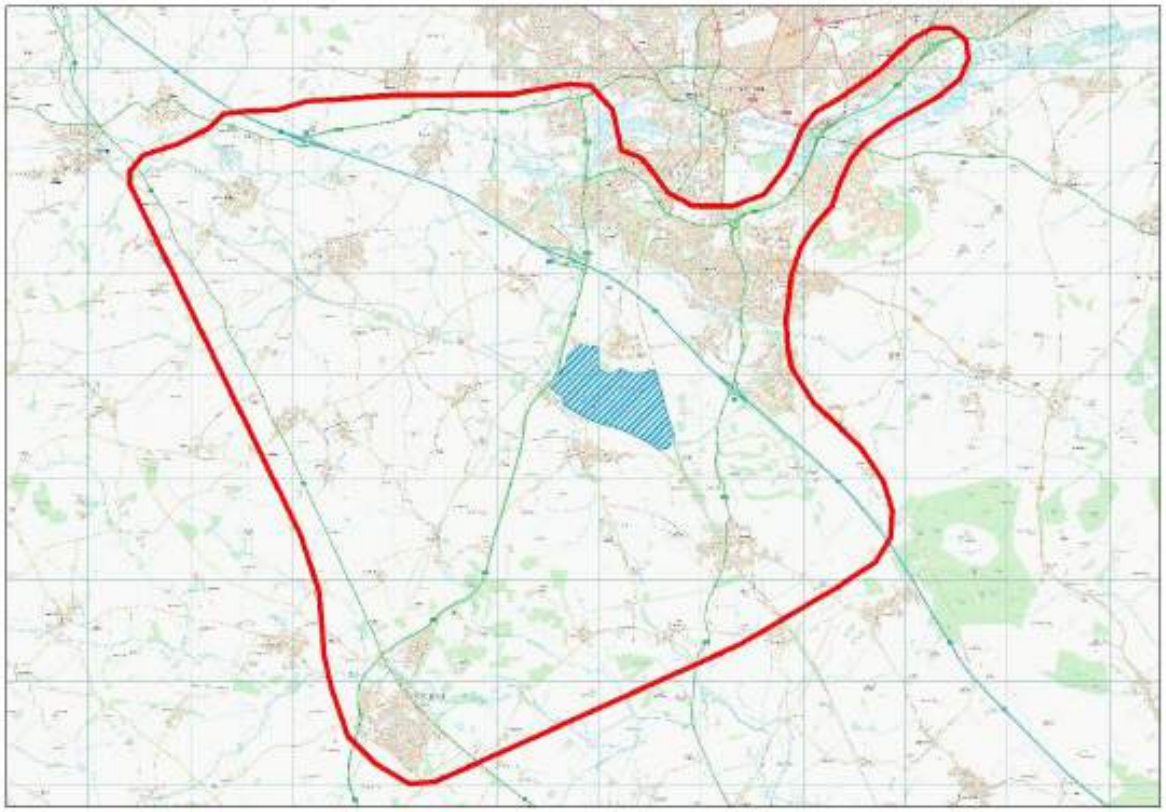
2.5.2 The distribution of employee and visitor trips has been determined by the model based on zones which contains similar employment land use.

2.5.3 The HGV trip movements and distribution has been derived from the GB Freight model. The movements associated with larger GB Freight model zones have been disaggregated based on the existing proportions of HGV movements associated with the smaller NSTM zones.

2.6 Area of Influence

2.6.1 A strategic modelling Area of Influence has been identified through an initial analysis of the flow impact of the scheme using the Northamptonshire Transport Model combined with discussions with interested parties regarding other routes and areas that may be affected by the scheme. This AOI is shown in Figure 2 and has been agreed with NCC and HE.

Figure 2. Strategic Modelling Area of Influence



2.6.2 This area has been identified for the purposes of the Local Model Validation and Strategic modelling exercises and not the scope for the Transport Assessment for the scheme. The AOI includes:

- the Highways England Routes of the A43, M1, A5 and A45;
- urban routes on the southern side of Northampton; and
- rural routes leading to local villages between the A5 and the M1.

2.7 Modelling Requirements

2.7.1 A transport model is required to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process have been used in the development of a Transport Assessment to be submitted as part of the National Infrastructure Planning (NIP) application.

2.7.2 The mitigation measures include improvements to the HE routes in the vicinity of the site including an access onto the A43, local highway network improvements and bus based public transport improvements.

2.7.3 As a result of these general requirements, a core list of model functionality required to undertake this assessment has been agreed with the Highways England (HE) and Northamptonshire County Council (NCC) as follows:

- Full simulated representation of the highway networks within the identified Area of Influence. This includes detailed representation of the operation of all classified roads and junctions within the network to enable the junction impacts to be assessed.
- Public Transport model capable of assessing the modal implications of new bus services accessing the site.
- Separate OGV/HGV matrices that reflect the regional and sub-regional HGV movements associated with the site.
- High levels of validation on the HE routes in the vicinity of the site and on local routes within the Area of Influence.
- Appropriate zoning system that ensures that local demand is disaggregated to provide a high quality representation of all transport movements between the site and its employment catchment.
- Outputs robust enough to form the bases of the Transport Assessment for the NSIP application.

3. NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)

3.1 Model overview

3.1.1 In 2008, the North Northamptonshire Highway Model (SATURN) and the West Northamptonshire Multi-Modal Model (SATURN and EMME/2) were combined and updated to produce the Northamptonshire Strategic Transport Model (NSTM).

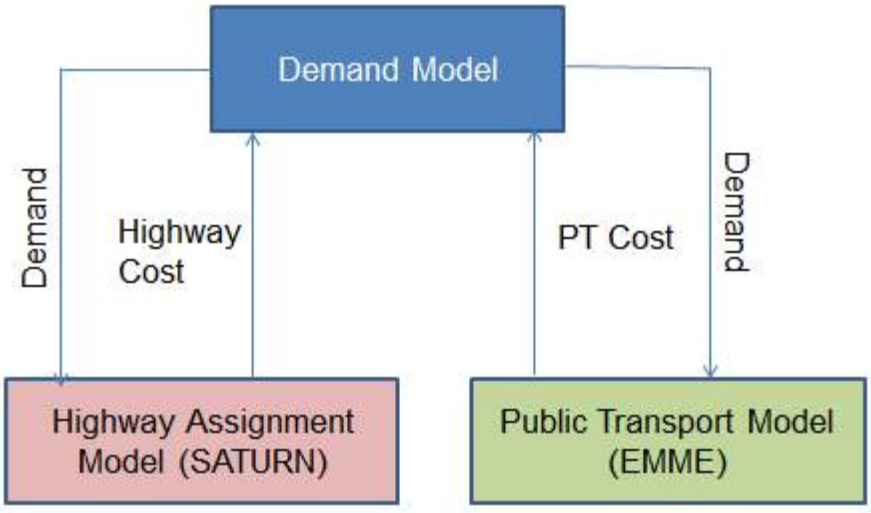
3.1.2 The SATURN suite of programs was used to build the highway model while EMME was used to build the Demand Model and the Public Transport Model. The strategic model developed by WSP offered an integrated system for a range of transport modes, representing private and public transport as well as modal interchange behaviour such as walking.

3.1.3 NSTM has been rebased to a 2015 base year by WSP Parsons Binckerhoff so that it is consistent with current WebTAG guidance. The resultant model is summarised below.

3.2 Model Structure

3.2.1 The NSTM is a TAG compliant full demand model, with separate highway and public transport assignment models that interact under the control of the demand model. The interaction between the models is shown in Figure 3.

Figure 3. NSTM Model Structure



3.3 Software Platform

3.3.1 The highway assignment model is run in SATURN (version 11.3.12F). The demand model and public transport assignment model run in EMME (version 4.2.3).

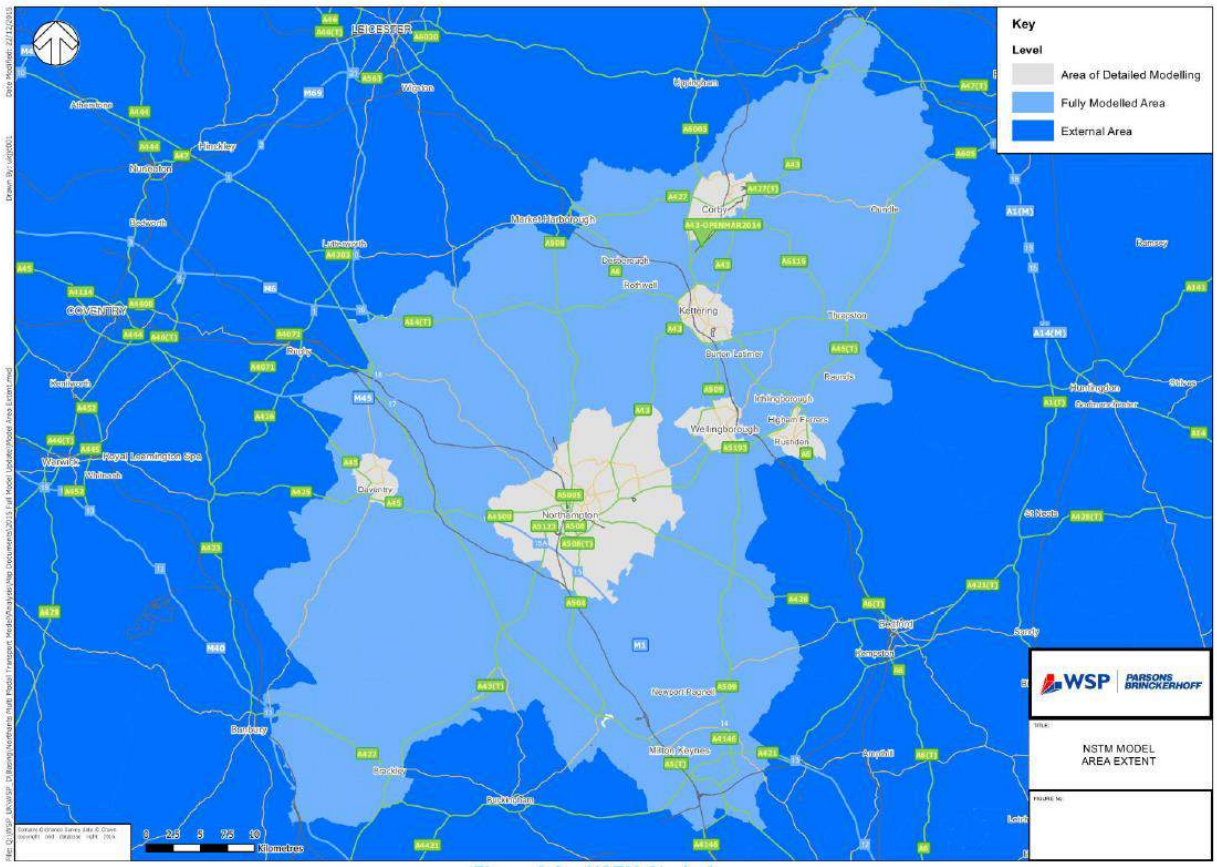
3.4 Modelled Area

3.4.1 The modelled area is set out in terms of a three-tier hierarchy, comprising:

- **Area of Detailed Modelling:** covers all roads with significant traffic volumes and all realistic route choices available to drivers, with all major junctions modelled.
- **Rest of Fully Modelled Area:** reduced level of detail, with principal strategic routes modelled and capacity restraint through the use of speed/flow curves and strategically important junctions.
- **External Area:** simplified network allowing traffic to enter the Fully Modelled Area at the correct location, without capacity restraint. Skeletal network with approximate distances to allow demand model to capture full trip length.

3.4.2 NSTM encompasses the major motorways of the M1 (Junctions 14 to 19) and M45 (from Junction 17). This modelled area is shown in Figure 4.

Figure 4. NSTM Coverage



3.5 Model Time Periods

3.5.1 The highway and public transport models include the following fully modelled time periods:

- Morning peak hour: (08:00-09:00).
- Average inter-peak hour: (10:00-16:00).
- Evening peak hour: (17:00-18:00).

3.5.2 The demand model operates at a 24-hour level in production/attraction format.

3.6 Demand Segmentation and User Classes

3.6.1 The trip matrices are segmented into a series of separate homogenous groups to adhere to current DfT guidance on variable demand modelling in TAG unit M2 (January 2014). In the Demand model, throughout the matrix building process all matrices are disaggregated as follows:

- Purpose: Work (Commute), Employer's Business (EB), and Other.
- Car availability: Car available (CA) and No car available (NCA) (household level).
- Time period: morning peak period; Inter-peak period, and evening peak period.
- Vehicle types: Light vehicles and Heavy vehicles.
- Mode: Private vehicle and Public transport.

3.6.2 This segmentation is consistent with that adopted in the Department for Transport (DfT) modelling tools – namely the National Trip End Model (NTEM) and the National Transport Model (NTM).

3.6.3 For highway assignment, the following user classes are modelled which is consistent with advice presented in Section 2.6 of TAG Unit M3.1 (January 2014):

- Car – Commuting.
- Car – Employer's Business.
- Car – Other.
- LGV.
- HGV (OGV1 and OGV2).

4. BASE YEAR VALIDATION

4.1 Background

4.1.1 In order to ensure a robust assessment, the NSTM highway networks have been locally refined and re-validated within the Area of Influence (AOI) of the Rail Central development. This revalidation within the AOI has used existing and new count data and has been undertaken in two phases:

- **Phase 1** involved network alterations and refinements to the highway model to more accurately represent the base year conditions.
- **Phase 2** involved matrix estimation to ensure the modelled flows reflect the observed flow data.

4.1.2 This approach is consistent with the WebTAG guidance and the Department for Transport's (DfT) criteria for model validation.

4.1.3 This section provides an overview of the resultant validation statistics within the AOI for the updated highway model. Full details of the base year validation are contained in Appendix A.

4.2 Validation and Calibration Counts

4.2.1 Local Automatic Number Plate Recognition (ANPR) and Automatic Traffic Count (ATC) data was collected in June and July 2016 at various locations within the AOI of the proposed development. These have been supplemented with existing Manual Classified Count Data including turning movement surveys at Junctions 15 and 15A of the M1 motorway. The core count locations for the ATC and Trads counts are shown in Figure 5 with the ANPR counts shown in Figure 6.

Figure 5. Strategic Rail Freight Interchange ATC and TRADS count locations

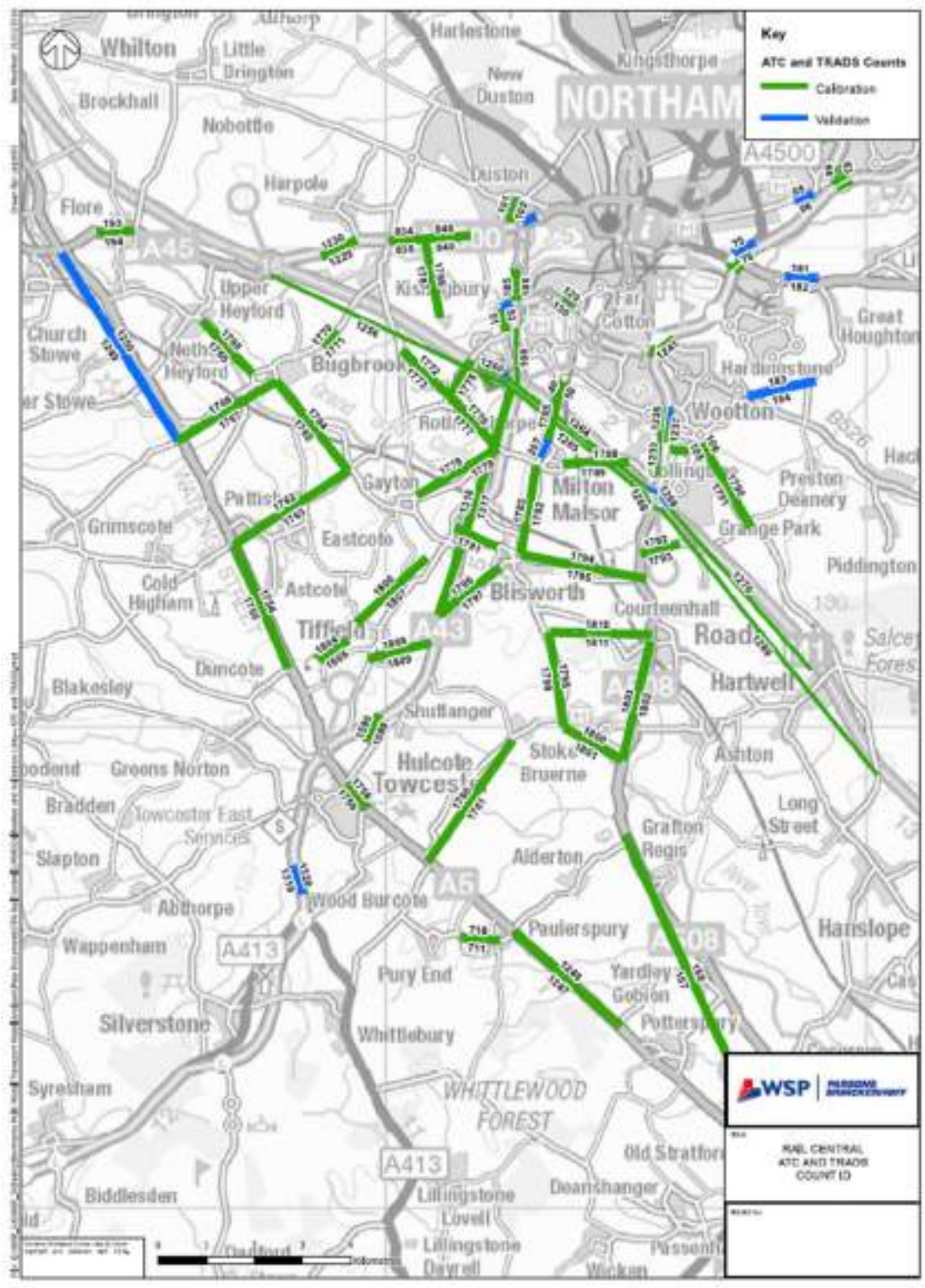
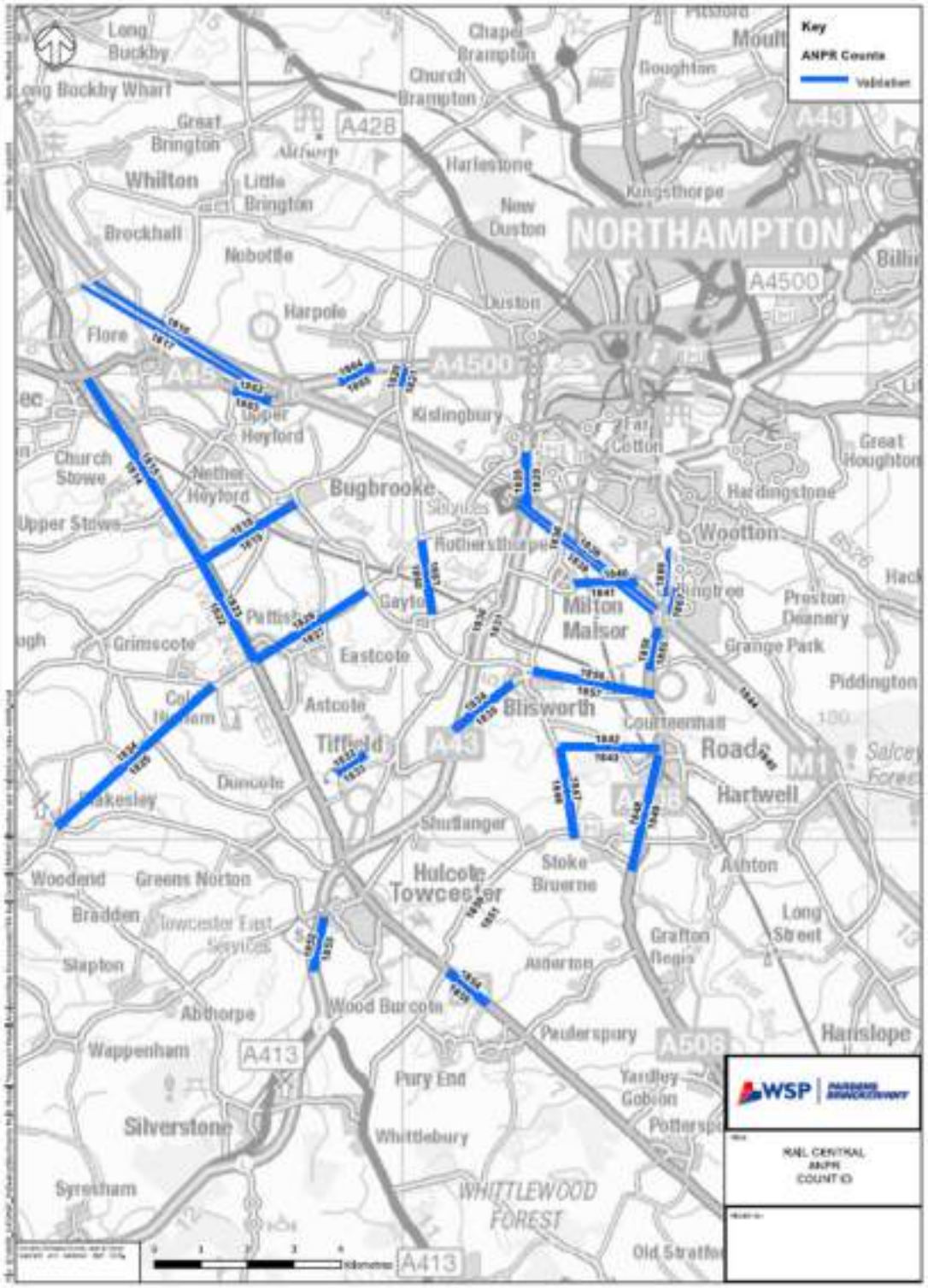


Figure 6. Strategic Rail Freight Interchange ANPR count locations



4.3 Rail Central Calibration and Validation

4.3.1 The DfT guidelines for the validation of highway models are based on those laid out in TAG Unit M3.1, Highway Assignment Modelling, Chapter 3. For the count comparisons presented in this section, there are two separate sets of criteria against which the counts and modelled flow comparisons should be measured. In both cases the criteria are expected to be met in 85% of cases. The two sets of criteria are:

- GEH Statistic: Links should have a GEH value of less than 5.
- TAG Unit M3.1 Link Flow and Turning Movement:
  - Where observed flow is less than 700 vehicles per hour, the modelled flow should be within 100 vehicles of the observed flow;
  - Where the observed flow is between 700 and 2,700 vehicles per hour, the modelled flow should be within 15% of the observed flow; and
  - Where observed flow is greater than 2,700 vehicles per hour, the modelled flow should be within 400 vehicles of the observed flow.

4.3.2 Regarding DfT guidelines on the acceptability of validation statistics, WebTAG Unit M3.1 section 3.2.8 discusses validation statistics for counts meeting GEH and DMRB criteria, stating that:

> ***"These two measures are broadly consistent and link flows that meet either criterion should be regarded as satisfactory."***

4.3.3 The Strategic Rail Freight Interchange AOI validation checks have been undertaken in line with these criteria.

Calibration Statistics

4.3.4 Table 4 provides the Calibration statistics for the link counts within the Rail Central developments AOI. A total 122 calibration counts were located within the AOI, all of which have been used in this review. The statistics suggest that the model calibration in the AOI achieves the TAG guidelines of 85% of counts meeting either the GEH or flow criteria for both the morning and evening peaks.

Table 4. Rail Central AOI Calibration Statistics

	NUMBER OF COUNTS	GEH > 85%	FLOW > 85%
Morning Peak			
Calibration	122	**85%**	93%
Evening Peak			
Calibration	122	89%	94%

Validation Statistics

4.3.5 Table 5 provides the validation statistics for the counts within the AOI. A total 68 validation counts were located within the Rail Central AOI, all of which have been used in this review. The statistics indicate that the model validation in the AOI successfully achieves the DfT guidelines for both the morning and evening peak periods.

Table 5. Rail Central AOI Validation Statistics

	NUMBER OF COUNTS	GEH > 85%	FLOW > 85%
Morning Peak			
Validation	68	85%	90%
Evening Peak			
Validation	68	87%	85%

M1 Motorway Junctions Validation

4.3.6 In addition to an overall AOI validation and calibration check, specific junctions were also chosen to have GEH and Flows measured to determine whether they comply with TAG guidance against junction turning flows. For this analysis, the following junctions were chosen:

- M1 Junction 15A – Northampton Services Roundabout (A43).
- M1 Junction 15A – Northern Roundabout (A43).
- M1 Junction 15A – Southern Roundabout (A43).
- M1 Junction 15 – A45.

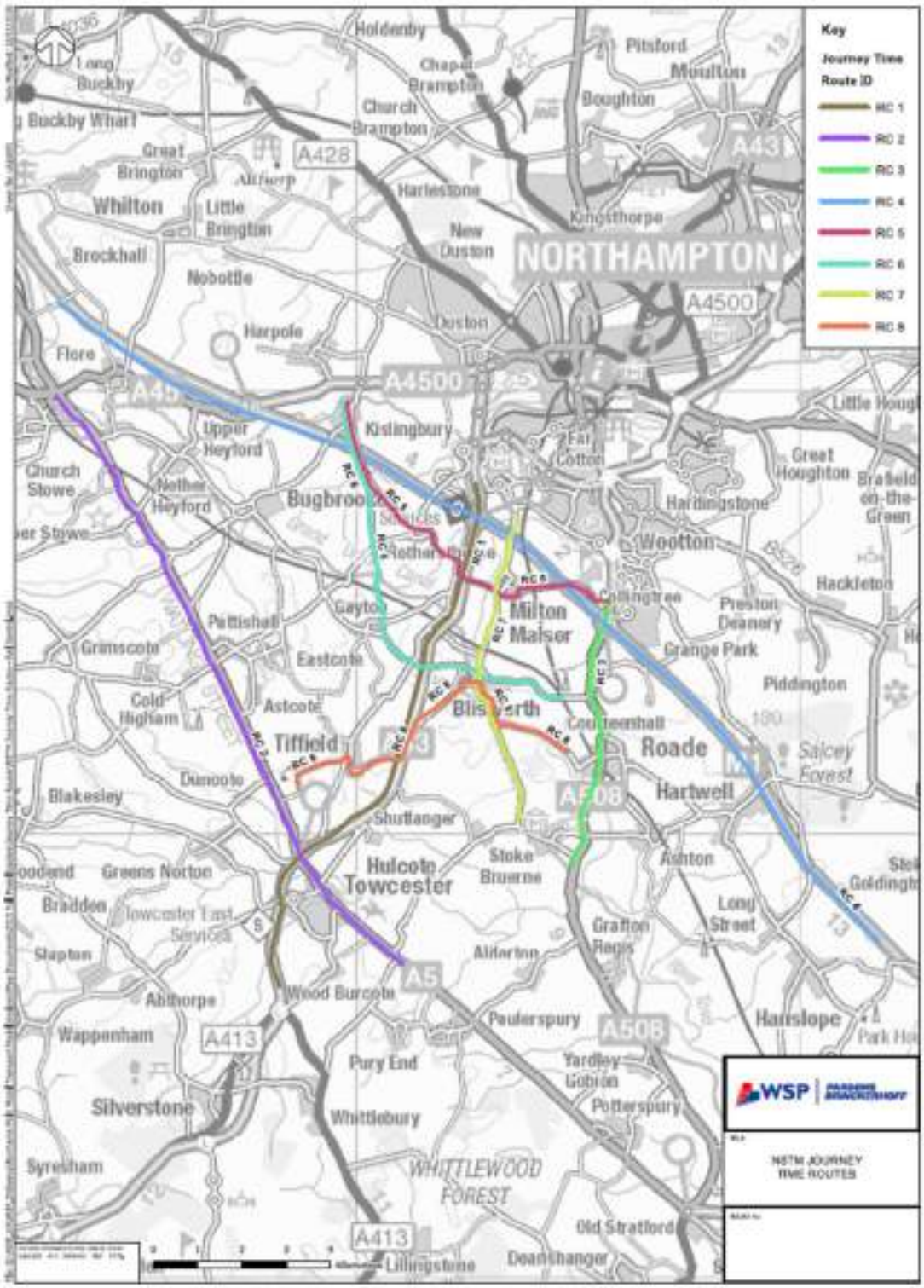
4.3.7 Details of this analysis can be found in Technical Note 3 in Appendix A, however, this shows that at a turning movement level the model generally replicates the main movements through these junctions.

Journey time evaluation

4.3.8 Modelled journey times have also evaluated in a similar fashion to the measurement of flow comparisons. Figures from an observed and a modelled scenario are compared, with the differences once again being measured within an overall difference of 15%, as specified by TAG. The locations of the journey time routes within the AOI evaluations are shown in Figure 7.

4.3.9 A total of 16 routes have been assessed in the Rail Central AOI. Overall the WebTAG criteria is met with 87% of journey time routes meeting the criteria (requirement 85%).

Figure 7. Journey Time Routes



Conclusions

4.3.10 Overall the calibration/validation of the Northampton Strategic Transport Model (NSTM) within the AOI of the Rail Central scheme meets/exceeds the WebTAG criteria against observed counts.

4.3.11 For Journey Times, again the model achieves overall the WebTAG criteria with 87% of journey time routes meeting the criteria (requirement 85%).

4.3.12 The resultant model has been approved as 'Fit for Purpose' of assessing the Rail Central development by HE and NCC.

5. REFERENCE CASE ASSUMPTIONS

5.1 Overview

5.1.1 This chapter outlines the modelling assumptions adopted in each of the Reference Cases. The key assumptions relating to land use and infrastructure have been agreed with Northamptonshire County Council and Highways England prior to undertaking the strategic modelling.

5.2 2021 and 2031 Reference Cases

5.2.1 It has been agreed that the 2021 Year of Opening and the 2031 Core Strategy scenarios should include the following assumptions:

- 2021 Growth to include the committed development that is envisaged to be constructed by 2021.
- 2031 Growth to include all the Core Strategy sites and any further sites to be constructed by 2031.
- Growth will be constrained to local growth levels using TEMPRO 7.2.
- All infrastructure schemes to be implemented by the Reference Case year to be included in the assessment.

5.2.2 Details of the development and infrastructure schemes that have been included in the 2021 Reference Case are provided in WSP Technical Notes entitled '2021/2031 Large Committed Development Assumptions and Locations' and '2021/2031 Committed Infrastructure Assumptions and Locations' which are provided in Appendix C.

5.2.3 In addition to the infrastructure schemes identified in these notes, the Managed Motorway scheme on the M1 which adds an additional lane to each carriageway through the modelled area, has also been assumed to be fully operational as agreed with the HE.

5.2.4 The assumptions within these technical notes have been agreed with NCC and HE.

5.3 Growth in Highway Trips

5.3.1 0 below shows a summary of the resultant change in highway trips between the 2015 Base and each Reference Case. The growth in highway trips between the 2015 base and the 2021 scenario is 12% in the morning peak and 10% in the evening peak. Between 2015 and 2031 there is forecast to be around a 32% increase in the morning peak and 29% increase in the evening peak.

Table 6. Growth in highway trips between Base and Reference Cases

	MORNING PEAK		EVENING PEAK	
	PCUS	% CHANGE FROM BASE	PCUS	% CHANGE FROM BASE
2015 Base	85,767	-	87,024	-
2021	96,393	12%	95,908	10%
2031	113,501	32%	111,907	29%

5.4 Junction Congestion

5.4.1 Junction congestion is measured by determining the ratio of the volume of traffic, to the capacity of traffic that can be accommodated. A Volume to Capacity (V/C) percentage of 85% is considered to be the threshold at which the junction is approaching its effective operational capacity, therefore increasing the likelihood of operational problems including congestion and associated delays and queues. A V/C percentage of 100% indicates that the junction is operating above its theoretical maximum capacity.

5.4.2 Figures 8 to 11 of the supplementary figures document shows junctions which are expected to experience a worsening in congestion between the 2015 base and the 2021/2031 Reference Cases. The plots show junctions which are predicted to have a resultant V/C either between 85% and 100% or above 100%.

5.4.3 A significant number of junctions are expected to have V/Cs in excess of 85% by 2031. In the immediate vicinity of the Rail Central development site there is forecast to be congestion at:

- A43/M1 junction 15A;
- A45/M1 junction 15; and,
- local junctions in Blisworth and Milton Malsor.

6. 2021 (DS1) WITH RAIL CENTRAL SCENARIO

6.1 Overview of Chapter

6.1.1 This chapter summarises the impact of Rail Central in the 2021 year of opening with no highway or public transport mitigation provided. The scenario contains the entire development and is compared against the 2021 Year of Opening Reference Case.

6.1.2 The following key indicators are covered in this chapter:

- Rail Central Trip Distribution;
- Reassignment Impact;
- Flow Change; and,
- Junction Congestion.

6.1.3 All figures referenced in this chapter can be found in the supplementary figures document provided with this report.

6.2 Trip Distribution

6.2.1 The peak hour trip distribution of Rail Central trips are shown in Figures 12 to 15. These plots show all external trips associated with the development, including HGV and non-HGV trips. Roads which experience a small amount of development traffic are represented in pale blue, while roads with greater levels of development traffic are shown in dark blue.

6.2.2 During both peak hours there is substantial interaction of development traffic with the immediate Strategic Road Network (SRN), notably the A43 and M1. A total of 392 pcus use the A43 to access the M1. The level of traffic t on the section of the A43 adjacent to Towcester is comparatively low with up to 132 pcus using this section of road.

6.2.3 In the morning peak approximately 133 pcus travel towards Rail central utilising the A45. At the junction with the A5076 (Mere Way) roughly half of these continue on the A5 and then the M1, while the other half uses the A5976 and A5123.

6.2.4 In the evening peak there are a number of vehicles (284 pcus) turning onto Towcester Road to access the A45 via the villages of Blisworth and Milton Malsor. The remainder of vehicles accessing the A45 do so via the A5076.

6.2.5 Traffic travelling towards Northampton is more noticeable in the evening peak. 75 pcus travel into the centre of Northampton and whilst approximately 45 pcus bypass west around Northampton to continue north along the A508.

6.2.6 In both peak hours a large proportion of the HGV traffic associated with the development, utilise the M1 north of Junction 15a. 104 pcus travel north in the morning peak whilst 110 travel towards the RFI during the evening peak. The remainder of the HGV trips in both peaks utilise the links into Northampton or the A43 with fewer trips going to or from M1 south.

6.3 Reassignment Impact

6.3.1 The direct impact of Rail Central traffic on the highway network is indicated in the trip distribution plots. However, the additional traffic associated with the development can cause increased congestion and delay on the network which may affect the routing of non-development traffic. This reassignment of non-development traffic is a secondary effect of the development.

6.3.2 Reassignment plots are provided for each peak hour in Figures 16 and 17. Roads which experience a reduction in traffic flow are represented in blue. Roads likely to experience an increase in non-development traffic are shown in red.

6.3.3 The figures illustrate there is a different pattern of reassignment between the morning and evening peak hours. Outside of the immediate vicinity of the development reassignment is likely to be a result of model noise, and not a direct impact of the Rail Central development. This is particularly the case in locations where the trip distribution plots do not indicate a significant level of interaction with the Rail Central site.

6.3.4 During both peak hours, the most notable reassignment impacts are on the M1, A43, and the route north-east from Junction 15a, following the A5123 and A5076 onto the A45. Non-development traffic moves away from all these roads.

6.3.5 During the morning peak the reassignment plots show traffic travels southbound along Rothersthorpe Road through Gayton joining Blisworth Road and Towcester Road where it re-joins the A43. This is to avoid the M1 and A43 due to increased congestion at M1 J15a.

6.3.6 North-bound along the A43, south of the development site, 125 pcus bypass the site access travelling along Towcester Road and Courteenhall Road to access their destinations, also avoiding Junction 15a.

6.3.7 A further redistribution of traffic is predicted along A4500 and Roman Road to access Northampton City Centre also avoiding Junction 15a.

6.3.8 During the evening peak the plots show reassignment of the non-development traffic away from the A43, A5076 and A5123 to access the A45 to the minor roads through Tiffield, Blisworth along Towcester Road through Milton Malsor to the A45 north of Junction 15.

6.3.9 A redistribution of traffic from the M1 is also identified as is the increase in traffic heading north between Junctions 15 and 15a from the A45.

6.4 Flow Change

6.4.1 The net change in traffic flows between the 2021 Reference Case and the Core Scenario are shown in Figures 18 and 19. Roads which experience a net reduction in traffic flow are represented in blue, whilst roads likely to experience a net increase in traffic flow are shown in red.

6.4.2 During both the morning and evening peak hours there is a significant increase in traffic travelling northbound on the A43 from the Rail Central access junction (total two way flows of 601 pcus and 605 pcus respectively). There is also an increase in traffic travelling towards the development northbound along the M1 between Junctions 15 and 15a of 271 pcus in the morning and 251 pcus in the evening peak hours. These increases are consistent with the trip distribution pattern.

6.4.3 During the morning peak there is a significant increase in traffic flow travelling south on Towcester Road (338 pcus). This is the result of reassigned traffic from various directions turning onto the Towcester Road at Blisworth in order to join the A43 south of Rail Central. There is a corresponding decrease of 502 pcus on the A43 between Towcester Road and the Rail Central development.

6.4.4 No significant difference in flow change is seen between Junction 15a and junction 16 of the M1. This is the combined effect of an increase in development traffic and a decrease in existing traffic, which has rerouted away from Junction 15a. Beyond Junction 16, an increase in traffic flow can be seen, where existing traffic joins development traffic. There is also an increase in traffic flow along the A45.

6.4.5 In the evening peak, there is an increase in traffic flow along lanes trough Tiffield, Blisworth and Milton Malsor, corresponding with the development traffic trip distribution and the reassignment of existing traffic. As a result, there is a reduction of 418 pcus on the A43 between Towcester and Rail Central.

6.5 Junction Congestion

6.5.1 Junction congestion is measured by determining the ratio of the volume of traffic, using an arm of the junction, to the capacity of traffic that can be accommodated. A V/C (Volume/Capacity) ratio of 85% or greater is considered to be the point at which the junction is at operational capacity, and where delays and queues are likely to be observed.

6.5.2 It should be noted that junctions with V/C ratio of greater than 85% have not necessarily been caused by the proposed development - existing capacity constraints at these locations, or growth from other developments could be the source of these problems. The V/C ratio for each junction presents the turning movement with the highest V/C value at that particular junction.

6.5.3 Figures 20 and 21 show the percentage change in V/C for those junctions which were already over the 85% threshold in the 2021 Reference Case. The junctions which are pushed over 85% V/C as a result of Rail Central are shown in Figures 22 and 23. These figures have been used to identify the junctions most affected by the proposed development, either directly or indirectly, through traffic rerouting.

6.5.4 Junctions which experience an increase in congestion in the morning peak include:

- A43 / Brackley Road
- A508 / Courteenahll Road
- Cliftonville Road / Clitonville / The Avenue
- A43 / St Gregorys Road
- A4500 / A5076

- A4500 / Gambrel Road
- A45 / on-slip from Rowtree Road
- A4500 / Mare Fair
- A4500 / The Green
- A4500 / A5095
- Sandy Lane / Access serving new development
- Berrywood Road / Southfield Road
- Tollgate Way / Westgate Road
- A5076 / Upton High Street
- A43 / Standens Barn Road
- Blisworth High Street / Northampton Road
- A43/M1 Junction 15a

6.5.5 Junctions which experience an increase in congestion in the evening peak include:

- Blisworth Road / unnamed local roads
- A43 / Rail central access
- Towcester Road / Rectory Lane
- Brickyard Spinney Road / Quarry Park Close
- Weston Way / Church Way
- A428 / Becketts View
- A45 / off slip to Rowtree Road
- A43 / M1 Junction 15
- A508 / Pitsford High Street
- A45 / A508 / A5076 Roundbaout
- Nene Valley Way / Caswell Road

6.6 Network Statistics

6.6.1 Highway indicators for the whole of the Area of Influence provide a way of gauging the overall impact of the predicted increase in trips associated with the Rail Central development. These indicators capture the direct impact of the additional development traffic and also the indirect reassignment impact of non-development trips. A brief explanation of key indicators is provided below.

- **Over capacity queues** - Time spent queuing at junctions that are over capacity. As traffic levels increase we expect to see a growing number of junctions reaching capacity and the time spent queuing at these overcapacity junctions increasing.
- **Average speed** - expressed as kilometres per hour for all traffic within the highway model simulation area for each peak period. Increased traffic levels should lead to more delays resulting in lower average speeds.

6.6.2 0 shows the highway statistics in the area of influence for both peaks. This shows that over capacity queues increase and average speeds reduce in both peaks as a result of Rail Central development.

Table 7. 2021 Core Scenario - Network Statistics

	MORNING		EVENING	
	REFERENCE	DS1	REFERENCE	DS1
Over Capacity Queues (pcu hrs)	856	1151	2101	2468
Average Speed (kph)	52.8	51.8	49.5	48.5

7. 2031 (DS1) WITH RAIL CENTRAL SCENARIO

7.1 Overview of Chapter

7.1.1 This chapter summarises the predicted strategic impact of the Rail Central development in 2031. The scenario contains the entire development and is compared against the 2031 Core Strategy Reference Case. The outputs in this chapter show the impact of the development in the context of all committed and core strategy developments and their associated mitigation measures.

7.1.2 The following key indicators are covered in this chapter:

- Trip Distribution.
- Reassignment Impact.
- Flow Change.
- Junction Congestion.

7.1.3 All figures referenced in this chapter can be found in the supplementary figures document provided with this report.

7.2 Trip Distribution

7.2.1 The peak hour trip distribution of Rail Central trips are shown in Figures 24 to 27. These plots show all external trips associated with the development, including HGV and non-HGV trips. Roads which experience a small amount of development traffic are represented in pale blue, while roads that incur higher levels of development traffic are shown in dark blue.

7.2.2 There is no significant change in the pattern of trip distribution in the 2031 DS scenario compared to the 2021 DS scenario.

7.2.3 The overall trip distribution of development traffic is similar in both the morning and evening peak hours and the interaction between the M1 and the A5123 and the A43 at Junction 15a is identified to be the core junction where the majority of development traffic passes through.

7.2.4 During the morning peak a large proportion of traffic enters the development from the north of Northampton using the A45, Mere Way, A5123 and the A43 with a flow of approximately 230 pcus, with a smaller proportion of 170 pcus utilising the M1 southbound. In both peaks the level of traffic traveling on the section of the A43 adjacent to Towcester is comparatively low - up to 165 pcus.

7.2.5 In the evening peak a proportion of development traffic (104 pcus) is predicted to travel along Towcester Road, heading north towards the A45 Nene Valley Way, bypassing Junction 15a. Similar to the morning peak there is a small amount of traffic heading north from the M1 with a total of 154 pcus heading towards the site from M1 southbound.

7.2.6 A large proportion of the HGV traffic associated with the development, in both peaks utilise the M1 north of Junction 15a. 133 pcus travel north in the morning peak and 131 travel towards the RFI during the evening peak. The remainder of the HGVs trips in utilise the links into Northampton or the A43 south with fewer trips going to or from M1 south of Junctions 15 and 15a.

7.3 Reassignment Impact

7.3.1 The direct impact of Rail Central traffic on the highway network is indicated in the trip distribution plots. The additional traffic associated with the development causes increased congestion and delay on the network which may affect the routing of non-development traffic. This reassignment of non-development traffic is a secondary effect of the development.

7.3.2 Reassignment plots are contained in the supplementary figures document for each peak hour shown in Figures 28 and 29. Roads which experience a reduction in traffic flow are represented in blue. Roads likely to experience an increase in non-development traffic are shown in red.

7.3.3 The figures illustrate there is a different pattern of reassignment between the morning and evening peaks. Outside of the immediate vicinity of the development reassignment is likely to be a result of model noise, and not a direct impact of the Rail Central development. This is particularly the case in locations where the trip distribution plots do not indicate a significant level of interaction with the Rail Central site.

7.3.4 During both peak hours, the most notable reassignment impacts are along the M1, A43, and the routing of non-development traffic north-east from Junction 15a, following the A5123 and A5076 onto the A45.

7.3.5 In the morning peak, to avoid increased congestion at M1 Junction 15a, non-development traffic redistributes from the M1 and A43 to the A4500, heading to Banbury Lane, through Gayton and Blisworth along Gayton Road and Towcester Road.

7.3.6 Traffic entering Northampton City from the north east diverts away from M1 and Junction 15a and uses the A4500 instead.

7.3.7 During the evening peak, non-development traffic redistributes away from the A43 avoiding the congestion at Junction 15a to travel through Tiffield along Blisworth Road and the village of Gayton connecting up to Rothersthorpe Road to eventually connect to the M1 from the A4500.

7.3.8 Overall non-development traffic redistributes away from the A5123, A5076 and A45 in Northampton, with a slight increase in the northbound traffic between Junctions 15 and 15a of the M1.

7.4 Flow Change

7.4.1 The net changes in traffic flows between the 2031 Reference Case and Core Scenario are shown in Figures 30 and 31 for both peaks. Roads which experience a net reduction in traffic flow are represented in blue, whilst roads likely to experience a net increase in traffic flow are shown in red.

7.4.2 In both peak hours there is a significant increase in traffic flow on the A43 north of Rail Central, 295 pcus southbound during the morning peak and 356 pcus northbound during the evening peak period and the M1 Northbound carriageway between Junction 15 and Junction 15a of 254 pcus during the morning peak and 282 pcus during the evening peak. These increases are consistent with the trip distribution pattern described above.

7.4.3 During the morning peak there is an increase in flow along the links between Junction 16 of the M1 and the junction of the A43 and Towcester Road due to the redistribution of local traffic away from these routes.

7.4.4 During the morning peak there is a noticeable increase in traffic flow between Junction 16 of the M1 and Towcester Road, a result of rerouting away from theA43. There is a decrease in traffic flow of 374 pcus on the A43 between Rail Central and Towcester Road. A decrease in flow occurs to the south of the development access.

7.4.5 In the evening peak, there is an increase in traffic on minor roads through Tiffield and Gayton Beyond Gayton and traffic disperses in various directions including towards Milton Malsor, Rothersthorpe and Kislingbury. There is a corresponding reduction on the traffic flow on the A43 between Towcester Road and Rail Central. This mirrors the observed pattern of reassignment.

7.4.6 There in also an increase in traffic flows travelling north along Towcester Road, as reflected in the trip distribution plots.

7.5 Junction Congestion

7.5.1 Junction congestion is measured by determining the ratio of the volume of traffic, using an arm of the junction, to the capacity of traffic that can be accommodated. A V/C (Volume/Capacity) ratio of 85% or greater is considered to be the point at which the junction is at operational capacity, and where delays and queues are likely to be observed.

7.5.2 It should be noted that junctions with V/C ratio of greater than 85% have not necessarily been caused by the proposed development - existing capacity constraints at these points or growth from other developments could be the source of these problems. The V/C ratio for each junction presents the turning movement with the highest V/C value at that particular junction.

7.5.3 Figures 32 and 33 show the percentage change in V/C for those junctions which were already over the 85% threshold in the 2031 Reference Case. The junctions which are pushed over 85% V/C as a result of the development are shown in Figures 34 and 35. These figures have been used to identify the junctions most affected by the proposed development, either directly or indirectly, through traffic rerouting.

7.5.4 Junctions which experience an increase in congestion in the morning peak include:

- Mill Lane / Access to new development
- A4500 / Duston Road
- A4500 / A508
- A4500 / The Green
- A508 Bridge Street / A508 Cattle Market Road
- Roman Road / Access to new development
- A43 / M1 Junction 15
- A5 / Northampton Road
- A5 / Local road to Duncote
- Blisworth High Street / Northampton Road
- A508 / Courteenhall Road
- A43 / M1 Junction 15a
- A508 / A428
- A508 / A5095
- A508 / Pitsford High Street

7.5.5 Junctions which experience an increase in congestion in the evening peak include:

- Sandy Lane / Harlestone Road
- Harlestone Road / Lodge Way
- Harbrough Road / High Street
- Harleton Road / Spencer Bridge Road
- A4500 / Green Street
- A5123 / Swan Street
- A4501 / Billing Road
- A508 / Hyde Road
- Blisworth Road / unnamed local Roads
- A43 / Site Access
- Towcester Road / Gayton Road
- A43 / M1 Junction 15A
- Angel Street / Swan Steet
- A500 / Wilberforce Street
- A45 / A428
- A508 / Pitsford High Street
- B526 / Brafield Road

7.6 Network Statistics

7.6.1 Highway indicators for the whole of the Area of Influence provide a way of gauging the overall impact of the predicted increase in trips associated with the Rail Central development. These indicators capture the direct impact of the additional development traffic and also the indirect reassignment impact of non-development trips. A brief explanation of key indicators is provided below.

- **Over capacity queues -** Time spent queuing at junctions that are over capacity. As traffic levels increase we expect to see a growing number of junctions reaching capacity and the time spent queuing at these overcapacity junctions increasing.
- **Average speed** - expressed as kilometres per hour for all traffic within the highway model simulation area for each peak period. Increased traffic levels should lead to more delays resulting in lower average speeds.

7.6.2 Table 8 shows the highway statistics in the Area of Influence for both peaks. This shows that over capacity queues increase and as a consequence average speeds decrease with the introduction of the Rail Central development during both peaks.

Table 8. 2031 Core Scenario - Network Statistics

	MORNING		EVENING	
	REFERENCE	DS1	REFERENCE	DS1
Over Capacity Queues (pcu hrs)	3360	3906	4482	4859
Average Speed (kph)	44.4	43.4	43.0	42.4

8. 2021 (DS2) WITH RAIL CENTRAL AND M1 JUNCTION 15A MITIGATION

8.1 Overview

8.1.1 This chapter summarises the impact of Rail Central in the 2021 year of opening with the proposed mitigation scheme for Junction 15A of the M1 motorway and no further highway or public transport mitigation. The scenario contains the entire development and is compared against the 2021 Year of Opening Reference Case.

8.1.2 The following key indicators are covered in this chapter:

- Proposed Junction 15A Mitigation scheme;
- Rail Central Trip Distribution;
- Flow Change;
- Junction Congestion.

8.1.3 All figures referenced in this chapter can be found in the supplementary figures document provided with this report.

8.2 Proposed M1 Junction 15a mitigation scheme

8.2.1 An indicative layout of the proposed mitigation scheme for Junction 15a is shown in Figure 36. The scheme consists of the following enhancements to the current layout:

- Signalisation of the Northern roundabout including;
  - Widening of the circulatory carriageway to 3 lanes where required
  - Signalised left turn slip road between the A43 and the A5123 into Northampton
  - Widening of the southern A43 entry to 4 lanes
- New signalised replacing the Southern roundabout including;
  - Free-flow movement for A43 southbound movements
  - Signalised right turns to and from the M1 motorway slip road
  - Signalised left turn slip road between the A43 and the M1 slip road
  - Signalised left turn slip road between the M1 slip road and the A43 overbridge.

8.3 Trip Distribution

8.3.1 The peak hour trip distribution of Rail Central trips is shown in Figures 37 to 40. These plots generally show similar routing patterns to the no mitigation scenario without the improvements to M1 Junction 15a.

8.3.2 The exception to this is the removal of employee traffic that was previously predicted to rat run through the villages of Blisworth and Milton Malsor in the evening peak. This traffic now uses the A43 due to the increased capacity at M1 Junction 15a and the resultant reductions in congestion at this location.

8.4 Flow Change

8.4.1 The net change in traffic flows between the 2021 Reference Case and the With Development and M1 Junction 15a scenario are shown in Figures 41 and 42. Roads which experience a net reduction in traffic flow are represented in blue, whilst roads likely to experience a net increase in traffic flow are shown in red.

8.4.2 Comparing the scenario with the M1 Junction 15a improvements against the previous No Mitigation scenario illustrates the following impacts of the Junction 15A mitigation scheme:

- Significant increase in the levels of traffic on the A43 resulting from the increased capacity associated with the mitigation scheme;
- Removal of the additional 'rat running' traffic using the minor roads on either side of the A43 with a resultant reduction of impact on the local villages including Blisworth and Milton Malsor.
- Significantly reduced levels of traffic on the A45 north of Junction 15, the A4500 north of Junction 16 and the A5 as traffic reverts back to the A43 and the M1 corridors.
- Significantly reduced levels of additional traffic within Northampton Town Centre.

8.4.3 Overall, the capacity improvements at M1 Junction 15a result in traffic returning to the A43 as the levels of congestion along this route decrease. This has a significant beneficial impact in traffic flows on the routes leading into Northampton and the minor roads and villages either side of the A43.

8.5 Junction Congestion

8.5.1 Junction congestion is measured by determining the ratio of the volume of traffic, using an arm of the junction, to the capacity of traffic that can be accommodated. A V/C (Volume/Capacity) ratio of 85% or greater is considered to be the point at which the junction is at operational capacity, and where delays and queues are likely to be observed.

8.5.2 It should be noted that junctions with V/C ratio of greater than 85% have not necessarily been caused by the proposed development - existing capacity constraints at these locations, or growth from other developments could be the source of these problems. The V/C ratio for each junction presents the turning movement with the highest V/C value at that particular junction.

8.5.3 Figures 43 and 44 show the percentage change in V/C for those junctions which were already over the 85% threshold in the 2021 Reference Case. The junctions which are pushed over 85% V/C as a result of Rail Central are shown in Figures 45 and 46.

8.5.4 Comparing the scenario with the M1 Junction 15a improvements against the previous No Mitigation scenario illustrates following congestion impacts of the Junction 15a mitigation scheme:

- Overall reduction in congestion at M1 Junction 15a even though the volumes of traffic passing through this junction have increased significantly.
- Reduction in the levels of congestion within Milton Malsor to below Reference Case conditions.
- General reductions in congestion at junctions on the A45 north and south of the M1.
- Overall reductions in congestion within Northampton Town Centre.

9. 2031 (DS2) WITH RAIL CENTRAL AND M1 JUNCTION 15A MITIGATION

9.1 Overview

9.1.1 This chapter summarises the impact of Rail Central in 2031 with the proposed mitigation scheme for Junction 15a of the M1 motorway and no further highway or public transport mitigation provided. The scenario contains the entire development and is compared against the 2031 Reference Case.

9.1.2 The following key indicators are covered in this chapter:

- Rail Central Trip Distribution;
- Flow Change;
- Junction Congestion.

9.1.3 All figures referenced in this chapter can be found in the supplementary figures document provided with this report.

9.2 Trip Distribution

9.2.1 The trip distribution of Rail Central trips are provided for each peak hour shown in Figures 47 to 50. These plots shows all external trips associated with the development, including HGV and non-HGV trips. Roads which experience a small amount of development traffic are represented in pale blue, while roads that incur higher levels of development traffic are shown in dark blue.

9.2.2 These plots generally show similar routing patterns to the no mitigation scenario without the improvements to M1 Junction 15a.

9.2.3 The exception to this is the removal of employee traffic that was previously predicted to rat run through the villages of Blisworth and Milton Malsor in the evening peak. This traffic now uses the A43 due to the increased capacity at M1 Junction 15a and the resultant reductions in congestion at this location.

9.3 Flow Change

9.3.1 The net change in traffic flows between the 2031 Reference Case and Core Scenario and M1 Junction 15a scenario are shown in Figures 51 and 52 for both peaks. Roads which experience a net reduction in traffic flow are represented in blue, whilst roads likely to experience a net increase in traffic flow are shown in red.

9.3.2 Comparing the scenario with the M1 Junction 15a improvements to the previous No Mitigation scenario highlights the following impacts of the Junction 15a mitigation scheme:

- Significant increase in the levels of traffic on the A43 resulting from the increased capacity associated with the mitigation scheme;

- Removal of the additional 'rat running' traffic using the minor roads on either side of the A43 with a resultant reduction of impact on the local villages including Blisworth and Milton Malsor.
- Increased levels of traffic through Towcester in the morning Peak due to the increased usage of the A43.
- Significantly reduced levels of traffic on the A45 north of Junction 15, the A4500 north of Junction 16 and the A5 as traffic reverts back to the A43 and the M1 corridors.
- Significantly reduced levels of additional traffic within Northampton Town Centre.

9.3.3 Overall, the capacity improvements at M1 Junction 15a result in traffic returning to the A43 as the levels of congestion along this route decrease. This has a significant beneficial impact in traffic flows on the routes leading into Northampton and the minor roads and villages either side of the A43.

9.4 Junction Congestion

9.4.1 Junction congestion is measured by determining the ratio of the volume of traffic, using an arm of the junction, to the capacity of traffic that can be accommodated. A V/C (Volume/Capacity) ratio of 85% or greater is considered to be the point at which the junction is at operational capacity, and where delays and queues are likely to be observed.

9.4.2 It should be noted that junctions with V/C ratio of greater than 85% have not necessarily been caused by the proposed development - existing capacity constraints at these points or growth from other developments could be the source of these problems. The V/C ratio for each junction presents the turning movement with the highest V/C value at that particular junction.

9.4.3 Figures 53 and 54 show the percentage change in V/C for those junctions which were already over the 85% threshold in the 2031 Reference Case. The junctions which are pushed over 85% V/C as a result of the development are shown in Figures 55 and 56.

9.4.4 Comparing the scenario with the M1 Junction 15a improvements and the previous No Mitigation scenario the following congestion impacts of the Junction 15A mitigation scheme can be observed:

- Overall reduction in congestion on the A43 at M1 Junction 15A even though the volumes of traffic passing through this junction have increased significantly.
- Slight increase in congestion at the roundabouts off of the A43 main carriageway within M1 Junction 15a due to the significantly increased volumes of traffic passing through this junction.
- Reduction in the levels of congestion within Milton Malsor to below Reference Case conditions.
- General reductions in congestion at junctions on the A45 south of the M1.
- Overall reductions in congestion within Northampton Town Centre.
- Small increases in congestion at M1 junction 15 due to the changes in traffic movements through this junction.
- Small increases in congestion at the A5123/A5076 Northampton Ring Road junction in the morning peak due to the increased levels of traffic using the A43/A5123 corridor.

10. CONCLUSIONS

10.1 Overview

10.1.1 SYSTRA has been commissioned to assess the strategic highway impacts of the proposed Rail Central Intermodal Park located on land to the south-west of M1 Junction 15A adjacent to the A43 South of Northampton. The development will contain circa 7.5 million sqft of commercial development consisting mainly of distribution warehousing with associated office and industrial activities. The site is also to include a rail intermodal terminal.

10.1.2 Transport Planning Associates (TPA) are developing the detailed transport related submissions associated with the Rail Central scheme and have commissioned SYSTRA to advise on the strategic modelling aspects of the appraisal.

10.1.3 The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

10.1.4 Strategic transport modelling has been undertaken to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process have been used in the development of a Transport Assessment to be submitted as part of the planning application.

10.2 2021 and 2031 No Mitigation Conclusions

10.2.1 Through the analysis of the 2021 and 2031 with development no mitigation modelled scenarios, it is identified that there will be an impact on the SRN and the roads in the immediate area of the Rail Central RFI development.

10.2.2 Over both peak periods for both forecast years, the most noticeable increase in traffic is on the M1 between junctions 15 and 15a, and on the A43 between the development access and Junction 15a. In most cases there is a significant reduction in traffic south between the development access and the A43 junction with Towcester Road due to re-assignment of traffic onto more minor routes as a result of the additional development traffic on the A43.

10.2.3 Other increases in traffic occur on the minor roads in the immediate vicinity of the development site, with traffic redistributing away from the main routes accessing the M1. This redistribution of traffic as a result of the development, simultaneously effects the operational capacity of the strategically important junctions within the AOI.

10.3 2021 and 2031 With M1 Junction 15A Mitigation Conclusions

10.3.1 The proposed improvement scheme for M1 Junction 15A consists of the following enhancements to the current layout:

- Signalisation of the Northern roundabout including;
  - Widening of the circulatory carriageway to 3 lanes where required
  - Signalised left turn slip road between the A43 and the A5123 into Northampton
  - Widening of the southern A43 entry to 4 lanes
- New signalised replacing the Southern roundabout including;
  - Free-flow movement for A43 southbound movements
  - Signalised right turns to and from the M1 motorway slip road
  - Signalised left turn slip road between the A43 and the M1 slip road
  - Signalised left turn slip road between the M1 slip road and the A43 overbridge.

10.3.2 Overall, the capacity improvements at M1 Junction 15A result in traffic returning to the A43 as the levels of congestion along this route decrease. This has a significant beneficial impact in traffic flows on the routes leading into Northampton and the minor roads and villages either side of the A43. The predicted changes in traffic flows as a result of this scheme include:

- Significant increase in the levels of traffic on the A43 resulting from the increased capacity associated with the mitigation scheme;
- Removal of the additional 'rat running' traffic using the minor roads on either side of the A43 with a resultant reduction of impact on the local villages including Blisworth and Milton Malsor.
- Increased levels of traffic through Towcester in the Am Peak due to the increased usage of the A43.
- Significantly reduced levels of traffic on the A45 north of Junction 15, the A4500 north of Junction 16 and the A5 as traffic reverts back to the A43 and the M1 corridors.
- Significantly reduced levels of additional traffic within Northampton Town Centre.

APPENDIX A

INFO NOTE

RAIL CENTRAL, NORTHAMPTON

REPORTING REQUIREMENTS

IDENTIFICATION TABLE	
Client/Project owner	TPA
Project	Rail Central, Northampton
Title of Document	Reporting Requirements
Type of Document	Info Note
Date	28/11/2016
Reference number	104176
Number of pages	5

TABLE OF CONTENTS

1.	**REQUIREMENTS**	**2**
1.1	**General Requirements**	**2**
1.2	**Development Areas of Impact**	**2**
1.3	**HGV Trip Distribution Plots**	**2**
1.4	**Employee Trip Distribution Plots**	**2**
1.5	**Flow Change Plots**	**3**
1.6	**Reassignment Plots**	**3**
1.7	**Junction Congestion Plots – Pushed Over**	**3**
1.8	**Junction Congestion Plots – Already Over**	**3**
1.9	**Network Statistics within the Area of Influence**	**4**
1.10	**Junction Turning Movements**	**4**
1.11	**Environmental Outputs:**	**4**
1.12	**Cordons for the Microsimulation models**	**4**

1. REQUIREMENTS

1.1 General Requirements

1.1.1 This brief Note identifies the core outputs that will be required from the Northamptonshire model for the Rail Central scheme assessment.

1.1.2 It would be beneficial for the model output files to be provided to the team to enable in depth analysis and output production to be undertaken externally, however should this option not be available the following outputs will be required as a minimum for each of the scenarios tested including the base and do minimum scenarios.

1.1.3 It is expected that these are provided in GIS format as well as in a JPEG format to allow us to manipulate the scales and format of the presentation. All flow plots should be provided as band width plots with and without flow numbers being represented.

1.1.4 Samples of each output are required prior to producing the final outputs to be agreed with the consultants team.

1.2 Development Areas of Impact

1.2.1 Based on a comparison of the 'With Development' and Do Minimum model outputs we will require plots showing the Traffic and Environmental Areas of impact based on the following:

- Traffic AOI – based on a 5% flow change on the network, outliers should not be included where the flow change is not continuous.
- Environmental AOI – based on a 10% flow change on the network, outliers should not be included where the flow change is not continuous.

1.2.2 These AOI's are to be discussed and agreed with the consultants team and Stakeholder group.

1.3 HGV Trip Distribution Plots

1.3.1 **Purpose:** to graphically show the geographical distribution and routings used by HGV trips

1.3.2 **Detailed requirements:** ArcGIS (or equivalent) produced jpgs (with raster OS background) which show the number of development trips on each link, classified by an appropriate range. Each range should have a different bandwidth. We need to be able to see the flow by direction of travel, so links will be required to be offset in ArcGIS.

1.3.3 We will also require a plot of the origins/destinations of the HGV trips on a sector basis which will contain a number of modelled zones. The definition of the sectors is to be agreed with the project team.

1.4 Employee Trip Distribution Plots

1.4.1 **Purpose:** to graphically show the geographical distribution and routings used by employee trips.

1.4.2 **Detailed requirements:** ArcGIS (or equivalent) produced jpgs (with raster OS background) which show the number of development trips on each link, classified by an appropriate range. Each range should have a different bandwidth. We need to be able to see the flow by direction of travel, so links will be required to be offset in ArcGIS.

1.4.3 We will also require a plot of the origins of the employees on a sector basis which will contain a number of modelled zones. The definition of the sectors is to be agreed with the project team.

1.5 Flow Change Plots

1.5.1 **Purpose:** to graphically show the net flow change between two scenarios.

1.5.2 **Detailed requirements:** ArcGIS (or equivalent) produced jpgs (with raster OS background) which show the number of development trips on each link, classified by an appropriate range. Each range should have a different bandwidth and colour (eg red for increase, blue for reduction). We need to be able to see the flow by direction of travel, so links will be required to be offset in ArcGIS.

1.6 Reassignment Plots

1.6.1 **Purpose:** to graphically show the impact of the RFI on the routings of non-development traffic

1.6.2 **Detailed requirements:** ArcGIS (or equivalent) produced jpgs (with raster OS background) which show the number of development trips on each link, classified by an appropriate range. Each range should have a different bandwidth and colour (eg red for increase, blue for reduction). We need to be able to see the flow by direction of travel, so links will be required to be offset in ArcGIS.

1.7 Junction Congestion Plots – Pushed Over

1.7.1 **Purpose:** To graphically show the junctions which are likely to be pushed over 85% V/C as a result of the development traffic.

Detailed requirements: ArcGIS (or equivalent) produced jpgs (with raster OS background) which show junctions where the Max V/C is less than 85% in the Reference and greater than 85% with the RFI in place. For each of these junctions we need to know how much the V/C increases by, classified by 3 or 4 appropriate ranges.

1.8 Junction Congestion Plots – Already Over

1.8.1 **Purpose:** To graphically show the change in V/C at junctions which are congested before the RFI.

Detailed requirements: ArcGIS (or equivalent) produced jpgs (with raster OS background) which show the change in max V/C at junctions where the max V/C is greater than 85% in the Reference. For each of these junctions we need to know how much the V/C changes by, classified by appropriate range bands.

1.9 Network Statistics within the Area of Influence

1.9.1 Purpose: to demonstrate how key network statistics change in the area of influence as a result of the RFI

1.9.2 Detailed requirements: tables presenting over-capacity queues, travel time, travel distance and average speed within the AOI

1.10 Junction Turning Movements

1.10.1 Turning movements are required for a range of major junctions within the Traffic AOI which are to be determined following the analysis of the core model outputs, however they will definitely include the motorway junctions and also the development access junctions.

1.11 Environmental Outputs:

1.11.1 We will need the following two-way link based data, we will also require GIS plots of the modelled highway network so that the locations of this information can be identified by our environmental consultants:

- Link length (m)
- 18HrAAWT (vehicles)
- 18HrSpeed (kph)
- 18Hr%HGV
- 24HrAADT (vehicles)
- 24HRSpeed (kph)
- 24Hr%HGV
- AMpkFlow (vehicles)
- AMPK%HGV
- AMPkSpeed (kph)
- IPpkFlow (vehicles)
- IPPK%HGV
- IPPkSpeed (kph)
- PMpkFlow (vehicles)
- PMPK%HGV
- PMPkSpeed (kph)

1.12 Cordons for the Microsimulation models

1.12.1 Cordon matrices will be provided as input matrices to the Microsimulation models that are being produced to provide the detailed evaluation of the impacts of the scheme. The precise area of these cordons will be defined once the Micro-simulation modelling has been fully defined.

INFO NOTE

RAIL CENTRAL NORTHAMPTONSHIRE

MODELLING METHODOLOGY SPECIFICATION REPORT

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates (TPA)
Project	Rail Central Northamptonshire
Title of Document	Modelling Methodology Specification Report
Type of Document	Info Note
Date	13/10/2016
Reference number	104176
Number of pages	23

TABLE OF CONTENTS

1.	**INTRODUCTION**	**3**
1.1	**REPORT BACKGROUND**	**3**
2.	**RAIL CENTRAL DEVELOPMENT PROPOSALS**	**4**
2.1	**SITE LOCATION AND ACCESS**	**4**
2.2	**LAND USE PROPOSALS**	**4**
2.3	**AREA OF INFLUENCE**	**4**
2.4	**MODELLING REQUIREMENTS**	**5**
3.	**NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)**	**7**
3.1	**MODEL OVERVIEW**	**7**
3.1	**MODEL STRUCTURE**	**7**
3.2	**SOFTWARE PLATFORM**	**7**
3.3	**MODELLED AREA**	**8**
3.4	**MODEL TIME PERIODS**	**9**
3.5	**DEMAND SEGMENTATION AND USER CLASSES**	**9**
4.	**STAGE 1: BASE MODEL ENHANCEMENTS AND VALIDATION**	**10**
4.1	**SURVEY DATA**	**10**
4.2	**NETWORK ENHANCEMENTS**	**12**

4.3	NETWORK CHECKS	12
4.4	LOCAL AREA CALIBRATION AND VALIDATION (HIGHWAY)	14
4.5	PUBLIC TRANSPORT MODEL	15
4.6	DEMAND MODEL CALIBRATION	16
4.7	REPORTING	16
5.	STAGE 2: REFERENCE CASE DEVELOPMENT	17
5.1	OVERVIEW	17
5.2	YEAR OF OPENING	17
5.3	FULL CORE STRATEGY MODEL	17
5.4	REPORTING	18
6.	STAGE 3: WITH DEVELOPMENT MODELLING	19
6.1	OVERVIEW	19
6.2	DEVELOPMENT ACCESS	19
6.3	TRAFFIC GENERATION	19
6.4	TRAFFIC DISTRIBUTION	20
6.5	MODELLING OF PUBLIC TRANSPORT	20
6.6	SCHEME PHASING	21
6.7	REPORTING	21
7.	STAGE4: MITIGATION MODELLING	22
7.1	OVERVIEW	22
7.2	REPORTING	22
8.	ENVIRONMENTAL OUTPUTS	23
8.1	GENERAL APPROACH	23

1. INTRODUCTION

1.1 Report Background

1.1.1 This report outlines the suggested strategy associated with the strategic transport modelling of the proposed Rail Central Scheme in Northamptonshire located on land to the south-west of M1 junction 15A adjacent to the A43.

1.1.2 Transport Planning Associates (TPA) are developing the detailed transport related submissions associated with the Rail Central scheme and have commissioned SYSTRA to advise on the strategic modelling aspects of the appraisal.

1.1.3 The scheme is classified as a nationally significant infrastructure project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

1.1.4 A transport model is being developed to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process will be used in the development of a Transport Assessment to be submitted as part of the National Infrastructure Planning (NIP) application.

1.1.5 The Northampton Strategic Transport Model (NSTM) which is currently being rebased and revalidated by WSP Parsons Brinckerhoff has been identified as a suitable tool to form the basis of the strategic transport modelling for the site. Further details of this model are presented in this report. All updates and application of this model will be undertaken by WSP Parsons Brinckerhoff with model outputs being provided to the applicants team for use in their appraisal of the site.



2. RAIL CENTRAL DEVELOPMENT PROPOSALS

2.1 Site Location and Access

2.1.1 The proposed Rail Central site is located on an area of undeveloped land bounded by the village of Milton Malsor to the North, The West Coast Mainline Railway to the south, the Northampton Loop Railway to the east and the A43 Trunk Road to the west.

2.1.2 Access will be gained via a new grade separated junction onto the A43. Northampton Road passes through the site, however there will be no general traffic connections to this route from the developments internal road network, however, emergency, pedestrian and cycle access is to be provided.

2.2 Land Use Proposals

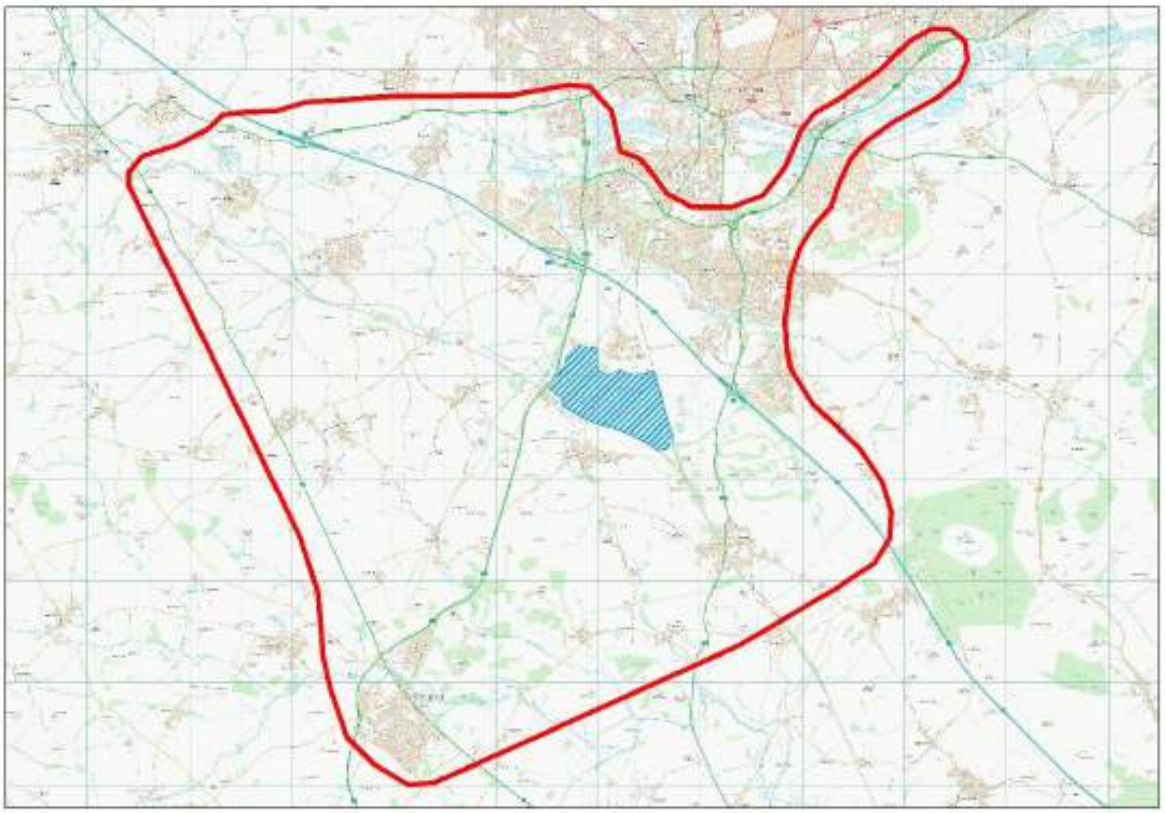
2.2.1 The current land use proposals include:

- An intermodal Park on the Northampton Loop line.
- Up to 8 million sqft of warehouse/distribution units.
- A train maintenance depot.
- A 149 space HGV Truck Park.

2.3 Area of Influence

2.3.1 A strategic modelling Area of Influence has been identified through an initial analysis of the flow impact of the scheme using the current Northamptonshire Transport Model combined with discussions with interested parties regarding other routes and areas that may be affected by the scheme. This AOI is shown in Figure 2.

Figure 1. Strategic Modelling Area of Influence



2.3.2 The Area of Influence for the site is shown in Figure 2 and the transport model is required to model this area in detail. This area has been identified for the purposes of the Local Model Validation and Strategic modelling exercises and not the scope for the Transport Assessment for the scheme. The AOI includes

- the Highways England Routes of the A43, M1, A5 and A45;
- urban routes on the southern side of Northampton; and
- rural routes leading to local villages between the A5 and the M1.

2.4 Modelling Requirements

2.4.1 The scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and as such, following the abolition of the Infrastructure Planning Committee in April 2012, the planning application will be dealt with by the National Infrastructure Directorate of the Planning Inspectorate.

2.4.2 A transport model is required to support the planning application for the proposed scheme, to provide a robust assessment of the impact of the development and its associated highway infrastructure packages. The outputs of the modelling process will be used in the development of a Transport Assessment to be submitted as part of the National Infrastructure Planning (NIP) application.

2.4.3 The mitigation measures are likely to include improvements to the HE routes in the vicinity of the site including an access onto the A43, local highway network improvements and bus based public transport improvements.

2.4.4 As a result of these general requirements we have identified a core list of model functionality that will be required to undertake this assessment as follows:

- Full simulated representation of the highway networks within the identified Area of Influence. This will include detailed representation of the operation of all classified roads and junctions within the network to enable the junction impacts to be assessed.
- Public Transport model capable of assessing the modal implications of new bus services accessing the site with routes serving the main catchment areas.
- Demand model to include mode choice and trip distribution as a minimum, calibrated to a level acceptable by the HE and local highway authorities.
- Separate OGV/HGV matrices that can reflect the regional and sub-regional HGV movements associated with the site.
- High levels of validation on the HE routes in the vicinity of the site and on local routes within the Area of Influence to an agreed level similar to WebTAG guidelines.
- Appropriate zoning system that ensures that local demand is disaggregated to ensure high quality representation of all transport movements between the site and its employment catchment.
- The model and modelling assessment has to be acceptable to all impacted authorities.
- Outputs have to be capable of being used to justify and design improvements to the local highway and public transport networks.
- Outputs robust enough to form the bases of the Transport Assessment to form part of the NSIP application.
- Provision of 16hr AAWT and 24hr AADT flows for assessment of Noise and Air Quality implications of the development by an environmental consultant.

2.4.5 As part of the NSIP application process Statements of Common Ground will be prepared between the development team, the local highway authorities and HE. It is anticipated that the outputs from the modelling process will form a key component of the Statements of Common Ground.

3. NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)

3.1 Model overview

3.1.1 In 2008, the North Northamptonshire Highway Model (SATURN) and the West Northamptonshire Multi-Modal Model (SATURN and EMME/2) were combined and updated to produce the Northamptonshire Strategic Transport Model (NSTM).

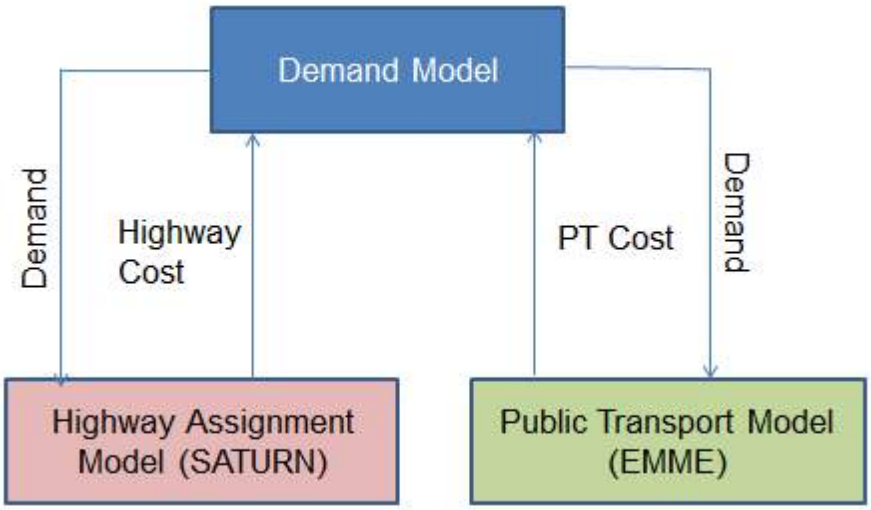
3.1.2 The SATURN suite of programs was used to build the highway model while EMME3 was used to build the Demand Model and the Public Transport Model. The strategic model developed by WSP offered an integrated system for a range of transport modes, representing private and public transport as well as modal interchange behaviour such as walking.

3.1.3 NSTM is currently being rebased to a 2015 base year by WSP Parsons Binckerhoff so that it is consistent with current WebTAG guidance. The resultant model is summarised below.

3.1 Model Structure

3.1.1 The NSTM will comprise a TAG compliant full demand model, with separate highway and public transport assignment models that interact under the control of the demand model. The interaction between the models is shown in Figure 3.

Figure 2. NSTM Model Structure



3.2 Software Platform

3.2.1 The highway assignment model will be run in SATURN (version 11.3.12F) as it is the most widely used and accepted highway assignment software in the UK.

3.2.2 The demand model and public transport assignment model will be run in EMME (version 4.2.3).

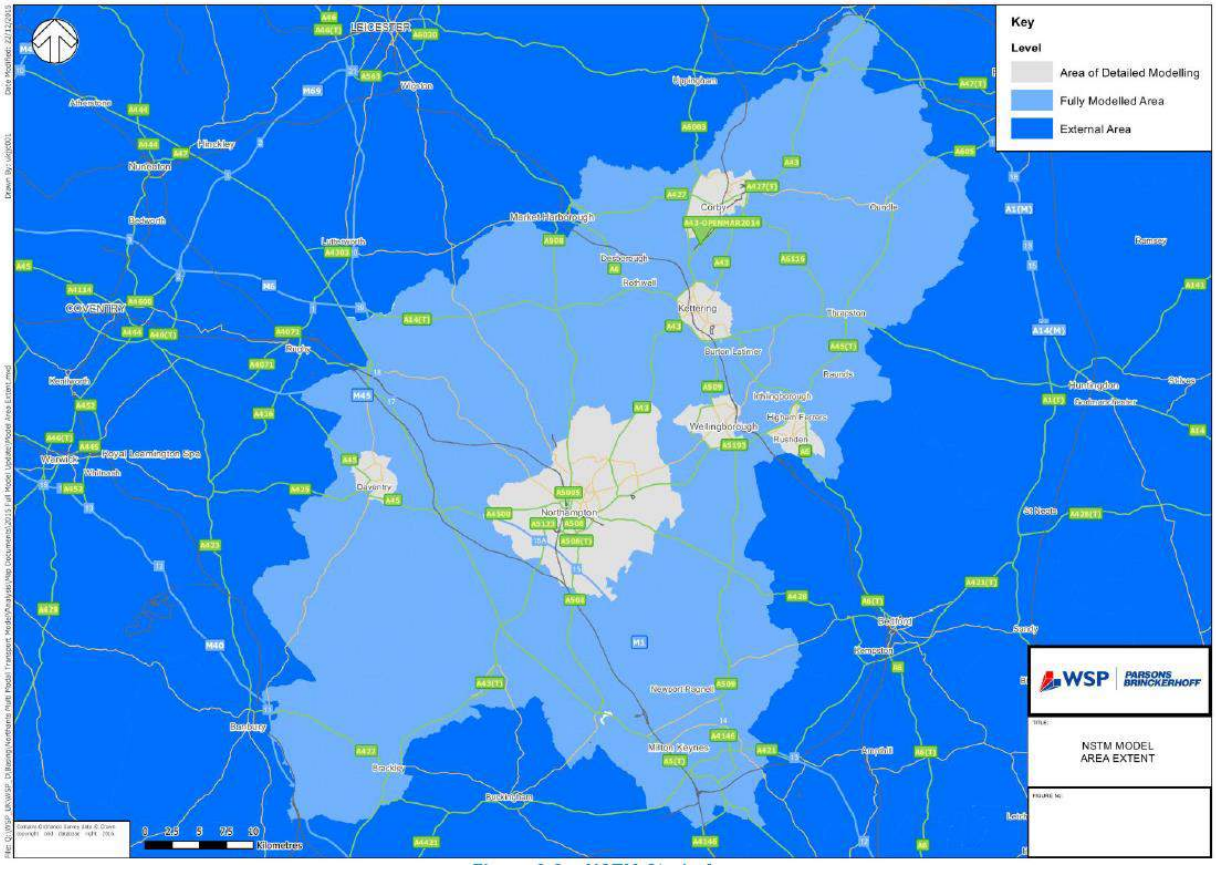
3.3 Modelled Area

3.3.1 The modelled area is set out in terms of a three-tier hierarchy, comprising:

- Area of Detailed Modelling: covers all roads with significant traffic volumes and all realistic route choices available to drivers, with all major junctions modelled
- Rest of Fully Modelled Area: reduced level of detail, with principal strategic routes modelled and capacity restraint through the use of speed/flow curves and strategically important junctions
- External Area: simplified network allowing traffic to enter the Fully Modelled Area at the correct location, without capacity restraint. Skeletal network with approximate distances to allow demand model to capture full trip length.

3.3.2 It encompasses the major motorways of the M1 (junctions 14 to 19) and M45 (from Junction 17).It is shown in Figure 4.

Figure 3. NSTM Coverage



3.4 Model Time Periods

3.4.1 The highway and public transport models include the following fully modelled time periods:

- AM peak hour: (08:00-09:00).
- Average inter-peak hour: (10:00-16:00).
- PM peak hour: (17:00-18:00).

3.4.2 The demand model operates at a 24-hour level in production-attraction format.

3.5 Demand Segmentation and User Classes

3.5.1 In general the trip matrices will be segmented into a series of separate homogenous groups to adhere to current DfT guidance on variable demand modelling in TAG unit M2 (January 2014). In the Demand model, throughout the matrix building process all matrices are disaggregated as follows:

- Purpose: Work (Commute), Employer's Business (EB), and Other.
- Car availability: Car available (CA) and No car available (NCA) (household level).
- Time period: AM peak period; Inter-peak period, and PM peak period.
- Vehicle types: Light vehicles and Heavy vehicles.
- Mode: Private vehicle and Public transport.

3.5.2 This segmentation is consistent with that adopted in the Department for Transport (DfT) modelling tools – namely the National Trip End Model (NTEM) and the National Transport Model (NTM).

3.5.3 For highway assignment, the following user classes will be modelled which is consistent with advice presented in Section 2.6 of TAG Unit M3.1 (January 2014):

- Car – Commuting.
- Car – Employer's Business.
- Car – Other.
- LGV.
- HGV (OGV1 and OGV2).

4. STAGE 1: BASE MODEL ENHANCEMENTS AND VALIDATION

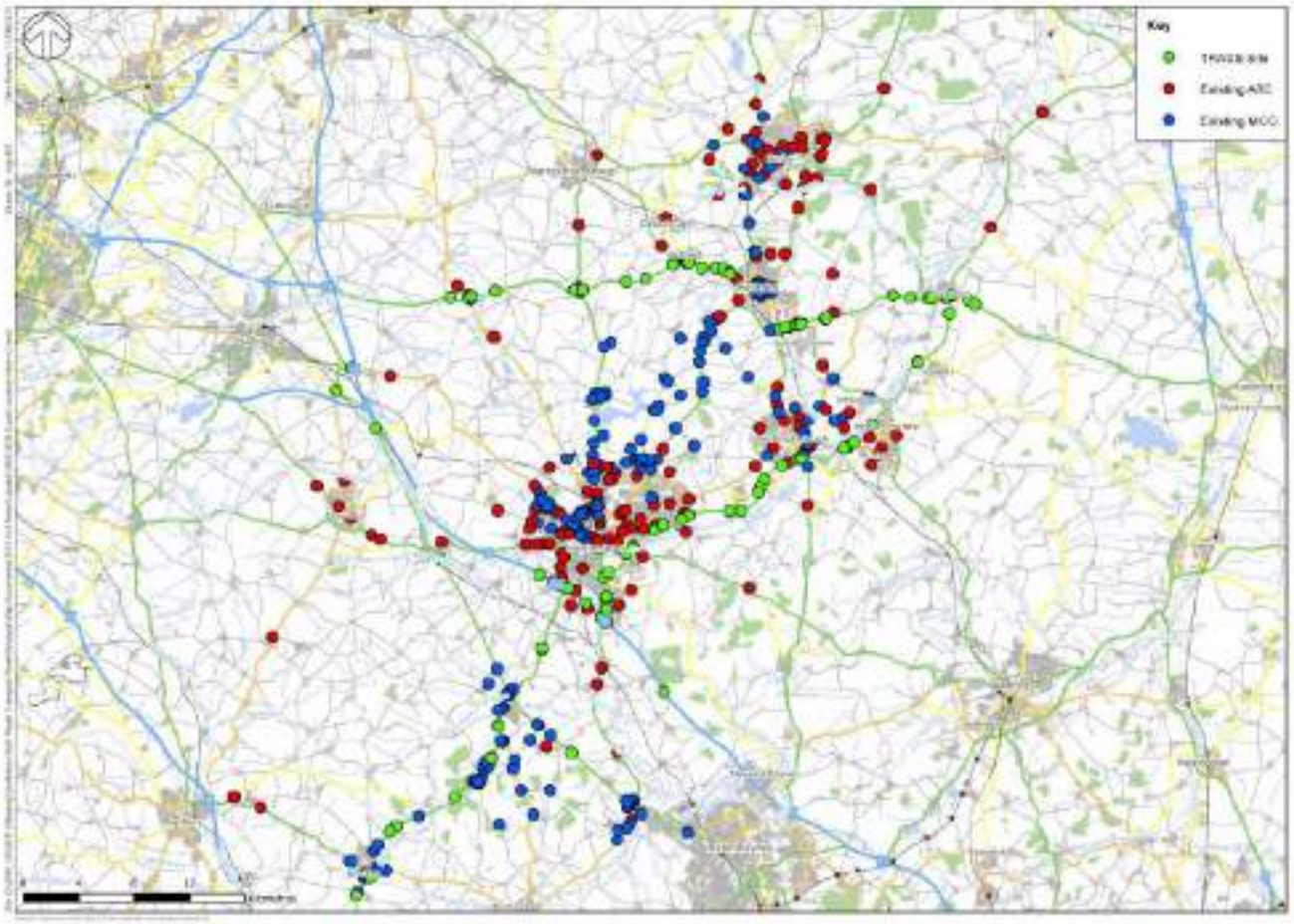
4.1 Survey Data

Vehicle Count Information

4.1.1 Existing traffic count data is required to calibrate/validate the highway model to ensure that it provides a reasonable fit to the traffic conditions during the 2015 Base Year.

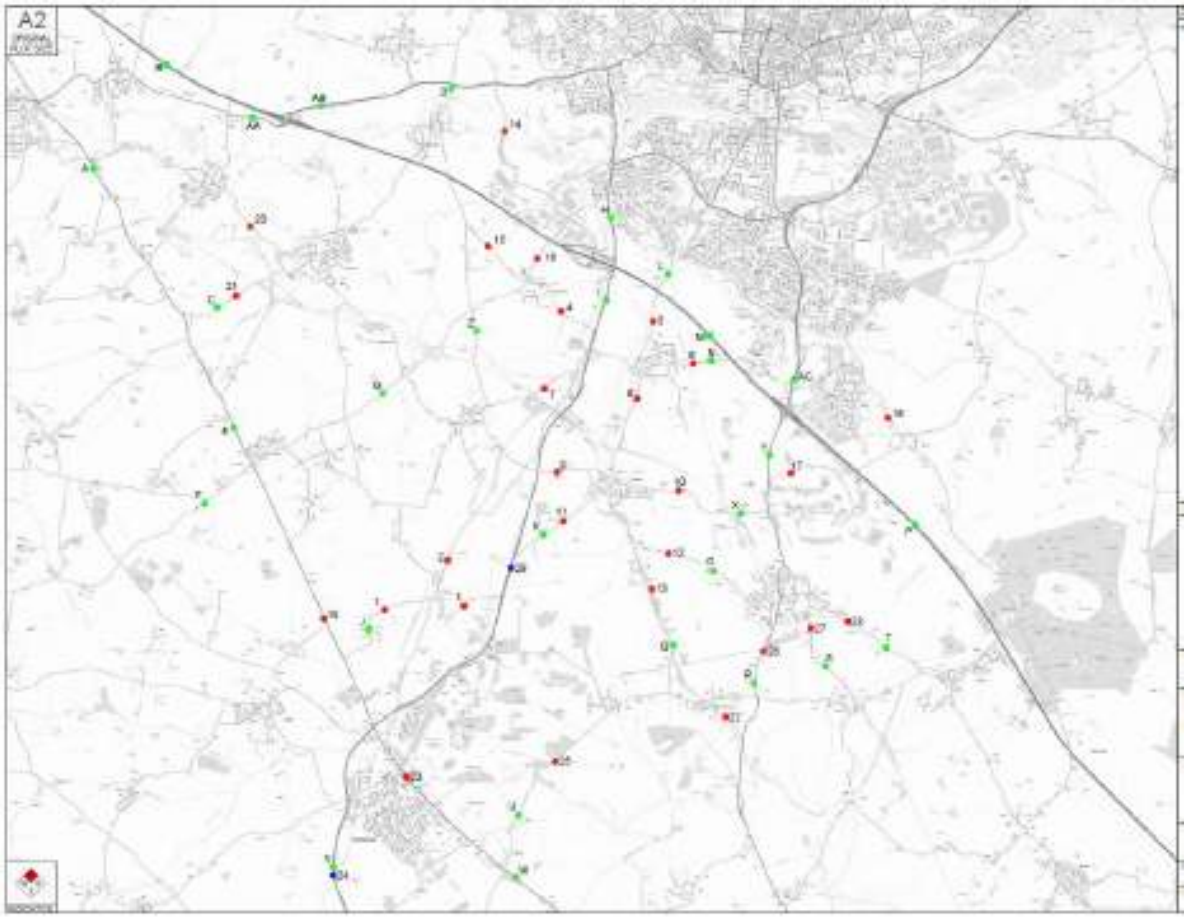
4.1.2 The development of the core model has generally relied on traffic count data from a range of sources which have been obtained by WSP for the validation and calibration of the entire model. The locations of the traffic counts being used in the core calibration/validation of the model are shown in Figure 5.

Figure 4. NSTM Calibration/Validation Count Locations



4.1.3 Within the Development's AOI these counts have been supplemented by additional ATC and ANPR data obtained on behalf of the developer for the Rail Central site. The locations of these counts are shown in Figure 6. These surveys were undertaken in a neutral month in 2016 and as such will be converted to the 2015 base year using factors from TEMPRO 7.

Figure 5. Additional AOI Count Locations



4.1.4 Turning counts have also been obtained for M1 Motorway junctions 15, 15A and 16.

4.1.5 It has been agreed with Northamptonshire and the HE that the survey information provided for the purpose of validating the AOI of the Rail Central scheme (as summarised above) is sufficient for the development of a robust model to assess the impacts of the Rail Central scheme and that no further traffic or public transport data acquisition will be required.

Journey Time Information

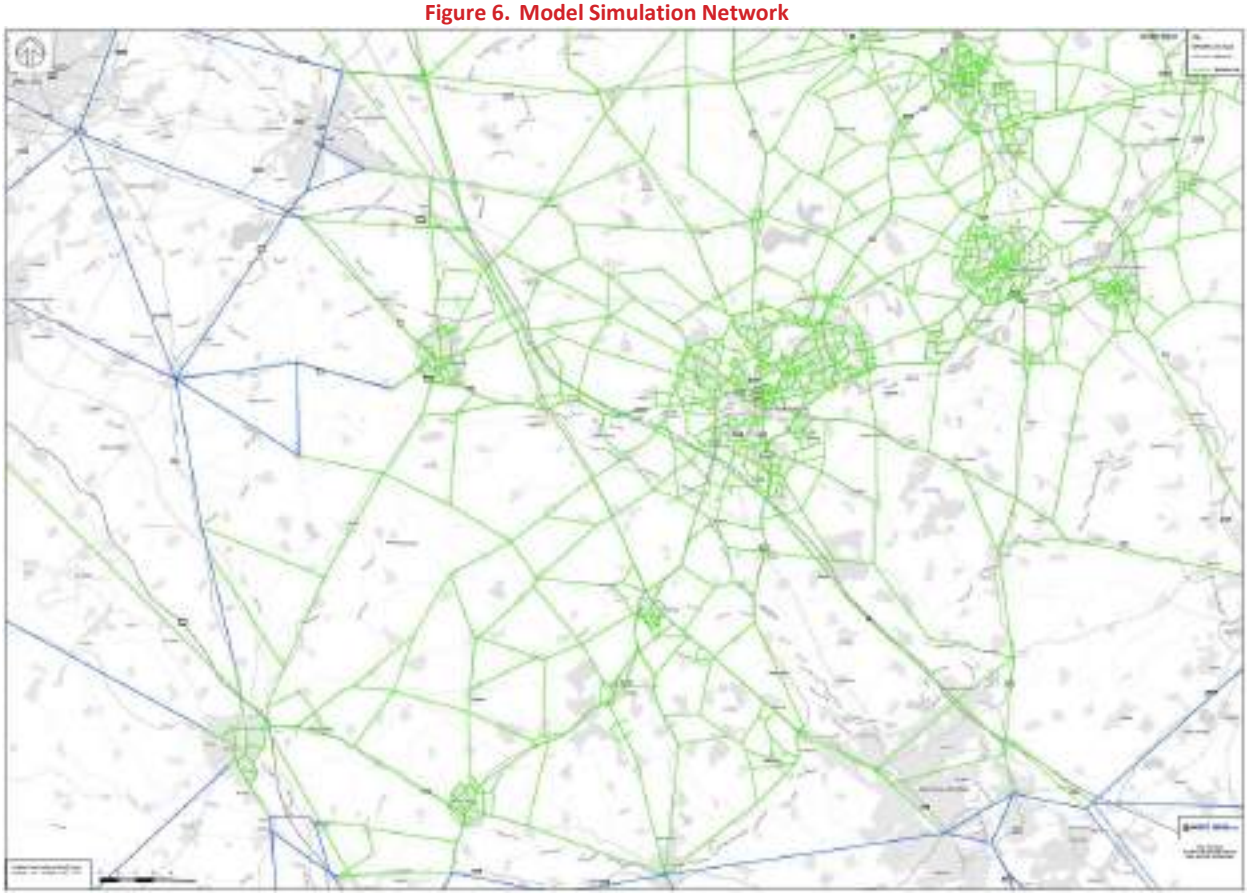
4.1.6 There is no journey time information being used within the developments AOI for the core model validation. However, Journey Times can be obtained from the additional ANPR data that is being obtained on behalf of the developer of the Rail Central site. This will be used to generate Journey times for the following routes:

- A43 between the M1 and the south of Towcester.
- A5 between the count to the south of Weedon Bec and the south of Towcester.
- A508 between the M1 and the south of the village of Roade.
- M1 between the count to the north of Junction 16 to the south of Junction 15.

4.2 Network Enhancements

4.2.1 Figure 7 shows the models simulation area (in green) in the vicinity of the development. The current model includes all the AOI within the fully simulated area and therefore all junctions and road links will be specifically modelled to reflect their current layouts and operation. No expansion of the simulation network is envisaged to assess the Rail Central development.

Figure 6. Model Simulation Network



4.3 Network Checks

Queues

4.3.1 It is important that the delays simulated within the model have a close correlation with reality in order to be able to replicate the highway conditions and provide robust forecast year modelling. If queuing is illogical and mis-represented then forecasts into the future may result in dubious results.

4.3.2 Logic checks will be conducted to ensure that queues are represented in locations where existing congestion has been observed. A list of locations will be developed and agreed with the Northamptonshire and HE.

Routing

4.3.3 Modelled routes will be checked using Select link Analysis and Tree Analysis to ensure integrity. These checks will ensure that the model assigns traffic along logical and expected routes in order for traffic to reach its destination. These will be undertaken between major origins and destinations which are likely to route through the AOI and will include movements between Northampton, Towcester, Milton Keynes and Daventry as well as routes between these towns and the villages that surround the site.

Network Coding

4.3.4 Network coding within the AOI will be checked against mapping and satellite images to ensure that all routes within the AOI have appropriate distances, speeds, lanes numbers and saturation flows.

HGV Restrictions

4.3.5 As HGV movement is a significant part of the generation of the Rail central site HGV restrictions will be reviewed in the vicinity of the site and ensure that they are correctly modelled within the base model. This will ensure that the forecast routings of HGV's comply with current restrictions on the network. This could include weight, height and environmental restrictions on the movement of larger vehicles.

Strategic Road Network Checks

4.3.6 The strategic network will be closely checked against mapping tools to ensure that distances, lanes and lane allocation and speeds were correct. Merge GAP values will also be reviewed to ensure that the slip roads to the motorways are coded correctly and amended where necessary. Particular attention will be paid to M1 Junctions 15 and 15A.

Zone Loading Points

4.3.7 A number of zone loading checks will also be performed to ensure that zones loaded onto the correct parts of the network and all trips associated with the zone were able to get onto the highway network.

4.4 Local Area Calibration and Validation (Highway)

Calibration Procedures

4.4.1 Calibration is the process of adjusting the model to improve the fit to the observed data in two main areas:

- adjustments to the coded links and junctions in the network; and
- adjustments to the elements of the matrix that were synthesised.

4.4.2 The calibration process will be guided by a comparison of modelled flows with observed flows at individual survey sites, and through comparing modelled journey times with observed journey times.

4.4.3 Adjustments to the networks will made in order to improve the fit between modelled link flows and observed link flows as well as improving the fit between modelled and observed journey times. Care will be taken to ensure that any changes made improve the situation by making the model a better representation of conditions on the ground. Unrealistic changes to improve the fit will not be undertaken.

Validation Procedures

4.4.4 A key tool in presenting how well a model performs is to compare the modelled flows against observed vehicle flows from traffic counts. The validation of the model utilises counts that are independent of those used in the calibration process to provide an independent check on how well the model is replicating observed flow conditions on the network.

4.4.5 The DfT guidelines for the calibration/validation of highway models are based on those laid out in the Design Manual for Roads and Bridges (DMRB) Volume 12, Section 2, Part 1, Chapter 4 and WebTAG 3.19. In respect of the individual count comparisons presented in this section there are two separate sets of criteria against which the counts and modelled flow comparison should be measured. The two sets of criteria are:

- GEH Statistic: links should have a GEH value of less than 5;
- Vehicle Flow Comparison (DMRB):
  - where observed flow is less than 700 vehicles per hour, the modelled flow should be within 100 vehicles of the observed flow;
  - where observed flow is between 700 and 2700 vehicles per hour, the modelled flow should be within 15% of observed flow; and
  - where observed flow is greater than 2700 vehicles per hour, the modelled flow should be within 400 vehicles of the observed flow.

4.4.6 With regard to DfT guidelines on the acceptability of validation statistics, WebTAG Unit 3.1 section 3.2.7 discusses validation statistics for counts meeting GEH and DMRB criteria, stating that:

"These two measures are broadly consistent and link flows that meet either criterion should be regarded as satisfactory."

4.4.7 The local area validation for the Rail Central scheme will be conducted in line with these criteria for all count locations within the AOI whilst ensuring that the wider model retains its integrity and has improved on the overall results achieved during the core validation of the NSTM. We will to calibrate/validate against individual link counts rather than using cordons as this is generally a rural area which does not lead itself to the standard cordon approach. All link counts with flows less than 50 vehicles per hour will be excluded from the process.

4.4.8 There are a number of locations where pairs of counts have been obtained for the calibration/validation of the model with ANPR and ATC counts on the road links. Where this has occurred one of these counts will be used in calibration and one in validation.

4.4.9 For the motorway junctions the calibration/validation process will also consider the turning movements at the junctions as well as the link flows leading to and from the junctions.

4.4.10 We will aim to achieve in excess of 80% count validation based on the above criteria. This is slightly below the WebTAG requirements, however, it reflects the nature of the local highway network and is consistent with other similar model validation processes for developments in the East Midlands which have been accepted by the HE and Local Authorities.

4.4.11 The morning and evening peak hours will be the subject to this revalidation process as these represent the main congestion periods on the local network when the greatest impact of the Rail Central scheme will be observed.

Journey Times

4.4.12 WebTAG requires 85% of the modelled end to end journey times along major routes to be within 15% of the observed values. Within the AOI we propose to evaluate Journey Times along the following routes:

- A43 between the M1 and the south of Towcester.
- A5 between the count to the south of Weedon Bec and the south of Towcester.
- A508 between the M1 and the south of the village of Roade.
- M1 between the count to the north of Junction 16 to the south of Junction 15.

4.5 Public Transport Model

4.5.1 Public Transport services that currently pass through the AOI will be checked to ensure the routing and frequency of services is consistent with current timetables.

4.5.2 No further calibration/validation of the public transport model will be undertaken over and above the core modelling work being undertaken by WSP as a result of the limited numbers of routes that pass through the developments AOI and the limited levels of existing demand for buses in the area.

4.6 Demand Model Calibration

4.6.1 Following the validation of the model within the developments AOI the revised highway model parameters will be incorporated into the NSTM demand model. A calibration check will be undertaken to ensure that the Demand Model continues to comply with WebTAG guidelines and if required the demand model will be recalibrated. This demand model check will comply with the requirements of WebTAG.

4.7 Reporting

4.7.1 A comprehensive Local Model Validation Report (LMVR) is being prepared for the core NSTM upgrade.

4.7.2 It is proposed that an addendum LMVR is prepared concentrating on the AOI of the Rail Central development. This will detail the flow and journey time calibration and validation statistics for the entire AOI and also the HE routes separately.

4.7.3 We will also report on the standard impacts that Matrix Estimation (ME) has on the model matrices and the results of the Demand Model recalibration check.

5. STAGE 2: REFERENCE CASE DEVELOPMENT

5.1 Overview

5.1.1 Two Reference Case models will be developed from the revalidated 2015 base year model to represent the following scenarios:

- Year of Opening – assumed to be 2021.
- Full Core Strategy Assessment – 2031 as being developed for Northamptonshire by WSP.

5.1.2 The main data inputs required for the NSTM demand model in relation to developments are as follows:

- Households
- Jobs
- Retail Space Value
- School Pupil Numbers

5.2 Year of Opening

5.2.1 DfT 02/2013 Circular guidance states that the development should be assessed at a year of opening. In order to meet the requirements of this circular and provide a realistic year of opening assessment of the scheme we propose to develop the 'Year of Opening' model with the following assumptions:

- 2021 to be assumed as the year of opening.
- Growth to include the committed development that is envisages to be constructed by this year.
- Growth will be constrained to local growth levels to 2016 using TEMPRO 7.
- All infrastructure schemes to be implemented by 2021 to be included in the assessment.

5.2.2 Details of the land use and infrastructure proposals to be included in this year of opening model will be obtained from Northamptonshire County Council, the HE and the local planning departments. This will be detailed in a technical note to be circulated for approval in advance of the development of the Reference Case.

5.3 Full Core Strategy Model

5.3.1 The Full Core Strategy Reference Case (2031) will be based on the core models Reference Case assumptions for land use and Infrastructure that is being developed for Northamptonshire. Growth in this Reference Case will also be constrained to Tempro 7.

5.3.2 The list of land use and infrastructure schemes that are currently being included by WSP in the 2031 Reference Case will be provided in a separate Technical Note.

5.4 Reporting

5.4.1 In addition to a technical note which outlines the planning and infrastructure assumptions to be included in the two Reference Cases we will also produce a Reference Case Report which will summarise the following:

- Describes the model development and the assumptions used.
- Compares the forecast models with the 2015 base model in terms of:
  - Changes in demand;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics.
- Identify the areas of congestion on the highway network within the AOI even without the Rail Central development.
- Provide peak hour turning movements for junctions in the vicinity of the site split by vehicle type.

6. STAGE 3: WITH DEVELOPMENT MODELLING

6.1 Overview

6.1.1 The Rail Central development will be added to the two reference cases to produce three main assessments as follows:

- **2021 Year of Opening (DfT Circular)** – to include the full development to be compliant with the DfT 2013 circular based on the 2021 Reference Case.
- **2021 Year of Opening (Environmental)** – to include the development envisaged to be occupied at the end of the first year of operation based on the 2021 Reference Case.
- **2031 Full Core Strategy** – to include the full Rail Central development based on the 2031 Reference Case.

6.1.2 For each of these scenarios a sensitivity test will be undertaken without the committed M1 managed motorway scheme which will be included in both the 2021 and 2031 Reference Cases.

6.2 Development Access

6.2.1 The grade separated access onto the A43 will be added to the model for this with development scenario, however, further improvements to the highway network will not be included as these will be considered as part of the Mitigation scenario.

6.2.2 It has been agreed that a full simulated representation of the proposed access junction will be included in the highway model with capacities and other design parameters modelled in a consistent way to other similar junctions within the model.

6.2.3 The development will also be accessible to existing public transport services, with bus stops provided on Northampton Road to serve the site. .

6.2.4 We propose to have two zones for the development replicating the sites on either side of Northampton Road. This will ensure that the variable distances to access public transport are take into account.

6.3 Traffic Generation

6.3.1 The proposed SRFI, comprising both the warehousing and distribution units and the rail terminal, would generate the following type of trips:

- 1. Employee and visitor car trips to and from the B8 units and the rail terminal.
- 2 HGV traffic to and from the B8 units and the Rail terminal.

6.3.2 Person and HGV trip rates for the first three categories of trips will be determined in a separate Technical Note will be produced detailing the derivation of the trip rates to be used in the strategic modelling and Transport Assessment.

6.3.3 The person trip rates will determine the levels of overall employee and visitor movements associated with the site and the model will derive the mode split for the these trips based on the availability of public transport for the origin/destination of the trip and also the relative generalised costs of undertaking the trip by the various available modes. The model will also apply a standard car occupancy ratio to the car borne trips.

6.3.4 The HGV trip movements and distribution will be derived from the GB Freight model. The movements associated with larger GB Freight model zones will be disaggregated based on the existing proportions of HGV movements associated with the smaller NSTM zones.

6.3.5 A technical note will be produced detailing the basis for the developments traffic generations which will be agreed with the HE and the local Authorities in advance of the modelling of the site.

6.4 Traffic Distribution

6.4.1 The distribution of the traffic movements to the local and wider highway network will vary between the various trip categories identified previously.

6.4.2 The distribution of employee and visitor trips will be determined by the model based on zones which contain similar employment land use. This will compared with 2011 Journey to work census data for the identified zones to ensure that the zones that the model is reflecting employee household distributions correctly and will therefore fully represent the likely distribution of employment associated with the site.

6.4.3 As indicated above the distribution of the HGV movements will be derived from the GB Freight model.

6.4.4 A technical note will be produced which details the resultant traffic distributions for cars and HGV's and agree this with the HE and the various local authorities before we proceed with the detailed modelling of the site.

6.5 Modelling of Public Transport

6.5.1 The model includes modal choice between public transport and private vehicle modes. This is determined from the availability of a public transport option for each individual origin/destination, the relative cost of the public transport option compared to the private car for that journey and also the average propensity for employees to use car or public transport modes.

6.5.2 The model can therefore identify the likely levels of public transport usage to and from the site for existing and also future public transport provision to the site.

6.5.3 In parallel with the strategic modelling of public transport access it has been agreed that a separate manual appraisal of the likely public transport access to the site should be undertaken based on the predicted spatial distribution of employees and the levels of public transport provision between the site and these areas. As this is more specific to the site and the potential employees it has been agreed that this will form the core evidence for the predicted mode share of the site rather than the strategic model outputs.

6.6 Scheme Phasing

6.6.1 At this stage it is not envisaged that the strategic model will be used to consider the phasing of the scheme and that if there are phases to the highway network improvements these will be considered using detailed junction models.

6.7 Reporting

6.7.1 During this stage we will prepare two technical notes to be submitted for approval as follows:

- **Traffic Attraction** – detailing the derivation of the traffic generation and the final flows to be used in the strategic modelling.
- **Traffic Distribution** – detailing the resultant traffic distribution for cars and HGV's associated with the site.

6.7.2 We will also add to the Reference Case report with outputs from the various with development model scenarios, which will summarise the impacts of the development compared to the Reference Case and highlight any areas of the network which may require further more detailed assessment and potentially mitigation. This additional section of the report will:

- Describe the derivation of the development scenario and the assumptions used.
- Identification of the impacts of the development in terms of
  - The distribution of development traffic flows;
  - Traffic redistribution for non-development movements;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics.
- Highlight main areas of congestion on the highway network within the AOI with the Rail Central development.
- Provide peak hour turning movements for junctions in the vicinity of the site split by vehicle type.

7. STAGE4: MITIGATION MODELLING

7.1 Overview

7.1.1 The highway and public transport models are capable of simulating at a strategic scale a range of potential mitigation measures to lessen the impact of the development on the local highway networks. Measures could include:

- Highway capacity improvements.
- New/improve public transport routes.
- Traffic management schemes.
- HGV bans and restrictions.

7.1.2 Based on the outputs of the earlier stages of modelling and also more detailed appraisals of the highway network using junction modelling tools we will identify a mitigation strategy in a further technical note to be discussed and agreed with the HE and the Local Authorities.

7.1.3 The agreed strategy will form the basis of the strategic modelling of the impacts of the identified strategy in mitigating the overall impacts of the development using NSTM.

7.2 Reporting

7.2.1 During this stage we will prepare a technical note detailing the proposed mitigation strategy to be discussed with the HE and the Local Authorities.

7.2.2 We will also add to the previous report with outputs from the mitigation model runs, which will summarise the impacts of the mitigation measures compared to the with development scenario. This additional section of the report will:

- Describe the mitigation measures assumed.
- Identify the impacts of the development in terms of:
  - Traffic redistribution for non-development movements;
  - Congestion and flow changes on the highway network; and
  - Overall model statistics and compare these to the Reference Case.
- Highlight any areas of congestion on the highway network within the AOI with the Rail Central development and its mitigation package.
- Provide turning movements for junctions in the vicinity of the site.

8. ENVIRONMENTAL OUTPUTS

8.1 General Approach

8.1.1 Traffic flow and speed information will be generated from the Saturn Highway for use in the air quality and noise assessment which will be submitted as part of the NSIP application for the site.

8.1.2 A separate 2021 Reference Case will be developed that includes the levels of growth that is anticipated by 2021 together with the amount of site development that is envisaged at the end of the first year of operation. This test is to be used for the Environmental assessment only.

8.1.3 Factors to take the average peak hour flows (AM and PM peak combined) to 18 and 24 hr flows as required for these assessments will be derived from the ATC information obtained for the assessment of the development scheme.

RAIL CENTRAL - NORTHAMPTON

LOCAL AREA VALIDATION AND CALIBRATION TECHNICAL NOTE

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates (TPA)
Project	Rail Central - Northampton
Type of document	Technical Note
Date	14/12/2016
Reference number	104176
Number of pages	21

© SYSTRA Ltd 2018 The contents of this technical note remain the intellectual property of SYSTRA Ltd and may be used only in connection with the brief for which it was submitted. It is specifically forbidden to communicate the contents to any third party without prior permission in writing from SYSTRA, and all reasonable precautions must be taken to avoid this occurring.

*

TABLE OF CONTENTS

1.	INTRODUCTION	5
1.1	BACKGROUND	5
1.2	VALIDATION AND CALIBRATION COUNTS	6
2.	RAIL CENTRAL CALIBRATION AND VALIDATION	6
2.1	VALIDATION GUIDANCE AND APPROACH	6
2.2	CALIBRATION COUNTS (AOI)	9
2.3	VALIDATION COUNTS (AOI)	11
2.4	M1 MOTORWAY JUNCTIONS VALIDATION	13
2.5	JOURNEY TIME EVALUATION	19
3.	CONCLUSIONS	20
3.1	OVERVIEW	20

*

*

LIST OF FIGURES

Figure 1.	Strategic Rail Freight Interchange AOI	5
Figure 2.	Strategic Rail Freight Interchange ATC and TRADS count locations	7
Figure 3.	Strategic Rail Freight Interchange ANPR count locations	8
Figure 4.	Journey Time Routes	19

*

*

LIST OF TABLES

Table 1.	Rail Central AOI Calibration Statistics	9
Table 2.	Calibration GEH and Flow Comparison Non-compliances (AM Peak)	10
Table 3.	Calibration GEH and Flow Comparison Non-Compliances (PM Peak)	10
Table 4.	Rail Central AOI Validation Statistics	11
Table 5.	Validation GEH and Flow Comparison Non-Compliances (AM Peak)	12
Table 6.	Validation GEH and Flow Comparison Non-compliances (PM Peak)	12
Table 7.	M1 Junction 15A – Northampton Services Roundabout (A43) - GEH (<5)	13
Table 8.	M1 Junction 15A – Northampton Services Roundabout (A43) – Flow Difference	14
Table 9.	M1 Junction 15A – Northern Roundabout (A43) - GEH (<5)	15
Table 10.	M1 Junction 15A - Northern Roundabout (A43) – Flow Difference	15
Table 11.	M1 Junction 15A – Southern Roundabout (A43) - GEH (<5)	16
Table 12.	M1 Junction 15A - Southern Roundabout (A43) – Flow Difference	16
Table 13.	M1 Junction 15 – A45 - GEH (<5)	17
Table 14.	M1 Junction 15 – A45 – Flow Difference	18

*

*

1. INTRODUCTION

1.1 Background

1.1.1 SYSTRA has been commissioned by Transport Planning Associates (TPA) to provide advice relating to the strategic transport modelling for the Rail Central Strategic Rail Freight Interchange near Milton Malsor south of Northampton.

1.1.2 The strategic transport modelling is to be undertaken by WSP/Parsons Brinkerhoff using the Northampton Strategic Transport Model (NSTM).

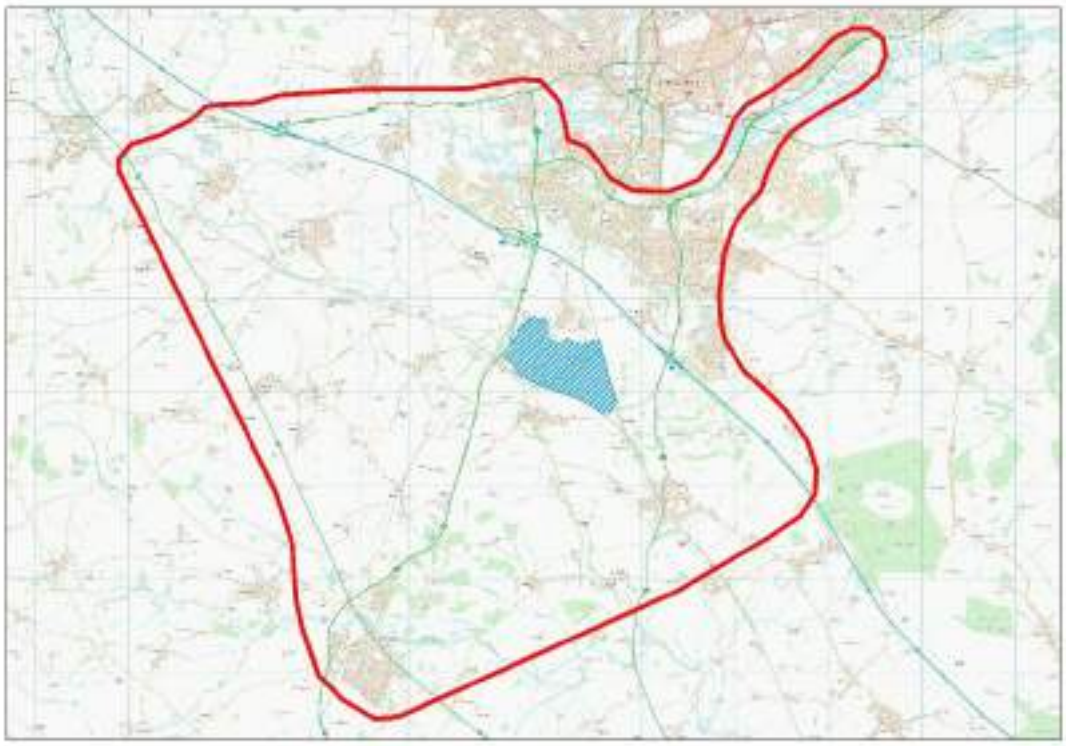
1.1.3 WSP have now completed the calibration/revalidation of the NSTM and have provided a summary note of the resulting calibration/validation of the highway model both for the entire model coverage and the identified Area of Influence of the Rail Central development. This technical note summarises this information and evaluates the 'Fitness for Purpose' of the resultant model for the assessment of the Rail Central scheme in advance of the publication of the full Local Model Validation Report (LMVR).

1.1.4 Strategic Rail Freight Interchange

1.1.5 The project consists of a large warehouse/distribution development with an associated intermodal freight terminal. Rail access is provided via a siding with the Northampton line, while road traffic is loaded onto the A43.

1.1.6 The proposed Area of Influence (AOI) is shown in Figure 1.

Figure 1. Strategic Rail Freight Interchange AOI



*

*

1.2 Validation and Calibration Counts

1.2.1 Local Automatic Number Plate Recognition (ANPR) and Automatic Traffic Count (ATC) data was collected in June and July 2016 at various locations around the AOI of the proposed development. These have been supplemented with existing Manual Classified Count Data including turning movement surveys at Junctions 15 and 15A of the M1 motorway.

1.2.2 This data has been used in the validation and calibration of the highway model which has been summarised by WSP in a pdf document entitled "NSTM Base Model Update - Initial Validation Results 301116 Low Res". The core count locations for the ATC and Trads counts are shown in Figure 2 with the ANPR counts shown in Figure 3.

2. RAIL CENTRAL CALIBRATION AND VALIDATION

2.1 Validation Guidance and Approach

2.1.1 The DfT guidelines for the validation of highway models are based on those laid out in TAG Unit M3.1, Highway Assignment Modelling, Chapter 3. In respect of the count comparisons presented in this section, there are two separate sets of criteria against which the counts and modelled flow comparisons should be measured. In both cases the criteria are expected to be met in 85% of cases. The two sets of criteria are:

- GEH Statistic:
  - Links should have a GEH value of less than 5.
- TAG Unit M3.1 Link Flow and Turning Movement:
  - Where observed flow is less than 700 vehicles per hour, the modelled flow should be within 100 vehicles of the observed flow;
  - Where the observed flow is between 700 and 2,700 vehicles per hour, the modelled flow should be within 15% of the observed flow; and
  - Where observed flow is greater than 2,700 vehicles per hour, the modelled flow should be within 400 vehicles of the observed flow.

2.1.2 Regarding DfT guidelines on the acceptability of validation statistics, WEBTag Unit M3.1 section 3.2.8 discusses validation statistics for counts meeting GEH and DMRB criteria, stating that:

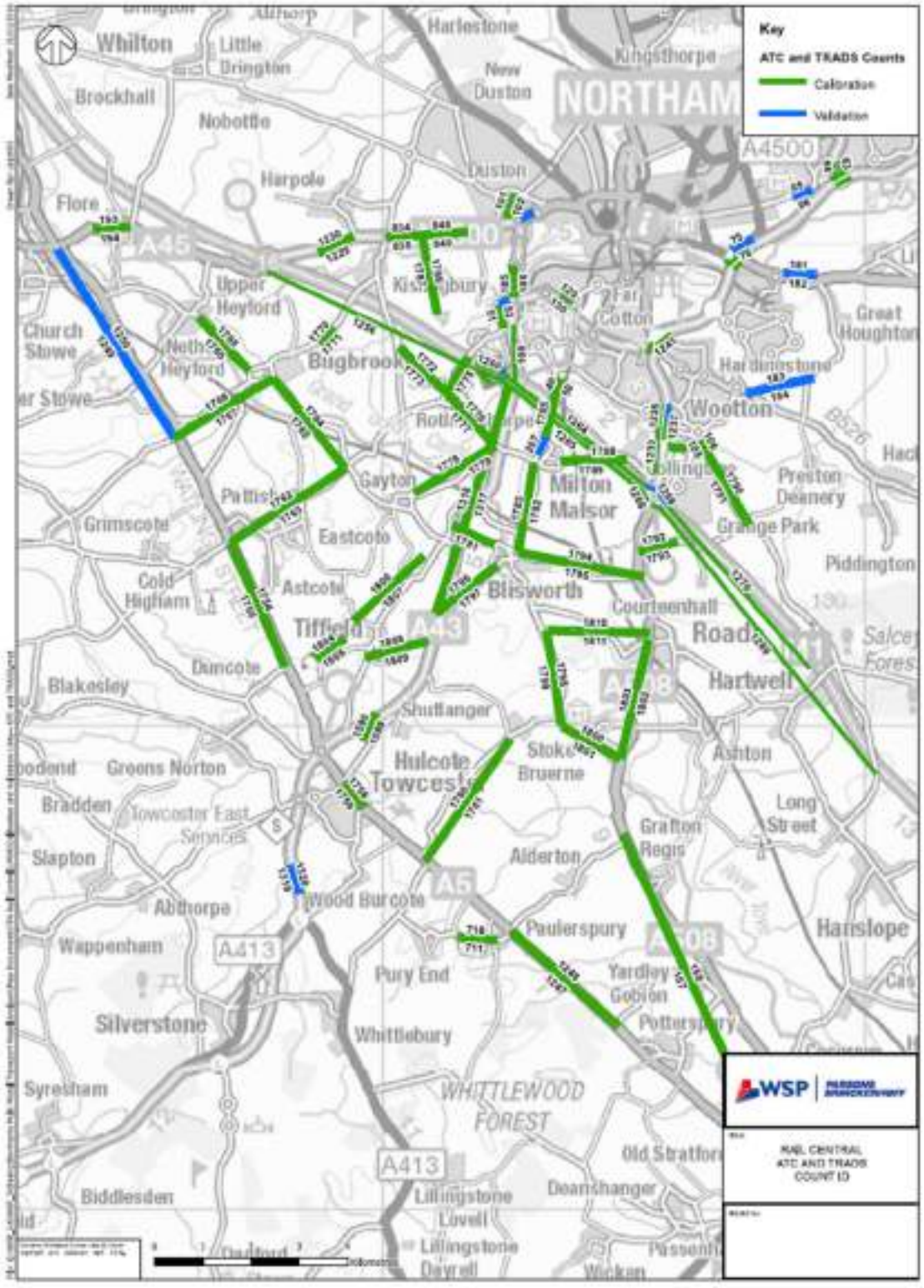
"These two measures are broadly consistent and link flows that meet either criterion should be regarded as satisfactory."

2.1.3 The Strategic Rail Freight Interchange AOI validation checks have been undertaken in line with these criteria**.**

*

*

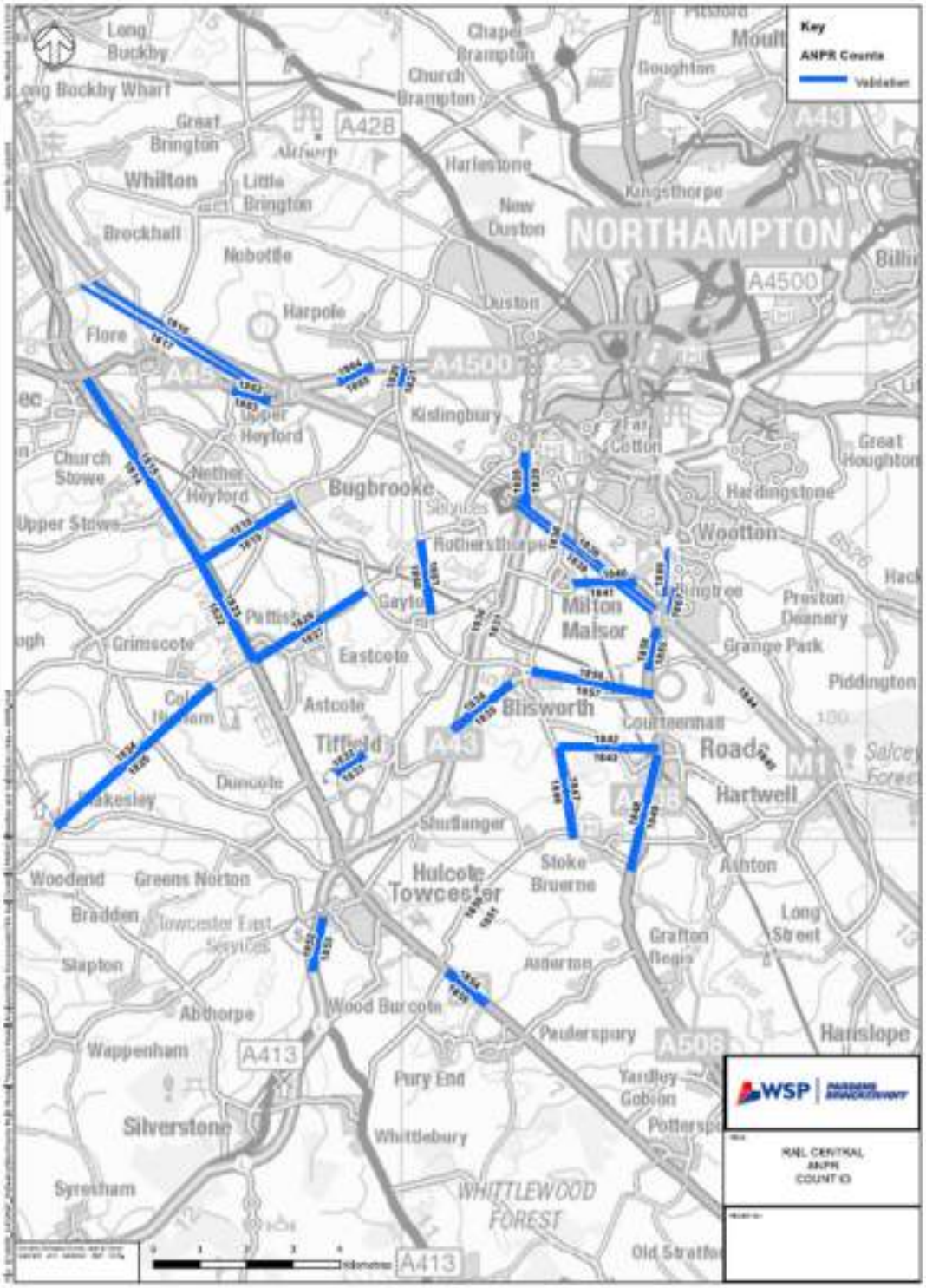
Figure 2. Strategic Rail Freight Interchange ATC and TRADS count locations



*

*

Figure 3. Strategic Rail Freight Interchange ANPR count locations



*

*

2.2 Calibration Counts (AOI)

2.2.1 Table 1 provides the Calibration statistics for the link counts within the Rail Central developments AOI. A total 122 calibration counts were located within the AOI, all of which have been used in this review.

Table 1. Rail Central AOI Calibration Statistics

	NUMBER OF COUNTS	GEH > 85%	FLOW > 85%
Morning Peak			
Calibration	122	**84.5%**	92.7%
Evening Peak			
Calibration	122	89.4%	93.5%

2.2.2 The statistics suggest that the model calibration in the AOI achieves the TAG guidelines of 85% of counts meeting either the GEH or flow criteria for both the AM and PM peaks.

2.2.3 An overall GEH calibration level of 84.5% in the AM peak is observed, with 19 of the 122 counts failing to achieve a GEH <5, whilst in the PM peak period this is 89.4% with 13 of the 122 counts failing to reach the target figure.

2.2.4 For the Flow Calibration criteria, in both peaks most modelled flows met the WEB Tag specifications for comparisons between modelled and observed flows. In the AM peak, the overall success rate is 92.7% with only 9 of the 122 counts taken showed modelled flows not meeting the WebTAG criteria, while in the PM peak this is 93.5% with the number of failed counts being 8 out of 122.

2.2.5 Counts that have specifically failed to meet the GEH and/or flow criteria are listed in red in Tables 2 and 3 below. From this information, only 9 counts fail to meet either the GEH or Flow criteria in the AM peaks giving an overall calibration levels of 92%. In the PM Peak 8 counts fail to meet either the GEH or Flow criteria giving an overall calibration levels of 93% These both exceed the WEBTag requirements of 85%.

*

*

Table 2. Calibration GEH and Flow Comparison Non-compliances (AM Peak)

ROAD NAME	DIRECTION		OBSERVED	MODELLED	FLOW DIFFERENCE	GEH (<5)
Towcester Road	NB		375	538	163	7.624
Towcester Road	SB		554	451	103	4.605
M1/A508	EB		248	166	82	5.700
A45/A508	WB		2135	1709	426	9.722
A45/A508	WB		1919	1654	265	6.268
M1 J15A	SB		654	476	178	7.498
M1 J15	NB		966	751	215	7.348
A45/A5095	WB		3450	3107	343	5.983
A43/M1	SB		1544	1260	284	7.582
A43/A5	SB		1958	1664	294	6.909
A45/A43	WB		694	590	104	4.101
A5	SB		1498	1133	365	10.063
Banbury Lane	SB		130	68	62	6.244
Camp Hill	NB		52	121	69	7.399
A5	SB		88	155	67	6.058
Towcester Road	NB		681	538	143	5.764
Upton Valley Way	SB		264	127	137	9.844
Bridge Lane	WB		43	93	50	6.048
A5	WB		22	64	42	6.522
High Street	NB		25	120	95	11.246

Table 3. Calibration GEH and Flow Comparison Non-Compliances (PM Peak)

ROAD NAME	DIRECTION	OBSERVED	MODELLED	FLOW DIFFERENCE	GEH (<5)
Towcester Road	SB	419	542	123	5.583
High Street	WB	54	19	35	5.785
M1/A508	EB	2251	1897	354	7.777
A508	WB	2668	2398	270	5.760
A45/A508	WB	2249	1972	277	6.026
M1 J15A	NB	589	462	127	5.519
A45/A428	EB	1439	1209	230	6.314
A43/A5	NB	1882	2150	268	5.966
A43/A5	SB	1414	1131	283	7.931
Saxon Avenue	WB	466	331	135	6.750
Milton Road	SB	53	19	34	5.600
Towcester Road	SB	658	542	116	4.764
Courteenhall Road	EB	124	225	101	7.580
A508	SB	658	517	141	5.853

*

*

2.3 Validation Counts (AOI)

2.3.1 Table 4 provides the validation statistics for the counts within the AOI. A total 68 validation counts were located within the Rail Central AOI, all of which have been used in this review.

Table 4. Rail Central AOI Validation Statistics

	NUMBER OF COUNTS	GEH > 85%	FLOW > 85%
Morning Peak			
Validation	68	85.3%	89.8%
Evening Peak			
Validation	68	86.8%	85.3%

2.3.1 The statistics suggest that the model validation in the AOI successfully achieves the DfT guidelines for both the AM and PM peak periods. An overall validation of 85.3% in the AM peak is observed, with 10 of the 68 counts failing to achieve a GEH <5, whilst in the PM peak period this is 86.8% with 9 of the 68 counts failing to reach the target figure.

2.3.2 For the Flow validation criteria, in both peaks a majority of flows successfully meet the TAG specifications for comparisons between modelled and observed flows. In the AM peak, the overall success rate is 89.8% with only 7 of the 68 counts taken showed modelled and observed flows with over 100-unit difference, while in the PM peak this is 85.3% with the number of failed counts being 10 out of 68.

2.3.3 Counts that have specifically failed to meet the GEH and/or flow criteria are listed in red in Tables 5 and 6 below. From this information, 6 counts fail to meet either the GEH or Flow criteria in the AM peak, with 9 in the PM peak. This indicates an overall validation level of 91% in the AM peak and 87% in the PM peak. This again exceeds the WEBTag requirements of 85%.

*

*

Table 5. Validation GEH and Flow Comparison Non-Compliances (AM Peak)

ROAD NAME	DIRECTION		OBSERVED	MODELLED	FLOW DIFFERENCE	GEH (<5)
Towcester Road	SB		578	444	134	5.895
M1 J15A	NB		683	457	226	9.469
Banbury Lane	EB		570	469	101	4.452
Banbury Lane	WB		494	367	127	6.113
A5	SB		70	155	85	7.965
Banbury Lane	SB		118	68	50	5.164
A5123	NB		927	1190	263	8.082
A5	NB		19	2	17	5.075
A5	SB		13	64	51	8.270
A43	NB		1079	1350	271	7.779
A5	WB		596	730	134	5.195

Table 6. Validation GEH and Flow Comparison Non-compliances (PM Peak)

ROAD NAME	DIRECTION	OBSERVED	MODELLED	FLOW DIFFERENCE	GEH (<5)
A43/M1	EB	496	655	159	6.631
Banbury Lane	EB	660	835	175	6.427
M1 J16	WB	4171	3682	489	7.797
A5	SB	440	555	115	5.136
A508	SB	637	517	120	5.013
A43	NB	1676	2150	474	10.835
Courteenhall Road	EB	123	225	102	7.710
A5088	NB	787	656	131	4.866
A4500	WB	923	741	182	6.307
A45	NB	2717	2330	387	7.713

*

*

2.4 M1 Motorway Junctions Validation

2.4.1 In addition to an overall AOI validation and calibration check, specific junctions were also chosen to have GEH and Flows measured to determine whether they comply with TAG guidance against junction turning flows. For this analysis, the following junctions were chosen:

- M1 Junction 15A – Northampton Services Roundabout (A43)
- M1 Junction 15A – Northern Roundabout (A43)
- M1 Junction 15A – Southern Roundabout (A43)
- M1 Junction 15 – A45

M1 Junction 15A – Northampton Services Roundabout (A43)

Table 7. M1 Junction 15A – Northampton Services Roundabout (A43) - GEH (<5)

DESTINATION	SWAN VALLEY WAY	A43 (E)	J15A SB SLIPWAY	A43 (W)
Morning Peak				
SWAN VALLEY WAY	-	4.5	7.8	7.6
A43 (E)	5	-	1.7	7.9
J15A SB SLIPWAY	4.7	11.4	-	0
A43 (W)	8.2	2.3	3.7	-
Evening Peak				
SWAN VALLEY WAY	-	11.6	8	6
A43 (E)	5.5	-	2.4	6.4
J15A SB SLIPWAY	2.4	10.2	-	0
A43 (W)	5.3	7.8	5.2	-

2.4.2 This assessment indicates that in the morning peak 7 of the 12 turning movements at this junction meet GEH criteria of less than 5 providing a validation level of 58%. In the PM peak only 3 meet the GEH criteria giving a validation level of only 25%.

*

*

Table 8. M1 Junction 15A – Northampton Services Roundabout (A43) – Flow Difference

DESTINATION	SWAN VALLEY WAY	A43 (E)	J15A SB SLIPWAY	A43 (W)
Morning Peak				
SWAN VALLEY WAY	-	35	84	29
A43 (E)	56	-	41	31
J15A SB SLIPWAY	11	65	-	0
A43 (W)	34	48	7	-
Evening Peak				
SWAN VALLEY WAY	-	75	91	18
A43 (E)	66	-	54	21
J15A SB SLIPWAY	3	52	-	0
A43 (W)	29	**178**	14	-

2.4.3 This Flow Difference assessment shows that in the AM Peak all turning movements at this junction meet the TAG criteria. However, in the PM peak, one turning flow fails to do this, giving a validation level in the PM peak of 83.3%.

2.4.4 Overall this indicates that this junction generally meets WEBTag criteria and that the model general replicates turning movements at this location.

*

*

M1 Junction 15A – Northern Roundabout (A43)

Table 9. M1 Junction 15A – Northern Roundabout (A43) - GEH (<5)

DESTINATION	A5123	A43 (S)	A43 (W)
Morning Peak			
A5123	-	1.1	5.5
A43 (S)	1.7	-	8
A43 (W)	9.7	5	-
Evening Peak			
A5123	-	1.8	2.2
A43 (S)	7.4	-	2.3
A43 (W)	7	5.5	-

2.4.5 This assessment indicates that in both peaks, 3 of the 6 turning movements at this junction meet GEH criteria, providing only a validation of 50%.

Table 10. M1 Junction 15A - Northern Roundabout (A43) – Flow Difference

DESTINATION	A5123	A43 (S)	A43 (W)
Morning Peak			
A5123	-	36	107
A43 (S)	55	-	154
A43 (W)	122	99	-
Evening Peak			
A5123	-	48	36
A43 (S)	260	-	46
A43 (W)	101	103	-

2.4.6 Similarly, to the GEH measurements, this assessment indicates that only 3 of the 6 turning movements successfully meet the TAG criteria, providing only a validation of 50%.

*

*

2.4.7 This indicates that this junction does not meet WEBTag criteria, with significant differences in terms of the modelled turning flows compared to observed flows.

M1 Junction 15A – Southern Roundabout (A43)

Table 11. M1 Junction 15A – Southern Roundabout (A43) - GEH (<5)

DESTINATION	A43 (N)	A43 (S)	A43 (W)
Morning Peak			
A43 (N)	-	6	9
A43 (S)	4	-	1
A43 (W)	1.6	6.2	-
Evening Peak			
A43 (N)	-	0.8	5.2
A43 (S)	6.3	-	3.6
A43 (W)	2.3	7.3	-

2.4.8 This assessment indicates that in both peaks, 3 of the 6 turning movements at this junction meet GEH criteria, providing only a validation of 50%.

Table 12. M1 Junction 15A - Southern Roundabout (A43) – Flow Difference

DESTINATION	A43 (N)	A43 (S)	A43 (W)
Morning Peak			
A43 (N)	-	206	145
A43 (S)	126	-	19
A43 (W)	28	93	-
Evening Peak			
A43 (N)	-	23	36
A43 (S)	277	-	46
A43 (W)	43	130	-

2.4.9 This assessment indicates that in both peaks 4 out of 6, turning movements meet criteria resulting in a validation of 66%. This indicates that this junction does not meet WEBTag criteria, with significant differences in terms of the modelled turning flows compared to observed flows.

*

*

M1 Junction 15 – A45

Table 13. M1 Junction 15 – A45 - GEH (<5)

DESTINATION	SAXON AVENUE	ON SLIP EASTBOUND	A508 SB	OFF SLIP EASTBOUND	A45 LONDON ROAD
Morning Peak					
Saxon Avenue	-	7.5	3.5	7	0.3
On Slip Eastbound	9	-	1.1	0	1.6
A508 SB	0.8	3	-	4.6	8.7
Off Slip Eastbound	2.6	0	9.2	-	3.5
A45 London Road	10.6	0.9	5	5.1	11.4
Evening Peak					
Saxon Avenue	-	6	4	1	10.4
On Slip Eastbound	10.7	-	3.1	0	3.8
A508 SB	6.4	0.2	-	2.6	3.9
Off Slip Eastbound	2.3	0	4.2	-	5.1
A45 London Road	1.6	0.6	2.6	1.7	9.7

2.4.10 This assessment indicates that in the AM peak 14 of the 21 turning movements at this junction meet the GEH criteria, providing only a validation of 66%. In the PM peak 16 movements meet the GEH criterial resulting in a validation of 75%.

*

*

Table 14. M1 Junction 15 – A45 – Flow Difference

DESTINATION	SAXON AVENUE	ON SLIP EASTBOUND	A508 SB	OFF SLIP EASTBOUND	A45 LONDON ROAD
Morning Peak					
Saxon Avenue	-	53	15	54	4
On Slip Eastbound	55	-	6	0	47
A508 SB	4	26	-	52	**184**
Off Slip Eastbound	28	0	**159**	-	**110**
A45 London Road	**125**	29	**112**	**124**	65
Evening Peak					
Saxon Avenue	-	29	15	5	121
On Slip Eastbound	61	-	17	0	**118**
A508 SB	28	1	-	38	84
Off Slip Eastbound	20	0	55	-	**151**
A45 London Road	16	18	70	50	47

2.4.11 This assessment indicates that in the AM peak, only 15 of the 21 turning movements at this junction meet the TAG criteria, providing only a validation of 71%. In the PM peak, the number of successful turning movements is 19 out of 21, resulting in a validation of 90%.

2.4.12 However, in the AM peak only 3 movements do not meet either of the GEH or Flow criteria which indicates an overall validation of 86%. In the PM peak, only 1 movement fails to comply with this joint criteria therefore the overall validation is 95%.

2.4.13 This indicates that based on WEBTag criteria the model robustly replicates traffic movements at this junction. It should however be noted that the model shows a U-turn manoeuvre to/from the A45 London Road which is not present in the observed data, which may identify an issue with the coding of an upstream junction on the A45.

*

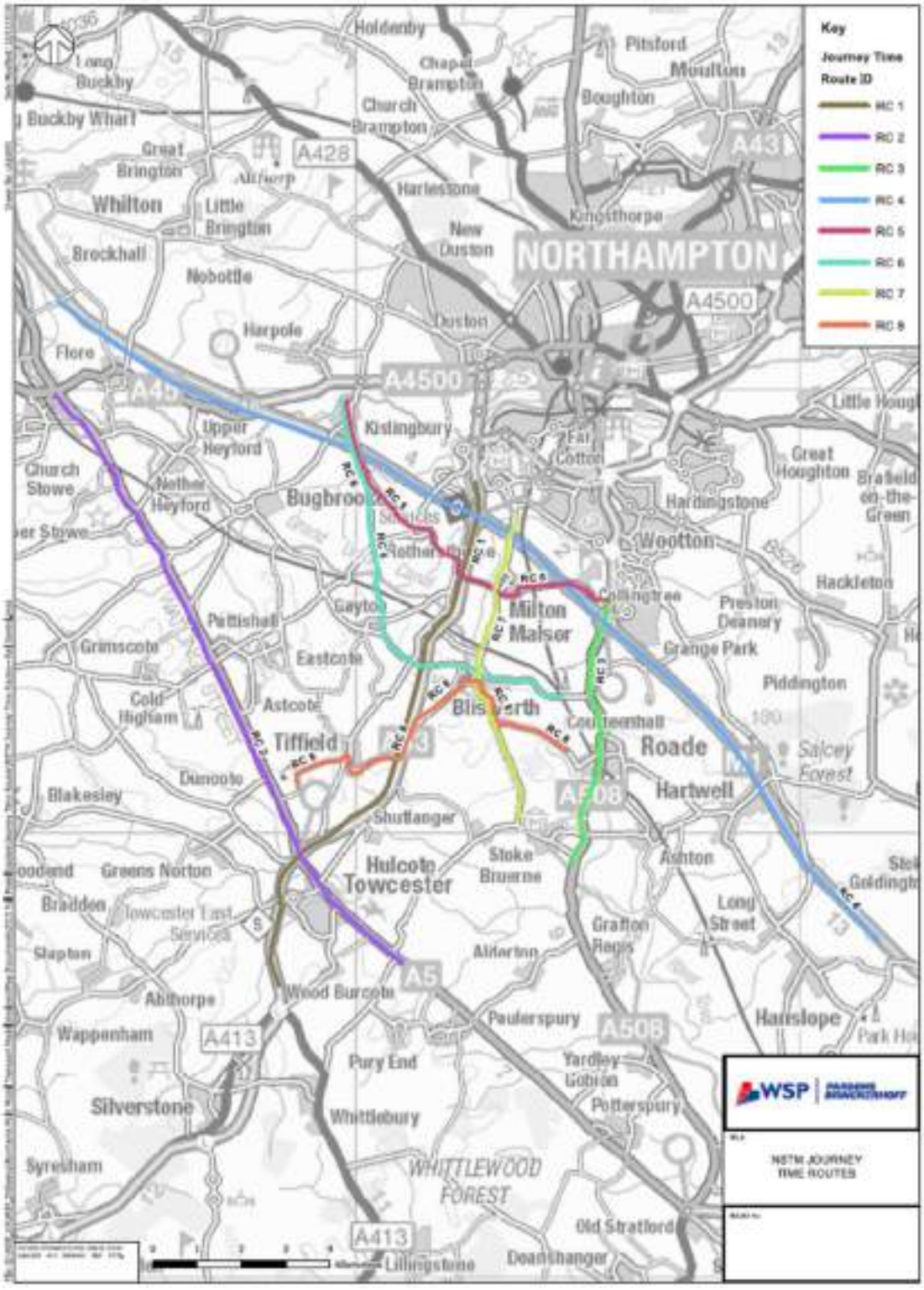
*

2.5 Journey time evaluation

2.5.1 In addition to the count Validation and Calibration, journey times are also evaluated in a similar fashion to the measurement of flow comparisons. Figures from an Observed and a Modelled scenario are compared, with the differences once again being measured within an overall difference of 15%, as specified by TAG.

2.5.2 The locations of the journey time routes within the AOI evaluations are shown in Figure 4

Figure 4. Journey Time Routes



*

*

2.5.3 A total of 16 routes have been assessed in the Rail Central AOI. Of these only 2 routes have not met the WEBTag criteria in both the Am and PM peaks. These include:

- Am Peak
  - Rail Central 1: A43 southbound
  - Rail Central 3: A508 southbound
- PM Peak
  - Rail Central 3: A508 southbound and northbound

2.5.4 Whilst overall the WEBTag criteria is met with 87% of journey time routes meeting the criteria (requirement 85%), the two routes that miss the criteria, the A43 and the A508 are major roads that abut the boundary of the site and are critical to the assessment of the Rail Central development site. In all cases where the criteria is exceeded the model is faster than the observed suggesting that congestion is being under represented.

3. CONCLUSIONS

3.1 Overview

3.1.1 Overall the calibration/validation of the Northampton Strategic Transport Model (NSTM) within the AOI of the Rail Central scheme meets/exceeds the WEBTag criteria against observed counts.

3.1.2 However, Towcester Road is a particular concern of local residents and the model does not replicate flows or Journey Times along this route to within the WebTAG criteria. It is therefore recommended that further work on the validation of this route is undertaken.

3.1.3 The turning movement validation has been assessed at the following junctions.

- M1 Junction 15A – Northampton Services Roundabout (A43)
- M1 Junction 15A – Northern Roundabout (A43)
- M1 Junction 15A – Southern Roundabout (A43)
- M1 Junction 15 – A45

3.1.4 Analysis of the detailed validation at these locations suggests that the model does not robustly replicate observed flows at the Junction 15A Northern and southern roundabouts based on WEBTag criteria. It is therefore recommended that further work is undertaken at these two junctions to better replicate modelled and observed movements.

3.1.5 It should also be noted that the model shows a U-turn manoeuvre to/from the A45 London Road at junction 15 which is not present in the observed data, which may identify an issue with the coding of an upstream junction on the A45.

3.1.6 For Journey Times, again the model achieves overall the WEBTag criteria with 87% of journey time routes meeting the criteria (requirement 85%). However, the two routes that miss the criteria, the A43 and the A508 are critical to the assessment of the Rail Central development site and we recommend that further work is undertaken to improve the journey times on these critical routes.

*

*

SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

A diverse group of results-oriented people, we are part of a strong team of professionals worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.

For more information visit www.systra.co.uk

Abu Dhabi
AS Business Centre, First Floor, Suites 201-213,
Al Ain Road, Umm al Nar, P.O. Box 129865,
Abu Dhabi, UAE
T: +971 2 558 3809 F: +971 2 558 9961

Birmingham
5th Floor, Lancaster House, Newhall St,
Birmingham, B3 1NQ
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

Dublin
2nd Floor, Riverview House, 21-23 City Quay
Dublin 2,Ireland
T: +353 (0)1 542 6000 F: +353 (0)1 542 6001

Edinburgh
Prospect House, 5 Thistle Street, Edinburgh EH2 1DF
United Kingdom
T: +44 (0)131 220 6966

Glasgow
Seventh Floor, 124 St Vincent Street
Glasgow G2 5HF United Kingdom
T: +44 (0)141 225 4400

Lille
86 Boulevard Carnot, 59000 Lille, France
T: +33 (0)3 74 07 00 F: +33 (0)1 53 17 36 01

London
Seventh Floor, 15 Old Bailey
London EC4M 7EF United Kingdom
T: +44 (0)20 7529 6500 F: +44 (0)20 3427 6274

Lyon
11, rue de la République, 69001 Lyon, France
T: +33 (0)4 72 10 29 29 F: +33 (0)4 72 10 29 28

Manchester
25th Floor, City Tower, Piccadilly Plaza
Manchester M1 4BT United Kingdom
T: +44 (0)161 236 0282 F: +44 (0)161 236 0095

Marseille
76, rue de la République, 13002 Marseille, France
T: +33 (0)4 91 37 35 15 F: +33 (0)4 91 91 90 14

Newcastle
PO Box 438, Newcastle upon Tyne, NE3 9BT
United Kingdom
T: +44 (0)191 2136157

Paris
72 rue Henry Farman, 75015 Paris, France
T: +33 (0)1 53 17 36 00 F: +33 (0)1 53 17 36 01

Woking
Dukes Court, Duke Street
Woking, Surrey GU21 5BH United Kingdom
T: +44 (0)1483 728051 F: +44 (0)1483 755207

Hong Kong
14th Floor West, Warwick House, TaiKoo Place,
979 King's Road, Island East, Hong Kong
T: +852 2529 7037 F: +852 2527 8490

Shenzhen
Room 905, Excellence Mansion, No.98, No.1 Fuhua Road,
Futian Central Zone, Shenzhen, PRC, Post Code：518048
T：+86 755 3336 1898 F：+86 755 3336 2060

Shenzhen - Beijing Branch Office
Room 1503, Block C, He Qiao Mansion, No. 8 Guanghua Road,
Chaoyang District, Beijing, PRC, Post Code：100026
T：+86 10 8557 0116 F：+86 10 8557 0126

Beijing Joint Venture
Room 1507, Main Building, No. 60, Nan Li Shi Road,
Xi Cheng District, Beijing, PRC, Post Code：100045
T：+86 10 8807 3718 F：+86 10 6804 3744

Mumbai
Antriksh, Unit no. 301, 3rd Floor, CTS Nos.
773, 773/1 to 7, Makwana Road, Marol, Andheri East ,
Mumbai 400069
T: +91 22 2647 3134
B 307, Great Eastern Summit Sector - 15, CBD Belapur Navi
Mumbai - 400 614
T: +91 22 2757 2745

New Delhi
5th Floor Guru Angad Bhawan, 71 Nehru Place, New Delhi
110019
T: +91 11 2641 3310

Noida
3/F, C-131, Sector 2, Noida-201301, U.P.
T: +91 120 432 6999

Singapore
25 Seah Street #04-01 Singapore 188381
T：+65 6227 3252 F：+65 6423 0178

Thailand
37th Floor, Unit F, Payatai Plaza Building,128/404-405 Payathai
Road, Rajthewee, Bangkok 10400, Thailand
T：+662 216 6652 F：+662 216 6651

Vietnam
5/F Perfect Building, Le Thi Hong Gam St, District 1,
Ho Chi Minh City, Vietnam
T：+84 8 3821 7183 F：+84 8 3821 6967



*

APPENDIX B

ASHFIELD LAND LTD

Rail Central

Briefing Note 01: Person Trip Attraction

Transport Model Stage 1: Trip Attraction

March 2017



www.tpa.uk.com

DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Central		
Project No.:	1211-80	**Report No.:**	1211-80/BN/01
Client:	Ashfield Land Ltd		

	Prepared By:	Checked By:	Approved for issue
Name	A. Snowden	M. Berrington	C. Rawlinson
Signature			
Date	March 2017	March 2017	March 2017

Issued by:

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates
25 King Street
Bristol
BS1 4PB

0117 925 9400
bristol@tpa.uk.com
www.tpa.uk.com

CONTENTS PAGE

1 INTRODUCTION 1
2 PROPOSAL FOR RAIL CENTRAL 3
3 DAILY AND PEAK HOUR TRIP ATTRACTION 4

LIST OF TABLES

Table 3.1 Summary of Rail Central Person Movements – DIRFT Methodology
Table 3.2 Summary of Rail Central Person Movements – EMGSRFI Methodology
Table 3.3 Summary of Rail Central Person Movements – Radlett Methodology
Table 3.4 Summary of Rail Central Person Movements – Similar Facilities
Table 3.5 First Principles Trip Attraction

LIST OF APPENDICES

A DIRFT III Socio-Economic Assessment Extract

B DIRFT Total Person Trips

C EMGSRFI Total Trips

D Radlett SRFI Trip Rates

E 1211-80/TN/05 – First Principles Person Trip Attraction

1 INTRODUCTION

1.1 Transport Planning Associates (TPA) is working on behalf of Ashfield Land Ltd in order to address the transportation aspects of a proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central. The site is located to the south of Milton Malsor, to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north.

1.2 The site is considered to be optimally located next to rail and trunk road infrastructure. The proposed SRFI will be progressed as a Nationally Significant Infrastructure Project (NSIP) and as such an application for the scheme will be taken through the Development Consent Order (DCO) process.

1.3 This briefing note forms part of a four stage transport model which can be summarised as follows:

(i) Stage 1: Trip Attraction;

(ii) Stage 2: Trip Distribution;

(iii) Stage 3: Mode Choice; and

(iv) Stage 4: Route Assignment.

1.4 This briefing note forecasts person trip attraction (excluding HGVs). It forms part of a stepped approach to confirming Stage 1 of the four stage transport model, along with information provided by MDS Transmodal relating to HGV trip attraction. Stages 2, 3 and 4 will be considered as part of subsequent briefing notes.

1.5 The briefing notes will inform scoping work required in advance of a full Transportation Assessment. They adhere to the principles of the 'Rochdale Envelope', which is used when the final details of the project are not fixed at the time of assessment work; and where there is a need for flexibility within clearly defined parameters that consider a range of likely possibilities. The assessment will be precautionary and will therefore consider the worst case. However, regard will be given to the worst case which *is likely to* occur to avoid the potential for the assessment to become over precautionary. The assessment work considers the measures that would be necessary to mitigate likely significant effects. Essentially, this means that the work is predicated on a range of scenarios which are presented in a way that aids decision making.

1.6 These briefing notes will be agreed with the highway authority at Northamptonshire County Council (NCC) and with Highways England (HE) as appropriate and through collaborative working.

1.7 In forecasting person trip attraction, this briefing note sets out a reference case methodology with reference to person trip rates at similar SRFI facilities, for each of the peak and daily periods. It also refers to a first principles based assessment, as a means of confirming that the anticipated level of trip attraction is reasonable for the purpose of the forthcoming assessment work.

1.8 This report concludes by presenting what is considered to be a likely worst case for the number of people travelling at the times when it is agreed with NCC and HE that the highway network will be operating at its busiest. It is these time periods that are agreed to be used to assess the trip impact of the scheme.

2 PROPOSAL FOR RAIL CENTRAL

Accommodation Schedule

2.1 The development masterplan is not fixed at this stage. Therefore, it is considered reasonable for a total of 687,4833sq.m (7.4M sq.ft) Gross Internal Area (GIA) of high bay warehousing with ancillary offices to be applied as a robust assessment. This is the largest quantum of development that is anticipated at the site.

2.2 The Architect has advised that the GIA of the proposed scheme equates to 98% of Gross External Area (GEA). The proposals therefore equate to up to 701,513sq.m GEA of high bay warehousing.

2.3 It is anticipated that the site would operate three eight-hour shifts each day, in addition to a traditional working day shift (0800 to 1600 or similar).

2.4 As set out later in this note, the number of employees likely to be associated with the scheme may vary according to its level of rail linkages. For the purpose of this Briefing Note and for ongoing work in relation to the Rail Central development, the following definitions will be used:

(i) **Rail-Served** – warehouses within the SRFI which are indirectly served by the rail freight interchange facilities, with goods moved by road between the interchange facilities and the warehouses using the internal estate roads; and

(ii) **Rail-Connected** – warehouses within the SRFI which can be directly connected to the rail network through provision of rail sidings into or alongside the warehouse.

3 DAILY AND PEAK HOUR TRIP ATTRACTION

3.1 In order to determine the level of (non-HGV) trip attraction to the proposed development, it is considered reasonable for the trip attraction methodologies adopted for similar SRFI facilities elsewhere (DIRFT, EMGSRFI and Radlett) to be used for the purpose of this assessment. It is an industry standard approach for trip attraction to be determined based on trip rates of similar facilities (for example using the TRICS database). Trip rates were agreed with Highways England and the local highway authority for Radlett, DIRFT and EMGSRFI, which were recently approved in 2014, 2014 and 2016 respectively.

3.2 Each of the similar facilities set out below calculated total person movements based on surveyed vehicular trip rates. These therefore inherently include trips by visitors and delivery vehicles, in addition to employees.

'DIRFT' Strategic Rail Freight Interchange

3.3 The Daventry International Rail Freight Terminal (DIRFT) is a rail-road intermodal freight terminal with an associated warehousing estate. The facility is located in Northamptonshire at the junctions between the M1 motorway, the A5 and the A428. It is located approximately six kilometres to the east of Rugby and 10 kilometres to the north of Daventry. Parts of the site are also connected by rail via the line known as the 'Northampton Loop' which is provided off the West Coast Main Line.

3.4 The original DIRFT estate includes 354,351sq.m of distribution warehousing and a rail port (the 'intermodal area') with associated rail sidings. A second phase known as DIRFT II consists of 180,741sq.m of directly rail-connected buildings, accommodating three occupiers; Tesco, Sainsbury's and Eddie Stobart. The Tesco building was completed in 2011 and the remaining two buildings were completed in 2015. A third phase known as DIRFT III is approved for construction and includes a rail freight interchange with 730,665sq.m of warehouse floorspace. This forms an expansion to the established rail freight facility and involves the development of a number of rail-served large warehouse units. The site currently employs some 4,000 people, and it is anticipated that this would increase to around 12,500 employees with 1,265,757sq.m of warehousing once DIRFT II and DIRFT III are fully completed and occupied. The DIRFT III proposals suggested a ratio of 70:30 rail-served to rail-connected warehousing. The relevant extracts are contained at **Appendix A**.

3.5 The TA submitted to support the DIRFT III proposals included trip rates for Cars/LGVs throughout the day, which were used to determine the total person trips associated with the site based on a modal share of 83% car drivers. The trip rates were based on surveys carried out at the existing DIRFT I site with mode share determined from 2001 Census travel to work data. HGV trip rates were provided separately.

3.6 The total person trips as set out within the DIRFT TA are contained at **Appendix B** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.1**.

Table 3.1 Summary of Rail Central Person Movements – DIRFT Methodology

701,513sq.m GEA B8 Warehousing – DIRFT Trip Rates	Car / LGV Trip Rates (per 100sq.m GFA)			Total Car / LGV Trips			Rail Central Total Person Trips (assuming 83% car drivers)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)	0.081	0.014	0.095	568	98	666	685	118	803
PM Peak (1700 – 1800)	0.054	0.086	0.140	379	603	982	456	727	1,183
Daily (24 hours)	1.048	1.036	2.084	7,352	7,268	14,620	8,858	8,756	17,614

East Midlands Gateway Strategic Rail Freight Interchange

3.7 The East Midlands Gateway Strategic Rail Freight Interchange (EMGSRFI) is a DCO application approved in 2016 for an intermodal freight terminal with up to 557,414sq.m of warehousing and ancillary B1 Office use. It is considered to be situated in a broadly similar location to Rail Central, being served by the Strategic Road Network at the M1 Junction 24 and the Rail Network in the form of the Castle Donington Branch freight-only railway line.

3.8 Technical Note Four – Trip Rates and Traffic Generation, submitted as part of the EMGSRFI application, set out trip rates for motorised persons (Car Driver, Car Passenger and Public Transport) throughout the day. These were calculated based on surveys carried out at the Pineham Park Industrial Area, immediately to the north of M1 Junction 15A near to Rail Central. The TA submitted to support the EMGSRFI proposals subsequently confirmed that an additional 3% would be added to the motorised person trips, to determine the overall person trips (including pedestrians and cyclists).HGV trip rates were provided separately.

3.9 The TA also confirmed that the busiest PM peak hour of the development was surveyed to be 1600-1700, and this was therefore applied to the typical network PM peak hour of 1700-1800 in order to provide a robust assessment.

3.10 The relevant extracts of the EMGSRFI submission are contained at **Appendix C** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.2**.

Table 3.2 Summary of Rail Central Person Movements – EMGSRFI Methodology

701,513sq.m GEA B8 Warehousing – EMGSRFI Trip Rates		Motorised Person Trip Rate (per 100sq.m GFA)			Motorised Person Trips (Car Driver, Car Passenger & Public Transport)			Pedestrian and Cycle Trips (3%)			Total Person Trips		
		Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)		0.128	0.014	0.142	898	98	996	27	3	30	925	101	1,026
PM Peak	1600-1700	0.042	0.147	0.189	295	1,031	1,326	9	31	40	303	1,062	1,366
	1700-1800	0.031	0.114	0.145	217	800	1,017	7	24	31	224	824	1,048
Daily (24 hours)		1.126	1.108	2.234	7,899	7,773	15,672	237	233	470	8,136	8,006	16,142

**Note EMGSRFI PM trips are based on 1600-1700 as a worst case assessment*

Radlett Strategic Rail Freight Interchange

3.11 The Radlett SRFI is a planning consent approved in 2014 for a Strategic Rail Freight Interchange including approximately 331,665sq.m of warehousing.

3.12 The Radlett SRFI is considered to be situated in a broadly similar location to the proposed development, being served by the Strategic Road Network including the M25 and M10, and close to the Rail Network in the form of the Midland Main Line.

3.13 The TA submitted to support the Radlett proposals set out separate trip rates for both light vehicles and HGVs. Separate trip rate scenarios were provided depending on the type of warehousing and distribution centre provided. These included rail related uses, with trip rates based on surveys carried out at DIRFT in 2005, and road based distribution, based on data from the Magna Park distribution site in Lutterworth.

3.14 As the Rail Central proposals are for a Strategic Rail Freight Interchange, with rail-served and rail-connected warehouses, it is considered appropriate for the rail related trip rate scenario to be used for the purpose of this assessment.

3.15 In order to determine the total person trips, the baseline mode share of car drivers set out within the Radlett TA (65.4%) has been used.

3.16 The trip rates as set out within the Radlett submission are contained at **Appendix D** and the resultant total trips at Rail Central when these are applied to the Rail Central proposals are shown in **Table 3.3**.

Table 3.3 Summary of Rail Central Person Movements – Radlett Methodology

701,513sq.m GEA B8 Warehousing – Radlett Trip Rates	Light Vehicle Trip Rates (per 100sq.m)			Rail Central Light Vehicle Trips			Rail Central Total Person Trips (assuming 65.4% car drivers)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
AM Peak (0800 – 0900)	0.074	0.013	0.087	519	91	610	794	139	933
PM Peak (1700 – 1800)	0.027	0.073	0.100	189	512	702	290	783	1,073
Daily (24 hours)	0.831	0.770	1.601	5,830	5,402	11,231	8,914	8,259	17,173

Summary of Similar Facilities Trip Attraction

3.17 A summary of the total trips at Rail Central, based on each of the similar facilities trip rates, is set out in **Table 3.4** below.

Table 3.4 Summary of Rail Central Person Movements – Similar Facilities

Total Person Trips	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
DIRFT (Ref. Table 3.1)	685	118	803	456	727	1,183	8,858	8,756	17,614
EMGSRFI (Ref. Table 3.2)	925	101	1,026	303*	1,062*	1,366*	8,136	8,006	16,142
Radlett (Ref. Table 3.3)	794	139	933	290	783	1,073	8,914	8,259	17,173
Average	**801**	**119**	**921**	**350**	**857**	**1,207**	**8,636**	**8,340**	**16,976**

**Note EMGSRFI PM trips are based on 1600-1700 as a worst case assessment*

3.18 It is considered reasonable for the EMGSRFI trip attraction shown in **Table 3.4** to be taken forward for further assessment work, as these are based on an industry standard approach using trip rates that have previously been agreed as appropriate by Highways England and the relevant local highway authorities. They would also provide a worst case assessment in comparison to the other trip attraction forecasts derived.

Alternate First Principles Assessment

3.19 An assessment of trip attraction has been undertaken for comparison purposes, based on first principles. This considered employee trip attraction based on anticipated employment densities, attendance patterns and working patterns. Realistic and robust assessments have been carried out to account for different forecast employment densities. The full details of the first principles assessment are set out in 1211-80/TN/05, included at **Appendix E**.

3.20 A summary of the total trips at Rail Central, based on the first principles assessment, is set out in **Table 3.5** below.

Table 3.5 First Principles Trip Attraction

Total Person Trips		AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
		Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total
First Principles (Ref. Appendix E)	**Scenario 1 (Realistic)**	548	217	765	377	582	959	6,510	6,510	13,020
	Scenario 2 (Robust)	658	261	919	453	699	1,152	7,819	7,819	15,638

3.21 The first principles based assessment results in a broadly similar level of peak hour trip attraction to both the DIRFT and Radlett methodologies, although is less than the EMGSRFI methodology.

Conclusion on Peak Hour and Daily Trip Attraction

3.22 It is concluded that the EMGSRFI based trip attraction provides a robust assessment of trip attraction as it uses PM peak trip rates for the 1600-1700 period (when the site's trip attraction is highest) applied to the typical network peak period of 1700-1800, and is also shown to result in a higher trip attraction than each of the Radlett, DIRFT and First Principles methodologies. It is therefore appropriate for use to ensure that the assessment can be considered to be a realistic worst case.

3.23 HGV trip attraction will be considered separately by MDS Transmodal, in order to finalise the first stage (Trip Attraction) of the four stage Transport Model.

APPENDIX A

DIRFT III

Environmental Statement

Chapter L

Socio-Economics

February 2013

Nathaniel Lichfield &
Partners
14 Regent's Wharf, London,
N1 9RL

Tel. 020 7837 4477
www.nlpplanning.com

proportion of construction workers drawn locally, it is difficult to identify the likely source of workers to fill these construction jobs before contracts have been let. However, based on experience elsewhere it would be reasonable to expect a proportion of the construction jobs created by the proposed development could be taken up by the local workforce, particularly if measures are in place to encourage local recruitment and to raise local skills levels.

L5.6 In addition, it is also likely that some businesses in the local area, as well as the Midlands economy, would benefit from the trade linkages that would be established to construct the development. This means that further indirect jobs would be supported locally in suppliers of construction materials and equipment. Local businesses would generally also benefit to some extent from temporary increases in expenditure as a result of the direct and indirect employment effects of the construction phase, for example, as construction workers spend wages in local shops and other facilities.

L5.7 Applying an employment multiplier of 1.2 to the FTE construction employment[4] indicates that up to a further 89 FTE indirect/induced jobs could be supported in the local area as a result of such construction-related expenditure.

L5.8 Drawing together these various effects of the construction phase, the construction of the new development could generate up to 4,433 person-years of temporary construction work (equivalent to 443 FTE jobs). 89 additional FTE jobs would be created from indirect impacts in the main impact area, many of which would be based in the local area.

After Completion

Economic Impacts

Direct Employment Impacts

L5.9 The level of direct employment associated with the likely form of B8 development has been estimated from consideration of the ratio between jobs and distribution floorspace of similar existing facilities, as well as from published studies of employment density of such schemes. Based on information provided by occupying companies at a range of RFI developments, including DIRFT, in 2008, the average employment density of those firms occupying rail-connected floorspace was approximately 1 job per 130 m^2 of floorspace (Appendix L1, Table 12). By comparison, HCA/OffPat's Employment Densities Second Edition

[4] Broadly derived from English Partnerships Additionality Guide Third Edition (Oct 2008) and NLP's experience of construction schemes and their economic impacts.

(2010) suggests employment densities of 1 FTE job per 50 m^2 GEA for general B8 uses and 1 FTE job per 80 m^2 GEA for large scale or high bay B8 warehousing. Survey work by Prologis in 2010 estimated that overall employment density across their portfolio of warehouses totalled 1 job (full time and part time) per 77 m^2.

L5.10 Assuming a density range of 1 job per 130 m^2 for rail-linked warehousing and 1 job per 80 m^2 for general strategic and rail-served warehousing at DIRFT III, the number of jobs can be estimated based upon the potential split of rail-linked and other rail-served warehousing. The scheme includes the ability for up to circa 30% to be rail-linked and with the remaining circa 70% being rail-served, with the ability to use the rail freight terminal without being directly linked. These additional jobs would be expected to have a broadly similar profile of employment in terms of full-time (91%) and part-time (9%) jobs and occupation types to those seen at DIRFT currently, as identified by information provided by occupying companies in 2001 and 2008.

Table L5.1 Direct Job Generation

Type	Floorspace (m^2)	Job Density	Jobs	PT:FT Split	PT Jobs	FT Jobs	FTE Jobs
Rail-linked B8 Warehouse	219,200	1 job per 130m^2	1,686	9:91	151	1,534	1,610
Rail-served B8 Warehouse	511,465	1 job per 80m^2	6,393	9:91	575	5,818	6,103
Total	730,665		8,079		686	6,936	7,713

Note: Floorspace split between 'rail-linked' and 'rail-served' floorspace is estimated based on current proposals.

L5.11 The table above demonstrates that applying these ratios to the proposed floorspace for the scheme will support circa 8,080 jobs or 7,710 FTE jobs.

L5.12 This represents a worst case scenario of job creation. If all of the floorspace were to come forward as rail-served warehousing, rather than directly linked, this level of direct job creation could increase to 9,133 jobs or 8,722 FTE jobs.

Net Additional Employment

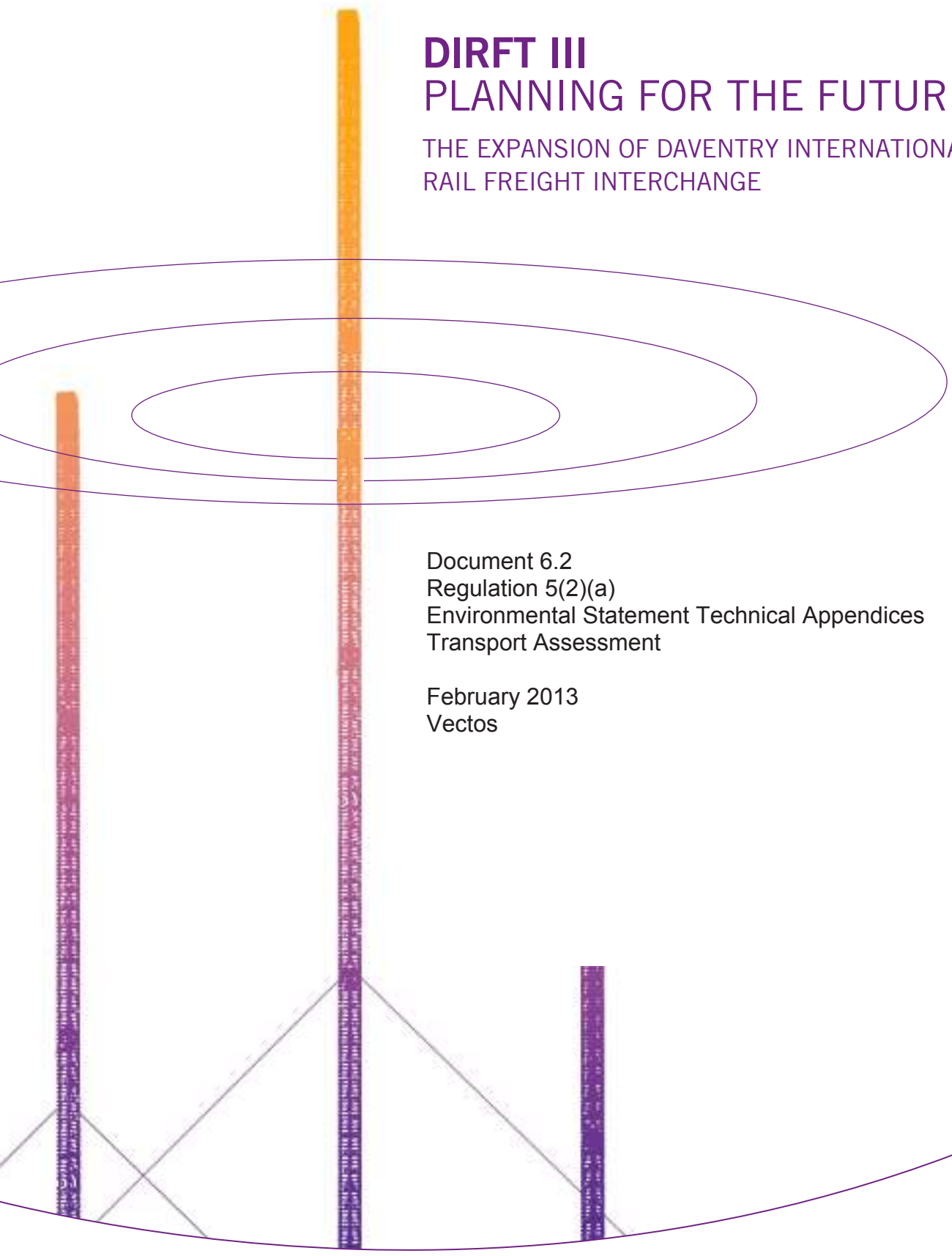
L5.13 As the application site is currently largely undeveloped, very few existing jobs, if any, will be lost, meaning all these job opportunities would be additional to current employment levels on the site.

L5.14 Net employment impacts in the main impact area have also been estimated by considering the extent to which the proposed development would displace some jobs from existing local businesses, or prevent other employment development proceeding. Consideration also needs

APPENDIX B

DIRFT III
PLANNING FOR THE FUTURE

THE EXPANSION OF DAVENTRY INTERNATIONAL RAIL FREIGHT INTERCHANGE



Document 6.2
Regulation 5(2)(a)
Environmental Statement Technical Appendices
Transport Assessment

February 2013
Vectos

www.DIRFTIII.com

BT

AVIVA INVESTORS

PROLOGIS

6 TRIP GENERATION

Introduction

6.1 During 2011 detailed discussions took place between Vectos and the relevant highway authorities in order to seek agreement on the baseline level of vehicular trips anticipated to be generated by the development proposals (i.e. before the effects of any subsequent modal shift resulting from transport improvements and incentives to travel by non-car modes).

6.2 These discussions culminated in the preparation of a Technical Note to provide details of the proposed methodology, which was based on surveys undertaken at the existing DIRFT I facilities, including the existing Intermodal Terminal. The Technical Note was submitted to the highway authorities for review in November 2011 and the derived baseline trip rates were subsequently agreed by NCC, WCC, and the HA, with LCC deferring to the other authorities. The agreed traffic methodology and associated calculations are provided below.

Trip Rate Methodology

6.3 In March 2011 a comprehensive set of surveys was undertaken at all parts of DIRFT I (East, Central and South) and included the existing Intermodal Terminal. Furthermore, all roads leading to and from the DIRFT I area were surveyed, including:

- M1 northbound and southbound off-slip roads at Junction 18;
- A5 north of DIRFT I;
- Lilbourne Road (west of A5);
- A428 east of M1 Junction 18 and also east of the main route into Crick (i.e. on the A428 Crick bypass);
- A428 west of DIRFT I and DIRFT II;
- A5 east of junction with A361 (i.e. to the east of Kilsby);
- A361 south of Kilsby (to the south of junction with The Ridgeway); and

- The Ridgway (immediately west of the A361).

6.4 The surveys combined volumetric counts at all locations as well as ANPR data. The former was used in deriving appropriate trip rates for DIRFT I to be applied to the DIRFT III proposals. The ANPR results provided information on internal trips, i.e. DIRFT I to/from the Intermodal Terminal and internal DIRFT I trips (excluding those made within the same area, such as DIRFT (East)) and the distribution of trips on the wider road network.

6.5 Trips to and from the existing Eddie Stobart facility that forms part of the DIRFT II site on the west side of the A5 were assessed separately from the rest of DIRFT I.

Warehouse Trips

6.6 The baseline trip rates derived from the whole of DIRFT I are summarised in **Table 6.1** below. **Table 6.2** then provides the resultant DIRFT III trips for each peak period, based on an assessment total floor area of 730,665sqm. The time periods included in the tables below include the traditional morning and evening peak hours (08:00 – 09:00 and 17:00 – 18:00) as well as the longer three hour morning and evening peak periods. The latter three hour peak periods were used in the derivation of the Paramics model matrices. The Paramics model also includes information for each three hour peak to provide suitable profiles for the release of vehicles onto the network that represent changes in flow throughout the modelled period.

Table 6.1: DIRFT I Warehouse Baseline Trip Rates (March 2011 Surveys)

Trips per 100 sqm	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	0.088	0.017	0.227	0.075	0.056	0.091	0.132	0.254
HGV	0.020	0.022	0.063	0.065	0.025	0.030	0.077	0.071
Totals	0.108	0.039	0.290	0.140	0.081	0.121	0.209	0.325
	0.147		0.430		0.202		0.534	

Table 6.2: DIRFT III Warehouse Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	643	124	1,659	548	410	665	964	1,856
HGV	146	161	460	475	183	219	563	519
Totals	796	285	2,119	1,030	592	884	1,527	2,382
	1,081		3,149		1,476		3,909	

Based on assessment of 730,665 sqm of DIRFT III warehousing

6.7 It is noteworthy that over the whole of the DIRFT I estate, rail-linked warehouses account for up to 19% of the total warehouse floorspace. As a general principle, it is anticipated that rail-linked warehouses generate fewer external road-based trips, particularly by HGVs, than a traditional stand-alone warehouse, since a number of inbound movements (with goods) and outbound movements (empty containers) are undertaken using trains rather than conventional HGVs.

6.8 The proposals for DIRFT III allow for the provision of approximately 40% direct rail-linked warehouses. However, for the purposes of the assessment, no additional allowance has been made for the significant increase in rail-linked warehouses. The trip rates and resultant trips as set out in **Tables 6.1** and **6.2** above, based on the whole of the existing DIRFT I estate, have been used in future assessments.

Intermodal Terminal Trips

6.9 The March 2011 surveys separately considered trips to and from the existing Intermodal Terminal. The resultant baseline trip rates, based on the existing number of container lifts (71,531 per year), are summarised in **Table 6.3** below. **Table 6.4** then provides the projections for the replacement facility, based on an assumption of up to 510,000 future lifts per year (as set out in Section 5.3 of the 'Rail Operations Report' (Document No. 7.8)).

Table 6.3: Intermodal Terminal Baseline Trip Rates (March 2011 Surveys)

Trips per 1,000 lifts	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	0.169	0.042	0.352	0.197	0.084	0.084	0.112	0.225
HGV	0.085	0.099	0.366	0.338	0.155	0.169	0.366	0.549
Totals	0.254	0.141	0.718	0.535	0.239	0.254	0.479	0.775
	0.395		1.253		0.493		1.254	

Table 6.4: New Intermodal Terminal Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	86	21	178	100	43	43	57	114
HGV	43	50	185	171	79	86	185	278
Totals	129	71	364	271	121	129	242	392
	200		635		250		634	

Based on projection of 510,000 lifts per year at new Intermodal Terminal

DIRFT III Combined Trips

6.10 In summary, **Table 6.5** below provides the total baseline trips associated with the overall development of DIRFT III, including warehousing and replacement Intermodal Terminal, before the effects of any modal shift assumptions or internal trips are applied.

Table 6.5: DIRFT III Total Baseline Trips

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	729	145	1,837	648	453	708	1,021	1,970
HGV	189	211	645	646	262	305	748	797
Totals	925	356	2,483	1,301	713	1,013	1,769	2,774
	1,281		3,784		1,726		4,543	

6.11 The highway authorities have agreed the use of the total baseline trips derived from the surveys at DIRFT I and the existing Intermodal Terminal as set out above.

6.12 The assessment of total trips associated with the DIRFT III proposals is based on an assumption of 730,665 sqm of warehouse floorspace across the whole of the Site. However, not all of this floorspace would be located on the

main area of the Site to the east of the A5. The indicative Masterplan and associated Parameters assumes that up to 17,187 sqm of warehouse accommodation would be provided on the Site of the existing Intermodal Terminal within DIRFT South.

6.13 It has been established that the levels of trips during both peak periods within the zone that represents the existing Intermodal Terminal (Paramics zone 136) are broadly similar to the levels that would be expected should that area of the Site be developed for up to 17,187 sqm of warehousing.

6.14 Therefore, in order to simplify the Paramics matrix derivation process, the traffic flows that would be associated with the small element of DIRFT III on the site of the existing Intermodal Terminal have been excluded from the assessment, but the trips associated with the existing Intermodal Terminal have not been removed from the Paramics matrices. This approach has been agreed with the highway authorities. The resultant DIRFT III traffic flows (before modal shift or internalisation) are shown in **Table 6.6** below:

Table 6.6: DIRFT III Warehouse Baseline Trips – Main Site

	AM Peak				PM Peak			
	08:00 – 09:00		07:00 – 10:00		17:00 – 18:00		16:00 – 19:00	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Cars/LGV	628	121	1,619	535	399	650	941	1,812
HGV	143	157	449	464	178	214	549	507

Based on assessment of 713,478 sqm of DIRFT III warehousing on main site

Modal Shift

6.15 DIRFT I was built in the 1990's and does not benefit from a significant level of public transport services. Only bus route 96, which operates between Rugby and Northampton via Crick, passes close to the Site and is only hourly during the working day. As such, there are few opportunities to travel to DIRFT I by bus. Furthermore, it is understood that there is no Travel Plan in effect at DIRFT I and there are very few, if any, incentives to travel to the site by means other than the car.

6.16 In addition, NCC has determined a target of a 20% reduction in single occupancy car journeys based on "*challenging but realistic targets following a review of best practice".* This is based on research undertaken by the Council as part of their 'Transport Strategy for Growth' of 2007. To achieve this target the Council suggest that *"higher quality alternatives to the private car need to be introduced"* and provide examples of 'Smarter Choice' techniques that could be implemented to achieve the targets.

6.17 It has therefore been assumed in the assessment of DIRFT III that there will be a 20% reduction in single occupancy car journeys when compared with the baseline levels established from the surveys of DIRFT I and that this would be achieved as a result of the sustainable transport initiatives being proposed as part of the development, including the introduction of a Travel Plan and improved public transport provision.

6.18 In order to establish the mode shift, journey to work data of people working in the Crick Ward has been extracted from 2001 Census Data. The Crick Ward has been selected as the majority of DIRFT I is located in the ward, therefore providing the most representative basis for the analysis. The analysis of the census data is included as **Appendix 6.1**, along with the derivation of the modal split percentages of people travelling to work in the Crick Ward. It should be noted that the 'Work from Home' respondents have been excluded from the analysis as they are not representative of the likely employees at the Site.

6.19 The existing modal split of journeys to work in the Crick Ward is presented in **Table 6.7**. The results of the census data analysis revealed that 83% of people who work in the Crick Ward travel to work as a car driver. The analysis also reveals only 3% of people who work in the ward travel to work by bus.

Table 6.7: Existing Modal Split of Journeys to Work in the Crick Ward

Mode	Existing Split (%)
Car Driver	83%
Car Passenger	9%
Bus	3%
Train	0%
Walk	1%
Cycle	1%
Other	3%
Total	100%

6.20 To ensure a robust assessment it has been assumed that, of the target of 20% reduction in single occupancy car journeys, 67% of people would choose to travel to the Site by bus and the remaining 33% of people would shift to car share. These are only working assumptions and it may be that the split between the sustainable modes is different in reality. Furthermore when baseline travel surveys are undertaken during the early occupation stages of DIRFT III, it may be that the modal split has already moved some way towards the achievement of the proposed modal share targets.

6.21 The potential modal split of journeys to work at DIRFT III is presented in **Table 6.8**.

Table 6.8: Proposed Modal Split of Journeys to Work at DIRFT III

Mode	Proposed Split (%)
Car Driver	66%
Car Passenger	14%
Bus	15%
Train	0%
Walk	1%
Cycle	1%
Other	3%
Total	100%

8.6 The total person trips to and from the Site for each hour can be calculated by dividing the car driver trips presented in **Table 6.6** by the car driver modal split percentage presented in **Table 6.7** (i.e. prior to the 20% reduction in single occupancy car trips). A summary of the total person trips for each hour of the day is provided in **Table 8.1** below.

Table 8.1: DIRFT III Total Person Trips

Time	IN			OUT		
	DIRFT I Trip Rate per 100sqm of GFA	DIRFT III Cars (730,665sqm GFA)	DIRFT III Total Person Trips	DIRFT I Trip Rate per 100sqm of GFA	DIRFT III Cars (730,665sqm GFA)	DIRFT III Total Person Trips
00:00-01:00	0.015	110	132	0.031	227	273
01:00-02:00	0.012	88	106	0.041	300	361
02:00-03:00	0.009	66	79	0.018	132	159
03:00-04:00	0.022	161	194	0.019	139	167
04:00-05:00	0.021	153	184	0.016	117	141
05:00-06:00	0.183	1337	1609	0.054	395	475
06:00-07:00	0.068	497	598	0.079	577	694
07:00-08:00	0.066	482	580	0.033	241	290
08:00-09:00	0.081	592	712	0.014	102	123
09:00-10:00	0.055	402	484	0.016	117	141
10:00-11:00	0.023	168	202	0.018	132	159
11:00-12:00	0.030	219	264	0.023	168	202
12:00-13:00	0.035	256	308	0.031	227	273
13:00-14:00	0.098	716	862	0.044	321	386
14:00-15:00	0.036	263	316	0.129	943	1135
15:00-16:00	0.029	212	255	0.048	351	422
16:00-17:00	0.023	168	202	0.074	541	651
17:00-18:00	0.054	395	475	0.086	628	756
18:00-19:00	0.045	329	396	0.076	555	668
19:00-20:00	0.028	205	247	0.037	270	325
20:00-21:00	0.021	153	184	0.026	190	229
21:00-22:00	0.068	497	598	0.029	212	255
22:00-23:00	0.015	110	132	0.073	533	641
23:00-24:00	0.011	80	96	0.019	139	167
Total	**1.048**	**7657**	**9214**	**1.036**	**7570**	**9110**

8.7 It has been assumed that a 20% reduction in single occupancy car journeys would be achieved as a result of the sustainable transport initiatives being proposed as part of the development, including the introduction of a Site Wide Travel Plan and improved public transport provision. This is

APPENDIX C

BWB

CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

TRANSPORT AND INFRASTRUCTURE PLANNING

East Midlands Gateway Strategic Rail Freight Interchange

Technical Note 4

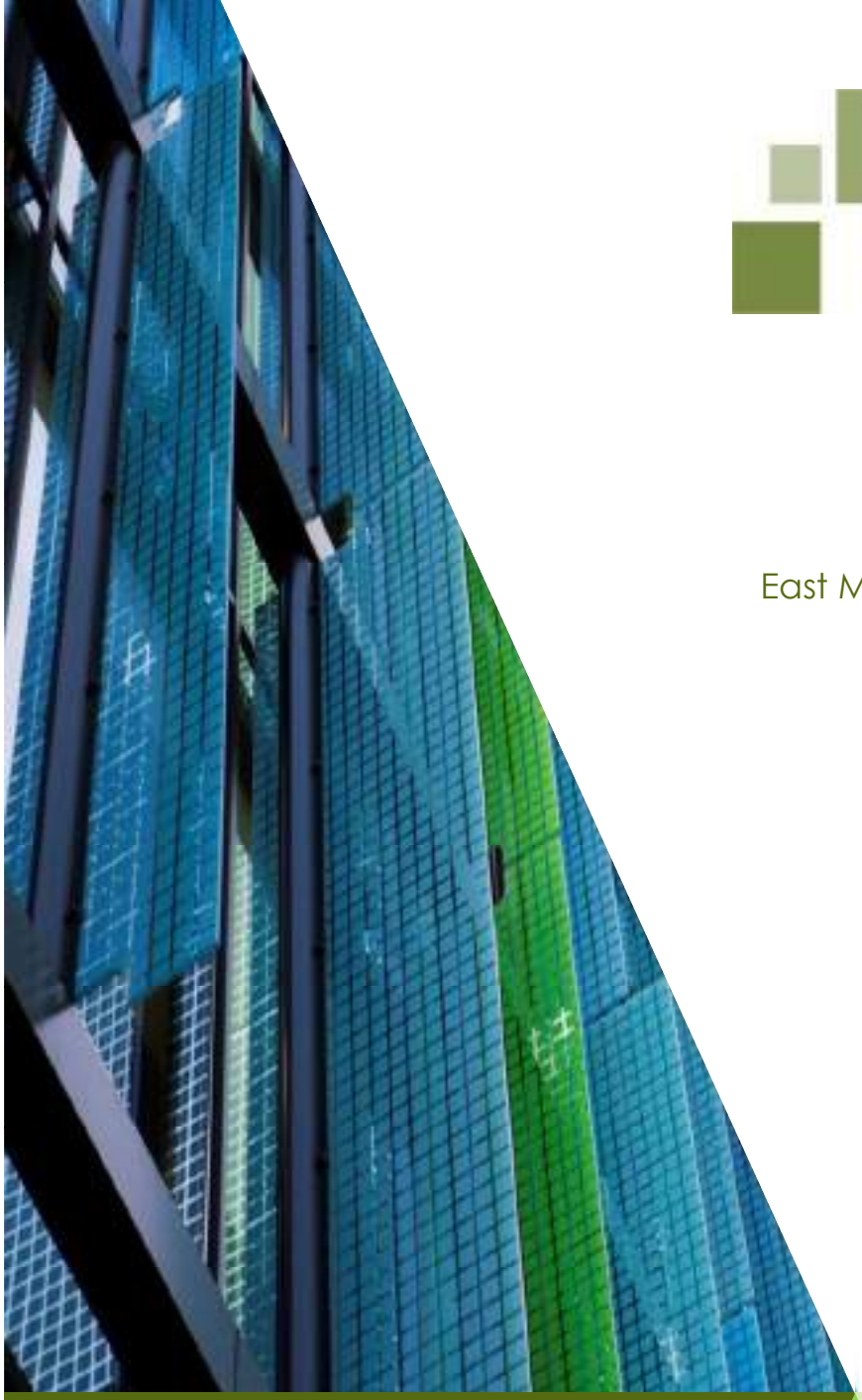
Trip Rates and Traffic Generation



Time Window	Motorised Person Trip Rates* (excluding heavy vehicles) per 100 sqm GFA			Motorised Person Trips* (excluding heavy vehicles)			Total external HGVs SRFI			Motorised Person Trips including HGV drivers		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way
00.00-01.00	0.011	0.008	0.018	60	43	103	54	85	139	114	128	242
01.00-02.00	0.007	0.002	0.009	39	13	52	81	81	162	119	94	214
02.00-03.00	0.005	0.018	0.022	26	99	125	86	87	173	112	185	297
03.00-04.00	0.008	0.010	0.018	43	56	99	60	91	150	103	146	249
04.00-05.00	0.025	0.012	0.036	137	64	202	83	57	140	220	121	342
05.00-06.00	0.175	0.083	0.257	978	464	1441	135	88	223	1113	552	1665
06.00-07.00	0.082	0.063	0.145	459	355	815	154	86	240	613	441	1054
07.00-08.00	0.094	0.030	0.124	528	167	696	154	191	345	682	358	1040
08.00-09.00	0.128	0.014	0.142	717	77	794	118	138	256	835	216	1051
09.00-10.00	0.061	0.019	0.081	344	107	451	143	133	277	487	241	728
10.00-11.00	0.048	0.029	0.077	266	163	429	170	180	351	437	344	780
11.00-12.00	0.036	0.027	0.063	202	150	352	152	147	299	354	298	651
12.00-13.00	0.052	0.058	0.110	292	326	618	138	127	266	430	453	884
13.00-14.00	0.088	0.061	0.149	492	344	836	113	160	273	605	504	1109
14.00-15.00	0.041	0.096	0.138	232	540	772	118	169	287	350	709	1059
15.00-16.00	0.024	0.118	0.142	133	661	794	97	149	246	230	810	1040
16.00-17.00	0.042	0.147	0.189	236	824	1061	164	118	282	400	942	1342
17.00-18.00	0.031	0.114	0.145	172	640	812	135	155	290	307	795	1102
18.00-19.00	0.094	0.094	0.188	528	524	1052	152	132	284	680	656	1336
19.00-20.00	0.014	0.035	0.049	77	198	275	122	90	213	200	288	488
20.00-21.00	0.016	0.018	0.035	90	103	193	119	98	217	209	201	410
21.00-22.00	0.040	0.014	0.053	222	77	299	72	104	176	294	181	475
22.00-23.00	0.003	0.029	0.032	17	162	179	65	80	146	82	242	325
23.00-00.00	0.002	0.008	0.011	13	47	60	74	85	160	87	132	220
Totals	**1.126**	**1.108**	**2.234**	**6304**	**6205**	**12509**	**2759**	**2834**	**5593**	**9063**	**9039**	**18102**

*Motorised person trips include: vehicle drivers, vehicle passengers, and public transport users

Table 14: Motorised Person Trips



CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

TRANSPORT & INFRASTRUCTURE

Roxhill (Kegworth) Ltd
East Midlands Gateway Strategic Rail Freight Interchange

TRANSPORT ASSESSMENT

Employee numbers

6.10 Based on published data from the Home and Communities Agency, and empirical data collected by ProLogis, the proposed 560,000sqm of B8 use at East Midlands Gateway SRFI could create around 7,270 full time equivalent jobs.

6.11 All the B8 units are likely to operate on a 24-hour basis, seven days a week. The main shifts are therefore likely to be 0600-1400 hours, 1400-2200 hours and 2200-0600 hours, although there will be some variation depending on the individual occupier requirements. Some occupiers may operate a 12 hour shift, from 0700-1900 hours and 1900-0700 hours.

6.12 The rail terminal would also employ a small number of staff, typically between 10 to 20 employees per shift. Therefore an average of 15 staff per shift (0600 – 1400 hours, 1400 - 2200 hours, and 2200 - 0600 hours) has been assumed.

Person trip generation

6.13 The TCM used in the assessment of the scheme (see Section 4.0) is a multi-modal model capable of allocating person trips to either highway or public transport modes. Car occupancy factors are also applied within the model to the highway person trips to obtain trips in vehicles. The model does not include for pedestrian and cyclist trips and therefore these modes were accounted for separately, with a worst case (for the purposes of traffic generation calculations) of a 3% mode share defined in TN4.

6.14 Based on the calculations in TN4 the total person trip generation the East Midlands Gateway SRFI development is given at **Table 6.1**.

Table 6.1: Total person trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	858	217	1,075
1700-1800	408	967	1,375
Daily	9,258	9,231	18,489

6.15 The person trips, broken down into car occupants and public transport trips (non HGV motorised person trips), HGV trips, and pedestrian and cyclists trips are shown at **Table 6.2**, **Table 6.3** and **Table 6.4** respectively.

Table 6.2: Car driver, car passenger and public transport person trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	717	77	794
1700-1800	236	824	1,060
Daily	6,304	6,205	12,509

Table 6.3: HGV trip generation

Time period	Arrivals	Departures	Two-way
0800-0900	118	138	256
1700-1800	164	118	282
Daily	2,759	2,834	5,593

Table 6.4: Pedestrian and cyclist person trips

Time period	Arrivals	Departures	Two-way
0800-0900	23	1	24
1700-1800	8	25	33
Daily	195	192	387

6.16 HGV trips are modelled separately within the strategic transport model as it is assumed that the purpose of a HGV movement is the transportation of its cargo. Therefore HGV driver trips are assumed not to undergo modal shift.

6.17 It should be noted that for the motorised trips, the shoulder peak period 1600 to 1700 hours was found to have a higher departure rate than the traditional 1700 to 1800 hours highway network peak hour. Therefore, to ensure a robust assessment, the higher shoulder peak hour trip generations have been used in the assessment of the development as a proxy for the 1700 to 1800 hour period.

6.18 Based on the output from the TCM, **Table 6.5**, **Table 6.6** and **Table 6.7** summarise the peak hour highway trip generations examined in this TA.

Table 6.5: Non HGV highway trips (car and public transport)

Time period	Arrivals	Departures	Two-way
0800-0900	628	62	690
1700-1800	201	724	925

Table 6.6: HGV highway trips

Time period	Arrivals	Departures	Two-way
0800-0900	118	138	256
1700-1800	164	118	282

Table 6.7: Total highway trips

Time period	Arrivals	Departures	Two-way
0800-0900	864	200	946
1700-1800	365	842	1207

6.19 Overall, it can be seen that the East Midlands Gateway SRFI is forecast to generation approximately 950 and 1210 two-way trips during the morning and evening peak hour periods, respectively. Of which, approximately 260 and 280 two-way trips will be HGVs.

Highway trip distribution

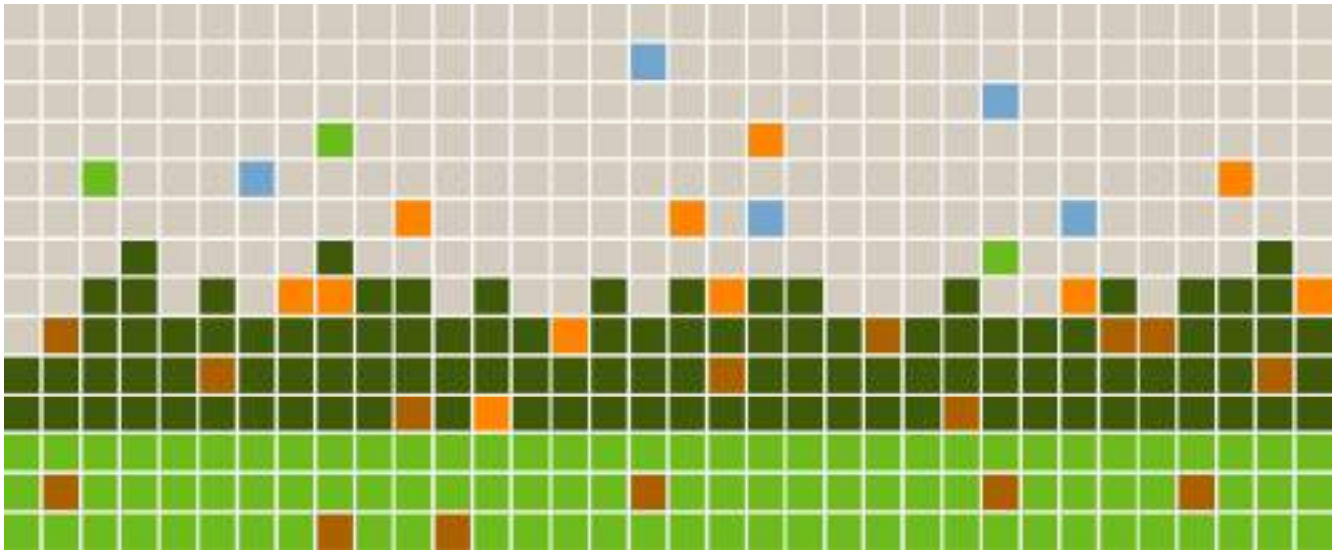
6.20 The distribution of non-HGV highway trips (effectively the employee trip distribution) was determined by the TCM based on the attractiveness of the proposed development. The resulting distribution shows that the SRFI is forecast to draw trips from a large number of districts across the East Midlands and beyond. A significant number of trips are associated with North West Leicestershire, Loughborough, Charnwood, as well as Derby City and Nottingham City. The attractiveness of the proposed SRFI diminishes as the distance from the site increase.

6.21 The distribution of HGV traffic was derived from the detailed assessment undertaken in TN7 (**Appendix J**).

6.22 The distribution of regional HGV trips was based on workplace population Census data and covers a 25 mile catchment area. The majority of regional trips to Derbyshire, Nottinghamshire and Leicestershire are therefore contained within the regional distribution. National HGV trips primarily use the SRN and travel further than the East Midlands. The proportion of trips associated with the national distribution was based on the top 10 busiest ports.

6.23 The resulting distribution plots are included in TMR2 and TMR3 (**Appendices N and O**). Overall the SRFI is forecast to have a wide distribution covering most parts of the AOI

APPENDIX D



Former Aerodrome, North Orbital Road, Hertfordshire

Transport Assessment

Helioslough

March 2009

WSP

Table 7.3: Traffic Generation – using rail based distribution trip rates (161,193 sqm)

	Rail Based Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	45	54	120	21	165	75
PM Peak (1700-1800)	57	33	44	117	101	150
24 Hour (0000-2400)	540	586	1340	1241	1880	1827

Table 7.4: Traffic Generation – using road based distribution trip rates (170,472 sqm)

	Road Based Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	51	52	268	85	319	138
PM Peak (1700-1800)	50	45	56	275	106	319
24 Hour (0000-2400)	1052	1019	2190	2286	3242	3305

7.2.10 The total traffic generation, as agreed with the Highways Agency, is summarised in **Table 7.5.**

Table 7.5: Total Traffic Generation (331,665 sqm)

	Total Traffic Generation					
	HGV		Light Vehicles		Total	
	in	out	in	out	in	out
AM Peak (0800-0900)	96	106	388	106	484	213
PM Peak (1700-1800)	107	78	99	392	206	469
24 Hour (0000-2400)	1592	1605	3530	3527	5122	5132

7.2.11 It can be seen that, of the total daily traffic movements generated by the proposals, 36% arises from the rail based distribution, with 64% arising from the road based distribution. In the case of HGV's, the rail based distribution would generate 35% of the total HGV movements.

Land in and around the Former Aerodrome,
North Orbital Road, Upper Colne Valley,
Hertfordshire

Travel Plan and Freight Management Plan

January 2009

- To reduce negative environmental impact of fleet vehicles, business travel and deliveries.

6.5 Travel Plan Targets

6.5.1 Clearly, at present no specific information is available regarding the journey to work modal splits of employees to the site. The target for the modal share for car drivers has therefore been set using 2001 National Census Journey to Work data for Hertfordshire as a baseline and this will need to be reviewed following initial staff surveys.

6.5.2 To set the context of the target for car journeys to and from the site, **Table 5** shows the modal split for Hertfordshire from the 2001 Census data. It should be noted that the baseline data excludes people working from home.

Table 5: Baseline – Modal Split for Hertfordshire

Mode	Bus	Train	M/C	Cycle	Walk	Car Driver	Car Pass
Baseline Modal Share	3.5	9.8	1.2	2.0	9.7	65.4	5.7

6.5.3 The target figure for journeys to work by car drivers has therefore been set at 65%. Whilst the target may change following initial and ongoing survey work, the broad principle of the target is to achieve a 15% reduction in the number of sole occupancy commuter car journeys to the site over 10 years, with an ultimate target of 50%.

6.5.4 In addition to the above overall targets for single occupancy car use, it is anticipated that there may be a range of staged targets over the life of the plan across all modes. These will be developed by the Travel Plan Working Group as considered appropriate. Staged targets and those targets relating to specific modes may be determined by the Travel Plan Working Group following detailed consultation with the local authorities and the Highways Agency.

APPENDIX E

ASHFIELD LAND LTD

Rail Central

Briefing Note 02: Baseline Mode Choice

Transport Model Stage 3: Mode Choice

March 2017



DOCUMENT SIGNATURE AND REVIEW SHEET

Project Details

Project Title:	Rail Central		
Project No.:	1211-80	**Report No.:**	1211-80/BN/02
Client:	Ashfield Land Ltd		

	Prepared By:	Checked By:	Approved for issue
Name	A. Snowden	M. Berrington	C. Rawlinson
Signature			
Date	March 2017	March 2017	February 2017

Issued by:

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates
25 King Street
Bristol
BS1 4PB

0117 925 9400
bristol@tpa.uk.com
www.tpa.uk.com

CONTENTS PAGE

1 INTRODUCTION 1

2 MODE CHOICE 3

LIST OF TABLES

Table 2.1 Summary of Person Trip Attraction from BN01
Table 2.2 Summary of Person Trip Attraction including Ancillary Uses
Table 2.3 2011 Census Mode Shares
Table 2.4 Summarised 2011 Census Mode Shares
Table 2.5 Rail Central Baseline Mode Shares
Table 2.6 Summary of Baseline Multi-Modal Trips

LIST OF FIGURES

Figure 2.1 2011 Census Workplace Zones

Figure 2.2 Walking Distances between Units and Bus Stops on Northampton Road

LIST OF APPENDICES

A 2011 Census Method of Travel to Work data

B South Northamptonshire Mid-Layer Super Output Area data

1 INTRODUCTION

1.1 Transport Planning Associates (TPA) is working on behalf of Ashfield Land Ltd in order to address the transportation aspects of a proposed Strategic Rail Freight Interchange (SRFI), known as Rail Central. The site is located to the south of Milton Malsor, to the north of the West Coast Main Line (railway line), to the west of the Northampton Loop (railway line) and to the east of the A43 trunk road. The M1 Motorway is located around two kilometres to the north.

1.2 The site is considered to be optimally located next to rail and trunk road infrastructure. The proposed SRFI will be progressed as a Nationally Significant Infrastructure Project (NSIP) and as such an application for the scheme will be taken through the Development Consent Order (DCO) process.

1.3 This briefing note forms part of a four stage transport model which can be summarised as follows:

(i) Stage 1: Trip Attraction;

(ii) Stage 2: Trip Distribution;

(iii) Stage 3: Mode Choice; and

(iv) Stage 4: Route Assignment.

1.4 The briefing notes will inform scoping work required in advance of a full Transportation Assessment. They adhere to the principles of the 'Rochdale Envelope', which is used when the final details of the project are not fixed at the time of assessment work; and where there is a need for flexibility within clearly defined parameters that consider a range of likely possibilities. The assessment will be precautionary and will therefore consider the worst case. However, regard will be given to the worst case which *is likely to* occur to avoid the potential for the assessment to become over precautionary. The assessment work considers the measures that would be necessary to mitigate likely significant effects. Essentially, this means that the work is predicated on a range of scenarios which are presented in a way that aids decision making.

1.5 These briefing notes will be agreed with the highway authority at Northamptonshire County Council (NCC) and with Highways England (HE) as appropriate and through collaborative working.

1.6 Briefing Note 1211-80/BN/01 (BN01) forecast the total number of person trips (excluding HGVs) that are anticipated to arrive and depart at the site each day, including delivery vehicles and visitors, associated with the proposed warehousing units. In addition, technical note 1211-80/TN/06 examined the person trip attraction that would be associated with ancillary uses on the site. In combination, these addressed Stage one of the four stage transport model set out above.

1.7 Stage Two will ultimately be informed by the outputs of the Northamptonshire Strategic Transport Model (NSTM). This is a trip distribution model applied to car driver, car passenger and public transport users. It is therefore necessary to first determine a baseline mode share for pedestrians and cyclists that can be removed prior to use of the NSTM, as well as the resultant number of car driver, car passenger and public transport user trips that will be entered into the model.

1.8 The NSTM assigns trips between vehicles and public transport users, and it is therefore considered appropriate for a baseline mode share of public transport to be determined as part of this briefing note for comparison purposes.

1.9 Following receipt of the initial trip distribution, the baseline mode share as set out within this briefing note will be reassessed.

1.10 In determining the baseline mode share, this briefing note sets out a reference case methodology using 2011 Census travel to work data for a number of comparator areas. This briefing note does not examine the forecast mode share that is likely to occur following the implementation of any Travel Plan measures, which will follow in a subsequent technical note.

1.11 This note concludes by presenting what is considered to be a likely worst case baseline mode share, thereby leading to the highest number of vehicle movements at the times when it is agreed with NCC and HE that the highway network will be operating at its busiest. It is these time periods that are agreed to be used to assess the trip impact of the scheme.

2 MODE CHOICE

Person Trip Attraction

2.1 The anticipated person trip attraction at Rail Central is set out within BN01, and this has been agreed as appropriate with HE and NCC.

2.2 For ease of reference, a summary of the agreed person trip attraction for each of the AM peak (0800-0900), PM peak (1700-1800) and daily (24hr) periods is set out in **Table 2.1** below.

Table 2.1 Summary of Person Trip Attraction from BN01

	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Person Trips	925	101	1,026	303	1,062	1,366	8,136	8,006	16,142

2.3 Technical note 1211-80/TN/06 sets out the anticipated person trip attraction associated with ancillary uses on the site. This confirms that these would not have any impact on the typical peak hours of the local highway network, and this has been agreed with HE and NCC.

2.4 For completeness, the overall person trip attraction, including daily trips associated with the ancillary uses, is set out in **Table 2.2** below.

Table 2.2 Summary of Person Trip Attraction including Ancillary Uses

	AM Peak (0800-0900)			PM Peak (1700-1800)			Daily (24 hour)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Person Trips	925	101	1,026	303	1,062	1,366	8,426	8,296	16,722

2.5 For the purpose of the NSTM, only the network peak hours will be assessed. The mode share on a daily basis will be considered in due course as part of subsequent briefing notes.

2011 Census Mode Share

2.6 In order to determine a suitable baseline mode share to be applied for forthcoming assessment work, a review of 2011 Census data has been carried out to establish the existing method of travel to work for a number of comparable areas.

2.7 The method of travel to work for people who work in the Census workplace zones in the vicinity of the site (Blisworth and Milton Malsor) has been examined, as these are likely to have similar characteristics to the site in terms of accessibility, and are therefore considered to provide a reasonable assessment of the baseline mode share. However, it is also noted that a scheme of this type is likely to exhibit different travel characteristics due to the measures it can bring forward, which influence travel behaviour. HE and NCC have therefore requested for the method of travel to work for people who work at similar facilities at Pineham Park and DIRFT to be examined.

2.8 The areas examined are illustrated in **Figure 2.1** and summarised as follows:

(i) People who work within Blisworth (2011 Census Workplace Zone E33017413);

(ii) People who work within Milton Malsor (2011 Census Workplace Zone E33017409);

(iii) People who work at Pineham Park (2011 Census Workplace Zones E33014992, E33014749 and E33014748);

(iv) People who work at DIRFT (2011 Census Workplace Zones E33014649 and E33014654).

2.9 A summary of the existing mode share for each of the areas set out above is shown on **Table 2.3** and the Census data is included at **Appendix A**.

Table 2.3 2011 Census Mode Shares

Method of Travel to Work	Blisworth		Milton Malsor		Pineham Park		DIRFT	
	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)
Underground, metro, light rail, tram	0	0.0%	1	0.4%	6	0.2%	1	0.0%
Train	1	0.2%	1	0.4%	27	0.8%	4	0.1%
Bus, minibus or coach	5	1.1%	11	4.7%	234	7.0%	26	0.9%
Taxi	1	0.2%	2	0.9%	14	0.4%	3	0.1%
Motorcycle, scooter or moped	3	0.7%	1	0.4%	23	0.7%	37	1.3%
Driving a car or van	375	85.2%	200	85.8%	2,488	74.2%	2,200	79.6%
Passenger in a car or van	19	4.3%	8	3.4%	388	11.6%	414	15.0%
Bicycle	6	1.4%	1	0.4%	90	2.7%	42	1.5%

Method of Travel to Work	Blisworth		Milton Malsor		Pineham Park		DIRFT	
	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)	Total People	Percentage (excl. Work from Home)
On foot	29	6.6%	7	3.0%	70	2.1%	31	1.1%
Other method of travel to work	1	0.2%	1	0.4%	11	0.3%	7	0.3%
Total	**440**	**100.0%**	**233**	**100.0%**	**3,351**	**100.0%**	**2,765**	**100.0%**

2.10 The mode shares in **Table 2.3** have been summarised into the wider travel modes of Single Occupancy Vehicles, Car Share, Public Transport, Walking, Cycling and Other, as set out in **Table 2.4** and can be summarised as follows:

(i) Total Vehicles includes the following travel modes from **Table 2.3**:

a. 'Motorcycle, scooter or moped'; and

b. 'Driving a car or van'.

It should be noted that as the total number of vehicles is based on the travel modes set out above, it is not affected by the proportions of single occupancy and car sharing vehicles set out below.

(ii) Single Occupancy Vehicles includes the following travel modes from **Table 2.3**:

a. 'Motorcycle, scooter or moped'; and

b. 'Driving a car or van' minus 'Passenger in a car or van' (assuming there is a maximum of one passenger per car or van, although on average there would likely be more than one passenger in car sharing vehicles).

(iii) Car Share includes the 'Passenger in a car or van' travel mode (from **Table 2.3**) multiplied by two (assuming there is a maximum of one passenger per car or van, although on average there would likely be more than one passenger in car sharing vehicles);

(iv) Public Transport includes the following travel modes from **Table 2.3**:

a. 'Underground, metro, light rail or tram;

b. 'Train';

c. 'Bus, minibus or coach'; and

d. 'Taxi'

(v) Walking ('On foot'), Cycling ('Bicycle') and Other ('Other method of travel to work') are as stated on **Table 2.3**.

Table 2.4 Summarised 2011 Census Mode Shares

Method of Travel to Work	Blisworth	Milton Malsor	Pineham Park	DIRFT
Total Vehicles	85.9%	86.3%	74.9%	80.9%
(Single Occupancy Vehicles)	*(81.6%)*	*(82.8%)*	*(63.3%)*	*(65.9%)*
(Car Share)	*(8.6%)*	*(6.9%)*	*(23.2%)*	*(30.0%)*
Public Transport (incl. Taxi)	1.6%	6.4%	8.4%	1.1%
Walking	6.6%	3.0%	2.1%	1.1%
Cycling	1.4%	0.4%	2.7%	1.5%
Other	0.2%	0.4%	0.3%	0.3%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Note: Figures are subject to rounding

2.12 The Census data illustrated in **Table 2.4** confirms that the proportion of trips made by private vehicles is relatively similar at each of Blisworth, Milton Malsor and at DIRFT (ranging between 80.9% at DIRFT to 86.3% at Milton Malsor), although the proportion at Pineham Park is lower at 74.9%. This may be due to Pineham Park being served by a regular bus service to Northampton Town Centre, noting also that the proportion of public transport trips at Pineham Park is higher than at the other locations examined.

2.13 **Table 2.4** also shows that the proportion of trips by car sharing is significantly higher at Pineham Park (23.2%) and DIRFT (30.0%) than at Blisworth (8.6%) and Milton Malsor (6.9%). This likely occurs as a result of these locations being large employment areas where many employees would work the same shift patterns, thereby making car sharing an easier and more attractive option. This may also be the result of Travel Plans at those sites, which are likely to encourage car sharing.

Rail Central Baseline Mode Share

2.14 It is considered appropriate for baseline mode shares to be determined as set out below, further to discussions with HE and NCC.

Public Transport

2.15 It is considered reasonable for the baseline public transport mode share to be determined based on the existing travel to work data at Milton Malsor and Blisworth. An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 3.3% public transport trips (22 public transport trips out of 673 total trips at Milton Malsor and Blisworth combined).

2.16 During the AM peak, the existing bus services stop on Northampton Road at 0814 and 0842 from Northampton, at 0817 from Milton Keynes, and at 0847 from Towcester. During the PM peak, the existing bus services stop on Northampton Road at 1737, 1742 and 1758 towards Northampton, at 1732 towards Milton Keynes, and at 1746 towards Towcester.

2.17 It is considered that there is sufficient opportunity for future employees at Rail Central to use existing bus services to travel to the site, such that a baseline 3.3% mode share is considered reasonable.

2.18 It is noted that the existing public transport usage at Milton Malsor and Blisworth is influenced by the number of houses within a 400m walking distance of a bus stop. It is therefore considered that the public transport mode share at Rail Central should be reduced to reflect the proportion of the site that can be accessed within a 400m walk of the proposed bus stops on Northampton Road and existing bus services.

2.19 The parameters plan, rather than the masterplan, would be a Requirement of any granted DCO. This identifies a number of development zones within the site, within which individual units may be arranged in a number of different ways. It is therefore considered appropriate that the 400m walking distance to the bus stops is measured to the entrance to each parameters plan development zone.

2.20 As shown in **Figure 2.2**, the parameter plan development zones 1, 2, 3 and 4 can be accessed within a 400m walking distance of the Northampton Road bus stops. These zones comprise 67.4% of the total proposed development area. The current development masterplan indicates that the units contained within each development zone are as follows:

(i) Development Zone 1 – Units 8, 9 and 10;

(ii) Development Zone 2 – Units 11, 12 and 13;

(iii) Development Zone 3 – Units 1 and 2; and

(iv) Development Zone 4 – Units 3 and 4.

2.21 In order to provide a robust assessment, only the units shown on the current development masterplan, as opposed to the parameter plan, that are approximately 400m walking distance from the Northampton Road bus stops, as shown in **Figure 2.2**, will be included. These are units 1 (106m), 2 (381m), 3 (284m), 8 (268m), 9 (414m) and 11 (342m), which equates to 46.8% of the total development area.

2.22 It is therefore considered appropriate for the baseline mode share of 3.3% to be applied to the areas of the proposed development that can be accessed within approximately 400m walking distance (46.8% of the total development area) with the remainder of the site assumed to have no public transport trips in the baseline situation. This equates to an average of 1.5% public transport trips across the site, which is broadly in accordance with the proportion of public transport trips at Blisworth, and is therefore considered appropriate.

Walking

2.23 It is considered appropriate for the baseline proportion of trips by walking to be determined with reference to the existing proportions at Milton Malsor and Blisworth. An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 5.3% walking trips (36 walking trips out of 673 total trips at Milton Malsor and Blisworth combined).

2.24 The appropriateness of the calculated 5.3% walking trips noted above has been considered further with respect to 2011 Census data. The distance travelled to work by method of travel and specifically walking has been assessed. This data is not available for workplace zones and has therefore been examined for people who live in the mid-layer super output area, South Northamptonshire 003 (where Rail Central is located), which is illustrated on **Figure 2.1**.

2.25 The data indicates that 67.5% of walking trips are less than 2km, 8.0% are between 2km to 5km, and 21.5% of walking trips are 5km and over (the remaining 2.7% of walking trips were identified as having no fixed place of work). This therefore suggests that a significant proportion of walking trips (up to 29.5%) to Rail Central could be expected to originate from residential areas to the south of Northampton, and north of the M1, with the edges of Milton Malsor and Blisworth being located approximately 0.66 kilometres and 1.19 kilometres walking distance from the site respectively. The edge of the Northampton urban area is located approximately 2.55 kilometres walking distance from the site. The supporting Census data is provided at **Appendix B.**

2.26 Therefore, whilst it is still considered that the average of 5.3% walking trips is reasonable in the context of current walking patterns in the South Northamptonshire area, it is considered appropriate for the baseline proportion of walking to be based on the existing proportion at Milton Malsor (3.0%), in order to ensure a robust assessment in line with the principles of a 'Rochdale Envelope'.

Cycling

2.27 It is considered appropriate for the baseline proportion of cycling trips to be determined with reference to the existing proportions at Milton Malsor and Blisworth. An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 1.0% cycling trips (seven cycling trips out of 673 total trips at Milton Malsor and Blisworth combined). It is considered reasonable for this proportion to be applied to Rail Central for the purpose of the baseline mode share. In reality, the proportions at Pineham Park and DIRFT demonstrate that this type of employment would likely attract a higher proportion of cycling, although it is also noted that these are well established sites where Travel Plan measures will have encouraged an increase in cycling compared to the baseline situation.

Vehicles

Car Share

2.28 An average of the existing mode shares for Milton Malsor and Blisworth (based on the relative number of total trips from the Census data to account for the relative populations of each area, shown in **Table 2.3**) results in 8.0% car share trips (54 car share trips out of 673 total trips at Milton Malsor and Blisworth combined). It is considered reasonable for this proportion to be applied to Rail Central for the purpose of the baseline mode share. In reality, the proportions at Pineham Park and DIRFT demonstrate that this type of employment would likely attract a much higher proportion of car sharing, although it is also noted that these are well established sites where Travel Plan measures will have encouraged an increase in car sharing compared to the baseline situation.

Single Occupancy Vehicles

2.29 On average the areas examined showed 0.3% of trips allocated to 'other method of travel to work'. To ensure that all trips are accounted for within the assessments, these are included within the proportion of single occupancy vehicle trips, and this is considered to provide a robust assessment.

2.30 Using the baseline mode shares as set out above results in a remainder of 86.5% single occupancy vehicle trips, and 90.5% total vehicle trips. This is higher than all of the areas set out in **Table 2.4** and is therefore considered to provide a robust assessment which is in accordance with the principles of a Rochdale Envelope.

2.31 A summary of the baseline mode shares to be applied at Rail Central is set out in **Table 2.5**.

Table 2.5 Rail Central Baseline Mode Shares

Method of Travel to Work	**Rail Central (Baseline)**
Total Vehicles	90.5%
(Single Occupancy Vehicles)	*(86.5%)*
(Car Share)	*(8.0%)*
Public Transport (incl. Taxi)	1.5%
Walking	3.0%
Cycling	1.0%
Total	**100.0%**

2.32 A summary of the resultant baseline multi-modal trips at Rail Central is set out in **Table 2.6.**

Table 2.6 Summary of Baseline Multi-Modal Trips

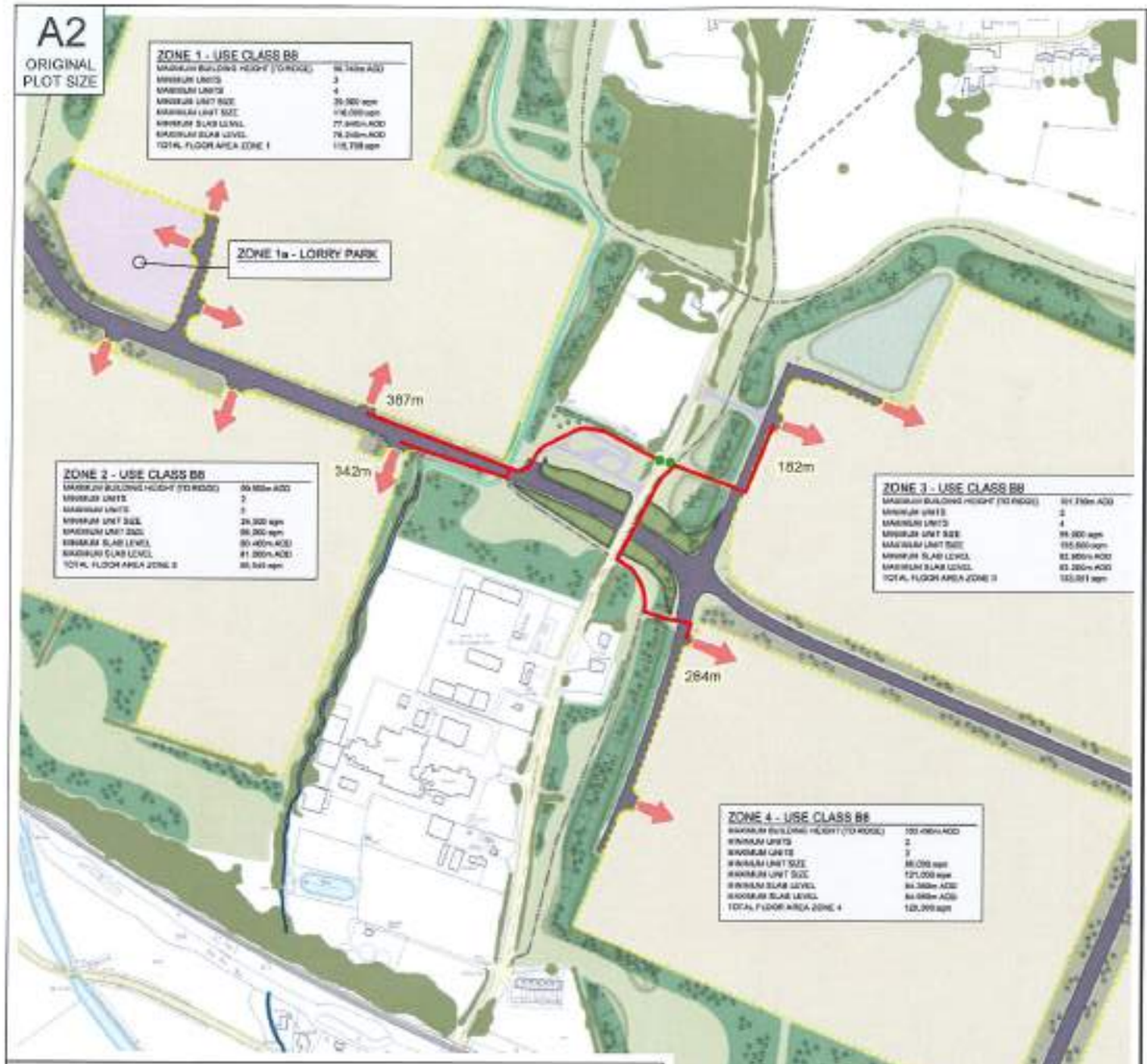
	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**
Total Vehicles	837	91	929	274	961	1,236
(Single Occupancy Vehicles)	*(800)*	*(87)*	*(887)*	*(262)*	*(919)*	*(1,182)*
(Car Share)	*(74)*	*(8)*	*(82)*	*(24)*	*(85)*	*(109)*
Public Transport (incl. Taxi)	14	2	15	5	16	20
Walking	28	3	31	9	32	41
Cycling	9	1	10	3	11	14
Total Person Trips	**925**	**101**	**1,026**	**303**	**1,062**	**1,366**

2.33 The baseline multi-modal trips set out in **Table 2.6** will be taken forward for future modelling work. They are agreed with HE and NCC for this purpose.

2.34 The forecast modal shares, taking into account any proposed measures, will be determined as part of a subsequent briefing note.

FIGURES

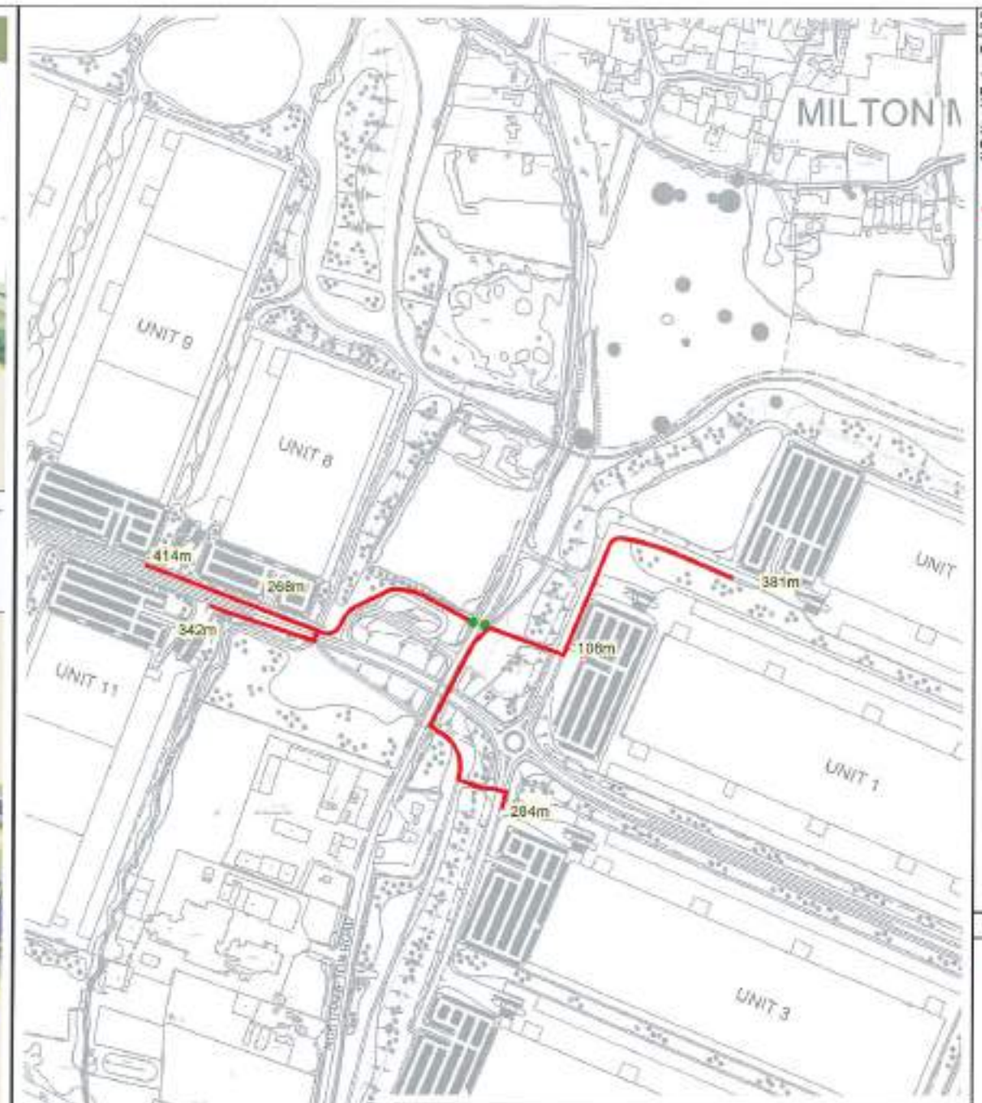
A2
ORIGINAL
PLOT SIZE





Parameters Plan Zone Locations
Scale 1:25,000

Isochrones Overlaid onto Parameters Plan
Scale 1:2000



Isochrones Overlaid onto Masterplan
Scale 1:2000



Master Plan Unit Locations
Scale 1:25,000

Reproduced from Ordnance Survey Superplan Data with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100032331

NOTES:

1. The Parameters Plan has been taken from drawing 30705-PE-TSD produced by Michael Sparks Associates and was received on 26th January 2017.

2. The Site Masterplan has been taken from drawing 30705/PE-76A produced by Michael Sparks Associates and was received on 12th August 2016.

- Bus Stop
- Isochrone from Bus Stop
- 382m Distance from Bus Stop to Access Point

No.	Date	Notes	Drawn by	Checked by	Approved by

Bristol
Cambridge
London
Oxford
Welwyn Garden City

tpa Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9403
www.tpa.uk.com

CLIENT:
ASHFIELD LAND LTD

PROJECT:
RAIL CENTRAL

TITLE:
Walking Distances from Bus Stops on Northampton Road

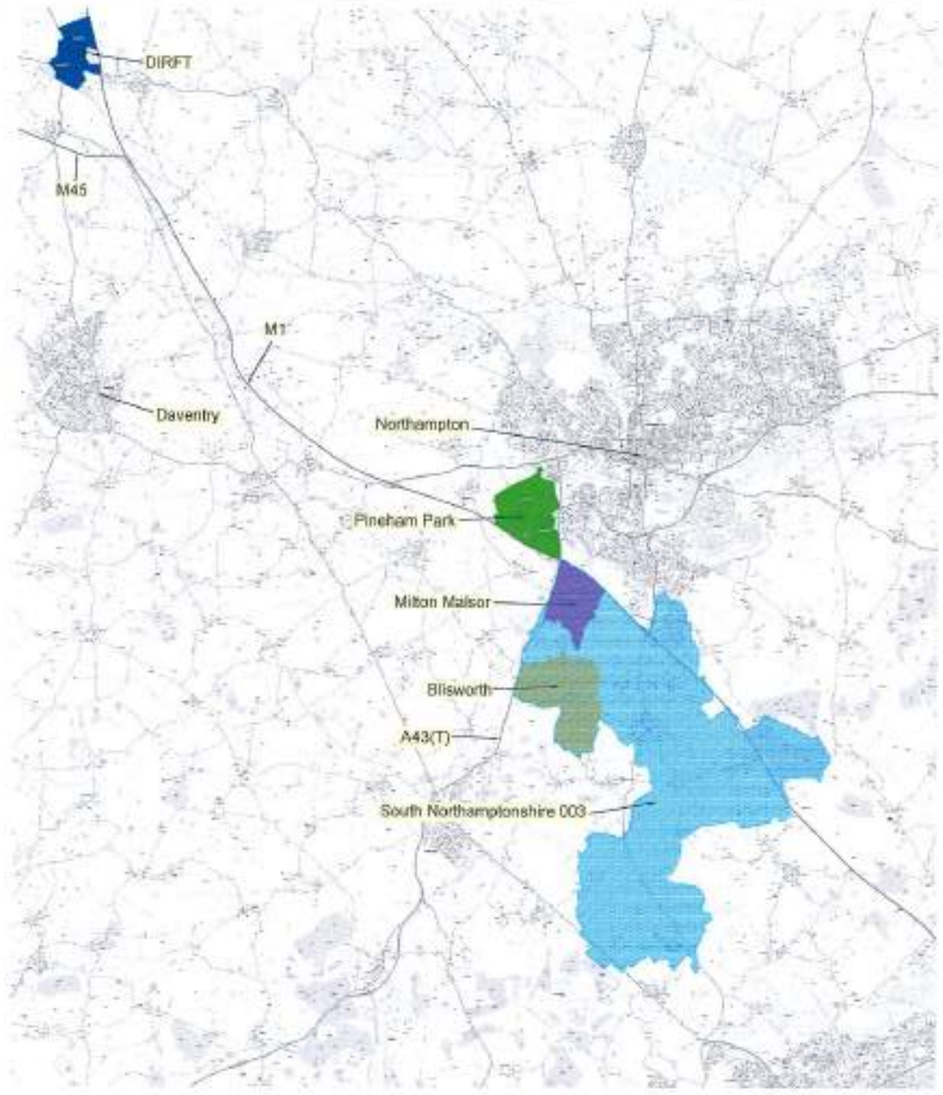
STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
As Shown	25.01.17	RNJ	AJS	MB

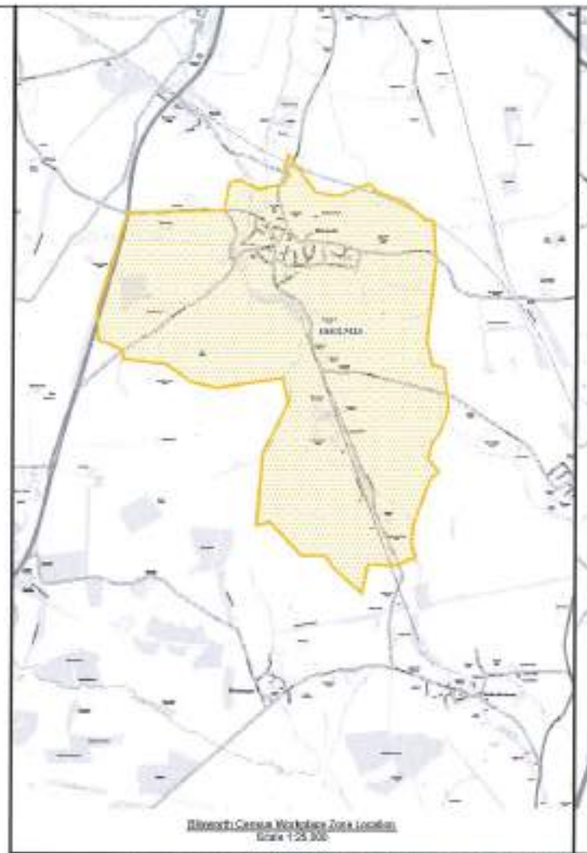
JOB NO:	DRAWING NO:	REVISION:
1211-80	Figure 2.2	

INDICATIVE

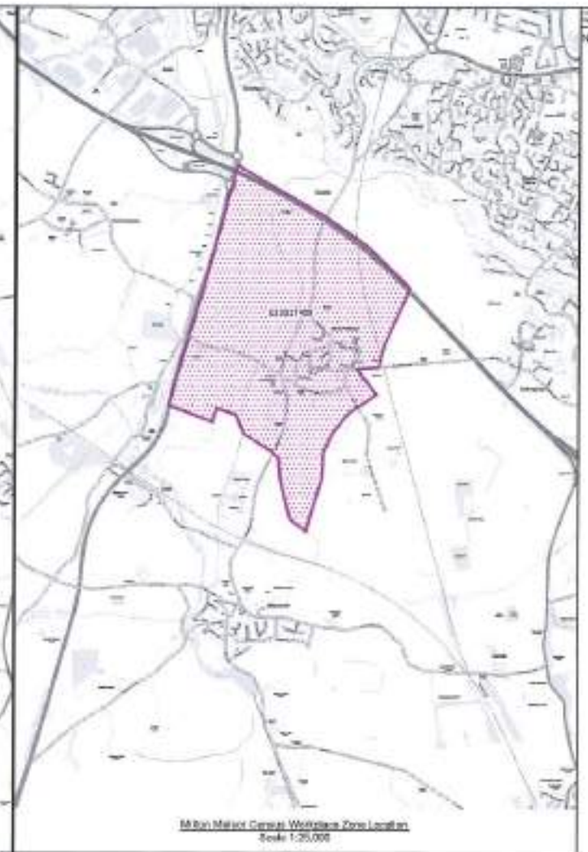
A1
ORIGINAL PLOT SIZE



Census Area Locations
Scale 1:100,000



Blisworth Census Workplace Zone Location
Scale 1:25,000



Milton Malsor Census Workplace Zone Location
Scale 1:25,000

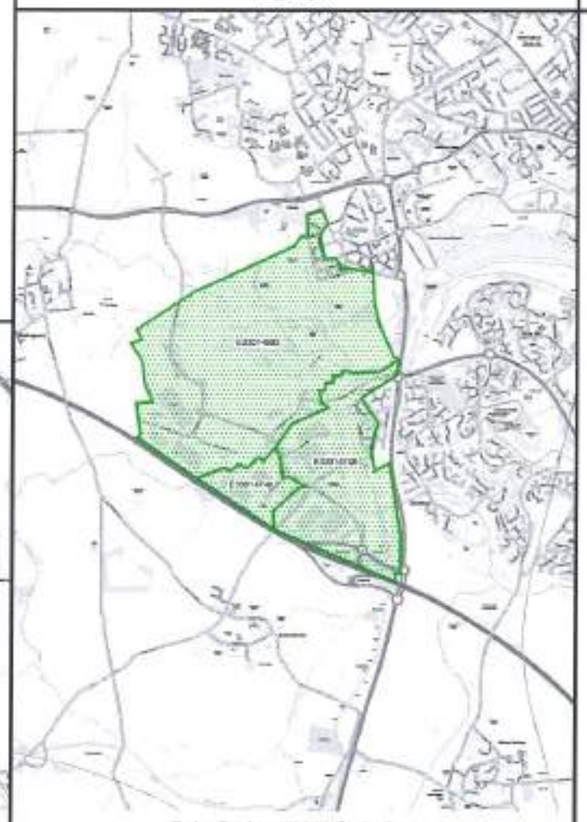
NOTES:



Walking Distances from Approximate Centre of Site to the North
Scale 1:25,000



Walking Distances from Approximate Centre of Site to the South
Scale 1:25,000



Pineham Park Census Workplace Zone Locations
Scale 1:25,000



Daventry International Rail Freight Terminal (DIRFT) Census Workplace Zone Locations
Scale 1:25,000

tpa

ASHFIELD LAND LTD

RAIL CENTRAL

2011 Census Workplace Zones

INFORMATION

SCALE	DATE	DRAWN	CHECKED	APPROVED
As Shown	02.02.17	RHJ	AJS	MB

JOB NO	DRAWING NO.	REVISION
1211-80	Figure 2.1	

APPENDIX A

WP703EW - Method of travel to work (2001 specification) (Workplace population)

ONS Crown Copyright Reserved [from Nomis on 16 February 2017]

population: All usual residents aged 16 to 74 in employment in the area the week before the census
units: Persons
date: 2011

	Milton Malsor	Blisworth	Pineham Park			DIRFT	
Method of travel to work	**E33017409**	**E33017413**	**E33014748**	**E33014749**	**E33014992**	**E33014649**	**E33014654**
All categories: Method of travel to work (2001 specification)	291	536	1,665	944	794	1,456	1,313
Work mainly at or from home	58	96	39	0	13	0	4
Underground, metro, light rail or tram	1	0	5	0	1	1	0
Train	1	1	12	7	8	2	2
Bus, minibus or coach	11	5	70	90	74	16	10
Taxi	2	1	1	13	0	3	0
Motorcycle, scooter or moped	1	3	7	6	10	22	15
Driving a car or van	200	375	1,238	719	531	1,134	1,066
Passenger in a car or van	8	19	205	80	103	234	180
Bicycle	1	6	42	16	32	21	21
On foot	7	29	41	10	19	17	14
Other method of travel to work	1	1	5	3	3	6	1

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

APPENDIX B

WP7701EW - Method of travel to work (2001 specification) by distance travelled to work (Workplace population)

ONS Crown Copyright Reserved [from Nomis on 9 February 2017]

population	All usual residents aged 16 to 74 in employment in the area the week before the census
units	Persons
date	2011
area type	2011 super output areas - middle layer
area name	E02005683 : South Northamptonshire 003

Distance travelled to work	All categories: Method of travel to work (2001 specification)	Work mainly at or from home	Train, underground, metro, light rail, tram, bus, minibus or coach	Driving a car or van	Bicycle	On foot		All other methods of travel to work
All categories: Distance	4,661	882	159	3,021	67	274		258
Less than 2km	472	0	10	235	27	185	67.5%	15
2km to less than 5km	410	0	18	320	14	22	8.0%	36
5km to less than 10km	867	0	59	680	16	21	7.7%	91
10km to less than 20km	675	0	14	602	5	14	5.1%	40
20km to less than 30km	354	0	14	311	0	14	5.1%	15
30km to less than 40km	120	0	3	109	0	6	2.2%	2
40km to less than 60km	94	0	0	89	1	2	0.7%	2
60km and over	220	0	14	186	1	2	0.7%	17
Work mainly at or from	882	882	0	0	0	0	0.0%	0
No fixed place	567	0	27	489	3	8	2.9%	40

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

GREAT BRITAIN FREIGHT MODEL

1. The *Great Britain Freight Model (GBFM)* is a comprehensive freight transport model that has been developed by MDS Transmodal. In broad terms, it has two main functions, namely:

    - Describing current GB-domestic and GB-international freight flows by mode, commodity and origin/destination (including port of entry/departure for international traffics). Inland road and rail freight flows are assigned to the national highway and railway networks respectively; and
    - Producing forecasts for future GB-domestic and GB-international freight flows by mode, commodity and origin/destination (including port of entry/departure for international traffics). User-defined scenarios or assumptions, reflecting changes to transport costs, infrastructure and new origins/destinations for freight, can be 'tested' and their impact on mode share/shift estimated. Inland road and rail freight flows are assigned to the national highway and railway networks respectively.

2. MDS Transmodal retains ownership of the GBFM, and uses it to undertake analysis in response to client requirements. Unlike other models, it is not licenced to third party users; clients of MDS Transmodal purchase 'outputs' from the model which address their requirements.

3. The GBFM actually consists of a number of inter-linked components, namely:

    - A multi-dimensional base matrix, built up from several sources, which describes freight flows within Great Britain and to/from Great Britain by origin/destination and commodity;
    - Freight transport cost models, validated against industry data, which replicate transport rates in the market and can be adjusted for different scenarios;
    - A mode-choice assignment model, which assigns origin/destination freight flows to transport modes (road or rail for inland flows);
    - A vehicle choice and load factor model used to 'convert' road freight outputs from the GBFM, which are initially expressed as annual tonnes-lifted, into HGV numbers;
    - A road assignment model, which subsequently assigns generated HGV numbers between each origin/destination pair onto specific routes on the national highway network; and
    - On a similar basis, a rail assignment model based upon current operating behaviour (route choice, tonnes/trains by commodity).

4. The multi-dimensional base matrix is generated from the following principal data-sources:

    - The DfT's Continuing Survey of Road Goods Transport (CSRGT). This is a DfT sample survey of British registered HGV activity. Each week, circa 300 HGVs are randomly selected, and their operators are subsequently required to record all activity undertaken during that week. This includes collection and delivery locations, commodities conveyed and tonnes-lifted. The

survey data is then extrapolated to estimate and describe the volume of goods lifted/moved by road haulage annually.

- Network Rail billing data. Network Rail records all rail freight movements across its network in order to levy track access charges on the freight operators (charges are essentially based on distance moved and the weight of wagons). Every freight wagon movement, the origin and destination siding, wagon type, commodity conveyed and wagon/commodity weight is recorded by Network Rail. MDS Transmodal process this billing data, allowing a complete record of annual rail freight activity to be produced.
- HM Revenue and Customs trade data. This records the origin and destination of international trade.
- DfT Maritime Statistics – the DfT's published record of freight traffic passing through British ports, by port, traffic type/commodity and tonnes-lifted/units handled; and
- Ferry industry data. Alongside the DfT's Maritime Statistics data, this allows the volume of goods lifted/moved by foreign registered HGVs to be estimated.

5. Freight flows in the base matrix are subsequently disaggregated down to Post Code District (PCD) level; there are in total 2,600 PCDs in Great Britain, meaning a large freight O/D matrix with 2,600 potential origins and 2,600 potential destinations for freight. The base matrix therefore describes annual current GB-domestic and GB-international freight flows by commodity between each of the 2,600 PCD origins/destinations (including port of entry/departure for international traffics). Outputs, in tonnes-lifted or tonne-km, can be generated and presented at national, regional and county levels together with user-defined groups of PCDs. For a given location e.g. Northampton, it can therefore describe the current distribution of cargo nationally by commodity.

6. The mode-choice assignment model subsequently assigns the base matrix flows between each of the 2,600 PCD origins/destinations as described to transport modes (road or rail for inland). This is based on a lowest 'generalised cost' approach, which takes into account transport costs (from the cost models) alongside other factors such as speed, flexibility and reliability. A calibration process is undertaken which ensures that the outputs replicate current mode shares. The assignment is undertaken on an unconstrained basis i.e. it assumes rail network capacity is available and does not account for changes in congestion on the wider highway network.

7. Each origin to destination road freight flow (tonnes-lifted) from the base matrix is then 'converted' to annual HGV numbers (using the vehicle choice and load factor component). The road assignment model subsequently assigns the generated HGV numbers between each origin/destination pair onto specific routes on the national highway network. Assignment is an 'all or nothing' process based on the lowest cost route between each origin and destination. For each link on the road network, it is therefore possible to estimate HGV numbers alongside their origin and destination. However, it should be noted that the derived HGV trips for Rail Central will be assigned onto the local highway network within NCC's SATURN model, which allows for local traffic conditions.

8. Likewise, the rail assignment model allocates rail flows from the base matrix to the national railway network, based upon current operating behaviour (route choice, tonnes/trains by commodity).

9. Freight flows in future years are forecast as follows:

    - GB-domestic freight flows – trend based forecasting, with growth rates subsequently applied to the GB-domestic elements of the base matrix; and
    - GB-international freight flows – growth rates by commodity, sector and country are derived from external trade forecasting models developed and operated by MDS Transmodal. These are then applied to the GB-international elements of the base matrix.

10. Effectively, a 'new' matrix of origin/destination freight flows is generated based on the respective growth rates as described applied to the base matrix. New freight infrastructure can also be included in this process, such as the likely traffic generated by a new container port or Strategic Rail Freight Interchanges (SRFIs). As per above, the forecast matrix therefore describes future GB-domestic and GB-international freight flows by commodity between each of the 2,600 PCD origins/destinations (including port of entry/departure for international traffics). Again, outputs, in tonnes-lifted or tonne-km, can be generated and presented at national, regional and county levels together with user-defined groups of PCDs.

11. As per above, the mode-choice assignment model subsequently assigns the forecast flows between each of the 2,600 PCD origins/destinations as described to transport modes (road or rail for inland). This is also based on a 'generalised cost' approach. User-defined scenarios or assumptions can be 'tested' in terms of their potential impact on mode share/shift. This could include higher fuel costs (due to oil price rises or taxation), distance based road user charging, higher driver wages and new road or railway infrastructure (including SRFIs). However, in this case we have assumed 'no-change' except for increases in labour and energy costs consistent with WEBTAG.

12. As per above, each origin to destination forecast road freight flow (tonnes-lifted) is then 'converted' to annual HGV numbers (using the vehicle choice and load factor component). The road assignment model subsequently assigns the forecast HGV numbers between each origin/destination pair onto specific routes on the national highway network. Likewise, the rail assignment model allocates future rail flows from the base matrix to the national railway network.

13. The recent project work for Transport for the North (TfN Freight and Logistics Strategy) is perhaps a good example of the type of analysis and outputs undertaken by the GBFM at the strategic level. Current (baseline) freight movements to/from the north of England (both domestic and international) by origin and destination, commodity and mode were established.

Assignment of the inland road and rail freight flows to the national highway and railway networks respectively was then undertaken.

14. Forecasts were then undertaken (again for domestic and international traffics) for the years 2033 and 2043. The mode-choice assignment model subsequently assigned these forecast flows to transport modes (road or rail for inland) under various user-defined strategy scenarios. These included a significant increase in the level of distribution floor space developed at rail or water served sites, alongside enhanced railway and highway infrastructure. A do-nothing scenario was also tested. Assignment of the inland road and rail freight flows to the national highway and railway networks respectively was then undertaken. The mode-shift potential of the various user-defined strategy scenarios (compared with baseline and do-nothing) were therefore tested and quantified. This included estimating the 'global' reduction in tonne-km moved by road, but also identifying the change in HGV number at key links on the national road network and the increase in the number of freight trains along links in the railway network.

15. With specific reference to ***Rail Central***, the GBFM has been used to estimate both the distribution of cargo nationally and the modal choice to and from the planned development (and by implication the impact on the national road network). Reference at this stage should be made to the attached note '*212008n_traffic forecasts_ver12 Nov2016*'.

16. Initially, the total daily volume of traffic to/from the warehousing planned for Rail Central was estimated from 'first principles' i.e. outside the GBFM. This is fully described in pages 2-4 of the attached note.

17. The GBFM was then employed to establish the distribution of cargo nationally by commodity to and from the Northampton area (from the GBFM's base matrix as described). The estimated daily inbound and outbound traffic passing through the warehousing at Rail Central (i.e. that shown in Table 2 from the attached technical note) was subsequently distributed nationally in proportion with that from the wider Northampton area. It has been assumed that cargo from the Rail Central warehouses will broadly have the same origins and destinations of cargo as that experienced by existing distribution centres in Northampton. The GBFM distributes cargo to and from PCDs local/adjacent to Northampton and PCDs more distant. Likewise the estimated Rail Central traffic, meaning it is capturing both local and longer distance flows.

18. The GBFM's mode-choice assignment model, as described, was then employed to estimate the modal choice to and from Rail Central. There were two elements to this process. Firstly, the forecast traffic to/from the planned warehousing (as estimated and distributed nationally) was inputted into the mode-choice assignment model, with the road-rail modal split subsequently established (outputs shown in Table 3 of the traffic forecasting attached note).

19. Secondly, there will be existing non rail-served warehouses in the Northampton area currently receiving/despatching goods by road. Given the availability of the intermodal terminal at Rail Central, some of these flows could in future arrive/depart by rail via Rail Central (with the short

final delivery leg undertaken by road). The GBFM's mode-choice assignment model was therefore run both with and without the Rail Central intermodal terminal included in the user-defined assumptions, with the level of rail traffic to/from off-site distributors that potentially will be generated subsequently established. The model estimates this to be 1,080,000 tonnes per annum inbound and outbound, equating to 165 HGV-equivalent units per day (i.e. 1.080,000 tonnes collected/delivered currently by road, but would switch to intermodal rail via Rail Central). The two elements were then added together to estimate total rail traffic to/from the development.

20. In order to calculate the mode share of traffic to/from locations across the country, assumptions need to be made about whether the other ends of journeys are rail-connected or not. If the other end of the journey is a rail-served warehouse, the whole journey can be by rail and there is no need for a local road haul, thus making rail a more viable option. It has been assumed that several sites for rail-served warehousing across the country will be built in the coming decades. Given that some planned sites may not be built, while other nearby sites may be brought forward, the assumptions include typical locations suitable for rail-served warehousing which are representative of specific projects and plans.

21. It should be noted that the baseline assumptions adopted in this mode-choice assignment process (including the approach to other rail-served warehousing across the country) reflect those used for the national rail freight demand forecasts produced by the GBFM to inform Network Rail's Freight Market Study in 2013. These were subsequently used to underpin the policy conclusions contained in the National Planning Statement for National Networks (NPS); it states that the forecasts, and the measures used to produce them, are considered robust and that the Government accepts them for planning purposes (see paragraph 2.49 of the NPS). The rail freight demand forecasts included some 10 million square metres of new SRFI floor space being developed nationally, including DIRFT Phase 3, East Midlands Gateway and Rail Central. The freight traffic projections for Rail Central assume that other SRFI included in the Network Rail forecasts have been built. The modelling process therefore undertaken for Rail Central includes these 'nearby' sites. In broad terms, the model will route such off-site intermodal traffic via the nearest rail terminal. However, the growth nationally in SRFI floor space, particularly increasing the quantum of rail-served floor space in the north of England, Scotland and the South West, encourages more domestic flows by rail (flows between two rail-served sites, apart from over very short distances, should always be more cost competitive by rail.

GBFM – Project Applications

22. The GBFM and the methodology used to produce the traffic forecasts for Rail Central (as described above and in the accompanying technical note '*212008n_traffic forecasts_ver10 Oct2016*') has previously been adopted on other SRFI schemes. In particular, traffic forecasts for the proposed SRFI at Slough (*SIFE*, promoted by Goodman) were prepared using the GBFM and

methodology as described. This scheme was examined at a Public Inquiry in September 2015 with highways issues, including the forecasting tools and methodologies adopted to assess HGV trip generation, being common ground between Goodman and the respective highway authorities (i.e. Slough BC and Highways England).

23. HGV trip generation was initially forecast using the same methodology for Rail Central (i.e. using the GBFM as acknowledged at para 6.28 of the Planning Inspector's report), though traffic data from DIRFT and the TRICS database was also referenced to ensure the outputs were robust. This approach was subsequently agreed with Slough BC and Highways England. The Inspector concluded "There is no contrary technical evidence to cast doubt on the results" (para 12.52). The Secretary of State agreed with this position (para 19 of Decision Letter).

24. The Inspector also concluded that the forecasts provided by MDST (for Goodman) "indicate a significant modal shift within 15 years of operation" (para 12.144). Overall the Inspector concluded "All the indicators are that the risk of not attaining a high level of rail use would be low" (para 12.148). The Secretary of State agreed with this position (para 28 of Decision Letter, see also paras 19 and 27). In summary, therefore, use of the GBFM in forecasting HGV trip generation (and rail freight) has recently been accepted by highway authorities for a scheme similar in nature to Rail Central, and was subsequently accepted by the Planning Inspectorate and the Secretary of State.[1]

25. Other examples of where the GBFM have been used include:

- Providing the freight inputs into the DfT's National Transport Model (NTM). MDS Transmodal have recently begun work on supplying updated freight inputs to the NTM as part of an upgrade process;
- Providing national rail freight demand forecasts (to 2033 and 2043) which supported the preparation and under-pinned the conclusions contained in Network Rail's Freight Market Study in 2013 (http://www.networkrail.co.uk/improvements/planning-policies-and-plans/long-term-planning-process/market-studies/freight/)
- The national rail freight demand forecasts were subsequently used to underpin the policy conclusions contained in the National Planning Statement for National Networks (NPS) (i.e. 'there is a compelling need for an expanded network of SRFIs');
- Transport for the North's Freight and Logistics Report (a major study for TfN undertaken by MDS Transmodal and Mott MacDonald). The GBFM was used to produce base line freight analysis and to test the potential strategy options emerging from the study (http://www.transportforthenorth.com/news/North-could-deliver-the-goods-for-the-UK-economy.html)
- Producing the economic case for longer semi-trailers (for DfT). MDS Transmodal advised the DfT on the economic case for introducing longer HGV semi-trailers in Great Britain. The

[1] Planning consent for SIFE was refused by the Secretary of State in July 2016 which was due to greenbelt policy rather than highway connectivity issues which, as noted, were common ground between all parties

GBFM was used to undertake forecasts demonstrating wider economic and environmental benefits. A trial has since been undertaken, with the DfT recently reporting significant benefits (https://www.gov.uk/government/news/more-efficient-lorries-cut-road-congestion-and-improve-air-quality)

APPENDIX C

NSTM 2021 AND 2031 FORECAST REPORT

INITIAL OUTPUTS TECHNICAL NOTE

2021/2031 LARGE COMMITTED DEVELOPMENT ASSUMPTIONS AND LOCATIONS

WSP | PARSONS BRINCKERHOFF

District	Reference	Development	Zone	Dwellings By 2031	Employees By 2031	A1 Floorspace By 2031 (sqm)	Schools By 2031	Dwellings By 2021	Employees By 2021	A1 Floorspace By 2021 (sqm)	Schools By 2021
Corby	C11	Priors Hall (Housing & b-class employment)	701	1659	205		300	1399			
Corby	C12	Priors Hall (Housing & b-class employment)	702	871	107						
Corby	C13	Priors Hall (Housing & b-class employment)	703	367	45			175			
Corby	C14	Priors Hall (Housing & b-class employment)	704	1996	246						
Corby	C15	Priors Hall (Non b-class employment)	701		83	1661					
Corby	C16	Priors Hall (Non b-class employment)	702		44	872					
Corby	C17	Priors Hall (Non b-class employment)	703		18	368					
Corby	C18	Priors Hall (Non b-class employment)	704		100	1999					
Corby	C19	Land West of Stanion (Little Stanion)	705	594	51	1016		468			
Corby	C20	Stanion Lane Plantation, Corby	705		3009				1504		
Corby	C21	Former Gefco automative site	696		1066				533		
Corby	C22	Land at Cockerell Road, Corby	58		525				263		
Corby	C23	Seymour Plantation, Rockingham Road, Corby	206		417				208		
Corby	C26	Weldon Park (housing & non b-class jobs)	706	991	72	804		530			
Corby	C3	TC & R03 - Retail Expansion	57		775	15500					
Corby	C59	Land South of Brooke Weston Academy	404	530				170			
Corby	C66	Rockingham Enterprise Zone	665		6133						
Corby	C7	West Corby	658	3495	726		2391	300			
Corby	C8	West Corby	678	471	205		677	300			
Daventry	D13	Land at Monkmoor Farm	710	1000	83	1200		80		1200	
Daventry	D18	Daventry North East SUE	825	2600	572	300		600			
Daventry	D19	Mickle Well Park	743	450				450			
Daventry	D20	Daventry Town Centre	720	300	1300			165			
Daventry	D22	DIRFT Phase III (Daventry International Rail Freight Interchange)	730		9000				2700		
Daventry	D23	Weedon Depot (Policy B6 in the JCS)	739		400				400		
East Northants	EN20	Irthlingborough West	407	672	849			185			
East Northants	EN21	North Raunds(West End), Raunds	547	230	527			230	263		
East Northants	EN27	Rushden Lakes (retail proposal)	691		1714	50800			857	25400	
East Northants	EN28	Warth Park Extension (Phase 2), Raunds	694		783				391		
East Northants	EN29	Rushden Strategic Site (Rushden East - RUS3)	729	1600	770			250			
East Northants	EN30	Vehicle Depot and Ajacent Land, Islip	648		788				394		
East Northants	EN31	Nene Valley Farm, Northampton Road, Rushden	657		700				350		
East Northants	EN64	Thrapston South (Phases 1 and 2)	479	150							
East Northants	EN65	Thrapston South (Phases 3 and 4)	479	499				275			
East Northants	EN76	Darsdale Farm, Chelveston Road	822	431				340			
East Northants	EN88	Deenethorpe Airfield Garden Village	693	1250	210			300			
Kettering	K22	Desborough North	659	560				450			
Kettering	K23	Rothwell North	660	791	236			490			
Kettering	K24	East of Kettering	662	825				825			
Kettering	K25	East of Kettering	675		103						
Kettering	K26	East of Kettering	689	953				953			
Kettering	K27	East of Kettering	690	670				117			
Kettering	K28	East of Kettering	722	937	129						
Kettering	K31	A14 J10 Business Park	717		699				349		
Kettering	K35	Weekley Wood Development Area, Kettering	733		801				401		
Kettering	K36	Kettering South (A14 jcn 9/A509)	724		822				411		
Kettering	K37	Kettering South (A14 jcn 9/A509)	725		281				141		
Kettering	K39	North Kettering	731		785				392		
Kettering	K48	Westhill (land at)	663	460				460			
Kettering	K6	SHQ1 Wadcroft/Newlands Phase 1	661		800	16000					

District	Reference	Development	Zone	Dwellings By 2031	Employees By 2031	A1 Floorspace By 2031 (sqm)	Schools By 2031	Dwellings By 2021	Employees By 2021	A1 Floorspace By 2021 (sqm)	Schools By 2021
Northampton	N54	Northampton North SUE (Policy N3) 1	666	150				150			
Northampton	N55	Northampton West SUE (Policy N4)	667	2500		1200	1050	300			1050
Northampton	N56	Northampton South SUE (Policy N5) 1	668	1000		700		350			
Northampton	N57	Northampton South of Brackmills SUE (Policy N6)	669	1300		700	420	400			420
Northampton	N59	Northampton North SUE (Policy N3) 2	679	1850	1316	2000	840	675			840
Northampton	N61	The Waterside: St Peter's Way	709	270	2389						
Northampton	N62	Northampton North of Whitehills	711	1050	236	700	300	250			
Northampton	N64	Upton Park (Policy N9)	713	1000		700	420	350			
Northampton	N65	Dallington Grange (Policies H1, H5 - Policy N8)	714	3000	1432	1800	840	350			
Northampton	N66	Upton Lodge (excluding Norwood Farm) (Policy H4)	715	1801				500			
Northampton	N67	Upton Lodge (Norwood Farm)	716	1699		1800	1050	500			
Northampton	N68	Ransome Road	718	400				200			
Northampton	N69	University Nunn Mills	748		1806				1806		
Northampton	N70	Princess Marina Hospital	719	550				550			
Northampton	N71	Pineham (Policy D13,14)	723	646							
Northampton	N72	Northampton South SUE (Policy N5) 2	728	1000			420	250			
Northampton	N73	Northampton North SUE (Policy N3) 3	737	1500				250			
Northampton	N74	Castle Station	738	270	1663						
Northampton	N75	Bridge St/ St John/ Angel St Masterplan	740	561	2500			561	2500		
Northampton	N78	Northampton Junction 16 Employment	732		4556				4556		
Northampton	N79	University of Northampton, Park Campus	821	750				250			
Northampton	N81	Milton Ham (land east of M1 J15a)	676		826				826		
South Northants	SN1	Silverstone Circuit	746		2683						
South Northants	SN2	Silverstone Circuit	747		2683						
South Northants	SN3	Silverstone Circuit	749		2007						
South Northants	SN33	Towcester South SUE	671		1102	500					
South Northants	SN34	Towcester South SUE	680	2310				340			
South Northants	SN35	Radstone Fields (Policy B3)	721	1000	53	500	300	350			
South Northants	SN36	Land North of Turweston Road	726		422						
South Northants	SN39	South Northants - Roade Masterplan 1	823	307				250			
South Northants	SN40	South Northants - Roade Masterplan 2	824	125				75			
Wellingborough	W19	Sites E1 and E2 (Market Square and Tresham Institute)	664		909	18182					
Wellingborough	W20	Wellingborough East SUE	649		430						
Wellingborough	W21	Wellingborough East SUE	673	180				180			
Wellingborough	W22	Wellingborough East SUE	651	666				666			
Wellingborough	W23	Wellingborough East SUE	652	666				219			
Wellingborough	W24	Wellingborough East SUE	653	133							
Wellingborough	W25	Wellingborough East SUE	654	1190	430						
Wellingborough	W26	Wellingborough East SUE	655		430						
Wellingborough	W27	Wellingborough East SUE	656		430						
Wellingborough	W28	Park Farm Way/ Shelley Road	672	496				320			
Wellingborough	W29	Wellingborough North	674	278				278			
Wellingborough	W30	Wellingborough North	683	275				275			
Wellingborough	W31	Wellingborough North	684	275				275			
Wellingborough	W32	Wellingborough North	685	225				225			
Wellingborough	W33	Wellingborough North	686	87				87			
Wellingborough	W34	Wellingborough North	687		227						
Wellingborough	W35	Wellingborough North	688	175				175			
Wellingborough	W36	Wellingborough North	735	261				261			
Wellingborough	W37	Appleby Lodge, Wellingborough	692		1826				913		

Drawn By: ukjis001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Committed Developments (Residential) v2.mxd

Key

- Large Committed Development
- District Boundary

Priors Hall (4893 Dwellings)
Deenethorpe Airfield Garden Village (1250 Dwellings)
Weldon Park (991 Dwellings)
West Corby SUE (3996 Dwellings)
Land West of Stanion (594 Dwellings)
South of Brooke Weston Academy (530 Dwellings)
Desborough North (500 Dwellings)
Rothwell North (791 Dwellings)
Westhill (460 Dwellings)
East of Kettering (3385 Dwellings)
Thrapston South (649 Dwellings)
Darsdale Farm, Chelveston Road (431 Dwellings)
Wellingborough North (1577 Dwellings)
Irthlingborough West (672 Dwellings)
WEAST Development (2836 Dwellings)
Rushden East SUE (1600 Dwellings)
Northampton North SUE (1500 Dwellings)
Park Farm Way / Shelley Road (496 Dwellings)
Northampton North SUE (2000 Dwellings)
Northampton North of Whitehills (1050 Dwellings)
Mickle Well Park (450 Dwellings)
Land at Monkmoor Farm (1000 Dwellings)
Daventry North East SUE (2600 Dwellings)
Dallington Grange (3000 Dwellings)
Park Campus (750 Dwellings)
Northampton West SUE (2500 Dwellings)
Upton Lodge (1801 Dwellings)
Princess Marina Hospital (550 Dwellings)
Bridge St/St John/Angel St (561 Dwellings)
Norwood Farm (1699 Dwellings)
Upton Park (1000 Dwellings)
Ransome Road (400 Dwellings)
Pineham (646 Dwellings)
Northampton South of Brackmills (1300 Dwellings)
Northampton South SUE (2000 Dwellings)
Roade Masterplan (432 Dwellings)
Towcester South SUE (2310 Dwellings)
Radstone Fields (1000 Dwellings)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 2 4 6 8 Kilometres

WSP | PARSONS BRINCKERHOFF

LARGE COMMITTED DEVELOPMENTS IN NORTHAMPTONSHIRE

Drawn By: ukjjs001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Committed Developments (Employment) v2.mxd

Key

- Large Committed Development
- District Boundary

Seymour Plantation (417 Jobs)
Rockingham Enterprise Zone (6133 Jobs)
Priors Hall (849 Jobs)
Land at Cockerell Road (525 Jobs)
TC & R03 - Retail Expansion (775 Jobs)
Former Gefco Automative Site (1066 Jobs)
West Corby SUE (931 Jobs)
Stanion Lane Plantation (3009 Jobs)
North Kettering (785 Jobs)
Weekley Wood (801 Jobs)
Newlands Phase 1 (800 Jobs)
Vehicle Depot, Islip (788 Jobs)
A14 J10 Business Park (699 Jobs)
Kettering South (1103 Jobs)
North Raunds (527 Jobs)
Warth Park Extension Phase 2 (783 Jobs)
Irthlingborough West (649 Jobs)
WEAST Development (1722 Jobs)
Nene Valley Farm (700 Jobs)
Appleby Lodge (1826 Jobs)
Sites E1 and E2 (909 Jobs)
Rushden Lakes (1714 Jobs)
Rushden East SUE (770 Jobs)
Northampton North SUE (1316 Jobs)
DIRFT Phase III (9000 Jobs)
Daventry North East SUE (572 Jobs)
Daventry Town Centre (1300 Jobs)
Dallington Grange (1432 Jobs)
Castle Station (1663 Jobs)
Bridge St/St John/Angel St (2500 Jobs)
University Nunn Mills (1806 Jobs)
The Waterside: St Peter's Way (2389 Jobs)
Junction 16 (4556 Jobs)
Weedon Depot (400 Jobs)
Milton Ham (826 Jobs)
Towcester South SUE (1102 Jobs)
Silverstone Circuit (7374 Jobs)
Land North of Turweston Road (422 Jobs)

Contains Ordnance Survey data © Crown copyright and database right 2017.

0 2 4 6 8 Kilometres

WSP | PARSONS BRINCKERHOFF

LARGE COMMITTED DEVELOPMENTS IN NORTHAMPTONSHIRE

NSTM 2021 AND 2031 FORECAST REPORT

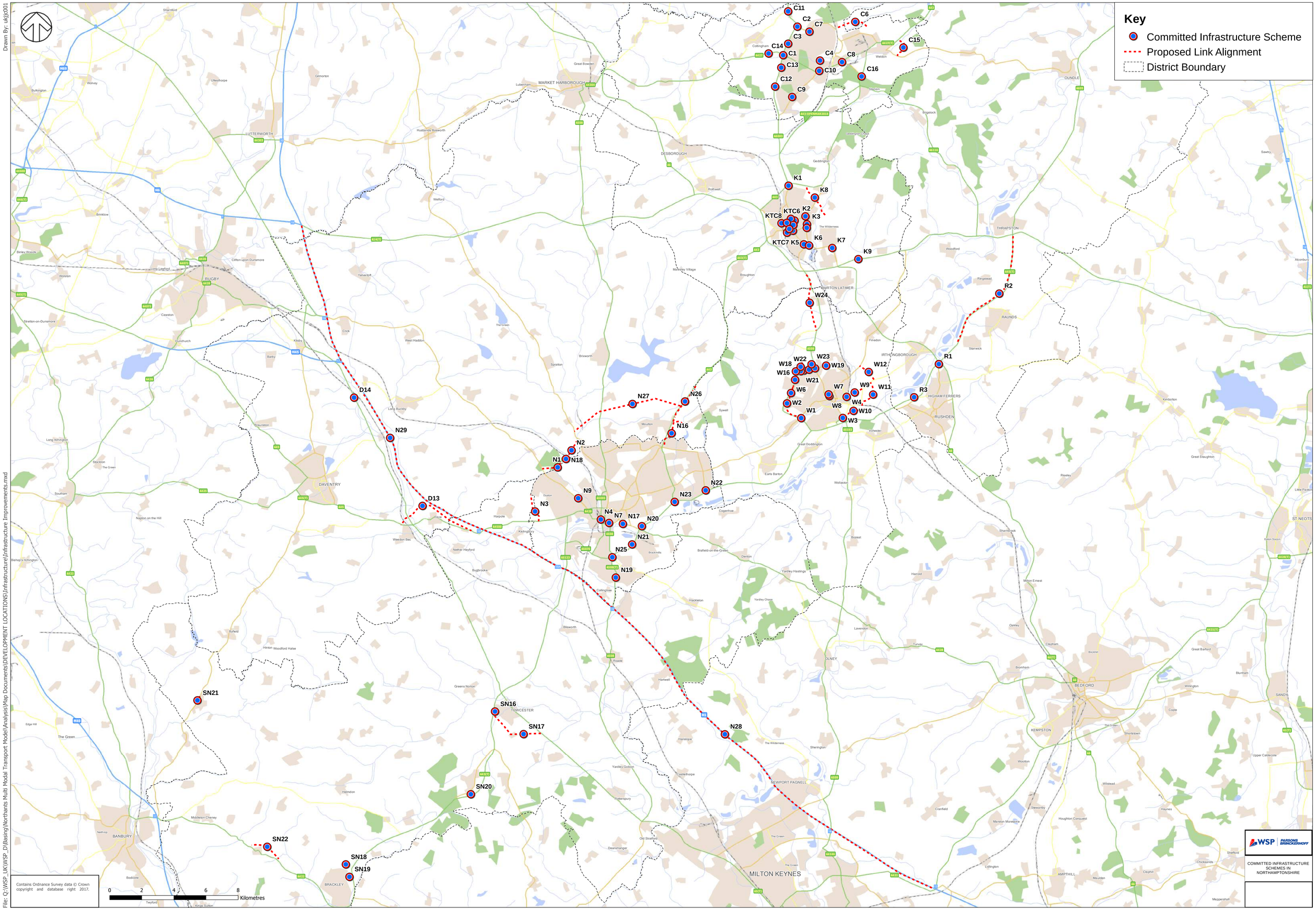
INITIAL OUTPUTS TECHNICAL NOTE

2021/2031 COMMITTED INFRASTRUCTURE SCHEMES AND LOCATIONS

WSP | PARSONS BRINCKERHOFF

District	Reference	Description	Mitigation	Built by 2031?	Built by 2021?
Corby	C1	A427 / Uppingham Road	Minor widening to northern Uppingham Road approach	Yes	Yes
Corby	C2	A6003 Rockingham Road / Uppingham Road	Minor widening to Rockingham Road approaches	Yes	Yes
Corby	C3	Vian Way / Uppingham Road	Three arm roundabout	Yes	No
Corby	C4	Elizabeth Street / Cottingham Road	Minor widening to eastern Cottingham Road arm	Yes	Yes
Corby	C6	Corby Northern Orbital – Phase 2	Between Rockingham Motor Speedway and Willowbrook East Industrial Estate	Yes	Yes
Corby	C7	Gretton Brook Road / A6116	Minor widening to western Rockingham Road approach	Yes	Yes
Corby	C8	A427 Weldon Road/ A6086 Lloyds Road/ A6086 Geddington Road	Minor widening to Lloyds Road and eastern A427 Weldon Road approach	Yes	No
Corby	C9	A6014 Oakley Road/ Danesholme Road/ Lewin Road	Minor widening to northern A6014 Oakley Road approach	Yes	No
Corby	C10	A427 Oakley Road/ A427 Westcott Way/ Oakley Road/ Elizabeth Street	Minor widening to all approaches	Yes	No
Corby	C11	A6003 Caldecott Road/A6003 Main Street/Gretton Road/Cottingham Road	Additional right turn lane on A6003 Caldecott Road	Yes	No
Corby	C12	Corby West - A6003 / Danesholme Road access	Four arm roundabout	Yes	Yes
Corby	C13	Corby West - Northern A6003 access / A427 access	Three arm roundabouts	Yes	No
Corby	C14	Corby West - A427 access	Three arm aroundabout	Yes	No
Corby	C15	A427 Weldon Relief Road		Yes	Yes
Corby	C16	A43 Stamford/ A6086 Geddington Road	Junction improvement for Stanion Plantation	Yes	Yes
Kettering	K1	A43/A6003 Rockingham Road/ Rockingham Road	Roundabout improvements	Yes	No
Kettering	K2	Montague Street/ Stamford Road/ Central Avenue/ Windmill Avenue	East of Kettering - Junction Improvement a	Yes	No
Kettering	K3	Windmill Avenue/ St Mary's Road	East of Kettering - Junction Improvement b	Yes	No
Kettering	K4	Windmill Avenue/Deeble Road	East of Kettering - Junction Improvement c	Yes	Yes
Kettering	K5	London Road/Barton Road/ Pytchley Road	East of Kettering - Junction Improvement	Yes	No
Kettering	K6	Barton Road/ Windmill Avenue	East of Kettering - Junction Improvement	Yes	No
Kettering	K7	Barton Road/Warkton Lane	East of Kettering - Access Junction E	Yes	No
Kettering	K8	Warkton-Weekley Avenue	Part of Phase 3 of East of Kettering development	Yes	No
Kettering	K9	Junction 10a	Improvement Scheme	Yes	No
Rushden	R1	Chowns Mill	Improvement Scheme	Yes	Yes
Rushden	R2	Stanwick to Thrapston	Online widening of the A45	Yes	No
Rushden	R3	A45 Skewbridge	Junction improvement for Rushden Lakes	Yes	Yes
Kettering Town Centre	KTC1	Northampton Road/ Station Road/ Bowling Green Road	Altered to take into account bus only links on Sheep Street	Yes	Yes
Kettering Town Centre	KTC2	Bowling Green Road/ London Road	Altered to take into account bus only links on Sheep Street / Market Street	Yes	No
Kettering Town Centre	KTC3	London Road/ Market Street	Altered to take into account Queen Street becoming two-way link	Yes	No
Kettering Town Centre	KTC4	Silver Street/ High Street	Altered to take into account new two-way links in town centre	Yes	No
Kettering Town Centre	KTC5	Montagu Street/ Victoria Street	Altered to take into account Victoria Street becoming two-way link	Yes	No
Kettering Town Centre	KTC6	Northall Street/ Eskdaill Street	Altered to take into account new two-way links in town centre	Yes	Yes
Kettering Town Centre	KTC7	Station Road	Made into two-way link	Yes	No
Kettering Town Centre	KTC8	Trafalgar Road to Northfield Avenue	Link road	Yes	No
Kettering Town Centre	KTC9	Queen Street	Made into two-way link	Yes	No
Kettering Town Centre	KTC10	20mph zone in city centre	Within Northall Street / Victoria Street / Northfield Avenue	Yes	No
Kettering Town Centre	KTC11	Sheep Street / Market Street	Made bus only; no through traffic	Yes	No
Wellingborough	W1	A4500/A509/Northampton Rd	Four arm signalised roundabout	Yes	No
Wellingborough	W2	A509 / Rutherford Drive	Improved capacity to A509 northern arm, taking into account Park Farm Way dualling	Yes	No
Wellingborough	W3	A509/Turnells Mill Lane/ Embankment	Four arm signalised roundabout	Yes	No
Wellingborough	W4	Senwick Road/ Elsden Road/ Midland Road	Signalised junction	Yes	Yes
Wellingborough	W6	Park Farm Way dualling	Included by changes to junction saturation flows	Yes	No
Wellingborough	W7	Northern Interceptor Road	Four arm junction with Alma Road / Park Road	Yes	No

District	Reference	Description	Mitigation	Built by 2031?	Built by 2021?
Wellingborough	W8	Church Street	Becomes bus only as part of TCAAP and introduction of one way system with interceptor road	Yes	No
Wellingborough	W9	Route 4 to WEAST	Part of the WEAST development	Yes	Yes
Wellingborough	W10	Route 2 to WEAST	Part of the WEAST development	Yes	No
Wellingborough	W11	Route 2 to WEAST extension	Part of the WEAST development	Yes	No
Wellingborough	W12	Eastern Relief Road (along Sidegate Lane)	Part of the WEAST development	Yes	No
Wellingborough	W14	A509 Niort Way / Kettering Road / A510 Northern Way / Harrowden Road	Northern arm changed to link related to IWIMP, A509 severed and downgraded	Yes	No
Wellingborough	W15	A509 Niort Way / Gleneagles Drive	Four arm roundabout	Yes	No
Wellingborough	W16	A509 Niort Way / Hardwick Road	Exit southbound into A509 dual carriageway	Yes	No
Wellingborough	W17	A509 Niort Way - Wellingborough North priority access	Between Gleneagles Drive & A509 / A510 / Harrowden Rd roundabouts	Yes	No
Wellingborough	W18	A509 Niort Way / IWIMP	Four arm roundabout	Yes	No
Wellingborough	W19	A510 Northern Way / Nest Farm Road	Four arm roundabout	Yes	No
Wellingborough	W21	A509 Niort Way	Upgraded to dual carriageway	Yes	No
Wellingborough	W22	IWIMP link	Connecting Isham Bypass to A509 Niort Way	Yes	No
Wellingborough	W23	IWIMP link / Red Hill Street	Through Wellingborough North development	Yes	Yes
Wellingborough	W24	Isham Bypass	Bypasses A509 Kettering Road	Yes	No
Northampton	N1	North – west bypass Phase 1	New Link between A428 to Grange Farm development	Yes	Yes
Northampton	N2	North – west bypass Phase 2	New Link between Grange Farm Development A5199	Yes	Yes
Northampton	N3	Sandy Lane Relief Road Phase 2	New Link between Weedon Road and the existing part of Sandy Lane	Yes	Yes
Northampton	N4	St Peters Way / Green Street	One signalised junction	Yes	Yes
Northampton	N7	Plough Junction Improvement	Allowing 2 way movement through Victoria Promenade and left hand filter lane onto Bridge St	Yes	Yes
Northampton	N9	Harlestone Road/Mill Lane Road Junction	Signalisation of junction	Yes	No
Northampton	N16	Moulton Bypass	Construction of the Moulton Bypass	Yes	Yes
Northampton	N17	Northampton University Bedford Road Access	New Northampton University Bedford Road site signalised access junction	Yes	Yes
Northampton	N18	Dallington Grange Roundabout	New roundabout as part of Dallington Grange	Yes	Yes
Northampton	N19	NGMS: A45 Wootton Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	Yes	No
Northampton	N20	NGMS: A45 Barnes Meadow Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	Yes	No
Northampton	N21	NGMS: A45 Brackmills Interchange	Junction upgrade as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes
Northampton	N22	NGMS: A45 Great Billing Interchange	Junction upgrade (with MOVA controlled traffic signals) as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes
Northampton	N23	NGMS: A45 Lumbertubs Interchange	Ramp metering as part of the Northampton Growth Management Scheme (NGMS)	Yes	No
Northampton	N25	NGMS: A45 Queen Eleanor Interchange	Junction upgrade as part of the Northampton Growth Management Scheme (NGMS)	Yes	Yes
Northampton	N26	A43 Phase 2 and 3	Dualling to Holcot/Sywell	Yes	Yes
Northampton	N27	Northern Orbital		Yes	No
Northampton	N28	M1 Smart Motorway Junction 13 to 16	All lane running	Yes	Yes
Northampton	N29	M1 Smart Motorway Junction 16 to 19	All lane running	Yes	Yes
Daventry	D13	Daventry Development Link (Flore Bypass)	Bypass around Flore to avoid the A45/A5 junction	Yes	Yes
Daventry	D14	A5/B5385 Junction Improvement	Signalisation of junction	Yes	Yes
South Northants	SN16	Abthorpe Roundabout (Towcester)	Part signalisation of roundabout with widening of roundabout and approaches	Yes	Yes
South Northants	SN17	A5 Relief Road and Junction associated with SUE	New link road between A43 and A5 to the South of Towcester	Yes	Yes
South Northants	SN18	Halse Road Link	New link between the A43 and Radstone Road at Brackley	Yes	Yes
South Northants	SN19	Traffic Calming at Turweston Road	Speed limit dropped to 20mph	Yes	No
South Northants	SN20	A43 Dadford Road Junction at Silverstone	Signalisation of eastbound on slip	Yes	Yes
South Northants	SN21	Chipping Warden Relief Road	Bypass of Chipping Warden to west of village (HS2 scheme)	Yes	No
South Northants	SN22	A422 Farthinghoe Bypass	Bypass of Farthinghoe village	Yes	No



Drawn By: ukjjc001

File: Q:\WSP_UK\WSP_D\Basing\Northants Multi Modal Transport Model\Analysis\Map Documents\DEVELOPMENT LOCATIONS\Infrastructure\Infrastructure Improvements.mxd

Contains Ordnance Survey data © Crown copyright and database right 2017.

WSP | PARSONS BRINCKERHOFF

COMMITTED INFRASTRUCTURE SCHEMES IN NORTHAMPTONSHIRE

SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

A diverse group of results-oriented people, we are part of a strong team of professionals worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.

For more information visit www.systra.co.uk

Birmingham – Newhall Street
5th Floor, Lancaster House, Newhall St,
Birmingham, B3 1NQ
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

Birmingham – Innovation Court
Innovation Court, 121 Edmund Street, Birmingham B3 2HJ
T: +44 (0)121 230 6010

Bristol
10 Victoria Street, Bristol, BS1 6BN
T: +44 (0)117 922 9040

Dublin
2nd Floor, Riverview House, 21-23 City Quay
Dublin 2,Ireland
T: +353 (0) 1 905 3961

Edinburgh – Thistle Street
Prospect House, 5 Thistle Street, Edinburgh EH2 1DF
United Kingdom
T: +44 (0)131 220 6966

Edinburgh – Manor Place
37 Manor Place, Edinburgh, EH3 7EB
Telephone +44 (0)131 225 7900 Fax: +44 (0)131 225 9229

Glasgow – St Vincent St
Seventh Floor, 124 St Vincent Street
Glasgow G2 5HF United Kingdom
T: +44 (0)141 225 4400

Glasgow – West George St
250 West George Street, Glasgow, G2 4QY
T: +44 (0)141 221 4030 F: +44 (0)800 066 4367

Leeds
100 Wellington Street, Leeds, LS1 1BA
T: +44 (0)113 397 9740 F: +44 (0)113 397 9741

Liverpool
Cotton Exchange, Bixteth Street, Liverpool, L3 9LQ
T: +44 (0)151 230 1930

London
3rd Floor, 5 Old Bailey, London EC4M 7BA United Kingdom
T: +44 (0)203 714 4400

Manchester – 16th Floor, City Tower
16th Floor, City Tower, Piccadilly Plaza
Manchester M1 4BT United Kingdom
T: +44 (0)161 831 5600

Newcastle
Floor B, South Corridor, Milburn House, Dean Street, Newcastle, NE1 1LE
United Kingdom
T: +44 (0)191 260 0135

Perth
13 Rose Terrace, Perth PH1 5HA
T: +44 (0)1738 621 377 F: +44 (0)1738 632 887

Reading
Soane Point, 6-8 Market Place, Reading,
Berkshire, RG1 2EG
T: +44 (0)118 334 5510

Woking
Dukes Court, Duke Street
Woking, Surrey GU21 5BH United Kingdom
T: +44 (0)1483 728051 F: +44 (0)1483 755207

Other locations:

France:
Bordeaux, Lille, Lyon, Marseille, Paris

Northern Europe:
Astana, Copenhagen, Kiev, London, Moscow, Riga, Wroclaw

Southern Europe & Mediterranean: Algiers, Baku, Bucharest,
Madrid, Rabat, Rome, Sofia, Tunis

Middle East:
Cairo, Dubai, Riyadh

Asia Pacific:
Bangkok, Beijing, Brisbane, Delhi, Hanoi, Hong Kong, Manila, Seoul, Shanghai, Singapore, Shenzhen, Taipei

Africa:
Abidjan, Douala, Johannesburg, Kinshasa, Libreville, Nairobi

Latin America:
Lima, Mexico, Rio de Janeiro, Santiago, São Paulo

North America:
Little Falls, Los Angeles, Montreal, New-York, Philadelphia, Washington

SYSTRA

Rail Central Northampton

Reference number 104176

09/10/2017

STRATEGIC MODELLING ASSESSMENT

Transport Planning Associates
20 1997-2017

RAIL CENTRAL NORTHAMPTON

STRATEGIC MODELLING ASSESSMENT

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates
Project	Rail Central Northampton
Study	Strategic Modelling Assessment
Type of document	Figures Document
Date	09/10/2017
File name	RP001b-104176-Rail Central Strategic Modelling Assessment - Figures Document - Final.docx
Reference number	104176
Number of pages	73

APPROVAL

Version	Name		Position	Date	Modifications
1	Author	Saiful Islam	Assistant Consultant	03/10/2017	
	Checked by	Dave Cope	Senior Consultant	06/10/2017	
	Approved by	Duncan Irons	Market Director	09/10/2017	
2	Author			DD/MM/YY	
	Checked by			DD/MM/YY	
	Approved by			DD/MM/YY	

TABLE OF CONTENTS

OVERVIEW 7

1.	INTRODUCTION	8
1.1	BACKGROUND	8
1.2	PREVIOUS TECHNICAL NOTES	8
2.	RAIL CENTRAL DEVELOPMENT PROPOSALS	9
2.1	SITE LOCATION AND ACCESS	9
2.2	LAND USE PROPOSALS	9
2.3	ASSESSMENT YEARS AND TIME PERIODS	9
2.4	TRIP GENERATION	9
2.5	TRAFFIC DISTRIBUTION	9
2.6	AREA OF INFLUENCE	9
2.7	MODELLING REQUIREMENTS	9
3.	NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)	12
3.1	MODEL OVERVIEW	12
3.2	MODEL STRUCTURE	12
3.3	SOFTWARE PLATFORM	12
3.4	MODELLED AREA	12
3.5	MODEL TIME PERIODS	12
3.6	DEMAND SEGMENTATION AND USER CLASSES	12

4.	BASE YEAR VALIDATION	15
4.1	BACKGROUND	15
4.2	VALIDATION AND CALIBRATION COUNTS	15
4.3	RAIL CENTRAL CALIBRATION AND VALIDATION	15
5.	CORE SCENARIO ASSUMPTIONS	19
5.2	2021 AND 2031 CORE SCENARIO	19
5.3	GROWTH IN HIGHWAY TRIPS	19
5.4	JUNCTION CONGESTION	19
6.	2021 CORE SCENARIO: NO MITIGATION IMPACTS	24
6.1	OVERVIEW OF CHAPTER	24
6.2	TRIP DISTRIBUTION	24
6.3	REASSIGNMENT IMPACT	24
6.4	FLOW CHANGE	24
6.5	JUNCTION CONGESTION	24
6.6	NETWORK STATISTICS	24
7.	2031 CORE STRATEGY SCENARIO: NO MITIGATION IMPACTS	37
7.1	OVERVIEW OF CHAPTER	37
7.2	TRIP DISTRIBUTION	37
7.3	REASSIGNMENT IMPACT	37
7.4	FLOW CHANGE	37
7.5	JUNCTION CONGESTION	37
7.6	NETWORK STATISTICS	37

LIST OF FIGURES

Figure 1.	Site Location	10
Figure 2.	Area of Influence	11
Figure 3.	NSTM Model Structure	13
Figure 4.	NTSM Coverage	14
Figure 5.	Strategic Rail Freight Interchange ATC and TRADS count locations	16
Figure 6.	Strategic Rail Freight Interchange ANPR count locations	17
Figure 7.	Journey Time Routes	18
Figure 8.	Increase in Junction Congestion between 2015 Base and 2021 Core Scenario – Morning Peak	20
Figure 9.	Increase in Junction Congestion between 2015 Base and 2021 Core Scenario – Evening Peak	21
Figure 10.	Increase in Junction Congestion between 2015 Base and 2031 Core Scenario – Morning Peak	22
Figure 11.	Increase in Junction Congestion between 2015 Base and 2031 Core Scenario – Evening Peak	23
Figure 12.	2021 Core Scenario: All PCUs Trip Distribution – Morning Peak	25
Figure 13.	2021 Core Scenario: All PCUs Trip Distribution – Evening Peak	26
Figure 14.	2021 Core Scenario: HGV Trip Distribution – Morning Peak	27
Figure 15.	2021 Core Scenario: HGV Trip Distribution – Evening Peak	28
Figure 16.	2021 Core Scenario: Reassignment Impact – Morning Peak	29
Figure 17.	2021 Core Scenario: Reassignment Impact – Evening Peak	30
Figure 18.	2021 Core Scenario: Flow Change – Morning Peak	31
Figure 19.	2021 Core Scenario: Flow Change – Evening Peak	32
Figure 20.	2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak	33
Figure 21.	2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak	34
Figure 22.	2021 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak	35
Figure 23.	2021 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak	36
Figure 24.	2031 Core Scenario: Trip Distribution – Morning Peak	38
Figure 25.	2031 Core Scenario: Trip Distribution – Evening Peak	39
Figure 26.	2031 Core Scenario: HGV Trip Distribution – Morning Peak	40
Figure 27.	2031 Core Scenario: HGV Trip Distribution – Evening Peak	41
Figure 28.	2031 Core Scenario: Reassignment Impact – Morning Peak	42
Figure 29.	2031 Core Scenario: Reassignment Impact – Evening Peak	43
Figure 30.	2031 Core Scenario: Flow Change – Morning Peak	44
Figure 31.	2031 Core Scenario: Flow Change – Evening Peak	45
Figure 32.	2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak	46
Figure 33.	2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak	47
Figure 34.	2031 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak	48
Figure 35.	2031 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak	49

OVERVIEW

This figures document is to be used alongside the core report – 'RP001-104176 Rail Central Strategic Modelling Assessment'. The following headings follow those within that report to enable the referencing of the figures easier.

1. INTRODUCTION

1.1 BACKGROUND

1.2 PREVIOUS TECHNICAL NOTES

2. RAIL CENTRAL DEVELOPMENT PROPOSALS

2.1 SITE LOCATION AND ACCESS

- Figure 1. Site Location

2.2 LAND USE PROPOSALS

2.3 ASSESSMENT YEARS AND TIME PERIODS

2.4 TRIP GENERATION

2.5 TRAFFIC DISTRIBUTION

2.6 AREA OF INFLUENCE

- Figure 2. Area of Influence

2.7 MODELLING REQUIREMENTS

Figure 1. Site Location

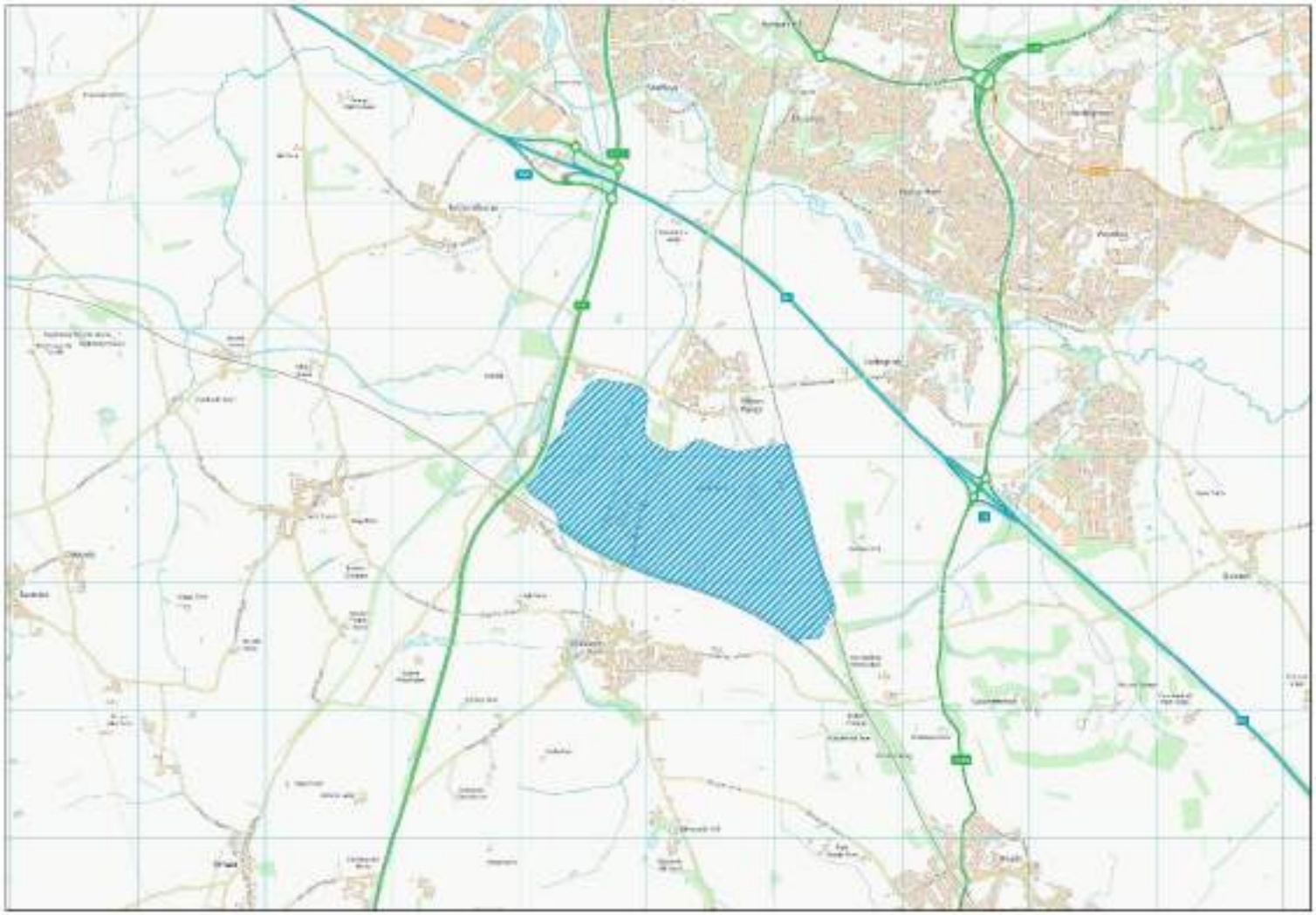
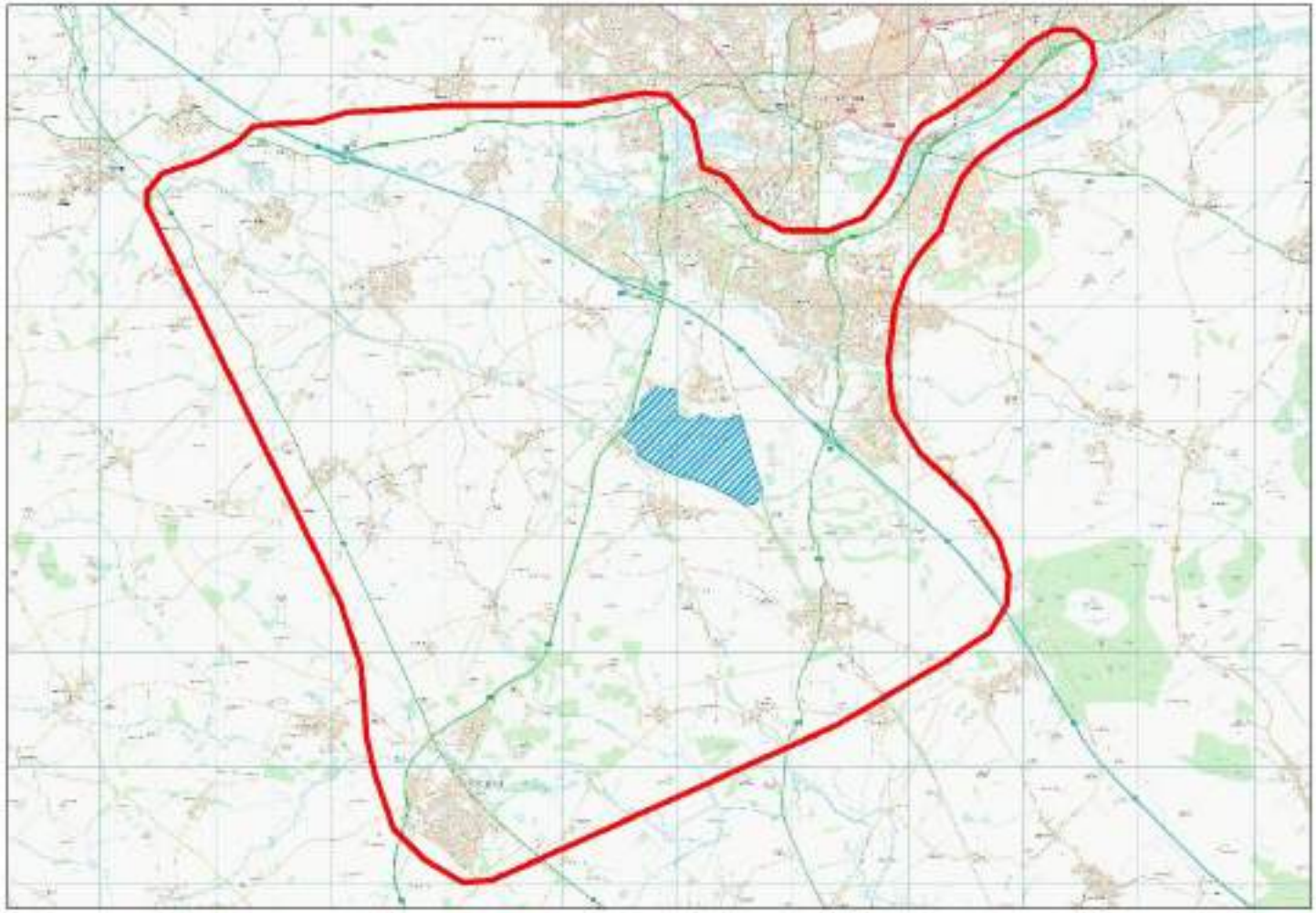


Figure 2. Area of Influence



3. NORTHAMPTONSHIRE STRATEGIC TRANSPORT MODEL (NSTM)

3.1 MODEL OVERVIEW

3.2 MODEL STRUCTURE

- Figure 3. NSTM Model Structure

3.3 SOFTWARE PLATFORM

3.4 MODELLED AREA

- Figure 4. NTSM Coverage

3.5 MODEL TIME PERIODS

3.6 DEMAND SEGMENTATION AND USER CLASSES

Figure 3. NSTM Model Structure

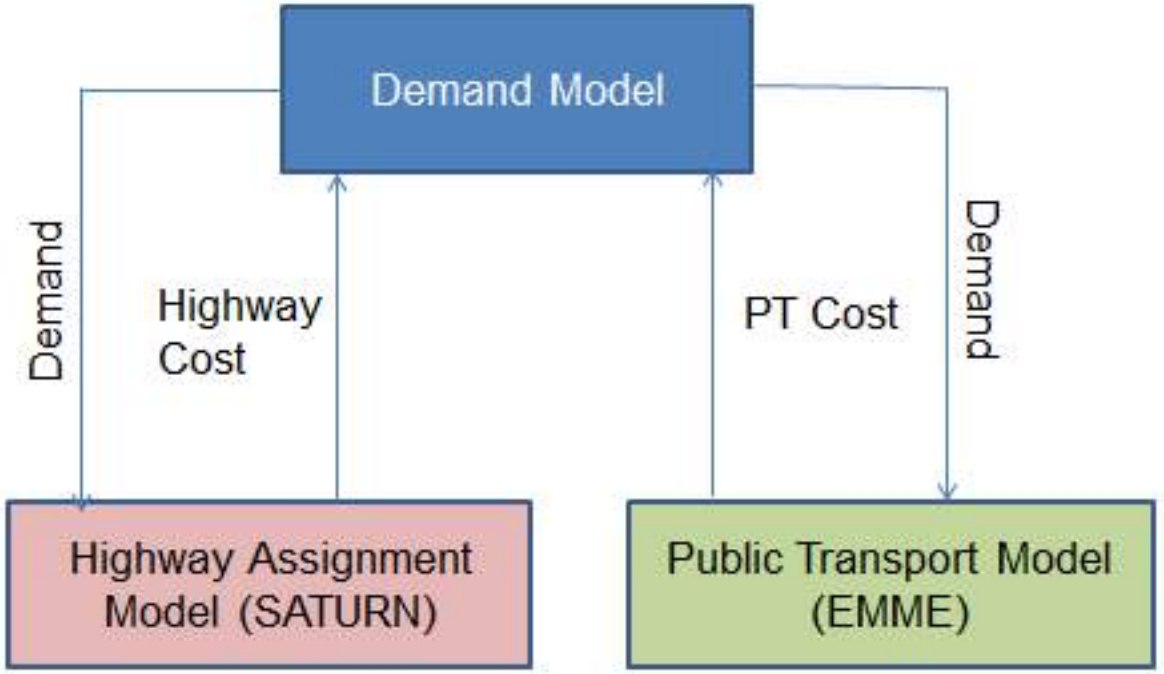
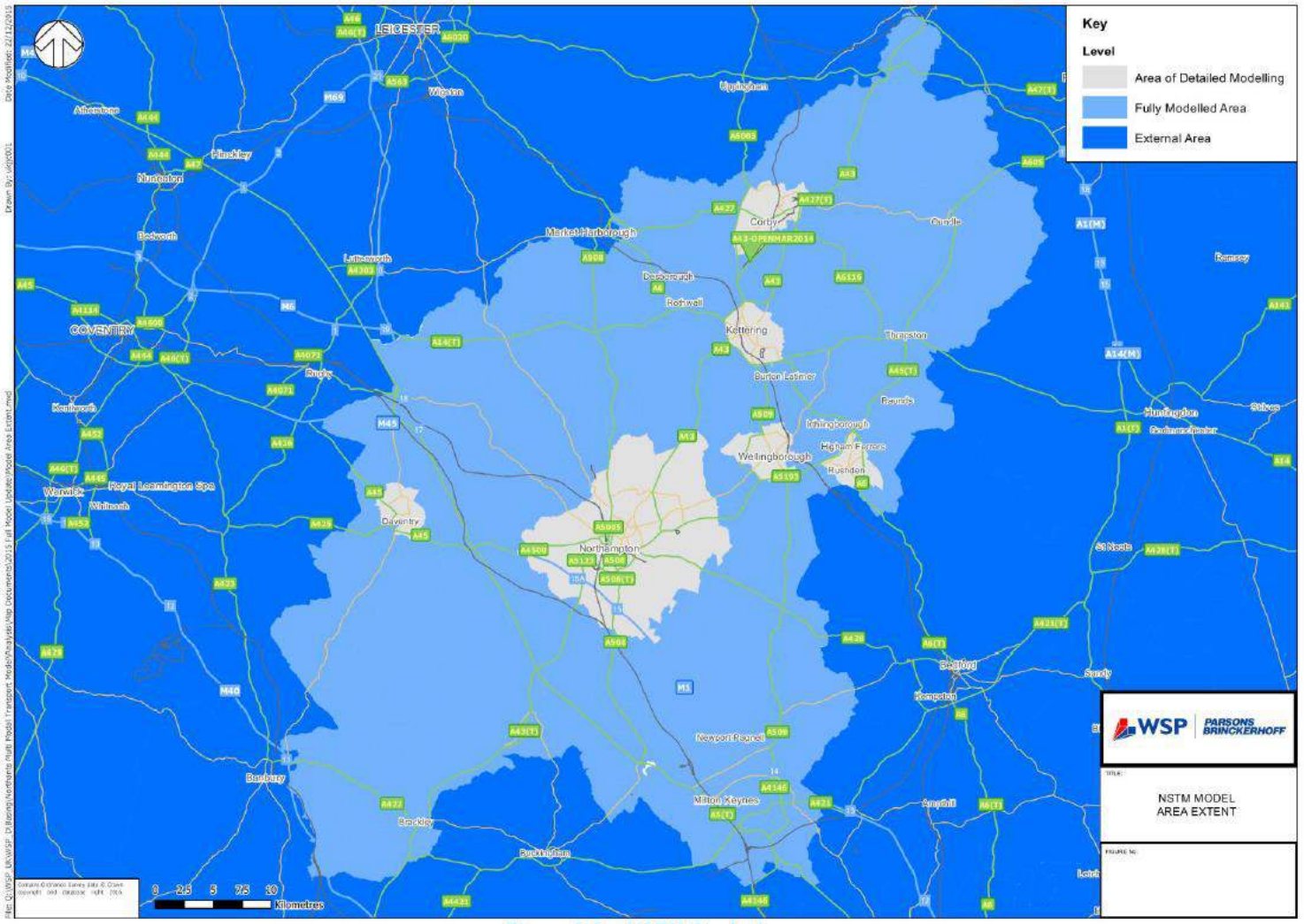


Figure 4. NTSM Coverage



4. BASE YEAR VALIDATION

4.1 BACKGROUND

4.2 VALIDATION AND CALIBRATION COUNTS

- Figure 5. Strategic Rail Freight Interchange ATC and TRADS count locations
- Figure 6. Strategic Rail Freight Interchange ANPR count locations

4.3 RAIL CENTRAL CALIBRATION AND VALIDATION

- Figure 7. Journey Time Routes

Figure 5. Strategic Rail Freight Interchange ATC and TRADS count locations

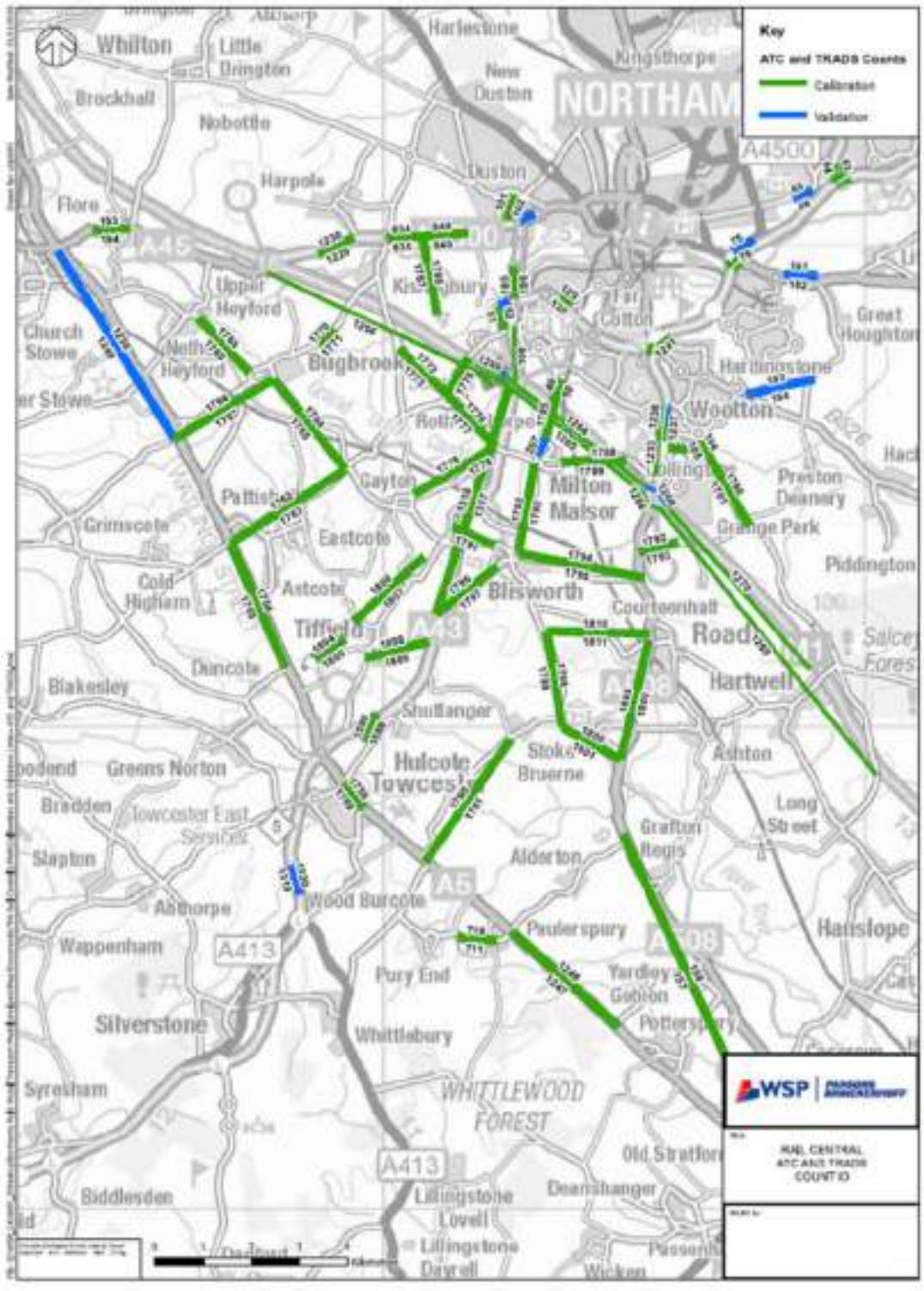


Figure 6. Strategic Rail Freight Interchange ANPR count locations

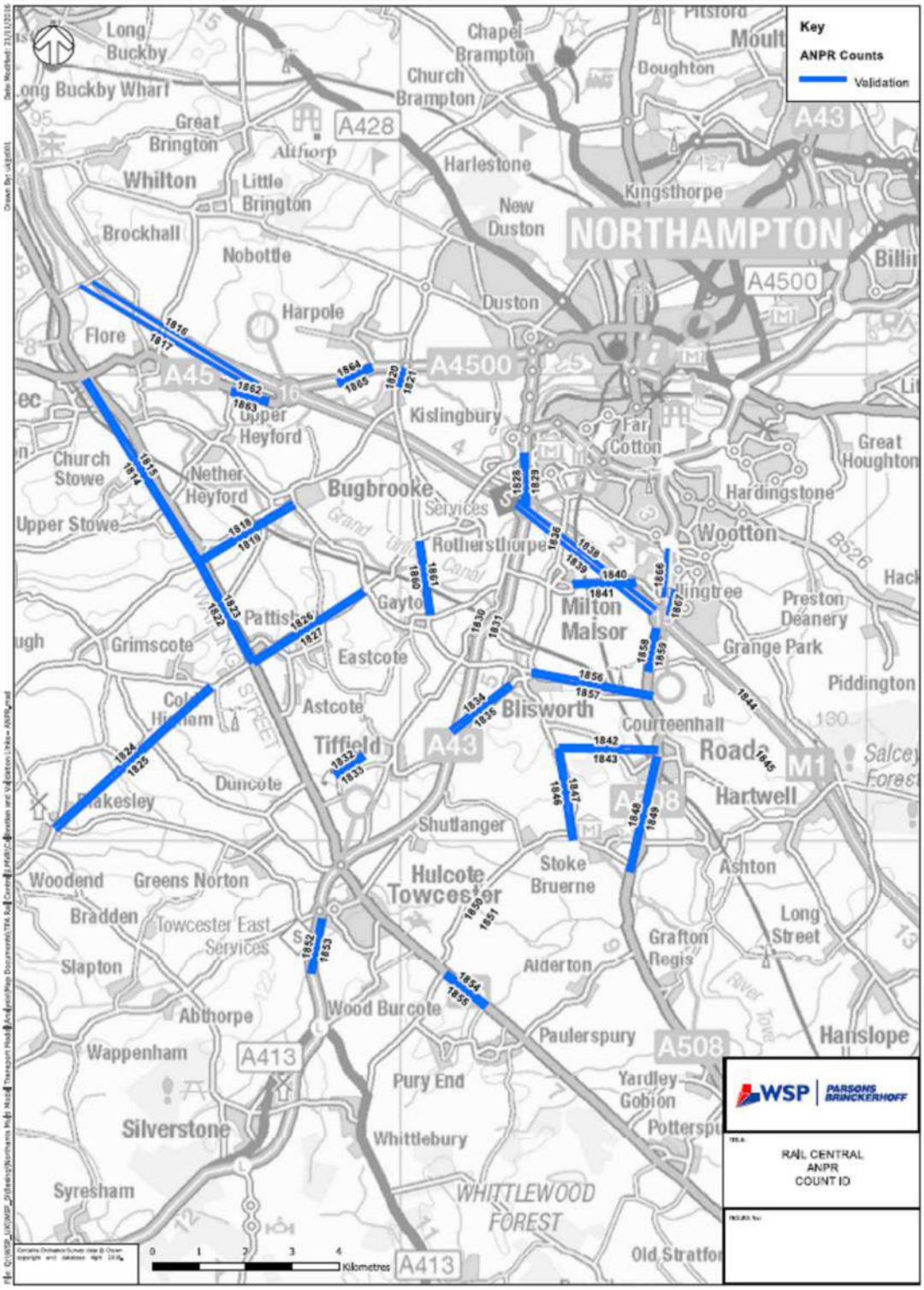
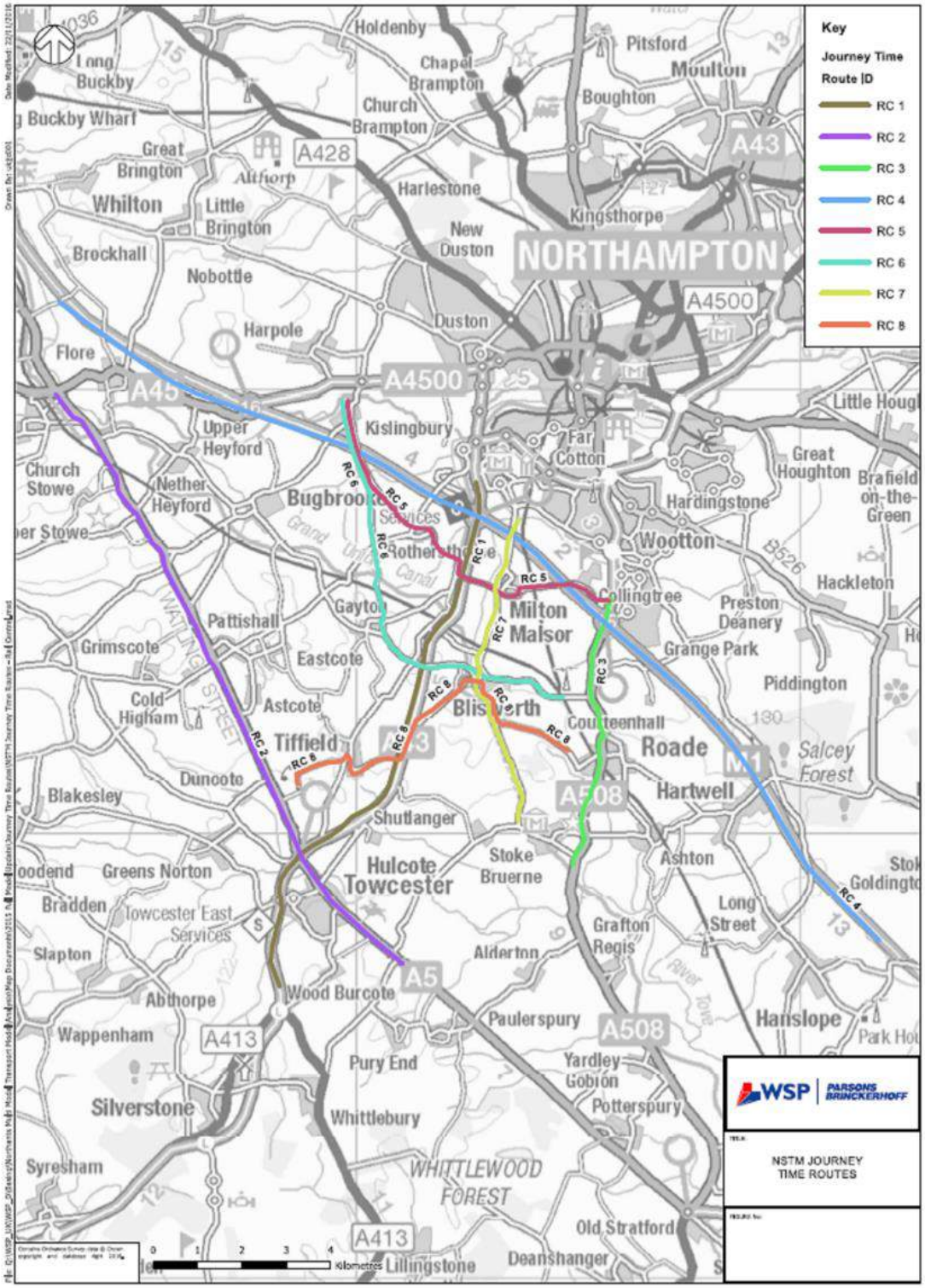


Figure 7. Journey Time Routes



5. CORE SCENARIO ASSUMPTIONS

5.2 2021 AND 2031 CORE SCENARIO

5.3 GROWTH IN HIGHWAY TRIPS

5.4 JUNCTION CONGESTION

- Figure 8. Increase in Junction Congestion between 2015 Base and 2021 Core Scenario – Morning Peak
- Figure 9. Increase in Junction Congestion between 2015 Base and 2021 Core Scenario – Evening Peak
- Figure 10. Increase in Junction Congestion between 2015 Base and 2031 Core Scenario – Morning Peak
- Figure 11. Increase in Junction Congestion between 2015 Base and 2031 Core Scenario – Evening Peak

Figure 8. Increase in Junction Congestion between 2015 Base and 2021 Core Scenario – Morning Peak

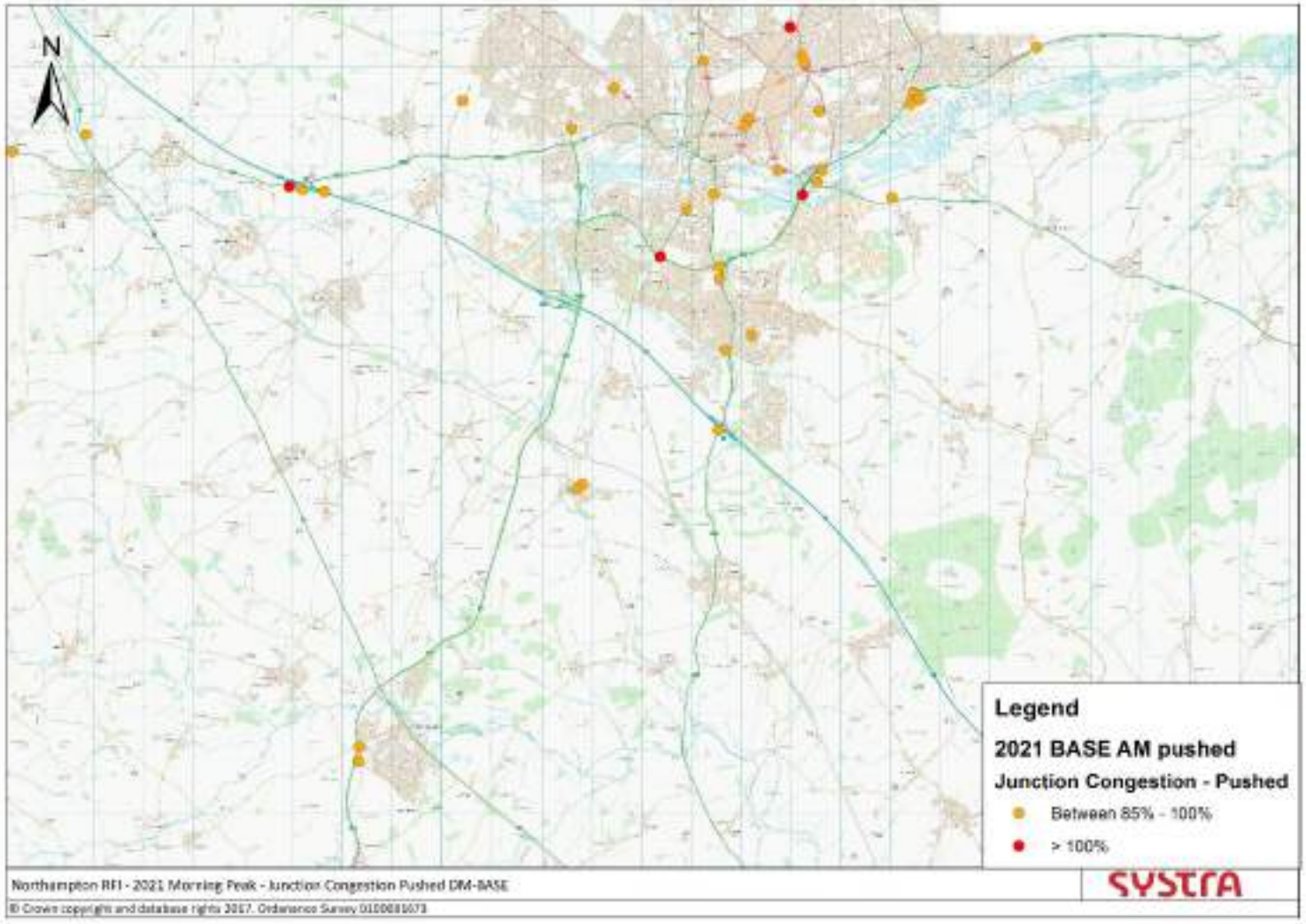


Figure 9. Increase in Junction Congestion between 2015 Base and 2021 Core Scenario – Evening Peak

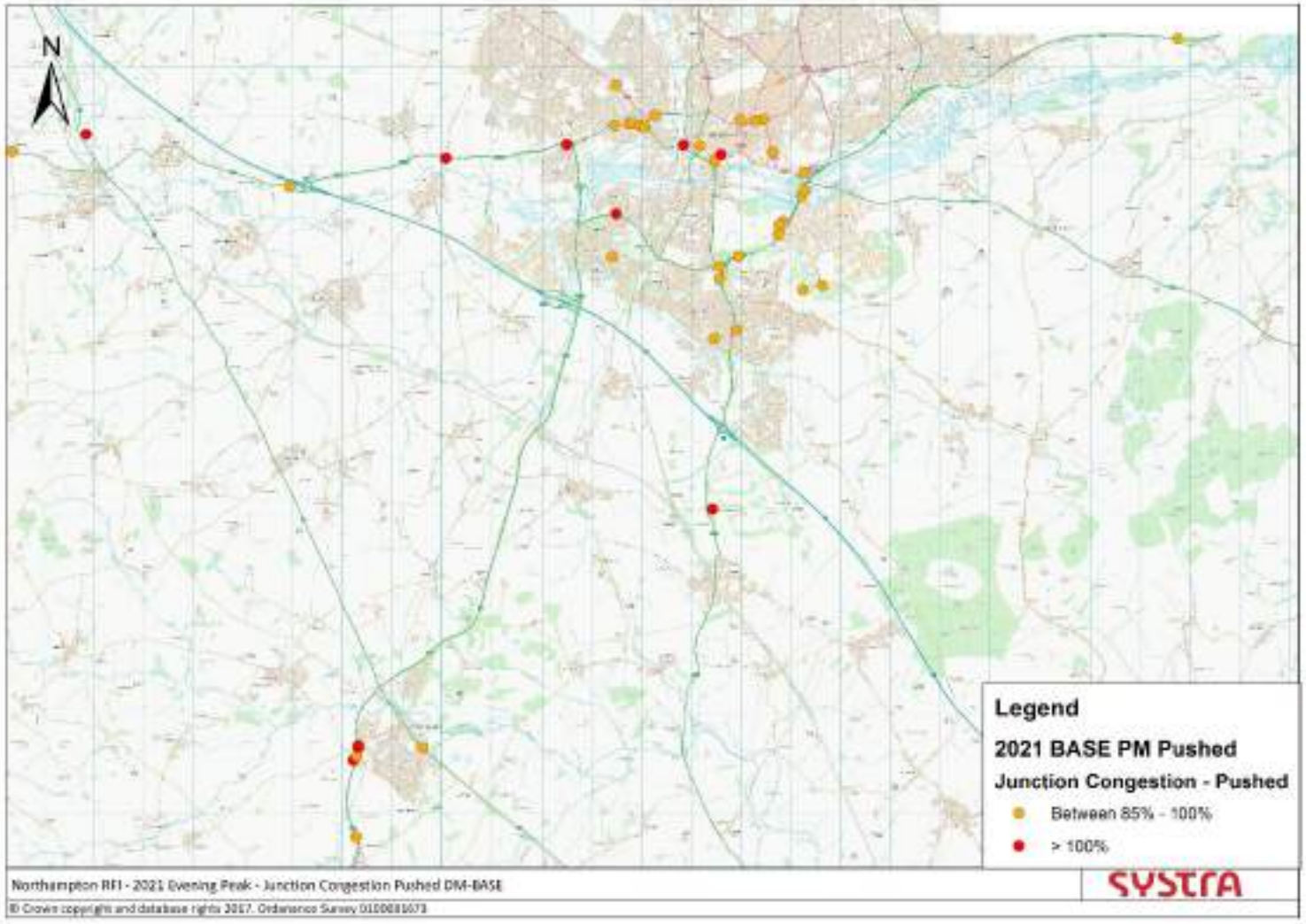


Figure 10. Increase in Junction Congestion between 2015 Base and 2031 Core Scenario – Morning Peak

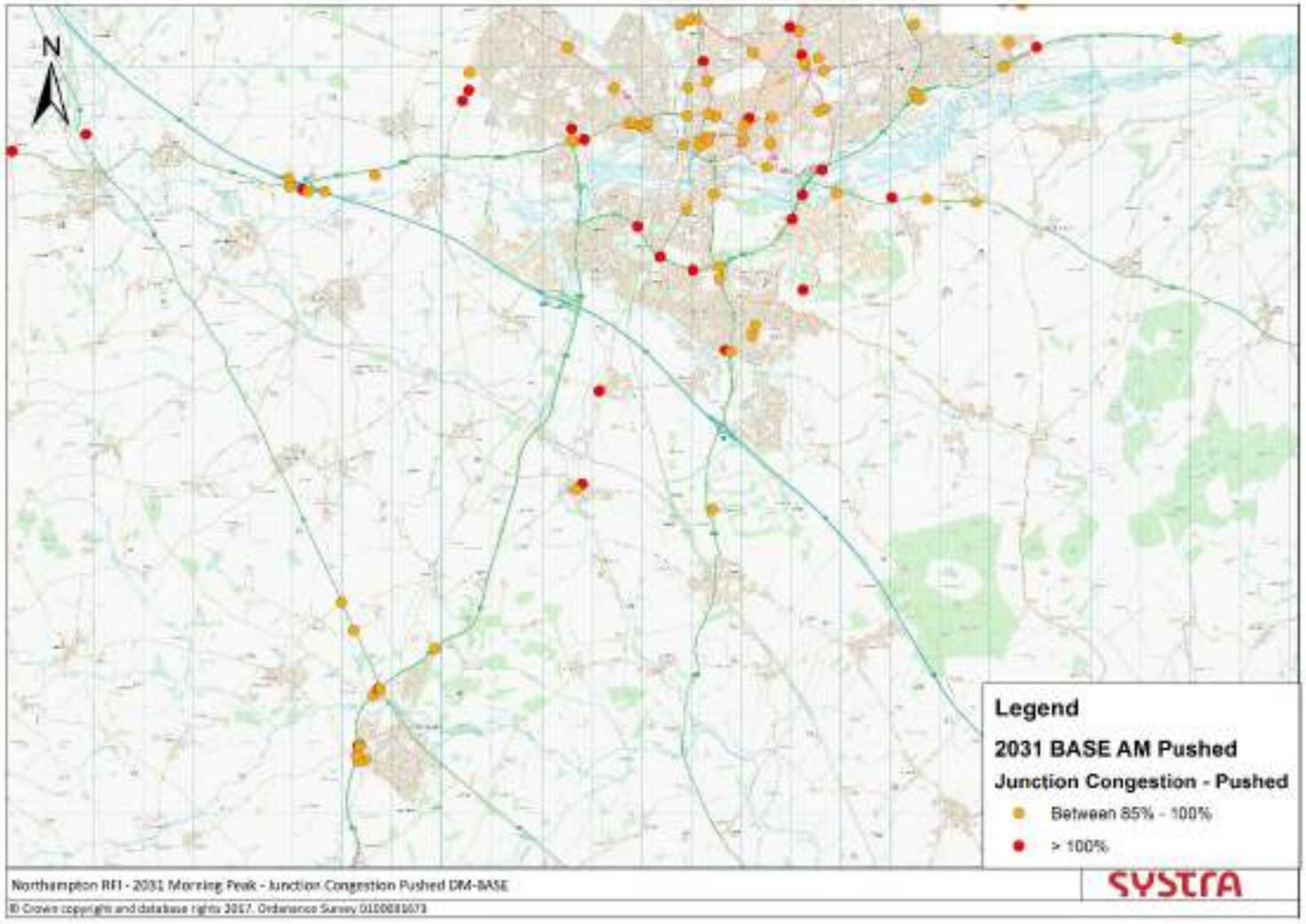
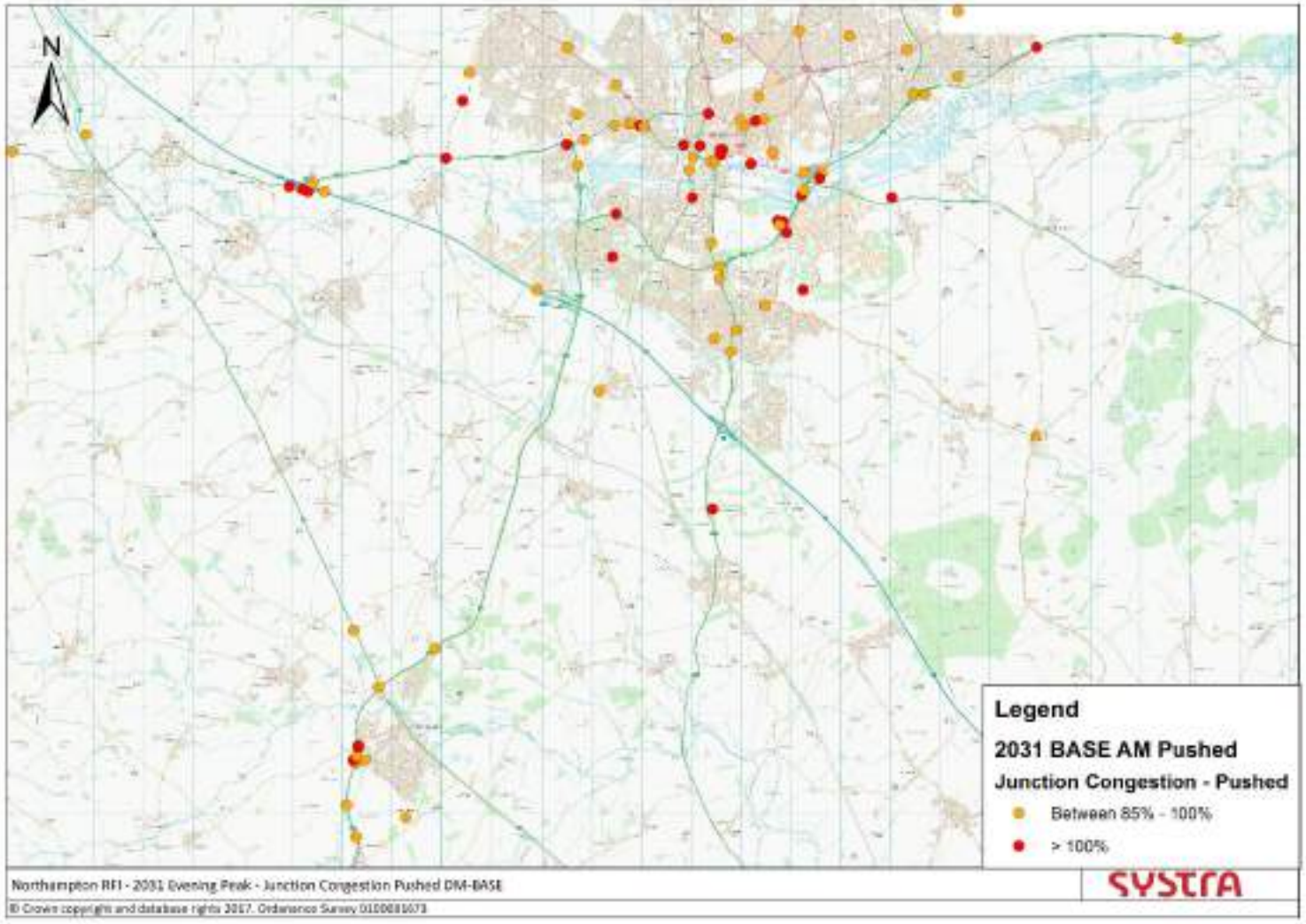


Figure 11. Increase in Junction Congestion between 2015 Base and 2031 Core Scenario – Evening Peak



6. 2021 CORE SCENARIO: NO MITIGATION IMPACTS

6.1 OVERVIEW OF CHAPTER

6.2 TRIP DISTRIBUTION

- Figure 12. 2021 Core Scenario: All PCUs Trip Distribution – Morning Peak
- Figure 13. 2021 Core Scenario: All PCUs Trip Distribution – Evening Peak
- Figure 14. 2021 Core Scenario: HGV Trip Distribution – Morning Peak
- Figure 15. 2021 Core Scenario: HGV Trip Distribution – Evening Peak

6.3 REASSIGNMENT IMPACT

- Figure 16. 2021 Core Scenario: Reassignment Impact – Morning Peak
- Figure 17. 2021 Core Scenario: Reassignment Impact – Evening Peak

6.4 FLOW CHANGE

- Figure 18. 2021 Core Scenario: Flow Change – Morning Peak
- Figure 19. 2021 Core Scenario: Flow Change – Evening Peak

6.5 JUNCTION CONGESTION

- Figure 20. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak
- Figure 21. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak
- Figure 22. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak
- Figure 23. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak

6.6 NETWORK STATISTICS

Figure 12. 2021 Core Scenario: All PCUs Trip Distribution – Morning Peak

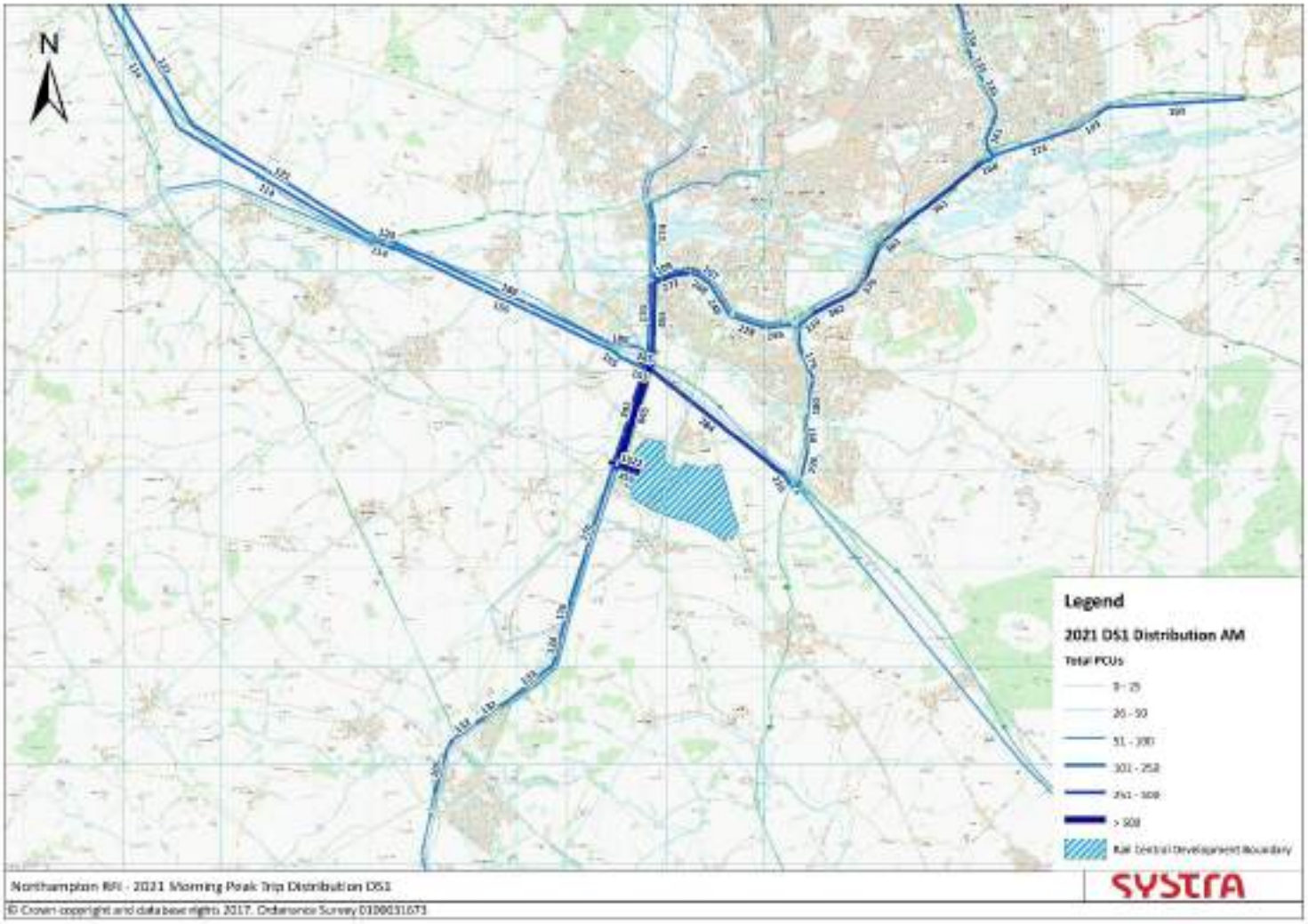


Figure 13. 2021 Core Scenario: All PCUs Trip Distribution – Evening Peak

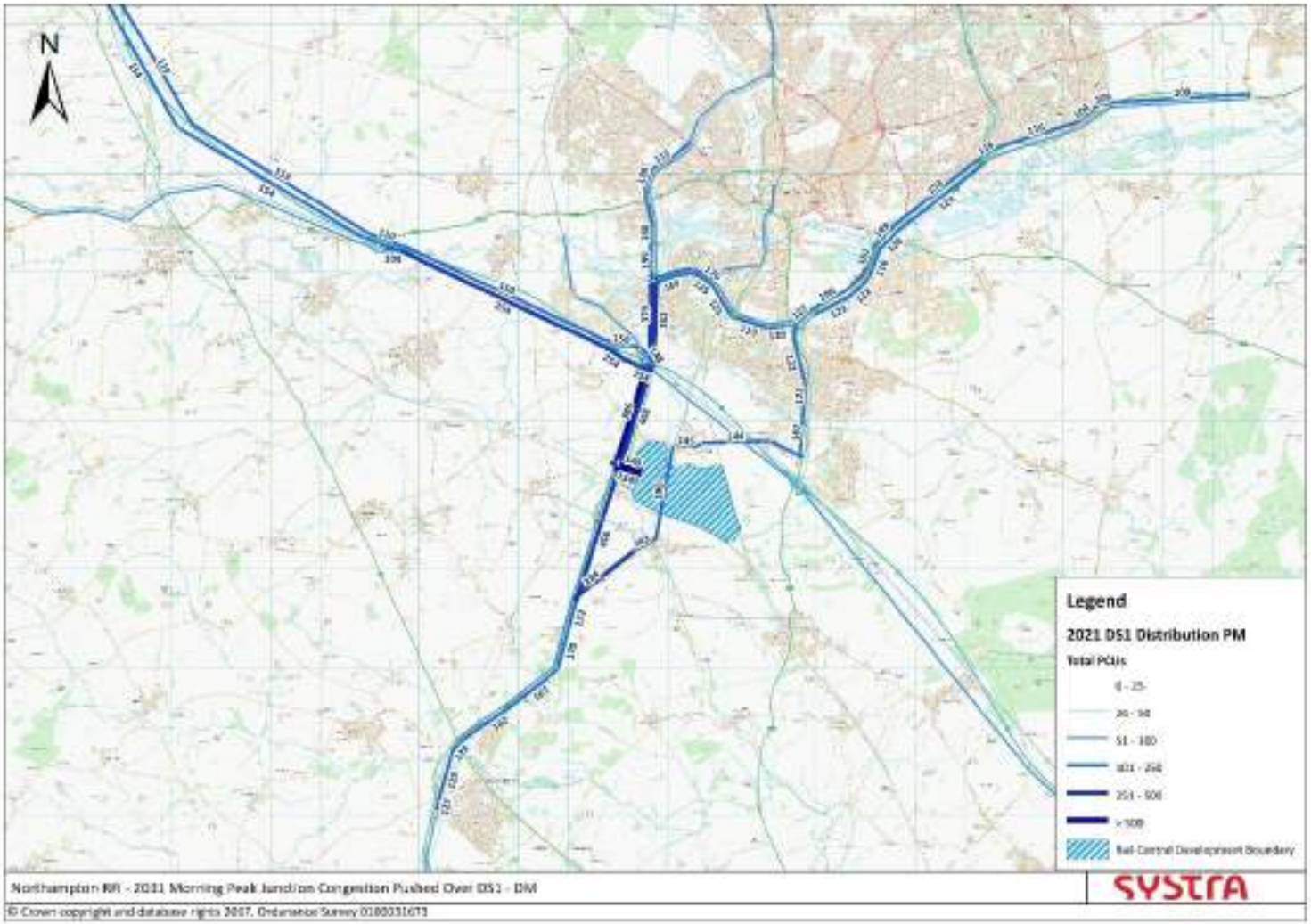


Figure 14. 2021 Core Scenario: HGV Trip Distribution – Morning Peak

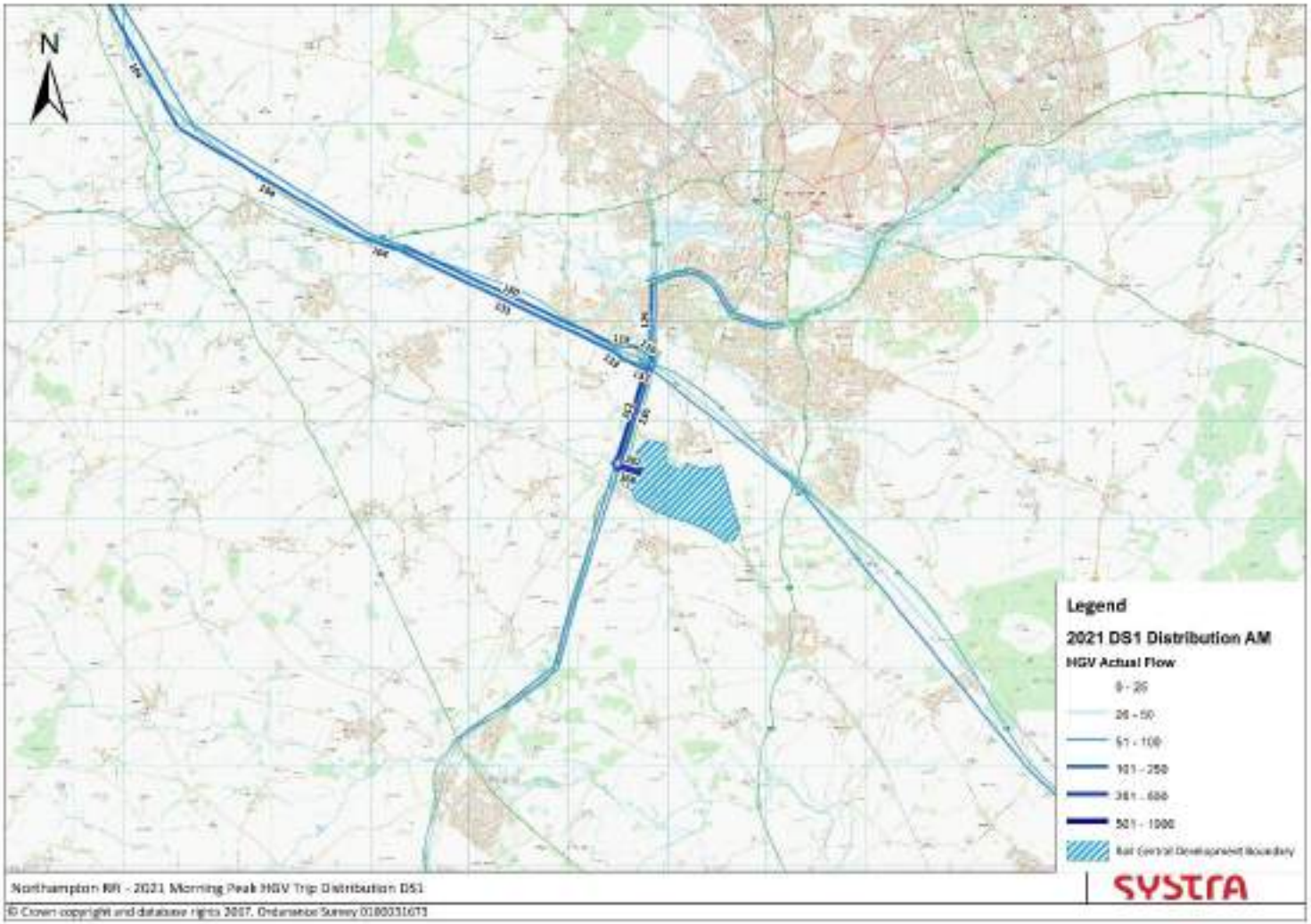


Figure 15. 2021 Core Scenario: HGV Trip Distribution – Evening Peak

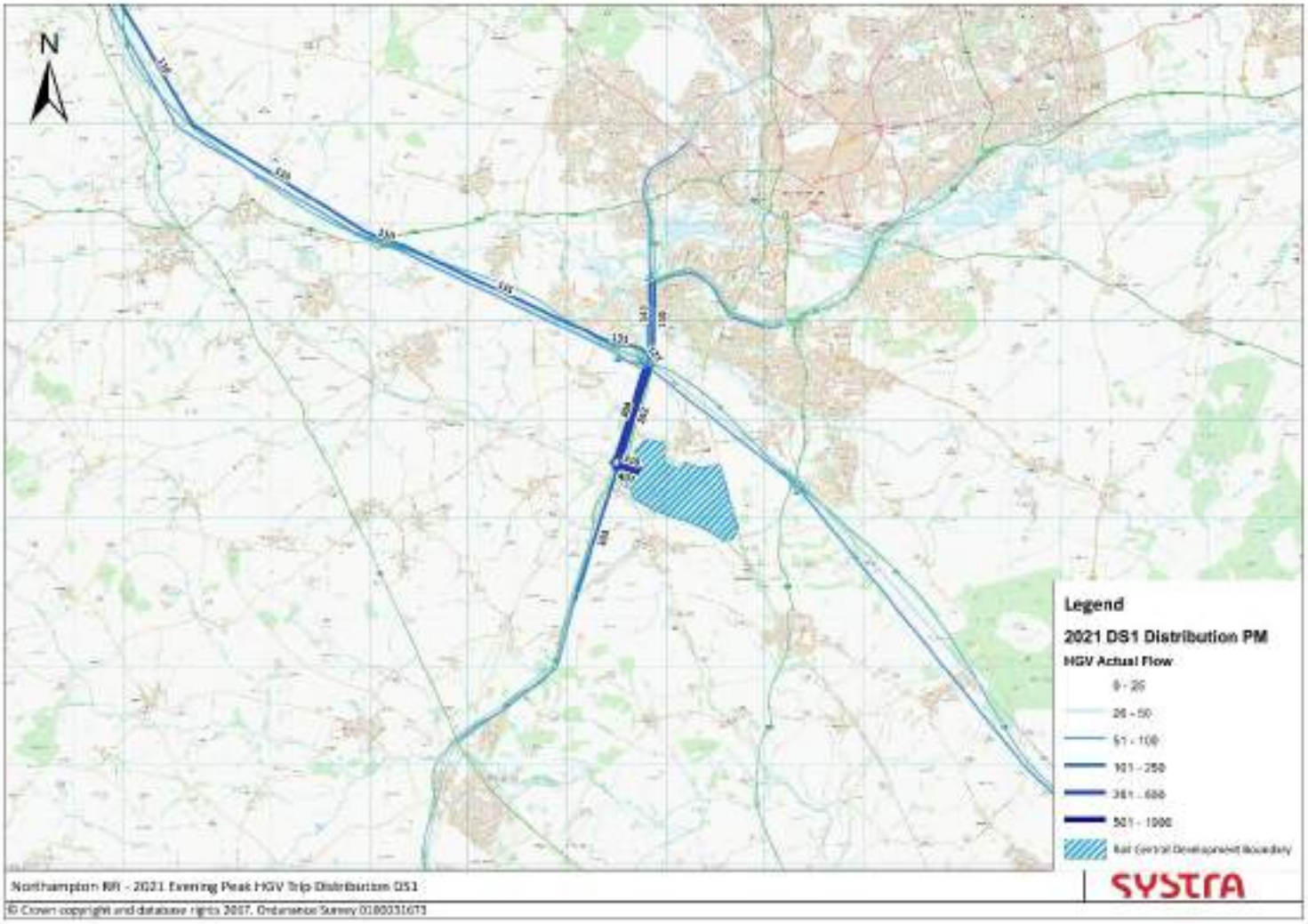


Figure 16. 2021 Core Scenario: Reassignment Impact – Morning Peak

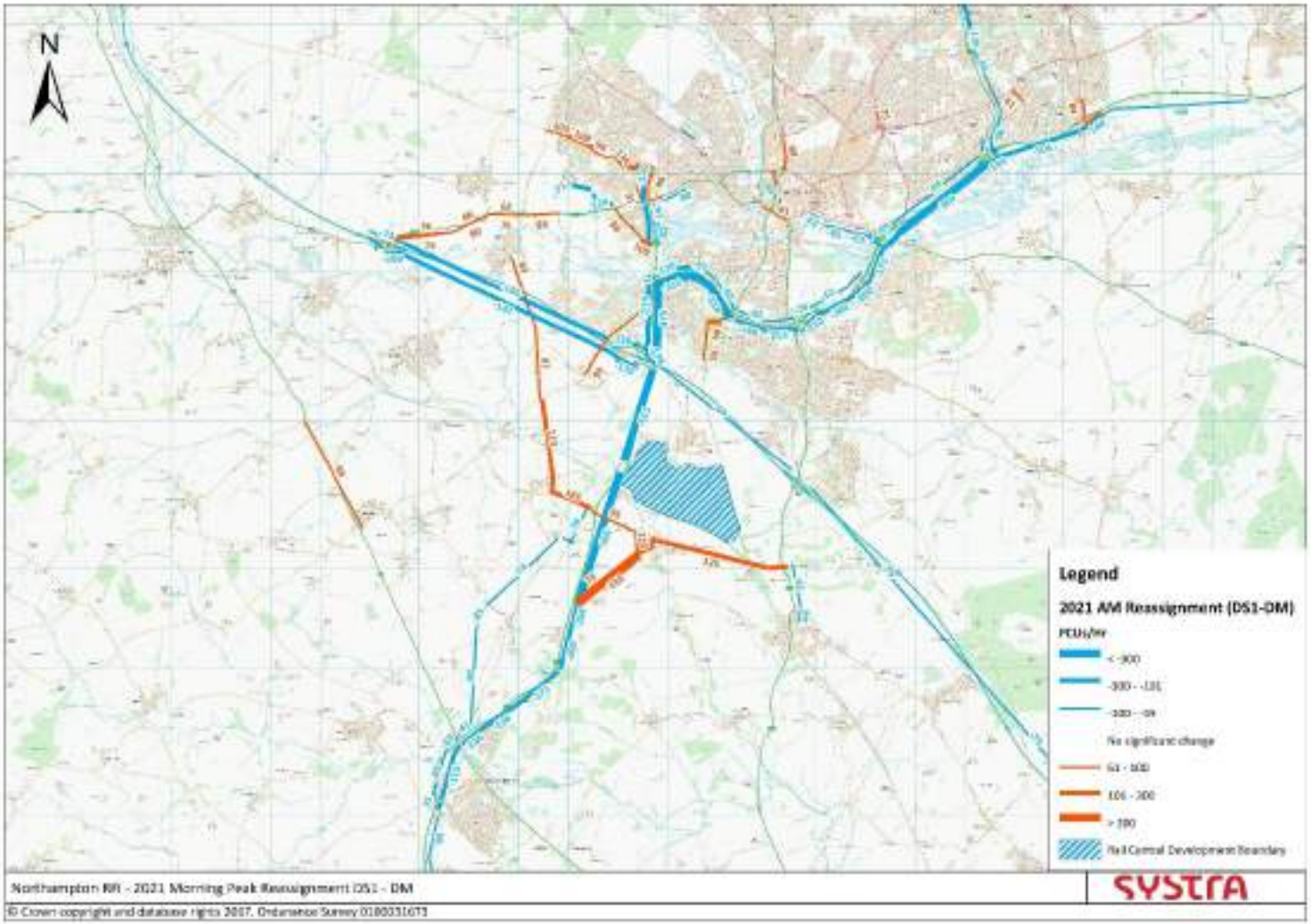


Figure 17. 2021 Core Scenario: Reassignment Impact – Evening Peak

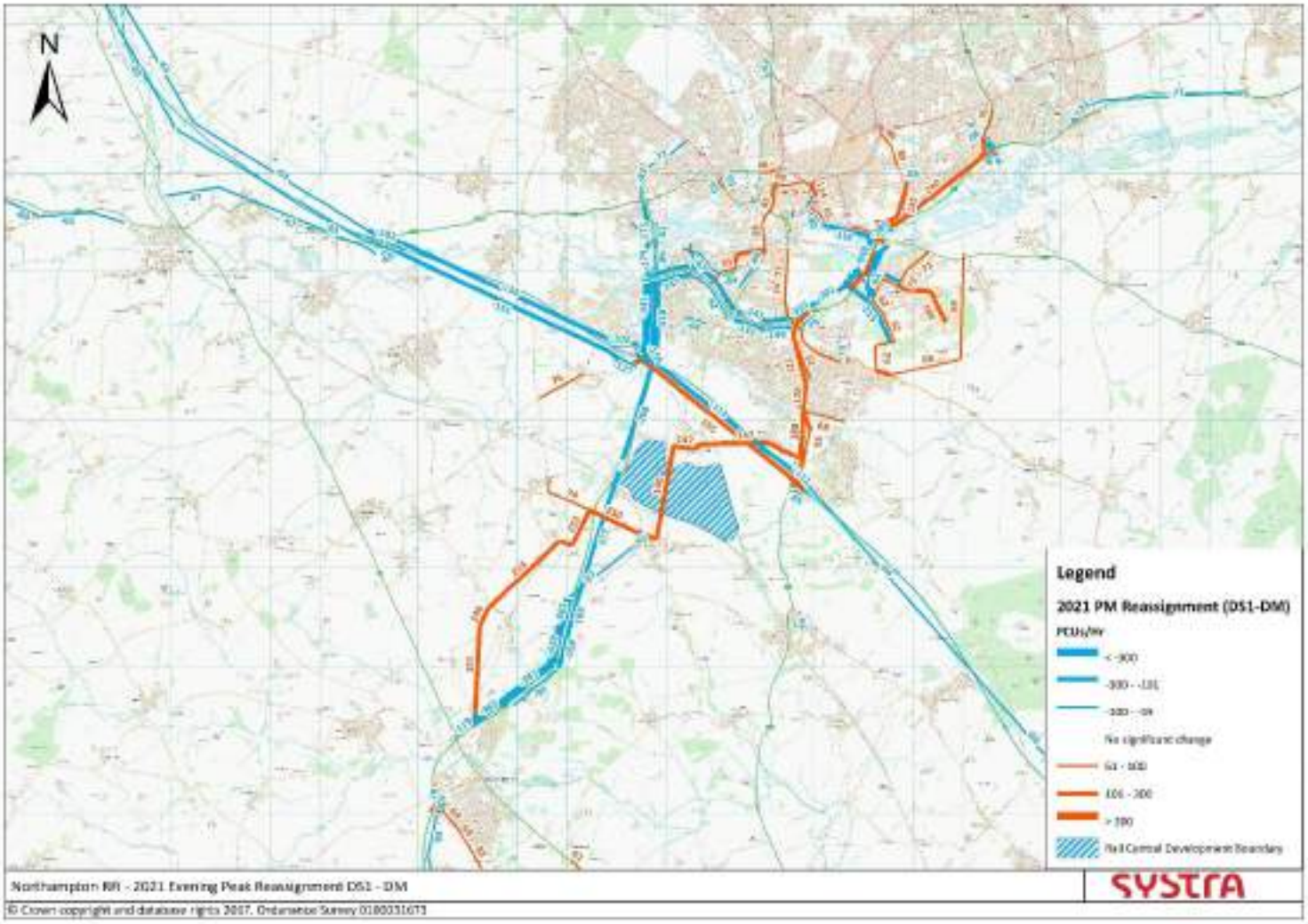


Figure 18. 2021 Core Scenario: Flow Change – Morning Peak

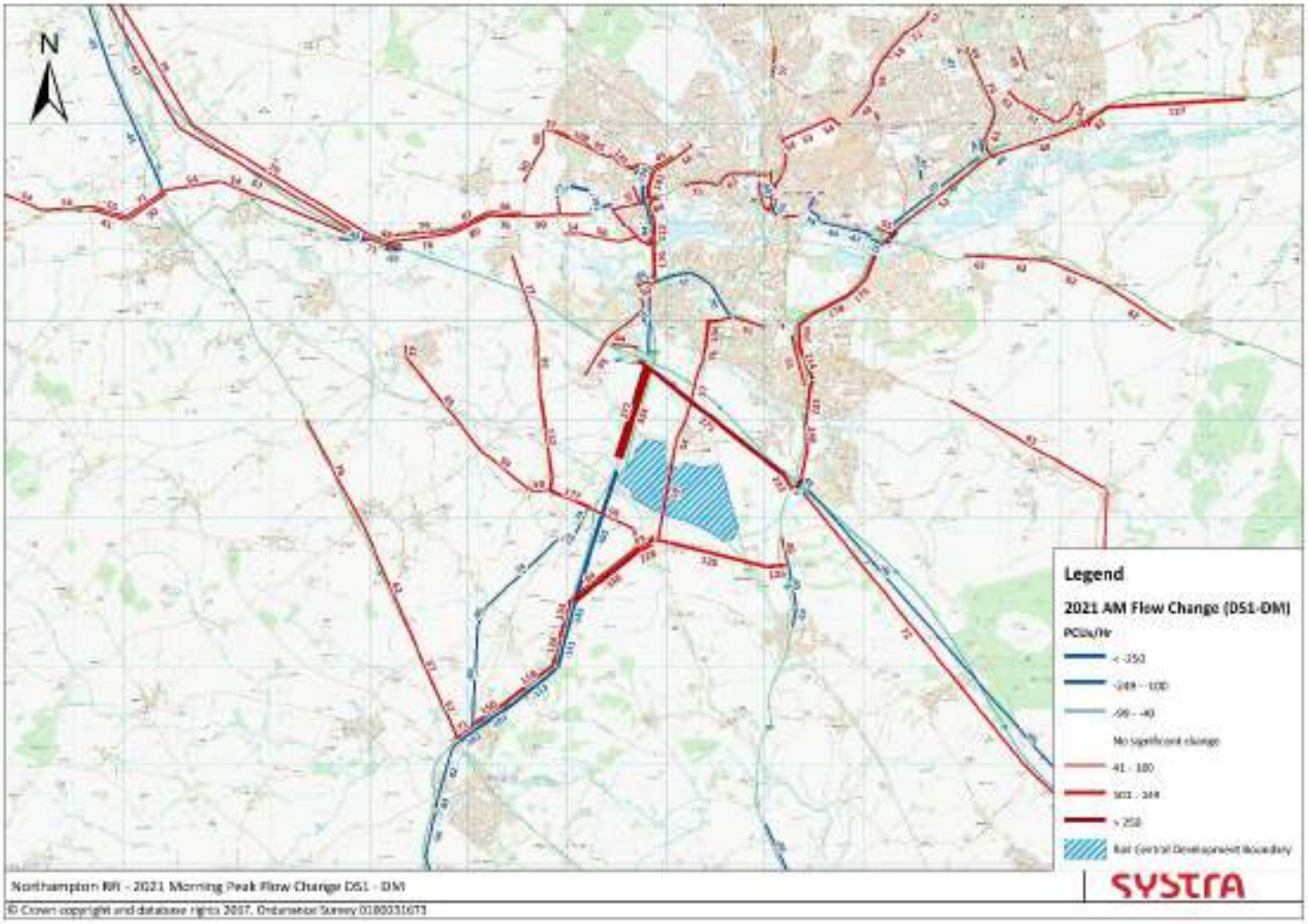


Figure 19. 2021 Core Scenario: Flow Change – Evening Peak

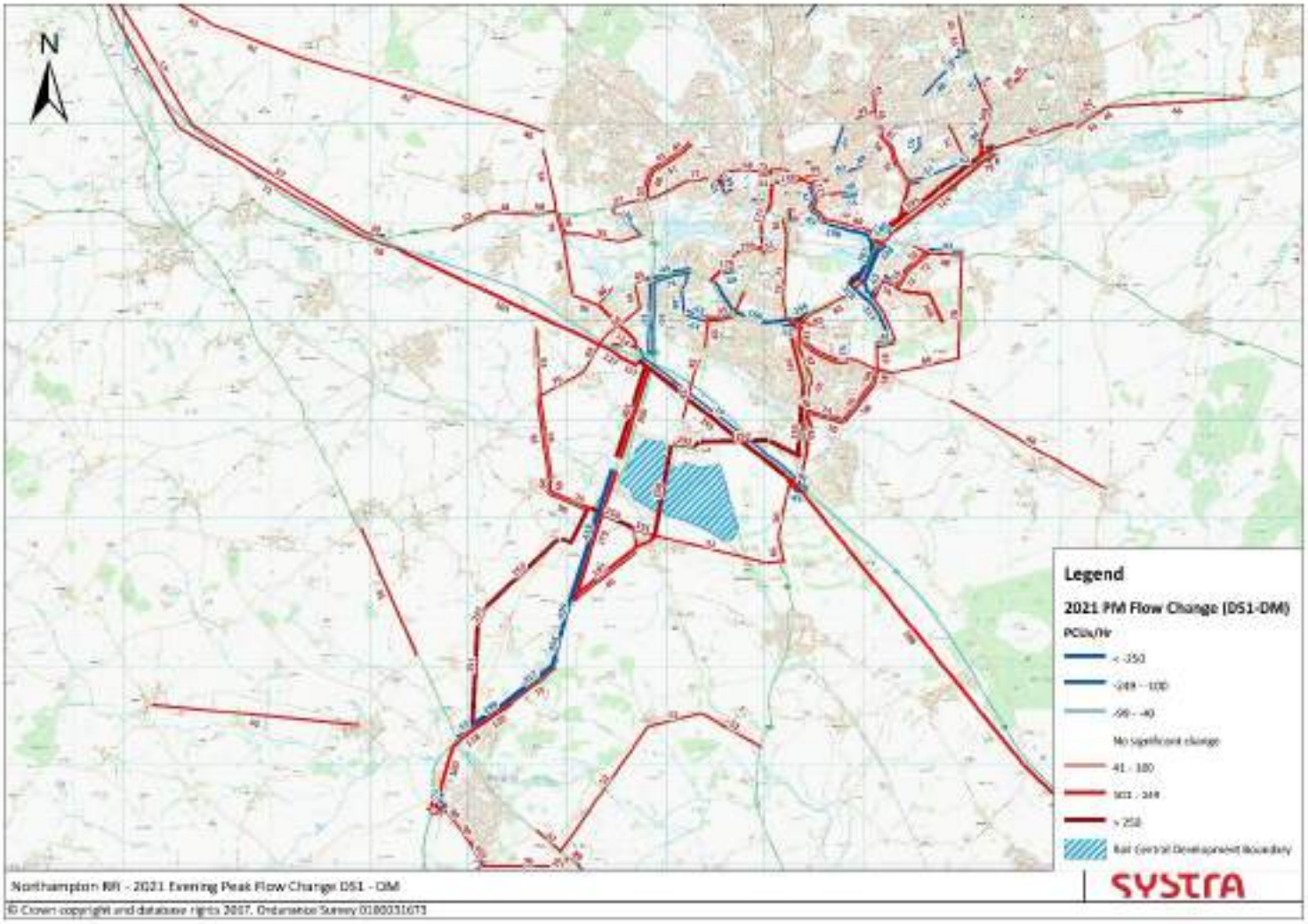


Figure 20. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak

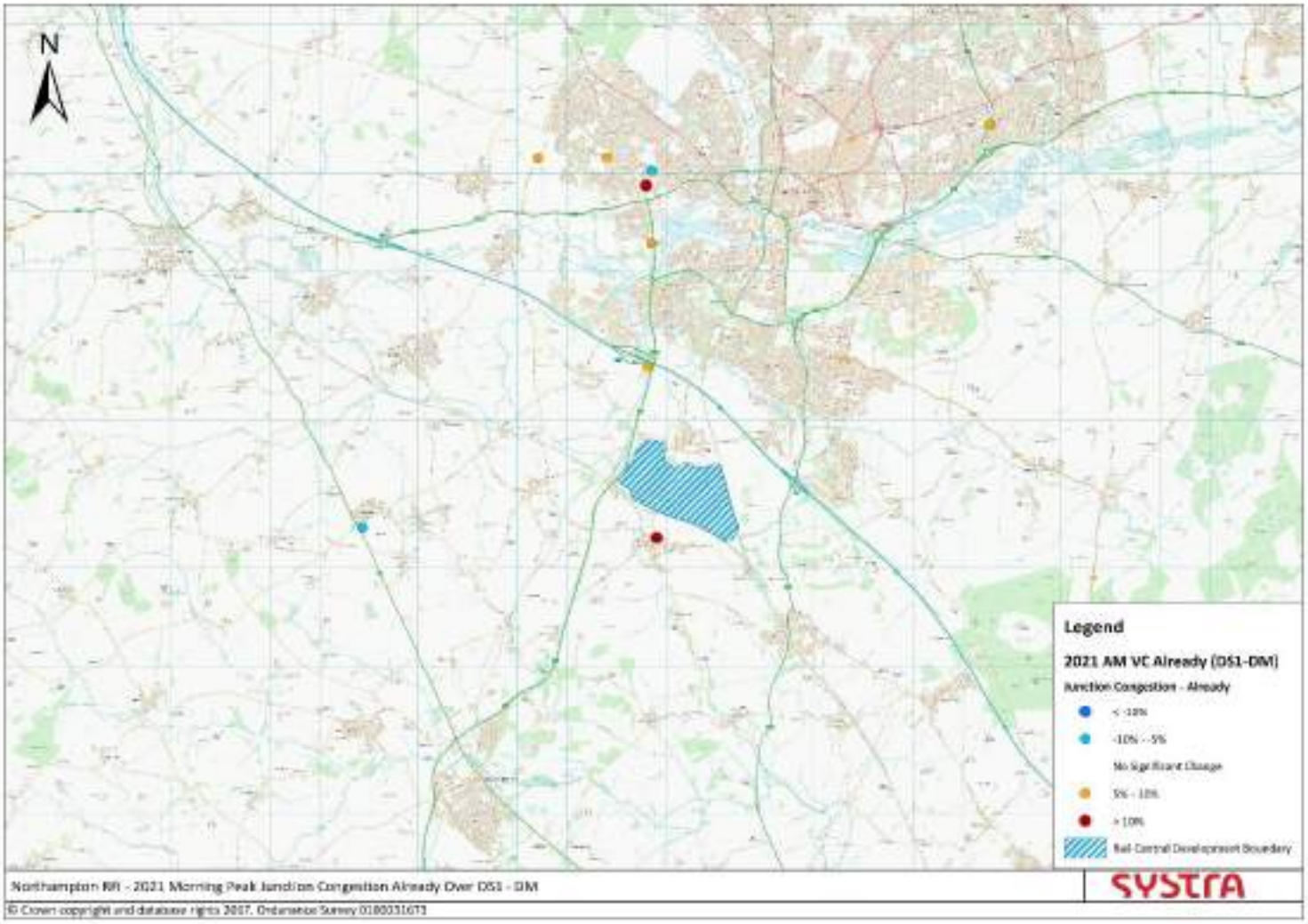


Figure 21. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak

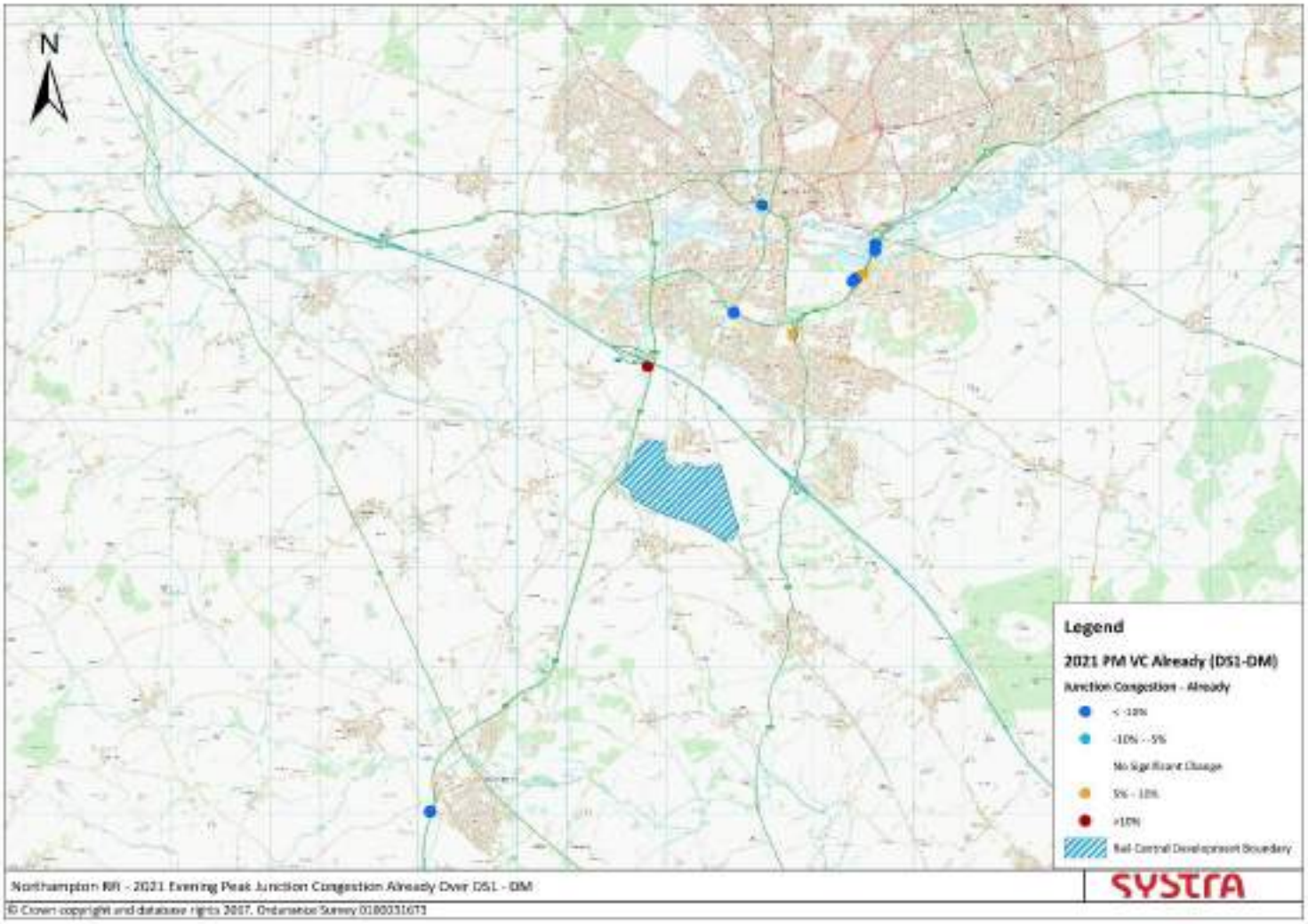


Figure 22. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak

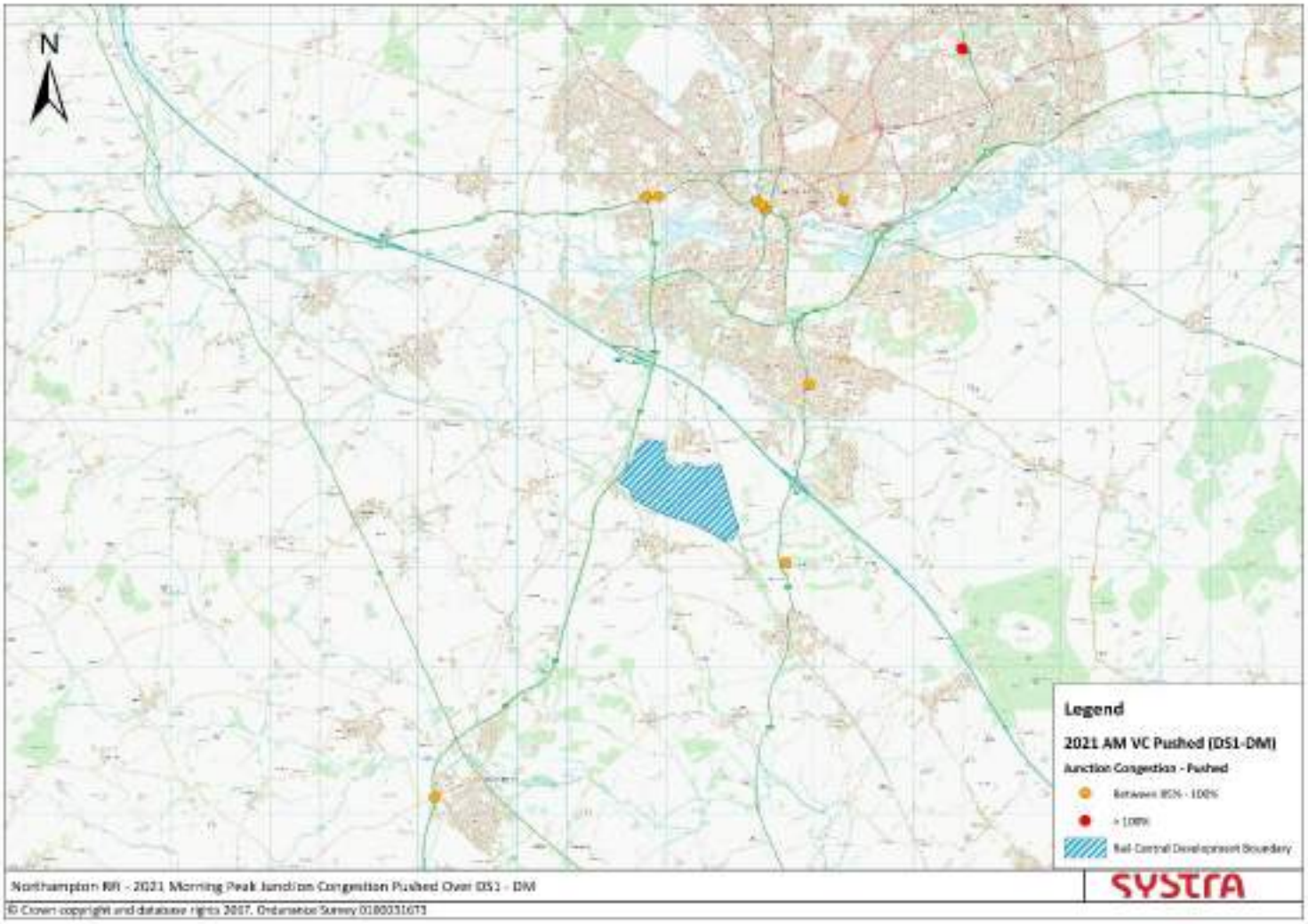
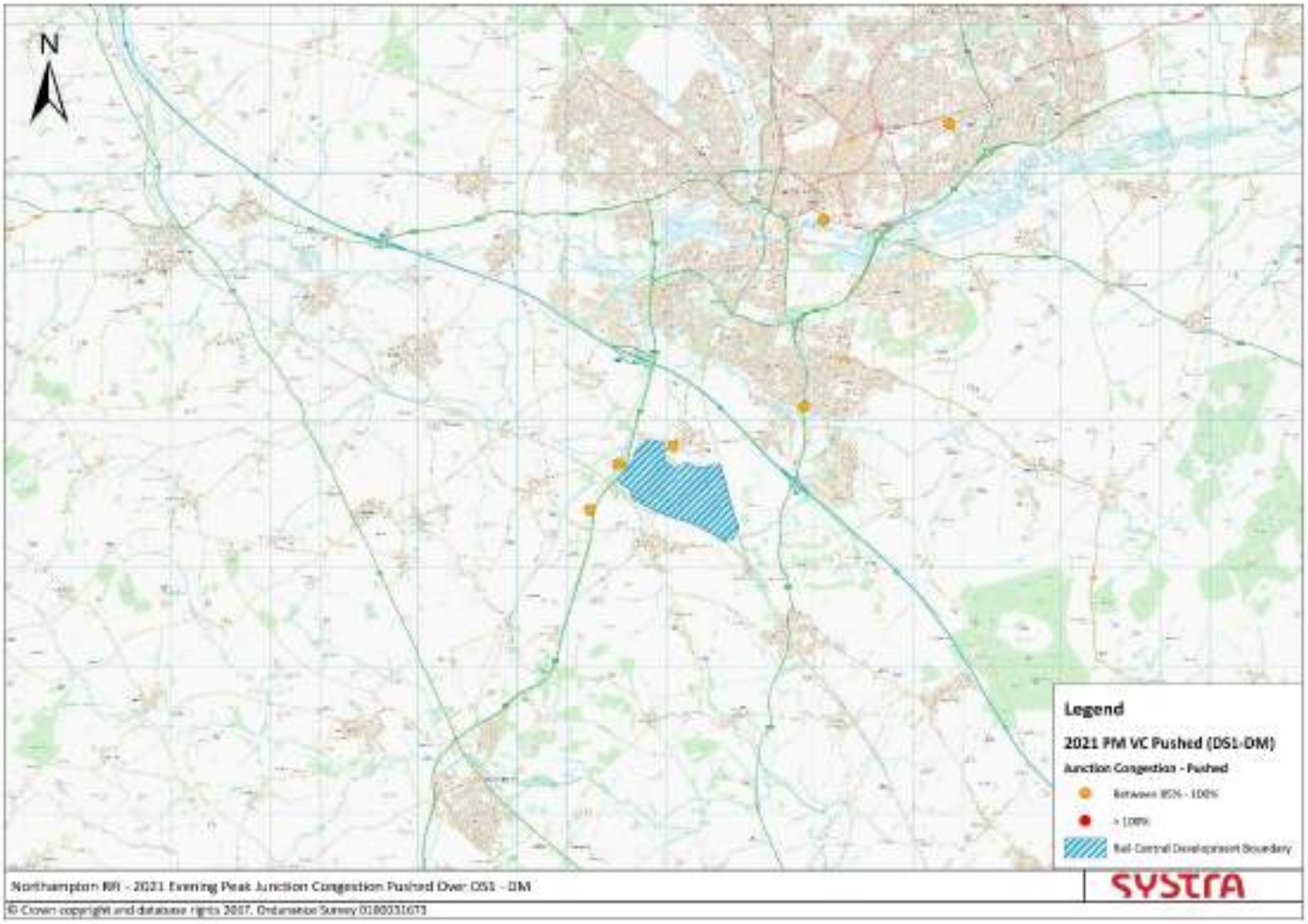


Figure 23. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak



7. 2031 CORE STRATEGY SCENARIO: NO MITIGATION IMPACTS

7.1 OVERVIEW OF CHAPTER

7.2 TRIP DISTRIBUTION

- Figure 24. 2031 Core Scenario: All PCUs Trip Distribution – Morning Peak
- Figure 25. 2031 Core Scenario: All PCUs Trip Distribution – Evening Peak
- Figure 26. 2031 Core Scenario: HGV Trip Distribution – Morning Peak
- Figure 27. 2031 Core Scenario: HGV Trip Distribution – Evening Peak

7.3 REASSIGNMENT IMPACT

- Figure 28. 2031 Core Scenario: Reassignment Impact – Morning Peak
- Figure 29. 2031 Core Scenario: Reassignment Impact – Evening Peak

7.4 FLOW CHANGE

- Figure 30. 2031 Core Scenario: Flow Change – Morning Peak
- Figure 31. 2031 Core Scenario: Flow Change – Evening Peak

7.5 JUNCTION CONGESTION

- Figure 32. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak
- Figure 33. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak
- Figure 34. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak
- Figure 35. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak

7.6 NETWORK STATISTICS

Figure 24. 2031 Core Scenario: Trip Distribution – Morning Peak

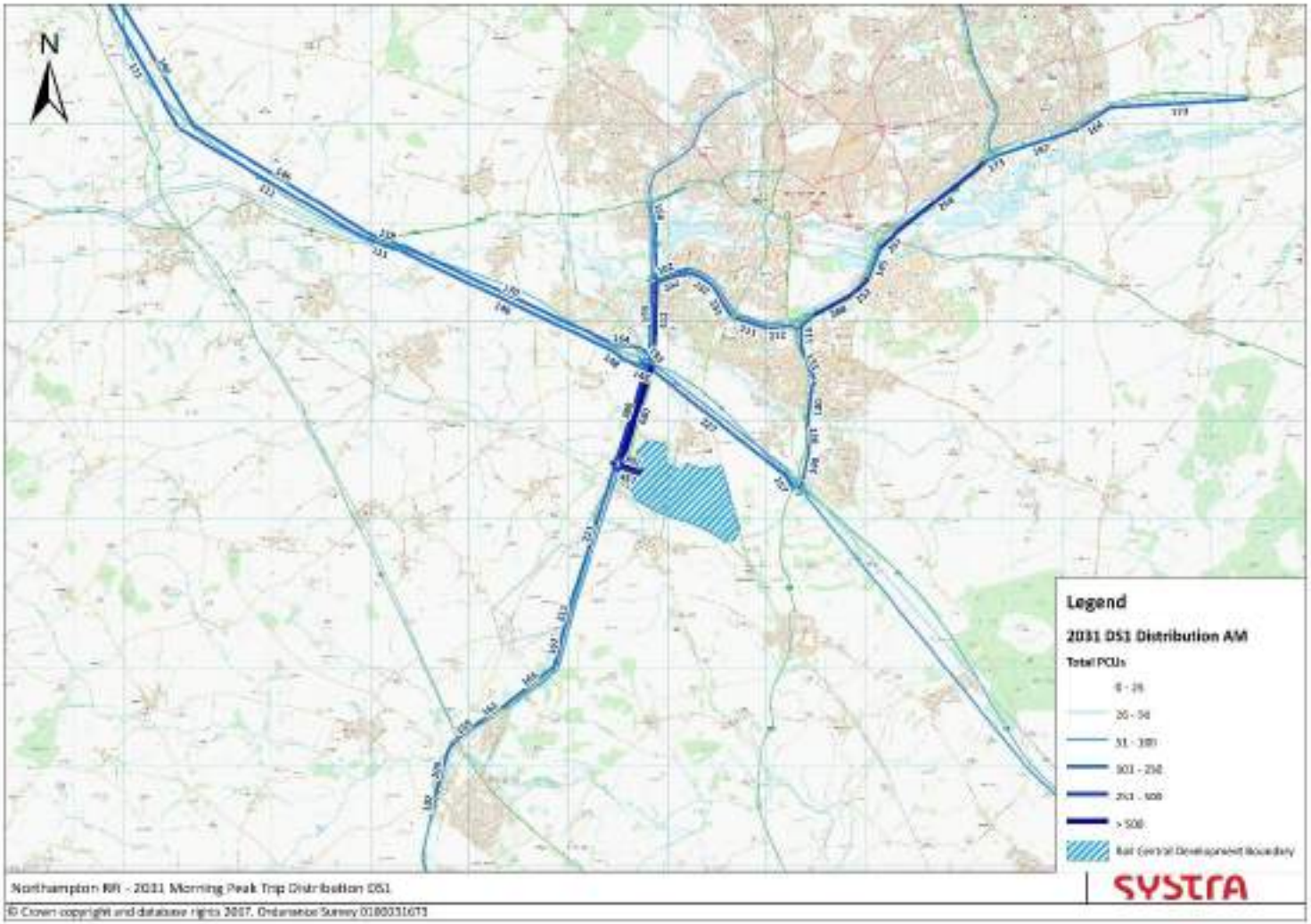


Figure 25. 2031 Core Scenario: Trip Distribution – Evening Peak

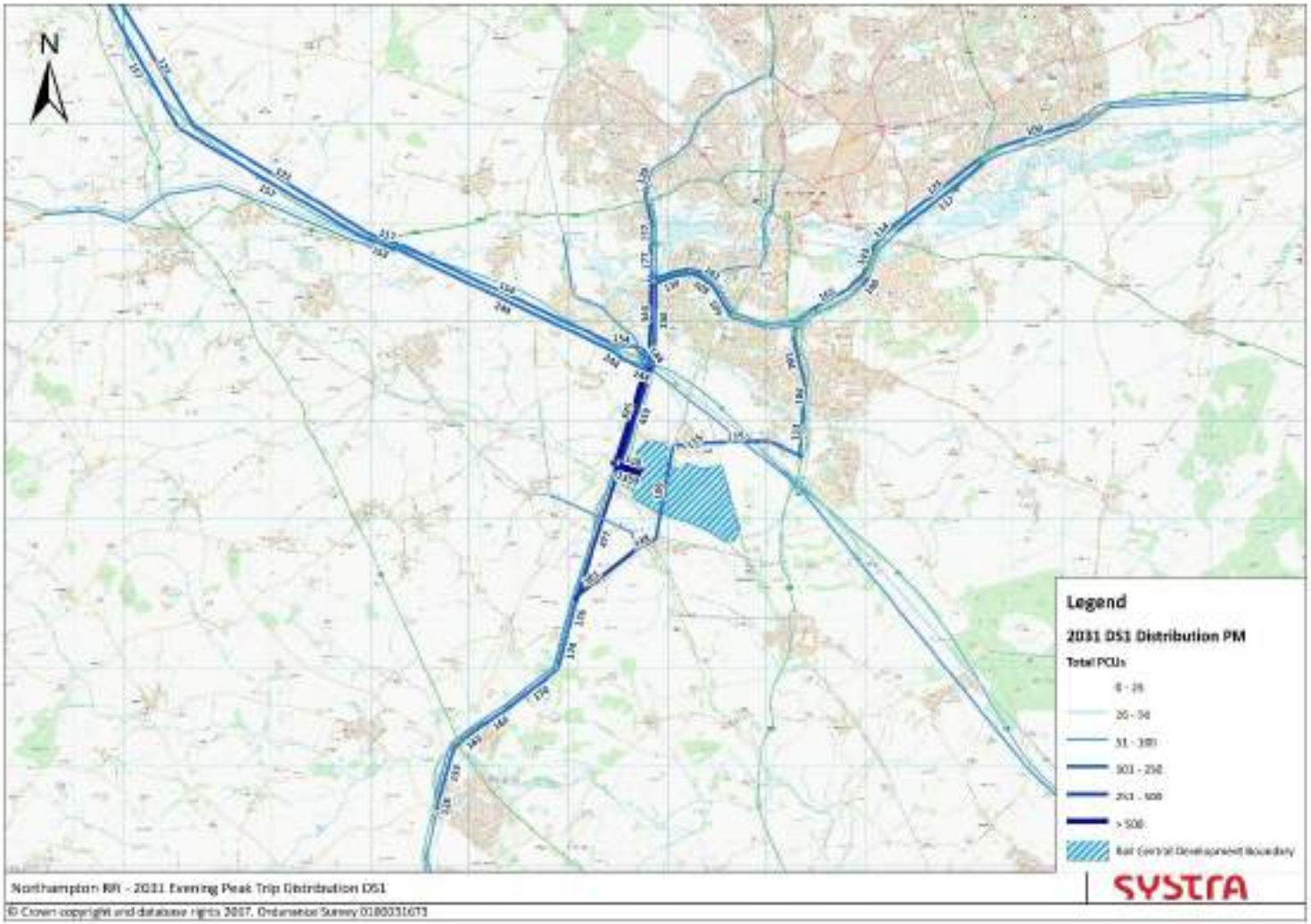


Figure 26. 2031 Core Scenario: HGV Trip Distribution – Morning Peak

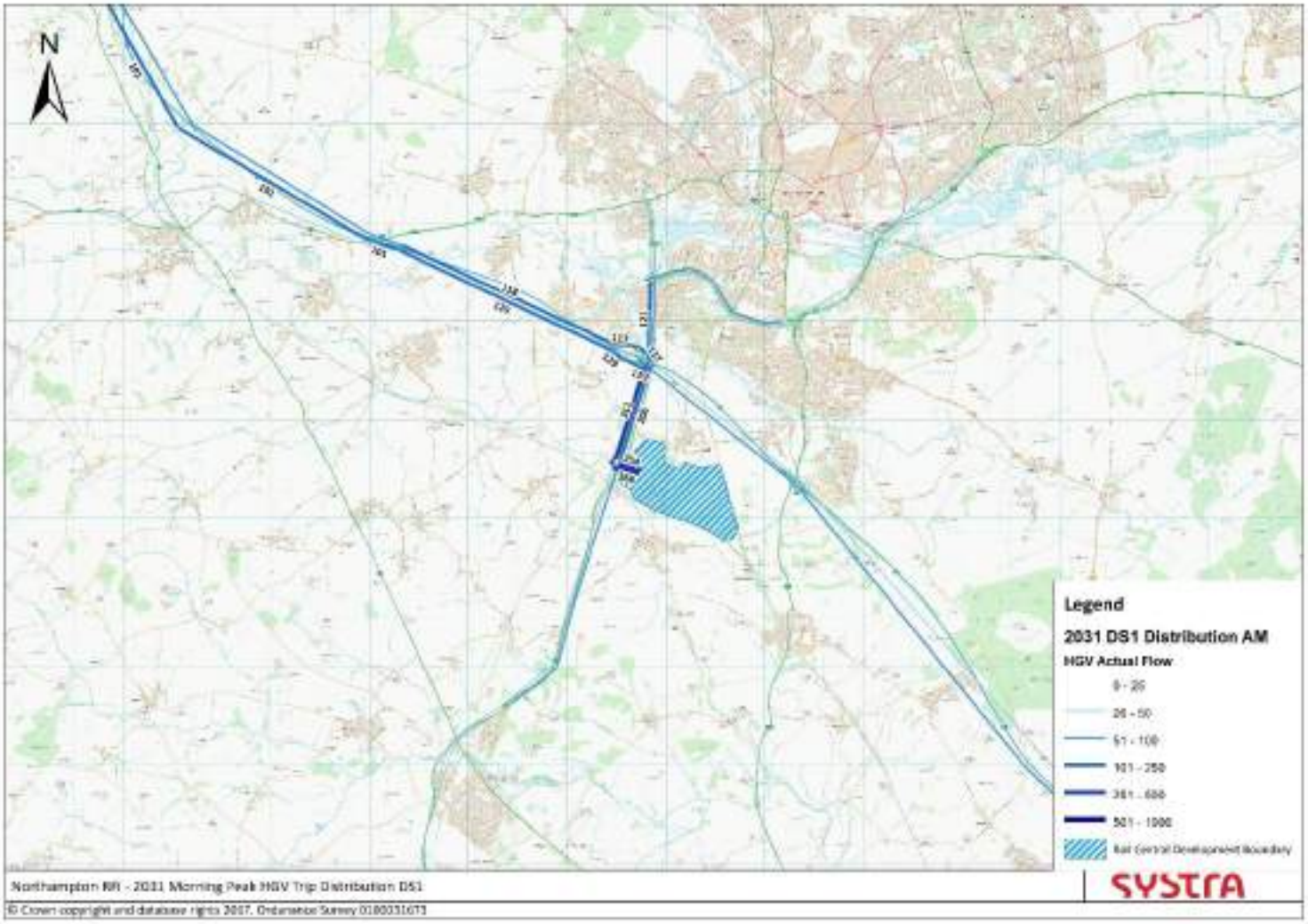


Figure 27. 2031 Core Scenario: HGV Trip Distribution – Evening Peak

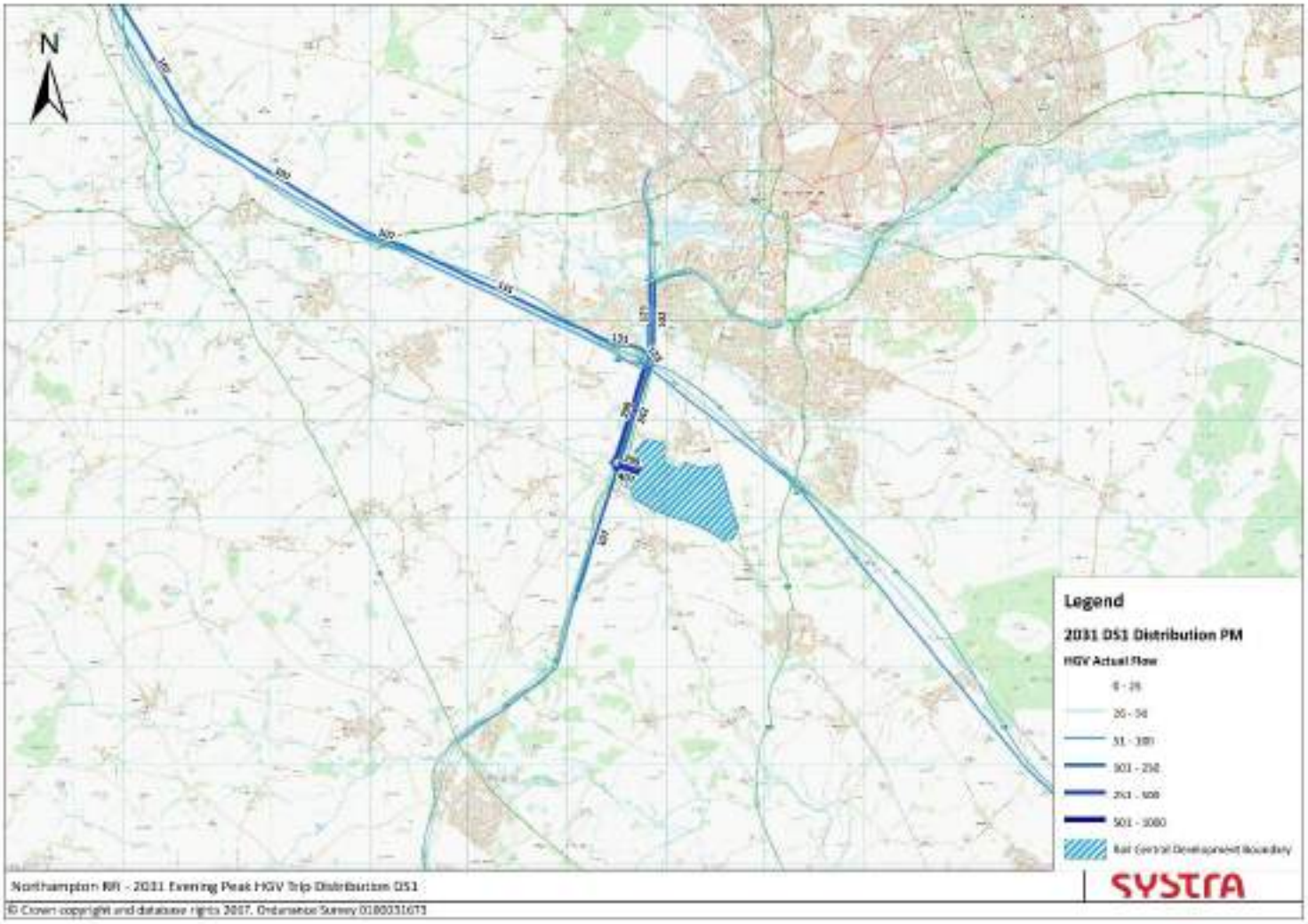


Figure 28. 2031 Core Scenario: Reassignment Impact – Morning Peak

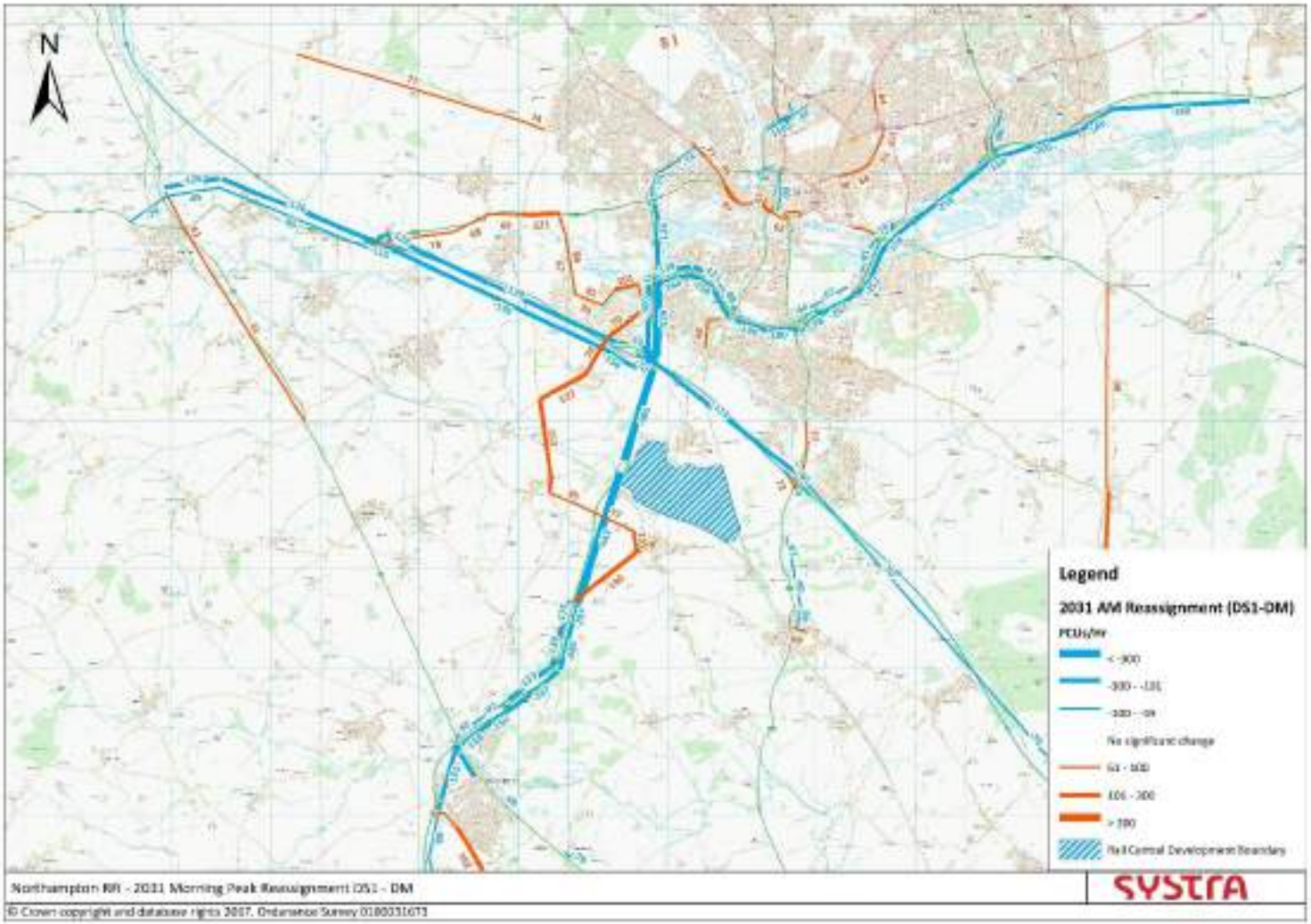


Figure 29. 2031 Core Scenario: Reassignment Impact – Evening Peak

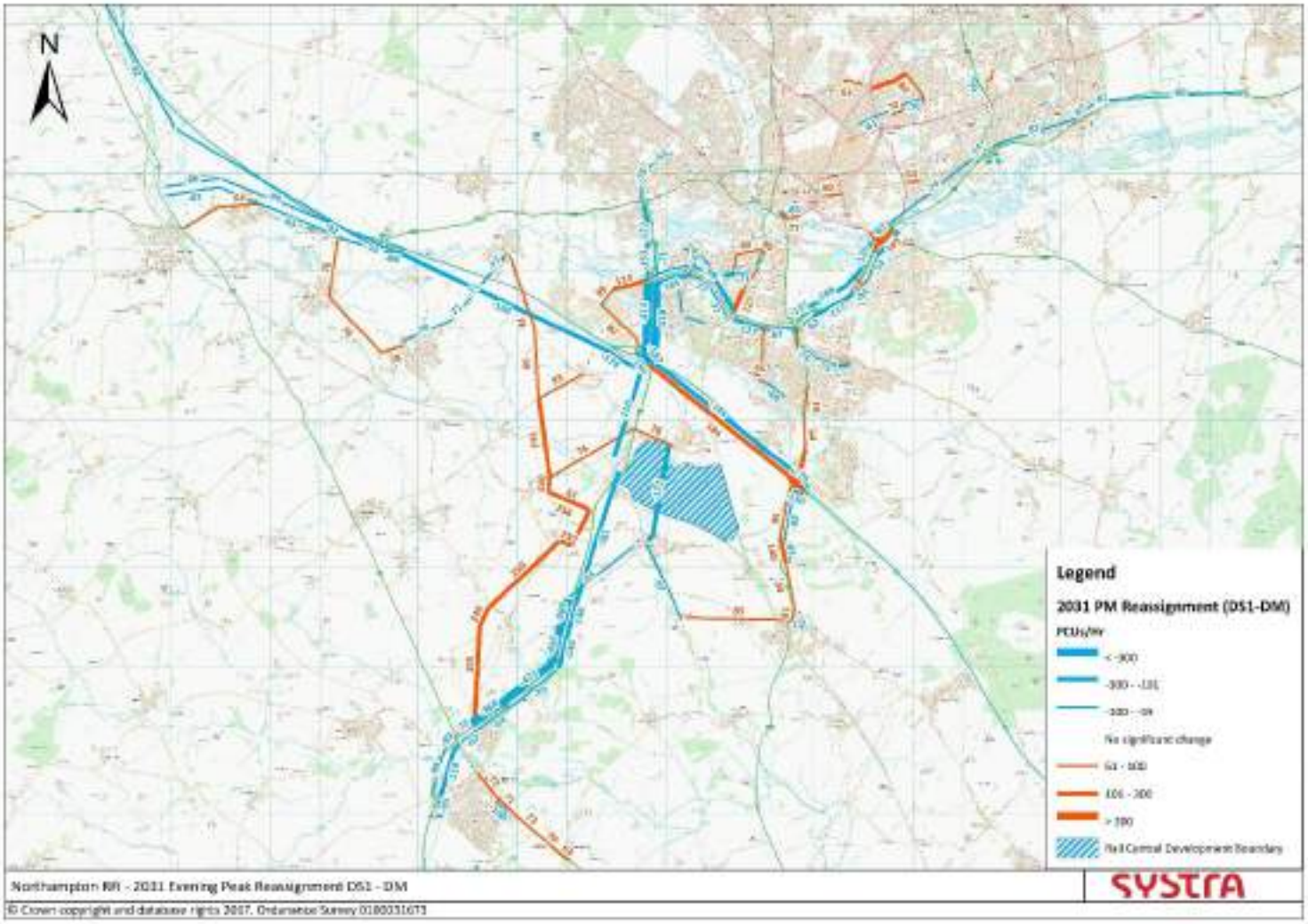


Figure 30. 2031 Core Scenario: Flow Change – Morning Peak

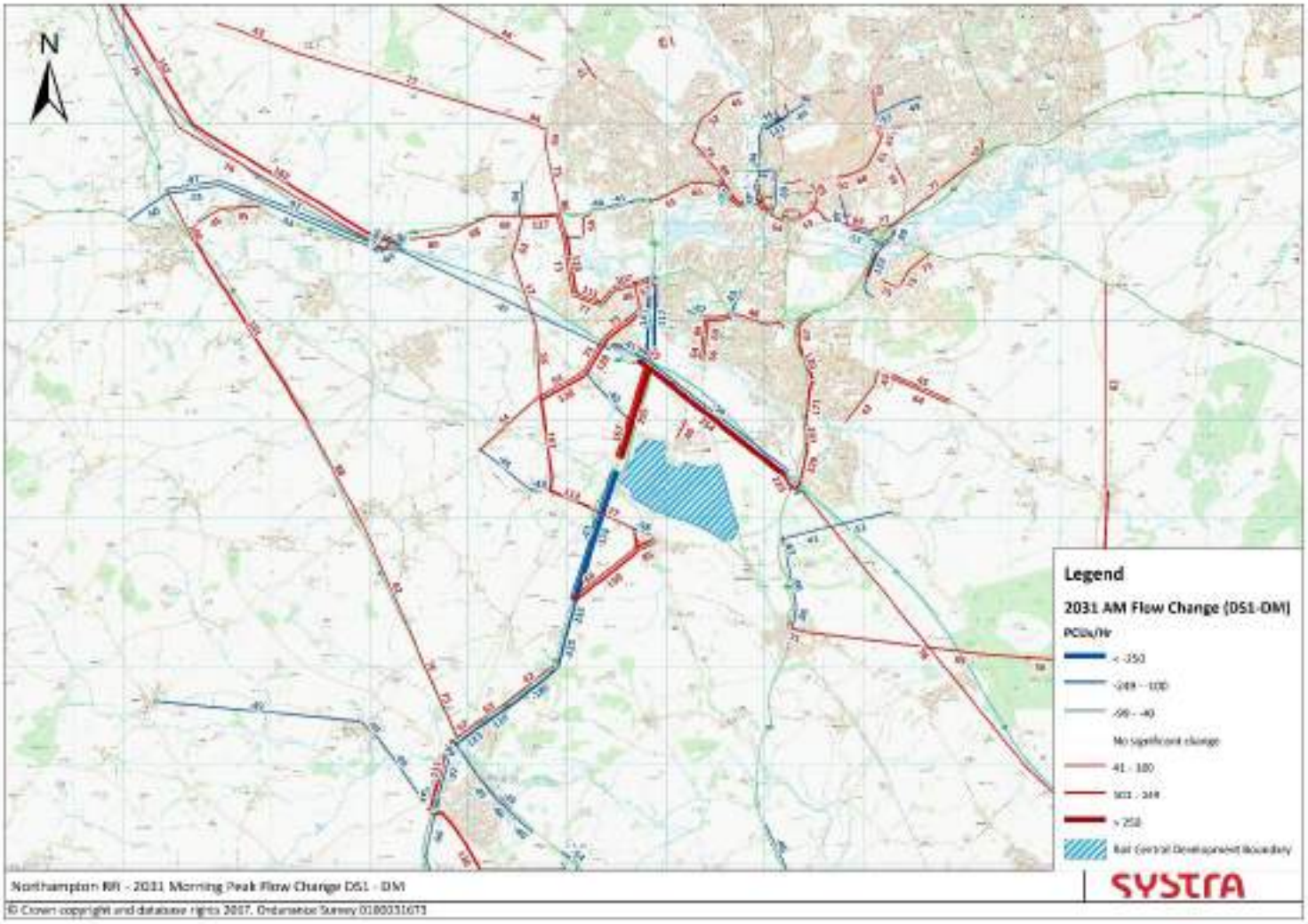


Figure 31. 2031 Core Scenario: Flow Change – Evening Peak

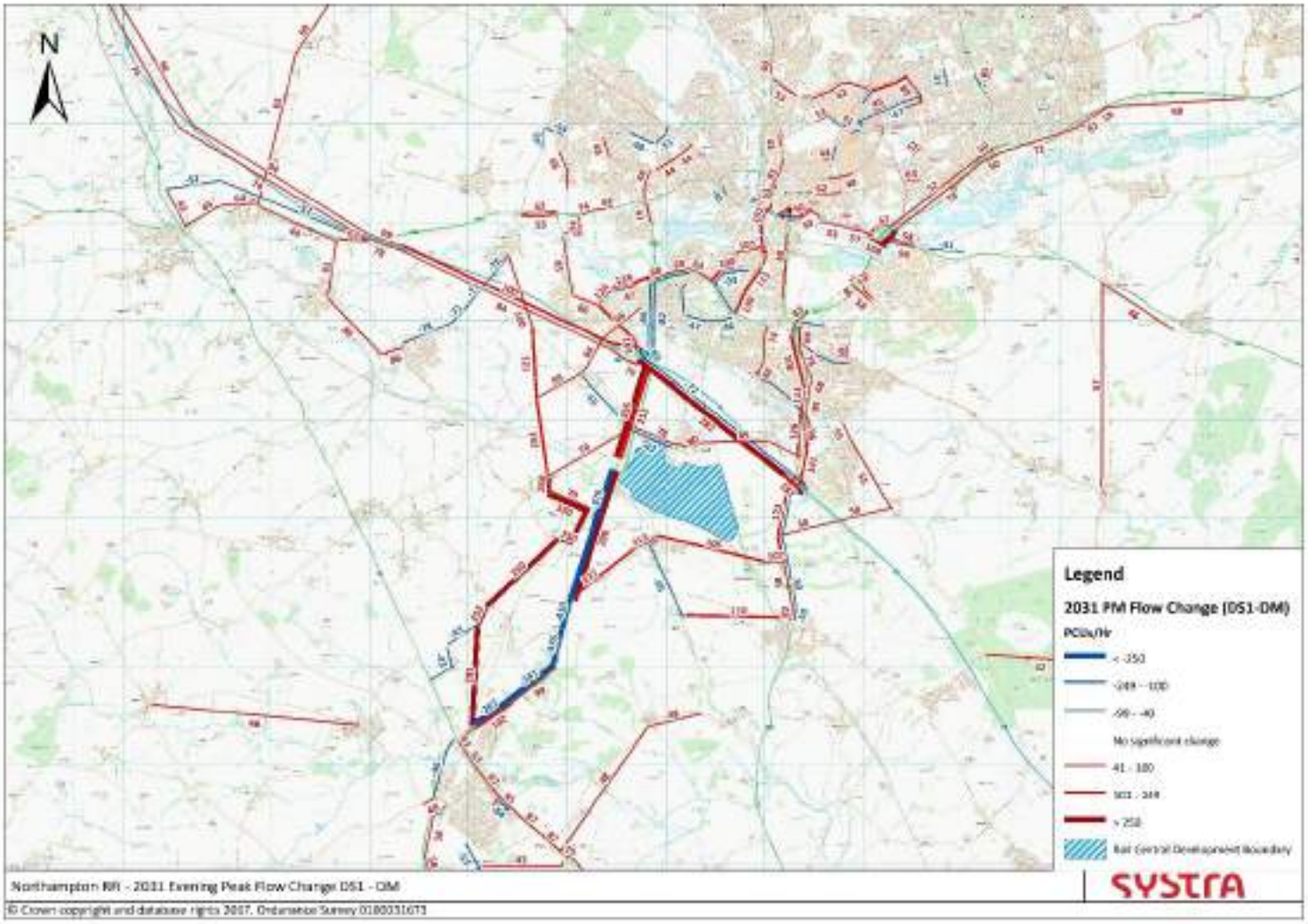


Figure 32. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak

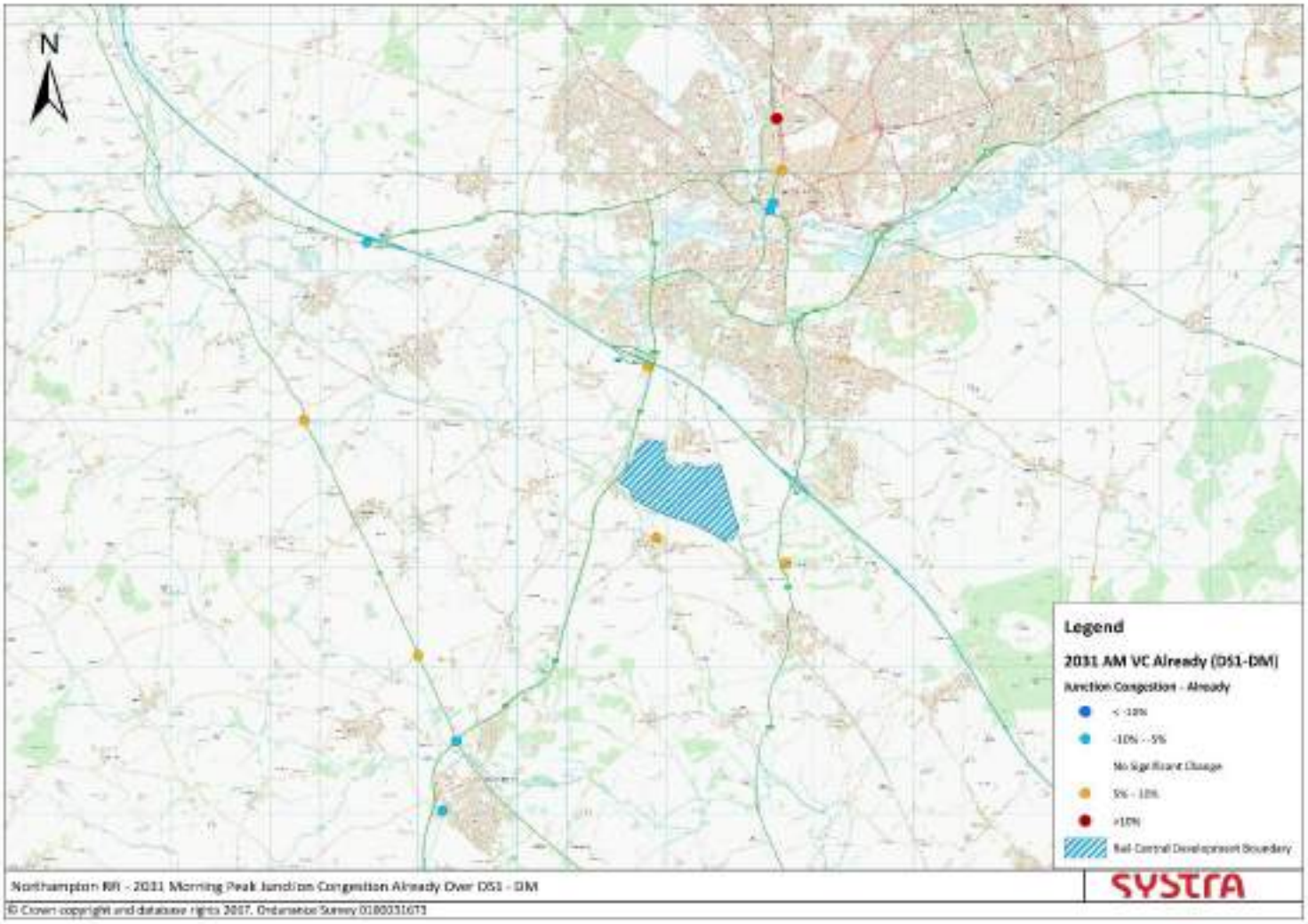


Figure 33. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak

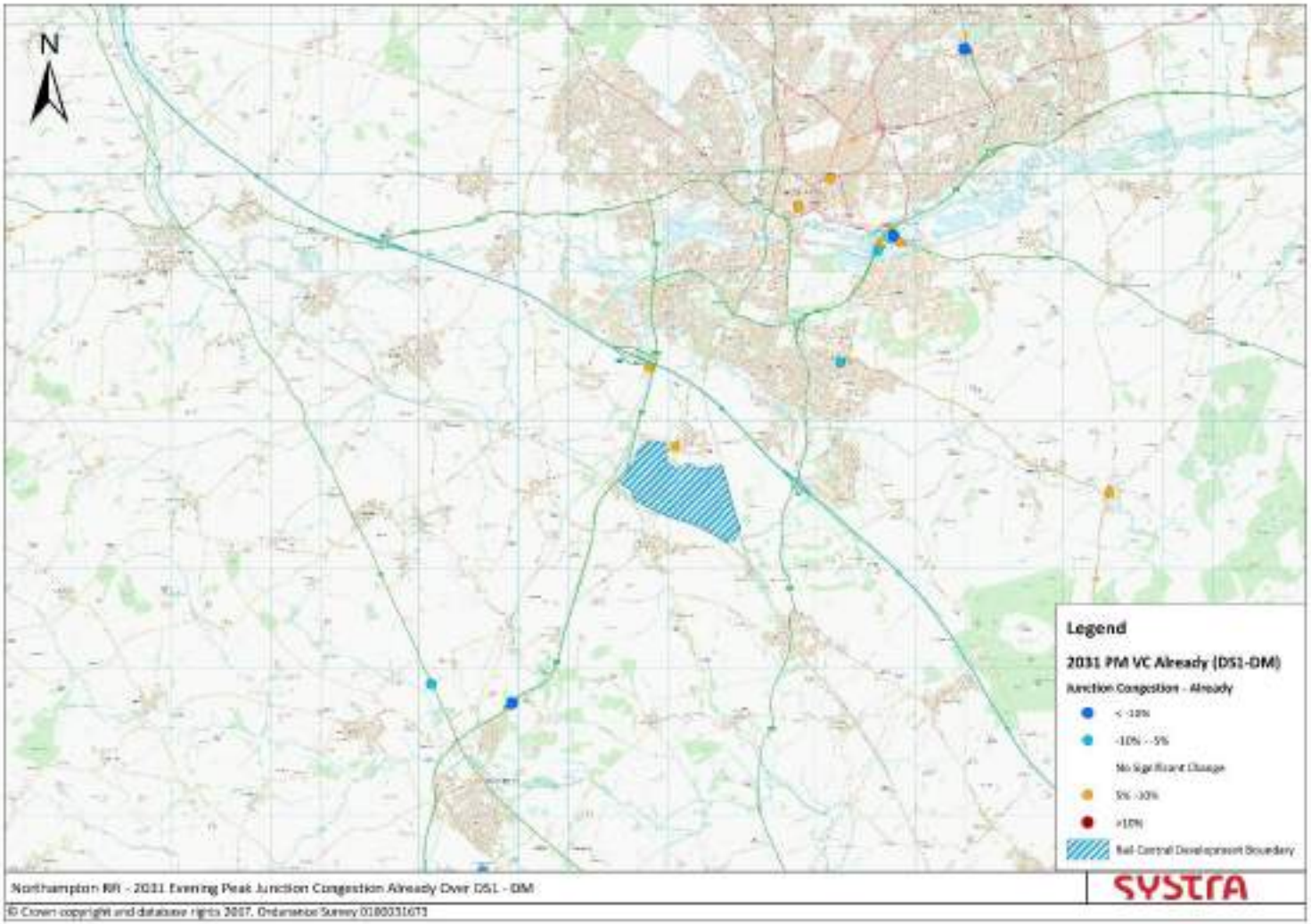


Figure 34. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak

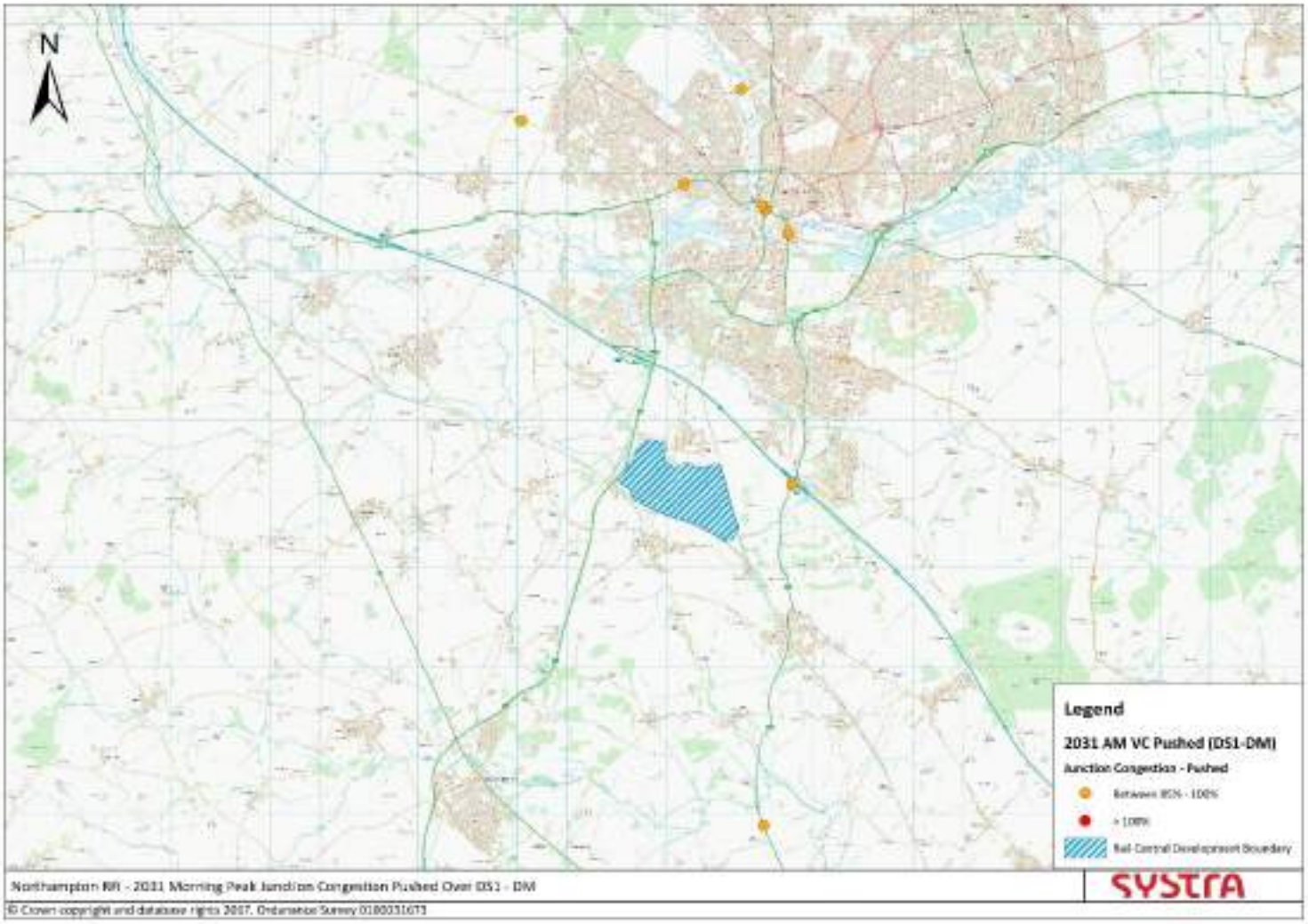
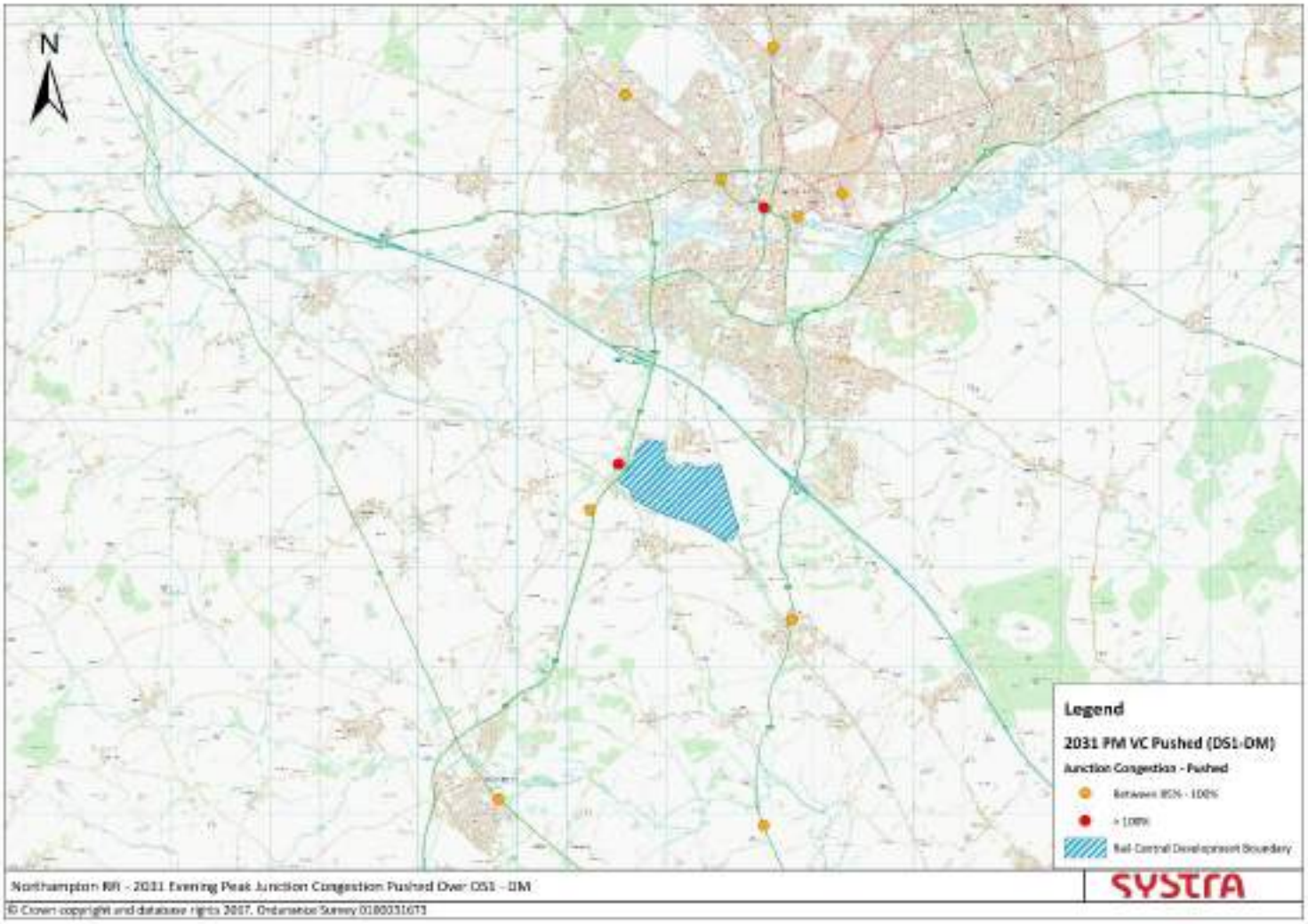


Figure 35. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak



8. 2021 CORE SCENARIO: M1 JUNCTION 15A MITIGATION

8.1 OVERVIEW OF CHAPTER

8.2 PROPOSED M1 JUNCTION 15A MITIGATION SCHEME

- Figure 36 Proposed M1 Junction 15A mitigation scheme

8.3 TRIP DISTRIBUTION

- Figure 37. 2021 Core Scenario: All PCUs Trip Distribution – Morning Peak
- Figure 38. 2021 Core Scenario: All PCUs Trip Distribution – Evening Peak
- Figure 39. 2021 Core Scenario: HGV Trip Distribution – Morning Peak
- Figure 40. 2021 Core Scenario: HGV Trip Distribution – Evening Peak

8.4 FLOW CHANGE

- Figure 41. 2021 Core Scenario: Flow Change – Morning Peak
- Figure 42. 2021 Core Scenario: Flow Change – Evening Peak

8.5 JUNCTION CONGESTION

- Figure 43. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak
- Figure 44. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak
- Figure 45. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak
- Figure 46. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak

Figure 36. Proposed M1 Junction 15A mitigation scheme

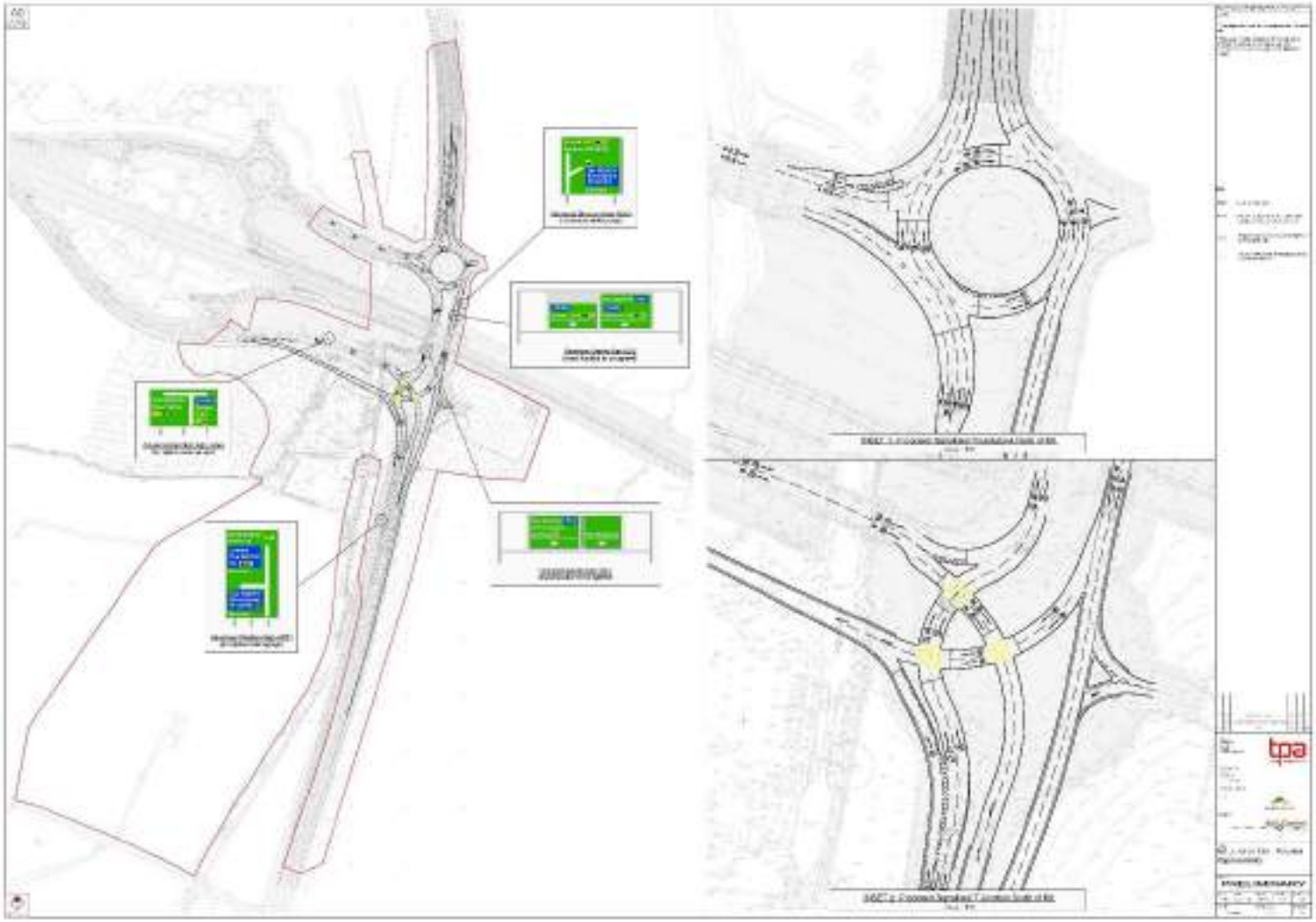


Figure 37. 2021 Core Scenario: All PCUs Trip Distribution – Morning Peak

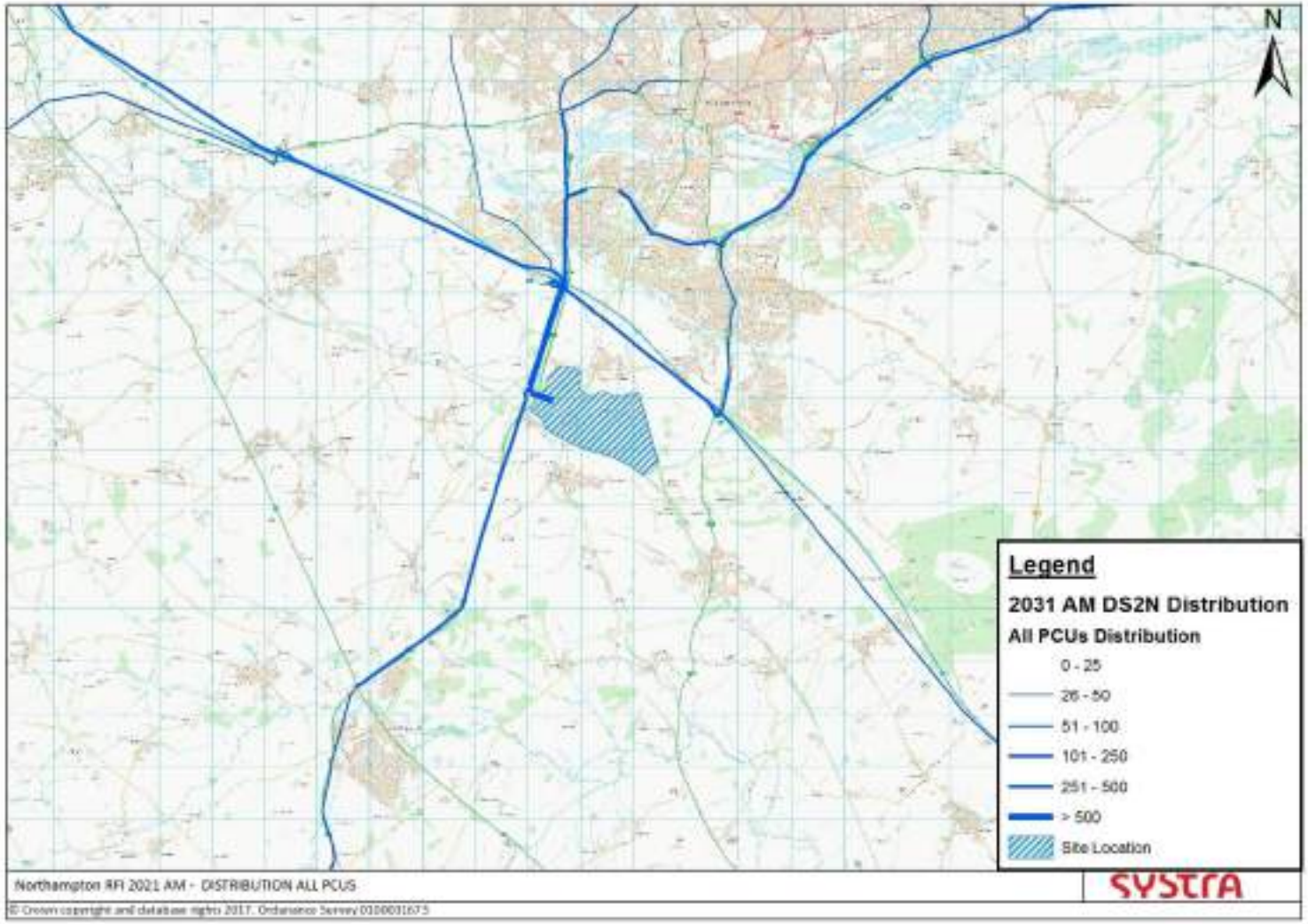


Figure 38. 2021 Core Scenario: All PCUs Trip Distribution – Evening Peak

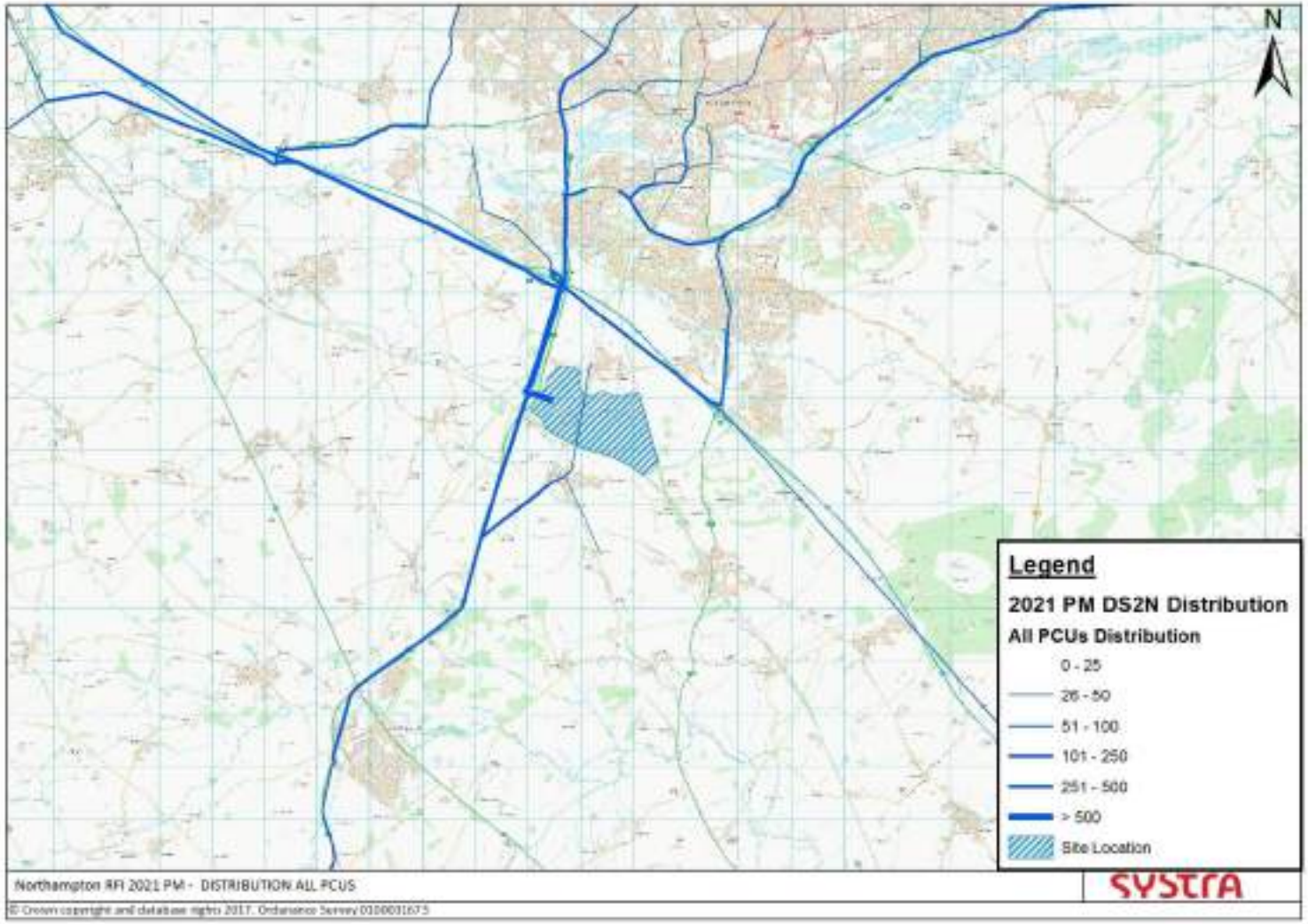


Figure 39. 2021 Core Scenario: HGV Trip Distribution – Morning Peak

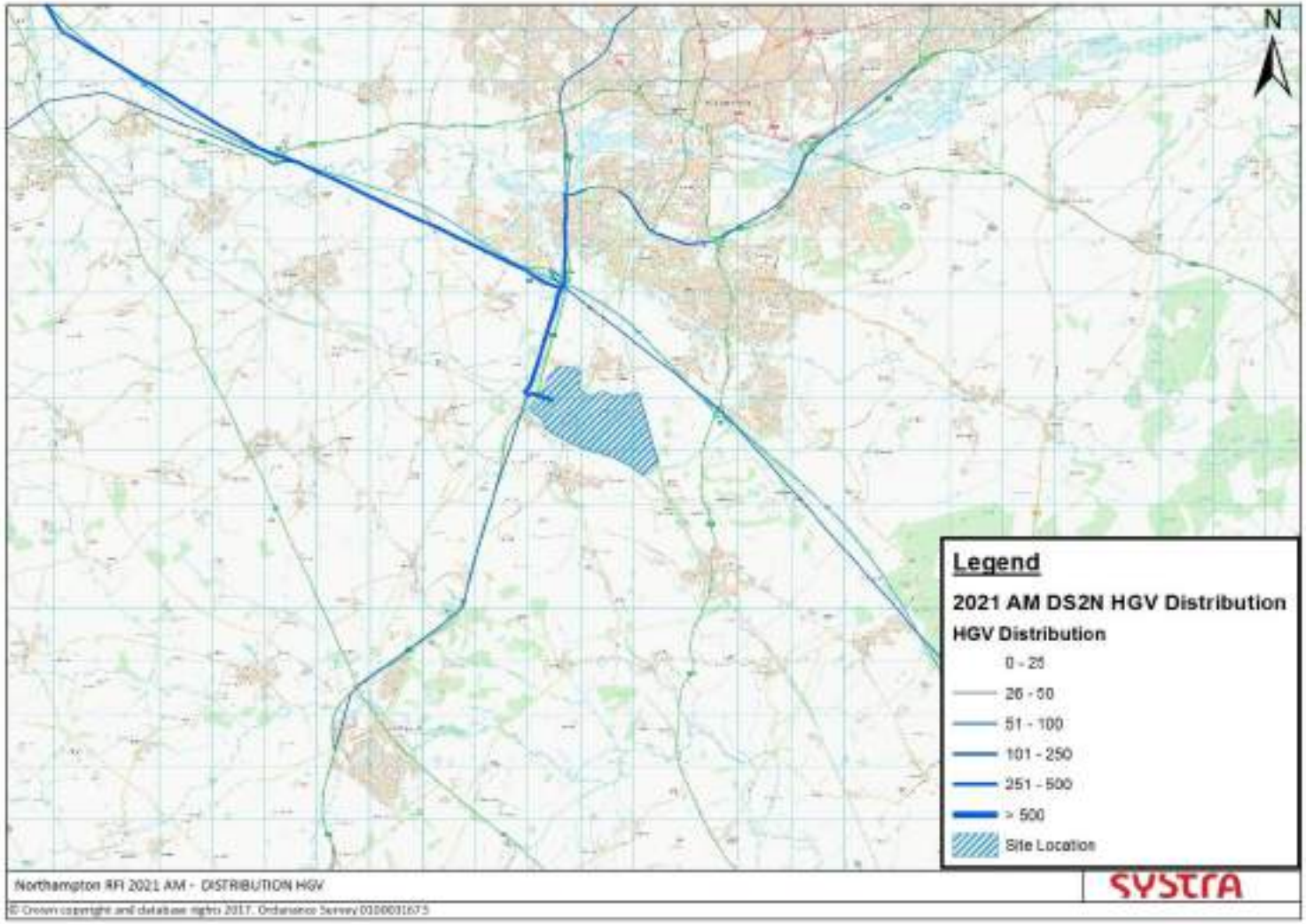


Figure 40. 2021 Core Scenario: HGV Trip Distribution – Evening Peak

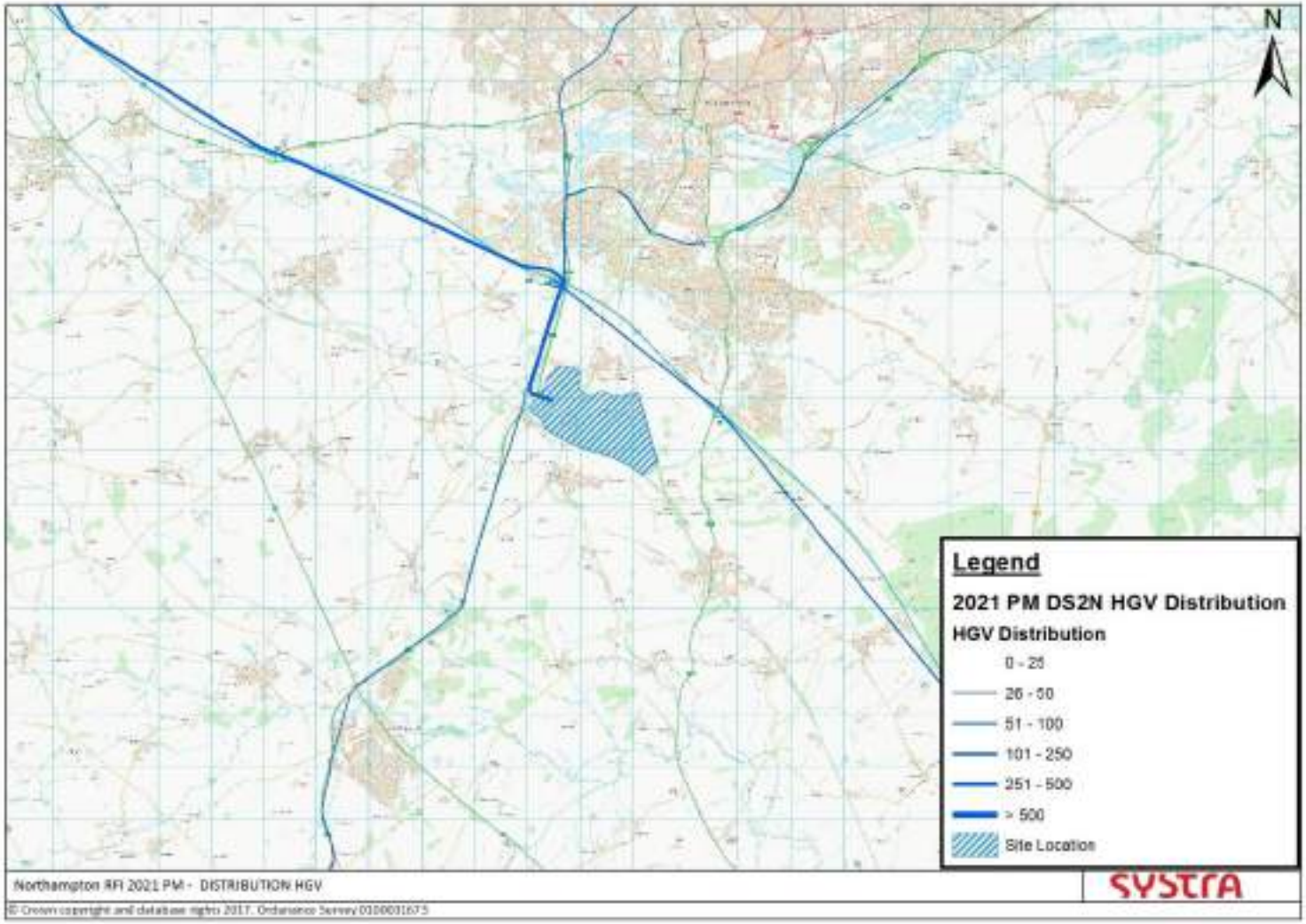


Figure 41. 2021 Core Scenario: Flow Change – Morning Peak

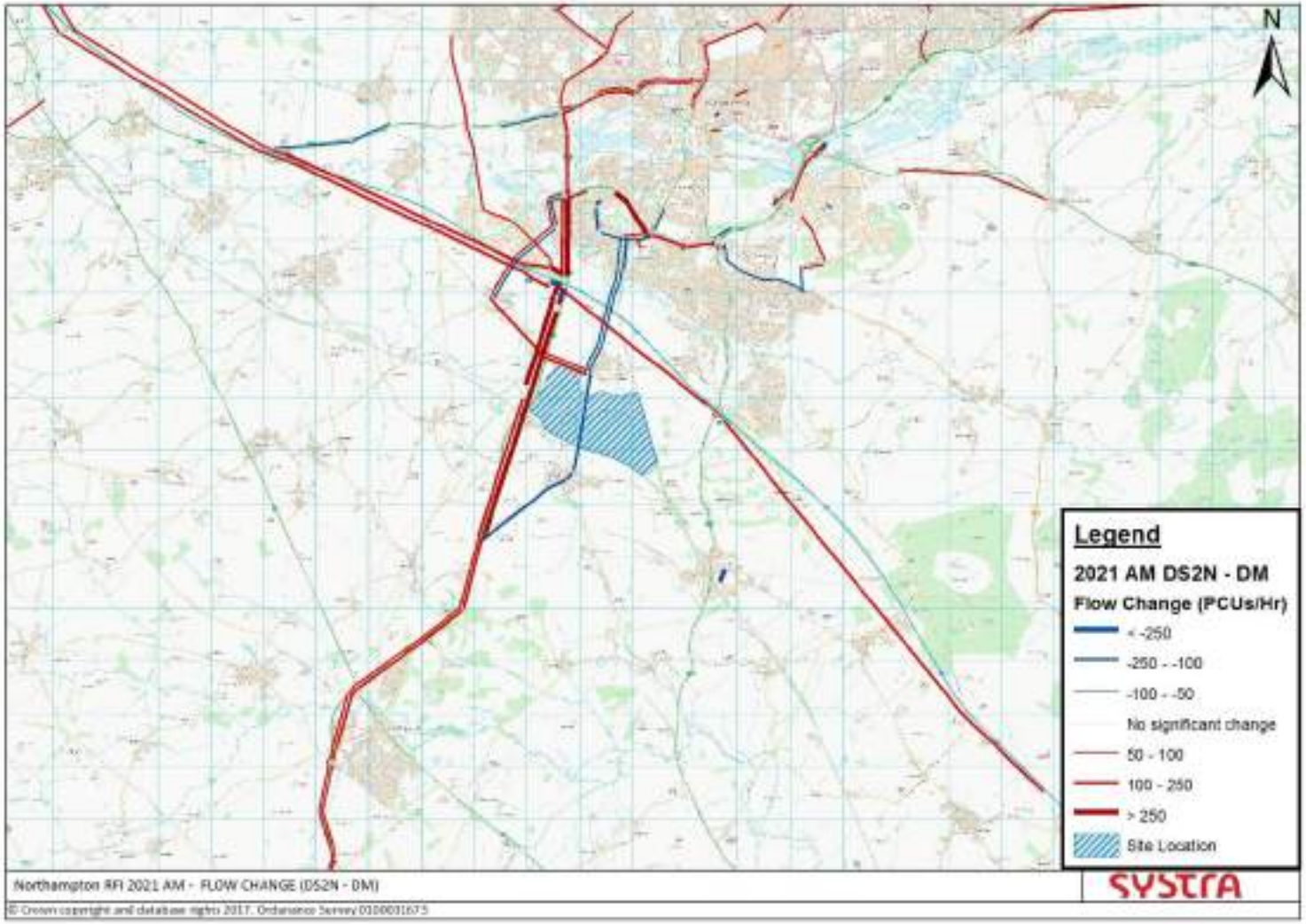


Figure 42. 2021 Core Scenario: Flow Change – Evening Peak

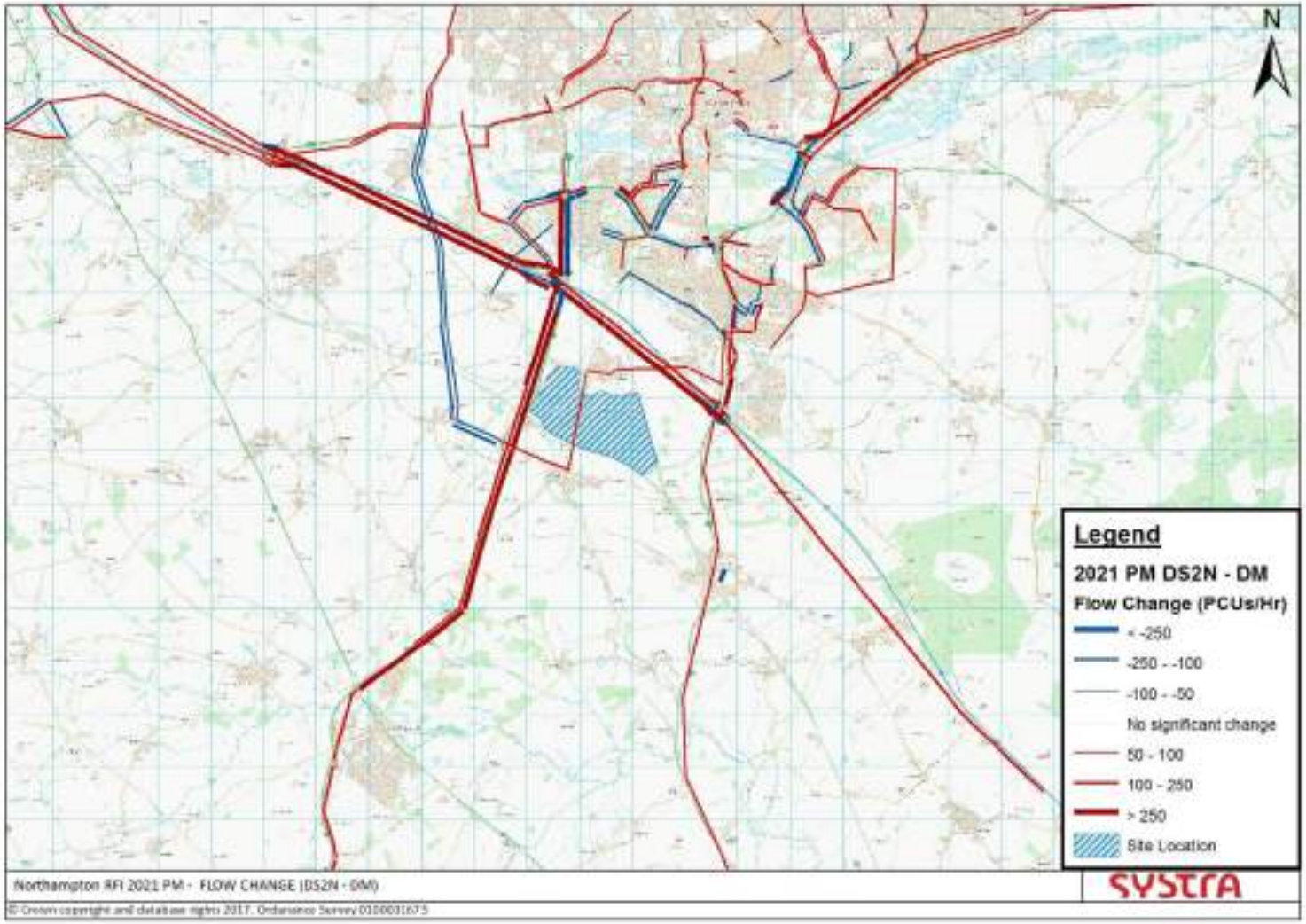


Figure 43. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak

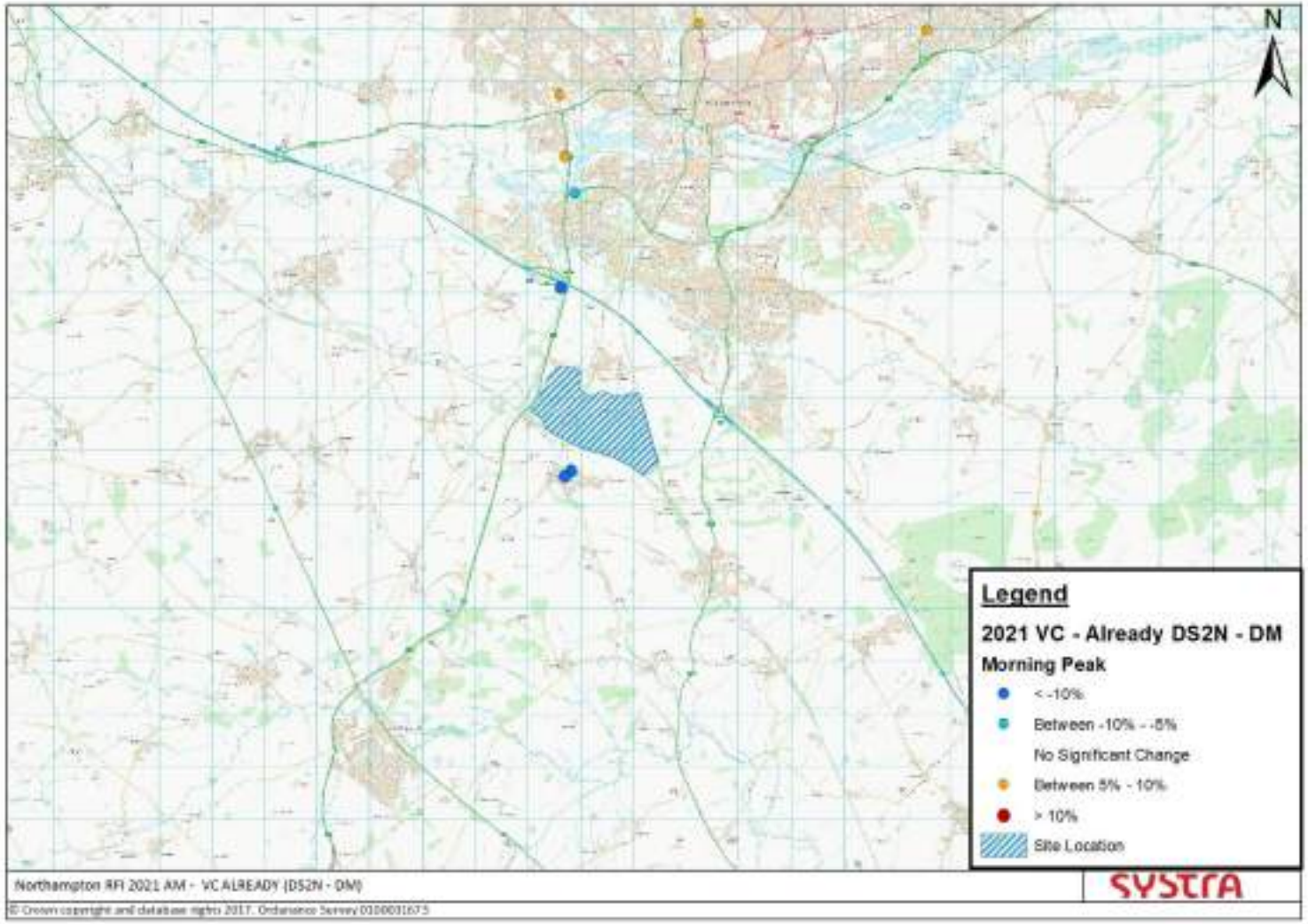


Figure 44. 2021 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak

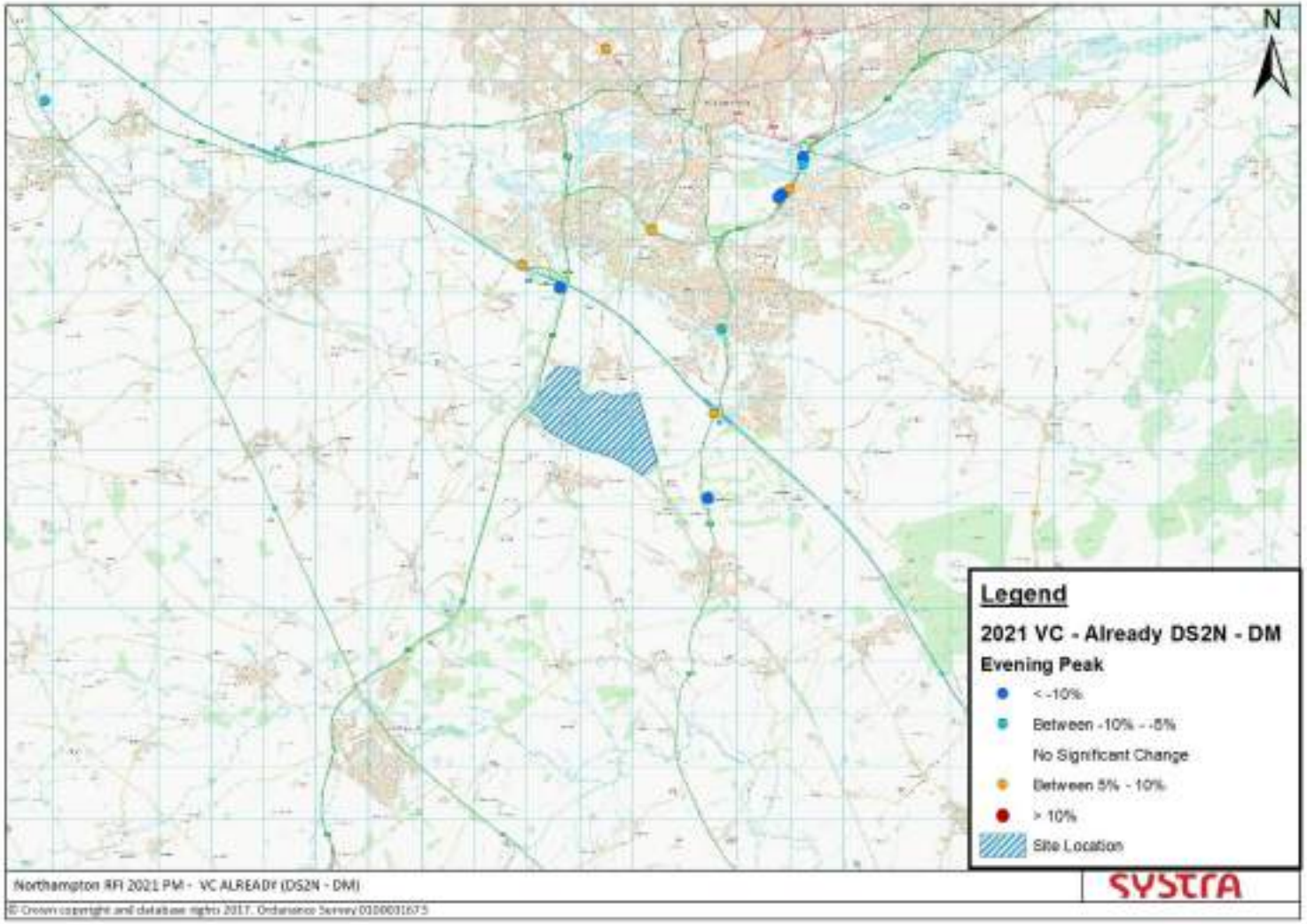


Figure 45. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak

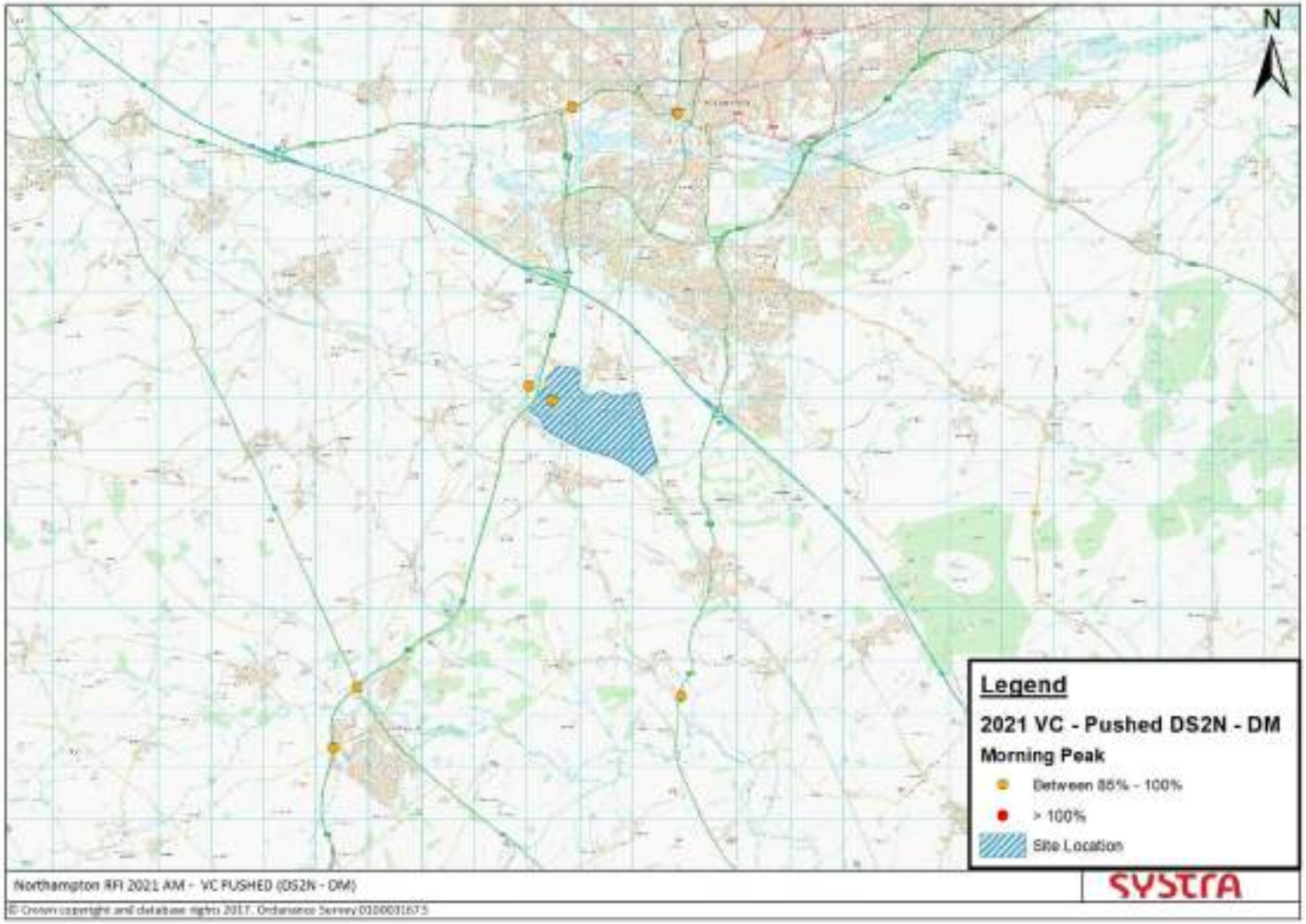
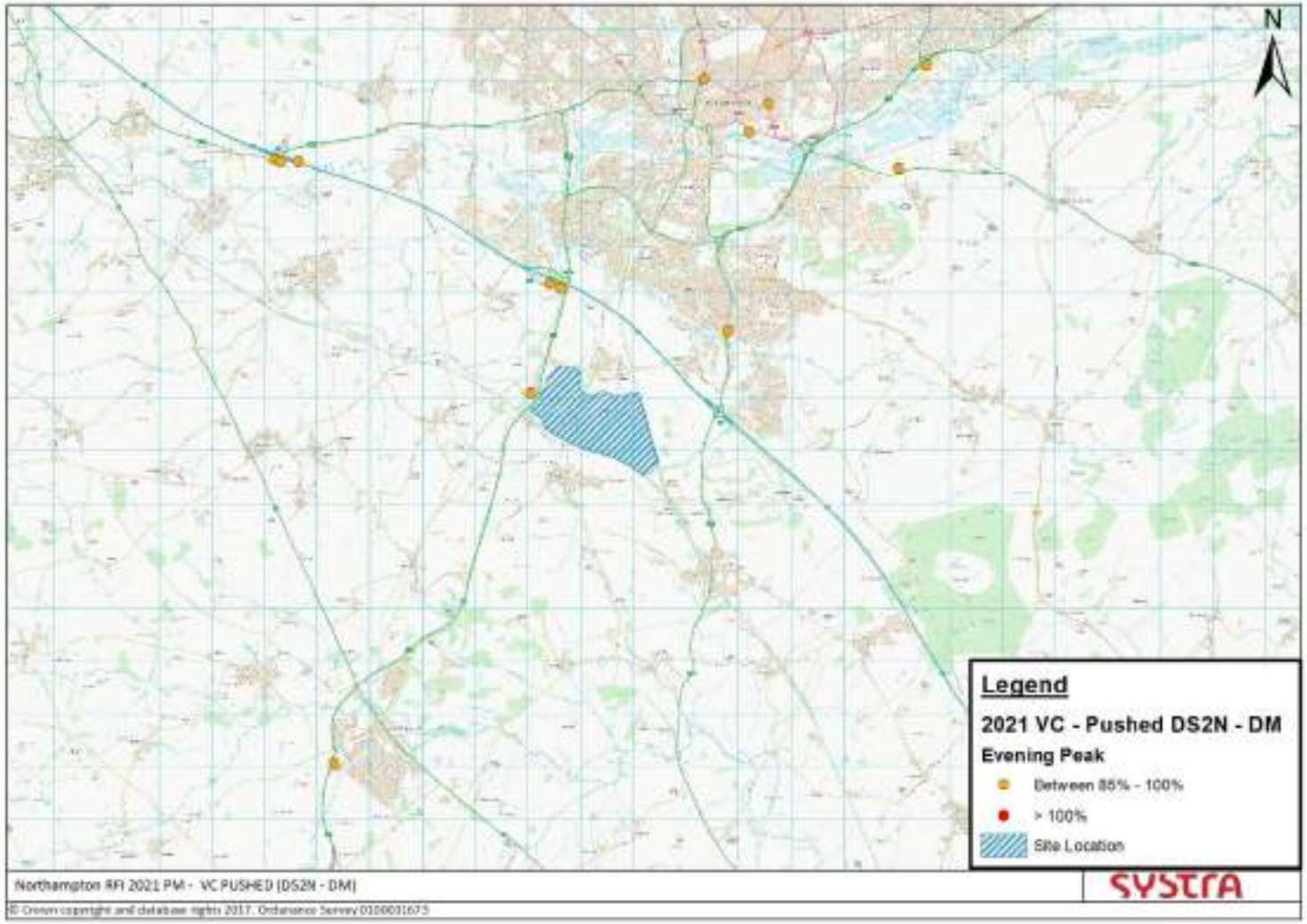


Figure 46. 2021 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak



9. 2031 CORE STRATEGY SCENARIO: M1 JUNCTION 15A MITIGATION

9.1 OVERVIEW OF CHAPTER

9.2 TRIP DISTRIBUTION

- Figure 47. 2031 Core Scenario: All PCUs Trip Distribution – Morning Peak
- Figure 48. 2031 Core Scenario: All PCUs Trip Distribution – Evening Peak
- Figure 49. 2031 Core Scenario: HGV Trip Distribution – Morning Peak
- Figure 50. 2031 Core Scenario: HGV Trip Distribution – Evening Peak

9.3 FLOW CHANGE

- Figure 51. 2031 Core Scenario: Flow Change – Morning Peak
- Figure 52. 2031 Core Scenario: Flow Change – Evening Peak

9.4 JUNCTION CONGESTION

- Figure 53. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak
- Figure 54. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak
- Figure 55. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak
- Figure 56. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak

Figure 47. 2031 Core Scenario: Trip Distribution – Morning Peak

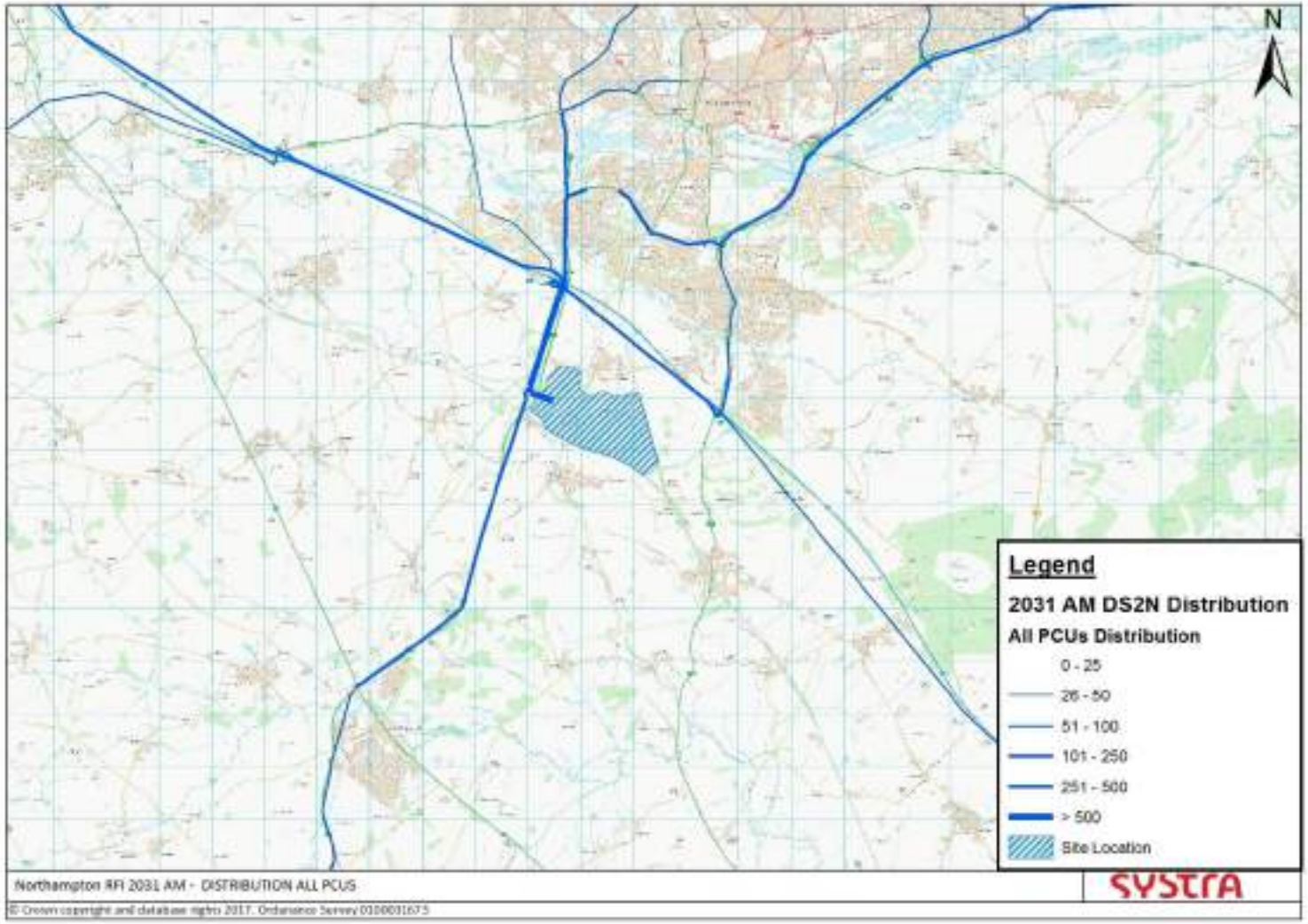


Figure 48. 2031 Core Scenario: Trip Distribution – Evening Peak

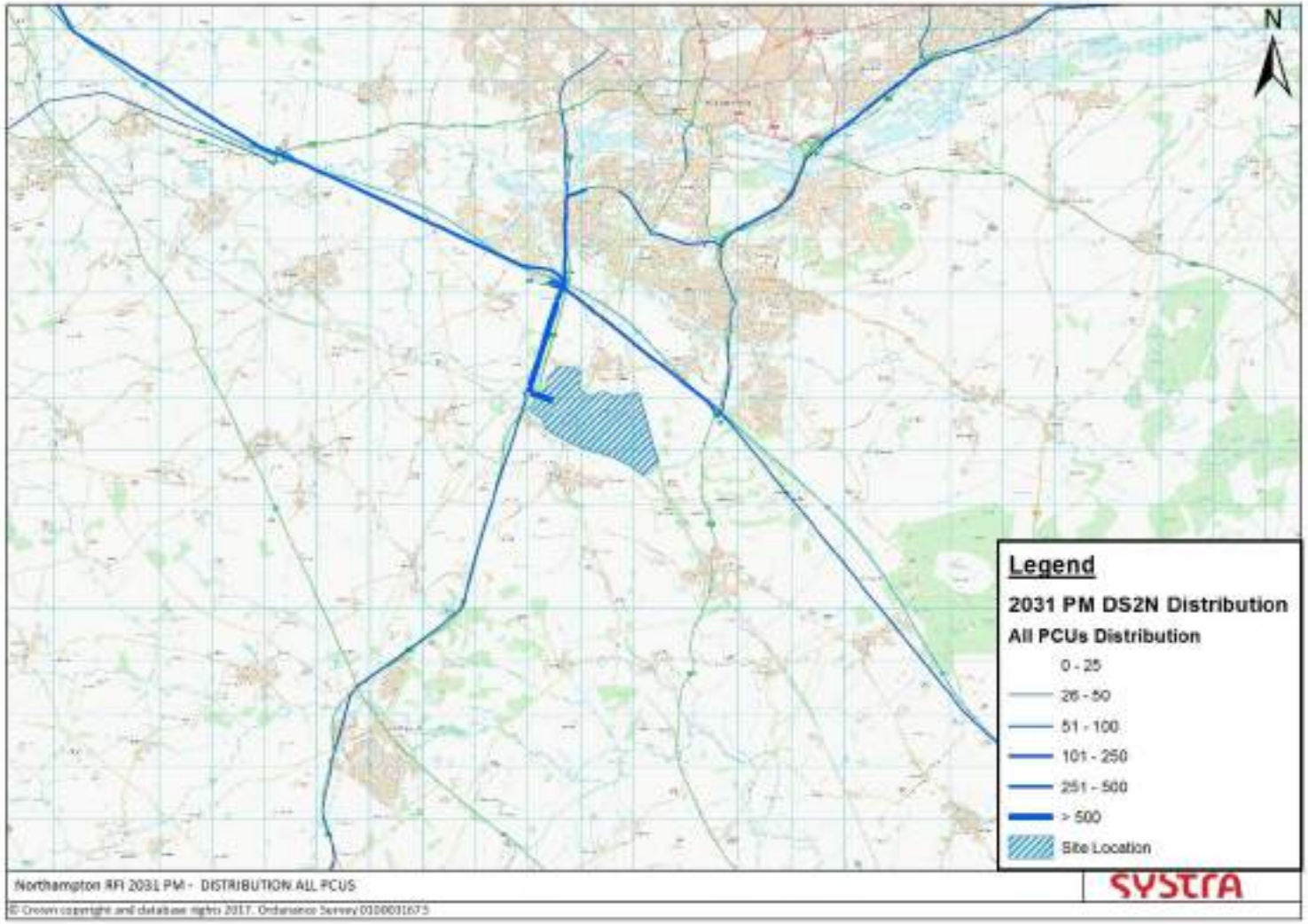


Figure 49. 2031 Core Scenario: HGV Trip Distribution – Morning Peak

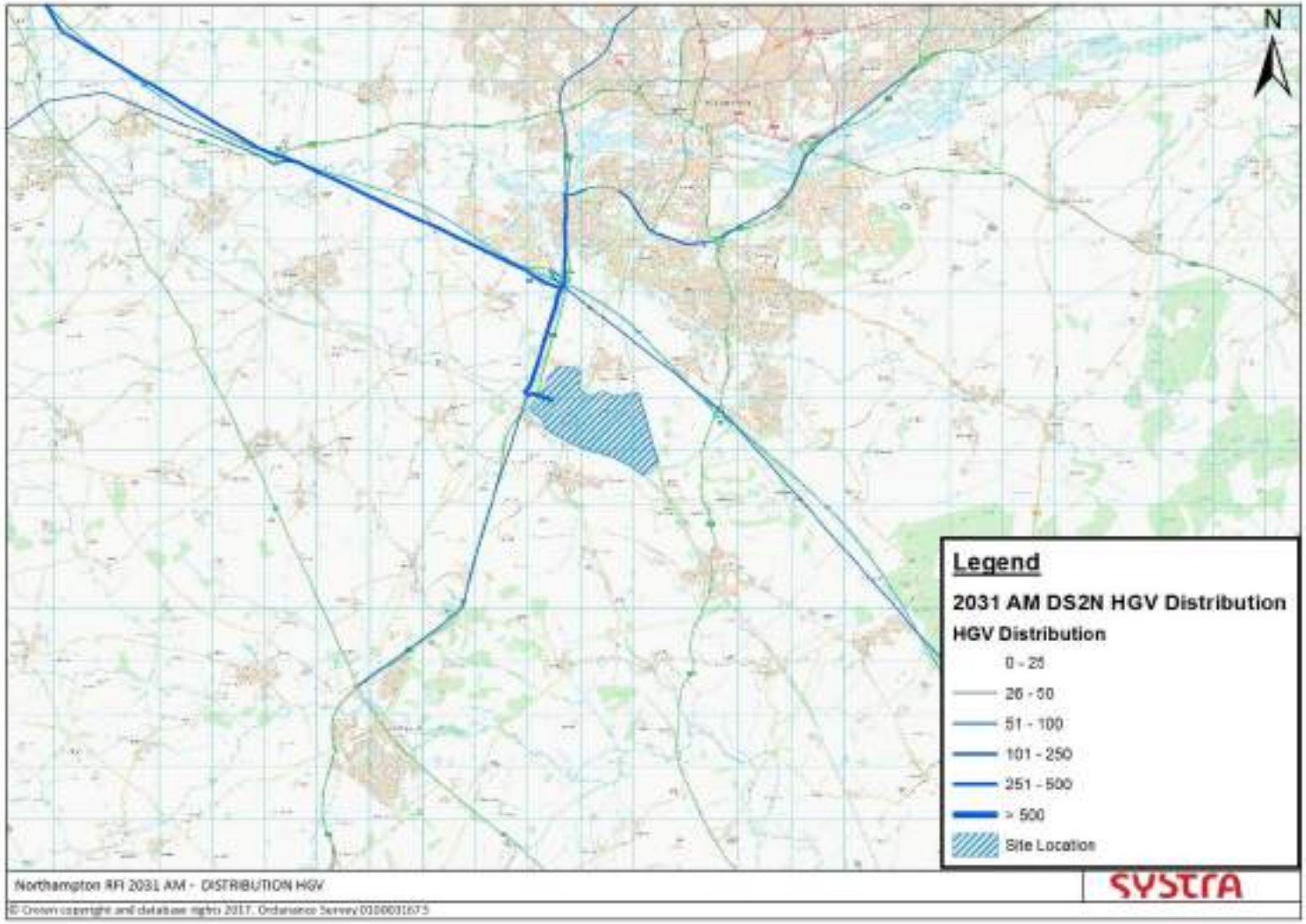


Figure 50. 2031 Core Scenario: HGV Trip Distribution – Evening Peak

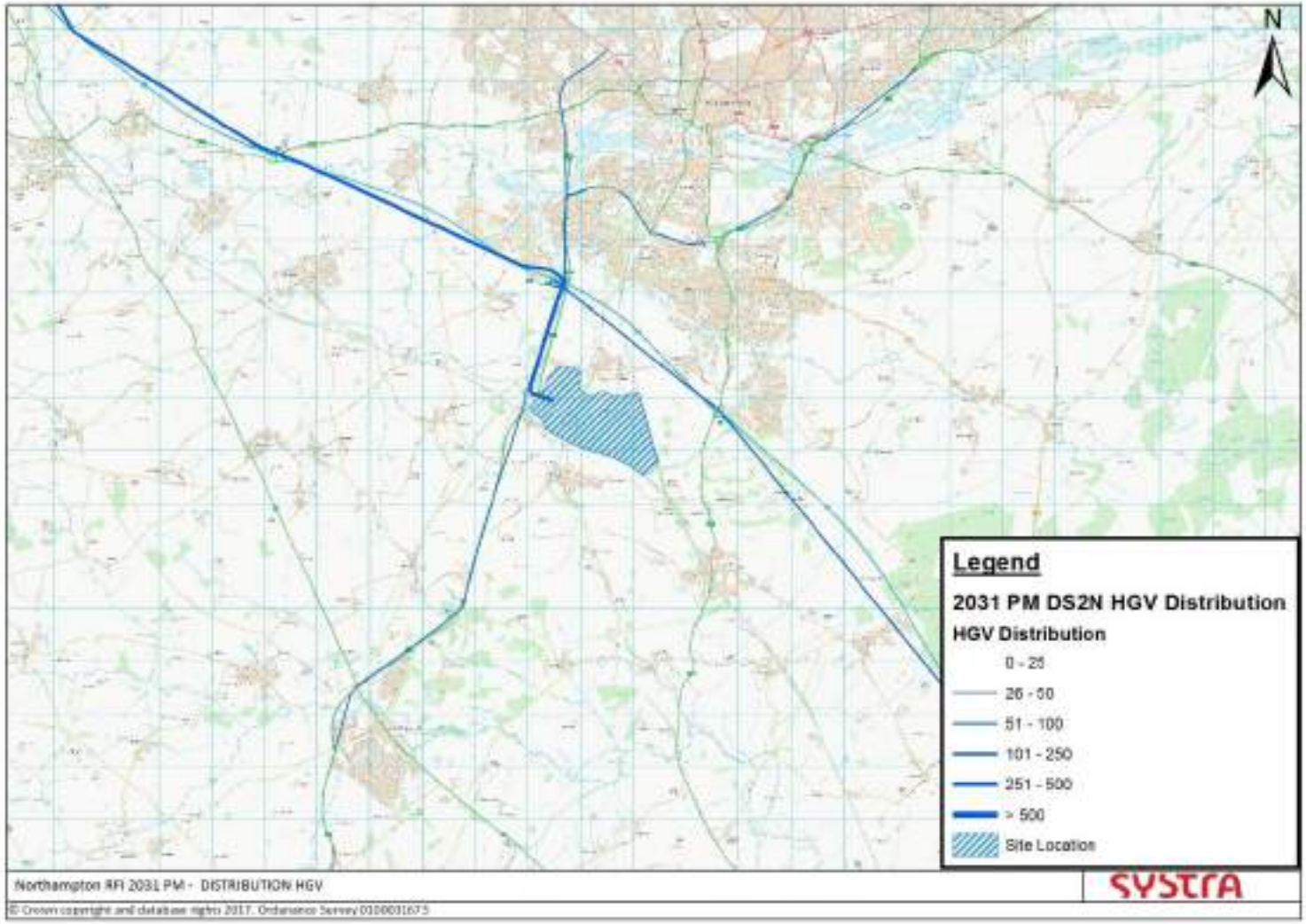


Figure 51. 2031 Core Scenario: Flow Change – Morning Peak

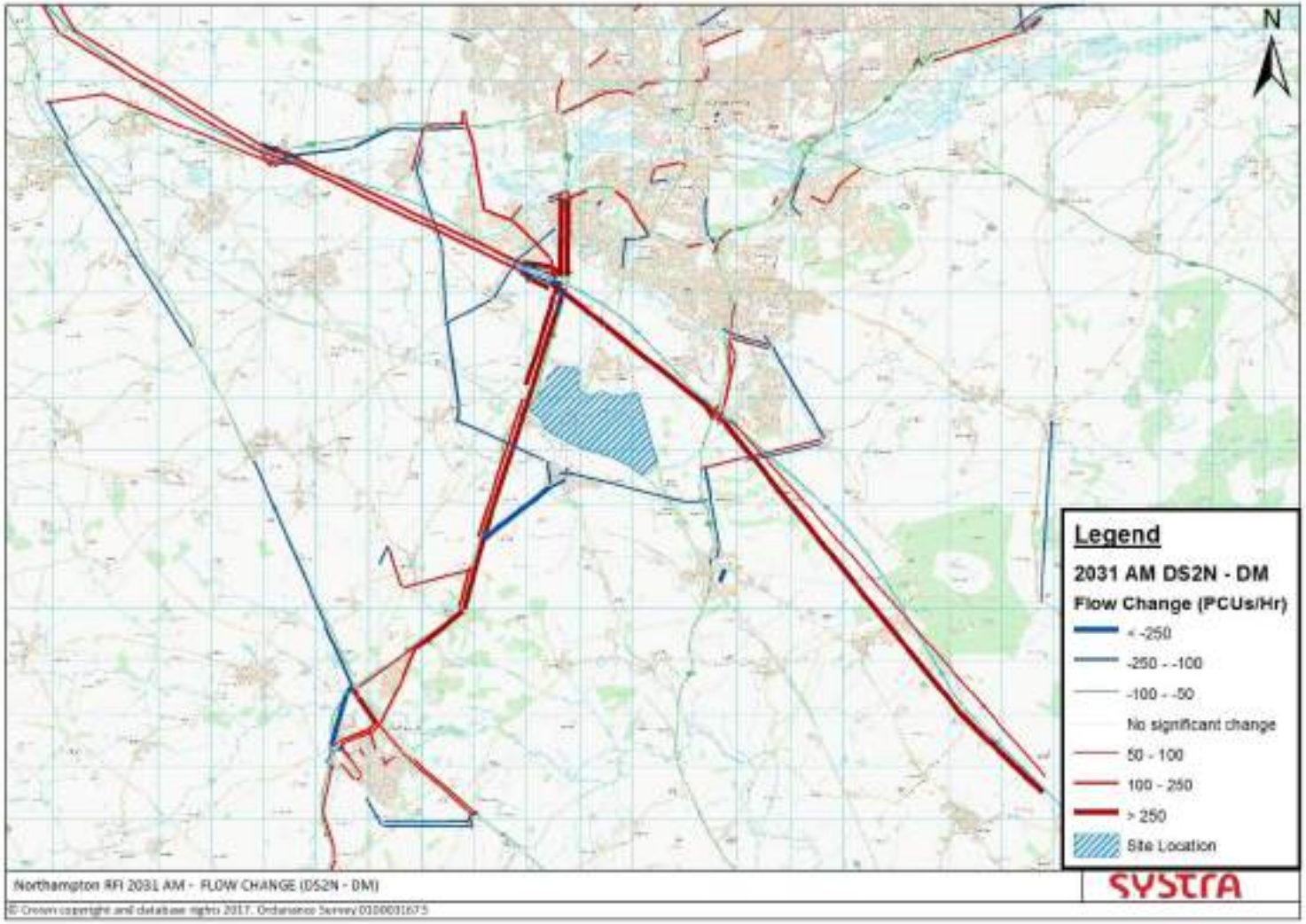


Figure 52. 2031 Core Scenario: Flow Change – Evening Peak

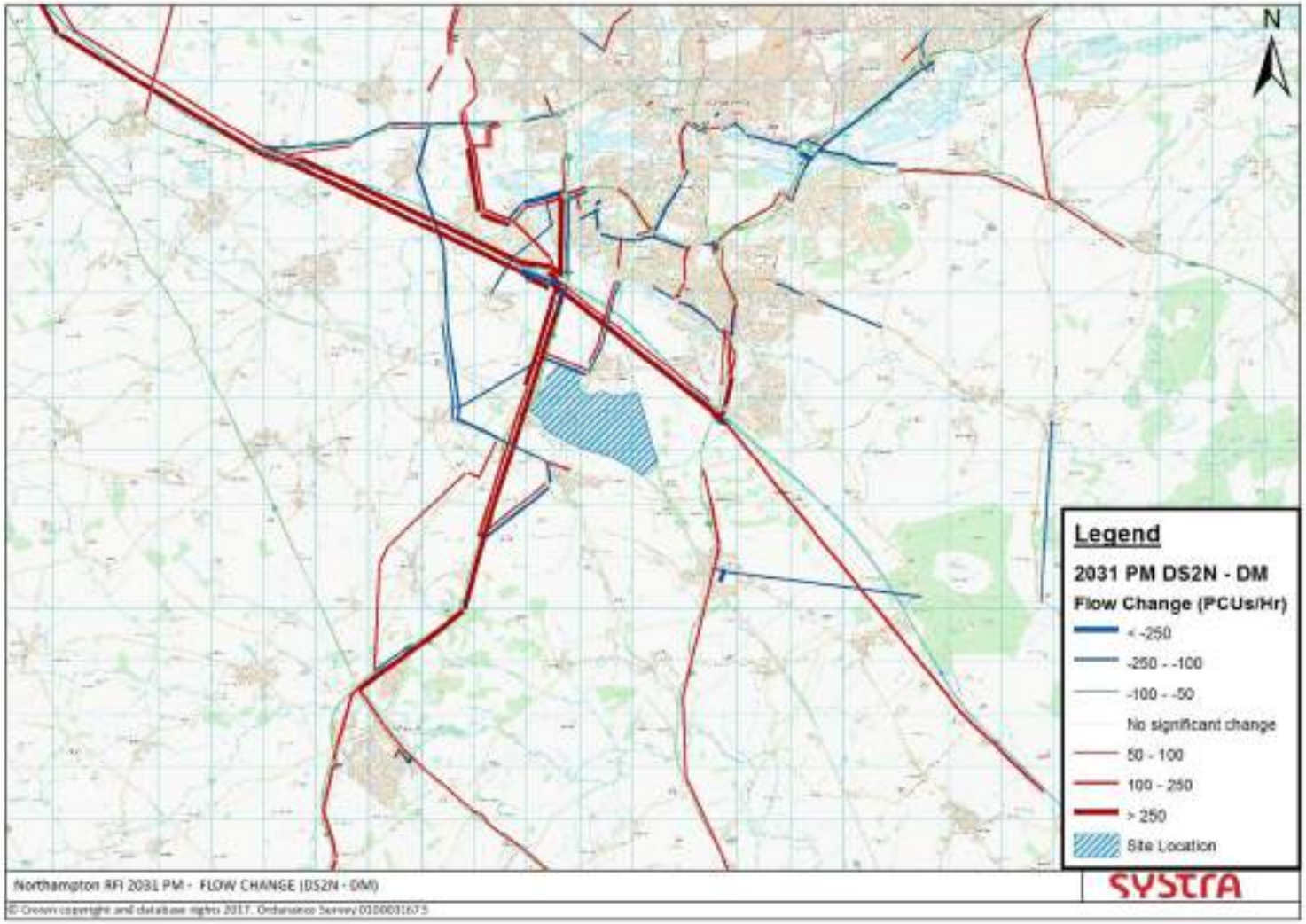


Figure 53. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Morning Peak

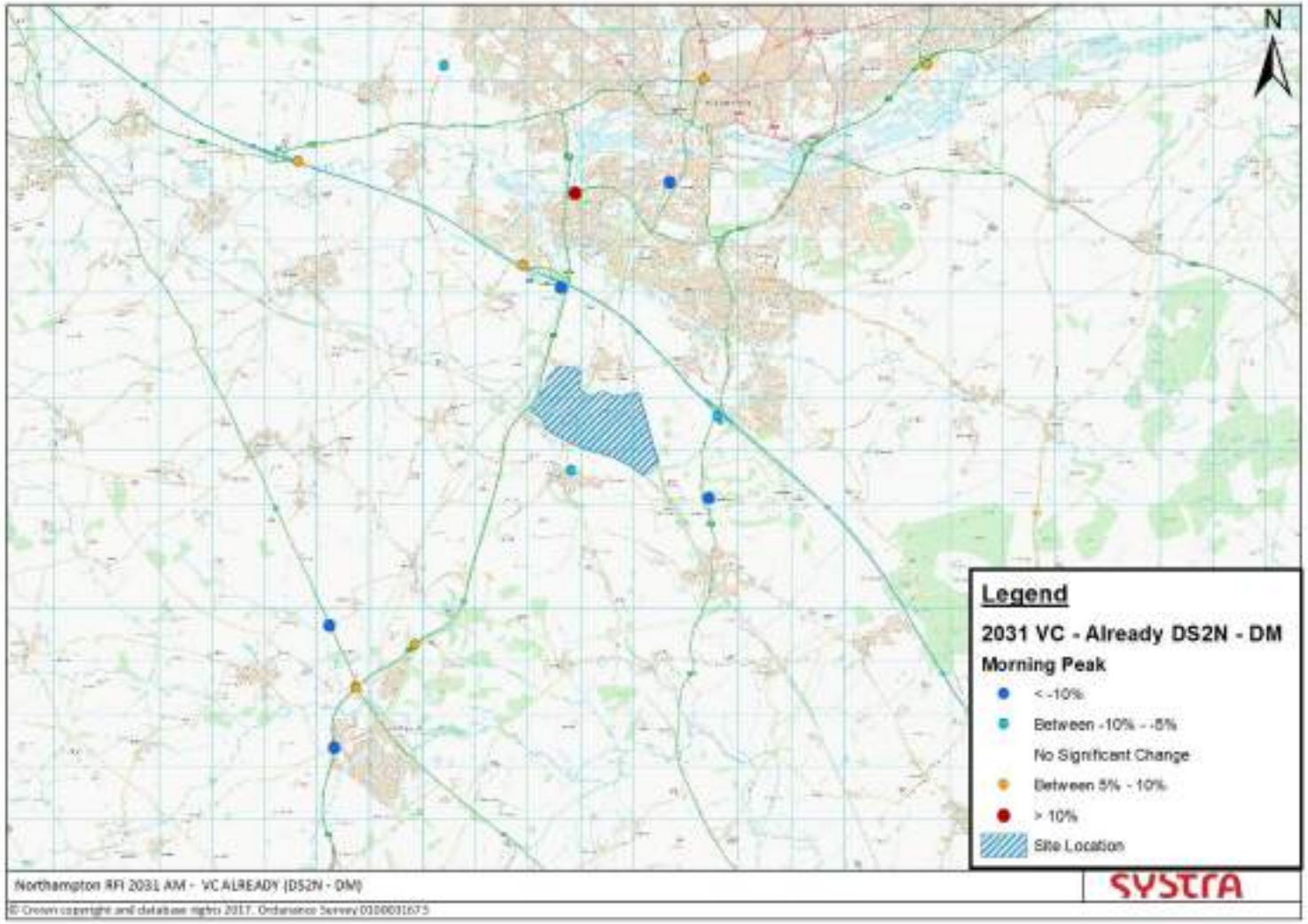


Figure 54. 2031 Core Scenario: Change in Junction Congestion for those already over 85% V/C – Evening Peak

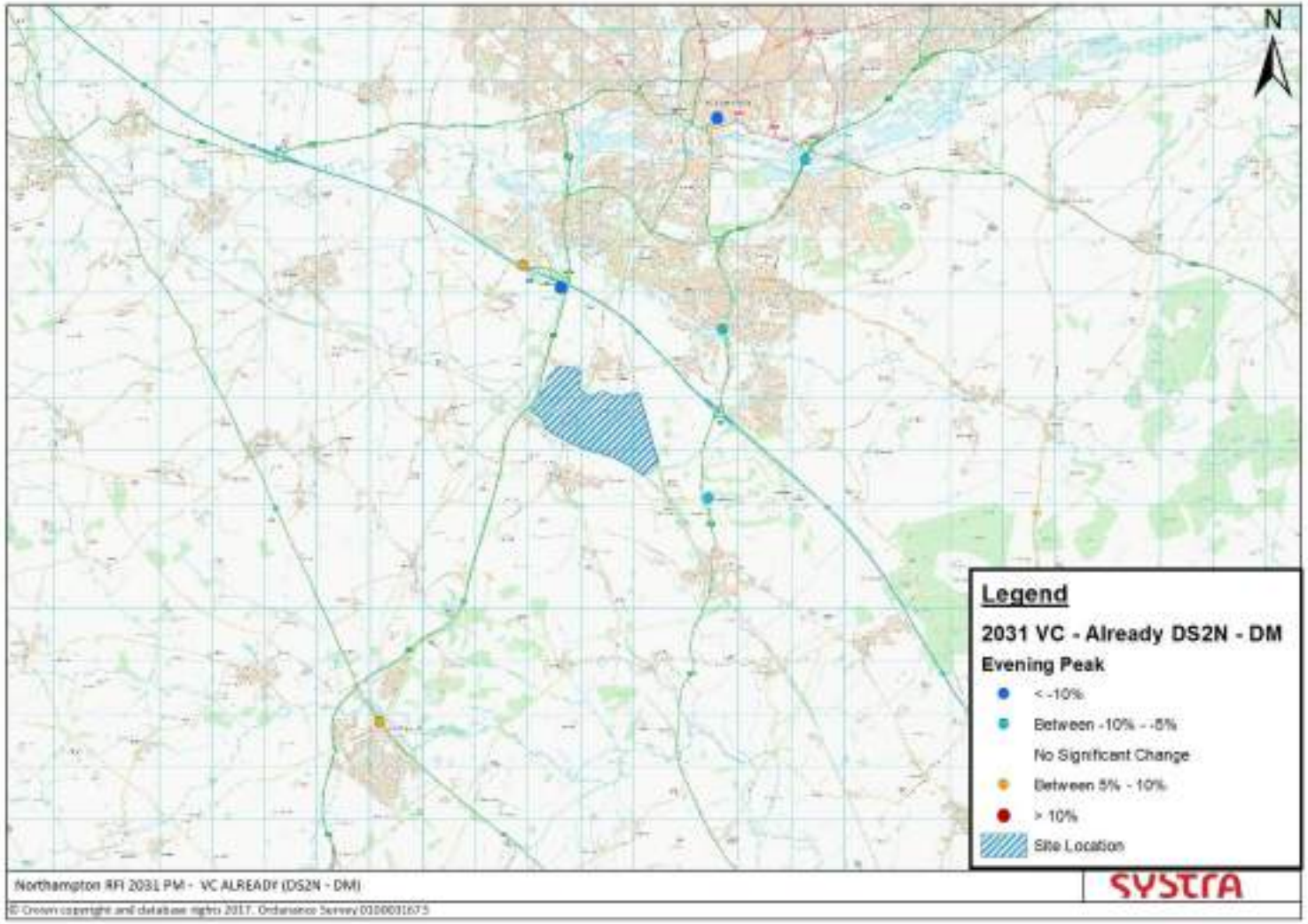


Figure 55. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Morning Peak

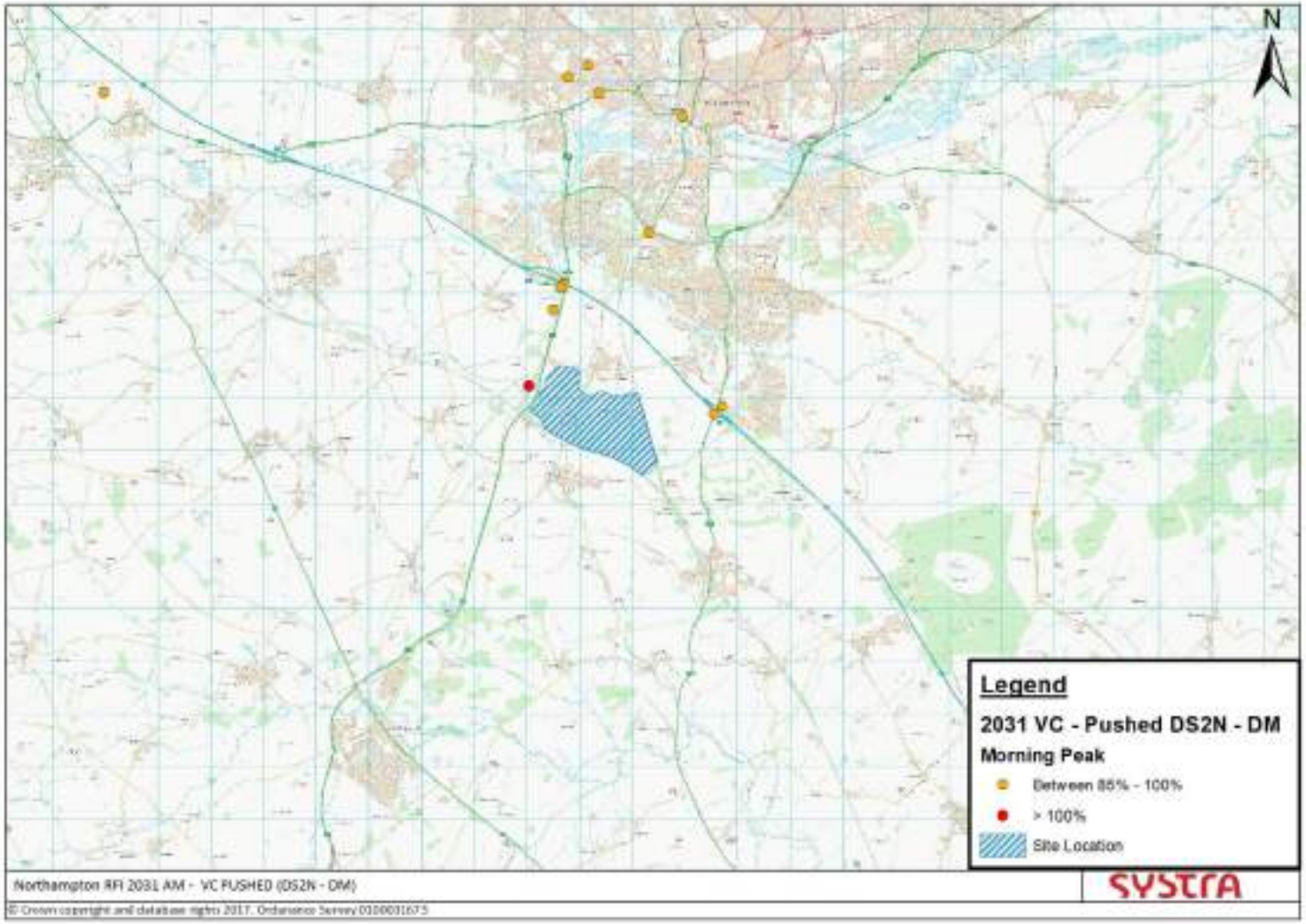
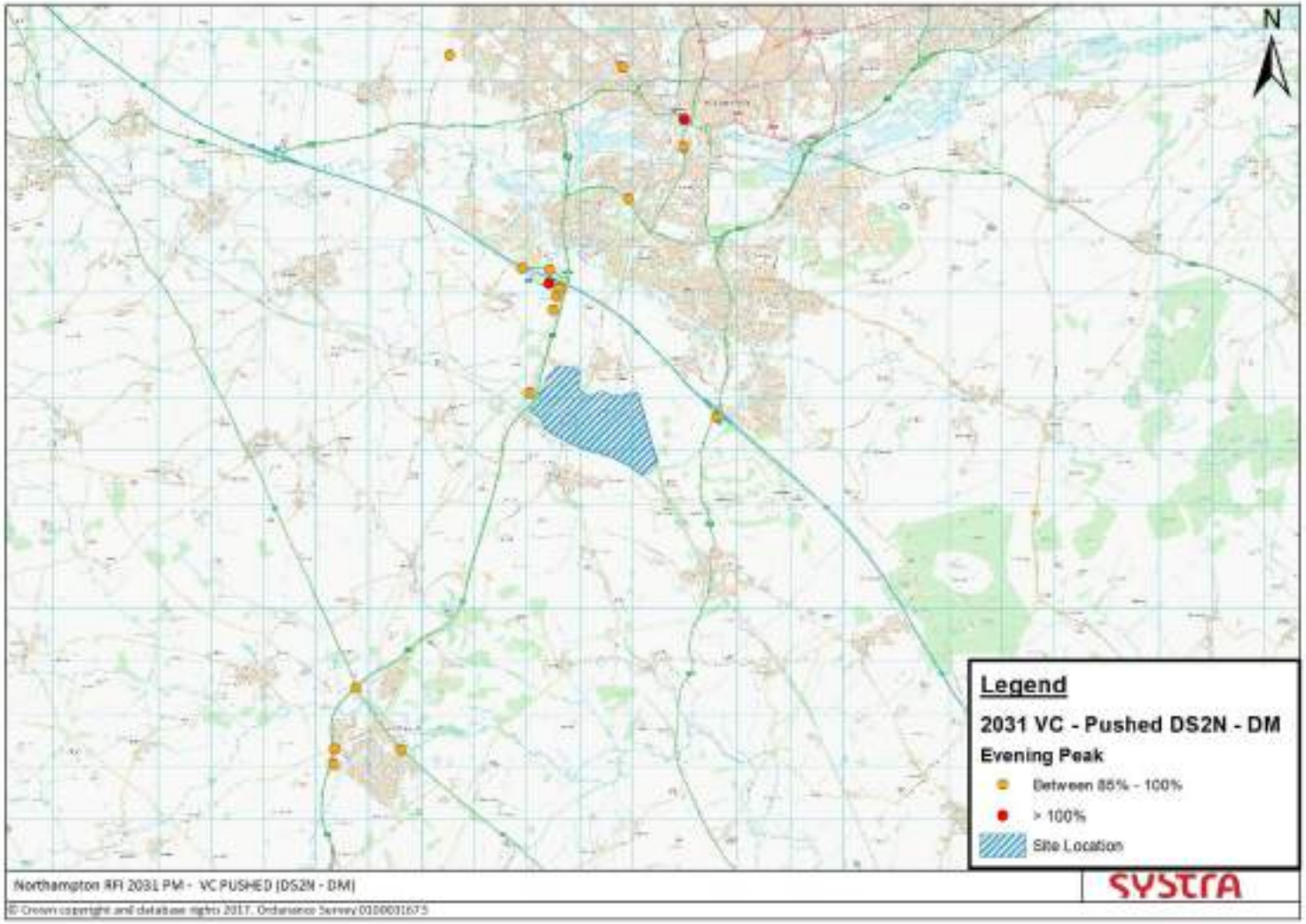


Figure 56. 2031 Core Scenario: Junction Congestion pushed over 85% V/C – Evening Peak



SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

A diverse group of results-oriented people, we are part of a strong team of professionals worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.

For more information visit www.systra.co.uk

Birmingham – Newhall Street
5th Floor, Lancaster House, Newhall St,
Birmingham, B3 1NQ
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

Birmingham – Innovation Court
Innovation Court, 121 Edmund Street, Birmingham B3 2HJ
T: +44 (0)121 230 6010

Bristol
10 Victoria Street, Bristol, BS1 6BN
T: +44 (0)117 922 9040

Dublin
2nd Floor, Riverview House, 21-23 City Quay
Dublin 2,Ireland
T: +353 (0) 1 905 3961

Edinburgh – Thistle Street
Prospect House, 5 Thistle Street, Edinburgh EH2 1DF
United Kingdom
T: +44 (0)131 220 6966

Edinburgh – Manor Place
37 Manor Place, Edinburgh, EH3 7EB
Telephone +44 (0)131 225 7900 Fax: +44 (0)131 225 9229

Glasgow – St Vincent St
Seventh Floor, 124 St Vincent Street
Glasgow G2 5HF United Kingdom
T: +44 (0)141 225 4400

Glasgow – West George St
250 West George Street, Glasgow, G2 4QY
T: +44 (0)141 221 4030 F: +44 (0)800 066 4367

Leeds
100 Wellington Street, Leeds, LS1 1BA
T: +44 (0)113 397 9740 F: +44 (0)113 397 9741

Liverpool
Cotton Exchange, Bixteth Street, Liverpool, L3 9LQ
T: +44 (0)151 230 1930

London
3rd Floor, 5 Old Bailey, London EC4M 7BA United Kingdom
T: +44 (0)203 714 4400

Manchester – 16th Floor, City Tower
16th Floor, City Tower, Piccadilly Plaza
Manchester M1 4BT United Kingdom
T: +44 (0)161 831 5600

Newcastle
Floor B, South Corridor, Milburn House, Dean Street, Newcastle,
NE1 1LE
United Kingdom

T: +44 (0)191 260 0135

Perth
13 Rose Terrace, Perth PH1 5HA
T: +44 (0)1738 621 377 F: +44 (0)1738 632 887

Reading
Soane Point, 6-8 Market Place, Reading,
Berkshire, RG1 2EG
T: +44 (0)118 334 5510

Woking
Dukes Court, Duke Street
Woking, Surrey GU21 5BH United Kingdom
T: +44 (0)1483 728051 F: +44 (0)1483 755207

Other locations:

France:
Bordeaux, Lille, Lyon, Marseille, Paris

Northern Europe:
Astana, Copenhagen, Kiev, London, Moscow, Riga, Wroclaw

Southern Europe & Mediterranean: Algiers, Baku, Bucharest,
Madrid, Rabat, Rome, Sofia, Tunis

Middle East:
Cairo, Dubai, Riyadh

Asia Pacific:
Bangkok, Beijing, Brisbane, Delhi, Hanoi, Hong Kong, Manila, Seoul, Shanghai, Singapore, Shenzhen, Taipei

Africa:
Abidjan, Douala, Johannesburg, Kinshasa, Libreville, Nairobi

Latin America:
Lima, Mexico, Rio de Janeiro, Santiago, São Paulo

North America:
Little Falls, Los Angeles, Montreal, New-York, Philadelphia, Washington

SYSTRA

APPENDIX R

Junction Assessment Technical Notes

DRAFT

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

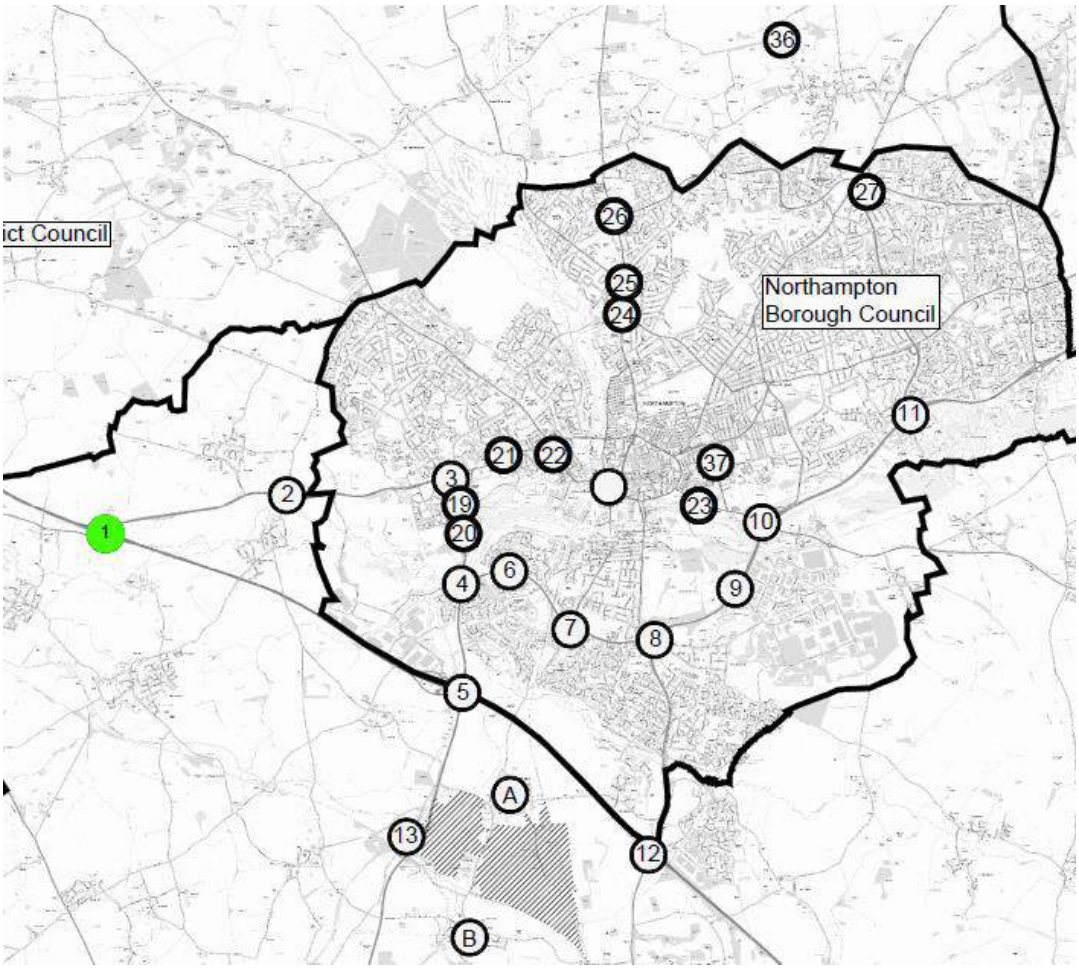
Technical Note No. 11

1 JUNCTION ONE – M1 JUNCTION 16, A4500 AND A45

Existing Junction Description

1.1 Junction One is a four arm grade separated roundabout on the M1 to the east of Upper Heyford. It connects with the A4500 and the A45. The M1 connects to Northampton to the south, via Junction 15A, and M1 Junction 17 for the M45 to the north. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction One Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for Junction One were conducted on Thursday 18th June 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing traffic flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing traffic surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The existing surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 As agreed with the NCC and HE, the junction has been modelled using the industry standard computer modelling software Junctions9. The outputs from Junctions9 relate to Max RFC (Ratio of Flow to Capacity), Max Queue (PCUs) and Delay (Seconds). RFC gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be exceeding theoretical capacity when the RFC greater than one.

1.6 The junction has been set up based on the guidance provided within the Junction9 handbook and industry standard guidance. The geometry of the junction has been measured in AutoCAD, to provide the most accurate measurements for the junction.

Base Model Validation

1.7 A summary of the junction validation is shown in **Table 1**.

Table 1 - Queue comparison for 2015 Base

2015 Base		Average Surveyed Queues	Range of Surveyed Queues	Modelled Max Queue
AM Peak Hour (0800-0900)	Arm 1 – A45	4	1-7	2
	Arm 3 – M1 West	4	0-7	1
	Arm 4 – A4500	4	1-7	1
	Arm 1 – M1 East	5	3-8	0
PM Peak Hour (1700-1800)	Arm 2 – A45	4	1-7	5
	Arm 3 – M1 West	5	1-9	2
	Arm 4 – A4500	3	1-5	1
	Arm 1 – M1 East	6	4-11	0

1.8 It is considered that the modelled queues are generally in line with the surveyed queue, and that the model is therefore appropriately validated.

1.9 Whilst there are instances of the modelled queues being lower than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded during the hour period.

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, shown in **Figure EL01** are summarised in **Table 2** and **Table 3** and junction analysis results are included at **Appendix B**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
RFC (%)	2015	62.0%	40.0%	32.0%	9.0%	55.0%	31.0%	32.0%	8.0%
	2021 DM	113.0%	110.0%	52.0%	83.0%	99.0%	101.0%	71.0%	51.0%
	2021 DS	114.0%	102.0%	52.0%	83.0%	109.0%	86.0%	71.0%	71.0%
	2031 DM	129.0%	123.0%	68.0%	121.0%	116.0%	130.0%	76.0%	75.0%
	2031 DS	129.0%	115.0%	63.0%	123.0%	118.0%	115.0%	82.0%	80.0%
Queue – MMQ (PCU)	2015	2	1	1	0	1	1	1	0
	2021 DM	166	34	1	6	30	18	3	1
	2021 DS	171	20	1	4	120	6	3	3
	2031 DM	346	124	3	121	200	6	3	3
	2031 DS	354	73	2	137	214	52	5	5
Average Delay (sec/pcu)	2015	3.8	4.6	2.1	2.4	3.1	3.8	2.1	2.1
	2021 DM	205.8	204.4	3.5	16.5	42.6	97.9	7.0	5.0
	2021 DS	213.2	131.6	3.8	13.3	145.8	47.5	6.7	9.6
	2031 DM	597.2	706.9	5.4	303.3	261.3	620.4	7.8	12.5
	2031 DS	325.0	599.5	414.3	4.6	291.2	326.2	10.3	15.9

1.11 As shown in **Table 2**, Rail Central is forecast to impact on the operation of the existing junction in the 2021 AM and PM peak scenarios, with Arm 1 in the AM peak exceeding theoretical capacity further by 1%. Furthermore, Arm 1 in the PM peak increases by 10%. However, there is a decrease in RFC on Arm 2 of 8% in the AM and decrease in 15% in the 2021 PM peak. There is also an increase in queueing on Arm 1 during the AM and PM peak of 5 and 90 PCUs respectively.

1.12 As shown in **Table 2**, Rail Central is forecast to impact on the operation of the existing junction in the 2031 AM and PM peak scenarios, with Arm 4 in the AM peak and Arm 1 in the PM peak exceeding capacity further as a result by 2% and 2% respectively. However, there is a decrease with Arm 2 by 8% in the AM peak and Arm 2 by 15%. There is also a significant increase in queueing on Arm 2 during the PM peak of 46 PCUs. However, there is a significant decrease in queueing on Arms 2 in the AM peak of 51.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	**AM**					**PM**				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (PRC)	44.0	-14.0	-13.0	-25.0	-23.0	67.0	-5.0	-10.0	-19.0	-17.0
Overall Junction Delay (PCUhr)	3	172	165	648	597	7	46	106	306	264

1.13 There is minimal effect on overall junction capacity between the DM and DS scenarios for both 2021 and 2031. However, Overall junction delay increases between the DM PM and DS PM scenarios by 60 PCUhrs for 2021. Therefore mitigation is considered necessary to address the development's impact.

Proposed Mitigation

1.14 The proposed mitigation is shown in **Figure J.1** of the TA and summarised is as follows:

- Provision of traffic signal control on both M1 off slips and the A45 approach, as well as three corresponding traffic signals on the circulatory;
- Provision of an additional nearside lane on the M1 Eastbound off-slip approach;
- Provision of an additional offside lane on the M1 Westbound off-slip approach;
- Provision of an additional nearside lane on the A45 approach; and
- Reconfiguration of road markings to provide three lanes on circulatory carriageway, with the exception of the eastern section.

The Standard Modelling Process for the Mitigated Junction

1.15 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

1.16 The junction has been set up based on the guidance provided within the LinSig 3 handbook and industry standard guidance. Default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied, further to comments received from NCC and HE and in accordance with guidance contained in LTN 1/09.

Results of the Mitigation Modelling

1.17 The results of the mitigated junction model is shown in **Table 4** and **Table 5** and junction analysis results are included at **Appendix B**.

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		**AM**				**PM**			
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**
DoS (%)	**2021 DS**	89.4%	65.5%	91.2%	51.1%	94.2%	74.2%	97.4%	38.9%
	Comparison to 2021 DM	-23.6%	-44.5%	39.2%	-31.9%	-4.8%	-26.8%	26.4%	-12.1%
	2031 DS	127.1%	80.8%	90.2%	56.3%	100.6%	73.5%	93.8%	39.0%
	Comparison to 2031 DM	-1.9%	-42.2%	22.2%	-64.7%	-15.4%	-56.5%	17.8%	-36.0%
Queue – MMQ (PCU)	**2021 DS**	17	23	23	6	18	8	35	23
	Comparison to 2021 DM	-149	-11	21	0	-12	-10	32	22
	2031 DS	103	14	22	8	35	11	23	5
	Comparison to 2031 DM	-243	-109	20	-114	-165	5	20	2
	2021 DS	51.2	23.0	22.6	5.5	45.5	24.6	34.5	22.9

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
Average Delay (sec/pcu)	Comparison to 2021 DM	-154.6	-181.4	19.1	-11.0	3.0	-73.3	27.5	17.9
	2031 DS	467.6	31.3	17.9	26.6	97.0	33.5	20.6	22.6
	Comparison to 2031 DM	-129.6	-675.6	12.5	-276.7	-164.3	-586.9	12.8	10.1

1.18 As shown in **Table 4**, the proposed junction mitigation is considered appropriate to ensure that Rail Centrals impact is mitigated in comparison to the 2021 DM scenarios.

1.19 Whilst Arm 3 shows to provide 39.2% less capacity than in the AM DM scenario, the other three arms work better in the AM peak period with the greatest reduction on Arm 2 of 44.5% better in 2021 AM peak scenario. There is also an improvement for queues across the whole junction with a reduction of 138 PCUs in the AM peak period. Furthermore there is a reduction in delay across the whole junction of over five minutes in the AM peak scenario.

1.20 As shown in **Table 4**, the proposed junction mitigation is considered appropriate to ensure that Rail Centrals impact is mitigated in comparison to the 2031 DM scenarios.

1.21 Whilst Arm 3 shows to provide less capacity than in the DM scenario, the other three arms shows an improvement and therefore the junction operates 7% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario. Furthermore, there is a reduction in queues AM peak and PM peak of 447 and 138 respectively, and a reduction in overall delay of almost 18 minutes in the AM peak and over 12 minutes in the PM peak.

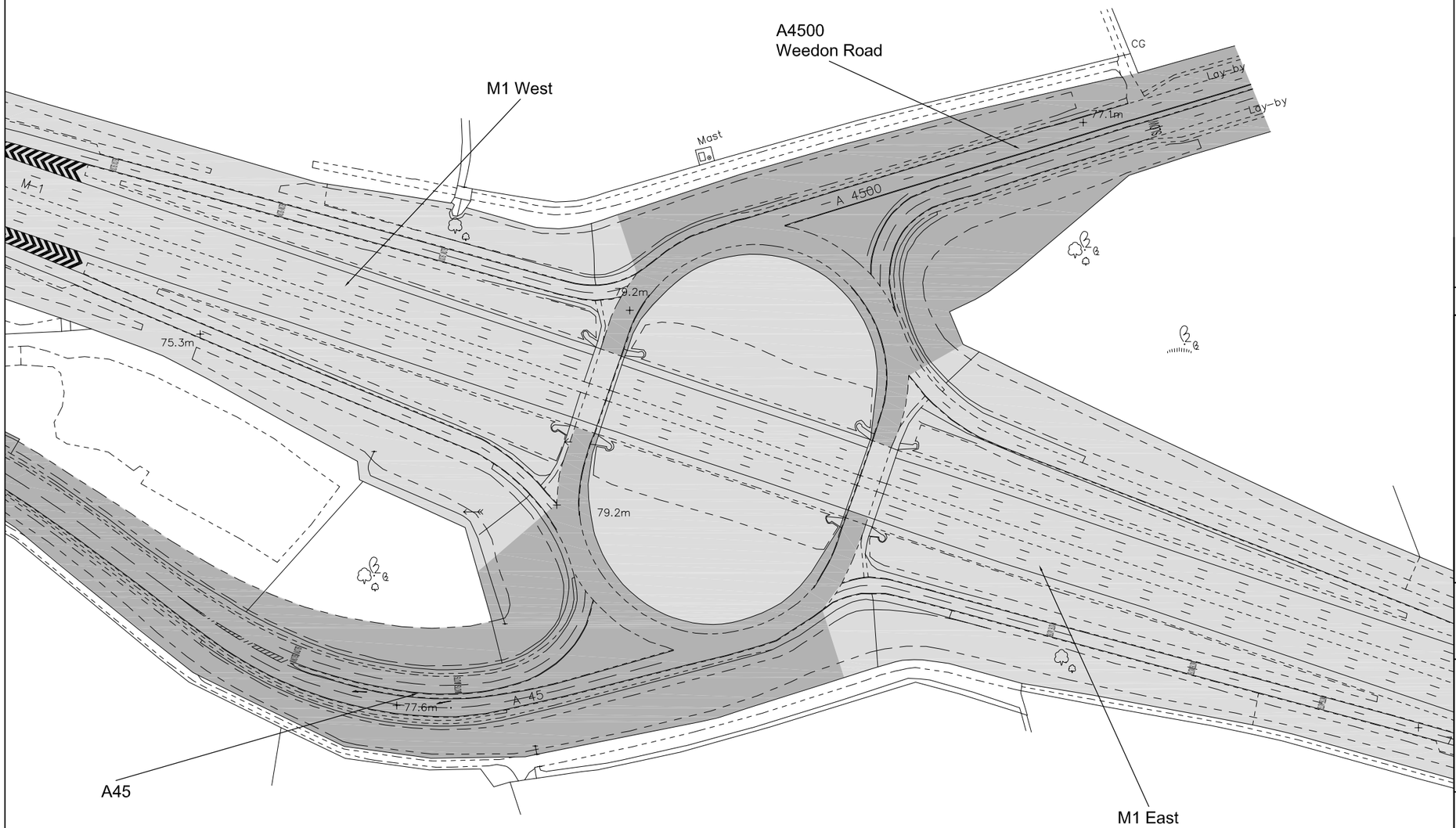
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM
Overall Junction capacity (PRC)	-1.4	NA	-41.3	NA	-8.3	NA	-11.8	NA
Overall Junction Delay (PCUhr)	59	NA	249	NA	67	NA	106	NA

1.22 As shown above in **Table 5**, there is no comparison to the existing junction results as the existing model was constructed in Jucntion9 and the proposed improvement model was constructed in LinSig 3, therefore results are not comparable.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
M1 Junction 16
Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	30.05.17	DR	KS	-MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL01	-

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	42	338	734	1,113
B - M1 EB IN	26	0	421	4,247	4,694
D - A4500WB	168	396	0	129	693
G - M1 WB IN	684	3,239	154	0	4,076
Total	878	3,676	913	5,110	10,577

Modelled Flows
2021 DM
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	56	785	1,158	2,000
B - M1 EB IN	33	0	421	4,729	5,183
D - A4500WB	439	525	0	14	977
G - M1 WB IN	1,453	3,594	352	0	5,399
Total	1,925	4,175	1,558	5,901	13,559

Modelled Flows
2021 DS2
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	55	751	1,206	2,012
B - M1 EB IN	31	0	383	4,905	5,319
D - A4500WB	440	525	0	19	984
G - M1 WB IN	1,424	3,743	347	0	5,515
Total	1,895	4,324	1,481	6,130	13,830

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	0	0	0	0
B - M1 EB IN	0	0	0	0	0
D - A4500WB	0	0	0	0	0
G - M1 WB IN	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	15	447	425	887
B - M1 EB IN	7	0	0	481	488
D - A4500WB	271	129	0	-115	284
G - M1 WB IN	769	355	198	0	1,323
Total	1,047	499	645	791	2,982

2021 DS2 minus 2015 Base
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	14	413	472	899
B - M1 EB IN	5	0	-38	658	624
D - A4500WB	272	129	0	-111	291
G - M1 WB IN	740	505	194	0	1,439
Total	1,017	648	568	1,019	3,253

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	528	545	420	1,493
B - M1 EB IN	40	41	482	0	563
D - A4500WB	466	22	0	331	819
G - M1 WB IN	54	0	104	0	158
Total	560	591	1,131	751	3,033

2021 DM adjusted to count
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	543	992	845	2,380
B - M1 EB IN	47	41	482	481	1,051
D - A4500WB	737	151	0	216	1,103
G - M1 WB IN	823	355	302	0	1,481
Total	1,607	1,090	1,776	1,542	6,015

2021 DS2 adjusted to count
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	542	958	892	2,392
B - M1 EB IN	45	41	444	658	1,187
D - A4500WB	738	151	0	220	1,110
G - M1 WB IN	794	505	298	0	1,597
Total	1,577	1,239	1,699	1,770	6,286

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	45	175	651	871
B - M1 EB IN	88	0	373	4,168	4,630
D - A4500WB	208	537	0	2	747
G - M1 WB IN	783	3,588	291	0	4,662
Total	1,079	4,170	840	4,820	10,910

Modelled Flows
2021 DM
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	89	518	1,230	1,837
B - M1 EB IN	117	0	466	4,267	4,850
D - A4500WB	494	646	0	67	1,207
G - M1 WB IN	1,359	3,933	295	0	5,587
Total	1,970	4,668	1,278	5,565	13,481

Modelled Flows
2021 DS2
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	76	524	1,271	1,870
B - M1 EB IN	101	0	323	4,579	5,003
D - A4500WB	522	662	0	78	1,262
G - M1 WB IN	1,456	4,143	471	0	6,069
Total	2,078	4,881	1,317	5,929	14,205

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	0	0	0	0
B - M1 EB IN	0	0	0	0	0
D - A4500WB	0	0	0	0	0
G - M1 WB IN	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	44	342	579	966
B - M1 EB IN	29	0	92	99	220
D - A4500WB	286	109	0	66	460
G - M1 WB IN	576	345	4	0	925
Total	891	498	439	744	2,571

2021 DS2 minus 2015 Base
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	31	348	620	999
B - M1 EB IN	12	0	-51	411	373
D - A4500WB	314	124	0	77	515
G - M1 WB IN	673	555	180	0	1,408
Total	999	710	477	1,108	3,295

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	493	426	434	1,353
B - M1 EB IN	58	21	389	0	468
D - A4500WB	352	18	0	436	806
G - M1 WB IN	80	0	71	0	151
Total	490	532	886	870	2,778

2021 DM adjusted to count
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	537	768	1,013	2,319
B - M1 EB IN	87	21	481	99	688
D - A4500WB	638	127	0	502	1,266
G - M1 WB IN	656	345	75	0	1,076
Total	1,381	1,030	1,325	1,614	5,349

2021 DS2 adjusted to count
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	524	774	1,054	2,352
B - M1 EB IN	70	21	338	411	841
D - A4500WB	666	142	0	513	1,321
G - M1 WB IN	753	555	251	0	1,559
Total	1,489	1,242	1,363	1,978	6,073

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	42	338	734	1,113
B - M1 EB IN	26	0	421	4,247	4,694
D - A4500WB	168	396	0	129	693
G - M1 WB IN	684	3,239	154	0	4,076
Total	878	3,676	913	5,110	10,577

Modelled Flows
2031 DM
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	66	755	1,120	1,941
B - M1 EB IN	65	0	681	5,136	5,883
D - A4500WB	577	770	0	71	1,418
G - M1 WB IN	1,375	3,725	492	1	5,593
Total	2,016	4,561	1,928	6,328	14,834

Modelled Flows
2031 DS2
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	68	837	1,095	2,001
B - M1 EB IN	77	0	582	5,460	6,119
D - A4500WB	539	739	0	19	1,297
G - M1 WB IN	1,469	3,890	475	0	5,834
Total	2,085	4,698	1,894	6,574	15,252

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	0	0	0	0
B - M1 EB IN	0	0	0	0	0
D - A4500WB	0	0	0	0	0
G - M1 WB IN	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	24	417	386	827
B - M1 EB IN	39	0	260	889	1,188
D - A4500WB	409	374	0	-58	725
G - M1 WB IN	691	487	338	1	1,517
Total	1,139	885	1,015	1,217	4,257

2031 DS2 minus 2015 Base
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	27	499	362	887
B - M1 EB IN	51	0	161	1,213	1,425
D - A4500WB	371	343	0	-111	604
G - M1 WB IN	786	651	322	0	1,759
Total	1,207	1,022	981	1,464	4,675

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	528	545	420	1,493
B - M1 EB IN	40	41	482	0	563
D - A4500WB	466	22	0	331	819
G - M1 WB IN	54	0	104	0	158
Total	560	591	1,131	751	3,033

2031 DM adjusted to count
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	552	962	806	2,320
B - M1 EB IN	79	41	742	889	1,751
D - A4500WB	875	396	0	273	1,544
G - M1 WB IN	745	487	442	1	1,675
Total	1,699	1,476	2,146	1,968	7,290

2031 DS2 adjusted to count
AM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	555	1,044	782	2,380
B - M1 EB IN	91	41	643	1,213	1,988
D - A4500WB	837	365	0	220	1,423
G - M1 WB IN	840	651	426	0	1,917
Total	1,767	1,613	2,112	2,215	7,708

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows

2015 BASE
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	45	175	651	871
B - M1 EB IN	88	0	373	4,168	4,630
D - A4500WB	208	537	0	2	747
G - M1 WB IN	783	3,588	291	0	4,662
Total	1,079	4,170	840	4,820	10,910

Modelled Flows

2031 DM
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	112	654	1,240	2,006
B - M1 EB IN	153	0	550	4,752	5,456
D - A4500WB	600	719	0	82	1,401
G - M1 WB IN	1,443	3,990	425	0	5,858
Total	2,197	4,821	1,629	6,074	14,721

Modelled Flows

2031 DS2
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	101	615	1,269	1,985
B - M1 EB IN	131	0	503	5,006	5,640
D - A4500WB	646	741	0	120	1,507
G - M1 WB IN	1,430	4,350	451	0	6,232
Total	2,207	5,192	1,570	6,395	15,364

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	0	0	0	0
B - M1 EB IN	0	0	0	0	0
D - A4500WB	0	0	0	0	0
G - M1 WB IN	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	67	479	589	1,135
B - M1 EB IN	65	0	177	585	826
D - A4500WB	393	182	0	80	654
G - M1 WB IN	661	402	134	0	1,197
Total	1,118	651	789	1,254	3,812

2031 DS2 minus 2015 Base
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	56	439	618	1,113
B - M1 EB IN	42	0	130	838	1,010
D - A4500WB	438	203	0	119	760
G - M1 WB IN	647	762	161	0	1,570
Total	1,128	1,022	730	1,575	4,454

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	493	426	434	1,353
B - M1 EB IN	58	21	389	0	468
D - A4500WB	352	18	0	436	806
G - M1 WB IN	80	0	71	0	151
Total	490	532	886	870	2,778

2031 DM adjusted to count
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	560	905	1,023	2,488
B - M1 EB IN	123	21	566	585	1,294
D - A4500WB	745	200	0	516	1,460
G - M1 WB IN	741	402	205	0	1,348
Total	1,608	1,183	1,675	2,124	6,590

2031 DS2 adjusted to count
PM Peak

	A - A45	C - M1 WB OUT	E - A4500EB	F - M1 EB OUT	Total
A - A45	0	549	865	1,052	2,466
B - M1 EB IN	100	21	519	838	1,478
D - A4500WB	790	221	0	555	1,566
G - M1 WB IN	727	762	232	0	1,721
Total	1,618	1,554	1,616	2,445	7,232

APPENDIX B

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 1 - M1 J16 Existing .j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J1 - M1 J16
Report generation date: 29/01/2018 09:28:40

»2015, AM
»2015, PM
»2021 DM, AM
»2021 DM, PM
»2021 DS2, AM
»2021 DS2, PM
»2031 DM, AM
»2031 DM, PM
»2031 DS2, AM
»2031 DS2, PM

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
2015										
4 - M1 East	0.1	2.44	0.09	A	44 % [2 - M1 West]	0.1	2.13	0.08	A	67 % [2 - M1 West]
1 - A45	1.7	3.78	0.62	A		1.3	3.13	0.55	A	
2 - M1 West	0.7	4.58	0.40	A		0.5	3.78	0.31	A	
3 - A4500 Weedon Road	0.5	2.07	0.32	A		0.5	2.14	0.32	A	
2021 DM										
4 - M1 East	5.5	16.48	0.83	C	-14 % [2 - M1 West]	1.1	5.00	0.51	A	-5 % [2 - M1 West]
1 - A45	166.0	205.78	1.13	F		29.5	42.55	0.99	E	
2 - M1 West	33.9	204.41	1.10	F		17.5	97.92	1.01	F	
3 - A4500 Weedon Road	1.2	3.53	0.52	A		2.7	6.99	0.71	A	
2021 DS2										
4 - M1 East	4.3	13.34	0.81	B	-13 % [1 - A45]	2.9	9.61	0.71	A	-10 % [1 - A45]
1 - A45	170.5	213.18	1.14	F		119.7	145.80	1.09	F	
2 - M1 West	19.7	131.63	1.02	F		5.5	47.51	0.86	E	
3 - A4500 Weedon Road	1.3	3.84	0.53	A		2.7	6.73	0.71	A	
2031 DM										
4 - M1 East	121.4	303.27	1.21	F	-25 % [2 - M1 West]	3.5	12.52	0.75	B	-19 % [2 - M1 West]
1 - A45	346.2	597.24	1.29	F		200.3	261.28	1.16	F	
2 - M1 West	123.6	706.87	1.23	F		103.0	620.36	1.30	F	

3 - A4500 Weedon Road	2.5	5.36	0.68	A		3.4	7.84	0.76	A	
	2031 DS2									
4 - M1 East	137.3	324.95	1.23	F	-23 % [2 - M1 West]	4.5	15.86	0.80	C	-17 % [2 - M1 West]
1 - A45	354.3	599.45	1.29	F		214.3	291.16	1.18	F	
2 - M1 West	72.9	414.32	1.15	F		51.8	326.15	1.15	F	
3 - A4500 Weedon Road	2.0	4.57	0.63	A		4.8	10.28	0.82	B	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	16/05/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\sam.maloney
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2015	AM	ONE HOUR	08:00	09:30	15	✓
D2	2015	PM	ONE HOUR	17:00	18:30	15	✓
D3	2021 DM	AM	ONE HOUR	08:00	09:30	15	✓
D4	2021 DM	PM	ONE HOUR	17:00	18:30	15	✓
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓
D7	2031 DM	AM	ONE HOUR	08:00	09:30	15	✓
D8	2031 DM	PM	ONE HOUR	17:00	18:30	15	✓
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2015, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	3.38	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	44	2 - M1 West

Arms

Arms

Arm	Name	Description
4	M1 East	
1	A45	
2	M1 West	
3	A4500 Weedon Road	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
4 - M1 East	6.00	6.30	1.0	35.0	128.0	27.0	
1 - A45	6.60	6.60	0.0	35.0	128.0	36.6	
2 - M1 West	5.70	6.60	19.0	35.0	128.0	19.0	
3 - A4500 Weedon Road	7.00	8.10	14.0	45.0	128.0	13.4	

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
4 - M1 East	0.936	2452
1 - A45	0.993	2805
2 - M1 West	0.979	2597
3 - A4500 Weedon Road	1.173	3375

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2015	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	158	100.000
1 - A45		ONE HOUR	✓	1493	100.000
2 - M1 West		ONE HOUR	✓	522	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	819	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	54	0	104
	1 - A45	420	0	528	545
	2 - M1 West	0	40	0	482
	3 - A4500 Weedon Road	331	466	22	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	19	0	17
	1 - A45	10	0	5	8
	2 - M1 West	0	9	0	11
	3 - A4500 Weedon Road	1	13	28	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	0.09	2.44	0.1	A	145	217
1 - A45	0.62	3.78	1.7	A	1370	2055
2 - M1 West	0.40	4.58	0.7	A	479	718
3 - A4500 Weedon Road	0.32	2.07	0.5	A	752	1127

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	119	30	397	2081	0.057	119	564	0.0	0.1	2.158	A
1 - A45	1124	281	95	2711	0.415	1121	421	0.0	0.8	2.429	A
2 - M1 West	393	98	803	1812	0.217	392	413	0.0	0.3	2.807	A
3 - A4500 Weedon Road	617	154	345	2970	0.208	615	849	0.0	0.3	1.653	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	142	36	474	2008	0.071	142	675	0.1	0.1	2.269	A
1 - A45	1342	336	113	2693	0.498	1341	503	0.8	1.1	2.859	A
2 - M1 West	469	117	960	1658	0.283	469	494	0.3	0.4	3.354	A
3 - A4500 Weedon Road	736	184	413	2891	0.255	736	1016	0.3	0.4	1.806	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	174	43	581	1909	0.091	174	826	0.1	0.1	2.441	A
1 - A45	1644	411	139	2668	0.616	1641	616	1.1	1.7	3.760	A
2 - M1 West	575	144	1175	1447	0.397	574	605	0.4	0.7	4.563	A
3 - A4500 Weedon Road	902	225	506	2782	0.324	901	1243	0.4	0.5	2.070	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	174	43	581	1908	0.091	174	827	0.1	0.1	2.442	A
1 - A45	1644	411	139	2667	0.616	1644	617	1.7	1.7	3.778	A
2 - M1 West	575	144	1177	1445	0.398	575	606	0.7	0.7	4.582	A
3 - A4500 Weedon Road	902	225	506	2781	0.324	902	1245	0.5	0.5	2.071	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	142	36	475	2008	0.071	142	676	0.1	0.1	2.272	A

1 - A45	1342	336	113	2693	0.498	1345	504	1.7	1.1	2.877	A
2 - M1 West	469	117	963	1655	0.284	470	495	0.7	0.4	3.370	A
3 - A4500 Weedon Road	736	184	414	2889	0.255	737	1019	0.5	0.4	1.808	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	119	30	398	2080	0.057	119	566	0.1	0.1	2.161	A
1 - A45	1124	281	95	2711	0.415	1125	422	1.1	0.8	2.441	A
2 - M1 West	393	98	806	1809	0.217	394	415	0.4	0.3	2.822	A
3 - A4500 Weedon Road	617	154	347	2969	0.208	617	852	0.4	0.3	1.657	A

2015, PM

Data Errors and Warnings
No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	2.89	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	67	2 - M1 West

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2015	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	151	100.000
1 - A45		ONE HOUR	✓	1353	100.000
2 - M1 West		ONE HOUR	✓	447	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	806	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	80	0	71
	1 - A45	434	0	493	426
	2 - M1 West	0	58	0	389
	3 - A4500 Weedon Road	436	352	18	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	7	0	12
	1 - A45	11	0	2	6
	2 - M1 West	0	13	0	16
	3 - A4500 Weedon Road	4	18	27	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	0.08	2.13	0.1	A	139	208
1 - A45	0.55	3.13	1.3	A	1242	1862
2 - M1 West	0.31	3.78	0.5	A	410	615
3 - A4500 Weedon Road	0.32	2.14	0.5	A	740	1109

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	114	28	322	2151	0.053	113	654	0.0	0.1	1.930	A
1 - A45	1019	255	67	2739	0.372	1016	368	0.0	0.6	2.213	A
2 - M1 West	337	84	699	1913	0.176	336	384	0.0	0.2	2.637	A
3 - A4500 Weedon Road	607	152	369	2942	0.206	606	665	0.0	0.3	1.697	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	136	34	385	2092	0.065	136	782	0.1	0.1	2.010	A
1 - A45	1216	304	80	2726	0.446	1215	440	0.6	0.9	2.525	A
2 - M1 West	402	100	836	1779	0.226	401	459	0.2	0.3	3.021	A
3 - A4500 Weedon Road	725	181	442	2857	0.254	724	796	0.3	0.4	1.858	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	166	42	471	2012	0.083	166	957	0.1	0.1	2.131	A
1 - A45	1490	372	98	2708	0.550	1488	539	0.9	1.3	3.124	A
2 - M1 West	492	123	1024	1595	0.309	491	562	0.3	0.5	3.769	A
3 - A4500 Weedon Road	887	222	541	2741	0.324	887	974	0.4	0.5	2.139	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	166	42	471	2011	0.083	166	958	0.1	0.1	2.132	A
1 - A45	1490	372	98	2708	0.550	1490	539	1.3	1.3	3.132	A
2 - M1 West	492	123	1025	1594	0.309	492	563	0.5	0.5	3.775	A
3 - A4500 Weedon Road	887	222	542	2740	0.324	887	975	0.5	0.5	2.140	A

18:00 - 18:15

Arm	Total Demand	Junction	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	Arrivals (PCU)						e (PCU)	e (PCU)		
4 - M1 East	136	34	385	2092	0.065	136	783	0.1	0.1	2.012	A
1 - A45	1216	304	80	2726	0.446	1218	441	1.3	0.9	2.533	A
2 - M1 West	402	100	838	1777	0.226	403	460	0.5	0.3	3.028	A
3 - A4500 Weedon Road	725	181	443	2856	0.254	725	798	0.5	0.4	1.863	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	114	28	322	2151	0.053	114	655	0.1	0.1	1.933	A
1 - A45	1019	255	67	2739	0.372	1020	369	0.9	0.6	2.220	A
2 - M1 West	337	84	702	1911	0.176	337	385	0.3	0.2	2.644	A
3 - A4500 Weedon Road	607	152	371	2940	0.206	607	668	0.4	0.3	1.701	A

2021 DM, AM

Data Errors and Warnings
No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	120.73	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-14	2 - M1 West

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2021 DM	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	1125	100.000
1 - A45		ONE HOUR	✓	2380	100.000
2 - M1 West		ONE HOUR	✓	529	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1104	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	823	0	302
	1 - A45	845	0	543	992
	2 - M1 West	0	47	0	482
	3 - A4500 Weedon Road	216	737	151	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	19	0	17
	1 - A45	10	0	5	8
	2 - M1 West	0	9	0	11
	3 - A4500 Weedon Road	1	13	28	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	0.83	16.48	5.5	C	1032	1548
1 - A45	1.13	205.78	166.0	F	2184	3276
2 - M1 West	1.10	204.41	33.9	F	485	728

3 - A4500 Weedon Road	0.52	3.53	1.2	A	1013	1520

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	847	212	702	1795	0.472	843	794	0.0	1.0	4.457	A
1 - A45	1792	448	340	2468	0.726	1781	1205	0.0	2.8	5.569	A
2 - M1 West	398	100	1601	1031	0.386	395	520	0.0	0.7	6.254	A
3 - A4500 Weedon Road	831	208	667	2592	0.321	829	1329	0.0	0.5	2.287	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1011	253	839	1667	0.607	1008	947	1.0	1.8	6.447	A
1 - A45	2140	535	406	2402	0.891	2120	1441	2.8	7.8	12.949	B
2 - M1 West	476	119	1907	731	0.650	470	619	0.7	2.0	15.015	C
3 - A4500 Weedon Road	992	248	794	2443	0.406	992	1583	0.5	0.8	2.780	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1239	310	1022	1496	0.828	1225	1054	1.8	5.2	15.059	C
1 - A45	2620	655	495	2314	1.133	2299	1752	7.8	88.1	82.615	F
2 - M1 West	582	146	2103	539	1.081	514	691	2.0	19.0	93.122	F
3 - A4500 Weedon Road	1216	304	862	2364	0.514	1214	1756	0.8	1.2	3.507	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1239	310	1024	1494	0.829	1238	1058	5.2	5.5	16.484	C
1 - A45	2620	655	498	2310	1.134	2309	1763	88.1	166.0	201.912	F
2 - M1 West	582	146	2114	528	1.103	523	693	19.0	33.9	200.091	F
3 - A4500 Weedon Road	1216	304	866	2359	0.515	1215	1771	1.2	1.2	3.530	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1011	253	845	1661	0.609	1026	1040	5.5	1.9	6.852	A
1 - A45	2140	535	411	2397	0.893	2381	1459	166.0	105.6	205.777	F
2 - M1 West	476	119	2113	529	0.899	512	679	33.9	24.7	204.414	F
3 - A4500 Weedon Road	992	248	891	2330	0.426	994	1735	1.2	0.8	3.025	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	847	212	713	1785	0.474	850	945	1.9	1.1	4.576	A
1 - A45	1792	448	342	2466	0.727	2202	1221	105.6	3.0	47.651	E
2 - M1 West	398	100	1928	711	0.560	491	616	24.7	1.5	26.912	D
3 - A4500 Weedon Road	831	208	825	2407	0.345	832	1594	0.8	0.6	2.565	A

2021 DM, PM

Data Errors and Warnings
No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	34.14	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-5	2 - M1 West

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00

2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2021 DM	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	731	100.000
1 - A45		ONE HOUR	✓	2318	100.000
2 - M1 West		ONE HOUR	✓	568	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1267	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	656	0	75
	1 - A45	1013	0	537	768
	2 - M1 West	0	87	0	481
	3 - A4500 Weedon Road	502	638	127	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	7	0	12
	1 - A45	11	0	2	6
	2 - M1 West	0	13	0	16
	3 - A4500 Weedon Road	4	18	27	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)

4 - M1 East	0.51	5.00	1.1	A	671	1006
1 - A45	0.99	42.55	29.5	E	2127	3191
2 - M1 West	1.01	97.92	17.5	F	521	782
3 - A4500 Weedon Road	0.71	6.99	2.7	A	1163	1744

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	550	138	639	1854	0.297	549	1136	0.0	0.5	2.960	A
1 - A45	1745	436	152	2655	0.657	1737	1036	0.0	2.0	4.167	A
2 - M1 West	428	107	1391	1236	0.346	425	498	0.0	0.6	5.114	A
3 - A4500 Weedon Road	954	238	824	2408	0.396	951	992	0.0	0.7	2.780	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	657	164	764	1737	0.378	656	1358	0.5	0.7	3.580	A
1 - A45	2084	521	181	2625	0.794	2076	1239	2.0	4.0	6.926	A
2 - M1 West	511	128	1662	970	0.526	508	595	0.6	1.3	8.946	A
3 - A4500 Weedon Road	1139	285	985	2220	0.513	1137	1185	0.7	1.2	3.744	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	805	201	929	1582	0.509	803	1634	0.7	1.1	4.954	A
1 - A45	2552	638	222	2585	0.987	2479	1511	4.0	22.2	26.570	D
2 - M1 West	625	156	1987	652	0.959	590	714	1.3	10.1	50.980	F
3 - A4500 Weedon Road	1395	349	1174	1998	0.698	1390	1403	1.2	2.5	6.612	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	805	201	933	1579	0.510	805	1655	1.1	1.1	4.999	A
1 - A45	2552	638	222	2584	0.988	2523	1516	22.2	29.5	42.552	E
2 - M1 West	625	156	2021	619	1.010	596	724	10.1	17.5	97.922	F

3 - A4500 Weedon Road	1395	349	1194	1975	0.706	1395	1423	2.5	2.7	6.989	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	657	164	779	1723	0.381	659	1408	1.1	0.7	3.641	A
1 - A45	2084	521	182	2624	0.794	2185	1256	29.5	4.3	10.757	B
2 - M1 West	511	128	1746	888	0.575	574	621	17.5	1.6	16.004	C
3 - A4500 Weedon Road	1139	285	1043	2152	0.529	1145	1278	2.7	1.3	4.053	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	550	138	643	1850	0.297	551	1145	0.7	0.5	2.980	A
1 - A45	1745	436	152	2654	0.658	1754	1042	4.3	2.1	4.328	A
2 - M1 West	428	107	1404	1223	0.350	432	502	1.6	0.6	5.282	A
3 - A4500 Weedon Road	954	238	833	2398	0.398	956	1003	1.3	0.7	2.818	A

2021 DS2, AM

Data Errors and Warnings
No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	116.71	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-13	1 - A45

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)

4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	1092	100.000
1 - A45		ONE HOUR	✓	2392	100.000
2 - M1 West		ONE HOUR	✓	489	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1109	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	794	0	298
	1 - A45	892	0	542	958
	2 - M1 West	0	45	0	444
	3 - A4500 Weedon Road	220	738	151	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	7	0	12
	1 - A45	11	0	2	6
	2 - M1 West	0	13	0	16
	3 - A4500 Weedon Road	4	18	27	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	0.81	13.34	4.3	B	1002	1503
1 - A45	1.14	213.18	170.5	F	2195	3292
2 - M1 West	1.02	131.63	19.7	F	449	673
3 - A4500 Weedon Road	0.53	3.84	1.3	A	1018	1526

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	822	206	701	1796	0.458	818	833	0.0	0.9	3.975	A
1 - A45	1801	450	337	2471	0.729	1790	1183	0.0	2.8	5.558	A
2 - M1 West	368	92	1607	1024	0.359	366	519	0.0	0.6	6.302	A
3 - A4500 Weedon Road	835	209	701	2553	0.327	833	1272	0.0	0.6	2.425	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	982	245	838	1668	0.589	979	992	0.9	1.5	5.644	A
1 - A45	2150	538	403	2405	0.894	2130	1415	2.8	7.9	13.092	B
2 - M1 West	440	110	1914	724	0.607	435	618	0.6	1.7	14.241	B
3 - A4500 Weedon Road	997	249	834	2396	0.416	996	1515	0.6	0.8	2.981	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1202	301	1023	1495	0.804	1192	1101	1.5	4.2	12.456	B
1 - A45	2634	658	491	2317	1.136	2304	1723	7.9	90.4	84.270	F
2 - M1 West	538	135	2107	535	1.006	495	688	1.7	12.5	71.211	F
3 - A4500 Weedon Road	1221	305	905	2314	0.528	1219	1698	0.8	1.3	3.808	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1202	301	1026	1492	0.806	1202	1105	4.2	4.3	13.342	B

1 - A45	2634	658	494	2314	1.138	2313	1733	90.4	170.5	206.699	F
2 - M1 West	538	135	2117	525	1.025	510	690	12.5	19.7	131.634	F
3 - A4500 Weedon Road	1221	305	910	2308	0.529	1221	1717	1.3	1.3	3.841	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	982	245	845	1661	0.591	993	1088	4.3	1.6	5.924	A
1 - A45	2150	538	407	2401	0.896	2386	1431	170.5	111.6	213.177	F
2 - M1 West	440	110	2116	526	0.836	487	677	19.7	7.9	103.177	F
3 - A4500 Weedon Road	997	249	935	2279	0.438	999	1668	1.3	0.9	3.268	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	822	206	706	1791	0.459	825	999	1.6	0.9	4.046	A
1 - A45	1801	450	339	2469	0.729	2235	1192	111.6	3.1	55.221	F
2 - M1 West	368	92	1954	685	0.537	394	620	7.9	1.4	15.519	C
3 - A4500 Weedon Road	835	209	870	2355	0.355	836	1478	0.9	0.6	2.753	A

2021 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	74.89	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-10	1 - A45

Arms

Arms

[same as above]

Roundabout Geometry

[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	1004	100.000
1 - A45		ONE HOUR	✓	2352	100.000
2 - M1 West		ONE HOUR	✓	408	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1321	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	753	0	251
	1 - A45	1054	0	524	774
	2 - M1 West	0	70	0	338
	3 - A4500 Weedon Road	513	666	142	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	19	0	17
	1 - A45	10	0	5	8
	2 - M1 West	0	9	0	11
	3 - A4500 Weedon Road	1	13	28	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	0.71	9.61	2.9	A	921	1382
1 - A45	1.09	145.80	119.7	F	2158	3237
2 - M1 West	0.86	47.51	5.5	E	374	562
3 - A4500 Weedon Road	0.71	6.73	2.7	A	1212	1818

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	756	189	659	1836	0.412	753	1174	0.0	0.8	3.927	A
1 - A45	1771	443	295	2513	0.705	1761	1117	0.0	2.5	5.114	A
2 - M1 West	307	77	1556	1074	0.286	305	499	0.0	0.4	5.171	A
3 - A4500 Weedon Road	995	249	841	2388	0.416	991	1021	0.0	0.8	2.812	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	903	226	788	1715	0.526	901	1401	0.8	1.3	5.225	A
1 - A45	2114	529	353	2455	0.861	2100	1336	2.5	6.2	10.548	B
2 - M1 West	367	92	1857	780	0.470	365	595	0.4	1.0	9.548	A
3 - A4500 Weedon Road	1188	297	1004	2198	0.540	1186	1218	0.8	1.3	3.879	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1105	276	961	1553	0.712	1099	1617	1.3	2.8	9.284	A
1 - A45	2590	647	431	2378	1.089	2353	1630	6.2	65.4	62.882	F
2 - M1 West	449	112	2103	539	0.834	435	680	1.0	4.5	34.750	D
3 - A4500 Weedon Road	1454	364	1129	2051	0.709	1449	1410	1.3	2.6	6.485	A

17:45 - 18:00

Arm	Total Demand	Junction	Circulating flow (PCU/hr)	Capacity	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	Arrivals (PCU)		(PCU/hr)				e (PCU)	e (PCU)		
4 - M1 East	1105	276	966	1548	0.714	1105	1628	2.8	2.9	9.610	A
1 - A45	2590	647	433	2376	1.090	2372	1638	65.4	119.7	145.798	F
2 - M1 West	449	112	2120	522	0.860	445	685	4.5	5.5	47.507	E
3 - A4500 Weedon Road	1454	364	1139	2039	0.713	1454	1426	2.6	2.7	6.730	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	903	226	794	1709	0.528	909	1552	2.9	1.3	5.369	A
1 - A45	2114	529	355	2452	0.862	2430	1347	119.7	40.7	121.190	F
2 - M1 West	367	92	2116	526	0.697	378	670	5.5	2.8	28.492	D
3 - A4500 Weedon Road	1188	297	1154	2021	0.587	1192	1340	2.7	1.6	4.769	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	756	189	664	1831	0.413	758	1249	1.3	0.8	3.984	A
1 - A45	1771	443	297	2511	0.705	1923	1126	40.7	2.7	8.593	A
2 - M1 West	307	77	1684	949	0.324	316	536	2.8	0.5	6.380	A
3 - A4500 Weedon Road	995	249	916	2301	0.432	997	1084	1.6	0.8	3.026	A

2031 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	397.51	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-25	2 - M1 West

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2031 DM	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	1187	100.000
1 - A45		ONE HOUR	✓	2320	100.000
2 - M1 West		ONE HOUR	✓	821	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1544	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	745	0	442
	1 - A45	806	0	552	962
	2 - M1 West	0	79	0	742
	3 - A4500 Weedon Road	273	875	396	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	7	0	12
	1 - A45	11	0	2	6
	2 - M1 West	0	13	0	16
	3 - A4500 Weedon Road	4	18	27	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	1.21	303.27	121.4	F	1089	1634
1 - A45	1.29	597.24	346.2	F	2129	3193
2 - M1 West	1.23	706.87	123.6	F	753	1130
3 - A4500 Weedon Road	0.68	5.36	2.5	A	1417	2125

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	894	223	1013	1505	0.594	887	806	0.0	1.6	6.285	A
1 - A45	1747	437	628	2182	0.800	1730	1272	0.0	4.1	8.228	A
2 - M1 West	618	155	1649	983	0.629	611	709	0.0	1.9	10.963	B
3 - A4500 Weedon Road	1162	291	660	2601	0.447	1159	1600	0.0	0.9	2.921	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1067	267	1206	1323	0.807	1057	938	1.6	4.2	14.172	B
1 - A45	2086	521	749	2061	1.012	1995	1514	4.1	26.7	37.016	E
2 - M1 West	738	185	1914	724	1.019	682	830	1.9	16.0	64.015	F
3 - A4500 Weedon Road	1388	347	759	2485	0.559	1386	1837	0.9	1.5	3.836	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

4 - M1 East	1307	327	1466	1080	1.210	1069	986	4.2	63.6	125.363	F
1 - A45	2554	639	833	1978	1.292	1976	1702	26.7	171.3	186.571	F
2 - M1 West	904	226	1904	734	1.232	730	905	16.0	59.5	201.300	F
3 - A4500 Weedon Road	1700	425	757	2487	0.683	1696	1877	1.5	2.5	5.309	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1307	327	1470	1077	1.214	1076	986	63.6	121.4	303.271	F
1 - A45	2554	639	837	1974	1.294	1974	1709	171.3	316.4	449.085	F
2 - M1 West	904	226	1905	733	1.233	732	906	59.5	102.4	423.346	F
3 - A4500 Weedon Road	1700	425	756	2488	0.683	1700	1881	2.5	2.5	5.358	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1067	267	1209	1321	0.808	1309	929	121.4	60.9	250.381	F
1 - A45	2086	521	845	1966	1.061	1966	1673	316.4	346.2	597.242	F
2 - M1 West	738	185	1986	654	1.129	653	825	102.4	123.6	641.168	F
3 - A4500 Weedon Road	1388	347	746	2500	0.555	1392	1893	2.5	1.5	3.825	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	894	223	1018	1499	0.596	1131	930	60.9	1.7	21.592	C
1 - A45	1747	437	720	2091	0.835	2084	1429	346.2	261.9	525.624	F
2 - M1 West	618	155	2009	631	0.980	625	794	123.6	121.8	706.870	F
3 - A4500 Weedon Road	1162	291	784	2455	0.473	1164	1850	1.5	1.1	3.277	A

2031 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	197.13	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-19	2 - M1 West

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2031 DM	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	946	100.000
1 - A45		ONE HOUR	✓	2488	100.000
2 - M1 West		ONE HOUR	✓	689	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1461	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	741	0	205
	1 - A45	1023	0	560	905
	2 - M1 West	0	123	0	566
	3 - A4500 Weedon Road	516	745	200	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	19	0	17
	1 - A45	10	0	5	8
	2 - M1 West	0	9	0	11
	3 - A4500 Weedon Road	1	13	28	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	0.75	12.52	3.5	B	868	1302
1 - A45	1.16	261.28	200.3	F	2283	3425
2 - M1 West	1.30	620.36	103.0	F	632	948
3 - A4500 Weedon Road	0.76	7.84	3.4	A	1341	2011

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	712	178	801	1703	0.418	709	1152	0.0	0.8	4.279	A
1 - A45	1873	468	304	2504	0.748	1861	1206	0.0	3.1	5.942	A
2 - M1 West	519	130	1595	1036	0.501	514	569	0.0	1.1	7.576	A
3 - A4500 Weedon Road	1100	275	857	2370	0.464	1096	1253	0.0	0.9	3.104	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

4 - M1 East	850	213	956	1558	0.546	848	1372	0.8	1.4	5.995	A
1 - A45	2237	559	363	2445	0.915	2210	1441	3.1	9.7	15.170	C
2 - M1 West	619	155	1897	741	0.836	605	677	1.1	4.7	26.859	D
3 - A4500 Weedon Road	1313	328	1017	2182	0.602	1311	1485	0.9	1.6	4.534	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1042	260	1141	1385	0.752	1034	1534	1.4	3.4	11.888	B
1 - A45	2739	685	443	2365	1.158	2355	1731	9.7	105.9	95.385	F
2 - M1 West	759	190	2049	592	1.281	586	749	4.7	48.0	179.208	F
3 - A4500 Weedon Road	1609	402	1073	2117	0.760	1602	1562	1.6	3.4	7.596	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1042	260	1145	1381	0.754	1041	1539	3.4	3.5	12.522	B
1 - A45	2739	685	446	2363	1.160	2362	1740	105.9	200.3	236.362	F
2 - M1 West	759	190	2056	585	1.296	585	752	48.0	91.4	444.569	F
3 - A4500 Weedon Road	1609	402	1075	2114	0.761	1608	1565	3.4	3.4	7.836	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	850	213	956	1558	0.546	859	1464	3.5	1.4	6.177	A
1 - A45	2237	559	367	2441	0.916	2428	1448	200.3	152.5	261.277	F
2 - M1 West	619	155	2068	574	1.079	573	727	91.4	103.0	620.356	F
3 - A4500 Weedon Road	1313	328	1101	2084	0.630	1320	1540	3.4	1.9	5.226	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	712	178	815	1690	0.422	715	1403	1.4	0.9	4.388	A
1 - A45	1873	468	306	2502	0.749	2466	1224	152.5	4.3	114.045	F
2 - M1 West	519	130	2066	576	0.901	570	706	103.0	90.3	611.487	F

3 - A4500 Weedon Road	1100	275	1116	2067	0.532	1102	1520	1.9	1.3	4.125	A

2031 DS2, AM

Data Errors and Warnings
No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	370.38	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-23	2 - M1 West

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	1266	100.000
1 - A45		ONE HOUR	✓	2381	100.000

2 - M1 West		ONE HOUR	✓	734	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1422	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	840	0	426
	1 - A45	782	0	555	1044
	2 - M1 West	0	91	0	643
	3 - A4500 Weedon Road	220	837	365	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	**1 - A45**	**2 - M1 West**	**3 - A4500 Weedon Road**
From	**4 - M1 East**	0	7	0	12
	1 - A45	11	0	2	6
	2 - M1 West	0	13	0	16
	3 - A4500 Weedon Road	4	18	27	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	1.23	324.95	137.3	F	1162	1743
1 - A45	1.29	599.45	354.3	F	2185	3277
2 - M1 West	1.15	414.32	72.9	F	674	1010
3 - A4500 Weedon Road	0.63	4.57	2.0	A	1305	1957

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	953	238	970	1544	0.617	946	748	0.0	1.7	6.465	A
1 - A45	1793	448	592	2217	0.809	1775	1324	0.0	4.3	8.394	A
2 - M1 West	553	138	1680	953	0.580	546	688	0.0	1.6	10.086	B
3 - A4500 Weedon Road	1071	268	651	2612	0.410	1067	1576	0.0	0.8	2.737	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1138	285	1157	1369	0.831	1126	868	1.7	4.9	15.307	C
1 - A45	2140	535	706	2104	1.018	2042	1576	4.3	28.9	38.471	E
2 - M1 West	660	165	1945	694	0.951	627	804	1.6	9.9	48.016	E
3 - A4500 Weedon Road	1278	320	748	2497	0.512	1277	1823	0.8	1.2	3.466	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1394	348	1407	1135	1.228	1126	908	4.9	71.8	133.086	F
1 - A45	2622	655	780	2030	1.291	2029	1753	28.9	177.1	188.769	F
2 - M1 West	808	202	1935	704	1.148	695	874	9.9	38.2	141.947	F
3 - A4500 Weedon Road	1566	391	752	2493	0.628	1563	1877	1.2	2.0	4.542	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1394	348	1410	1132	1.231	1132	908	71.8	137.3	324.950	F
1 - A45	2622	655	783	2028	1.293	2028	1759	177.1	325.6	450.111	F
2 - M1 West	808	202	1936	703	1.150	701	875	38.2	65.1	285.310	F
3 - A4500 Weedon Road	1566	391	753	2492	0.628	1566	1884	2.0	2.0	4.573	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1138	285	1161	1366	0.833	1355	863	137.3	83.1	290.702	F
1 - A45	2140	535	785	2026	1.057	2025	1731	325.6	354.3	599.453	F
2 - M1 West	660	165	2009	631	1.046	629	801	65.1	72.9	410.692	F
3 - A4500 Weedon Road	1278	320	743	2503	0.511	1281	1895	2.0	1.2	3.474	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	953	238	979	1536	0.621	1278	855	83.1	1.9	49.792	E

1 - A45	1793	448	705	2105	0.852	2098	1552	354.3	277.8	542.620	F
2 - M1 West	553	138	2039	601	0.919	592	764	72.9	63.0	414.318	F
3 - A4500 Weedon Road	1071	268	763	2481	0.432	1072	1869	1.2	0.9	3.012	A

2031 DS2, PM

Data Errors and Warnings
No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	M1 Junction 16	Large Roundabout	4, 1, 2, 3	169.55	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-17	2 - M1 West

Arms

Arms
[same as above]

Roundabout Geometry
[same as above]

Large Roundabout Data

Arm	Circulating flow (PCU/hr)	Entry-to-exit separation (m)
4 - M1 East	531	100.00
1 - A45	257	0.00
2 - M1 West	587	100.00
3 - A4500 Weedon Road	370	0.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
4 - M1 East		ONE HOUR	✓	959	100.000
1 - A45		ONE HOUR	✓	2466	100.000
2 - M1 West		ONE HOUR	✓	619	100.000
3 - A4500 Weedon Road		ONE HOUR	✓	1566	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	727	0	232
	1 - A45	1052	0	549	865
	2 - M1 West	0	100	0	519
	3 - A4500 Weedon Road	555	790	221	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		4 - M1 East	1 - A45	2 - M1 West	3 - A4500 Weedon Road
From	4 - M1 East	0	19	0	17
	1 - A45	10	0	5	8
	2 - M1 West	0	9	0	11
	3 - A4500 Weedon Road	1	13	28	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
4 - M1 East	0.80	15.86	4.5	C	880	1320
1 - A45	1.18	291.16	214.3	F	2263	3394
2 - M1 West	1.15	326.15	51.8	F	568	852
3 - A4500 Weedon Road	0.82	10.28	4.8	B	1437	2155

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	722	180	833	1673	0.432	718	1203	0.0	0.9	4.456	A
1 - A45	1857	464	340	2468	0.752	1844	1212	0.0	3.2	6.117	A

2 - M1 West	466	117	1607	1024	0.455	462	576	0.0	0.9	7.044	A
3 - A4500 Weedon Road	1179	295	861	2365	0.499	1175	1208	0.0	1.1	3.320	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	862	216	995	1521	0.567	860	1431	0.9	1.5	6.426	A
1 - A45	2217	554	406	2402	0.923	2188	1448	3.2	10.4	16.353	C
2 - M1 West	556	139	1909	729	0.763	547	685	0.9	3.2	20.912	C
3 - A4500 Weedon Road	1408	352	1022	2177	0.647	1404	1434	1.1	2.0	5.112	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1056	264	1200	1329	0.795	1045	1591	1.5	4.3	14.500	B
1 - A45	2715	679	495	2314	1.173	2305	1750	10.4	112.9	103.285	F
2 - M1 West	682	170	2045	596	1.143	581	755	3.2	28.4	116.716	F
3 - A4500 Weedon Road	1724	431	1077	2111	0.817	1714	1548	2.0	4.6	9.717	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	1056	264	1208	1322	0.799	1055	1596	4.3	4.5	15.856	C
1 - A45	2715	679	498	2310	1.175	2310	1764	112.9	214.3	257.477	F
2 - M1 West	682	170	2051	590	1.154	588	757	28.4	51.8	262.321	F
3 - A4500 Weedon Road	1724	431	1080	2108	0.818	1724	1558	4.6	4.8	10.276	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	862	216	1007	1510	0.571	874	1520	4.5	1.6	6.822	A
1 - A45	2217	554	411	2397	0.925	2385	1469	214.3	172.4	291.159	F
2 - M1 West	556	139	2065	576	0.966	568	731	51.8	48.9	326.146	F
3 - A4500 Weedon Road	1408	352	1109	2074	0.679	1417	1524	4.8	2.4	6.125	A

18:15 - 18:30

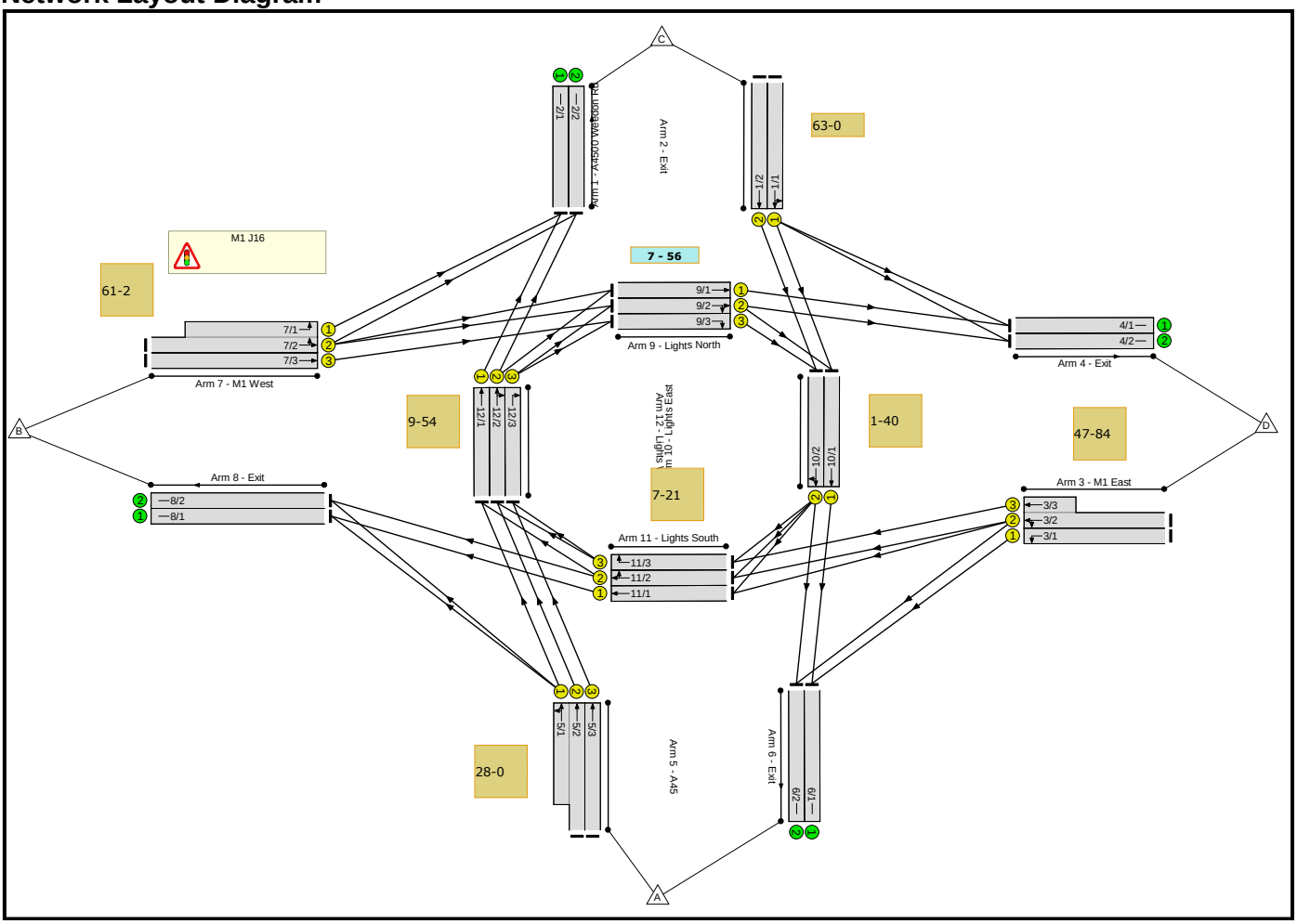
Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
4 - M1 East	722	180	852	1655	0.436	725	1464	1.6	0.9	4.601	A
1 - A45	1857	464	342	2465	0.753	2450	1235	172.4	24.0	146.980	F
2 - M1 West	466	117	2080	562	0.830	549	712	48.9	28.1	256.436	F
3 - A4500 Weedon Road	1179	295	1134	2045	0.577	1182	1495	2.4	1.5	4.618	A

Full Input Data And Results

User and Project Details

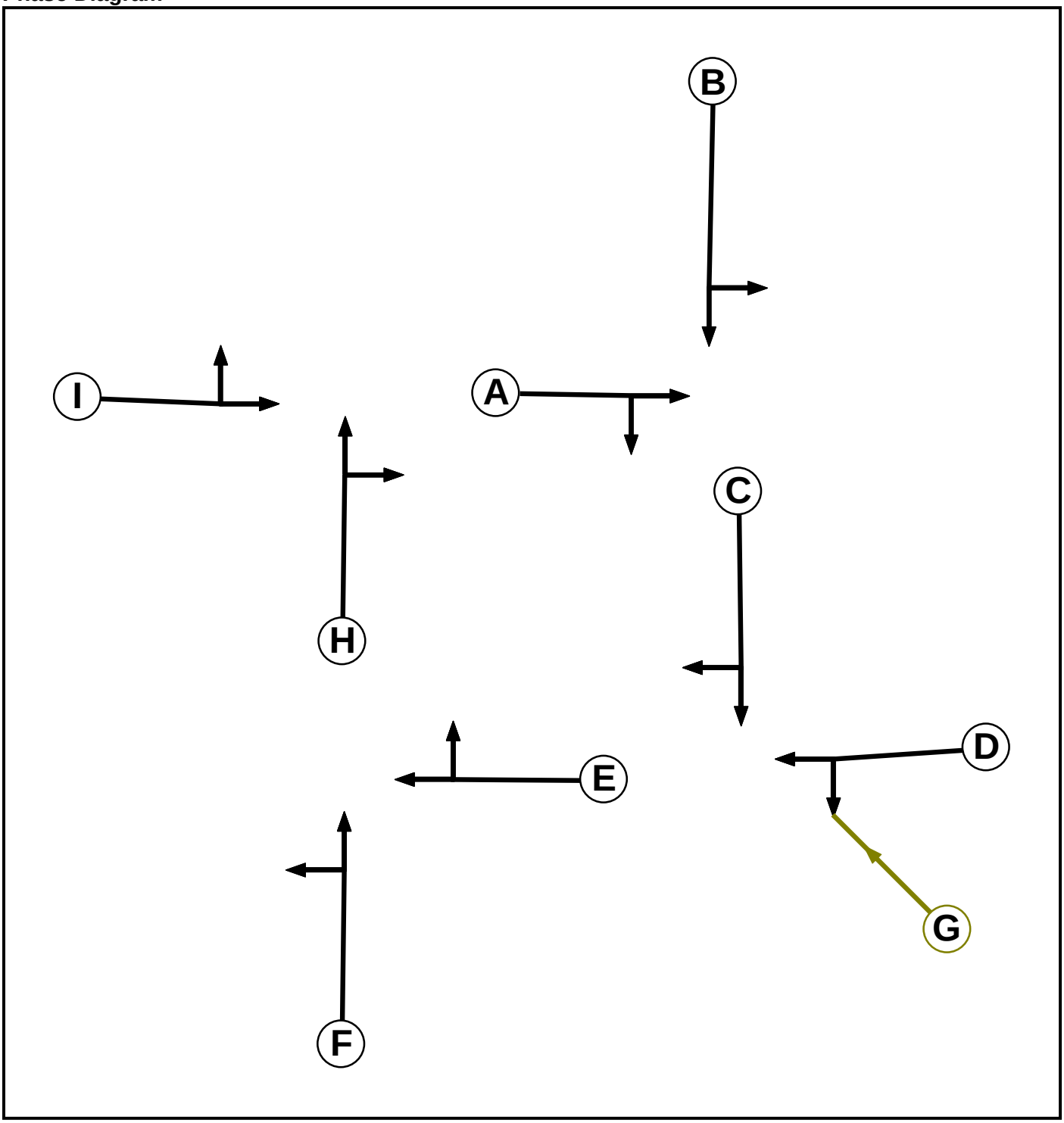
Project:	Rail Central
Title:	Junction 1
Location:	M1 J16
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Filter			4	4
H	Traffic	4		7	7
I	Traffic	4		7	7

Phase Intergreens Matrix

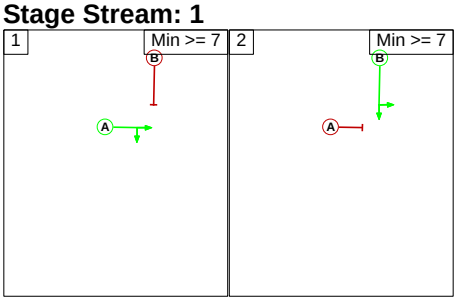
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		7	-	-	-	-	-	-	-
	B	7		-	-	-	-	-	-	-
	C	-	-		7	-	-	-	-	-
	D	-	-	7		-	-	-	-	-
	E	-	-	-	-		7	-	-	-
	F	-	-	-	-	7		-	-	-
	G	-	-	-	-	-	-		-	-
	H	-	-	-	-	-	-	-		7
	I	-	-	-	-	-	-	-	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	H
4	2	I

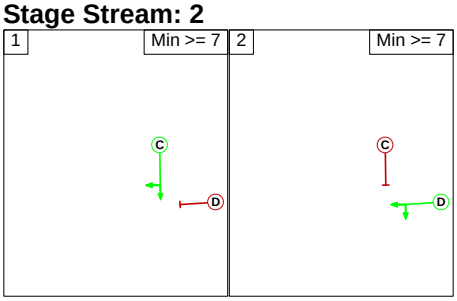
Stage Diagram

Stage Stream: 1

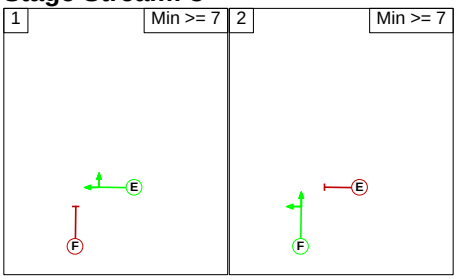


Full Input Data And Results

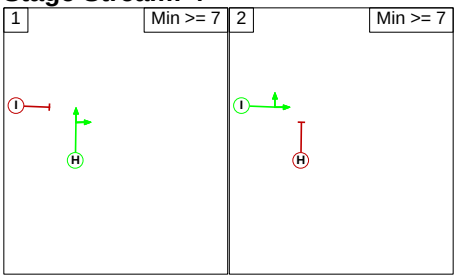
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 3

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 4

	To Stage		
From Stage		1	2
	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: M1 J16
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: M1 J16

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A4500 Weedon Rd)	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A4500 Weedon Rd)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
2/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (M1 East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/2 (M1 East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/3 (M1 East)	U	D	2	3	5.0	User	1800	-	-	-	-	-
4/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (A45)	U	F	2	3	25.0	User	1800	-	-	-	-	-
5/2 (A45)	U	F	2	3	60.0	User	1800	-	-	-	-	-
5/3 (A45)	U	F	2	3	60.0	User	1800	-	-	-	-	-
6/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (M1 West)	U	I	2	3	20.0	User	1800	-	-	-	-	-
7/2 (M1 West)	U	I	2	3	60.0	User	1800	-	-	-	-	-
7/3 (M1 West)	U	I	2	3	60.0	User	1800	-	-	-	-	-
8/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Lights North)	U	A	2	3	7.0	User	1900	-	-	-	-	-
9/2 (Lights North)	U	A	2	3	8.0	User	1900	-	-	-	-	-
9/3 (Lights North)	U	A	2	3	10.0	User	1900	-	-	-	-	-
10/1 (Lights East)	U	C	2	3	15.0	User	1900	-	-	-	-	-

10/2 (Lights East)	U	C	2	3	16.0	User	1900	-	-	-	-	-
11/1 (Lights South)	U	E	2	3	6.0	User	1900	-	-	-	-	-
11/2 (Lights South)	U	E	2	3	7.0	User	1900	-	-	-	-	-
11/3 (Lights South)	U	E	2	3	7.0	User	1900	-	-	-	-	-
12/1 (Lights West)	U	H	2	3	16.0	User	1900	-	-	-	-	-
12/2 (Lights West)	U	H	2	3	17.0	User	1900	-	-	-	-	-
12/3 (Lights West)	U	H	2	3	18.0	User	1900	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	542	958	892	2392
	B	45	41	444	0	530
	C	738	151	0	220	1109
	D	794	0	298	0	1092
	Tot.	1577	734	1700	1112	5123

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS2 AM
Junction: M1 J16	
1/1	572
1/2	537
2/1	836
2/2	864
3/1	501
3/2 (with short)	591(In) 450(Out)
3/3 (short)	141
4/1	252
4/2	860
5/1 (short)	986
5/2 (with short)	1642(In) 656(Out)
5/3	750
6/1	879
6/2	698
7/1 (short)	235
7/2 (with short)	470(In) 235(Out)
7/3	60
8/1	446
8/2	288
9/1	142
9/2	776
9/3	60
10/1	378
10/2	597
11/1	175
11/2	174
11/3	141
12/1	601
12/2	797
12/3	750

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	524	774	1054	2352
	B	70	21	338	0	429
	C	666	142	0	513	1321
	D	753	0	251	0	1004
	Tot.	1489	687	1363	1567	5106

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS2 PM
Junction: M1 J16	
1/1	760
1/2	561
2/1	854
2/2	509
3/1	450
3/2 (with short)	554(In) 424(Out)
3/3 (short)	130
4/1	713
4/2	854
5/1 (short)	1088
5/2 (with short)	1754(In) 666(Out)
5/3	598
6/1	697
6/2	792
7/1 (short)	169
7/2 (with short)	338(In) 169(Out)
7/3	91
8/1	395
8/2	292
9/1	456
9/2	598
9/3	91
10/1	247
10/2	652
11/1	133
11/2	151
11/3	130
12/1	685
12/2	796
12/3	598

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	555	1044	782	2381
	B	91	41	643	0	775
	C	837	365	0	220	1422
	D	840	0	426	0	1266
	Tot.	1768	961	2113	1002	5844

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS2 AM
Junction: M1 J16	
1/1	712
1/2	710
2/1	1014
2/2	1099
3/1	567
3/2 (with short)	699(In) 459(Out)
3/3 (short)	240
4/1	134
4/2	868
5/1 (short)	1024
5/2 (with short)	1623(In) 599(Out)
5/3	758
6/1	1135
6/2	633
7/1 (short)	359
7/2 (with short)	719(In) 360(Out)
7/3	56
8/1	591
8/2	370
9/1	24
9/2	834
9/3	56
10/1	568
10/2	766
11/1	314
11/2	278
11/3	240
12/1	655
12/2	839
12/3	758

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	549	865	1052	2466
	B	100	21	519	0	640
	C	790	221	0	555	1566
	D	727	0	232	0	959
	Tot.	1617	791	1616	1607	5631

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS2 PM
Junction: M1 J16	
1/1	785
1/2	781
2/1	865
2/2	751
3/1	438
3/2 (with short)	521(In) 387(Out)
3/3 (short)	134
4/1	553
4/2	1054
5/1 (short)	1051
5/2 (with short)	1689(In) 638(Out)
5/3	777
6/1	679
6/2	938
7/1 (short)	265
7/2 (with short)	530(In) 265(Out)
7/3	110
8/1	448
8/2	343
9/1	275
9/2	788
9/3	110
10/1	241
10/2	891
11/1	174
11/2	166
11/3	134
12/1	600
12/2	772
12/3	777

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

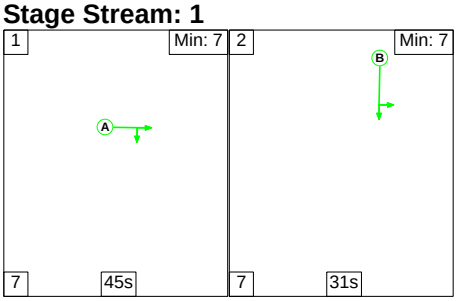
Full Input Data And Results

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

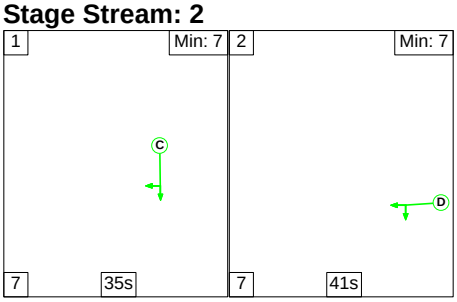
Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

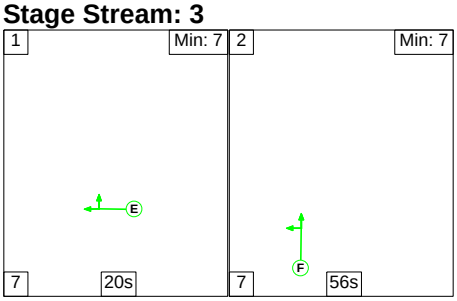
Stage Stream: 1



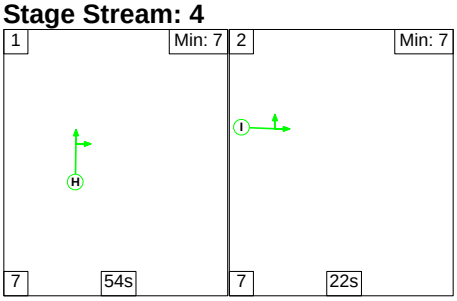
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	45	31
Change Point	0	52

Stage Stream: 2

Stage	1	2
Duration	35	41
Change Point	56	8

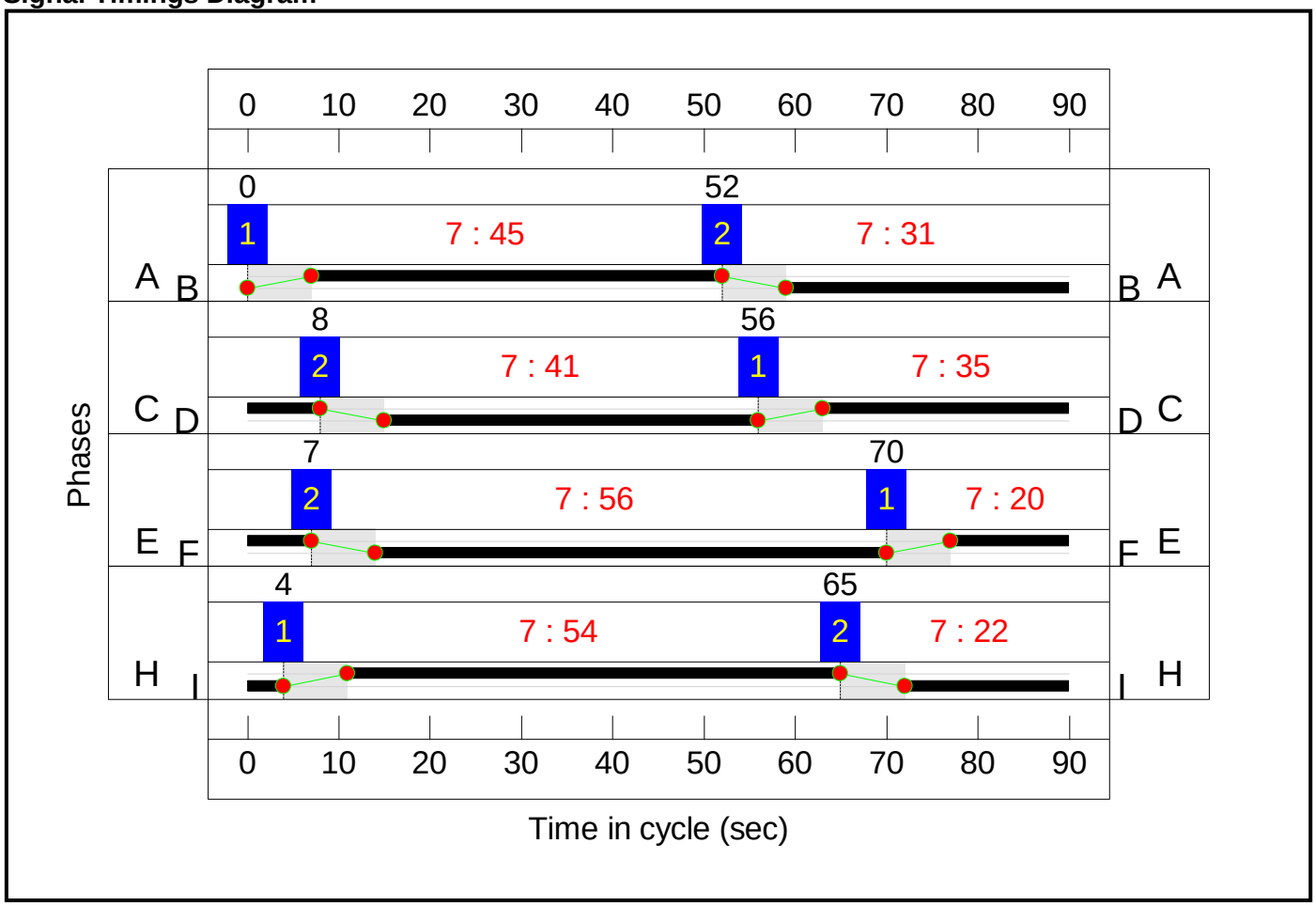
Stage Stream: 3

Stage	1	2
Duration	20	56
Change Point	70	7

Stage Stream: 4

Stage	1	2
Duration	54	22
Change Point	4	65

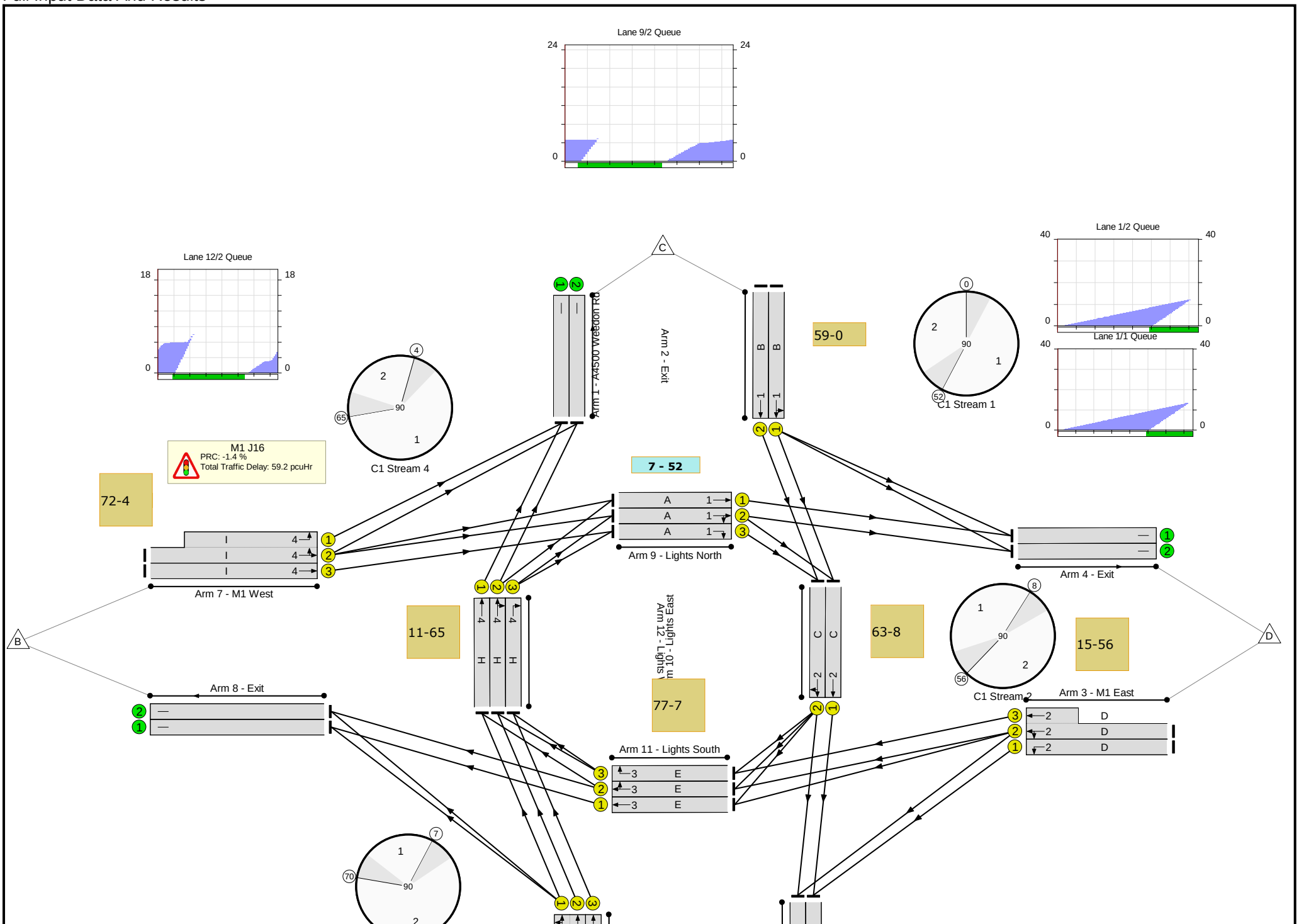
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.2%**
M1 J16	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.2%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	31	-	572	1800	640	89.4%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	31	-	537	1800	640	83.9%
2/1	Exit	U	N/A	N/A	-		-	-	-	836	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	864	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	41	-	501	1800	840	59.6%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	41	-	591	1800:1800	687+215	65.5 : 65.5%
4/1	Exit	U	N/A	N/A	-		-	-	-	252	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	56	-	1642	1800:1800	719+1081	91.2 : 91.2%
5/3	A45 Ahead	U	3	N/A	F		1	56	-	750	1800	1140	65.8%
6/1	Exit	U	N/A	N/A	-		-	-	-	879	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	698	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	22	-	470	1800:1800	460+460	51.1 : 51.1%
7/3	M1 West Ahead	U	4	N/A	I		1	22	-	60	1800	460	13.0%
8/1	Exit	U	N/A	N/A	-		-	-	-	446	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	288	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	45	-	142	1900	971	14.6%
9/2	Lights North Ahead Right	U	1	N/A	A		1	45	-	776	1900	971	79.9%
9/3	Lights North Right	U	1	N/A	A		1	45	-	60	1900	971	6.2%
10/1	Lights East Ahead	U	2	N/A	C		1	35	-	378	1900	760	49.7%
10/2	Lights East Ahead Right	U	2	N/A	C		1	35	-	597	1900	760	78.6%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	20	-	175	1900	443	39.5%
11/2	Lights South Ahead Right	U	3	N/A	E		1	20	-	174	1900	443	39.2%
11/3	Lights South Right	U	3	N/A	E		1	20	-	141	1900	443	31.8%
12/1	Lights West Ahead	U	4	N/A	H		1	54	-	601	1900	1161	51.8%
12/2	Lights West Ahead Right	U	4	N/A	H		1	54	-	797	1900	1161	68.6%
12/3	Lights West Right	U	4	N/A	H		1	54	-	750	1900	1161	64.6%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**37.0**	**22.2**	**0.0**	**59.2**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**37.0**	**22.2**	**0.0**	**59.2**	**-**	**-**	**-**	**-**
1/1	572	572	-	-	-	4.4	3.8	-	8.1	51.2	13.5	3.8	17.3
1/2	537	537	-	-	-	4.0	2.5	-	6.5	43.3	12.2	2.5	14.7
2/1	836	836	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	501	501	-	-	-	2.5	0.7	-	3.2	23.0	9.2	0.7	9.9
3/2+3/3	591	591	-	-	-	2.8	0.9	-	3.7	22.7	9.3	0.9	10.2
4/1	252	252	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	1642	1642	-	-	-	5.4	4.9	-	10.3	22.6	19.7	4.9	24.6
5/3	750	750	-	-	-	2.2	1.0	-	3.1	15.0	11.7	1.0	12.6
6/1	879	879	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	698	698	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	470	470	-	-	-	3.7	0.5	-	4.3	32.7	5.0	0.5	5.5
7/3	60	60	-	-	-	0.4	0.1	-	0.5	30.3	1.2	0.1	1.2
8/1	446	446	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	288	288	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	142	142	-	-	-	0.3	0.1	-	0.4	9.5	0.7	0.1	0.8
9/2	776	776	-	-	-	1.9	1.9	-	3.8	17.8	4.9	1.9	6.8
9/3	60	60	-	-	-	0.3	0.0	-	0.3	19.2	1.5	0.0	1.5
10/1	378	378	-	-	-	0.4	0.5	-	0.9	8.2	0.8	0.5	1.3
10/2	597	597	-	-	-	0.9	1.8	-	2.7	16.2	1.8	1.8	3.6
11/1	175	175	-	-	-	0.4	0.3	-	0.7	14.1	2.4	0.3	2.7
11/2	174	174	-	-	-	1.9	0.3	-	2.3	46.7	4.2	0.3	4.5
11/3	141	141	-	-	-	1.7	0.2	-	2.0	50.4	3.5	0.2	3.8
12/1	601	601	-	-	-	1.4	0.5	-	1.9	11.4	5.6	0.5	6.2

Full Input Data And Results

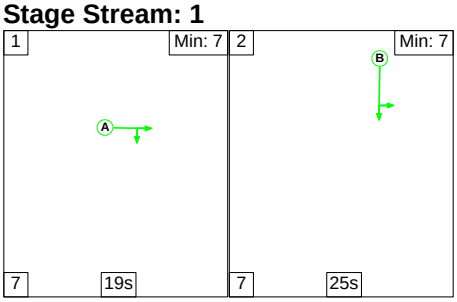
12/2	797	797	-	-	-	1.6	1.1	-	2.7	12.2	8.0	1.1	9.1
12/3	750	750	-	-	-	0.9	0.9	-	1.8	8.8	2.7	0.9	3.6

C1	Stream: 1	PRC for Signalled Lanes (%):	0.7	Total Delay for Signalled Lanes (pcuHr):	19.13	Cycle Time (s):	90	
C1	Stream: 2	PRC for Signalled Lanes (%):	14.6	Total Delay for Signalled Lanes (pcuHr):	10.48	Cycle Time (s):	90	
C1	Stream: 3	PRC for Signalled Lanes (%):	-1.4	Total Delay for Signalled Lanes (pcuHr):	18.32	Cycle Time (s):	90	
C1	Stream: 4	PRC for Signalled Lanes (%):	31.1	Total Delay for Signalled Lanes (pcuHr):	11.23	Cycle Time (s):	90	
		PRC Over All Lanes (%):	-1.4	Total Delay Over All Lanes(pcuHr):	59.16			

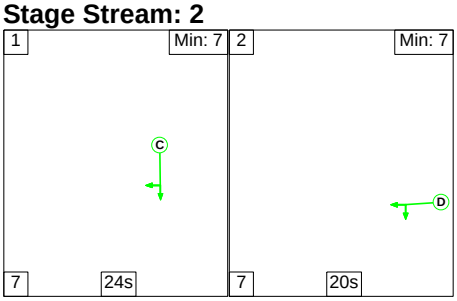
Full Input Data And Results
Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

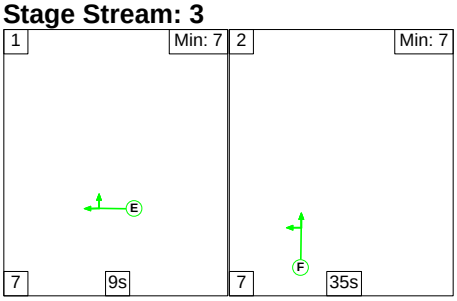
Stage Stream: 1



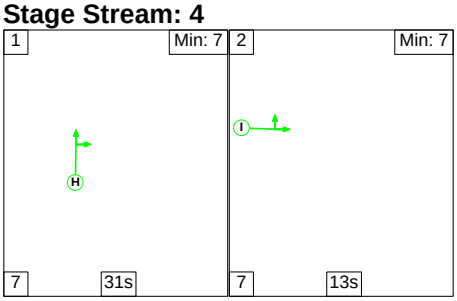
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	25
Change Point	24	50

Stage Stream: 2

Stage	1	2
Duration	24	20
Change Point	53	26

Full Input Data And Results

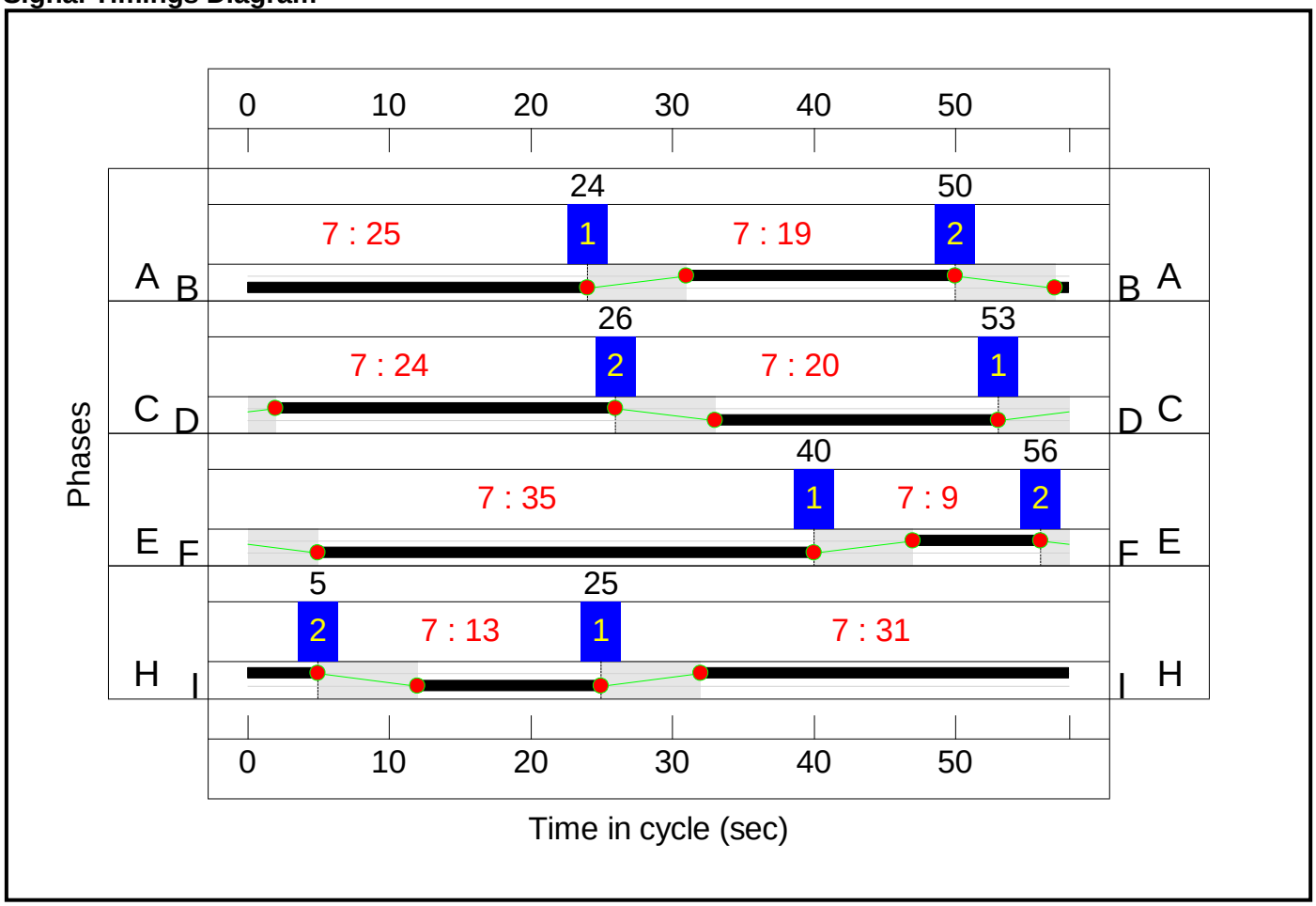
Stage Stream: 3

Stage	1	2
Duration	9	35
Change Point	40	56

Stage Stream: 4

Stage	1	2
Duration	31	13
Change Point	25	5

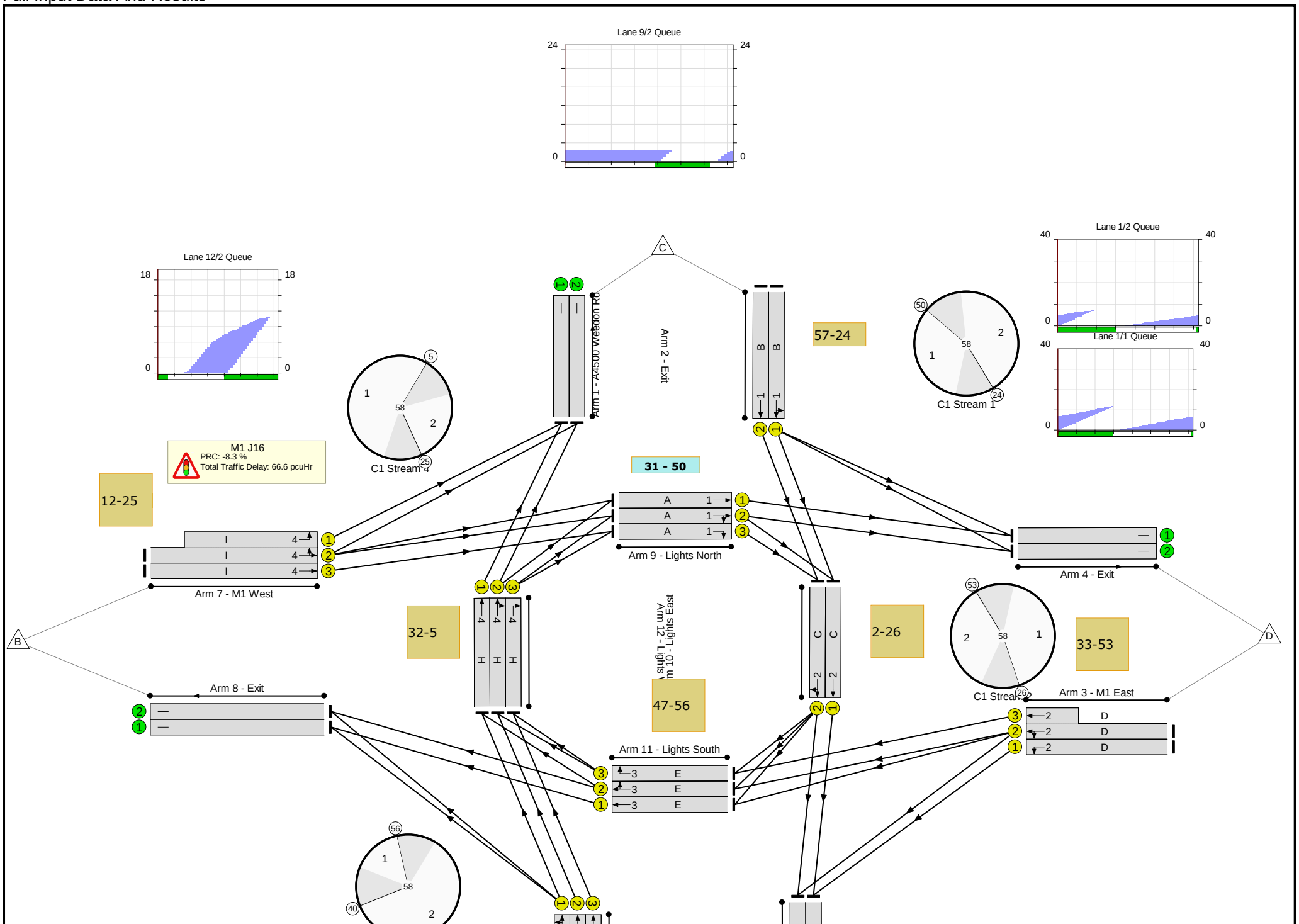
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.4%**
M1 J16	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.4%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	25	-	760	1800	807	94.2%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	25	-	561	1800	807	69.5%
2/1	Exit	U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	509	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	20	-	450	1800	652	69.0%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	20	-	554	1800:1800	572+175	74.2 : 74.2%
4/1	Exit	U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	35	-	1754	1800:1800	683+1117	97.4 : 97.4%
5/3	A45 Ahead	U	3	N/A	F		1	35	-	598	1800	1117	53.5%
6/1	Exit	U	N/A	N/A	-		-	-	-	697	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	792	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	13	-	338	1800:1800	434+434	38.9 : 38.9%
7/3	M1 West Ahead	U	4	N/A	I		1	13	-	91	1800	434	20.9%
8/1	Exit	U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	292	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	19	-	456	1900	655	69.6%
9/2	Lights North Ahead Right	U	1	N/A	A		1	19	-	598	1900	655	91.3%
9/3	Lights North Right	U	1	N/A	A		1	19	-	91	1900	655	13.9%
10/1	Lights East Ahead	U	2	N/A	C		1	24	-	247	1900	819	30.2%
10/2	Lights East Ahead Right	U	2	N/A	C		1	24	-	652	1900	819	79.6%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	9	-	133	1900	328	40.6%
11/2	Lights South Ahead Right	U	3	N/A	E		1	9	-	151	1900	328	46.1%
11/3	Lights South Right	U	3	N/A	E		1	9	-	130	1900	328	39.7%
12/1	Lights West Ahead	U	4	N/A	H		1	31	-	685	1900	1048	65.3%
12/2	Lights West Ahead Right	U	4	N/A	H		1	31	-	796	1900	1048	75.9%
12/3	Lights West Right	U	4	N/A	H		1	31	-	598	1900	1048	57.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**31.1**	**35.5**	**0.0**	**66.6**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**31.1**	**35.5**	**0.0**	**66.6**	**-**	**-**	**-**	**-**
1/1	760	760	-	-	-	3.2	6.4	-	9.6	45.5	11.6	6.4	18.0
1/2	561	561	-	-	-	2.0	1.1	-	3.1	20.1	7.2	1.1	8.3
2/1	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	509	509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	450	450	-	-	-	2.0	1.1	-	3.1	24.6	6.1	1.1	7.2
3/2+3/3	554	554	-	-	-	2.3	1.4	-	3.7	24.1	6.1	1.4	7.5
4/1	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	1754	1754	-	-	-	4.4	12.4	-	16.8	34.5	16.6	12.4	29.0
5/3	598	598	-	-	-	1.0	0.6	-	1.6	9.7	5.3	0.6	5.9
6/1	697	697	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	792	792	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	338	338	-	-	-	1.7	0.3	-	2.0	21.8	2.3	0.3	2.6
7/3	91	91	-	-	-	0.4	0.1	-	0.6	22.9	1.2	0.1	1.3
8/1	395	395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	292	292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	456	456	-	-	-	1.6	1.1	-	2.7	21.4	2.5	1.1	3.6
9/2	598	598	-	-	-	1.6	4.5	-	6.1	36.8	2.5	4.5	7.0
9/3	91	91	-	-	-	0.3	0.1	-	0.4	15.6	1.5	0.1	1.5
10/1	247	247	-	-	-	0.4	0.2	-	0.6	8.9	0.7	0.2	1.0
10/2	652	652	-	-	-	1.1	1.9	-	3.0	16.6	3.2	1.9	5.1
11/1	133	133	-	-	-	1.1	0.3	-	1.5	40.2	2.1	0.3	2.5
11/2	151	151	-	-	-	0.5	0.4	-	0.9	21.6	1.9	0.4	2.4
11/3	130	130	-	-	-	0.3	0.3	-	0.6	17.7	1.7	0.3	2.1
12/1	685	685	-	-	-	1.6	0.9	-	2.6	13.6	9.0	0.9	9.9

Full Input Data And Results

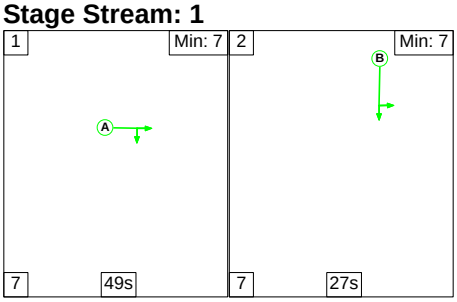
12/2	796	796	-	-	-	2.9	1.6	-	4.5	20.3	10.8	1.6	12.3
12/3	598	598	-	-	-	2.5	0.7	-	3.1	18.8	9.5	0.7	10.2

C1	Stream: 1	PRC for Signalled Lanes (%):	-4.7	Total Delay for Signalled Lanes (pcuHr):	21.94	Cycle Time (s):	58	
C1	Stream: 2	PRC for Signalled Lanes (%):	13.0	Total Delay for Signalled Lanes (pcuHr):	10.40	Cycle Time (s):	58	
C1	Stream: 3	PRC for Signalled Lanes (%):	-8.3	Total Delay for Signalled Lanes (pcuHr):	21.45	Cycle Time (s):	58	
C1	Stream: 4	PRC for Signalled Lanes (%):	18.5	Total Delay for Signalled Lanes (pcuHr):	12.83	Cycle Time (s):	58	
		PRC Over All Lanes (%):	-8.3	Total Delay Over All Lanes(pcuHr):	66.62			

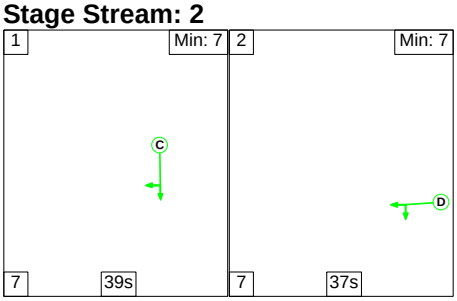
Full Input Data And Results
Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

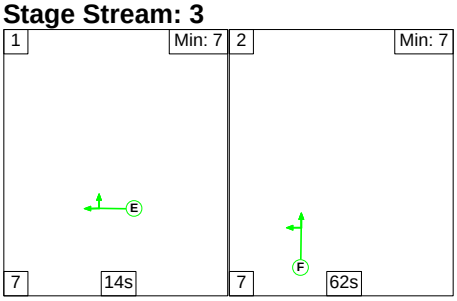
Stage Stream: 1



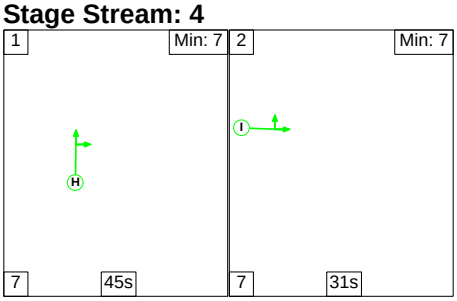
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	49	27
Change Point	0	56

Stage Stream: 2

Stage	1	2
Duration	39	37
Change Point	84	40

Full Input Data And Results

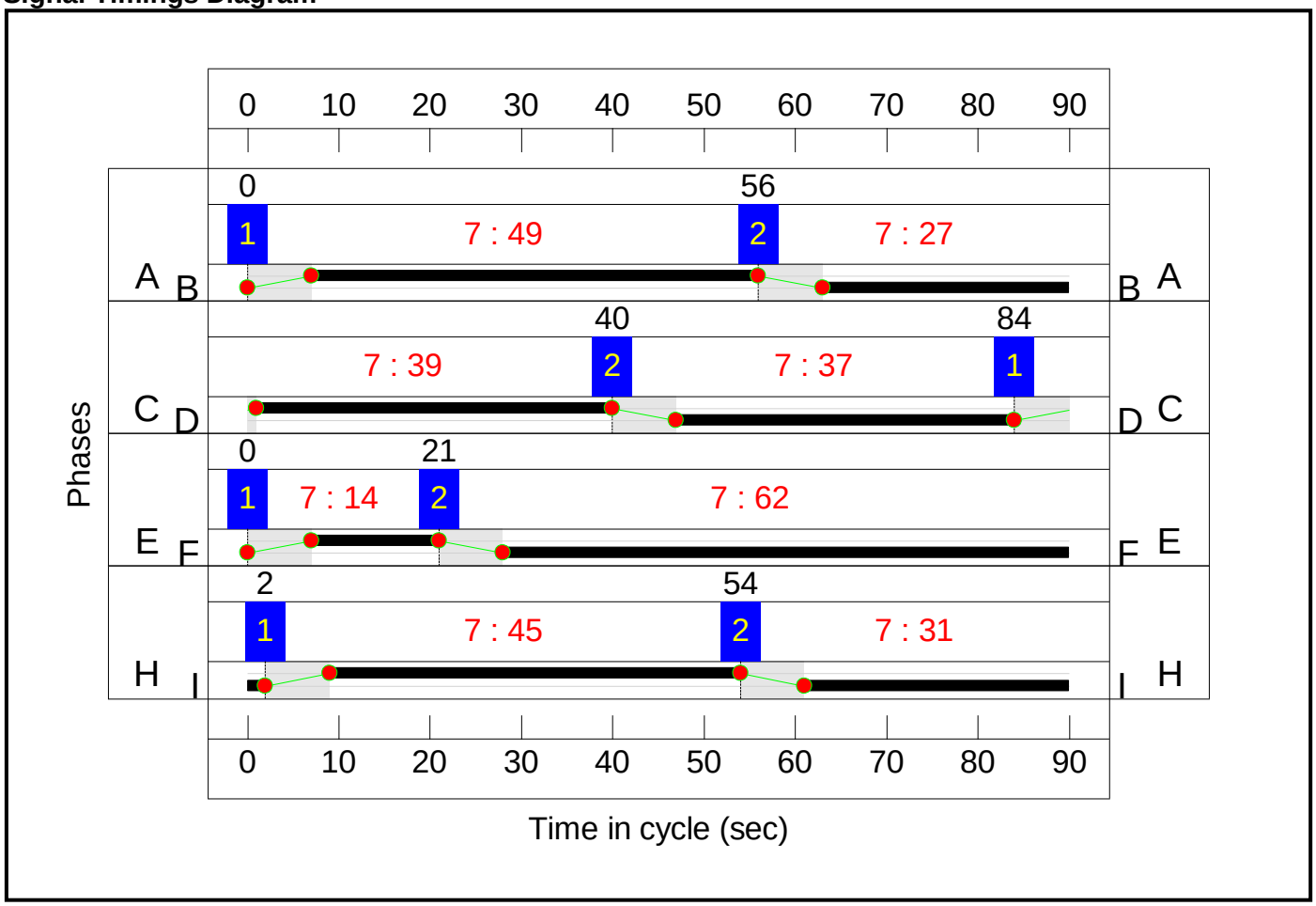
Stage Stream: 3

Stage	1	2
Duration	14	62
Change Point	0	21

Stage Stream: 4

Stage	1	2
Duration	45	31
Change Point	2	54

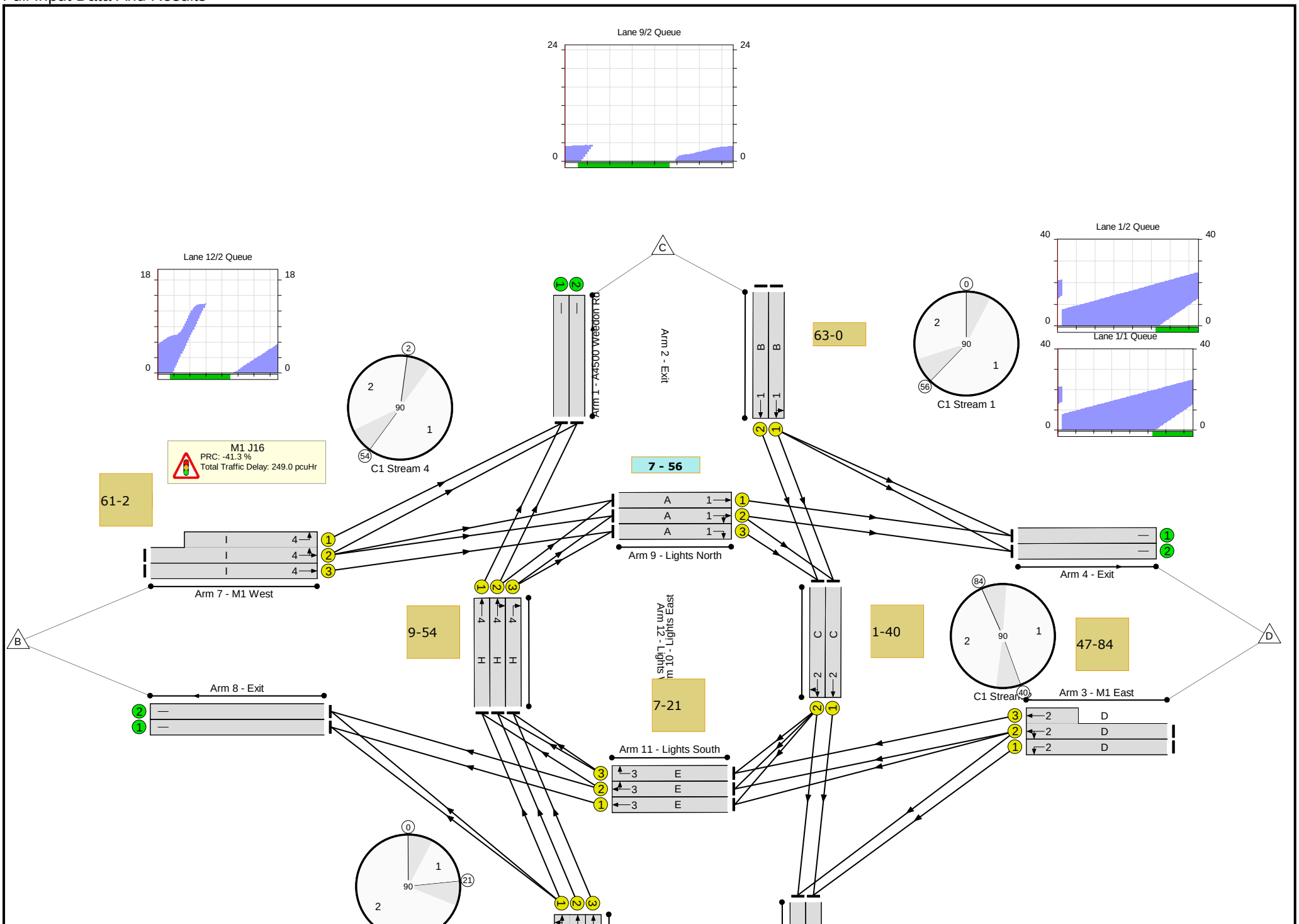
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**127.1%**
M1 J16	-	-	**N/A**	-	-		-	-	-	-	-	-	**127.1%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	27	-	712	1800	560	127.1%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	27	-	710	1800	560	126.8%
2/1	Exit	U	N/A	N/A	-		-	-	-	1014	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	1099	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	37	-	567	1800	760	74.6%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	37	-	699	1800:1800	568+297	80.8 : 80.8%
4/1	Exit	U	N/A	N/A	-		-	-	-	134	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	62	-	1623	1800:1800	664+1136	90.2 : 90.2%
5/3	A45 Ahead	U	3	N/A	F		1	62	-	758	1800	1260	60.2%
6/1	Exit	U	N/A	N/A	-		-	-	-	1135	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	633	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	31	-	719	1800:1800	640+640	56.3 : 56.1%
7/3	M1 West Ahead	U	4	N/A	I		1	31	-	56	1800	640	8.8%
8/1	Exit	U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	49	-	24	1900	1056	2.3%
9/2	Lights North Ahead Right	U	1	N/A	A		1	49	-	834	1900	1056	79.0%
9/3	Lights North Right	U	1	N/A	A		1	49	-	56	1900	1056	5.3%
10/1	Lights East Ahead	U	2	N/A	C		1	39	-	568	1900	844	54.8%
10/2	Lights East Ahead Right	U	2	N/A	C		1	39	-	766	1900	844	72.9%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	14	-	314	1900	317	79.6%
11/2	Lights South Ahead Right	U	3	N/A	E		1	14	-	278	1900	317	83.0%
11/3	Lights South Right	U	3	N/A	E		1	14	-	240	1900	317	75.8%
12/1	Lights West Ahead	U	4	N/A	H		1	45	-	655	1900	971	67.4%
12/2	Lights West Ahead Right	U	4	N/A	H		1	45	-	839	1900	971	86.4%
12/3	Lights West Right	U	4	N/A	H		1	45	-	758	1900	971	78.1%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**68.9**	**180.1**	**0.0**	**249.0**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**68.9**	**180.1**	**0.0**	**249.0**	**-**	**-**	**-**	**-**
1/1	712	560	-	-	-	14.2	78.3	-	92.5	467.6	24.8	78.3	103.1
1/2	710	560	-	-	-	14.1	77.3	-	91.4	463.4	24.7	77.3	102.0
2/1	1014	1014	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	1099	1099	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	567	567	-	-	-	3.5	1.4	-	4.9	31.1	11.8	1.4	13.3
3/2+3/3	699	699	-	-	-	4.0	2.1	-	6.1	31.3	12.1	2.1	14.2
4/1	111	111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	845	845	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	1623	1623	-	-	-	3.7	4.4	-	8.1	17.9	17.6	4.4	22.0
5/3	758	758	-	-	-	1.5	0.8	-	2.2	10.6	9.7	0.8	10.4
6/1	1030	1030	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	560	560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	719	719	-	-	-	4.7	0.6	-	5.3	26.6	7.2	0.6	7.8
7/3	56	56	-	-	-	0.3	0.0	-	0.3	22.4	0.9	0.0	1.0
8/1	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	24	24	-	-	-	0.0	0.0	-	0.0	3.6	0.0	0.0	0.0
9/2	834	834	-	-	-	1.2	1.9	-	3.1	13.2	3.4	1.9	5.3
9/3	56	56	-	-	-	0.4	0.0	-	0.4	27.5	1.4	0.0	1.4
10/1	463	463	-	-	-	1.7	0.6	-	2.3	17.6	11.2	0.6	11.8
10/2	616	616	-	-	-	3.2	1.3	-	4.5	26.3	15.4	1.3	16.7
11/1	252	252	-	-	-	2.4	1.8	-	4.2	60.2	5.0	1.8	6.8
11/2	263	263	-	-	-	2.6	2.3	-	4.9	66.9	6.4	2.3	8.7
11/3	240	240	-	-	-	2.3	1.5	-	3.8	57.2	6.0	1.5	7.5
12/1	655	655	-	-	-	2.9	1.0	-	4.0	21.7	12.0	1.0	13.0

Full Input Data And Results

12/2	839	839	-	-	-	2.9	3.0	-	5.9	25.5	13.3	3.0	16.4
12/3	758	758	-	-	-	3.4	1.7	-	5.2	24.5	9.6	1.7	11.4

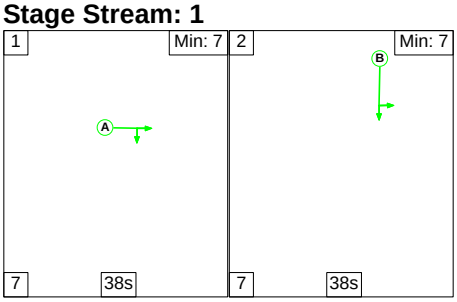
C1	Stream: 1	PRC for Signalled Lanes (%):	-41.3	Total Delay for Signalled Lanes (pcuHr):	187.39	Cycle Time (s):	90	
C1	Stream: 2	PRC for Signalled Lanes (%):	11.3	Total Delay for Signalled Lanes (pcuHr):	17.74	Cycle Time (s):	90	
C1	Stream: 3	PRC for Signalled Lanes (%):	-0.2	Total Delay for Signalled Lanes (pcuHr):	23.19	Cycle Time (s):	90	
C1	Stream: 4	PRC for Signalled Lanes (%):	4.2	Total Delay for Signalled Lanes (pcuHr):	20.70	Cycle Time (s):	90	
		PRC Over All Lanes (%):	-41.3	Total Delay Over All Lanes(pcuHr):	249.01			

Full Input Data And Results

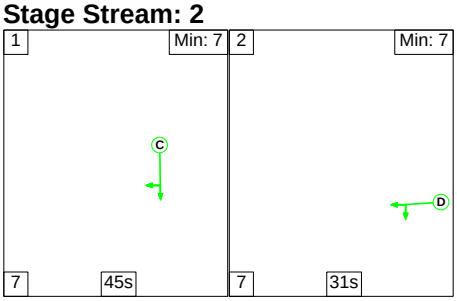
Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

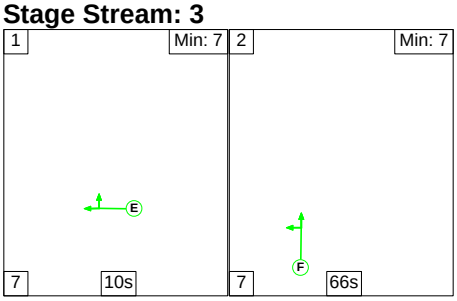
Stage Stream: 1



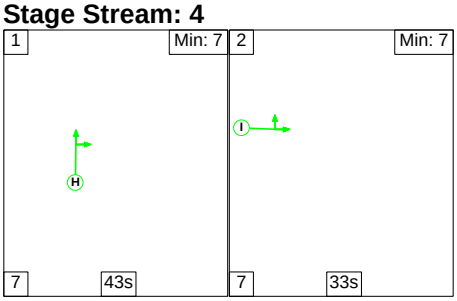
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	38	38
Change Point	0	45

Stage Stream: 2

Stage	1	2
Duration	45	31
Change Point	57	19

Full Input Data And Results

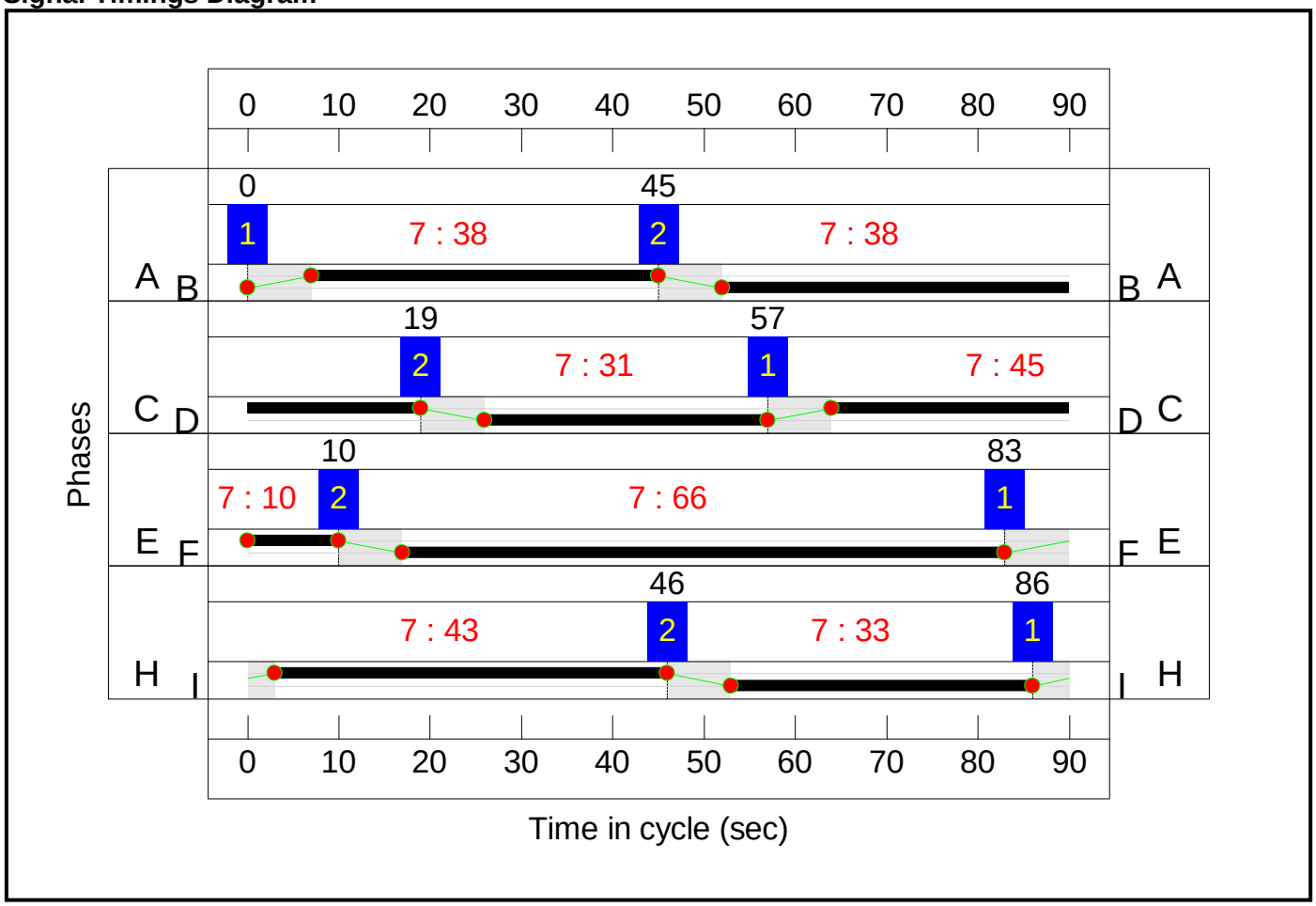
Stage Stream: 3

Stage	1	2
Duration	10	66
Change Point	83	10

Stage Stream: 4

Stage	1	2
Duration	43	33
Change Point	86	46

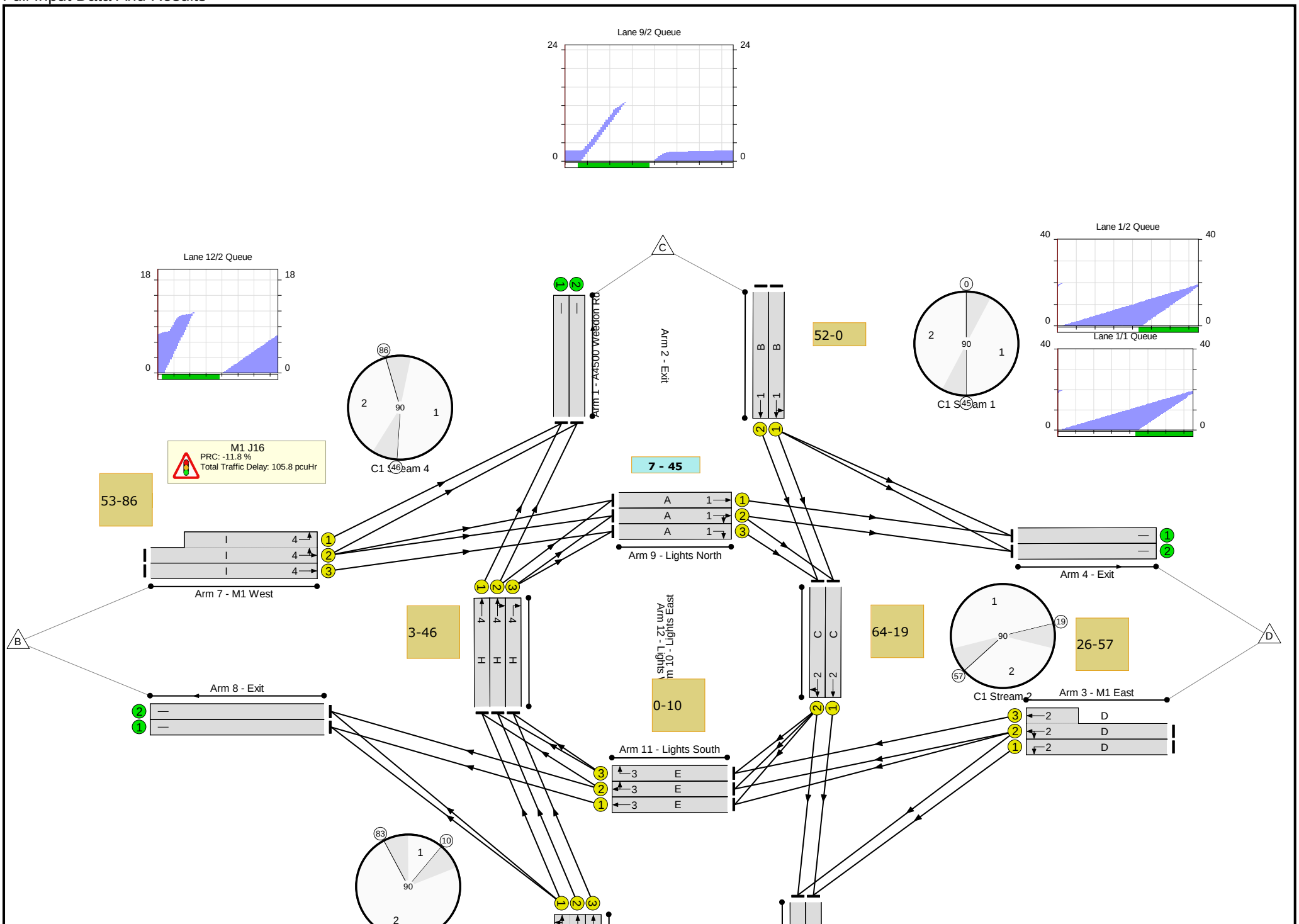
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.6%**
M1 J16	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.6%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	38	-	785	1800	780	100.6%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	38	-	781	1800	780	100.1%
2/1	Exit	U	N/A	N/A	-		-	-	-	865	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	751	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	31	-	438	1800	640	68.4%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	31	-	521	1800:1800	527+182	73.5 : 73.5%
4/1	Exit	U	N/A	N/A	-		-	-	-	553	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	1054	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	66	-	1689	1800:1800	680+1120	93.8 : 93.8%
5/3	A45 Ahead	U	3	N/A	F		1	66	-	777	1800	1340	58.0%
6/1	Exit	U	N/A	N/A	-		-	-	-	679	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	938	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	33	-	530	1800:1800	680+680	39.0 : 39.0%
7/3	M1 West Ahead	U	4	N/A	I		1	33	-	110	1800	680	16.2%
8/1	Exit	U	N/A	N/A	-		-	-	-	448	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	343	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	38	-	275	1900	823	33.4%
9/2	Lights North Ahead Right	U	1	N/A	A		1	38	-	788	1900	823	95.7%
9/3	Lights North Right	U	1	N/A	A		1	38	-	110	1900	823	13.4%
10/1	Lights East Ahead	U	2	N/A	C		1	45	-	241	1900	971	24.7%
10/2	Lights East Ahead Right	U	2	N/A	C		1	45	-	891	1900	971	91.6%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	10	-	174	1900	232	74.8%
11/2	Lights South Ahead Right	U	3	N/A	E		1	10	-	166	1900	232	71.4%
11/3	Lights South Right	U	3	N/A	E		1	10	-	134	1900	232	57.7%
12/1	Lights West Ahead	U	4	N/A	H		1	43	-	600	1900	929	64.6%
12/2	Lights West Ahead Right	U	4	N/A	H		1	43	-	772	1900	929	83.1%
12/3	Lights West Right	U	4	N/A	H		1	43	-	777	1900	929	83.6%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**43.8**	**62.1**	**0.0**	**105.8**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**43.8**	**62.1**	**0.0**	**105.8**	**-**	**-**	**-**	**-**
1/1	785	780	-	-	-	5.8	15.3	-	21.1	97.0	19.8	15.3	35.1
1/2	781	780	-	-	-	5.6	14.2	-	19.8	91.3	19.5	14.2	33.8
2/1	865	865	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	751	751	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	438	438	-	-	-	3.0	1.1	-	4.1	33.5	9.2	1.1	10.3
3/2+3/3	521	521	-	-	-	3.4	1.4	-	4.8	33.1	9.3	1.4	10.6
4/1	551	551	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	1052	1052	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	1689	1689	-	-	-	2.9	6.8	-	9.6	20.6	16.1	6.8	22.8
5/3	777	777	-	-	-	1.1	0.7	-	1.8	8.4	8.6	0.7	9.3
6/1	678	678	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	937	937	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	530	530	-	-	-	3.0	0.3	-	3.3	22.6	4.8	0.3	5.1
7/3	110	110	-	-	-	0.6	0.1	-	0.7	21.7	1.8	0.1	1.9
8/1	448	448	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	343	343	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	275	275	-	-	-	0.3	0.3	-	0.5	7.1	0.6	0.3	0.9
9/2	788	788	-	-	-	1.5	7.8	-	9.3	42.3	12.7	7.8	20.5
9/3	110	110	-	-	-	1.0	0.1	-	1.1	36.2	2.7	0.1	2.8
10/1	240	240	-	-	-	0.1	0.2	-	0.2	3.3	0.8	0.2	1.0
10/2	890	890	-	-	-	1.1	4.9	-	6.0	24.1	19.8	4.9	24.7
11/1	174	174	-	-	-	1.2	1.4	-	2.6	53.8	3.9	1.4	5.3
11/2	166	166	-	-	-	1.8	1.2	-	3.0	64.9	4.0	1.2	5.2
11/3	134	134	-	-	-	1.8	0.7	-	2.5	67.7	3.3	0.7	4.0
12/1	600	600	-	-	-	2.9	0.9	-	3.8	22.7	9.7	0.9	10.7

Full Input Data And Results

12/2	772	772	-	-	-	3.1	2.4	-	5.5	25.7	11.8	2.4	14.2
12/3	777	777	-	-	-	3.6	2.5	-	6.0	28.0	9.8	2.5	12.3

C1	Stream: 1	PRC for Signalled Lanes (%):	-11.8	Total Delay for Signalled Lanes (pcuHr):	51.87	Cycle Time (s):	90	
C1	Stream: 2	PRC for Signalled Lanes (%):	-1.8	Total Delay for Signalled Lanes (pcuHr):	15.05	Cycle Time (s):	90	
C1	Stream: 3	PRC for Signalled Lanes (%):	-4.3	Total Delay for Signalled Lanes (pcuHr):	19.56	Cycle Time (s):	90	
C1	Stream: 4	PRC for Signalled Lanes (%):	7.6	Total Delay for Signalled Lanes (pcuHr):	19.34	Cycle Time (s):	90	
		PRC Over All Lanes (%):	-11.8	Total Delay Over All Lanes(pcuHr):	105.82			

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

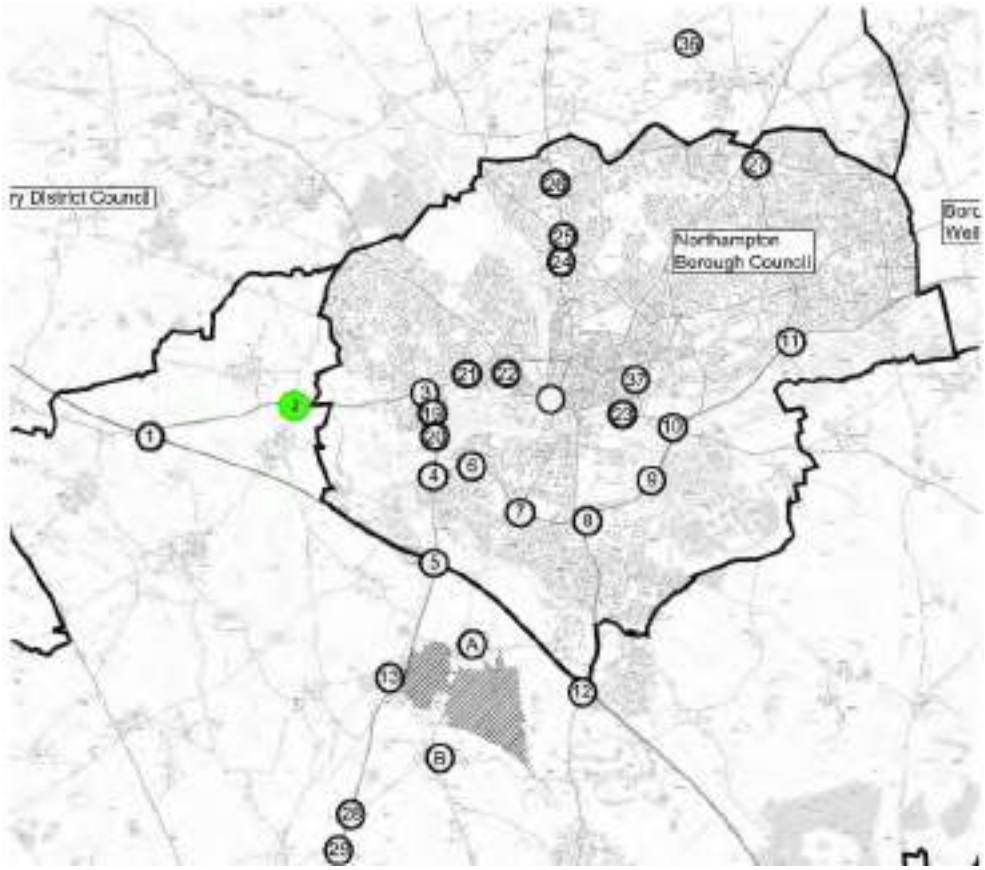
Technical Note No. 12

1 JUNCTION TWO – UPTON VALLEY WAY / A4500 / SANDY LANE RELIEF ROAD

Existing Junction Description

1.1 Junction Two is a four arm signalised crossroads to the north east of Kislingbury and the West of Upton. It connects the Sandy Lane Relief Road, the A4500 Weedon Road, Upton Valley Way and the A4500. The current junction in not in full option with the Sandy Lane Relief Road not open to traffic therefore the junction is being assessed as a future junction only. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Two Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for Junction Two were conducted on Tuesday 6th June 2017 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the baseline flows along with queue length surveys recorded at five minute intervals. However, the junction was not in full operation as the Sandy Lane Relief Road (the northern arm) is not yet open to traffic. Therefore it is not possible to achieve an appropriately validated base model for this junction.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 As agreed with the NCC and HE The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.6 The junction has been set up based on the LinSig 3 inputs included as part of the Norwood Farm application (SN/06/1467) included at **Appendix B**, and guidance provided within the LinSig 3 handbook and industry standard guidance. This inputs applied included geometrically calculated saturation flows, intergreens, stages, prohibited moves and phase delays.

1.7 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Results of the Base Modelling

1.8 The results of the modelling for the existing junction layout, Shown in **Figure EL02** are summarised in **Table 2** and junction analysis results are included at **Appendix C**.

1.9 The names of each arm is as follows:

- Arm 1 – Sandy Lane Relief Road
- Arm 2 – A4500 East
- Arm 3 – Upton Valley Way
- Arm 4 – A4500 West

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		**AM**				**PM**			
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**
DoS (%)	**2017**	NA				NA			
	2021 DM	61.8%	67.4%	57.8%	67.2%	83.1%	83.8%	81.5%	84.3%
	2021 DS	68.4%	70.2%	63.6%	67.5%	88.1%	87.5%	83.4%	85.4%
	2031 DM	78.30%	81.90%	74.80%	80.00%	96.80%	96.40%	92.00%	93.00%
	2031 DS	84.2%	84.0%	83.2%	84.3%	91.8%	92.7%	90.0%	95.4%
Queue – MMQ (PCU)	**2017**	NA				NA			
	2021 DM	4	11	3	10	7	16	6	13
	2021 DS	5	11	4	10	8	17	7	14
	2031 DM	9	13	6	11	14	22	9	11
	2031 DS	11	13	8	12	12	19	9	19
Average Delay (sec/pcu)	**2017**	NA				NA			
	2021 DM	49.9	34.1	51.1	33.4	6.1	7.0	5.5	8.0
	2021 DS	48.8	36.9	53.1	35.0	67.9	49.6	63.0	47.2
	2031 DM	46.3	46.0	54.2	41.9	95.4	79.1	80.6	60.2
	2031 DS	50.1	50.4	58.8	44.6	65.8	63.9	75.1	70.5

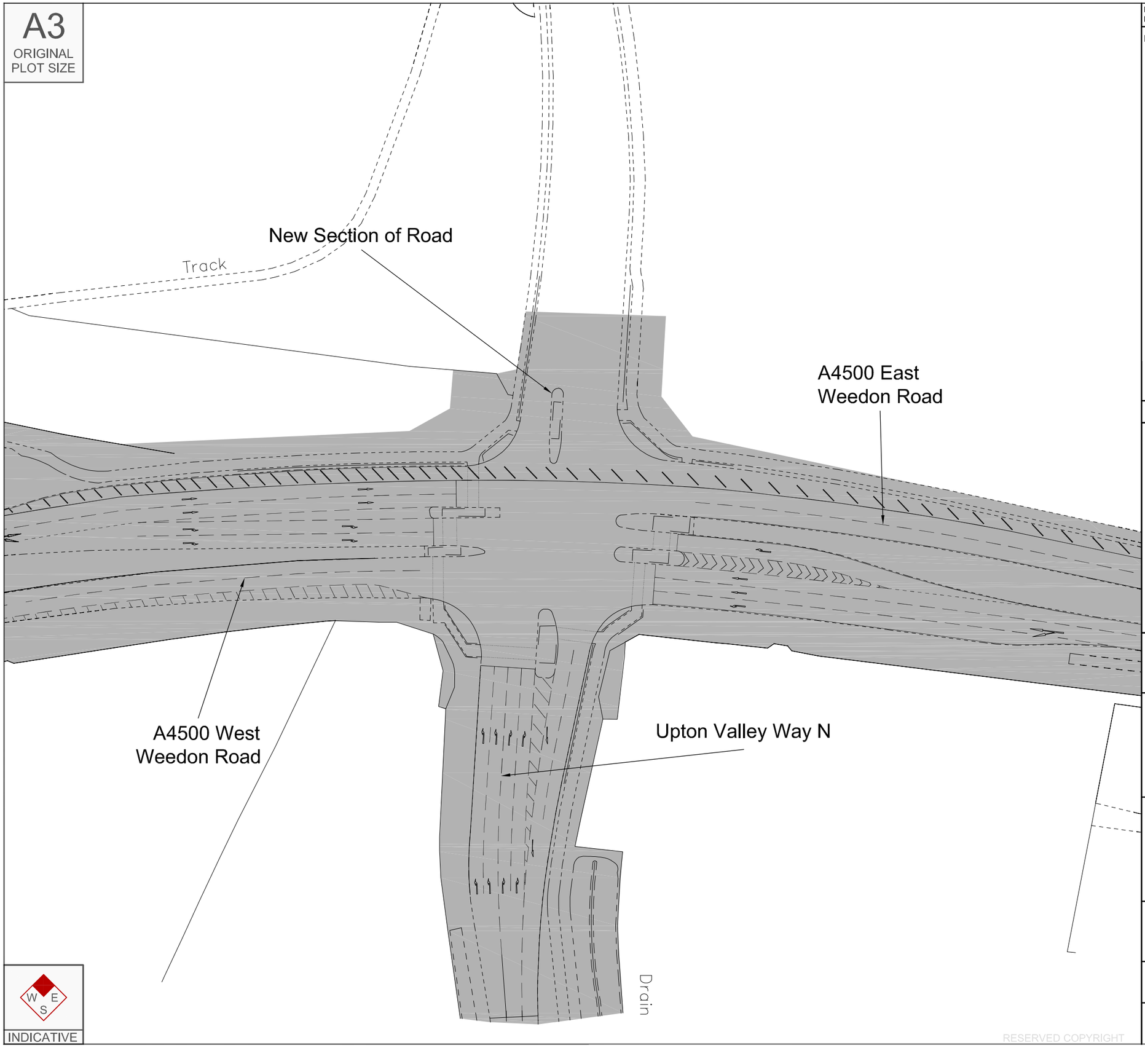
Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (PRC)	NA	33.5	28.2	9.8	6.8	NA	6.8	2.2	-7.5	-6.0
Overall Junction Delay (PCUhr)	NA	26	29	44	50	NA	40	47	74	73

1.10 As shown in **Table 3**, Rail Central is shown to have minimal impact on the operation of the existing junction and that the junction remains within theoretical capacity in the 2031 AM and PM scenarios. Therefore mitigation is not considered necessary at this location.

FIGURES

A3
ORIGINAL
PLOT SIZE



W E S

INDICATIVE

RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT:

PROJECT:

TITLE:
A508 Harborough Road / A5076 Holly Lodge Drive Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	26.05.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL02	

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	1,320	147	1,467
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	670	0	0	35	705
D - Upton Valley Way	231	0	20	0	251
Total	901	0	1,340	182	2,423

Modelled Flows
2021 DM
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	12	979	282	1,273
B - Sandy Lane Relief Road	7	0	0	259	266
C - A4500 (East)	827	21	0	0	848
D - Upton Valley Way	139	209	6	0	354
Total	973	242	985	541	2,741

Modelled Flows
2021 DS2
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	15	1,021	249	1,285
B - Sandy Lane Relief Road	42	0	1	351	395
C - A4500 (East)	801	19	0	0	820
D - Upton Valley Way	153	230	0	0	383
Total	996	264	1,023	600	2,883

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	0	0	0
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	0	0	0	0	0
D - Upton Valley Way	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	12	-341	135	-194
B - Sandy Lane Relief Road	7	0	0	259	266
C - A4500 (East)	157	21	0	-35	143
D - Upton Valley Way	-92	209	-14	0	103
Total	72	242	-355	359	318

2021 DS2 minus 2015 Base
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	15	-299	102	-182
B - Sandy Lane Relief Road	42	0	1	351	395
C - A4500 (East)	131	19	0	-35	115
D - Upton Valley Way	-78	230	-20	0	132
Total	95	264	-317	418	460

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	1,029	250	1,279
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	744	0	3	37	784
D - Upton Valley Way	182	0	13	0	195
Total	926	0	1,045	287	2,258

2021 DM adjusted to count
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - Upton Valley Way East	0	12	688	385	1,085
B - A5076 N	7	0	0	259	266
C - A5076 E	901	21	3	2	927
D - A5123 S	90	209	-1	0	298
Total	998	242	690	646	2,576

2021 DS2 adjusted to count
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - Upton Valley Way East	0	15	730	352	1,097
B - A5076 N	42	0	1	351	395
C - A5076 E	875	19	3	2	899
D - A5123 S	104	230	-7	0	327
Total	1,021	264	728	705	2,718

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	800	91	891
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	1,120	0	0	21	1,141
D - Upton Valley Way	203	0	113	0	316
Total	1,323	0	913	112	2,348

Modelled Flows
2021 DM
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	2	766	183	951
B - Sandy Lane Relief Road	8	0	0	349	357
C - A4500 (East)	1,196	3	0	0	1,199
D - Upton Valley Way	109	114	6	0	229
Total	1,313	119	772	532	2,736

Modelled Flows
2021 DS2
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	61	797	152	1,009
B - Sandy Lane Relief Road	21	0	1	410	431
C - A4500 (East)	1,167	4	0	0	1,170
D - Upton Valley Way	152	168	0	0	320
Total	1,339	233	797	562	2,931

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	0	0	0
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	0	0	0	0	0
D - Upton Valley Way	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	2	-34	92	60
B - Sandy Lane Relief Road	8	0	0	349	357
C - A4500 (East)	76	3	0	-21	58
D - Upton Valley Way	-94	114	-107	0	-87
Total	-10	119	-141	420	388

2021 DS2 minus 2015 Base
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	61	-3	61	118
B - Sandy Lane Relief Road	21	0	1	410	431
C - A4500 (East)	47	4	0	-21	29
D - Upton Valley Way	-51	168	-113	0	4
Total	16	233	-116	450	583

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	1	0	898	112	1,011
B - Sandy Lane Relief Road	0	0	0	0	1,983
C - A4500 (East)	1,099	0	0	24	2,223
D - Upton Valley Way	404	0	48	0	1,663
Total	647	2,424	2,000	1,293	6,364

2021 DM adjusted to count
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	1	2	864	204	1,071
B - Sandy Lane Relief Road	8	0	0	349	357
C - A4500 (East)	1,175	3	0	3	1,181
D - Upton Valley Way	310	114	-59	0	365
Total	1,494	119	805	556	2,974

2021 DS2 adjusted to count
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	1	61	895	173	1,129
B - Sandy Lane Relief Road	21	0	1	410	431
C - A4500 (East)	1,146	4	0	3	1,152
D - Upton Valley Way	353	168	-65	0	456
Total	1,520	233	830	586	3,169

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	1,320	147	1,467
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	670	0	0	35	705
D - Upton Valley Way	231	0	20	0	251
Total	901	0	1,340	182	2,423

Modelled Flows
2031 DM
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	38	1,018	227	1,283
B - Sandy Lane Relief Road	295	0	0	498	793
C - A4500 (East)	815	64	0	0	879
D - Upton Valley Way	314	338	6	0	658
Total	1,424	440	1,024	725	3,613

Modelled Flows
2031 DS2
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	114	986	320	1,421
B - Sandy Lane Relief Road	341	0	50	606	997
C - A4500 (East)	816	37	0	0	854
D - Upton Valley Way	210	413	0	0	623
Total	1,367	564	1,036	927	3,895

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	0	0	0
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	0	0	0	0	0
D - Upton Valley Way	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	38	-302	80	-184
B - Sandy Lane Relief Road	295	0	0	498	793
C - A4500 (East)	145	64	0	-35	174
D - Upton Valley Way	83	338	-14	0	407
Total	523	440	-316	543	1,190

2031 DS2 minus 2015 Base
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	114	-334	173	-46
B - Sandy Lane Relief Road	341	0	50	606	997
C - A4500 (East)	146	37	0	-35	149
D - Upton Valley Way	-21	413	-20	0	372
Total	466	564	-304	745	1,472

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	1,029	250	1,279
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	744	0	3	37	784
D - Upton Valley Way	182	0	13	0	195
Total	926	0	1,045	287	2,258

2031 DM adjusted to count
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - Upton Valley Way East	0	38	727	330	1,095
B - Sandy Lane Relief Road	295	0	0	498	793
C - A4500 (East)	889	64	3	2	958
D - Upton Valley Way	265	338	-1	0	602
Total	1,449	440	729	830	3,448

2031 DS2 adjusted to count
AM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - Upton Valley Way East	0	114	695	423	1,233
B - Sandy Lane Relief Road	341	0	50	606	997
C - A4500 (East)	890	37	3	2	933
D - Upton Valley Way	161	413	-7	0	567
Total	1,392	564	741	1,032	3,730

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	800	91	891
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	1,120	0	0	21	1,141
D - Upton Valley Way	203	0	113	0	316
Total	1,323	0	913	112	2,348

Modelled Flows
2031 DM
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	55	927	158	1,140
B - Sandy Lane Relief Road	79	0	0	498	577
C - A4500 (East)	1,193	4	0	0	1,197
D - Upton Valley Way	188	302	5	0	495
Total	1,460	361	932	656	3,409

Modelled Flows
2031 DS2
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	124	821	189	1,134
B - Sandy Lane Relief Road	197	0	28	571	796
C - A4500 (East)	1,149	7	0	0	1,156
D - Upton Valley Way	180	386	0	0	565
Total	1,526	516	850	760	3,651

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	0	0	0	0
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	0	0	0	0	0
D - Upton Valley Way	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	55	127	67	249
B - Sandy Lane Relief Road	79	0	0	498	577
C - A4500 (East)	73	4	0	-21	56
D - Upton Valley Way	-15	302	-108	0	179
Total	137	361	19	544	1,061

2031 DS2 minus 2015 Base
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	0	124	21	98	243
B - Sandy Lane Relief Road	197	0	28	571	796
C - A4500 (East)	29	7	0	-21	15
D - Upton Valley Way	-23	386	-113	0	249
Total	203	516	-63	648	1,303

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	1	0	898	112	1,011
B - Sandy Lane Relief Road	0	0	0	0	0
C - A4500 (East)	1,099	0	0	24	1,123
D - Upton Valley Way	404	0	48	0	452
Total	1,504	0	946	136	2,586

2031 DM adjusted to count
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	1	55	1,025	179	1,260
B - Sandy Lane Relief Road	79	0	0	498	577
C - A4500 (East)	1,172	4	0	3	1,179
D - Upton Valley Way	389	302	-60	0	631
Total	1,641	361	965	680	3,647

2031 DS2 adjusted to count
PM Peak

	A - A4500 (West)	B - Sandy Lane Relief Road	C - A4500 (East)	D - Upton Valley Way	Total
A - A4500 (West)	1	124	919	210	1,254
B - Sandy Lane Relief Road	197	0	28	571	796
C - A4500 (East)	1,128	7	0	3	1,138
D - Upton Valley Way	381	386	-65	0	701
Total	1,707	516	883	784	3,889

APPENDIX B

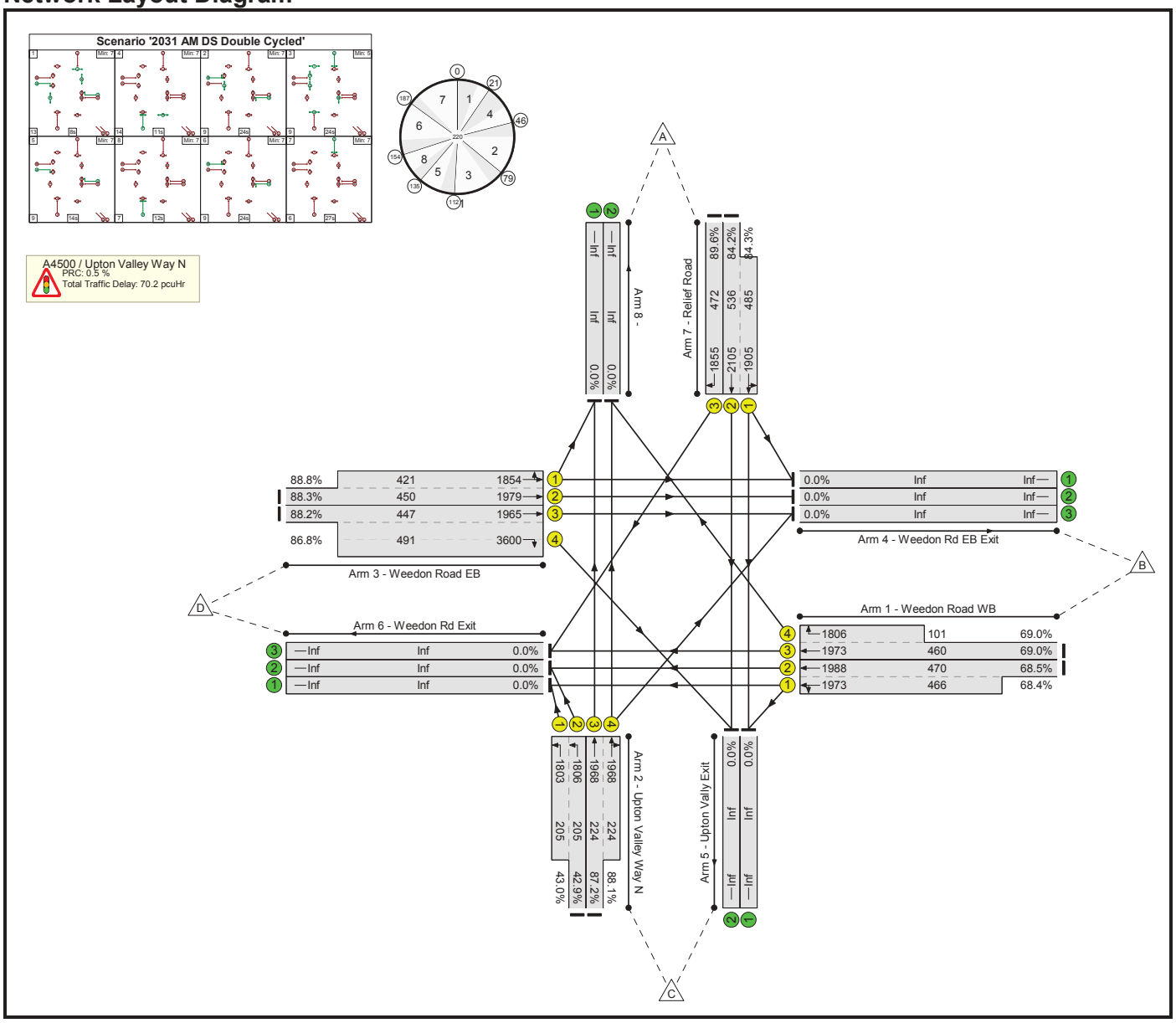
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Weedon Road - Upton Valley Way (Junction 6) Committed.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 7: '2031 AM DS Double Cycled' (FG3: '2031 AM DS', Plan 3: 'Peds Every Other Cycle')

Network Layout Diagram



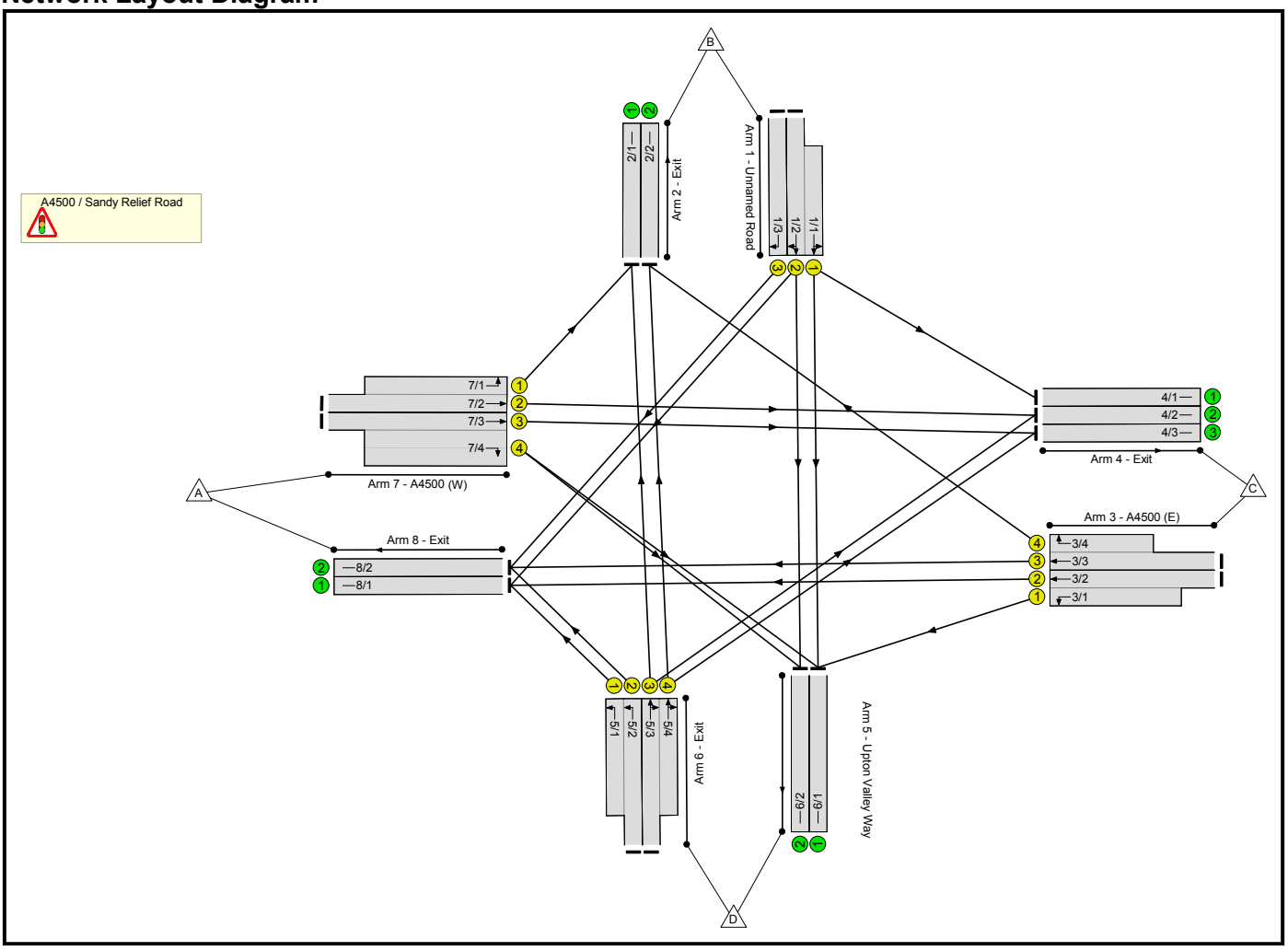
APPENDIX C

Full Input Data And Results

User and Project Details

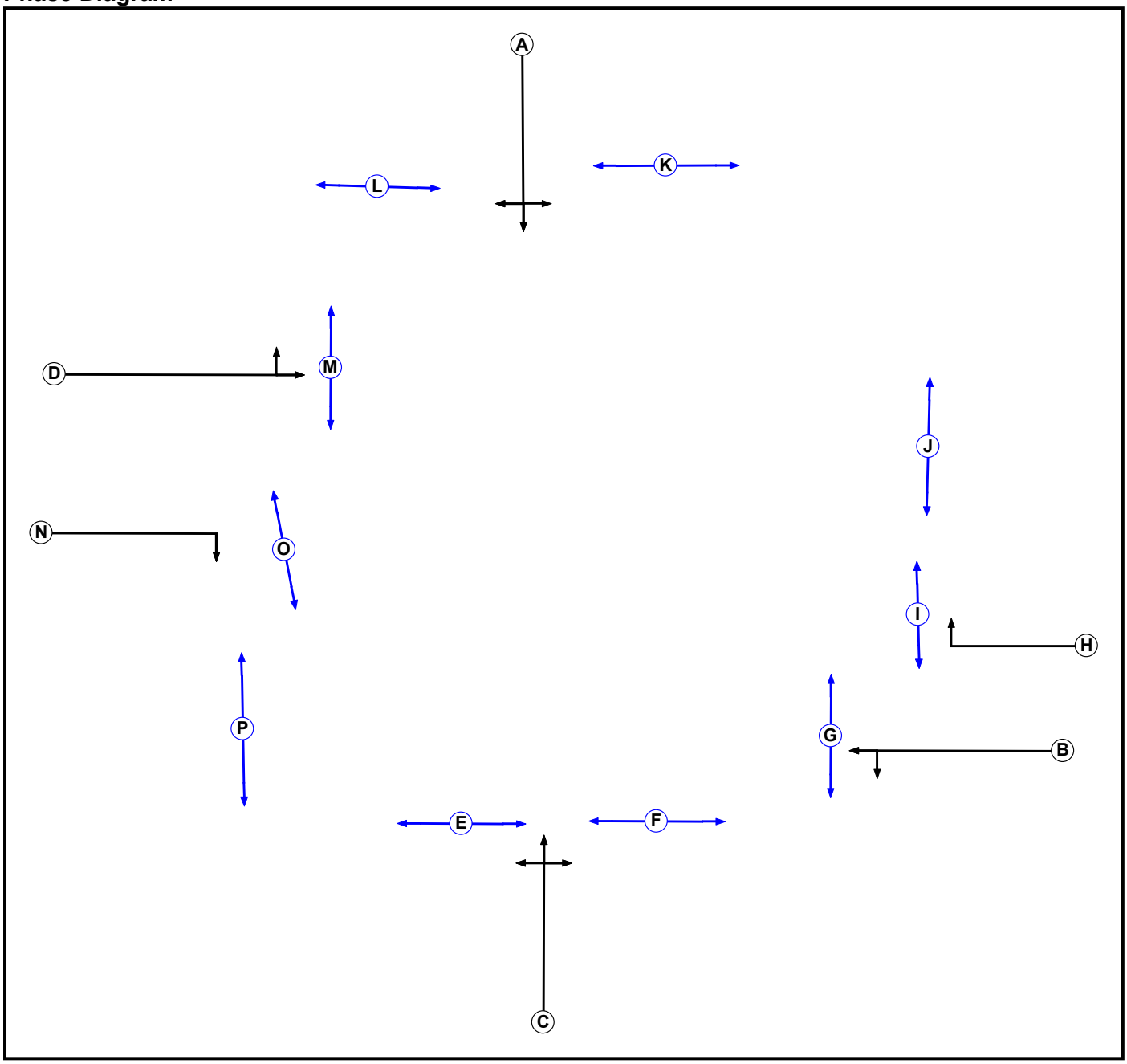
Project:	Rail Central
Title:	Junction 2
Location:	A4500 / Sandy Lane Relief Road
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		7	7
F	Pedestrian		7	7
G	Pedestrian		7	7
H	Traffic		7	7
I	Pedestrian		7	7
J	Pedestrian		7	7
K	Pedestrian		7	7
L	Pedestrian		7	7
M	Pedestrian		7	7
N	Traffic		7	7
O	Pedestrian		7	7
P	Pedestrian		7	7

Full Input Data And Results

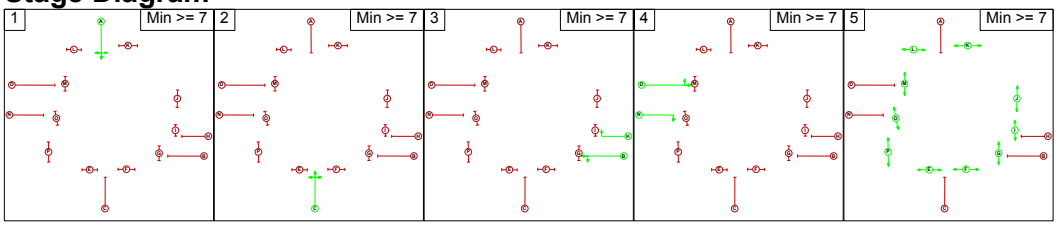
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A		8	8	5	14	9	12	8	8	14	15	9	12	5	9	12
B	8		5	5	14	9	12	-	8	14	15	9	12	5	9	12
C	8	5		5	14	9	12	5	8	14	15	9	12	5	9	12
D	5	5	5		14	9	12	5	8	14	15	9	12	-	9	12
E	14	14	14	1		-	-	14	-	-	-	-	-	14	-	-
F	9	9	9	9	-		-	9	-	-	-	-	-	9	-	-
G	12	12	12	12	-	-		12	-	-	-	-	-	12	-	-
H	8	-	5	5	14	9	12		8	14	15	9	12	5	9	12
I	8	8	8	8	-	-	-	8		-	-	-	-	8	-	-
J	14	14	14	14	-	-	-	14	-		-	-	-	14	-	-
K	15	15	15	15	-	-	-	15	-	-		-	-	15	-	-
L	9	9	9	9	-	-	-	9	-	-	-		-	9	-	-
M	12	12	12	12	-	-	-	12	-	-	-	-		12	-	-
N	5	5	5	-	14	9	12	5	8	14	15	9	12		9	12
O	9	9	9	9	-	-	-	9	-	-	-	-	-	9		-
P	12	12	12	12	-	-	-	12	-	-	-	-	-	12	-	

Phases in Stage

Stage No.	Phases in Stage
1	A
2	C
3	B H
4	D N
5	E F G I J K L M O P

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

From Stage	To Stage					
		1	2	3	4	5
	1		8	8	5	15
	2	8		5	5	15
	3	8	5		5	15
	4	5	5	5		15
	5	15	15	15	15	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A4500 / Sandy Relief Road
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: A4500 / Sandy Relief Road

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Unnamed Road)	U	A	2	3	11.3	Geom	-	3.50	0.00	N	Arm 4 Left	25.00
											Arm 6 Ahead	Inf
1/2 (Unnamed Road)	U	A	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	Inf
											Arm 8 Right	31.00
1/3 (Unnamed Road)	U	A	2	3	13.0	Geom	-	3.50	0.00	N	Arm 8 Right	31.00
2/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
2/2 (Exit)	U		2	3	9.0	Inf	-	-	-	-	-	-
3/1 (A4500 (E))	U	B	2	3	16.5	Geom	-	3.50	0.00	Y	Arm 6 Left	15.00
3/2 (A4500 (E))	U	B	2	3	60.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	Inf
3/3 (A4500 (E))	U	B	2	3	60.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	Inf
3/4 (A4500 (E))	U	H	2	3	8.7	Geom	-	4.50	0.00	N	Arm 2 Right	25.00
4/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/3 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Upton Valley Way)	U	C	2	3	11.3	Geom	-	3.50	0.00	Y	Arm 8 Left	22.00
5/2 (Upton Valley Way)	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm 8 Left	23.00
5/3 (Upton Valley Way)	U	C	2	3	60.0	Geom	-	3.50	0.00	N	Arm 2 Ahead	Inf
											Arm 4 Right	35.00
5/4 (Upton Valley Way)	U	C	2	3	11.3	Geom	-	3.50	0.00	Y	Arm 2 Ahead	Inf
											Arm 4 Right	32.00
6/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (Exit)	U		2	3	8.7	Inf	-	-	-	-	-	-
7/1 (A4500 (W))	U	D	2	3	17.4	Geom	-	3.50	0.00	Y	Arm 2 Left	22.00

7/2 (A4500 (W))	U	D	2	3	60.0	Geom	-	3.30	0.00	N	Arm 4 Ahead	Inf
7/3 (A4500 (W))	U	D	2	3	60.0	Geom	-	3.30	0.00	N	Arm 4 Ahead	Inf
7/4 (A4500 (W))	U	N	2	3	17.4	User	3600	-	-	-	-	-
8/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM '	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2021 DM AM ' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	12	688	385	1085
	B	7	0	0	259	266
	C	901	21	3	2	927
	D	90	209	0	0	299
	Tot.	998	242	691	646	2577

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DM AM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	129
1/2 (with short)	259(In) 130(Out)
1/3	7
2/1	120
2/2	122
3/1 (short)	2
3/2 (with short)	453(In) 451(Out)
3/3 (with short)	471(In) 450(Out)
3/4 (short)	21
4/1	0
4/2	299
4/3	389
5/1 (short)	43
5/2 (with short)	90(In) 47(Out)
5/3 (with short)	209(In) 108(Out)
5/4 (short)	101
6/1	324
6/2	322
7/1 (short)	12
7/2 (with short)	311(In) 299(Out)
7/3 (with short)	774(In) 389(Out)
7/4 (short)	385
8/1	494
8/2	504

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	0.0 %	2105	2105
				Arm 6 Ahead	Inf	100.0 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
				Arm 8 Right	31.00	0.0 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM ', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	1	2	864	204	1071
	B	8	0	0	349	357
	C	1175	3	0	3	1181
	D	310	114	0	0	424
	Tot.	1494	119	864	556	3033

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DM PM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	174
1/2 (with short)	349(In) 175(Out)
1/3	8
2/1	61
2/2	58
3/1 (short)	3
3/2 (with short)	590(In) 587(Out)
3/3 (with short)	591(In) 588(Out)
3/4 (short)	3
4/1	0
4/2	415
4/3	449
5/1 (short)	149
5/2 (with short)	310(In) 161(Out)
5/3 (with short)	114(In) 59(Out)
5/4 (short)	55
6/1	279
6/2	277
7/1 (short)	2
7/2 (with short)	417(In) 415(Out)
7/3 (with short)	653(In) 449(Out)
7/4 (short)	204
8/1	736
8/2	757

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	0.0 %	2105	2105
				Arm 6 Ahead	Inf	100.0 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
				Arm 8 Right	31.00	0.0 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	730	352	1097
	B	42	0	1	351	394
	C	875	19	3	2	899
	D	104	230	0	0	334
	Tot.	1021	264	734	705	2724

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS2 AM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	176
1/2 (with short)	352(In) 176(Out)
1/3	42
2/1	134
2/2	130
3/1 (short)	2
3/2 (with short)	439(In) 437(Out)
3/3 (with short)	457(In) 438(Out)
3/4 (short)	19
4/1	1
4/2	339
4/3	391
5/1 (short)	50
5/2 (with short)	104(In) 54(Out)
5/3 (with short)	230(In) 119(Out)
5/4 (short)	111
6/1	353
6/2	352
7/1 (short)	15
7/2 (with short)	354(In) 339(Out)
7/3 (with short)	743(In) 391(Out)
7/4 (short)	352
8/1	487
8/2	534

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	0.6 %	2104	2104
				Arm 6 Ahead	Inf	99.4 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
				Arm 8 Right	31.00	0.0 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	1	61	895	173	1130
	B	21	0	1	410	432
	C	1146	4	0	3	1153
	D	353	168	0	0	521
	Tot.	1521	233	896	586	3236

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS2 PM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	205
1/2 (with short)	411(In) 206(Out)
1/3	21
2/1	148
2/2	85
3/1 (short)	3
3/2 (with short)	576(In) 573(Out)
3/3 (with short)	577(In) 573(Out)
3/4 (short)	4
4/1	1
4/2	440
4/3	455
5/1 (short)	170
5/2 (with short)	353(In) 183(Out)
5/3 (with short)	168(In) 87(Out)
5/4 (short)	81
6/1	294
6/2	292
7/1 (short)	61
7/2 (with short)	501(In) 440(Out)
7/3 (with short)	628(In) 455(Out)
7/4 (short)	173
8/1	743
8/2	777

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	0.5 %	2104	2104
				Arm 6 Ahead	Inf	99.5 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
				Arm 8 Right	31.00	0.0 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	38	727	330	1095
	B	295	0	0	498	793
	C	889	64	3	2	958
	D	265	338	0	0	603
	Tot.	1449	440	730	830	3449

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2031 DM AM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	293
1/2 (with short)	582(In) 289(Out)
1/3	211
2/1	213
2/2	227
3/1 (short)	2
3/2 (with short)	450(In) 448(Out)
3/3 (with short)	505(In) 441(Out)
3/4 (short)	64
4/1	0
4/2	338
4/3	389
5/1 (short)	128
5/2 (with short)	265(In) 137(Out)
5/3 (with short)	338(In) 175(Out)
5/4 (short)	163
6/1	460
6/2	370
7/1 (short)	38
7/2 (with short)	376(In) 338(Out)
7/3 (with short)	719(In) 389(Out)
7/4 (short)	330
8/1	660
8/2	789

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	0.0 %	2105	2105
				Arm 6 Ahead	Inf	100.0 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	70.9 %	2076	2076
				Arm 8 Right	31.00	29.1 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	1	55	1025	179	1260
	B	79	0	0	498	577
	C	1172	4	0	3	1179
	D	389	302	0	0	691
	Tot.	1641	361	1025	680	3707

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2031 DM PM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	249
1/2 (with short)	498(In) 249(Out)
1/3	79
2/1	211
2/2	150
3/1 (short)	3
3/2 (with short)	589(In) 586(Out)
3/3 (with short)	590(In) 586(Out)
3/4 (short)	4
4/1	0
4/2	508
4/3	517
5/1 (short)	188
5/2 (with short)	389(In) 201(Out)
5/3 (with short)	302(In) 156(Out)
5/4 (short)	146
6/1	342
6/2	338
7/1 (short)	55
7/2 (with short)	563(In) 508(Out)
7/3 (with short)	696(In) 517(Out)
7/4 (short)	179
8/1	774
8/2	866

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	0.0 %	2105	2105
				Arm 6 Ahead	Inf	100.0 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
				Arm 8 Right	31.00	0.0 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	114	695	423	1232
	B	341	0	50	606	997
	C	890	37	3	2	932
	D	161	413	0	0	574
	Tot.	1392	564	748	1031	3735

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS2 AM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	351
1/2 (with short)	703(In) 352(Out)
1/3	294
2/1	328
2/2	236
3/1 (short)	2
3/2 (with short)	449(In) 447(Out)
3/3 (with short)	480(In) 443(Out)
3/4 (short)	37
4/1	50
4/2	324
4/3	371
5/1 (short)	78
5/2 (with short)	161(In) 83(Out)
5/3 (with short)	413(In) 214(Out)
5/4 (short)	199
6/1	515
6/2	516
7/1 (short)	114
7/2 (with short)	438(In) 324(Out)
7/3 (with short)	794(In) 371(Out)
7/4 (short)	423
8/1	572
8/2	820

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	14.2 %	2087	2087
				Arm 6 Ahead	Inf	85.8 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	86.6 %	2091	2091
				Arm 8 Right	31.00	13.4 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	1	124	919	210	1254
	B	197	0	28	571	796
	C	1128	7	0	3	1138
	D	381	386	0	0	767
	Tot.	1707	517	947	784	3955

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS2 PM
Junction: A4500 / Sandy Relief Road	
1/1 (short)	299
1/2 (with short)	599(In) 300(Out)
1/3	197
2/1	324
2/2	193
3/1 (short)	3
3/2 (with short)	567(In) 564(Out)
3/3 (with short)	571(In) 564(Out)
3/4 (short)	7
4/1	28
4/2	455
4/3	464
5/1 (short)	184
5/2 (with short)	381(In) 197(Out)
5/3 (with short)	386(In) 200(Out)
5/4 (short)	186
6/1	379
6/2	405
7/1 (short)	124
7/2 (with short)	579(In) 455(Out)
7/3 (with short)	674(In) 464(Out)
7/4 (short)	210
8/1	748
8/2	958

Full Input Data And Results

Lane Saturation Flows

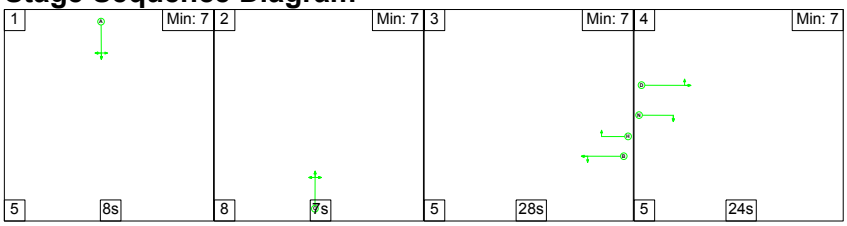
Full Input Data And Results

Junction: A4500 / Sandy Relief Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Unnamed Road)	3.50	0.00	N	Arm 4 Left	25.00	9.4 %	2093	2093
				Arm 6 Ahead	Inf	90.6 %		
1/2 (Unnamed Road)	3.50	0.00	N	Arm 6 Ahead	Inf	100.0 %	2105	2105
				Arm 8 Right	31.00	0.0 %		
1/3 (Unnamed Road)	3.50	0.00	N	Arm 8 Right	31.00	100.0 %	2008	2008
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A4500 (E))	3.50	0.00	Y	Arm 6 Left	15.00	100.0 %	1786	1786
3/2 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/3 (A4500 (E))	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
3/4 (A4500 (E))	4.50	0.00	N	Arm 2 Right	25.00	100.0 %	2080	2080
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
4/3 (Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
5/1 (Upton Valley Way)	3.50	0.00	Y	Arm 8 Left	22.00	100.0 %	1840	1840
5/2 (Upton Valley Way)	3.50	0.00	N	Arm 8 Left	23.00	100.0 %	1976	1976
5/3 (Upton Valley Way)	3.50	0.00	N	Arm 2 Ahead	Inf	100.0 %	2105	2105
				Arm 4 Right	35.00	0.0 %		
5/4 (Upton Valley Way)	3.50	0.00	Y	Arm 2 Ahead	Inf	100.0 %	1965	1965
				Arm 4 Right	32.00	0.0 %		
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (A4500 (W))	3.50	0.00	Y	Arm 2 Left	22.00	100.0 %	1840	1840
7/2 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/3 (A4500 (W))	3.30	0.00	N	Arm 4 Ahead	Inf	100.0 %	2085	2085
7/4 (A4500 (W) Lane 4)	This lane uses a directly entered Saturation Flow						3600	3600
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

8/2 (Exit Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2021 DM AM ' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

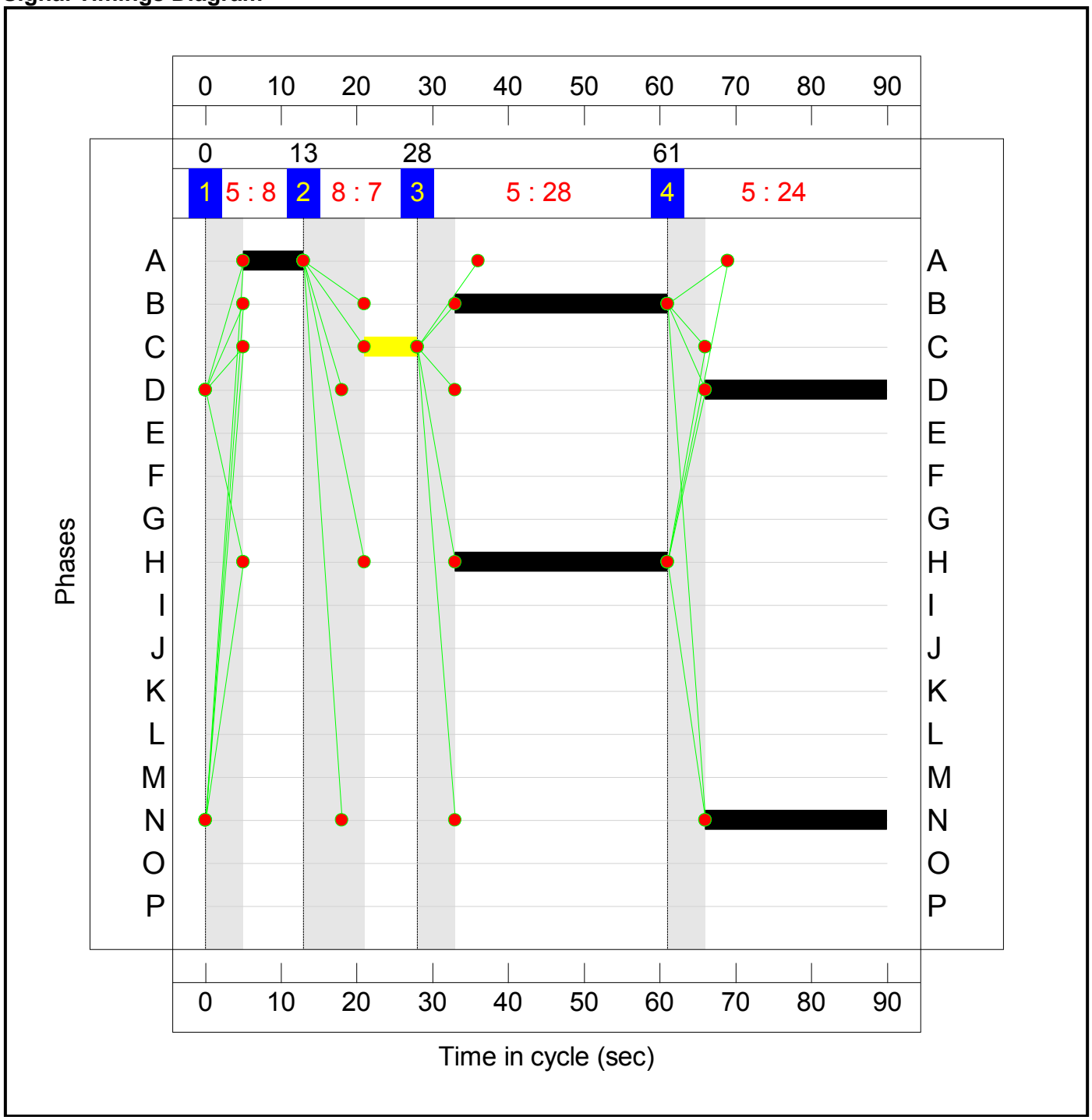


Stage Timings

Stage	1	2	3	4
Duration	8	7	28	24
Change Point	0	13	28	61

Full Input Data And Results

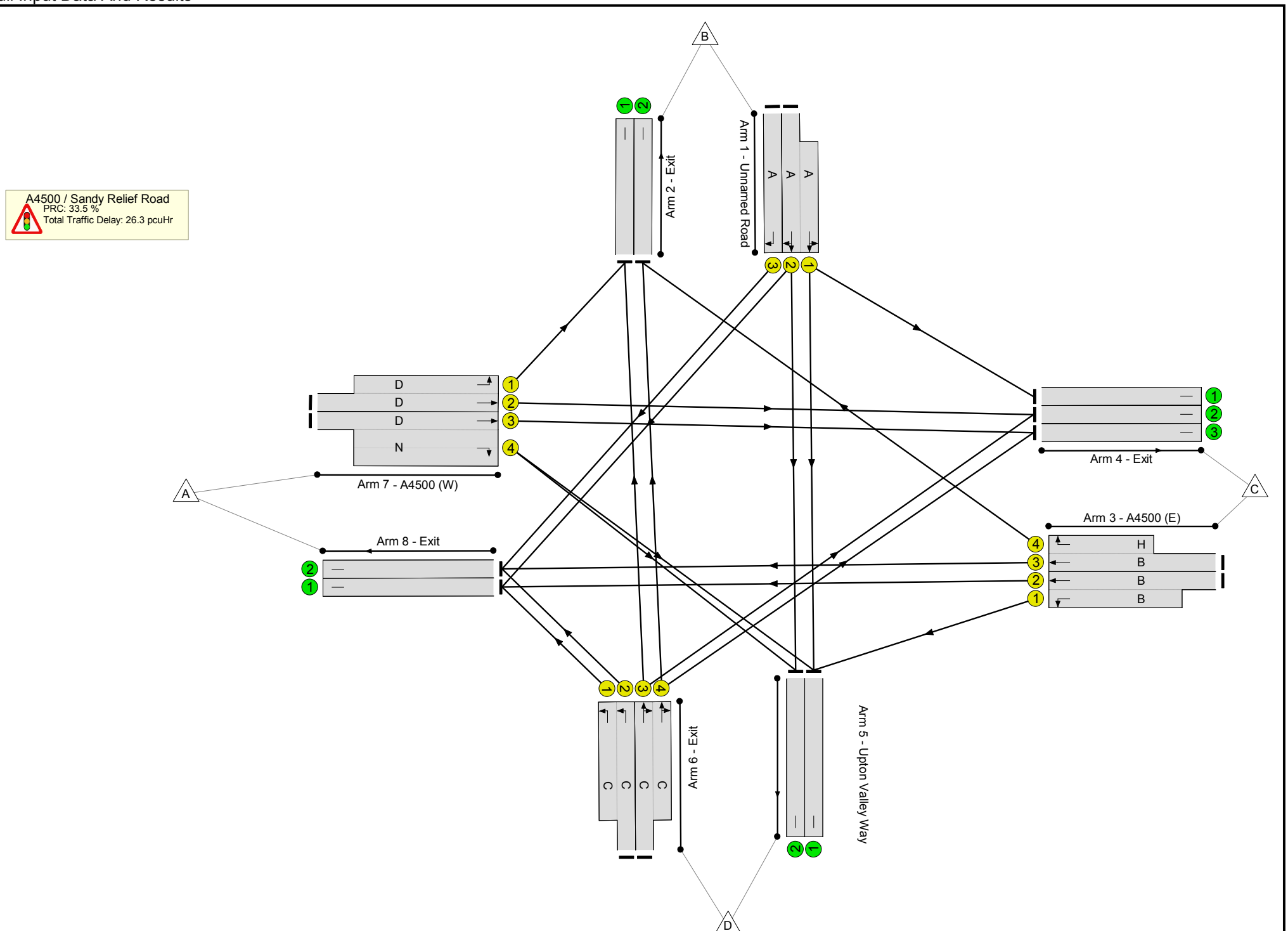
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**67.4%**
A4500 / Sandy Relief Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**67.4%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	8	-	259	2105:2105	210+210	61.8 : 61.3%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	8	-	7	2008	201	3.5%
2/1	Exit	U	N/A	N/A	-		-	-	-	120	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	122	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	28	-	453	2105:1786	678+3	66.5 : 66.5%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	28	-	471	2105:2080	668+31	67.4 : 67.4%
4/1	Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	299	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	389	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	7	-	90	1976:1840	176+164	26.8 : 26.3%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	7	-	209	2105:1965	187+175	57.7 : 57.8%
6/1	Exit	U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	24	-	311	2085:1840	579+23	51.6 : 51.6%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	24	-	774	2085:3600	579+573	67.2 : 67.2%
8/1	Exit	U	N/A	N/A	-		-	-	-	494	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	504	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**21.1**	**5.2**	**0.0**	**26.3**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**21.1**	**5.2**	**0.0**	**26.3**	**-**	**-**	**-**	**-**
1/2+1/1	259	259	-	-	-	2.8	0.8	-	3.6	49.9	3.1	0.8	3.9
1/3	7	7	-	-	-	0.1	0.0	-	0.1	46.2	0.2	0.0	0.2
2/1	120	120	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	122	122	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	453	453	-	-	-	3.3	1.0	-	4.3	34.1	9.6	1.0	10.6
3/3+3/4	471	471	-	-	-	3.4	1.0	-	4.4	33.9	9.7	1.0	10.8
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	299	299	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	90	90	-	-	-	1.0	0.2	-	1.1	45.5	1.1	0.2	1.3
5/3+5/4	209	209	-	-	-	2.3	0.7	-	3.0	51.1	2.6	0.7	3.3
6/1	324	324	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	322	322	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	311	311	-	-	-	2.4	0.5	-	2.9	33.4	6.2	0.5	6.8
7/3+7/4	774	774	-	-	-	5.9	1.0	-	6.9	32.3	8.5	1.0	9.6
8/1	494	494	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	504	504	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

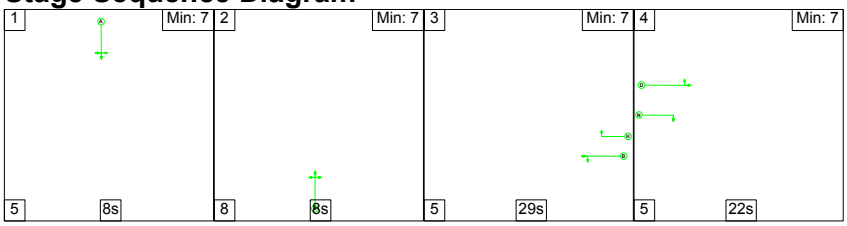
C1 PRC for Signalled Lanes (%): 33.5 Total Delay for Signalled Lanes (pcuHr): 26.34 Cycle Time (s): 90

PRC Over All Lanes (%): 33.5 Total Delay Over All Lanes(pcuHr): 26.34

Full Input Data And Results

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM ', Plan 1: 'Network Control Plan 1')

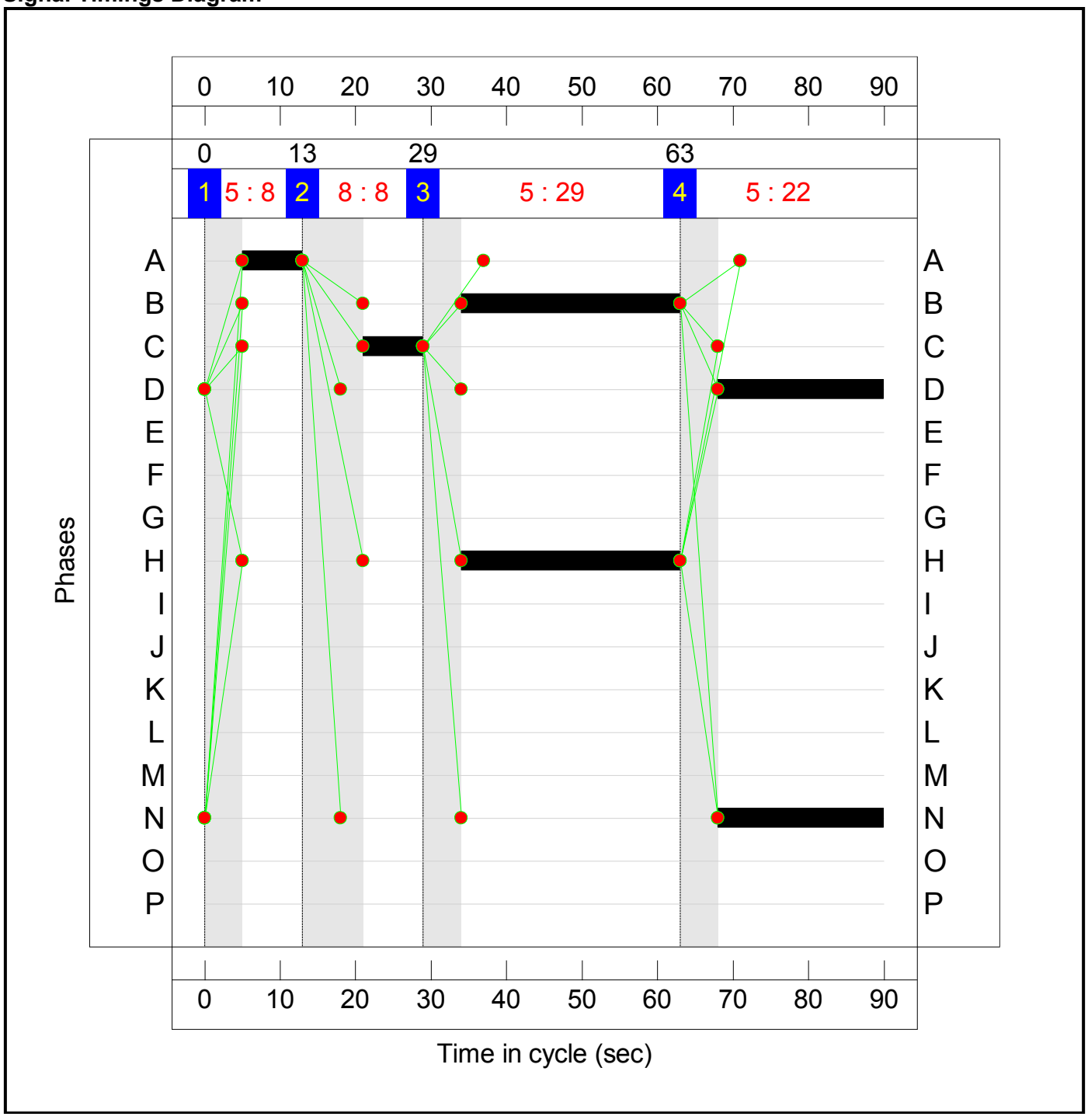
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	8	8	29	22
Change Point	0	13	29	63

Signal Timings Diagram

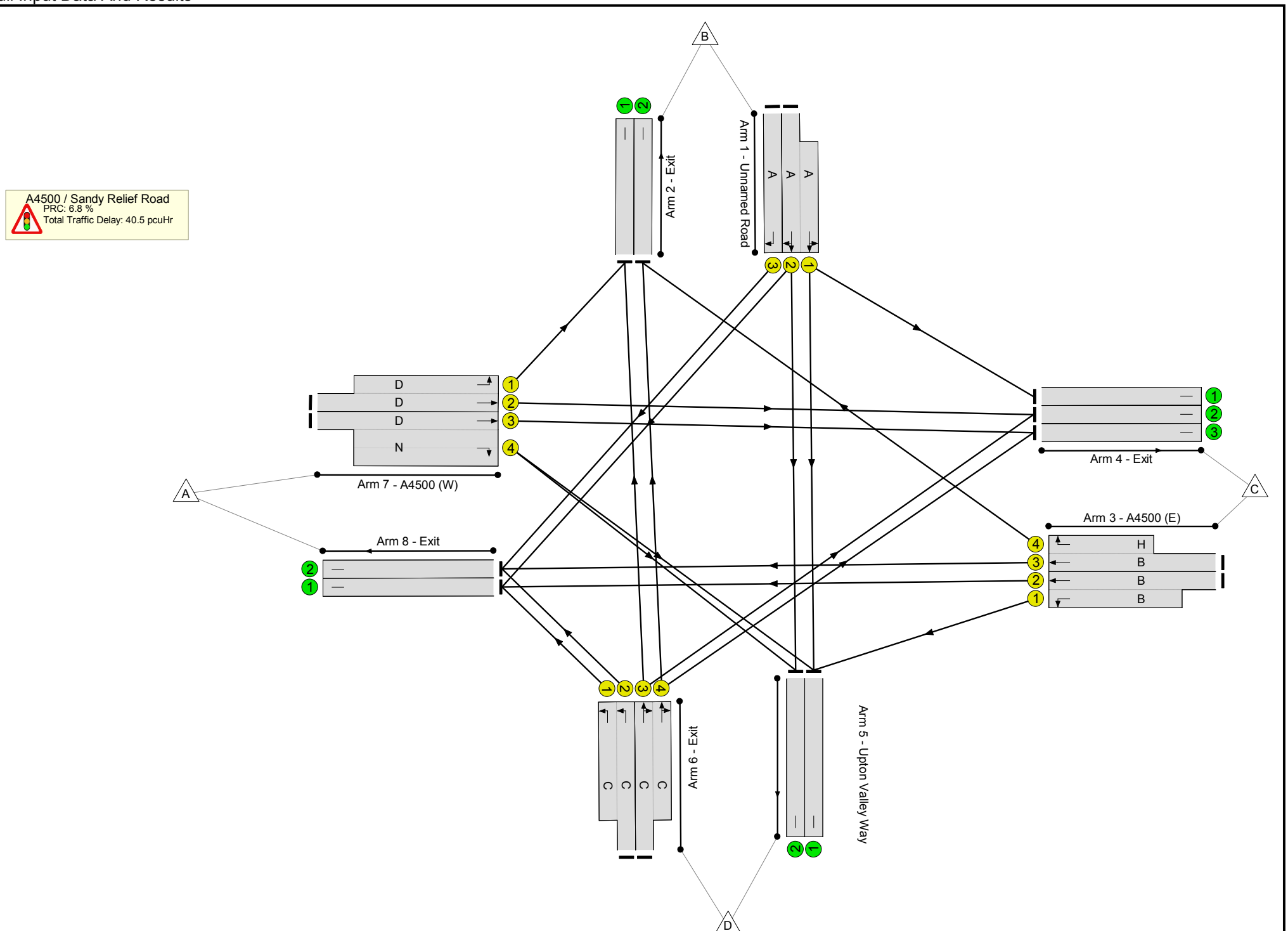


Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.3%**
A4500 / Sandy Relief Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.3%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	8	-	349	2105:2105	210+210	83.1 : 82.7%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	8	-	8	2008	201	4.0%
2/1	Exit	U	N/A	N/A	-		-	-	-	61	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	58	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	29	-	590	2105:1786	702+4	83.7 : 83.7%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	29	-	591	2105:2080	702+4	83.8 : 83.8%
4/1	Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	449	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	8	-	310	1976:1840	198+184	81.5 : 81.0%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	8	-	114	2105:1965	210+196	28.0 : 28.0%
6/1	Exit	U	N/A	N/A	-		-	-	-	279	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	277	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	22	-	417	2085:1840	533+3	77.9 : 77.9%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	22	-	653	2085:3600	533+242	84.3 : 84.3%
8/1	Exit	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	757	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.7**	**13.8**	**0.0**	**40.5**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**26.7**	**13.8**	**0.0**	**40.5**	**-**	**-**	**-**	**-**
1/2+1/1	349	349	-	-	-	3.9	2.3	-	6.1	63.3	4.3	2.3	6.6
1/3	8	8	-	-	-	0.1	0.0	-	0.1	46.2	0.2	0.0	0.2
2/1	61	61	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	58	58	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	590	590	-	-	-	4.5	2.5	-	7.0	42.7	13.5	2.5	16.0
3/3+3/4	591	591	-	-	-	4.6	2.5	-	7.0	42.8	13.6	2.5	16.1
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	449	449	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	310	310	-	-	-	3.4	2.0	-	5.5	63.5	3.9	2.0	6.0
5/3+5/4	114	114	-	-	-	1.2	0.2	-	1.4	43.7	1.4	0.2	1.6
6/1	279	279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	277	277	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	417	417	-	-	-	3.6	1.7	-	5.3	45.9	9.6	1.7	11.3
7/3+7/4	653	653	-	-	-	5.5	2.6	-	8.0	44.3	10.6	2.6	13.2
8/1	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	757	757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

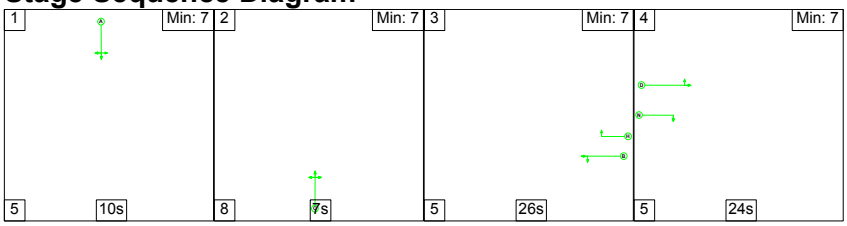
C1 PRC for Signalled Lanes (%): 6.8 Total Delay for Signalled Lanes (pcuHr): 40.46 Cycle Time (s): 90

PRC Over All Lanes (%): 6.8 Total Delay Over All Lanes(pcuHr): 40.46

Full Input Data And Results

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

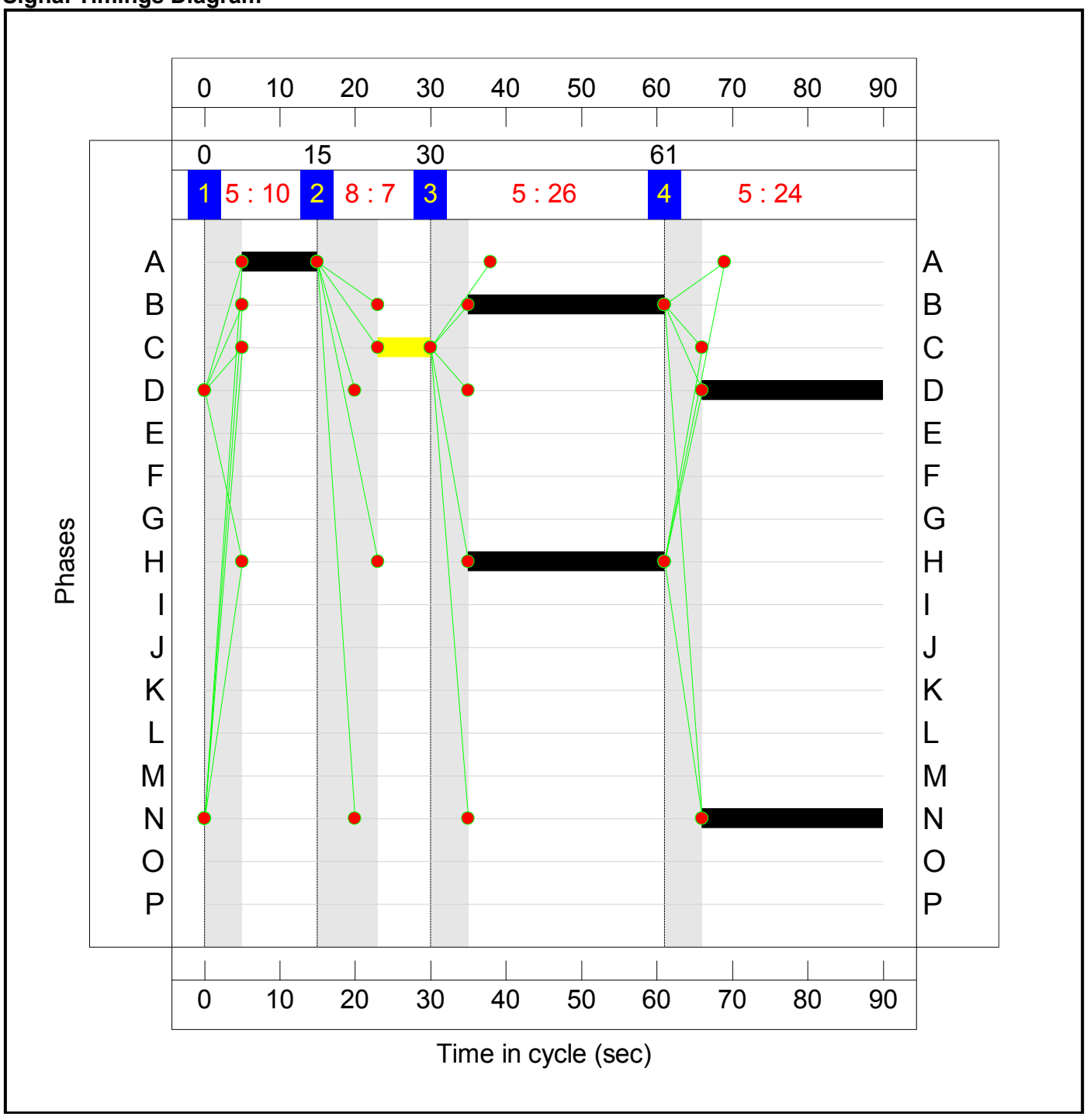
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	7	26	24
Change Point	0	15	30	61

Signal Timings Diagram

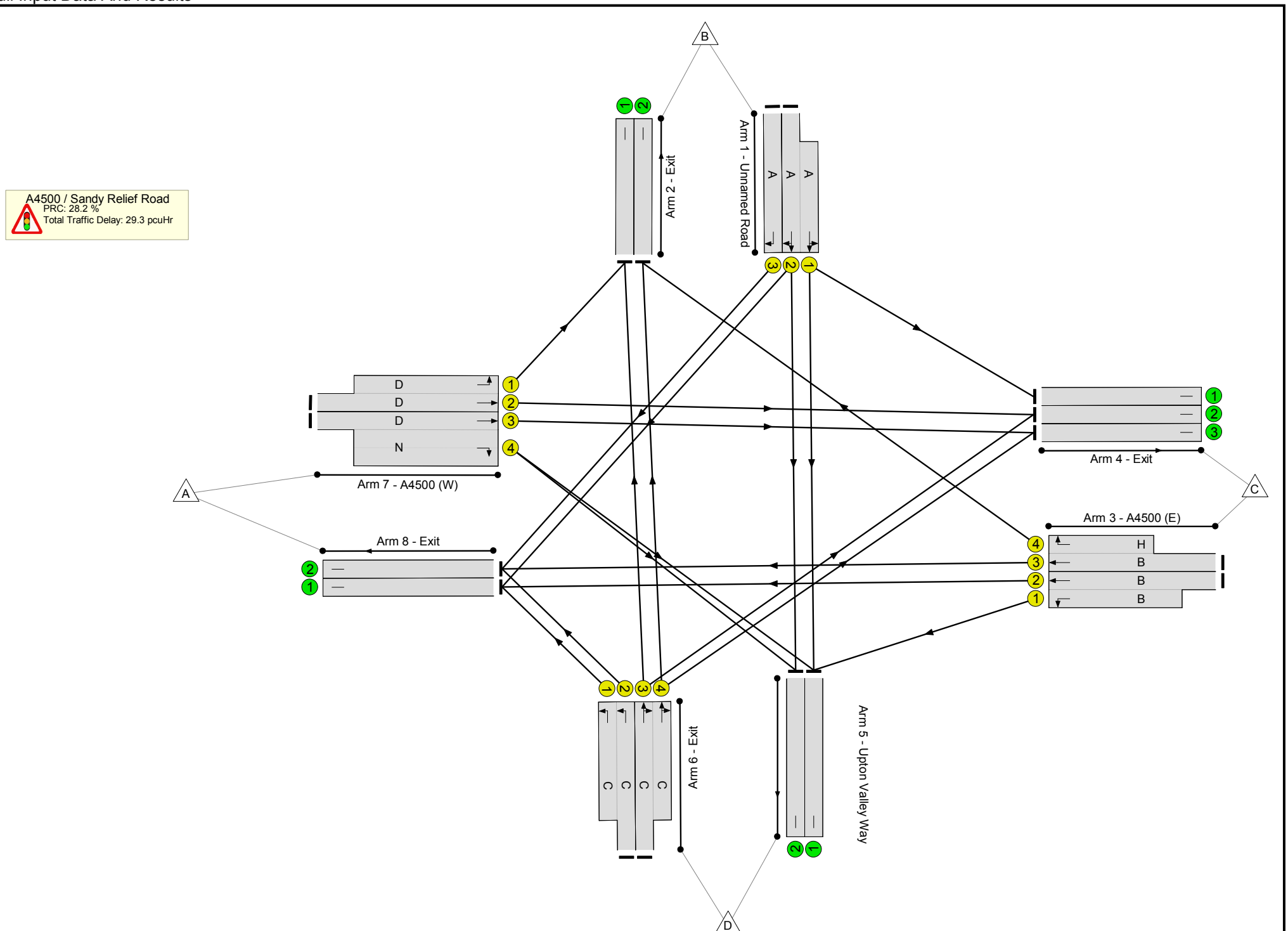


Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.2%**
A4500 / Sandy Relief Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.2%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	10	-	352	2105:2104	257+257	68.4 : 68.4%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	10	-	42	2008	245	17.1%
2/1	Exit	U	N/A	N/A	-		-	-	-	134	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	130	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	26	-	439	2105:1786	632+3	69.2 : 69.2%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	26	-	457	2105:2080	624+27	70.2 : 70.2%
4/1	Exit	U	N/A	N/A	-		-	-	-	1	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	339	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	391	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	7	-	104	1976:1840	176+164	30.7 : 30.6%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	7	-	230	2105:1965	187+175	63.6 : 63.5%
6/1	Exit	U	N/A	N/A	-		-	-	-	353	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	352	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	24	-	354	2085:1840	579+26	58.5 : 58.5%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	24	-	743	2085:3600	579+521	67.5 : 67.5%
8/1	Exit	U	N/A	N/A	-		-	-	-	487	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	534	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**23.1**	**6.3**	**0.0**	**29.3**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**23.1**	**6.3**	**0.0**	**29.3**	**-**	**-**	**-**	**-**
1/2+1/1	352	352	-	-	-	3.7	1.1	-	4.8	48.8	4.2	1.1	5.3
1/3	42	42	-	-	-	0.4	0.1	-	0.5	44.3	0.9	0.1	1.0
2/1	134	134	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	130	130	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	439	439	-	-	-	3.4	1.1	-	4.5	36.9	9.6	1.1	10.7
3/3+3/4	457	457	-	-	-	3.5	1.2	-	4.7	36.8	9.7	1.2	10.9
4/1	1	1	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	339	339	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	104	104	-	-	-	1.1	0.2	-	1.3	46.1	1.3	0.2	1.5
5/3+5/4	230	230	-	-	-	2.5	0.9	-	3.4	53.1	2.8	0.9	3.7
6/1	353	353	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	352	352	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	354	354	-	-	-	2.7	0.7	-	3.4	35.0	7.3	0.7	8.0
7/3+7/4	743	743	-	-	-	5.7	1.0	-	6.7	32.5	8.7	1.0	9.7
8/1	487	487	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	534	534	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

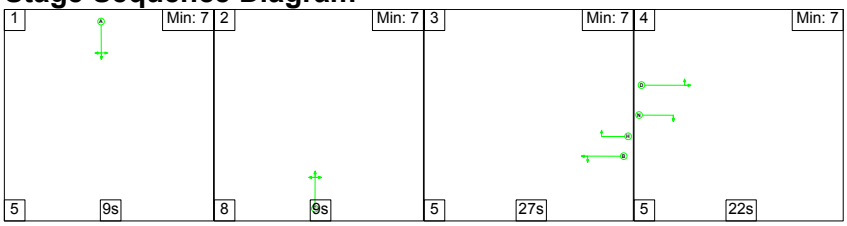
C1 PRC for Signalled Lanes (%): 28.2 Total Delay for Signalled Lanes (pcuHr): 29.34 Cycle Time (s): 90

PRC Over All Lanes (%): 28.2 Total Delay Over All Lanes(pcuHr): 29.34

Full Input Data And Results

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

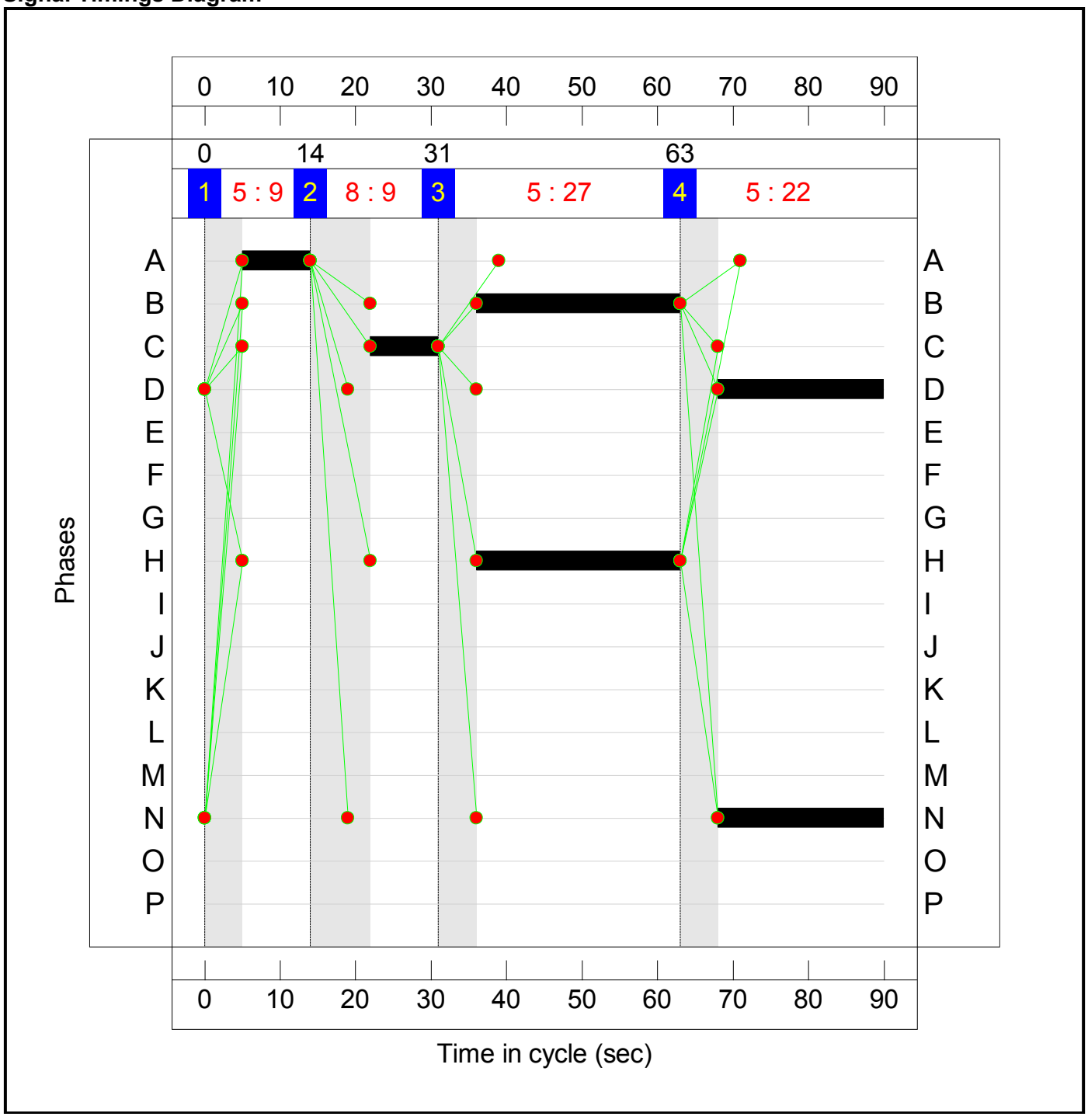
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	9	9	27	22
Change Point	0	14	31	63

Signal Timings Diagram

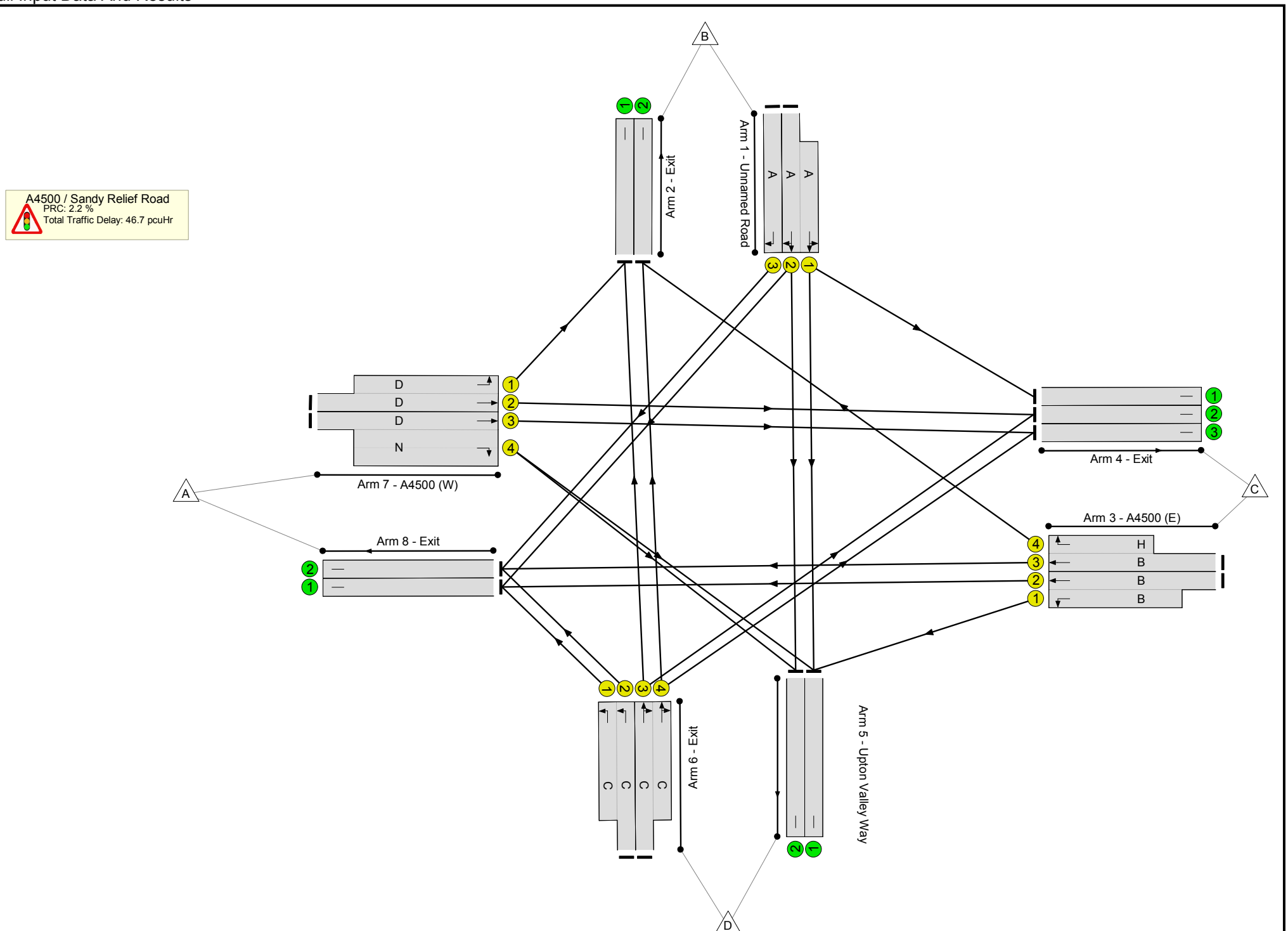


Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.1%**
A4500 / Sandy Relief Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.1%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	9	-	411	2105:2104	234+234	88.1 : 87.7%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	9	-	21	2008	223	9.4%
2/1	Exit	U	N/A	N/A	-		-	-	-	148	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	85	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	27	-	576	2105:1786	655+3	87.5 : 87.5%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	27	-	577	2105:2080	655+5	87.5 : 87.5%
4/1	Exit	U	N/A	N/A	-		-	-	-	1	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	440	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	455	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	9	-	353	1976:1840	220+204	83.4 : 83.2%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	9	-	168	2105:1965	234+218	37.2 : 37.1%
6/1	Exit	U	N/A	N/A	-		-	-	-	294	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	292	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	22	-	501	2085:1840	533+74	82.6 : 82.6%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	22	-	628	2085:3600	533+203	85.4 : 85.4%
8/1	Exit	U	N/A	N/A	-		-	-	-	743	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	777	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**29.3**	**17.5**	**0.0**	**46.7**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**29.3**	**17.5**	**0.0**	**46.7**	**-**	**-**	**-**	**-**
1/2+1/1	411	411	-	-	-	4.5	3.3	-	7.8	67.9	5.0	3.3	8.3
1/3	21	21	-	-	-	0.2	0.1	-	0.3	44.9	0.5	0.1	0.5
2/1	148	148	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	85	85	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	576	576	-	-	-	4.7	3.2	-	7.9	49.6	13.5	3.2	16.8
3/3+3/4	577	577	-	-	-	4.7	3.2	-	7.9	49.6	13.6	3.2	16.8
4/1	1	1	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	440	440	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	455	455	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	353	353	-	-	-	3.8	2.3	-	6.2	63.0	4.5	2.3	6.8
5/3+5/4	168	168	-	-	-	1.7	0.3	-	2.0	43.4	2.0	0.3	2.3
6/1	294	294	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	292	292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	501	501	-	-	-	4.3	2.3	-	6.6	47.2	10.3	2.3	12.5
7/3+7/4	628	628	-	-	-	5.3	2.8	-	8.1	46.3	10.7	2.8	13.5
8/1	743	743	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	777	777	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

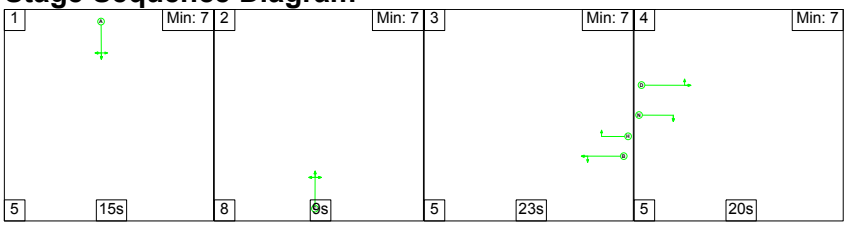
C1 PRC for Signalled Lanes (%): 2.2 Total Delay for Signalled Lanes (pcuHr): 46.74 Cycle Time (s): 90

PRC Over All Lanes (%): 2.2 Total Delay Over All Lanes(pcuHr): 46.74

Full Input Data And Results

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

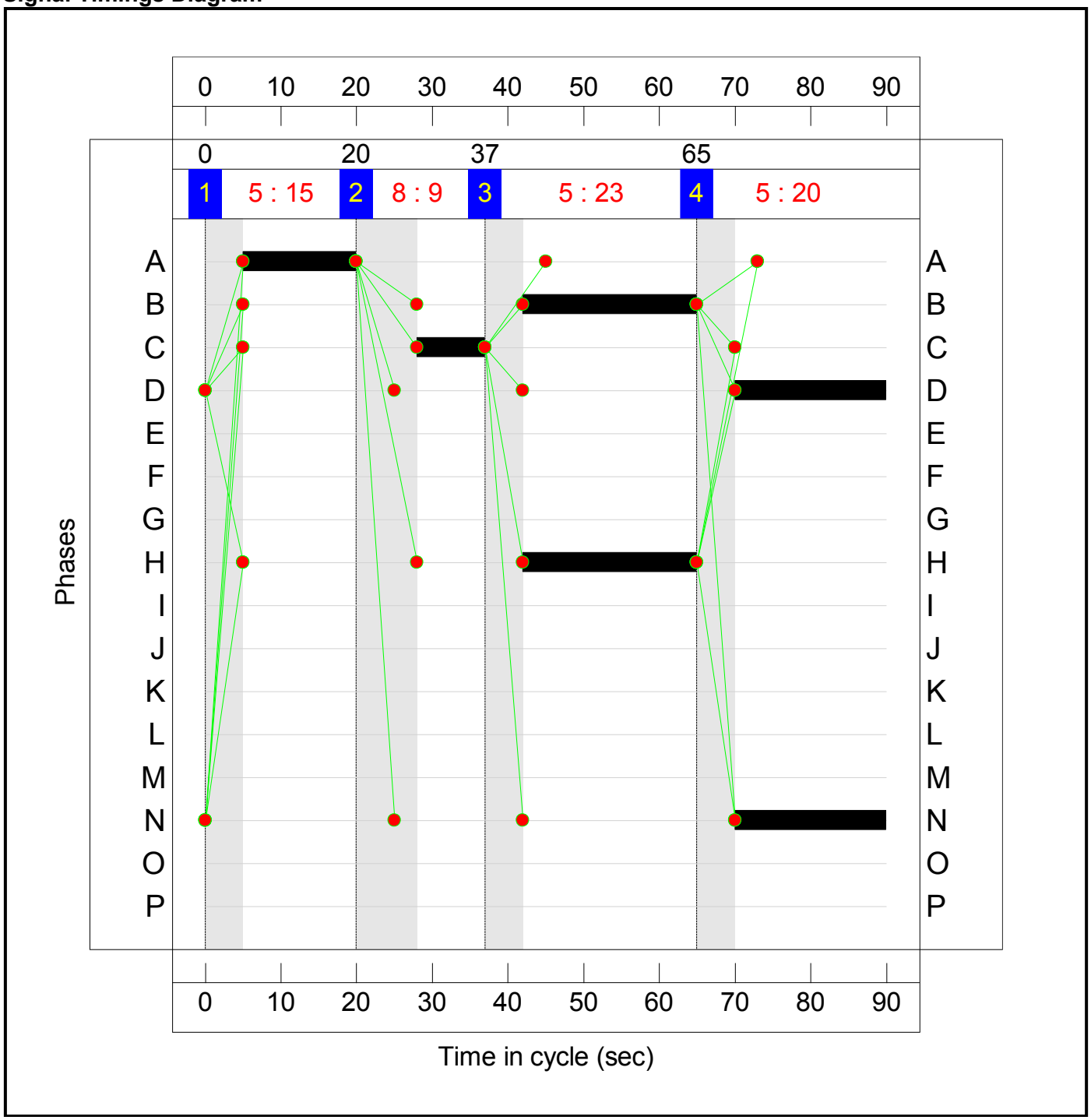
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	15	9	23	20
Change Point	0	20	37	65

Signal Timings Diagram

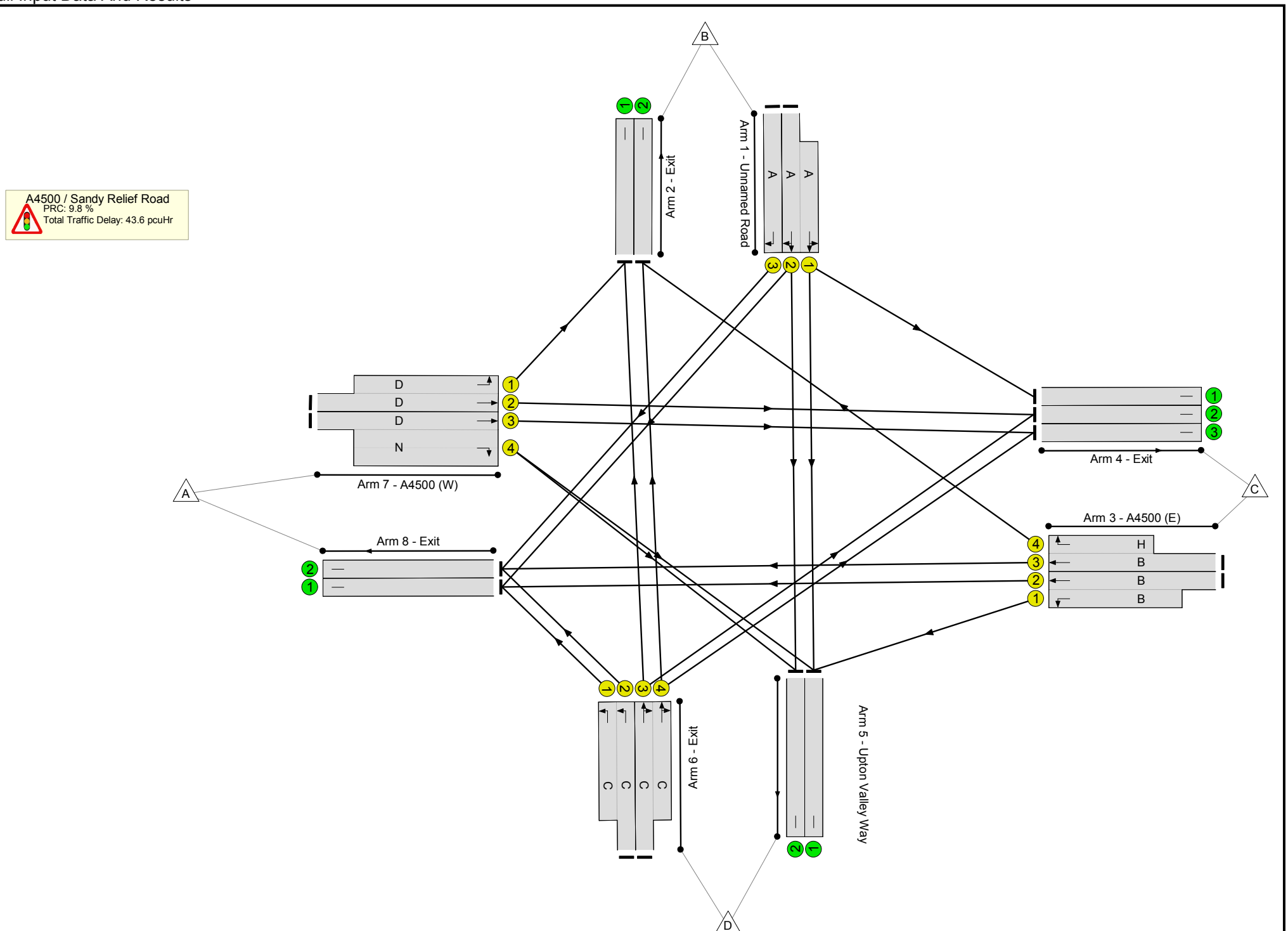


Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.9%**
A4500 / Sandy Relief Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.9%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	15	-	582	2076:2105	369+374	78.3 : 78.3%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	15	-	211	2008	357	59.1%
2/1	Exit	U	N/A	N/A	-		-	-	-	213	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	227	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	23	-	450	2105:1786	561+3	79.8 : 79.8%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	23	-	505	2105:2080	538+78	81.9 : 81.9%
4/1	Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	338	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	389	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	9	-	265	1976:1840	220+204	62.4 : 62.6%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	9	-	338	2105:1965	234+218	74.8 : 74.7%
6/1	Exit	U	N/A	N/A	-		-	-	-	460	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	20	-	376	2085:1840	487+55	69.5 : 69.5%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	20	-	719	2085:3600	487+413	80.0 : 80.0%
8/1	Exit	U	N/A	N/A	-		-	-	-	660	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	789	Inf	Inf	0.0%

Full Input Data And Results

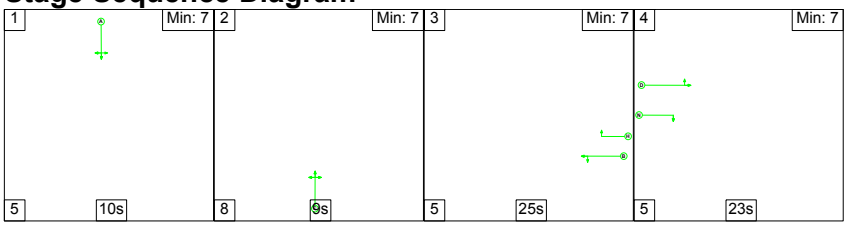
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**31.6**	**11.9**	**0.0**	**43.6**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**31.6**	**11.9**	**0.0**	**43.6**	**-**	**-**	**-**	**-**
1/2+1/1	582	582	-	-	-	5.7	1.8	-	7.5	46.3	6.9	1.8	8.7
1/3	211	211	-	-	-	2.0	0.7	-	2.7	46.2	4.8	0.7	5.5
2/1	213	213	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	227	227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	450	450	-	-	-	3.8	1.9	-	5.8	46.0	10.3	1.9	12.2
3/3+3/4	505	505	-	-	-	4.2	2.2	-	6.4	45.5	10.4	2.2	12.6
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	338	338	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	265	265	-	-	-	2.8	0.8	-	3.6	49.4	3.2	0.8	4.1
5/3+5/4	338	338	-	-	-	3.6	1.4	-	5.1	54.2	4.2	1.4	5.7
6/1	460	460	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	376	376	-	-	-	3.3	1.1	-	4.4	41.9	7.7	1.1	8.8
7/3+7/4	719	719	-	-	-	6.2	2.0	-	8.1	40.7	9.1	2.0	11.0
8/1	660	660	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	789	789	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 9.8 Total Delay for Signalled Lanes (pcuHr): 43.56 Cycle Time (s): 90
PRC Over All Lanes (%): 9.8 Total Delay Over All Lanes(pcuHr): 43.56

Full Input Data And Results

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

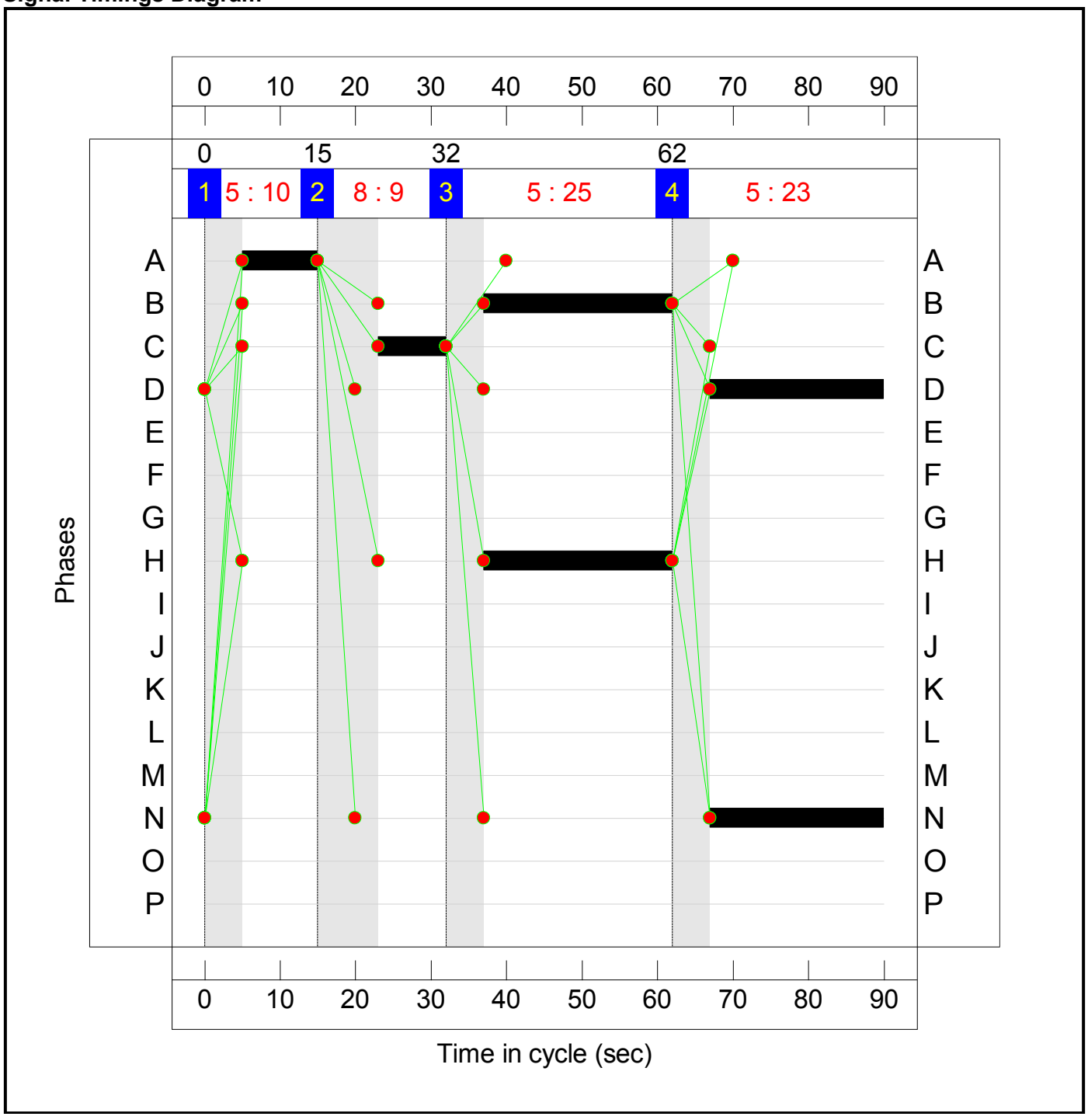
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	9	25	23
Change Point	0	15	32	62

Signal Timings Diagram

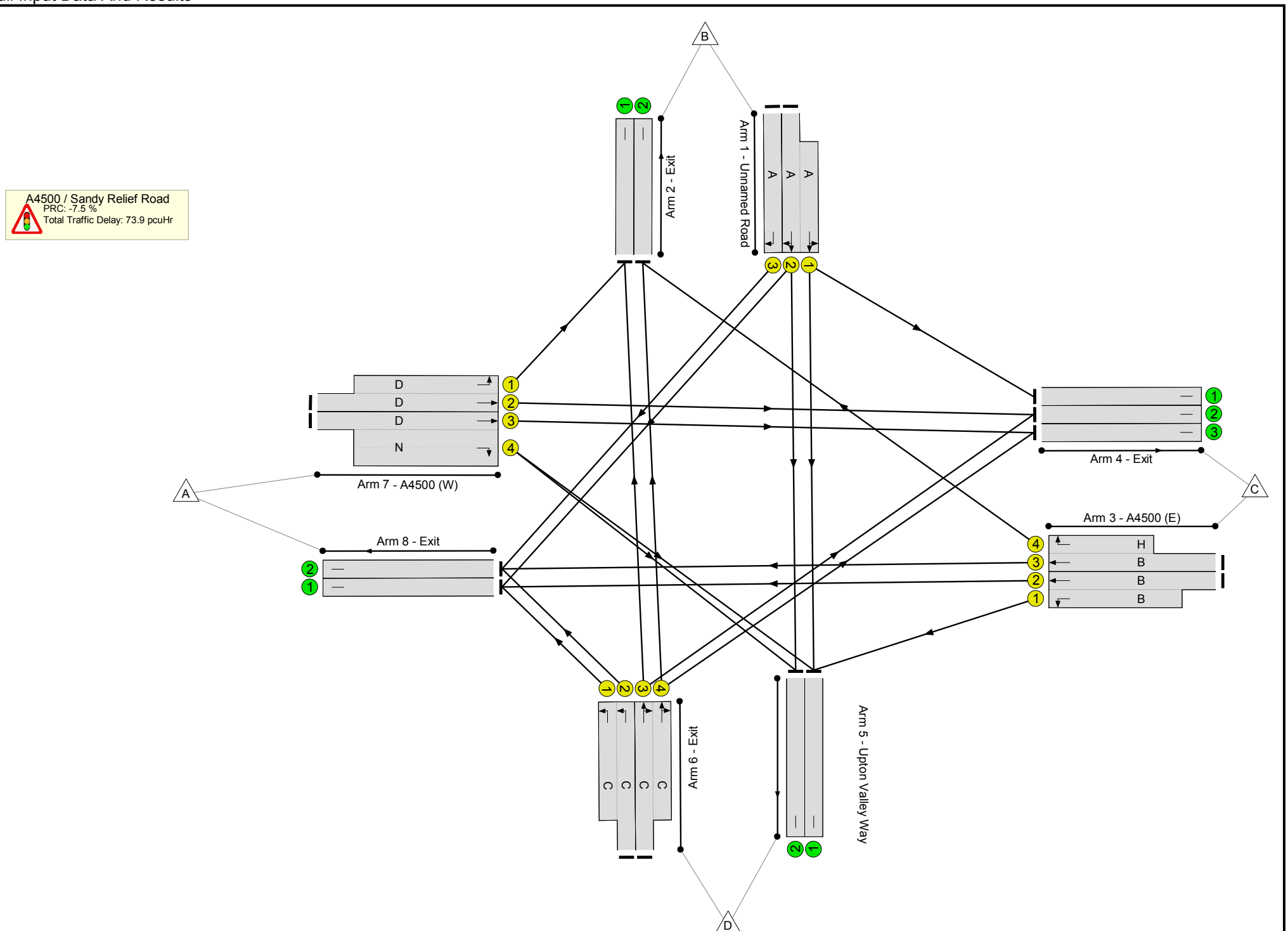


Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.8%**
A4500 / Sandy Relief Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.8%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	10	-	498	2105:2105	257+257	96.8 : 96.8%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	10	-	79	2008	245	32.2%
2/1	Exit	U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	150	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	25	-	589	2105:1786	608+3	96.4 : 96.4%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	25	-	590	2105:2080	608+4	96.4 : 96.4%
4/1	Exit	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	508	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	517	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	9	-	389	1976:1840	220+204	91.5 : 92.0%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	9	-	302	2105:1965	234+218	66.7 : 66.9%
6/1	Exit	U	N/A	N/A	-		-	-	-	342	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	338	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	23	-	563	2085:1840	556+60	91.4 : 91.4%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	23	-	696	2085:3600	556+193	93.0 : 93.0%
8/1	Exit	U	N/A	N/A	-		-	-	-	774	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**34.8**	**39.0**	**0.0**	**73.9**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**34.8**	**39.0**	**0.0**	**73.9**	**-**	**-**	**-**	**-**
1/2+1/1	498	498	-	-	-	5.4	7.8	-	13.2	95.4	6.2	7.8	13.9
1/3	79	79	-	-	-	0.8	0.2	-	1.0	46.9	1.8	0.2	2.0
2/1	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	150	150	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	589	589	-	-	-	5.2	7.8	-	12.9	79.1	14.3	7.8	22.1
3/3+3/4	590	590	-	-	-	5.2	7.8	-	13.0	79.1	14.4	7.8	22.2
4/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	508	508	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	517	517	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	389	389	-	-	-	4.3	4.4	-	8.7	80.6	5.0	4.4	9.4
5/3+5/4	302	302	-	-	-	3.2	1.0	-	4.2	50.2	3.7	1.0	4.7
6/1	342	342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	338	338	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	563	563	-	-	-	4.9	4.5	-	9.4	60.2	12.3	4.5	16.8
7/3+7/4	696	696	-	-	-	5.9	5.5	-	11.4	58.8	12.5	5.5	18.0
8/1	774	774	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

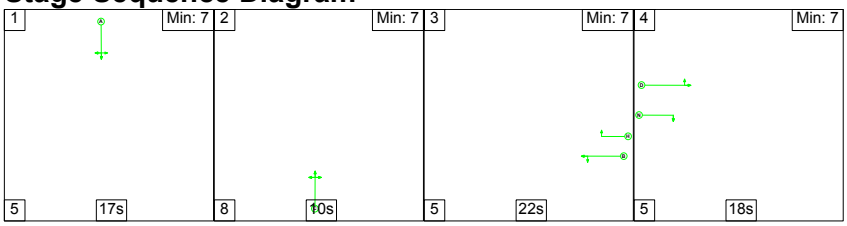
C1 PRC for Signalled Lanes (%): -7.5 Total Delay for Signalled Lanes (pcuHr): 73.85 Cycle Time (s): 90

PRC Over All Lanes (%): -7.5 Total Delay Over All Lanes(pcuHr): 73.85

Full Input Data And Results

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

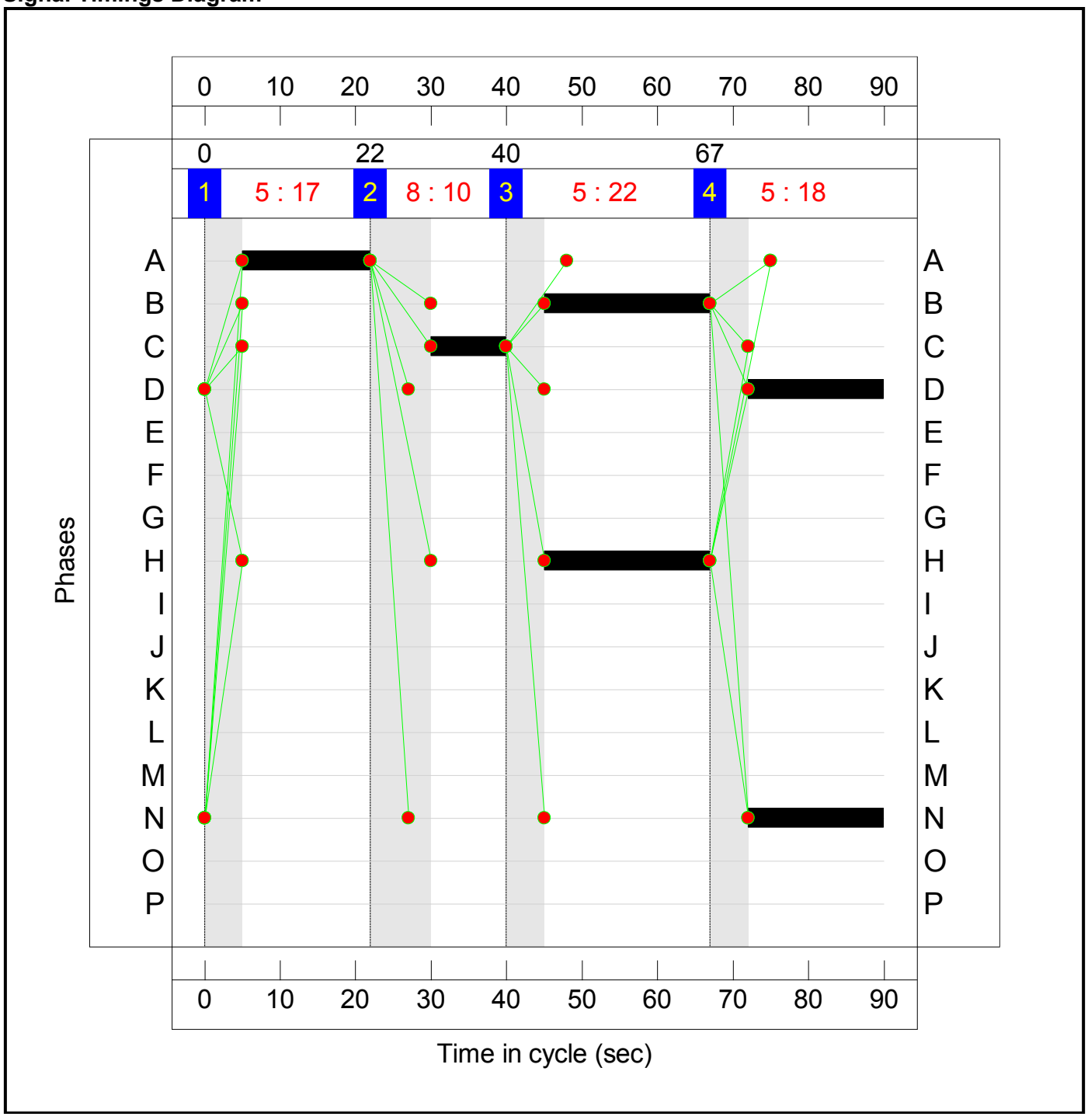
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	17	10	22	18
Change Point	0	22	40	67

Signal Timings Diagram

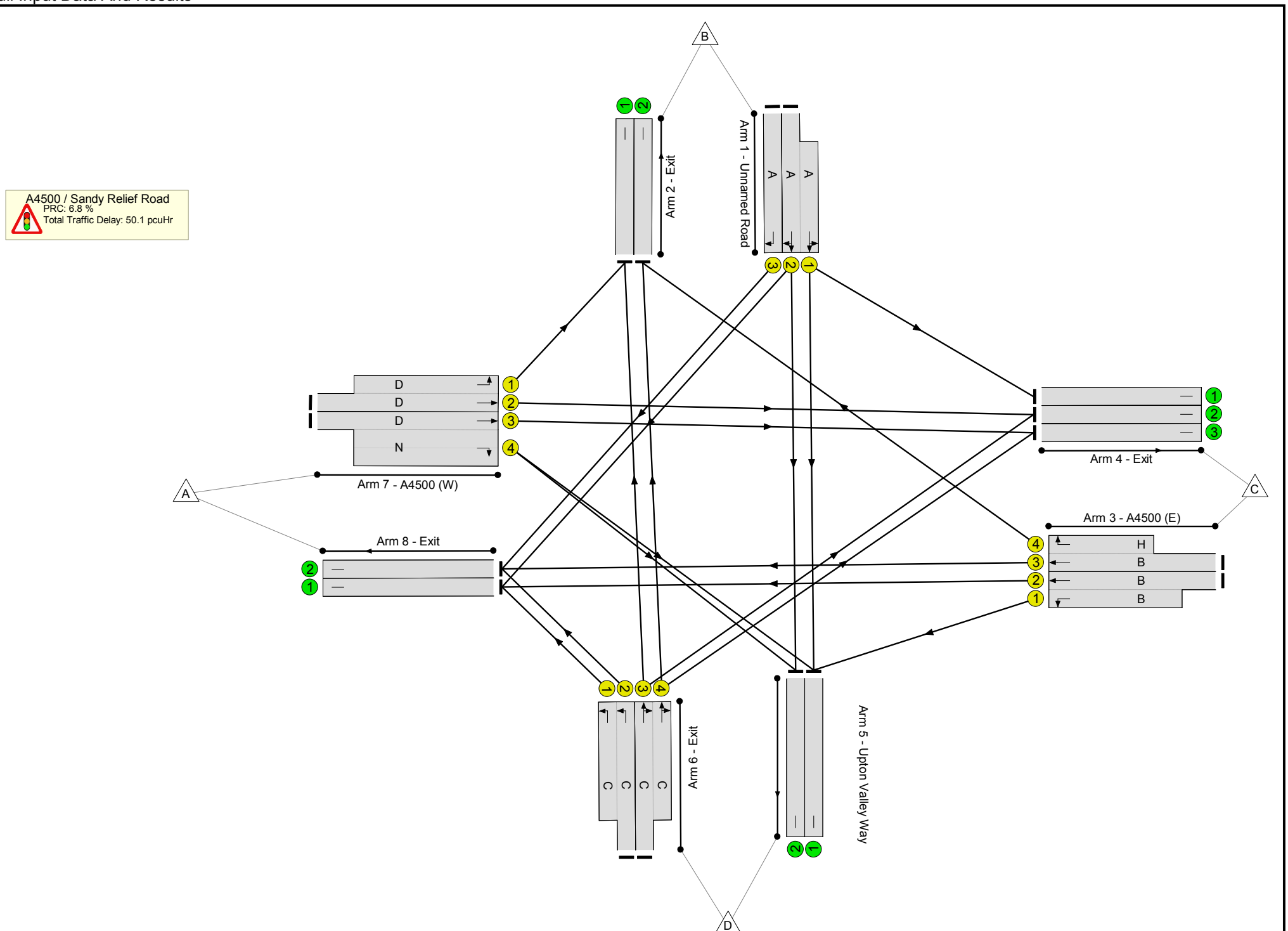


Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.3%**
A4500 / Sandy Relief Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.3%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	17	-	703	2091:2087	418+417	84.2 : 84.1%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	17	-	294	2008	402	73.2%
2/1	Exit	U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	236	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	22	-	449	2105:1786	538+2	83.1 : 83.1%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	22	-	480	2105:2080	527+44	84.0 : 84.0%
4/1	Exit	U	N/A	N/A	-		-	-	-	50	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	371	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	10	-	161	1976:1840	242+225	34.4 : 34.7%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	10	-	413	2105:1965	257+240	83.2 : 82.9%
6/1	Exit	U	N/A	N/A	-		-	-	-	515	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	516	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	18	-	438	2085:1840	440+155	73.6 : 73.6%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	18	-	794	2085:3600	440+502	84.3 : 84.3%
8/1	Exit	U	N/A	N/A	-		-	-	-	572	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**34.8**	**15.3**	**0.0**	**50.1**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**34.8**	**15.3**	**0.0**	**50.1**	**-**	**-**	**-**	**-**
1/2+1/1	703	703	-	-	-	6.8	2.6	-	9.3	47.7	8.4	2.6	11.0
1/3	294	294	-	-	-	2.8	1.3	-	4.1	50.1	6.9	1.3	8.2
2/1	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	236	236	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	449	449	-	-	-	3.9	2.3	-	6.3	50.4	10.6	2.3	12.9
3/3+3/4	480	480	-	-	-	4.2	2.5	-	6.6	49.9	10.5	2.5	13.0
4/1	50	50	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	324	324	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	371	371	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	161	161	-	-	-	1.6	0.3	-	1.9	42.1	1.9	0.3	2.2
5/3+5/4	413	413	-	-	-	4.4	2.3	-	6.7	58.8	5.2	2.3	7.5
6/1	515	515	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	516	516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	438	438	-	-	-	3.9	1.4	-	5.3	43.6	7.6	1.4	8.9
7/3+7/4	794	794	-	-	-	7.2	2.6	-	9.8	44.6	8.9	2.6	11.5
8/1	572	572	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	820	820	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

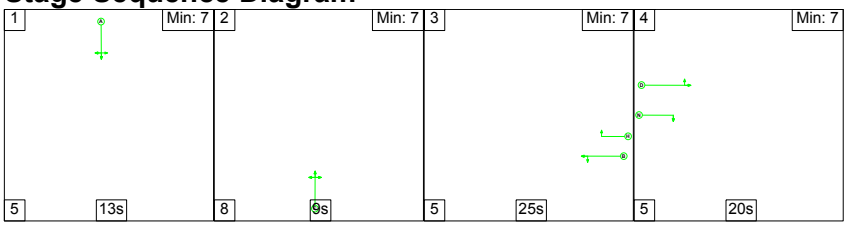
C1 PRC for Signalled Lanes (%): 6.8 Total Delay for Signalled Lanes (pcuHr): 50.10 Cycle Time (s): 90

PRC Over All Lanes (%): 6.8 Total Delay Over All Lanes(pcuHr): 50.10

Full Input Data And Results

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

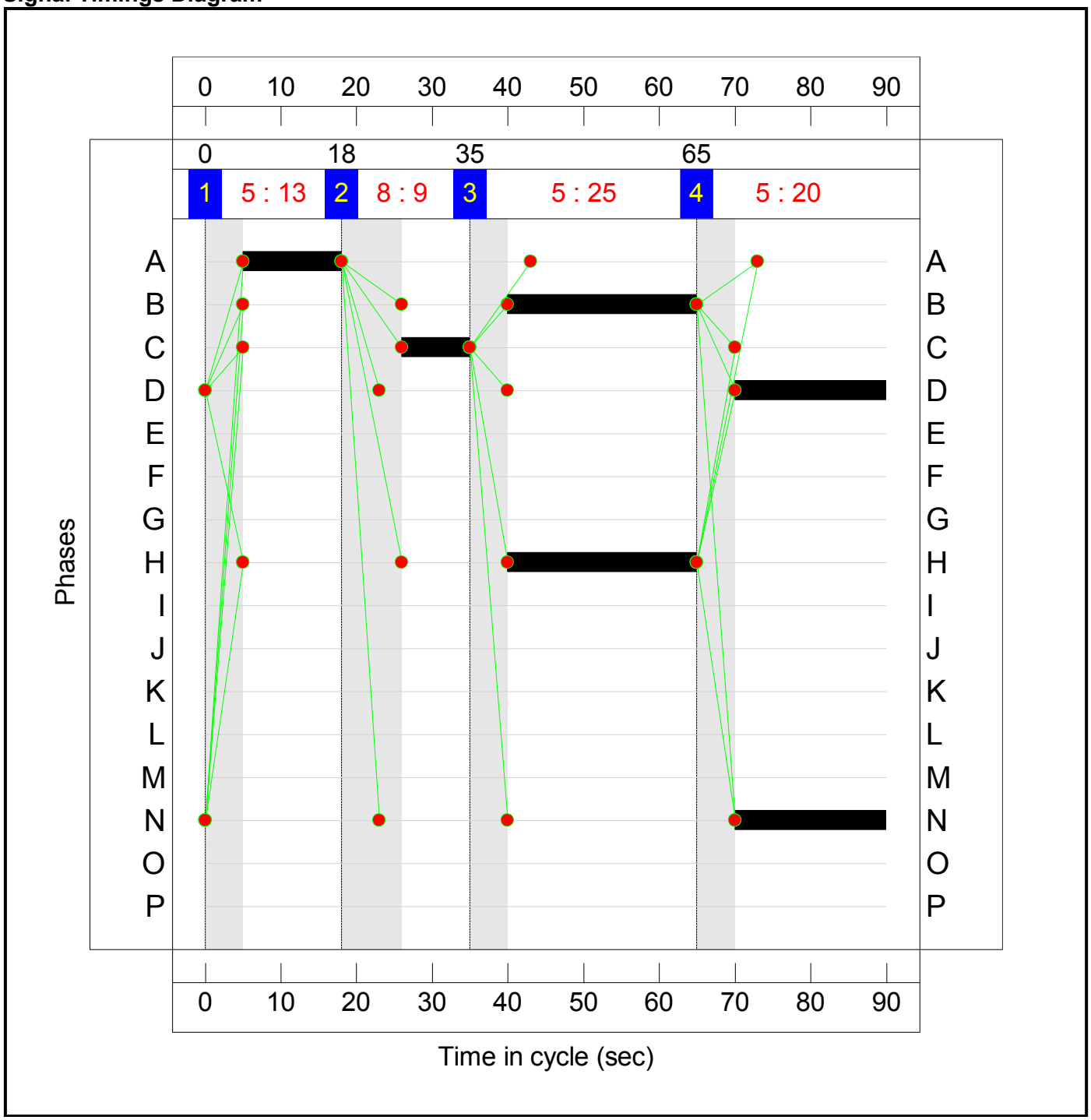
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	13	9	25	20
Change Point	0	18	35	65

Signal Timings Diagram

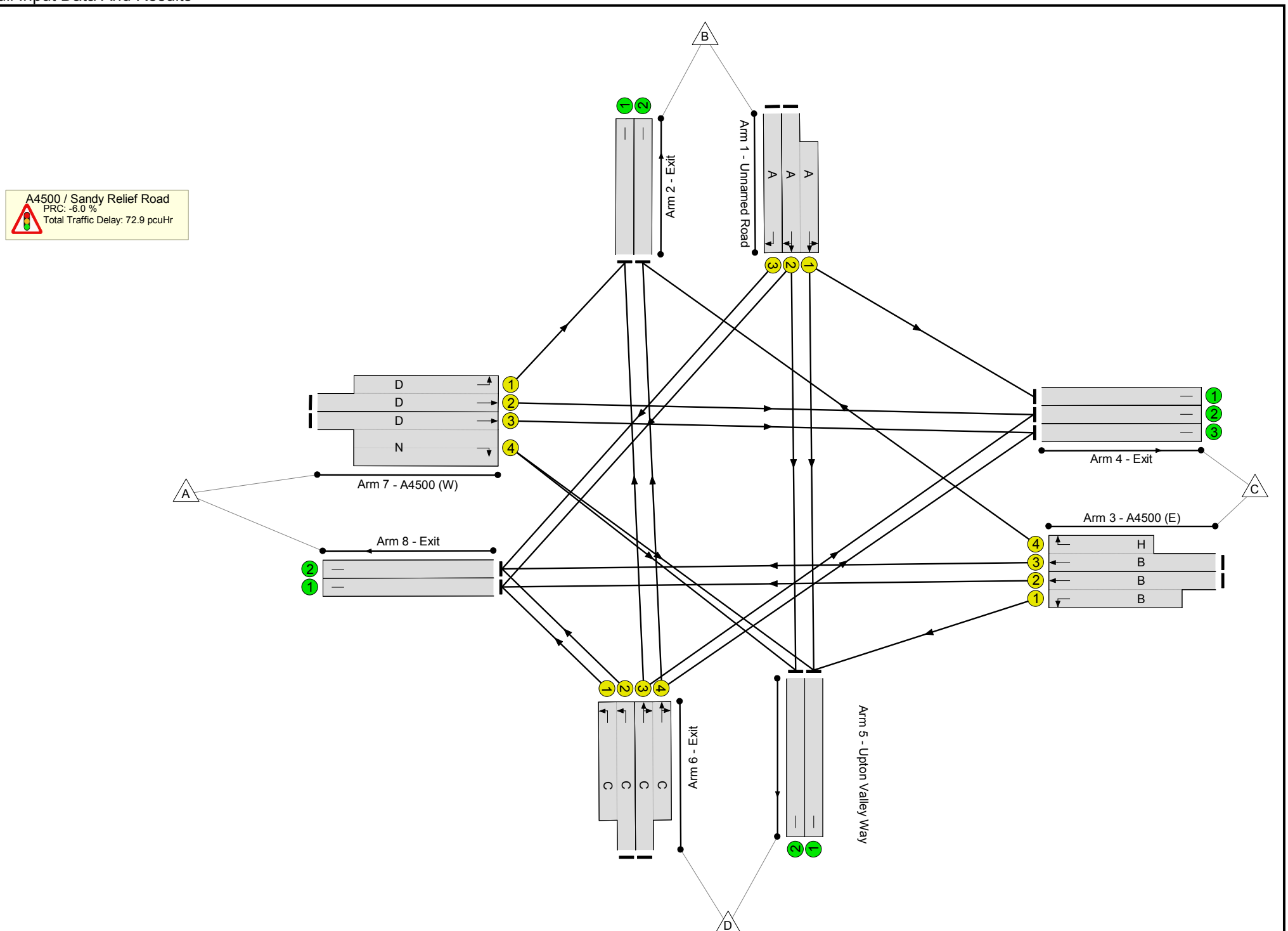


Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.4%**
A4500 / Sandy Relief Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.4%**
1/2+1/1	Unnamed Road Left Ahead Right	U	N/A	N/A	A		1	13	-	599	2105:2093	327+326	91.6 : 91.8%
1/3	Unnamed Road Right	U	N/A	N/A	A		1	13	-	197	2008	312	63.1%
2/1	Exit	U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	193	Inf	Inf	0.0%
3/2+3/1	A4500 (E) Left Ahead	U	N/A	N/A	B		1	25	-	567	2105:1786	608+3	92.7 : 92.7%
3/3+3/4	A4500 (E) Right Ahead	U	N/A	N/A	B H		1	25	-	571	2105:2080	608+8	92.7 : 92.7%
4/1	Exit	U	N/A	N/A	-		-	-	-	28	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	455	Inf	Inf	0.0%
4/3	Exit	U	N/A	N/A	-		-	-	-	464	Inf	Inf	0.0%
5/2+5/1	Upton Valley Way Left	U	N/A	N/A	C		1	9	-	381	1976:1840	220+204	89.7 : 90.0%
5/3+5/4	Upton Valley Way Ahead Right	U	N/A	N/A	C		1	9	-	386	2105:1965	234+218	85.5 : 85.2%
6/1	Exit	U	N/A	N/A	-		-	-	-	379	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
7/2+7/1	A4500 (W) Left Ahead	U	N/A	N/A	D		1	20	-	579	2085:1840	487+133	93.5 : 93.5%
7/3+7/4	A4500 (W) Ahead Right	U	N/A	N/A	D N		1	20	-	674	2085:3600	487+220	95.4 : 95.4%
8/1	Exit	U	N/A	N/A	-		-	-	-	748	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	958	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**37.7**	**35.2**	**0.0**	**72.9**	**-**	**-**	**-**	**-**
A4500 / Sandy Relief Road	**-**	**-**	**0**	**0**	**0**	**37.7**	**35.2**	**0.0**	**72.9**	**-**	**-**	**-**	**-**
1/2+1/1	599	599	-	-	-	6.2	4.7	-	10.9	65.8	7.3	4.7	12.1
1/3	197	197	-	-	-	1.9	0.8	-	2.8	51.0	4.6	0.8	5.4
2/1	324	324	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	193	193	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/2+3/1	567	567	-	-	-	4.9	5.2	-	10.1	63.9	13.6	5.2	18.8
3/3+3/4	571	571	-	-	-	4.9	5.2	-	10.1	63.7	13.7	5.2	18.9
4/1	28	28	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	455	455	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	464	464	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	381	381	-	-	-	4.2	3.8	-	8.0	75.1	4.8	3.8	8.6
5/3+5/4	386	386	-	-	-	4.2	2.7	-	6.9	64.4	4.9	2.7	7.6
6/1	379	379	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	579	579	-	-	-	5.3	5.6	-	10.9	67.7	11.1	5.6	16.8
7/3+7/4	674	674	-	-	-	6.0	7.2	-	13.2	70.5	11.3	7.2	18.5
8/1	748	748	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	958	958	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -6.0 Total Delay for Signalled Lanes (pcuHr): 72.86 Cycle Time (s): 90

PRC Over All Lanes (%): -6.0 Total Delay Over All Lanes(pcuHr): 72.86

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

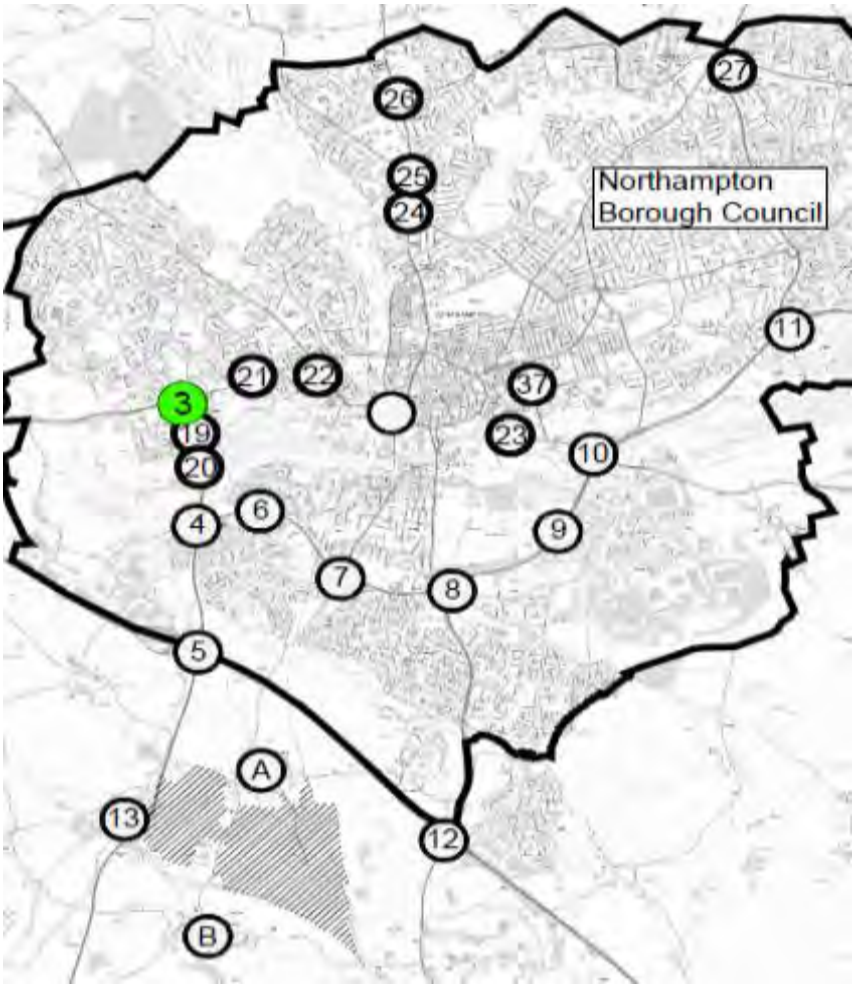
Technical Note No. 13

1 JUNCTION THREE – TOLLGATE WAY, WEEDON ROAD, A4500 AND A5076

Site Description of the Base Junction

1.1 Junction three is a four arm signalised roundabout to the north west of Sixfields Stadium. It connects the A4500 Weedon Road, A5076 Upton Way and Tollgate Way. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Three Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Thursday 18th June 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the baseline flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The existing surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 As agreed with the NCC and HE, the operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.6 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays included at **Appendix B**.

1.7 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.8 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015 Base		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A4500 West	8	5 - 7	10
	Arm 2 – Tollgate Way	8	6 - 9	10
	Arm 3 – A4500 East	5	4 - 6	5
	Arm 4 – A5076	11	7 - 14	4
PM Peak Hour (1700-1800)	Arm 1 – A4500 West	6	5 - 8	7
	Arm 2 – Tollgate Way	7	6 - 9	9
	Arm 3 – A4500 East	7	6 - 9	5
	Arm 4 – A5076	10	9 - 13	6

1.9 It is considered that the modelled queues are generally in line with the surveyed queue, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher and lower than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle for both controllers (57 and 54 seconds).

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, shown in **Figure EL03**, are summarised in **Table 2** and **Table 3** and junction analysis results are included at **Appendix C**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2015	73.9%	84.0%	65.0%	50.2%	55.8%	77.9%	58.0%	74.4%
	2021 DM	67.4%	89.2%	63.6%	64.7%	65.7%	60.8%	59.3%	47.4%
	2021 DS	56.5%	88.2%	65.6%	51.3%	75.7%	76.8%	57.9%	77.7%
	2031 DM	94.30%	95.90%	69.80%	53.60%	64.20%	82.30%	62.50%	76.10%
	2031 DS	67.7%	92.0%	74.9%	61.0%	83.5%	87.3%	68.4%	54.2%
	2015	10	10	5	6	6	9	5	8

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
Queue – MMQ (PCU)	2021 DM	7	14	6	7	7	5	5	5
	2021 DS	7	14	4	6	6	5	4	7
	2031 DM	14	21	7	6	8	10	6	9
	2031 DS	8	16	8	7	13	14	8	8
Average Delay (sec/pcu)	2015	17.4	24.6	27.4	13.6	14.8	22.1	18.4	27.3
	2021 DM	18.6	22.9	32.3	22.0	18.1	19.7	14.5	10.8
	2021 DS	15.8	20.6	31.5	17.3	19.5	19.5	12.0	18.8
	2031 DM	36.7	34.2	23.2	17.9	18.0	26.9	15.2	26.0
	2031 DS	16.7	25.8	28.2	18.7	30.8	32.2	18.7	16.6

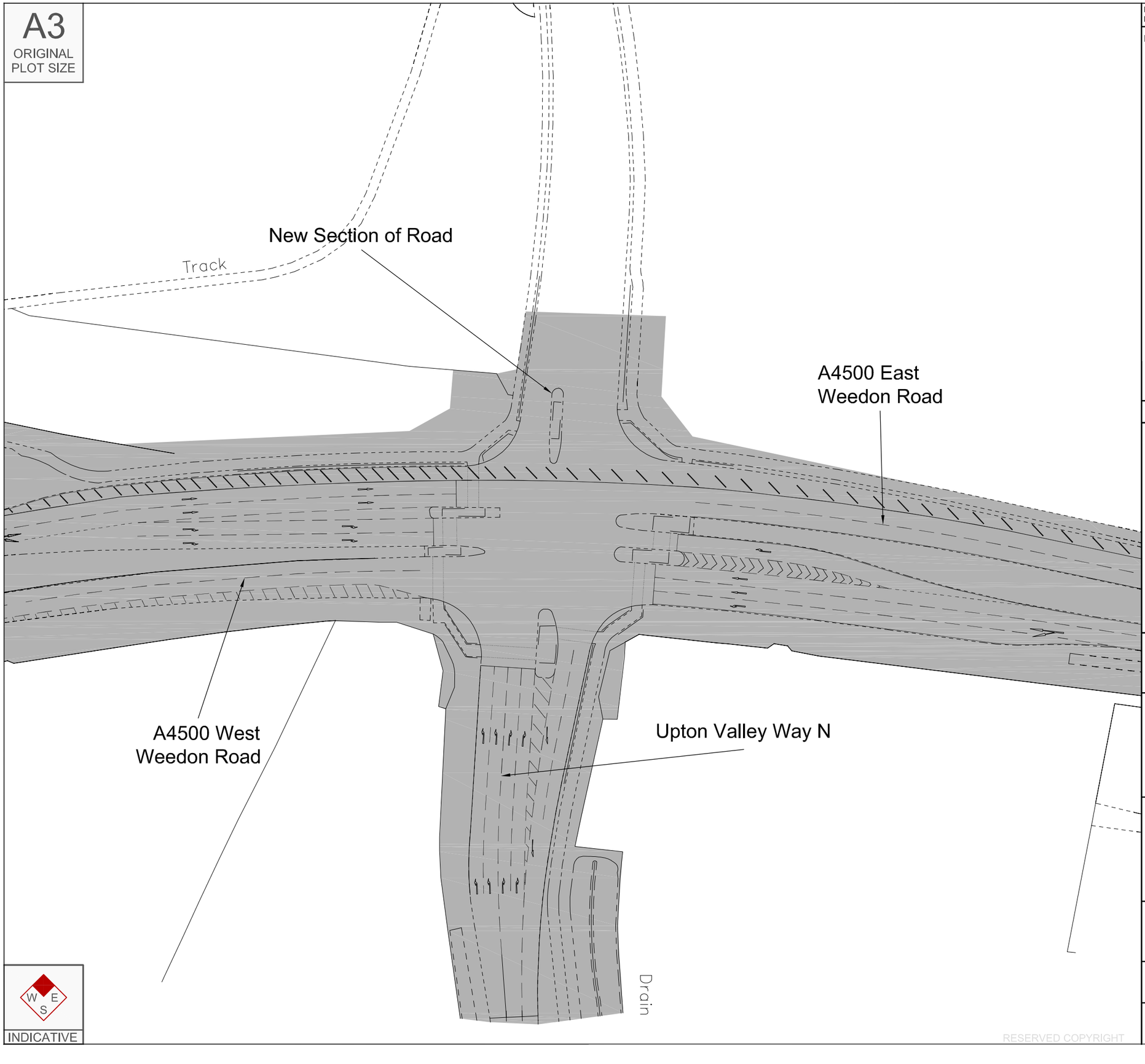
Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2015	2021 DM	2021 DS	2031 DM	2031 DS	2015	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (PRC)	6.9	0.9	2.0	-6.5	-2.3	15.6	27.0	15.8	9.4	3.1
Overall Junction Delay (PCUhr)	43	43	46	`68	59	40	36	38	55	54

1.11 As shown in **Table 2**, Rail Central is shown to have minimal impact on the operation of the existing junction and that the junction remains within theoretical capacity in the 2031 AM and PM scenarios. Therefore mitigation is not considered necessary at this location.

FIGURES

A3
ORIGINAL
PLOT SIZE



W E S

INDICATIVE

RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT:

PROJECT:

TITLE:
A508 Harborough Road / A5076 Holly Lodge Drive Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	26.05.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL02	

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	41	178	976	728	1,923
B - Tollgate Way	111	0	154	528	794
C - A4500 EB	162	4	0	368	535
D - A5076	440	893	451	0	1,784
Total	754	1,075	1,582	1,624	5,036

Modelled Flows
2021 DM
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	22	141	976	398	1,538
B - Tollgate Way	140	0	148	883	1,172
C - A4500 EB	307	1	0	301	609
D - A5076	552	750	452	0	1,754
Total	1,022	892	1,577	1,581	5,073

Modelled Flows
2021 DS2
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	24	141	1,004	414	1,583
B - Tollgate Way	120	0	198	957	1,274
C - A4500 EB	340	2	0	383	725
D - A5076	513	790	456	3	1,762
Total	998	933	1,658	1,756	5,345

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	0	0	0	0
B - Tollgate Way	0	0	0	0	0
C - A4500 EB	0	0	0	0	0
D - A5076	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-19	-36	0	-330	-385
B - Tollgate Way	30	0	-6	354	378
C - A4500 EB	145	-4	0	-67	74
D - A5076	112	-143	1	0	-30
Total	268	-183	-5	-43	37

2021 DS2 minus 2015 Base
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-16	-37	28	-314	-340
B - Tollgate Way	9	0	43	428	481
C - A4500 EB	178	-3	0	14	190
D - A5076	73	-102	5	3	-22
Total	244	-142	76	132	309

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	218	639	742	1,599
B - Tollgate Way	275	0	40	698	1,013
C - A4500 EB	418	37	0	199	654
D - A5076	305	673	183	0	1,161
Total	998	928	862	1,639	4,427

2021 DM adjusted to count
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-19	182	639	412	1,214
B - Tollgate Way	305	0	34	1,052	1,391
C - A4500 EB	563	33	0	132	728
D - A5076	417	530	184	0	1,131
Total	1,266	745	857	1,596	4,464

2021 DS2 adjusted to count
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-16	181	667	428	1,259
B - Tollgate Way	284	0	83	1,126	1,494
C - A4500 EB	596	34	0	213	844
D - A5076	378	571	188	3	1,139
Total	1,242	786	938	1,771	4,736

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	37	174	519	639	1,370
B - Tollgate Way	152	0	81	588	822
C - A4500 EB	660	14	0	484	1,157
D - A5076	144	805	539	6	1,493
Total	992	993	1,140	1,717	4,842

Modelled Flows
2021 DM
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	9	92	744	491	1,335
B - Tollgate Way	68	0	75	534	677
C - A4500 EB	829	24	0	572	1,425
D - A5076	164	831	493	0	1,488
Total	1,070	947	1,311	1,597	4,925

Modelled Flows
2021 DS2
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	9	103	769	482	1,362
B - Tollgate Way	78	0	85	548	710
C - A4500 EB	818	22	0	582	1,422
D - A5076	142	834	530	0	1,506
Total	1,046	959	1,384	1,611	5,000

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	0	0	0	0
B - Tollgate Way	0	0	0	0	0
C - A4500 EB	0	0	0	0	0
D - A5076	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-28	-83	224	-148	-35
B - Tollgate Way	-84	0	-6	-55	-145
C - A4500 EB	170	10	0	88	268
D - A5076	20	27	-47	-6	-5
Total	78	-46	171	-120	83

2021 DS2 minus 2015 Base
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-28	-71	249	-157	-7
B - Tollgate Way	-75	0	4	-41	-112
C - A4500 EB	158	8	0	98	265
D - A5076	-2	29	-9	-6	12
Total	54	-34	244	-106	158

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	155	548	458	1,161
B - Tollgate Way	275	0	53	533	861
C - A4500 EB	608	60	0	270	938
D - A5076	403	621	228	0	1,252
Total	1,286	836	829	1,261	4,212

2021 DM adjusted to count
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-28	72	772	310	1,126
B - Tollgate Way	191	0	47	478	716
C - A4500 EB	778	70	0	358	1,206
D - A5076	423	648	181	-6	1,247
Total	1,364	790	1,000	1,141	4,295

2021 DS2 adjusted to count
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-28	84	797	301	1,154
B - Tollgate Way	200	0	57	492	749
C - A4500 EB	766	68	0	368	1,203
D - A5076	401	650	219	-6	1,264
Total	1,340	802	1,073	1,155	4,370

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	41	178	976	728	1923
B - Tollgate Way	111	0	154	528	794
C - A4500 EB	162	4	0	368	535
D - A5076	440	893	451	0	1784
Total	754	1075	1582	1624	5036

Modelled Flows
2031 DM
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	31	220	1067	410	1727
B - Tollgate Way	177	3	256	933	1368
C - A4500 EB	512	28	0	500	1040
D - A5076	442	872	498	1	1813
Total	1163	1122	1820	1844	5949

Modelled Flows
2031 DS2
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	29	239	1034	425	1726
B - Tollgate Way	146	1	272	900	1319
C - A4500 EB	561	20	0	525	1107
D - A5076	393	919	523	0	1835
Total	1128	1179	1829	1850	5987

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	0	0	0	0
B - Tollgate Way	0	0	0	0	0
C - A4500 EB	0	0	0	0	0
D - A5076	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-10	42	90	-318	-195
B - Tollgate Way	66	3	101	404	575
C - A4500 EB	350	23	0	132	505
D - A5076	2	-21	46	1	29
Total	409	47	238	219	913

2031 DS2 minus 2015 Base
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-12	61	57	-303	-196
B - Tollgate Way	36	1	118	372	526
C - A4500 EB	399	16	0	157	572
D - A5076	-48	26	72	0	51
Total	374	104	247	226	952

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	218	639	742	1599
B - Tollgate Way	275	0	40	698	1013
C - A4500 EB	418	37	0	199	654
D - A5076	305	673	183	0	1161
Total	998	928	862	1639	4427

2031 DM adjusted to count
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-10	260	729	424	1404
B - Tollgate Way	341	3	141	1102	1588
C - A4500 EB	768	60	0	331	1159
D - A5076	307	652	229	1	1190
Total	1407	975	1100	1858	5340

2031 DS2 adjusted to count
AM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-12	279	696	439	1403
B - Tollgate Way	311	1	158	1070	1539
C - A4500 EB	817	53	0	356	1226
D - A5076	257	699	255	0	1212
Total	1372	1032	1109	1865	5379

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	37	174	519	639	1370
B - Tollgate Way	152	0	81	588	822
C - A4500 EB	660	14	0	484	1157
D - A5076	144	805	539	6	1493
Total	992	993	1140	1717	4842

Modelled Flows
2031 DM
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	5	155	864	444	1469
B - Tollgate Way	154	0	140	701	995
C - A4500 EB	785	32	0	674	1491
D - A5076	193	927	564	0	1684
Total	1137	1114	1568	1819	5639

Modelled Flows
2031 DS2
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	7	177	905	424	1513
B - Tollgate Way	159	0	160	665	984
C - A4500 EB	845	37	2	713	1596
D - A5076	151	897	604	0	1652
Total	1162	1110	1671	1802	5745

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	0	0	0	0
B - Tollgate Way	0	0	0	0	0
C - A4500 EB	0	0	0	0	0
D - A5076	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-31	-19	345	-195	99
B - Tollgate Way	2	0	58	112	172
C - A4500 EB	125	18	0	191	334
D - A5076	49	122	25	-6	191
Total	145	122	429	102	797

2031 DS2 minus 2015 Base
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-29	3	385	-215	144
B - Tollgate Way	6	0	79	77	162
C - A4500 EB	186	22	2	229	439
D - A5076	7	92	65	-6	159
Total	170	117	531	85	903

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	0	155	548	458	1161
B - Tollgate Way	275	0	53	533	861
C - A4500 EB	608	60	0	270	938
D - A5076	403	621	228	0	1252
Total	1286	836	829	1261	4212

2031 DM adjusted to count
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-31	136	893	263	1260
B - Tollgate Way	277	0	111	645	1033
C - A4500 EB	733	78	0	461	1272
D - A5076	452	743	253	-6	1443
Total	1431	958	1258	1363	5009

2031 DS2 adjusted to count
PM Peak

	A- A4500 WB	B - Tollgate Way	C - A4500 EB	D - A5076	Total
A- A4500 WB	-29	158	933	243	1305
B - Tollgate Way	281	0	132	610	1023
C - A4500 EB	794	82	2	499	1377
D - A5076	410	713	293	-6	1411
Total	1456	953	1360	1346	5115

APPENDIX B

Works Order : 450503584
EV Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Steve) - Northampton Site ORN037

Administration

General Specification

Customer Name: Northamptonshire County Council
Intersection General Description: Upton Way / Weedon Road Rdbt East (Steve) - Northampton Site ORN037
Controller: Hire / Modification
Area Specification / Customer Drawings:
Specification Section:
Contract / Tender Ref:
Quotation No:
Works Order No.: 450503584

Customer Order No:
Controller Serial Number:
SCOOT Install Number: 62455 Issue: 3
Equipment Installation by: Siemens Mobility Traffic Solutions
Site Cut by/by: Siemens Mobility Traffic Solutions
Civil Works by: Siemens Mobility Traffic Solutions
Customers Engineer: P Leatherbarrow
Telephone Number: 01604 559620

Signal Company Use Only

Signal Engineer: Kevin L Roberts
UTC Prime Database by Prom Number: 16276 Prom Version: 126
Configuration Check Value: 69 90 C4 67

Controller Options

Hardware: MC60 Firmware Type and Issue: MC60 ISS 18 Other Options: CTC UD

ST600/ST700 Series Cabinet Options

Cabinet Rack: Kit Type Chosen: ○ ○ ○ ○
Cabinet Wire Harness: Cabinet Options:

Mains Supply: 240 Volts 50 Hz
Peak Lamp Current: 5 Amps Running Voltage: 160
Average Lamp Power: 1750 Watts
Total Average Power: 1850 Watts
All Reds Allowed: 0 Date Created: 06/03/05
Exit Hour: 15

Power Feed Rating: requires 30 Amp minimum (recommended), 15 Amp minimum for petrol / highly loaded consoles

Works Order : 450503584
EV Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Steve) - Northampton Site ORN037

Streams, Stages, Phases Control

Select Object to Add/Delete/Amend

Streams
Current Number of Streams: 2

Phases
Current Total Number of Phases: 5
Number of Real Phases: 5
Number of Dummy Phases: 0

Stages
Current Number of stages (do not ALL RED stages): 5

Switched Signs
Number of Switched Signs: 1

Add/Delete
Add At | Delete At



Works Order : 480593584
EM Number : 82455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Right East (Slave) - Northampton Site ORN037

Facilities/Modes Enabled and Mode Priority Levels

Facilities

- [x] Manual Drafts
- [ ] Manual Stop On Mode
- [x] CLF (Start Time)
- [ ] CLF (non-Start Time)
- [x] UTC Facility
- [ ] Hurry Call Mode
- [ ] Priority
- [ ] Emergency Vehicles
- [ ] Part Time
- [x] Master Time Clock
- [x] DEU Lamp Monitoring
- [x] Lamp Monitoring
- [ ] Linked Front Time
- [x] FT To Current MAX
- [ ] Speed Measurement
- [ ] Download To Level 3
- [ ] London TMU
- [ ] Expand All Red
- [ ] Fail To Hardware Flashing
- [x] Ripple Change
- [ ] Non-UR
- [ ] Welcome/Write Tourism Patterns
- [ ] Standard Manual
- [ ] Holden Clock
- [ ] Fail to Part Time
- [ ] Serial MOVA
- [x] Serial UTC
- [ ] Free Standing DTU
- [ ] Integral DTU

7 Starting Intergreen

Mode Priority

PRIORITY	1	2	3	4	5	6	7	8	9	10	11
Part Time	○	○	○	○	○	○	○	○	○	○	○
Emergency Vehicle	○	○	○	○	○	○	○	○	○	○	○
Hurry Call	○	○	○	○	○	○	○	○	○	○	○
Bandwidth Data	◉	○	○	○	○	○	○	○	○	○	○
UTC	○	◉	○	○	○	○	○	○	○	○	○
Manual Stop On	○	○	○	○	○	○	○	○	○	○	○
Standard FT or Wide CLF	○	○	◉	○	○	○	○	○	○	○	○
Cableless Link (CLF)	○	○	○	◉	○	○	○	○	○	○	○
Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○
Vehicle Adaptive	○	○	○	○	○	○	○	○	○	◉	○
Front Time	○	○	○	○	○	○	○	○	○	○	◉

Configuration Complexity

○ Low ○ Medium ○ High ◉ Minimum

Standard SDF

Default PROM data file

Correspondence Monitoring Kind

- [x] Rods
- [ ] Switched Signs
- [x] Ambers
- ignore Rods and Ambers during Fail to Part Time

Phase Rate (ms)

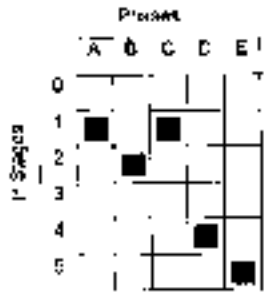
400 Off 400 On

Last Modified 21/02/12, Issue 3.0.15

Form Ref: 1.3

Works Order : 480593584
EM Number : 82456
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Right East (Slave) - Northampton Site ORN037

Phases in Stages



Last Modified 21/02/12, Issue 3.0.15

Form Ref: 1.4

Works Order : 460593584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Right East (Slave) - Northampton Site ORN037

Stages in Streams

Stream Data	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demand/conditions								
Signal Stage	1	4						
Part-Time switch off stage								
Simulated Pedestrian								

NB : For a Stand Alone Stream, the reversion must be at the Red stage of Traffic stage/phase to meet the relevant standard of specification

Stages

In Stream	0	1	2	3	4	5
0	■	■	■			
1				■	■	■

Works Order : 460593584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Right East (Slave) - Northampton Site ORN037

Phase Type and Conditions

Phase Type and Conditions

◉ Phase Shift ○

Phase	Title	Type	Type Type	Type Type	Phase Phase
0	[illegible]	[illegible]	[illegible]	[illegible]	
1	[illegible]	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	[illegible]	
3	[illegible]	[illegible]	[illegible]	[illegible]	
4	[illegible]	[illegible]	[illegible]	[illegible]	

[illegible]

Works Order 460593584
EM Number : 62455
Engineer Kevin L Roberts
Intersection : Upton Way / Weedon Road Robt East | Slave | - Northampton Site ORN037

Opposing and Conflicting Phases

Select Stream(s) To Confirm

All 0 1 0 0 0 0 0 0

Initialise

To Phase

From Phase	A	B	C	D	E
A		Co	o		
B	Co		Co		
C	o	Co			
D					Co
E				Co	

Last Modified 21/02/12, Issue 3.0.15

Form Ref 2.2

Works Order 460593584
EM Number 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Robt East | Slave | - Northampton Site ORN037

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

Phases A to E

Phase	Min Green	Min Ped Green	Extensions	Maximums A	B	C	D	E	F	G	H	Protected
A	4	0	0.2	20	20	20	20	20	20	20	20	
B	7	0	0.2	20	20	20	20	20	20	20	20	
C	7	0	0.0	0	0	0	0	0	0	0	0	
D	7	0	0.2	20	20	20	20	20	20	20	20	
E	7	0	0.2	20	20	20	20	20	20	20	20	

NB: For Signalling Shortcuts Help for use of Max. Sets

Last Modified 21/02/12, Issue 3.0.15

Form Ref 2.3.1

Works Order : 460590584
EM Number : 62456
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Phase Intergreen Times

Select Stream(s) To Configure

○ A ○ B ○ C ○ D ○ E ○ F ○ G ○ H

NB: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreen between Pedestrian and Traffic Phases are controlled by the Settings (PH1, PH2, CH1, CH2, CR3 and PR4) therefore it should be entered for the appropriate intergreen times in grid below

To Phase

From Phase	A	B	C	D	E
A	■	5			
B	6	■	5		
C		9	■		
D				■	5
E				5	■

Last Modified 21/02/12, Issue 3.0.15

Form Ref: 2.3.2

Works Order : 460590584
EM Number : 62456
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Handset Intergreen Limits

HSH 30

Copy Intergreen Values

To Phase

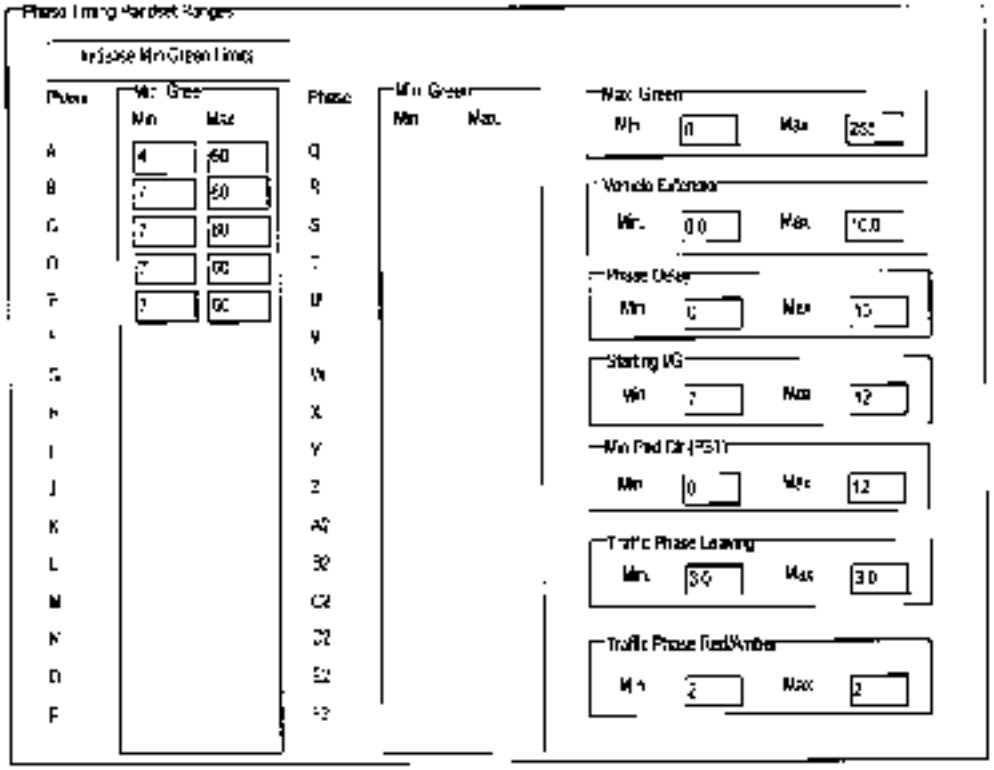
From Phase	A	B	C	D	E
A	■	4			
B	5	■	4		
C		6	■		
D				■	4
E				4	■

Last Modified 21/02/12, Issue 3.0.15

Form Ref: 2.3.3

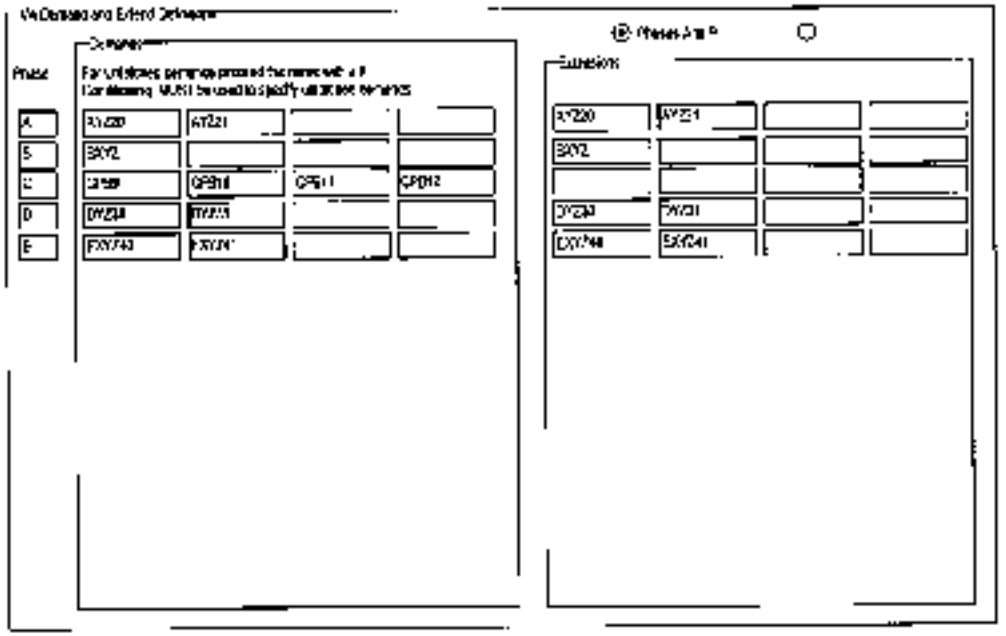
Works Order : 460693584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Phase Timing Handset Ranges



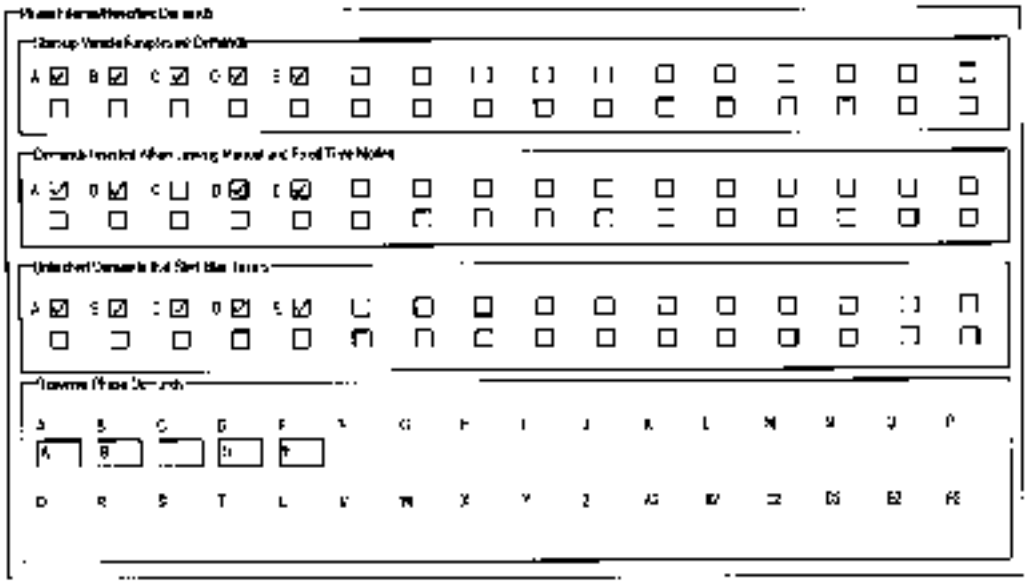
Works Order : 460693584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Phase - VA Demand and Extend Definitions



Works Order : 40093584
EM No.Number : 52455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Phase Internal/Revertive Demands

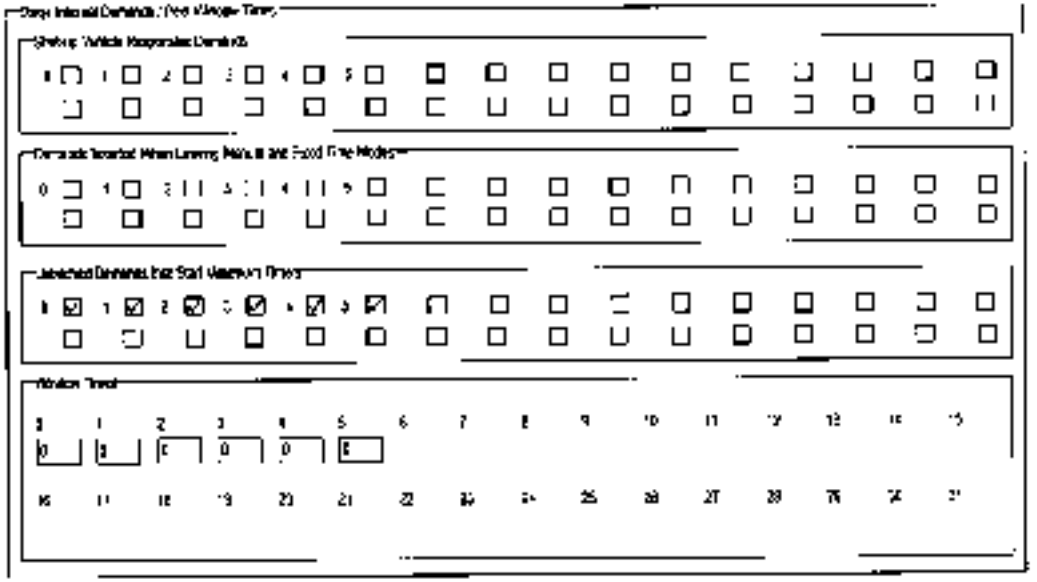


Last Modified 21/02/12, Issue 3.0.15

Form Ref. 2.5

Works Order : 40093584
EM No.Number : 52455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Stage Internal Demands / Ped. Window Times



Last Modified 21/02/12, Issue 3.0.15

Form Ref. 3.2

Works Order : 460590584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN007

Phase delays

Phase delays

(●) Phase Delays 0-29 ( ) Phase Delays 30-59 ( ) Phase Delays 60-89 ( ) Phase Delays 90-119

No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds	No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds
0	A	1	2	4	15				0
1	A	1	3	4	16				0
2				0	17				0
3				0	18				0
4				0	19				0
5				0	20				0
6				0	21				0
7				0	22				0
8				0	23				0
9				0	24				0
10				0	25				0
11				0	26				0
12				0	27				0
13				0	28				0
14				0	29				0

Last Modified 21/02/12, Issue 3.0.15 Form Ref: 3.3 (1)

Works Order : 460590584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN007

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Mode)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Mode

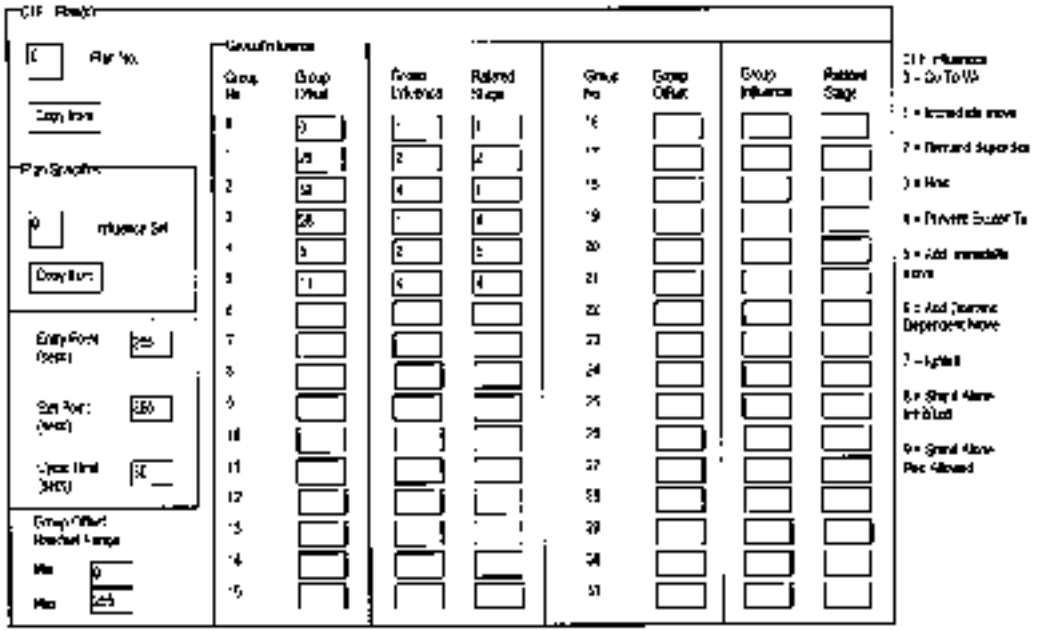
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	AB	BB	CB	DB	EB	FB
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Last Modified 21/02/12, Issue 3.0.15 Form Ref: 4.1

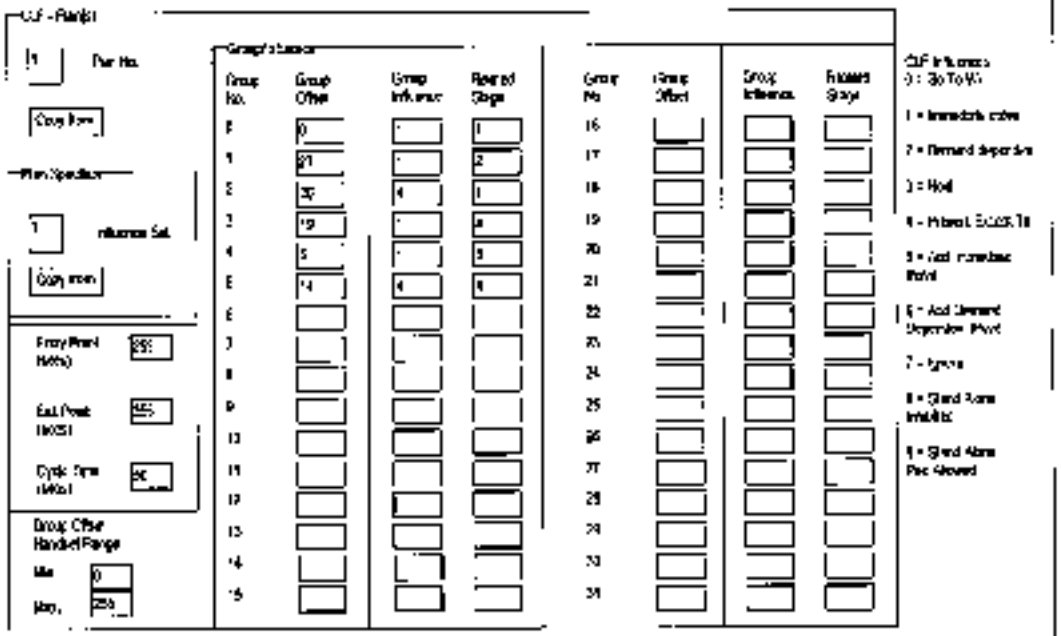
Works Order : 460583584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Steve) - Northampton Site ORN037

CLF - Plan(s)



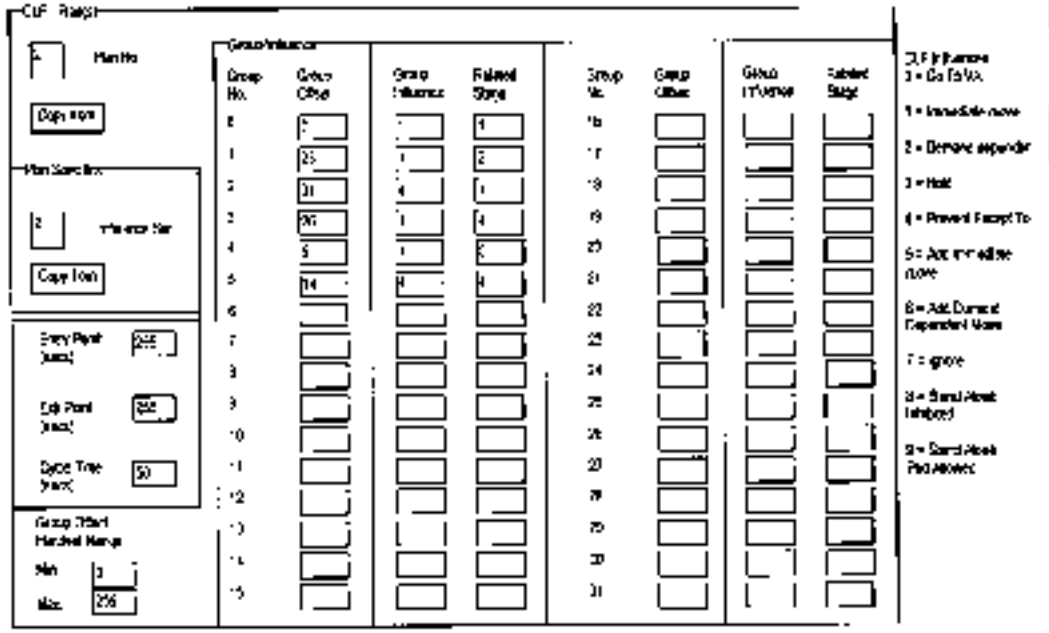
Works Order : 460583584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Steve) - Northampton Site ORN037

CLF - Plan(s)



Works Order : 4605990564
FM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roundabout East (Slave) - Northampton Site CRN037

CLF - Plan(s)

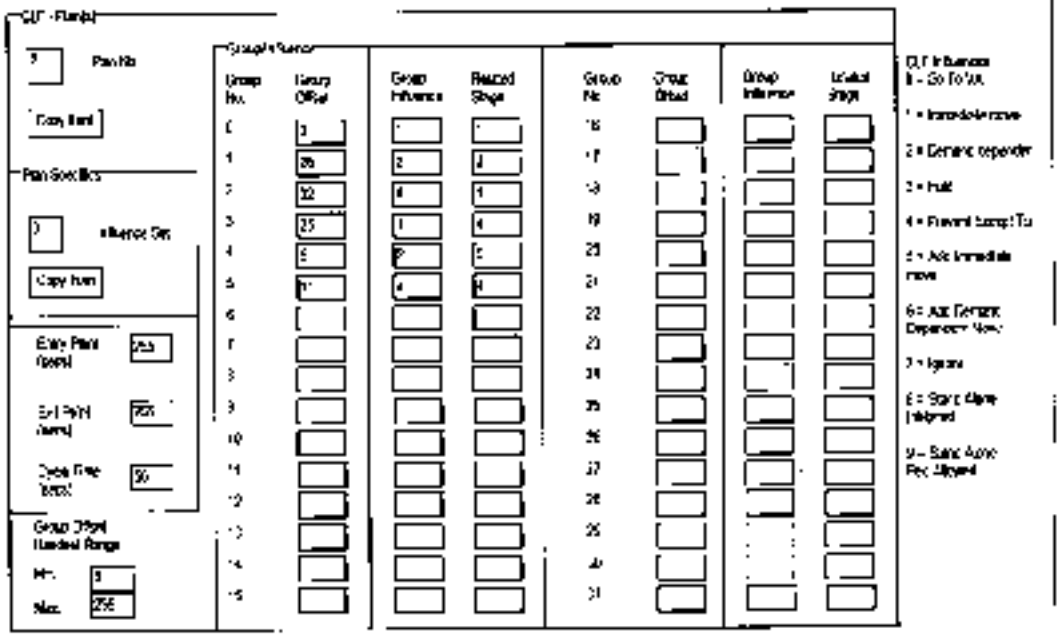


Last Modified 21/02/12. Issue 3.0.15

Form Ref 4.2.1 (3)

Works Order : 4605990564
FM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roundabout East (Slave) - Northampton Site CRN037

CLF - Plan(s)

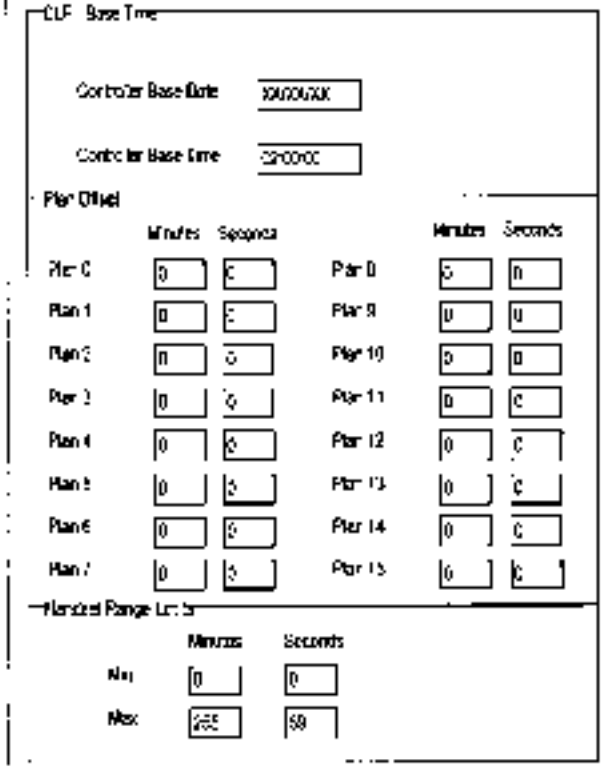


Last Modified 21/02/12. Issue 3.0.15

Form Ref 4.2.1 (4)

Works Order : 460693584
EM Number : 52455
Engineer : Kevin J. Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Stave) - Northampton Site ORN037

CLF - Base Time



CLF - Base Time

Controller Base Date: XX/XX/XX

Controller Base Time: 02:00:00

Plan Offset

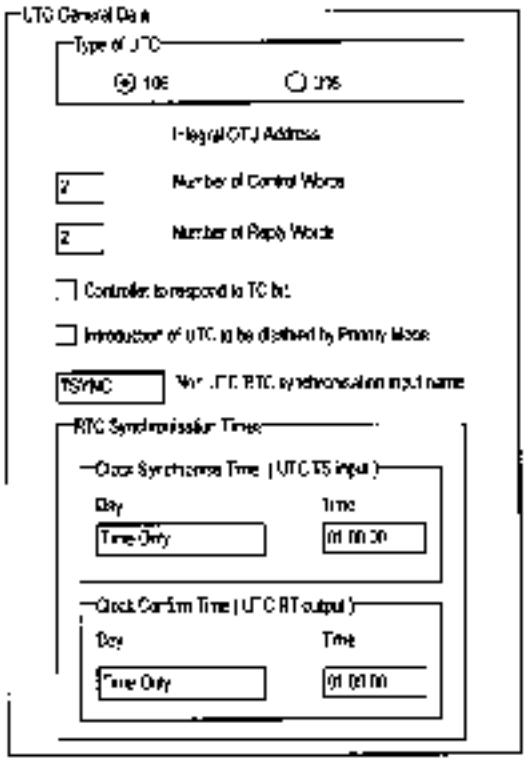
	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Handset Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

Works Order : 460693584
EM Number : 52455
Engineer : Kevin J. Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Stave) - Northampton Site ORN037

UTC General Data



UTC General Data

Type of UTC: (•) 106 ( ) 306

Integral OTU Address

2 Number of Control Words

2 Number of Reply Words

☐ Controller to respond to TC bit

☐ Introduction of UTC to be disabled by Priority Mode

TSYNC Non UTC RTC synchronisation input name

RTC Synchronisation Times

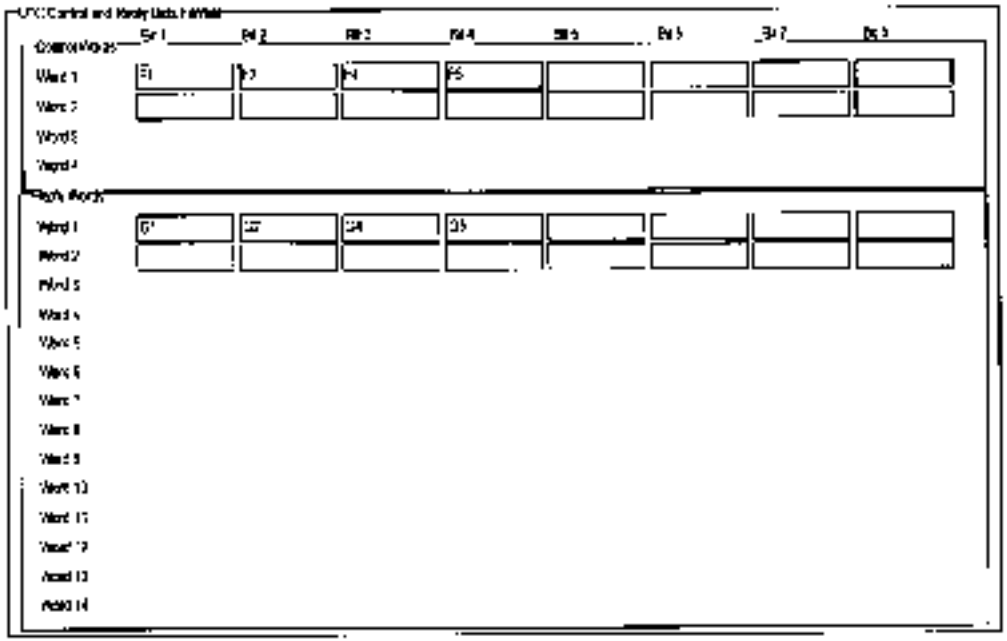
Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	01:00:00

Clock Confirm Time (UTC RT output)

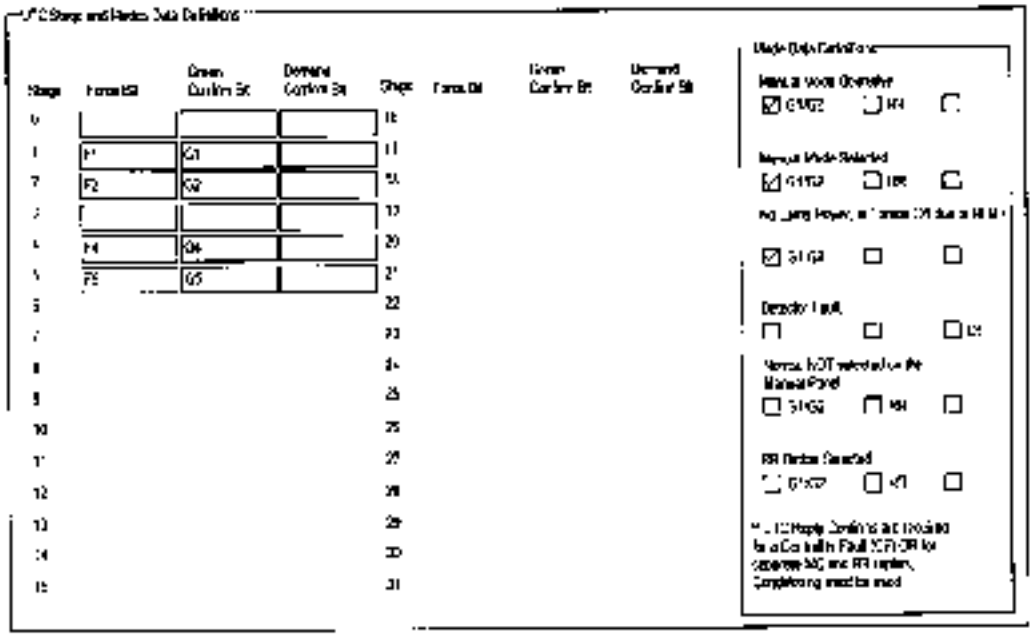
Day	Time
Time Only	01:00:00

UTC Control and Reply Data Format



Works Order : 4606983584
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Robot East | Slave) - Northampton Site ORN037

UTC Stage and Modes Data Definitions



Last Modified: 21/02/12, Issue 3.0.15 Form Ref: 4.3.3.2

Works Order : 460593584
LM Number : 67456
Engineer : Kevin L Roberts
Intersection Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site DRN037

MTC - Time Switch Parameters

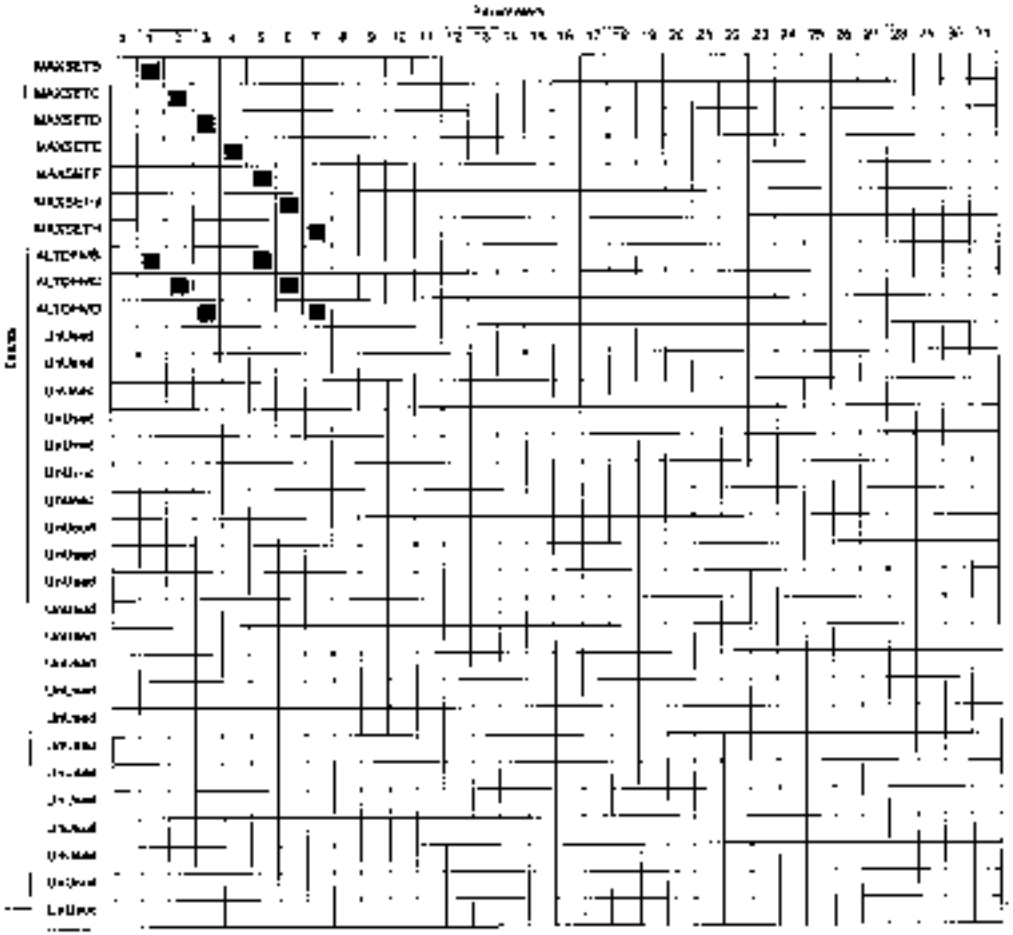
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	Alternate Max	MAXSETE
4	Alternate Max	MAXSETF
5	Alternate Max	MAXSETG
6	Alternate Max	MAXSETH
7	Alternate OFN	ALTOFNB
8	Alternate OFN	ALTOFNC
9	Alternate OFN	ALTOFND
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order : 460593584
LM Number : 82455
Engineer : Kevin L Roberts
Intersection Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site DRN037

MTC - Time Switch Parameters Array



Works Order : 460593554
EM Number : 82455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Robt East (Slave) - Northampton Site ORN037

Master Time Clock - Day Type

Master Time Clock - Day Type

No	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☑	☑	☑	☑	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 460593554
EM Number : 82455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Robt East (Slave) - Northampton Site ORN037

Master Time Clock - Time Table

Master Time Clock - Time Table

View Time Table settings: ◉ 0-15 ○ 16-31 ○ 32-47 ○ 48-63

Number	Day Type	Time	Feature Number Required	Function Number	Plan Number
0	0	08:30:00	INTRODUCE CLF PLAN 0	1	0
1	0	01:00:00	INTRODUCE CLF PLAN 1	1	1
2	0	09:00:00	INTRODUCE CLF PLAN 0	1	0
3	10	16:00:00	INTRODUCE CLF PLAN 2	1	2
4	0	16:30:00	INTRODUCE CLF PLAN 0	1	0
5	3	11:00:00	INTRODUCE CLF PLAN 0	1	0
6	3	21:00:00	INTRODUCE CLF PLAN 0	1	0
7	3	06:30:00	INTRODUCE CLF PLAN 3	1	0
8	3	11:00:00	INTRODUCE CLF PLAN 7	1	7
9	3	19:30:00	INTRODUCE CLF PLAN 3	1	0
10	0	21:30:00	INTRODUCE CLF PLAN 3	1	0
11	1	13:30:00	INTRODUCE CLF PLAN 3	1	0
12	1	19:30:00	INTRODUCE CLF PLAN 3	1	0
13	0			0	0
14	0			0	0
15	0			0	0

Function Numbers:

0 = Inhibit From CLF

1 = Introduce a CLF Plan

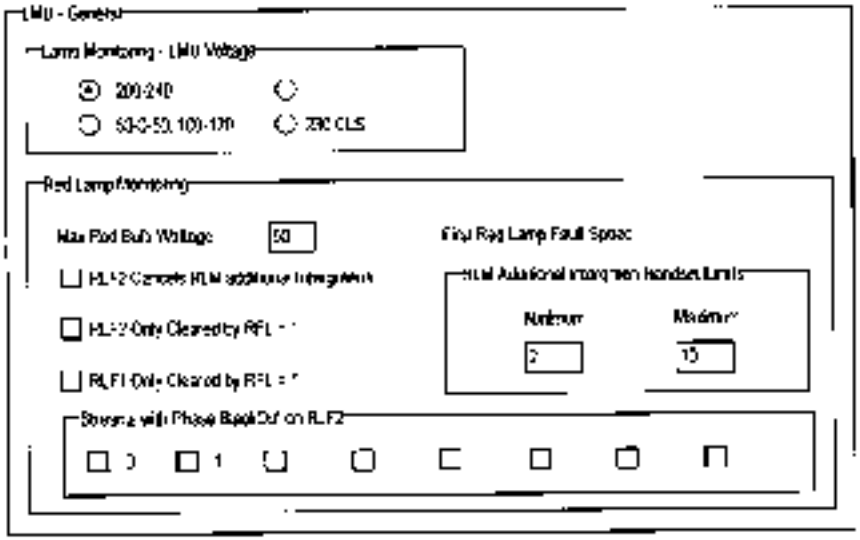
2 = Introduce a Fail Mode (Communication Failure) Inactive

3 = Select an Intruder Event Switch to be Set

4 = Select an Intruder Event Switch to be Cleared

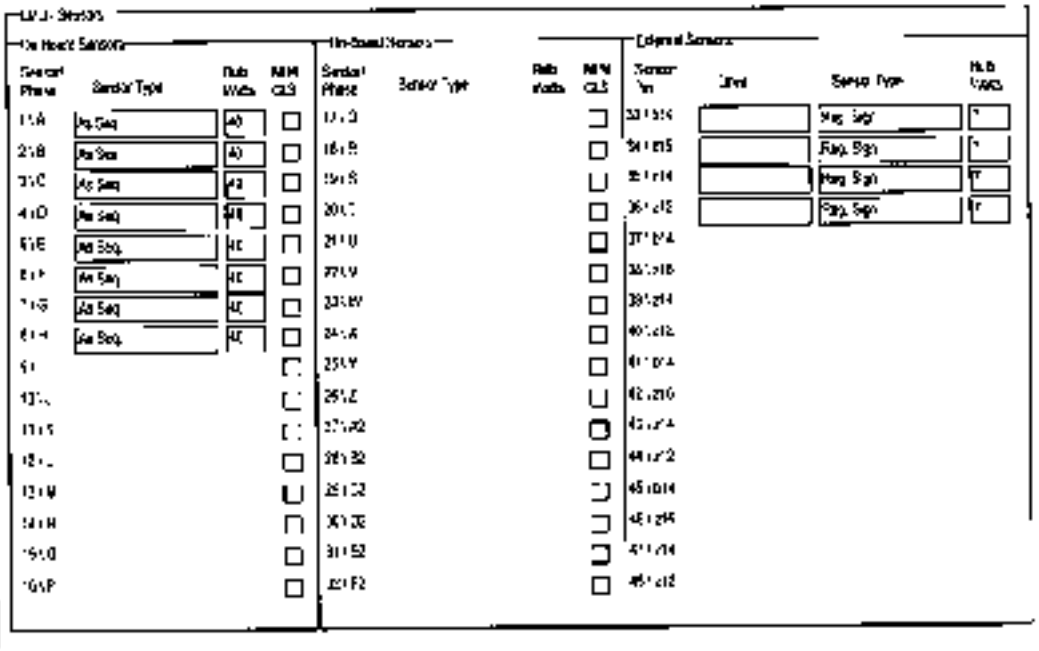
Works Order : 402693584
EM Number : 82455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roll Level | Slave | - Northampton Site ORN037

LMU - General



Works Order : 402693584
EM Number : 82455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roll Level | Slave | - Northampton Site ORN037

LMU - Sensors



Works Order : 460593584
EM Number : 62456
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East ; Slave : - Northampton Site ORN037

RLM Additional Intergreens

Phases Delayed



Phases with RLF1	A	B	C	D	E
A	■				
B		■			
C			■		
D				■	
E					■

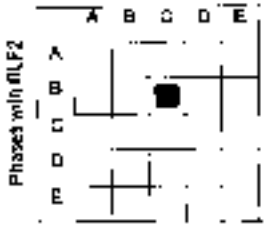
Last Modified 21/02/12 Issue 3.0.15 Form Ref 4.5.3

Works Order : 460593584
EM Number : 62456
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East ; Slave : - Northampton Site ORN037

RLM Phase Inhibits

Phases Inhibited/Blacked-out

Phases with RLF2	A	B	C	D	E
A					
B			■		
C					
D					
E					



Works Order : 40059Q564
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Nb (Lead) | Slave = - Northampton Site ORN037

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Dated Stage for Screen 0	1	2	3	4	5	6	7
0	Confirm Stages 0_3	0	3						
1	Roundabout	1	4						
2	Upton Way and Roundabout	2	4						
3	Orchid Way and Weedon Road	3	5						
4	Weedon Roadband Roundabout	4	5						
5									
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Confirmed	☐	☑	☑	☑	☑

Vehicle Mode Enable

- (•) Always
- ( ) When Handset Plugged In (Note 1)
- ( ) When MMO Command Entered

Note 1
For this to operate
Cyclic Conflict(1)
Required

Device Buttons

	None	SW1	SW2	SW3
Hungary		☐	☐	☐
Ext Override	(•)	( )	( )	( )
All	(•)	( )	( )	( )

Manual Stages On

- ( ) Immediate Signals On
- (•) At Stage 0

Mode Select Switches Disabled

☐ Off ☐ Flash Only ☐ On

Works Order : 40059Q564
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Nb (Lead) | Slave = - Northampton Site ORN037

Special Conditioning

```
; AUX LEDS
; --------

                                        ; AUX 1 LED = ON
                                        ; AUX 2 LED NOT USED
                                        ; AUX 3 LED LIT WHEN THE MOVA BUTTON ON MOVA SCREEN
                                        ; AUX 4 LIT DURING HURRY CALL
                                        ; AUX 5 LIT WHEN THE MOVA BUTTON ON MOVA SCREEN
                                        ; ALL OFF/AUX

; MOVA CONTROL PARAMETERS
; -----------------------

                                        ; MOVA OFF-SETTING ACTS SLOT, SLOTS SPLIT TIME

                                        ; ALL SAME cycle switch STREAM DEMARCATION AUXS SAME AS MOVA (AUX5) LIKE
                                        ; MOVA OFF TIME STAGE ACTIVE, INTERGR GREEN AUXS SAME AS MOVA, AUX5 LIKE
                                        ; EXTENDS TO ALLOW LOST ENTRY TIME AFTER MOVA OFF-SET SLOTS
                                        ; DEAL WITH OFF-SET WHILST CLEAR EXTENSION ON

; SPECIAL SELECTS AND SPECIAL DEMAND

                                        ; ALL USES MAX MINUS TO ADD TO MAX EXTENSION

; SPECIAL FACILITIES ENABLED MANUAL PANEL
; ---------------------------------------

                                        ; MOVA SPECIAL FACILITIES ENABLED WITH CONFIRM
```

Works Order : 460593584
F&M Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Special Conditioning

```
. [illegible]
[illegible]
```


Works Order : 460593584
F&M Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN037

Special Conditioning

```
. [illegible]
[illegible]
```

Last Modified 21/02/12, Issue 2.0.15 Form Ref. 5.1 (2)

Works Order : 460580504
EM Number : 62455
Engineer : Kevan L Roberts
Intersection : Upton Way / Weedon Road Roll: East (Slave) - Northampton Site ORN037

Special Conditioning Timers

Special Conditioning Timers

Mode

(•) 0 (1) ( ) 32 (1) ( ) 64 (1)

No	Value	Min	Max	255ms	Description	No	Value	Min	Max	255ms	Description
0	0	0	255	☐	PLANE DELAY TIMER	16		0	255	☐	
1	2	0	255	☐	PLANE TARGET RELEASE TIMER	17		0	255	☐	
2	150	0	255	☐	START OVERRIDE TIMER	18		0	255	☐	
3		0	255	☐		19		0	255	☐	
4		0	255	☐		20		0	255	☐	
5		0	255	☐		21		0	255	☐	
6		0	255	☐		22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8		0	255	☐		24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order : 460580504
EM Number : 62455
Engineer : Kevan L Roberts
Intersection : Upton Way / Weedon Road Roll: East (Slave) - Northampton Site ORN037

Special Instructions

No	Type	Min	Max	Type	Time	Cycle	Time
0	A	0	1	1	0 - 0	0	0
1	A	0	1	1	0 - 0	0	0
2	A	0	1	1	0 - 0	0	0

Works Order : 460583564
EM Number : 80468
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roundabout East (Stage) - Northampton Site ORN037

Special Instructions

Last Modified 21/02/12, Issue 3.0 15

Form Ref. 6 (2)

Works Order : 460583564
EM Number : 80468
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roundabout East (Stage) - Northampton Site ORN037

Special Instructions

Last Modified 21/02/12, Issue 3.0 15

Form Ref. 5 (3)

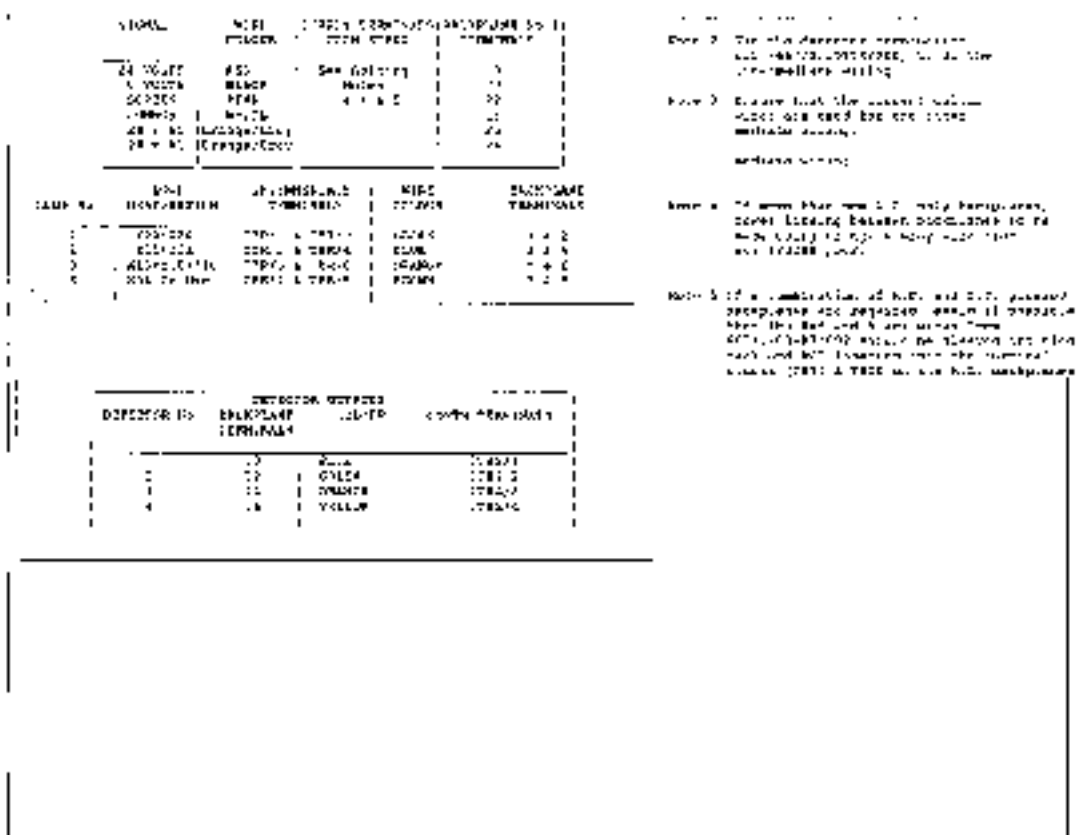
Works Order : 460593554
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN337

Special Instructions

Works Order : 460593554
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site ORN337

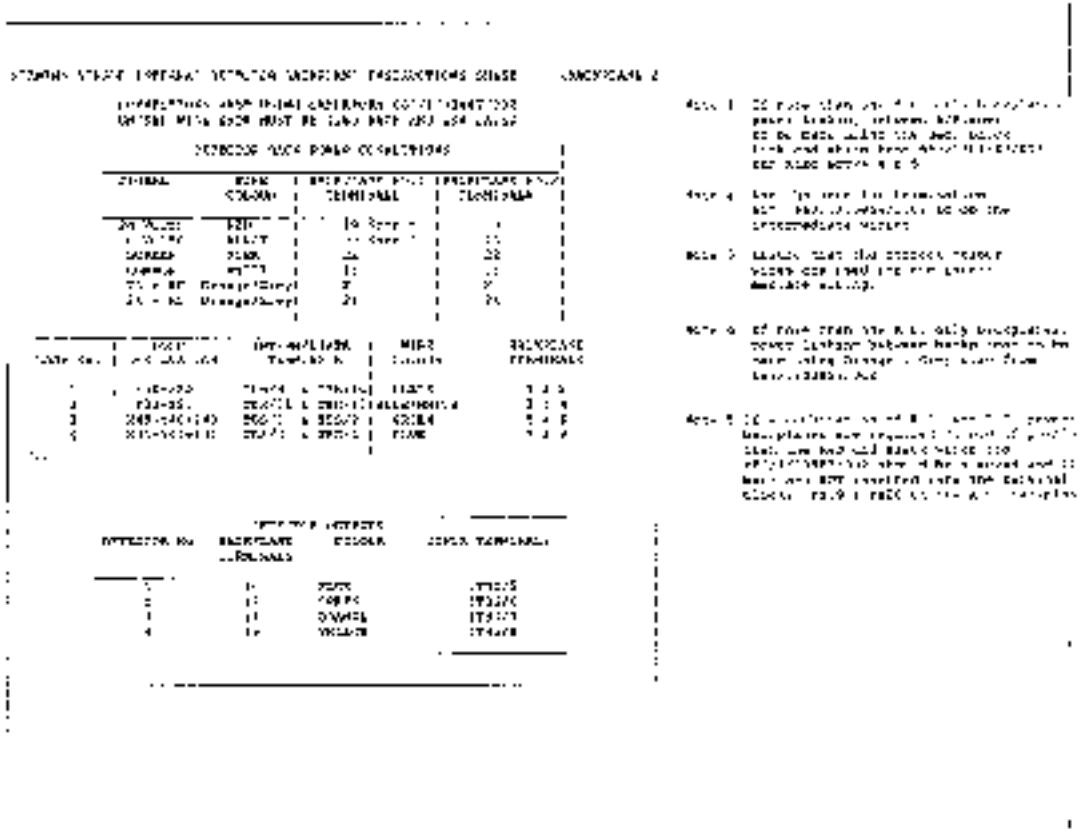
Special Instructions

Special Instructions



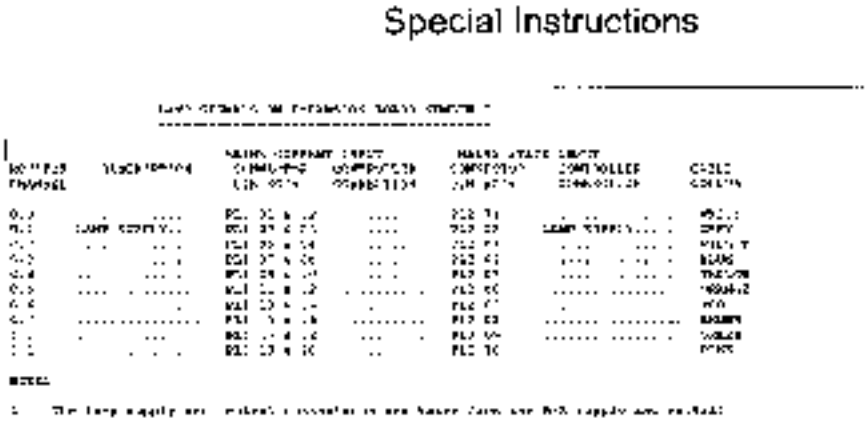
Works Order : 460593584
EV Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Steve) - Northampton Site ORN027

Special Instructions



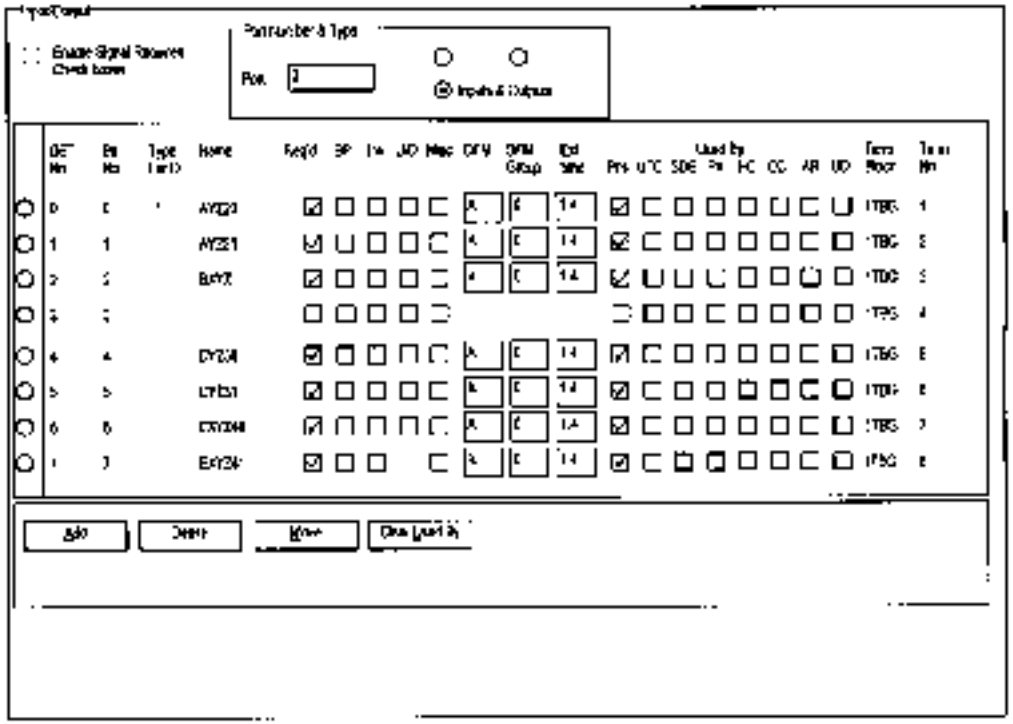
Last Modified 21/02/12 Issue 3.0.15 Form Ref 6 (7)

Special Instructions



Works Order : 4505835684
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Robt East (Slave) Northampton Site DRN037

Input/Output



Works Order : 463593504
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Robt East (Steve) - Northampton Site ORN037

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

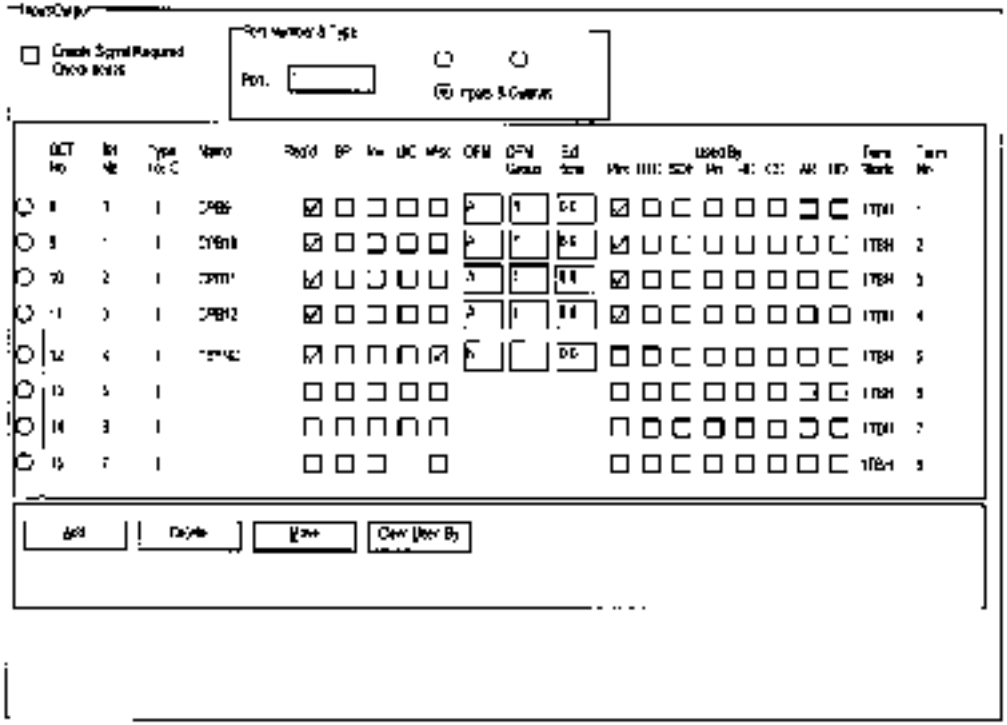
Port Number & Type

Port: [ ]

Inputs & Outputs

OCT No	Bit No	Type Input/Output	Name	Req'd	BP	Inv	LED	Misc	OFM	OFM Group	Ext time	Used By Pha	LTC	SDE	Pn	HC	CC	AR	UC	Term Block	Term No
8	1	1	OPB9	☑	☐	☐	☐	☐	P	1	DC	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	1
9	1	1	OPB10	☑	☐	☐	☐	☐	P	1	DC	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	2
10	2	1	OPB11	☑	☐	☐	☐	☐	P	1	DC	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	3
11	3	1	OPB12	☑	☐	☐	☐	☐	P	1	DC	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	4
12	4	1	OPB13	☑	☐	☐	☐	☑	P		DC	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	5
13	5	1		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBH	6
14	6	1		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBH	7
15	7	1		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBH	8

Add | Delete | Move | Clear User By

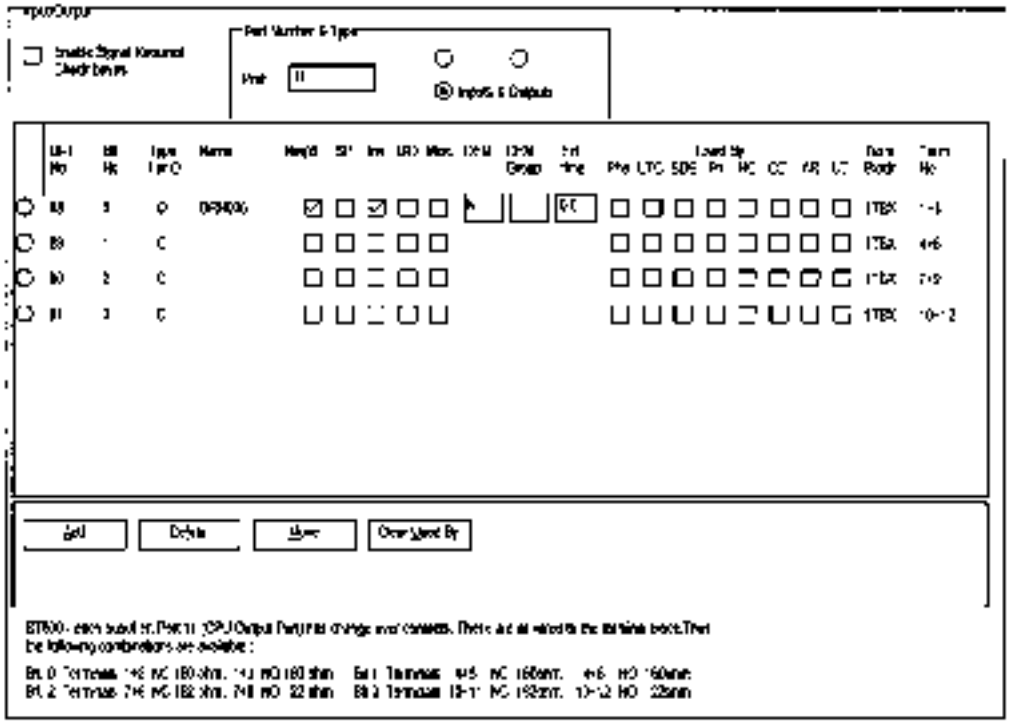


Last Modified 21/02/12, Issue 3.0.15

Form Ref: 7.2 (2)

Works Order : 463593551
EM Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Robt East (Steve) - Northampton Site ORN037

Input/Output



Input/Output

☐ Enable Signal Required Check boxes

Port Number & Type

Port: [ ]

Inputs & Outputs

OCT No	Bit No	Type Input/Output	Name	Req'd	BP	Inv	LED	Misc	OFM	OFM Group	Ext time	Used By Pha	LTC	SDE	Pn	HC	CC	AR	UC	Term Block	Term No
88	0	0	ORN006	☑	☐	☑	☐	☐	P		DC	☐	☐	☐	☐	☐	☐	☐	☐	1TBX	1-4
89	1	0		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBX	4-6
90	2	0		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBX	7-9
91	3	0		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBX	10-12

Add | Delete | Move | Clear User By

ST600 - each subset of Port 11 (CPU Output Port) has change over contacts. There are all wired to the terminal block. That the following combinations are available :

Bit 0 Terminals 1+2 NC 180 ohm, 1+3 NO 180 ohm Bit 1 Terminals 4+5 NC 160 ohm, 4+6 NO 160 ohm
Bit 2 Terminals 7+8 NC 182 ohm, 7+9 NO 182 ohm Bit 3 Terminals 10+11 NC 192 ohm, 10+12 NO 192 ohm

Last Modified 21/02/12, Issue 3.0.15

Form Ref: 7.2 (3)

Works Order : 460563594
EV Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site DRN037

Aspect Drives

Aspect Drives

◉ A-L ○ M-X ○ Y-Z

Phase Drive Card 1

	Used For	Term Block	Term No
A - Red	Phase	1TBA	1
A - Amber	Phase	1TBA	2
A - Green	Phase	1TBA	3
B - Red	Phase	1TBA	4
B - Amber	Phase	1TBA	5
B - Green	Phase	1TBA	6
C - Red	Phase	1TBA	7
C - Amber	Phase	1TBA	8
C - Green	Phase	1TBA	9
D - Red	Phase	1TBA	10
D - Amber	Phase	1TBA	11
D - Green	Phase	1TBA	12

Phase Drive Card 1

	Used For	Term Block	Term No
E - Red	Phase	1TBB	1
E - Amber	Phase	1TBB	2
E - Green	Phase	1TBB	3
F - Red			
F - Amber			
F - Green			
G - Red			
G - Amber			
G - Green			
H - Red			
H - Amber			
H - Green			

Phase Drive Card 2

	Used For	Term Block	Term No
I - Red			
I - Amber			
I - Green			
J - Red			
J - Amber			
J - Green			
K - Red			
K - Amber			
K - Green			
L - Red			
L - Amber			
L - Green			

Works Order : 460563594
EV Number : 62455
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt East (Slave) - Northampton Site DRN037

I/O - Group DFM Timings

I/O - Group DFM Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	9	9	9	9
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)				
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note: 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset. [illegible]

Handset Timing Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Annunciation
- 1.2 Streams, Stages, Phases Conflo
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Clearing Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Hardset Intergreen Limits
  - 2.3.4 Phase Timing Hardset Ranges
- 2.4 Phase - VA Demand and Extend Definitions
- 2.5 Phase Internal/Reactive Demands

3 Streams and Stages
- 3.1 Stage - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands / Ped. Window Times
- 3.3 Phase delays

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cordeiro Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 Urban Traffic Control
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions (No configuration data to print)
    - 4.3.3.2 UTC Stage and Modes Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces (No configuration data to print)
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 Master Time Clock - Day Type
  - 4.4.4 Master Time Clock - Time Table
- 4.5 Imagia Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 LMU - Sensors
  - 4.5.3 RLM Additional Intergreens
  - 4.5.4 RLM Phase Inhibits
- 4.6 Manual
  - 4.6.1 Manual Ramp
  - 4.6.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Cell Cancel (No configuration data to print)
- 7.2 Incub Output
- 7.3 Aspect Drives
- 7.4 I/O - Group I/M Inputs

TRAFFIC CONTROL - TIMING CHANGES TCF 8 Rev 1

SITE: N. Weedon Rd / Upton Way (West) ORN: 36

Reasons for timing changes:

New Prom Installed

Type of controller: S800

Parameter to be changed	existing settings from records	existing settings as found	Required settings
TIMERS			
CDT 18		34	36
CDT 8		25	23
CLF			
INF 0 1		2	1
INF 3 1		2	1

Engineered by:

Approved by (if safety related):

Controller records updated by:

FRAS updated by:

Controller changed by: D. Harris (Stevo.) Date: 21-3-12

Works Order : 4035935S4
Site Number : 02454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN006

Administration

General Specification

Customer Name: Northamptonshire County Council
Intersection / General Description: Upton Way / Weedon Road Rdbt West (Master) Northampton Site ORN006
Controller: (•) New ( ) Modification
Area Specifications / Database Drawings:
Specification Section:
Contract/Tender Ref:
Duration No.:
Works Order No: 4035935S4

Customer Order No:
Controller Serial Number: 30885406
S.C.O.O.T.S. I.D. Number: 02454 Issue: 3
Equipment Installed by: Siemens Mobility Traffic Solutions
Site Cutting by: Siemens Mobility Traffic Solutions
Civil Works by: Siemens Mobility Traffic Solutions
Customer's Engineer: R Leathwick
Telephone Number: 01604-364572

Signal Company Use Only

Signal Engineer: Kevin L Roberts
(If From Label on A) From Number: 6776 From Variant: 126
Configuration Check date: 07-01-13 21

Controller Options

Hardware: 1020 Firmware (yes are now): P9807558-9 Other Options: KTDLO

C1500S / 750 Series Cabinet Options

Cabinet Rack: Kit Type Options: ( ) ( ) ( ) ( )
Cabinet Rack Variant: Outdoor Options: ☐

Mains Supply: 240 Volts 50 Hz
Peak Lamp Current: 9 Amps Operating Voltage: 155 Ampere Issue: 5 Date Checked: 06/06/03
Average Lamp Power: 1762 Watts Pot Issue: 33
Total Average Power: 1880 Watts

Powermod Monitoring requires 30 Amp minimum for controller. 10 Amp minimum for pelican/ped/puffin controller

Last Modified 28/02/12, Issue 3.0.33 — Form Rel: 1.1

Works Order : 4035935S4
Site Number : 02454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN006

Streams, Stages, Phases Control

Select Object to Add/Delete/Check

Streams
( ) Current Number of Streams: 6

Phases
Current Total Number of Phases: 9
(•) Number of Real Phases: 9
( ) Number of Dummy Phases: 0

Stages
( ) Current Number of stages (inc. ALL-RED stages): 12

Switched Signs
( ) Number of Switched Signs: 0

Action
Add At | Delete At

Type Approval
21-3-12
All Red clears

Last Modified 21/03/12, Issue 3.0.33 — Form Rel: 1.2

Works Order : 460593584
EM Number : 52454
Engineer : Kevin L Roberts
Intersection : Upton Way / Woodcot Road Ring West (Master) - Northampton Site ORN036

Facilities/Modes Enabled and Mode Priority Levels

Facilities

- [x] Manual Control
- [ ] Manual Step On Mode
- [x] CLF (Dark Time)
- [ ] CLF (non-Base Time)
- [ ] UTC Priority
- [x] Hurry Call Mode
- [ ] Priority
- [ ] Emergency Vehicles
- [ ] Part Time
- [x] Master Time Clock
- [x] RED Lamp Monitoring
- [x] Lamp Monitoring
- [ ] Linked Plans Time
- [x] Fit To Load MAX
- [ ] Speed Measurement
- [ ] Downloaded Speeds
- [ ] London IVU
- [ ] Extend All Red
- [ ] Fail To Hardware Flashing
- [x] Ripple Change
- [ ] Non-MX
- [ ] Pelican/Puffin/Toucan Facilities
- [ ] Standalone Mimics
- [ ] Holiday Diary
- [ ] Fail 2 Part Time
- [ ] Safe MOVA
- [ ] Nerul LTC
- [ ] Free Standing CFL
- [ ] Integral MTC

Starting Megaram: 9

Mode Priority

PRIORITY	1	2	3	4	5	6	7	8	9	10	11
Part Time	○	○	○	○	○	○	○	●	○	○	○
Emergency Vehicle	○	○	○	○	○	○	○	○	○	○	○
Hurry Call	○	◉	○	○	○	○	○	○	○	○	○
Selected Man Cntl	◉	○	○	○	○	○	○	○	○	○	○
UTC	○	○	○	○	○	○	○	○	○	○	○
Manual Step On	○	○	○	○	○	○	○	○	○	○	○
Selected Plan via CLF	○	○	◉	○	○	○	○	○	○	○	○
Calculated Plan (CLF)	○	○	○	◉	○	○	○	○	○	○	○
Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○
Manual Actuation	○	○	○	○	○	○	○	○	○	◉	○
Fixed Time	○	○	○	○	○	○	○	○	○	○	◉

Configuration Complexity

- ○ Low
- ○ Medium
- ○ High
- ◉ Maximum

Standard MOVA

Default PRC/Hi (deg Mx

Correspondence Monitoring Items

- [x] Reds
- [x] Ambers
- [ ] Switched Signs
- [ ] Ignore Reds and Ambers during Part to Part Time

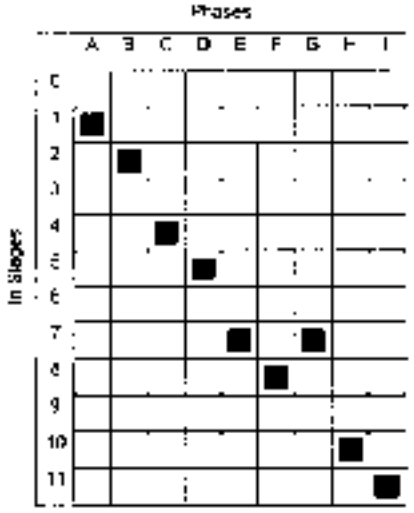
Flash Rate - ms

On: 400 Off: 400

Last Modified 21/02/12. Issue 3.0.33 Form Ref: 1.3

Works Order : 460593584
EM Number : 52454
Engineer : Kevin L Roberts
Intersection : Upton Way / Woodcot Road Ring West (Master) Northampton Site ORN036

Phases in Stages



Last Modified 21/02/12. Issue 3.0.33 Form Ref: 1.4

Works Order : 460593564
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdlt West (Master) - Northampton Site ORN036

Stages in Streams

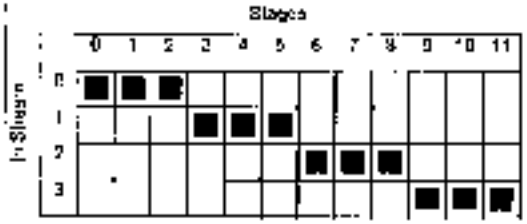
Stream Data

	0	1	2	3	4	5	6	7
Phase in Stage to revert to in absence of demands/timeouts		4		10				
Startup Stage	1	4	7	10				
Fan-Time switch off stage								
Standalone Pedestrian								

NB: For a Stand Alone Stream, the revertion must be to an Red stage or Traffic stage/phase to match the relevant specified or specification

Stages

In Stream	0	1	2	3	4	5	6	7	8	9	10	11
0	■	■	■									
1				■	■	■						
2							■	■	■			
3										■	■	■



Works Order : 460593564
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdlt West (Master) - Northampton Site ORN036

Phase Type and Conditions

Phase Type and Conditions

Phase Type

Phase	Title	Type	Age Time	Term Time	Agent Phase
A	Standard Shuttling Traffic	0 - Full Traffic	0	0 - 1	
B	Line 3/3 Upper Way Bus Pedestrian	0 - Full Traffic	0	0 - 1	
C	Line 3/3 Weedon Road Bus Pedestrian	0 - Full Traffic	0	0	
D	Line 3/3 Pedestrian Weedon Road Bus Pedestrian	1 - Full Traffic Pedestrian	0	0 - 1	
E	Line 3/3 Shuttling Traffic	0 - Full Traffic	0	0 - 1	
F	Line 3/3 Weedon Road Bus Pedestrian	0 - Full Traffic	0	0 - 1	
G	Line 3/3 Pedestrian Weedon Weedon Road Bus Pedestrian	1 - Full Traffic Pedestrian	0	0 - 1	
H	Line 3/4 Upper Way Bus Pedestrian	0 - Full Traffic	0	0 - 1	
I	Line 3/4 Pedestrian Weedon Upper Way Bus Pedestrian	1 - Full Traffic Pedestrian	0	0 - 1	

Last Modified 21/02/12 Issue 3.0.33 Form Ref 2.1

Works Order : 450593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt. Wdn (Master) Northampton Site ORN036

Opposing and Conflicting Phases

Select Stream(s) to Designer

To Phase

From Phase	A	B	C	D	E	F	G	H	I
A	■	Co							
B	Co	■							
C			■	Co					
D			Co	■					
E					■	Co	o		
F					Co	■	Co		
G					o	Co	■		
H								■	Co
I								Co	■

Works Order : 450593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt. Wdn (Master) Northampton Site ORN036

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

Phase A to P

Phase	Min Green	Min Ped Gr	Extension	Maximums A	B	C	D	E	F	G	H	Prioritised
A	7	0	0.2	20	20	20	20	20	20	20	20	☐
B	7	0	0.2	20	20	20	20	20	20	20	20	☐
C	7	0	0.0	0	0	0	0	0	0	0	0	☐
D	8	0	0.0	0	0	0	0	0	0	0	0	☐
E	8	0	0.0	20	20	20	20	20	20	20	20	☐
F	7	0	0.2	20	20	20	20	20	20	20	20	☐
G	7	0	0.0	0	0	0	0	0	0	0	0	☐
H	7	0	0.0	0	0	0	0	0	0	0	0	☐
I	7	0	0.0	0	0	0	0	0	0	0	0	☐

NB: For Standard Stream use help for use of Max. Sets

Works Order : 460583584
EM Number : 82454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton - Site ORN036

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ 2 ○ 3 ○ ○ ○ ○

NB: On a Short Zone Pelican/Toucan/Pelfin Stream the Intergreen between Pedestrian and Traffic Phases are controlled by the Inverse (VST, PIT, CMT, CDT, CRD and ISR). Sections 3 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F	G	H	I
A		5							
B	6								
C				7					
D			9						
E						5			
F					7		5		
G						11			
H									8
I								9	

Works Order : 460583584
EM Number : 82454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton - Site ORN036

Handset Intergreen Limits

MTH 33

Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E	F	G	H	I
A		4							
B	5								
C				4					
D			6						
E						4			
F					6		5		
G						13			
H									4
I								6	

Works Order : 460593564
EM Number : 52454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roll West (Master) - Northampton Site ORN036

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min	Min. Green Max	Phase	Min. Green Min	Min. Green Max
A	6	30	Q		
B	6	30	R		
C	6	30	S		
D	7	30	T		
E	7	30	U		
F	6	30	V		
G	6	30	W		
H	6	30	X		
I	6	30	Y		
J			Z		
K			A2		
L			B2		
M			C2		
N			D2		
O			E2		
P			F2		

	Min	Max
Max Green	0	255
Vehicle Extension	0.0	10.0
Phase Delay	0	10
Starting MG	4	12
Min Ped Clr (PST)	0	12
Traffic Phase Leaving	3.0	3.0
Traffic Phase Red/Amber	2	2

Works Order : 460593564
EM Number : 52454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roll West (Master) - Northampton Site ORN036

Phase - VA Demand and Extend Definitions

VA Demand and Extend Definitions

Phases A to P

Demands

For unlatched demands process the name with a #.
Conditioning: MUST be used to specify unlatched demands

Phase				
A	AY210	AY211		
B	BXY220	BXY221		
C				
D	DP01	DP02	DP03	DP04
E	EY230	EY231		
F	FXY240	FXY241		
G	GP05	GP06	GP07	GP08
H				
I	IP011	IP012	IP013	IP014

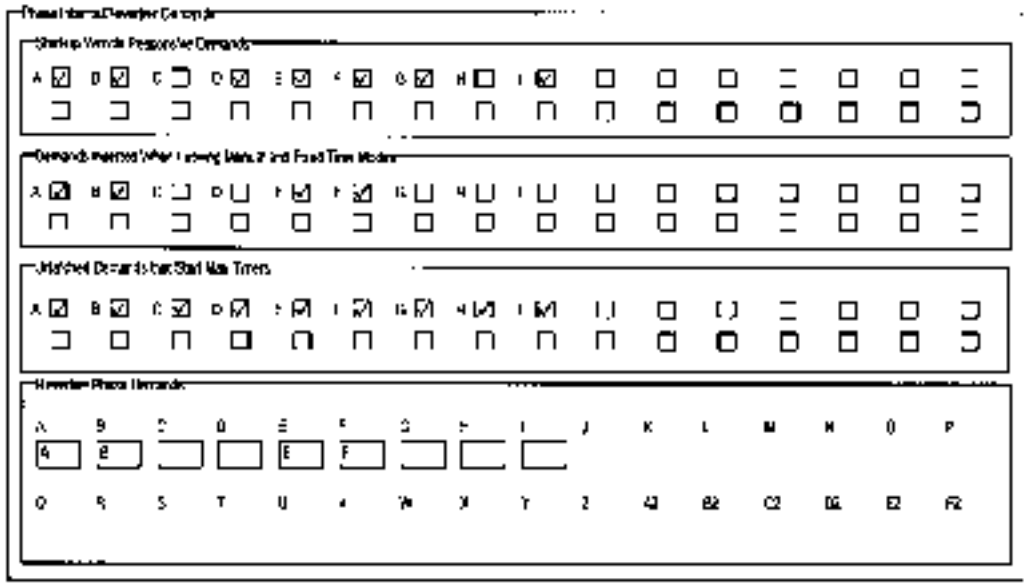
Extended

AY210	AY211		
BXY220	BXY221		
EY230	EY231		
FXY240	FXY241		

Works Order : 460593684
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt. West (Master) - Northampton Site ORN036

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands



Startup Vehicle Responsive Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☐	☑	☑	☑	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unfinished Demands that Start Max Timers

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B			E	F										
Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order : 460593684
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt. West (Master) - Northampton Site ORN036

Stage Internal Demands / Ped. Window Times

Stage Internal Demands / Ped. Window Times

Startup Vehicle Responsive Demands

0	1	2	3	4	5	6	7	8	9	10	11				
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

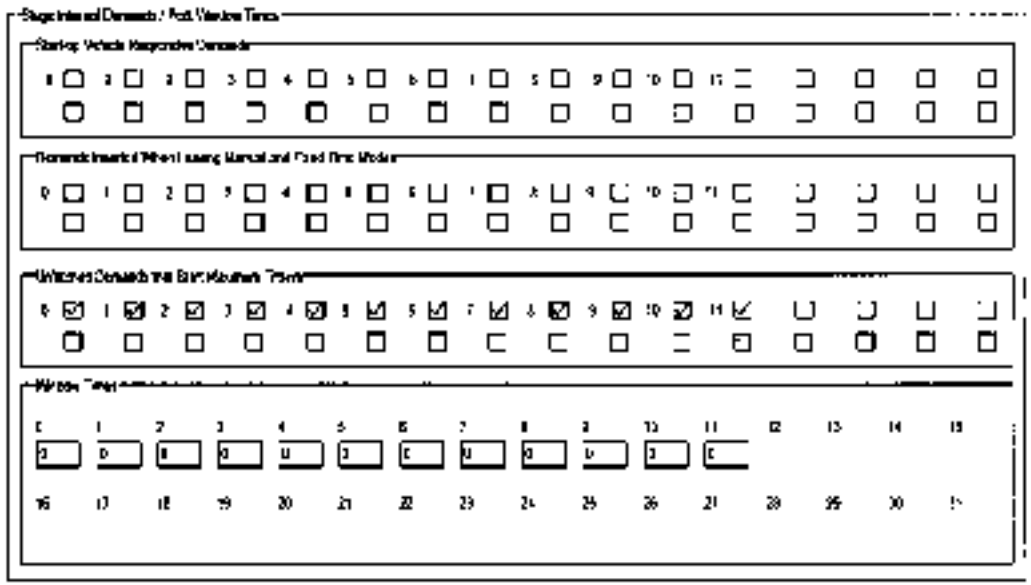
0	1	2	3	4	5	6	7	8	9	10	11				
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unfinished Demands that Start Maximum Timers

0	1	2	3	4	5	6	7	8	9	10	11				
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0	0	0	0	0				
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31



Phase delays

Phase delays

Phase Delays 1-28 | Phase Delays 29-56 | Phase Delays 57-84 | Phase Delays 85-115

No	Delay Phase	On Change from Stage	To Stage	Wait Seconds	No	Delay Phase	On Change from Stage	To Stage	Wait Seconds
0	E	7	8	5	15				0
1	E	F	8	5	16				0
2				0	17				0
3				0	18				0
4				0	19				0
5				0	20				0
6				0	21				0
7				0	22				0
8				0	23				0
9				0	24				0
10				0	25				0
11				0	26				0
12				0	27				0
13				0	28				0
14				0	29				0

Works Order : 4505503504
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

Fixed Time

Fixed Time

Stage Times & Times (not Fixed Time) to Commence

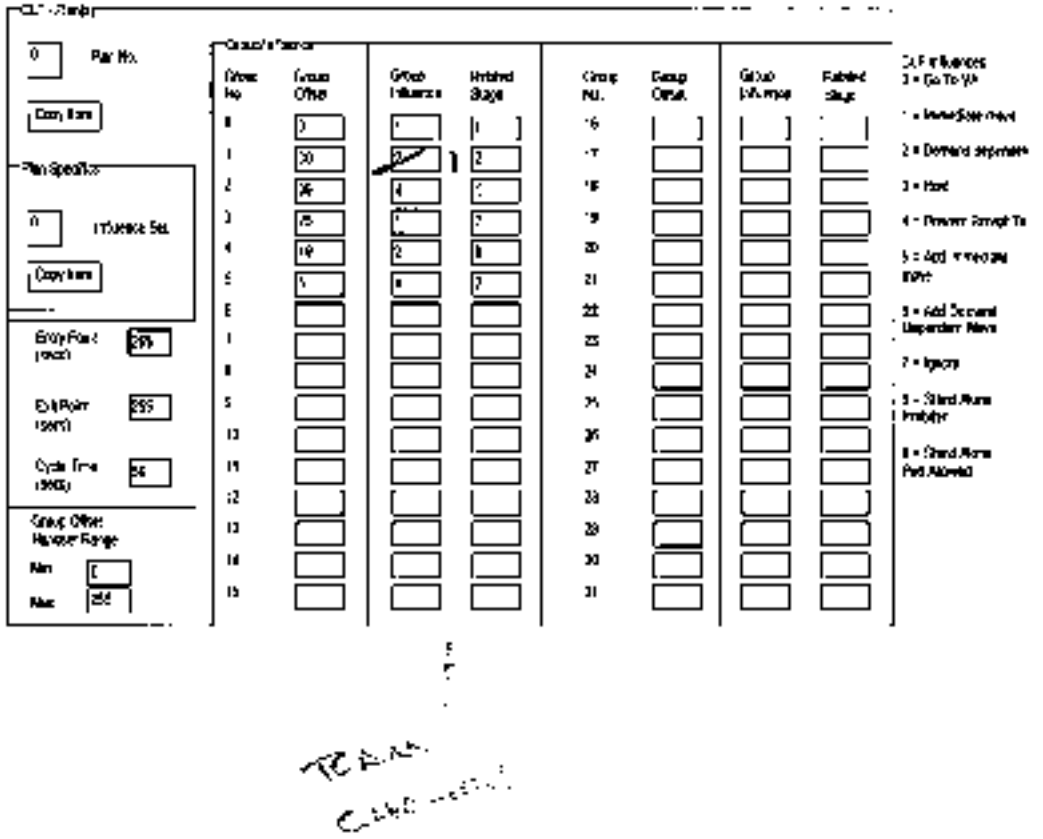
Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded / Extended under Fixed Time to Current Max

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☐	☐	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Q	R	S	T	U	V	W	X	Y	Z	ZA	ZB	ZC	ZD	ZE	ZF
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

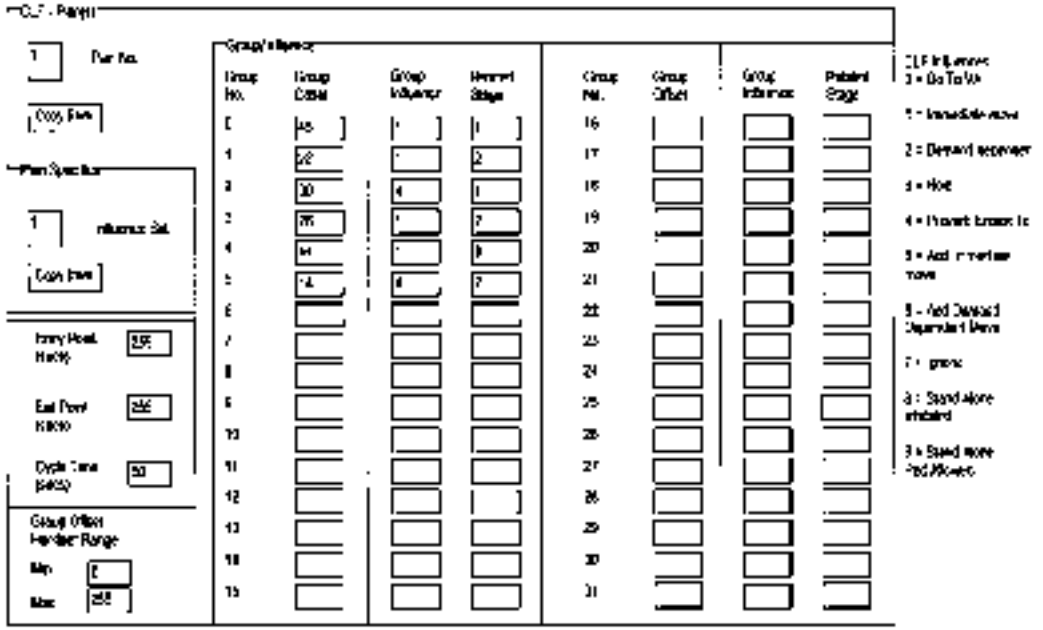
Works Order : 460993584
EM Number : 82454
Engineer : Kevin L Roberts
Intersection : Upton Way / Wootton Road Road West (Master) - Northampton Site ORN036

CLF - Plan(s)



Works Order : 460993584
EM Number : 82454
Engineer : Kevin L Roberts
Intersection : Upton Way / Wootton Road Road West (Master) - Northampton Site ORN036

CLF - Plan(s)



Works Order : 480593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

CLF - Plan(s)

CLF - Plan(s)

Plan No. 2

Copy from

Plan Specifics

Influence Set 2

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 90

Group Offset Handled Range

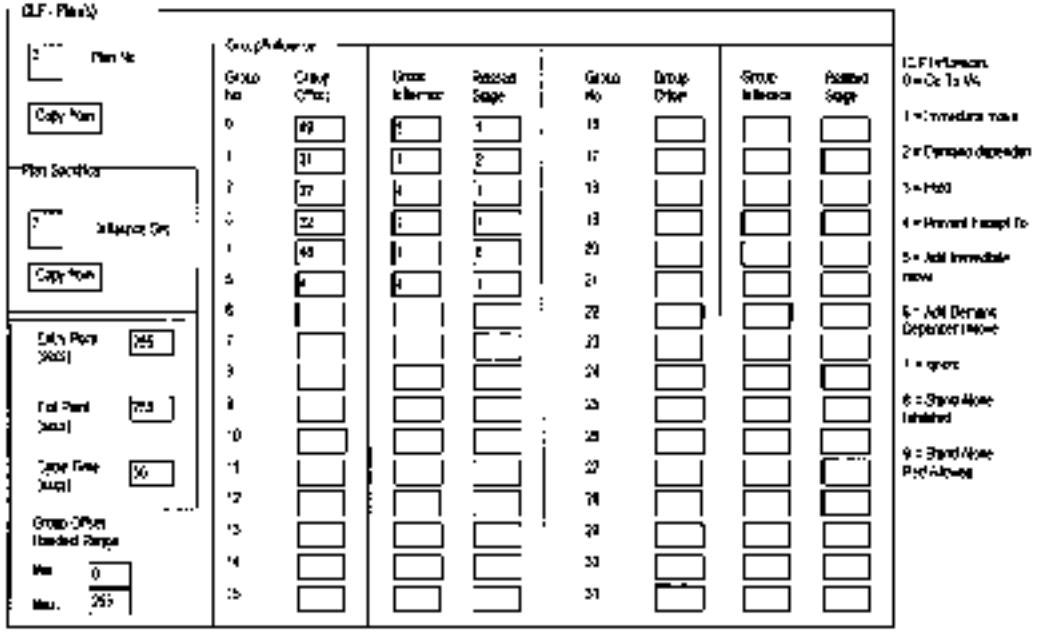
Min 0

Max 255

Group Influence

Group No	Group Offset	Group Influence	Related Stage	Group No	Group Offset	Group Influence	Related Stage
0	49	5	1	16			
1	31	1	2	17			
2	37	4	1	18			
3	32	1	1	19			
4	48	1	2	20			
5	4	4	1	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences
0 = Cycle Time
1 = Immediate move
2 = Demand dependent
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Not Allowed



Works Order : 480593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

CLF - Plan(s)

CLF - Plan(s)

Plan No. 0

Copy from

Plan Specifics

Influence Set 0

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 90

Group Offset Handled Range

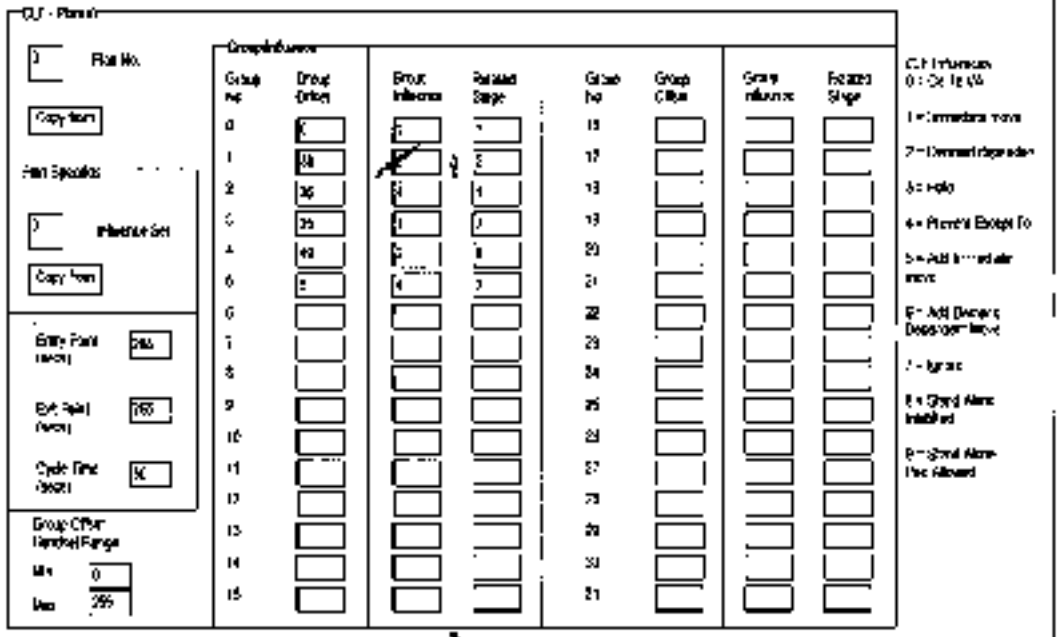
Min 0

Max 255

Group Influence

Group No	Group Offset	Group Influence	Related Stage	Group No	Group Offset	Group Influence	Related Stage
0	0	5	1	16			
1	38	2	2	17			
2	36	3	1	18			
3	35	1	2	19			
4	49	3	1	20			
5	5	4	2	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences
0 = Cycle Time
1 = Immediate move
2 = Demand dependent
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Not Allowed



Works Order : 450593584
EM Number : 62454
Engineer : Kevin L Robens
Intersection : Upton Way / Weedon Road Point West (Master) - Northampton Site ORN030

CLF - Base Time

CLF - Base Time

Controller Base Date: XXXXXXX

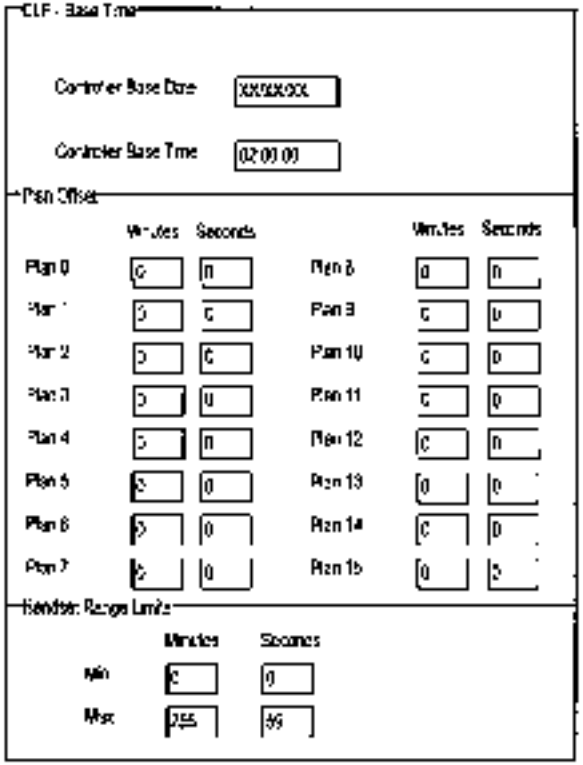
Controller Base Time: 02:00:00

Plan Offset

	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Random Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

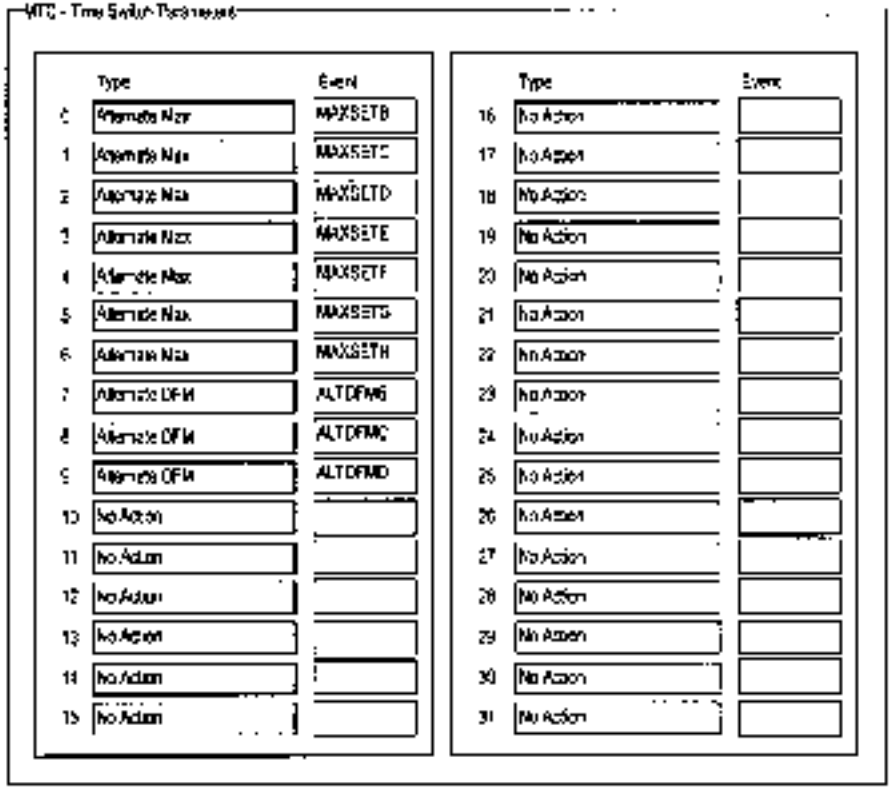


Works Order : 450593584
EM Number : 62454
Engineer : Kevin L Robens
Intersection : Upton Way / Weedon Road Point West (Master) - Northampton Site ORN030

MTC - Time Switch Parameters

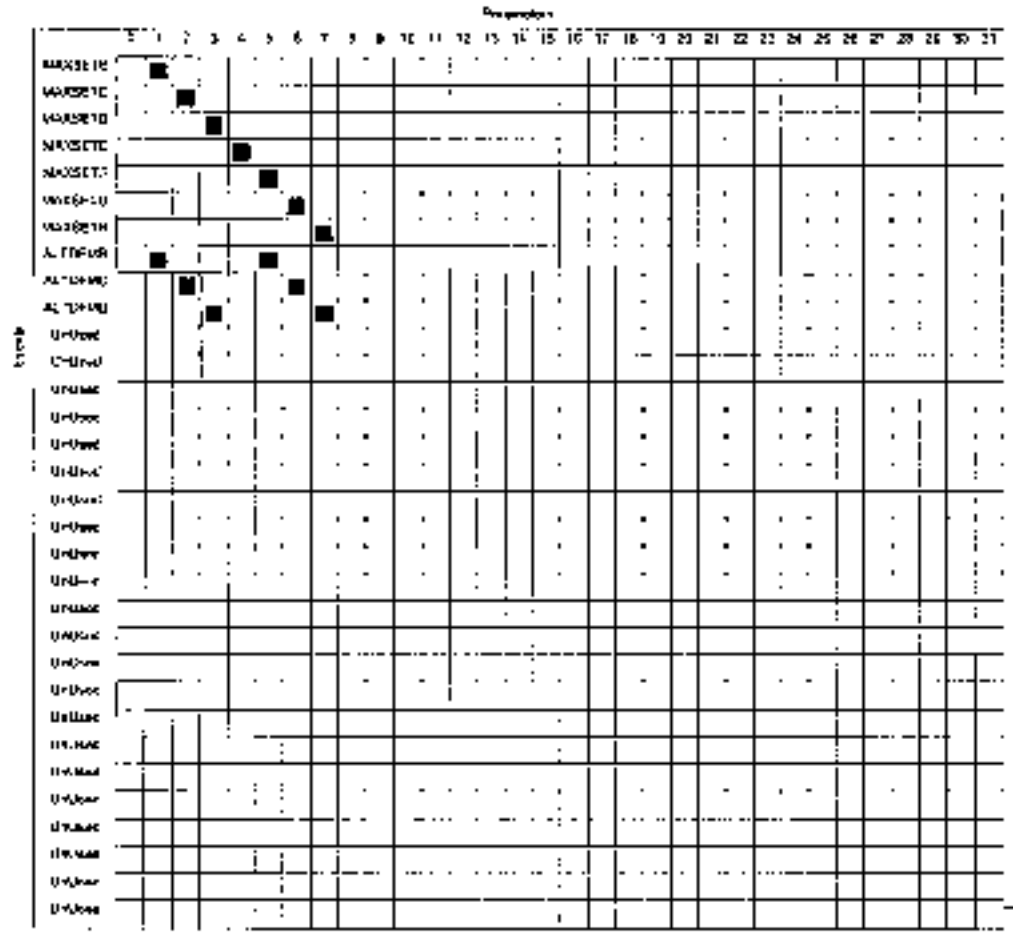
MTC - Time Switch Parameters

	Type	Event		Type	Event
0	Alternate Max	MAXSETB	16	No Action	
1	Alternate Max	MAXSETC	17	No Action	
2	Alternate Max	MAXSETD	18	No Action	
3	Alternate Max	MAXSETE	19	No Action	
4	Alternate Max	MAXSETF	20	No Action	
5	Alternate Max	MAXSETG	21	No Action	
6	Alternate Max	MAXSETH	22	No Action	
7	Alternate DFM	ALTDFMB	23	No Action	
8	Alternate DFM	ALTDFMC	24	No Action	
9	Alternate DFM	ALTDFMD	25	No Action	
10	No Action		26	No Action	
11	No Action		27	No Action	
12	No Action		28	No Action	
13	No Action		29	No Action	
14	No Action		30	No Action	
15	No Action		31	No Action	



Works Order : 460593584
EM Number : 82464
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

MTC - Time Switch Parameters Array



Last Modified 21/02/12 Issue 3.0.33 Form Ref. 4.3.2

Works Order 460593584
EM Number 82464
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) Northampton Site ORN036

Master Time Clock - Day Type

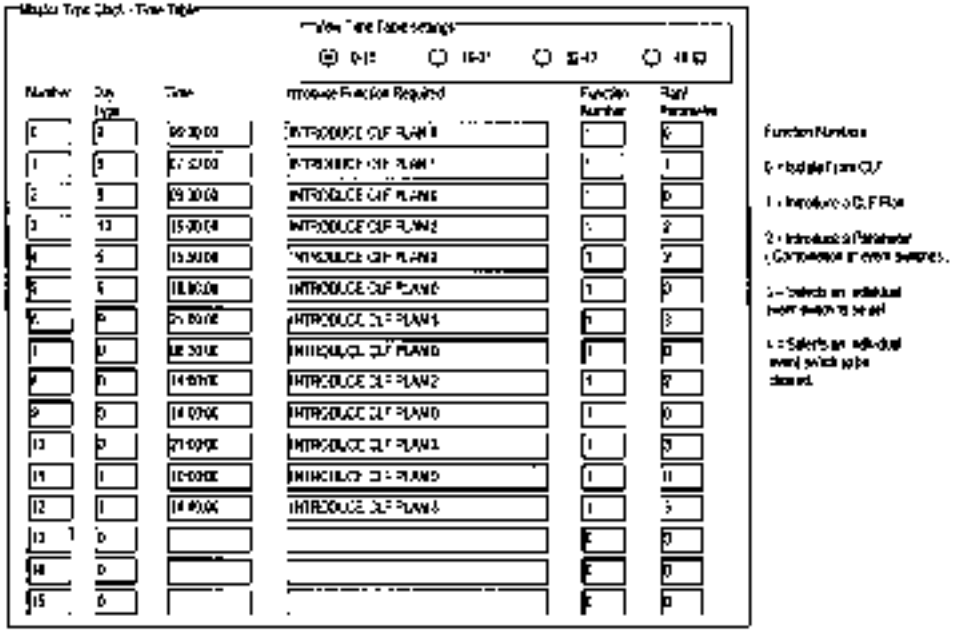
Master Time Clock - Day Type

No	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☑	☑	☑	☑	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Last Modified 21/02/12, issue 3.0.33 Form Ref: 4.3.3

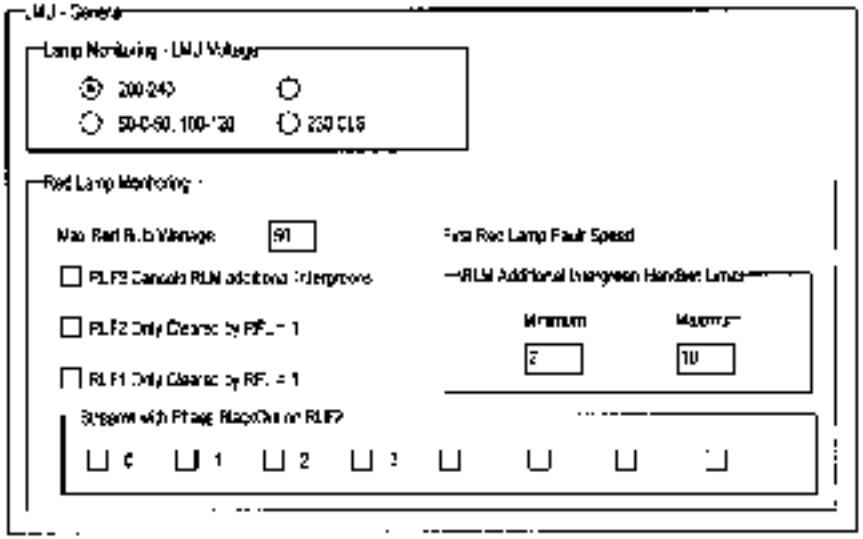
Works Order : 405583504
SM Number : 82464
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

Master Time Clock - Time Table



Works Order : 405583504
SM Number : 82464
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

LMU - General



Last Modified 21/02/12 Issue 3.0.33 Form Ref. 4.4.1

Works Order : 460583584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

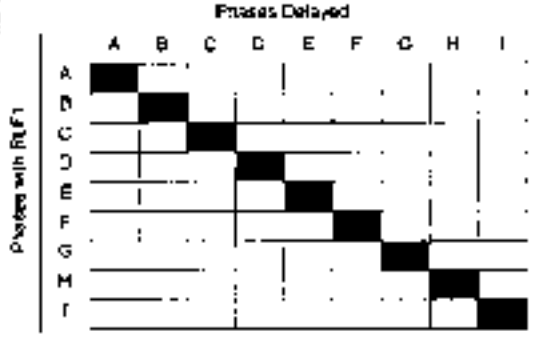
LMU - Sensors

LMU - Sensors

On-Board Sensors				On Road Sensors				External Sensors			
Sensor Phase	Sensor Type	Bulb Watts	NLM CLS	Sensor Phase	Sensor Type	Bulb Watts	NLM CLS	Sensor Pin	Drive	Sensor Type	Bulb Watts
1 \ A	As Seq	40	☐	17 \ D			☐	33 \ 214		Reg Sign	1
2 \ B	As Seq	40	☐	18 \ R			☐	34 \ 210		Reg Sign	1
3 \ C	As Seq	40	☐	19 \ S			☐	35 \ 214		Reg Sign	1
4 \ D	As Seq	40	☐	20 \ T			☐	36 \ 212		Reg Sign	1
5 \ E	As Seq	40	☐	21 \ U			☐	37 \ 214		Reg Sign	1
6 \ F	As Seq	40	☐	22 \ V			☐	38 \ 216		Reg Sign	1
7 \ G	As Seq	40	☐	23 \ W			☐	39 \ 214		Reg Sign	1
8 \ H	As Seq	40	☐	24 \ X			☐	40 \ 212		Reg Sign	1
9 \ I	As Seq	40	☐	25 \ Y			☐	41 \ 214			
10 \ J	As Seq	40	☐	26 \ Z			☐	42 \ 213			
11 \ K	As Seq	40	☐	27 \ A2			☐	43 \ 210			
12 \ L	As Seq	40	☐	28 \ B2			☐	44 \ 212			
13 \ M	As Seq	40	☐	29 \ C2			☐	45 \ 214			
14 \ N	As Seq	40	☐	30 \ D2			☐	46 \ 215			
15 \ O	As Seq	40	☐	31 \ E2			☐	47 \ 214			
16 \ P	As Seq	40	☐	32 \ F2			☐	48 \ 212			

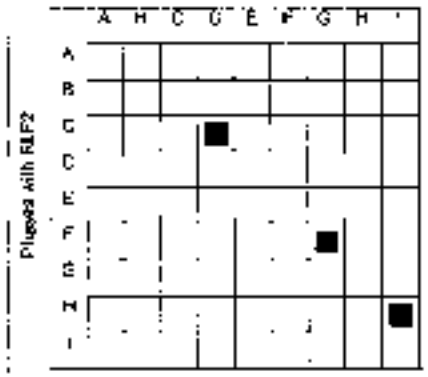
Works Order : 460583584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

RLM Additional Intergreens



RLM Phase Inhibits

Phases Inhibited/Blocked-out



Works Order : 4605635S4
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Roundabout (West | Master) - Northampton Site ORN030

Hurry Call

Hurry Call

Hurry Call	Stage Called	Call Input Name	Cancel Input Name	Confirm Output Name	Delay Time	Hold Time	Prevent Time
0	0	[illegible]	[illegible]		0	40	0
1	1	[illegible]	[illegible]		0	40	0
2	2	[illegible]	[illegible]		0	40	0
3					0	0	0
4	4	[illegible]	[illegible]		0	40	0
5	5	[illegible]	[illegible]		0	40	0
6	6	[illegible]	[illegible]		0	40	0
7	8	[illegible]	[illegible]		0	40	0

Hurry Call Limit Values

	Min.	Max.
Call Delay	0	250
Call Hold	0	250
Call Prevent	0	250

Works Order : 460893584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt (East) / Master I - Northampton Site ORN036

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No	Title	Called Stage for Sequence 0	1	2	3	4	5	6	7
0	All Red Stage (1, 2 & 3	0	3	5	6				
1	Roundabout	1	4	7	10				
2	Roundabout and Upton Way	2	4	7	11				
3	Upton Way and Weedon Road	2	4	8	11				
4	Weedon Road and Roundabout	1	4	8	10				
5	All Red Stage (1, Pedestrian Weedon Road Westbound En	9	3	8	12				
6									
7									

General LEDs

	AUX 1	AUX 2	MOVE	AUX 4 (Many Call)	AUX 5 (Higher Priority)
Conditional	☑	☑	☑	☑	☑

Manual Hold Status

- (•) Always
- ( ) When Manual Plugged In (Yes)
- ( ) When MVD Coverage Expired

Note 1:
Hold Status ignores Special Conditioning if required.

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Alt Override	(•)	( )	( )	( )
RR	(•)	( )	( )	( )

Stage Signals On

- ( ) Immediate Signals On
- (•) At Stage 0

Mode Select Switches Disabled

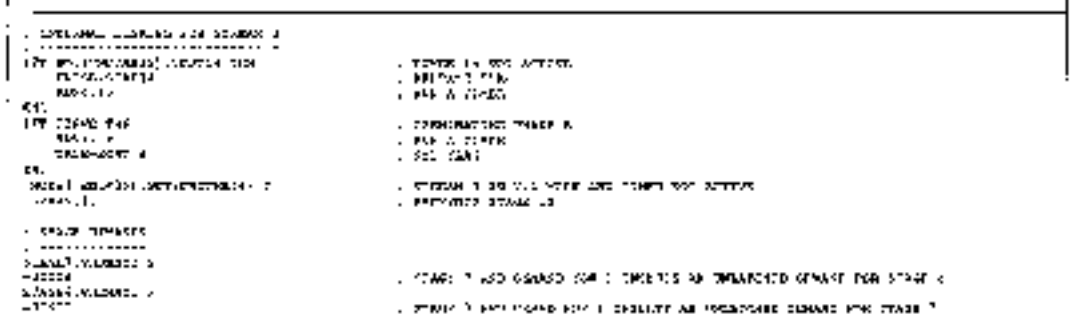
☐ VA ☐ Fixed Time ☐ CLF

Works Order : 460893584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt (East) / Master I - Northampton Site ORN036

Special Conditioning

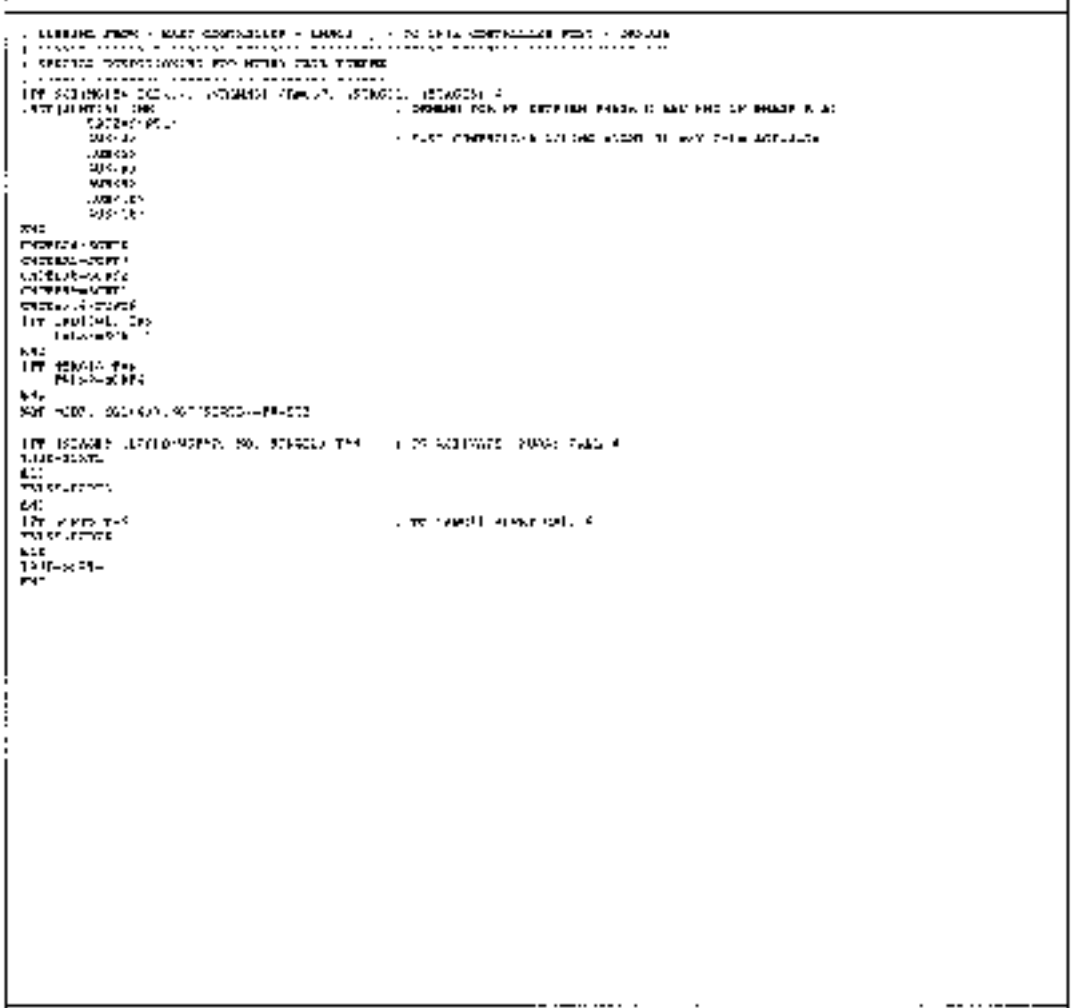
```
  AUX INPUTS

                                        AUX 1 : FIX LOC MODE WHEN CALL ACTIVE (MASTER I)
                                        AUX 2 : FIX LOC MODE WHEN CALL ACTIVE (STREAM 1)
                                        AUX 3 : FIX LOC MODE WHEN CALL ACTIVE (STREAM 2)
                                        AUX 4 : MANY CALL ( CAN LOC MODE WHEN ALL MANY CALL MODE)
                                        AUX 5 : HIGHER PRIORITY ( CAN MOVE LOC)

  ; OTHER SPECIAL CONDITIONS
  ; ------------------------
                                        ; MANUAL OPERATION ALLOW STAGE ADVANCE OPTION 0 YES
                                        ; SELECT PED INPUT FAIL AND SCREEN CONFIRMATION TO NO START METHOD SERIAL USER
                                        ; SELECT PED INPUT FAIL AND SCREEN WITH FAULT TO START METHOD SERIAL USER
                                        ; SCREEN USER PRINT DOOR INTER INPUT READ DATE ALLOW SERIAL I/F
                                        ; MODE 0 ACTIVE INPUT START METHOD "DEFAULT" L SS
                                        ; MODE 1 ACTIVE INPUT PLOT METHOD SERIAL USER
                                        ; MODE 2 ACTIVE INPUT START METHOD SERIAL USER
                                        ; MODE 3 NOT USED - PUT START METHOD SERIAL USER
                                        ; FILES TO DELETE WHEN NEW DATA DOWNLOADED TO SCU

  ; DOOR SWITCH ENA SERIAL LINK
  ; ---------------------------
                                        ; DOOR ENTER MODE SERIAL TO ENT VIA SERIAL LINK

  ; ADDITIONAL SELECTED MODES PANEL
  ; -------------------------------
                                        ; DOOR SELECTED DISABLED MODES MODE CONTROL
```

Special Conditioning



Works Order : 400503534
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt (West | Master) - Northampton Site ORN036

Special Conditioning



Special Conditioning

Works Order : 4801933584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Wooden Road Ridx West (Master) - Northampton Site ORN036

Special Conditioning

Last Modified 21/02/12. Issue 3.0.33 Form Ref: 5.1 (5)

Special Conditioning Timers

Special Conditioning Timers

Timers

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	5	0	255	☐	Phase C Inhibit Delay	16	2	1	255	☐	PED WINDOW TIMER
1	2	1	255	☐	Phase C Inhibit Release	17		0	255	☐	
2	3	0	255	☐	Phase E Inhibit Delay	18	30	0	255	☐	FORCE STAGE 8
3	2	1	255	☐	Phase E Inhibit Release	19	0	0	255	☐	PED D LINK PHASE A
4	2	0	255	☐	FORCE STAGE 6	20	2	0	255	☐	PED D WINDOW TIMER
5	25	0	255	☐	FORCE STAGE 7	21		0	255	☐	
6		0	255	☐		22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8	5A	0	255	☐	FORCE STAGE 2	24		0	255	☐	
9	5A	0	255	☐	FORCE STAGE 1	25		0	255	☐	
10	32	0	255	☐	HURRY CALL EXTENDER	26		0	255	☐	
11	5	0	255	☐	PED D INHIBIT A	27		0	255	☐	
12	2	0	255	☐	PED D WINDOW TIMER	28		0	255	☐	
13	5	0	255	☐	PED D LINK PHASE B	29		0	255	☐	
14	2	0	255	☐	PED D WINDOW TIMER	30		0	255	☐	
15	5	0	255	☐	PED D LINK PHASE C	31		0	255	☐	

RAM CHANGES

Special Instructions

Works Order : 480593584
EV Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN035

Special Instructions

[illegible]

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	CO	NUMBERS	NOTE
[illegible]	[illegible]	[illegible]				[illegible]

Last Modified 21/02/12, Issue 3.0.33

Form Ref. 6 (2)

Works Order : 480593584
EV Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN035

Special Instructions

[illegible]

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	CO	NUMBERS	NOTE
[illegible]	[illegible]	[illegible]				[illegible]

Last Modified 21/02/12, Issue 3.0.33

Form Ref. 6 (3)

Works Order : 460562584
DM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN406

Special Instructions

Works Order : 460562584
DM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN406

Special Instructions

Special Instructions

GENERAL NOTICE TO ALL CONTRACTORS

ALL EXCAVATIONS MUST BE BACKFILLED AND PROPER ENDS MADE BEFORE LEAVING SITE UNATTENDED. IF THIS IS NOT POSSIBLE, THE EXCAVATION MUST BE PROTECTED BY BARRIERS AND LIGHTS AS REQUIRED BY THE HIGHWAYS AUTHORITY.

ALL TRENCHES AND EXCAVATIONS MUST BE SUPPORTED AND PROTECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE HSE GUIDANCE NOTES AND REGULATIONS.

ALL PERSONNEL WORKING ON THE SITE MUST BE FULLY CONVERSANT WITH THE CONTENTS OF THE CDM REGULATIONS 2015 AND THE HSE GUIDANCE NOTES HSG47 AVOIDING DANGER FROM UNDERGROUND SERVICES.

ALL TRENCHES AND EXCAVATIONS MUST BE PROTECTED BY BARRIERS AND LIGHTS AS REQUIRED BY THE HIGHWAYS AUTHORITY.

ALL TRENCHES AND EXCAVATIONS MUST BE SUPPORTED AND PROTECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE HSE GUIDANCE NOTES AND REGULATIONS.

ALL PERSONNEL WORKING ON THE SITE MUST BE FULLY CONVERSANT WITH THE CONTENTS OF THE CDM REGULATIONS 2015 AND THE HSE GUIDANCE NOTES HSG47 AVOIDING DANGER FROM UNDERGROUND SERVICES.

ALL THE BUT PACIAL FLOOR OUTLOG TYPE ITEMS ARE TO BE PLAT CLEAR OF THE MAIN DRAIN AND MAINTENANCE ACCESS PIT. ITEMS MARKED ARE TO BE CONSULTED TO THE EARLY USE OF THE MARKED AREAS AND SHOULD BEING THE ATTENTION OF THE SITE MANAGER.

Works Order : 4605893584
EM Number : 62454
Engineer : Kevin L Roberts
Workstation : Upton Way / Weedon Road Roundabout West (Master) - Northampton Site ORN036

Special Instructions

SCHEDULE OF SPECIAL DETAILED BACKFILLING PREPARATIONS/WORKS (SECTION 6)

CONTRACTORS MUST BRING THEMSELVES AWARE OF THE FOLLOWING
NOTICE: MUCH LESS WORK WILL BE REQUIRED

EXCAVATION TRENCH BACKFILL SPECIFICATION

MATERIAL	MIN. DENSITY	SUITABLE GRADING FROM TABLE	COMPACTION
[illegible]	MDD	See Notes	95
[illegible]	PLANT	Notes	95
[illegible]	DCP	[illegible]	95
[illegible]	[illegible]		95
[illegible]	Strength/Duty		[illegible]
[illegible]	Strength/Duty		95

LOOP No.	LOOP INSTALLATION	SPECIFICATION TRENCH DETAIL	PIPE DUCTS	VALVE PIT TERMINATE
1	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]

DETECTOR SERVICES

DETECTOR No.	BACKPLANE LABELLING	DUCTS	UNDER TERMINATE
1	10	[illegible]	[illegible]
2	7	[illegible]	[illegible]
3	14	[illegible]	[illegible]
4	16	[illegible]	[illegible]

Note 1: If more than one duct only one spare must be laid between adjacent chambers. Ducts to be laid in straight lines from chamber to chamber and where there are bends, these must be made with [illegible] bends.

Note 2: The No. detector terminations will refer to individual to be the [illegible] marker.

Note 3: Please note the following as per [illegible] and [illegible] [illegible] [illegible].

Note 4: If more than one A.T. duty equipment, please liaise between manufacturers to ensure equipment is compatible.

Note 5: It is [illegible] if A.T. and C.U. panels are located [illegible] [illegible] [illegible]

Works Order : 450593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

Special Instructions

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

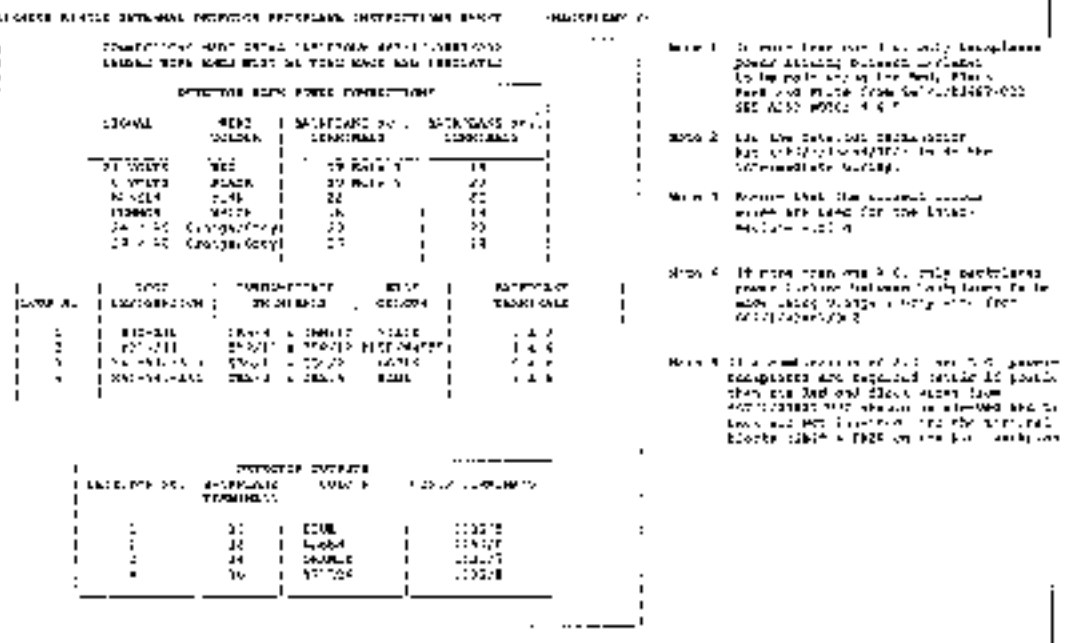
Note 1 [illegible]

Note 2 [illegible]

Note 3 [illegible]

Note 4 [illegible]

Note 5 [illegible]

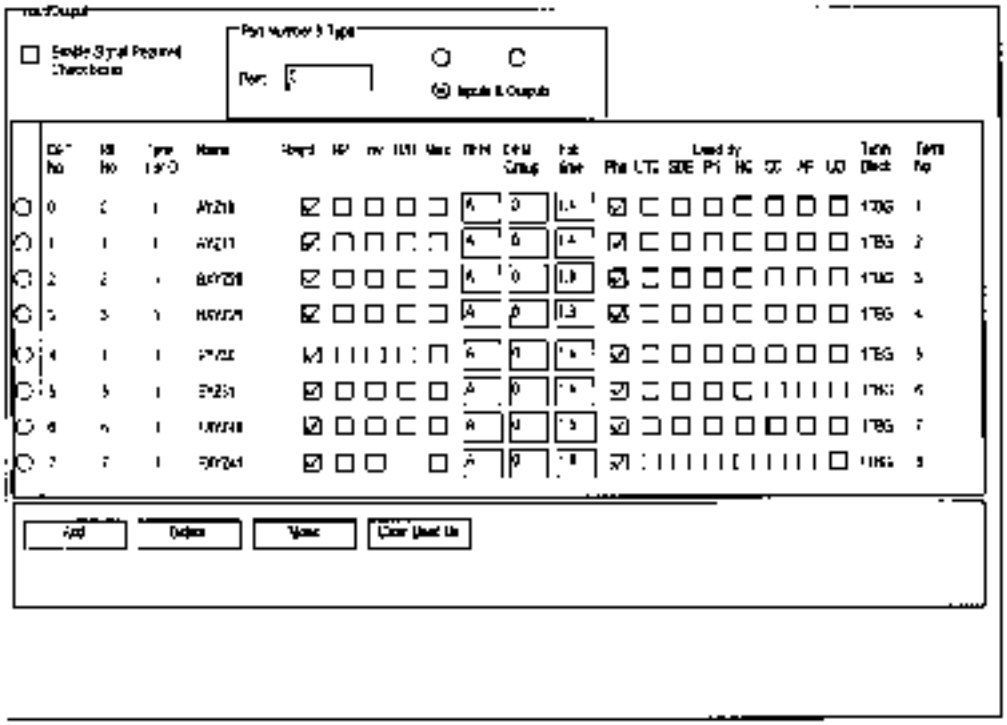


Works Order : 450593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN036

Special Instructions

Works Order : 460693584
EM Number : 62464
Engineer : Kevin L Roberts
Intersection : Upton Way \ Weedon Road Roundabout \ Master \ - Northampton Site ORN030

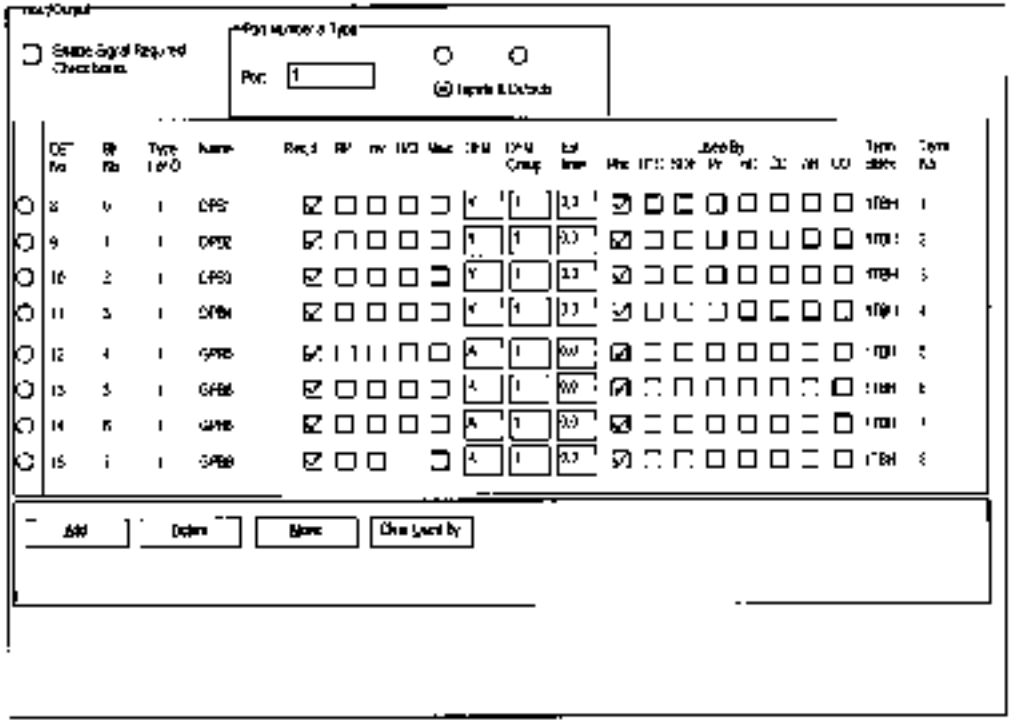
Input/Output



Last Modified 21/09/12, Issue 3.0.33 Form Ref. 7.2 (1)

Works Order : 460693584
EM Number : 62464
Engineer : Kevin L Roberts
Intersection : Upton Way \ Weedon Road Roundabout \ West \ Master \ Northampton Site ORN030

Input/Output



Last Modified 21/09/12, Issue 3.0.33 Form Ref. 7.2 (2)

Works Order : 460593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check Boxes

Port Number & Type

Port: 7

Inputs & Outputs

	DET No	Bit No	Type (in D)	Name	Reqd	BP	Inv	L/D	Misc	DFM	DFM Group	Ext Info	Used By Pre	UTC	SDE	Pr	HC	CC	AR	LD	Term Block	Dest No
○	16	0	1	PB11	☑	☐	☐	☐	☐	A	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	1
○	17	1	1	PD12	☑	☐	☐	☐	☐	A	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	2
○	18	2	1	PB13	☑	☐	☐	☐	☐	A	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	3
○	19	3	1	PD14	☑	☐	☐	☐	☐	A	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBJ	4
○	20	4	1	ORN001	☑	☐	☐	☐	☐	1	2	0.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	5
○	21	5	1										☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	6
○	22	6	1		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	7
○	23	7	1						☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	8

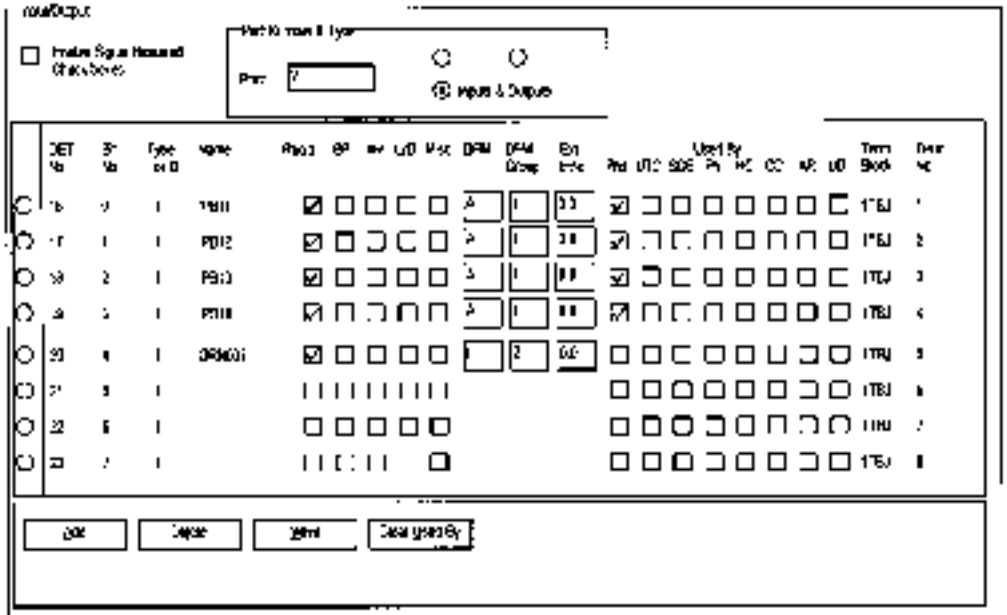
Add | Delete | Move | Clear Used By

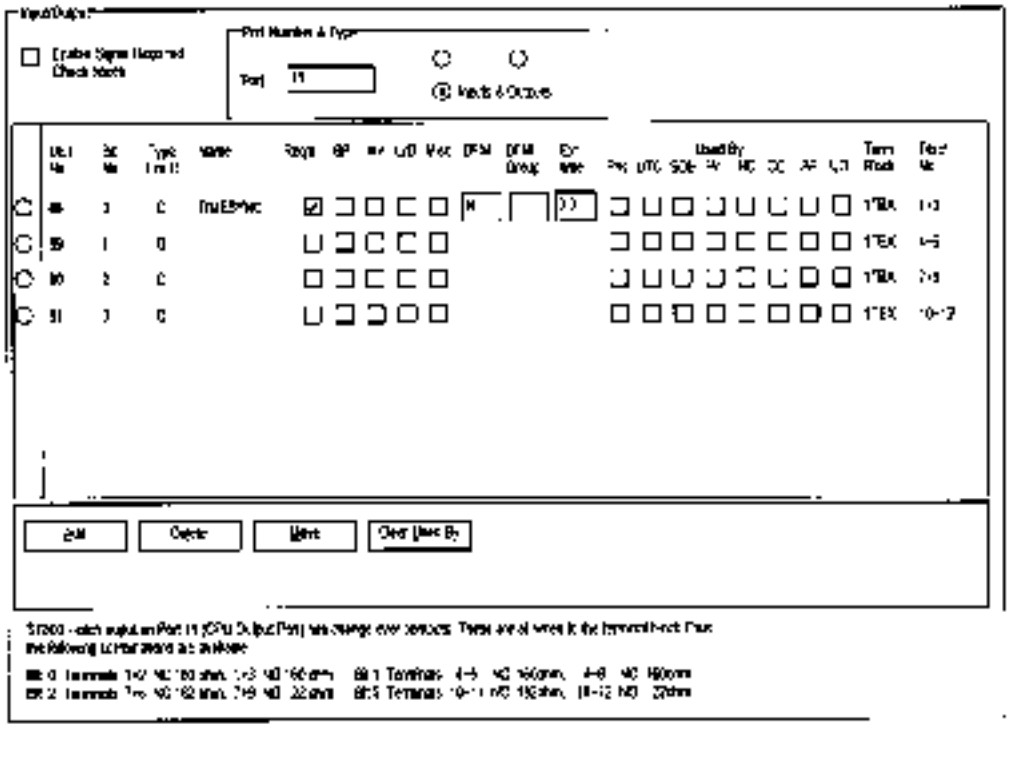
Last Modified 21/07/12, Issue 3.0.33

Form Ref. 7.2 (3)

Works Order : 460593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt West (Master) - Northampton Site ORN038

Input/Output





Input/Output

☐ Enable Signal Required Check Boxes

Port Number & Type

Port: 11

Inputs & Outputs

	DET No	Bit No	Type (in D)	Name	Reqd	BP	Inv	L/D	Misc	DFM	DFM Group	Ext Info	Used By Pre	UTC	SDE	Pr	HC	CC	AR	LD	Term Block	Dest No
○	48	0	C	TruEBPNC	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBA	1-3
○	49	1	C		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBA	4-6
○	50	2	C		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBA	7-9
○	51	3	C		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBA	10-12

Add | Delete | Move | Clear Used By

Bit 0 - each output on Port 11 (CPU Output Port) will change over contacts. These are all wired to the terminal block. Thus the following contact wired are available:

Bit 0 Terminals 1-2 NO 160 ohm, 1-3 NO 160 ohm Bit 1 Terminals 4-5 NO 160 ohm, 4-6 NO 160 ohm
Bit 2 Terminals 7-8 NO 162 ohm, 7-9 NO 22 ohm Bit 3 Terminals 10-11 NO 162 ohm, 10-12 NO 22 ohm

Last Modified 21/07/12, Issue 3.0.33

Form Ref. 7.2 (4)

Works Order : 480593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt. West (Master) Northampton Site ORN036

Aspect Drives

Aspect Group

(A) A-L ( ) M-S ( ) T-Z

Phase Driver Card 1

	Used For	Term Block	Term No
A - Red	Phase	1TBA	1
A - Amber	Phase	1TBA	2
A - Green	Phase	1TBA	3
B - Red	Phase	1TBA	4
B - Amber	Phase	1TBA	5
B - Green	Phase	1TBA	6
C - Red	Phase	1TBA	7
C - Amber	Phase	1TBA	8
C - Green	Phase	1TBA	9
D - Red	Phase	1TBA	10
D - Amber	Phase	1TBA	11
D - Green	Phase	1TBA	12

Phase Driver Card 1

	Used For	Term Block	Term No
E - Red	Phase	1TBB	1
E - Amber	Phase	1TBB	2
E - Green	Phase	1TBB	3
F - Red	Phase	1TBB	4
F - Amber	Phase	1TBB	5
F - Green	Phase	1TBB	6
G - Red	Phase	1TBB	7
G - Amber	Phase	1TBB	8
G - Green	Phase	1TBB	9
H - Red	Phase	1TBB	10
H - Amber	Phase	1TBB	11
H - Green	Phase	1TBB	12

Phase Driver Card 2

	Used For	Term Block	Term No
I - Red	Phase	1TBC	1
I - Amber	Phase	1TBC	2
I - Green	Phase	1TBC	3
J - Red			
J - Amber			
J - Green			
K - Red			
K - Amber			
K - Green			
L - Red			
L - Amber			
L - Green			

Works Order : 480593584
EM Number : 62454
Engineer : Kevin L Roberts
Intersection : Upton Way / Weedon Road Rdbt. West (Master) Northampton Site ORN036

I/O - Group DFM Timings

I/O - Group DFM Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	9	9	9	9
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)				
Group 2	Active (Mins)	5	5	5	5
	InActive (Hrs)	1	1	1	1
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (

Expected Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Streams, Stages, Phases Control
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped. Leaving periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Handset Intergreen Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 Phase - VA Demand and Extend Definitions
- 2.5 Phase Internal/Reversive Demands

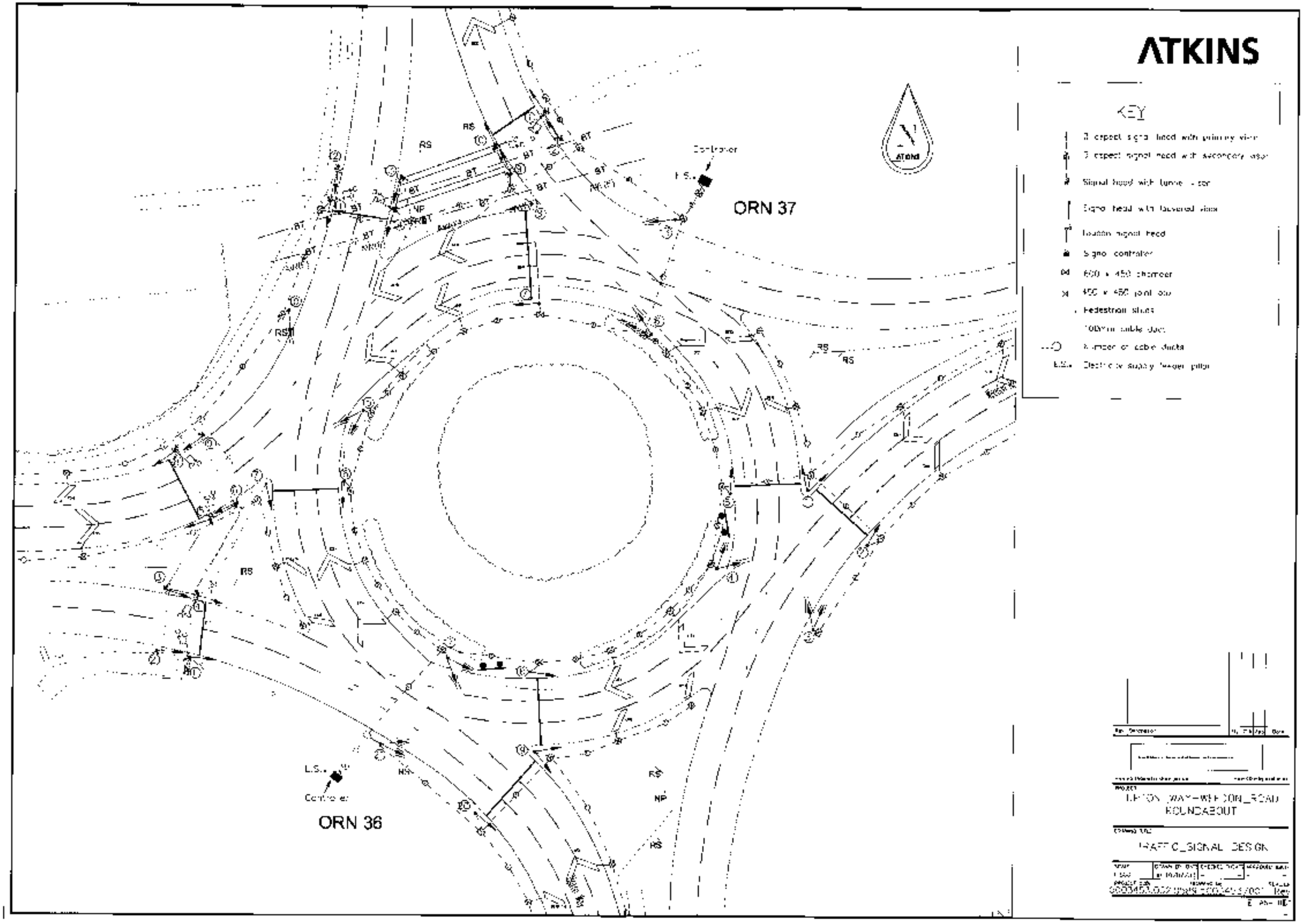
3 Streams and Stages
- 3.1 Stage - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands / Ped. Window Times
- 3.3 Phase delays

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 Master Time Clock
  - 4.3.1 MTC - Time Switch Parameters
  - 4.3.2 MTC - Time Switch Parameters Array
  - 4.3.3 Master Time Clock - Day Type
  - 4.3.4 Master Time Clock - Time Table
- 4.4 Integral Lamp Monitoring
  - 4.4.1 LMU - General
  - 4.4.2 LMU - Sensors
  - 4.4.3 RLM Additional Intergreens
  - 4.4.4 RLM Phase Intervals
- 4.5 Hurry Call
- 4.6 Manual
  - 4.6.1 Manual Panel
  - 4.6.2 Manual Mode - Optional Phases Appearances (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel (No configuration data to print)
- 7.2 Input/Output
- 7.3 Aspect Drives
- 7.4 I/O - Group CFM Timings


ATKINS
KEY
3 aspect signal head with primary visor
3 aspect signal head with secondary visor
Signal head with tunnel visor
Signal head with louvered visor
Louvered signal head
Signal controller
600 x 450 chamber
450 x 450 joint box
Pedestrian studs
100mm cable duct
Number of cable ducts
Electricity supply feeder pillar
ORN 37
ORN 36
Controller
L.S.
RS
BT
NP
ATKINS
LIPTON_WAY-WEECON_ROAD
ROUNDABOUT
TRAFFIC_SIGNAL_DESIGN

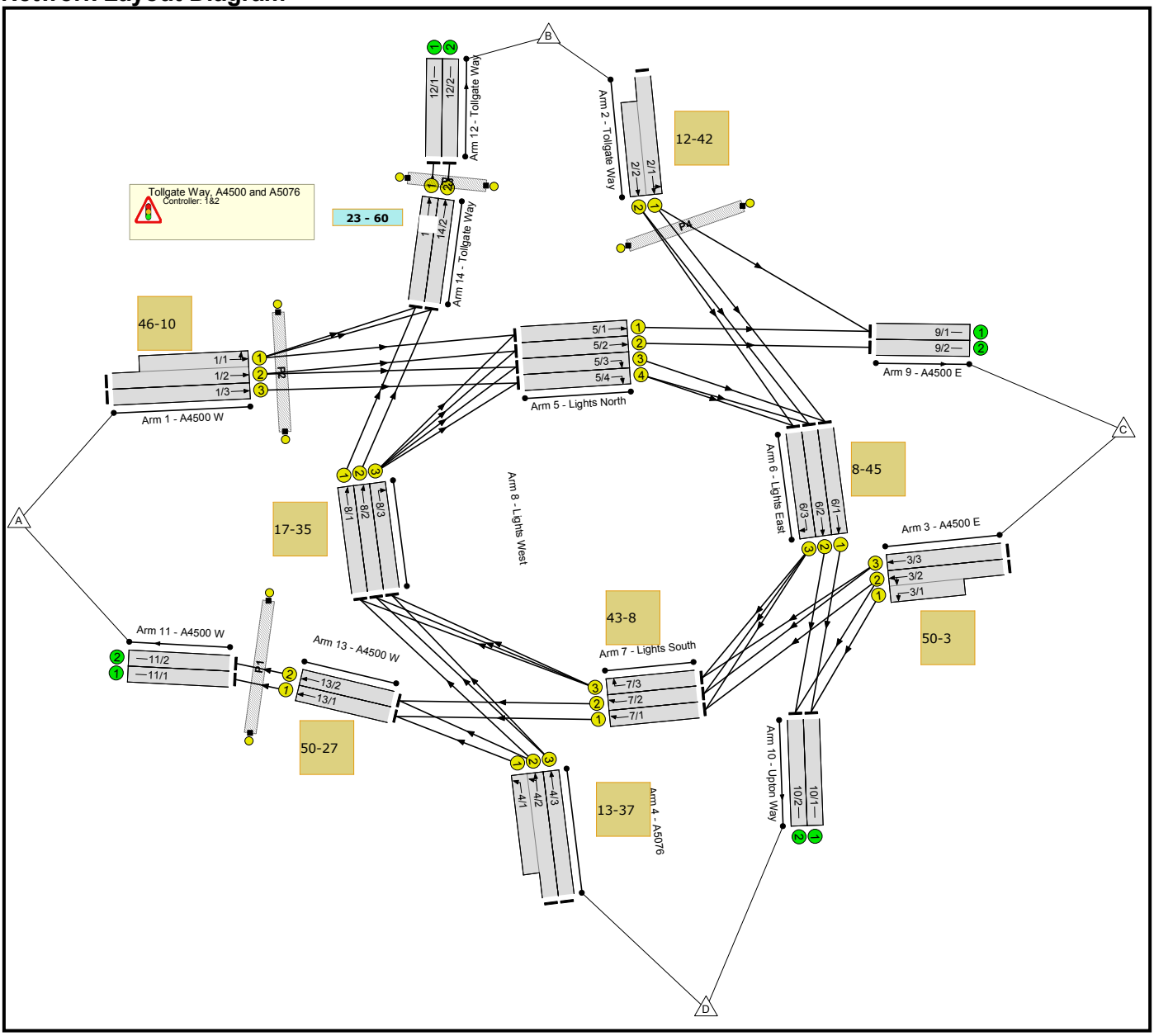
APPENDIX C

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 3
Location:	A4500 Weedon Road / Tollgate Way / A4500 Weedon Road / A5076 Upton Way
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

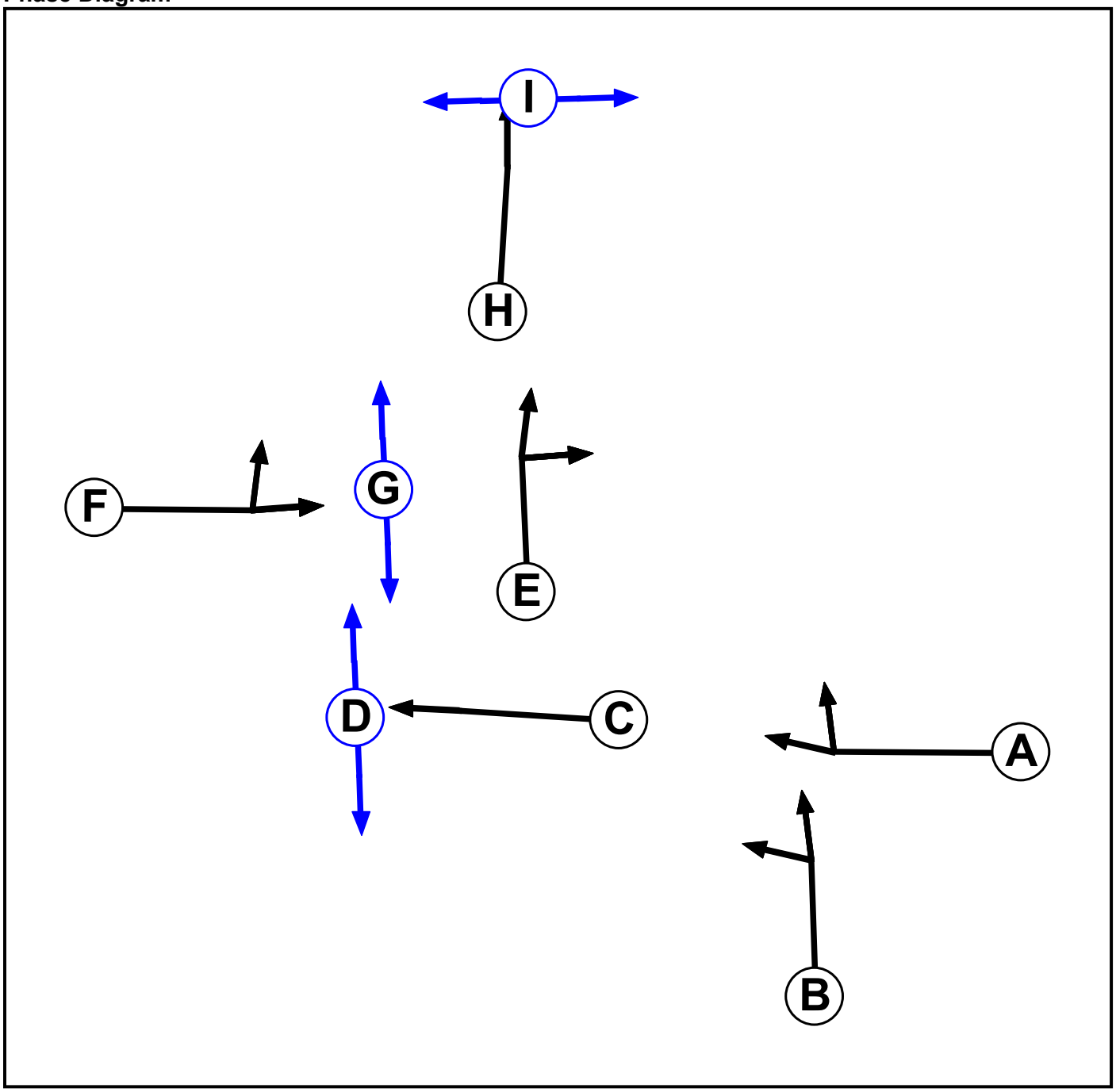
Network Layout Diagram



Full Input Data And Results

C1

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Pedestrian	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Pedestrian	3		7	7
H	Traffic	4		7	7
I	Pedestrian	4		7	7

Phase Intergreens Matrix

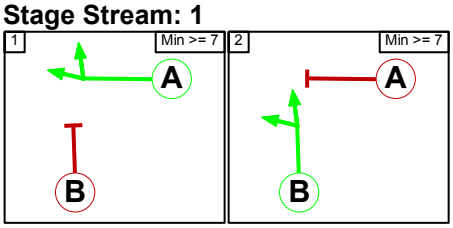
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		5	-	-	-	-	-	-	-
	B	6		-	-	-	-	-	-	-
	C	-	-		7	-	-	-	-	-
	D	-	-	9		-	-	-	-	-
	E	-	-	-	-		5	-	-	-
	F	-	-	-	-	7		6	-	-
	G	-	-	-	-	-	11		-	-
	H	-	-	-	-	-	-	-		8
	I	-	-	-	-	-	-	-	9	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	D
2	2	C
3	1	E G
3	2	F
4	1	I
4	2	H

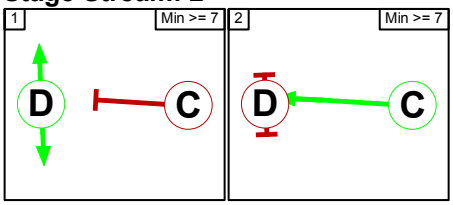
Stage Diagram

Stage Stream: 1

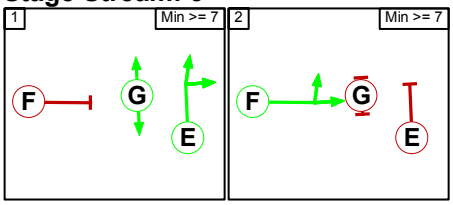


Full Input Data And Results

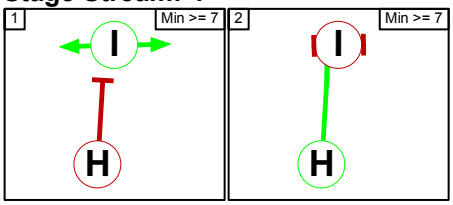
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	6	

Full Input Data And Results

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		9
	2	7	

Stage Stream: 3

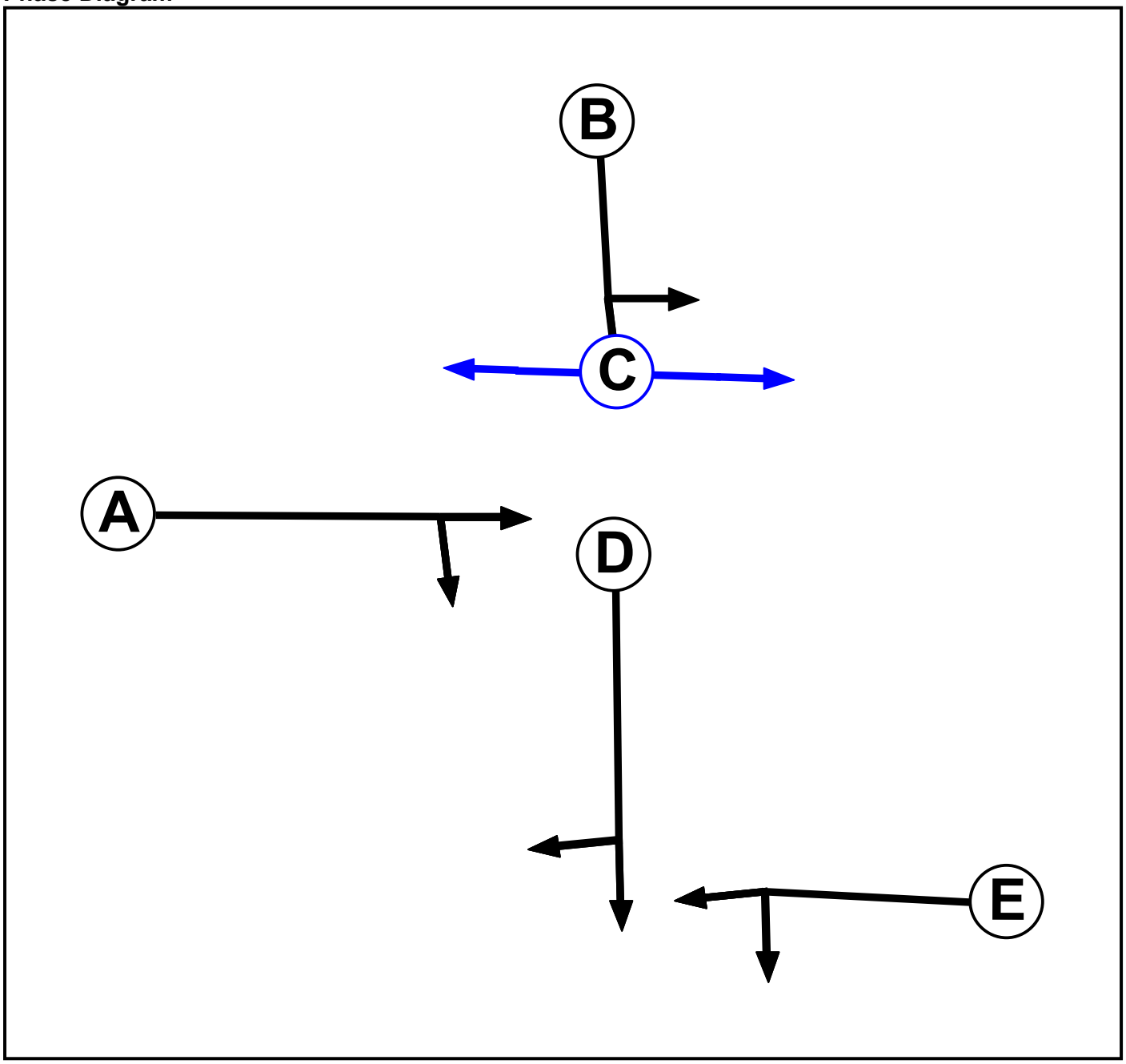
	To Stage		
		1	2
From Stage	1		11
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		9
	2	8	

C2

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Pedestrian	1		7	7
D	Traffic	2		7	7
E	Traffic	2		7	7

Full Input Data And Results

Phase Intergreens Matrix

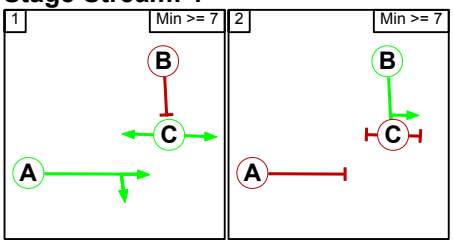
Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		5	-	-	-
	B	6		5	-	-
	C	-	9		-	-
	D	-	-	-		5
	E	-	-	-	5	

Phases in Stage

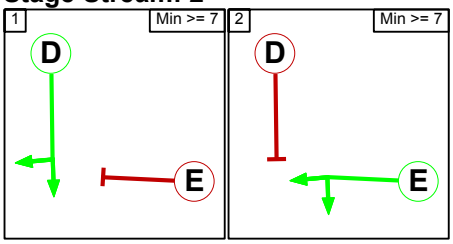
Stream	Stage No.	Phases in Stage
1	1	A C
1	2	B
2	1	D
2	2	E

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		9
	2	6	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Tollgate Way, A4500 and A5076
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A4500 W)	U	F	2	3	31.0	Geom	-	3.50	0.00	Y	Arm 5 Ahead	65.00
											Arm 14 Left	47.00
1/2 (A4500 W)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	68.00
1/3 (A4500 W)	U	F	2	3	60.0	Geom	-	3.55	0.00	Y	Arm 5 Ahead	68.00
2/1 (Tollgate Way)	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead	58.00
											Arm 9 Left	40.00
2/2 (Tollgate Way)	U	B	2	3	12.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead	58.00
3/1 (A4500 E)	U	E	2	3	7.0	Geom	-	3.75	0.00	Y	Arm 10 Left	55.00
3/2 (A4500 E)	U	E	2	3	60.0	Geom	-	3.75	0.00	N	Arm 7 Ahead	60.00
											Arm 10 Left	55.00
3/3 (A4500 E)	U	E	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 7 Ahead	60.00
4/1 (A5076)	U	B	2	3	24.0	Geom	-	3.75	0.00	Y	Arm 13 Left	48.00
4/2 (A5076)	U	B	2	3	60.0	Geom	-	3.75	0.00	N	Arm 8 Ahead	58.00
											Arm 13 Left	47.00
4/3 (A5076)	U	B	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 8 Ahead	58.00
5/1 (Lights North)	U	A	2	3	3.0	Geom	-	3.50	0.00	Y	Arm 9 Ahead	57.00
5/2 (Lights North)	U	A	2	3	3.0	Geom	-	3.50	0.00	N	Arm 9 Ahead	57.00
5/3 (Lights North)	U	A	2	3	3.0	Geom	-	3.50	0.00	N	Arm 6 Right	38.50
5/4 (Lights North)	U	A	2	3	4.0	Geom	-	3.50	0.00	Y	Arm 6 Right	38.00
6/1 (Lights East)	U	D	2	3	6.0	Geom	-	3.50	0.00	Y	Arm 10 Ahead	56.00
6/2 (Lights East)	U	D	2	3	6.0	Geom	-	3.50	0.00	N	Arm 10 Ahead	57.00

Full Input Data And Results

6/3 (Lights East)	U	D	2	3	6.0	Geom	-	3.25	0.00	Y	Arm 7 Right	58.00
7/1 (Lights South)	U	A	2	3	4.0	Geom	-	3.50	0.00	Y	Arm 13 Ahead	62.00
7/2 (Lights South)	U	A	2	3	4.0	Geom	-	3.50	0.00	N	Arm 13 Ahead	62.00
7/3 (Lights South)	U	A	2	3	5.0	Geom	-	3.50	0.00	Y	Arm 8 Right	62.00
8/1 (Lights West)	U	E	2	3	4.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	58.00
8/2 (Lights West)	U	E	2	3	4.0	Geom	-	3.50	0.00	N	Arm 14 Ahead	57.00
8/3 (Lights West)	U	E	2	3	5.0	Geom	-	3.50	0.00	N	Arm 5 Right	56.00
9/1 (A4500 E)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A4500 E)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (Upton Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (Upton Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A4500 W)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A4500 W)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (Tollgate Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2 (Tollgate Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (A4500 W)	U	C	2	3	4.0	Geom	-	4.00	0.00	Y	Arm 11 Ahead	Inf
13/2 (A4500 W)	U	C	2	3	4.0	Geom	-	4.00	0.00	Y	Arm 11 Ahead	Inf
14/1 (Tollgate Way)	U	H	2	3	2.0	Geom	-	4.00	0.00	Y	Arm 12 Ahead	83.00
14/2 (Tollgate Way)	U	H	2	3	2.0	Geom	-	4.00	0.00	Y	Arm 12 Ahead	84.00

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2015 AM Base Flow'	08:00	09:00	01:00	
2: '2015 PM Base Flow'	17:00	18:00	01:00	
3: '2021 20% Dev AM'	08:00	09:00	01:00	
4: '2021 20% Dev PM'	17:00	18:00	01:00	
5: '2021 DM AM'	08:00	09:00	01:00	
6: '2021 DM PM'	17:00	18:00	01:00	
7: '2021 DM + 2021 DS 20% AM'	08:00	09:00	01:00	F5 + F3
8: '2021 DM + 2021 DS 20% PM'	17:00	18:00	01:00	F6 + F4
9: '2021 DS AM'	08:00	09:00	01:00	
10: '2021 DS PM'	17:00	18:00	01:00	
11: '2031 DM AM'	08:00	09:00	01:00	
12: '2031 DM PM'	17:00	18:00	01:00	
13: '2031 DS AM'	08:00	09:00	01:00	
14: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2015 AM Base Flow' (FG1: '2015 AM Base Flow', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	218	639	742	1599
	B	275	0	40	698	1013
	C	418	37	0	199	654
	D	305	673	183	0	1161
	Tot.	998	928	862	1639	4427

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2015 AM Base Flow
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	555
1/2 (with short)	1196(In) 641(Out)
1/3	403
2/1 (with short)	1013(In) 462(Out)
2/2 (short)	551
3/1 (short)	196
3/2 (with short)	471(In) 275(Out)
3/3	183
4/1 (short)	274
4/2 (with short)	683(In) 409(Out)
4/3	478
5/1	398
5/2	424
5/3	339
5/4	403
6/1	761
6/2	679
6/3	275
7/1	320
7/2	373
7/3	37
8/1	378
8/2	332
8/3	183
9/1	438
9/2	424
10/1	957
10/2	682
11/1	594
11/2	404
12/1	492
12/2	436
13/1	594
13/2	404
14/1	492
14/2	436

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	60.7 %	1914	1914
				Arm 14 Left	47.00	39.3 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	91.3 %	1962	1962
				Arm 9 Left	40.00	8.7 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	98.9 %	2078	2078
				Arm 10 Left	55.00	1.1 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	92.4 %	2075	2075
				Arm 13 Left	47.00	7.6 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 2: '2015 PM Base Flow' (FG2: '2015 PM Base Flow', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	155	548	458	1161
	B	275	0	53	533	861
	C	608	60	0	270	938
	D	403	621	228	0	1252
	Tot.	1286	836	829	1261	4212

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2015 PM Base Flow
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	436
1/2 (with short)	920(In) 484(Out)
1/3	241
2/1 (with short)	861(In) 323(Out)
2/2 (short)	538
3/1 (short)	265
3/2 (with short)	623(In) 358(Out)
3/3	315
4/1 (short)	329
4/2 (with short)	816(In) 487(Out)
4/3	436
5/1	368
5/2	408
5/3	217
5/4	241
6/1	487
6/2	504
6/3	275
7/1	418
7/2	465
7/3	60
8/1	413
8/2	268
8/3	228
9/1	421
9/2	408
10/1	752
10/2	509
11/1	747
11/2	539
12/1	413
12/2	423
13/1	747
13/2	539
14/1	413
14/2	423

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	64.4 %	1915	1915
				Arm 14 Left	47.00	35.6 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	83.6 %	1961	1961
				Arm 9 Left	40.00	16.4 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	98.6 %	2078	2078
				Arm 10 Left	55.00	1.4 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	84.8 %	2074	2074
				Arm 13 Left	47.00	15.2 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	182	639	412	1233
	B	305	0	34	1052	1391
	C	563	33	0	132	728
	D	417	530	184	0	1131
	Tot.	1285	745	857	1596	4483

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	481
1/2 (with short)	950(In) 469(Out)
1/3	283
2/1 (with short)	1391(In) 642(Out)
2/2 (short)	749
3/1 (short)	132
3/2 (with short)	456(In) 324(Out)
3/3	272
4/1 (short)	311
4/2 (with short)	766(In) 455(Out)
4/3	365
5/1	388
5/2	435
5/3	129
5/4	283
6/1	737
6/2	727
6/3	305
7/1	379
7/2	489
7/3	33
8/1	350
8/2	213
8/3	184
9/1	422
9/2	435
10/1	869
10/2	727
11/1	690
11/2	595
12/1	442
12/2	303
13/1	690
13/2	595
14/1	442
14/2	303

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	62.2 %	1914	1914
				Arm 14 Left	47.00	37.8 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	94.7 %	1963	1963
				Arm 9 Left	40.00	5.3 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
				Arm 10 Left	55.00	0.0 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	76.7 %	2073	2073
				Arm 13 Left	47.00	23.3 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	72	772	310	1154
	B	191	0	47	478	716
	C	778	70	0	358	1206
	D	423	648	181	0	1252
	Tot.	1392	790	1000	1146	4328

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	447
1/2 (with short)	939(In) 492(Out)
1/3	215
2/1 (with short)	716(In) 347(Out)
2/2 (short)	369
3/1 (short)	347
3/2 (with short)	774(In) 427(Out)
3/3	432
4/1 (short)	318
4/2 (with short)	801(In) 483(Out)
4/3	451
5/1	455
5/2	498
5/3	95
5/4	215
6/1	395
6/2	393
6/3	191
7/1	466
7/2	503
7/3	70
8/1	380
8/2	338
8/3	181
9/1	502
9/2	498
10/1	742
10/2	404
11/1	784
11/2	608
12/1	427
12/2	363
13/1	784
13/2	608
14/1	427
14/2	363

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	83.9 %	1918	1918
				Arm 14 Left	47.00	16.1 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	86.5 %	1961	1961
				Arm 9 Left	40.00	13.5 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	97.4 %	2078	2078
				Arm 10 Left	55.00	2.6 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	78.3 %	2074	2074
				Arm 13 Left	47.00	21.7 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 7: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	181	667	428	1276
	B	284	0	83	1126	1493
	C	596	34	0	213	843
	D	378	571	188	3	1140
	Tot.	1258	786	938	1770	4752

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2021 DS AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	461
1/2 (with short)	947(In) 486(Out)
1/3	329
2/1 (with short)	1493(In) 739(Out)
2/2 (short)	754
3/1 (short)	213
3/2 (with short)	530(In) 317(Out)
3/3	313
4/1 (short)	337
4/2 (with short)	773(In) 436(Out)
4/3	367
5/1	390
5/2	465
5/3	102
5/4	329
6/1	758
6/2	799
6/3	284
7/1	395
7/2	485
7/3	34
8/1	398
8/2	207
8/3	191
9/1	473
9/2	465
10/1	971
10/2	799
11/1	732
11/2	526
12/1	435
12/2	351
13/1	732
13/2	526
14/1	435
14/2	351

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	60.7 %	1914	1914
				Arm 14 Left	47.00	39.3 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	88.8 %	1962	1962
				Arm 9 Left	40.00	11.2 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
				Arm 10 Left	55.00	0.0 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	90.6 %	2075	2075
				Arm 13 Left	47.00	9.4 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 8: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	84	797	301	1182
	B	200	0	57	492	749
	C	766	68	0	368	1202
	D	401	650	219	0	1270
	Tot.	1367	802	1073	1161	4403

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2021 DS PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	425
1/2 (with short)	881(In) 456(Out)
1/3	301
2/1 (with short)	749(In) 404(Out)
2/2 (short)	345
3/1 (short)	362
3/2 (with short)	812(In) 450(Out)
3/3	390
4/1 (short)	199
4/2 (with short)	788(In) 589(Out)
4/3	482
5/1	472
5/2	544
5/3	0
5/4	301
6/1	347
6/2	446
6/3	200
7/1	483
7/2	483
7/3	68
8/1	400
8/2	318
8/3	219
9/1	529
9/2	544
10/1	709
10/2	452
11/1	682
11/2	685
12/1	420
12/2	382
13/1	682
13/2	685
14/1	420
14/2	382

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	80.2 %	1917	1917
				Arm 14 Left	47.00	19.8 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	85.9 %	1961	1961
				Arm 9 Left	40.00	14.1 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	98.7 %	2078	2078
				Arm 10 Left	55.00	1.3 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	65.7 %	2072	2072
				Arm 13 Left	47.00	34.3 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	0.0 %	2105	2105
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	260	729	424	1413
	B	341	3	141	1102	1587
	C	768	60	0	331	1159
	D	307	652	229	1	1189
	Tot.	1416	975	1099	1858	5348

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DM AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	541
1/2 (with short)	1092(In) 551(Out)
1/3	321
2/1 (with short)	1587(In) 786(Out)
2/2 (short)	801
3/1 (short)	325
3/2 (with short)	736(In) 411(Out)
3/3	423
4/1 (short)	294
4/2 (with short)	758(In) 464(Out)
4/3	431
5/1	432
5/2	526
5/3	104
5/4	321
6/1	749
6/2	778
6/3	344
7/1	520
7/2	589
7/3	63
8/1	453
8/2	262
8/3	230
9/1	573
9/2	526
10/1	1074
10/2	784
11/1	814
11/2	602
12/1	473
12/2	502
13/1	814
13/2	602
14/1	473
14/2	502

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	51.9 %	1913	1913
				Arm 14 Left	47.00	48.1 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	82.1 %	1960	1960
				Arm 9 Left	40.00	17.9 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	98.5 %	2078	2078
				Arm 10 Left	55.00	1.5 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	97.2 %	2076	2076
				Arm 13 Left	47.00	2.8 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	136	893	263	1292
	B	277	0	111	645	1033
	C	733	78	0	461	1272
	D	452	743	253	0	1448
	Tot.	1462	957	1257	1369	5045

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DM PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	496
1/2 (with short)	1029(In) 533(Out)
1/3	263
2/1 (with short)	1033(In) 520(Out)
2/2 (short)	513
3/1 (short)	400
3/2 (with short)	833(In) 433(Out)
3/3	439
4/1 (short)	402
4/2 (with short)	962(In) 560(Out)
4/3	486
5/1	499
5/2	647
5/3	0
5/4	263
6/1	409
6/2	499
6/3	277
7/1	464
7/2	546
7/3	78
8/1	515
8/2	306
8/3	253
9/1	610
9/2	647
10/1	809
10/2	560
11/1	866
11/2	596
12/1	534
12/2	423
13/1	866
13/2	596
14/1	534
14/2	423

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	72.6 %	1916	1916
				Arm 14 Left	47.00	27.4 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	78.7 %	1959	1959
				Arm 9 Left	40.00	21.3 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	85.9 %	2077	2077
				Arm 10 Left	55.00	14.1 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	91.1 %	2075	2075
				Arm 13 Left	47.00	8.9 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	0.0 %	2105	2105
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 11: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	279	696	439	1414
	B	311	1	158	1070	1540
	C	817	53	0	356	1226
	D	257	699	255	0	1211
	Tot.	1385	1032	1109	1865	5391

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	532
1/2 (with short)	1088(In) 556(Out)
1/3	326
2/1 (with short)	1540(In) 775(Out)
2/2 (short)	765
3/1 (short)	354
3/2 (with short)	759(In) 405(Out)
3/3	467
4/1 (short)	255
4/2 (with short)	725(In) 470(Out)
4/3	486
5/1	405
5/2	546
5/3	113
5/4	326
6/1	730
6/2	779
6/3	312
7/1	539
7/2	589
7/3	54
8/1	468
8/2	285
8/3	255
9/1	563
9/2	546
10/1	1084
10/2	781
11/1	794
11/2	591
12/1	609
12/2	423
13/1	794
13/2	591
14/1	609
14/2	423

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	47.6 %	1912	1912
				Arm 14 Left	47.00	52.4 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	79.6 %	1960	1960
				Arm 9 Left	40.00	20.4 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	99.5 %	2078	2078
				Arm 10 Left	55.00	0.5 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	99.6 %	2076	2076
				Arm 13 Left	47.00	0.4 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

Scenario 12: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	158	933	243	1334
	B	281	0	132	610	1023
	C	794	82	2	499	1377
	D	410	713	293	0	1416
	Tot.	1485	953	1360	1352	5150

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	526
1/2 (with short)	1091(In) 565(Out)
1/3	243
2/1 (with short)	1023(In) 454(Out)
2/2 (short)	569
3/1 (short)	415
3/2 (with short)	867(In) 452(Out)
3/3	510
4/1 (short)	361
4/2 (with short)	916(In) 555(Out)
4/3	500
5/1	528
5/2	700
5/3	0
5/4	243
6/1	322
6/2	531
6/3	281
7/1	499
7/2	576
7/3	84
8/1	522
8/2	273
8/3	295
9/1	660
9/2	700
10/1	737
10/2	615
11/1	860
11/2	625
12/1	541
12/2	412
13/1	860
13/2	625
14/1	541
14/2	412

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076

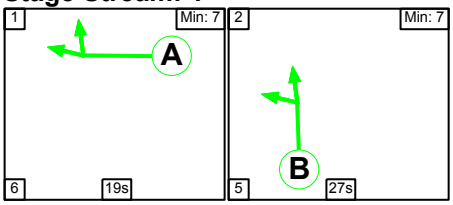
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A4500 W)	3.50	0.00	Y	Arm 5 Ahead	65.00	70.0 %	1916	1916
				Arm 14 Left	47.00	30.0 %		
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.55	0.00	Y	Arm 5 Ahead	68.00	100.0 %	1927	1927
2/1 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	70.9 %	1958	1958
				Arm 9 Left	40.00	29.1 %		
2/2 (Tollgate Way)	4.00	0.00	Y	Arm 6 Ahead	58.00	100.0 %	1964	1964
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	81.4 %	2077	2077
				Arm 10 Left	55.00	18.6 %		
3/3 (A4500 E)	3.75	0.00	Y	Arm 7 Ahead	60.00	100.0 %	1941	1941
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	91.2 %	2075	2075
				Arm 13 Left	47.00	8.8 %		
4/3 (A5076)	3.75	0.00	Y	Arm 8 Ahead	58.00	100.0 %	1940	1940
5/1 (Lights North)	3.50	0.00	Y	Arm 9 Ahead	57.00	100.0 %	1915	1915
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	0.0 %	2105	2105
5/4 (Lights North)	3.50	0.00	Y	Arm 6 Right	38.00	100.0 %	1890	1890
6/1 (Lights East)	3.50	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1914	1914
6/2 (Lights East)	3.50	0.00	N	Arm 10 Ahead	57.00	100.0 %	2051	2051
6/3 (Lights East)	3.25	0.00	Y	Arm 7 Right	58.00	100.0 %	1891	1891
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	Y	Arm 8 Right	62.00	100.0 %	1919	1919
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915
8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051

8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	84.00	100.0 %	1980	1980

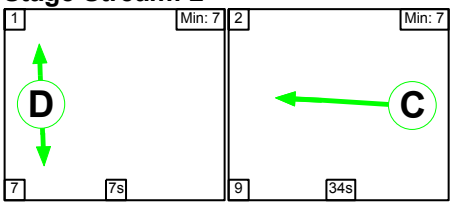
Scenario 1: '2015 AM Base Flow' (FG1: '2015 AM Base Flow', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

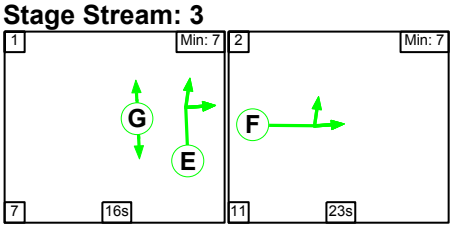
Stage Stream: 1



Stage Stream: 2

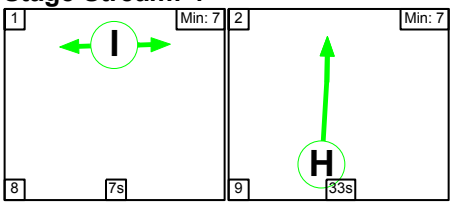


Stage Stream: 3



Full Input Data And Results

Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	27
Change Point	0	25

Stage Stream: 2

Stage	1	2
Duration	7	34
Change Point	44	1

Stage Stream: 3

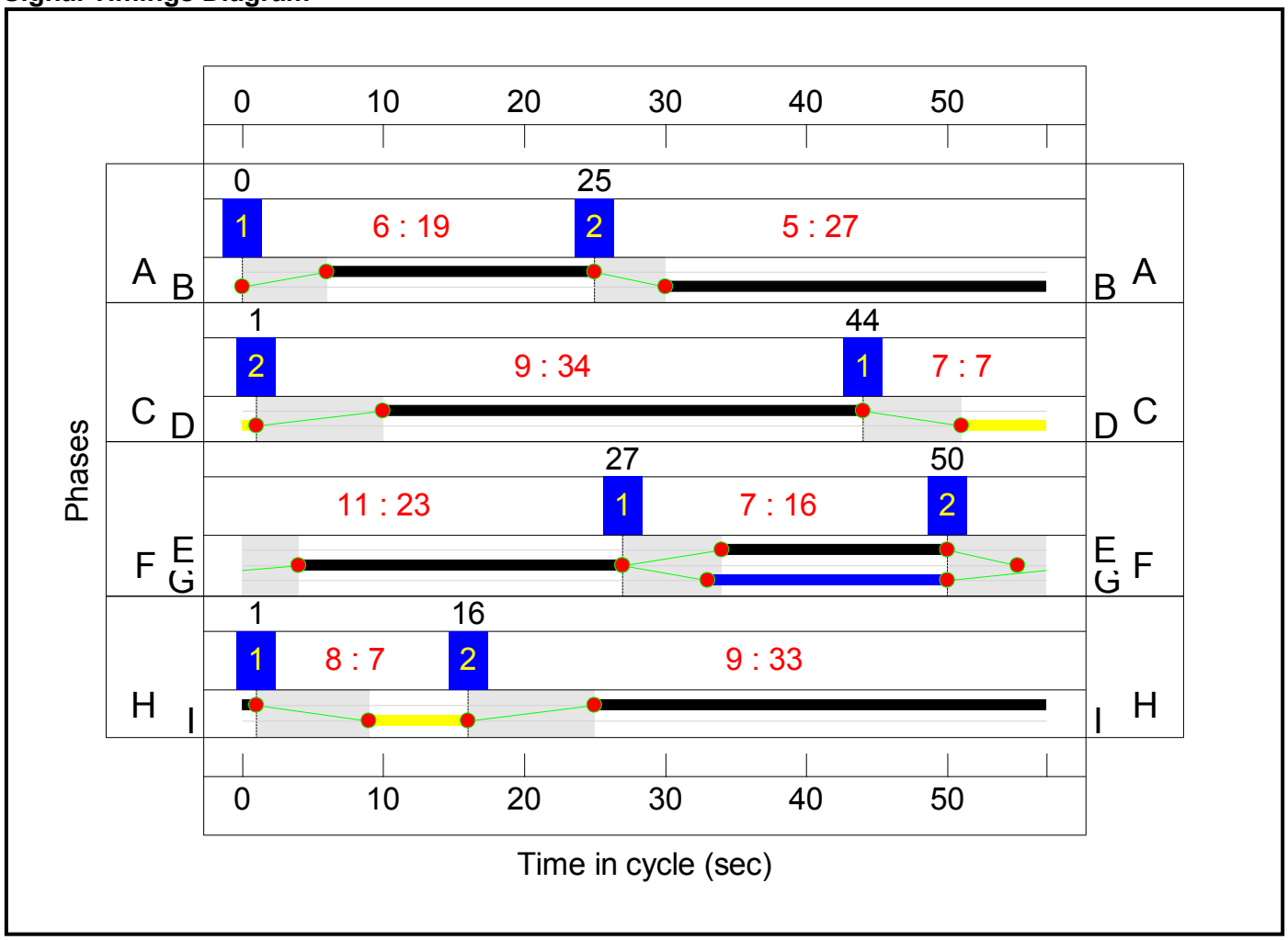
Stage	1	2
Duration	16	23
Change Point	27	50

Stage Stream: 4

Stage	1	2
Duration	7	33
Change Point	1	16

Full Input Data And Results

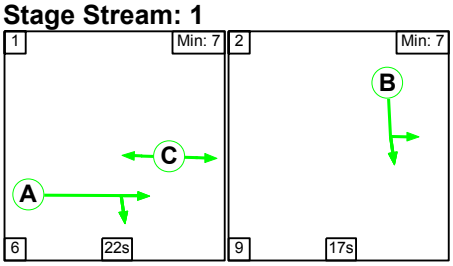
Signal Timings Diagram



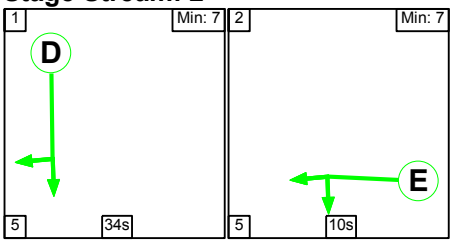
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

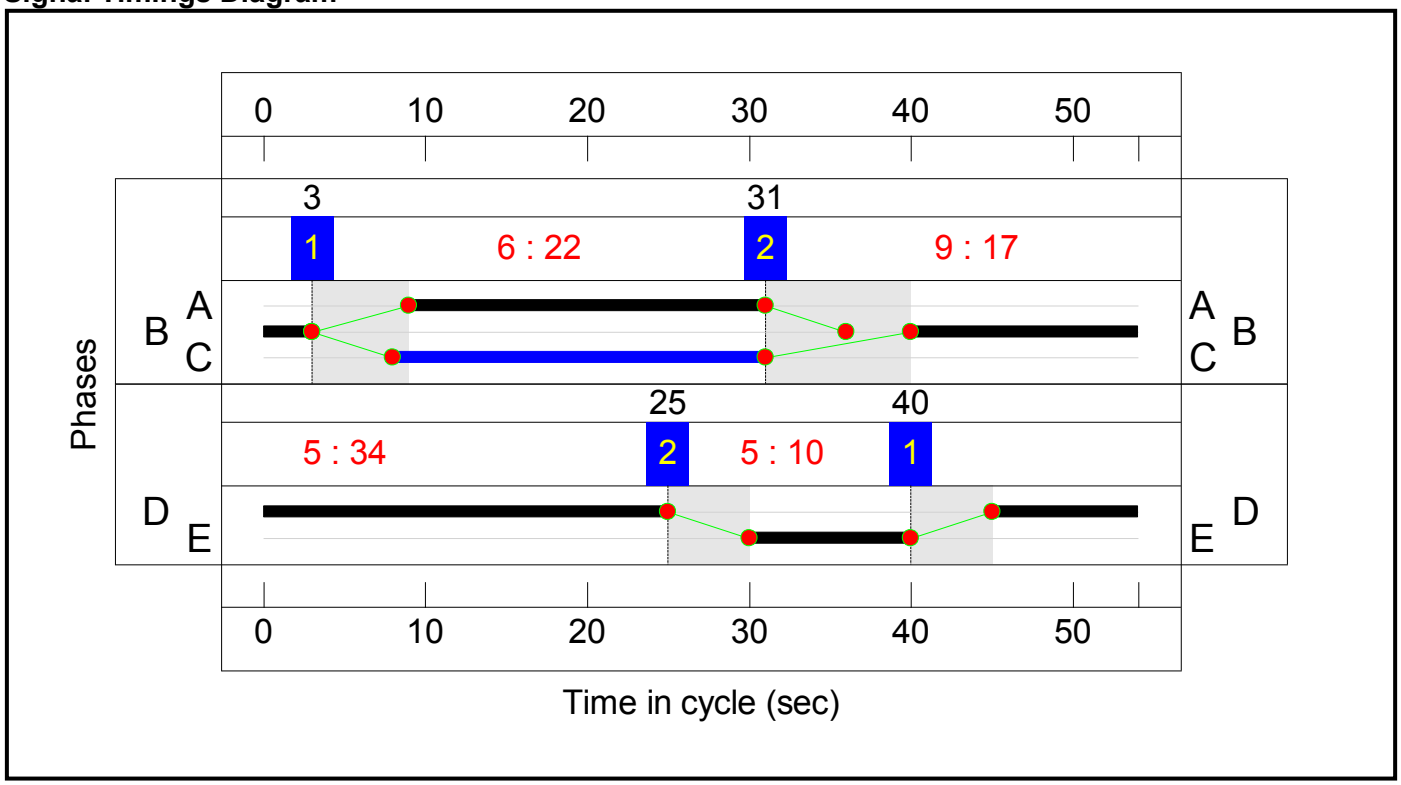
Stage Stream: 1

Stage	1	2
Duration	22	17
Change Point	3	31

Stage Stream: 2

Stage	1	2
Duration	34	10
Change Point	40	25

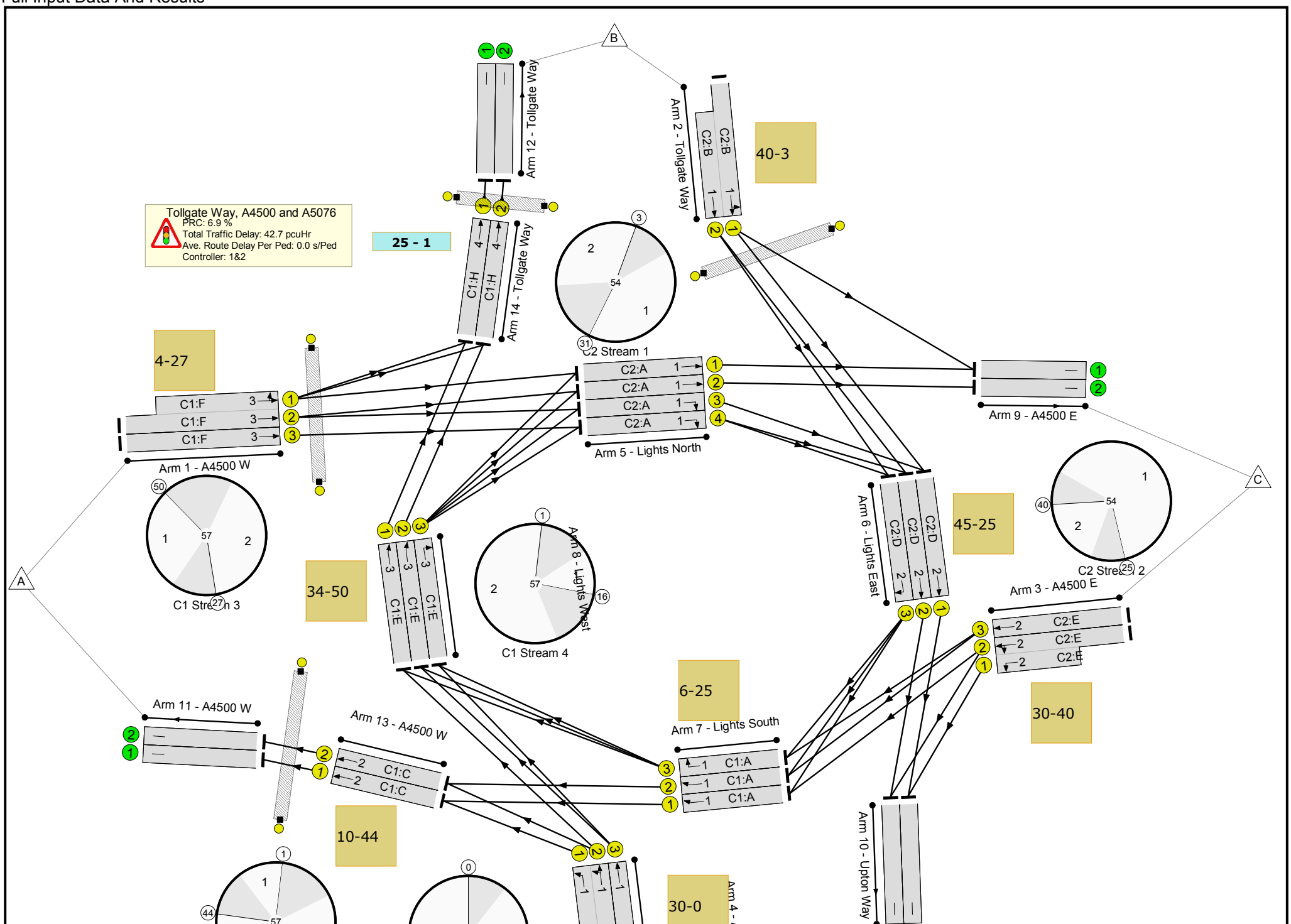
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**84.2%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**84.2%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	23	-	1196	2060:1914	867+806	73.9 : 68.9%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	23	-	403	1927	811	49.7%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	17	-	1013	1962:1964	566+655	81.7 : 84.2%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	10	-	471	2078:1937	423+302	65.0 : 65.0%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	10	-	183	1941	395	46.3%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	27	-	683	2075:1930	1019+808	40.1 : 33.9%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	27	-	478	1940	953	50.2%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	22	-	398	1915	816	48.8%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	22	-	424	2051	874	48.5%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	22	-	339	2026	863	39.3%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	22	-	403	1890	805	50.1%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	34	-	761	1914	1241	61.3%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	34	-	679	2051	1329	51.1%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	34	-	275	1891	1226	22.4%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	19	-	320	1919	673	47.5%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	19	-	373	2055	721	51.7%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	19	-	37	1919	673	5.5%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	16	-	378	1915	571	66.2%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	16	-	332	2051	612	54.3%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	16	-	183	2050	611	29.9%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	438	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	424	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	957	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	682	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	34	-	594	2015	1237	48.0%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	34	-	404	2015	1237	32.7%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	33	-	492	1979	1180	41.7%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	33	-	436	1980	1181	36.9%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	17	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	23	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**29.1**	**13.6**	**0.0**	**42.7**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**29.1**	**13.6**	**0.0**	**42.7**	**-**	**-**	**-**	**-**
1/2+1/1	1196	1196	-	-	-	4.5	1.2	-	5.8	17.4	8.4	1.2	9.6
1/3	403	403	-	-	-	1.4	0.5	-	1.8	16.5	4.6	0.5	5.1
2/1+2/2	1013	1013	-	-	-	4.6	2.4	-	7.0	24.7	7.7	2.4	10.0
3/2+3/1	471	471	-	-	-	2.5	0.9	-	3.5	26.5	3.7	0.9	4.7
3/3	183	183	-	-	-	1.0	0.4	-	1.4	27.4	2.4	0.4	2.8
4/2+4/1	683	683	-	-	-	1.7	0.3	-	2.0	10.5	4.1	0.3	4.4
4/3	478	478	-	-	-	1.3	0.5	-	1.8	13.6	5.0	0.5	5.5
5/1	398	398	-	-	-	1.2	0.5	-	1.7	15.5	4.3	0.5	4.8
5/2	424	424	-	-	-	1.3	0.5	-	1.8	15.2	4.6	0.5	5.1
5/3	339	339	-	-	-	1.0	0.3	-	1.3	14.1	3.5	0.3	3.8
5/4	403	403	-	-	-	1.3	0.5	-	1.8	15.8	4.4	0.5	4.9
6/1	761	761	-	-	-	0.4	0.8	-	1.2	5.5	2.2	0.8	3.0
6/2	679	679	-	-	-	0.5	0.5	-	1.0	5.4	2.3	0.5	2.8
6/3	275	275	-	-	-	0.0	0.1	-	0.1	1.9	0.0	0.1	0.1
7/1	320	320	-	-	-	1.3	0.5	-	1.7	19.5	3.9	0.5	4.4
7/2	373	373	-	-	-	1.5	0.5	-	2.1	19.8	4.7	0.5	5.2
7/3	37	37	-	-	-	0.1	0.0	-	0.2	15.2	0.4	0.0	0.4
8/1	378	378	-	-	-	1.0	1.0	-	1.9	18.5	1.8	1.0	2.8
8/2	332	332	-	-	-	1.0	0.6	-	1.6	17.1	2.0	0.6	2.6
8/3	183	183	-	-	-	0.5	0.2	-	0.7	13.4	0.8	0.2	1.0
9/1	438	438	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	424	424	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	957	957	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	682	682	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

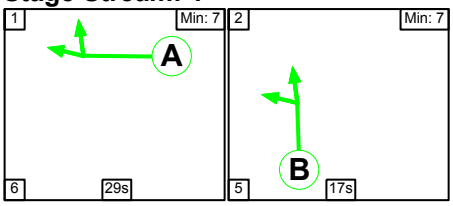
11/1	594	594	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	436	436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	594	594	-	-	-	0.4	0.5	-	0.9	5.4	1.9	0.5	2.4
13/2	404	404	-	-	-	0.0	0.2	-	0.3	2.6	0.2	0.2	0.5
14/1	492	492	-	-	-	0.3	0.4	-	0.6	4.5	1.7	0.4	2.0
14/2	436	436	-	-	-	0.3	0.3	-	0.6	4.9	1.6	0.3	1.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	74.0	Total Delay for Signalled Lanes (pcuHr):	7.74	Cycle Time (s):	57		
C1	Stream: 2 PRC for Signalled Lanes (%):	87.5	Total Delay for Signalled Lanes (pcuHr):	1.18	Cycle Time (s):	57		
C1	Stream: 3 PRC for Signalled Lanes (%):	21.8	Total Delay for Signalled Lanes (pcuHr):	11.84	Cycle Time (s):	57		
C1	Stream: 4 PRC for Signalled Lanes (%):	115.9	Total Delay for Signalled Lanes (pcuHr):	1.22	Cycle Time (s):	57		
C2	Stream: 1 PRC for Signalled Lanes (%):	6.9	Total Delay for Signalled Lanes (pcuHr):	13.56	Cycle Time (s):	54		
C2	Stream: 2 PRC for Signalled Lanes (%):	38.5	Total Delay for Signalled Lanes (pcuHr):	7.20	Cycle Time (s):	54		
	PRC Over All Lanes (%):	6.9	Total Delay Over All Lanes(pcuHr):	42.74				

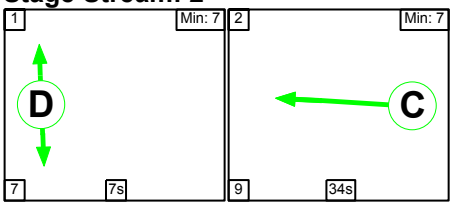
Full Input Data And Results
Scenario 2: '2015 PM Base Flow' (FG2: '2015 PM Base Flow', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

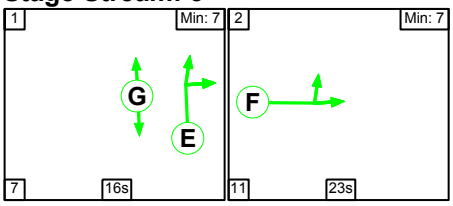
Stage Stream: 1



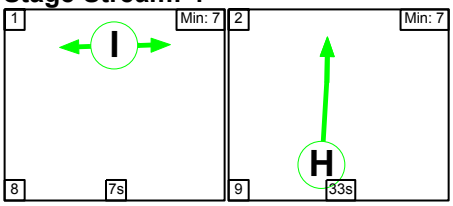
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	29	17
Change Point	0	35

Stage Stream: 2

Stage	1	2
Duration	7	34
Change Point	19	33

Stage Stream: 3

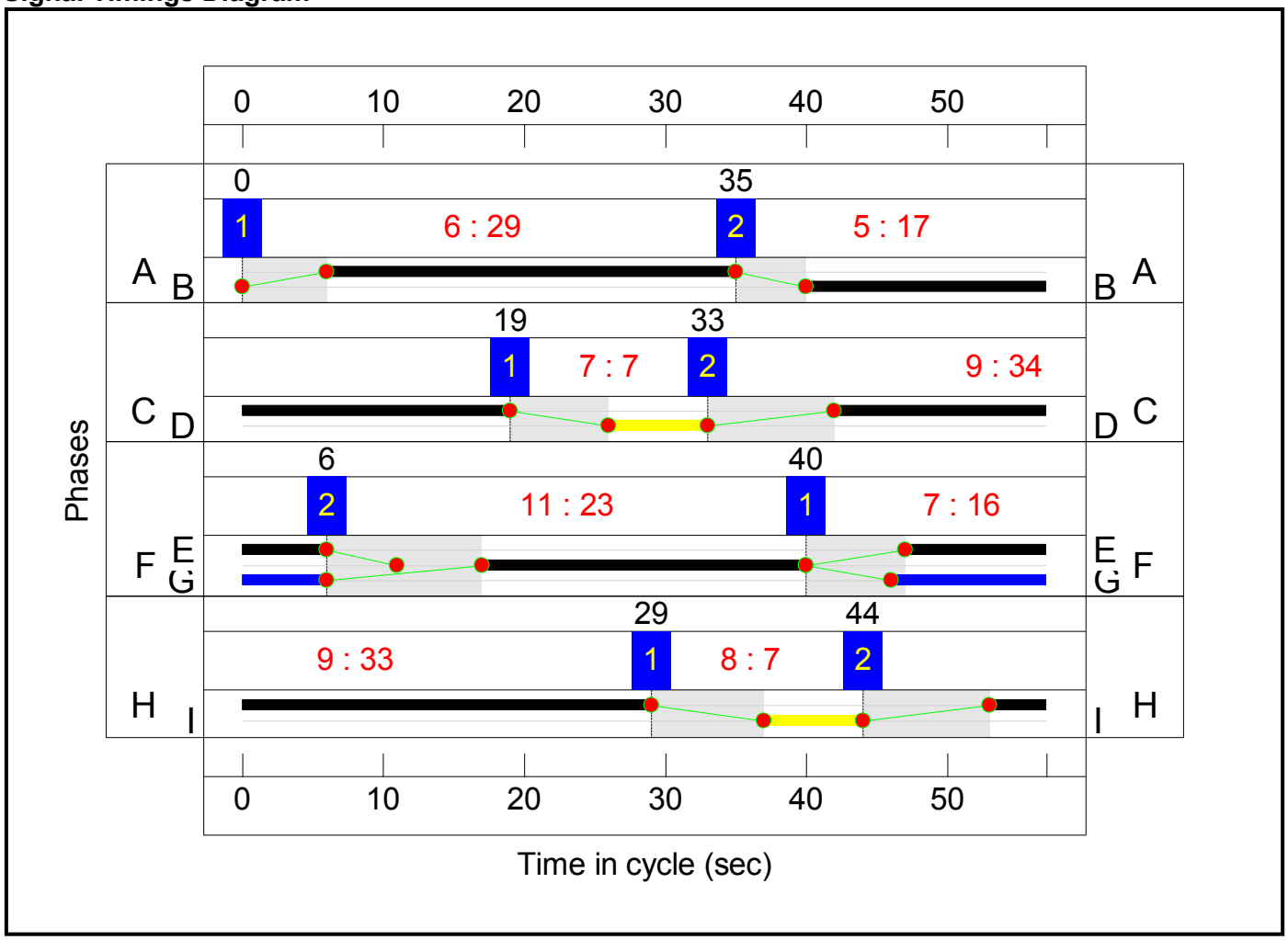
Stage	1	2
Duration	16	23
Change Point	40	6

Stage Stream: 4

Stage	1	2
Duration	7	33
Change Point	29	44

Full Input Data And Results

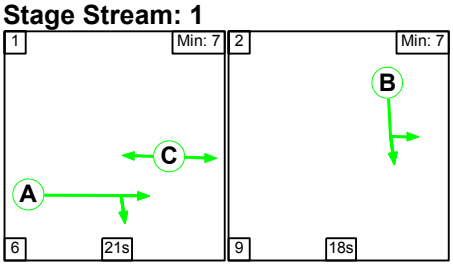
Signal Timings Diagram



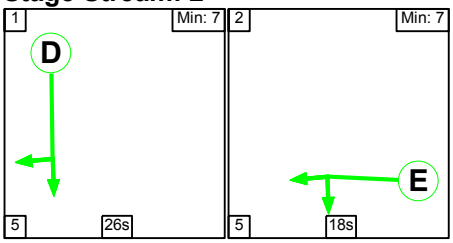
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

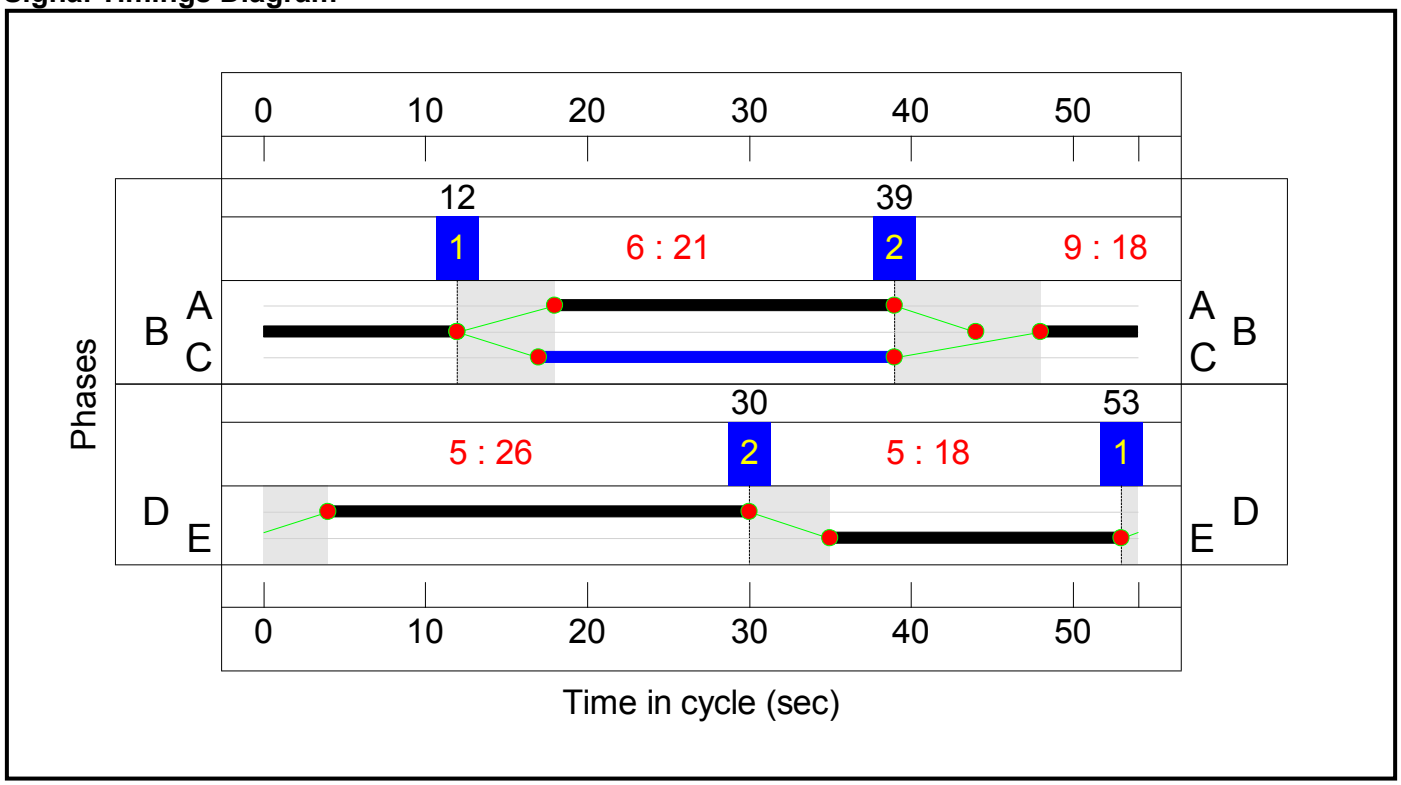
Stage Stream: 1

Stage	1	2
Duration	21	18
Change Point	12	39

Stage Stream: 2

Stage	1	2
Duration	26	18
Change Point	53	30

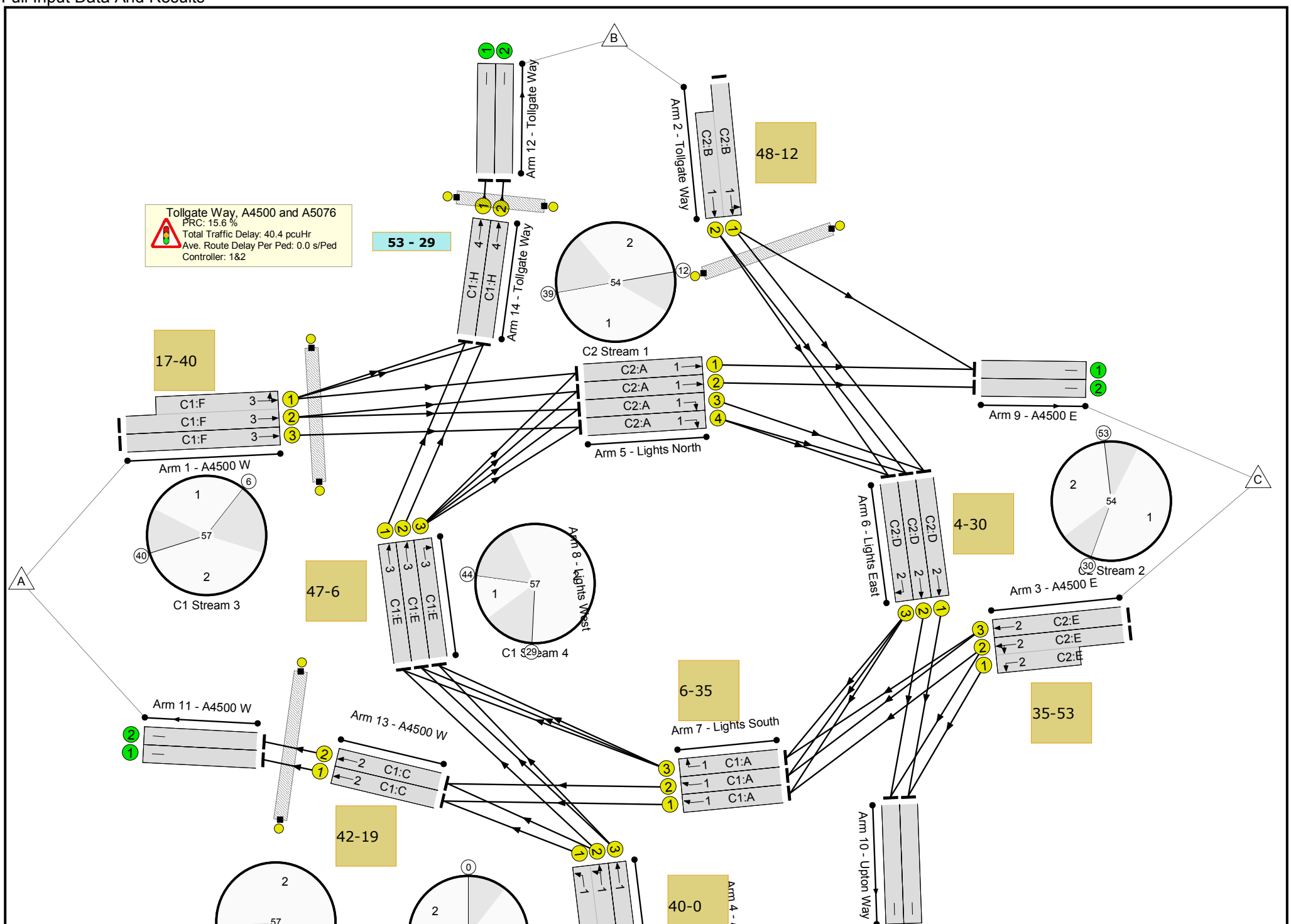
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.9%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.9%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	23	-	920	2060:1915	867+806	55.8 : 54.1%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	23	-	241	1927	811	29.7%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	18	-	861	1961:1964	415+691	77.9 : 77.9%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	18	-	623	2078:1937	617+457	58.0 : 58.0%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	18	-	315	1941	683	46.1%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	17	-	816	2074:1930	655+609	74.4 : 54.0%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	17	-	436	1940	613	71.2%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	21	-	368	1915	780	47.2%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	21	-	408	2051	836	48.8%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	21	-	217	2026	825	26.3%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	21	-	241	1890	770	31.3%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	26	-	487	1914	957	50.9%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	26	-	504	2051	1025	49.1%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	26	-	275	1891	946	29.1%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	29	-	418	1919	1010	41.4%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	29	-	465	2055	1082	43.0%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	29	-	60	1919	1010	5.9%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	16	-	413	1915	571	72.3%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	16	-	268	2051	612	43.8%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	16	-	228	2050	611	37.3%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	421	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	408	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	752	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	509	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	747	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	539	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	413	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	423	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	34	-	747	2015	1237	60.4%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	34	-	539	2015	1237	43.6%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	33	-	413	1979	1180	35.0%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	33	-	423	1980	1181	35.8%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	17	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	22	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**27.6**	**12.7**	**0.0**	**40.4**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**27.6**	**12.7**	**0.0**	**40.4**	**-**	**-**	**-**	**-**
1/2+1/1	920	920	-	-	-	3.2	0.6	-	3.8	14.8	5.8	0.6	6.4
1/3	241	241	-	-	-	0.7	0.2	-	0.9	14.1	2.5	0.2	2.7
2/1+2/2	861	861	-	-	-	3.6	1.7	-	5.3	22.1	7.2	1.7	8.9
3/2+3/1	623	623	-	-	-	2.3	0.7	-	3.0	17.5	4.2	0.7	4.9
3/3	315	315	-	-	-	1.2	0.4	-	1.6	18.4	3.6	0.4	4.0
4/2+4/1	816	816	-	-	-	3.8	0.9	-	4.7	20.9	6.8	0.9	7.7
4/3	436	436	-	-	-	2.1	1.2	-	3.3	27.3	6.1	1.2	7.3
5/1	368	368	-	-	-	1.2	0.4	-	1.6	16.1	4.0	0.4	4.4
5/2	408	408	-	-	-	1.3	0.5	-	1.8	16.0	4.4	0.5	4.9
5/3	217	217	-	-	-	0.6	0.2	-	0.8	13.6	2.1	0.2	2.3
5/4	241	241	-	-	-	0.7	0.2	-	1.0	14.3	2.4	0.2	2.6
6/1	487	487	-	-	-	0.7	0.5	-	1.2	9.1	4.5	0.5	5.0
6/2	504	504	-	-	-	0.7	0.5	-	1.2	8.3	3.6	0.5	4.1
6/3	275	275	-	-	-	0.0	0.2	-	0.2	3.2	1.1	0.2	1.4
7/1	418	418	-	-	-	1.0	0.4	-	1.3	11.2	3.9	0.4	4.3
7/2	465	465	-	-	-	1.1	0.4	-	1.4	11.2	4.4	0.4	4.8
7/3	60	60	-	-	-	0.1	0.0	-	0.1	8.5	0.5	0.0	0.5
8/1	413	413	-	-	-	0.2	1.3	-	1.5	13.1	1.1	1.3	2.4
8/2	268	268	-	-	-	0.6	0.4	-	1.0	13.1	1.5	0.4	1.9
8/3	228	228	-	-	-	0.1	0.3	-	0.4	6.5	0.3	0.3	0.6
9/1	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	408	408	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	752	752	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	509	509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

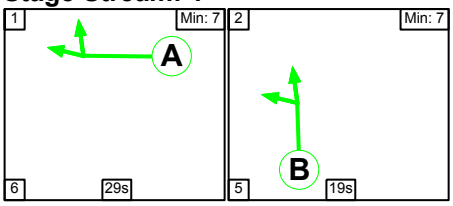
11/1	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	539	539	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	747	747	-	-	-	0.9	0.8	-	1.7	8.2	6.2	0.8	6.9
13/2	539	539	-	-	-	1.1	0.4	-	1.5	9.7	4.1	0.4	4.5
14/1	413	413	-	-	-	0.0	0.3	-	0.3	2.3	0.0	0.3	0.3
14/2	423	423	-	-	-	0.3	0.3	-	0.6	5.2	2.2	0.3	2.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	21.0	Total Delay for Signalled Lanes (pcuHr):	10.93	Cycle Time (s):	57
C1	Stream: 2 PRC for Signalled Lanes (%):	49.1	Total Delay for Signalled Lanes (pcuHr):	3.16	Cycle Time (s):	57
C1	Stream: 3 PRC for Signalled Lanes (%):	24.5	Total Delay for Signalled Lanes (pcuHr):	7.62	Cycle Time (s):	57
C1	Stream: 4 PRC for Signalled Lanes (%):	151.3	Total Delay for Signalled Lanes (pcuHr):	0.88	Cycle Time (s):	57
C2	Stream: 1 PRC for Signalled Lanes (%):	15.6	Total Delay for Signalled Lanes (pcuHr):	10.53	Cycle Time (s):	54
C2	Stream: 2 PRC for Signalled Lanes (%):	55.1	Total Delay for Signalled Lanes (pcuHr):	7.27	Cycle Time (s):	54
	PRC Over All Lanes (%):	15.6	Total Delay Over All Lanes(pcuHr):	40.38		

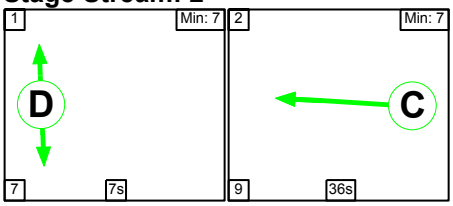
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

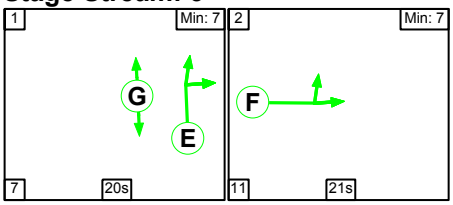
Stage Stream: 1



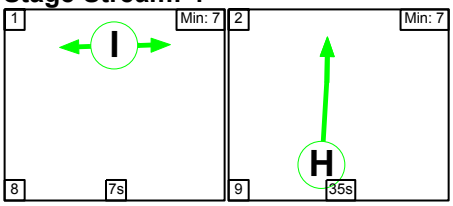
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	29	19
Change Point	25	1

Stage Stream: 2

Stage	1	2
Duration	7	36
Change Point	53	8

Stage Stream: 3

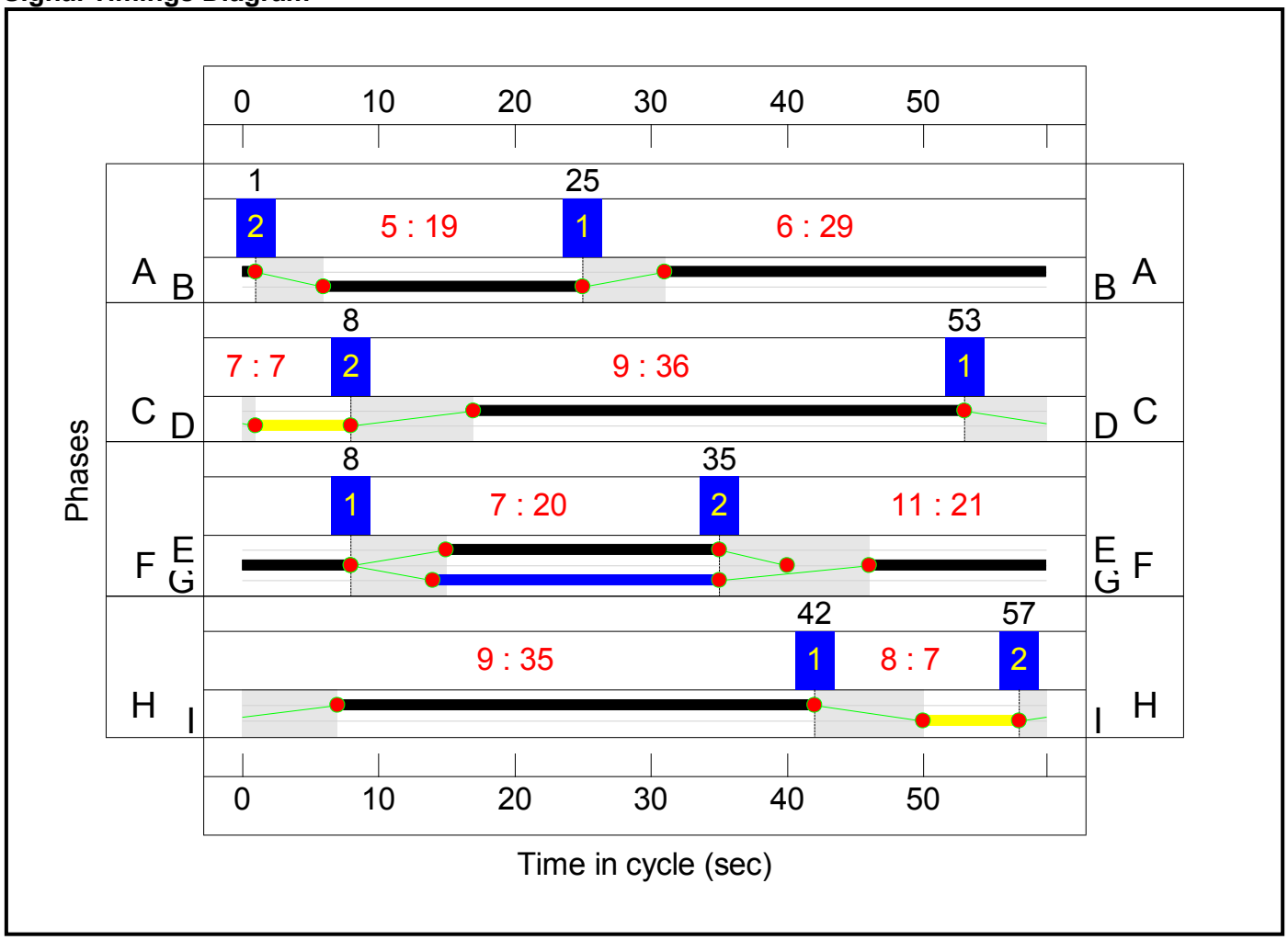
Stage	1	2
Duration	20	21
Change Point	8	35

Stage Stream: 4

Stage	1	2
Duration	7	35
Change Point	42	57

Full Input Data And Results

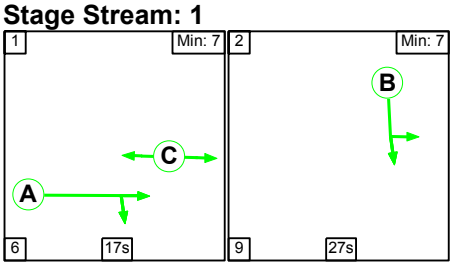
Signal Timings Diagram



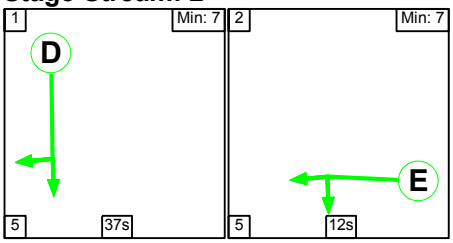
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

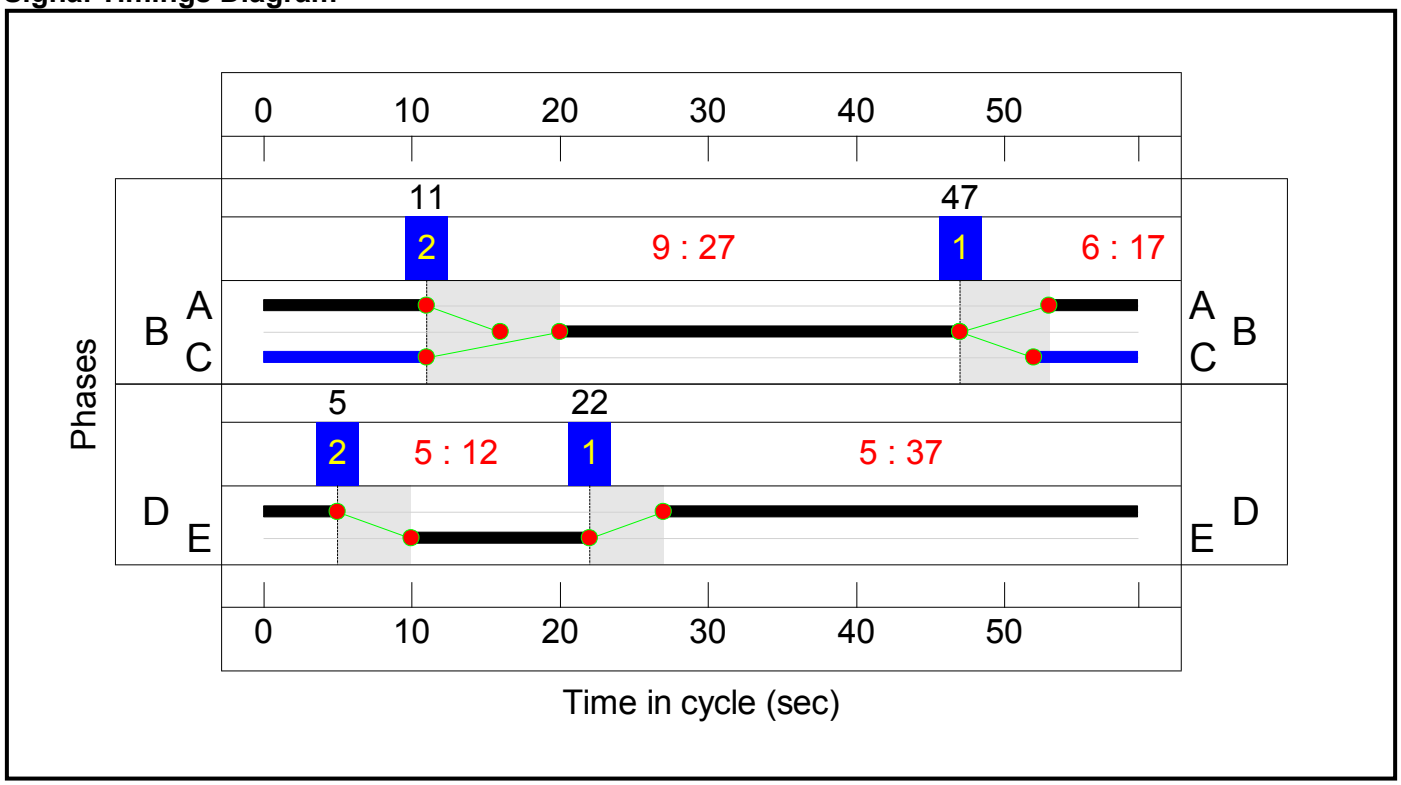
Stage Stream: 1

Stage	1	2
Duration	17	27
Change Point	47	11

Stage Stream: 2

Stage	1	2
Duration	37	12
Change Point	22	5

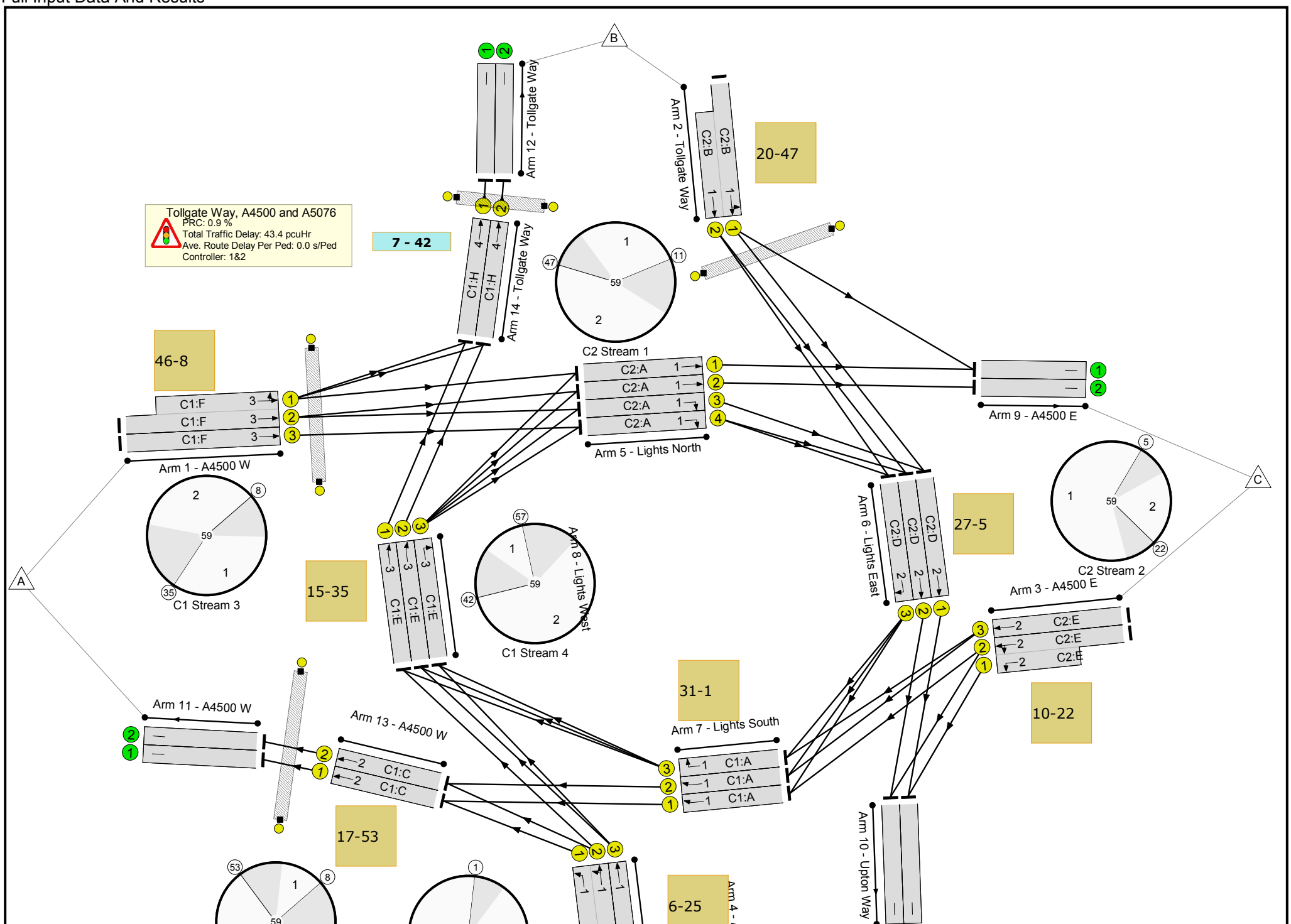
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.2%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.2%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	21	-	950	2060:1914	768+714	61.1 : 67.4%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	21	-	283	1927	719	39.4%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	27	-	1391	1963:1964	720+840	89.2 : 89.2%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	12	-	456	2078:1937	452+184	71.7 : 71.7%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	12	-	272	1941	428	63.6%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	19	-	766	2073:1930	703+654	64.7 : 47.5%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	19	-	365	1940	658	55.5%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	17	-	388	1915	584	66.4%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	17	-	435	2051	626	69.5%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	17	-	129	2026	618	20.9%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	17	-	283	1890	577	49.1%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	37	-	737	1914	1233	59.8%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	37	-	727	2051	1321	55.0%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	37	-	305	1891	1218	25.0%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	29	-	379	1919	976	38.8%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	29	-	489	2055	1045	46.8%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	29	-	33	1919	976	3.4%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	20	-	350	1915	682	51.3%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	20	-	213	2051	730	29.2%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	20	-	184	2050	730	25.2%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	422	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	435	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	869	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	727	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	690	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	595	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	36	-	690	2015	1264	54.6%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	36	-	595	2015	1264	47.1%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	35	-	442	1979	1208	36.6%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	35	-	303	1980	1208	25.1%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	21	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	18	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**27.4**	**16.0**	**0.0**	**43.4**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**27.4**	**16.0**	**0.0**	**43.4**	**-**	**-**	**-**	**-**
1/2+1/1	950	950	-	-	-	4.0	0.9	-	4.9	18.6	6.5	0.9	7.4
1/3	283	283	-	-	-	1.1	0.3	-	1.4	17.7	3.4	0.3	3.7
2/1+2/2	1391	1391	-	-	-	4.9	3.9	-	8.8	22.9	10.4	3.9	14.3
3/2+3/1	456	456	-	-	-	2.6	1.3	-	3.9	30.6	4.9	1.3	6.1
3/3	272	272	-	-	-	1.6	0.9	-	2.4	32.3	4.0	0.9	4.9
4/2+4/1	766	766	-	-	-	3.4	0.6	-	4.1	19.1	6.2	0.6	6.8
4/3	365	365	-	-	-	1.6	0.6	-	2.2	22.0	4.9	0.6	5.5
5/1	388	388	-	-	-	1.0	1.0	-	2.0	18.6	3.9	1.0	4.9
5/2	435	435	-	-	-	1.1	1.1	-	2.3	18.7	5.8	1.1	6.9
5/3	129	129	-	-	-	0.1	0.1	-	0.3	7.2	0.2	0.1	0.4
5/4	283	283	-	-	-	0.3	0.5	-	0.8	9.7	2.1	0.5	2.6
6/1	737	737	-	-	-	0.6	0.7	-	1.3	6.5	9.1	0.7	9.8
6/2	727	727	-	-	-	0.9	0.6	-	1.5	7.3	4.8	0.6	5.4
6/3	305	305	-	-	-	0.0	0.2	-	0.2	2.0	0.1	0.2	0.2
7/1	379	379	-	-	-	1.2	0.3	-	1.5	14.7	5.6	0.3	5.9
7/2	489	489	-	-	-	1.0	0.4	-	1.4	10.3	4.8	0.4	5.2
7/3	33	33	-	-	-	0.1	0.0	-	0.1	11.0	0.5	0.0	0.5
8/1	350	350	-	-	-	0.1	0.5	-	0.6	6.2	2.7	0.5	3.2
8/2	213	213	-	-	-	0.2	0.2	-	0.4	7.3	1.2	0.2	1.4
8/3	184	184	-	-	-	0.0	0.2	-	0.2	3.9	0.7	0.2	0.8
9/1	422	422	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	435	435	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	869	869	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	727	727	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

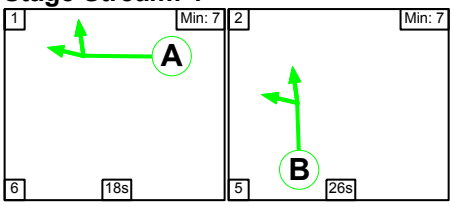
11/1	690	690	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	595	595	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	442	442	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	303	303	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	690	690	-	-	-	0.4	0.6	-	1.0	5.3	4.7	0.6	5.3
13/2	595	595	-	-	-	0.7	0.4	-	1.1	6.8	3.2	0.4	3.6
14/1	442	442	-	-	-	0.2	0.3	-	0.5	3.8	1.3	0.3	1.6
14/2	303	303	-	-	-	0.3	0.2	-	0.4	5.1	1.5	0.2	1.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	39.0	Total Delay for Signalled Lanes (pcuHr):	9.34	Cycle Time (s): 59
C1	Stream: 2 PRC for Signalled Lanes (%):	64.8	Total Delay for Signalled Lanes (pcuHr):	2.15	Cycle Time (s): 59
C1	Stream: 3 PRC for Signalled Lanes (%):	33.5	Total Delay for Signalled Lanes (pcuHr):	7.55	Cycle Time (s): 59
C1	Stream: 4 PRC for Signalled Lanes (%):	145.9	Total Delay for Signalled Lanes (pcuHr):	0.90	Cycle Time (s): 59
C2	Stream: 1 PRC for Signalled Lanes (%):	0.9	Total Delay for Signalled Lanes (pcuHr):	14.12	Cycle Time (s): 59
C2	Stream: 2 PRC for Signalled Lanes (%):	25.5	Total Delay for Signalled Lanes (pcuHr):	9.29	Cycle Time (s): 59
	PRC Over All Lanes (%):	0.9	Total Delay Over All Lanes(pcuHr):	43.36	

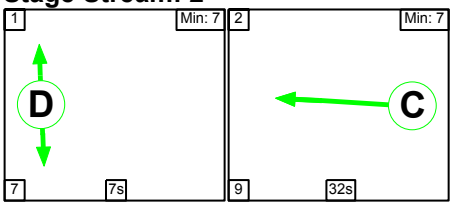
Full Input Data And Results
Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

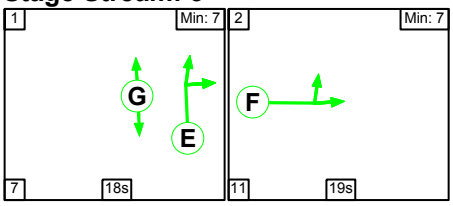
Stage Stream: 1



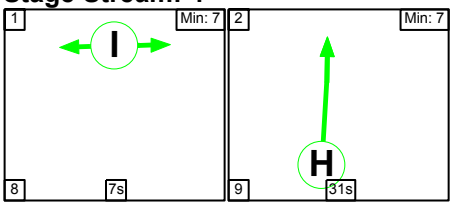
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	26
Change Point	36	5

Stage Stream: 2

Stage	1	2
Duration	7	32
Change Point	23	37

Stage Stream: 3

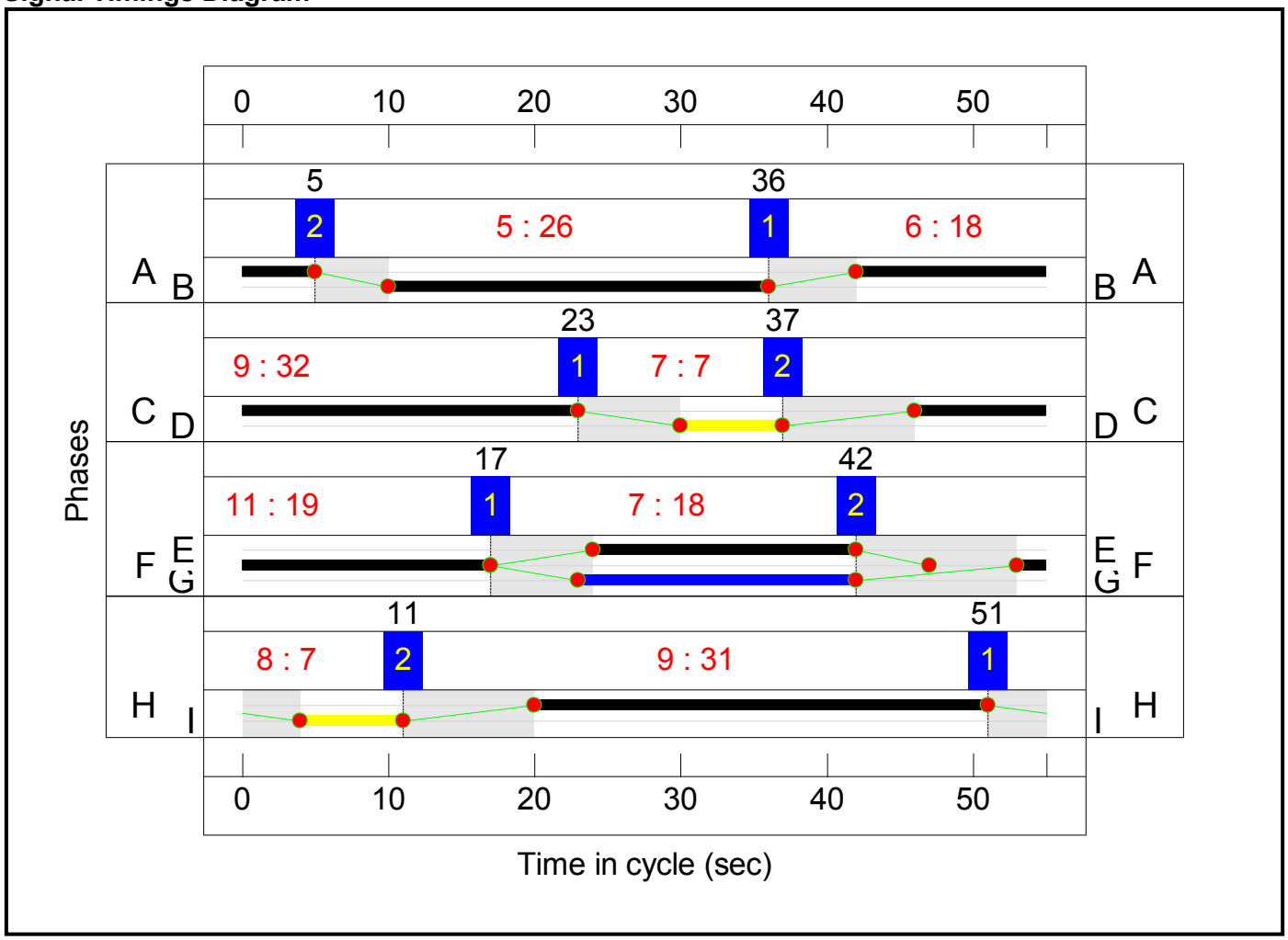
Stage	1	2
Duration	18	19
Change Point	17	42

Stage Stream: 4

Stage	1	2
Duration	7	31
Change Point	51	11

Full Input Data And Results

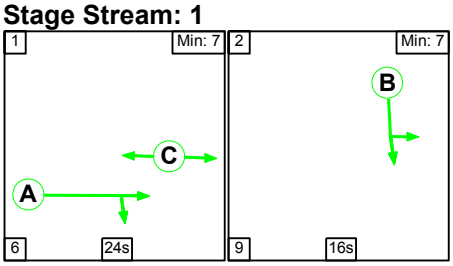
Signal Timings Diagram



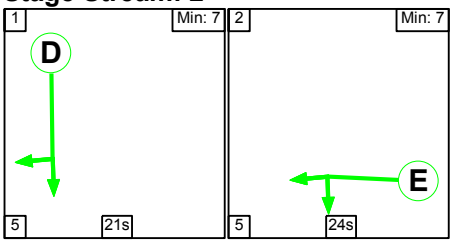
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

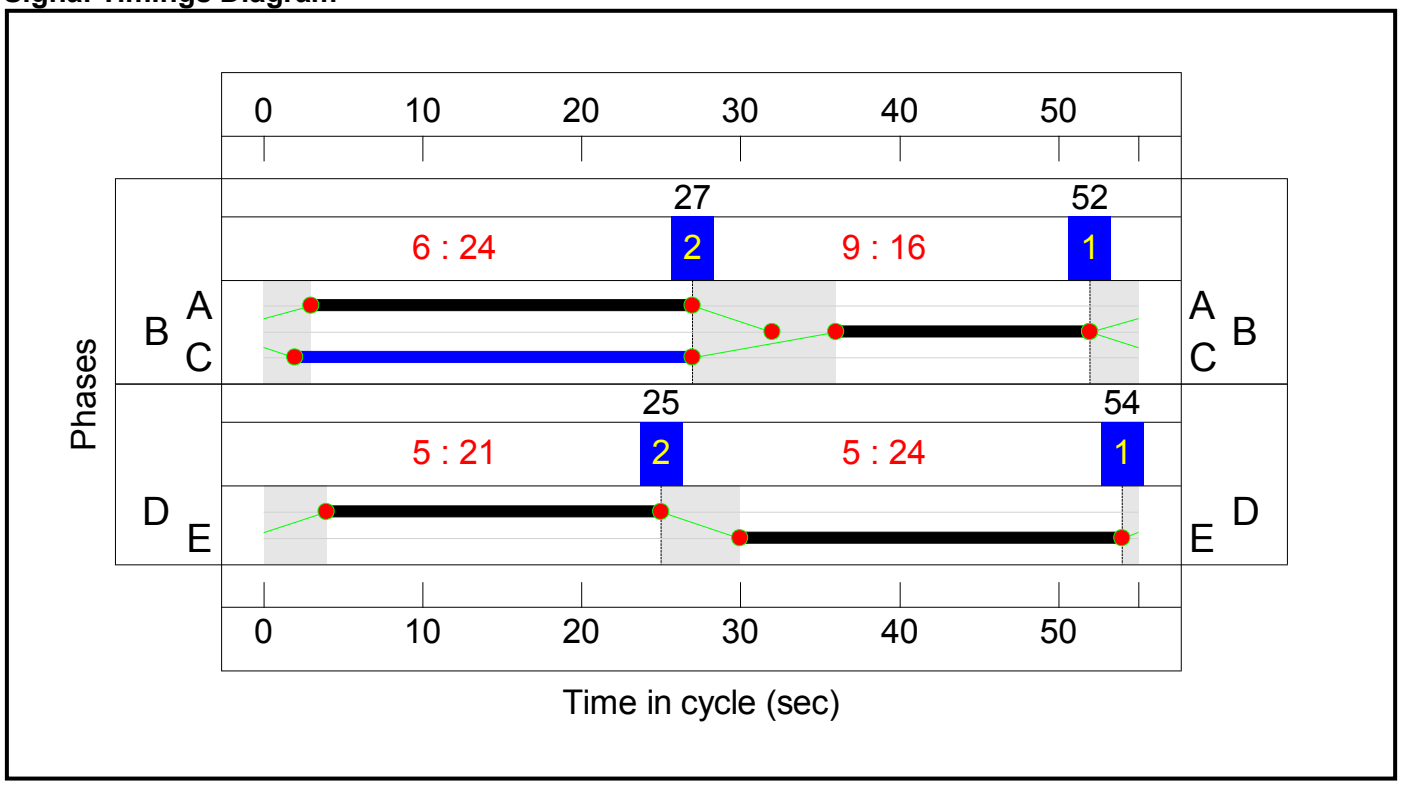
Stage Stream: 1

Stage	1	2
Duration	24	16
Change Point	52	27

Stage Stream: 2

Stage	1	2
Duration	21	24
Change Point	54	25

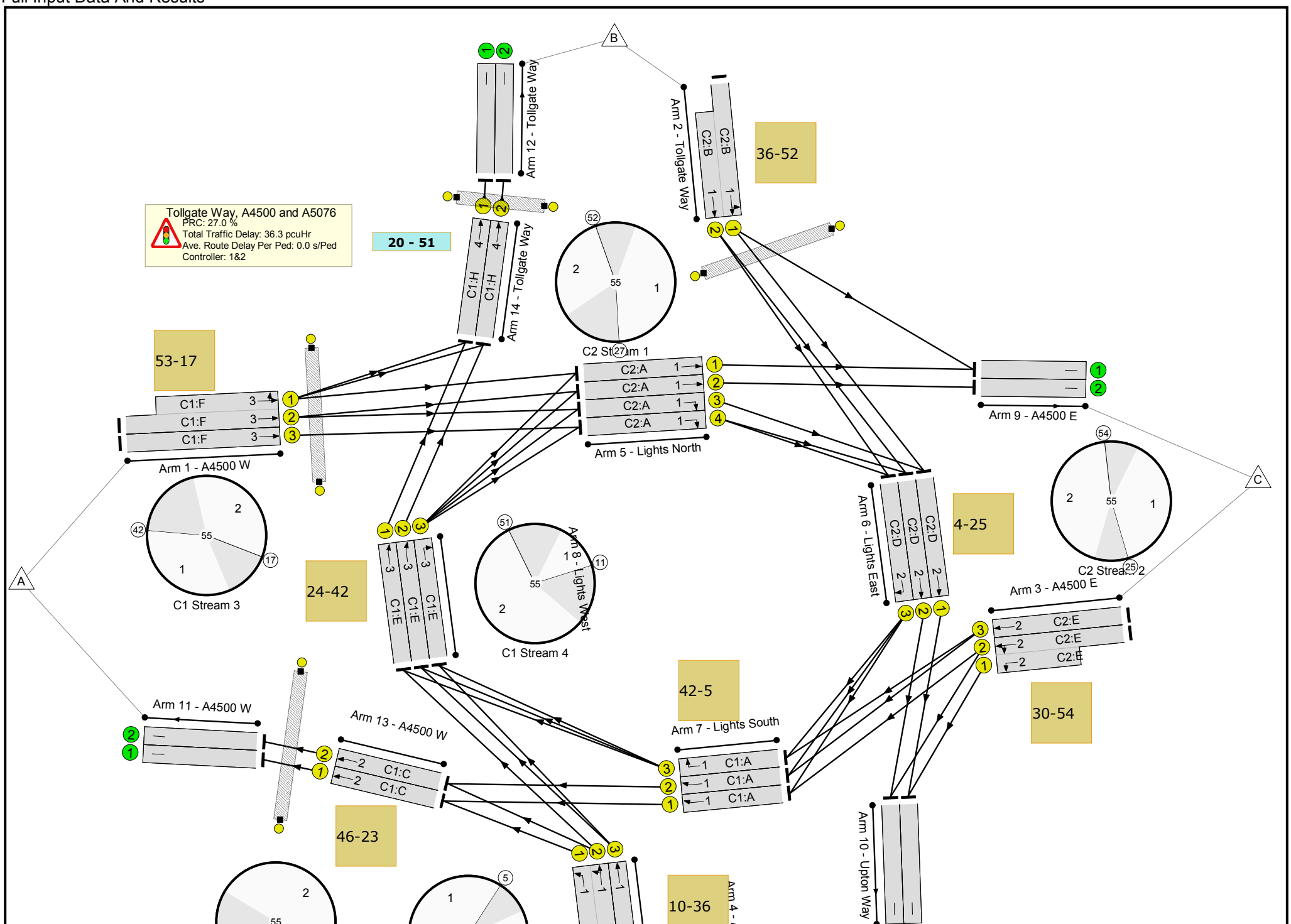
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**70.9%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**70.9%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	19	-	939	2060:1918	749+697	65.7 : 64.1%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	19	-	215	1927	701	30.7%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	16	-	716	1961:1964	606+607	57.2 : 60.8%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	24	-	774	2078:1937	721+586	59.3 : 59.3%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	24	-	432	1941	882	49.0%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	26	-	801	2074:1930	1018+800	47.4 : 39.8%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	26	-	451	1940	952	47.4%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	24	-	455	1915	870	52.3%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	24	-	498	2051	932	53.4%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	24	-	95	2026	921	10.3%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	24	-	215	1890	859	25.0%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	21	-	395	1914	766	51.6%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	21	-	393	2051	820	47.9%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	21	-	191	1891	756	25.3%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	18	-	466	1919	663	70.3%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	18	-	503	2055	710	70.9%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	18	-	70	1919	663	10.6%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	18	-	380	1915	662	57.4%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	18	-	338	2051	709	47.7%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	18	-	181	2050	708	25.6%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	502	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	498	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	742	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	608	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	363	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	32	-	784	2015	1209	64.8%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	32	-	608	2015	1209	50.3%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	31	-	427	1979	1151	37.1%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	31	-	363	1980	1152	31.5%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	19	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	25	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**24.2**	**12.1**	**0.0**	**36.3**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**24.2**	**12.1**	**0.0**	**36.3**	**-**	**-**	**-**	**-**
1/2+1/1	939	939	-	-	-	3.8	0.9	-	4.7	18.1	6.2	0.9	7.1
1/3	215	215	-	-	-	0.7	0.2	-	1.0	16.3	2.3	0.2	2.6
2/1+2/2	716	716	-	-	-	3.2	0.7	-	3.9	19.7	4.7	0.7	5.4
3/2+3/1	774	774	-	-	-	2.2	0.7	-	2.9	13.5	4.4	0.7	5.1
3/3	432	432	-	-	-	1.3	0.5	-	1.7	14.5	4.6	0.5	5.0
4/2+4/1	801	801	-	-	-	2.0	0.4	-	2.4	10.8	4.8	0.4	5.2
4/3	451	451	-	-	-	1.2	0.4	-	1.6	12.9	4.5	0.4	5.0
5/1	455	455	-	-	-	0.5	0.5	-	1.1	8.5	1.7	0.5	2.2
5/2	498	498	-	-	-	0.7	0.6	-	1.2	9.0	2.3	0.6	2.9
5/3	95	95	-	-	-	0.0	0.1	-	0.1	2.4	0.0	0.1	0.1
5/4	215	215	-	-	-	0.0	0.2	-	0.2	3.0	0.0	0.2	0.2
6/1	395	395	-	-	-	1.4	0.5	-	1.9	17.2	5.0	0.5	5.5
6/2	393	393	-	-	-	0.9	0.5	-	1.3	12.4	3.2	0.5	3.7
6/3	191	191	-	-	-	0.6	0.2	-	0.8	15.2	2.9	0.2	3.1
7/1	466	466	-	-	-	1.1	1.2	-	2.2	17.4	6.2	1.2	7.3
7/2	503	503	-	-	-	1.8	1.2	-	3.0	21.7	7.0	1.2	8.2
7/3	70	70	-	-	-	0.0	0.1	-	0.1	5.3	0.4	0.1	0.5
8/1	380	380	-	-	-	0.6	0.7	-	1.3	11.9	4.6	0.7	5.3
8/2	338	338	-	-	-	1.0	0.5	-	1.4	15.1	4.2	0.5	4.7
8/3	181	181	-	-	-	0.2	0.2	-	0.4	7.2	1.8	0.2	2.0
9/1	502	502	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	498	498	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	742	742	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

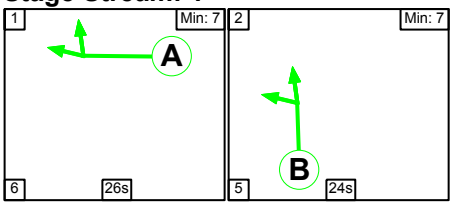
11/1	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	608	608	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	363	363	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	784	784	-	-	-	0.6	0.9	-	1.5	6.9	3.4	0.9	4.3
13/2	608	608	-	-	-	0.2	0.5	-	0.7	4.3	1.1	0.5	1.6
14/1	427	427	-	-	-	0.1	0.3	-	0.4	3.6	0.7	0.3	1.0
14/2	363	363	-	-	-	0.1	0.2	-	0.3	3.2	0.4	0.2	0.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	27.0	Total Delay for Signalled Lanes (pcuHr):	9.39	Cycle Time (s):	55
C1	Stream: 2 PRC for Signalled Lanes (%):	38.8	Total Delay for Signalled Lanes (pcuHr):	2.24	Cycle Time (s):	55
C1	Stream: 3 PRC for Signalled Lanes (%):	37.0	Total Delay for Signalled Lanes (pcuHr):	8.73	Cycle Time (s):	55
C1	Stream: 4 PRC for Signalled Lanes (%):	142.7	Total Delay for Signalled Lanes (pcuHr):	0.75	Cycle Time (s):	55
C2	Stream: 1 PRC for Signalled Lanes (%):	48.1	Total Delay for Signalled Lanes (pcuHr):	6.48	Cycle Time (s):	55
C2	Stream: 2 PRC for Signalled Lanes (%):	51.9	Total Delay for Signalled Lanes (pcuHr):	8.69	Cycle Time (s):	55
	PRC Over All Lanes (%):	27.0	Total Delay Over All Lanes(pcuHr):	36.29		

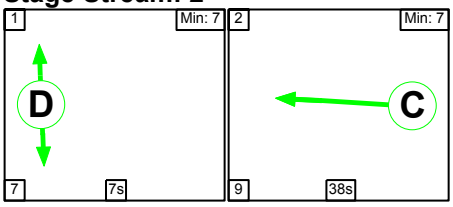
Full Input Data And Results
Scenario 7: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

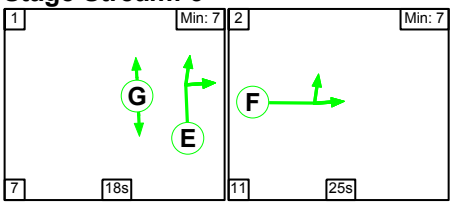
Stage Stream: 1



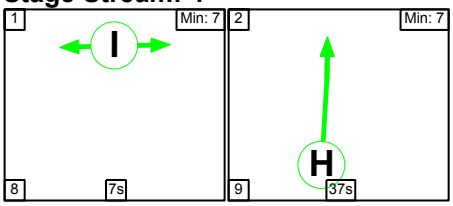
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	24
Change Point	37	8

Stage Stream: 2

Stage	1	2
Duration	7	38
Change Point	27	41

Stage Stream: 3

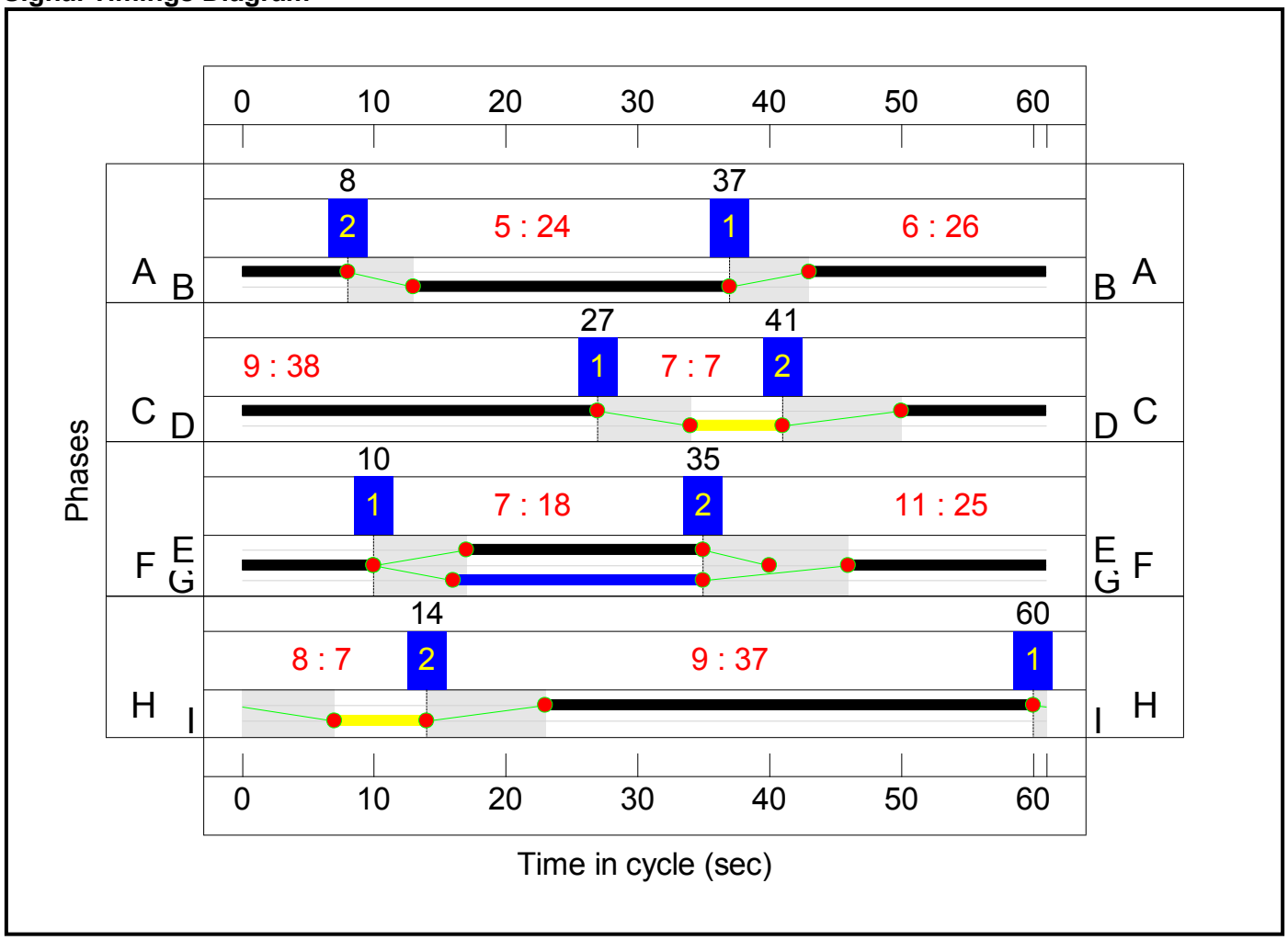
Stage	1	2
Duration	18	25
Change Point	10	35

Stage Stream: 4

Stage	1	2
Duration	7	37
Change Point	60	14

Full Input Data And Results

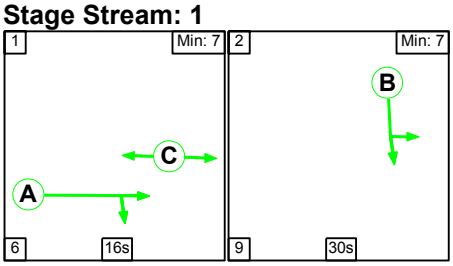
Signal Timings Diagram



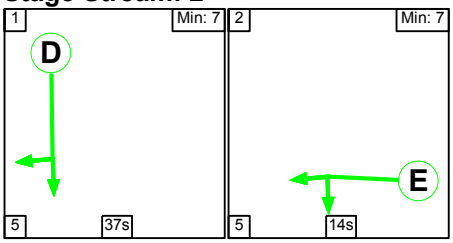
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

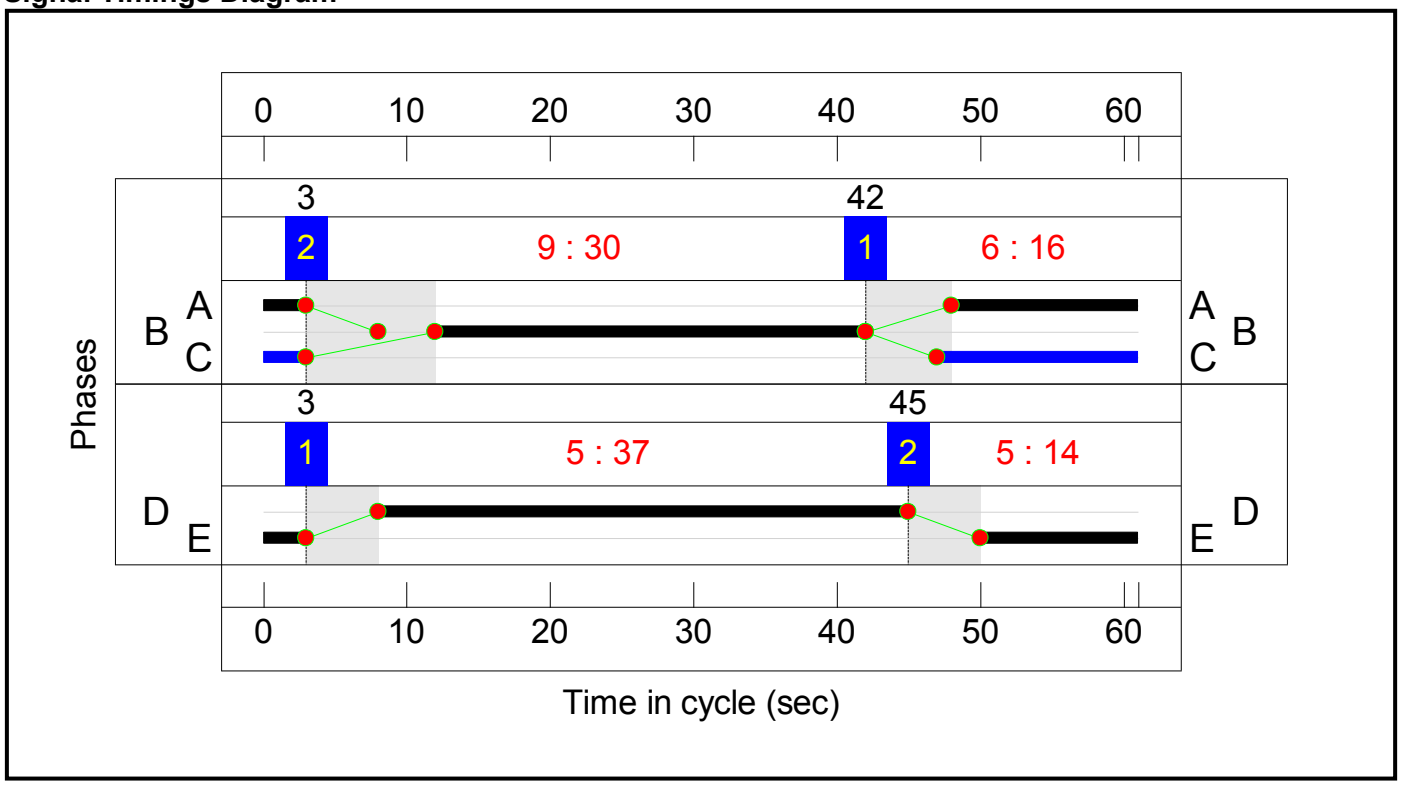
Stage Stream: 1

Stage	1	2
Duration	16	30
Change Point	42	3

Stage Stream: 2

Stage	1	2
Duration	37	14
Change Point	3	45

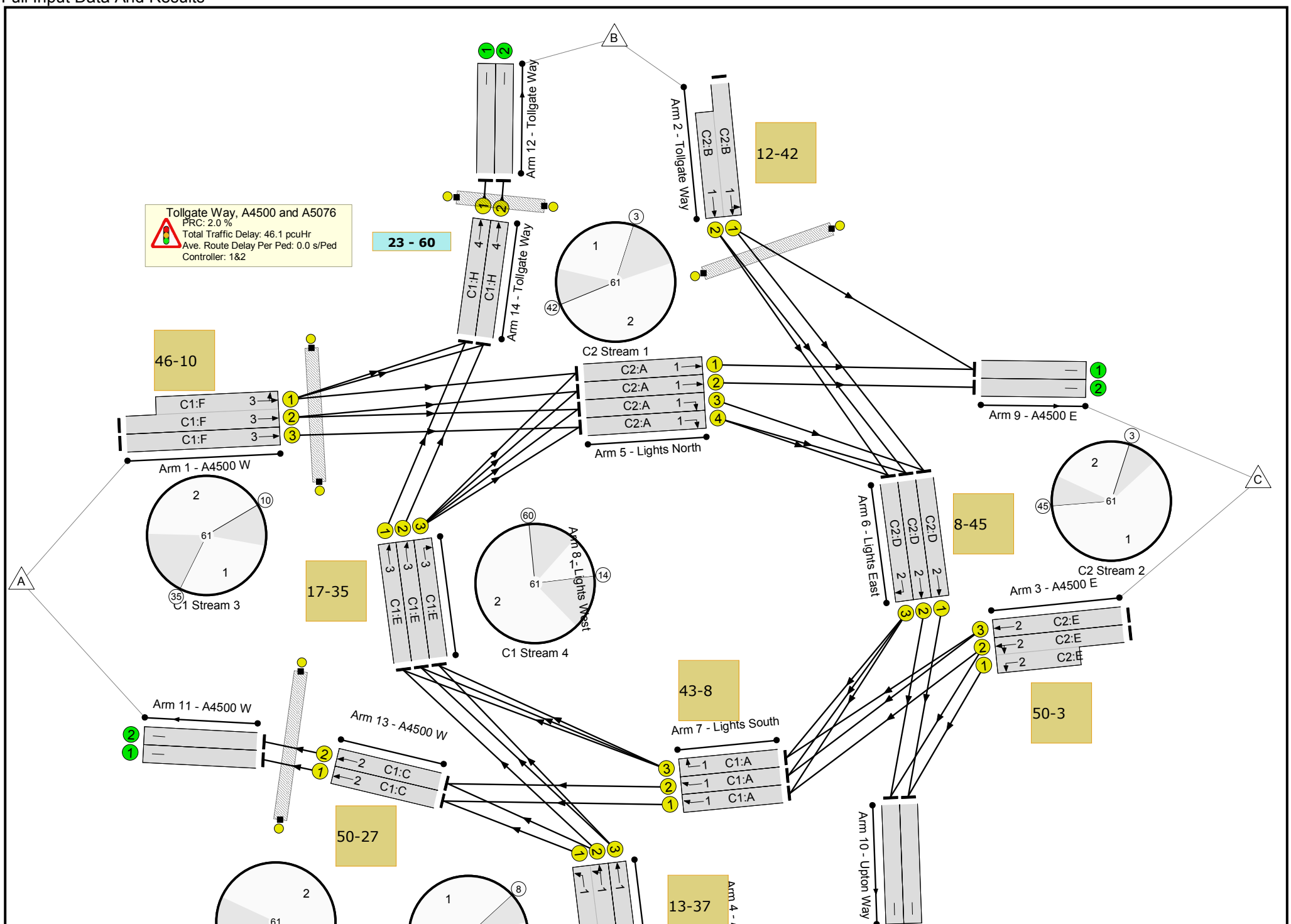
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.2%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.2%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	25	-	947	2060:1914	878+816	55.4 : 56.5%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	25	-	329	1927	821	40.1%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	30	-	1493	1962:1964	837+854	88.2 : 88.2%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	14	-	530	2078:1937	473+317	67.1 : 67.1%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	14	-	313	1941	477	65.6%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	24	-	773	2075:1930	850+791	51.3 : 42.6%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	24	-	367	1940	795	46.2%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	16	-	390	1915	534	73.1%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	16	-	465	2051	572	81.4%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	16	-	102	2026	565	18.1%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	16	-	329	1890	527	62.5%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	37	-	758	1914	1192	63.6%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	37	-	799	2051	1278	62.5%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	37	-	284	1891	1178	24.1%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	26	-	395	1919	849	46.5%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	26	-	485	2055	910	53.3%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	26	-	34	1919	849	4.0%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	18	-	398	1915	596	66.7%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	18	-	207	2051	639	32.4%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	18	-	191	2050	639	29.9%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	473	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	465	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	971	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	799	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	732	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	526	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	435	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	38	-	732	2015	1288	56.8%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	38	-	526	2015	1288	40.8%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	37	-	435	1979	1233	35.3%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	37	-	351	1980	1233	28.5%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	19	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	17	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**28.5**	**17.6**	**0.0**	**46.1**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**28.5**	**17.6**	**0.0**	**46.1**	**-**	**-**	**-**	**-**
1/2+1/1	947	947	-	-	-	3.5	0.6	-	4.1	15.6	6.1	0.6	6.7
1/3	329	329	-	-	-	1.1	0.3	-	1.4	15.8	3.8	0.3	4.2
2/1+2/2	1493	1493	-	-	-	4.9	3.6	-	8.6	20.6	10.1	3.6	13.7
3/2+3/1	530	530	-	-	-	3.0	1.0	-	4.0	27.0	4.8	1.0	5.8
3/3	313	313	-	-	-	1.8	0.9	-	2.7	31.5	4.7	0.9	5.6
4/2+4/1	773	773	-	-	-	2.8	0.4	-	3.3	15.3	5.4	0.4	5.9
4/3	367	367	-	-	-	1.3	0.4	-	1.8	17.3	4.5	0.4	4.9
5/1	390	390	-	-	-	1.5	1.3	-	2.8	26.2	3.8	1.3	5.1
5/2	465	465	-	-	-	1.7	2.1	-	3.8	29.1	3.6	2.1	5.7
5/3	102	102	-	-	-	0.3	0.1	-	0.4	15.1	0.5	0.1	0.7
5/4	329	329	-	-	-	0.9	0.8	-	1.7	19.1	1.5	0.8	2.3
6/1	758	758	-	-	-	0.6	0.9	-	1.4	6.8	2.6	0.9	3.5
6/2	799	799	-	-	-	1.3	0.8	-	2.1	9.4	6.3	0.8	7.2
6/3	284	284	-	-	-	0.1	0.2	-	0.3	3.7	0.4	0.2	0.6
7/1	395	395	-	-	-	0.4	0.4	-	0.8	7.4	1.4	0.4	1.9
7/2	485	485	-	-	-	0.7	0.6	-	1.3	9.7	3.5	0.6	4.1
7/3	34	34	-	-	-	0.0	0.0	-	0.0	4.6	0.0	0.0	0.1
8/1	398	398	-	-	-	0.7	1.0	-	1.7	15.6	1.2	1.0	2.2
8/2	207	207	-	-	-	0.4	0.2	-	0.7	11.5	1.0	0.2	1.3
8/3	191	191	-	-	-	0.3	0.2	-	0.6	10.4	0.6	0.2	0.8
9/1	473	473	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	465	465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	971	971	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	799	799	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

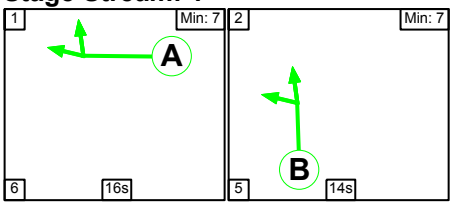
11/1	732	732	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	526	526	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	435	435	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	732	732	-	-	-	0.7	0.7	-	1.3	6.5	3.6	0.7	4.3
13/2	526	526	-	-	-	0.1	0.3	-	0.4	3.0	1.2	0.3	1.6
14/1	435	435	-	-	-	0.1	0.3	-	0.4	3.0	0.3	0.3	0.6
14/2	351	351	-	-	-	0.2	0.2	-	0.4	4.5	1.3	0.2	1.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	68.8	Total Delay for Signalled Lanes (pcuHr):	7.21	Cycle Time (s): 61
C1	Stream: 2 PRC for Signalled Lanes (%):	58.4	Total Delay for Signalled Lanes (pcuHr):	1.76	Cycle Time (s): 61
C1	Stream: 3 PRC for Signalled Lanes (%):	34.9	Total Delay for Signalled Lanes (pcuHr):	8.47	Cycle Time (s): 61
C1	Stream: 4 PRC for Signalled Lanes (%):	155.1	Total Delay for Signalled Lanes (pcuHr):	0.80	Cycle Time (s): 61
C2	Stream: 1 PRC for Signalled Lanes (%):	2.0	Total Delay for Signalled Lanes (pcuHr):	17.33	Cycle Time (s): 61
C2	Stream: 2 PRC for Signalled Lanes (%):	34.1	Total Delay for Signalled Lanes (pcuHr):	10.54	Cycle Time (s): 61
	PRC Over All Lanes (%):	2.0	Total Delay Over All Lanes(pcuHr):	46.11	

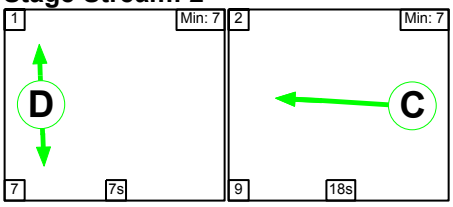
Full Input Data And Results
Scenario 8: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

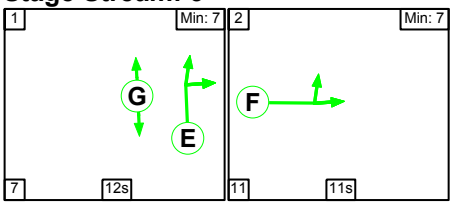
Stage Stream: 1



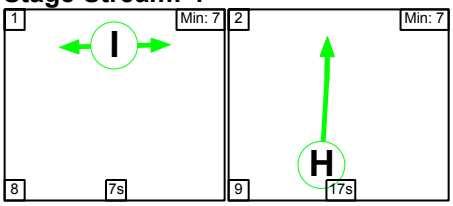
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	14
Change Point	0	22

Stage Stream: 2

Stage	1	2
Duration	7	18
Change Point	26	40

Stage Stream: 3

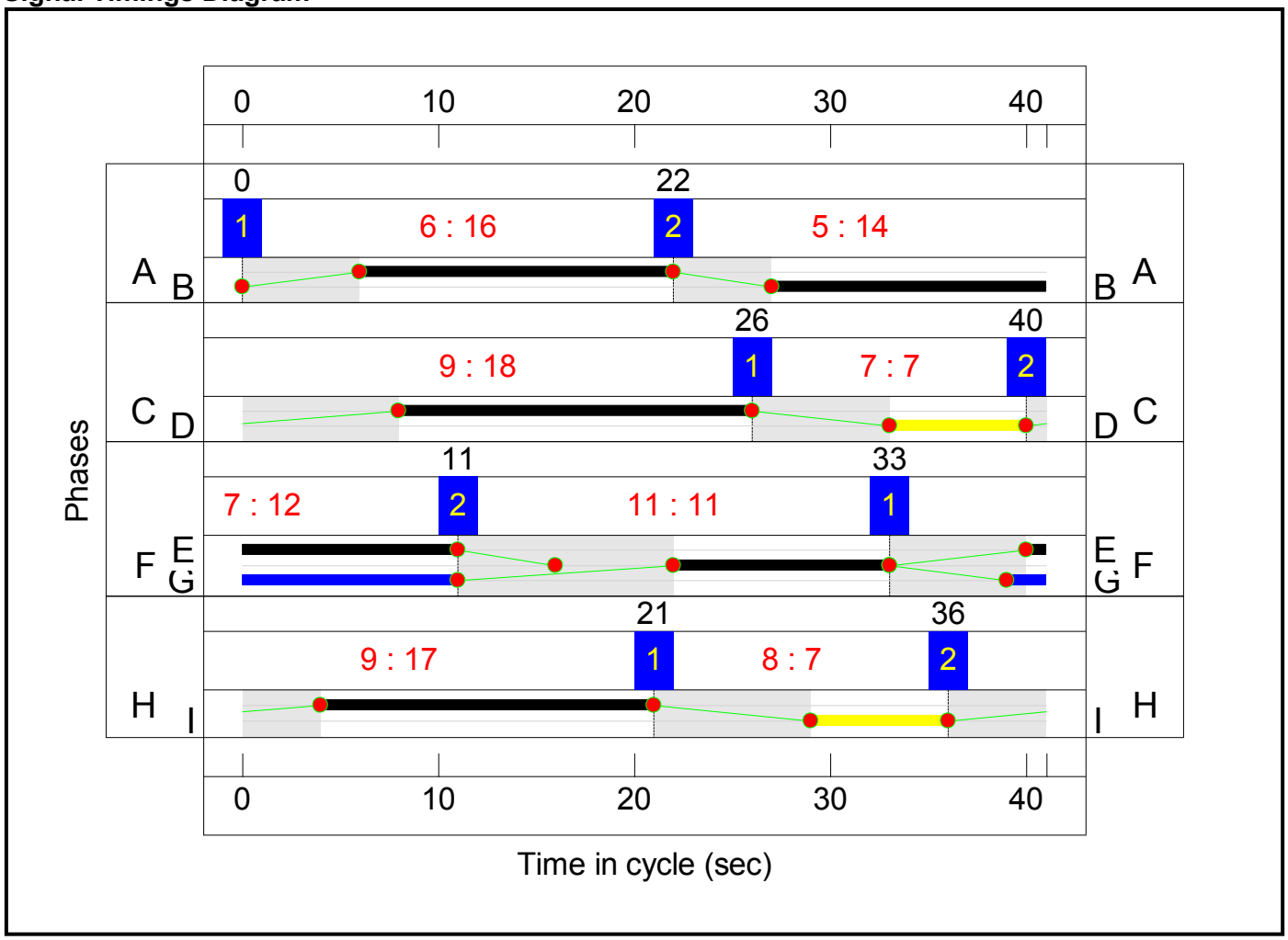
Stage	1	2
Duration	12	11
Change Point	33	11

Stage Stream: 4

Stage	1	2
Duration	7	17
Change Point	21	36

Full Input Data And Results

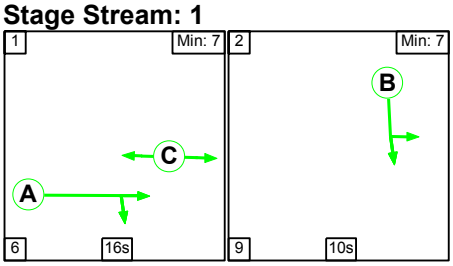
Signal Timings Diagram



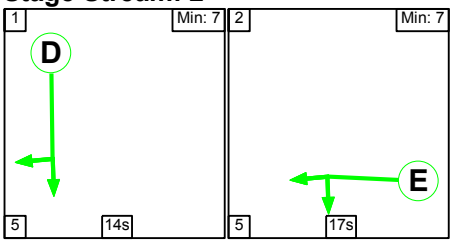
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

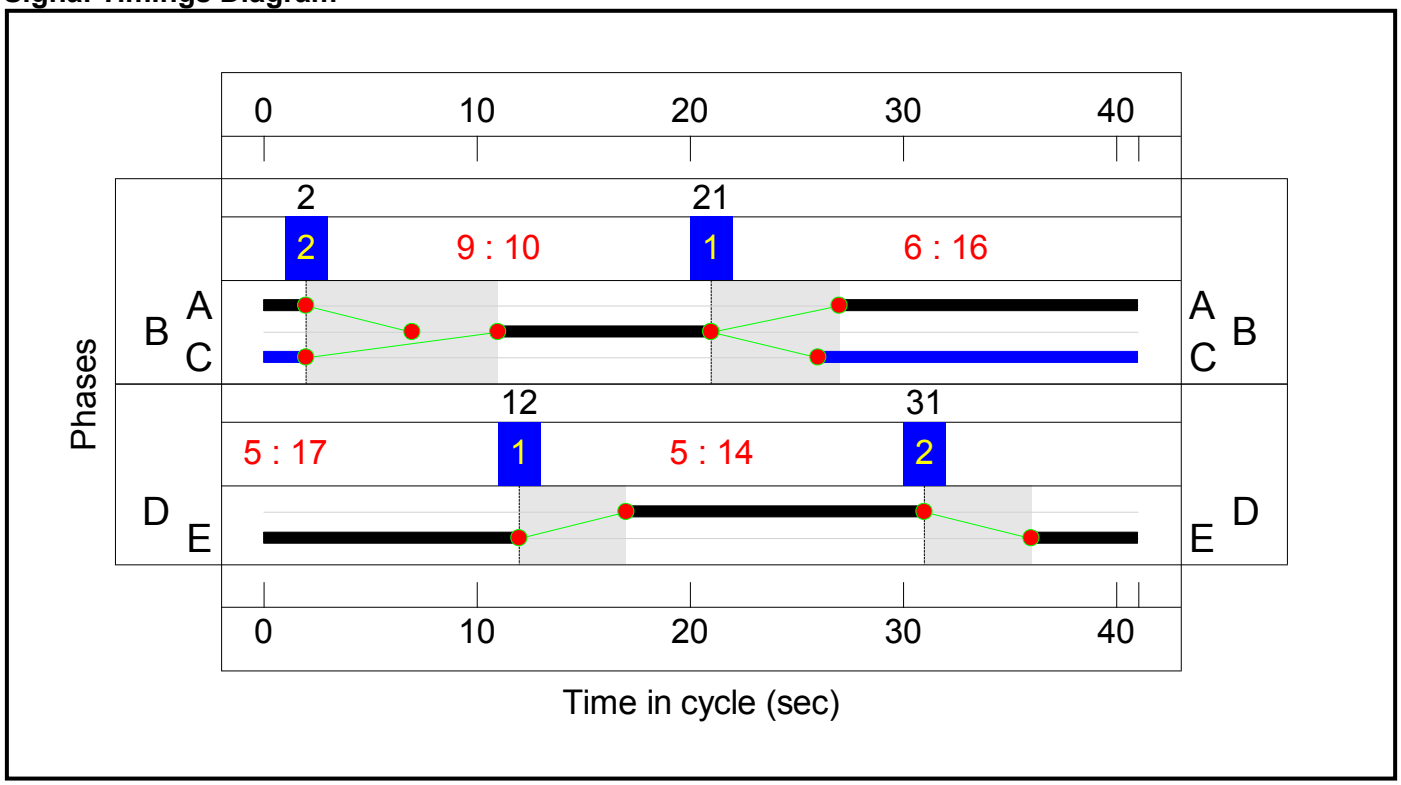
Stage Stream: 1

Stage	1	2
Duration	16	10
Change Point	21	2

Stage Stream: 2

Stage	1	2
Duration	14	17
Change Point	12	31

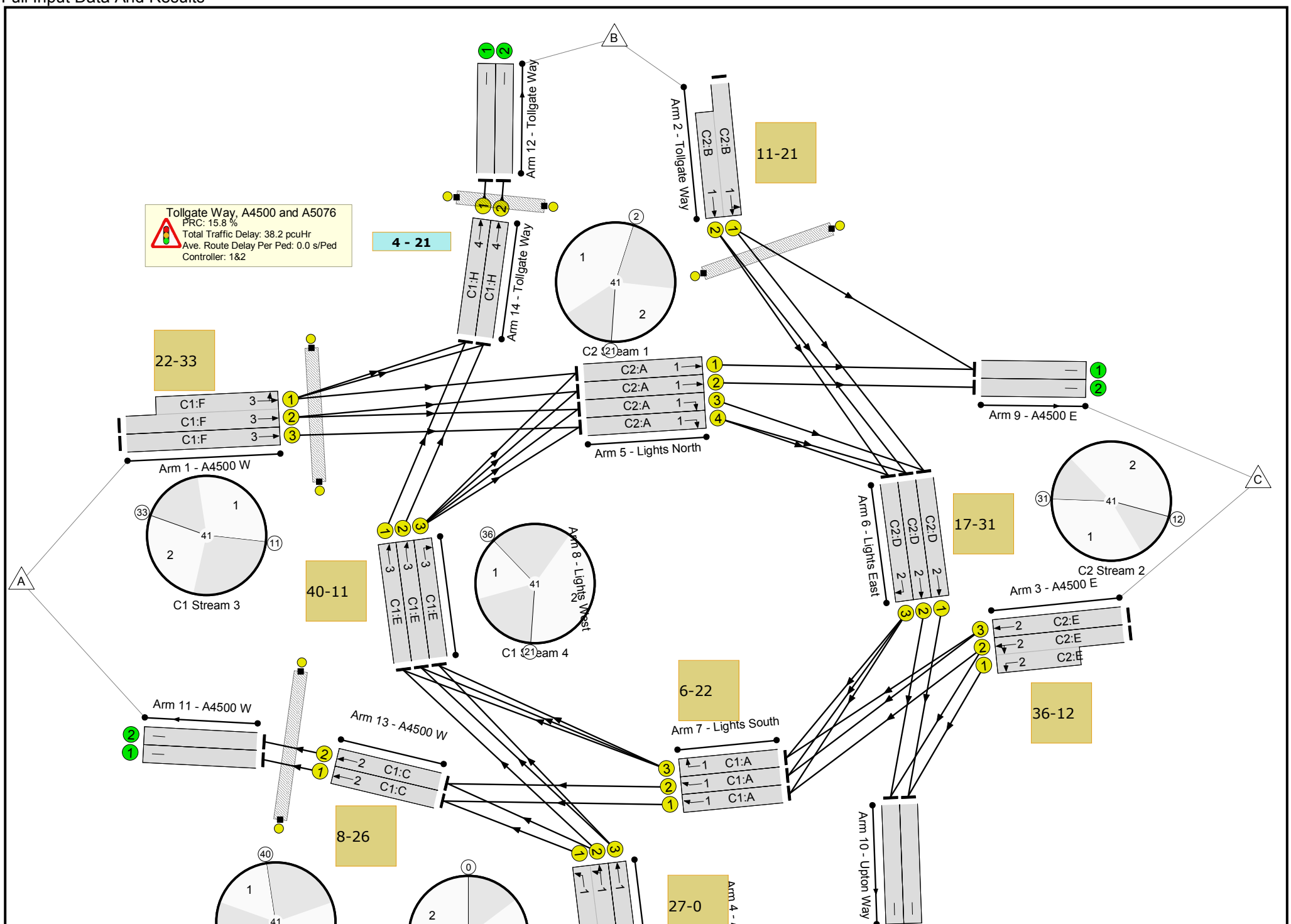
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.7%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.7%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	11	-	881	2060:1917	603+561	75.6 : 75.7%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	11	-	301	1927	564	53.4%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	10	-	749	1961:1964	526+527	76.8 : 65.5%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	17	-	812	2078:1937	778+626	57.9 : 57.9%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	17	-	390	1941	852	45.8%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	14	-	788	2072:1930	758+417	77.7 : 47.7%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	14	-	482	1940	710	67.9%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	16	-	472	1915	794	59.4%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	16	-	544	2051	850	64.0%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	16	-	0	2105	873	0.0%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	16	-	301	1890	784	38.4%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	14	-	347	1914	700	49.6%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	14	-	446	2051	750	59.4%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	14	-	200	1891	692	28.9%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	16	-	483	1919	796	60.7%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	16	-	483	2055	852	56.7%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	16	-	68	1919	796	8.5%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	12	-	400	1915	607	65.9%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	12	-	318	2051	650	48.9%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	12	-	219	2050	650	33.7%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	529	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	544	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	452	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	682	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	420	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	382	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	18	-	682	2015	934	73.0%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	18	-	685	2015	934	73.4%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	17	-	420	1979	869	48.3%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	17	-	382	1980	869	43.9%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	13	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	17	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**21.6**	**16.6**	**0.0**	**38.2**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**21.6**	**16.6**	**0.0**	**38.2**	**-**	**-**	**-**	**-**
1/2+1/1	881	881	-	-	-	3.2	1.5	-	4.8	19.5	4.7	1.5	6.2
1/3	301	301	-	-	-	1.0	0.6	-	1.6	19.0	2.8	0.6	3.4
2/1+2/2	749	749	-	-	-	2.8	1.2	-	4.1	19.5	4.2	1.2	5.4
3/2+3/1	812	812	-	-	-	1.8	0.7	-	2.5	11.1	3.6	0.7	4.3
3/3	390	390	-	-	-	0.9	0.4	-	1.3	12.0	3.0	0.4	3.5
4/2+4/1	788	788	-	-	-	2.4	1.0	-	3.4	15.6	5.9	1.0	6.9
4/3	482	482	-	-	-	1.5	1.0	-	2.5	18.8	4.6	1.0	5.6
5/1	472	472	-	-	-	0.7	0.7	-	1.5	11.1	2.2	0.7	3.0
5/2	544	544	-	-	-	0.5	0.9	-	1.4	9.1	1.3	0.9	2.2
5/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/4	301	301	-	-	-	0.0	0.3	-	0.3	4.0	0.1	0.3	0.4
6/1	347	347	-	-	-	0.1	0.5	-	0.5	5.6	0.1	0.5	0.6
6/2	446	446	-	-	-	1.7	0.7	-	2.5	19.9	4.7	0.7	5.4
6/3	200	200	-	-	-	0.0	0.2	-	0.2	4.1	0.0	0.2	0.2
7/1	483	483	-	-	-	0.6	0.8	-	1.4	10.3	4.6	0.8	5.4
7/2	483	483	-	-	-	1.2	0.7	-	1.9	13.9	4.9	0.7	5.5
7/3	68	68	-	-	-	0.0	0.0	-	0.1	3.7	0.3	0.0	0.4
8/1	400	400	-	-	-	0.5	1.0	-	1.4	12.7	4.1	1.0	5.0
8/2	318	318	-	-	-	0.5	0.5	-	1.0	10.8	2.9	0.5	3.4
8/3	219	219	-	-	-	0.2	0.3	-	0.4	6.8	1.9	0.3	2.1
9/1	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	544	544	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	452	452	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

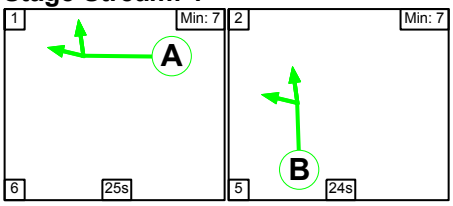
11/1	682	682	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	685	685	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	420	420	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	382	382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	682	682	-	-	-	0.9	1.3	-	2.2	11.7	2.6	1.3	3.9
13/2	685	685	-	-	-	0.7	1.4	-	2.1	10.9	2.6	1.4	3.9
14/1	420	420	-	-	-	0.1	0.5	-	0.6	4.7	0.3	0.5	0.7
14/2	382	382	-	-	-	0.3	0.4	-	0.7	6.2	0.8	0.4	1.2
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	15.8	Total Delay for Signalled Lanes (pcuHr):	9.25	Cycle Time (s):	41		
C1	Stream: 2 PRC for Signalled Lanes (%):	22.7	Total Delay for Signalled Lanes (pcuHr):	4.30	Cycle Time (s):	41		
C1	Stream: 3 PRC for Signalled Lanes (%):	18.8	Total Delay for Signalled Lanes (pcuHr):	9.13	Cycle Time (s):	41		
C1	Stream: 4 PRC for Signalled Lanes (%):	86.2	Total Delay for Signalled Lanes (pcuHr):	1.21	Cycle Time (s):	41		
C2	Stream: 1 PRC for Signalled Lanes (%):	17.2	Total Delay for Signalled Lanes (pcuHr):	7.23	Cycle Time (s):	41		
C2	Stream: 2 PRC for Signalled Lanes (%):	51.4	Total Delay for Signalled Lanes (pcuHr):	7.04	Cycle Time (s):	41		
	PRC Over All Lanes (%):	15.8	Total Delay Over All Lanes(pcuHr):	38.17				

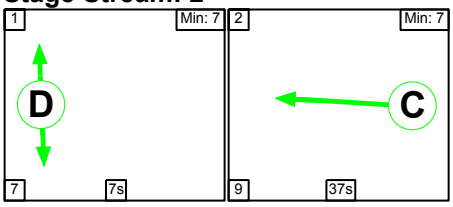
Full Input Data And Results
Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

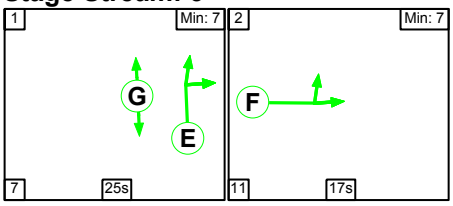
Stage Stream: 1



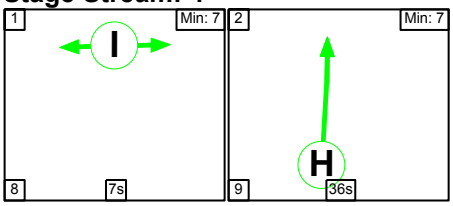
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	24
Change Point	27	58

Stage Stream: 2

Stage	1	2
Duration	7	37
Change Point	16	30

Stage Stream: 3

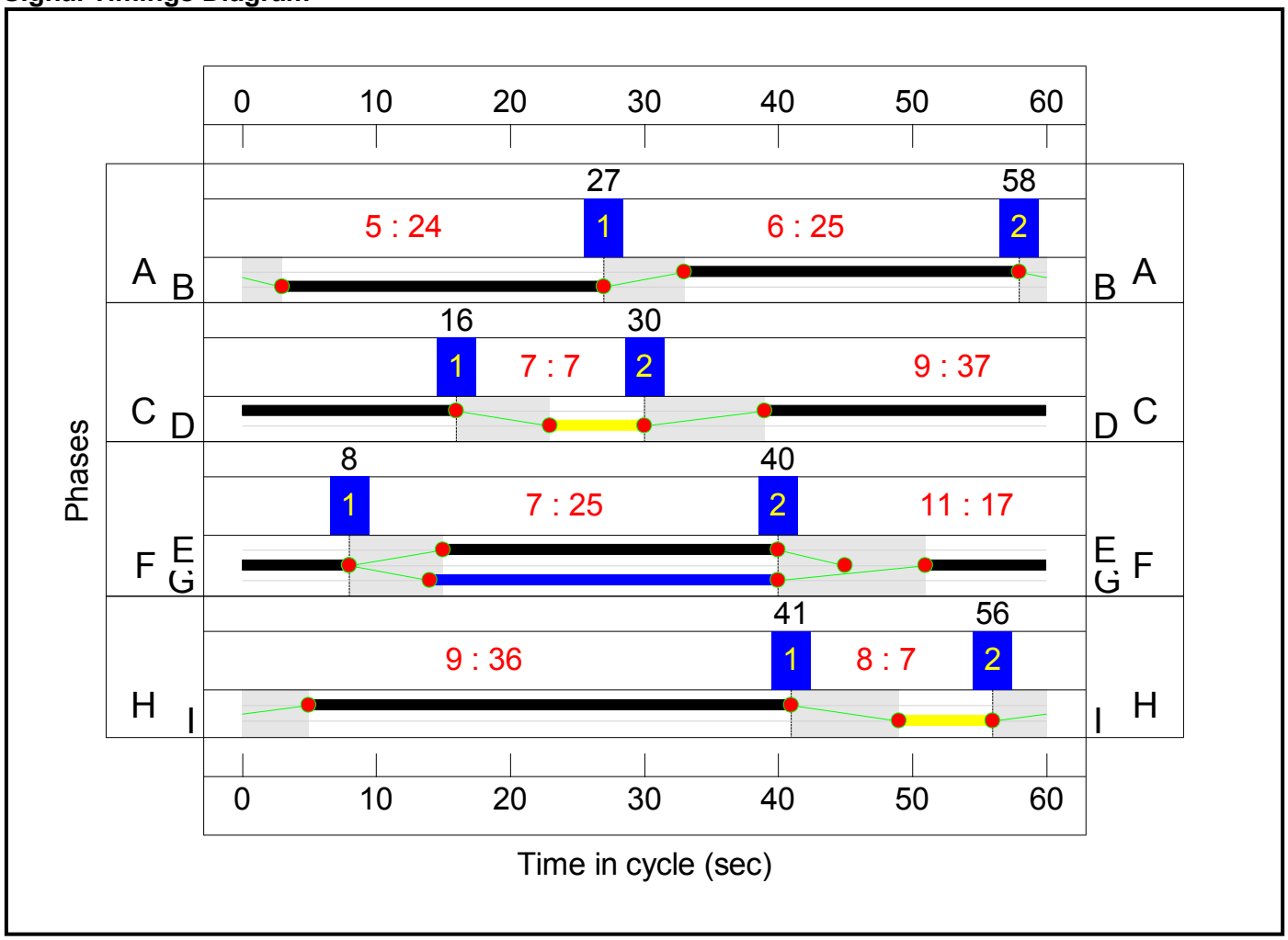
Stage	1	2
Duration	25	17
Change Point	8	40

Stage Stream: 4

Stage	1	2
Duration	7	36
Change Point	41	56

Full Input Data And Results

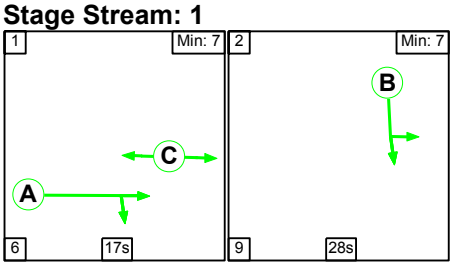
Signal Timings Diagram



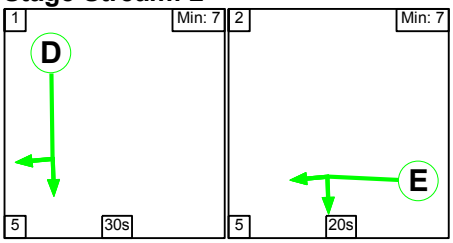
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

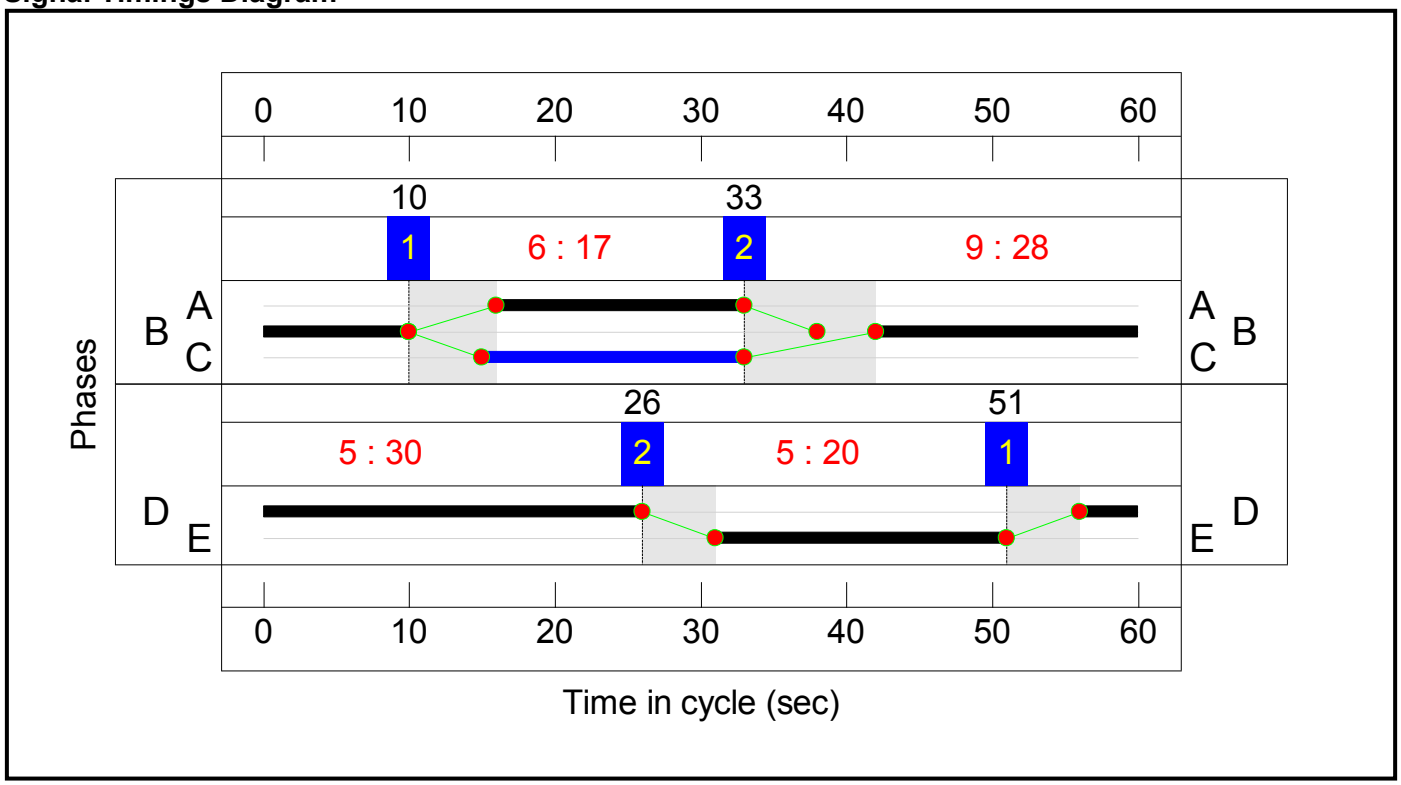
Stage Stream: 1

Stage	1	2
Duration	17	28
Change Point	10	33

Stage Stream: 2

Stage	1	2
Duration	30	20
Change Point	51	26

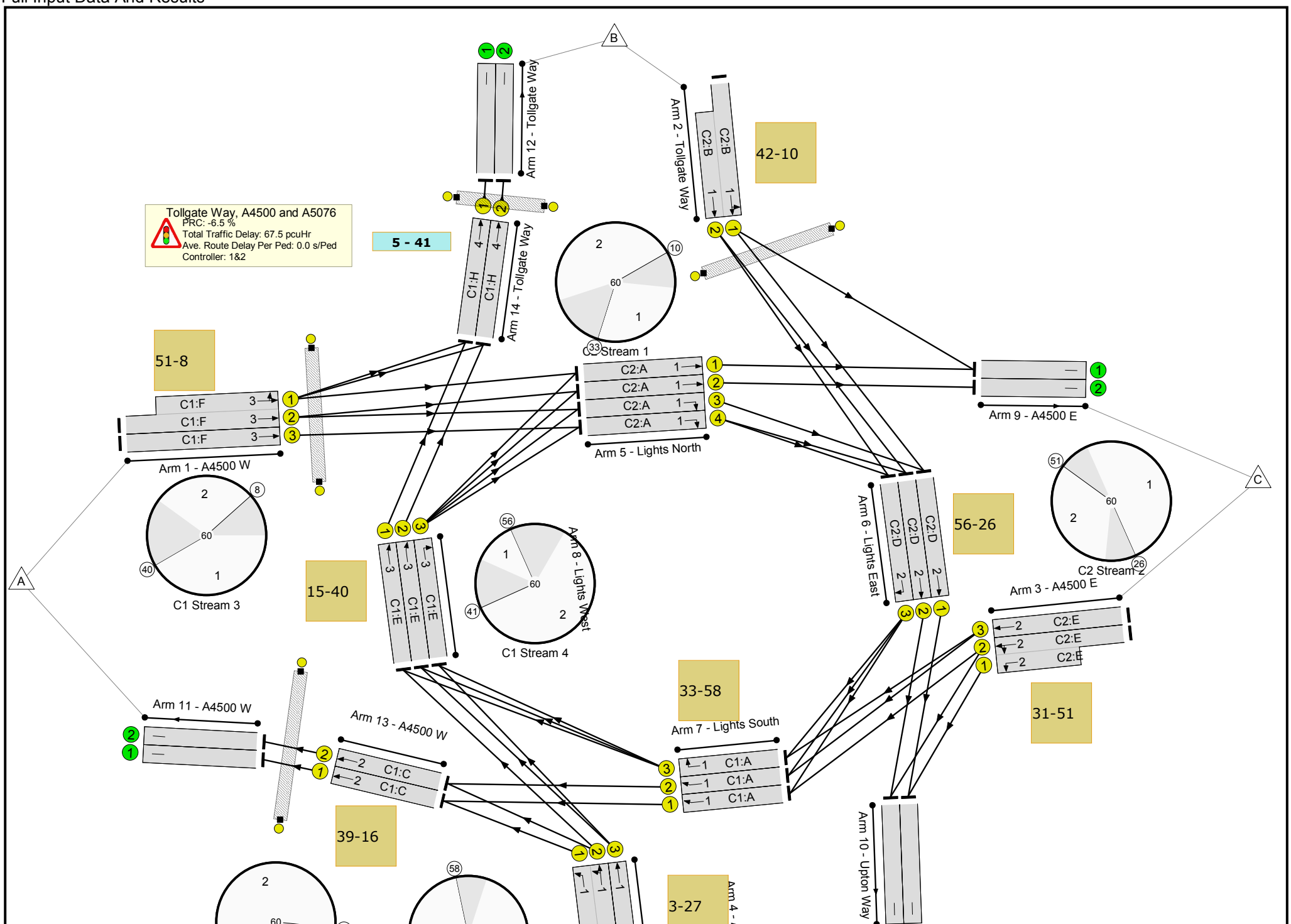
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.9%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.9%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	17	-	1092	2060:1913	618+574	89.2 : 94.3%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	17	-	321	1927	578	55.5%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	28	-	1587	1960:1964	820+836	95.9 : 95.9%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	20	-	736	2078:1937	589+465	69.8 : 69.8%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	20	-	423	1941	679	62.3%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	24	-	758	2076:1930	865+691	53.6 : 42.6%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	24	-	431	1940	808	53.3%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	17	-	432	1915	574	75.2%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	17	-	526	2051	615	85.5%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	17	-	104	2026	608	17.1%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	17	-	321	1890	567	56.6%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	30	-	749	1914	989	75.7%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	30	-	778	2051	1060	73.4%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	30	-	344	1891	977	35.2%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	25	-	520	1919	832	62.5%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	25	-	589	2055	890	66.1%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	25	-	63	1919	832	7.6%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	25	-	453	1915	830	54.6%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	25	-	262	2051	889	29.5%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	25	-	230	2050	888	25.9%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	573	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	526	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	1074	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	814	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	602	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	473	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	502	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	37	-	814	2015	1276	63.8%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	37	-	602	2015	1276	47.2%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	36	-	473	1979	1220	38.8%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	36	-	502	1980	1221	41.1%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	26	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	18	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**36.8**	**30.8**	**0.0**	**67.5**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**36.8**	**30.8**	**0.0**	**67.5**	**-**	**-**	**-**	**-**
1/2+1/1	1092	1092	-	-	-	6.2	5.0	-	11.1	36.7	8.7	5.0	13.7
1/3	321	321	-	-	-	1.6	0.6	-	2.2	24.6	4.5	0.6	5.1
2/1+2/2	1587	1587	-	-	-	5.9	9.2	-	15.1	34.2	11.6	9.2	20.7
3/2+3/1	736	736	-	-	-	3.2	1.1	-	4.3	21.2	5.5	1.1	6.6
3/3	423	423	-	-	-	1.9	0.8	-	2.7	23.2	5.8	0.8	6.6
4/2+4/1	758	758	-	-	-	2.7	0.5	-	3.2	15.0	5.8	0.5	6.3
4/3	431	431	-	-	-	1.6	0.6	-	2.1	17.9	5.3	0.6	5.8
5/1	432	432	-	-	-	1.4	1.5	-	2.9	24.3	6.6	1.5	8.1
5/2	526	526	-	-	-	2.2	2.8	-	5.0	34.0	8.7	2.8	11.4
5/3	104	104	-	-	-	0.3	0.1	-	0.4	13.9	1.7	0.1	1.8
5/4	321	321	-	-	-	1.5	0.6	-	2.1	23.6	5.3	0.6	6.0
6/1	749	749	-	-	-	1.0	1.5	-	2.5	12.2	10.4	1.5	11.9
6/2	778	778	-	-	-	2.6	1.4	-	3.9	18.2	10.6	1.4	11.9
6/3	344	344	-	-	-	0.1	0.3	-	0.4	4.3	2.3	0.3	2.6
7/1	520	520	-	-	-	0.8	0.8	-	1.7	11.4	2.1	0.8	2.9
7/2	589	589	-	-	-	1.6	1.0	-	2.6	16.0	5.8	1.0	6.8
7/3	63	63	-	-	-	0.0	0.0	-	0.1	4.1	0.1	0.0	0.1
8/1	453	453	-	-	-	0.5	0.6	-	1.1	8.4	6.4	0.6	7.0
8/2	262	262	-	-	-	0.5	0.2	-	0.7	10.1	3.1	0.2	3.3
8/3	230	230	-	-	-	0.1	0.2	-	0.3	4.2	2.3	0.2	2.5
9/1	573	573	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	526	526	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1074	1074	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

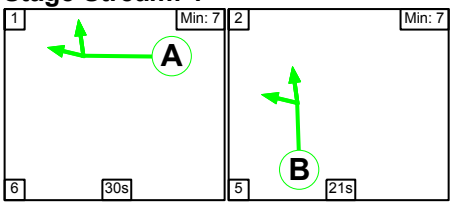
11/1	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	602	602	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	473	473	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	502	502	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	814	814	-	-	-	0.6	0.9	-	1.5	6.5	5.0	0.9	5.9
13/2	602	602	-	-	-	0.0	0.4	-	0.5	2.9	0.1	0.4	0.6
14/1	473	473	-	-	-	0.1	0.3	-	0.4	3.3	0.5	0.3	0.8
14/2	502	502	-	-	-	0.4	0.3	-	0.7	5.0	3.9	0.3	4.2
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	36.1	Total Delay for Signalled Lanes (pcuHr):	9.64	Cycle Time (s): 60
C1	Stream: 2 PRC for Signalled Lanes (%):	41.1	Total Delay for Signalled Lanes (pcuHr):	1.95	Cycle Time (s): 60
C1	Stream: 3 PRC for Signalled Lanes (%):	-4.7	Total Delay for Signalled Lanes (pcuHr):	15.38	Cycle Time (s): 60
C1	Stream: 4 PRC for Signalled Lanes (%):	118.9	Total Delay for Signalled Lanes (pcuHr):	1.14	Cycle Time (s): 60
C2	Stream: 1 PRC for Signalled Lanes (%):	-6.5	Total Delay for Signalled Lanes (pcuHr):	25.47	Cycle Time (s): 60
C2	Stream: 2 PRC for Signalled Lanes (%):	18.8	Total Delay for Signalled Lanes (pcuHr):	13.94	Cycle Time (s): 60
	PRC Over All Lanes (%):	-6.5	Total Delay Over All Lanes(pcuHr):	67.52	

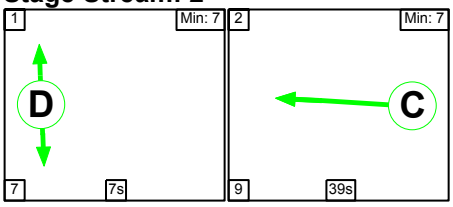
Full Input Data And Results
Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

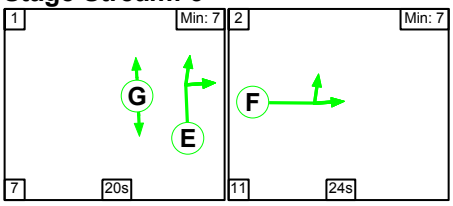
Stage Stream: 1



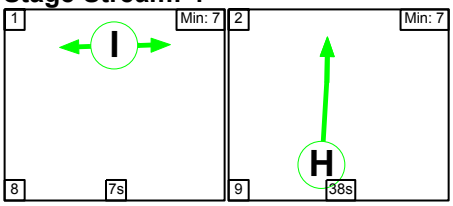
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	30	21
Change Point	33	7

Stage Stream: 2

Stage	1	2
Duration	7	39
Change Point	60	12

Stage Stream: 3

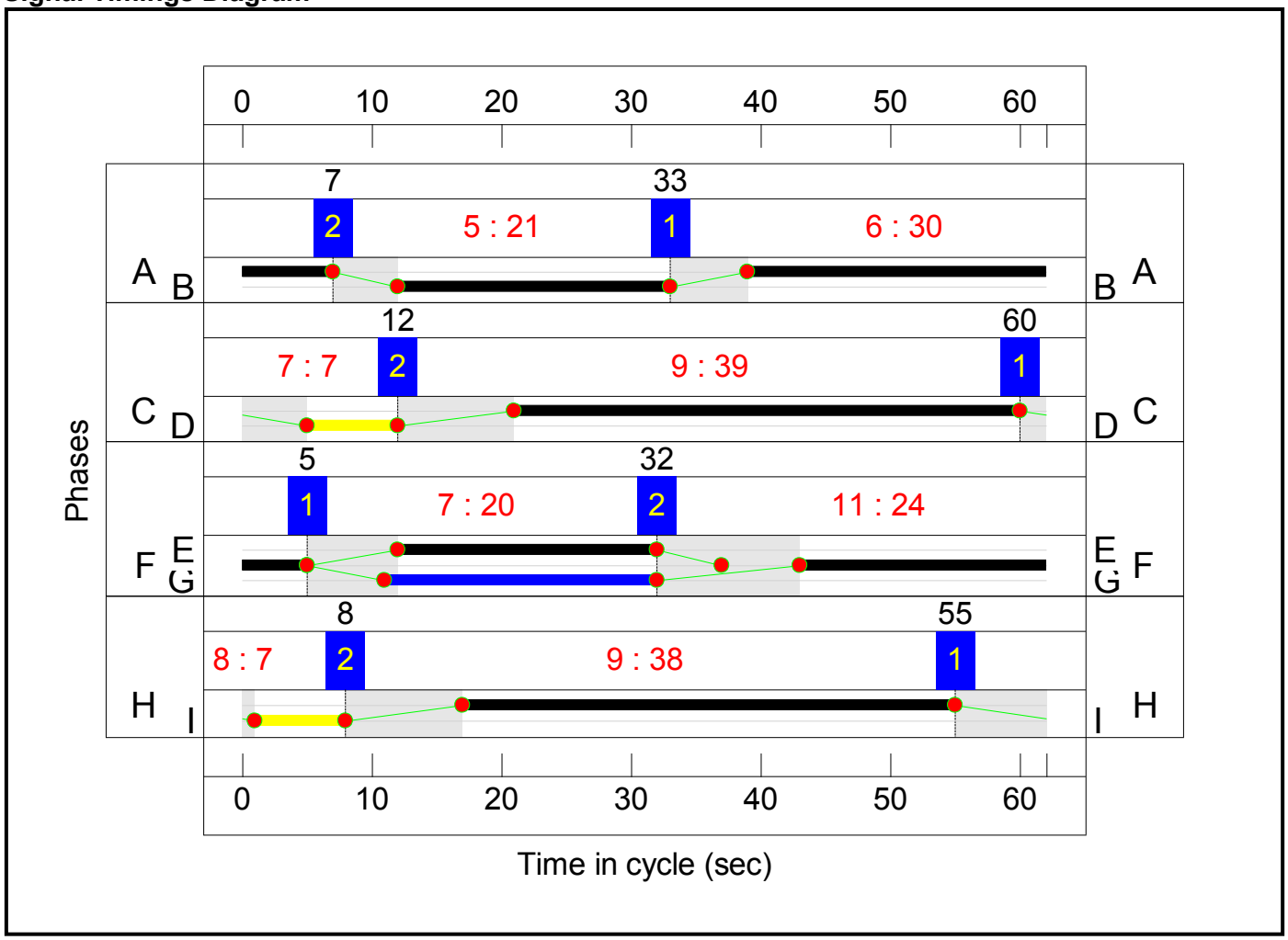
Stage	1	2
Duration	20	24
Change Point	5	32

Stage Stream: 4

Stage	1	2
Duration	7	38
Change Point	55	8

Full Input Data And Results

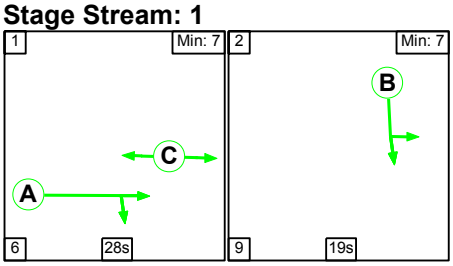
Signal Timings Diagram



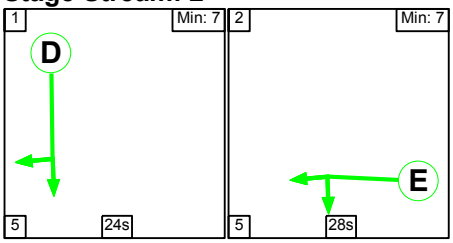
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

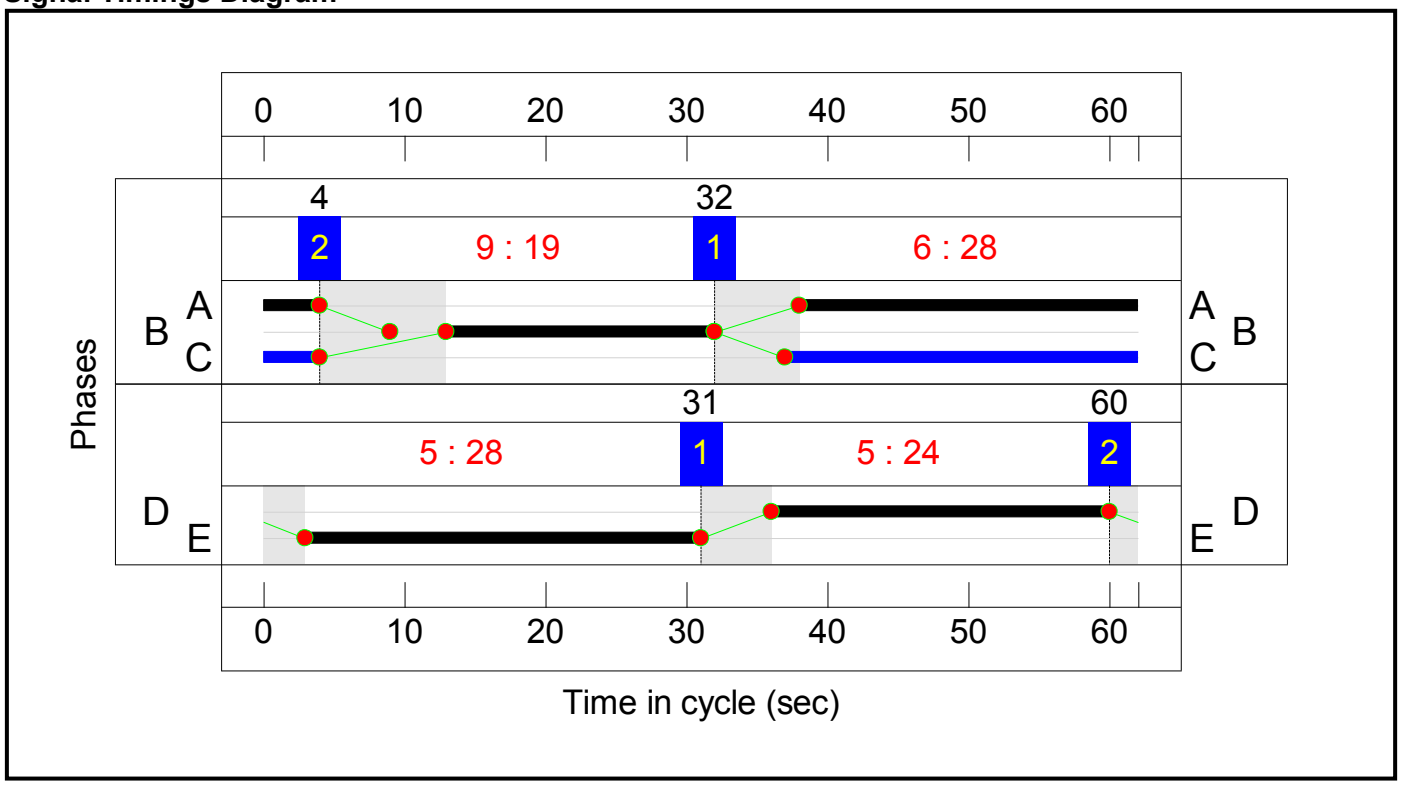
Stage Stream: 1

Stage	1	2
Duration	28	19
Change Point	32	4

Stage Stream: 2

Stage	1	2
Duration	24	28
Change Point	31	60

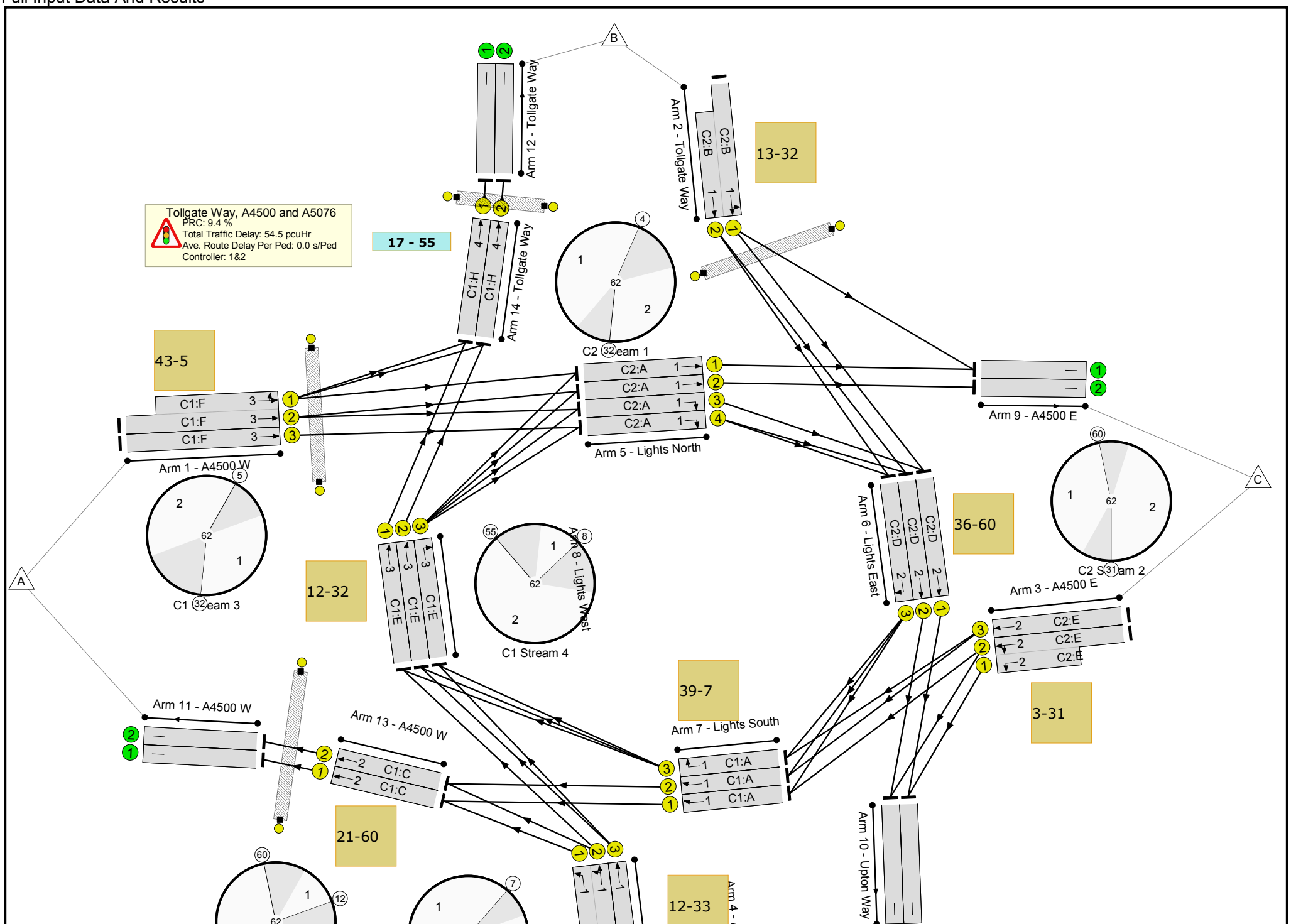
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**82.3%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**82.3%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	24	-	1029	2060:1916	831+773	64.2 : 64.2%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	24	-	263	1927	777	33.8%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	19	-	1033	1959:1964	632+634	82.3 : 81.0%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	28	-	833	2077:1937	693+640	62.5 : 62.5%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	28	-	439	1941	908	48.4%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	21	-	962	2075:1930	736+685	76.1 : 58.7%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	21	-	486	1940	688	70.6%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	28	-	499	1915	896	55.7%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	28	-	647	2051	959	67.4%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	28	-	0	2105	985	0.0%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	28	-	263	1890	884	29.8%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	24	-	409	1914	772	53.0%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	24	-	499	2051	827	60.3%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	24	-	277	1891	763	36.3%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	30	-	464	1919	960	48.4%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	30	-	546	2055	1027	53.1%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	30	-	78	1919	960	8.1%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	20	-	515	1915	649	79.4%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	20	-	306	2051	695	44.0%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	20	-	253	2050	694	36.4%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	610	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	647	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	809	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	560	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	596	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	534	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	423	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	39	-	866	2015	1300	66.6%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	39	-	596	2015	1300	45.8%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	38	-	534	1979	1245	42.9%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	38	-	423	1980	1245	34.0%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	21	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	29	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**38.5**	**16.0**	**0.0**	**54.5**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**38.5**	**16.0**	**0.0**	**54.5**	**-**	**-**	**-**	**-**
1/2+1/1	1029	1029	-	-	-	4.3	0.9	-	5.2	18.0	7.3	0.9	8.1
1/3	263	263	-	-	-	0.9	0.3	-	1.2	16.3	3.1	0.3	3.3
2/1+2/2	1033	1033	-	-	-	5.5	2.2	-	7.7	26.9	8.2	2.2	10.4
3/2+3/1	833	833	-	-	-	2.6	0.8	-	3.4	14.7	4.9	0.8	5.8
3/3	439	439	-	-	-	1.4	0.5	-	1.9	15.2	5.1	0.5	5.6
4/2+4/1	962	962	-	-	-	4.6	1.0	-	5.6	21.0	8.4	1.0	9.4
4/3	486	486	-	-	-	2.3	1.2	-	3.5	26.0	7.2	1.2	8.3
5/1	499	499	-	-	-	0.9	0.6	-	1.5	10.9	3.3	0.6	4.0
5/2	647	647	-	-	-	1.0	1.0	-	2.1	11.5	3.4	1.0	4.4
5/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/4	263	263	-	-	-	0.3	0.2	-	0.5	7.2	0.7	0.2	0.9
6/1	409	409	-	-	-	1.5	0.6	-	2.1	18.1	7.0	0.6	7.6
6/2	499	499	-	-	-	2.3	0.8	-	3.1	22.3	7.0	0.8	7.8
6/3	277	277	-	-	-	0.9	0.3	-	1.1	14.9	4.7	0.3	5.0
7/1	464	464	-	-	-	2.7	0.5	-	3.1	24.3	7.8	0.5	8.3
7/2	546	546	-	-	-	2.6	0.6	-	3.2	21.0	9.2	0.6	9.8
7/3	78	78	-	-	-	0.4	0.0	-	0.5	21.9	1.3	0.0	1.4
8/1	515	515	-	-	-	1.3	1.9	-	3.2	22.3	2.1	1.9	4.0
8/2	306	306	-	-	-	1.1	0.4	-	1.5	17.7	2.1	0.4	2.5
8/3	253	253	-	-	-	0.5	0.3	-	0.8	11.6	0.9	0.3	1.2
9/1	610	610	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	647	647	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	809	809	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	560	560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

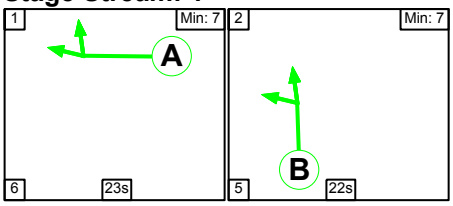
11/1	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	596	596	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	534	534	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	866	866	-	-	-	0.5	1.0	-	1.5	6.1	6.4	1.0	7.4
13/2	596	596	-	-	-	0.5	0.4	-	0.9	5.6	3.4	0.4	3.8
14/1	534	534	-	-	-	0.1	0.4	-	0.4	2.9	0.2	0.4	0.6
14/2	423	423	-	-	-	0.3	0.3	-	0.6	4.8	1.2	0.3	1.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	18.3	Total Delay for Signalled Lanes (pcuHr):	15.92	Cycle Time (s):	62		
C1	Stream: 2 PRC for Signalled Lanes (%):	35.1	Total Delay for Signalled Lanes (pcuHr):	2.40	Cycle Time (s):	62		
C1	Stream: 3 PRC for Signalled Lanes (%):	13.4	Total Delay for Signalled Lanes (pcuHr):	11.86	Cycle Time (s):	62		
C1	Stream: 4 PRC for Signalled Lanes (%):	109.8	Total Delay for Signalled Lanes (pcuHr):	1.00	Cycle Time (s):	62		
C2	Stream: 1 PRC for Signalled Lanes (%):	9.4	Total Delay for Signalled Lanes (pcuHr):	11.83	Cycle Time (s):	62		
C2	Stream: 2 PRC for Signalled Lanes (%):	43.9	Total Delay for Signalled Lanes (pcuHr):	11.54	Cycle Time (s):	62		
	PRC Over All Lanes (%):	9.4	Total Delay Over All Lanes(pcuHr):	54.54				

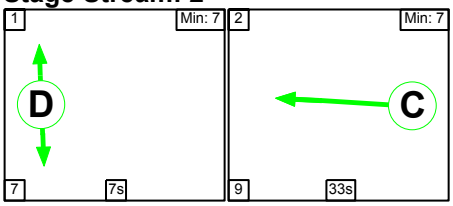
Full Input Data And Results
Scenario 11: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

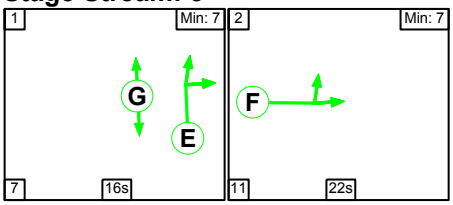
Stage Stream: 1



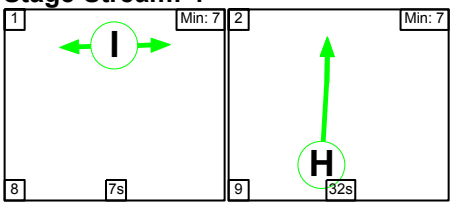
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	22
Change Point	35	8

Stage Stream: 2

Stage	1	2
Duration	7	33
Change Point	25	39

Stage Stream: 3

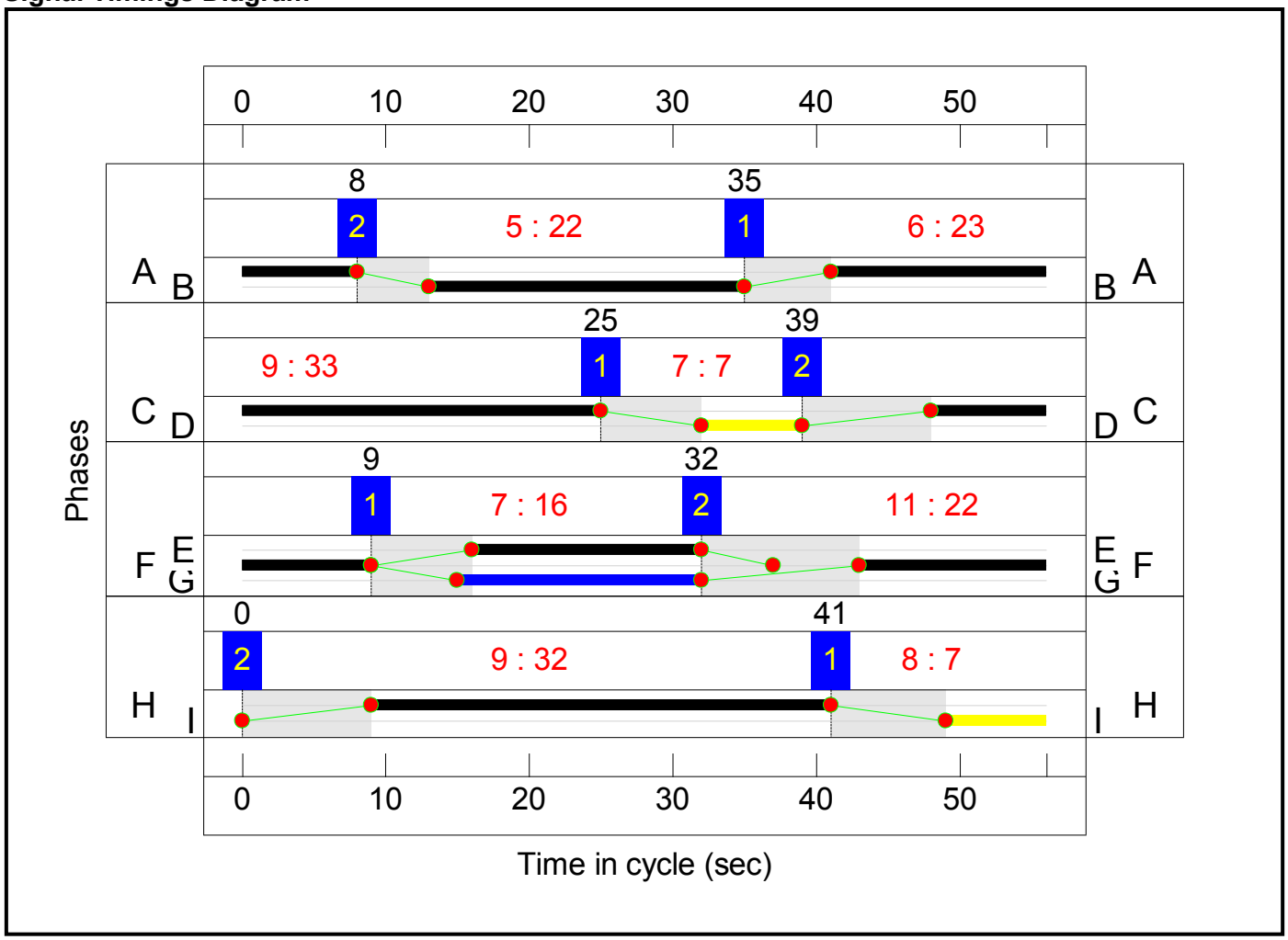
Stage	1	2
Duration	16	22
Change Point	9	32

Stage Stream: 4

Stage	1	2
Duration	7	32
Change Point	41	0

Full Input Data And Results

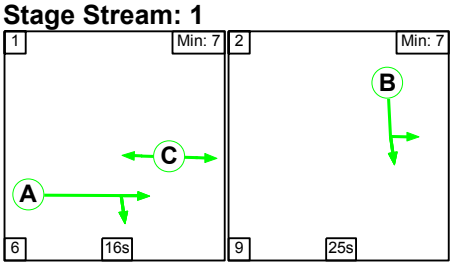
Signal Timings Diagram



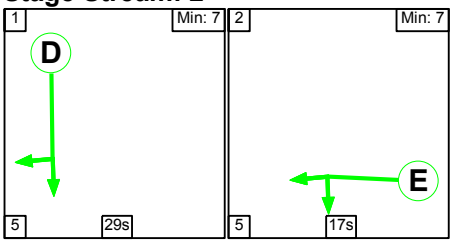
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

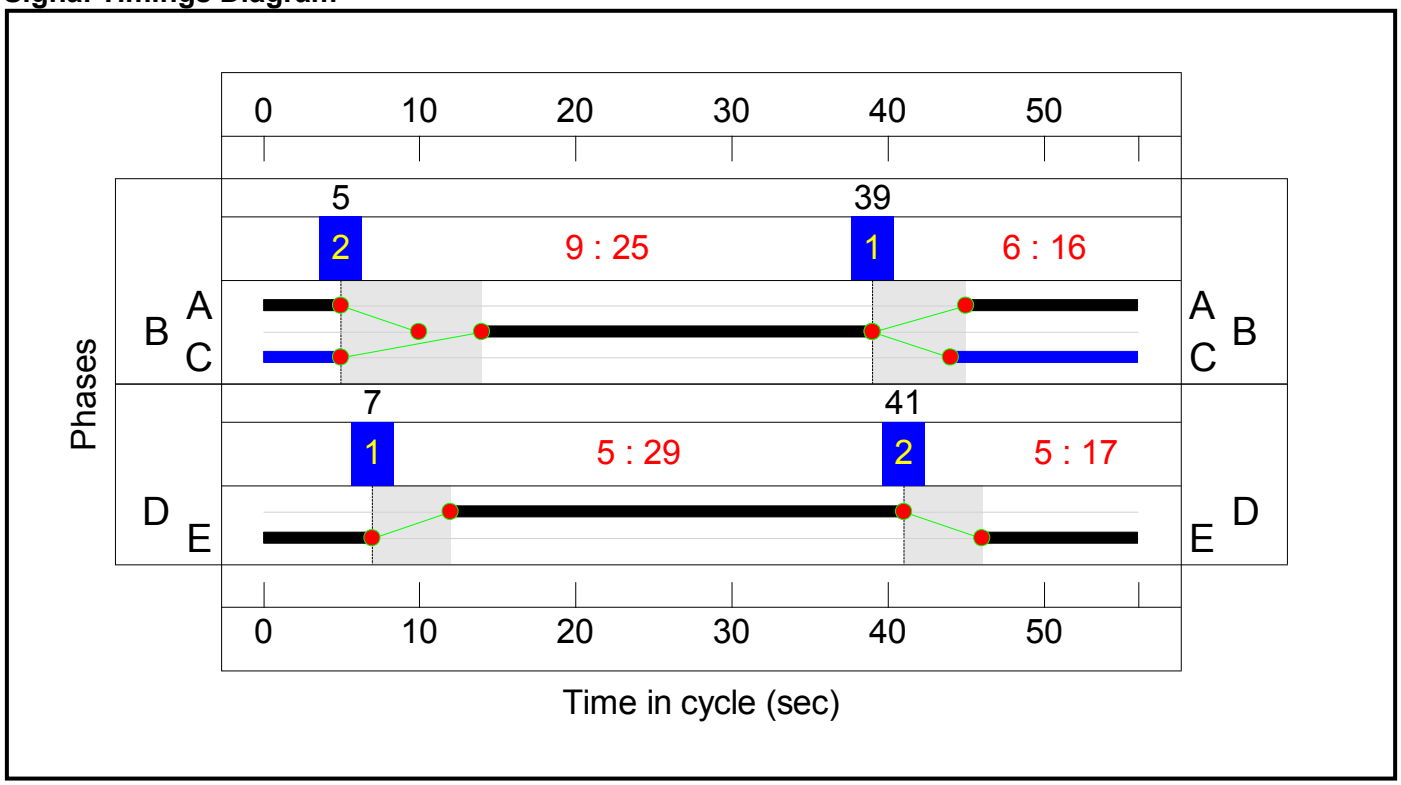
Stage Stream: 1

Stage	1	2
Duration	16	25
Change Point	39	5

Stage Stream: 2

Stage	1	2
Duration	29	17
Change Point	7	41

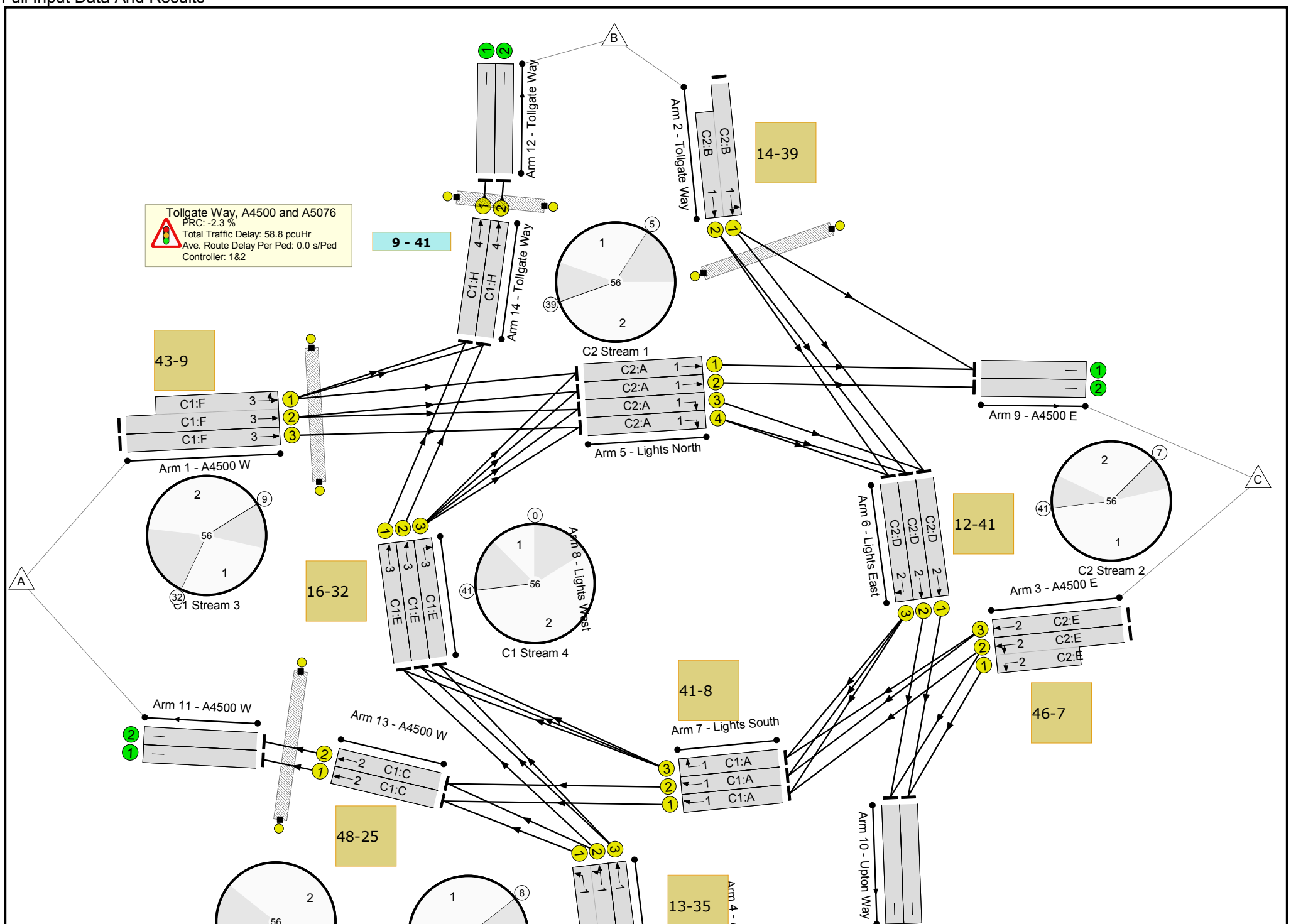
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.0%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.0%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	22	-	1088	2060:1912	846+785	65.7 : 67.7%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	22	-	326	1927	791	41.2%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	25	-	1540	1960:1964	842+831	92.0 : 92.0%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	17	-	759	2078:1937	565+494	71.7 : 71.7%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	17	-	467	1941	624	74.9%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	22	-	725	2076:1930	853+608	55.1 : 41.9%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	22	-	486	1940	797	61.0%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	16	-	405	1915	581	69.7%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	16	-	546	2051	623	87.7%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	16	-	113	2026	615	18.4%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	16	-	326	1890	574	56.8%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	29	-	730	1914	1025	71.2%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	29	-	779	2051	1099	70.9%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	29	-	312	1891	1013	30.8%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	23	-	539	1919	822	65.5%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	23	-	589	2055	881	66.9%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	23	-	54	1919	822	6.6%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	16	-	468	1915	581	80.5%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	16	-	285	2051	623	45.8%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	16	-	255	2050	622	41.0%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	563	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	546	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	1084	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	781	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	794	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	609	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	423	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	33	-	794	2015	1223	64.9%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	33	-	591	2015	1223	48.3%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	32	-	609	1979	1166	52.2%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	32	-	423	1980	1167	36.3%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	17	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	17	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**33.3**	**25.5**	**0.0**	**58.8**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**33.3**	**25.5**	**0.0**	**58.8**	**-**	**-**	**-**	**-**
1/2+1/1	1088	1088	-	-	-	4.0	1.0	-	5.0	16.7	6.9	1.0	7.9
1/3	326	326	-	-	-	1.1	0.3	-	1.4	15.6	3.5	0.3	3.9
2/1+2/2	1540	1540	-	-	-	5.7	5.4	-	11.0	25.8	10.5	5.4	15.9
3/2+3/1	759	759	-	-	-	3.4	1.3	-	4.6	21.9	5.3	1.3	6.5
3/3	467	467	-	-	-	2.2	1.5	-	3.7	28.2	6.5	1.5	7.9
4/2+4/1	725	725	-	-	-	2.4	0.5	-	2.9	14.5	5.5	0.5	6.0
4/3	486	486	-	-	-	1.8	0.8	-	2.5	18.7	5.9	0.8	6.7
5/1	405	405	-	-	-	1.5	1.1	-	2.6	23.3	4.0	1.1	5.1
5/2	546	546	-	-	-	1.8	3.3	-	5.1	33.4	4.7	3.3	8.0
5/3	113	113	-	-	-	0.3	0.1	-	0.4	13.5	0.5	0.1	0.6
5/4	326	326	-	-	-	0.7	0.7	-	1.4	15.1	1.2	0.7	1.8
6/1	730	730	-	-	-	0.9	1.2	-	2.1	10.4	3.0	1.2	4.2
6/2	779	779	-	-	-	1.6	1.2	-	2.8	12.9	6.5	1.2	7.7
6/3	312	312	-	-	-	0.3	0.2	-	0.5	5.5	0.6	0.2	0.8
7/1	539	539	-	-	-	0.8	0.9	-	1.8	11.9	2.8	0.9	3.8
7/2	589	589	-	-	-	1.1	1.0	-	2.1	13.1	3.8	1.0	4.8
7/3	54	54	-	-	-	0.1	0.0	-	0.1	8.4	0.2	0.0	0.2
8/1	468	468	-	-	-	1.0	2.0	-	3.0	23.1	2.2	2.0	4.2
8/2	285	285	-	-	-	0.7	0.4	-	1.1	14.4	1.7	0.4	2.1
8/3	255	255	-	-	-	0.6	0.3	-	0.9	12.9	0.9	0.3	1.3
9/1	563	563	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	546	546	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1084	1084	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	781	781	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

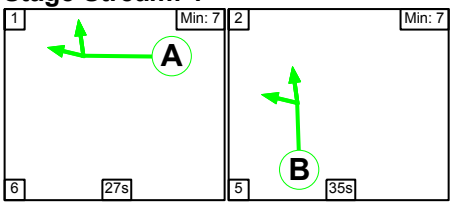
11/1	794	794	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	591	591	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	609	609	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	794	794	-	-	-	0.6	0.9	-	1.5	6.8	4.3	0.9	5.2
13/2	591	591	-	-	-	0.0	0.5	-	0.5	2.9	0.2	0.5	0.7
14/1	609	609	-	-	-	0.4	0.5	-	0.9	5.5	2.1	0.5	2.7
14/2	423	423	-	-	-	0.4	0.3	-	0.7	6.2	2.1	0.3	2.4
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	34.6	Total Delay for Signalled Lanes (pcuHr):	9.50	Cycle Time (s):	56
C1	Stream: 2 PRC for Signalled Lanes (%):	38.7	Total Delay for Signalled Lanes (pcuHr):	1.98	Cycle Time (s):	56
C1	Stream: 3 PRC for Signalled Lanes (%):	11.8	Total Delay for Signalled Lanes (pcuHr):	11.52	Cycle Time (s):	56
C1	Stream: 4 PRC for Signalled Lanes (%):	72.3	Total Delay for Signalled Lanes (pcuHr):	1.66	Cycle Time (s):	56
C2	Stream: 1 PRC for Signalled Lanes (%):	-2.3	Total Delay for Signalled Lanes (pcuHr):	20.50	Cycle Time (s):	56
C2	Stream: 2 PRC for Signalled Lanes (%):	20.2	Total Delay for Signalled Lanes (pcuHr):	13.65	Cycle Time (s):	56
	PRC Over All Lanes (%):	-2.3	Total Delay Over All Lanes(pcuHr):	58.81		

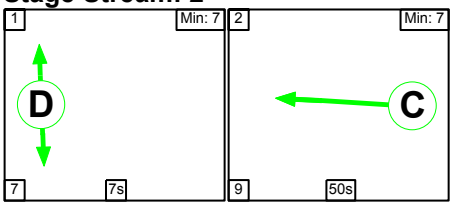
Full Input Data And Results
Scenario 12: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

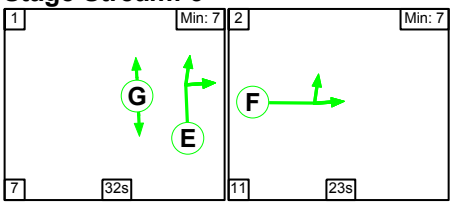
Stage Stream: 1



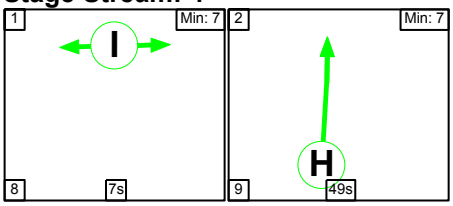
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	27	35
Change Point	28	61

Stage Stream: 2

Stage	1	2
Duration	7	50
Change Point	14	28

Stage Stream: 3

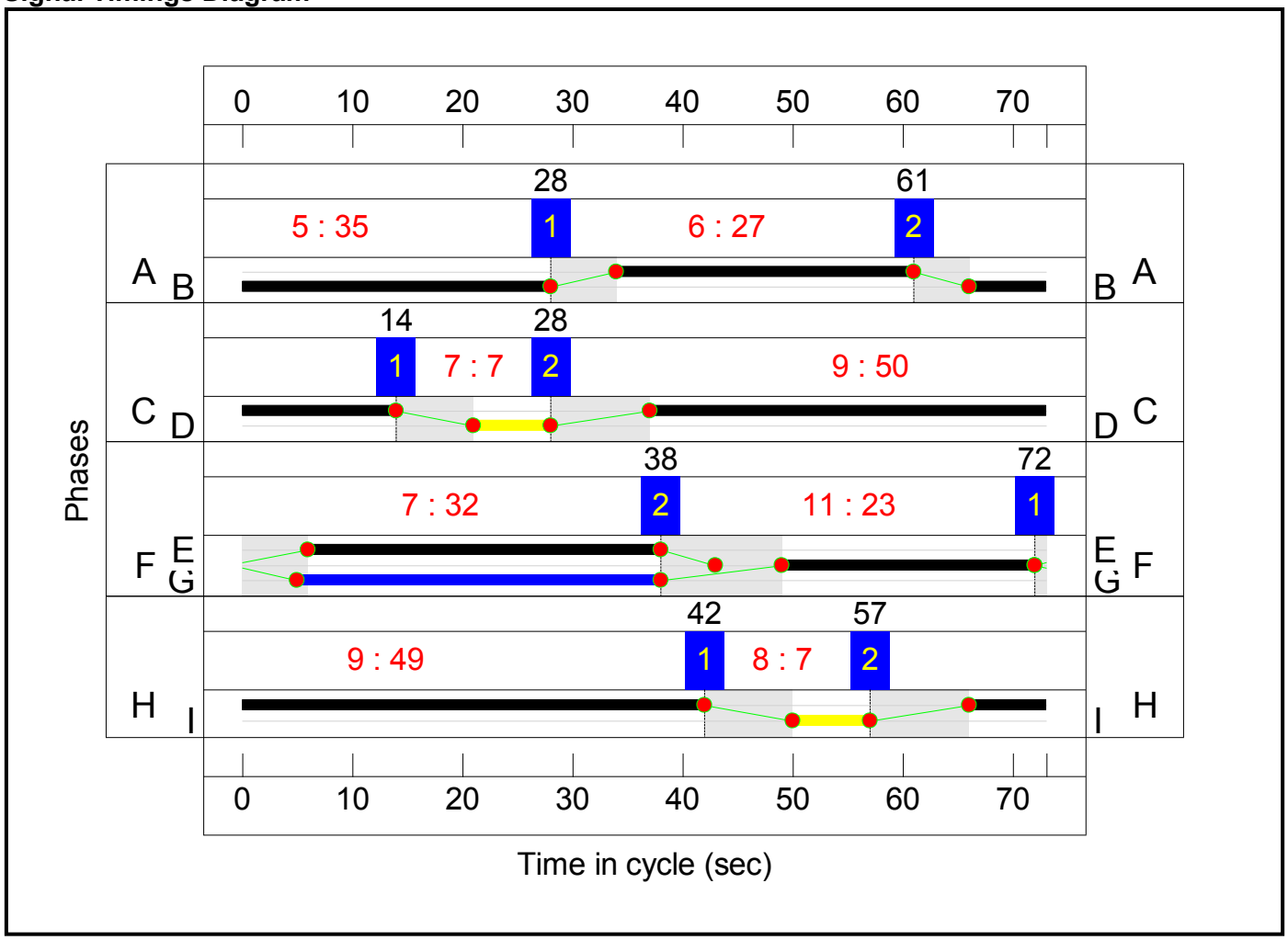
Stage	1	2
Duration	32	23
Change Point	72	38

Stage Stream: 4

Stage	1	2
Duration	7	49
Change Point	42	57

Full Input Data And Results

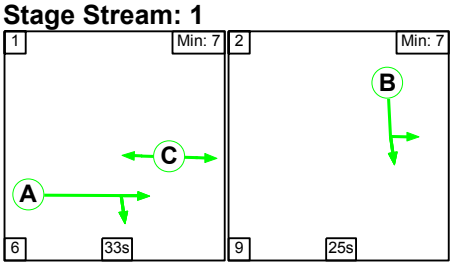
Signal Timings Diagram



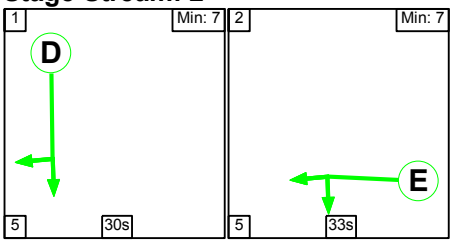
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

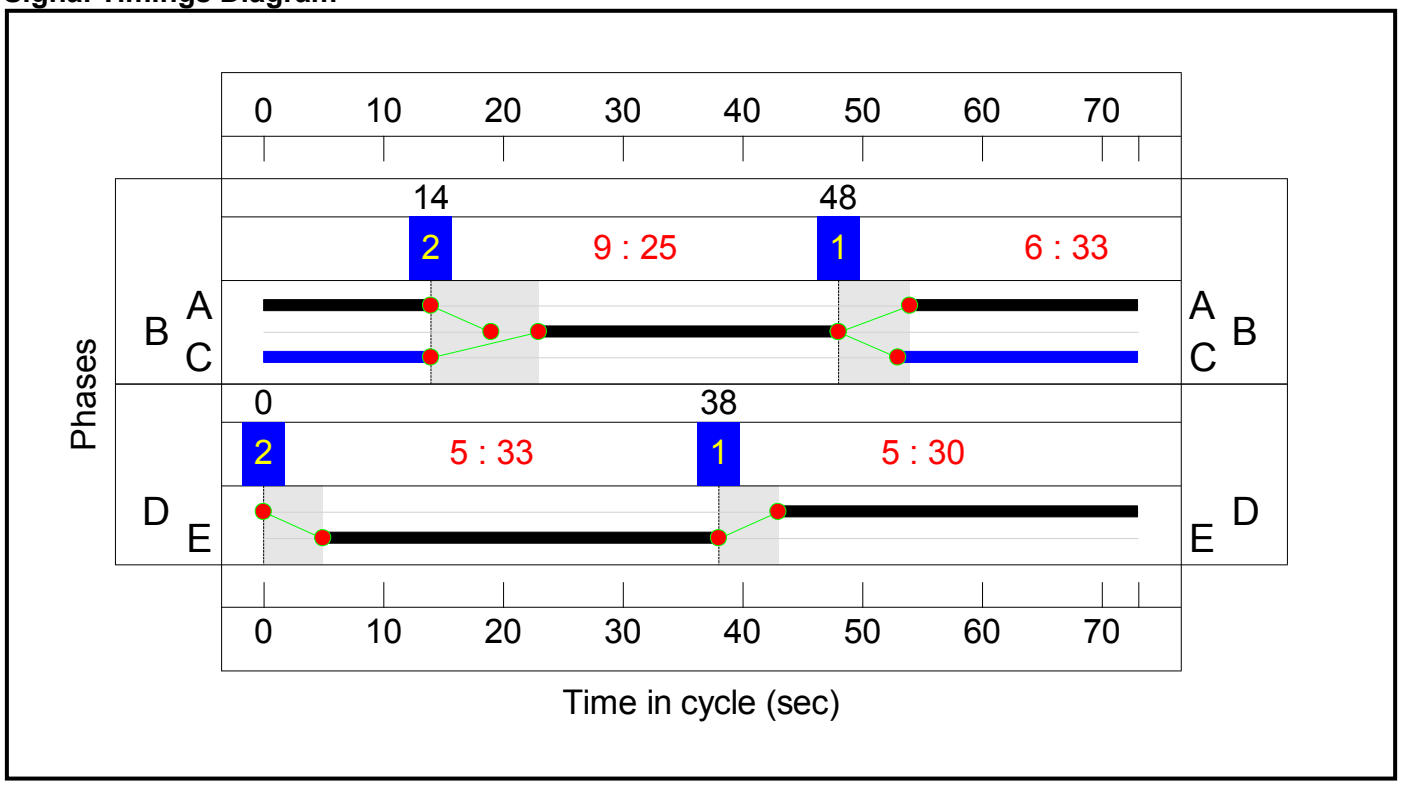
Stage Stream: 1

Stage	1	2
Duration	33	25
Change Point	48	14

Stage Stream: 2

Stage	1	2
Duration	30	33
Change Point	38	0

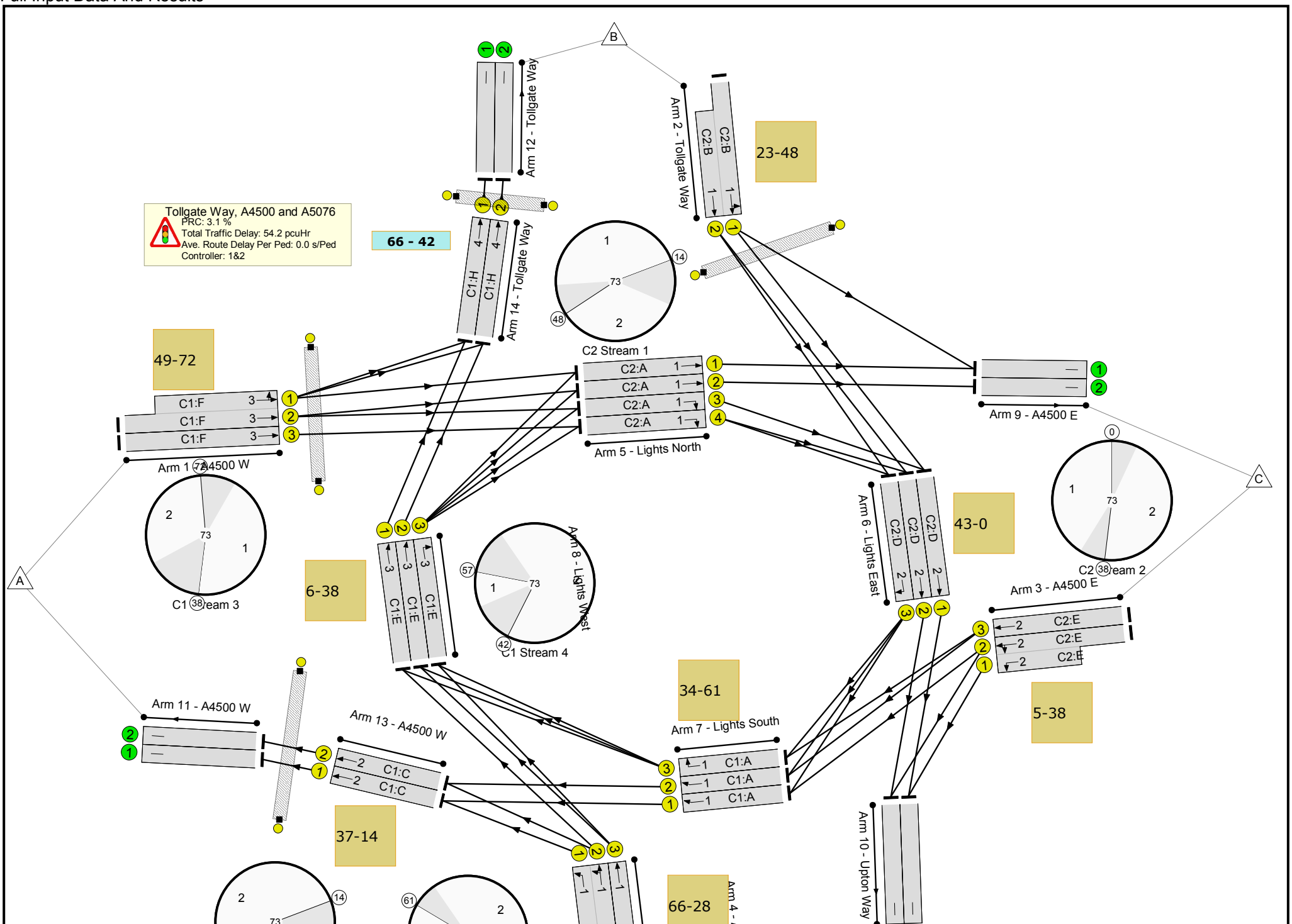
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.3%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.3%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	23	-	1091	2060:1916	677+630	83.4 : 83.5%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	23	-	243	1927	634	38.4%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	25	-	1023	1958:1964	520+652	87.3 : 87.3%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	33	-	867	2077:1937	661+607	68.4 : 68.4%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	33	-	510	1941	904	56.4%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	35	-	916	2075:1930	1023+674	54.2 : 53.6%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	35	-	500	1940	957	52.3%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	33	-	528	1915	892	59.2%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	33	-	700	2051	955	73.3%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	33	-	0	2105	980	0.0%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	33	-	243	1890	880	27.6%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	30	-	322	1914	813	39.6%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	30	-	531	2051	871	61.0%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	30	-	281	1891	803	35.0%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	27	-	499	1919	736	67.8%
7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	27	-	576	2055	788	73.1%

Full Input Data And Results

7/3	Lights South Right	U	1:1	N/A	C1:A		1	27	-	84	1919	736	11.4%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	32	-	522	1915	866	60.3%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	32	-	273	2051	927	29.4%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	32	-	295	2050	927	31.8%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	660	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	700	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	737	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	615	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	625	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	541	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	50	-	860	2015	1408	61.1%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	50	-	625	2015	1408	44.4%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	49	-	541	1979	1355	39.9%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	49	-	412	1980	1356	30.4%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	33	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	34	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**36.3**	**18.0**	**0.0**	**54.2**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**36.3**	**18.0**	**0.0**	**54.2**	**-**	**-**	**-**	**-**
1/2+1/1	1091	1091	-	-	-	6.9	2.5	-	9.3	30.8	10.5	2.5	13.0
1/3	243	243	-	-	-	1.3	0.3	-	1.6	23.4	3.8	0.3	4.1
2/1+2/2	1023	1023	-	-	-	5.9	3.3	-	9.2	32.2	10.4	3.3	13.7
3/2+3/1	867	867	-	-	-	3.2	1.1	-	4.3	17.8	6.2	1.1	7.2
3/3	510	510	-	-	-	2.0	0.6	-	2.6	18.7	7.4	0.6	8.0
4/2+4/1	916	916	-	-	-	3.1	0.6	-	3.7	14.6	7.7	0.6	8.3
4/3	500	500	-	-	-	1.8	0.5	-	2.3	16.6	6.8	0.5	7.4
5/1	528	528	-	-	-	1.3	0.7	-	2.0	13.7	5.4	0.7	6.1
5/2	700	700	-	-	-	1.2	1.4	-	2.5	13.1	12.7	1.4	14.0
5/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/4	243	243	-	-	-	0.0	0.2	-	0.2	2.9	0.0	0.2	0.2
6/1	322	322	-	-	-	0.8	0.3	-	1.1	12.6	6.2	0.3	6.6
6/2	531	531	-	-	-	1.4	0.8	-	2.2	14.6	7.0	0.8	7.8
6/3	281	281	-	-	-	0.5	0.3	-	0.8	10.1	5.3	0.3	5.6
7/1	499	499	-	-	-	2.0	1.0	-	3.0	21.7	7.7	1.0	8.7
7/2	576	576	-	-	-	2.2	1.3	-	3.6	22.4	8.9	1.3	10.2
7/3	84	84	-	-	-	0.3	0.1	-	0.3	14.4	1.4	0.1	1.5
8/1	522	522	-	-	-	0.8	0.8	-	1.5	10.4	8.3	0.8	9.1
8/2	273	273	-	-	-	0.7	0.2	-	1.0	12.6	3.6	0.2	3.8
8/3	295	295	-	-	-	0.2	0.2	-	0.4	5.0	3.5	0.2	3.7
9/1	660	660	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	700	700	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	737	737	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	615	615	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	625	625	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	541	541	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	860	860	-	-	-	0.4	0.8	-	1.2	5.0	2.4	0.8	3.2
13/2	625	625	-	-	-	0.1	0.4	-	0.5	2.6	3.4	0.4	3.8
14/1	541	541	-	-	-	0.1	0.3	-	0.4	2.9	0.5	0.3	0.8
14/2	412	412	-	-	-	0.3	0.2	-	0.5	4.3	2.5	0.2	2.7
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

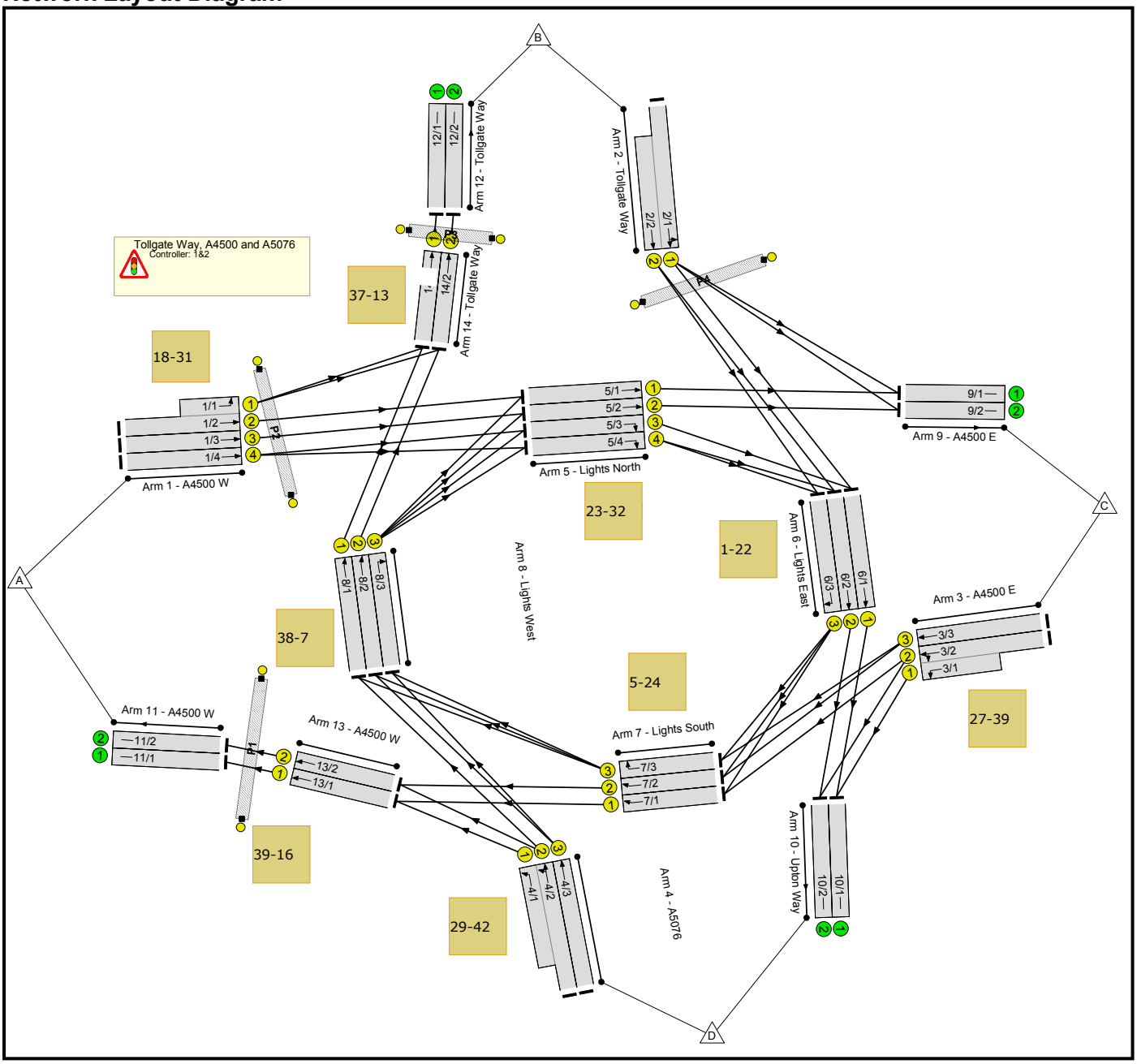
C1	Stream: 1 PRC for Signalled Lanes (%):	23.2	Total Delay for Signalled Lanes (pcuHr):	12.95	Cycle Time (s):	73		
C1	Stream: 2 PRC for Signalled Lanes (%):	47.3	Total Delay for Signalled Lanes (pcuHr):	1.64	Cycle Time (s):	73		
C1	Stream: 3 PRC for Signalled Lanes (%):	7.8	Total Delay for Signalled Lanes (pcuHr):	13.79	Cycle Time (s):	73		
C1	Stream: 4 PRC for Signalled Lanes (%):	125.5	Total Delay for Signalled Lanes (pcuHr):	0.93	Cycle Time (s):	73		
C2	Stream: 1 PRC for Signalled Lanes (%):	3.1	Total Delay for Signalled Lanes (pcuHr):	13.90	Cycle Time (s):	73		
C2	Stream: 2 PRC for Signalled Lanes (%):	31.5	Total Delay for Signalled Lanes (pcuHr):	10.99	Cycle Time (s):	73		
	PRC Over All Lanes (%):	3.1	Total Delay Over All Lanes(pcuHr):	54.21				

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 3
Location:	A4500 Weedon Road / Tollgate Way / A4500 Weedon Road / A5076 Upton Way
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

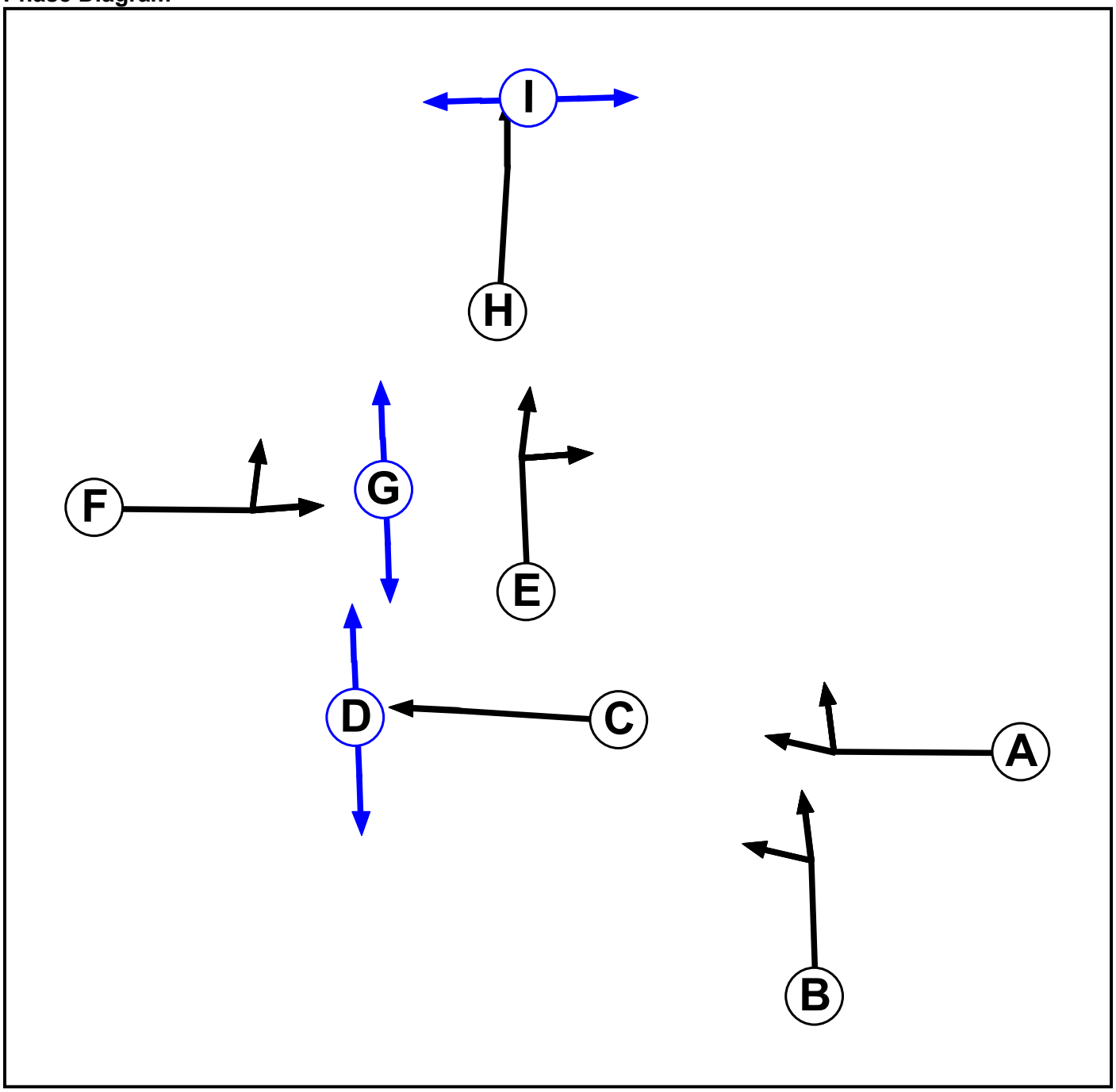
Network Layout Diagram



Full Input Data And Results

C1

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Pedestrian	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Pedestrian	3		7	7
H	Traffic	4		7	7
I	Pedestrian	4		7	7

Phase Intergreens Matrix

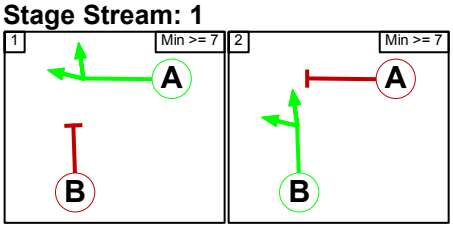
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		5	-	-	-	-	-	-	-
	B	6		-	-	-	-	-	-	-
	C	-	-		7	-	-	-	-	-
	D	-	-	9		-	-	-	-	-
	E	-	-	-	-		5	-	-	-
	F	-	-	-	-	7		6	-	-
	G	-	-	-	-	-	11		-	-
	H	-	-	-	-	-	-	-		8
	I	-	-	-	-	-	-	-	9	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	D
2	2	C
3	1	E G
3	2	F
4	1	I
4	2	H

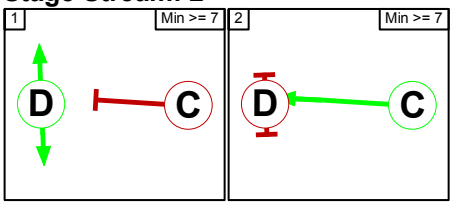
Stage Diagram

Stage Stream: 1

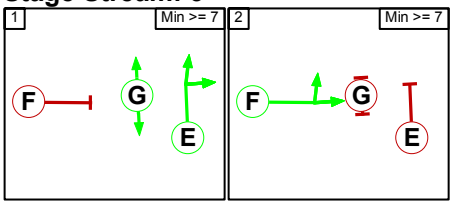


Full Input Data And Results

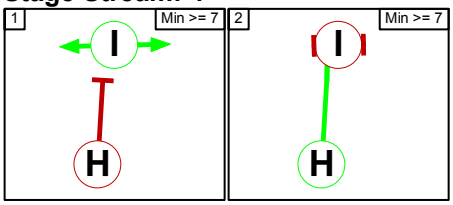
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	6	

Full Input Data And Results

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		9
	2	7	

Stage Stream: 3

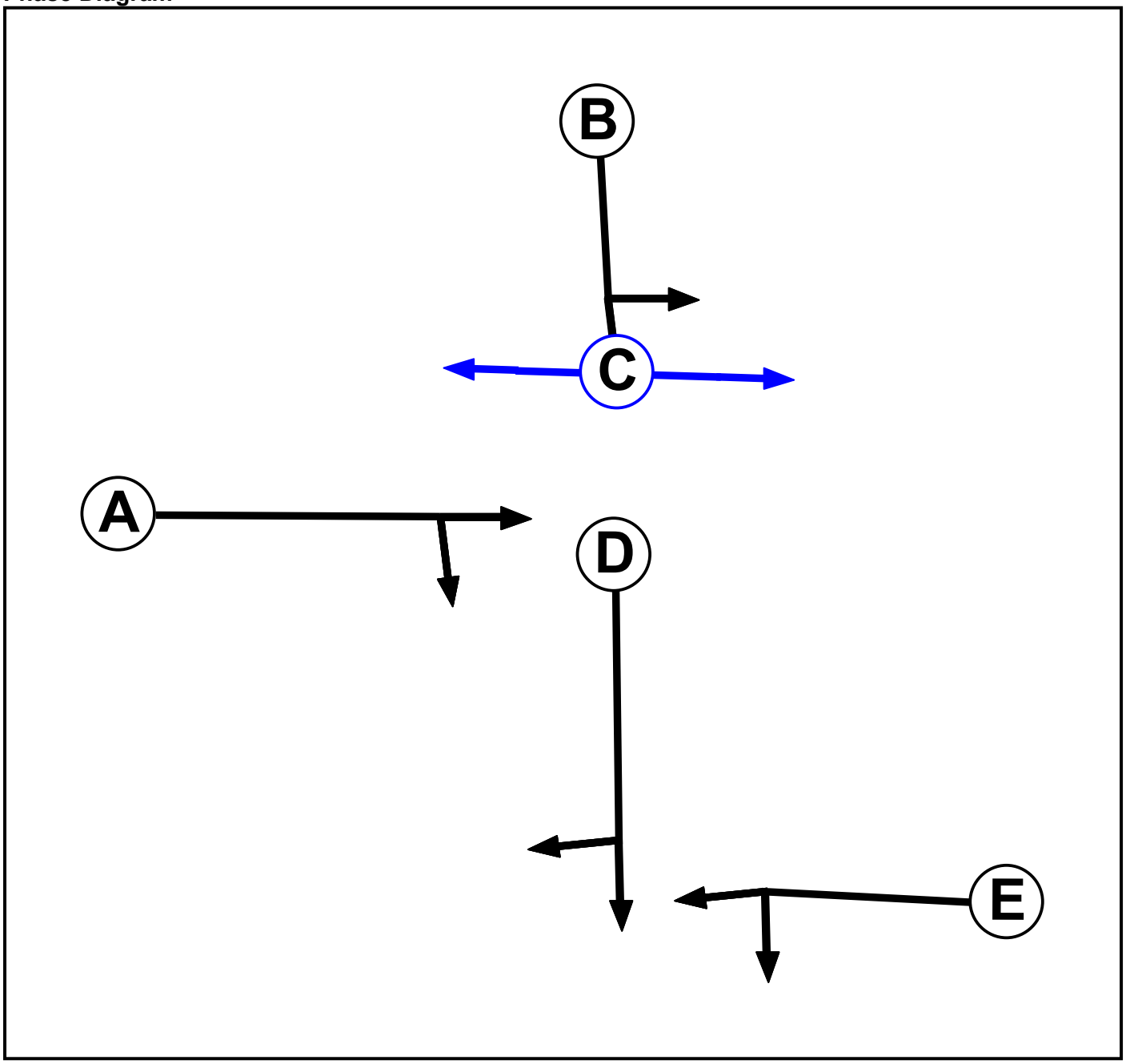
	To Stage		
		1	2
From Stage	1		11
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		9
	2	8	

C2

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Pedestrian	1		7	7
D	Traffic	2		7	7
E	Traffic	2		7	7

Full Input Data And Results

Phase Intergreens Matrix

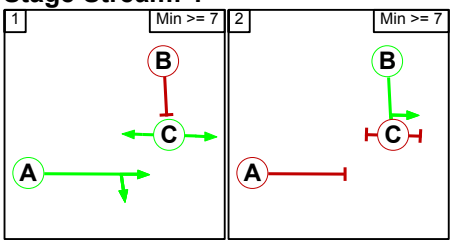
Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		5	-	-	-
	B	6		5	-	-
	C	-	9		-	-
	D	-	-	-		5
	E	-	-	-	5	

Phases in Stage

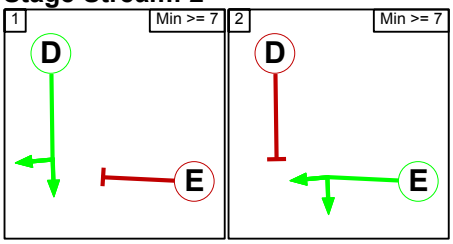
Stream	Stage No.	Phases in Stage
1	1	A C
1	2	B
2	1	D
2	2	E

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		9
	2	6	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Tollgate Way, A4500 and A5076
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A4500 W)	U	F	2	3	5.2	Geom	-	3.25	0.00	Y	Arm 14 Left	50.00
1/2 (A4500 W)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	68.00
1/3 (A4500 W)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	68.00
1/4 (A4500 W)	U	F	2	3	60.0	Geom	-	3.25	0.00	N	Arm 5 Ahead	68.00
2/1 (Tollgate Way)	U	B	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	58.00
											Arm 9 Left	Inf
2/2 (Tollgate Way)	U	B	2	3	12.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	58.00
3/1 (A4500 E)	U	E	2	3	7.0	Geom	-	3.75	0.00	Y	Arm 10 Left	55.00
3/2 (A4500 E)	U	E	2	3	60.0	Geom	-	3.75	0.00	N	Arm 7 Ahead	60.00
											Arm 10 Left	55.00
3/3 (A4500 E)	U	E	2	3	60.0	Geom	-	3.75	0.00	N	Arm 7 Ahead	60.00
4/1 (A5076)	U	B	2	3	24.0	Geom	-	3.75	0.00	Y	Arm 13 Left	48.00
4/2 (A5076)	U	B	2	3	60.0	Geom	-	3.75	0.00	N	Arm 8 Ahead	58.00
											Arm 13 Left	47.00
4/3 (A5076)	U	B	2	3	60.0	Geom	-	3.75	0.00	N	Arm 8 Ahead	58.00
5/1 (Lights North)	U	A	0	3	3.0	Geom	-	3.50	0.00	N	Arm 9 Ahead	57.00
5/2 (Lights North)	U	A	0	3	3.0	Geom	-	3.50	0.00	N	Arm 9 Ahead	57.00
5/3 (Lights North)	U	A	0	3	3.0	Geom	-	3.50	0.00	N	Arm 6 Right	38.50
5/4 (Lights North)	U	A	0	3	4.0	Geom	-	3.50	0.00	N	Arm 6 Right	38.00
6/1 (Lights East)	U	D	0	3	6.0	Geom	-	3.25	0.00	Y	Arm 10 Ahead	56.00
6/2 (Lights East)	U	D	0	3	6.0	Geom	-	3.25	0.00	N	Arm 10 Ahead	57.00

Full Input Data And Results

6/3 (Lights East)	U	D	0	3	6.0	Geom	-	3.25	0.00	N	Arm 7 Right	58.00
7/1 (Lights South)	U	A	0	3	4.0	Geom	-	3.50	0.00	Y	Arm 13 Ahead	62.00
7/2 (Lights South)	U	A	0	3	4.0	Geom	-	3.50	0.00	N	Arm 13 Ahead	62.00
7/3 (Lights South)	U	A	0	3	5.0	Geom	-	3.50	0.00	N	Arm 8 Right	62.00
8/1 (Lights West)	U	E	0	3	4.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	58.00
8/2 (Lights West)	U	E	0	3	4.0	Geom	-	3.50	0.00	N	Arm 14 Ahead	57.00
8/3 (Lights West)	U	E	0	3	5.0	Geom	-	3.50	0.00	N	Arm 5 Right	56.00
9/1 (A4500 E)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A4500 E)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (Upton Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (Upton Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A4500 W)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A4500 W)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (Tollgate Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2 (Tollgate Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (A4500 W)	U	C	2	3	4.0	Geom	-	4.00	0.00	Y	Arm 11 Ahead	Inf
13/2 (A4500 W)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 11 Ahead	Inf
14/1 (Tollgate Way)	U	H	2	3	2.0	Geom	-	4.00	0.00	Y	Arm 12 Ahead	83.00
14/2 (Tollgate Way)	U	H	2	3	2.0	Geom	-	4.00	0.00	N	Arm 12 Ahead	84.00

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	
8: '2031 DS PM'	17:00	18:00	01:00	

Scenario 3: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	181	667	428	1276
	B	284	0	83	1126	1493
	C	596	34	0	213	843
	D	378	571	188	3	1140
	Tot.	1258	786	938	1770	4752

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 3: 2021 DS AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	181
1/2 (with short)	527(In) 346(Out)
1/3	321
1/4	428
2/1 (with short)	1493(In) 686(Out)
2/2 (short)	807
3/1 (short)	209
3/2 (with short)	547(In) 338(Out)
3/3	296
4/1 (short)	215
4/2 (with short)	745(In) 530(Out)
4/3	395
5/1	429
5/2	426
5/3	193
5/4	238
6/1	796
6/2	761
6/3	284
7/1	420
7/2	460
7/3	34
8/1	368
8/2	237
8/3	191
9/1	470
9/2	468
10/1	1005
10/2	765
11/1	635
11/2	623
12/1	441
12/2	345
13/1	635
13/2	623
14/1	441
14/2	345

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	87.9 %	2058	2058
				Arm 9 Left	Inf	12.1 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	98.8 %	2078	2078
				Arm 10 Left	55.00	1.2 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	69.2 %	2073	2073
				Arm 13 Left	47.00	30.8 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

Scenario 4: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin \ Destination	A	B	C	D	Tot.
A	0	84	797	301	1182
B	200	0	57	492	749
C	766	68	0	368	1202
D	401	650	219	0	1270
Tot.	1367	802	1073	1161	4403

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 4: 2021 DS PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	84
1/2 (with short)	488(In) 404(Out)
1/3	393
1/4	301
2/1 (with short)	749(In) 334(Out)
2/2 (short)	415
3/1 (short)	356
3/2 (with short)	786(In) 430(Out)
3/3	416
4/1 (short)	186
4/2 (with short)	744(In) 558(Out)
4/3	526
5/1	510
5/2	506
5/3	125
5/4	176
6/1	402
6/2	391
6/3	200
7/1	470
7/2	496
7/3	68
8/1	353
8/2	365
8/3	219
9/1	538
9/2	535
10/1	758
10/2	403
11/1	656
11/2	711
12/1	395
12/2	407
13/1	656
13/2	711
14/1	395
14/2	407

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	82.9 %	2061	2061
				Arm 9 Left	Inf	17.1 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	97.2 %	2078	2078
				Arm 10 Left	55.00	2.8 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	61.5 %	2072	2072
				Arm 13 Left	47.00	38.5 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

Scenario 7: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	279	696	439	1414
	B	311	1	158	1070	1540
	C	817	53	0	356	1226
	D	257	699	255	0	1211
	Tot.	1385	1032	1109	1865	5391

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 7: 2031 DS AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	279
1/2 (with short)	628(In) 349(Out)
1/3	347
1/4	439
2/1 (with short)	1540(In) 751(Out)
2/2 (short)	789
3/1 (short)	338
3/2 (with short)	787(In) 449(Out)
3/3	439
4/1 (short)	257
4/2 (with short)	718(In) 461(Out)
4/3	493
5/1	476
5/2	475
5/3	171
5/4	268
6/1	764
6/2	745
6/3	312
7/1	514
7/2	614
7/3	54
8/1	462
8/2	291
8/3	255
9/1	555
9/2	554
10/1	1102
10/2	763
11/1	771
11/2	614
12/1	516
12/2	516
13/1	771
13/2	614
14/1	516
14/2	516

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	79.0 %	2063	2063
				Arm 9 Left	Inf	21.0 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	96.0 %	2078	2078
				Arm 10 Left	55.00	4.0 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
				Arm 13 Left	47.00	0.0 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

Scenario 8: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	158	933	243	1334
	B	281	0	132	610	1023
	C	794	82	2	499	1377
	D	410	713	293	0	1416
	Tot.	1485	953	1360	1352	5150

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 8: 2031 DS PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	158
1/2 (with short)	608(In) 450(Out)
1/3	483
1/4	243
2/1 (with short)	1023(In) 506(Out)
2/2 (short)	517
3/1 (short)	421
3/2 (with short)	887(In) 466(Out)
3/3	490
4/1 (short)	393
4/2 (with short)	908(In) 515(Out)
4/3	508
5/1	606
5/2	622
5/3	67
5/4	176
6/1	441
6/2	412
6/3	281
7/1	440
7/2	635
7/3	84
8/1	499
8/2	296
8/3	295
9/1	672
9/2	688
10/1	862
10/2	490
11/1	833
11/2	652
12/1	555
12/2	398
13/1	833
13/2	652
14/1	555
14/2	398

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

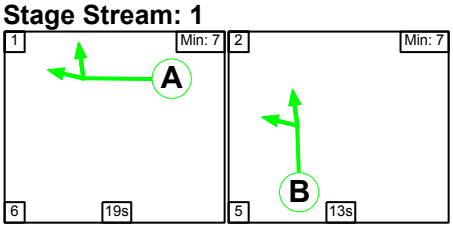
Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	73.9 %	2066	2066
				Arm 9 Left	Inf	26.1 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	83.3 %	2077	2077
				Arm 10 Left	55.00	16.7 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	96.7 %	2076	2076
				Arm 13 Left	47.00	3.3 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

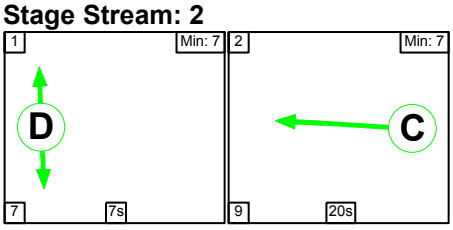
Scenario 3: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

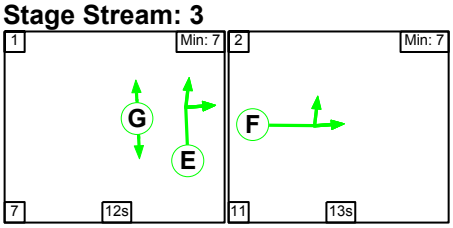
Stage Stream: 1



Stage Stream: 2

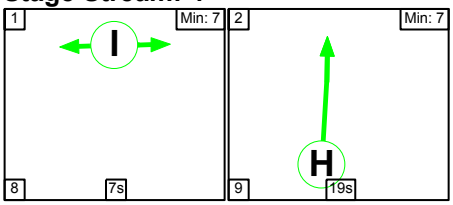


Stage Stream: 3



Full Input Data And Results

Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	13
Change Point	42	24

Stage Stream: 2

Stage	1	2
Duration	7	20
Change Point	16	30

Stage Stream: 3

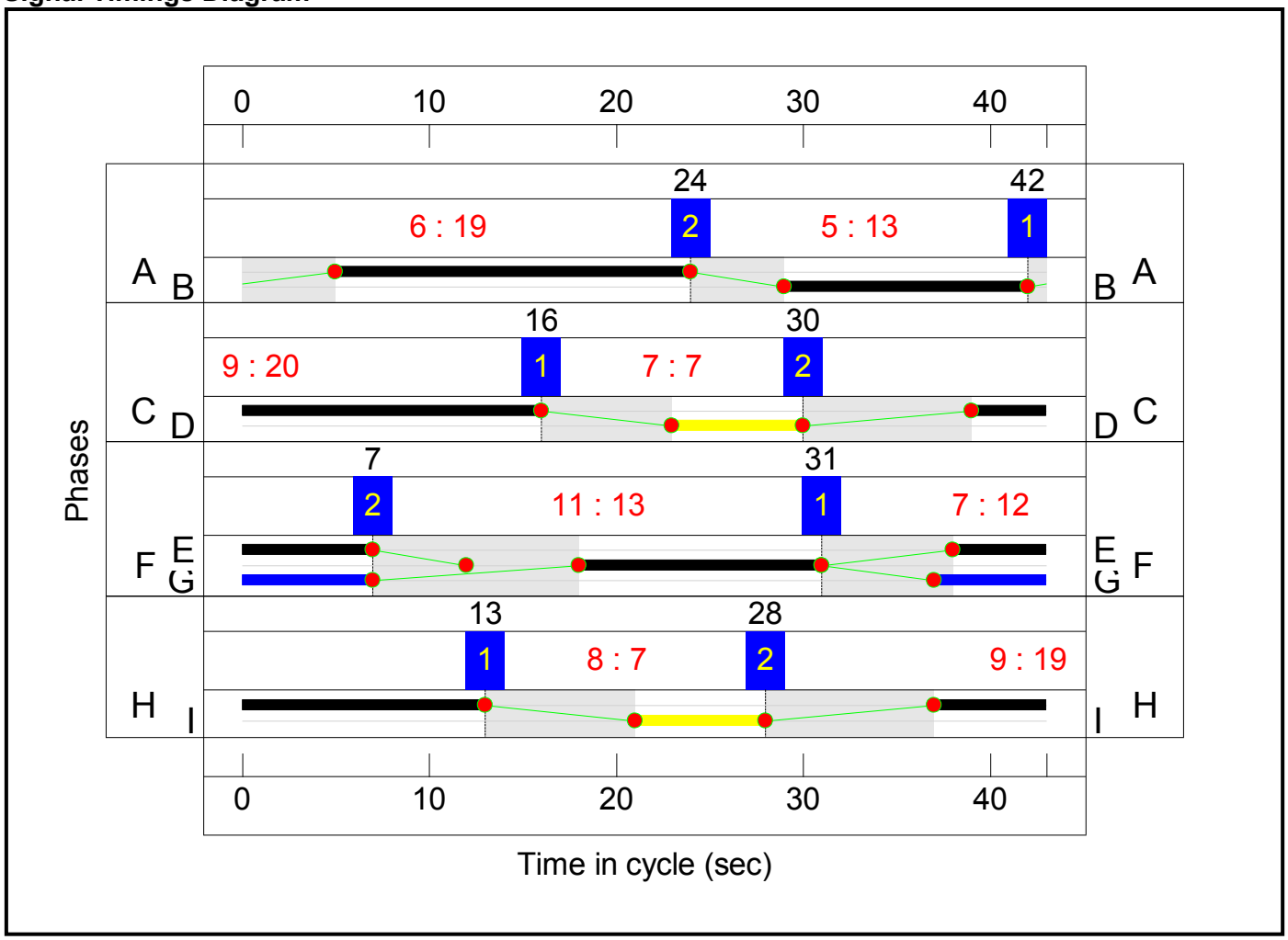
Stage	1	2
Duration	12	13
Change Point	31	7

Stage Stream: 4

Stage	1	2
Duration	7	19
Change Point	13	28

Full Input Data And Results

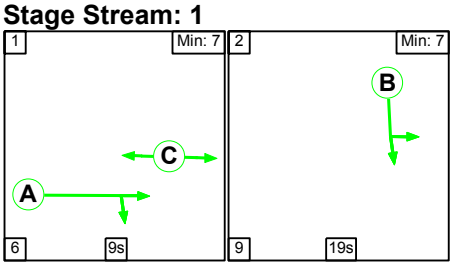
Signal Timings Diagram



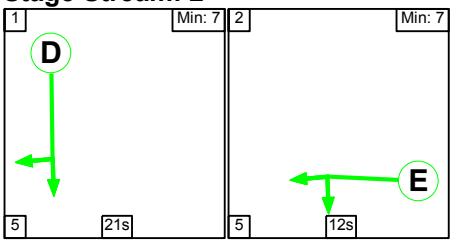
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

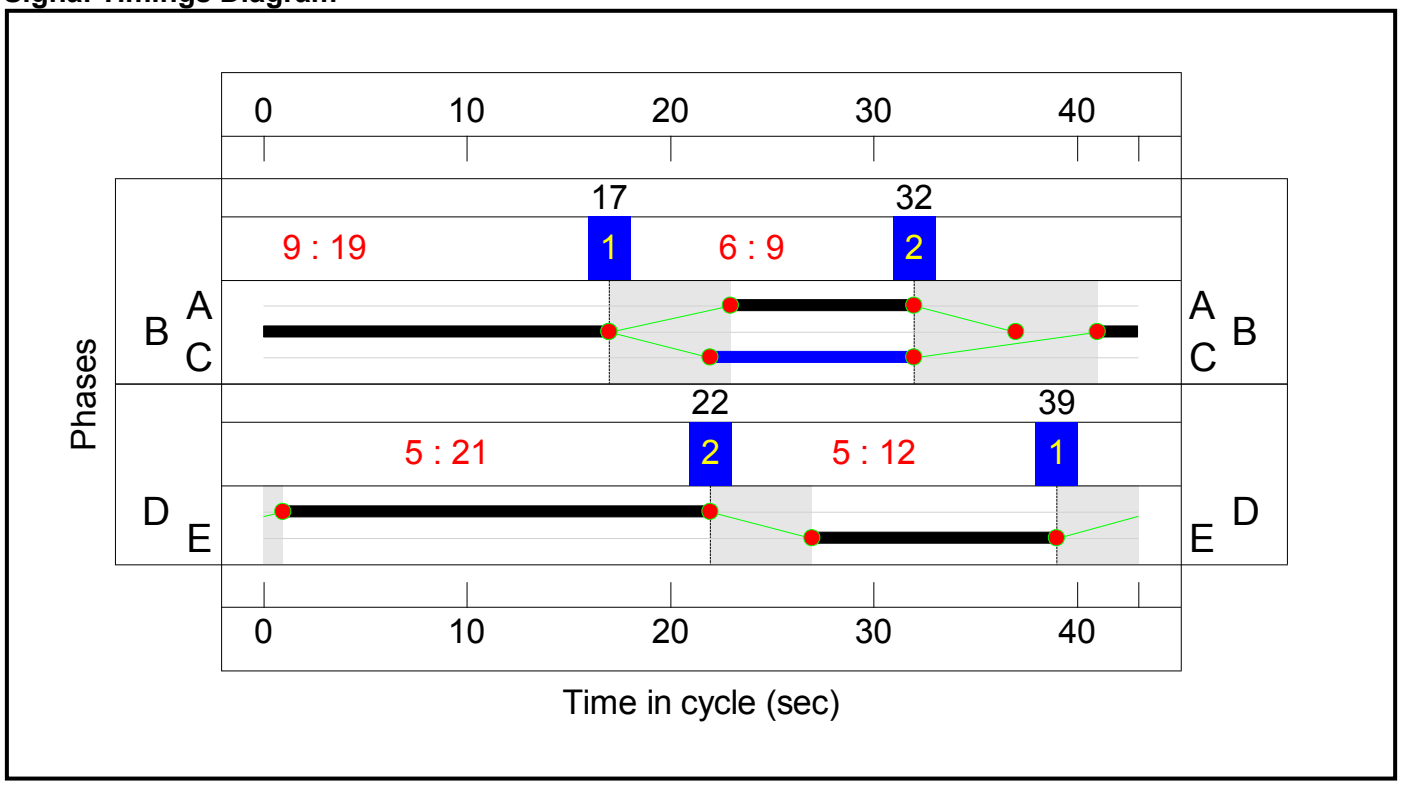
Stage Stream: 1

Stage	1	2
Duration	9	19
Change Point	17	32

Stage Stream: 2

Stage	1	2
Duration	21	12
Change Point	39	22

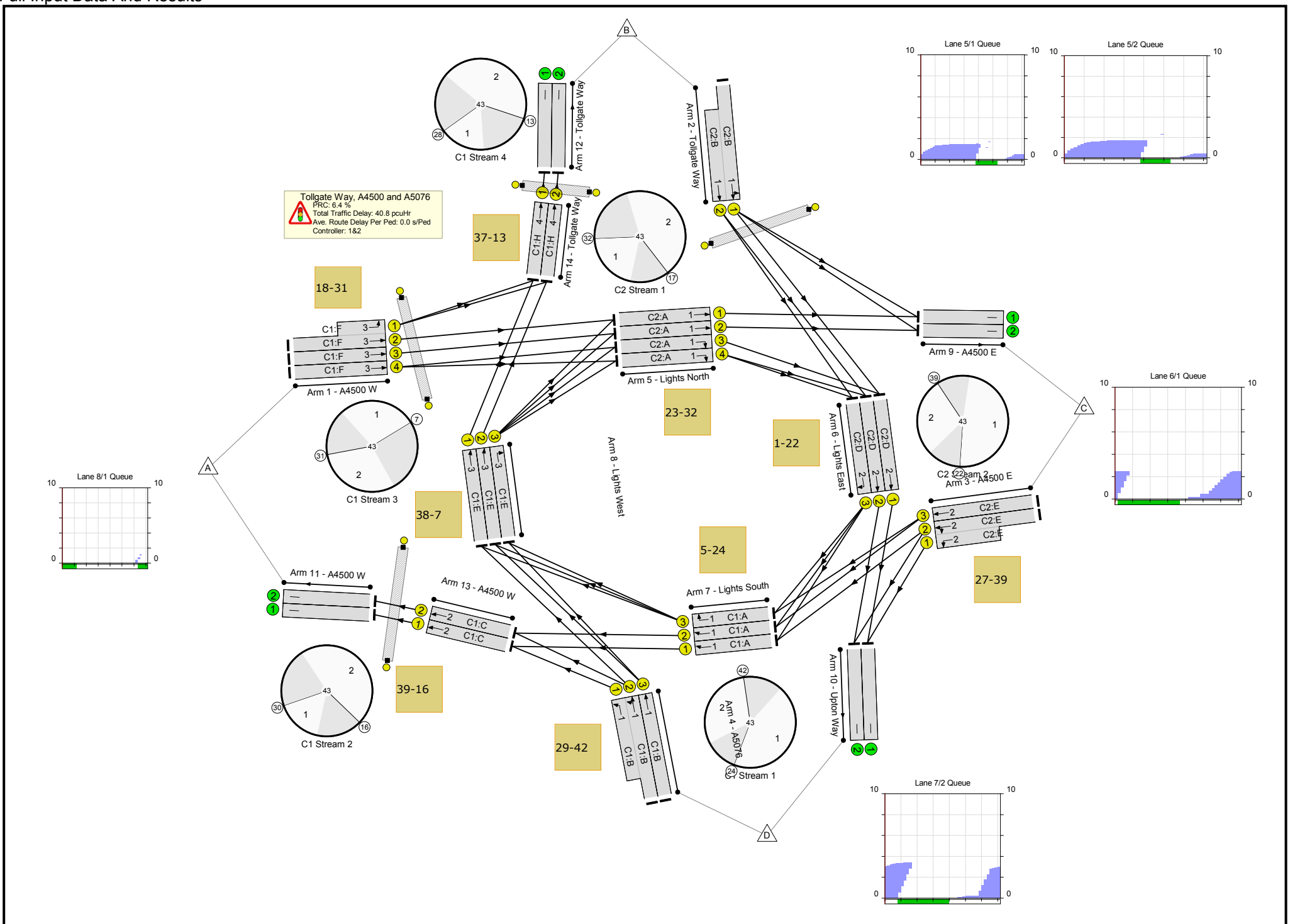
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**84.6%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**84.6%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	13	-	527	2060:1883	584+305	59.3 : 59.3%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	13	-	321	2060	671	47.9%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	13	-	428	2035	663	64.6%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	19	-	1493	2058:2052	811+954	84.6 : 84.6%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	12	-	547	2078:1937	615+380	55.0 : 55.0%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	12	-	296	2078	628	47.1%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	13	-	745	2073:1930	675+493	78.5 : 43.6%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	13	-	395	2076	676	58.4%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	9	-	429	2051	572	75.0%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	9	-	426	2051	572	74.4%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	9	-	193	2026	565	34.1%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	9	-	238	2025	565	42.1%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	21	-	796	1889	1054	75.5%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	21	-	761	2027	1131	67.3%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	21	-	284	2028	1132	25.1%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	19	-	420	1919	982	42.8%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	19	-	460	2055	1051	43.8%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	19	-	34	2055	1051	3.2%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	12	-	368	1915	668	55.1%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	12	-	237	2051	715	33.1%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	12	-	191	2050	715	26.7%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	468	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	765	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	635	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	623	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	441	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	345	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	20	-	635	2015	984	64.5%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	20	-	623	2155	1052	59.2%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	19	-	441	1979	920	47.9%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	19	-	345	2117	985	35.0%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	13	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	10	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**23.0**	**17.8**	**0.0**	**40.8**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**23.0**	**17.8**	**0.0**	**40.8**	**-**	**-**	**-**	**-**
1/2+1/1	527	527	-	-	-	1.7	0.7	-	2.4	16.4	3.3	0.7	4.0
1/3	321	321	-	-	-	1.0	0.5	-	1.5	16.7	3.0	0.5	3.5
1/4	428	428	-	-	-	1.5	0.9	-	2.4	20.0	4.3	0.9	5.2
2/1+2/2	1493	1493	-	-	-	4.0	2.7	-	6.7	16.2	8.3	2.7	11.0
3/2+3/1	547	547	-	-	-	1.9	0.6	-	2.5	16.2	3.3	0.6	3.9
3/3	296	296	-	-	-	1.0	0.4	-	1.4	17.6	2.8	0.4	3.2
4/2+4/1	745	745	-	-	-	2.6	0.9	-	3.5	16.8	5.6	0.9	6.5
4/3	395	395	-	-	-	1.3	0.7	-	2.0	18.5	3.8	0.7	4.5
5/1	429	429	-	-	-	0.8	1.5	-	2.3	18.9	2.9	1.5	4.3
5/2	426	426	-	-	-	0.9	1.4	-	2.3	19.6	2.9	1.4	4.3
5/3	193	193	-	-	-	0.2	0.3	-	0.4	8.3	0.3	0.3	0.5
5/4	238	238	-	-	-	0.2	0.4	-	0.6	9.0	0.4	0.4	0.7
6/1	796	796	-	-	-	0.7	1.5	-	2.2	10.0	2.5	1.5	4.0
6/2	761	761	-	-	-	0.8	1.0	-	1.9	8.8	3.0	1.0	4.0
6/3	284	284	-	-	-	0.0	0.2	-	0.2	2.6	0.1	0.2	0.2
7/1	420	420	-	-	-	1.2	0.4	-	1.6	13.9	4.1	0.4	4.5
7/2	460	460	-	-	-	1.0	0.4	-	1.4	10.9	3.4	0.4	3.8
7/3	34	34	-	-	-	0.1	0.0	-	0.1	11.6	0.4	0.0	0.4
8/1	368	368	-	-	-	0.0	0.6	-	0.6	6.2	1.2	0.6	1.8
8/2	237	237	-	-	-	0.0	0.2	-	0.3	3.9	0.6	0.2	0.8
8/3	191	191	-	-	-	0.0	0.2	-	0.2	3.6	0.3	0.2	0.5
9/1	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	468	468	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1005	1005	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

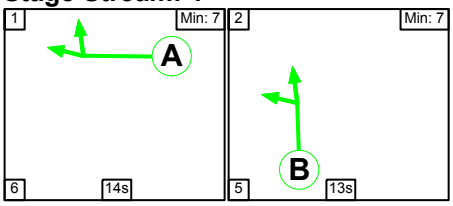
10/2	765	765	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	635	635	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	623	623	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	441	441	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	345	345	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	635	635	-	-	-	0.6	0.9	-	1.5	8.4	3.1	0.9	4.0
13/2	623	623	-	-	-	0.9	0.7	-	1.6	9.4	3.7	0.7	4.4
14/1	441	441	-	-	-	0.2	0.5	-	0.6	5.2	0.8	0.5	1.3
14/2	345	345	-	-	-	0.3	0.3	-	0.6	6.4	1.3	0.3	1.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	14.6	Total Delay for Signalled Lanes (pcuHr):	8.62	Cycle Time (s):	43		
C1	Stream: 2 PRC for Signalled Lanes (%):	39.5	Total Delay for Signalled Lanes (pcuHr):	3.12	Cycle Time (s):	43		
C1	Stream: 3 PRC for Signalled Lanes (%):	39.3	Total Delay for Signalled Lanes (pcuHr):	7.34	Cycle Time (s):	43		
C1	Stream: 4 PRC for Signalled Lanes (%):	87.9	Total Delay for Signalled Lanes (pcuHr):	1.24	Cycle Time (s):	43		
C2	Stream: 1 PRC for Signalled Lanes (%):	6.4	Total Delay for Signalled Lanes (pcuHr):	12.32	Cycle Time (s):	43		
C2	Stream: 2 PRC for Signalled Lanes (%):	19.2	Total Delay for Signalled Lanes (pcuHr):	8.17	Cycle Time (s):	43		
	PRC Over All Lanes (%):	6.4	Total Delay Over All Lanes(pcuHr):	40.81				

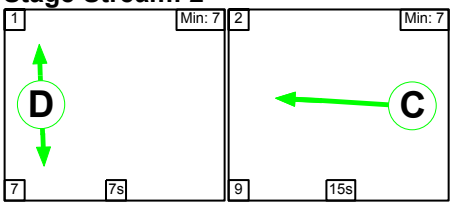
Full Input Data And Results
Scenario 4: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

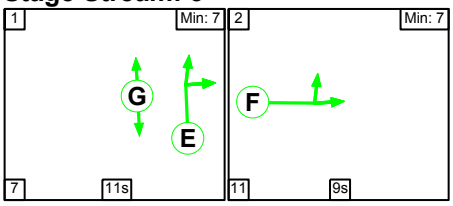
Stage Stream: 1



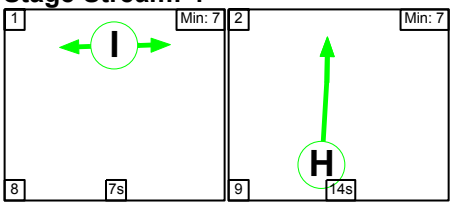
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	14	13
Change Point	35	17

Stage Stream: 2

Stage	1	2
Duration	7	15
Change Point	17	31

Stage Stream: 3

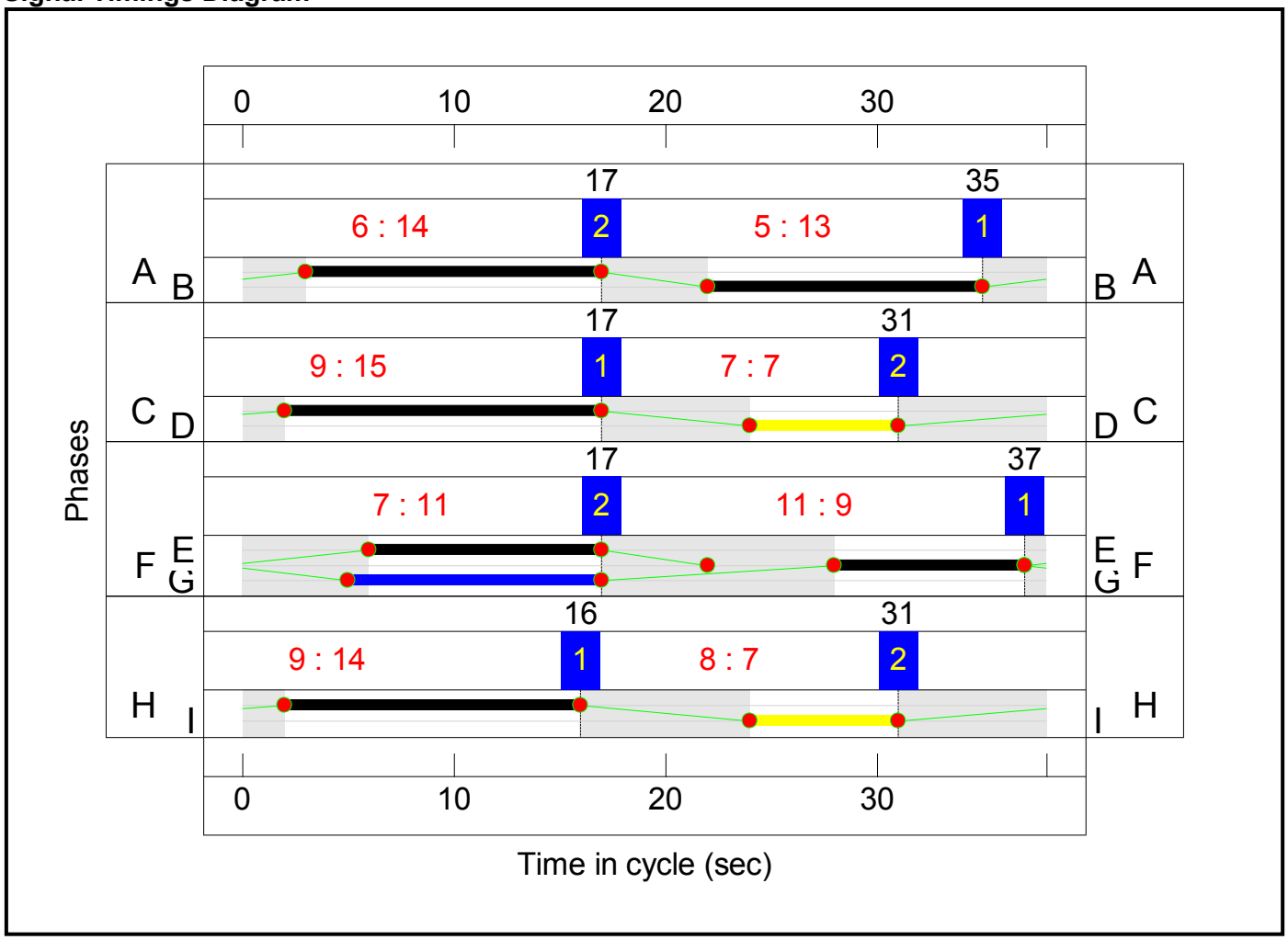
Stage	1	2
Duration	11	9
Change Point	37	17

Stage Stream: 4

Stage	1	2
Duration	7	14
Change Point	16	31

Full Input Data And Results

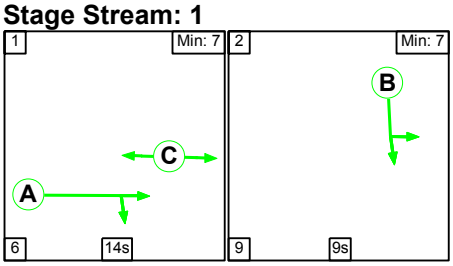
Signal Timings Diagram



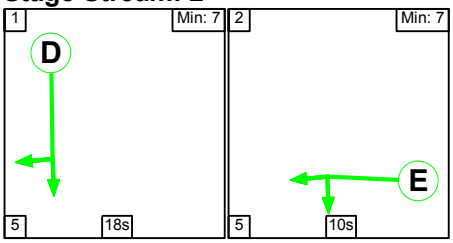
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

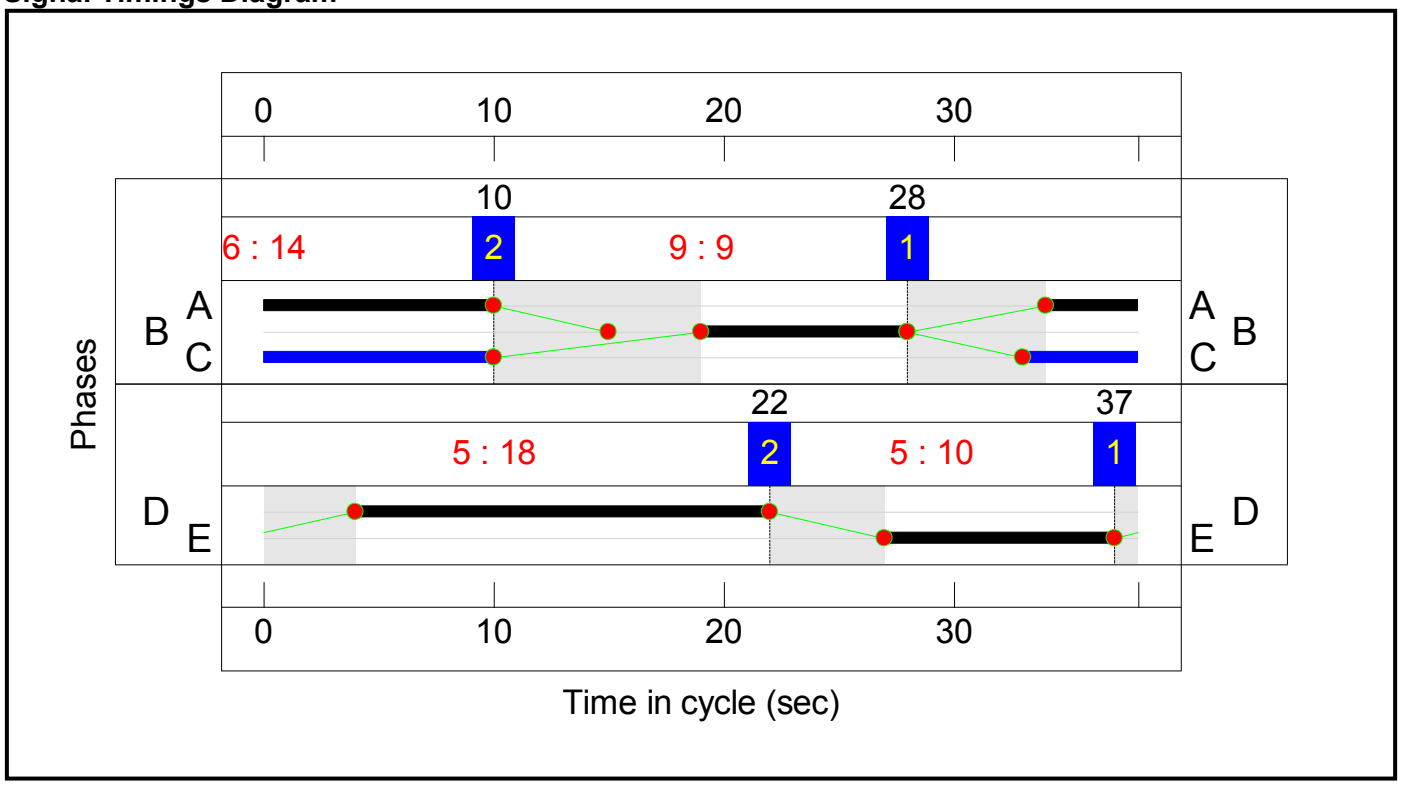
Stage Stream: 1

Stage	1	2
Duration	14	9
Change Point	28	10

Stage Stream: 2

Stage	1	2
Duration	18	10
Change Point	37	22

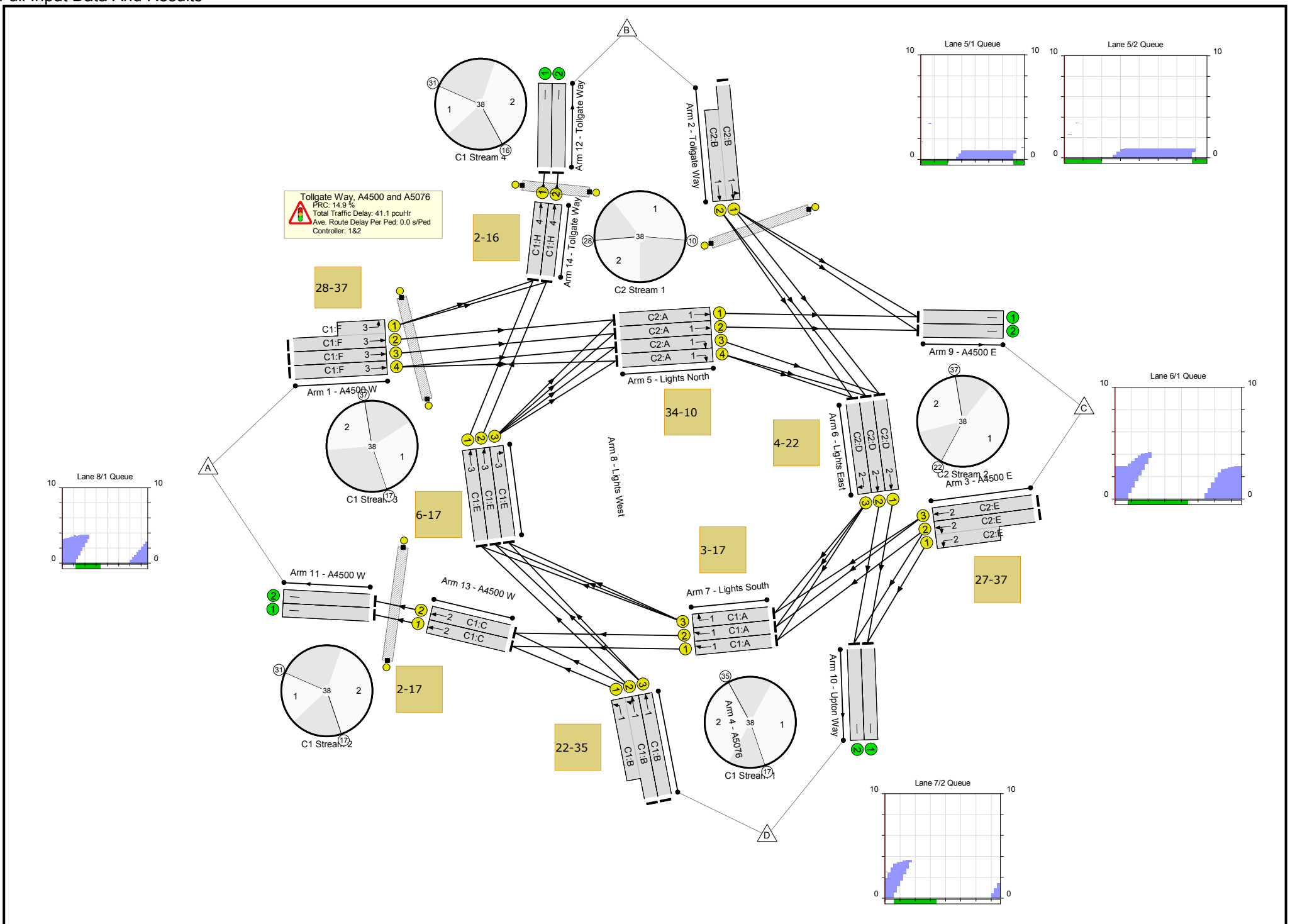
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.4%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.4%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	9	-	488	2060:1883	529+110	76.3 : 76.3%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	9	-	393	2060	542	72.5%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	9	-	301	2035	536	56.2%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	9	-	749	2061:2052	542+540	61.6 : 76.9%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	10	-	786	2078:1937	602+498	71.5 : 71.5%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	10	-	416	2078	602	69.2%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	13	-	744	2072:1930	763+503	73.1 : 37.0%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	13	-	526	2076	765	68.8%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	14	-	510	2051	918	55.6%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	14	-	506	2051	918	55.1%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	14	-	125	2026	906	13.8%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	14	-	176	2025	906	19.4%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	18	-	402	1889	1044	38.5%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	18	-	391	2027	1120	34.9%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	18	-	200	2028	1121	17.8%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	14	-	470	1919	858	54.7%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	14	-	496	2055	919	54.0%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	14	-	68	2055	919	7.4%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	11	-	353	1915	706	50.0%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	11	-	365	2051	756	48.3%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	11	-	219	2050	755	29.0%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	538	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	535	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	758	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	403	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	656	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	407	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	15	-	656	2015	848	77.3%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	15	-	711	2155	907	78.4%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	14	-	395	1979	781	50.6%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	14	-	407	2117	836	48.7%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	12	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	15	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**23.4**	**17.7**	**0.0**	**41.1**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**23.4**	**17.7**	**0.0**	**41.1**	**-**	**-**	**-**	**-**
1/2+1/1	488	488	-	-	-	1.7	1.6	-	3.3	24.1	3.8	1.6	5.4
1/3	393	393	-	-	-	1.4	1.3	-	2.7	24.6	3.7	1.3	5.0
1/4	301	301	-	-	-	1.0	0.6	-	1.7	19.7	2.7	0.6	3.3
2/1+2/2	749	749	-	-	-	2.6	1.1	-	3.8	18.0	4.0	1.1	5.2
3/2+3/1	786	786	-	-	-	2.6	1.2	-	3.9	17.6	4.1	1.2	5.3
3/3	416	416	-	-	-	1.4	1.1	-	2.5	21.6	3.8	1.1	4.9
4/2+4/1	744	744	-	-	-	2.0	0.7	-	2.8	13.3	5.0	0.7	5.7
4/3	526	526	-	-	-	1.5	1.1	-	2.6	17.6	4.7	1.1	5.8
5/1	510	510	-	-	-	0.5	0.6	-	1.1	7.6	3.4	0.6	4.1
5/2	506	506	-	-	-	0.5	0.6	-	1.1	7.8	3.4	0.6	4.0
5/3	125	125	-	-	-	0.0	0.1	-	0.1	2.3	0.0	0.1	0.1
5/4	176	176	-	-	-	0.0	0.1	-	0.1	2.5	0.0	0.1	0.1
6/1	402	402	-	-	-	1.2	0.3	-	1.6	13.9	4.1	0.3	4.5
6/2	391	391	-	-	-	0.9	0.3	-	1.2	10.9	4.0	0.3	4.2
6/3	200	200	-	-	-	0.7	0.1	-	0.8	14.9	2.1	0.1	2.2
7/1	470	470	-	-	-	0.7	0.6	-	1.3	10.0	4.6	0.6	5.2
7/2	496	496	-	-	-	0.5	0.6	-	1.1	7.9	3.7	0.6	4.3
7/3	68	68	-	-	-	0.1	0.0	-	0.1	5.0	0.6	0.0	0.7
8/1	353	353	-	-	-	1.2	0.5	-	1.7	16.9	3.7	0.5	4.2
8/2	365	365	-	-	-	1.1	0.5	-	1.5	15.1	3.9	0.5	4.3
8/3	219	219	-	-	-	0.7	0.2	-	0.9	14.2	2.3	0.2	2.5
9/1	538	538	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	758	758	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

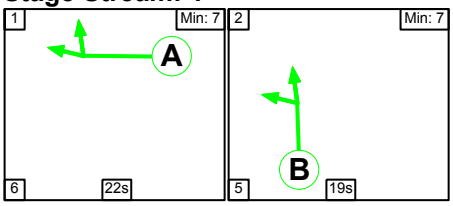
10/2	403	403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	656	656	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	395	395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	407	407	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	656	656	-	-	-	0.5	1.7	-	2.2	12.1	2.0	1.7	3.6
13/2	711	711	-	-	-	0.5	1.8	-	2.3	11.6	2.3	1.8	4.0
14/1	395	395	-	-	-	0.0	0.5	-	0.5	5.0	0.3	0.5	0.9
14/2	407	407	-	-	-	0.1	0.5	-	0.5	4.7	0.4	0.5	0.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	23.1	Total Delay for Signalled Lanes (pcuHr):	7.82	Cycle Time (s):	38		
C1	Stream: 2 PRC for Signalled Lanes (%):	14.9	Total Delay for Signalled Lanes (pcuHr):	4.50	Cycle Time (s):	38		
C1	Stream: 3 PRC for Signalled Lanes (%):	17.9	Total Delay for Signalled Lanes (pcuHr):	11.67	Cycle Time (s):	38		
C1	Stream: 4 PRC for Signalled Lanes (%):	78.0	Total Delay for Signalled Lanes (pcuHr):	1.09	Cycle Time (s):	38		
C2	Stream: 1 PRC for Signalled Lanes (%):	17.1	Total Delay for Signalled Lanes (pcuHr):	6.12	Cycle Time (s):	38		
C2	Stream: 2 PRC for Signalled Lanes (%):	25.9	Total Delay for Signalled Lanes (pcuHr):	9.91	Cycle Time (s):	38		
	PRC Over All Lanes (%):	14.9	Total Delay Over All Lanes(pcuHr):	41.11				

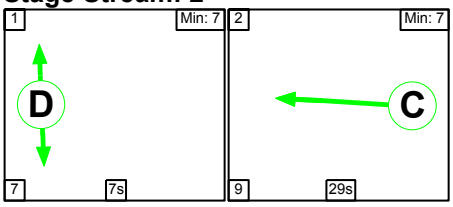
Full Input Data And Results
Scenario 7: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

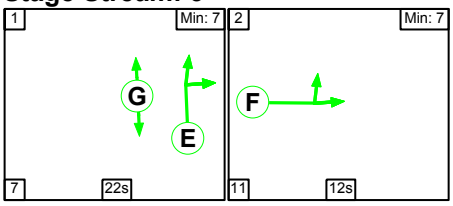
Stage Stream: 1



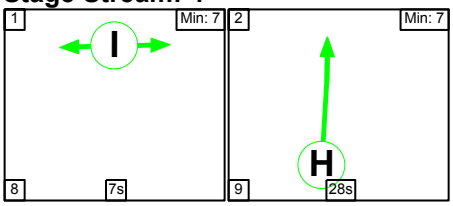
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	22	19
Change Point	36	12

Stage Stream: 2

Stage	1	2
Duration	7	29
Change Point	15	29

Stage Stream: 3

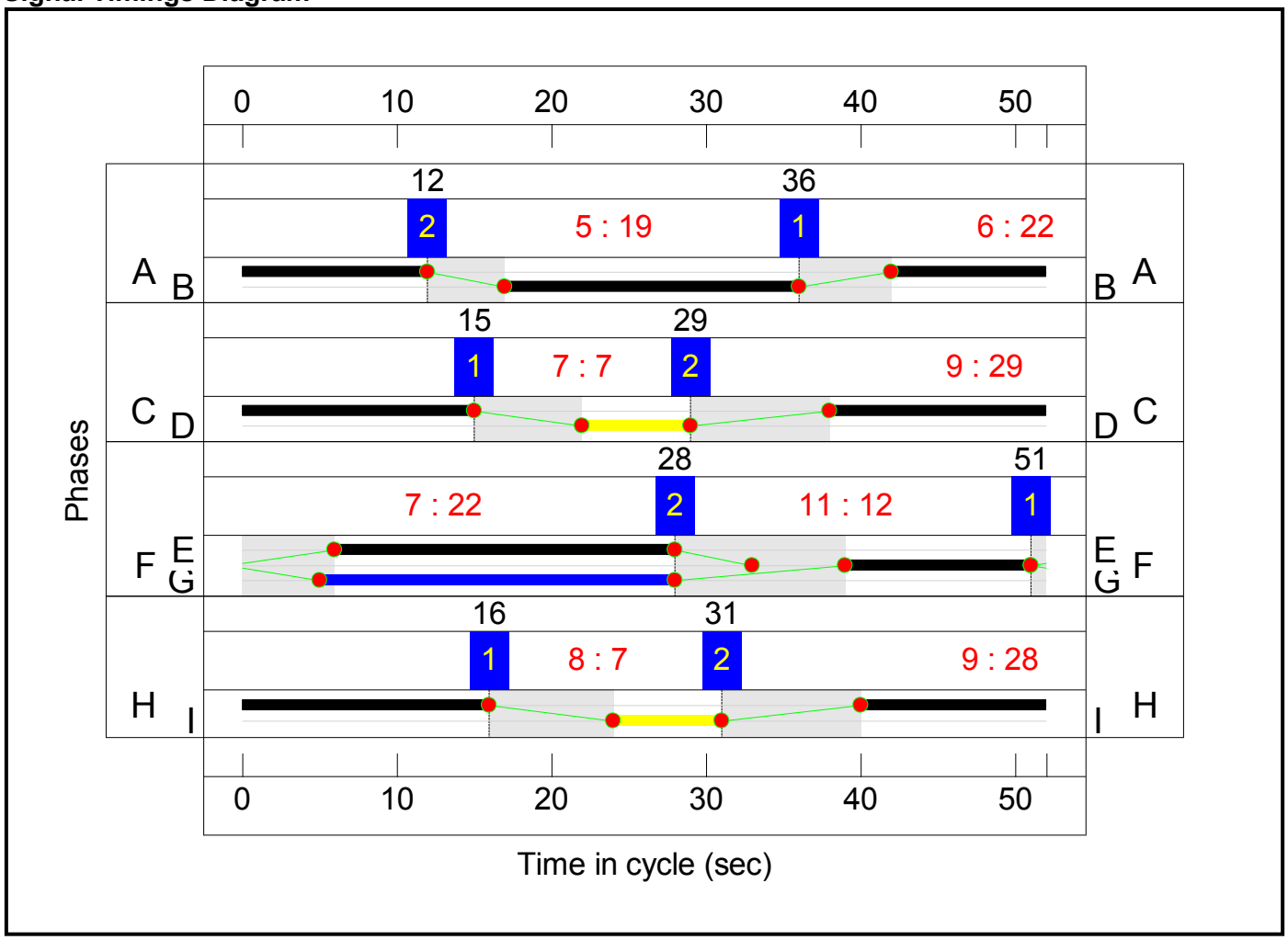
Stage	1	2
Duration	22	12
Change Point	51	28

Stage Stream: 4

Stage	1	2
Duration	7	28
Change Point	16	31

Full Input Data And Results

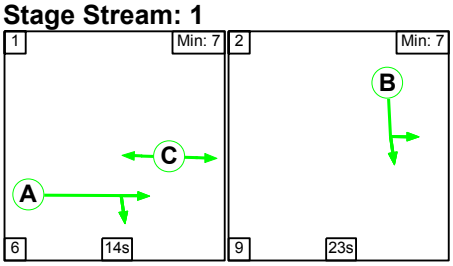
Signal Timings Diagram



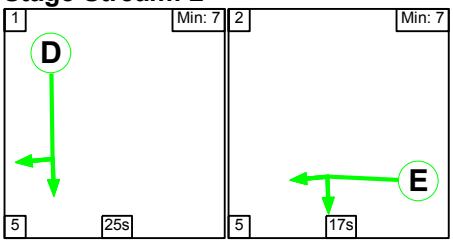
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

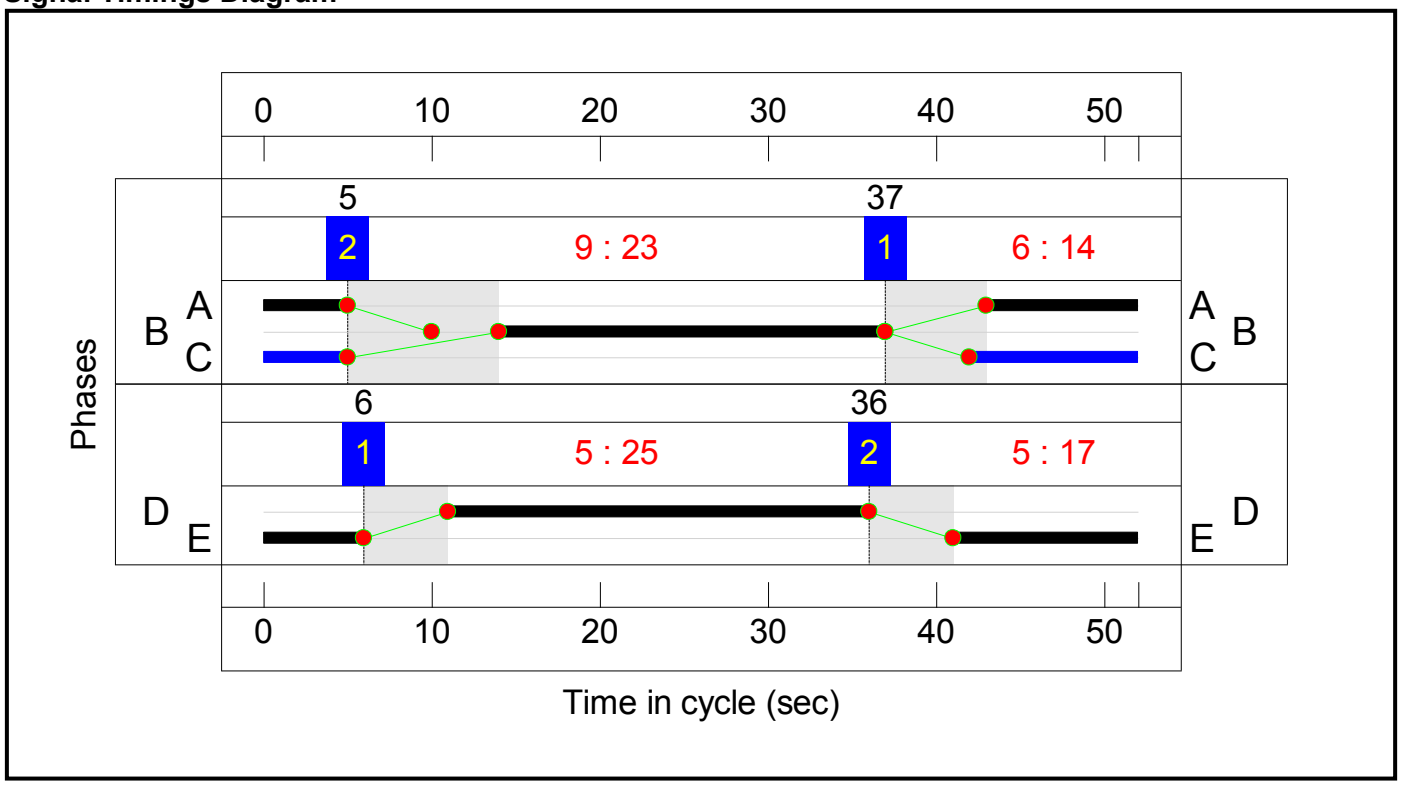
Stage Stream: 1

Stage	1	2
Duration	14	23
Change Point	37	5

Stage Stream: 2

Stage	1	2
Duration	25	17
Change Point	6	36

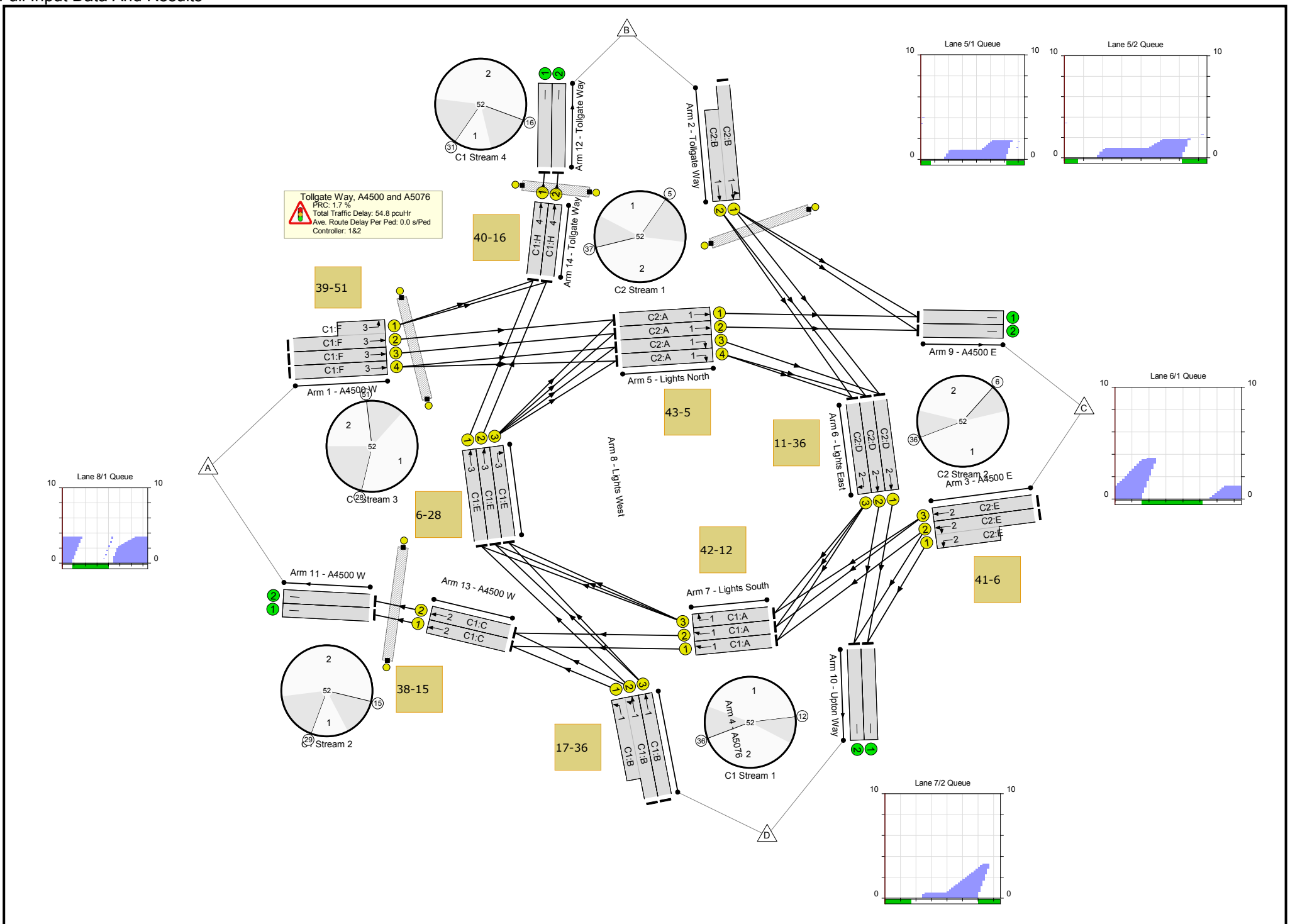
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.5%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.5%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	12	-	628	2060:1883	442+353	79.0 : 79.0%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	12	-	347	2060	515	67.4%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	12	-	439	2035	509	86.3%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	23	-	1540	2063:2052	849+892	88.5 : 88.5%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	17	-	787	2078:1937	617+465	72.7 : 72.7%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	17	-	439	2078	719	61.0%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	19	-	718	2076:1930	798+676	57.7 : 38.0%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	19	-	493	2076	798	61.7%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	14	-	476	2051	671	71.0%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	14	-	475	2051	671	70.8%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	14	-	171	2026	662	25.8%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	14	-	268	2025	662	40.5%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	25	-	764	1889	1017	75.1%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	25	-	745	2027	1091	68.3%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	25	-	312	2028	1092	28.6%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	22	-	514	1919	923	55.7%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	22	-	614	2055	988	62.1%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	22	-	54	2055	988	5.5%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	22	-	462	1915	921	50.2%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	22	-	291	2051	986	29.5%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	22	-	255	2050	986	25.9%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	555	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	554	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	1102	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	763	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	771	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	614	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	516	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	516	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	771	2015	1163	66.3%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	614	2155	1243	49.4%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	516	1979	1104	46.8%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	516	2117	1181	43.7%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	23	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	15	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**31.6**	**23.2**	**0.0**	**54.8**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**31.6**	**23.2**	**0.0**	**54.8**	**-**	**-**	**-**	**-**
1/2+1/1	628	628	-	-	-	3.0	1.8	-	4.9	27.9	4.5	1.8	6.3
1/3	347	347	-	-	-	1.7	1.0	-	2.7	28.2	4.4	1.0	5.5
1/4	439	439	-	-	-	2.3	2.9	-	5.2	42.5	6.0	2.9	8.9
2/1+2/2	1540	1540	-	-	-	5.2	3.7	-	8.9	20.7	9.9	3.7	13.6
3/2+3/1	787	787	-	-	-	3.0	1.3	-	4.4	19.9	5.4	1.3	6.7
3/3	439	439	-	-	-	1.7	0.8	-	2.5	20.5	5.2	0.8	6.0
4/2+4/1	718	718	-	-	-	2.4	0.5	-	2.9	14.6	5.3	0.5	5.7
4/3	493	493	-	-	-	1.8	0.8	-	2.6	18.8	5.6	0.8	6.4
5/1	476	476	-	-	-	0.7	1.2	-	2.0	14.8	4.0	1.2	5.2
5/2	475	475	-	-	-	0.8	1.2	-	2.0	14.8	4.0	1.2	5.2
5/3	171	171	-	-	-	0.0	0.2	-	0.2	3.7	0.0	0.2	0.2
5/4	268	268	-	-	-	0.0	0.3	-	0.3	4.6	0.0	0.3	0.3
6/1	764	764	-	-	-	0.9	1.5	-	2.4	11.3	3.6	1.5	5.1
6/2	745	745	-	-	-	1.1	1.1	-	2.2	10.7	4.9	1.1	6.0
6/3	312	312	-	-	-	0.3	0.2	-	0.5	5.5	0.7	0.2	0.9
7/1	514	514	-	-	-	0.2	0.6	-	0.9	6.1	5.0	0.6	5.6
7/2	614	614	-	-	-	0.7	0.8	-	1.5	9.0	3.3	0.8	4.1
7/3	54	54	-	-	-	0.0	0.0	-	0.0	2.1	0.0	0.0	0.0
8/1	462	462	-	-	-	1.8	0.5	-	2.3	17.6	3.5	0.5	4.0
8/2	291	291	-	-	-	0.9	0.2	-	1.1	13.3	2.4	0.2	2.6
8/3	255	255	-	-	-	0.9	0.2	-	1.1	14.8	1.9	0.2	2.1
9/1	555	555	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	554	554	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1102	1102	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

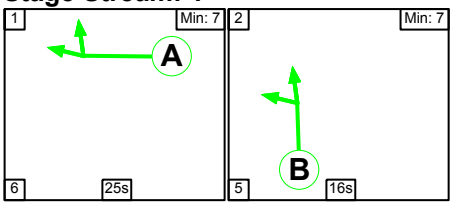
10/2	763	763	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	771	771	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	614	614	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	516	516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	516	516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	771	771	-	-	-	1.1	1.0	-	2.1	9.8	4.1	1.0	5.1
13/2	614	614	-	-	-	0.1	0.5	-	0.6	3.6	0.3	0.5	0.8
14/1	516	516	-	-	-	0.7	0.4	-	1.1	7.7	3.2	0.4	3.6
14/2	516	516	-	-	-	0.3	0.4	-	0.7	5.1	1.8	0.4	2.1
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	44.8	Total Delay for Signalled Lanes (pcuHr):	7.90	Cycle Time (s):	52		
C1	Stream: 2 PRC for Signalled Lanes (%):	35.7	Total Delay for Signalled Lanes (pcuHr):	2.71	Cycle Time (s):	52		
C1	Stream: 3 PRC for Signalled Lanes (%):	4.3	Total Delay for Signalled Lanes (pcuHr):	17.15	Cycle Time (s):	52		
C1	Stream: 4 PRC for Signalled Lanes (%):	92.5	Total Delay for Signalled Lanes (pcuHr):	1.84	Cycle Time (s):	52		
C2	Stream: 1 PRC for Signalled Lanes (%):	1.7	Total Delay for Signalled Lanes (pcuHr):	13.28	Cycle Time (s):	52		
C2	Stream: 2 PRC for Signalled Lanes (%):	19.8	Total Delay for Signalled Lanes (pcuHr):	11.94	Cycle Time (s):	52		
	PRC Over All Lanes (%):	1.7	Total Delay Over All Lanes(pcuHr):	54.83				

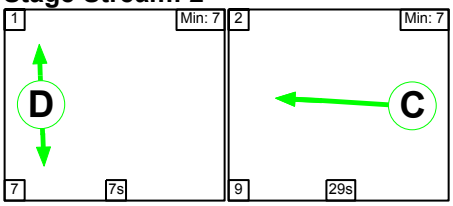
Full Input Data And Results
Scenario 8: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

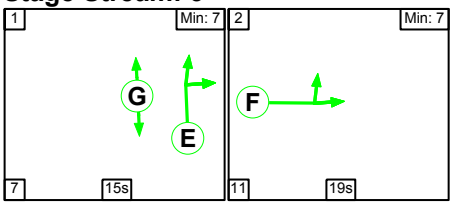
Stage Stream: 1



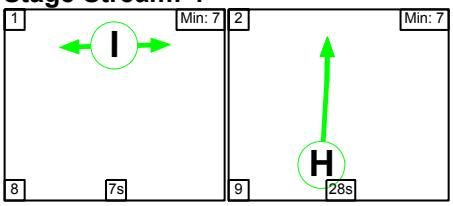
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	16
Change Point	33	12

Stage Stream: 2

Stage	1	2
Duration	7	29
Change Point	43	5

Stage Stream: 3

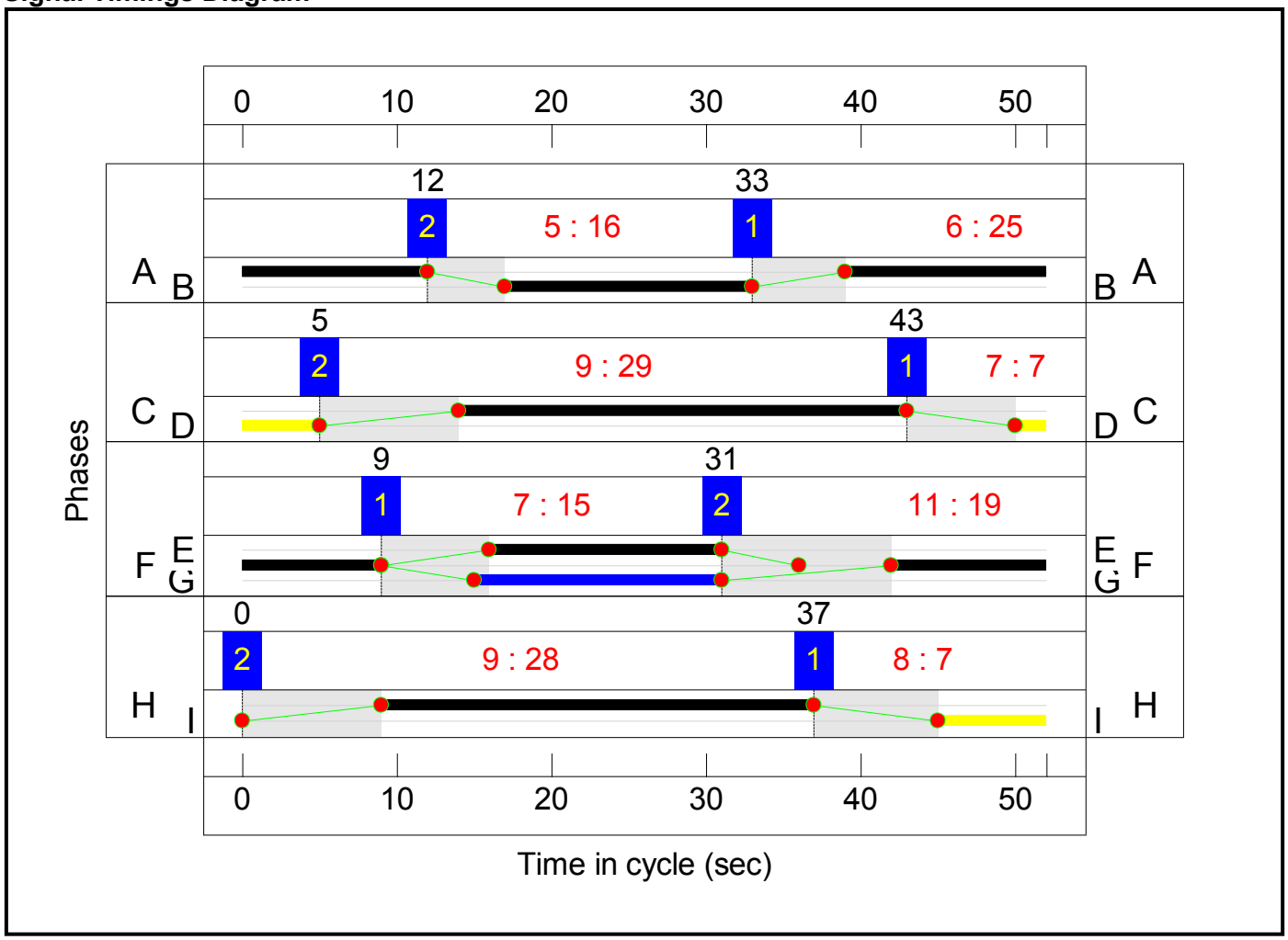
Stage	1	2
Duration	15	19
Change Point	9	31

Stage Stream: 4

Stage	1	2
Duration	7	28
Change Point	37	0

Full Input Data And Results

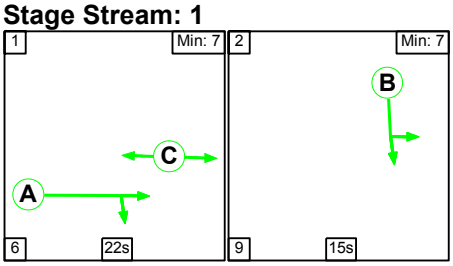
Signal Timings Diagram



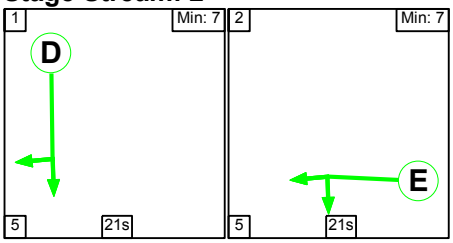
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

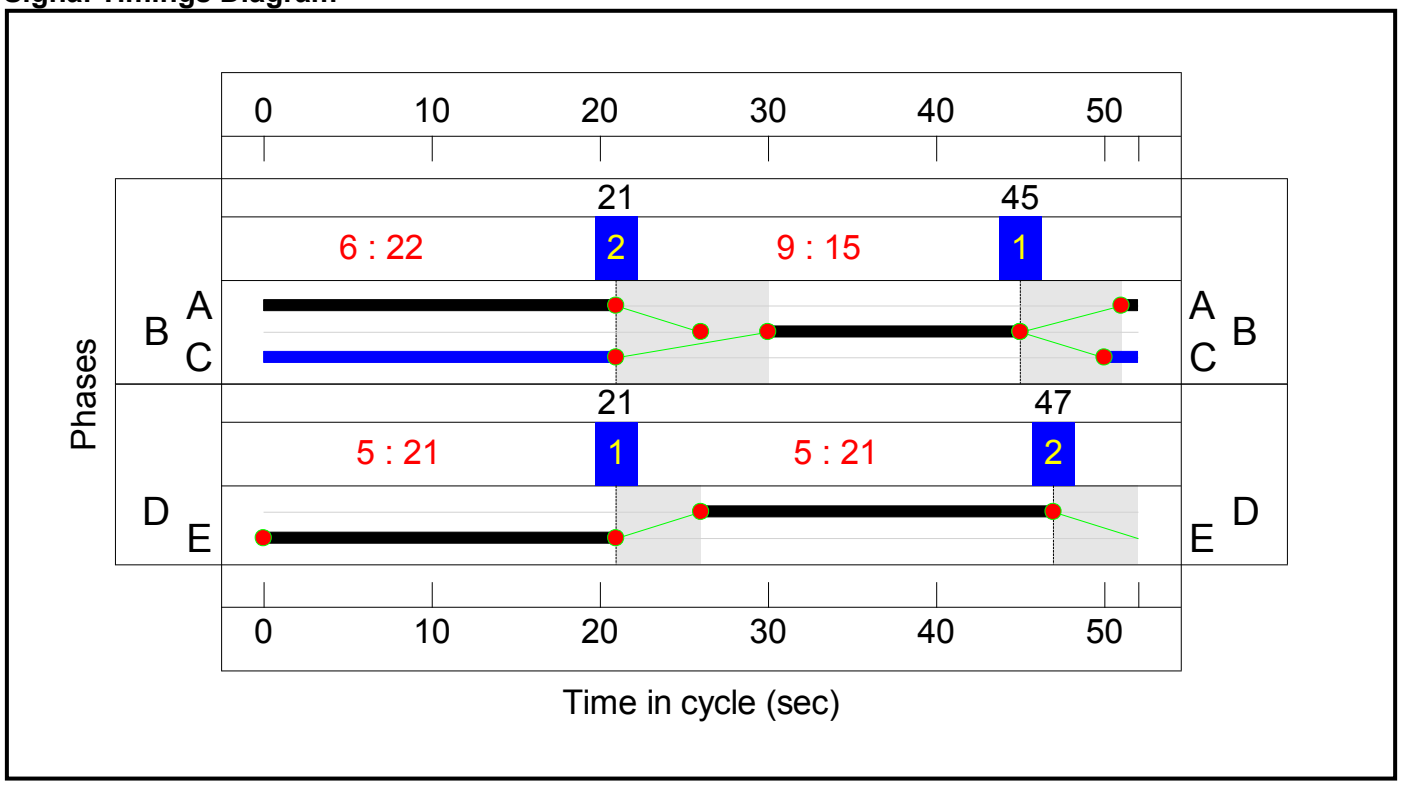
Stage Stream: 1

Stage	1	2
Duration	22	15
Change Point	45	21

Stage Stream: 2

Stage	1	2
Duration	21	21
Change Point	21	47

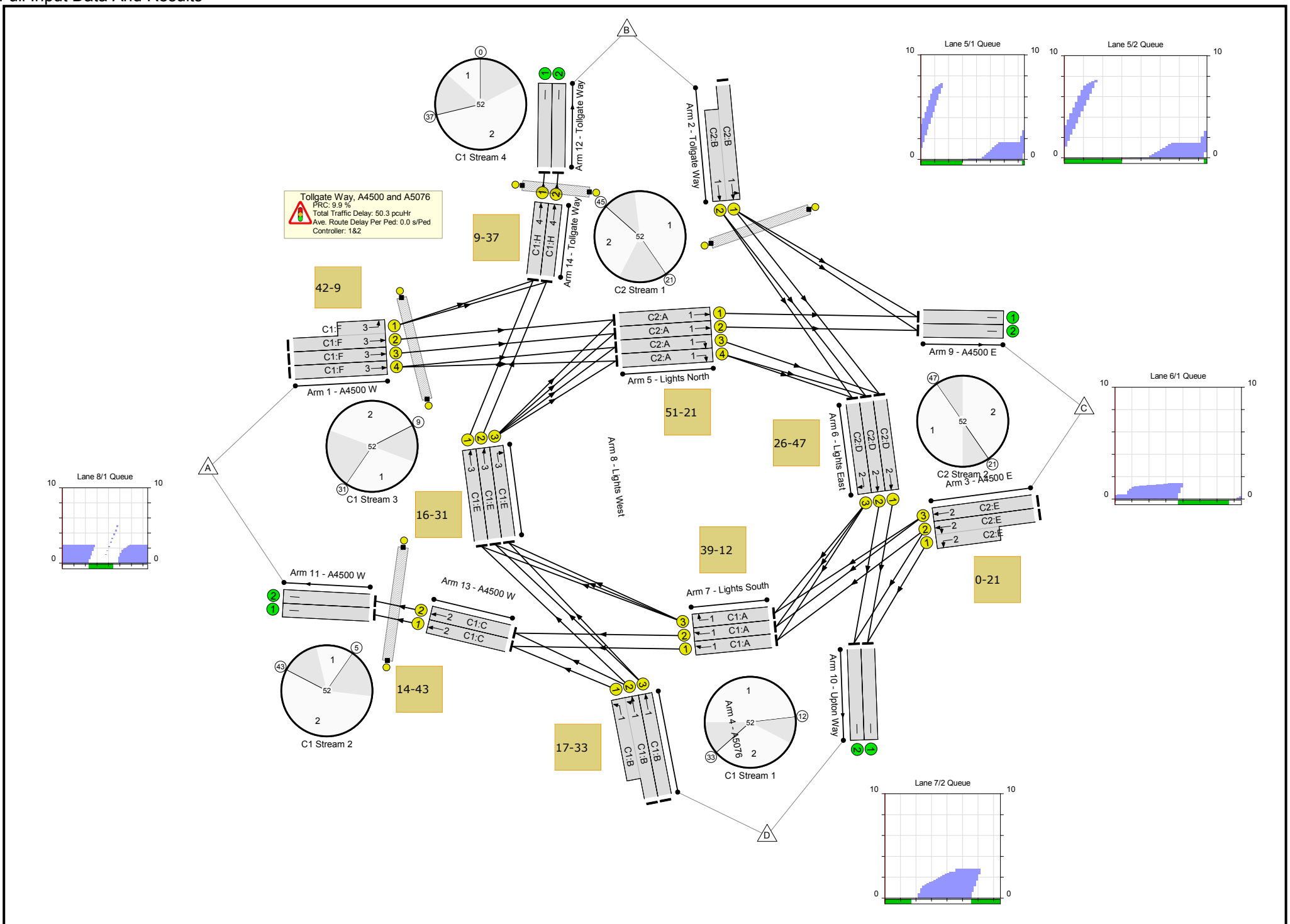
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.9%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.9%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	19	-	608	2060:1883	670+235	67.1 : 67.1%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	19	-	483	2060	792	61.0%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	19	-	243	2035	783	31.0%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	15	-	1023	2066:2052	636+631	79.6 : 81.9%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	21	-	887	2077:1937	687+621	67.8 : 67.8%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	21	-	490	2078	879	55.7%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	16	-	908	2076:1930	679+631	75.9 : 62.3%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	16	-	508	2076	679	74.8%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	22	-	606	2051	986	61.5%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	22	-	622	2051	986	63.1%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	22	-	67	2026	974	6.9%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	22	-	176	2025	974	18.1%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	21	-	441	1889	872	50.6%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	21	-	412	2027	936	44.0%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	21	-	281	2028	936	30.0%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	25	-	440	1919	1033	42.6%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	25	-	635	2055	1107	57.4%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	25	-	84	2055	1107	7.6%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	15	-	499	1915	663	75.3%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	15	-	296	2051	710	41.7%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	15	-	295	2050	710	41.6%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	672	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	688	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	862	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	833	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	652	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	555	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	398	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	833	2015	1163	71.7%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	652	2155	1243	52.4%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	555	1979	1104	50.3%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	398	2117	1181	33.7%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	16	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	23	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**33.2**	**17.1**	**0.0**	**50.3**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**33.2**	**17.1**	**0.0**	**50.3**	**-**	**-**	**-**	**-**
1/2+1/1	608	608	-	-	-	2.0	1.0	-	3.1	18.1	5.0	1.0	6.0
1/3	483	483	-	-	-	1.7	0.8	-	2.5	18.7	5.5	0.8	6.3
1/4	243	243	-	-	-	0.8	0.2	-	1.0	14.5	2.4	0.2	2.7
2/1+2/2	1023	1023	-	-	-	4.7	2.1	-	6.8	23.8	6.9	2.1	9.0
3/2+3/1	887	887	-	-	-	2.7	1.0	-	3.8	15.4	4.9	1.0	6.0
3/3	490	490	-	-	-	1.5	0.6	-	2.2	15.9	5.3	0.6	5.9
4/2+4/1	908	908	-	-	-	3.9	1.1	-	5.0	19.7	6.6	1.1	7.7
4/3	508	508	-	-	-	2.2	1.5	-	3.7	26.0	6.5	1.5	8.0
5/1	606	606	-	-	-	1.0	0.8	-	1.8	10.4	7.3	0.8	8.1
5/2	622	622	-	-	-	0.9	0.9	-	1.7	10.1	7.6	0.9	8.5
5/3	67	67	-	-	-	0.0	0.0	-	0.0	2.1	0.2	0.0	0.2
5/4	176	176	-	-	-	0.0	0.1	-	0.1	2.6	1.2	0.1	1.3
6/1	441	441	-	-	-	0.6	0.5	-	1.1	8.7	1.4	0.5	1.9
6/2	412	412	-	-	-	1.1	0.4	-	1.5	12.9	2.8	0.4	3.2
6/3	281	281	-	-	-	0.2	0.2	-	0.4	5.0	0.3	0.2	0.6
7/1	440	440	-	-	-	0.9	0.4	-	1.3	10.4	2.3	0.4	2.7
7/2	635	635	-	-	-	1.1	0.7	-	1.7	9.8	2.8	0.7	3.5
7/3	84	84	-	-	-	0.2	0.0	-	0.2	9.9	0.5	0.0	0.6
8/1	499	499	-	-	-	1.6	1.5	-	3.1	22.3	5.0	1.5	6.5
8/2	296	296	-	-	-	0.9	0.4	-	1.2	14.9	2.1	0.4	2.4
8/3	295	295	-	-	-	0.8	0.4	-	1.1	13.9	1.3	0.4	1.6
9/1	672	672	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	688	688	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	862	862	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/2	490	490	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	833	833	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	652	652	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	555	555	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	398	398	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	833	833	-	-	-	1.4	1.3	-	2.7	11.7	10.7	1.3	12.0
13/2	652	652	-	-	-	2.7	0.6	-	3.2	17.7	8.7	0.6	9.2
14/1	555	555	-	-	-	0.1	0.5	-	0.6	4.0	0.7	0.5	1.2
14/2	398	398	-	-	-	0.3	0.3	-	0.5	4.9	1.3	0.3	1.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	18.6	Total Delay for Signalled Lanes (pcuHr):	11.88	Cycle Time (s):	52		
C1	Stream: 2 PRC for Signalled Lanes (%):	25.6	Total Delay for Signalled Lanes (pcuHr):	5.91	Cycle Time (s):	52		
C1	Stream: 3 PRC for Signalled Lanes (%):	19.6	Total Delay for Signalled Lanes (pcuHr):	11.99	Cycle Time (s):	52		
C1	Stream: 4 PRC for Signalled Lanes (%):	79.0	Total Delay for Signalled Lanes (pcuHr):	1.17	Cycle Time (s):	52		
C2	Stream: 1 PRC for Signalled Lanes (%):	9.9	Total Delay for Signalled Lanes (pcuHr):	10.44	Cycle Time (s):	52		
C2	Stream: 2 PRC for Signalled Lanes (%):	32.8	Total Delay for Signalled Lanes (pcuHr):	8.89	Cycle Time (s):	52		
	PRC Over All Lanes (%):	9.9	Total Delay Over All Lanes(pcuHr):	50.28				

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

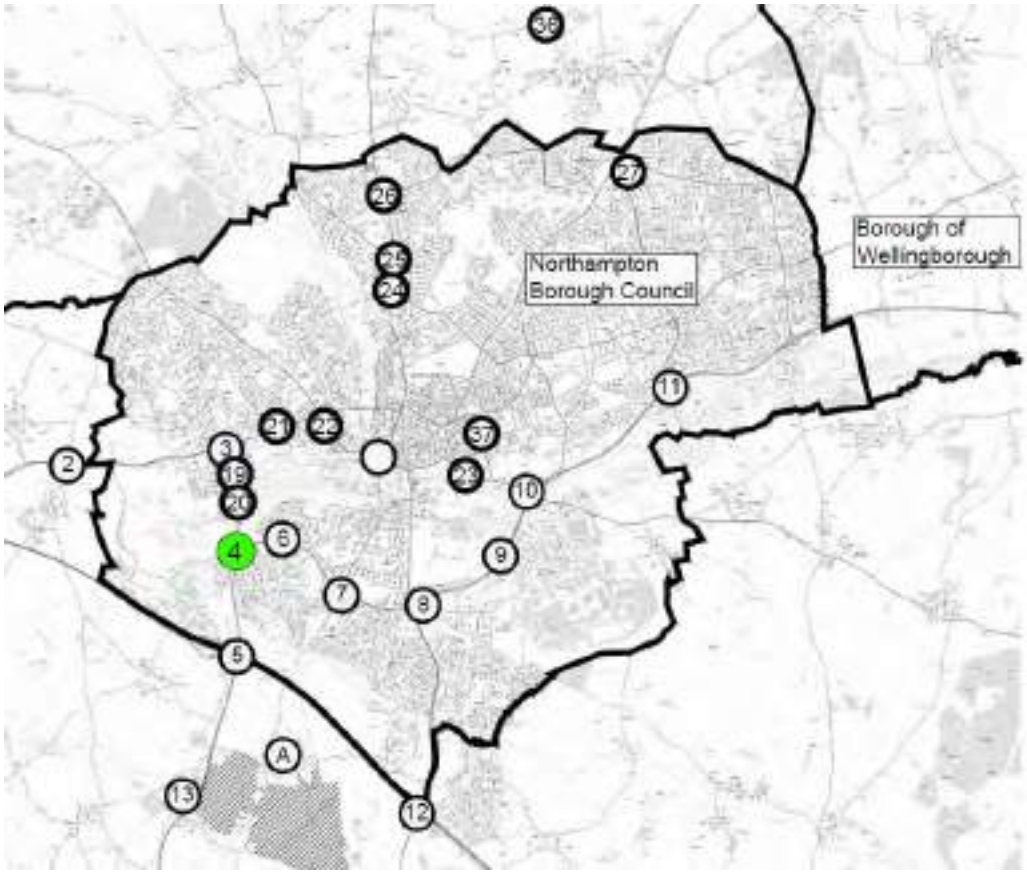
Technical Note No. 14

1 JUNCTION FOUR – A5076 DANES CAMP WAY, UPTON VALLEY WAY AND A5123

Existing Junction Description

1.1 Junction Four is a four arm signalised roundabout to the south of the Grand Union Canal and Upton Country Park It connects the A5076 Danes Camp Way with the A5123 and Upton Valley Way. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Four Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction four were conducted on Thursday 18th June 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 As agreed with the NCC and HE, The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.6 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays included in **Appendix B**.

1.7 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.8 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015 Base		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A5076	6	4-8	10
	Arm 2 – Danes Camp Way A5076	9	5-12	10
	Arm 3 – A5123	9	6-13	6
	Arm 4 – Upton Valley Way	4	2-7	4
PM Peak Hour (1700-1800)	Arm 1 – A5076	5	4-9	9
	Arm 2 – Danes Camp Way A5076	8	5-10	13
	Arm 3 – A5123	8	6-10	14
	Arm 4 – Upton Valley Way	3	4-8	3

1.9 It is considered that the modelled queues are generally in line with the surveyed queues, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (59 seconds).

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, Shown in **Figure EL04** are summarised in **Table 2** and **Table 3** and included as **Appendix C.**

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2015	74.0%	75.4%	63.1%	67.2%	79.4%	90.8%	89.4%	59.8%
	2021 DM	55.8%	94.7%	92.9%	75.2%	110.2%	110.6%	118.4%	103.7%
	2021 DS	119.7%	120.4%	111.3%	88.1%	91.6%	78.3%	190.8%	40.8%
	2031 DM	116.80%	98.50%	115.40%	113.60%	104.00%	129.50%	154.30%	142.30%
	2031 DS	124.9%	123.4%	117.7%	114.9%	94.1%	101.6%	230.1%	68.5%
Queue – MMQ (PCU)	2015	9	10	7	4	10	14	14	3
	2021 DM	23	17	15	4	77	105	101	19

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	2021 DS	131	155	61	6	17	11	360	2
	2031 DM	120	26	63	51	50	225	204	110
	2031 DS	160	183	83	54	20	43	459	4
Average Delay (sec/pcu)	**2015**	13.3	14.9	22.6	32.4	18.7	30.5	39.5	31.4
	2021 DM	50.1	33.9	39.5	27.6	218.1	217.7	335.3	168.4
	2021 DS	337.5	337.8	229.2	39.2	27.3	16.4	932.2	27.5
	2031 DM	289.6	48.9	285.0	25.6	121.3	457.2	29.1	608.8
	2031 DS	393.0	375.4	311.3	279.7	32.7	77.7	1103.4	3.6

1.11 As shown in **Table 2**, Rail Central is forecast to impact on the operation of the existing junction in the 2031 AM and PM peak scenarios, with all arms in the AM peak, particular Arm 2 by 24.9%% and Arm 3 by 75.8% by in the PM peak exceeding capacity further as a result. However, Arms 1, 2 and 4 in the PM peak by 9.9%, 27.9% and 73.8% have greater capacity. There is also a significant increase in queueing across all arms during the AM peak of 219 PCUs and Arms 3 in the PM peak of 255 PCUs. However, there is a significant decrease in queueing Arms 1, 2 and 3 in the PM peak of 318 PCUs.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (DoS)	19.3	-8.8	-33.8	-29.7	-38.8	-0.9	-31.6	-112.0	-71.5	-155.6
Overall Junction Delay (PCUhr)	36	61	343	259	471	51	289	431	590	561

1.12 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for both 2021 and 2031 by 25% and 9.1% for 2021 AM and 2031 AM respectively. There is also an increase of 80.4% and 84.1% for the 2021 PM and 2031 PM respectively.

1.13 There is an increase in overall junction delay between the DM AM and DS AM scenarios by 282 and 212 PCUhrs for 2021 AM and 2031 AM respectively and an increase by in 2021 PM

peak 142 PCUhrs. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.14 The proposed mitigation is shown in **Appendix J.3** of the TA and summarised is as follows:

- Extension to offside right turn lane on Upton Way approach;
- Reconfiguration of road markings on Danes Camp Way approach;
- Reconfiguration of road markings on circulatory carriageway;
- Additional offside lane on the A5123 approach;
- Additional lane on circulatory carriageway; and
- Additional lane on Upton Way exit.

1.15 The results of the mitigated junction model is shown in **Table 4** and **Table 5** and included as **Appendix C.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		**AM**				**PM**			
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**
DoS (%)	**2021 DS**	88.1%	84.2%	51.0%	48.9%	95.2%	97.2%	97.2%	32.6%
	Comparison to 2021 DM	32.3%	-10.5%	-41.9%	-26.3%	-15.0%	-13.4%	-21.2%	-71.1%
	2031 DS	97.4%	82.5%	60.9%	94.1%	104.6%	95.4%	121.5%	55.7%
	Comparison to 2031 DM	-19.4%	-16.0%	-54.5%	-19.5%	0.6%	-34.1%	-32.8%	-86.6%
Queue – MMQ (PCU)	**2021 DS**	9	8	4	2	16	24	18	2
	Comparison to 2021 DM	-13	-9	-11	-2	-62	-81	-83	-18
	2031 DS	23	12	6	9	44	21	145	3
	Comparison to 2031 DM	-97	-14	-56	-42	-6	-204	-59	-107
Average Delay (sec/pcu)	**2021 DS**	23.0	17.0	9.5	16.8	41.1	46.0	33.8	32.2
	Comparison to 2021 DM	-27.1	-16.9	-30.0	-10.8	-177.0	-171.7	-301.5	-136.2

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	2031 DS	36.3	22.2	18.0	50.3	147.1	33.7	100.3	34.1
	Comparison to 2031 DM	-253.3	-26.7	-267.0	24.7	25.8	-423.5	71.2	-574.7

1.16 As shown in **Table 4,** the proposed junction mitigation is considered appropriate to ensure that there is nil detriment as a result of Rail Central in comparison to the 2031 DM scenarios. All arms show a decrease in saturation, particularly by Arm 3 of 54.5% in the AM peak and a decrease across all arms in the PM peak, particularly Arm 4 by 86.6%. Furthermore, there is a reduction in queues AM peak and PM peak of 209 PCUs and 476 PCUs respectively, and a reduction in overall delay of almost nine minutes in the AM peak and over 15 minutes in the PM peak.

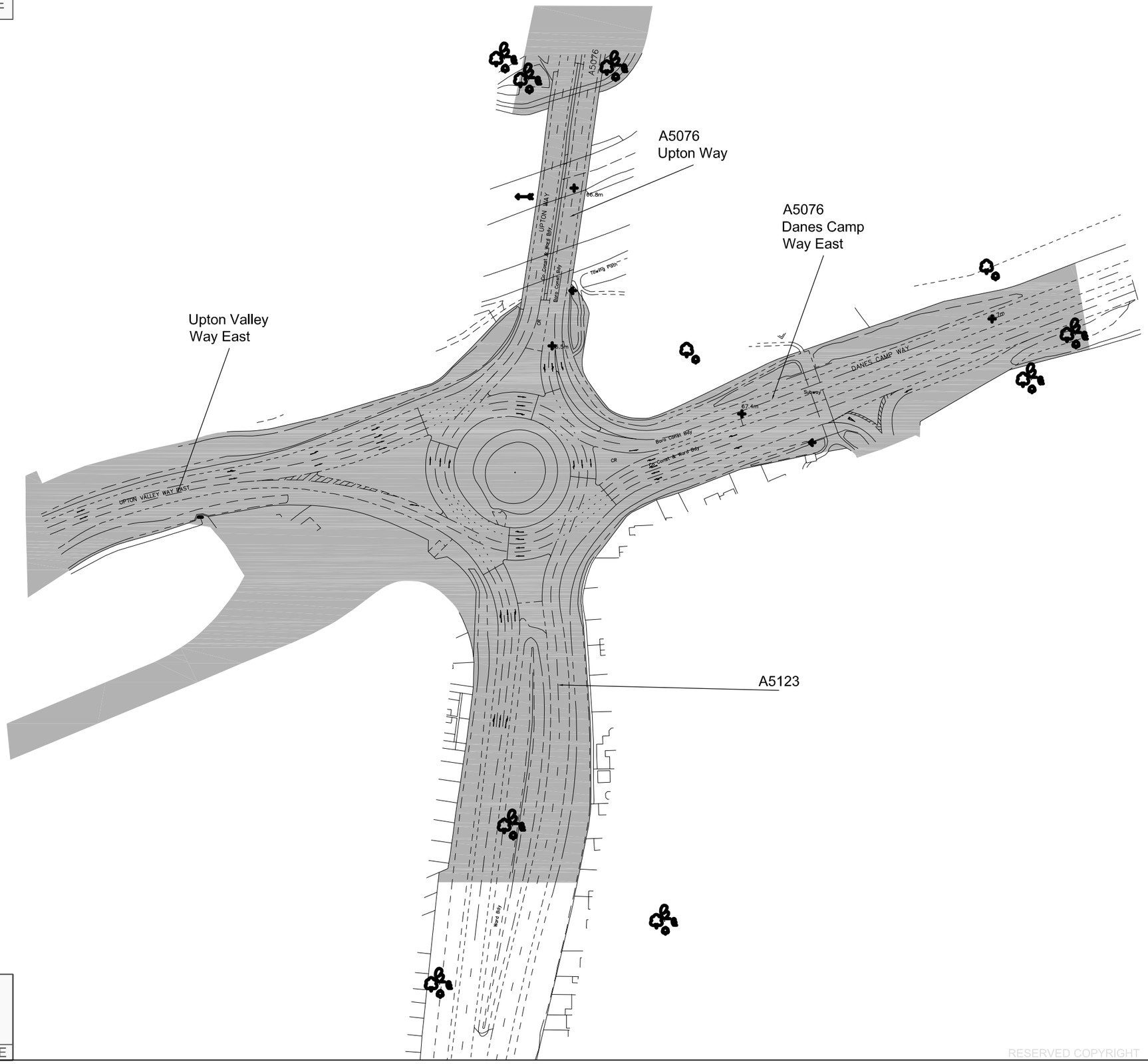
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM
Overall Junction capacity (DoS)	2.2	11.0	-8.2	21.5	-8.0	23.6	-16.2	139.4
Overall Junction Delay (PCUhr)	48	-13	76	-184	82	-206	184	-376

1.17 The junction operates 21.5% and 139.4% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario and 2031 DS scenario PM peak than PM peak 2031 DM scenario. Finally, the overall junction delay is 177 and 376 PCUhrs better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



INDICATIVE

RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A5076/A5123/Upton Way Roundabout Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	30.05.17	PSW	AJS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL04	-

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	206	237	89	532
B - A5076 N	74	0	1,279	518	1,871
C - A5076 E	293	1,314	0	915	2,522
D - A5123 S	13	621	838	0	1,473
Total	381	2,141	2,354	1,523	6,399

Modelled Flows
2021 DM
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	213	258	146	617
B - A5076 N	105	0	1,285	619	2,009
C - A5076 E	293	1,305	0	1,012	2,610
D - A5123 S	14	483	1,142	0	1,639
Total	413	2,001	2,685	1,777	6,876

Modelled Flows
2021 DS2
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	302	221	160	683
B - A5076 N	93	0	1,274	837	2,205
C - A5076 E	251	1,156	0	1,371	2,778
D - A5123 S	19	556	1,225	0	1,800
Total	364	2,014	2,720	2,368	7,466

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	0	0	0	0
B - A5076 N	0	0	0	0	0
C - A5076 E	0	0	0	0	0
D - A5123 S	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	7	21	57	85
B - A5076 N	31	0	7	100	138
C - A5076 E	0	-8	0	96	88
D - A5123 S	1	-139	303	0	166
Total	32	-140	332	254	477

2021 DS2 minus 2015 Base
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	96	-16	70	150
B - A5076 N	19	0	-5	319	333
C - A5076 E	-42	-158	0	455	256
D - A5123 S	5	-65	387	0	327
Total	-17	-127	366	845	1,067

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	162	354	52	568
B - A5076 N	124	0	1,104	831	2,059
C - A5076 E	367	1,050	0	699	2,116
D - A5123 S	19	519	452	0	990
Total	510	1,731	1,910	1,582	5,733

2021 DM adjusted to count
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	169	375	109	653
B - A5076 N	155	0	1,111	931	2,197
C - A5076 E	367	1,042	0	795	2,204
D - A5123 S	20	380	755	0	1,156
Total	542	1,591	2,242	1,836	6,210

2021 DS2 adjusted to count
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	258	338	122	718
B - A5076 N	143	0	1,099	1,150	2,392
C - A5076 E	325	892	0	1,154	2,372
D - A5123 S	24	454	839	0	1,317
Total	493	1,604	2,276	2,427	6,800

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	4	357	159	19	539
B - A5076 N	71	0	1,674	481	2,226
C - A5076 E	332	893	0	741	1,967
D - A5123 S	238	1,045	271	0	1,554
Total	645	2,295	2,103	1,242	6,285

Modelled Flows
2021 DM
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	70	227	57	355
B - A5076 N	67	0	1,533	635	2,234
C - A5076 E	306	1,048	0	1,197	2,551
D - A5123 S	233	1,174	565	7	1,980
Total	607	2,292	2,325	1,897	7,120

Modelled Flows
2021 DS2
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	1	44	55	16	116
B - A5076 N	73	0	1,495	668	2,236
C - A5076 E	408	907	0	860	2,176
D - A5123 S	294	1,404	977	0	2,674
Total	776	2,355	2,527	1,544	7,202

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	0	0	0	0
B - A5076 N	0	0	0	0	0
C - A5076 E	0	0	0	0	0
D - A5123 S	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	-4	-287	69	38	-184
B - A5076 N	-4	0	-141	153	8
C - A5076 E	-26	155	0	456	585
D - A5123 S	-4	128	294	7	426
Total	-38	-3	222	655	835

2021 DS2 minus 2015 Base
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	-3	-313	-103	-3	-423
B - A5076 N	3	0	-179	186	10
C - A5076 E	76	14	0	119	210
D - A5123 S	56	358	706	0	1,121
Total	131	60	424	302	917

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	194	278	23	495
B - A5076 N	157	0	1,082	744	1,983
C - A5076 E	437	1,260	0	526	2,223
D - A5123 S	53	970	640	0	1,663
Total	647	2,424	2,000	1,293	6,364

2021 DM adjusted to count
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	-4	-93	347	61	311
B - A5076 N	153	0	941	897	1,991
C - A5076 E	411	1,415	0	982	2,808
D - A5123 S	49	1,098	934	7	2,089
Total	609	2,421	2,222	1,948	7,199

2021 DS2 adjusted to count
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	-3	-119	175	20	72
B - A5076 N	160	0	903	930	1,993
C - A5076 E	513	1,274	0	645	2,433
D - A5123 S	109	1,328	1,346	0	2,784
Total	778	2,484	2,424	1,595	7,281

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	206	237	89	532
B - A5076 N	74	0	1,279	518	1,871
C - A5076 E	293	1,314	0	915	2,522
D - A5123 S	13	621	838	0	1,473
Total	381	2,141	2,354	1,523	6,399

Modelled Flows
2031 DM
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	7	338	485	124	953
B - A5076 N	133	0	1,218	842	2,194
C - A5076 E	455	1,295	1	1,070	2,821
D - A5123 S	17	597	1,099	1	1,714
Total	612	2,230	2,803	2,037	7,682

Modelled Flows
2031 DS2
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	8	323	445	168	944
B - A5076 N	86	0	1,165	916	2,167
C - A5076 E	378	1,139	5	1,375	2,896
D - A5123 S	26	765	1,251	0	2,043
Total	498	2,228	2,866	2,459	8,050

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	0	0	0	0
B - A5076 N	0	0	0	0	0
C - A5076 E	0	0	0	0	0
D - A5123 S	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	7	132	248	35	421
B - A5076 N	59	0	-60	324	323
C - A5076 E	162	-18	1	155	299
D - A5123 S	3	-24	261	1	241
Total	231	89	450	514	1,283

2031 DS2 minus 2015 Base
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	8	117	208	79	412
B - A5076 N	11	0	-113	397	295
C - A5076 E	85	-175	5	460	375
D - A5123 S	13	144	413	0	569
Total	117	86	512	936	1,651

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	162	354	52	568
B - A5076 N	124	0	1,104	831	2,059
C - A5076 E	367	1,050	0	699	2,116
D - A5123 S	19	519	452	0	990
Total	510	1,731	1,910	1,582	5,733

2031 DM adjusted to count
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	7	294	602	87	989
B - A5076 N	183	0	1,044	1,155	2,382
C - A5076 E	529	1,032	1	854	2,415
D - A5123 S	22	495	713	1	1,231
Total	741	1,820	2,360	2,096	7,016

2031 DS2 adjusted to count
AM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	8	279	562	131	980
B - A5076 N	135	0	991	1,228	2,354
C - A5076 E	452	875	5	1,159	2,491
D - A5123 S	32	663	865	0	1,559
Total	627	1,817	2,422	2,518	7,384

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	4	357	159	19	539
B - A5076 N	71	0	1,674	481	2,226
C - A5076 E	332	893	0	741	1,967
D - A5123 S	238	1,045	271	0	1,554
Total	645	2,295	2,103	1,242	6,285

Modelled Flows
2031 DM
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	23	179	458	67	727
B - A5076 N	68	1	1,467	676	2,212
C - A5076 E	506	1,152	21	1,252	2,930
D - A5123 S	195	1,088	635	0	1,919
Total	792	2,420	2,581	1,995	7,787

Modelled Flows
2031 DS2
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	4	122	172	30	328
B - A5076 N	74	1	1,449	704	2,227
C - A5076 E	531	1,062	0	1,067	2,660
D - A5123 S	266	1,288	1,092	0	2,645
Total	875	2,472	2,713	1,800	7,861

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	0	0	0	0
B - A5076 N	0	0	0	0	0
C - A5076 E	0	0	0	0	0
D - A5123 S	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	18	-177	299	48	188
B - A5076 N	-3	1	-207	194	-15
C - A5076 E	173	258	21	511	963
D - A5123 S	-42	43	364	0	365
Total	147	125	478	753	1,502

2031 DS2 minus 2015 Base
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	-234	14	11	-210
B - A5076 N	3	1	-225	222	1
C - A5076 E	199	169	0	326	693
D - A5123 S	28	242	821	0	1,092
Total	230	177	610	559	1,576

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	194	278	23	495
B - A5076 N	157	0	1,082	744	1,983
C - A5076 E	437	1,260	0	526	2,223
D - A5123 S	53	970	640	0	1,663
Total	647	2,424	2,000	1,293	6,364

2031 DM adjusted to count
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	18	17	577	71	683
B - A5076 N	154	1	875	938	1,968
C - A5076 E	610	1,518	21	1,037	3,186
D - A5123 S	11	1,013	1,004	0	2,028
Total	794	2,549	2,478	2,046	7,866

2031 DS2 adjusted to count
PM Peak

	A - Upton Valley Way East	B - A5076 N	C - A5076 E	D - A5123 S	Total
A - Upton Valley Way East	0	-40	292	34	285
B - A5076 N	160	1	857	966	1,984
C - A5076 E	636	1,429	0	852	2,916
D - A5123 S	81	1,212	1,461	0	2,755
Total	877	2,601	2,610	1,852	7,940

APPENDIX B

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Administration

General Specifications

Customer Name	Northamptonshire County Council	Customer Order No.	8515713241
Intersection/ General Description	A43 / A45 Danes Camp Roundabout Northampton ORN195	Controller/ Serial Number	7027464
		S.T.S. /Est Number	62832 Issue 8
Controller	(•) New ( ) Modification	Equipment Installation by	S.T.C
Area Specifications/ Customer Drawings	CBBADL / 226 / 220 Rev C	Slot Cutting by	S.T.C
Specification Section		Civil Works by	Civils Contractor
Contract/Tender Ref.		Customer's Engineer	P.Shoebridge
Quotation No.		Telephone Number	01243-649916
Works Order No.	460227732		

Signal Company Use Only

Signal Engineer: Kevin L Roberts

(If Prism Label as >) Prism Number: 16260 Prism Variant: 0

Configuration Check Value: 6D 32 BE 1B

Controller Options

Hardware: T800 Firmware Type and Issue: P8800 ISS 18 Other Options: KTD LO

Mains Supply	240 Volts	50 Hz	☑ H.I.	Dimming Voltage	(•) 160	( ) 140	( ) 120 ( ) None
Peak Lamp Current	16 Amps						
Average Lamp Power	1800 Watts						
Total Average Power	2000 Watts						

Answer Issue: 23 Date Created: 21/03/06

Edit Issue: 29

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for policeman/lightly loaded controller

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Streams, Stages, Phases Control

Select Object to Add/Delete/Insert

Streams
( ) Current Number of Streams: 4

Phases
Current Total Number of Phases: 12
(•) Number of Real Phases: 8
( ) Number of Dummy Phases: 4

Stages
( ) Current Number of stages (inc. ALL-RED stage): 12

Switched Signs
( ) Number of Switched Signs: 0

Action
Add At | Delete At

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Facilities/Modes Enabled and Mode Priority Levels

Facilities

- [x] Manual Control
- [ ] Manual Step On Mode
- [ ] CLF (Base Time)
- [x] CLF (non-Base Time)
- [x] UTC Facility
- [ ] Hurry Call Mode
- [ ] Priority
- [ ] Emergency Vehicles
- [ ] Part Time
- [x] Master Time Clock
- [x] RED Lamp Monitoring
- [x] Lamp Monitoring
- [ ] Linked Fixed Time
- [x] FT To Current MAX
- [ ] Speed Measurement
- [ ] Downlead To Level 3
- [ ] London IRU
- [ ] Extend All Red
- [ ] Fail To Hardwire Flashing
- [x] Ripple Change
- [ ] Non-UK
- [ ] Police/Puffin/Toucan Facilities
- [ ] Standalone Manual
- [ ] Holiday Clock
- [ ] Fail to Part Time
- [ ] Serial MOVA
- [x] Serial UTC
- [ ]
- [x] Integral OTU

Starting Intergreen: 3

Mode Priority

PRIORITY	1	2	3	4	5	6	7	8	9	10	11
Part Time	○	○	○	○	○	○	○	○	○	○	○
Emergency Vehicle	○	○	○	○	○	○	○	○	○	○	○
Hurry Call	○	○	○	○	○	○	○	○	○	○	○
Selected Man Cntrl	◉	○	○	○	○	○	○	○	○	○	○
UTC	○	○	◉	○	○	○	○	○	○	○	○
Manual Step On	○	○	○	○	○	○	○	○	○	○	○
Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○
Cableless Link (CLF)	○	○	○	◉	○	○	○	○	○	○	○
Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○
Vehicle Actuated	○	○	○	○	◉	○	○	○	○	○	○
Fixed Time	○	○	○	○	○	○	○	○	○	○	◉

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standard.MDF

Default PRISM data file

Correspondence Monitoring is on:

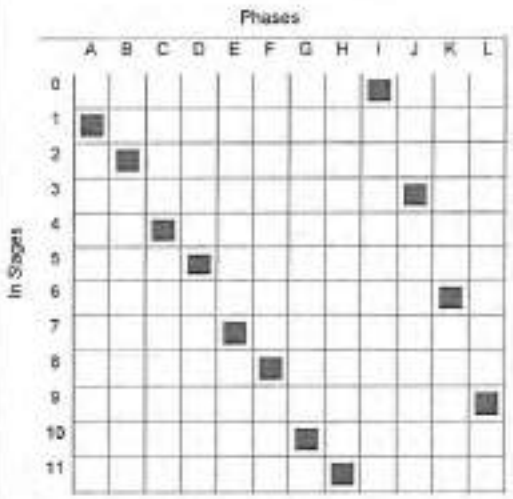
- [x] Reds
- [x] Ambers
- [ ] Switched Signs
- [ ] Ignore Reds and Ambers during Fail to Part Time

Flash Rate (ms)

400 Off 400 On

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Phases in Stages



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Stages in Streams

Stream Data

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions								
Startup Stage	1	4	7	10				
Part-Time switch off stage								
Stand-alone Pedestrian								

NB : For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet TRSM1

Stages

In Stream	0	1	2	3	4	5	6	7	8	9	10	11
0	■	■	■									
1				■	■	■						
2							■	■	■			
3										■	■	■

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Phase Type and Conditions

Phase Type and Conditions

(●) Phases A to P ( )

Phase	Title	Type	App. Type	Term Type	Assoc Phase
A	Roundabout ?	0 - UK Traffic	0	0 -	
B	Southbound A45	0 - UK Traffic	0	0 -	
C	Roundabout ?	0 - UK Traffic	0	0 -	
D	A45 Danes Camp Way	0 - UK Traffic	0	0 -	
E	Roundabout ?	0 - UK Traffic	0	0 -	
F	Northbound A43	0 - UK Traffic	0	0 -	
G	Roundabout ?	0 - UK Traffic	0	0 -	
H	Pinetum Access	0 - UK Traffic	0	0 -	
I	All Red Stage 0	0 - UK Traffic	0	0 -	
J	All Red Stage 3	0 - UK Traffic	0	0 -	
K	All Red Stage 6	0 - UK Traffic	0	0 -	
L	All Red Stage 9	0 - UK Traffic	0	0 -	

App Types: 0 = Always Appears, 1 = Appears if demd prior to interstage, 2 = If demd, 3 = If demd before end of window time
Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ 2 ○ 3 ○ ○ ○ ○

Initialise

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L
A	■	Co							o			
B	Co	■							o			
C			■	Co						o		
D			Co	■						o		
E					■	Co					o	
F					Co	■					o	
G							■	Co				o
H							Co	■				o
I	o	o							■			
J			o	o						■		
K					o	o					■	
L							o	o				■

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

◉ Phases A to P ○

Phase	Min Green	Min Ped Cir	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	25	30	30	15	0	0	0	0	☐
B	7	0	0.0	20	20	20	10	0	0	0	0	☐
C	7	0	0.0	25	30	30	15	0	0	0	0	☐
D	7	0	0.0	20	30	30	10	0	0	0	0	☐
E	7	0	0.0	25	30	30	15	0	0	0	0	☐
F	7	0	0.0	20	20	20	10	0	0	0	0	☐
G	7	0	0.0	35	35	35	15	0	0	0	0	☐
H	7	0	0.0	10	15	15	10	0	0	0	0	☐
I	0	0	0.0	0	0	0	0	0	0	0	0	☐
J	0	0	0.0	0	0	0	0	0	0	0	0	☐
K	0	0	0.0	0	0	0	0	0	0	0	0	☐
L	0	0	0.0	0	0	0	0	0	0	0	0	☐
												☐
												☐
												☐
												☐

NB: For Standalone Streams see Help for use of Max. Sets.

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ 2 ○ 3 ○ ○ ○ ○ ○

NB: On a Stand Alone Pelican/Toucan/Puffin Stream the intergreens between Pedestrian and Traffic Phases are controlled by the timings (PDT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below

To Phase

From Phase

	A	B	C	D	E	F	G	H	I	J	K	L
A		5							3			
B	5								3			
C				5						3		
D			5							3		
E						5					3	
F					5						3	
G								5				3
H							5					3
I	2	2										
J			2	2								
K					2	2						
L							2	2				

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Handset Intergreen Limits

HiDH 50

Copy Intergreen Values

To Phase

From Phase

	A	B	C	D	E	F	G	H	I	J	K	L
A		5							3			
B	5								3			
C				5						3		
D			5							3		
E						5					3	
F					5						3	
G								5				3
H							5					3
I	2	2										
J			2	2								
K					2	2						
L							2	2				

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min	Min. Green Max	Phase	Min. Green Min	Min. Green Max
A	7	60	Q		
B	7	60	R		
C	7	60	S		
D	7	60	T		
E	7	60	U		
F	7	60	V		
G	7	60	W		
H	7	60	X		
I	03	60	Y		
J	03	60	Z		
K	03	60	A2		
L	03	60	B2		
M			C2		
N			D2		
O			E2		
P			F2		

Max. Green: Min. 0 Max. 255

Vehicle Extension: Min. 0.0 Max. 10.0

Phase Delay: Min. 0 Max. 10

Starting I/G: Min. 4 Max. 12

Min Ped Clr (PBT): Min. 0 Max. 12

Traffic Phase Leaving: Min. 3.0 Max. 3.0

Traffic Phase Red/Amber: Min. 2 Max. 2

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Phase - VA Demand and Extend Definitions

VA Demand and Extend Definitions

(•) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AY1	AZ1	AY2	AZ2
B	BX	BY	BZ	
C	CZ1	CZ2		
D	DX1	DY1	DZ1	DX2
E	EZ1	EY2	EZ2	
F	FX1	FY1	FZ1	FX2
G	GX1	GZ1	GX2	GZ2
H	HX1	HZ1	HZ1	HX2
I				
J				
K				
L				

Extensions

AY1	AZ1	AY2	AZ2
BX	BY	BZ	
CZ1	CZ2		
DX1	DY1	DZ1	DX2
EZ1	EY2	EZ2	
FX1	FY1	FZ1	FX2
GX1	GZ1	GX2	GZ2
HX1	HY1	HZ1	HX2

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F	G	H	I	J	K	L				
☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F	G	H	I	J	K	L				
☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

A	B	C	D	E	F	G	H	I	J	K	L				
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D	E	F	G	H								

Q	R	S	T	U	V	W	X	Y	Z	Z2	Z3	Z1	Z0	Z5	Z4

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Stage - Prohibited, Alternative, Ignored Moves

Stage - Prohibited, Alternative, Ignored Moves

Stage

◉	1
○	2
○	3
○	4

Modes	Restrictions Apply To	No Restrictions
Urban Traffic Control	◉	○
Calibrated Linking	◉	○
Vehicle Actuated	◉	○
	○	○
Fixed Time	◉	○

Modes	Restrictions Apply To	No Restrictions
Manual	◉	○
	○	○
	○	○
	○	○

To Stage

From Stage	0	1	2	3	4	5	6	7	8	9	10	11
0	■											
1		■										
2			■									
3				■								
4					■							
5						■						
6							■					
7								■				
8									■			
9										■		
10											■	
11												■

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Stage Internal Demands / Ped. Window Times

Stage Internal Demands / Ped. Window Times

Start-up Vehicle Response Demands

0	1	2	3	4	5	6	7	8	9	10	11				
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5	6	7	8	9	10	11				
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5	6	7	8	9	10	11				
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0	0	0	0	0				

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐
	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

CLF - Plan(s)

off Peak

CLF - Plan(s)

Plan No. 8

Copy from

Flow Specifics

Influence Set 8

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 90

Group Offset Handset Range

Min 0

Max 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	20	2	2	16			
1	21	3		17			
2	27	4	1	18			
3	58	1	1	19			
4	19	2	5	20			
5	20	3		21			
6	29	4	6	22			
7	34	1	4	23			
8	8	2	8	24			
9	9	3		25			
10	11	4	7	26			
11	24	1	7	27			
12	8	4	10	28			
13	11	1	10	29			
14	38	2	11	30			
15	39	3		31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependent
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Not Allowed

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN199

CLF - Plan(s)

AM

CLF - Plan(s)

Plan No. 1

Copy from

Flow Specifics

Influence Set 1

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 90

Group Offset Handset Range

Min 0

Max 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	15	2	2	16			
1	16	3		17			
2	22	4	1	18			
3	55	1	1	19			
4	19	2	5	20			
5	20	3		21			
6	29	4	4	22			
7	32	1	4	23			
8	8	2	8	24			
9	7	3		25			
10	13	4	7	26			
11	22	1	7	27			
12	8	3		28			
13	9	4	10	29			
14	13	1	10	30			
15	33	2	11	31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependent
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Not Allowed

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

CLF - Plan(s)

PM

CLF - Plan(s)

Plan No: 2

Copy from

Plan Specifics

Influence Set: 2

Copy from

Entry Point (secs): 255

Exit Point (secs): 255

Cycle Time (secs): 60

Group Offset Handset Range

Min: 0

Max: 255

Group/Influence

Group No	Group Offset	Group Influence	Related Stage
0	24	0	0
1	25	0	1
2	31	4	1
3	51	1	1
4	20	0	5
5	21	0	4
6	37	4	4
7	57	1	4
8	7	0	8
9	0	0	
10	9	4	7
11	26	1	7
12	4	4	10
13	16	1	10
14	52	2	11
15	48	0	

Group No	Group Offset	Group Influence	Related Stage
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependent
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Not Allowed

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

CLF - Plan(s)

Night time

CLF - Plan(s)

Plan No: 0

Copy from

Plan Specifics

Influence Set: 3

Copy from

Entry Point (secs): 255

Exit Point (secs): 255

Cycle Time (secs): 55

Group Offset Handset Range

Min: 0

Max: 255

Group/Influence

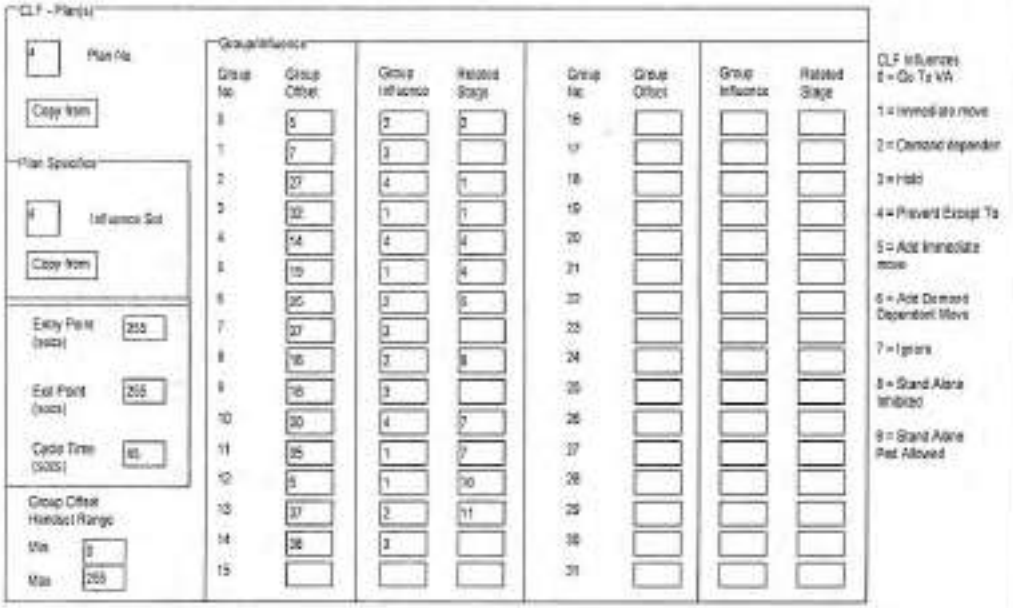
Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1
1	20	2	2
2	23	3	
3	10	2	5
4	23	3	
5	25	1	4
6	0	7	8
7	0	3	
8	15	1	7
9	0	1	10
10	22	2	11
11	23	3	
12			
13			
14			
15			

Group No	Group Offset	Group Influence	Related Stage
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependent
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Not Allowed

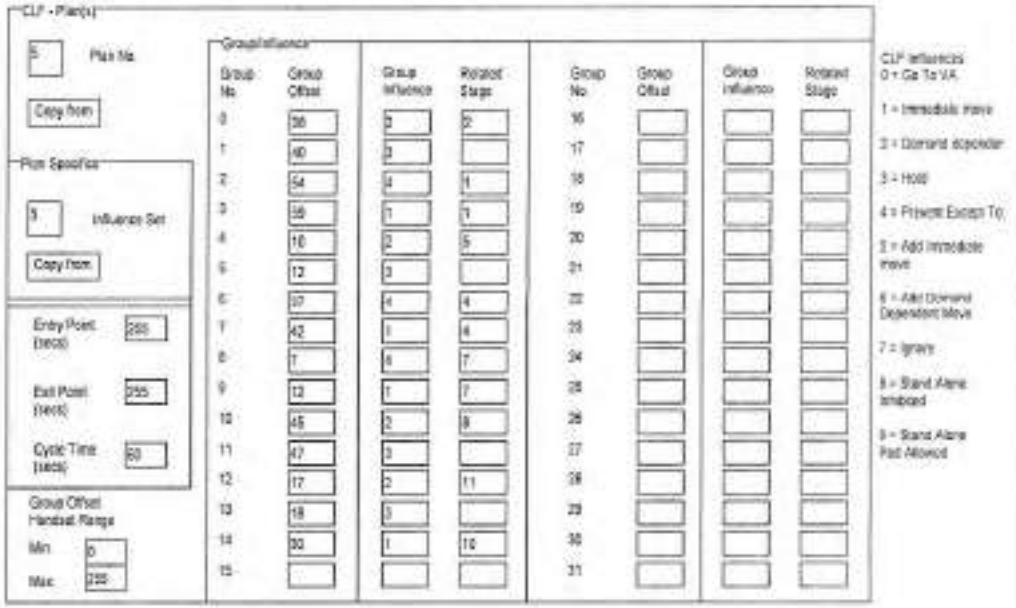
Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

CLF - Plan(s)



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN190

CLF - Plan(s)



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

UTC Phase Demand and Extend Definitions

UTC Demand and Extend Definitions

(•) Phases A to P ( )

Phase	Demands: For unlatched demands, precede the name with a # Conditioning MUST be used to specify unlatched demands				Extensions			
A	D1				D1			
B	D1	D2			D1	D2		
C	D1				D1			
D	D1	D5			D1	D5		
E	D1				D1			
F	D1	D8			D1	D8		
G	D1				D1			
H	D1	D11			D1	D11		
I								
J								
K								
L								

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

UTC Stage and Modes Data Definitions

UTC Stage and Modes Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0				16			
1	F1	G1		17			
2	#F2	G2		18			
3				19			
4	F4	G4		20			
5	#F5	G5		21			
6				22			
7	F7	G7		23			
8	#F8	G8		24			
9				25			
10	F10	G10		26			
11	#F11	G11		27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operation: ☐ G1/G2 ☑ RR ☐

Manual Mode Selected: ☐ G1/G2 ☑ RR ☐

No Lamp Power (incl RLM and PT): ☑ G1/G2 ☐ ☐

Controller Fault: ☐ ☐ ☑ CF

Handset NOT selected on the Manual Panel: ☐ G1/G2 ☑ RR ☐

RR Button Selected: ☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

MTC - Time Switch Parameters

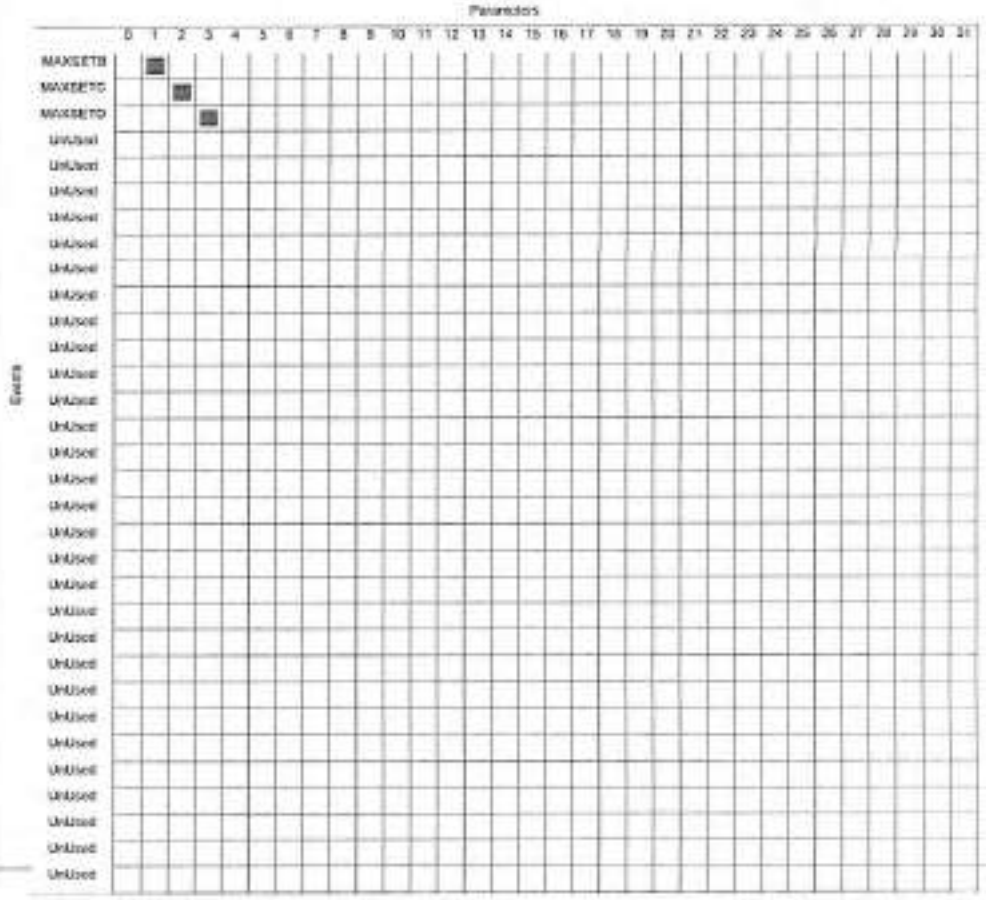
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	No Action	
4	No Action	
5	No Action	
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

MTC - Time Switch Parameters Array



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Master Time Clock - Day Type

Master Time Clock - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☑	☑	☑	☑	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Master Time Clock - Time Table

Master Time Clock - Time Table

View Time Table settings: ◉ 0-15 ○ 16-31 ○ 32-47 ○ 48-63

Number	Day Type	Time	Incoduce Function Required	Function Number	Plan/ Parameter
0	7	06:00:00	MAXSET A	2	0
1	7	07:00:00	MAXSET B	2	1
2	7	09:30:00	MAXSET A	2	0
3	7	15:00:00	MAXSET C	2	2
4	7	19:30:00	MAXSET A	2	0
5	7	21:00:00	MAXSET D	2	3
6	8	07:00:00	MAXSET A	2	0
7	8	21:00:00	MAXSET D	2	3
8	7	00:00:00	CLF PLAN 0	1	0
9	7	07:00:00	CLF PLAN 1	1	1
10	7	09:30:00	CLF PLAN 0	1	0
11	7	15:30:00	CLF PLAN 2	1	2
12	7	19:30:00	CLF PLAN 0	1	0
13	7	21:00:00	CLF PLAN 3	1	3
14	8	07:00:00	CLF PLAN 0	1	0
15	8	21:00:00	CLF PLAN 3	1	3

Function Numbers
0 = Isolate From CLF
1 = Introduce a CLF Plan
2 = Introduce a Parameter / Combination of event switches
3 = Selects an individual event switch to be set
4 = Selects an individual event switch to be cleared

5 23.30 JA

Sat Sun

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

- (•) 200-240
- ( ) 50-0-50, 100-120

Red Lamp Monitoring

Max Red Bulb Wattage: 50

- [ ] RLF2 Cancels RLM additional Intergreens
- [ ] RLF2 Only Cleared by RFL = 1
- [ ] RLF1 Only Cleared by RFL = 1

RLM Additional Intergreen Handset Limits

Minimum	Maximum
2	10

Streams with Phase BlackOut on RLF2

0	1	2	3				
☑	☑	☑	☑	☐	☐	☐	☐

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

LMU - Sensors

LMU - Sensors

On-Board Sensors

Sensor\ Phase	Type	Bulb Wattage
11\A	As Seq	50
21\B	As Seq	50
31\C	As Seq	50
41\D	As Seq	50
51\E	As Seq	50
61\F	As Seq	50
71\G	As Seq	50
81\H	As Seq	50
91\I		
101\J		
111\K		
121\L		
131\M		
141\N		
151\O		
161\P		

On-Board Sensors

Sensor\ Phase	Type	Bulb Wattage
17\Q		
18\R		
19\S		
20\T		
21\U		
22\V		
23\W		
24\X		
25\Y		
26\Z		
27\A2		
28\B2		
29\C2		
30\D2		
31\E2		
32\F2		

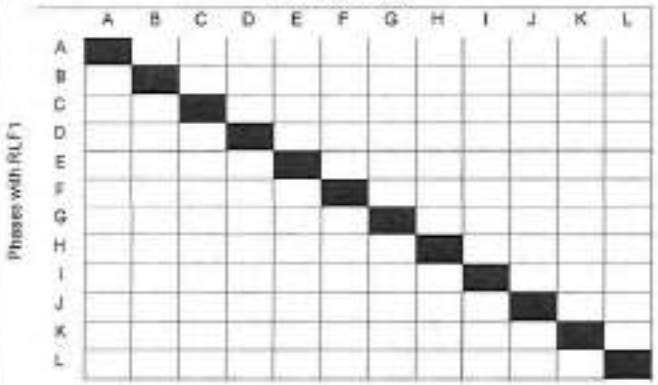
External Sensors

Sensor\ Pin	Drive	Type	Bulb Wattage
33\s14		Reg. Sign	7
34\z18		Reg. Sign	7
35\z14		Reg. Sign	7
36\z13		Reg. Sign	7
37\s14			
38\z16			
39\z14			
40\z12			
41\s14			
42\z15			
43\z14			
44\z12			
45\s14			
46\z16			
47\z14			
48\z13			

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

RLM Additional Intergreens

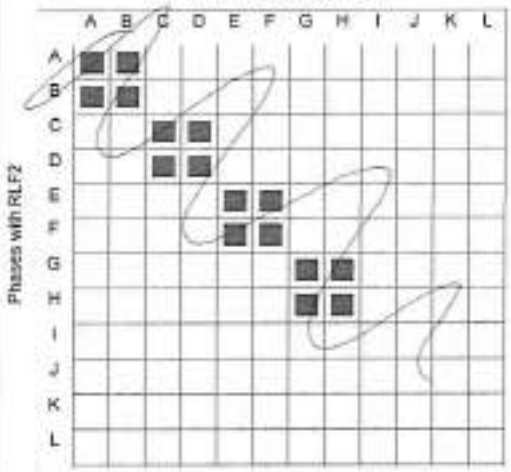
Phases Delayed



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

RLM Phase Inhibits

Phases Inhibited/Blacked-out



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red Stages 2, 3, 6 and 9	0	3	6	9				
1	Stages 1, 4, 7 and 10	1	4	7	10				
2	Stages 2, 5, 8 and 11	2	5	8	11				
3	Stages 1, 4, 8 and 10	1	4	8	10				
4	Stages 1, 5, 7 and 10	1	5	7	10				
5	Stages 2, 4, 7 and 10	2	4	7	10				
6	Stages 1, 4, 7 and 11	1	4	7	11				
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditional	☑	☑	☑	☑	☑

Manual Mode Enable

- ◉ Always
- ○ When Handset Plugged in (Note 1)
- ○ When 'MMD' Command Entered

Note 1:
For this to operate Special Conditioning is required

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	◉	○	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Special Conditioning

```
; ASE LED'S
; ----------
                                                        ;AUX 1 LED NOT USED
                                                        ;AUX 2 LED NOT USED
(MODE4 EQU<3>).(MODE3 EQU<3>).(MODE2 EQU<3>) 0          ;AUX 3 LED LIT WHEN CLF MODE ACTIVE ON ALL STREAMS
.(MODE1 EQU<3>)=MILA3
                                                        ;AUX 4 ( HURRY CALL ) LED NOT USED
(MODE4 EQU<4>).(MODE3 EQU<4>).(MODE2 EQU<4>) 0          ;AUX 5 ( HIGHER PRIORITY ) LED LIT WHEN PTC MODE ACTIVE
.(MODE1 EQU<4>)=MILA4                                   ;ON ALL STREAMS

; PTC RESULTS
; -----------
LMPOR.LF<PTC>.SWLAMP3.BIT(PLF23).BIT(PRESET)=01         ;LAMP3 BIT AND STAGE CONFIRM BIT PTC C3 and C2 Bit<>
LMPOR.LF<PTC>.SWLAMP4.BIT(PLF23).BIT(PRESET)=02
;BIT(PRESET)=03                                         ;ALL RED STAGE 0 / 3 (STREAM 0 RESULTS PTC C3 BIT
;BIT(STAGE)=C3                                          ;ALL RED STAGE 1 / 4 (STREAM 1 RESULTS PTC C23 BIT
BIT(SYSLED)=CF                                          ;CONTROLLER FAULT RESULTS CF PTC BIT
BIT(LMPREF+LMPRET1+LMPRET2+LMPRET3)=LF                  ;LPP LAMP STATUS RESULTS LF PTC BIT ANY STREAM

; PTC CHECKS IF MOVE ONE BIT
; --------------------------
BIT(F1)+F21+BIT(F4+F5)+BIT(F7+F8)+BIT(F10+F11)<<<01BIT>>
                                                        **<<01BIT>>
                                                        **<<01BIT>>
                                                        **<<01BIT>>


; ERRORS AND ACTIONS
; ------------------
BIT+E21<<+ICFBD
        **<<E01B
        **<<E01B
FC1+F21<<+ICFBF
        **<<E01F
        **<<E01F
BIT+E21<<+ICFBH
        **<<E01H
        **<<E01H

; WITH CFD COMMANDS
; -----------------
; ONU TO REPORT NODE CFD1 WITH CFD1 COMMAND
; -----------------------------------------
CFD1.BIT(0000)=!-BIT(0)+                                ;CFD1-1 SETS UP READY LINK TO END DESTATION

; NODE CLOSED DISABLES MANUAL PANEL
; ---------------------------------
CFD1.B00(8)=!-MDC1BIT                                   ;CFD1-1 SETS UP NODE CLOSED DISABLES MANUAL PANEL CONTROL
          **<<D1BIT
```

Special Conditioning

```
! STAGE PREVENTS FOR VA AND UTC STREAM 0
! ---------------------------------------
IFT (MODE1 EQL<2>)+(MODE2 EQL<6>) THN                  
    NOT(ACST1)=PRVST1                                  !PREVENT ALL STAGES UNLESS AN INTERGREEN CALL
    NOT(ACST2)=PRVST2                                  !IS PRESENT
    NOT(ACST3)=PRVST3
    NOT(ACST4)=PRVST4
ELS
      FALSE(*)=PRVST1                                  !REMOVE PREVENTS FOR ALL OTHER MODES
              *=PRVST2
              *=PRVST3
              *=PRVST4
END

! STAGE PREVENTS FOR VA AND UTC STREAM 1
! ---------------------------------------
IFT (MODE1 EQL<2>)+(MODE2 EQL<6>) THN
     NOT(ACST4)=PRVST4                                 !PREVENT ALL STAGES UNLESS AN INTERGREEN CALL
     NOT(ACST3)=PRVST3                                 !IS PRESENT
     NOT(ACST2)=PRVST2
     NOT(ACST1)=PRVST1
    NOT(ACST10)=PRVST10
    NOT(ACST11)=PRVST11
ELS
     FALSE(1:9)=PRVST9                                 !REMOVE PREVENTS FOR ALL OTHER MODES
              *=PRVST7
              *=PRVST6
              *=PRVST5
              *=PRVST8
              *=PRVST11
END
```


Special Conditioning

```
! SPECIAL REVERSION STREAM 0 IF V.A
! ----------------------------------
LCOVA=(KOVA+KOVA+KOVA) 2                               !SPECIAL REVERSION STREAM 0
+LKOVB+(KOVB+KOVA) 2
+LKOVC+(KOVC+KOVA) 2
+LKOVD+(KOVD+KOVA) 2
+(LCOVZ.NOT(PRESET)) 2
+LCST1+(KCST1) 2
+LCST2+(KCST2) 2
+LCST3+(KCST3) 2
+LCLTA+(KCST4+(KCST5+(KCST6
IFT (KCST6 THN
    MEM=0>
END

CHSTEP=+(KCST)

IFT CHSTEP1 THN
    MEM<1>
ELS
IFT CHSTEP2 THN
    MEM=0>
  ELS
END

! SPECIAL REVERSION STREAM 1 IF V.A
! ----------------------------------
LCPEE=(KCPEE+KSTAE 2                                   !SPECIAL REVERSION STREAM 1
+LKCPEF+(KCPEF+LSTAF 2
+LCPED+(KCPED+KSTAD 2
+LCPEB+(KCPEB+KSTAB 2
+LCPE1+(KCPE1+KSTA1 2
+(LCPEE..NOT(PRESET)) 2
+(LCPEL..NOT(PRESET)) 2
+LCST6+(KCST6 2
+LCST2+(KCST7 2
+LCST3+(KCST8 2
+LCST4+(KCST9 2
+LCST10+(KCST10+(KCST11
IFT (CST1 THN
    MEM=7>
END

CHSTEP2=+(KCST)

IFT CHSTEP1 THN
    MEM=3>
ELS
IFT CHSTEP2 THN
    MEM=2>
  ELS
END
```

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Special Conditioning Timers

Special Conditioning Timers

Timers

(●) 0-31 ( ) 32-63 ( ) 64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	30	0	255	☐	REVERT DELAY TO STAGE 0	16		0	255	☐	
1	1	0	255	☐	TIMER TO REVERT STREAM 0	17		0	255	☐	
2	30	0	255	☐	REVERT DELAY TO STAGE 0	18		0	255	☐	
3	1	0	255	☐	TIMER TO REVERT STREAM 1	19		0	255	☐	
4		0	255	☐		20		0	255	☐	
5		0	255	☐		21		0	255	☐	
6		0	255	☐		22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8		0	255	☐		24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Special Instructions

62807

Board	Position	Set	Port	Type 1 or 0	Line	Cable	Black
CPU	A	X31	0	1	00 - 07	101	1T9C
CPU	A	X31	1	4	08 - 15		1T9B
CPU	A	X30	11	0	08 - 91	105	1T9C

The socket X3 on the CPU pcb is the double stacked one
X31 - Inner (nearest the board)
X30 - Outer

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Special Instructions

ITEM CONTROLLER ITEMS LIST SHEET 1 (1 of 2)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/27000/101	Cabinet 8 Phase mixed 8 Phase	1		
3	667/1/27000/102	Cabinet 24 Phase mixed 32 Phase			
4	667/1/27001/101	Rack 8 Phase mixed 16 Phase			
5	667/1/27001/102	Rack 24 Phase mixed 32 Phase			
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23	667/1/27972/001	Cableham 8 Phase (Long)	1		
24	667/1/27982/099	Lamp Switch Kit 8 Phase	1		
25	667/1/27981/099	I/O Kit	1		
26	667/1/27985/099	SDE Facility Kit	1		
27	667/1/27986/099	Tailgate GTU Kit	1		
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39	667/1/27000/999	Confirmation Spare (Tuner 0, 1&3	1		
40					

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Special Instructions

ITEM CONTROLLER ITEMS LIST SHEET 2 (2 of 2)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/27056/001	Manual Panel Assy (Intersection Cont)			
43	667/1/27056/010	Manual Panel Assy (Loop on/off)			
44	667/1/27056/000	Manual Panel Blanking Kit			
45					
46					
47					
48					
49					
50					
51					
52	667/1/29173/000	Current Transformer			
53					
54					
55					
56					
57					
58					
59					
60					
61	667/1/27000/101	Cabinet Expect 8 Phase mixed 16 Phase			
62	667/1/27000/102	Cabinet Expct 24 Phase mixed 32 Phase			
63	667/1/27001/101	Rack Expect 8 Phase mixed 16 Phase			
64	667/1/27001/102	Rack Expect 24 Phase mixed 32 Phase			
65	667/1/27005/100	Expect Lamp Switch Kit			
66	667/1/27004/001	Dimming Assembly (1.5KVA)(Fit 1st Off)			
67	667/1/27004/002	Dimming Assembly (2.0KVA)			
68	667/1/27004/003	Dimming Assembly (3.0KVA)			
69	667/1/27156/000	168, Controller Kit			
70					
71	667/1/27000/330	27000 2E Expect Rack up to 8 Phase			
72	667/1/27223/003	27000 2E 8 Phase Drives No LME			
73	667/1/27223/003	27000 2E 8 Phase Drives No LME			
74					
75					
76					
77	667/1/27000/301	27000 2 Is a Cabinet 4Fb 1 Stream PSU			
78	667/1/27045/000	PSU 2nd Stream Kit for 27000 2			
79	667/1/27000/300	27000 2 Rack Only 4Fb 1 Stream PSU			

Note 2:
Ancillary Processor Kit
Variants
101 QTY & LME
102 QTY Only
103 LME Only
104 QTY & LME + Up/Download
105 QTY Only + Up/Download
(LME Controller Has built in LME
So LME as Ancillary Processor
Not required included for info
only.

Note 3:
Tri Current Transformer
(starting) 1000 position)
T1A/2/16 on the first phase
(across PCB. If more than 1
sensors are called up fit the
16th sensor to the second
Phases driver PCB, and so on
until all sensors have been
used up.
T1A/1/14 - 1st sensor terminal
T1A/2/16 - 2nd sensor terminal
T1A/1/14 - 3rd sensor terminal
T1A/2/12 - 4th sensor terminal
T1A/1/12 - 5th sensor terminal

T1A/2/12 - 6th sensor terminal

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Special Instructions

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Special Instructions

```
; SPECIAL INSTRUCTIONS
; ------------------------
; CFE0 SETS UP THE INSTATION TO RECEIVE DOOR OPEN TO RMS; CFE0-1 ENABLES DOOR OPEN AND DEBRIS LINE TO RMS INSTATION
;      "          "                 "          "      " ; CFE0-2 ENABLES DOOR OPEN AND NOT DEBRIS LINE TO RMS INSTATION
; CFE1 SETS UP OPERATION OF DOOR CLOSED;                 CFE1-1 ENABLES DOOR CLOSED AUTOMATICALLY TO THE NEXT MODE OF OPERATION
;      "          "                 " ;                 CFE1-2 ENABLES OPERATION
```

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Input/Output

Input/Output

☐ Enable Signal Required Ch

Port: ◉ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

	DET No	Port No	Bit No	Type I or O	Name	Req'd	Inv	U/D	Misc	DFM	DFM Group	Ext time	Pres	UTC	Used By SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	0	0	0	I	AY1	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	1
○	1	0	1	I	AZ1	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	2
○	2	0	2	I	AY2	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	3
○	3	0	3	I	AZ2	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	4
○	4	0	4	I	BX	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	5
○	5	0	5	I	BY	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	6
○	6	0	6	I	BZ	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	7
○	7	0	7	I	CZ1	☑	☐		☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBG	8

Add | Delete | Move | Clear Used By

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Input/Output

Input/Output

☐ Enable Signal Required Ch

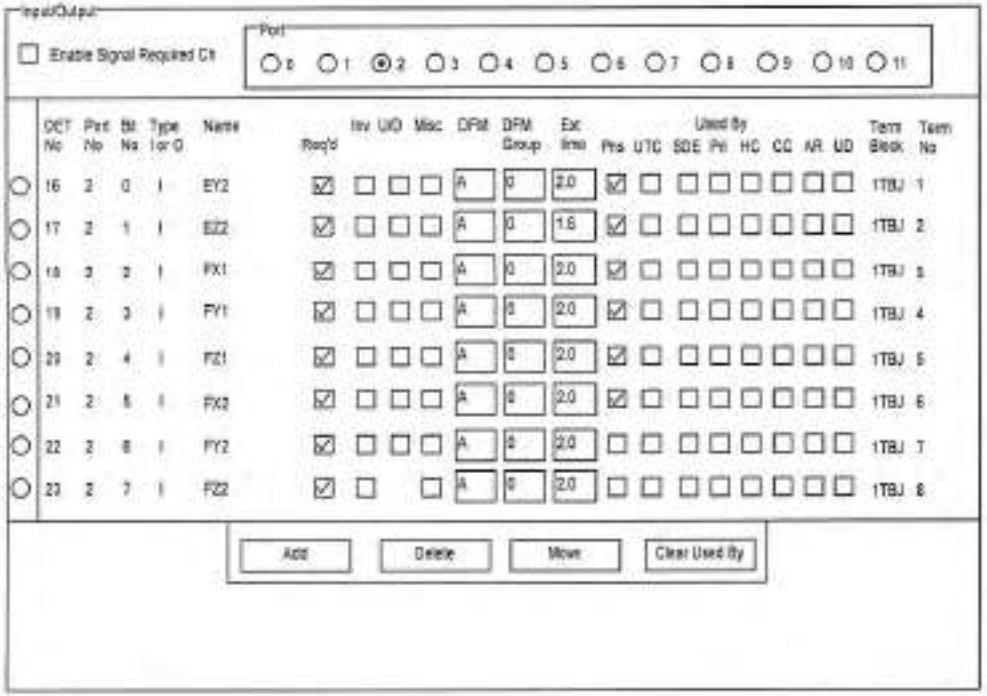
Port: ○ 0 ◉ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

	DET No	Port No	Bit No	Type I or O	Name	Req'd	Inv	U/D	Misc	DFM	DFM Group	Ext time	Pres	UTC	Used By SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	8	1	0	I	CZ2	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	1
○	9	1	1	I	DX1	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	2
○	10	1	2	I	DY1	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	3
○	11	1	3	I	DZ1	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	4
○	12	1	4	I	DX2	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	5
○	13	1	5	I	DY2	☑	☐	☐	☐	A	0	2.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	6
○	14	1	6	I	DZ2	☑	☐	☐	☐	A	0	2.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	7
○	15	1	7	I	EZ1	☑	☐		☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	1TBH	8

Add | Delete | Move | Clear Used By

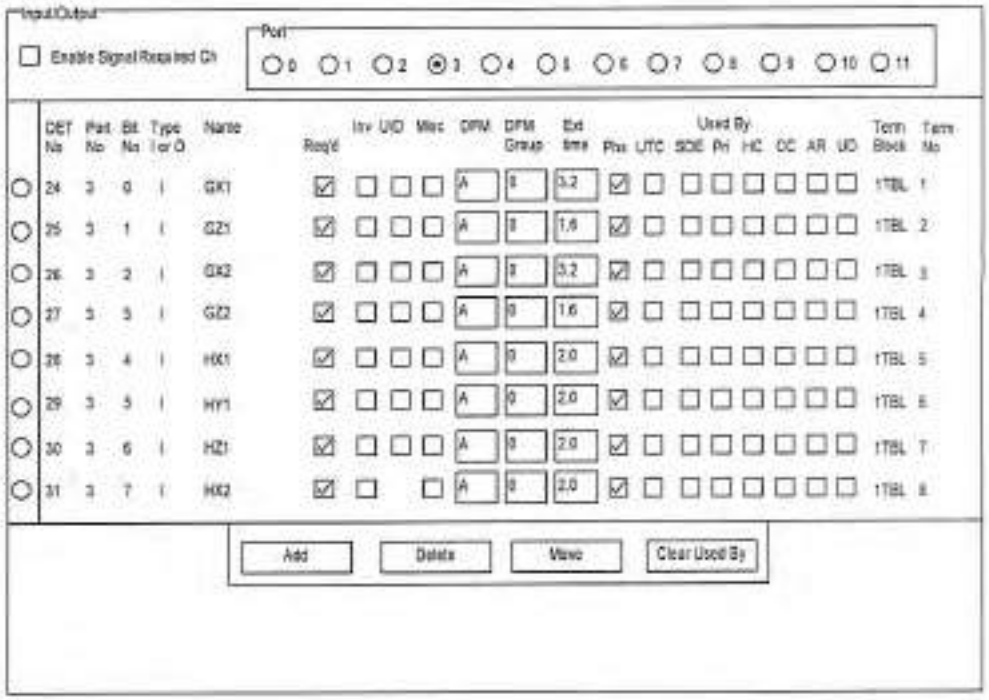
Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Input/Output



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Input/Output



Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Input/Output

Input/Output

Enable Signal Received Ch

Port: ○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ◉ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11

DET No	Port No	Bit No	Type I or O	Name	Rec'd	Inv	U/D	Mac	DRM	DRM Group	Ext. Time	Used By: Phs	UTC	SDE	PH	HC	CC	AR	UD	Term Block	Term No
○	48	6	0	I	HY2	☑	☐	☐	☐	A	0	2.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBN	1
○	49	6	1	I	HZ2	☑	☐	☐	☐	A	0	2.0	☐	☐	☐	☐	☐	☐	☐	☐	1TBN	2
○	50	6	2	I		☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	3
○	51	6	3	I		☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	4
○	52	6	4	I		☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	5
○	53	6	5	I		☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	6
○	54	6	6	I		☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	7
○	55	6	7	I		☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1TBN	8

Add | Delete | Move | Clear Used By

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

Aspect Drives

Aspect Drives

◉ A-L ○ M-X ○ Y-Z2

Phase Driver Card 1

	Used For	Term Block	Term No
A - Red	Phase	1TBA	1
A - Amber	Phase	1TBA	2
A - Green	Phase	1TBA	3
B - Red	Phase	1TBA	4
B - Amber	Phase	1TBA	5
B - Green	Phase	1TBA	6
C - Red	Phase	1TBA	7
C - Amber	Phase	1TBA	8
C - Green	Phase	1TBA	9
D - Red	Phase	1TBA	10
D - Amber	Phase	1TBA	11
D - Green	Phase	1TBA	12

Phase Driver Card 1

	Used For	Term Block	Term No
E - Red	Phase	1TBB	1
E - Amber	Phase	1TBB	2
E - Green	Phase	1TBB	3
F - Red	Phase	1TBB	4
F - Amber	Phase	1TBB	5
F - Green	Phase	1TBB	6
G - Red	Phase	1TBB	7
G - Amber	Phase	1TBB	8
G - Green	Phase	1TBB	9
H - Red	Phase	1TBB	10
H - Amber	Phase	1TBB	11
H - Green	Phase	1TBB	12

Phase Driver Card 2

	Used For	Term Block	Term No
I - Red			
I - Amber			
I - Green			
J - Red			
J - Amber			
J - Green			
K - Red			
K - Amber			
K - Green			
L - Red			
L - Amber			
L - Green			

Works Order : 460227732
EM Number : 62832
Engineer : Kevin L Roberts
Intersection : A43 / A45 Danes Camp Roundabout Northampton ORN195

I/O - Group DFM Timings

I/O - Group DFM Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	0	0	0	0
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset.

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Streams, Stages, Phases Control
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped. Leaving periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Handset Intergreen Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 Phase - VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Streams and Stages
- 3.1 Stage - Prohibited, Alternative, Ignored Moves
- 3.2 Stage Internal Demands / Ped. Window Times
- 3.3 Phase delays (No configuration data to print)

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 Urban Traffic Control
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions
    - 4.3.3.2 UTC Stage and Modes Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces (No configuration data to print)
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 Master Time Clock - Day Type
  - 4.4.4 Master Time Clock - Time Table
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 LMU - Sensors
  - 4.5.3 RLM Additional Intergreens
  - 4.5.4 RLM Phase Inhibits
- 4.6 Manual
  - 4.6.1 Manual Panel
  - 4.6.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

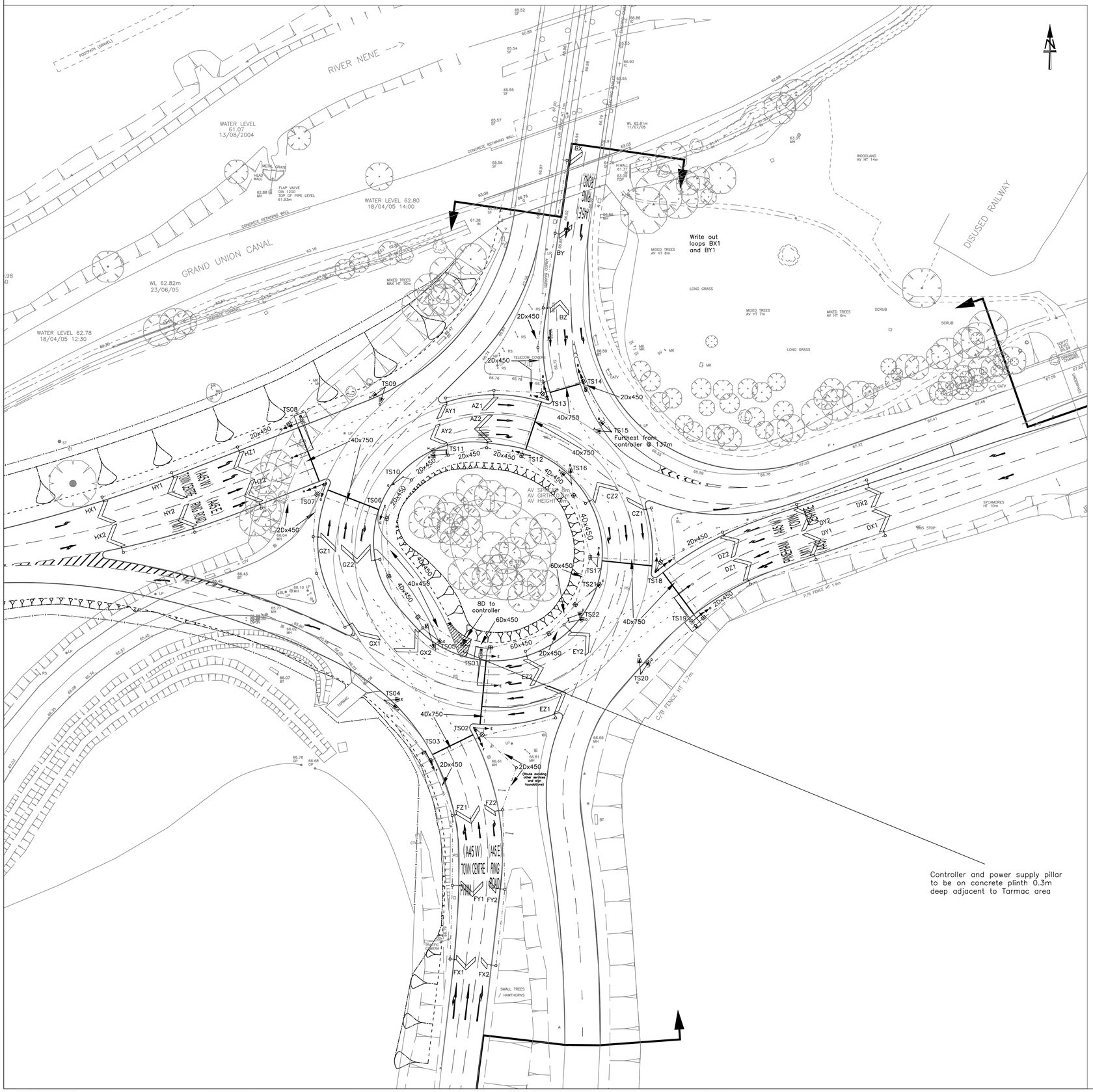
5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel (No configuration data to print)
- 7.2 Input/Output
- 7.3 Aspect Drives
- 7.4 I/O - Group DFM Timings

General View

Scale 1:500



Signal Equipment:
- 1 no 4 stream junction controller to TR2500 with loop specific extensions (signal contractor to advise on cabling if ELV only is offered)
- 13 no 4m bottom entry poles (note NAL units to be used to house poles)
- 6 no 6m bottom entry poles (note NAL Stakka Box and pole socket housing and that terminations will be in remote pillors)
- 3 no mast arms, each with a reinforced concrete foundation as per drawing CBB/ADL/226/250 and using the 'Offset Mast' option
- 34 no BSEN12368 Red Amber Green heads (4 side mounted)
- 11 no LED BSEN12368 Red Amber Green heads
- Extra long tunnel hoods for all aspects on poles TS05, TS11, TS16 and TS22
- Extra long cut-away hoods for phase B heads on poles TS14 and TS15 (cut-away to be on right-hand side of the heads)
- 1 no Solar cell (mounted on pole TS05)
- Appropriate voltage transformers
- Amoured multi-core signal cable as required
- Loop feeder cable as required (spare 2 pair cable to go to farthest loop chamber on each approach)
- Slot cutting 10 no single and 24 double chevron loops including traffic management (approximately 600m of slot cutting)
- 34 channels of VA detection i.e. 9 no 4 channel detector cards
- 1 no Siemens GSM multi-stream OMU with cabinet mounted antenna
- Power cable to connect controller to feeder pillar (assume tails from DPI or similar will be available)
- Other items deemed necessary by the signal sub-contractor; please state

All goods and services shall comform to the Northamptonshire County Council general specification for traffic signals

Tall (6m) poles: TS02, TS03, TS07, TS13, TS14 and TS18

Mast arms: TS01, TS08 and TS19
All to have remote termination pillar at nearest draw pit

Note: longest theoretical signal cable run is from controller to pole TS15 @ 137m including pole height and 10% for slack within the duct network

Stream 0 A45 from north	B ↓ A → Dummy I
Stream 1 A45 from east	C ↓ D ← Dummy J
Stream 2 A43 from south	E ← ↑ F Dummy K
Stream 3 Pinehams from west	H → ↑ G Dummy L

See also drawing CBB/ADL/226/220 rev C for closer signal equipment view

FOR APPROVAL

Notes:

For Signals
1. All setting out to be agreed with the Overseeing Organisation

2. Entry arm D-System XYZ loops to be at 52, 33.5 and 16m from the stop line respectively. For circulating arm D-System loop positions, see additional note

3. Controller green extensions to be 2.0 seconds per entry arm loop. See additional note for circulating arm loop extension times

4. The 4 stream controller to be capable of DUSC, CLF and VA

5. Loops to be cut to carriageway loop chambers under kerb ducts i.e. kerb units are not to be damaged by slot cutting

6. Controller to be equipped with sufficient Siemens GSM OMUs to monitor and facilitate DUSC control of the 4 streams

7. Cable tagging to Northamptonshire County Council standards

For Civils
1. Stop lines to be laid at standard Northamptonshire County Council distance from primary pole

2. Poles centres to be 1.0.m from edge of front face of kerb except for poles TS11 and TS22, which shall be 1.9m (for clearance of side-mounted heads)

3. Ducts to be orange in colour and smooth bored – flexi ducts not acceptable except for under kerb loop ducts

4. Ducts to have draw chords fitted

5. All draw pits shall be from NAL 'Stakka Box' range in line with NCC standard

6. All draw pits to have non-slip covers

7. All 4m poles shall be in NAL Duckfoot sockets

8. All 6m poles shall be in NAL RS115 Duckfoot sockets (750mm root), NAL Stakka Box pole box chambers with feeder pillars for terminations adjacent to the chambers

9. Draw pits in verges to have concrete collars to ensure lid frames stay in position

10. Service ducts installed in the carriageway to have 750mm cover and service ducts installed in the footway to have 450mm cover to finished surface.

11. Feeder pillar to be 5–10m from controller

12. Loop draw pits to have under kerb ducts and have NAL D400 Carriageway Loop Boxes

13. All controllers and poles to be sited in the presence of Northamptonshire County Council's Consultant Atkins.

Key:

- Pole and primary signal head in NAL socket
- Tall pole with normal head and high level LED repeater head
- Feeder pillar for power supply
- Remote termination pillar for poles/mast arms with high level heads
- Photo cell
- Large draw pit 600mmx600mm approx from NAL Stakka Box range
- Intermediate draw pit 600mmx450mm approx from NAL Stakka Box range
- Loop/general draw pit 450mmx300mm approx from NAL Stakka Box range
- NAL D400 carriageway loop chamber
- NAL Stakka Box Duckfoot pole box
- 2Dx450 — Duct run label: number of pipes/depth of cover in mm
- Duct run – assume 1 pipe in 450mm cover unless otherwise stated
- AX — D-System inductance loop with ref.
- Mast arm
- Mast arm with foundation, draw pit and feeder pillar

Rev	By	Chkd	Apprvd	Date	Description
C	PJS	PJS	BS	20.5.08	Loop labels changed, NCC comments added
B	PJS	PJS	BS	16.11.07	NCC Atkins Comments addressed
A	PJS	PJS	BS	5.11.07	Revisions to match revised highway design 2.2

Client

English Partnerships – The National Regeneration Agency

Northamptonshire County Council

Halcrow Group Limited
Lyndon House 62 Hagley Road Edgbaston Birmingham B16 8PE
Tel +44 (0)121 4562345 Fax +44 (0)121 456 1569
www.halcrow.com

Halcrow

Project

PINEHAM INDUSTRIAL ESTATE
NORTHAMPTON

Drawing

DANES CAMP ROUNDABOUT
TRAFFIC SIGNAL LAYOUT
(PHASE 2.0)
JUNCTION EXTENTS

Drawn by: MA	Date: 24.09.07
Checked by: PJS	Date: 24.09.07
Approved by: BS	Date: xx.09.07

Drawing No.	Revision
CBB/ADL/226/222	C

Drawing Scale: As shown at A1

Drawing file path & name : Plotted by : User and Plot Date

TRAFFIC CONTROL - TIMING CHANGES — TCF 8 Rev 1

SITE: N. Danes Camp Way / RDBT — ORN: 195

Reasons for timing changes:

To improve linking

Type of controller: S800

Parameter to be changed	existing settings from records	existing settings as found	Required settings
PLAN 1	ALL POINTS		
PLT 1 0	19	19	36 → 23
1 1	21	21	38 → 25
1 2	60	60	7 → 60
1 3	65	65	12 → 65
PLT 2 12	10	10	5
2 13	12	12	4
2 14	24	24	18

Engineered by:

Approved by (if safety related):

Controller records updated by:

FRAS updated by:

Controller changed by: via RMS. Date: 14-6-11

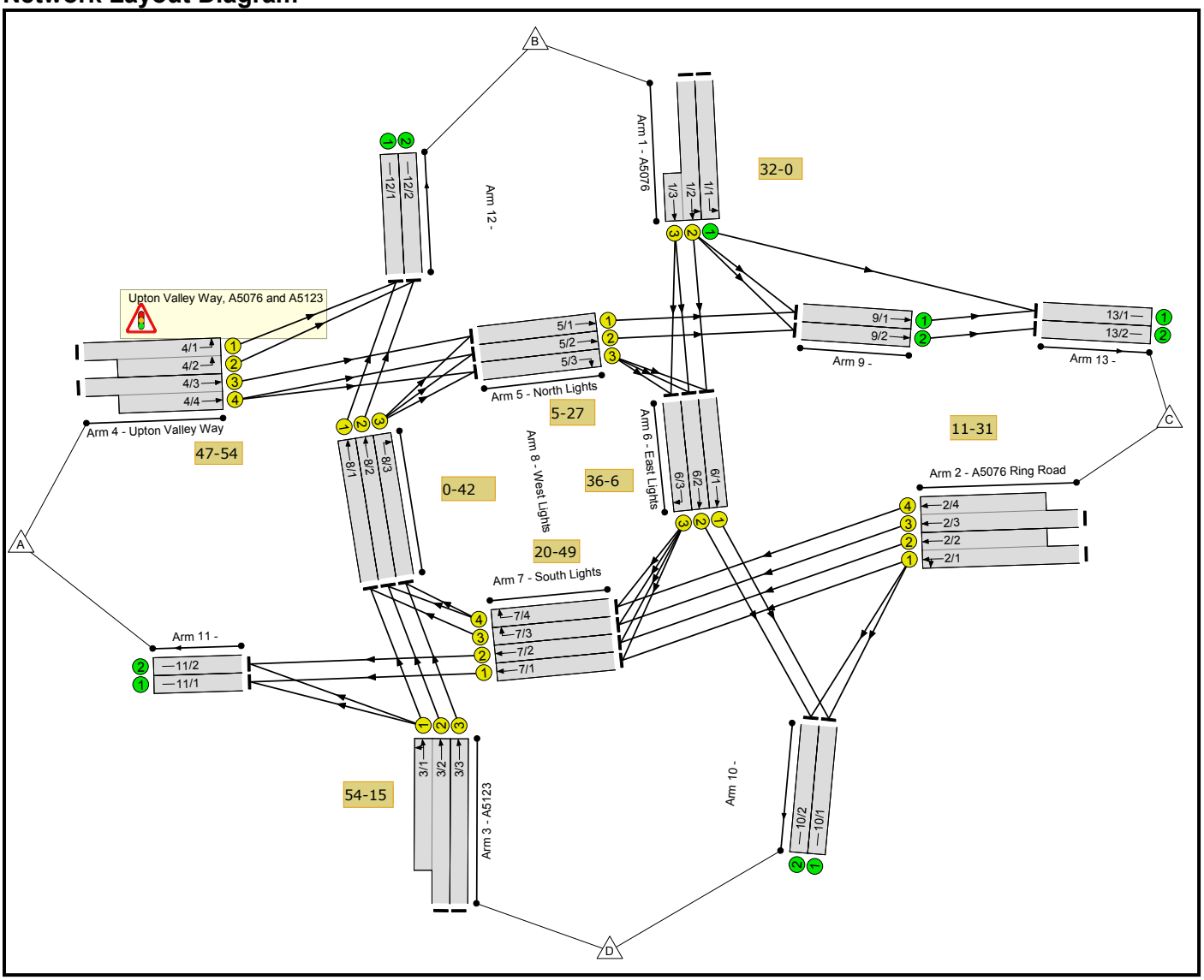
APPENDIX C

Full Input Data And Results

User and Project Details

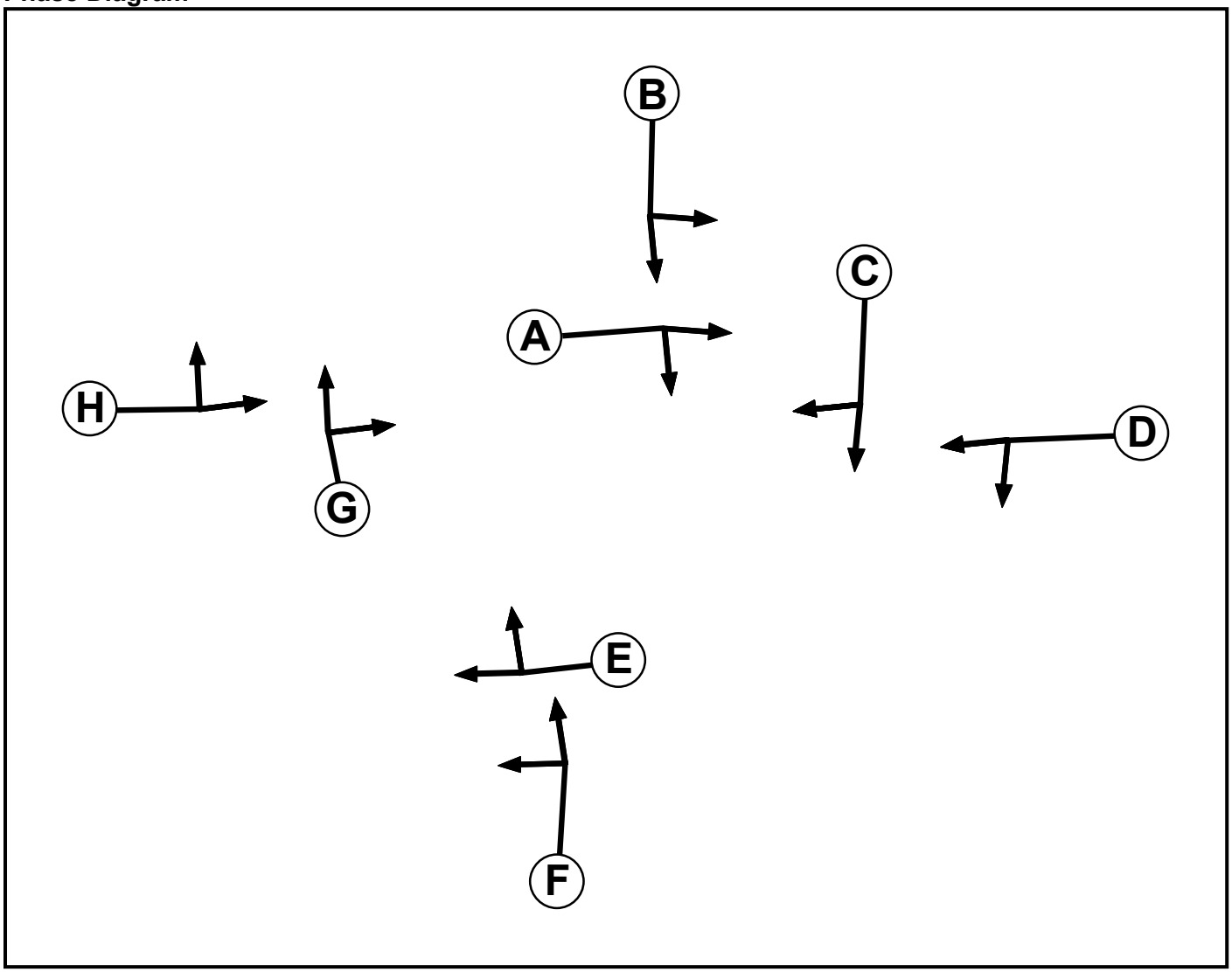
Project:	Rail Central
Title:	Junction 4
Location:	A5076 / A5123 / Upton Way Roundabout (Pineham Park) (Danes Camp Way)
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Traffic	4		7	7
H	Traffic	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

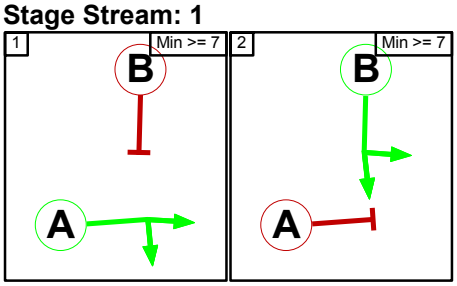
Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A		5	-	-	-	-	-	-
	B	5		-	-	-	-	-	-
	C	-	-		5	-	-	-	-
	D	-	-	5		-	-	-	-
	E	-	-	-	-		5	-	-
	F	-	-	-	-	5		-	-
	G	-	-	-	-	-	-		5
	H	-	-	-	-	-	-	5	

Phases in Stage

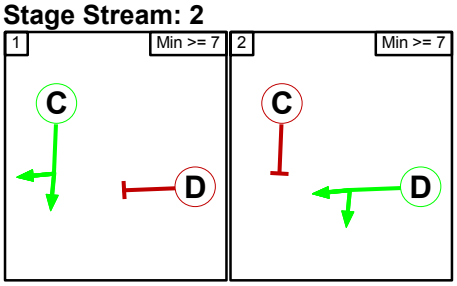
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	G
4	2	H

Stage Diagram

Stage Stream: 1

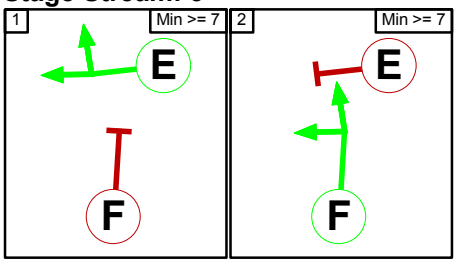


Stage Stream: 2

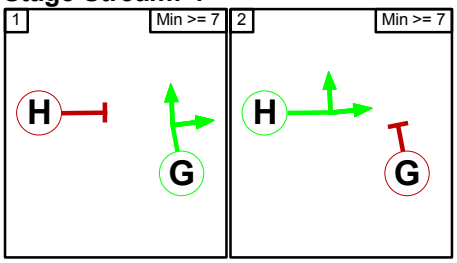


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Stage Stream: 3

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 4

	To Stage		
From Stage		1	2
	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Upton Valley Way, A5076 and A5123
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5076)	U		2	3	60.0	Geom	-	4.50	0.00	Y	Arm 13 Left	40.00
1/2 (A5076)	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead	60.00
											Arm 9 Left	42.00
1/3 (A5076)	U	B	2	3	4.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead	60.00
2/1 (A5076 Ring Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 7 Ahead	59.00
											Arm 10 Left	46.00
2/2 (A5076 Ring Road)	U	D	2	3	12.7	Geom	-	3.25	0.00	N	Arm 7 Ahead	59.00
2/3 (A5076 Ring Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	N	Arm 7 Ahead	58.00
2/4 (A5076 Ring Road)	U	D	2	3	12.7	Geom	-	3.25	0.00	Y	Arm 7 Ahead	58.00
3/1 (A5123)	U	F	2	3	14.6	Geom	-	3.50	0.00	Y	Arm 8 Ahead	56.00
											Arm 11 Left	45.00
3/2 (A5123)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	56.00
3/3 (A5123)	U	F	2	3	60.0	Geom	-	4.50	0.00	Y	Arm 8 Ahead	56.00
4/1 (Upton Valley Way)	U	H	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 12 Left	65.00
4/2 (Upton Valley Way)	U	H	2	3	8.7	Geom	-	3.50	0.00	N	Arm 12 Left	62.00
4/3 (Upton Valley Way)	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	70.00
4/4 (Upton Valley Way)	U	H	2	3	8.7	Geom	-	3.50	0.00	Y	Arm 5 Ahead	69.00
5/1 (North Lights)	U	A	2	3	5.0	Geom	-	4.50	0.00	Y	Arm 9 Ahead	60.00
5/2 (North Lights)	U	A	2	3	5.0	Geom	-	4.00	0.00	N	Arm 9 Ahead	60.00

Full Input Data And Results

5/3 (North Lights)	U	A	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 6 Right	35.00
6/1 (East Lights)	U	C	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 10 Ahead	60.00
6/2 (East Lights)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 10 Ahead	60.00
6/3 (East Lights)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 7 Right	56.00
7/1 (South Lights)	U	E	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 11 Ahead	58.00
7/2 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 11 Ahead	58.00
7/3 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 8 Right	52.00
7/4 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	Y	Arm 8 Right	52.00
8/1 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	Y	Arm 12 Ahead	62.00
8/2 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	N	Arm 12 Ahead	62.00
8/3 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	Y	Arm 5 Right	35.00
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2015 AM Base Flow'	08:00	09:00	01:00	
2: '2015 PM Base Flow'	17:00	18:00	01:00	
3: '2021 20% Dev AM'	08:00	09:00	01:00	
4: '2021 20% Dev PM'	17:00	18:00	01:00	
5: '2021 DM AM'	08:00	09:00	01:00	
6: '2021 DM PM'	17:00	18:00	01:00	
7: '2021 DM + 2021 DS 20% AM'	08:00	09:00	01:00	F5 + F3
8: '2021 DM + 2021 DS 20% PM'	17:00	18:00	01:00	F6 + F4
9: '2021 DS AM'	08:00	09:00	01:00	
10: '2021 DS PM'	17:00	18:00	01:00	
11: '2031 DM AM'	08:00	09:00	01:00	
12: '2031 DM PM'	17:00	18:00	01:00	
13: '2031 DS AM'	08:00	09:00	01:00	
14: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2015 AM Base Flow OPT' (FG1: '2015 AM Base Flow', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	162	353	52	567
	B	124	0	1102	830	2056
	C	367	1048	0	698	2113
	D	19	518	452	0	989
	Tot.	510	1728	1907	1580	5725

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 1: 2015 AM Base Flow OPT
Junction: Upton Valley Way, A5076 and A5123	
1/1	1102
1/2 (with short)	954(In) 403(Out)
1/3 (short)	551
2/1 (with short)	1065(In) 705(Out)
2/2 (short)	360
2/3 (with short)	1048(In) 542(Out)
2/4 (short)	506
3/1 (short)	254
3/2 (with short)	537(In) 283(Out)
3/3	452
4/1 (with short)	162(In) 79(Out)
4/2 (short)	83
4/3 (with short)	405(In) 208(Out)
4/4 (short)	197
5/1	391
5/2	414
5/3	52
6/1	426
6/2	456
6/3	124
7/1	106
7/2	385
7/3	542
7/4	506
8/1	777
8/2	789
8/3	452
9/1	391
9/2	414
10/1	775
10/2	805
11/1	115
11/2	395
12/1	856
12/2	872

Full Input Data And Results

13/1	1493
13/2	414

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	1.0 %	1879	1879
				Arm 10 Left	46.00	99.0 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	92.5 %	1913	1913
				Arm 11 Left	45.00	7.5 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	100.0 %	2055	2055
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

Full Input Data And Results

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2015 PM Base Flow OPT' (FG2: '2015 PM Base Flow', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	193	278	23	494
	B	157	0	1081	742	1980
	C	437	1259	0	526	2222
	D	53	970	640	0	1663
	Tot.	647	2422	1999	1291	6359

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 2: 2015 PM Base Flow OPT
Junction: Upton Valley Way, A5076 and A5123	
1/1	1081
1/2 (with short)	899(In) 392(Out)
1/3 (short)	507
2/1 (with short)	963(In) 542(Out)
2/2 (short)	421
2/3 (with short)	1259(In) 648(Out)
2/4 (short)	611
3/1 (short)	480
3/2 (with short)	1023(In) 543(Out)
3/3	640
4/1 (with short)	193(In) 94(Out)
4/2 (short)	99
4/3 (with short)	301(In) 145(Out)
4/4 (short)	156
5/1	440
5/2	478
5/3	23
6/1	394
6/2	371
6/3	157
7/1	137
7/2	457
7/3	648
7/4	611
8/1	1075
8/2	1154
8/3	640
9/1	440
9/2	478
10/1	657
10/2	634
11/1	163
11/2	484
12/1	1169
12/2	1253

Full Input Data And Results

13/1	1521
13/2	478

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	3.0 %	1879	1879
				Arm 10 Left	46.00	97.0 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	89.0 %	1912	1912
				Arm 11 Left	45.00	11.0 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	100.0 %	2055	2055
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	169	375	109	653
	B	155	0	1111	931	2197
	C	367	1042	0	795	2204
	D	20	380	755	0	1155
	Tot.	542	1591	2241	1835	6209

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 3: 2021 DM AM
Junction: Upton Valley Way, A5076 and A5123	
1/1	1111
1/2 (with short)	1086(In) 450(Out)
1/3 (short)	636
2/1 (with short)	1162(In) 795(Out)
2/2 (short)	367
2/3 (with short)	1042(In) 542(Out)
2/4 (short)	500
3/1 (short)	172
3/2 (with short)	400(In) 228(Out)
3/3	755
4/1 (with short)	169(In) 83(Out)
4/2 (short)	86
4/3 (with short)	484(In) 238(Out)
4/4 (short)	246
5/1	559
5/2	571
5/3	109
6/1	498
6/2	542
6/3	155
7/1	147
7/2	375
7/3	542
7/4	500
8/1	694
8/2	728
8/3	755
9/1	559
9/2	571
10/1	895
10/2	940
11/1	157
11/2	385
12/1	777
12/2	814

Full Input Data And Results

13/1	1670
13/2	571

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	0.0 %	1879	1879
				Arm 10 Left	46.00	100.0 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	88.4 %	1912	1912
				Arm 11 Left	45.00	11.6 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	100.0 %	2055	2055
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	347	61	408
	B	153	0	941	897	1991
	C	411	1415	0	982	2808
	D	49	1098	934	7	2088
	Tot.	613	2513	2222	1947	7295

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 4: 2021 DM PM
Junction: Upton Valley Way, A5076 and A5123	
1/1	941
1/2 (with short)	1050(In) 423(Out)
1/3 (short)	627
2/1 (with short)	1393(In) 983(Out)
2/2 (short)	410
2/3 (with short)	1415(In) 732(Out)
2/4 (short)	683
3/1 (short)	540
3/2 (with short)	1147(In) 607(Out)
3/3	941
4/1 (with short)	0(In) 0(Out)
4/2 (short)	0
4/3 (with short)	408(In) 211(Out)
4/4 (short)	197
5/1	640
5/2	641
5/3	68
6/1	458
6/2	507
6/3	153
7/1	151
7/2	413
7/3	732
7/4	683
8/1	1223
8/2	1290
8/3	941
9/1	640
9/2	641
10/1	949
10/2	998
11/1	175
11/2	438
12/1	1223
12/2	1290

Full Input Data And Results

13/1	1581
13/2	641

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	0.1 %	1879	1879
				Arm 10 Left	46.00	99.9 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	90.9 %	1913	1913
				Arm 11 Left	45.00	9.1 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	0.0 %	2015	2015
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	0.0 %	2105	2105
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	258	338	122	718
	B	143	0	1099	1150	2392
	C	325	892	0	1154	2371
	D	24	454	839	0	1317
	Tot.	492	1604	2276	2426	6798

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 7: 2021 DS AM
Junction: Upton Valley Way, A5076 and A5123	
1/1	1099
1/2 (with short)	1293(In) 551(Out)
1/3 (short)	742
2/1 (with short)	1479(In) 1155(Out)
2/2 (short)	324
2/3 (with short)	892(In) 465(Out)
2/4 (short)	427
3/1 (short)	217
3/2 (with short)	478(In) 261(Out)
3/3	839
4/1 (with short)	258(In) 126(Out)
4/2 (short)	132
4/3 (with short)	460(In) 218(Out)
4/4 (short)	242
5/1	591
5/2	586
5/3	122
6/1	609
6/2	663
6/3	143
7/1	81
7/2	387
7/3	465
7/4	427
8/1	658
8/2	688
8/3	839
9/1	591
9/2	586
10/1	1186
10/2	1240
11/1	93
11/2	399
12/1	784
12/2	820

Full Input Data And Results

13/1	1690
13/2	586

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	0.1 %	1879	1879
				Arm 10 Left	46.00	99.9 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	88.9 %	1912	1912
				Arm 11 Left	45.00	11.1 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	100.0 %	2055	2055
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	175	20	195
	B	160	0	903	930	1993
	C	513	1274	0	645	2432
	D	109	1328	1346	0	2783
	Tot.	782	2602	2424	1595	7403

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 8: 2021 DS PM
Junction: Upton Valley Way, A5076 and A5123	
1/1	903
1/2 (with short)	1090(In) 452(Out)
1/3 (short)	638
2/1 (with short)	1158(In) 699(Out)
2/2 (short)	459
2/3 (with short)	1274(In) 661(Out)
2/4 (short)	613
3/1 (short)	693
3/2 (with short)	1437(In) 744(Out)
3/3	1346
4/1 (with short)	0(In) 0(Out)
4/2 (short)	0
4/3 (with short)	195(In) 85(Out)
4/4 (short)	110
5/1	737
5/2	784
5/3	20
6/1	456
6/2	494
6/3	160
7/1	172
7/2	501
7/3	661
7/4	613
8/1	1245
8/2	1357
8/3	1346
9/1	737
9/2	784
10/1	778
10/2	817
11/1	226
11/2	556
12/1	1245
12/2	1357

Full Input Data And Results

13/1	1640
13/2	784

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	7.7 %	1880	1880
				Arm 10 Left	46.00	92.3 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	84.3 %	1912	1912
				Arm 11 Left	45.00	15.7 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	0.0 %	2015	2015
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	0.0 %	2105	2105
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	7	294	602	87	990
	B	183	0	1044	1155	2382
	C	529	1032	1	854	2416
	D	22	495	713	1	1231
	Tot.	741	1821	2360	2097	7019

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 9: 2031 DM AM
Junction: Upton Valley Way, A5076 and A5123	
1/1	1044
1/2 (with short)	1338(In) 542(Out)
1/3 (short)	796
2/1 (with short)	1383(In) 854(Out)
2/2 (short)	529
2/3 (with short)	1033(In) 530(Out)
2/4 (short)	503
3/1 (short)	237
3/2 (with short)	517(In) 280(Out)
3/3	714
4/1 (with short)	294(In) 144(Out)
4/2 (short)	150
4/3 (with short)	696(In) 360(Out)
4/4 (short)	336
5/1	649
5/2	667
5/3	95
6/1	591
6/2	652
6/3	190
7/1	170
7/2	549
7/3	530
7/4	503
8/1	745
8/2	782
8/3	715
9/1	649
9/2	667
10/1	1018
10/2	1079
11/1	181
11/2	560
12/1	889
12/2	932

Full Input Data And Results

13/1	1693
13/2	667

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	0.0 %	1879	1879
				Arm 10 Left	46.00	100.0 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	90.7 %	1913	1913
				Arm 11 Left	45.00	9.3 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	100.0 %	2055	2055
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	18	17	577	71	683
	B	154	1	875	938	1968
	C	610	1518	21	1037	3186
	D	11	1013	1004	0	2028
	Tot.	793	2549	2477	2046	7865

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 10: 2031 DM PM
Junction: Upton Valley Way, A5076 and A5123	
1/1	875
1/2 (with short)	1093(In) 444(Out)
1/3 (short)	649
2/1 (with short)	1647(In) 1165(Out)
2/2 (short)	482
2/3 (with short)	1539(In) 786(Out)
2/4 (short)	753
3/1 (short)	463
3/2 (with short)	1024(In) 561(Out)
3/3	1004
4/1 (with short)	17(In) 8(Out)
4/2 (short)	9
4/3 (with short)	666(In) 344(Out)
4/4 (short)	322
5/1	782
5/2	820
5/3	89
6/1	480
6/2	529
6/3	173
7/1	224
7/2	558
7/3	786
7/4	754
8/1	1238
8/2	1294
8/3	1025
9/1	782
9/2	820
10/1	998
10/2	1048
11/1	229
11/2	564
12/1	1246
12/2	1303

Full Input Data And Results

13/1	1657
13/2	820

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	11.0 %	1880	1880
				Arm 10 Left	46.00	89.0 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	97.6 %	1913	1913
				Arm 11 Left	45.00	2.4 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	100.0 %	2055	2055
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 11: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	8	279	562	131	980
	B	135	0	991	1228	2354
	C	452	875	5	1159	2491
	D	32	663	865	0	1560
	Tot.	627	1817	2423	2518	7385

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 11: 2031 DS AM
Junction: Upton Valley Way, A5076 and A5123	
1/1	991
1/2 (with short)	1363(In) 587(Out)
1/3 (short)	776
2/1 (with short)	1611(In) 1159(Out)
2/2 (short)	452
2/3 (with short)	880(In) 455(Out)
2/4 (short)	425
3/1 (short)	320
3/2 (with short)	695(In) 375(Out)
3/3	865
4/1 (with short)	279(In) 137(Out)
4/2 (short)	142
4/3 (with short)	701(In) 361(Out)
4/4 (short)	340
5/1	721
5/2	711
5/3	139
6/1	650
6/2	709
6/3	143
7/1	136
7/2	459
7/3	455
7/4	425
8/1	743
8/2	795
8/3	870
9/1	721
9/2	711
10/1	1229
10/2	1289
11/1	152
11/2	475
12/1	880
12/2	937

Full Input Data And Results

13/1	1712
13/2	711

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	0.0 %	1879	1879
				Arm 10 Left	46.00	100.0 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	90.0 %	1913	1913
				Arm 11 Left	45.00	10.0 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	100.0 %	2055	2055
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 12: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	292	34	326
	B	160	0	857	966	1983
	C	636	1429	0	852	2917
	D	81	1212	1461	0	2754
	Tot.	877	2641	2610	1852	7980

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 12: 2031 DS PM
Junction: Upton Valley Way, A5076 and A5123	
1/1	857
1/2 (with short)	1126(In) 476(Out)
1/3 (short)	650
2/1 (with short)	1488(In) 863(Out)
2/2 (short)	625
2/3 (with short)	1429(In) 732(Out)
2/4 (short)	697
3/1 (short)	624
3/2 (with short)	1293(In) 669(Out)
3/3	1461
4/1 (with short)	0(In) 0(Out)
4/2 (short)	0
4/3 (with short)	326(In) 141(Out)
4/4 (short)	185
5/1	852
5/2	901
5/3	34
6/1	483
6/2	517
6/3	160
7/1	160
7/2	636
7/3	732
7/4	697
8/1	1275
8/2	1366
8/3	1461
9/1	852
9/2	901
10/1	909
10/2	943
11/1	200
11/2	677
12/1	1275
12/2	1366

Full Input Data And Results

13/1	1709
13/2	901

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1966	1966
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	59.00	1.3 %	1879	1879
				Arm 10 Left	46.00	98.7 %		
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	100.0 %	2028	2028
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	Y	Arm 7 Ahead	58.00	100.0 %	1891	1891
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	87.0 %	1912	1912
				Arm 11 Left	45.00	13.0 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	Y	Arm 8 Ahead	56.00	100.0 %	2011	2011
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	0.0 %	2015	2015
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 12 Left	62.00	0.0 %	2105	2105
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	Y	Arm 5 Ahead	69.00	100.0 %	1923	1923
5/1 (North Lights)	4.50	0.00	Y	Arm 9 Ahead	60.00	100.0 %	2015	2015
5/2 (North Lights)	4.00	0.00	N	Arm 9 Ahead	60.00	100.0 %	2102	2102
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 11 Ahead	58.00	100.0 %	2101	2101
7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095

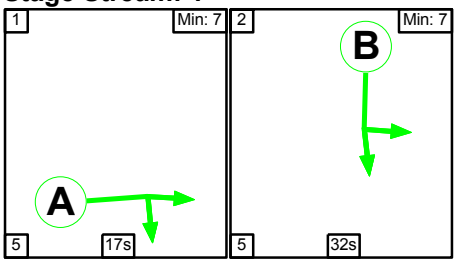
Full Input Data And Results

7/4 (South Lights)	4.00	0.00	Y	Arm 8 Right	52.00	100.0 %	1959	1959
8/1 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/2 (West Lights)	4.50	0.00	N	Arm 12 Ahead	62.00	100.0 %	2153	2153
8/3 (West Lights)	4.50	0.00	Y	Arm 5 Right	35.00	100.0 %	1980	1980
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

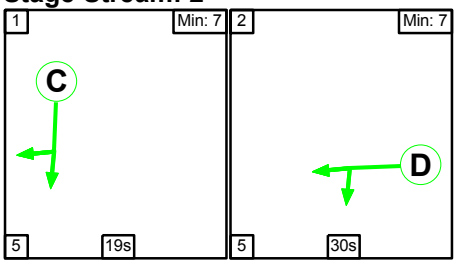
Scenario 1: '2015 AM Base Flow OPT' (FG1: '2015 AM Base Flow', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

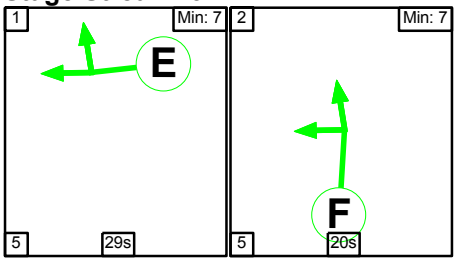
Stage Stream: 1



Stage Stream: 2

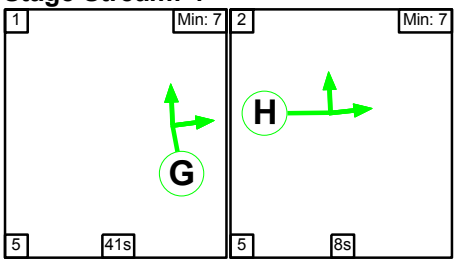


Stage Stream: 3



Full Input Data And Results

Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	32
Change Point	0	22

Stage Stream: 2

Stage	1	2
Duration	19	30
Change Point	25	49

Stage Stream: 3

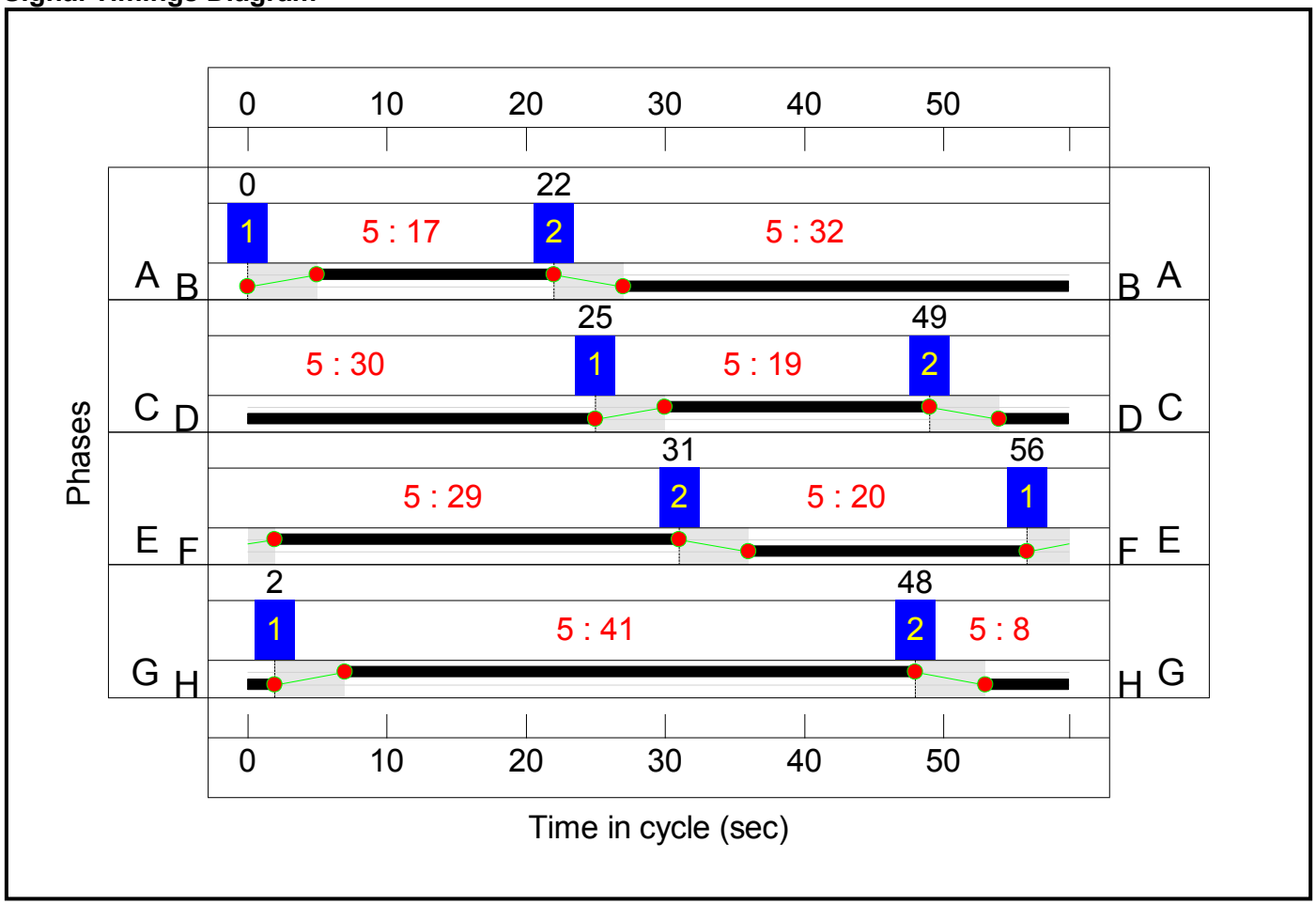
Stage	1	2
Duration	29	20
Change Point	56	31

Stage Stream: 4

Stage	1	2
Duration	41	8
Change Point	2	48

Full Input Data And Results

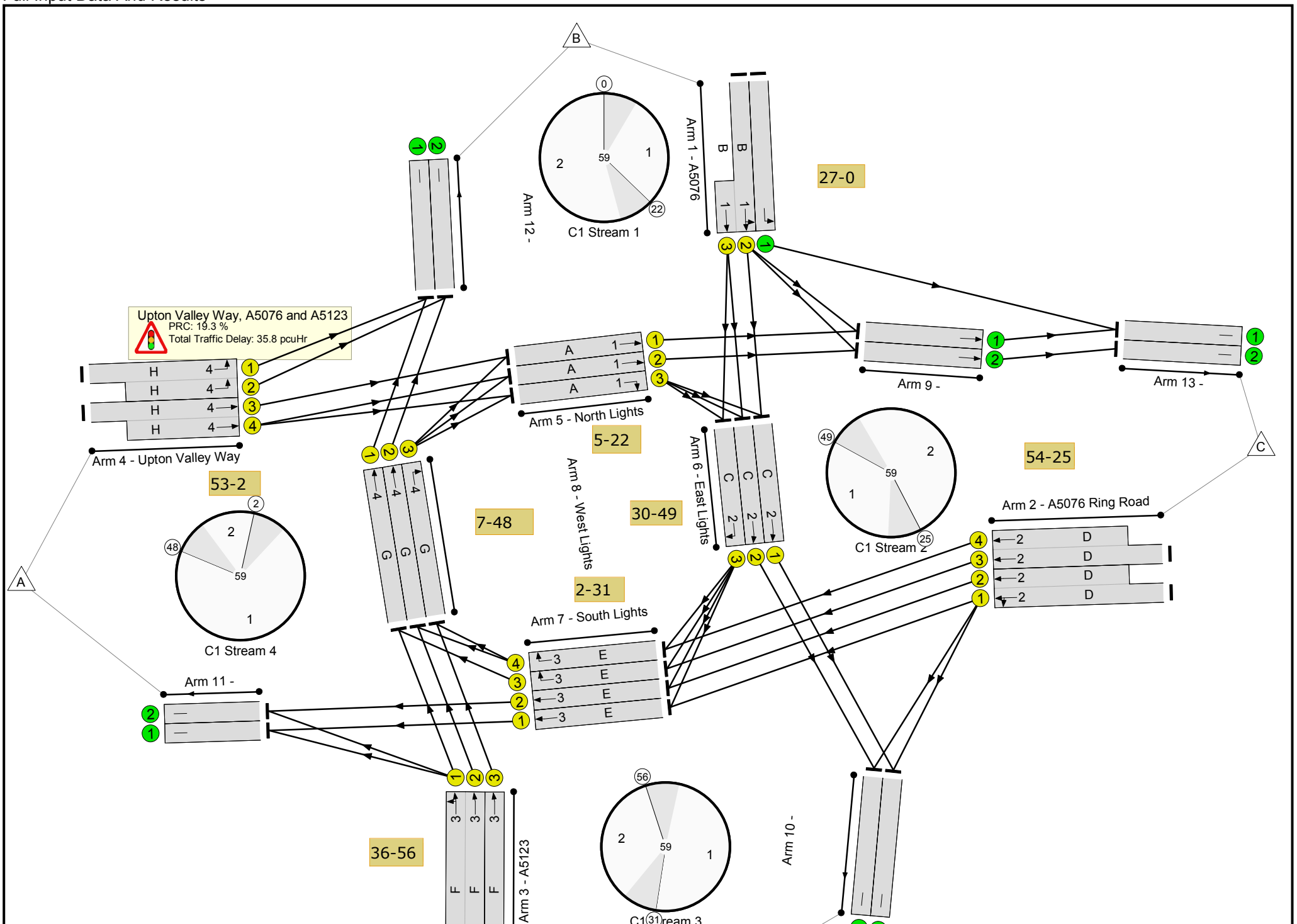
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.4%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.4%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	1102	1990	1990	55.4%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	32	-	954	1966:1966	544+744	74.0 : 74.0%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	30	-	1065	1879:2028	935+477	75.4 : 75.4%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	30	-	1048	2028:1891	937+875	57.8 : 57.8%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	20	-	537	2050:1913	730+681	38.8 : 37.3%
3/3	A5123 Ahead	U	3	N/A	F		1	20	-	452	2011	716	63.1%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	8	-	162	1970:2055	301+313	26.3 : 26.5%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	8	-	405	2061:1923	314+293	66.2 : 67.2%
5/1	North Lights Ahead	U	1	N/A	A		1	17	-	391	2015	615	63.6%
5/2	North Lights Ahead	U	1	N/A	A		1	17	-	414	2102	641	64.6%
5/3	North Lights Right	U	1	N/A	A		1	17	-	52	1908	582	8.9%
6/1	East Lights Ahead	U	2	N/A	C		1	19	-	426	1966	666	63.9%
6/2	East Lights Ahead	U	2	N/A	C		1	19	-	456	2102	713	64.0%
6/3	East Lights Right	U	2	N/A	C		1	19	-	124	2099	712	17.4%
7/1	South Lights Ahead	U	3	N/A	E		1	29	-	106	1940	986	10.7%
7/2	South Lights Ahead	U	3	N/A	E		1	29	-	385	2101	1068	36.0%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	29	-	542	2095	1065	50.9%
7/4	South Lights Right	U	3	N/A	E		1	29	-	506	1959	996	50.8%
8/1	West Lights Ahead	U	4	N/A	G		1	41	-	777	2016	1435	54.1%
8/2	West Lights Ahead	U	4	N/A	G		1	41	-	789	2153	1533	51.5%
8/3	West Lights Right	U	4	N/A	G		1	41	-	452	1980	1409	32.1%
9/1	Ahead	U	N/A	N/A	-		-	-	-	391	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	414	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	775	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	805	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	115	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	856	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	872	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1493	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	414	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.8**	**13.0**	**0.0**	**35.8**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**22.8**	**13.0**	**0.0**	**35.8**	**-**	**-**	**-**	**-**
1/1	1102	1102	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
1/2+1/3	954	954	-	-	-	2.1	1.4	-	3.5	13.3	7.4	1.4	8.8
2/1+2/2	1065	1065	-	-	-	2.9	1.5	-	4.4	14.9	8.6	1.5	10.1
2/3+2/4	1048	1048	-	-	-	2.6	0.7	-	3.3	11.4	5.7	0.7	6.4
3/2+3/1	537	537	-	-	-	2.1	0.3	-	2.4	16.2	3.5	0.3	3.8
3/3	452	452	-	-	-	2.0	0.9	-	2.8	22.6	6.2	0.9	7.0
4/1+4/2	162	162	-	-	-	1.0	0.2	-	1.2	26.1	1.2	0.2	1.4
4/3+4/4	405	405	-	-	-	2.7	1.0	-	3.6	32.4	3.2	1.0	4.2
5/1	391	391	-	-	-	0.7	0.9	-	1.6	14.3	4.7	0.9	5.6
5/2	414	414	-	-	-	0.8	0.9	-	1.7	14.7	4.3	0.9	5.2
5/3	52	52	-	-	-	0.0	0.0	-	0.1	4.8	0.6	0.0	0.6
6/1	426	426	-	-	-	1.3	0.9	-	2.1	18.1	3.3	0.9	4.2
6/2	456	456	-	-	-	1.4	0.9	-	2.2	17.8	3.1	0.9	3.9
6/3	124	124	-	-	-	0.3	0.1	-	0.4	12.8	0.6	0.1	0.8
7/1	106	106	-	-	-	0.5	0.1	-	0.5	17.7	1.6	0.1	1.7
7/2	385	385	-	-	-	0.2	0.3	-	0.5	4.8	2.9	0.3	3.2
7/3	542	542	-	-	-	0.2	0.5	-	0.7	4.4	1.2	0.5	1.7
7/4	506	506	-	-	-	0.1	0.5	-	0.7	4.7	1.1	0.5	1.6
8/1	777	777	-	-	-	0.3	0.6	-	0.9	4.3	2.8	0.6	3.4
8/2	789	789	-	-	-	0.4	0.5	-	0.9	4.3	3.1	0.5	3.6
8/3	452	452	-	-	-	1.2	0.2	-	1.4	11.5	4.6	0.2	4.8
9/1	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	414	414	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	775	775	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/2	805	805	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	115	115	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	395	395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	856	856	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1493	1493	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	414	414	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

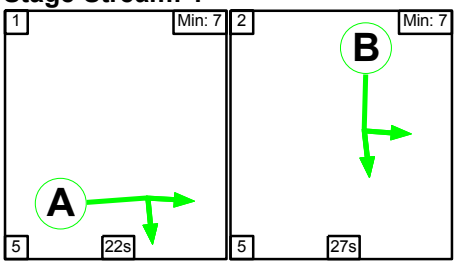
C1	Stream: 1 PRC for Signalled Lanes (%):	21.6	Total Delay for Signalled Lanes (pcuHr):	6.84	Cycle Time (s):	59
C1	Stream: 2 PRC for Signalled Lanes (%):	19.3	Total Delay for Signalled Lanes (pcuHr):	12.57	Cycle Time (s):	59
C1	Stream: 3 PRC for Signalled Lanes (%):	42.5	Total Delay for Signalled Lanes (pcuHr):	7.61	Cycle Time (s):	59
C1	Stream: 4 PRC for Signalled Lanes (%):	34.0	Total Delay for Signalled Lanes (pcuHr):	8.13	Cycle Time (s):	59
	PRC Over All Lanes (%):	19.3	Total Delay Over All Lanes(pcuHr):	35.77		

Full Input Data And Results

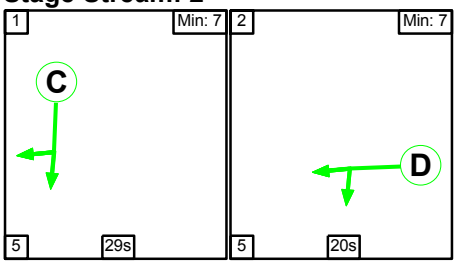
Scenario 2: '2015 PM Base Flow OPT' (FG2: '2015 PM Base Flow', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

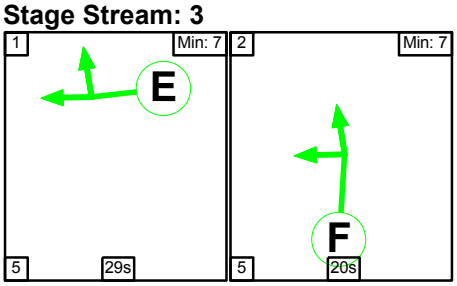
Stage Stream: 1



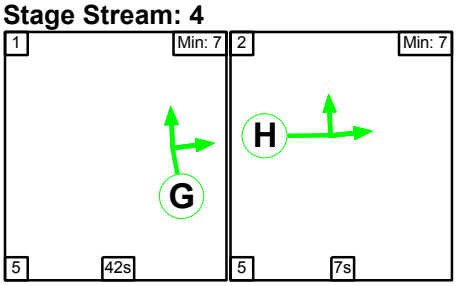
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	22	27
Change Point	0	27

Stage Stream: 2

Stage	1	2
Duration	29	20
Change Point	31	6

Stage Stream: 3

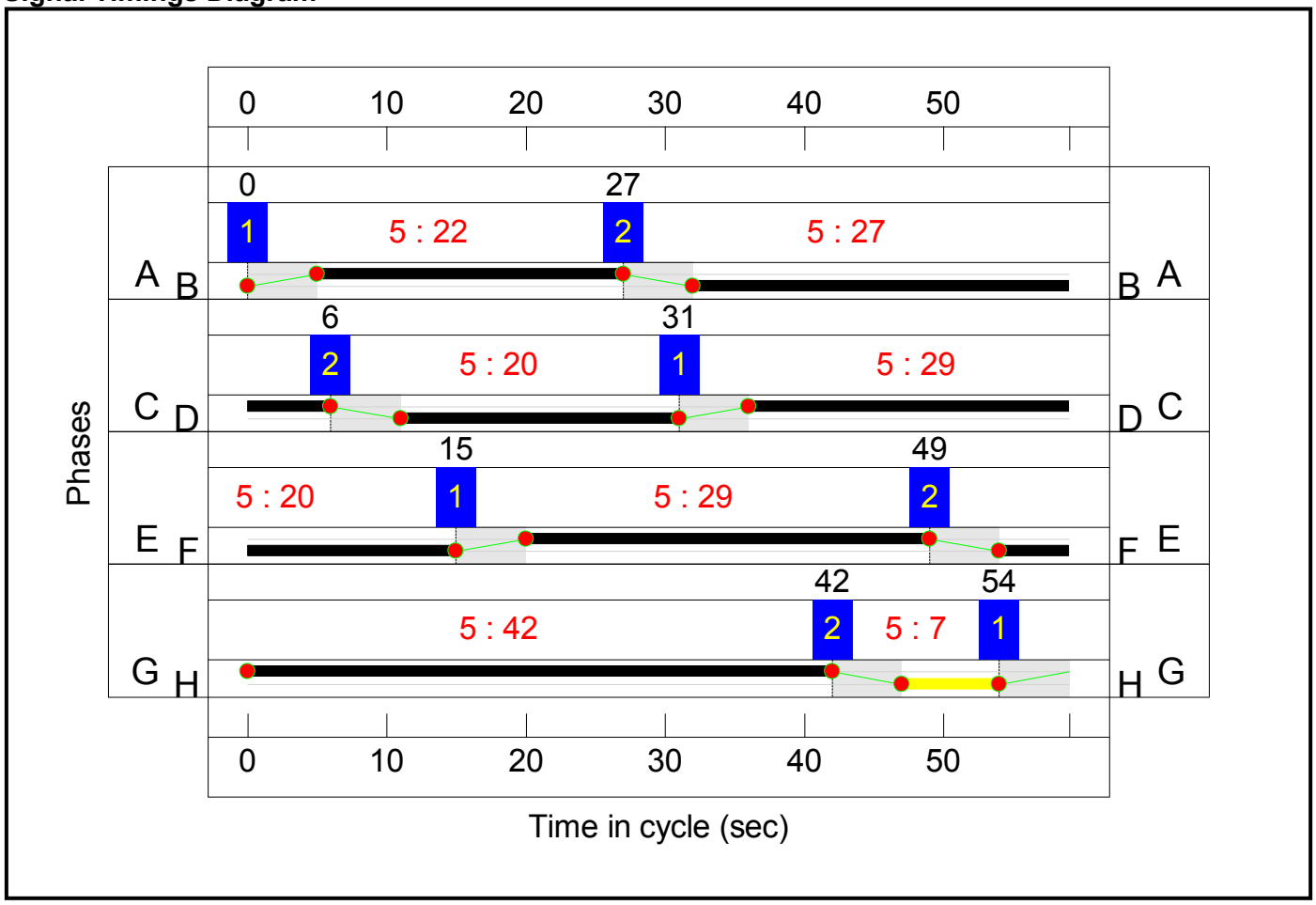
Stage	1	2
Duration	29	20
Change Point	15	49

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	42	7
Change Point	54	42

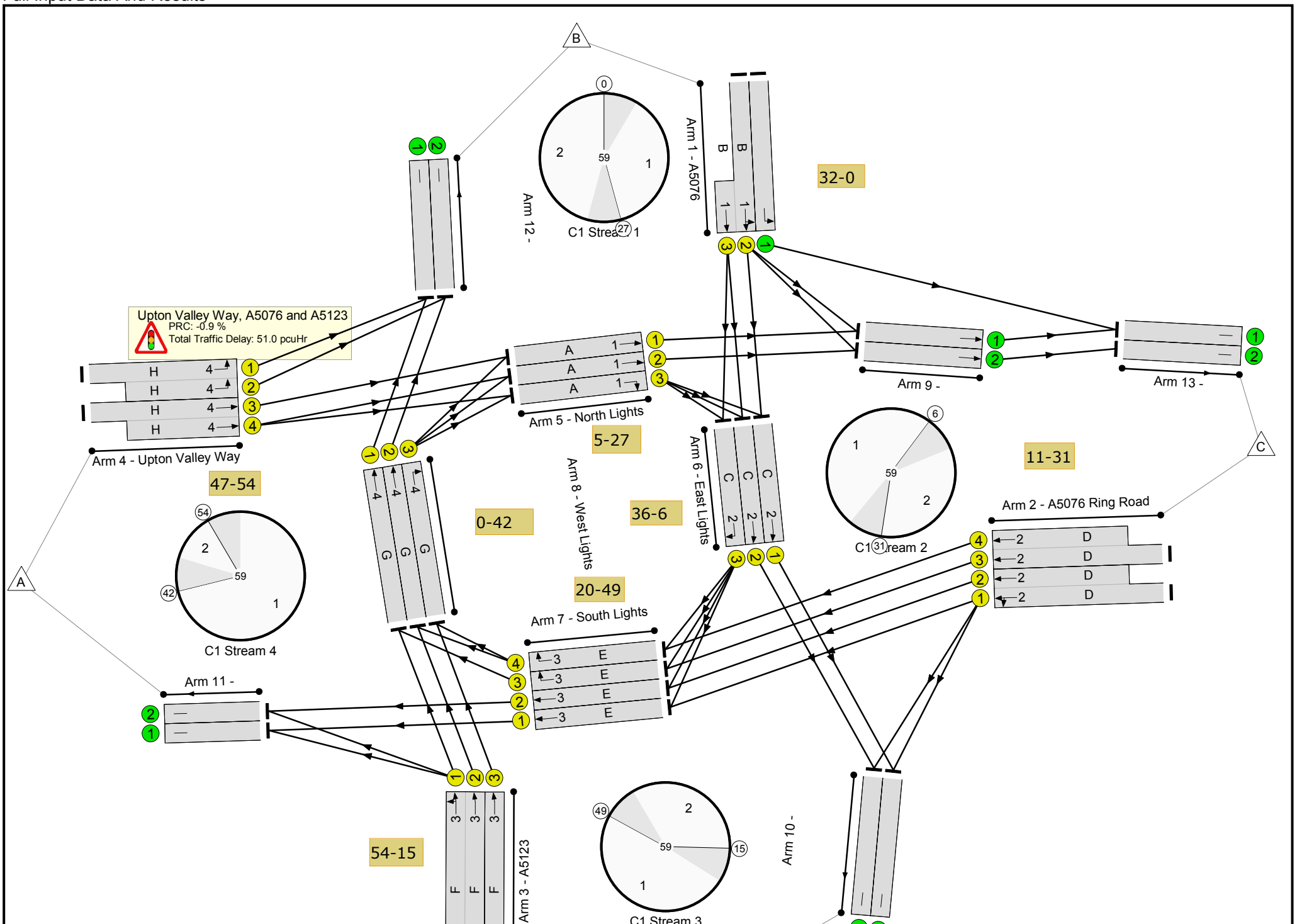
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.8%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.8%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	1081	1990	1990	54.3%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	27	-	899	1966:1966	494+639	79.4 : 79.4%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	20	-	963	1879:2028	669+519	81.0 : 81.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	20	-	1259	2028:1891	722+673	89.8 : 90.8%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	20	-	1023	2050:1912	730+681	74.4 : 70.5%
3/3	A5123 Ahead	U	3	N/A	F		1	20	-	640	2011	716	89.4%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	193	1970:2055	267+279	35.2 : 35.5%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	301	2061:1923	279+261	51.9 : 59.8%
5/1	North Lights Ahead	U	1	N/A	A		1	22	-	440	2015	786	56.0%
5/2	North Lights Ahead	U	1	N/A	A		1	22	-	478	2102	819	58.3%
5/3	North Lights Right	U	1	N/A	A		1	22	-	23	1908	744	3.1%
6/1	East Lights Ahead	U	2	N/A	C		1	29	-	394	1966	1000	39.4%
6/2	East Lights Ahead	U	2	N/A	C		1	29	-	371	2102	1069	34.7%
6/3	East Lights Right	U	2	N/A	C		1	29	-	157	2099	1067	14.7%
7/1	South Lights Ahead	U	3	N/A	E		1	29	-	137	1940	986	13.9%
7/2	South Lights Ahead	U	3	N/A	E		1	29	-	457	2101	1068	42.8%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	29	-	648	2095	1065	60.8%
7/4	South Lights Right	U	3	N/A	E		1	29	-	611	1959	996	61.3%
8/1	West Lights Ahead	U	4	N/A	G		1	42	-	1075	2016	1469	73.2%
8/2	West Lights Ahead	U	4	N/A	G		1	42	-	1154	2153	1569	73.5%
8/3	West Lights Right	U	4	N/A	G		1	42	-	640	1980	1443	44.4%
9/1	Ahead	U	N/A	N/A	-		-	-	-	440	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	657	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	634	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	484	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1169	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1253	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1521	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**28.8**	**22.2**	**0.0**	**51.0**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**28.8**	**22.2**	**0.0**	**51.0**	**-**	**-**	**-**	**-**
1/1	1081	1081	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
1/2+1/3	899	899	-	-	-	2.8	1.9	-	4.7	18.7	8.4	1.9	10.3
2/1+2/2	963	963	-	-	-	4.4	2.1	-	6.5	24.3	8.0	2.1	10.1
2/3+2/4	1259	1259	-	-	-	6.3	4.4	-	10.7	30.5	9.9	4.4	14.3
3/2+3/1	1023	1023	-	-	-	4.7	1.3	-	6.0	21.1	7.7	1.3	9.0
3/3	640	640	-	-	-	3.2	3.8	-	7.0	39.5	9.8	3.8	13.6
4/1+4/2	193	193	-	-	-	1.2	0.3	-	1.5	28.3	1.5	0.3	1.7
4/3+4/4	301	301	-	-	-	2.0	0.6	-	2.6	31.4	2.4	0.6	3.0
5/1	440	440	-	-	-	0.8	0.6	-	1.4	11.6	3.2	0.6	3.9
5/2	478	478	-	-	-	0.8	0.7	-	1.5	11.3	3.2	0.7	3.9
5/3	23	23	-	-	-	0.0	0.0	-	0.1	9.5	0.4	0.0	0.4
6/1	394	394	-	-	-	0.1	0.3	-	0.4	4.0	0.3	0.3	0.6
6/2	371	371	-	-	-	0.2	0.3	-	0.5	4.8	0.6	0.3	0.8
6/3	157	157	-	-	-	0.0	0.1	-	0.1	2.9	0.1	0.1	0.2
7/1	137	137	-	-	-	0.6	0.1	-	0.6	17.0	1.6	0.1	1.7
7/2	457	457	-	-	-	0.3	0.4	-	0.7	5.5	5.9	0.4	6.3
7/3	648	648	-	-	-	0.1	0.8	-	0.9	5.0	9.4	0.8	10.1
7/4	611	611	-	-	-	0.1	0.8	-	0.9	5.4	8.8	0.8	9.6
8/1	1075	1075	-	-	-	0.6	1.4	-	1.9	6.4	5.1	1.4	6.5
8/2	1154	1154	-	-	-	0.5	1.4	-	1.9	5.8	4.8	1.4	6.2
8/3	640	640	-	-	-	0.0	0.4	-	0.4	2.3	4.4	0.4	4.8
9/1	440	440	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	478	478	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	657	657	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

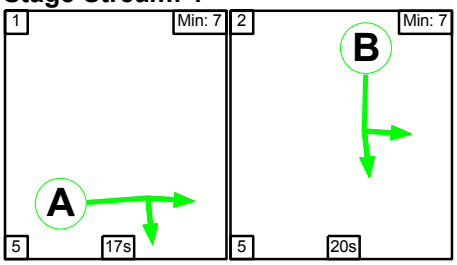
10/2	634	634	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	163	163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	484	484	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1169	1169	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1253	1253	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1521	1521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	478	478	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	13.4	Total Delay for Signalled Lanes (pcuHr):	7.64	Cycle Time (s):	59
C1	Stream: 2 PRC for Signalled Lanes (%):	-0.9	Total Delay for Signalled Lanes (pcuHr):	18.22	Cycle Time (s):	59
C1	Stream: 3 PRC for Signalled Lanes (%):	0.7	Total Delay for Signalled Lanes (pcuHr):	16.20	Cycle Time (s):	59
C1	Stream: 4 PRC for Signalled Lanes (%):	22.4	Total Delay for Signalled Lanes (pcuHr):	8.33	Cycle Time (s):	59
	PRC Over All Lanes (%):	-0.9	Total Delay Over All Lanes(pcuHr):	50.98		

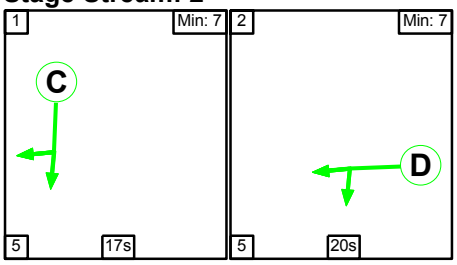
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

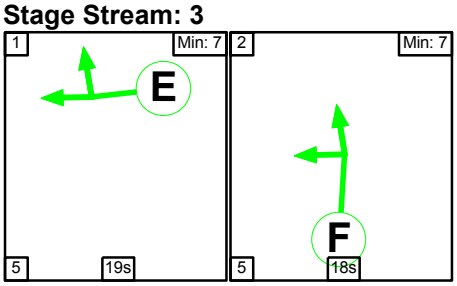
Stage Stream: 1



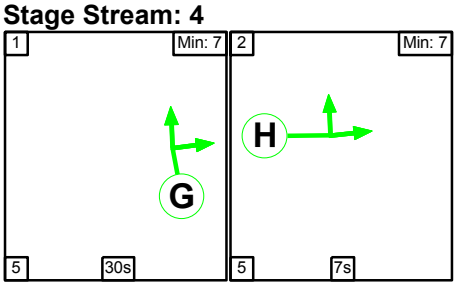
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	20
Change Point	10	32

Stage Stream: 2

Stage	1	2
Duration	17	20
Change Point	37	12

Stage Stream: 3

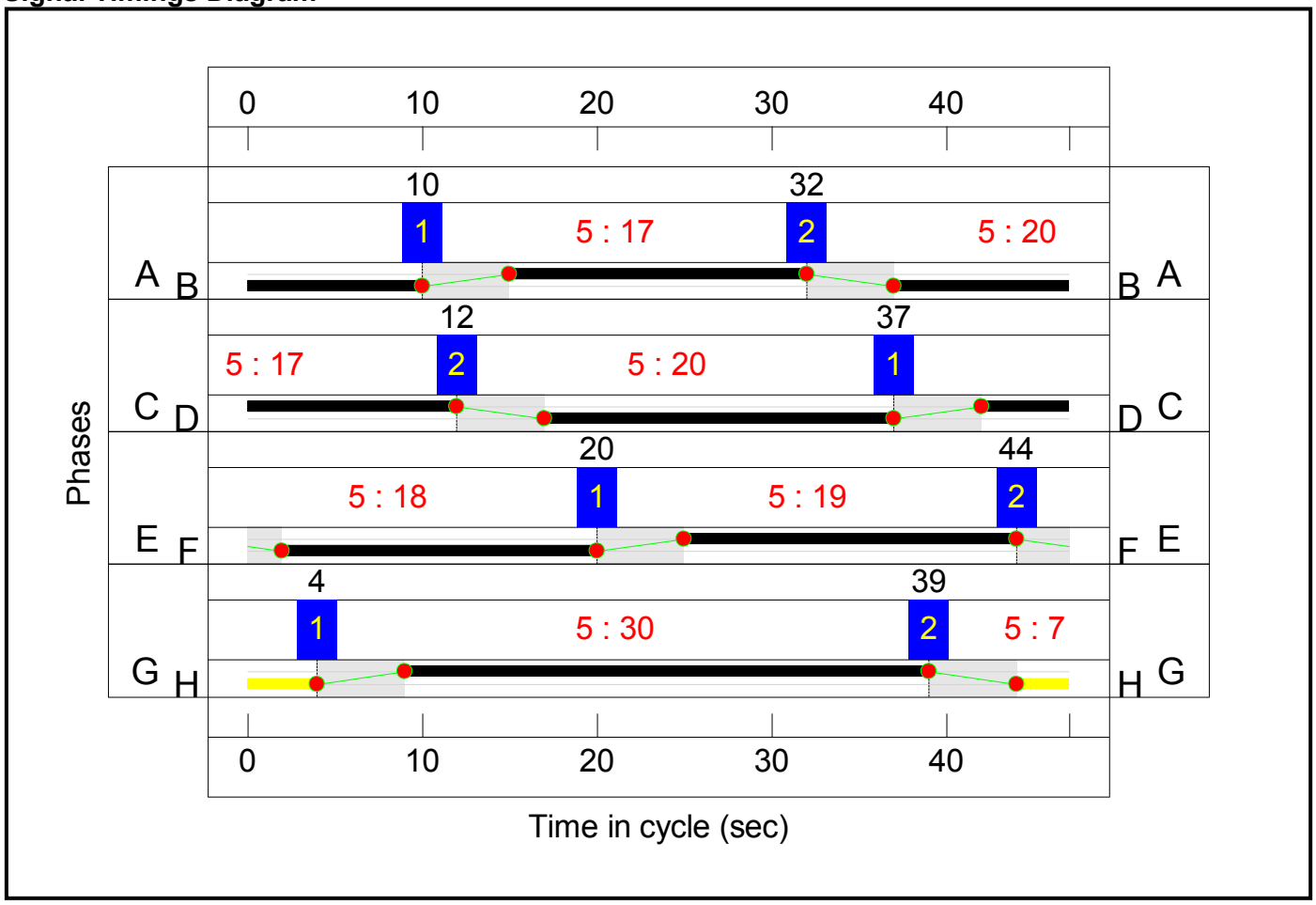
Stage	1	2
Duration	19	18
Change Point	20	44

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	30	7
Change Point	4	39

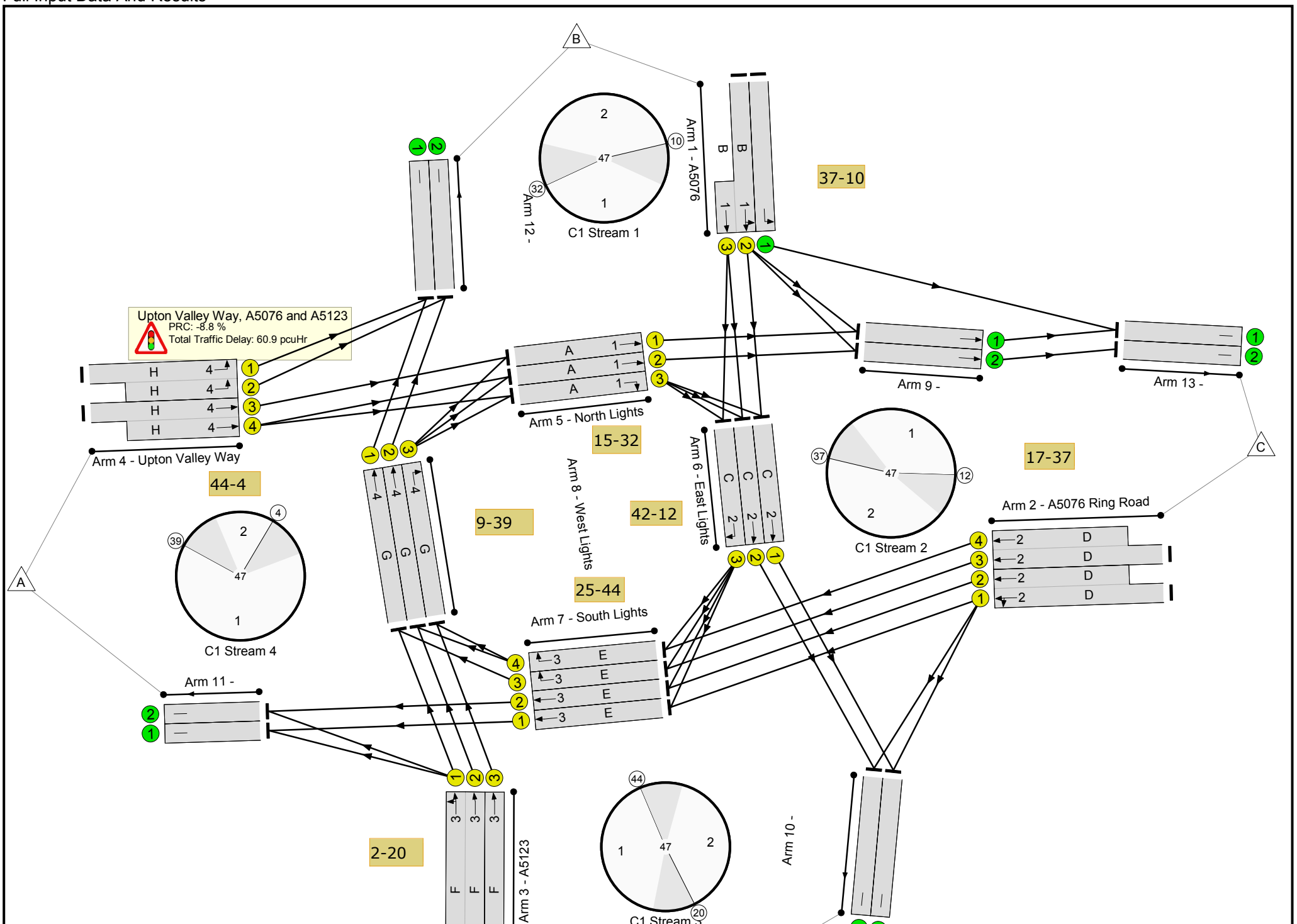
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.9%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.9%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	1111	1990	1990	55.8%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	20	-	1086	1966:1966	459+649	97.9 : 97.9%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	20	-	1162	1879:2028	840+388	94.7 : 94.7%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	20	-	1042	2028:1891	906+845	59.8 : 59.2%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	18	-	400	2050:1912	829+714	27.5 : 24.1%
3/3	A5123 Ahead	U	3	N/A	F		1	18	-	755	2011	813	92.9%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	169	1970:2055	335+350	24.8 : 24.6%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	484	2061:1923	351+327	67.8 : 75.2%
5/1	North Lights Ahead	U	1	N/A	A		1	17	-	559	2015	772	72.4%
5/2	North Lights Ahead	U	1	N/A	A		1	17	-	571	2102	805	70.9%
5/3	North Lights Right	U	1	N/A	A		1	17	-	109	1908	731	14.9%
6/1	East Lights Ahead	U	2	N/A	C		1	17	-	498	1966	753	66.1%
6/2	East Lights Ahead	U	2	N/A	C		1	17	-	542	2102	805	67.3%
6/3	East Lights Right	U	2	N/A	C		1	17	-	155	2099	804	19.3%
7/1	South Lights Ahead	U	3	N/A	E		1	19	-	147	1940	826	17.8%
7/2	South Lights Ahead	U	3	N/A	E		1	19	-	375	2101	894	41.9%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	19	-	542	2095	891	60.8%
7/4	South Lights Right	U	3	N/A	E		1	19	-	500	1959	834	60.0%
8/1	West Lights Ahead	U	4	N/A	G		1	30	-	694	2016	1330	52.2%
8/2	West Lights Ahead	U	4	N/A	G		1	30	-	728	2153	1420	51.3%
8/3	West Lights Right	U	4	N/A	G		1	30	-	755	1980	1306	57.8%
9/1	Ahead	U	N/A	N/A	-		-	-	-	559	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	571	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	895	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	940	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	157	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	385	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	777	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	814	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1670	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	571	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**25.0**	**35.9**	**0.0**	**60.9**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**25.0**	**35.9**	**0.0**	**60.9**	**-**	**-**	**-**	**-**
1/1	1111	1111	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
1/2+1/3	1086	1086	-	-	-	3.4	11.7	-	15.1	50.1	10.7	11.7	22.5
2/1+2/2	1162	1162	-	-	-	3.6	7.3	-	10.9	33.9	9.9	7.3	17.2
2/3+2/4	1042	1042	-	-	-	2.8	0.7	-	3.6	12.3	5.3	0.7	6.0
3/2+3/1	400	400	-	-	-	1.0	0.2	-	1.2	10.9	2.0	0.2	2.1
3/3	755	755	-	-	-	2.8	5.5	-	8.3	39.5	9.2	5.5	14.7
4/1+4/2	169	169	-	-	-	0.8	0.2	-	1.0	20.4	1.0	0.2	1.1
4/3+4/4	484	484	-	-	-	2.5	1.2	-	3.7	27.6	3.0	1.2	4.2
5/1	559	559	-	-	-	1.2	1.3	-	2.5	16.3	5.3	1.3	6.6
5/2	571	571	-	-	-	1.0	1.2	-	2.2	13.9	4.1	1.2	5.3
5/3	109	109	-	-	-	0.2	0.1	-	0.3	11.1	1.4	0.1	1.5
6/1	498	498	-	-	-	1.0	1.0	-	2.0	14.5	4.0	1.0	5.0
6/2	542	542	-	-	-	1.1	1.0	-	2.2	14.4	3.1	1.0	4.1
6/3	155	155	-	-	-	0.2	0.1	-	0.4	8.4	0.4	0.1	0.6
7/1	147	147	-	-	-	0.7	0.1	-	0.8	18.9	1.9	0.1	2.0
7/2	375	375	-	-	-	0.2	0.4	-	0.5	5.0	2.5	0.4	2.9
7/3	542	542	-	-	-	0.2	0.8	-	0.9	6.2	4.1	0.8	4.9
7/4	500	500	-	-	-	0.2	0.7	-	0.9	6.5	3.9	0.7	4.6
8/1	694	694	-	-	-	1.0	0.5	-	1.6	8.1	4.5	0.5	5.1
8/2	728	728	-	-	-	1.0	0.5	-	1.5	7.3	5.0	0.5	5.5
8/3	755	755	-	-	-	0.0	0.7	-	0.7	3.3	3.9	0.7	4.6
9/1	559	559	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	571	571	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	895	895	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

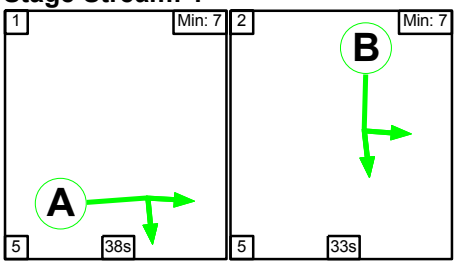
10/2	940	940	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	157	157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	385	385	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	777	777	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1670	1670	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	571	571	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-8.8	Total Delay for Signalled Lanes (pcuHr):	20.19	Cycle Time (s):	47
C1	Stream: 2 PRC for Signalled Lanes (%):	-5.2	Total Delay for Signalled Lanes (pcuHr):	19.04	Cycle Time (s):	47
C1	Stream: 3 PRC for Signalled Lanes (%):	-3.2	Total Delay for Signalled Lanes (pcuHr):	12.61	Cycle Time (s):	47
C1	Stream: 4 PRC for Signalled Lanes (%):	19.8	Total Delay for Signalled Lanes (pcuHr):	8.39	Cycle Time (s):	47
	PRC Over All Lanes (%):	-8.8	Total Delay Over All Lanes(pcuHr):	60.87		

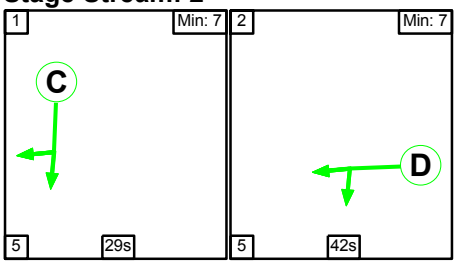
Full Input Data And Results
Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

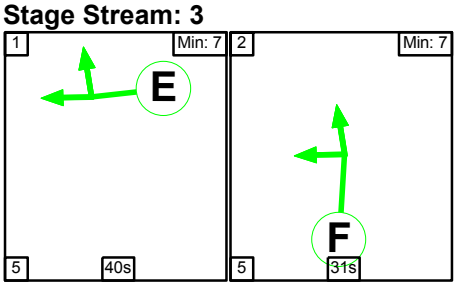
Stage Stream: 1



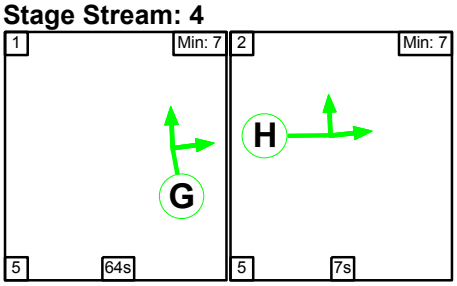
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	38	33
Change Point	33	76

Stage Stream: 2

Stage	1	2
Duration	29	42
Change Point	14	48

Stage Stream: 3

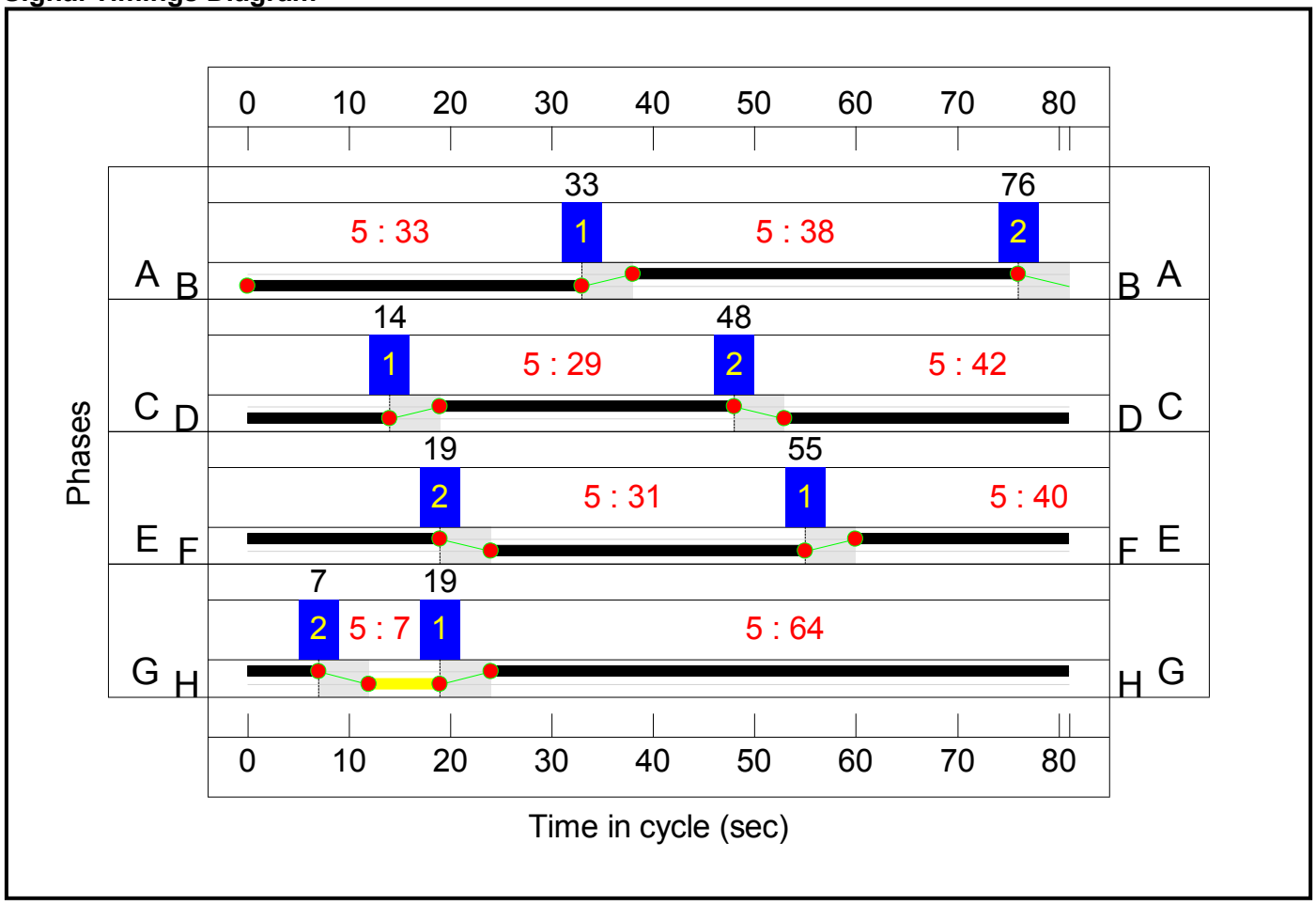
Stage	1	2
Duration	40	31
Change Point	55	19

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	64	7
Change Point	19	7

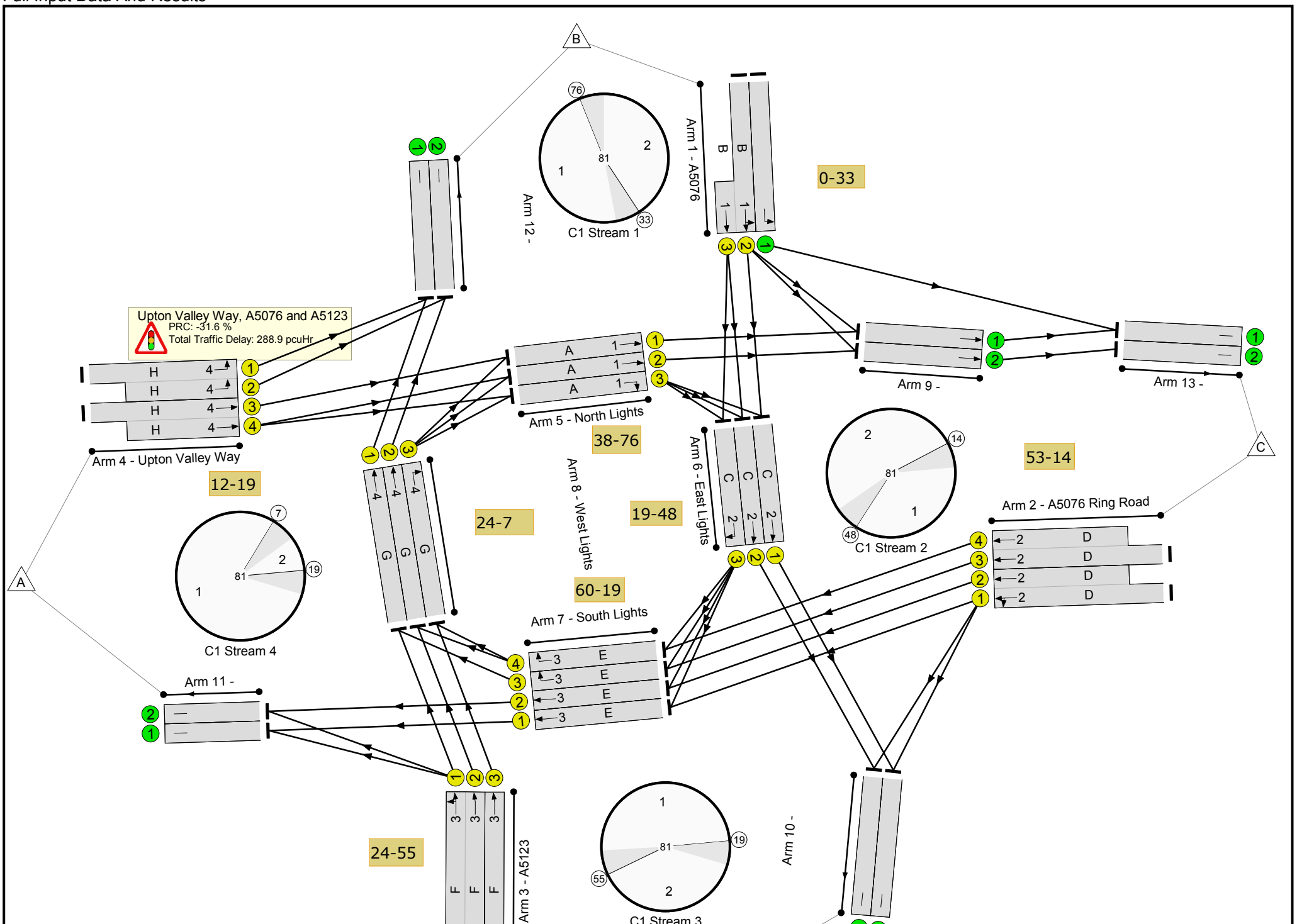
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**118.4%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**118.4%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	941	1990	1990	47.3%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	33	-	1050	1966:1966	384+569	110.2 : 110.2%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	42	-	1393	1879:2028	889+371	110.6 : 110.6%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	42	-	1415	2028:1891	833+777	87.9 : 87.9%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	31	-	1147	2050:1913	734+653	82.7 : 82.7%
3/3	A5123 Ahead	U	3	N/A	F		1	31	-	941	2011	794	118.4%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	0	2015:2105	199+208	0.0 : 0.0%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	408	2061:1923	204+190	103.7 : 103.7%
5/1	North Lights Ahead	U	1	N/A	A		1	38	-	640	2015	970	58.3%
5/2	North Lights Ahead	U	1	N/A	A		1	38	-	641	2102	1012	55.1%
5/3	North Lights Right	U	1	N/A	A		1	38	-	68	1908	919	7.0%
6/1	East Lights Ahead	U	2	N/A	C		1	29	-	458	1966	728	57.3%
6/2	East Lights Ahead	U	2	N/A	C		1	29	-	507	2102	779	59.3%
6/3	East Lights Right	U	2	N/A	C		1	29	-	153	2099	777	17.9%
7/1	South Lights Ahead	U	3	N/A	E		1	40	-	151	1940	982	14.0%
7/2	South Lights Ahead	U	3	N/A	E		1	40	-	413	2101	1063	35.1%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	40	-	732	2095	1060	69.0%
7/4	South Lights Right	U	3	N/A	E		1	40	-	683	1959	992	68.9%
8/1	West Lights Ahead	U	4	N/A	G		1	64	-	1223	2016	1618	75.6%
8/2	West Lights Ahead	U	4	N/A	G		1	64	-	1290	2153	1728	74.7%
8/3	West Lights Right	U	4	N/A	G		1	64	-	941	1980	1589	50.0%
9/1	Ahead	U	N/A	N/A	-		-	-	-	640	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	641	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	949	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	998	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	175	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	438	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1223	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1290	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1581	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	641	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**57.8**	**231.1**	**0.0**	**288.9**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**57.8**	**231.1**	**0.0**	**288.9**	**-**	**-**	**-**	**-**
1/1	941	941	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
1/2+1/3	1050	953	-	-	-	10.2	53.4	-	63.6	218.1	24.0	53.4	77.4
2/1+2/2	1393	1259	-	-	-	12.5	71.8	-	84.2	217.7	33.3	71.8	105.1
2/3+2/4	1415	1415	-	-	-	5.5	3.5	-	9.0	22.9	12.0	3.5	15.5
3/2+3/1	1147	1147	-	-	-	6.6	2.3	-	9.0	28.2	11.6	2.3	14.0
3/3	941	794	-	-	-	11.3	76.3	-	87.7	335.3	24.5	76.3	100.8
4/1+4/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3+4/4	408	393	-	-	-	4.7	14.4	-	19.1	168.4	4.9	14.4	19.3
5/1	566	566	-	-	-	1.2	0.7	-	1.9	12.0	7.4	0.7	8.1
5/2	557	557	-	-	-	0.7	0.6	-	1.3	8.5	4.9	0.6	5.5
5/3	65	65	-	-	-	0.2	0.0	-	0.3	16.0	1.3	0.0	1.4
6/1	417	417	-	-	-	0.7	0.7	-	1.4	11.8	6.2	0.7	6.9
6/2	462	462	-	-	-	0.7	0.7	-	1.5	11.4	7.2	0.7	7.9
6/3	139	139	-	-	-	0.1	0.1	-	0.2	6.0	1.4	0.1	1.6
7/1	137	137	-	-	-	1.1	0.1	-	1.2	30.3	3.1	0.1	3.1
7/2	373	373	-	-	-	0.3	0.3	-	0.5	5.1	2.4	0.3	2.6
7/3	732	732	-	-	-	0.3	1.1	-	1.4	7.0	2.9	1.1	4.0
7/4	683	683	-	-	-	0.3	1.1	-	1.4	7.3	2.7	1.1	3.8
8/1	1223	1223	-	-	-	0.7	1.5	-	2.2	6.6	7.3	1.5	8.9
8/2	1290	1290	-	-	-	0.6	1.5	-	2.1	5.8	5.4	1.5	6.9
8/3	794	794	-	-	-	0.0	0.5	-	0.5	2.4	12.3	0.5	12.8
9/1	566	566	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	557	557	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	861	861	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/2	905	905	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	161	161	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	398	398	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1223	1223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1290	1290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1507	1507	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	557	557	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

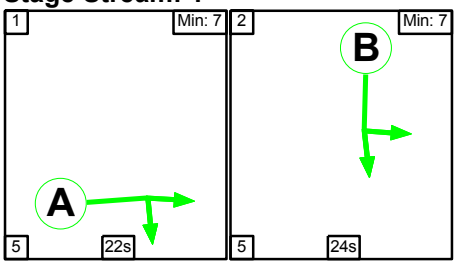
C1	Stream: 1 PRC for Signalled Lanes (%):	-22.4	Total Delay for Signalled Lanes (pcuHr):	67.10	Cycle Time (s):	81
C1	Stream: 2 PRC for Signalled Lanes (%):	-22.9	Total Delay for Signalled Lanes (pcuHr):	96.27	Cycle Time (s):	81
C1	Stream: 3 PRC for Signalled Lanes (%):	-31.6	Total Delay for Signalled Lanes (pcuHr):	101.14	Cycle Time (s):	81
C1	Stream: 4 PRC for Signalled Lanes (%):	-15.2	Total Delay for Signalled Lanes (pcuHr):	23.92	Cycle Time (s):	81
	PRC Over All Lanes (%):	-31.6	Total Delay Over All Lanes(pcuHr):	288.89		

Full Input Data And Results

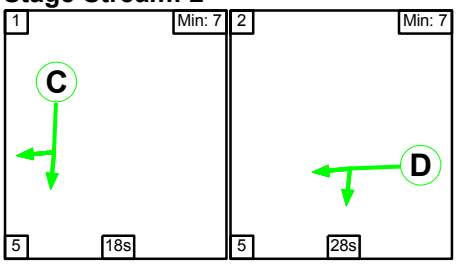
Scenario 7: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

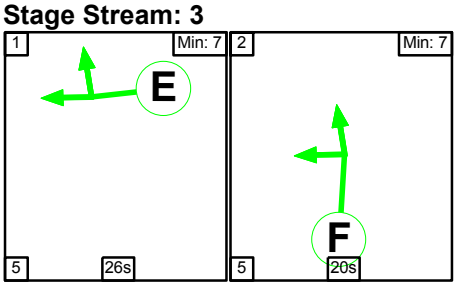
Stage Stream: 1



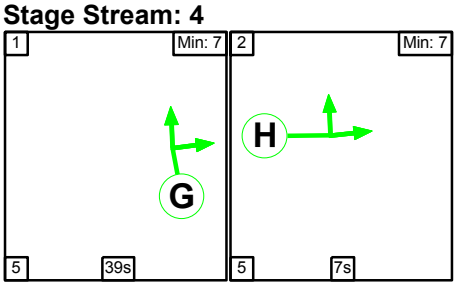
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	22	24
Change Point	8	35

Stage Stream: 2

Stage	1	2
Duration	18	28
Change Point	46	13

Stage Stream: 3

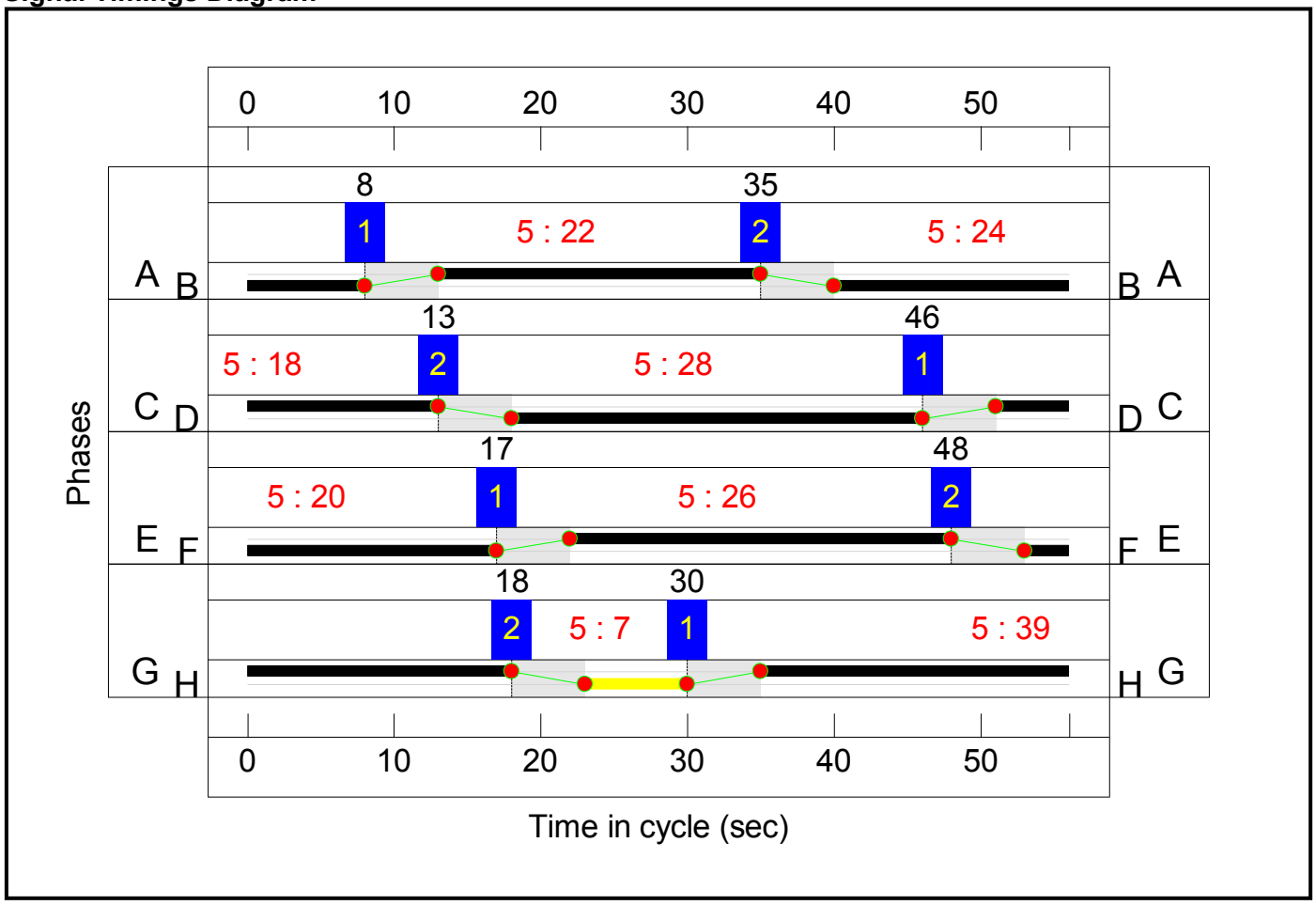
Stage	1	2
Duration	26	20
Change Point	17	48

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	39	7
Change Point	30	18

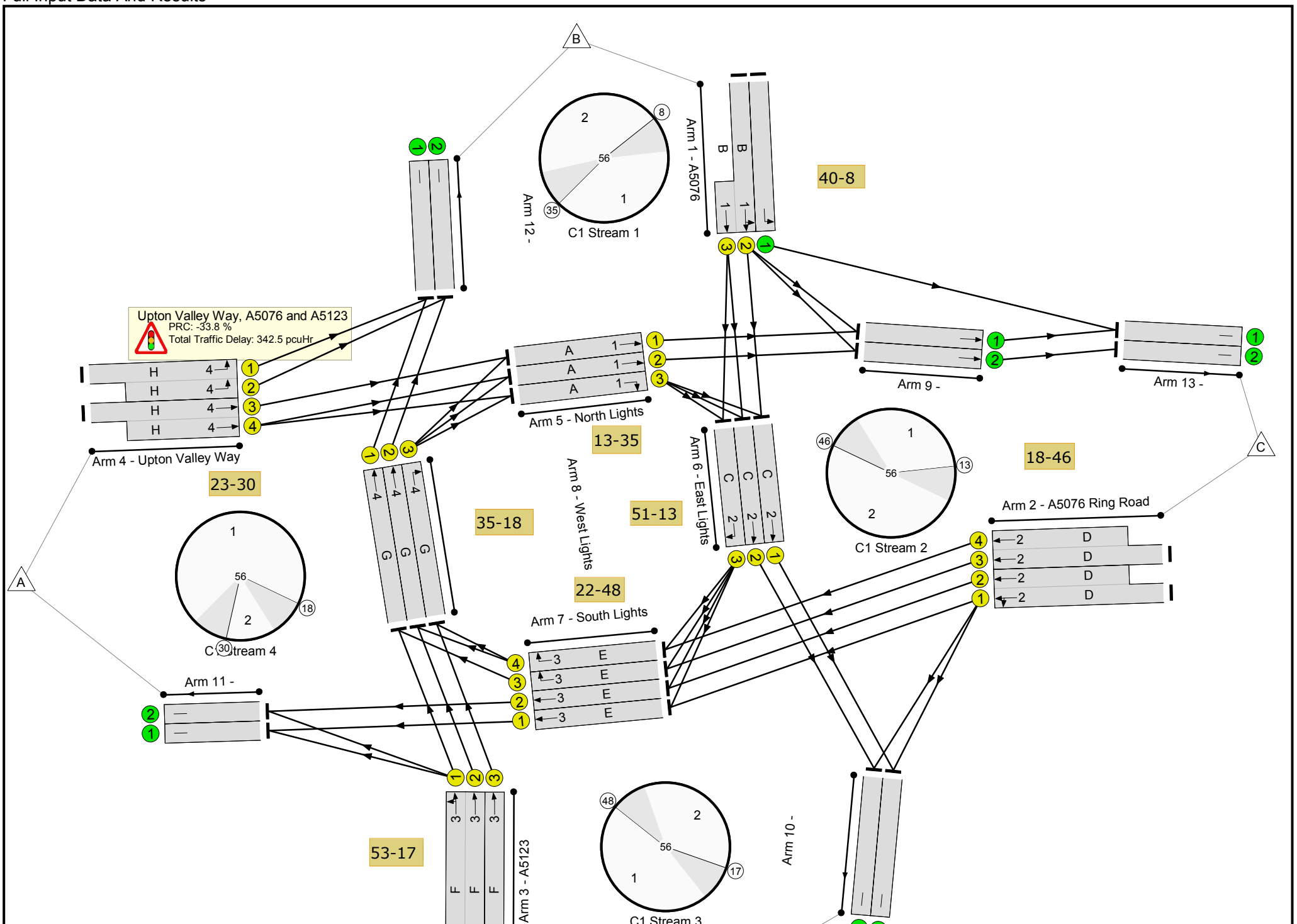
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**120.4%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**120.4%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	1099	1990	1990	55.2%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	24	-	1293	1966:1966	460+620	119.7 : 119.7%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	28	-	1479	1879:2028	959+269	120.4 : 120.4%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	28	-	892	2028:1891	953+875	48.8 : 48.8%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	20	-	478	2050:1912	769+717	34.0 : 30.3%
3/3	A5123 Ahead	U	3	N/A	F		1	20	-	839	2011	754	111.3%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	258	1970:2055	281+294	44.8 : 45.0%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	460	2061:1923	294+275	74.0 : 88.1%
5/1	North Lights Ahead	U	1	N/A	A		1	22	-	591	2015	828	66.9%
5/2	North Lights Ahead	U	1	N/A	A		1	22	-	586	2102	863	62.4%
5/3	North Lights Right	U	1	N/A	A		1	22	-	122	1908	784	15.6%
6/1	East Lights Ahead	U	2	N/A	C		1	18	-	609	1966	667	77.7%
6/2	East Lights Ahead	U	2	N/A	C		1	18	-	663	2102	713	79.1%
6/3	East Lights Right	U	2	N/A	C		1	18	-	143	2099	712	16.8%
7/1	South Lights Ahead	U	3	N/A	E		1	26	-	81	1940	935	7.2%
7/2	South Lights Ahead	U	3	N/A	E		1	26	-	387	2101	1013	31.7%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	26	-	465	2095	1010	46.0%
7/4	South Lights Right	U	3	N/A	E		1	26	-	427	1959	945	45.2%
8/1	West Lights Ahead	U	4	N/A	G		1	39	-	658	2016	1440	45.7%
8/2	West Lights Ahead	U	4	N/A	G		1	39	-	688	2153	1538	44.7%
8/3	West Lights Right	U	4	N/A	G		1	39	-	839	1980	1414	53.3%
9/1	Ahead	U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	586	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1186	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1240	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	93	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1690	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	586	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**45.9**	**296.6**	**0.0**	**342.5**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**45.9**	**296.6**	**0.0**	**342.5**	**-**	**-**	**-**	**-**
1/1	1099	1099	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
1/2+1/3	1293	1080	-	-	-	11.8	109.4	-	121.2	337.5	21.5	109.4	131.0
2/1+2/2	1479	1228	-	-	-	10.4	128.4	-	138.8	337.8	26.2	128.4	154.6
2/3+2/4	892	892	-	-	-	2.1	0.5	-	2.6	10.4	4.5	0.5	5.0
3/2+3/1	478	478	-	-	-	1.7	0.2	-	1.9	14.2	2.9	0.2	3.1
3/3	839	754	-	-	-	6.5	46.9	-	53.4	229.2	14.4	46.9	61.3
4/1+4/2	258	258	-	-	-	1.6	0.4	-	2.0	27.7	1.9	0.4	2.3
4/3+4/4	460	460	-	-	-	3.0	2.0	-	5.0	39.2	3.6	2.0	5.7
5/1	553	553	-	-	-	1.3	1.0	-	2.3	15.2	4.5	1.0	5.5
5/2	539	539	-	-	-	1.5	0.8	-	2.3	15.2	5.5	0.8	6.3
5/3	122	122	-	-	-	0.3	0.1	-	0.4	11.7	0.5	0.1	0.6
6/1	518	518	-	-	-	1.1	1.7	-	2.8	19.7	6.2	1.7	7.9
6/2	564	564	-	-	-	1.2	1.8	-	3.0	19.4	6.7	1.8	8.6
6/3	119	119	-	-	-	0.1	0.1	-	0.2	7.0	0.6	0.1	0.7
7/1	68	68	-	-	-	0.3	0.0	-	0.3	15.6	1.0	0.0	1.1
7/2	322	322	-	-	-	0.5	0.2	-	0.7	8.3	1.4	0.2	1.7
7/3	465	465	-	-	-	0.4	0.4	-	0.8	6.2	0.8	0.4	1.2
7/4	427	427	-	-	-	0.3	0.4	-	0.8	6.3	0.7	0.4	1.1
8/1	658	658	-	-	-	0.4	0.4	-	0.9	4.7	5.8	0.4	6.2
8/2	688	688	-	-	-	0.4	0.4	-	0.8	4.2	5.1	0.4	5.5
8/3	754	754	-	-	-	1.1	0.6	-	1.7	8.1	4.0	0.6	4.6
9/1	553	553	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	539	539	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	997	997	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

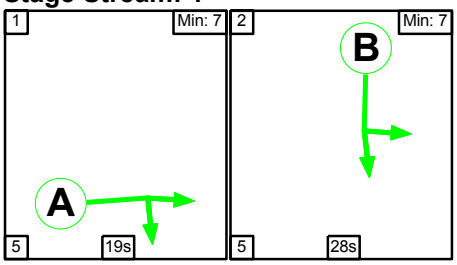
10/2	1043	1043	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	80	80	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	334	334	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	820	820	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1652	1652	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	539	539	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-33.0	Total Delay for Signalled Lanes (pcuHr):	126.22	Cycle Time (s):	56
C1	Stream: 2 PRC for Signalled Lanes (%):	-33.8	Total Delay for Signalled Lanes (pcuHr):	147.45	Cycle Time (s):	56
C1	Stream: 3 PRC for Signalled Lanes (%):	-23.6	Total Delay for Signalled Lanes (pcuHr):	57.88	Cycle Time (s):	56
C1	Stream: 4 PRC for Signalled Lanes (%):	2.2	Total Delay for Signalled Lanes (pcuHr):	10.35	Cycle Time (s):	56
	PRC Over All Lanes (%):	-33.8	Total Delay Over All Lanes(pcuHr):	342.52		

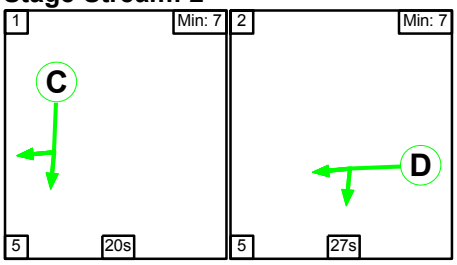
Full Input Data And Results
Scenario 8: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

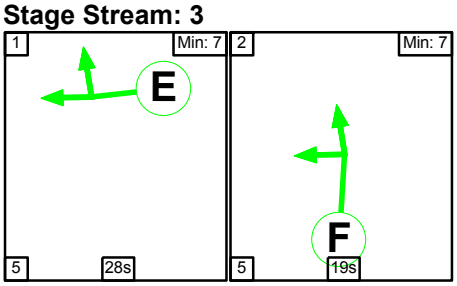
Stage Stream: 1



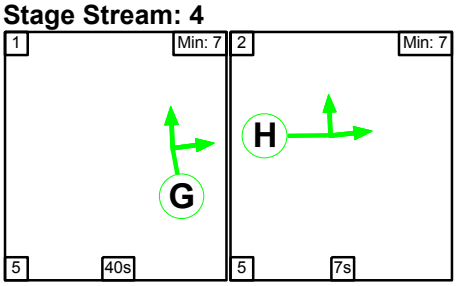
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	28
Change Point	39	6

Stage Stream: 2

Stage	1	2
Duration	20	27
Change Point	10	35

Stage Stream: 3

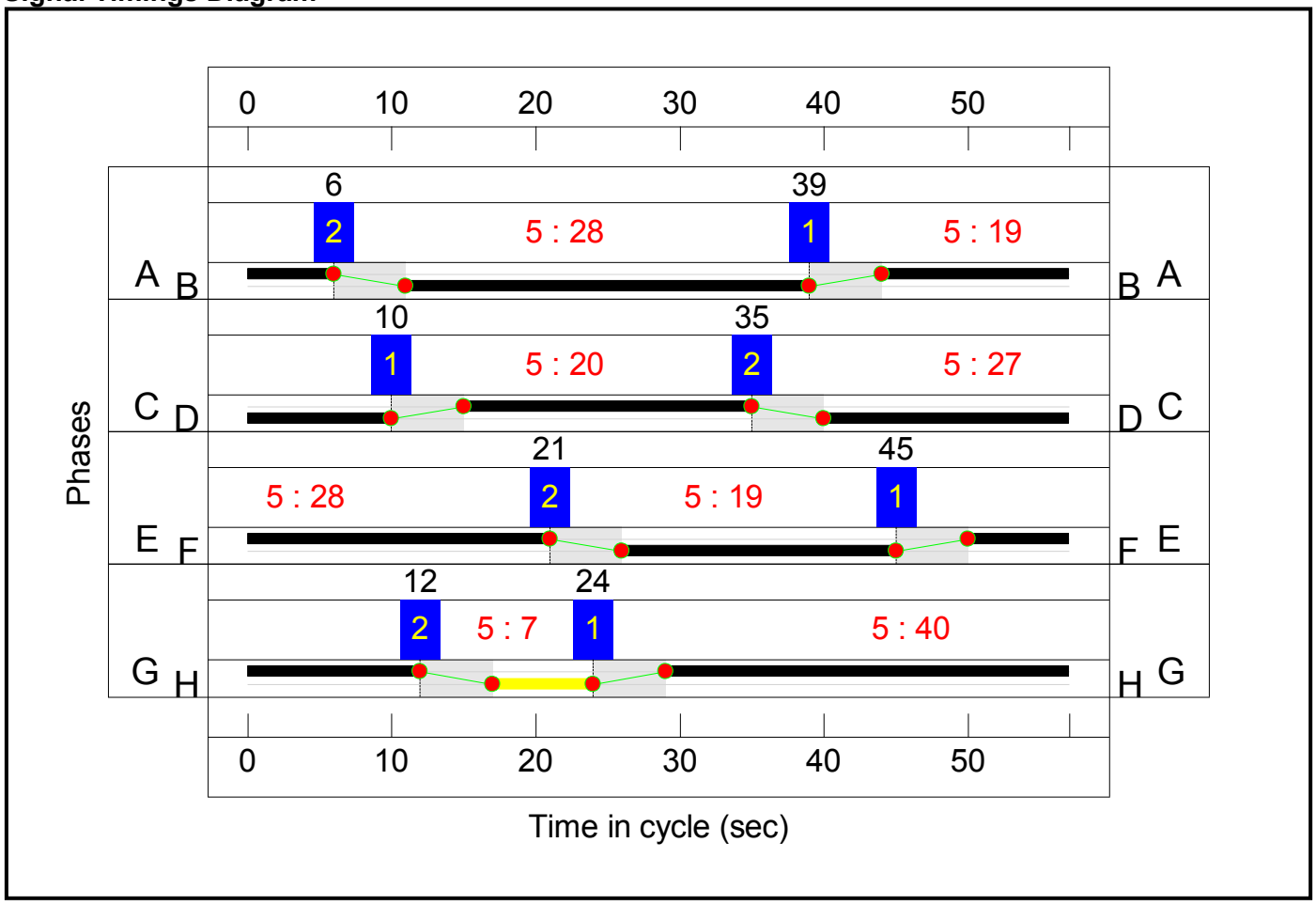
Stage	1	2
Duration	28	19
Change Point	45	21

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	40	7
Change Point	24	12

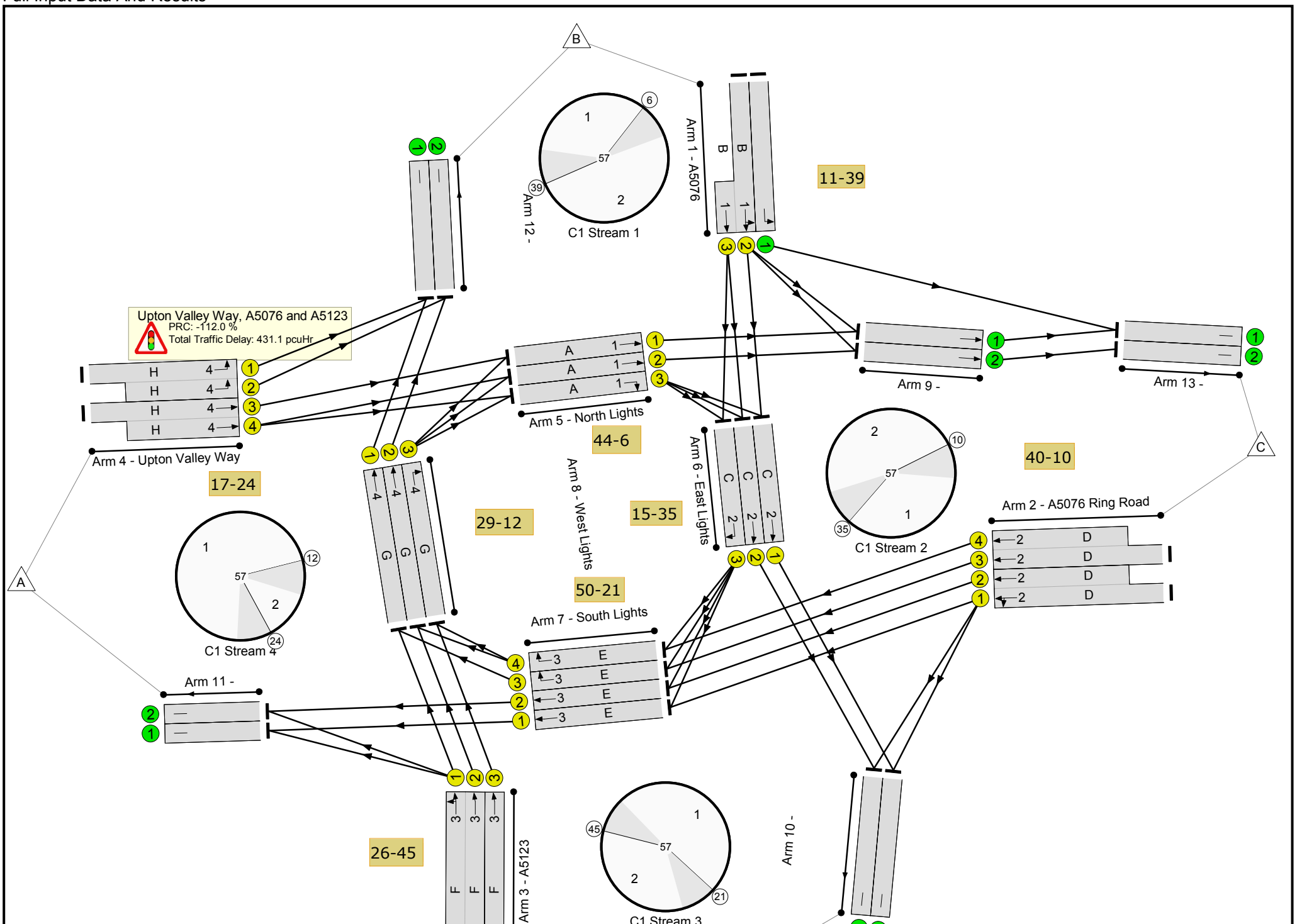
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**190.8%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**190.8%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	903	1990	1990	45.4%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	28	-	1090	1966:1966	494+697	91.6 : 91.6%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	27	-	1158	1880:2028	892+586	78.3 : 78.3%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	27	-	1274	2028:1891	917+851	72.1 : 72.1%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	19	-	1437	2050:1912	719+671	103.4 : 103.3%
3/3	A5123 Ahead	U	3	N/A	F		1	19	-	1346	2011	706	190.8%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	0	2015:2105	283+295	0.0 : 0.0%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	195	2061:1923	263+270	32.3 : 40.8%
5/1	North Lights Ahead	U	1	N/A	A		1	19	-	737	2015	707	60.4%
5/2	North Lights Ahead	U	1	N/A	A		1	19	-	784	2102	738	61.5%
5/3	North Lights Right	U	1	N/A	A		1	19	-	20	1908	669	3.0%
6/1	East Lights Ahead	U	2	N/A	C		1	20	-	456	1966	724	63.0%
6/2	East Lights Ahead	U	2	N/A	C		1	20	-	494	2102	774	63.8%
6/3	East Lights Right	U	2	N/A	C		1	20	-	160	2099	773	20.7%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	172	1940	987	17.4%
7/2	South Lights Ahead	U	3	N/A	E		1	28	-	501	2101	1069	46.9%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	661	2095	1066	62.0%
7/4	South Lights Right	U	3	N/A	E		1	28	-	613	1959	997	61.5%
8/1	West Lights Ahead	U	4	N/A	G		1	40	-	1245	2016	1450	84.6%
8/2	West Lights Ahead	U	4	N/A	G		1	40	-	1357	2153	1549	86.0%
8/3	West Lights Right	U	4	N/A	G		1	40	-	1346	1980	1424	49.5%
9/1	Ahead	U	N/A	N/A	-		-	-	-	737	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	778	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	817	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	556	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1245	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1357	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1640	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**55.4**	**375.7**	**0.0**	**431.1**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**55.4**	**375.7**	**0.0**	**431.1**	**-**	**-**	**-**	**-**
1/1	903	903	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
1/2+1/3	1090	1090	-	-	-	3.3	4.9	-	8.3	27.3	12.3	4.9	17.2
2/1+2/2	1158	1158	-	-	-	3.5	1.8	-	5.3	16.4	8.9	1.8	10.7
2/3+2/4	1274	1274	-	-	-	3.9	1.3	-	5.2	14.6	7.9	1.3	9.2
3/2+3/1	1437	1390	-	-	-	8.4	34.0	-	42.4	106.1	12.2	34.0	46.2
3/3	1346	706	-	-	-	27.3	321.2	-	348.5	932.2	38.2	321.2	359.5
4/1+4/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3+4/4	195	195	-	-	-	1.2	0.3	-	1.5	27.5	1.6	0.3	1.8
5/1	427	427	-	-	-	0.7	0.8	-	1.5	12.3	4.0	0.8	4.7
5/2	454	454	-	-	-	0.7	0.8	-	1.5	12.2	4.2	0.8	5.0
5/3	20	20	-	-	-	0.1	0.0	-	0.1	20.3	0.3	0.0	0.3
6/1	456	456	-	-	-	1.2	0.8	-	2.1	16.4	3.9	0.8	4.7
6/2	494	494	-	-	-	1.4	0.9	-	2.2	16.3	3.1	0.9	4.0
6/3	160	160	-	-	-	0.4	0.1	-	0.5	12.0	0.7	0.1	0.9
7/1	172	172	-	-	-	0.6	0.1	-	0.7	14.9	1.9	0.1	2.0
7/2	501	501	-	-	-	0.5	0.4	-	0.9	6.6	5.6	0.4	6.0
7/3	661	661	-	-	-	0.3	0.8	-	1.1	6.0	7.9	0.8	8.7
7/4	613	613	-	-	-	0.3	0.8	-	1.1	6.3	7.3	0.8	8.1
8/1	1226	1226	-	-	-	0.9	2.7	-	3.6	10.5	6.7	2.7	9.4
8/2	1332	1332	-	-	-	0.8	3.0	-	3.8	10.2	7.2	3.0	10.2
8/3	706	706	-	-	-	0.0	0.5	-	0.5	2.5	5.6	0.5	6.1
9/1	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	778	778	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

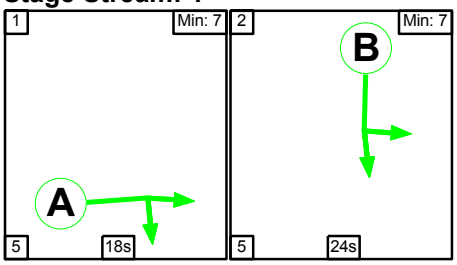
10/2	817	817	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	554	554	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1226	1226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1332	1332	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1330	1330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-1.7	Total Delay for Signalled Lanes (pcuHr):	11.37	Cycle Time (s):	57
C1	Stream: 2 PRC for Signalled Lanes (%):	14.9	Total Delay for Signalled Lanes (pcuHr):	15.28	Cycle Time (s):	57
C1	Stream: 3 PRC for Signalled Lanes (%):	-112.0	Total Delay for Signalled Lanes (pcuHr):	394.71	Cycle Time (s):	57
C1	Stream: 4 PRC for Signalled Lanes (%):	4.6	Total Delay for Signalled Lanes (pcuHr):	9.33	Cycle Time (s):	57
	PRC Over All Lanes (%):	-112.0	Total Delay Over All Lanes(pcuHr):	431.11		

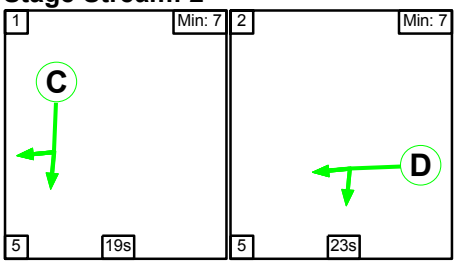
Full Input Data And Results
Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

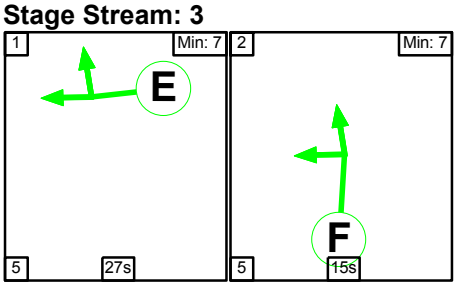
Stage Stream: 1



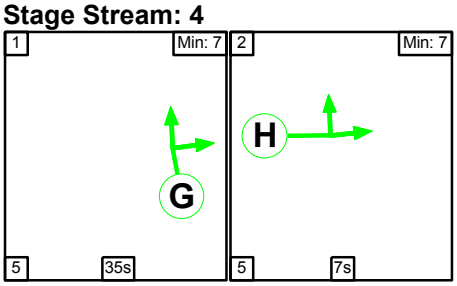
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	24
Change Point	43	14

Stage Stream: 2

Stage	1	2
Duration	19	23
Change Point	21	45

Stage Stream: 3

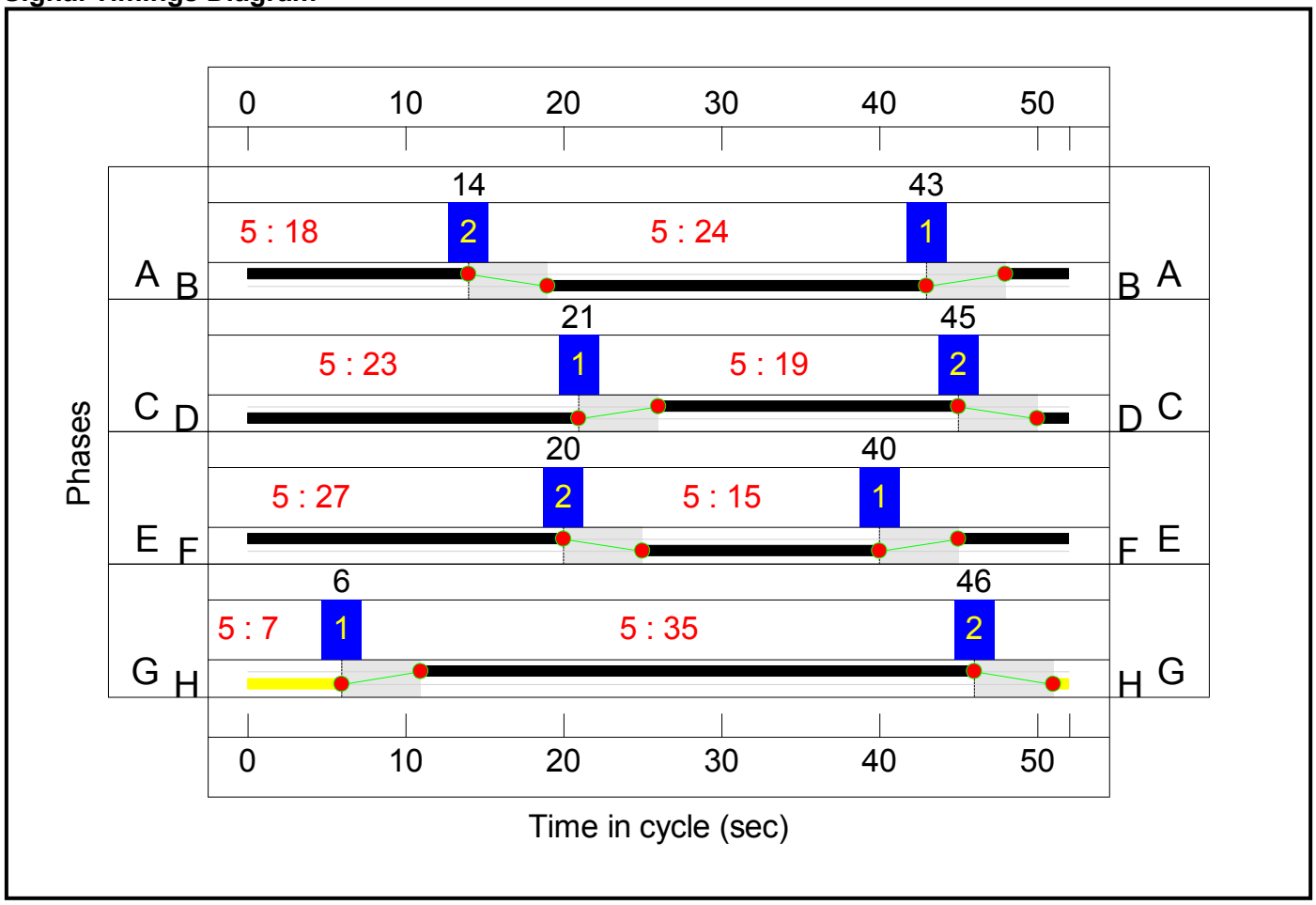
Stage	1	2
Duration	27	15
Change Point	40	20

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	35	7
Change Point	6	46

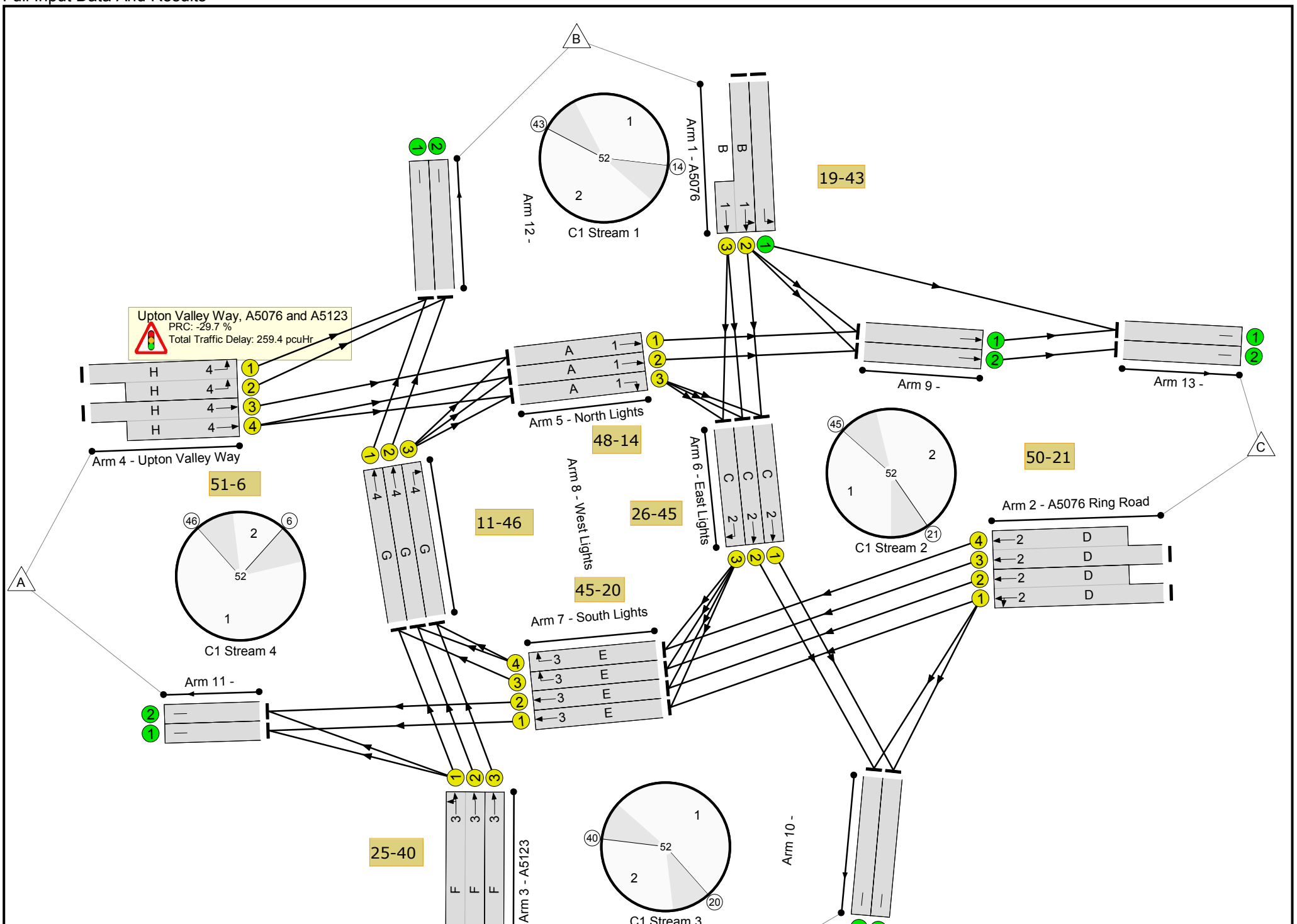
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.8%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.8%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	1044	1990	1990	52.5%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	24	-	1338	1966:1966	464+682	116.8 : 116.8%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	23	-	1383	1879:2028	867+537	98.5 : 98.5%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	23	-	1033	2028:1891	924+873	57.3 : 57.6%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	15	-	517	2050:1913	631+589	44.4 : 40.3%
3/3	A5123 Ahead	U	3	N/A	F		1	15	-	714	2011	619	115.4%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	294	1970:2055	303+316	47.5 : 47.4%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	696	2061:1923	317+296	113.5 : 113.6%
5/1	North Lights Ahead	U	1	N/A	A		1	18	-	649	2015	736	77.1%
5/2	North Lights Ahead	U	1	N/A	A		1	18	-	667	2102	768	75.7%
5/3	North Lights Right	U	1	N/A	A		1	18	-	95	1908	697	12.0%
6/1	East Lights Ahead	U	2	N/A	C		1	19	-	591	1966	756	67.1%
6/2	East Lights Ahead	U	2	N/A	C		1	19	-	652	2102	808	69.2%
6/3	East Lights Right	U	2	N/A	C		1	19	-	190	2099	807	20.2%
7/1	South Lights Ahead	U	3	N/A	E		1	27	-	170	1940	1045	14.0%
7/2	South Lights Ahead	U	3	N/A	E		1	27	-	549	2101	1131	48.3%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	27	-	530	2095	1128	47.0%
7/4	South Lights Right	U	3	N/A	E		1	27	-	503	1959	1055	47.7%
8/1	West Lights Ahead	U	4	N/A	G		1	35	-	745	2016	1396	53.4%
8/2	West Lights Ahead	U	4	N/A	G		1	35	-	782	2153	1491	52.5%
8/3	West Lights Right	U	4	N/A	G		1	35	-	715	1980	1371	45.2%
9/1	Ahead	U	N/A	N/A	-		-	-	-	649	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	667	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1018	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1079	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	181	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	560	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	932	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1693	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	667	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**39.1**	**220.4**	**0.0**	**259.4**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**39.1**	**220.4**	**0.0**	**259.4**	**-**	**-**	**-**	**-**
1/1	1044	1044	-	-	-	0.0	0.6	-	0.6	1.9	0.0	0.6	0.6
1/2+1/3	1338	1146	-	-	-	8.3	99.4	-	107.6	289.6	20.5	99.4	119.8
2/1+2/2	1383	1383	-	-	-	4.8	14.0	-	18.8	48.9	12.1	14.0	26.1
2/3+2/4	1033	1033	-	-	-	2.9	0.7	-	3.6	12.6	5.4	0.7	6.1
3/2+3/1	517	517	-	-	-	2.1	0.4	-	2.4	16.9	3.2	0.4	3.6
3/3	714	619	-	-	-	5.4	51.1	-	56.5	285.0	11.7	51.1	62.8
4/1+4/2	294	294	-	-	-	1.6	0.5	-	2.1	25.6	2.0	0.5	2.4
4/3+4/4	696	613	-	-	-	6.5	45.4	-	51.9	268.6	5.8	45.4	51.2
5/1	568	568	-	-	-	0.9	1.6	-	2.5	16.0	3.9	1.6	5.6
5/2	582	582	-	-	-	1.1	1.5	-	2.7	16.6	5.5	1.5	7.1
5/3	84	84	-	-	-	0.1	0.1	-	0.2	6.5	0.1	0.1	0.2
6/1	507	507	-	-	-	1.1	1.0	-	2.1	14.7	4.7	1.0	5.7
6/2	559	559	-	-	-	1.1	1.1	-	2.2	14.2	4.9	1.1	6.0
6/3	163	163	-	-	-	0.3	0.1	-	0.4	8.8	0.7	0.1	0.8
7/1	146	146	-	-	-	0.3	0.1	-	0.3	8.2	1.7	0.1	1.8
7/2	546	546	-	-	-	0.6	0.5	-	1.0	6.9	1.6	0.5	2.1
7/3	530	530	-	-	-	0.5	0.4	-	1.0	6.7	1.4	0.4	1.8
7/4	503	503	-	-	-	0.5	0.5	-	1.0	7.0	1.3	0.5	1.8
8/1	745	745	-	-	-	0.3	0.6	-	0.9	4.4	3.4	0.6	4.0
8/2	782	782	-	-	-	0.3	0.6	-	0.9	4.0	2.5	0.6	3.0
8/3	620	620	-	-	-	0.3	0.4	-	0.8	4.4	3.3	0.4	3.7
9/1	568	568	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	582	582	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	934	934	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

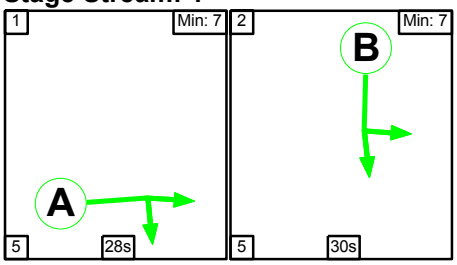
10/2	986	986	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	157	157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	557	557	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	889	889	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	932	932	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1612	1612	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	582	582	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-29.7	Total Delay for Signalled Lanes (pcuHr):	112.98	Cycle Time (s):	52
C1	Stream: 2 PRC for Signalled Lanes (%):	-9.4	Total Delay for Signalled Lanes (pcuHr):	27.07	Cycle Time (s):	52
C1	Stream: 3 PRC for Signalled Lanes (%):	-28.2	Total Delay for Signalled Lanes (pcuHr):	62.29	Cycle Time (s):	52
C1	Stream: 4 PRC for Signalled Lanes (%):	-26.2	Total Delay for Signalled Lanes (pcuHr):	56.56	Cycle Time (s):	52
	PRC Over All Lanes (%):	-29.7	Total Delay Over All Lanes(pcuHr):	259.44		

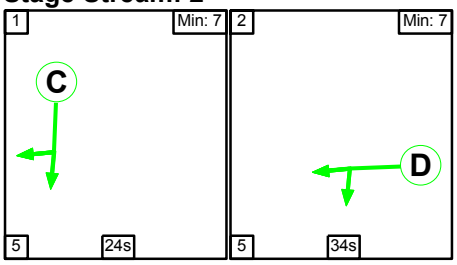
Full Input Data And Results
Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

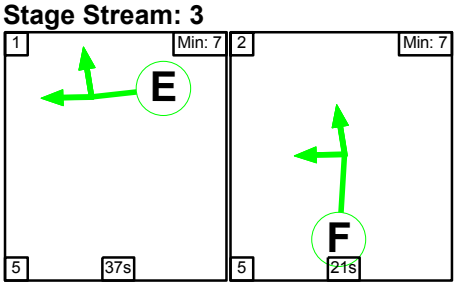
Stage Stream: 1



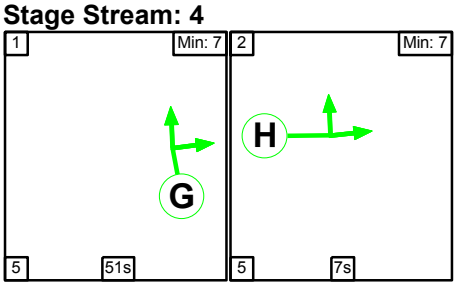
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	28	30
Change Point	23	56

Stage Stream: 2

Stage	1	2
Duration	24	34
Change Point	2	31

Stage Stream: 3

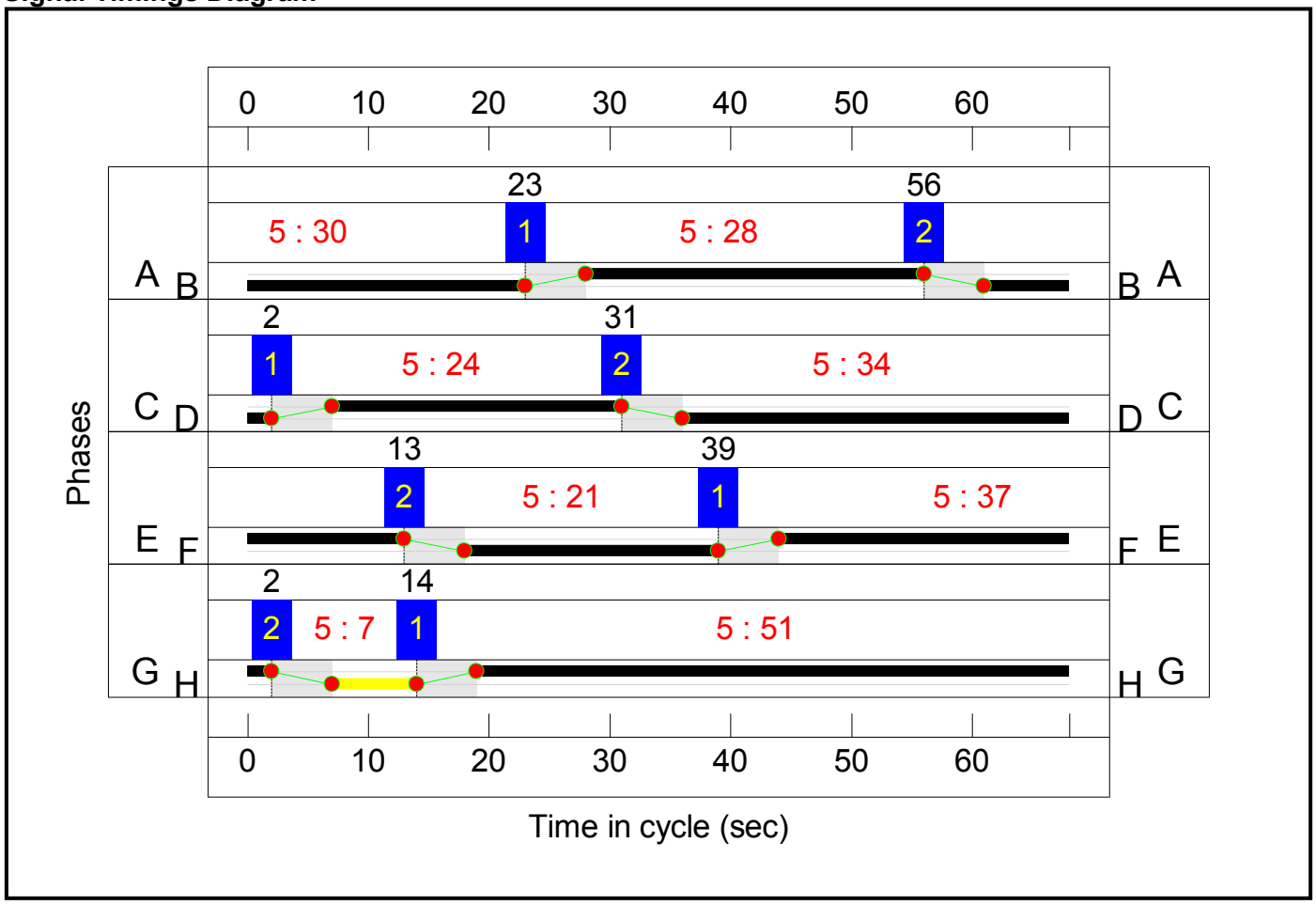
Stage	1	2
Duration	37	21
Change Point	39	13

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	51	7
Change Point	14	2

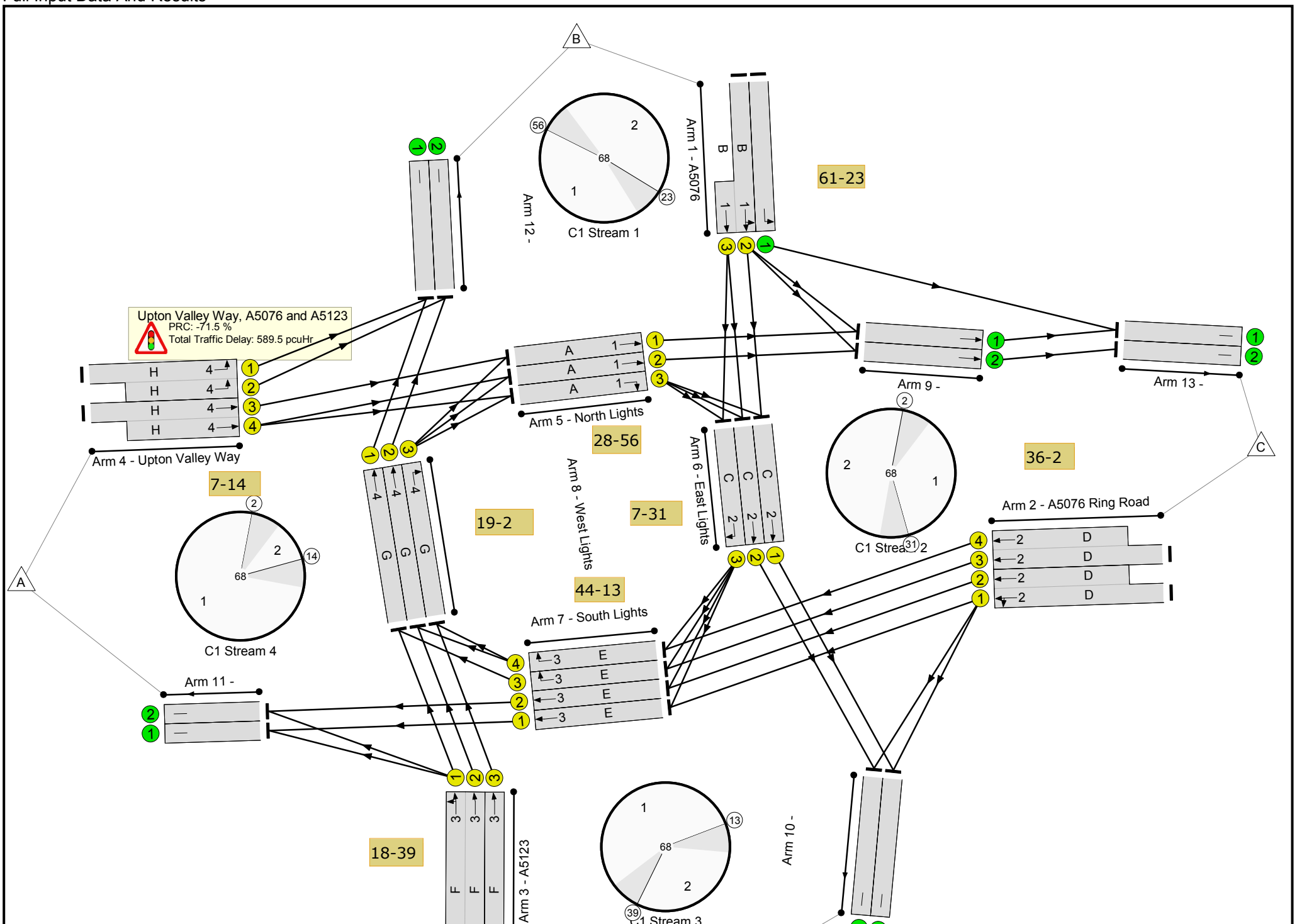
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**154.3%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**154.3%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	875	1990	1990	44.0%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	30	-	1093	1966:1966	427+624	104.0 : 104.0%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	34	-	1647	1880:2028	900+372	129.5 : 129.5%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	34	-	1539	2028:1891	868+832	90.6 : 90.6%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	21	-	1024	2050:1913	663+580	84.6 : 79.9%
3/3	A5123 Ahead	U	3	N/A	F		1	21	-	1004	2011	651	154.3%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	17	1970:2055	232+242	3.5 : 3.7%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	666	2061:1923	242+226	141.9 : 142.3%
5/1	North Lights Ahead	U	1	N/A	A		1	28	-	782	2015	859	61.4%
5/2	North Lights Ahead	U	1	N/A	A		1	28	-	820	2102	896	61.4%
5/3	North Lights Right	U	1	N/A	A		1	28	-	89	1908	814	7.7%
6/1	East Lights Ahead	U	2	N/A	C		1	24	-	480	1966	723	62.5%
6/2	East Lights Ahead	U	2	N/A	C		1	24	-	529	2102	773	64.6%
6/3	East Lights Right	U	2	N/A	C		1	24	-	173	2099	772	20.9%
7/1	South Lights Ahead	U	3	N/A	E		1	37	-	224	1940	1084	17.6%
7/2	South Lights Ahead	U	3	N/A	E		1	37	-	558	2101	1174	37.6%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	37	-	786	2095	1171	67.1%
7/4	South Lights Right	U	3	N/A	E		1	37	-	754	1959	1095	68.9%
8/1	West Lights Ahead	U	4	N/A	G		1	51	-	1238	2016	1542	80.3%
8/2	West Lights Ahead	U	4	N/A	G		1	51	-	1294	2153	1646	78.6%
8/3	West Lights Right	U	4	N/A	G		1	51	-	1025	1980	1514	44.4%
9/1	Ahead	U	N/A	N/A	-		-	-	-	782	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	998	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1048	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	229	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1246	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1303	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1657	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**73.6**	**515.9**	**0.0**	**589.5**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**73.6**	**515.9**	**0.0**	**589.5**	**-**	**-**	**-**	**-**
1/1	875	875	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
1/2+1/3	1093	1051	-	-	-	6.6	30.3	-	36.8	121.3	19.6	30.3	49.9
2/1+2/2	1647	1272	-	-	-	19.4	189.8	-	209.2	457.2	35.2	189.8	225.0
2/3+2/4	1539	1539	-	-	-	5.6	4.5	-	10.2	23.8	11.6	4.5	16.1
3/2+3/1	1024	1024	-	-	-	6.0	2.3	-	8.3	29.1	9.8	2.3	12.1
3/3	1004	651	-	-	-	16.8	178.1	-	194.9	698.7	25.6	178.1	203.7
4/1+4/2	17	17	-	-	-	0.1	0.0	-	0.1	30.9	0.2	0.0	0.2
4/3+4/4	666	469	-	-	-	12.3	100.3	-	112.6	608.8	9.4	100.3	109.7
5/1	528	528	-	-	-	1.1	0.8	-	1.9	13.0	5.9	0.8	6.7
5/2	550	550	-	-	-	0.9	0.8	-	1.7	10.9	4.4	0.8	5.1
5/3	63	63	-	-	-	0.2	0.0	-	0.2	12.5	1.2	0.0	1.2
6/1	452	452	-	-	-	0.8	0.8	-	1.6	12.8	5.2	0.8	6.0
6/2	499	499	-	-	-	0.8	0.9	-	1.7	12.1	5.9	0.9	6.8
6/3	162	162	-	-	-	0.2	0.1	-	0.4	8.2	1.3	0.1	1.4
7/1	190	190	-	-	-	0.5	0.1	-	0.6	12.2	1.8	0.1	1.9
7/2	441	441	-	-	-	0.6	0.3	-	0.9	7.0	5.9	0.3	6.2
7/3	786	786	-	-	-	0.0	1.0	-	1.1	4.9	2.4	1.0	3.4
7/4	754	754	-	-	-	0.1	1.1	-	1.2	5.5	2.7	1.1	3.8
8/1	1238	1238	-	-	-	0.8	2.0	-	2.9	8.3	8.4	2.0	10.5
8/2	1294	1294	-	-	-	0.8	1.8	-	2.6	7.2	6.0	1.8	7.8
8/3	672	672	-	-	-	0.0	0.4	-	0.4	2.3	6.7	0.4	7.1
9/1	528	528	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	550	550	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	852	852	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

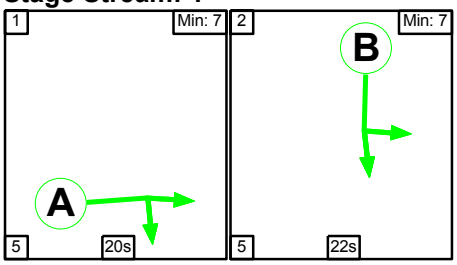
10/2	900	900	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	195	195	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	447	447	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1246	1246	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1303	1303	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1403	1403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	550	550	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-15.6	Total Delay for Signalled Lanes (pcuHr):	40.61	Cycle Time (s):	68
C1	Stream: 2 PRC for Signalled Lanes (%):	-43.9	Total Delay for Signalled Lanes (pcuHr):	223.01	Cycle Time (s):	68
C1	Stream: 3 PRC for Signalled Lanes (%):	-71.5	Total Delay for Signalled Lanes (pcuHr):	206.85	Cycle Time (s):	68
C1	Stream: 4 PRC for Signalled Lanes (%):	-58.1	Total Delay for Signalled Lanes (pcuHr):	118.65	Cycle Time (s):	68
	PRC Over All Lanes (%):	-71.5	Total Delay Over All Lanes(pcuHr):	589.52		

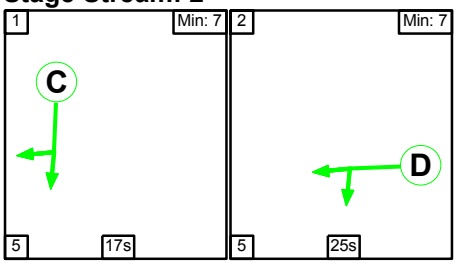
Full Input Data And Results
Scenario 11: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

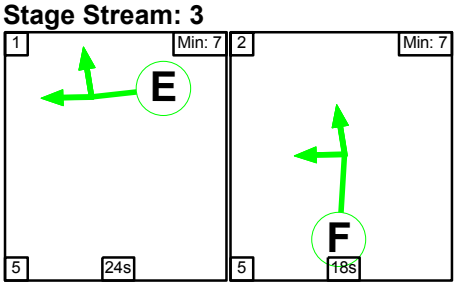
Stage Stream: 1



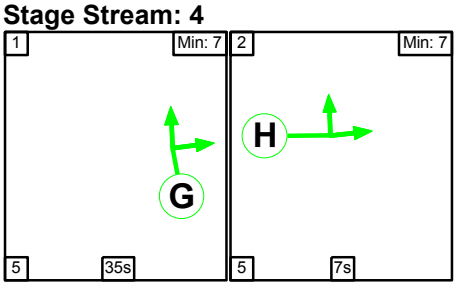
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	22
Change Point	40	13

Stage Stream: 2

Stage	1	2
Duration	17	25
Change Point	23	45

Stage Stream: 3

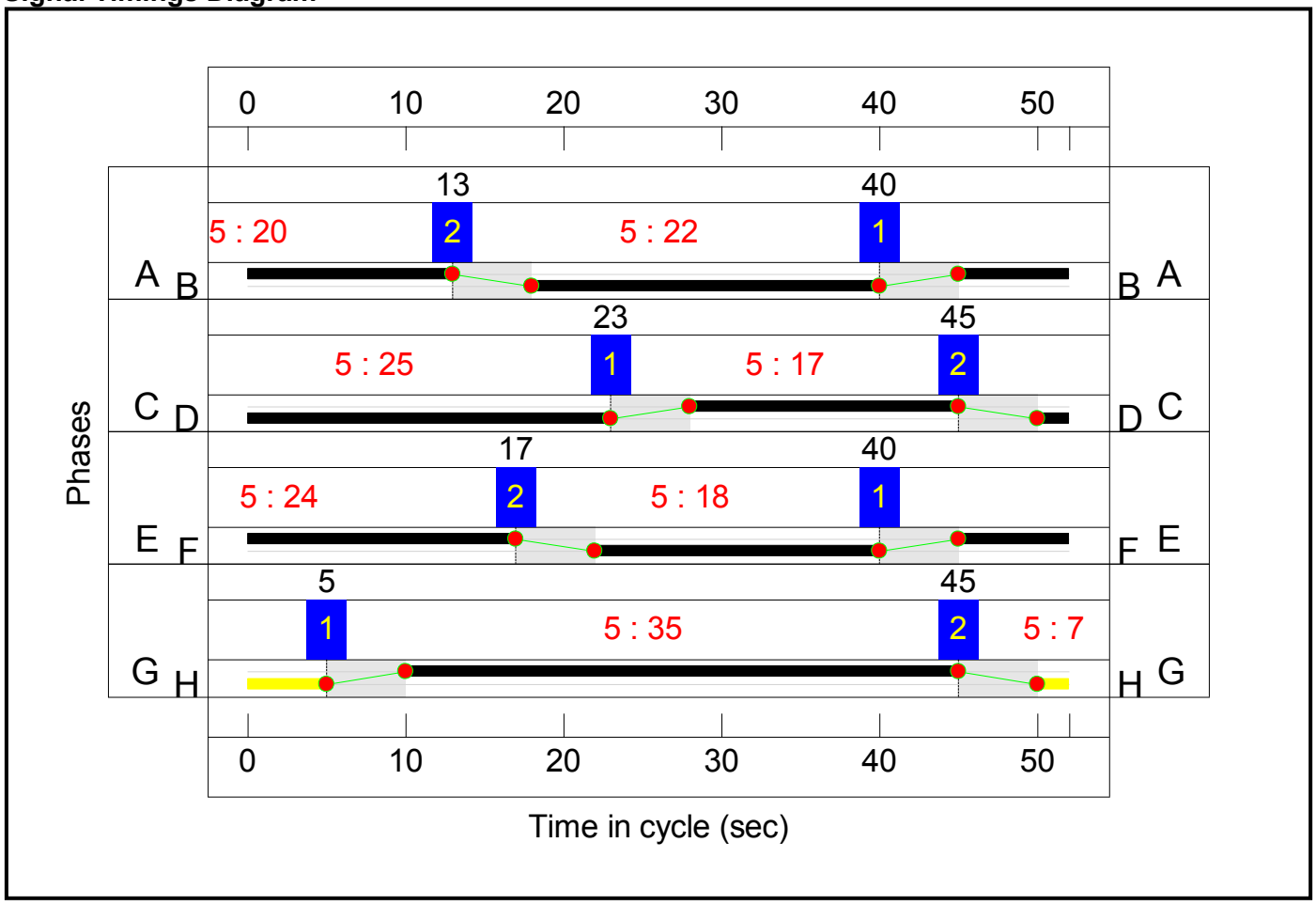
Stage	1	2
Duration	24	18
Change Point	40	17

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	35	7
Change Point	5	45

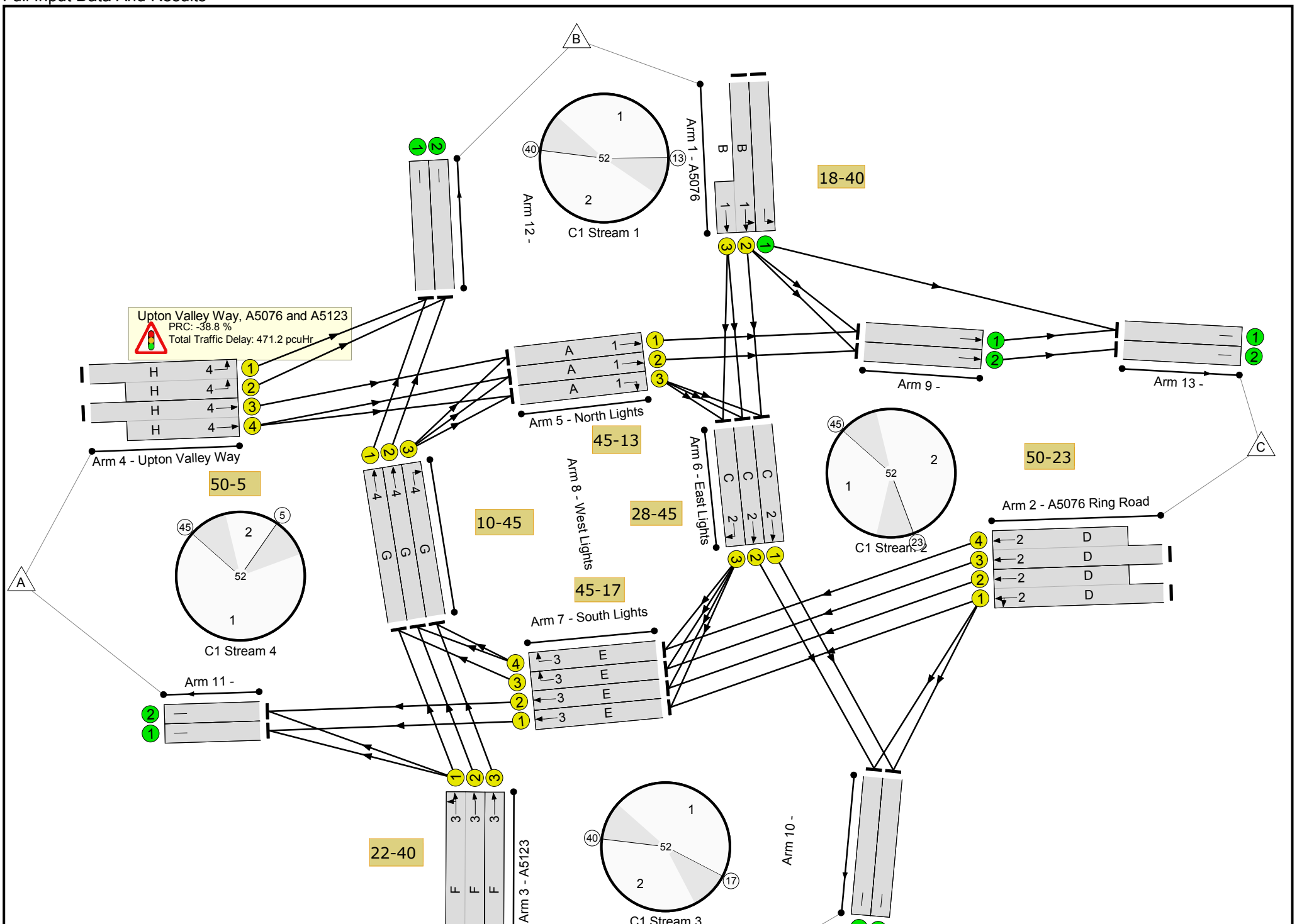
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**124.9%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**124.9%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	991	1990	1990	49.8%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	22	-	1363	1966:1966	470+621	124.9 : 124.9%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	25	-	1611	1879:2028	939+366	123.4 : 123.4%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	25	-	880	2028:1891	966+902	47.1 : 47.1%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	18	-	695	2050:1913	749+699	50.1 : 45.8%
3/3	A5123 Ahead	U	3	N/A	F		1	18	-	865	2011	735	117.7%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	279	1970:2055	303+316	45.2 : 44.9%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	701	2061:1923	317+296	113.9 : 114.9%
5/1	North Lights Ahead	U	1	N/A	A		1	20	-	721	2015	814	76.6%
5/2	North Lights Ahead	U	1	N/A	A		1	20	-	711	2102	849	71.7%
5/3	North Lights Right	U	1	N/A	A		1	20	-	139	1908	771	15.7%
6/1	East Lights Ahead	U	2	N/A	C		1	17	-	650	1966	681	77.1%
6/2	East Lights Ahead	U	2	N/A	C		1	17	-	709	2102	728	78.7%
6/3	East Lights Right	U	2	N/A	C		1	17	-	143	2099	727	15.8%
7/1	South Lights Ahead	U	3	N/A	E		1	24	-	136	1940	933	11.7%
7/2	South Lights Ahead	U	3	N/A	E		1	24	-	459	2101	1010	36.8%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	24	-	455	2095	1007	45.2%
7/4	South Lights Right	U	3	N/A	E		1	24	-	425	1959	942	45.1%
8/1	West Lights Ahead	U	4	N/A	G		1	35	-	743	2016	1396	53.2%
8/2	West Lights Ahead	U	4	N/A	G		1	35	-	795	2153	1491	53.3%
8/3	West Lights Right	U	4	N/A	G		1	35	-	870	1980	1371	54.0%
9/1	Ahead	U	N/A	N/A	-		-	-	-	721	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1229	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1289	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	152	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	475	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	880	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	937	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1712	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**50.6**	**420.6**	**0.0**	**471.2**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**50.6**	**420.6**	**0.0**	**471.2**	**-**	**-**	**-**	**-**
1/1	991	991	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
1/2+1/3	1363	1091	-	-	-	10.5	138.3	-	148.8	393.0	21.7	138.3	160.0
2/1+2/2	1611	1306	-	-	-	12.9	155.1	-	168.0	375.4	27.6	155.1	182.8
2/3+2/4	880	880	-	-	-	2.1	0.4	-	2.5	10.2	4.2	0.4	4.6
3/2+3/1	695	695	-	-	-	2.5	0.5	-	2.9	15.1	4.2	0.5	4.6
3/3	865	735	-	-	-	6.5	68.3	-	74.8	311.3	14.4	68.3	82.6
4/1+4/2	279	279	-	-	-	1.6	0.4	-	2.0	25.3	1.9	0.4	2.3
4/3+4/4	701	613	-	-	-	6.7	47.7	-	54.5	279.7	5.8	47.7	53.6
5/1	623	623	-	-	-	1.0	1.6	-	2.6	15.2	4.6	1.6	6.2
5/2	609	609	-	-	-	1.3	1.3	-	2.6	15.2	6.4	1.3	7.6
5/3	121	121	-	-	-	0.1	0.1	-	0.2	6.1	0.2	0.1	0.3
6/1	525	525	-	-	-	1.0	1.7	-	2.6	18.2	5.7	1.7	7.3
6/2	572	572	-	-	-	1.0	1.8	-	2.8	17.9	6.4	1.8	8.3
6/3	115	115	-	-	-	0.1	0.1	-	0.2	7.2	0.5	0.1	0.6
7/1	109	109	-	-	-	0.2	0.1	-	0.2	7.6	1.2	0.1	1.3
7/2	372	372	-	-	-	0.3	0.3	-	0.6	5.4	0.8	0.3	1.1
7/3	455	455	-	-	-	0.8	0.4	-	1.2	9.3	1.9	0.4	2.3
7/4	425	425	-	-	-	0.7	0.4	-	1.1	9.5	1.7	0.4	2.1
8/1	743	743	-	-	-	0.4	0.6	-	1.0	4.9	4.0	0.6	4.6
8/2	795	795	-	-	-	0.4	0.6	-	1.0	4.5	3.0	0.6	3.6
8/3	740	740	-	-	-	0.5	0.6	-	1.1	5.4	4.4	0.6	5.0
9/1	623	623	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	609	609	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	994	994	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

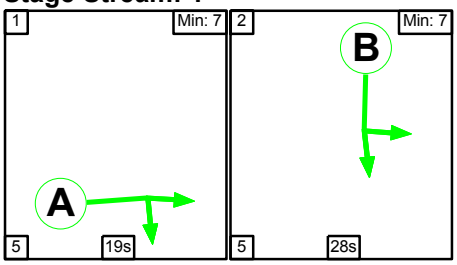
10/2	1043	1043	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	125	125	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	880	880	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	937	937	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1614	1614	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	609	609	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-38.8	Total Delay for Signalled Lanes (pcuHr):	154.18	Cycle Time (s):	52
C1	Stream: 2 PRC for Signalled Lanes (%):	-37.1	Total Delay for Signalled Lanes (pcuHr):	176.23	Cycle Time (s):	52
C1	Stream: 3 PRC for Signalled Lanes (%):	-30.8	Total Delay for Signalled Lanes (pcuHr):	80.81	Cycle Time (s):	52
C1	Stream: 4 PRC for Signalled Lanes (%):	-27.7	Total Delay for Signalled Lanes (pcuHr):	59.52	Cycle Time (s):	52
	PRC Over All Lanes (%):	-38.8	Total Delay Over All Lanes(pcuHr):	471.23		

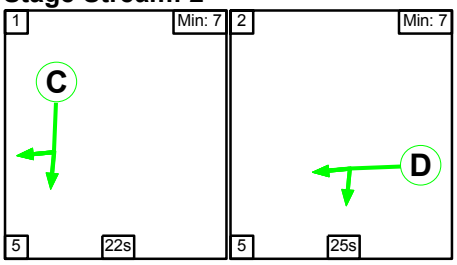
Full Input Data And Results
Scenario 12: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

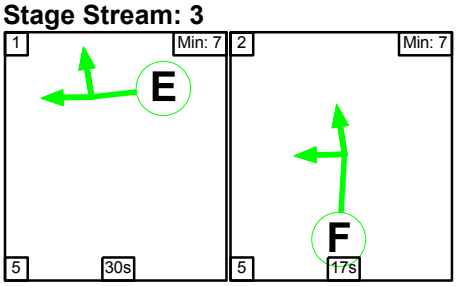
Stage Stream: 1



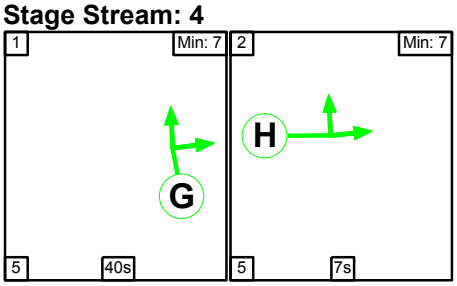
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	28
Change Point	56	23

Stage Stream: 2

Stage	1	2
Duration	22	25
Change Point	26	53

Stage Stream: 3

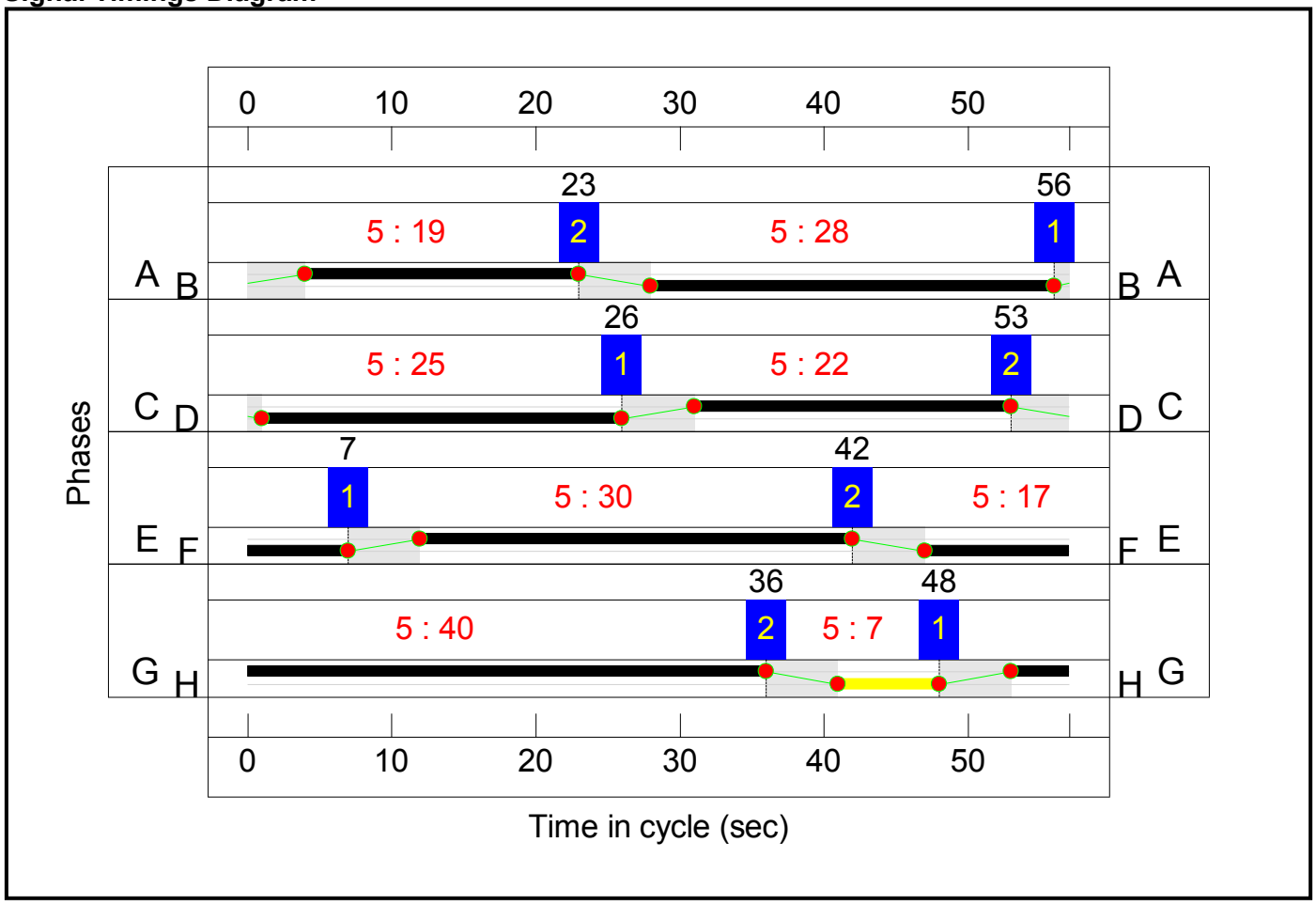
Stage	1	2
Duration	30	17
Change Point	7	42

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	40	7
Change Point	48	36

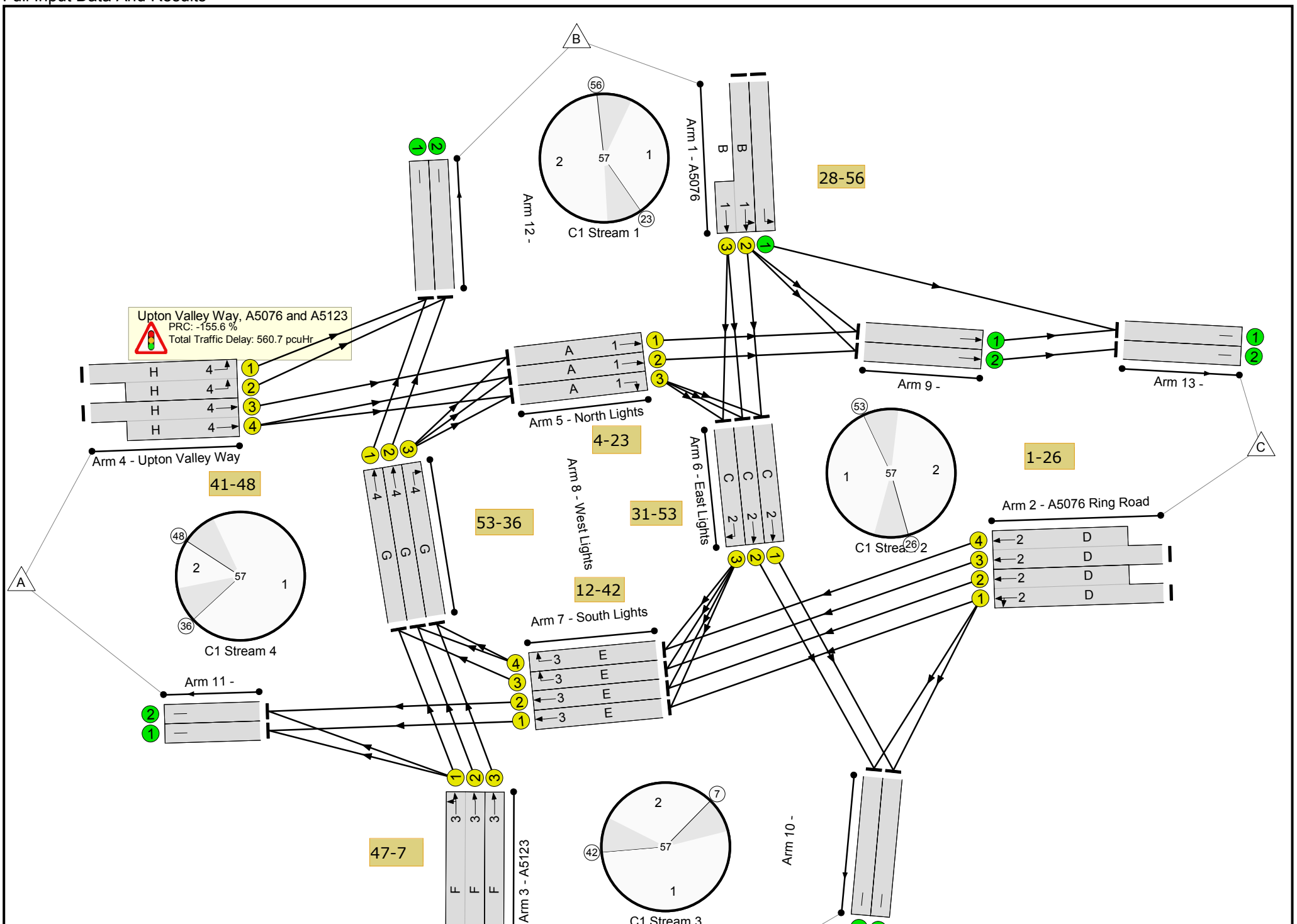
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**230.1%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**230.1%**
1/1	A5076 Left	U	N/A	N/A	-		-	-	-	857	1990	1990	43.1%
1/2+1/3	A5076 Ahead Left	U	1	N/A	B		1	28	-	1126	1966:1966	506+691	94.1 : 94.1%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	25	-	1488	1879:2028	850+615	101.6 : 101.6%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	25	-	1429	2028:1891	879+837	83.3 : 83.3%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	17	-	1293	2050:1912	647+604	103.3 : 103.3%
3/3	A5123 Ahead	U	3	N/A	F		1	17	-	1461	2011	635	230.1%
4/1+4/2	Upton Valley Way Left	U	4	N/A	H		1	7	-	0	2015:2105	283+295	0.0 : 0.0%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	326	2061:1923	252+270	56.0 : 68.5%
5/1	North Lights Ahead	U	1	N/A	A		1	19	-	852	2015	707	63.7%
5/2	North Lights Ahead	U	1	N/A	A		1	19	-	901	2102	738	64.7%
5/3	North Lights Right	U	1	N/A	A		1	19	-	34	1908	669	5.1%
6/1	East Lights Ahead	U	2	N/A	C		1	22	-	483	1966	793	60.9%
6/2	East Lights Ahead	U	2	N/A	C		1	22	-	517	2102	848	61.0%
6/3	East Lights Right	U	2	N/A	C		1	22	-	160	2099	847	18.9%
7/1	South Lights Ahead	U	3	N/A	E		1	30	-	160	1940	1055	15.2%
7/2	South Lights Ahead	U	3	N/A	E		1	30	-	636	2101	1143	54.9%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	30	-	732	2095	1139	64.2%
7/4	South Lights Right	U	3	N/A	E		1	30	-	697	1959	1065	65.4%
8/1	West Lights Ahead	U	4	N/A	G		1	40	-	1275	2016	1450	86.7%
8/2	West Lights Ahead	U	4	N/A	G		1	40	-	1366	2153	1549	86.8%
8/3	West Lights Right	U	4	N/A	G		1	40	-	1461	1980	1424	44.6%
9/1	Ahead	U	N/A	N/A	-		-	-	-	852	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	901	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	909	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	943	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	200	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	677	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1275	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1366	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1709	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	901	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**66.6**	**494.0**	**0.0**	**560.7**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**66.6**	**494.0**	**0.0**	**560.7**	**-**	**-**	**-**	**-**
1/1	857	857	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
1/2+1/3	1126	1126	-	-	-	3.5	6.7	-	10.2	32.7	13.3	6.7	20.0
2/1+2/2	1488	1467	-	-	-	6.3	25.8	-	32.1	77.7	17.2	25.8	43.0
2/3+2/4	1429	1429	-	-	-	5.3	2.4	-	7.7	19.4	9.8	2.4	12.2
3/2+3/1	1293	1251	-	-	-	7.8	31.3	-	39.1	108.8	10.7	31.3	42.0
3/3	1461	635	-	-	-	34.0	413.9	-	447.8	1103.4	45.2	413.9	459.1
4/1+4/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3+4/4	326	326	-	-	-	2.1	0.8	-	2.9	32.2	2.8	0.8	3.6
5/1	450	450	-	-	-	0.8	0.9	-	1.7	13.2	4.0	0.9	4.9
5/2	477	477	-	-	-	0.8	0.9	-	1.7	13.0	4.3	0.9	5.2
5/3	34	34	-	-	-	0.1	0.0	-	0.1	12.4	0.5	0.0	0.6
6/1	483	483	-	-	-	1.2	0.8	-	1.9	14.5	2.4	0.8	3.2
6/2	517	517	-	-	-	1.3	0.8	-	2.1	14.7	2.9	0.8	3.7
6/3	160	160	-	-	-	0.4	0.1	-	0.5	10.8	0.7	0.1	0.8
7/1	160	160	-	-	-	0.5	0.1	-	0.6	14.4	1.7	0.1	1.8
7/2	627	627	-	-	-	0.5	0.6	-	1.1	6.2	8.4	0.6	9.0
7/3	732	732	-	-	-	0.5	0.9	-	1.4	6.8	10.2	0.9	11.1
7/4	697	697	-	-	-	0.5	0.9	-	1.4	7.3	10.0	0.9	10.9
8/1	1257	1257	-	-	-	0.6	3.2	-	3.7	10.7	6.8	3.2	10.0
8/2	1344	1344	-	-	-	0.6	3.2	-	3.8	10.2	10.9	3.2	14.1
8/3	635	635	-	-	-	0.0	0.4	-	0.4	2.3	4.4	0.4	4.8
9/1	450	450	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	477	477	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	903	903	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/2	937	937	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	199	199	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	667	667	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1257	1257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1344	1344	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1307	1307	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	477	477	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

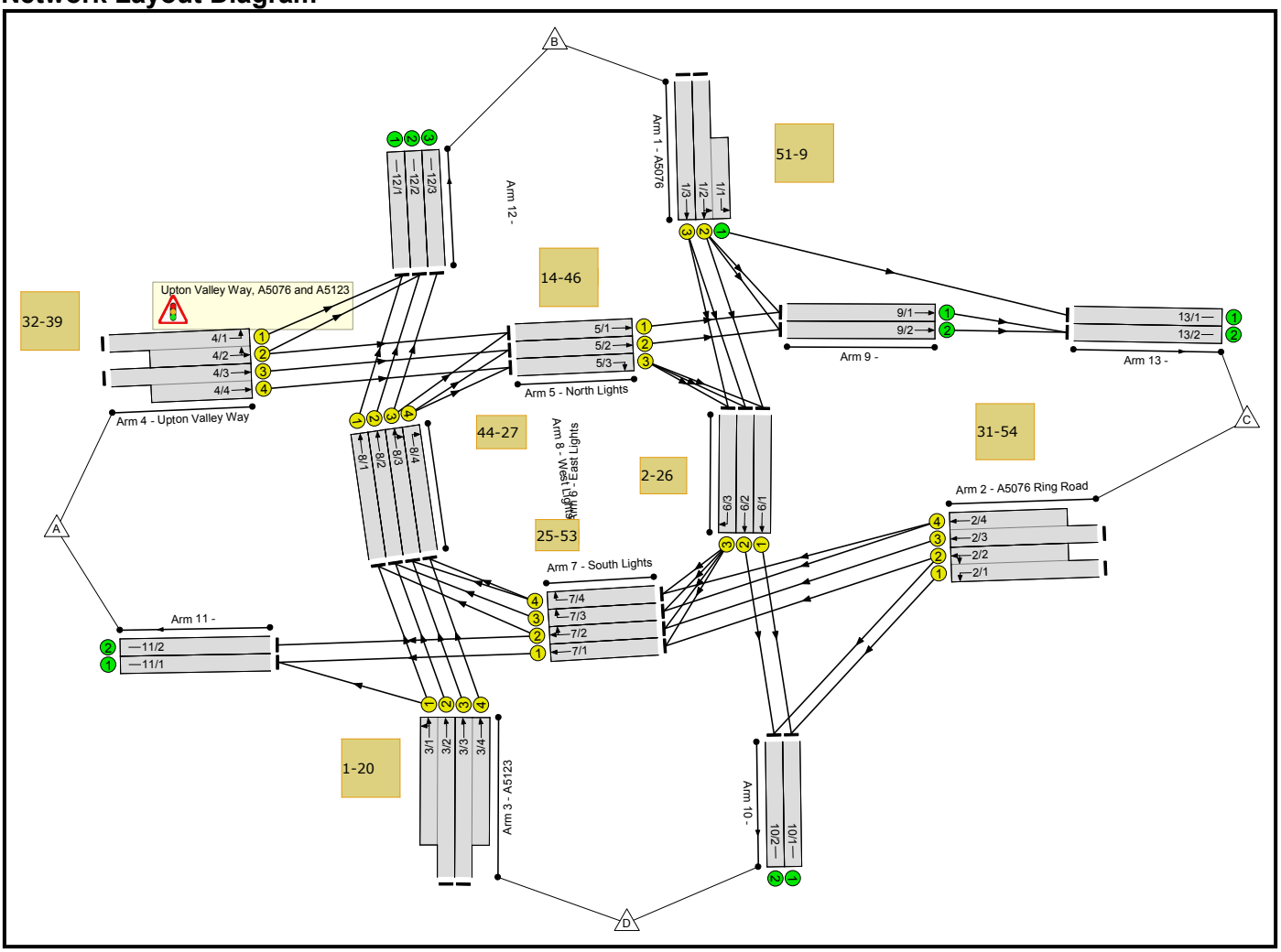
C1	Stream: 1 PRC for Signalled Lanes (%):	-4.6	Total Delay for Signalled Lanes (pcuHr):	13.72	Cycle Time (s):	57
C1	Stream: 2 PRC for Signalled Lanes (%):	-12.8	Total Delay for Signalled Lanes (pcuHr):	44.35	Cycle Time (s):	57
C1	Stream: 3 PRC for Signalled Lanes (%):	-155.6	Total Delay for Signalled Lanes (pcuHr):	491.39	Cycle Time (s):	57
C1	Stream: 4 PRC for Signalled Lanes (%):	3.7	Total Delay for Signalled Lanes (pcuHr):	10.85	Cycle Time (s):	57
	PRC Over All Lanes (%):	-155.6	Total Delay Over All Lanes(pcuHr):	560.68		

Full Input Data And Results

User and Project Details

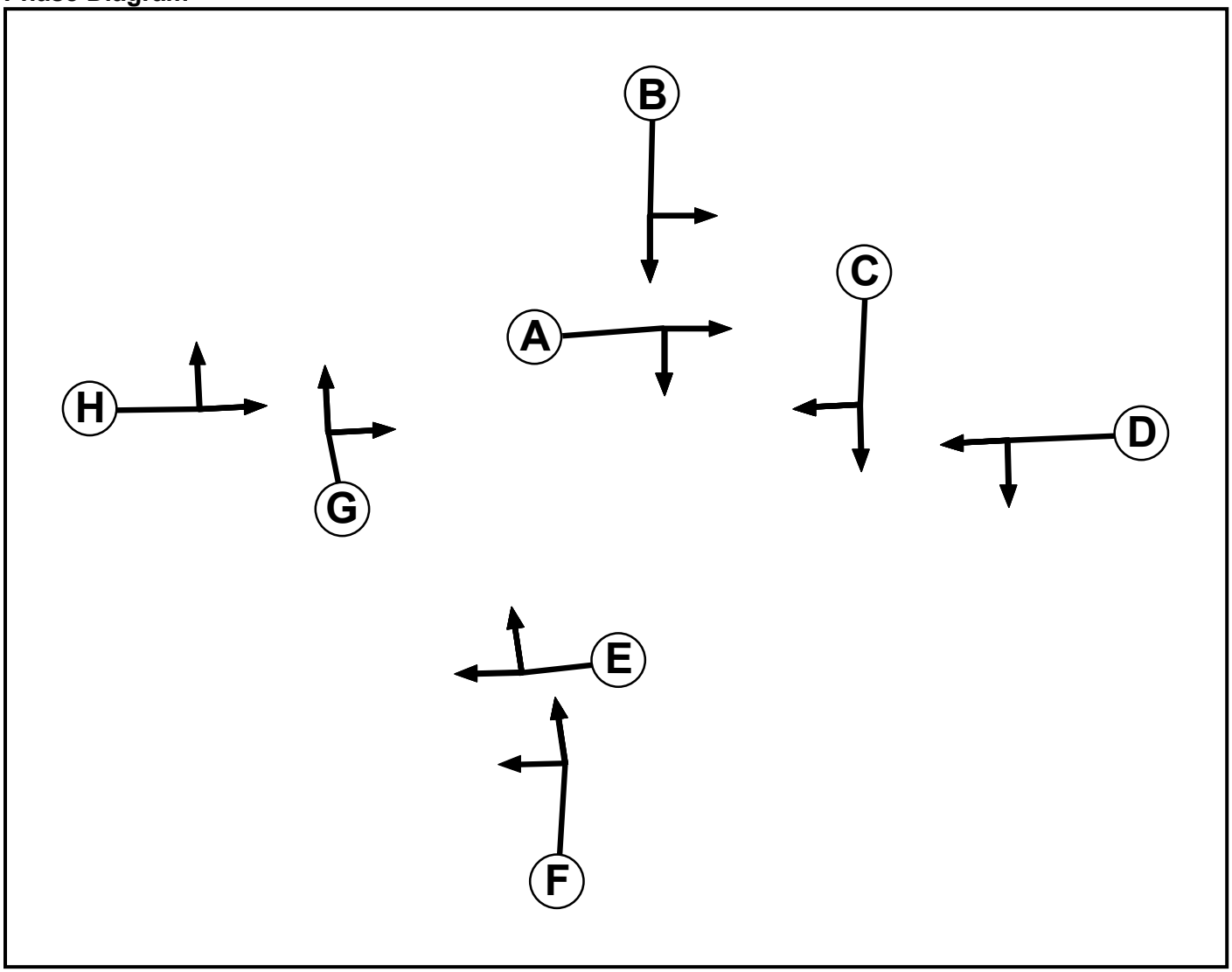
Project:	Rail Central
Title:	Junction 4
Location:	A5076 / A5123 / Upton Way Roundabout (Pineham Park) (Danes Camp Way)
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Traffic	4		7	7
H	Traffic	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

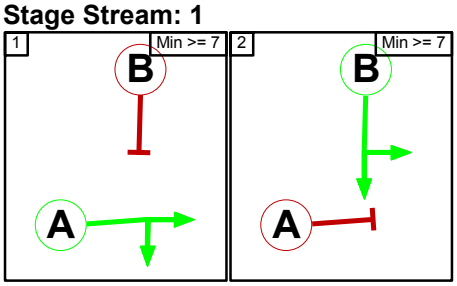
Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A		5	-	-	-	-	-	-
	B	5		-	-	-	-	-	-
	C	-	-		5	-	-	-	-
	D	-	-	5		-	-	-	-
	E	-	-	-	-		5	-	-
	F	-	-	-	-	5		-	-
	G	-	-	-	-	-	-		5
	H	-	-	-	-	-	-	5	

Phases in Stage

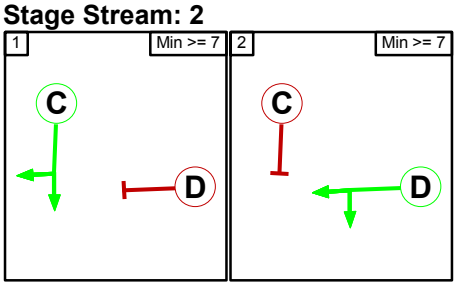
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	G
4	2	H

Stage Diagram

Stage Stream: 1

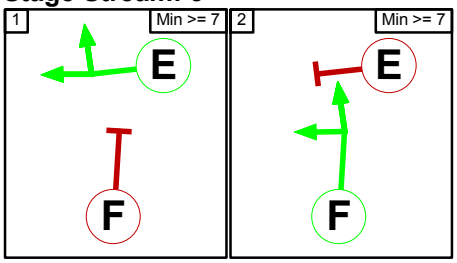


Stage Stream: 2

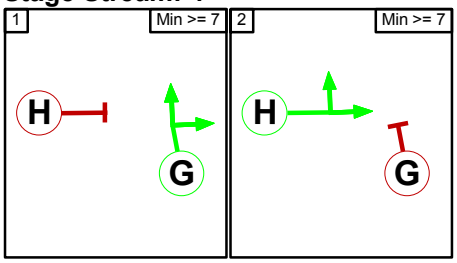


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Upton Valley Way, A5076 and A5123
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5076)	U		2	3	7.0	Geom	-	4.50	0.00	Y	Arm 13 Left	40.00
1/2 (A5076)	U	B	2	3	60.0	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
											Arm 9 Left	42.00
1/3 (A5076)	U	B	2	3	60.0	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
2/1 (A5076 Ring Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 10 Left	46.00
2/2 (A5076 Ring Road)	U	D	2	3	12.7	Geom	-	3.25	0.00	N	Arm 7 Ahead	59.00
											Arm 10 Left	47.00
2/3 (A5076 Ring Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	N	Arm 7 Ahead	58.00
2/4 (A5076 Ring Road)	U	D	2	3	12.7	Geom	-	3.25	0.00	N	Arm 7 Ahead	58.00
3/1 (A5123)	U	F	2	3	14.6	Geom	-	3.50	0.00	Y	Arm 8 Ahead	56.00
											Arm 11 Left	45.00
3/2 (A5123)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	56.00
3/3 (A5123)	U	F	2	3	60.0	Geom	-	4.50	0.00	N	Arm 8 Ahead	56.00
3/4 (A5123)	U	F	2	3	17.4	Geom	-	3.50	0.00	Y	Arm 8 Ahead	55.00
4/1 (Upton Valley Way)	U	H	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 12 Left	65.00
4/2 (Upton Valley Way)	U	H	2	3	8.7	Geom	-	3.50	0.00	N	Arm 5 Ahead	70.00
											Arm 12 Left	62.00
4/3 (Upton Valley Way)	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	70.00
4/4 (Upton Valley Way)	U	H	2	3	8.7	Geom	-	3.50	0.00	N	Arm 5 Ahead	69.00
5/1 (North Lights)	U	A	2	3	5.0	Geom	-	4.00	0.00	Y	Arm 9 Ahead	60.00

Full Input Data And Results

5/2 (North Lights)	U	A	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 9 Ahead	60.00
5/3 (North Lights)	U	A	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 6 Right	35.00
6/1 (East Lights)	U	C	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 10 Ahead	60.00
6/2 (East Lights)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 10 Ahead	60.00
6/3 (East Lights)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 7 Right	56.00
7/1 (South Lights)	U	E	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 11 Ahead	58.00
7/2 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 8 Right Arm 11 Ahead	52.00 58.00
7/3 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 8 Right	52.00
7/4 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 8 Right	52.00
8/1 (West Lights)	U	G	2	3	5.0	Geom	-	4.00	0.00	Y	Arm 12 Ahead	62.00
8/2 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	Y	Arm 12 Ahead	62.00
8/3 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	N	Arm 5 Right Arm 12 Ahead	35.00 62.00
8/4 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	N	Arm 5 Right	32.00
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/3	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	258	338	122	718
	B	143	0	1099	1150	2392
	C	325	892	0	1154	2371
	D	24	454	839	0	1317
	Tot.	492	1604	2276	2426	6798

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 3: 2021 DS2 AM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	1099
1/2 (with short)	1735(In) 636(Out)
1/3	657
2/1 (with short)	1208(In) 582(Out)
2/2 (short)	626
2/3 (with short)	1163(In) 517(Out)
2/4 (short)	646
3/1 (short)	260
3/2 (with short)	478(In) 218(Out)
3/3 (with short)	839(In) 417(Out)
3/4 (short)	422
4/1 (with short)	426(In) 208(Out)
4/2 (short)	218
4/3 (with short)	292(In) 170(Out)
4/4 (short)	122
5/1	585
5/2	592
5/3	122
6/1	655
6/2	617
6/3	143
7/1	194
7/2	520
7/3	342
7/4	304
8/1	482
8/2	560
8/3	721
8/4	422
9/1	585
9/2	592
10/1	1237
10/2	1189
11/1	218

Full Input Data And Results

11/2	274
12/1	690
12/2	610
12/3	304
13/1	1099
13/2	1177

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	8.6 %	2017	2017
				Arm 10 Left	47.00	91.4 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	90.8 %	1913	1913
				Arm 11 Left	45.00	9.2 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	77.1 %	2060	2060
				Arm 12 Left	62.00	22.9 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	47.3 %	2098	2098
				Arm 11 Ahead	58.00	52.7 %		

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	57.8 %	2130	2130
				Arm 12 Ahead	62.00	42.2 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	175	20	195
	B	160	0	903	930	1993
	C	513	1274	0	645	2432
	D	109	1328	1346	0	2783
	Tot.	782	2602	2424	1595	7403

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 4: 2021 DS2 PM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	903
1/2 (with short)	1390(In) 487(Out)
1/3	603
2/1 (with short)	1158(In) 557(Out)
2/2 (short)	601
2/3 (with short)	1274(In) 447(Out)
2/4 (short)	827
3/1 (short)	675
3/2 (with short)	1369(In) 694(Out)
3/3 (with short)	1414(In) 721(Out)
3/4 (short)	693
4/1 (with short)	84(In) 0(Out)
4/2 (short)	84
4/3 (with short)	111(In) 91(Out)
4/4 (short)	20
5/1	737
5/2	784
5/3	20
6/1	493
6/2	457
6/3	160
7/1	553
7/2	567
7/3	396
7/4	431
8/1	1013
8/2	1090
8/3	1152
8/4	693
9/1	737
9/2	784
10/1	1050
10/2	545
11/1	662

Full Input Data And Results

11/2	120
12/1	1013
12/2	1090
12/3	499
13/1	903
13/2	1521

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	85.4 %	2027	2027
				Arm 10 Left	47.00	14.6 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	83.9 %	1912	1912
				Arm 11 Left	45.00	16.1 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	0.0 %	2015	2015
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
				Arm 12 Left	62.00	0.0 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	78.8 %	2096	2096
				Arm 11 Ahead	58.00	21.2 %		

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	56.7 %	2131	2131
				Arm 12 Ahead	62.00	43.3 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	8	279	562	131	980
	B	135	0	991	1228	2354
	C	452	875	5	1159	2491
	D	32	663	865	0	1560
	Tot.	627	1817	2423	2518	7385

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 7: 2031 DS2 AM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	991
1/2 (with short)	1564(In) 573(Out)
1/3	790
2/1 (with short)	1275(In) 615(Out)
2/2 (short)	660
2/3 (with short)	1216(In) 565(Out)
2/4 (short)	651
3/1 (short)	349
3/2 (with short)	694(In) 345(Out)
3/3 (with short)	866(In) 444(Out)
3/4 (short)	422
4/1 (with short)	565(In) 264(Out)
4/2 (short)	301
4/3 (with short)	415(In) 276(Out)
4/4 (short)	139
5/1	730
5/2	702
5/3	139
6/1	647
6/2	712
6/3	143
7/1	225
7/2	599
7/3	353
7/4	298
8/1	546
8/2	698
8/3	738
8/4	426
9/1	730
9/2	702
10/1	1262
10/2	1256
11/1	257

Full Input Data And Results

11/2	370
12/1	810
12/2	713
12/3	294
13/1	991
13/2	1432

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	17.6 %	2018	2018
				Arm 10 Left	47.00	82.4 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	90.8 %	1913	1913
				Arm 11 Left	45.00	9.2 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	95.0 %	2061	2061
				Arm 12 Left	62.00	5.0 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	38.2 %	2098	2098
				Arm 11 Ahead	58.00	61.8 %		

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	60.2 %	2130	2130
				Arm 12 Ahead	62.00	39.8 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	292	34	326
	B	160	1	857	966	1984
	C	636	1429	0	852	2917
	D	81	1212	1461	0	2754
	Tot.	877	2642	2610	1852	7981

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 8: 2031 DS2 PM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	857
1/2 (with short)	1367(In) 510(Out)
1/3	617
2/1 (with short)	1488(In) 716(Out)
2/2 (short)	772
2/3 (with short)	1429(In) 551(Out)
2/4 (short)	878
3/1 (short)	621
3/2 (with short)	1288(In) 667(Out)
3/3 (with short)	1466(In) 773(Out)
3/4 (short)	693
4/1 (with short)	131(In) 0(Out)
4/2 (short)	131
4/3 (with short)	195(In) 161(Out)
4/4 (short)	34
5/1	899
5/2	854
5/3	34
6/1	511
6/2	489
6/3	161
7/1	679
7/2	668
7/3	420
7/4	459
8/1	1091
8/2	1087
8/3	1232
8/4	693
9/1	899
9/2	854
10/1	1227
10/2	625
11/1	760

Full Input Data And Results

11/2	117
12/1	1091
12/2	1087
12/3	464
13/1	857
13/2	1753

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	82.4 %	2026	2026
				Arm 10 Left	47.00	17.6 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	87.0 %	1912	1912
				Arm 11 Left	45.00	13.0 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	0.0 %	2015	2015
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
				Arm 12 Left	62.00	0.0 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	82.5 %	2096	2096
				Arm 11 Ahead	58.00	17.5 %		

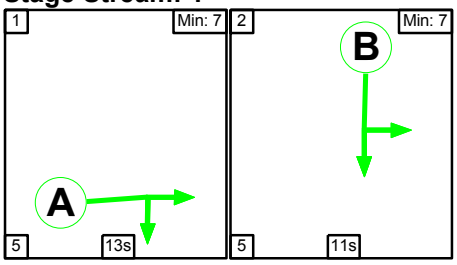
Full Input Data And Results

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	62.3 %	2129	2129
				Arm 12 Ahead	62.00	37.7 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

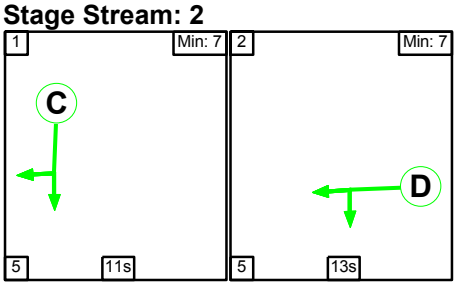
Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

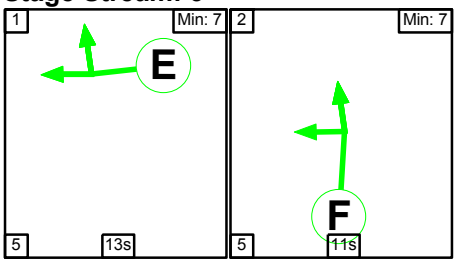


Stage Stream: 2

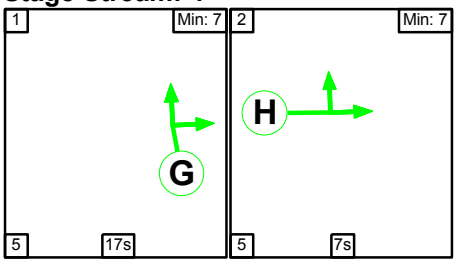


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	11
Change Point	13	31

Stage Stream: 2

Stage	1	2
Duration	11	13
Change Point	2	18

Stage Stream: 3

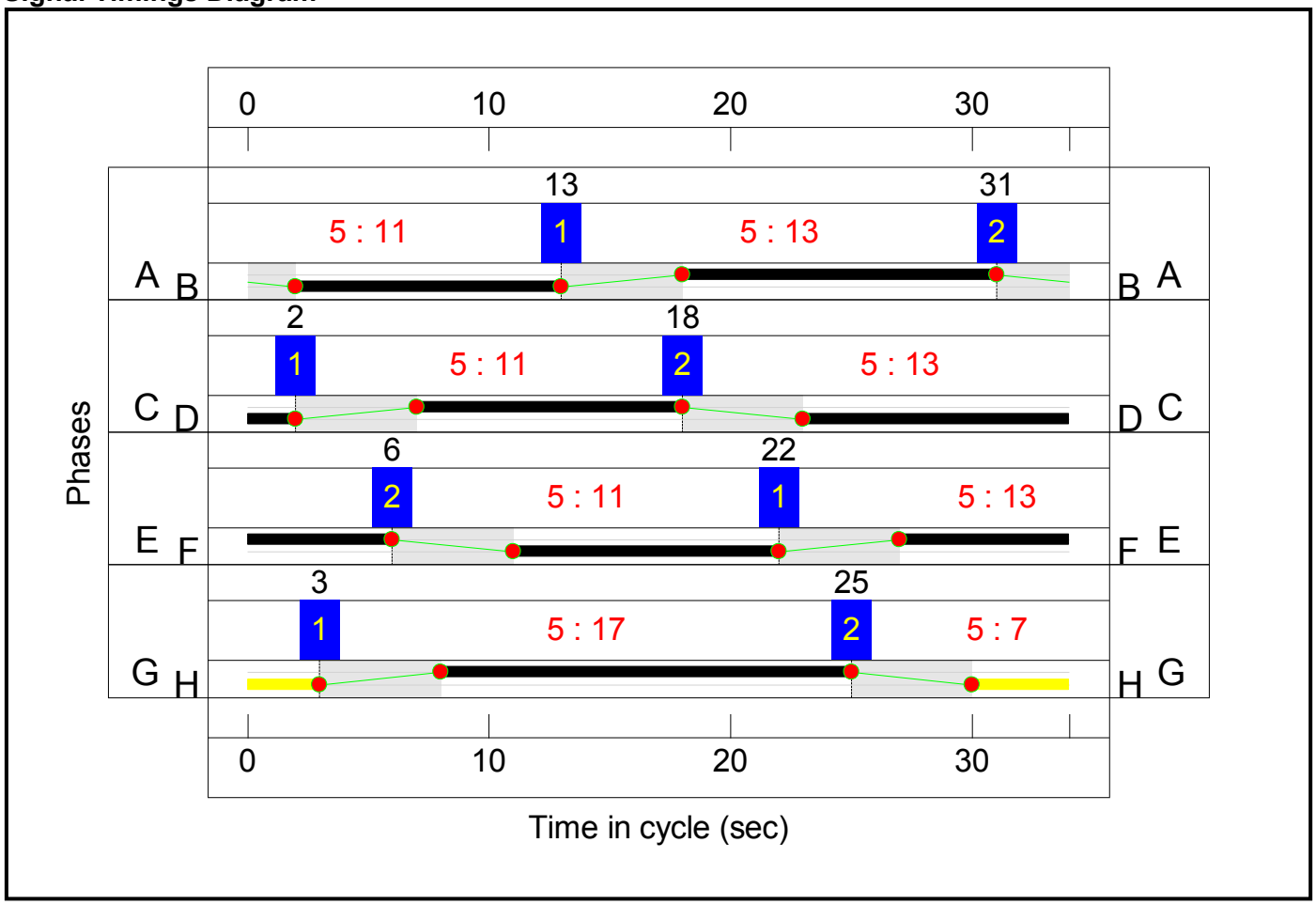
Stage	1	2
Duration	13	11
Change Point	22	6

Stage Stream: 4

Stage	1	2
Duration	17	7
Change Point	3	25

Full Input Data And Results

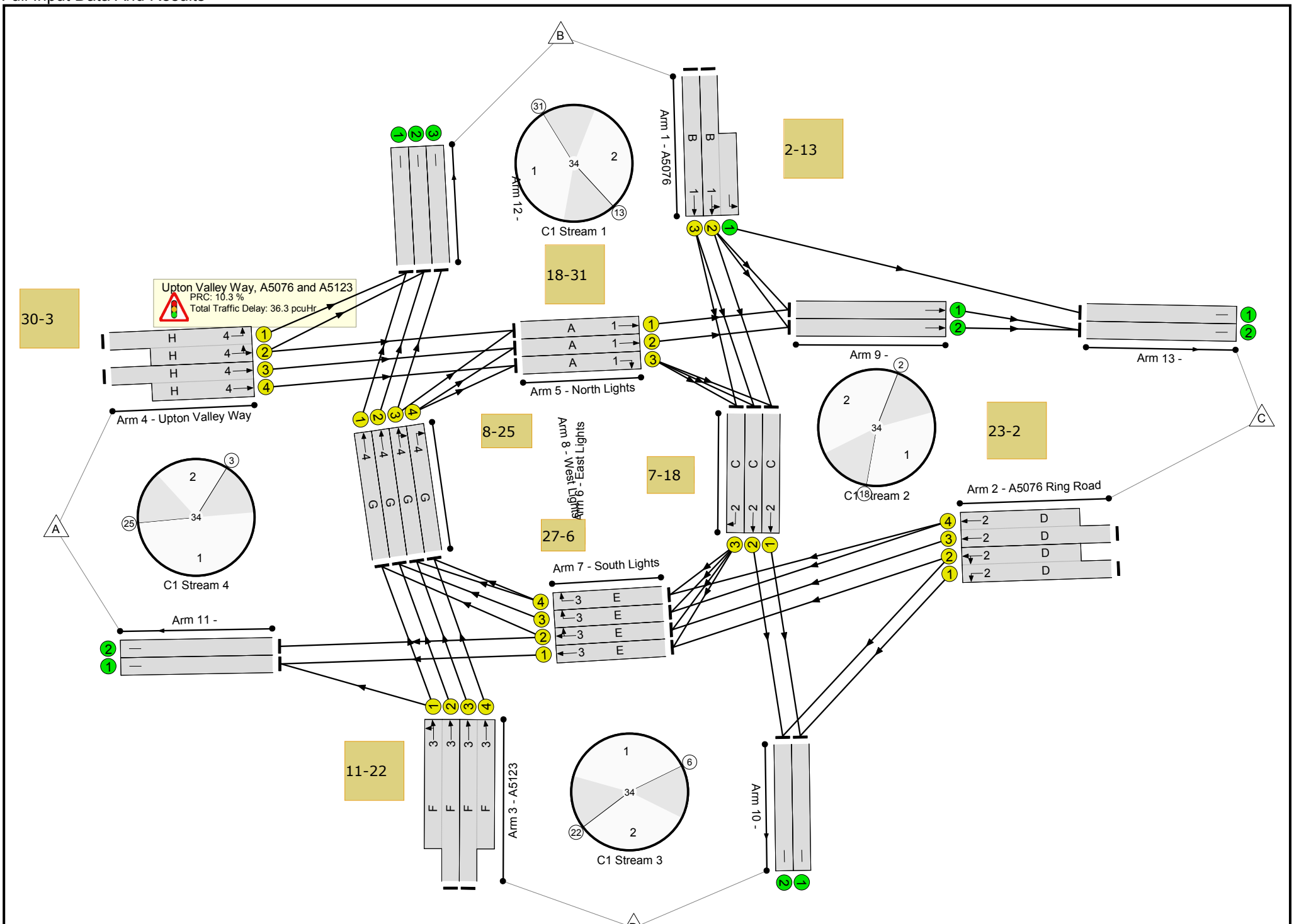
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.6%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.6%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	11	-	1653	2102:1990	664+1361	81.6 : 81.6%
1/3	A5076 Ahead	U	1	N/A	B		1	11	-	544	2102	742	73.3%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	13	-	1079	1879:2022	774+833	67.3 : 67.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	13	-	1125	2028:2028	787+835	59.1 : 79.0%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	11	-	400	2050:1912	724+675	29.3 : 27.9%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	11	-	755	2147:1913	758+675	47.9 : 58.1%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	372	1970:2061	464+485	36.0 : 42.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	281	2061:2060	485+406	35.5 : 26.8%
5/1	North Lights Ahead	U	1	N/A	A		1	13	-	566	1966	810	69.9%
5/2	North Lights Ahead	U	1	N/A	A		1	13	-	564	1941	799	70.6%
5/3	North Lights Right	U	1	N/A	A		1	13	-	109	1908	786	13.9%
6/1	East Lights Ahead	U	2	N/A	C		1	11	-	542	1966	694	78.1%
6/2	East Lights Ahead	U	2	N/A	C		1	11	-	498	2102	742	67.1%
6/3	East Lights Right	U	2	N/A	C		1	11	-	155	2099	741	20.9%
7/1	South Lights Ahead	U	3	N/A	E		1	13	-	391	1940	799	48.9%
7/2	South Lights Right Ahead	U	3	N/A	E		1	13	-	513	2096	863	59.4%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	13	-	355	2095	863	41.2%
7/4	South Lights Right	U	3	N/A	E		1	13	-	305	2095	863	35.4%
8/1	West Lights Ahead	U	4	N/A	G		1	17	-	550	1967	1041	52.8%
8/2	West Lights Ahead	U	4	N/A	G		1	17	-	567	2016	1067	53.1%
8/3	West Lights Right Ahead	U	4	N/A	G		1	17	-	668	2132	1129	59.2%
8/4	West Lights Right	U	4	N/A	G		1	17	-	392	2106	1115	35.2%
9/1	Ahead	U	N/A	N/A	-		-	-	-	566	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1063	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	772	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	411	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	131	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	569	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1111	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1130	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**20.1**	**16.3**	**0.0**	**36.3**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**20.1**	**16.3**	**0.0**	**36.3**	**-**	**-**	**-**	**-**
1/2+1/1	1653	1653	-	-	-	1.4	2.2	-	3.6	7.9	4.4	2.2	6.6
1/3	544	544	-	-	-	1.5	1.4	-	2.8	18.6	4.4	1.4	5.7
2/1+2/2	1079	1079	-	-	-	2.4	1.0	-	3.5	11.5	4.2	1.0	5.2
2/3+2/4	1125	1125	-	-	-	2.6	1.1	-	3.7	11.9	5.3	1.1	6.4
3/2+3/1	400	400	-	-	-	0.9	0.2	-	1.1	9.8	1.4	0.2	1.6
3/3+3/4	755	755	-	-	-	1.8	0.6	-	2.4	11.4	2.9	0.6	3.5
4/1+4/2	372	372	-	-	-	1.1	0.3	-	1.5	14.1	1.6	0.3	1.9
4/3+4/4	281	281	-	-	-	0.8	0.2	-	1.1	13.7	1.3	0.2	1.6
5/1	566	566	-	-	-	1.2	1.2	-	2.4	15.0	3.1	1.2	4.2
5/2	564	564	-	-	-	1.2	1.2	-	2.3	15.0	3.0	1.2	4.2
5/3	109	109	-	-	-	0.4	0.1	-	0.5	16.0	1.0	0.1	1.1
6/1	542	542	-	-	-	0.4	1.7	-	2.2	14.3	0.7	1.7	2.4
6/2	498	498	-	-	-	0.8	1.0	-	1.8	12.9	1.9	1.0	2.9
6/3	155	155	-	-	-	0.1	0.1	-	0.2	5.8	0.2	0.1	0.3
7/1	391	391	-	-	-	0.4	0.5	-	0.9	8.5	1.4	0.5	1.9
7/2	513	513	-	-	-	0.4	0.7	-	1.1	8.1	1.0	0.7	1.8
7/3	355	355	-	-	-	0.3	0.3	-	0.6	6.6	0.6	0.3	0.9
7/4	305	305	-	-	-	0.3	0.3	-	0.5	6.3	0.5	0.3	0.8
8/1	550	550	-	-	-	0.6	0.6	-	1.1	7.4	3.6	0.6	4.2
8/2	567	567	-	-	-	0.5	0.6	-	1.1	6.8	3.4	0.6	3.9
8/3	668	668	-	-	-	0.6	0.7	-	1.3	7.0	3.1	0.7	3.8
8/4	392	392	-	-	-	0.3	0.3	-	0.6	5.3	0.8	0.3	1.0
9/1	566	566	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1063	1063	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	772	772	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	411	411	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	131	131	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	569	569	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	305	305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1111	1111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1130	1130	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

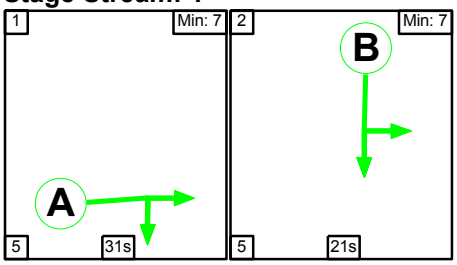
C1	Stream: 1 PRC for Signalled Lanes (%):	10.3	Total Delay for Signalled Lanes (pcuHr):	11.64	Cycle Time (s): 34
C1	Stream: 2 PRC for Signalled Lanes (%):	13.9	Total Delay for Signalled Lanes (pcuHr):	11.37	Cycle Time (s): 34
C1	Stream: 3 PRC for Signalled Lanes (%):	51.4	Total Delay for Signalled Lanes (pcuHr):	6.73	Cycle Time (s): 34
C1	Stream: 4 PRC for Signalled Lanes (%):	52.1	Total Delay for Signalled Lanes (pcuHr):	6.61	Cycle Time (s): 34
	PRC Over All Lanes (%):	10.3	Total Delay Over All Lanes(pcuHr):	36.34	

Full Input Data And Results

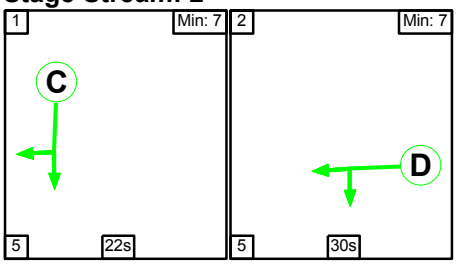
Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

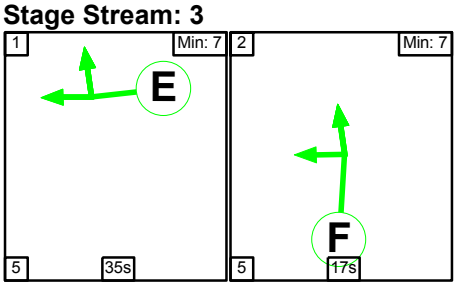
Stage Stream: 1



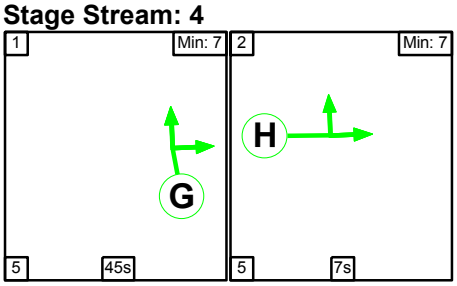
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	31	21
Change Point	43	17

Stage Stream: 2

Stage	1	2
Duration	22	30
Change Point	23	50

Stage Stream: 3

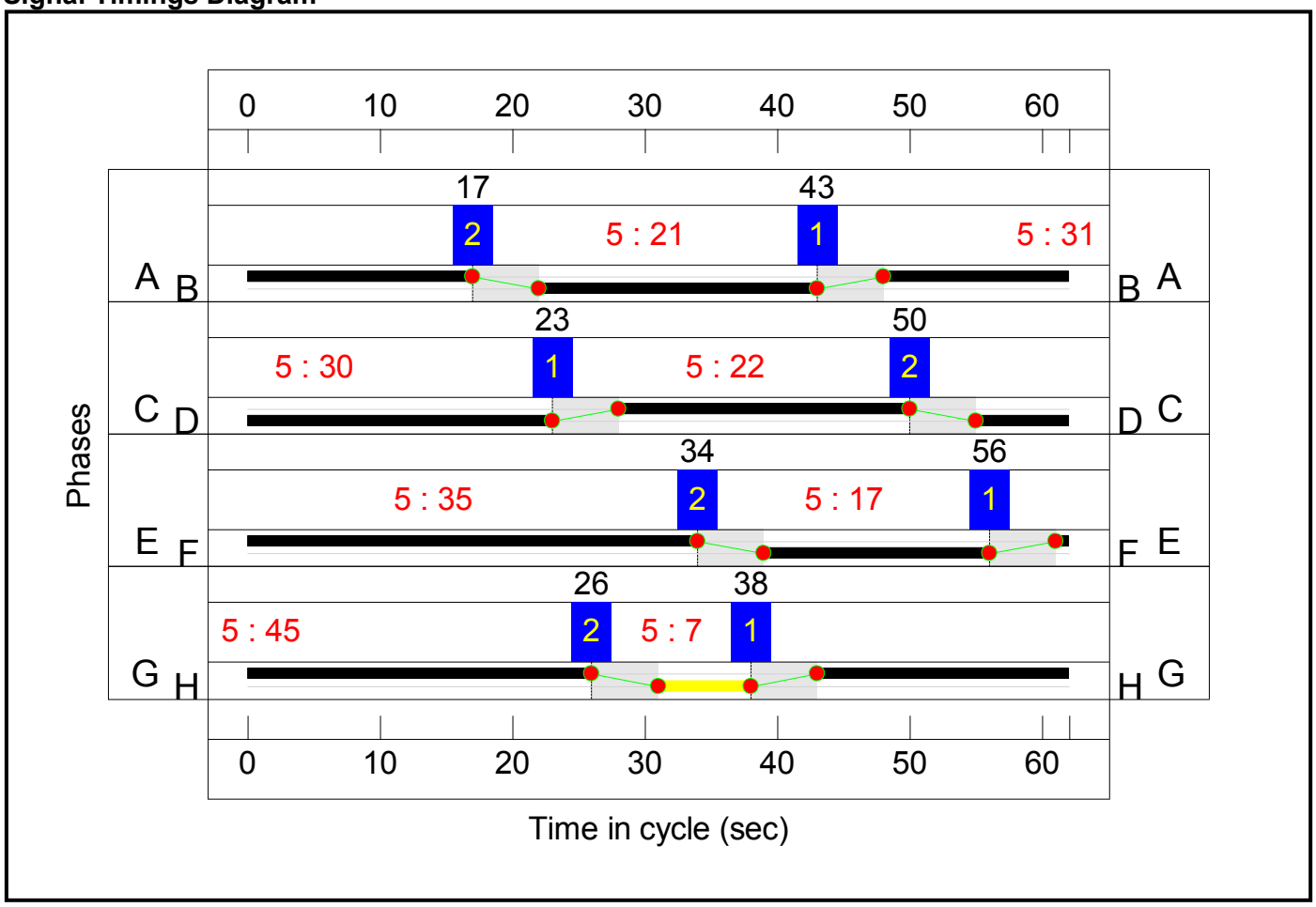
Stage	1	2
Duration	35	17
Change Point	56	34

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	45	7
Change Point	38	26

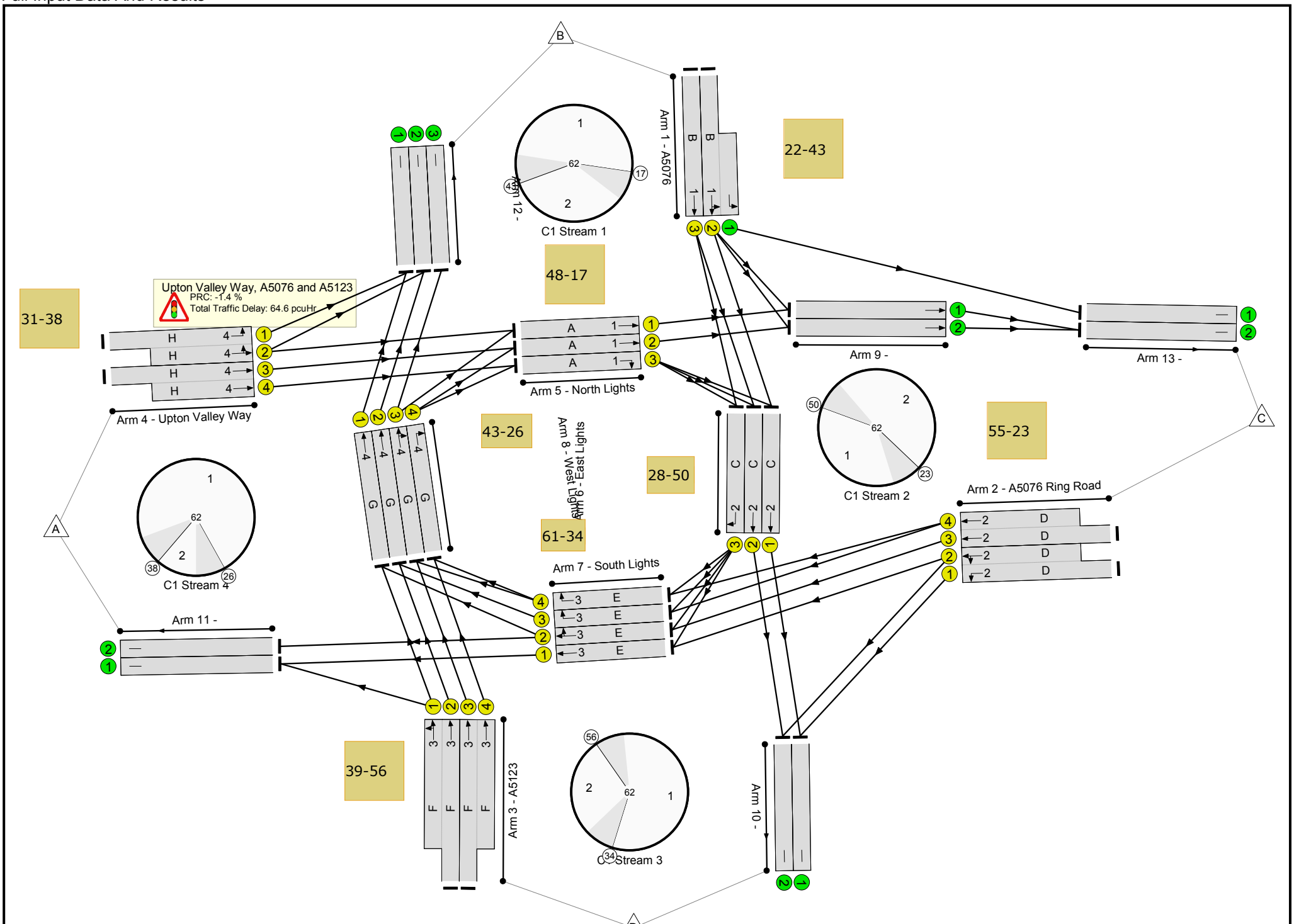
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.2%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.2%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	21	-	1409	2102:1990	515+1035	90.9 : 90.9%
1/3	A5076 Ahead	U	1	N/A	B		1	21	-	582	2102	746	78.0%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	30	-	1393	1879:2023	829+892	81.0 : 81.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	30	-	1415	2028:2028	656+917	90.0 : 90.0%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	17	-	1029	2050:1913	595+555	91.2 : 87.5%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	17	-	1059	2147:1913	623+555	89.2 : 90.6%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	163	2015:2061	0+266	0.0 : 61.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	245	2061:2060	266+88	69.2 : 69.2%
5/1	North Lights Ahead	U	1	N/A	A		1	31	-	601	1966	1015	59.2%
5/2	North Lights Ahead	U	1	N/A	A		1	31	-	680	1941	1002	67.9%
5/3	North Lights Right	U	1	N/A	A		1	31	-	68	1908	985	6.9%
6/1	East Lights Ahead	U	2	N/A	C		1	22	-	489	1966	729	67.0%
6/2	East Lights Ahead	U	2	N/A	C		1	22	-	476	2102	780	61.0%
6/3	East Lights Right	U	2	N/A	C		1	22	-	153	2099	779	19.6%
7/1	South Lights Ahead	U	3	N/A	E		1	35	-	509	1940	1126	45.2%
7/2	South Lights Right Ahead	U	3	N/A	E		1	35	-	645	2095	1216	53.0%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	35	-	382	2095	1216	31.4%
7/4	South Lights Right	U	3	N/A	E		1	35	-	443	2095	1216	36.4%
8/1	West Lights Ahead	U	4	N/A	G		1	45	-	1027	1967	1459	70.4%
8/2	West Lights Ahead	U	4	N/A	G		1	45	-	925	2016	1496	61.8%
8/3	West Lights Right Ahead	U	4	N/A	G		1	45	-	999	2136	1585	63.0%
8/4	West Lights Right	U	4	N/A	G		1	45	-	503	2106	1563	32.2%
9/1	Ahead	U	N/A	N/A	-		-	-	-	601	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	680	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1160	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	787	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	55	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1027	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	925	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	561	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	941	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1281	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**33.6**	**31.0**	**0.0**	**64.6**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**33.6**	**31.0**	**0.0**	**64.6**	**-**	**-**	**-**	**-**
1/2+1/1	1409	1409	-	-	-	2.2	4.7	-	6.8	17.5	6.6	4.7	11.3
1/3	582	582	-	-	-	2.9	1.7	-	4.6	28.6	8.9	1.7	10.6
2/1+2/2	1393	1393	-	-	-	4.7	2.1	-	6.8	17.5	9.6	2.1	11.7
2/3+2/4	1415	1415	-	-	-	4.8	4.2	-	9.0	23.0	11.9	4.2	16.2
3/2+3/1	1029	1029	-	-	-	6.0	4.0	-	10.0	35.0	8.9	4.0	12.9
3/3+3/4	1059	1059	-	-	-	6.2	4.1	-	10.4	35.2	9.1	4.1	13.2
4/1+4/2	163	163	-	-	-	1.2	0.8	-	1.9	42.8	2.6	0.8	3.4
4/3+4/4	245	245	-	-	-	1.7	1.1	-	2.8	41.6	3.0	1.1	4.1
5/1	601	601	-	-	-	0.4	0.7	-	1.2	6.9	2.9	0.7	3.6
5/2	680	680	-	-	-	0.5	1.0	-	1.5	8.2	3.9	1.0	4.9
5/3	68	68	-	-	-	0.1	0.0	-	0.2	9.7	1.0	0.0	1.1
6/1	489	489	-	-	-	0.3	1.0	-	1.3	9.7	2.8	1.0	3.8
6/2	476	476	-	-	-	0.6	0.8	-	1.3	10.1	1.4	0.8	2.2
6/3	153	153	-	-	-	0.0	0.1	-	0.2	3.9	0.1	0.1	0.2
7/1	509	509	-	-	-	0.5	0.4	-	0.9	6.2	2.7	0.4	3.1
7/2	645	645	-	-	-	0.3	0.6	-	0.8	4.6	1.9	0.6	2.4
7/3	382	382	-	-	-	0.0	0.2	-	0.2	2.3	0.0	0.2	0.3
7/4	443	443	-	-	-	0.0	0.3	-	0.3	2.4	0.0	0.3	0.3
8/1	1027	1027	-	-	-	0.4	1.2	-	1.6	5.6	3.3	1.2	4.5
8/2	925	925	-	-	-	0.4	0.8	-	1.2	4.6	3.4	0.8	4.2
8/3	999	999	-	-	-	0.4	0.9	-	1.3	4.7	3.6	0.9	4.5
8/4	503	503	-	-	-	0.0	0.2	-	0.2	1.7	0.0	0.2	0.2
9/1	601	601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	680	680	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1160	1160	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	787	787	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	55	55	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1027	1027	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	925	925	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	561	561	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	941	941	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1281	1281	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

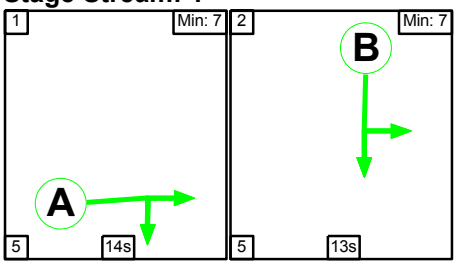
C1	Stream: 1 PRC for Signalled Lanes (%):	-1.0	Total Delay for Signalled Lanes (pcuHr):	14.34	Cycle Time (s):	62
C1	Stream: 2 PRC for Signalled Lanes (%):	0.1	Total Delay for Signalled Lanes (pcuHr):	18.61	Cycle Time (s):	62
C1	Stream: 3 PRC for Signalled Lanes (%):	-1.4	Total Delay for Signalled Lanes (pcuHr):	22.60	Cycle Time (s):	62
C1	Stream: 4 PRC for Signalled Lanes (%):	27.9	Total Delay for Signalled Lanes (pcuHr):	9.09	Cycle Time (s):	62
	PRC Over All Lanes (%):	-1.4	Total Delay Over All Lanes(pcuHr):	64.64		

Full Input Data And Results

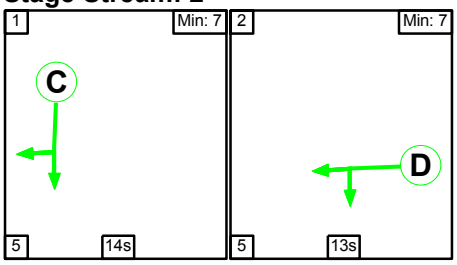
Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

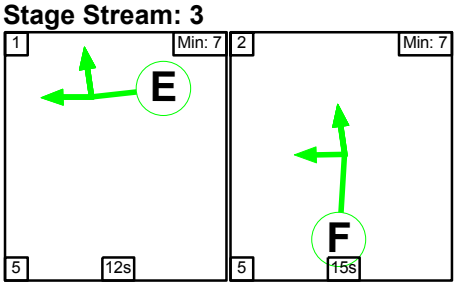
Stage Stream: 1



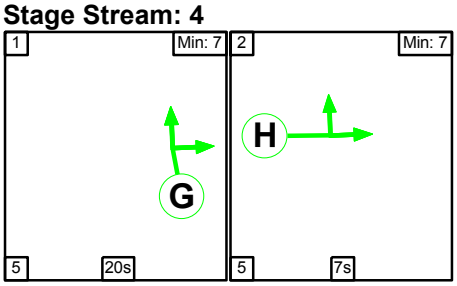
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	14	13
Change Point	27	9

Stage Stream: 2

Stage	1	2
Duration	14	13
Change Point	15	34

Stage Stream: 3

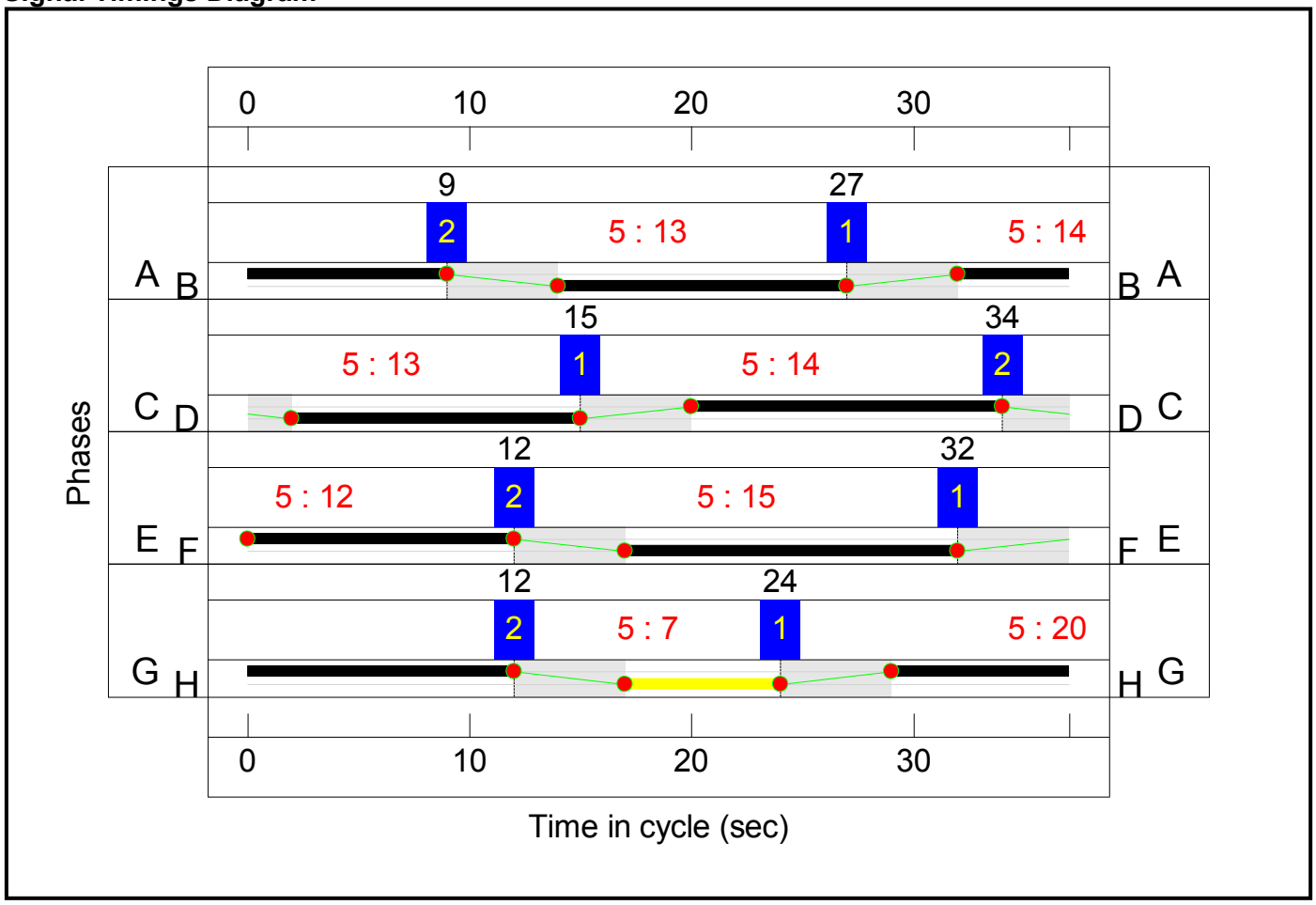
Stage	1	2
Duration	12	15
Change Point	32	12

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	20	7
Change Point	24	12

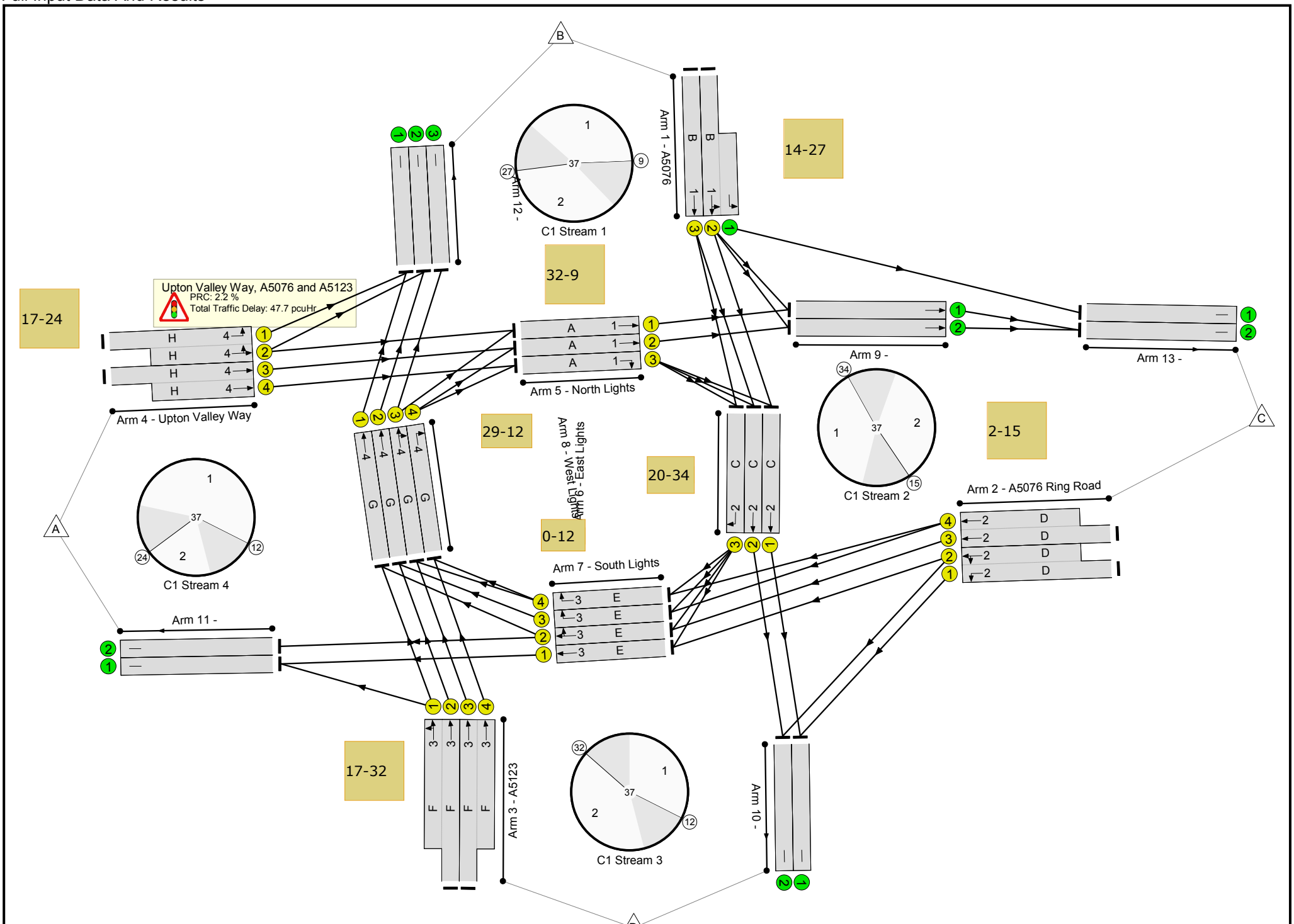
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.1%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.1%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	13	-	1735	2102:1990	722+1248	88.1 : 88.1%
1/3	A5076 Ahead	U	1	N/A	B		1	13	-	657	2102	795	82.6%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	13	-	1208	1879:2017	711+763	81.9 : 82.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	13	-	1163	2028:2028	767+767	67.4 : 84.2%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	15	-	478	2050:1913	886+827	24.6 : 31.4%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	15	-	839	2147:1913	928+827	44.9 : 51.0%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	426	1970:2060	426+445	48.8 : 48.9%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	292	2061:2060	446+356	38.1 : 34.2%
5/1	North Lights Ahead	U	1	N/A	A		1	14	-	585	1966	797	73.4%
5/2	North Lights Ahead	U	1	N/A	A		1	14	-	592	1941	787	75.2%
5/3	North Lights Right	U	1	N/A	A		1	14	-	122	1908	774	15.8%
6/1	East Lights Ahead	U	2	N/A	C		1	14	-	655	1966	797	82.2%
6/2	East Lights Ahead	U	2	N/A	C		1	14	-	617	2102	852	72.4%
6/3	East Lights Right	U	2	N/A	C		1	14	-	143	2099	851	16.8%
7/1	South Lights Ahead	U	3	N/A	E		1	12	-	194	1940	682	28.5%
7/2	South Lights Right Ahead	U	3	N/A	E		1	12	-	520	2098	737	70.5%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	12	-	342	2095	736	46.5%
7/4	South Lights Right	U	3	N/A	E		1	12	-	304	2095	736	41.3%
8/1	West Lights Ahead	U	4	N/A	G		1	20	-	482	1967	1116	43.2%
8/2	West Lights Ahead	U	4	N/A	G		1	20	-	560	2016	1144	48.9%
8/3	West Lights Right Ahead	U	4	N/A	G		1	20	-	721	2130	1209	59.6%
8/4	West Lights Right	U	4	N/A	G		1	20	-	422	2106	1195	35.3%
9/1	Ahead	U	N/A	N/A	-		-	-	-	585	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	592	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1189	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	274	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	690	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	610	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1099	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1177	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.0**	**21.7**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**26.0**	**21.7**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
1/2+1/1	1735	1735	-	-	-	1.8	3.6	-	5.4	11.2	5.7	3.6	9.2
1/3	657	657	-	-	-	1.9	2.3	-	4.2	23.0	6.0	2.3	8.3
2/1+2/2	1208	1208	-	-	-	3.5	2.2	-	5.7	17.0	5.7	2.2	8.0
2/3+2/4	1163	1163	-	-	-	3.3	1.6	-	4.8	14.9	5.9	1.6	7.5
3/2+3/1	478	478	-	-	-	0.9	0.2	-	1.1	8.3	1.7	0.2	1.9
3/3+3/4	839	839	-	-	-	1.8	0.5	-	2.2	9.5	3.0	0.5	3.5
4/1+4/2	426	426	-	-	-	1.5	0.5	-	2.0	16.8	1.9	0.5	2.4
4/3+4/4	292	292	-	-	-	1.0	0.3	-	1.3	15.8	1.5	0.3	1.7
5/1	585	585	-	-	-	0.6	1.4	-	2.0	12.2	2.2	1.4	3.6
5/2	592	592	-	-	-	0.6	1.5	-	2.1	12.5	2.3	1.5	3.8
5/3	122	122	-	-	-	0.2	0.1	-	0.3	9.4	1.2	0.1	1.3
6/1	655	655	-	-	-	0.3	2.2	-	2.5	13.9	1.7	2.2	3.9
6/2	617	617	-	-	-	0.7	1.3	-	2.0	11.6	2.4	1.3	3.7
6/3	143	143	-	-	-	0.0	0.1	-	0.1	3.7	0.1	0.1	0.2
7/1	194	194	-	-	-	0.4	0.2	-	0.6	10.8	1.6	0.2	1.8
7/2	520	520	-	-	-	2.2	1.2	-	3.3	23.1	3.5	1.2	4.7
7/3	342	342	-	-	-	1.5	0.4	-	1.9	20.0	2.6	0.4	3.0
7/4	304	304	-	-	-	1.3	0.4	-	1.6	19.4	2.3	0.4	2.6
8/1	482	482	-	-	-	0.7	0.4	-	1.1	8.0	3.1	0.4	3.5
8/2	560	560	-	-	-	0.7	0.5	-	1.2	7.7	3.1	0.5	3.6
8/3	721	721	-	-	-	0.9	0.7	-	1.7	8.3	4.9	0.7	5.7
8/4	422	422	-	-	-	0.3	0.3	-	0.6	5.3	3.6	0.3	3.8
9/1	585	585	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

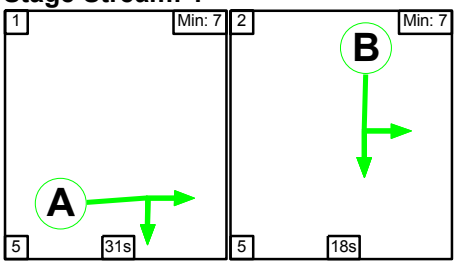
10/1	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1189	1189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	218	218	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	274	274	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	690	690	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	610	610	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1099	1099	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1177	1177	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	2.2	Total Delay for Signalled Lanes (pcuHr):	13.94	Cycle Time (s): 37
C1	Stream: 2 PRC for Signalled Lanes (%):	6.9	Total Delay for Signalled Lanes (pcuHr):	15.18	Cycle Time (s): 37
C1	Stream: 3 PRC for Signalled Lanes (%):	27.6	Total Delay for Signalled Lanes (pcuHr):	10.77	Cycle Time (s): 37
C1	Stream: 4 PRC for Signalled Lanes (%):	50.9	Total Delay for Signalled Lanes (pcuHr):	7.82	Cycle Time (s): 37
	PRC Over All Lanes (%):	2.2	Total Delay Over All Lanes(pcuHr):	47.71	

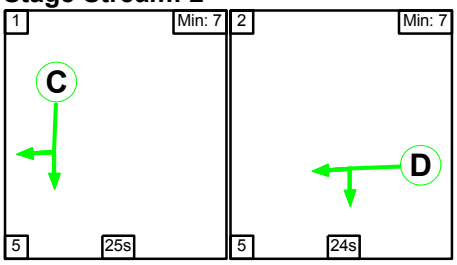
Full Input Data And Results
Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

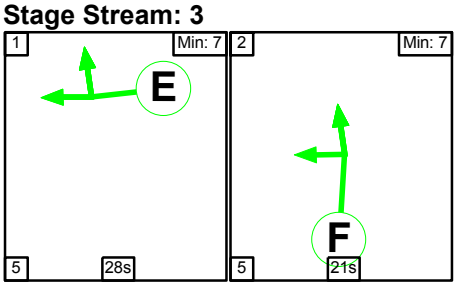
Stage Stream: 1



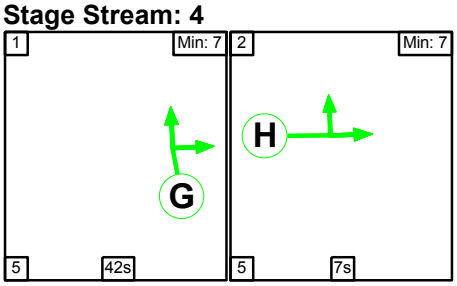
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	31	18
Change Point	50	27

Stage Stream: 2

Stage	1	2
Duration	25	24
Change Point	34	5

Stage Stream: 3

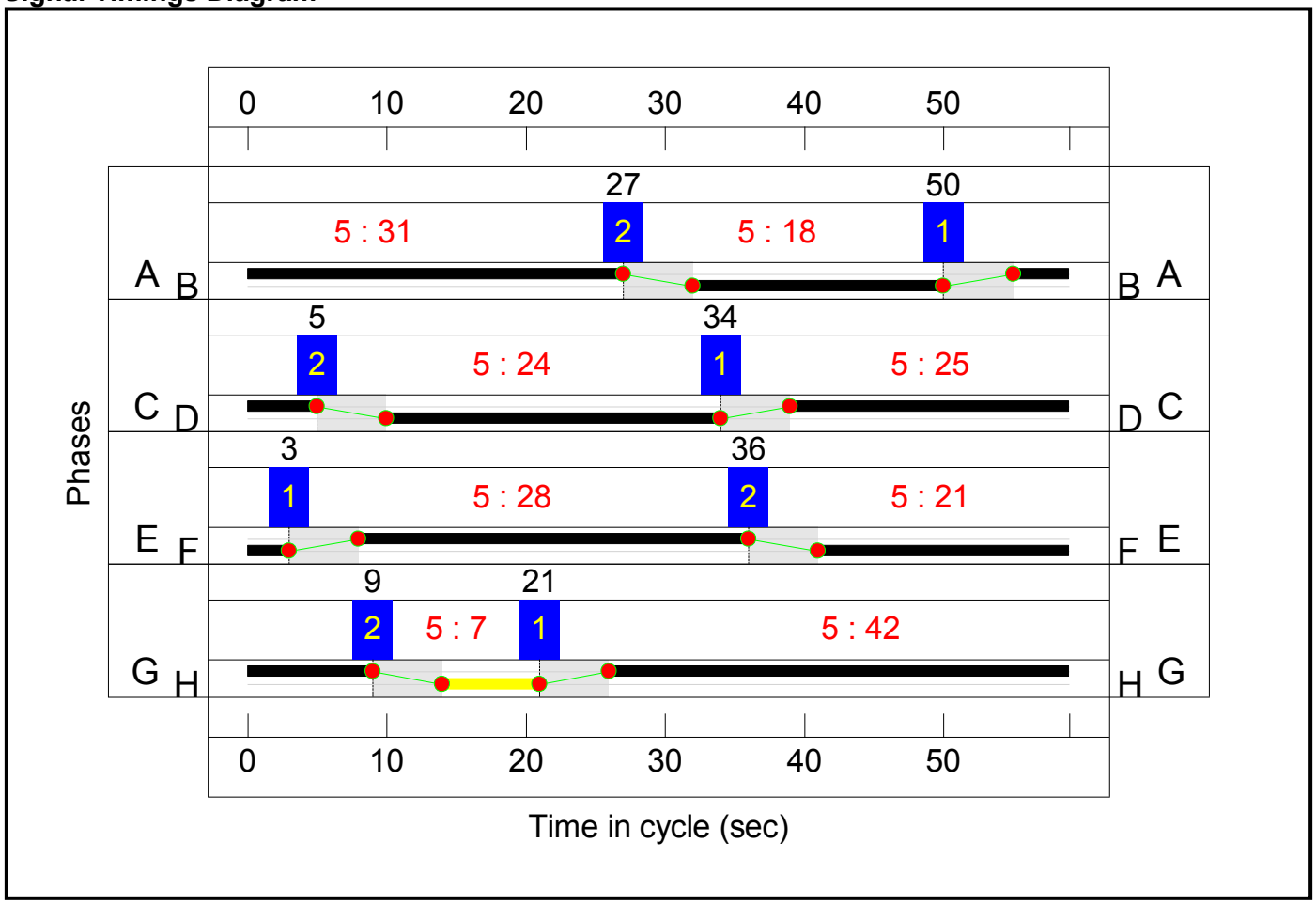
Stage	1	2
Duration	28	21
Change Point	3	36

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	42	7
Change Point	21	9

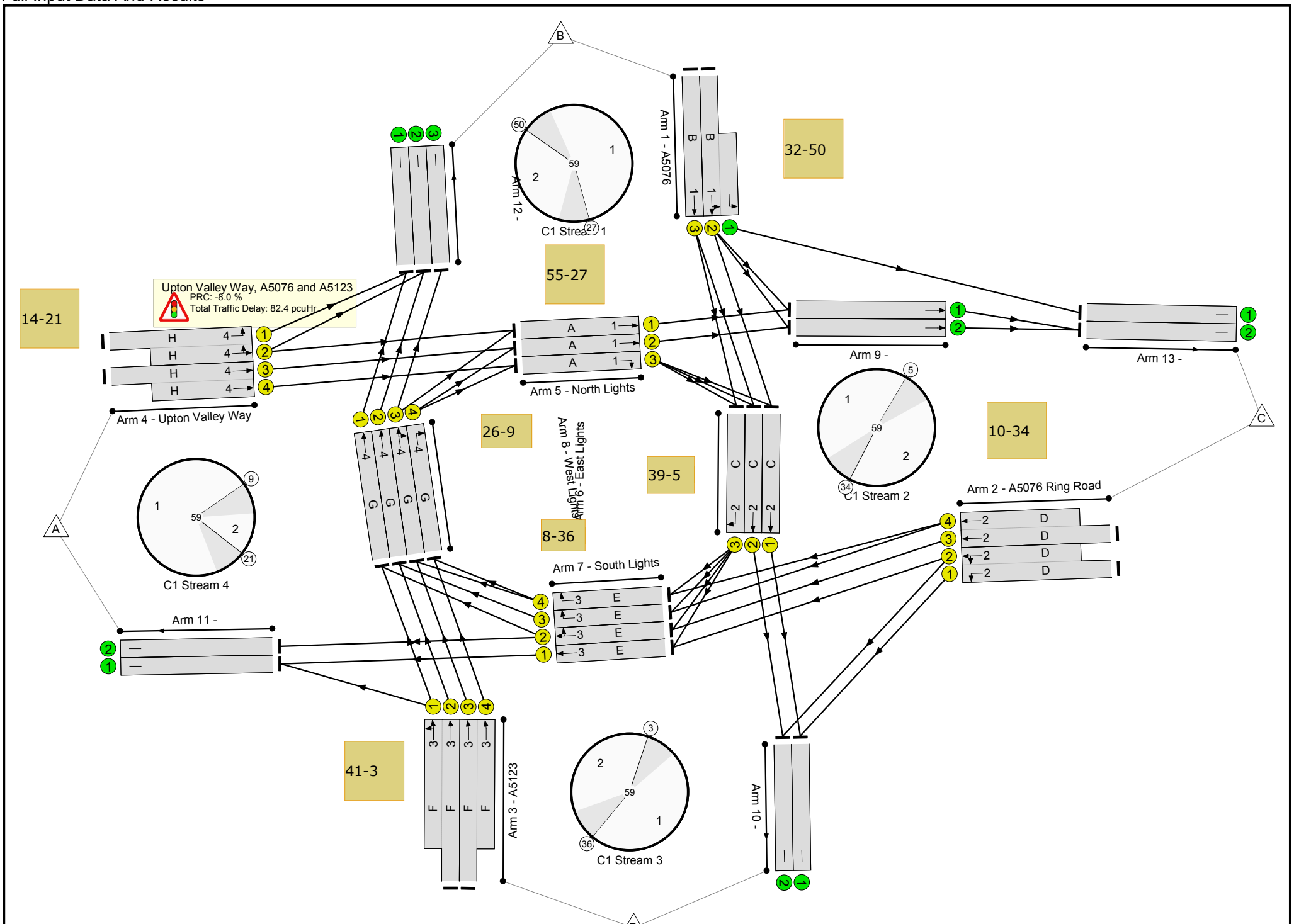
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	18	-	1390	2102:1990	511+948	95.2 : 95.2%
1/3	A5076 Ahead	U	1	N/A	B		1	18	-	603	2102	677	89.1%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	24	-	1158	1879:2027	773+834	72.0 : 72.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	24	-	1274	2028:2028	460+851	97.2 : 97.2%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	21	-	1369	2050:1912	764+713	90.8 : 94.7%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	21	-	1414	2147:1913	801+713	90.1 : 97.2%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	84	2015:2061	0+279	0.0 : 30.1%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	111	2061:2060	279+61	32.6 : 32.6%
5/1	North Lights Ahead	U	1	N/A	A		1	31	-	737	1966	1066	69.1%
5/2	North Lights Ahead	U	1	N/A	A		1	31	-	784	1941	1053	74.5%
5/3	North Lights Right	U	1	N/A	A		1	31	-	20	1908	1035	1.9%
6/1	East Lights Ahead	U	2	N/A	C		1	25	-	493	1966	866	56.9%
6/2	East Lights Ahead	U	2	N/A	C		1	25	-	457	2102	926	49.3%
6/3	East Lights Right	U	2	N/A	C		1	25	-	160	2099	925	17.3%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	553	1940	954	58.0%
7/2	South Lights Right Ahead	U	3	N/A	E		1	28	-	567	2096	1030	55.0%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	396	2095	1030	38.5%
7/4	South Lights Right	U	3	N/A	E		1	28	-	431	2095	1030	41.9%
8/1	West Lights Ahead	U	4	N/A	G		1	42	-	1013	1967	1434	70.7%
8/2	West Lights Ahead	U	4	N/A	G		1	42	-	1090	2016	1469	74.2%
8/3	West Lights Right Ahead	U	4	N/A	G		1	42	-	1152	2131	1553	74.2%
8/4	West Lights Right	U	4	N/A	G		1	42	-	693	2106	1535	45.2%
9/1	Ahead	U	N/A	N/A	-		-	-	-	737	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1050	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	545	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	662	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	120	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1013	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1090	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	499	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	903	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1521	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**35.7**	**46.7**	**0.0**	**82.4**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**35.7**	**46.7**	**0.0**	**82.4**	**-**	**-**	**-**	**-**
1/2+1/1	1390	1390	-	-	-	2.4	8.1	-	10.5	27.1	7.8	8.1	15.9
1/3	603	603	-	-	-	3.2	3.7	-	6.9	41.1	9.4	3.7	13.1
2/1+2/2	1158	1158	-	-	-	4.5	1.3	-	5.8	17.9	8.0	1.3	9.3
2/3+2/4	1274	1274	-	-	-	5.4	10.9	-	16.3	46.0	13.1	10.9	24.0
3/2+3/1	1369	1369	-	-	-	6.7	5.7	-	12.5	32.8	10.7	5.7	16.4
3/3+3/4	1414	1414	-	-	-	7.0	6.3	-	13.3	33.8	11.2	6.3	17.5
4/1+4/2	84	84	-	-	-	0.5	0.2	-	0.8	32.2	1.2	0.2	1.5
4/3+4/4	111	111	-	-	-	0.7	0.2	-	0.9	30.8	1.3	0.2	1.6
5/1	737	737	-	-	-	0.3	1.1	-	1.4	6.8	1.7	1.1	2.8
5/2	784	784	-	-	-	0.4	1.4	-	1.9	8.5	3.3	1.4	4.7
5/3	20	20	-	-	-	0.0	0.0	-	0.0	3.6	0.0	0.0	0.0
6/1	493	493	-	-	-	0.0	0.7	-	0.7	5.0	3.3	0.7	4.0
6/2	457	457	-	-	-	0.0	0.5	-	0.5	4.2	0.6	0.5	1.1
6/3	160	160	-	-	-	0.0	0.1	-	0.1	2.5	0.1	0.1	0.2
7/1	553	553	-	-	-	0.6	0.7	-	1.3	8.2	1.6	0.7	2.3
7/2	567	567	-	-	-	0.8	0.6	-	1.4	9.0	2.7	0.6	3.3
7/3	396	396	-	-	-	0.7	0.3	-	1.0	8.8	1.4	0.3	1.7
7/4	431	431	-	-	-	0.7	0.4	-	1.1	9.0	1.5	0.4	1.9
8/1	1013	1013	-	-	-	0.6	1.2	-	1.8	6.2	6.8	1.2	8.0
8/2	1090	1090	-	-	-	0.5	1.4	-	1.9	6.4	5.1	1.4	6.5
8/3	1152	1152	-	-	-	0.5	1.4	-	2.0	6.1	4.2	1.4	5.6
8/4	693	693	-	-	-	0.2	0.4	-	0.6	3.3	0.9	0.4	1.3
9/1	737	737	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1050	1050	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	545	545	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	662	662	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	120	120	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1013	1013	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1090	1090	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	499	499	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	903	903	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1521	1521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

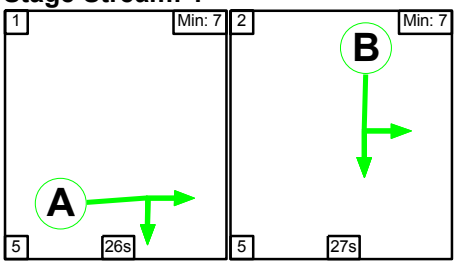
C1	Stream: 1 PRC for Signalled Lanes (%):	-5.8	Total Delay for Signalled Lanes (pcuHr):	20.64	Cycle Time (s):	59
C1	Stream: 2 PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	23.37	Cycle Time (s):	59
C1	Stream: 3 PRC for Signalled Lanes (%):	-7.9	Total Delay for Signalled Lanes (pcuHr):	30.46	Cycle Time (s):	59
C1	Stream: 4 PRC for Signalled Lanes (%):	21.3	Total Delay for Signalled Lanes (pcuHr):	7.96	Cycle Time (s):	59
	PRC Over All Lanes (%):	-8.0	Total Delay Over All Lanes(pcuHr):	82.43		

Full Input Data And Results

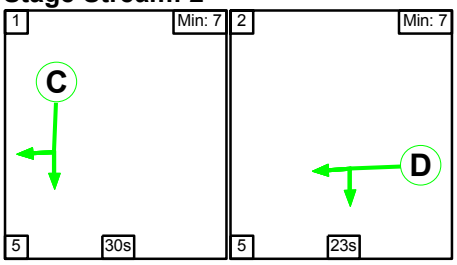
Scenario 5: '2031 DM AM ' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

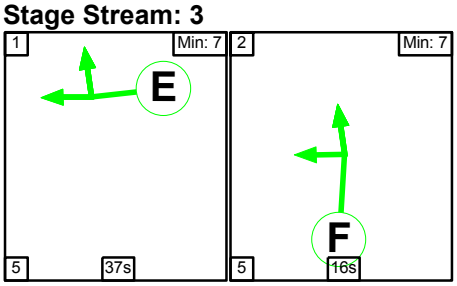
Stage Stream: 1



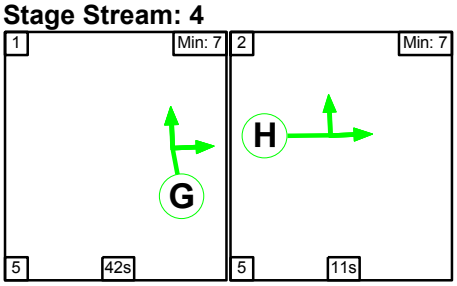
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	27
Change Point	7	38

Stage Stream: 2

Stage	1	2
Duration	30	23
Change Point	43	15

Stage Stream: 3

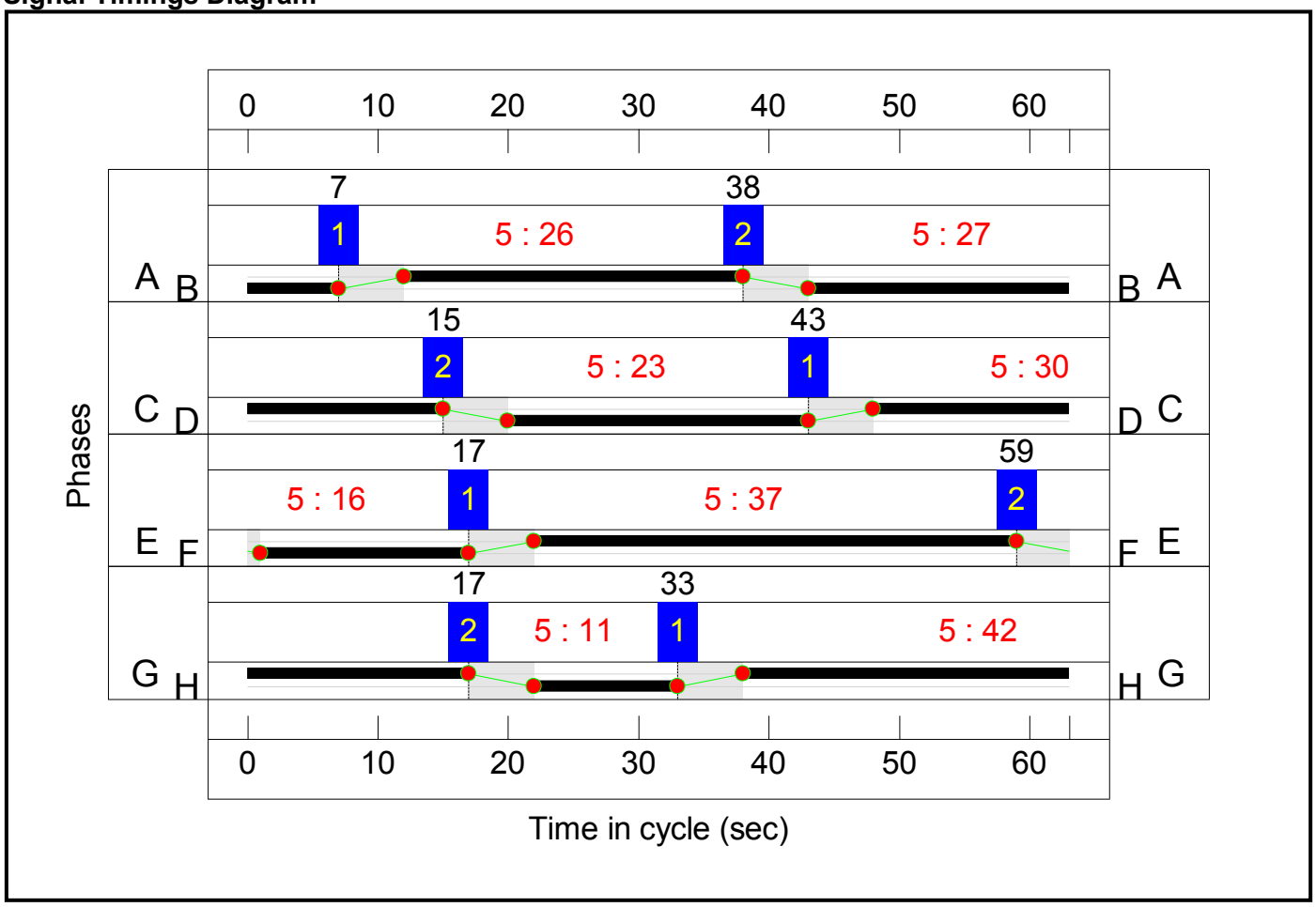
Stage	1	2
Duration	37	16
Change Point	17	59

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	42	11
Change Point	33	17

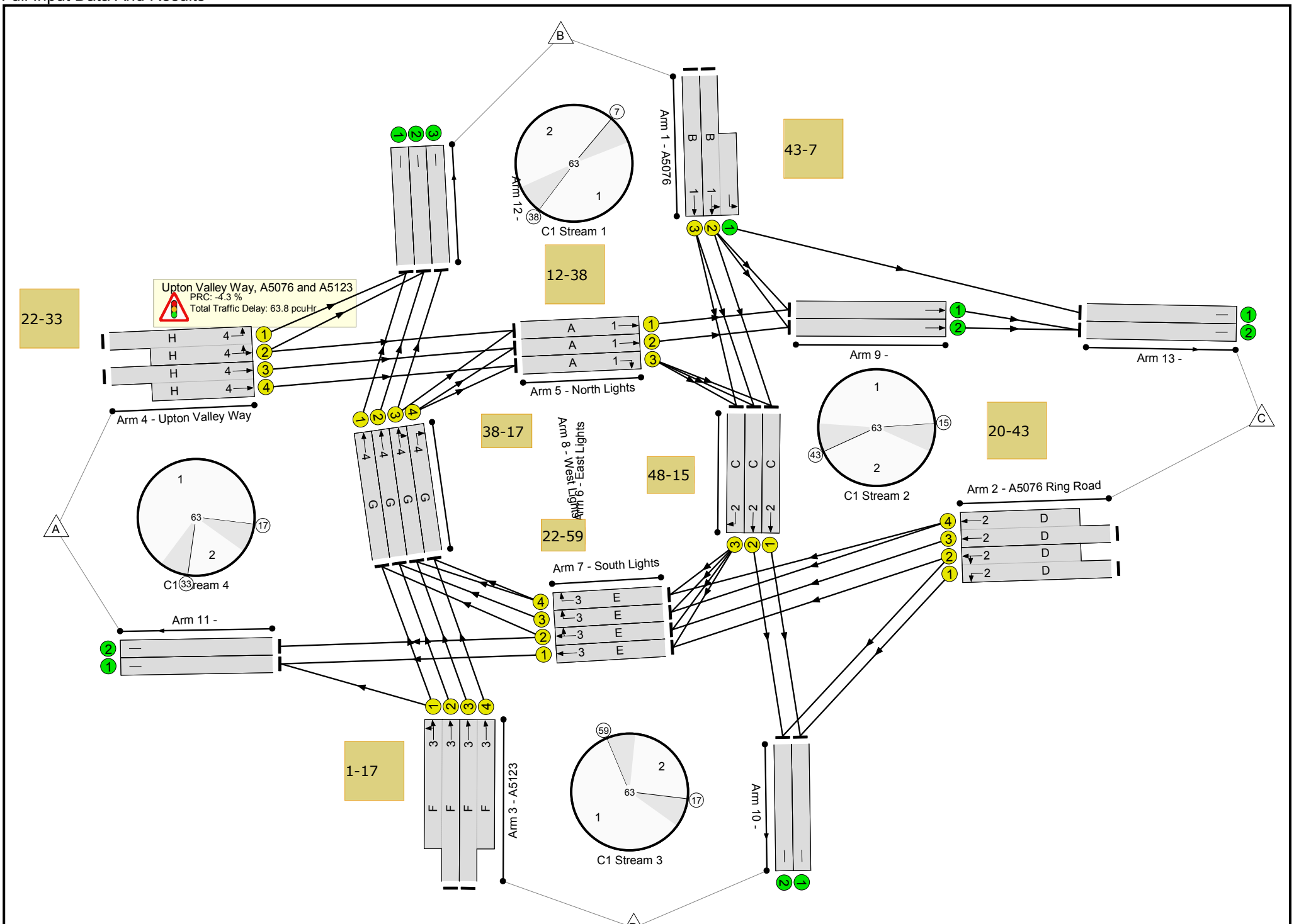
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	27	-	1584	2102:1990	575+1113	93.8 : 93.8%
1/3	A5076 Ahead	U	1	N/A	B		1	27	-	798	2102	934	85.4%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	23	-	1230	1879:2023	710+765	83.4 : 83.4%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	23	-	1186	2028:2028	628+769	84.9 : 84.9%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	16	-	517	2050:1913	553+516	48.6 : 48.0%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	16	-	714	2147:1913	579+516	64.4 : 66.1%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	11	-	585	1970:2060	310+392	83.3 : 83.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	11	-	405	2061:2060	393+119	79.2 : 79.2%
5/1	North Lights Ahead	U	1	N/A	A		1	26	-	665	1966	843	78.9%
5/2	North Lights Ahead	U	1	N/A	A		1	26	-	651	1941	832	78.3%
5/3	North Lights Right	U	1	N/A	A		1	26	-	95	1908	818	11.6%
6/1	East Lights Ahead	U	2	N/A	C		1	30	-	593	1966	967	61.3%
6/2	East Lights Ahead	U	2	N/A	C		1	30	-	650	2102	1034	62.8%
6/3	East Lights Right	U	2	N/A	C		1	30	-	190	2099	1033	18.4%
7/1	South Lights Ahead	U	3	N/A	E		1	37	-	470	1940	1170	40.2%
7/2	South Lights Right Ahead	U	3	N/A	E		1	37	-	629	2097	1265	49.7%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	37	-	357	2095	1264	28.3%
7/4	South Lights Right	U	3	N/A	E		1	37	-	296	2095	1264	23.4%
8/1	West Lights Ahead	U	4	N/A	G		1	42	-	606	1967	1343	45.1%
8/2	West Lights Ahead	U	4	N/A	G		1	42	-	626	2016	1376	45.5%
8/3	West Lights Right Ahead	U	4	N/A	G		1	42	-	669	2131	1454	46.0%
8/4	West Lights Right	U	4	N/A	G		1	42	-	341	2106	1437	23.7%
9/1	Ahead	U	N/A	N/A	-		-	-	-	665	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1185	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	912	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	249	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	864	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	662	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	295	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1044	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1316	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**35.4**	**28.4**	**0.0**	**63.8**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**35.4**	**28.4**	**0.0**	**63.8**	**-**	**-**	**-**	**-**
1/2+1/1	1584	1584	-	-	-	2.0	6.7	-	8.7	19.8	8.3	6.7	15.1
1/3	798	798	-	-	-	3.5	2.8	-	6.3	28.4	12.4	2.8	15.2
2/1+2/2	1230	1230	-	-	-	6.0	2.5	-	8.5	24.8	9.9	2.5	12.4
2/3+2/4	1186	1186	-	-	-	5.7	2.7	-	8.4	25.5	10.3	2.7	13.1
3/2+3/1	517	517	-	-	-	2.8	0.5	-	3.2	22.6	3.9	0.5	4.4
3/3+3/4	714	714	-	-	-	4.0	0.9	-	5.0	25.1	5.7	0.9	6.6
4/1+4/2	585	585	-	-	-	3.9	2.4	-	6.3	39.0	5.4	2.4	7.9
4/3+4/4	405	405	-	-	-	2.7	1.8	-	4.5	40.1	5.2	1.8	7.0
5/1	665	665	-	-	-	1.1	1.8	-	3.0	16.1	3.4	1.8	5.2
5/2	651	651	-	-	-	1.1	1.8	-	2.8	15.7	2.8	1.8	4.5
5/3	95	95	-	-	-	0.1	0.1	-	0.1	4.7	0.1	0.1	0.2
6/1	593	593	-	-	-	0.2	0.8	-	1.0	6.2	3.8	0.8	4.6
6/2	650	650	-	-	-	0.2	0.8	-	1.0	5.7	0.8	0.8	1.6
6/3	190	190	-	-	-	0.0	0.1	-	0.2	3.0	0.2	0.1	0.3
7/1	470	470	-	-	-	0.3	0.3	-	0.7	5.1	1.5	0.3	1.8
7/2	629	629	-	-	-	0.3	0.5	-	0.8	4.7	1.4	0.5	1.9
7/3	357	357	-	-	-	0.0	0.2	-	0.2	2.0	0.0	0.2	0.2
7/4	296	296	-	-	-	0.0	0.2	-	0.2	1.9	0.0	0.2	0.2
8/1	606	606	-	-	-	0.3	0.4	-	0.7	4.4	5.0	0.4	5.4
8/2	626	626	-	-	-	0.3	0.4	-	0.7	4.1	3.0	0.4	3.4
8/3	669	669	-	-	-	0.5	0.4	-	0.9	4.9	3.2	0.4	3.7
8/4	341	341	-	-	-	0.4	0.2	-	0.5	5.7	1.4	0.2	1.5
9/1	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

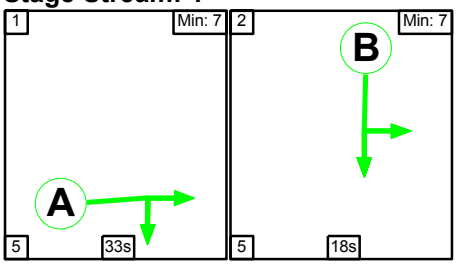
10/1	1185	1185	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	912	912	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	249	249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	662	662	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	295	295	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1044	1044	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1316	1316	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-4.3	Total Delay for Signalled Lanes (pcuHr):	20.92	Cycle Time (s):	63		
C1	Stream: 2 PRC for Signalled Lanes (%):	6.0	Total Delay for Signalled Lanes (pcuHr):	19.10	Cycle Time (s):	63		
C1	Stream: 3 PRC for Signalled Lanes (%):	36.2	Total Delay for Signalled Lanes (pcuHr):	10.06	Cycle Time (s):	63		
C1	Stream: 4 PRC for Signalled Lanes (%):	8.0	Total Delay for Signalled Lanes (pcuHr):	13.76	Cycle Time (s):	63		
	PRC Over All Lanes (%):	-4.3	Total Delay Over All Lanes(pcuHr):	63.84				

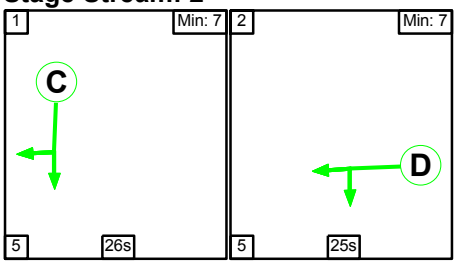
Full Input Data And Results
Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

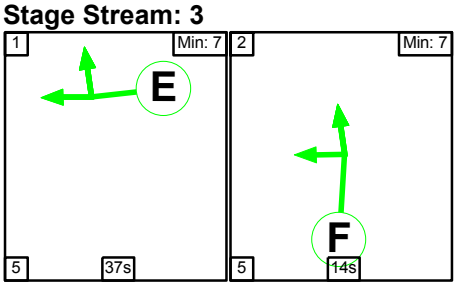
Stage Stream: 1



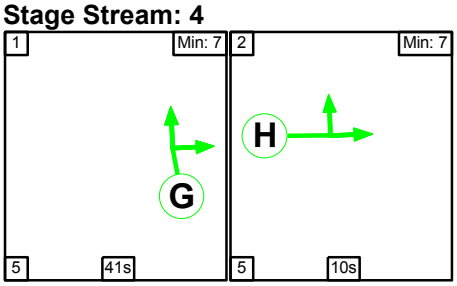
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	33	18
Change Point	4	42

Stage Stream: 2

Stage	1	2
Duration	26	25
Change Point	48	18

Stage Stream: 3

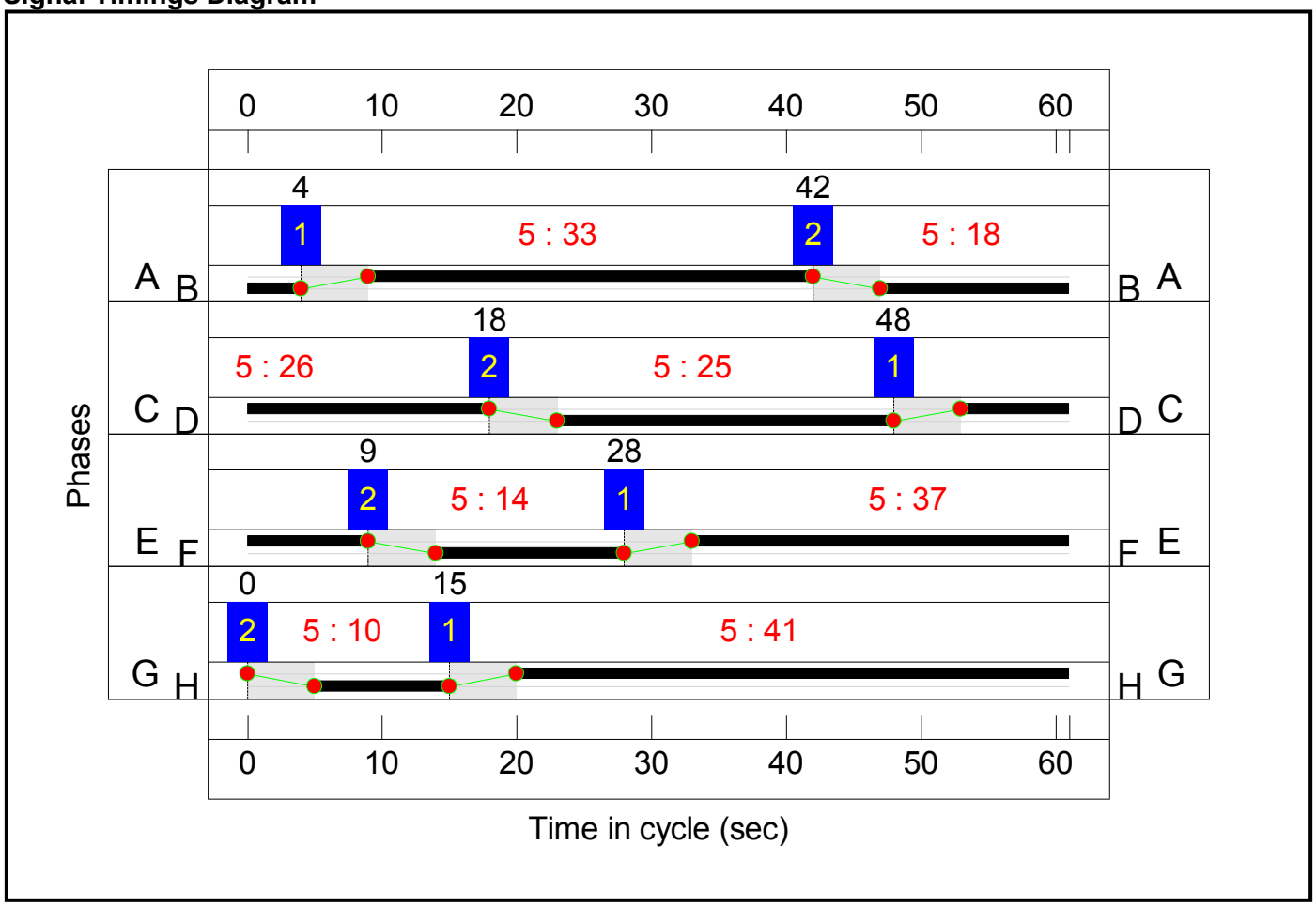
Stage	1	2
Duration	37	14
Change Point	28	9

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	41	10
Change Point	15	0

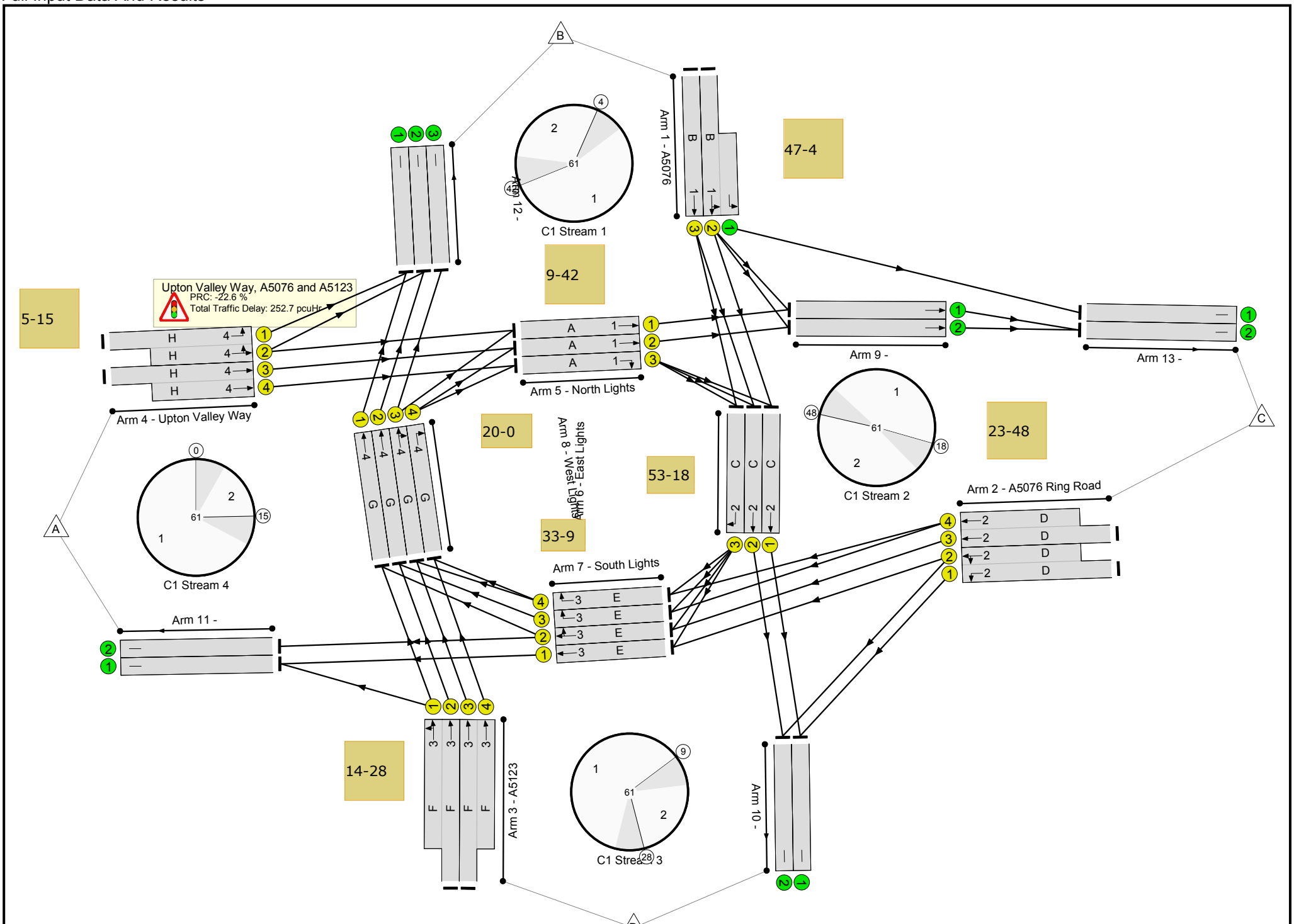
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.3%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.3%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	18	-	1359	2102:1990	496+897	97.6 : 97.6%
1/3	A5076 Ahead	U	1	N/A	B		1	18	-	609	2102	655	93.0%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	25	-	1647	1879:2025	765+824	103.7 : 103.7%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	25	-	1539	2028:2028	558+838	110.3 : 110.3%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	14	-	971	2050:1913	504+470	102.8 : 96.3%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	14	-	1057	2147:1913	528+470	104.2 : 107.8%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	10	-	303	1970:2061	21+372	77.2 : 77.2%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	10	-	380	2061:2060	372+114	78.3 : 78.3%
5/1	North Lights Ahead	U	1	N/A	A		1	33	-	787	1966	1096	70.0%
5/2	North Lights Ahead	U	1	N/A	A		1	33	-	815	1941	1082	71.8%
5/3	North Lights Right	U	1	N/A	A		1	33	-	89	1908	1063	8.4%
6/1	East Lights Ahead	U	2	N/A	C		1	26	-	528	1966	870	60.7%
6/2	East Lights Ahead	U	2	N/A	C		1	26	-	481	2102	930	51.7%
6/3	East Lights Right	U	2	N/A	C		1	26	-	173	2099	929	18.6%
7/1	South Lights Ahead	U	3	N/A	E		1	37	-	667	1940	1209	53.4%
7/2	South Lights Right Ahead	U	3	N/A	E		1	37	-	730	2096	1306	51.5%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	37	-	445	2095	1305	30.9%
7/4	South Lights Right	U	3	N/A	E		1	37	-	480	2095	1305	33.3%
8/1	West Lights Ahead	U	4	N/A	G		1	41	-	1057	1967	1354	73.8%
8/2	West Lights Ahead	U	4	N/A	G		1	41	-	963	2016	1388	65.4%
8/3	West Lights Right Ahead	U	4	N/A	G		1	41	-	1013	2134	1469	64.5%
8/4	West Lights Right	U	4	N/A	G		1	41	-	524	2106	1450	33.5%
9/1	Ahead	U	N/A	N/A	-		-	-	-	787	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	815	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1321	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	725	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	678	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	115	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1073	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	964	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	512	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	875	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1602	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**48.3**	**204.4**	**0.0**	**252.7**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**48.3**	**204.4**	**0.0**	**252.7**	**-**	**-**	**-**	**-**
1/2+1/1	1359	1359	-	-	-	2.6	11.8	-	14.4	38.1	9.3	11.8	21.1
1/3	609	609	-	-	-	3.4	5.4	-	8.8	52.2	10.0	5.4	15.4
2/1+2/2	1647	1589	-	-	-	9.2	39.7	-	49.0	107.0	21.4	39.7	61.1
2/3+2/4	1539	1395	-	-	-	10.2	76.9	-	87.1	203.7	24.0	76.9	100.9
3/2+3/1	971	957	-	-	-	6.6	21.7	-	28.2	104.7	9.0	21.7	30.7
3/3+3/4	1057	998	-	-	-	8.4	36.5	-	44.9	153.0	9.7	36.5	46.2
4/1+4/2	303	303	-	-	-	2.0	1.6	-	3.6	43.1	4.6	1.6	6.3
4/3+4/4	380	380	-	-	-	2.5	1.7	-	4.2	39.8	4.7	1.7	6.4
5/1	767	767	-	-	-	0.6	1.2	-	1.7	8.1	1.4	1.2	2.6
5/2	777	777	-	-	-	0.6	1.3	-	1.9	8.7	1.8	1.3	3.0
5/3	89	89	-	-	-	0.0	0.0	-	0.0	1.8	0.0	0.0	0.0
6/1	528	528	-	-	-	0.3	0.8	-	1.1	7.5	3.3	0.8	4.1
6/2	481	481	-	-	-	0.2	0.5	-	0.7	5.5	0.4	0.5	1.0
6/3	173	173	-	-	-	0.1	0.1	-	0.2	5.1	0.3	0.1	0.4
7/1	645	645	-	-	-	0.3	0.6	-	0.8	4.7	4.9	0.6	5.5
7/2	673	673	-	-	-	0.8	0.5	-	1.3	6.9	9.2	0.5	9.7
7/3	404	404	-	-	-	0.0	0.2	-	0.3	2.3	0.9	0.2	1.1
7/4	435	435	-	-	-	0.0	0.2	-	0.3	2.3	1.2	0.2	1.5
8/1	1000	1000	-	-	-	0.2	1.4	-	1.6	5.7	4.9	1.4	6.3
8/2	908	908	-	-	-	0.2	0.9	-	1.1	4.6	2.8	0.9	3.8
8/3	948	948	-	-	-	0.2	0.9	-	1.1	4.2	1.3	0.9	2.2
8/4	486	486	-	-	-	0.0	0.3	-	0.3	1.9	0.0	0.3	0.3
9/1	767	767	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	777	777	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

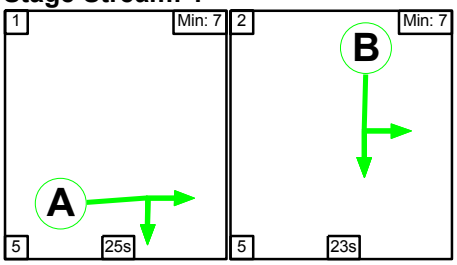
10/1	1293	1293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	656	656	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	115	115	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1016	1016	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	909	909	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	467	467	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	875	875	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1544	1544	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-8.4	Total Delay for Signalled Lanes (pcuHr):	26.86	Cycle Time (s): 61
C1	Stream: 2 PRC for Signalled Lanes (%):	-22.6	Total Delay for Signalled Lanes (pcuHr):	138.13	Cycle Time (s): 61
C1	Stream: 3 PRC for Signalled Lanes (%):	-19.8	Total Delay for Signalled Lanes (pcuHr):	75.81	Cycle Time (s): 61
C1	Stream: 4 PRC for Signalled Lanes (%):	14.9	Total Delay for Signalled Lanes (pcuHr):	11.94	Cycle Time (s): 61
	PRC Over All Lanes (%):	-22.6	Total Delay Over All Lanes(pcuHr):	252.74	

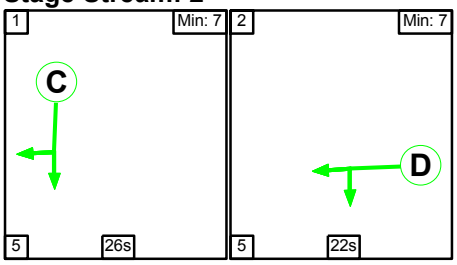
Full Input Data And Results
Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

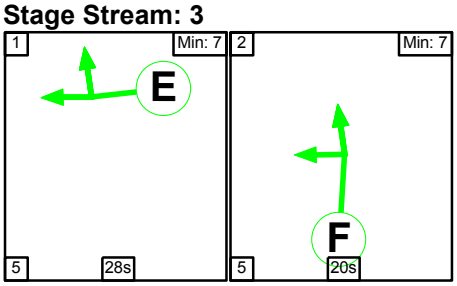
Stage Stream: 1



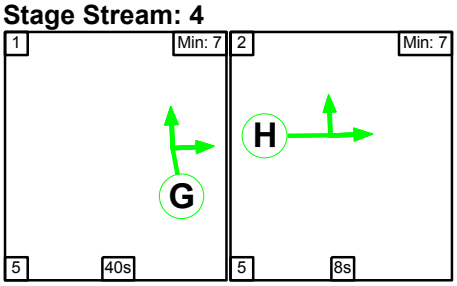
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	23
Change Point	22	52

Stage Stream: 2

Stage	1	2
Duration	26	22
Change Point	55	28

Stage Stream: 3

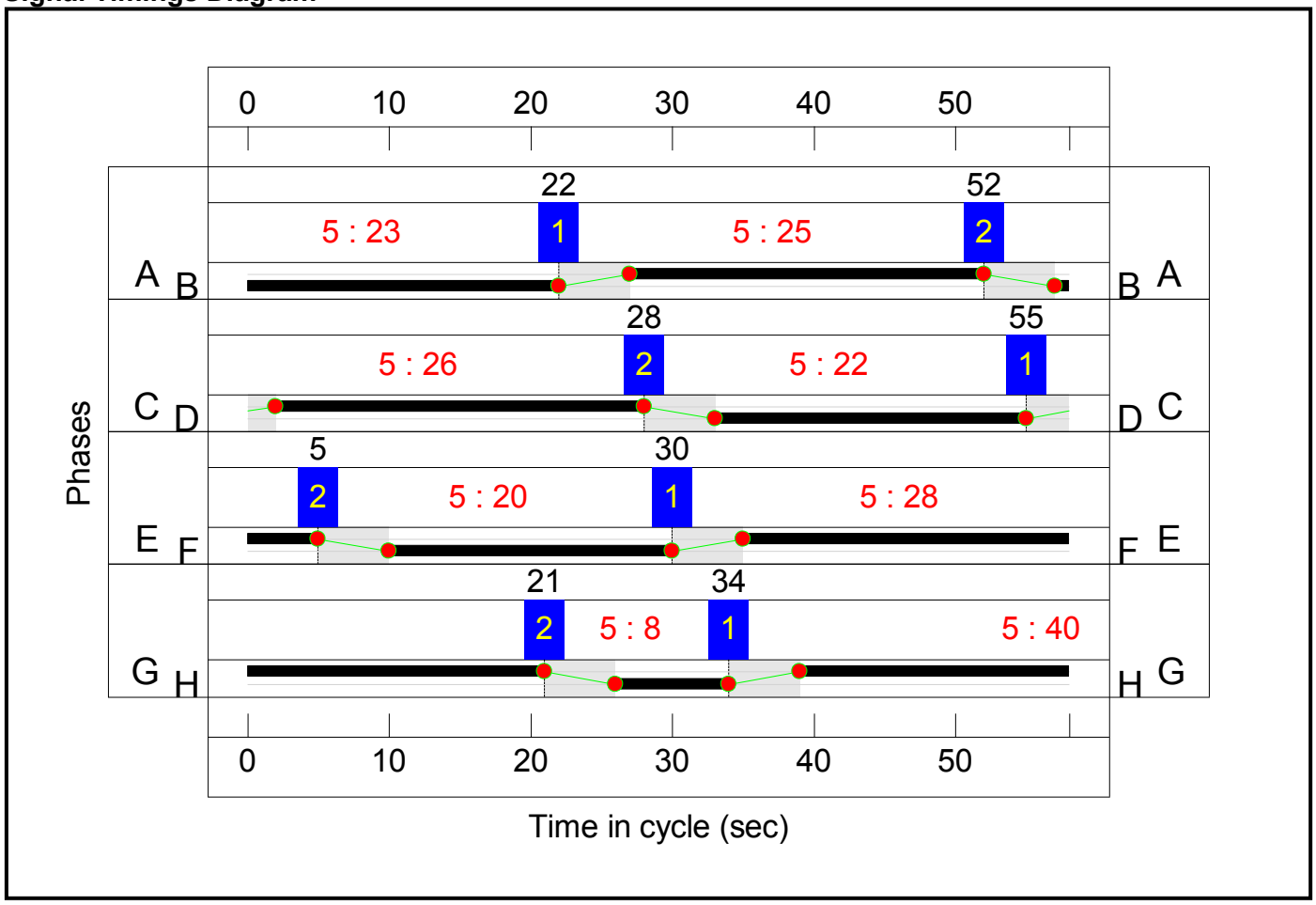
Stage	1	2
Duration	28	20
Change Point	30	5

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	40	8
Change Point	34	21

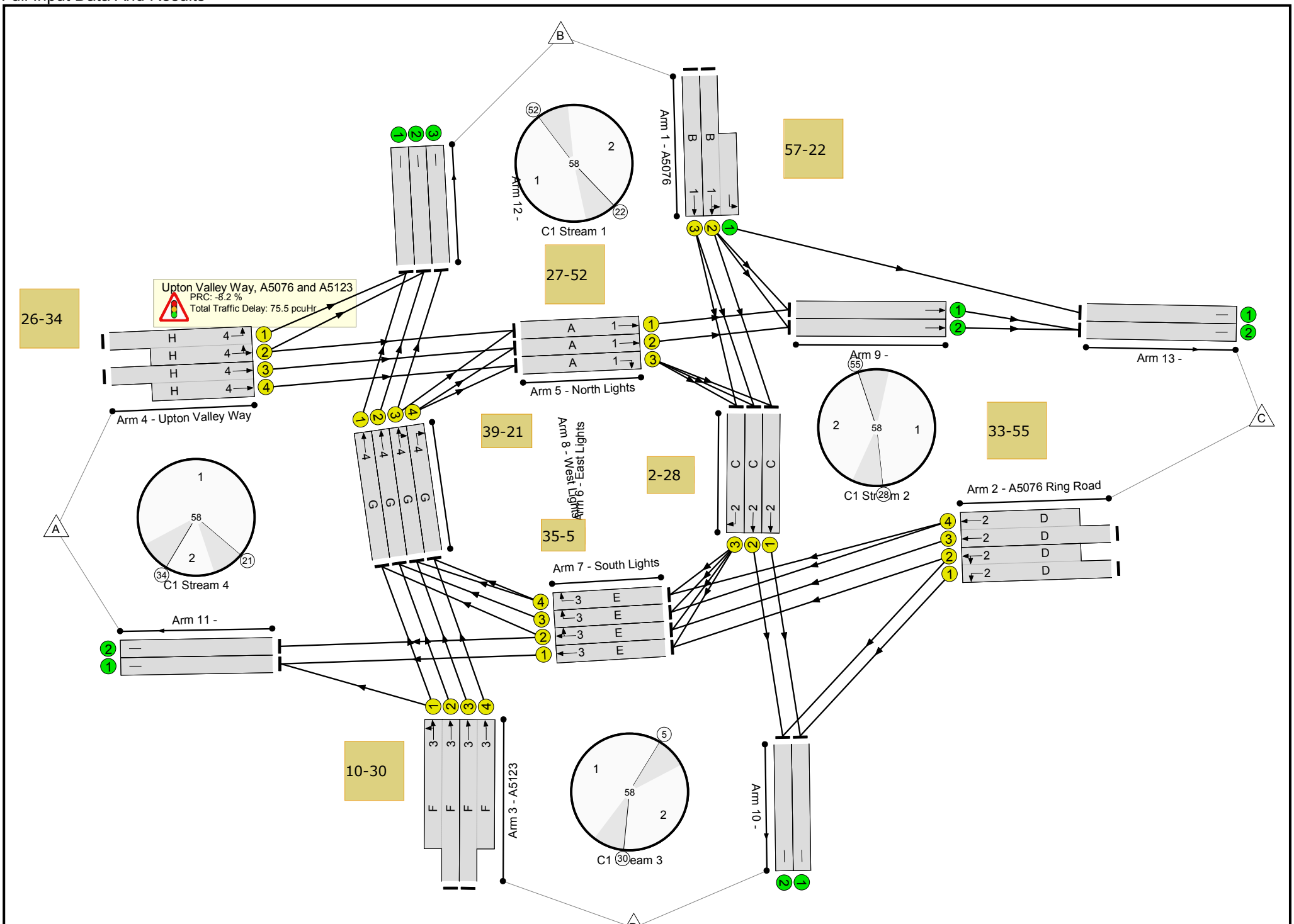
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.4%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.4%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	23	-	1564	2102:1990	588+1018	97.4 : 97.4%
1/3	A5076 Ahead	U	1	N/A	B		1	23	-	790	2102	870	90.8%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	22	-	1275	1879:2018	745+800	82.5 : 82.5%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	22	-	1216	2028:2028	698+804	80.9 : 80.9%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	20	-	694	2050:1913	742+693	46.5 : 50.4%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	20	-	866	2147:1913	777+693	57.1 : 60.9%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	8	-	565	1970:2061	306+320	86.4 : 94.1%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	8	-	415	2061:2060	320+161	86.3 : 86.3%
5/1	North Lights Ahead	U	1	N/A	A		1	25	-	730	1966	881	82.8%
5/2	North Lights Ahead	U	1	N/A	A		1	25	-	702	1941	870	80.7%
5/3	North Lights Right	U	1	N/A	A		1	25	-	139	1908	855	16.3%
6/1	East Lights Ahead	U	2	N/A	C		1	26	-	647	1966	915	70.7%
6/2	East Lights Ahead	U	2	N/A	C		1	26	-	712	2102	979	72.8%
6/3	East Lights Right	U	2	N/A	C		1	26	-	143	2099	977	14.6%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	225	1940	970	23.2%
7/2	South Lights Right Ahead	U	3	N/A	E		1	28	-	599	2098	1049	57.1%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	353	2095	1047	33.7%
7/4	South Lights Right	U	3	N/A	E		1	28	-	298	2095	1047	28.4%
8/1	West Lights Ahead	U	4	N/A	G		1	40	-	546	1967	1390	39.3%
8/2	West Lights Ahead	U	4	N/A	G		1	40	-	698	2016	1425	49.0%
8/3	West Lights Right Ahead	U	4	N/A	G		1	40	-	738	2130	1506	49.0%
8/4	West Lights Right	U	4	N/A	G		1	40	-	426	2106	1489	28.6%
9/1	Ahead	U	N/A	N/A	-		-	-	-	730	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1262	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1256	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	810	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	294	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	991	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1432	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**36.7**	**38.8**	**0.0**	**75.5**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**36.7**	**38.8**	**0.0**	**75.5**	**-**	**-**	**-**	**-**
1/2+1/1	1564	1564	-	-	-	2.2	11.9	-	14.1	32.6	11.3	11.9	23.3
1/3	790	790	-	-	-	3.5	4.5	-	8.0	36.3	11.8	4.5	16.3
2/1+2/2	1275	1275	-	-	-	5.6	2.3	-	7.9	22.2	9.5	2.3	11.9
2/3+2/4	1216	1216	-	-	-	5.1	2.1	-	7.2	21.3	9.2	2.1	11.3
3/2+3/1	694	694	-	-	-	2.8	0.5	-	3.2	16.7	4.4	0.5	4.8
3/3+3/4	866	866	-	-	-	3.6	0.7	-	4.3	18.0	5.7	0.7	6.4
4/1+4/2	565	565	-	-	-	3.8	4.1	-	7.9	50.3	4.8	4.1	8.9
4/3+4/4	415	415	-	-	-	2.7	2.9	-	5.6	48.5	4.3	2.9	7.2
5/1	730	730	-	-	-	0.8	2.3	-	3.2	15.6	4.4	2.3	6.8
5/2	702	702	-	-	-	0.8	2.0	-	2.8	14.4	3.8	2.0	5.9
5/3	139	139	-	-	-	0.0	0.1	-	0.1	2.5	0.0	0.1	0.1
6/1	647	647	-	-	-	0.5	1.2	-	1.7	9.6	3.3	1.2	4.5
6/2	712	712	-	-	-	0.5	1.3	-	1.9	9.5	1.5	1.3	2.8
6/3	143	143	-	-	-	0.1	0.1	-	0.2	4.5	0.2	0.1	0.3
7/1	225	225	-	-	-	0.4	0.2	-	0.6	9.1	1.8	0.2	1.9
7/2	599	599	-	-	-	0.2	0.7	-	0.8	5.1	0.7	0.7	1.3
7/3	353	353	-	-	-	0.1	0.3	-	0.3	3.1	0.1	0.3	0.4
7/4	298	298	-	-	-	0.0	0.2	-	0.2	2.9	0.1	0.2	0.3
8/1	546	546	-	-	-	0.8	0.3	-	1.1	7.2	3.2	0.3	3.5
8/2	698	698	-	-	-	0.8	0.5	-	1.3	6.5	3.3	0.5	3.8
8/3	738	738	-	-	-	1.2	0.5	-	1.7	8.4	4.9	0.5	5.4
8/4	426	426	-	-	-	1.2	0.2	-	1.4	11.8	4.6	0.2	4.8
9/1	730	730	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	702	702	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

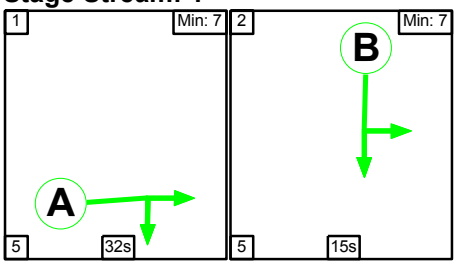
10/1	1262	1262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1256	1256	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	810	810	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	294	294	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	991	991	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1432	1432	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-8.2	Total Delay for Signalled Lanes (pcuHr):	28.18	Cycle Time (s):	58
C1	Stream: 2 PRC for Signalled Lanes (%):	9.0	Total Delay for Signalled Lanes (pcuHr):	18.86	Cycle Time (s):	58
C1	Stream: 3 PRC for Signalled Lanes (%):	47.7	Total Delay for Signalled Lanes (pcuHr):	9.51	Cycle Time (s):	58
C1	Stream: 4 PRC for Signalled Lanes (%):	-4.6	Total Delay for Signalled Lanes (pcuHr):	18.95	Cycle Time (s):	58
	PRC Over All Lanes (%):	-8.2	Total Delay Over All Lanes(pcuHr):	75.50		

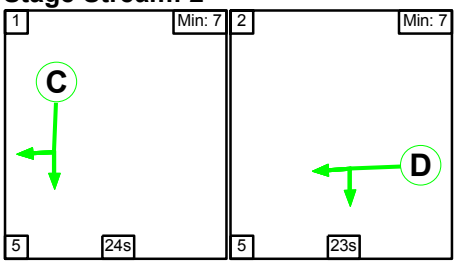
Full Input Data And Results
Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

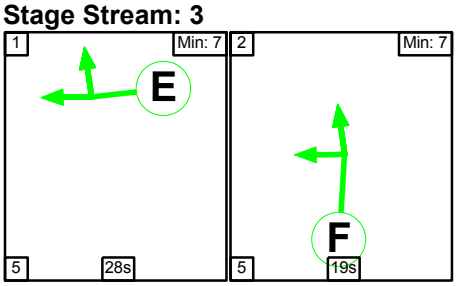
Stage Stream: 1



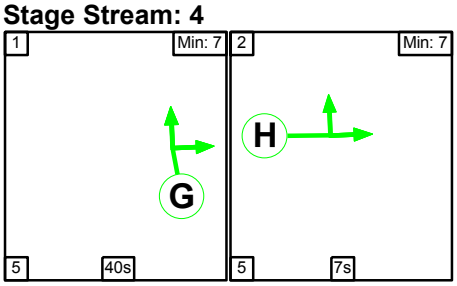
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	32	15
Change Point	9	46

Stage Stream: 2

Stage	1	2
Duration	24	23
Change Point	54	26

Stage Stream: 3

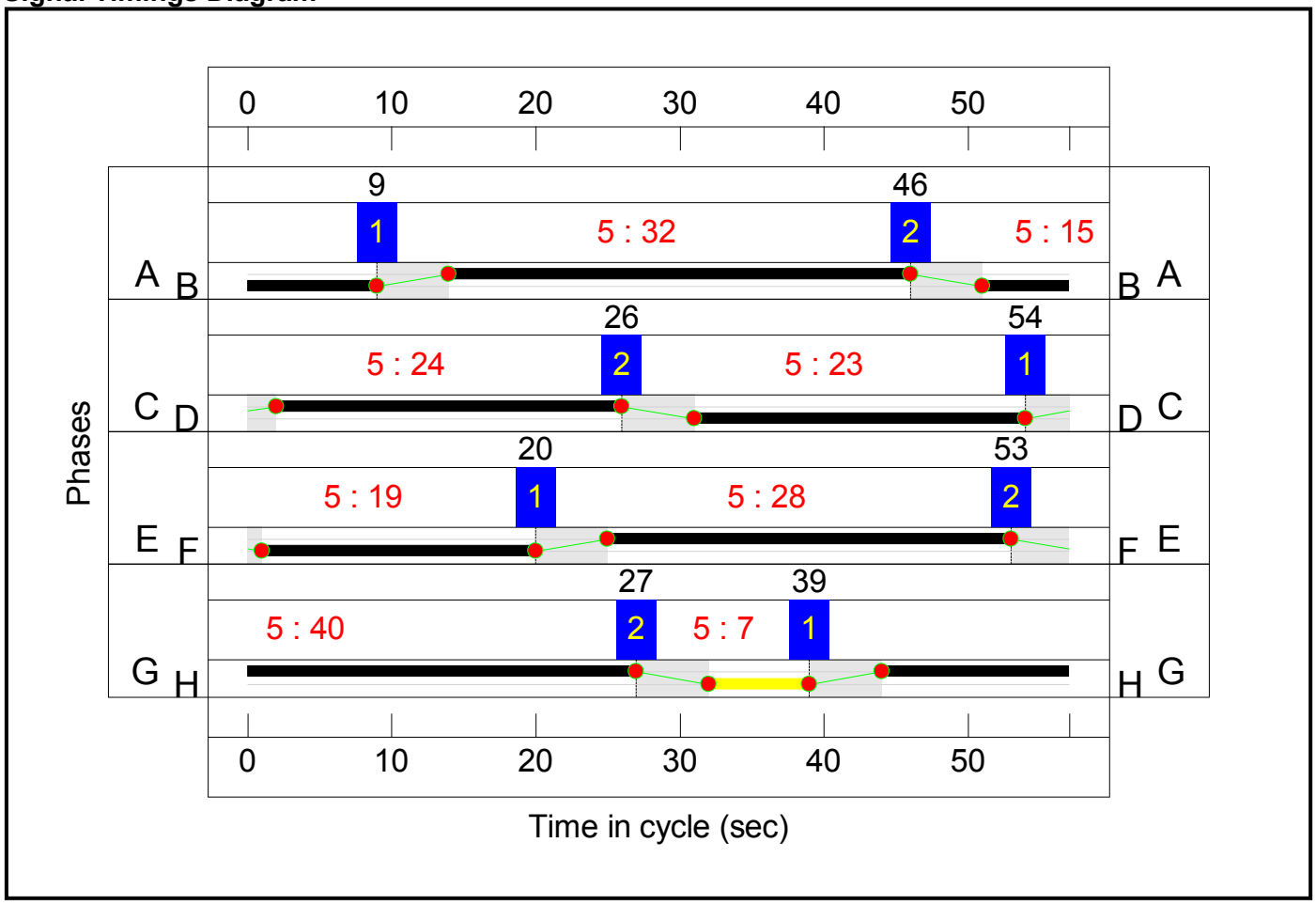
Stage	1	2
Duration	28	19
Change Point	20	53

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	40	7
Change Point	39	27

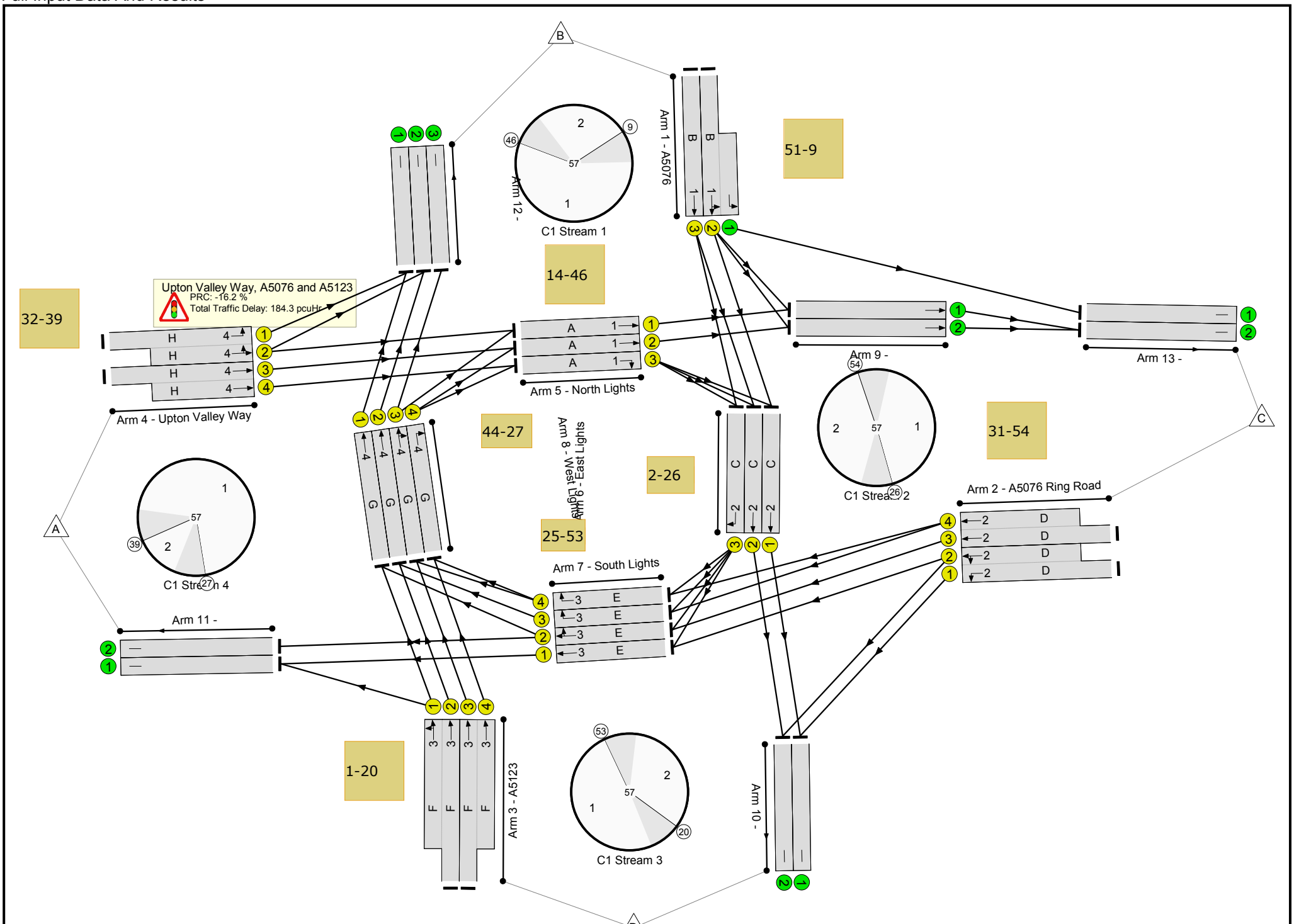
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.6%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.6%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	15	-	1367	2102:1990	495+832	103.0 : 103.0%
1/3	A5076 Ahead	U	1	N/A	B		1	15	-	617	2102	590	104.6%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	23	-	1488	1879:2026	784+846	91.3 : 91.3%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	23	-	1429	2028:2028	536+854	102.8 : 102.8%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	19	-	1288	2050:1912	719+671	92.7 : 92.6%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	19	-	1466	2147:1913	753+671	102.6 : 103.2%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	131	2015:2061	0+289	0.0 : 45.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	195	2061:2060	289+61	55.7 : 55.7%
5/1	North Lights Ahead	U	1	N/A	A		1	32	-	899	1966	1138	77.3%
5/2	North Lights Ahead	U	1	N/A	A		1	32	-	854	1941	1124	74.1%
5/3	North Lights Right	U	1	N/A	A		1	32	-	34	1908	1105	3.1%
6/1	East Lights Ahead	U	2	N/A	C		1	24	-	511	1966	862	57.6%
6/2	East Lights Ahead	U	2	N/A	C		1	24	-	489	2102	922	50.9%
6/3	East Lights Right	U	2	N/A	C		1	24	-	161	2099	921	16.7%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	679	1940	987	68.6%
7/2	South Lights Right Ahead	U	3	N/A	E		1	28	-	668	2096	1066	60.7%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	420	2095	1066	38.3%
7/4	South Lights Right	U	3	N/A	E		1	28	-	459	2095	1066	41.9%
8/1	West Lights Ahead	U	4	N/A	G		1	40	-	1091	1967	1415	76.0%
8/2	West Lights Ahead	U	4	N/A	G		1	40	-	1087	2016	1450	74.2%
8/3	West Lights Right Ahead	U	4	N/A	G		1	40	-	1232	2129	1531	78.3%
8/4	West Lights Right	U	4	N/A	G		1	40	-	693	2106	1515	44.3%
9/1	Ahead	U	N/A	N/A	-		-	-	-	899	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1227	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	625	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	760	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	117	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1091	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1087	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	464	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	857	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1753	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**45.7**	**138.6**	**0.0**	**184.3**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**45.7**	**138.6**	**0.0**	**184.3**	**-**	**-**	**-**	**-**
1/2+1/1	1367	1352	-	-	-	3.4	30.8	-	34.2	90.1	13.1	30.8	43.9
1/3	617	590	-	-	-	4.3	20.9	-	25.2	147.1	10.2	20.9	31.1
2/1+2/2	1488	1488	-	-	-	6.4	4.9	-	11.3	27.3	11.4	4.9	16.3
2/3+2/4	1429	1389	-	-	-	6.7	31.1	-	37.8	95.3	16.3	31.1	47.4
3/2+3/1	1288	1288	-	-	-	6.4	5.7	-	12.0	33.7	10.0	5.7	15.7
3/3+3/4	1466	1425	-	-	-	8.7	32.1	-	40.8	100.3	12.6	32.1	44.7
4/1+4/2	131	131	-	-	-	0.8	0.4	-	1.2	33.8	1.9	0.4	2.3
4/3+4/4	195	195	-	-	-	1.2	0.6	-	1.8	34.1	2.4	0.6	3.0
5/1	879	879	-	-	-	0.4	1.7	-	2.1	8.4	6.7	1.7	8.4
5/2	832	832	-	-	-	0.3	1.4	-	1.8	7.6	1.6	1.4	3.0
5/3	34	34	-	-	-	0.0	0.0	-	0.0	2.8	0.0	0.0	0.0
6/1	496	496	-	-	-	0.1	0.7	-	0.8	5.5	6.6	0.7	7.3
6/2	469	469	-	-	-	0.1	0.5	-	0.6	5.0	1.9	0.5	2.4
6/3	154	154	-	-	-	0.0	0.1	-	0.1	2.5	0.1	0.1	0.2
7/1	677	677	-	-	-	1.6	1.1	-	2.7	14.5	3.8	1.1	4.9
7/2	647	647	-	-	-	0.8	0.8	-	1.5	8.6	2.8	0.8	3.6
7/3	408	408	-	-	-	1.1	0.3	-	1.4	12.3	2.5	0.3	2.8
7/4	446	446	-	-	-	1.2	0.4	-	1.6	12.5	2.7	0.4	3.0
8/1	1075	1075	-	-	-	0.4	1.6	-	1.9	6.4	4.4	1.6	5.9
8/2	1075	1075	-	-	-	0.7	1.4	-	2.1	7.0	4.5	1.4	5.9
8/3	1200	1200	-	-	-	0.9	1.8	-	2.6	8.0	5.4	1.8	7.1
8/4	671	671	-	-	-	0.2	0.4	-	0.6	3.1	0.8	0.4	1.2
9/1	879	879	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1212	1212	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	758	758	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	112	112	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1075	1075	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1075	1075	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	451	451	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	857	857	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1712	1712	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-16.2	Total Delay for Signalled Lanes (pcuHr):	63.26	Cycle Time (s): 57
C1	Stream: 2 PRC for Signalled Lanes (%):	-14.2	Total Delay for Signalled Lanes (pcuHr):	50.60	Cycle Time (s): 57
C1	Stream: 3 PRC for Signalled Lanes (%):	-14.7	Total Delay for Signalled Lanes (pcuHr):	60.09	Cycle Time (s): 57
C1	Stream: 4 PRC for Signalled Lanes (%):	14.9	Total Delay for Signalled Lanes (pcuHr):	10.34	Cycle Time (s): 57
	PRC Over All Lanes (%):	-16.2	Total Delay Over All Lanes(pcuHr):	184.29	

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

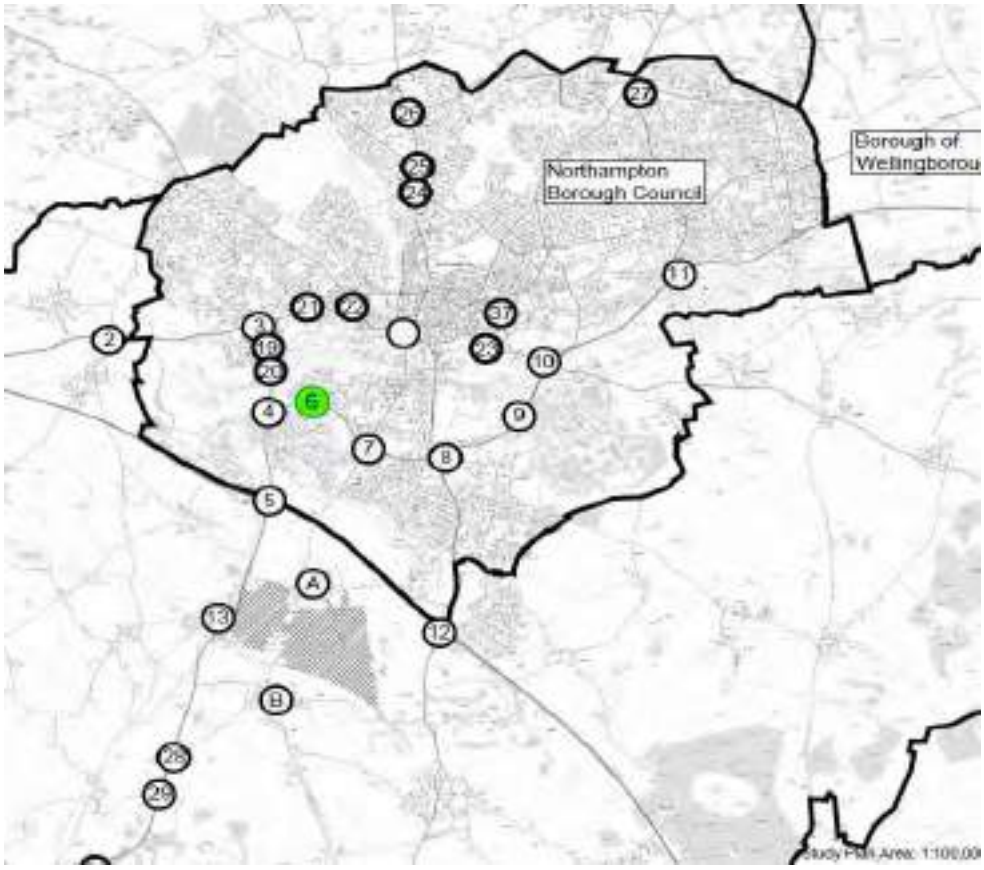
Technical Note No. 15

1 JUNCTION SIX – A5076 DANES CAMP WAY, HUNSBURY HILL AVENUE, HUNSBARROW ROAD AND HUNSBURY HILL ROAD

Existing Junction Description

1.1 Junction Six is a five arm roundabout which is located to the north of Hunsbury Hill Country Park. It connects the A5076 Danes Camp Way, Hunsbury Hill Avenue, Hunsbarrow Road and Hunsbury Hill Road. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Six Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction six were conducted on Thursday 18th June 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 As agreed with the NCC and HE, the junction has been modelled using the industry standard computer modelling software Junctions9. The outputs from Junctions9 relate to Max RFC (Ratio of Flow to Capacity), Max Queue (PCUs) and Delay (Seconds). RFC gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be exceeding theoretical capacity when the RFC greater than 1.

1.6 The junction has been set up based on the guidance provided within the Junction 9 handbook and industry standard guidance. The geometry of the junction has been measured in AutoCAD, to provide the most accurate measurements for the junction.

Base Model Validation

1.7 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015 Base		Average Surveyed Queues	Range of Surveyed Queues	Modelled Max Queue
AM Peak Hour (0800-0900)	Arm 1 – Hunsbarrow Road	4	2-5	1
	Arm 2 – A5076 DCW E	2	1-5	6
	Arm 3 – Hunsbury Hill Road	6	4-8	1
	Arm 4 – A5076 DCW W	4	3-7	8
	Arm 5 – Hunsbury Hill Avenue	10	7-12	0
PM Peak Hour (1700-1800)	Arm 1 – Hunsbarrow Road	3	2-6	1
	Arm 2 – A5076 DCW E	2	1-3	11
	Arm 3 – Hunsbury Hill Road	7	6-9	2
	Arm 4 – A5076 DCW W	4	2-6	14
	Arm 5 – Hunsbury Hill Avenue	11	6-14	0

1.8 It is considered that the modelled queues are generally in line with the surveyed queues, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being lower and higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded during the hour period.

Results of the Base Modelling

1.9 The results of the modelling for the existing junction layout, shown in **Figure EL06** are summarised in **Table 2** and junction analysis results are included at **Appendix B**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2015	35%	84%	58%	88%	18%	38%	92%	65%	94%	19%
	2021 DM	42%	80%	72%	102%	24%	111%	96%	141%	102%	24%
	2021 DS	51%	93%	73%	107%	25%	125%	82%	102%	116%	27%

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
	2031 DM	50%	93%	78%	104%	33%	132%	93%	158%	110%	30%
	2031 DS	56%	100%	80%	112%	33%	133%	96%	164%	119%	31%
Queue – MMQ (PCU)	2015	1	6	1	8	0	1	11	2	14	0
	2021 DM	1	4	3	51	0	41	18	83	46	0
	2021 DS	1	12	3	91	0	78	5	19	192	0
	2031 DM	1	13	3	64	1	112	13	128	138	0
	2031 DS	1	39	4	145	1	120	18	150	253	1
Average Delay (sec/pcu)	2015	9.6	9.3	11.9	13.8	7.2	10.4	18.4	16.2	24.6	7.9
	2021 DM	11.4	7.2	18.3	72.5	8.0	192.3	28.9	498.3	65.1	7.2
	2021 DS	13.8	18.4	18.4	117.8	8.3	472.9	8.6	114.0	275.3	8.2
	2031 DM	8.0	-5.0	-9.0	-6.0	-12.0	2.0	-15.0	-20.0	-21.0	-25.0
	2031 DS	14	50	88	70	158	27	163	293	373	581

1.10 As shown in **Table 2**, Rail Central is forecast to impact on the operation of the existing junction in the 2031 AM and PM peak scenarios, with Arm 2 and 4 by 7% and 8% in the AM peak and Arms 1, 3 and 4 by 1%, 6% and 9% respectively in the PM peak exceeding capacity further as a result. There is also a significant increase in queueing on Arm 2 and 4 of 26 and 81 PCUs respectively during the AM peak and across each arm during the PM peak of 150 PCUs.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (PRC)	8.0	-5.0	-9.0	-6.0	-12.0	2.0	-15.0	-20.0	-21.0	-25.0
Overall Junction Delay (PCUhr)	14	50	88	70	158	27	163	293	373	581

1.11 There is significant effect on overall junction capacity between the DM AM and DS AM scenarios for both 2021 and 2031. However, Overall junction delay increases between the DM AM and DS AM scenarios by 36 and 88 PCUhrs for 2021 and 2031 respectively. There is also an increase between DM PM and DS PM scenarios by 130 and 208 PCUhrs for both 2021 and 2031. Therefore mitigation is considered necessary to address the development's impact.

Proposed Mitigation

1.12 The proposed mitigation is shown in **Appendix J5** of the TA and summarised is as follows:

- Provision of signal control on both arms of the A5076 Danes Camp Way approaches and two corresponding traffic signals on the circulatory carriageway;
- Provision of an additional nearside lane on both of the A5076 Danes Camp Way approaches;
- Provision of an additional merge lane on both of the A5076 Danes Camp Way exits;
- Lengthening of the nearside lane on the Hunsbarrow Road approach;
- Reconfiguration of road markings to provide extra connecters on circulatory carriageway and entry arms;

The Standard Modelling Process for the Mitigated Junction

1.13 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

Results of the Mitigation Modelling

1.14 The results of the mitigated junction model is shown in **Table 4.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2021 DS	49.9%	76.9%	69.7%	76.2%	16.4%	111.6%	73.0%	72.7%	102.4%	14.8%
	Comparison to 2021 DM	7.9%	-3.1%	-2.3%	-25.8%	-7.6%	0.6%	-23.0%	-68.3%	0.4%	-9.2%
	2031 DS	53.9%	76.9%	77.8%	75.1%	24.2%	138.4%	96.7%	81.0%	106.0%	21.5%
	Comparison to 2031 DM	3.9%	-16.1%	-0.2%	-28.9%	-8.8%	6.4%	3.7%	-77.0%	-4.0%	-8.5%
Queue – MMQ (PCU)	2021 DS	1	7	3	7	0	47	8	4	46	1
	Comparison to 2021 DM	1	3	1	-44	0	6	-10	-78	0	0
	2031 DS	2	8	4	8	1	108	17	5	43	1
	Comparison to 2031 DM	1	-5	1	-56	0	-4	5	-123	-95	0
Average Delay (sec/pcu)	2021 DS	9.4	9.6	18.3	9.5	3.9	224.8	13.0	13.2	86.5	4.3
	Comparison to 2021 DM	-2.0	2.4	0.0	-63.0	-4.1	32.5	-15.9	-485.1	21.5	-2.9
	2031 DS	12.6	12.9	27.9	12.3	5.1	534.9	37.4	18.5	144.2	5.0
	Comparison to 2031 DM	-1.6	-6.8	-3.4	-75.7	-4.2	-95.1	15.5	-675.6	-28.7	-2.9

1.15 As shown in **Table 4**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst Arm 1 shows to provide 3.9% less capacity than in the 2031 DM AM scenario, the other arms show improvements, in particularly Arm 4 by 28.9%. Whilst Arms 1 and 2, shows to provide 6.4% and 3.7% less capacity than in the 2031 DM PM scenario respectively, the other three arms show improvements in particularly Arm 3 of 77%.

1.16 Furthermore, there is a reduction in queues 2031 AM peak and PM peak of 60 PCUs and 237 PCUs respectively, and a reduction in overall delay of over a minute in the AM peak and over 14 minutes in the PM peak.

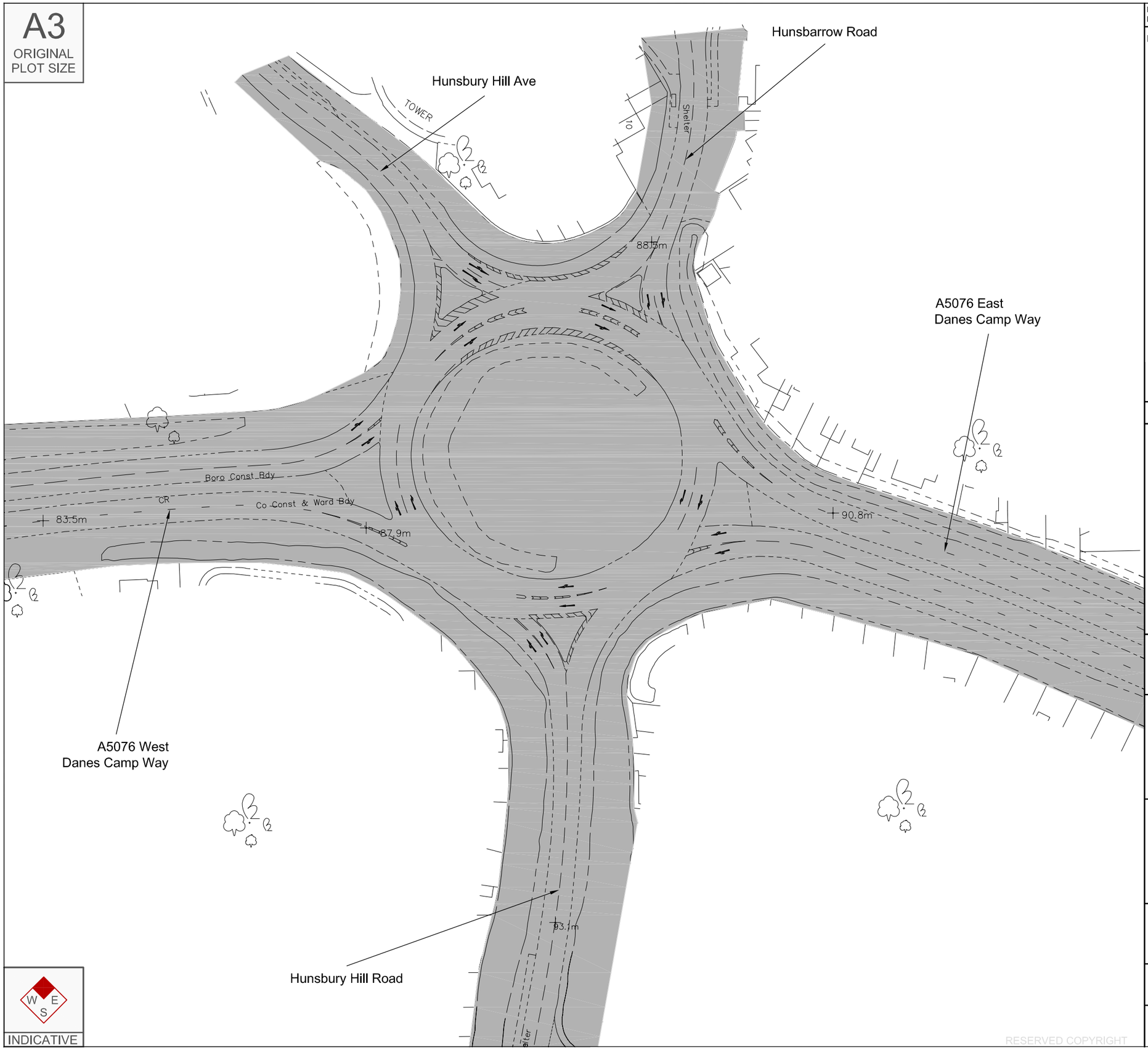
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	17.0	NA	15.7	NA	-24.0	NA	-53.7	NA
Overall Junction Delay (PCUhr)	17	NA	21	NA	110	NA	200	NA

1.17 As shown above in **Table 5**, there is no comparison to the existing junction results as the existing model was constructed in Jucntion9 and the proposed improvement model was constructed in LinSig 3, therefore results are not comparable.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A5076/ Hunsbury Hill Road Roundabout Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	14.06.17	DR	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL06	-

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	126	6	1,952	321	2,405
B - Hunsbury Hill Avenue	144	0	1	158	29	332
C - Hunsbarrow Road	269	16	0	31	27	343
D - A5076 (East)	1,560	135	8	0	70	1,773
E - Hunsbury Hill Road	507	10	8	193	0	718
Total	2,480	287	23	2,334	447	4,853

Modelled Flows
2021 DM
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	135	7	2,224	278	2,644
B - Hunsbury Hill Avenue	160	0	1	166	32	359
C - Hunsbarrow Road	289	17	0	31	28	365
D - A5076 (East)	1,526	165	10	0	80	1,781
E - Hunsbury Hill Road	543	9	8	239	0	799
Total	2,518	326	26	2,660	418	5,948

Modelled Flows
2021 DS2
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	139	7	2,309	253	2,707
B - Hunsbury Hill Avenue	165	0	1	171	22	359
C - Hunsbarrow Road	333	23	0	27	22	405
D - A5076 (East)	1,837	137	27	0	61	2,062
E - Hunsbury Hill Road	412	18	0	244	0	675
Total	2,747	317	35	2,751	358	6,207

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	0	0	0	0	0
B - Hunsbury Hill Avenue	0	0	0	0	0	0
C - Hunsbarrow Road	0	0	0	0	0	0
D - A5076 (East)	0	0	0	0	0	0
E - Hunsbury Hill Road	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	9	1	272	-43	239
B - Hunsbury Hill Avenue	16	0	0	8	3	27
C - Hunsbarrow Road	20	1	0	0	1	22
D - A5076 (East)	-34	30	2	0	10	8
E - Hunsbury Hill Road	36	-1	0	46	0	81
Total	38	39	3	326	-29	377

2021 DS2 minus 2015 Base
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	13	1	357	-68	302
B - Hunsbury Hill Avenue	21	0	0	13	-7	27
C - Hunsbarrow Road	64	7	0	-4	-5	62
D - A5076 (East)	277	2	19	0	-9	289
E - Hunsbury Hill Road	95	8	-8	51	0	43
Total	267	30	12	417	-89	636

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	224	31	1,607	34	1,896
B - Hunsbury Hill Avenue	38	0	6	49	8	101
C - Hunsbarrow Road	73	8	0	46	62	189
D - A5076 (East)	1,795	45	51	0	81	1,972
E - Hunsbury Hill Road	171	6	5	199	0	381
Total	2,077	283	93	1,901	185	4,539

2021 DM adjusted to count
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	233	32	1,879	-9	2,135
B - Hunsbury Hill Avenue	54	0	6	57	11	128
C - Hunsbarrow Road	93	9	0	46	63	211
D - A5076 (East)	1,761	75	53	0	91	1,980
E - Hunsbury Hill Road	207	5	5	245	0	462
Total	2,115	322	96	2,227	156	4,916

2021 DS2 adjusted to count
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	237	32	1,964	-34	2,198
B - Hunsbury Hill Avenue	59	0	6	62	1	128
C - Hunsbarrow Road	137	15	0	42	57	251
D - A5076 (East)	2,072	47	70	0	72	2,261
E - Hunsbury Hill Road	76	14	-3	250	0	338
Total	2,344	313	105	2,318	96	5,175

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	134	343	1,339	264	2,080
B - Hunsbury Hill Avenue	173	0	10	203	11	397
C - Hunsbarrow Road	101	8	0	15	14	138
D - A5076 (East)	1,455	267	73	0	175	1,970
E - Hunsbury Hill Road	215	7	20	141	0	383
Total	1,944	416	446	1,698	464	4,968

Modelled Flows
2021 DM
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	139	340	1,553	253	2,285
B - Hunsbury Hill Avenue	196	0	11	228	10	445
C - Hunsbarrow Road	457	58	0	15	45	575
D - A5076 (East)	1,623	189	54	0	119	1,985
E - Hunsbury Hill Road	326	11	12	166	0	515
Total	2,602	397	417	1,962	427	5,805

Modelled Flows
2021 DS2
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	138	347	1,752	259	2,497
B - Hunsbury Hill Avenue	189	0	11	236	10	446
C - Hunsbarrow Road	434	67	0	15	78	593
D - A5076 (East)	1,353	190	64	0	103	1,710
E - Hunsbury Hill Road	261	13	4	244	0	521
Total	2,236	407	426	2,246	451	5,767

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	0	0	0	0	0
B - Hunsbury Hill Avenue	0	0	0	0	0	0
C - Hunsbarrow Road	0	0	0	0	0	0
D - A5076 (East)	0	0	0	0	0	0
E - Hunsbury Hill Road	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	5	-3	214	-11	205
B - Hunsbury Hill Avenue	23	0	1	25	-1	48
C - Hunsbarrow Road	356	50	0	0	31	437
D - A5076 (East)	168	-78	-19	0	-56	15
E - Hunsbury Hill Road	111	4	-8	25	0	132
Total	658	-19	-29	264	-37	837

2021 DS2 minus 2015 Base
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	4	4	413	-5	417
B - Hunsbury Hill Avenue	16	0	1	33	-1	49
C - Hunsbarrow Road	333	59	0	0	64	455
D - A5076 (East)	-102	-77	-9	0	-72	-260
E - Hunsbury Hill Road	46	6	-16	103	0	138
Total	292	-9	-20	548	-13	799

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	338	52	1,559	55	2,004
B - Hunsbury Hill Avenue	38	0	4	47	10	99
C - Hunsbarrow Road	95	7	0	52	44	198
D - A5076 (East)	1,851	82	80	0	83	2,096
E - Hunsbury Hill Road	209	6	4	167	0	386
Total	2,193	433	140	1,825	192	4,783

2021 DM adjusted to count
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	343	49	1,773	44	2,209
B - Hunsbury Hill Avenue	61	0	5	72	9	147
C - Hunsbarrow Road	451	57	0	52	75	635
D - A5076 (East)	2,019	4	61	0	27	2,111
E - Hunsbury Hill Road	320	10	-4	192	0	518
Total	2,851	414	111	2,089	155	5,620

2021 DS2 adjusted to count
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	342	56	1,972	50	2,421
B - Hunsbury Hill Avenue	54	0	5	80	9	148
C - Hunsbarrow Road	428	66	0	52	108	653
D - A5076 (East)	1,749	5	71	0	11	1,836
E - Hunsbury Hill Road	255	12	-12	270	0	524
Total	2,485	424	120	2,373	179	5,582

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	126	6	1,952	321	2,405
B - Hunsbury Hill Avenue	144	0	1	158	29	332
C - Hunsbarrow Road	269	16	0	31	27	343
D - A5076 (East)	1,560	135	8	0	70	1,773
E - Hunsbury Hill Road	507	10	8	193	0	718
Total	2,480	287	23	2,334	447	5,571

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	0	0	0	0	0
B - Hunsbury Hill Avenue	0	0	0	0	0	0
C - Hunsbarrow Road	0	0	0	0	0	0
D - A5076 (East)	0	0	0	0	0	0
E - Hunsbury Hill Road	0	0	0	0	0	0
Total	0	0	0	0	0	0

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	224	31	1,607	34	1,896
B - Hunsbury Hill Avenue	38	0	6	49	8	101
C - Hunsbarrow Road	73	8	0	46	62	189
D - A5076 (East)	1,795	45	51	0	81	1,972
E - Hunsbury Hill Road	171	6	5	199	0	381
Total	2,077	283	93	1,901	185	4,539

Modelled Flows
2031 DM
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	131	6	2,257	224	2,618
B - Hunsbury Hill Avenue	198	0	1	186	7	392
C - Hunsbarrow Road	316	27	0	21	24	388
D - A5076 (East)	1,835	148	9	0	71	2,063
E - Hunsbury Hill Road	422	10	8	257	0	697
Total	2,771	316	24	2,721	326	6,158

2031 DM minus 2015 Base
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	5	0	305	-97	213
B - Hunsbury Hill Avenue	54	0	0	28	-22	60
C - Hunsbarrow Road	47	11	0	-10	-3	45
D - A5076 (East)	275	13	1	0	1	290
E - Hunsbury Hill Road	-85	0	0	64	0	-21
Total	291	29	1	387	-121	587

2031 DM adjusted to count
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	229	31	1,912	-63	2,109
B - Hunsbury Hill Avenue	92	0	6	77	-14	161
C - Hunsbarrow Road	120	19	0	36	59	234
D - A5076 (East)	2,070	58	52	0	82	2,262
E - Hunsbury Hill Road	86	6	5	263	0	360
Total	2,368	312	94	2,288	64	5,126

Modelled Flows
2031 DS2
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	149	7	2,411	261	2,827
B - Hunsbury Hill Avenue	191	0	1	189	12	393
C - Hunsbarrow Road	332	30	0	29	22	413
D - A5076 (East)	2,042	133	8	0	43	2,225
E - Hunsbury Hill Road	371	14	0	253	0	639
Total	2,935	326	15	2,882	338	6,496

2031 DS2 minus 2015 Base
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	23	1	459	-60	422
B - Hunsbury Hill Avenue	47	0	0	31	-17	61
C - Hunsbarrow Road	63	14	0	-2	-5	70
D - A5076 (East)	482	-2	0	0	-27	452
E - Hunsbury Hill Road	-136	4	-8	60	0	-79
Total	455	39	-8	548	-109	925

2031 DS2 adjusted to count
AM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	247	32	2,066	-26	2,318
B - Hunsbury Hill Avenue	85	0	6	80	-9	162
C - Hunsbarrow Road	136	22	0	44	57	259
D - A5076 (East)	2,277	43	51	0	54	2,424
E - Hunsbury Hill Road	35	10	-3	259	0	302
Total	2,532	322	85	2,449	76	5,464

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	134	343	1,339	264	2,080
B - Hunsbury Hill Avenue	173	0	10	203	11	397
C - Hunsbarrow Road	101	8	0	15	14	138
D - A5076 (East)	1,455	267	73	0	175	1,970
E - Hunsbury Hill Road	215	7	20	141	0	383
Total	1,944	416	446	1,698	464	4,968

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	0	0	0	0	0
B - Hunsbury Hill Avenue	0	0	0	0	0	0
C - Hunsbarrow Road	0	0	0	0	0	0
D - A5076 (East)	0	0	0	0	0	0
E - Hunsbury Hill Road	0	0	0	0	0	0
Total	0	0	0	0	0	0

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	338	52	1,559	55	2,004
B - Hunsbury Hill Avenue	38	0	4	47	10	99
C - Hunsbarrow Road	95	7	0	52	44	198
D - A5076 (East)	1,851	82	80	0	83	2,096
E - Hunsbury Hill Road	209	6	4	167	0	386
Total	2,193	433	140	1,825	192	4,783

Modelled Flows
2031 DM
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	165	349	1,682	318	2,514
B - Hunsbury Hill Avenue	216	0	13	238	13	480
C - Hunsbarrow Road	549	53	0	1	45	648
D - A5076 (East)	1,603	180	14	0	9	1,806
E - Hunsbury Hill Road	411	16	14	174	0	615
Total	2,779	414	390	2,095	385	6,063

2031 DM minus 2015 Base
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	31	6	343	54	434
B - Hunsbury Hill Avenue	43	0	3	35	2	83
C - Hunsbarrow Road	448	45	0	-14	31	510
D - A5076 (East)	148	-87	-59	0	-166	-164
E - Hunsbury Hill Road	196	9	-6	33	0	232
Total	835	-2	-56	397	-79	1,095

2031 DM adjusted to count
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	369	58	1,902	109	2,438
B - Hunsbury Hill Avenue	81	0	7	82	12	182
C - Hunsbarrow Road	543	52	0	38	75	708
D - A5076 (East)	1,999	-5	21	0	-83	1,932
E - Hunsbury Hill Road	405	15	-2	200	0	618
Total	3,028	431	84	2,222	113	5,878

Modelled Flows
2031 DS2
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	173	342	1,757	403	2,675
B - Hunsbury Hill Avenue	205	0	13	244	18	480
C - Hunsbarrow Road	475	36	0	34	94	640
D - A5076 (East)	1,614	174	42	0	82	1,912
E - Hunsbury Hill Road	399	46	6	219	0	670
Total	2,693	429	403	2,255	597	6,376

2031 DS2 minus 2015 Base
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	39	-1	418	139	595
B - Hunsbury Hill Avenue	32	0	3	41	7	83
C - Hunsbarrow Road	374	28	0	19	80	502
D - A5076 (East)	159	-93	-31	0	-93	-58
E - Hunsbury Hill Road	184	39	-14	78	0	287
Total	749	13	-43	557	133	1,408

2031 DS2 adjusted to count
PM Peak

	A - A5076 (West)	B - Hunsbury Hill Avenue	C - Hunsbarrow Road	D - A5076 (East)	E - Hunsbury Hill Road	Total
A - A5076 (West)	0	377	51	1,977	194	2,599
B - Hunsbury Hill Avenue	70	0	7	88	17	182
C - Hunsbarrow Road	469	35	0	71	124	700
D - A5076 (East)	2,010	-11	49	0	-10	2,038
E - Hunsbury Hill Road	393	45	-10	245	0	673
Total	2,942	446	97	2,382	325	6,191

APPENDIX B

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: A5076 Hunsbury Hill Road Roundabout for TA.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J6 - A5076_Hunsbury Hill Road Roundabout
Report generation date: 29/01/2018 09:52:34

» 2015 Base, AM
» 2015 Base, PM
» 2021 DM, AM
» 2021 DM, PM
» 2021 DS2, AM
» 2021 DS2, PM
» 2031 DM, AM
» 2031 DM, PM
» 2031 DS2, AM
» 2031 DS2, PM

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
A5076 Hunsbury Hill Road Roundabout - 2015 Base										
1 - Hunsbarrow Road	0.5	9.61	0.35	A	8 % [4 - A5076 - Danes Camp Way West]	0.6	10.43	0.38	B	2 % [4 - A5076 - Danes Camp Way West]
2 - A5076 - Danes Camp Way East	5.5	9.34	0.84	A		11.1	18.39	0.92	C	
3 - Hunsbury Hill Road	1.4	11.90	0.58	B		1.9	16.24	0.65	C	
4 - A5076 - Danes Camp Way West	7.7	13.80	0.88	B		14.2	24.63	0.94	C	
5 - Hunsbury Hill Avenue	0.2	7.18	0.18	A		0.2	7.88	0.19	A	
A5076 Hunsbury Hill Road Roundabout - 2021 DM										
1 - Hunsbarrow Road	0.7	11.37	0.42	B	-5 % [4 - A5076 - Danes Camp Way West]	40.6	192.33	1.11	F	-15 % [3 - Hunsbury Hill Road]
2 - A5076 - Danes Camp Way East	4.3	7.23	0.80	A		17.5	28.85	0.96	D	
3 - Hunsbury Hill Road	2.5	18.30	0.72	C		82.5	498.29	1.41	F	
4 - A5076 - Danes Camp Way West	50.7	72.49	1.02	F		46.0	65.05	1.02	F	
5 - Hunsbury Hill Avenue	0.3	8.00	0.24	A		0.3	7.24	0.24	A	
A5076 Hunsbury Hill Road Roundabout - 2021 DS2										
1 - Hunsbarrow Road	1.0	13.77	0.51	B	-9 % [4 - A5076 - Danes Camp Way West]	77.6	472.86	1.25	F	-20 % [1 - Hunsbarrow Road]
2 - A5076 - Danes Camp Way East	12.0	18.37	0.93	C		4.7	8.59	0.82	A	
3 - Hunsbury Hill Road	2.5	25.60	0.73	D		19.1	113.99	1.02	F	
4 - A5076 - Danes Camp Way West	91.1	117.83	1.07	F		192.4	275.30	1.16	F	
5 - Hunsbury Hill Avenue	0.3	8.31	0.25	A		0.4	8.21	0.27	A	

	A5076 Hunsbury Hill Road Roundabout - 2031 DM									
1 - Hunsbarrow Road	1.0	14.21	0.50	B	-6 % [4 - A5076 - Danes Camp Way West]	112.2	630.01	1.32	F	-21 % [1 - Hunsbarrow Road]
2 - A5076 - Danes Camp Way East	12.8	19.67	0.93	C		12.7	21.94	0.93	C	
3 - Hunsbury Hill Road	3.3	31.29	0.78	D		127.8	694.08	1.58	F	
4 - A5076 - Danes Camp Way West	64.3	87.98	1.04	F		137.7	172.91	1.10	F	
5 - Hunsbury Hill Avenue	0.5	9.34	0.33	A		0.4	7.92	0.30	A	
	A5076 Hunsbury Hill Road Roundabout - 2031 DS2									
1 - Hunsbarrow Road	1.3	16.35	0.56	C	-12 % [4 - A5076 - Danes Camp Way West]	120.1	716.19	1.33	F	-25 % [1 - Hunsbarrow Road]
2 - A5076 - Danes Camp Way East	38.9	51.71	1.00	F		17.8	30.02	0.96	D	
3 - Hunsbury Hill Road	3.5	40.57	0.80	E		149.7	765.71	1.64	F	
4 - A5076 - Danes Camp Way West	145.1	181.37	1.12	F		253.1	386.26	1.19	F	
5 - Hunsbury Hill Avenue	0.5	9.34	0.33	A		0.5	8.28	0.31	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	13/11/2015
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\james.padgham
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2015 Base	AM	ONE HOUR	07:45	09:15	15	✓
D2	2015 Base	PM	ONE HOUR	16:45	18:15	15	✓
D3	2021 DM	AM	ONE HOUR	07:45	09:15	15	✓
D4	2021 DM	PM	ONE HOUR	16:45	18:15	15	✓
D5	2021 DS2	AM	ONE HOUR	07:45	09:15	15	✓
D6	2021 DS2	PM	ONE HOUR	16:45	18:15	15	✓
D7	2031 DM	AM	ONE HOUR	07:45	09:15	15	✓
D8	2031 DM	PM	ONE HOUR	16:45	18:15	15	✓

D9	2031 DS2	AM	ONE HOUR	07:45	09:15	15	✓
D10	2031 DS2	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	A5076 Hunsbury Hill Road Roundabout	✓	100.000	100.000

A5076 Hunsbury Hill Road Roundabout - 2015 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	11.38	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	8	4 - A5076 - Danes Camp Way West

Arms

Arms

Arm	Name	Description
1	Hunsbarrow Road	
2	A5076 - Danes Camp Way East	
3	Hunsbury Hill Road	
4	A5076 - Danes Camp Way West	
5	Hunsbury Hill Avenue	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Hunsbarrow Road	3.65	7.00	10.0	27.5	85.0	12.5	
2 - A5076 - Danes Camp Way East	7.30	10.00	10.6	50.0	85.0	15.0	
3 - Hunsbury Hill Road	3.65	7.00	15.0	30.0	85.0	13.0	
4 - A5076 - Danes Camp Way West	7.30	8.00	18.0	40.0	85.0	17.0	
5 - Hunsbury Hill Avenue	3.65	6.00	21.0	32.5	85.0	18.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Hunsbarrow Road	0.481	1714
2 - A5076 - Danes Camp Way East	0.650	2879
3 - Hunsbury Hill Road	0.497	1826

4 - A5076 - Danes Camp Way West	0.603	2568
5 - Hunsbury Hill Avenue	0.480	1729

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2015 Base	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	189	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	1972	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	381	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	1896	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	100	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	**2 - A5076 - Danes Camp Way East**	**3 - Hunsbury Hill Road**	**4 - A5076 - Danes Camp Way West**	**5 - Hunsbury Hill Avenue**
From	**1 - Hunsbarrow Road**	0	46	62	73	8
	2 - A5076 - Danes Camp Way East	51	0	81	1795	45
	3 - Hunsbury Hill Road	5	199	0	171	6
	4 - A5076 - Danes Camp Way West	31	1607	224	0	34
	5 - Hunsbury Hill Avenue	6	48	8	38	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	**2 - A5076 - Danes Camp Way East**	**3 - Hunsbury Hill Road**	**4 - A5076 - Danes Camp Way West**	**5 - Hunsbury Hill Avenue**
From	**1 - Hunsbarrow Road**	0	0	0	6	0
	2 - A5076 - Danes Camp Way East	9	0	5	8	0
	3 - Hunsbury Hill Road	0	2	0	1	0
	4 - A5076 - Danes Camp Way West	10	7	3	0	0
	5 - Hunsbury Hill Avenue	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	0.35	9.61	0.5	A	173	260
2 - A5076 - Danes Camp Way East	0.84	9.34	5.5	A	1810	2714
3 - Hunsbury Hill Road	0.58	11.90	1.4	B	350	524
4 - A5076 - Danes Camp Way West	0.88	13.80	7.7	B	1740	2609
5 - Hunsbury Hill Avenue	0.18	7.18	0.2	A	92	138

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	142	36	1592	949	0.150	142	70	0.0	0.2	4.553	A
2 - A5076 - Danes Camp Way East	1485	371	310	2678	0.554	1479	1424	0.0	1.3	3.220	A
3 - Hunsbury Hill Road	287	72	1508	1076	0.266	285	281	0.0	0.4	4.611	A
4 - A5076 - Danes Camp Way West	1427	357	235	2426	0.588	1421	1558	0.0	1.5	3.791	A
5 - Hunsbury Hill Avenue	75	19	1587	967	0.078	75	70	0.0	0.1	4.033	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	170	42	1905	798	0.213	170	83	0.2	0.3	5.844	A
2 - A5076 - Danes Camp Way East	1773	443	370	2639	0.672	1769	1704	1.3	2.2	4.445	A
3 - Hunsbury Hill Road	342	86	1804	929	0.369	342	336	0.4	0.6	6.208	A
4 - A5076 - Danes Camp Way West	1704	426	282	2398	0.711	1700	1864	1.5	2.6	5.457	A
5 - Hunsbury Hill Avenue	90	22	1898	818	0.110	90	83	0.1	0.1	4.943	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	208	52	2318	600	0.347	207	102	0.3	0.5	9.345	A
2 - A5076 - Danes Camp Way East	2171	543	452	2586	0.840	2159	2074	2.2	5.3	8.826	A
3 - Hunsbury Hill Road	419	105	2201	732	0.573	416	410	0.6	1.3	11.474	B
4 - A5076 - Danes Camp Way West	2087	522	344	2360	0.884	2069	2274	2.6	7.3	12.394	B

5 - Hunsbury Hill Avenue	110	28	2310	620	0.178	110	102	0.1	0.2	7.049	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	208	52	2337	591	0.352	208	102	0.5	0.5	9.608	A
2 - A5076 - Danes Camp Way East	2171	543	454	2584	0.840	2171	2090	5.3	5.5	9.340	A
3 - Hunsbury Hill Road	419	105	2213	726	0.578	419	412	1.3	1.4	11.897	B
4 - A5076 - Danes Camp Way West	2087	522	346	2359	0.885	2086	2286	7.3	7.7	13.802	B
5 - Hunsbury Hill Avenue	110	28	2329	611	0.180	110	102	0.2	0.2	7.183	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	170	42	1931	786	0.216	171	84	0.5	0.3	5.989	A
2 - A5076 - Danes Camp Way East	1773	443	375	2636	0.673	1786	1727	5.5	2.2	4.628	A
3 - Hunsbury Hill Road	342	86	1820	921	0.372	345	340	1.4	0.6	6.381	A
4 - A5076 - Danes Camp Way West	1704	426	285	2396	0.711	1724	1881	7.7	2.7	5.868	A
5 - Hunsbury Hill Avenue	90	22	1925	805	0.112	90	84	0.2	0.1	5.037	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	142	36	1604	943	0.151	143	70	0.3	0.2	4.599	A
2 - A5076 - Danes Camp Way East	1485	371	312	2677	0.555	1488	1435	2.2	1.4	3.274	A
3 - Hunsbury Hill Road	287	72	1517	1072	0.268	288	283	0.6	0.4	4.665	A
4 - A5076 - Danes Camp Way West	1427	357	237	2425	0.589	1432	1568	2.7	1.5	3.877	A
5 - Hunsbury Hill Avenue	75	19	1599	962	0.078	75	70	0.1	0.1	4.063	A

A5076 Hunsbury Hill Road Roundabout - 2015 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	20.28	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	2	4 - A5076 - Danes Camp Way West

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2015 Base	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	198	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	2096	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	386	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2004	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	99	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	52	44	95	7
	2 - A5076 - Danes Camp Way East	80	0	83	1851	82
	3 - Hunsbury Hill Road	4	167	0	209	6
	4 - A5076 - Danes Camp Way West	52	1559	338	0	55
	5 - Hunsbury Hill Avenue	4	47	10	38	0

Vehicle Mix

Heavy Vehicle Percentages

From	To					
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
	1 - Hunsbarrow Road	0	2	0	6	0
	2 - A5076 - Danes Camp Way East	0	0	0	5	1
	3 - Hunsbury Hill Road	0	3	0	1	0
	4 - A5076 - Danes Camp Way West	0	4	8	1	0
	5 - Hunsbury Hill Avenue	0	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	0.38	10.43	0.6	B	182	273
2 - A5076 - Danes Camp Way East	0.92	18.39	11.1	C	1923	2885
3 - Hunsbury Hill Road	0.65	16.24	1.9	C	354	531
4 - A5076 - Danes Camp Way West	0.94	24.63	14.2	C	1839	2758
5 - Hunsbury Hill Avenue	0.19	7.88	0.2	A	91	136

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	149	37	1618	936	0.160	149	105	0.0	0.2	4.717	A
2 - A5076 - Danes Camp Way East	1578	394	399	2620	0.602	1572	1367	0.0	1.6	3.564	A
3 - Hunsbury Hill Road	290	73	1615	1023	0.284	289	356	0.0	0.4	4.981	A
4 - A5076 - Danes Camp Way West	1509	377	259	2411	0.626	1502	1644	0.0	1.7	4.102	A
5 - Hunsbury Hill Avenue	74	19	1649	938	0.079	74	112	0.0	0.1	4.204	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	178	45	1935	784	0.228	178	126	0.2	0.3	6.134	A
2 - A5076 - Danes Camp Way East	1884	471	477	2569	0.733	1879	1635	1.6	2.8	5.411	A
3 - Hunsbury Hill Road	347	87	1931	866	0.401	346	426	0.4	0.7	7.032	A

4 - A5076 - Danes Camp Way West	1802	450	310	2381	0.757	1796	1967	1.7	3.2	6.366	A
5 - Hunsbury Hill Avenue	89	22	1971	783	0.114	89	134	0.1	0.1	5.234	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	218	55	2340	589	0.371	217	152	0.3	0.6	9.969	A
2 - A5076 - Danes Camp Way East	2308	577	579	2503	0.922	2279	1978	2.8	10.1	15.123	C
3 - Hunsbury Hill Road	425	106	2342	662	0.642	421	515	0.7	1.7	14.950	B
4 - A5076 - Danes Camp Way West	2206	552	377	2341	0.943	2170	2386	3.2	12.4	18.904	C
5 - Hunsbury Hill Avenue	109	27	2383	585	0.186	109	163	0.1	0.2	7.617	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	218	55	2370	575	0.380	218	154	0.6	0.6	10.432	B
2 - A5076 - Danes Camp Way East	2308	577	585	2499	0.923	2304	2003	10.1	11.1	18.386	C
3 - Hunsbury Hill Road	425	106	2367	649	0.654	424	522	1.7	1.9	16.236	C
4 - A5076 - Danes Camp Way West	2206	552	380	2338	0.944	2199	2411	12.4	14.2	24.629	C
5 - Hunsbury Hill Avenue	109	27	2415	570	0.191	109	165	0.2	0.2	7.879	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	178	45	1984	760	0.235	180	128	0.6	0.3	6.421	A
2 - A5076 - Danes Camp Way East	1884	471	487	2563	0.735	1917	1677	11.1	3.0	6.105	A
3 - Hunsbury Hill Road	347	87	1968	848	0.409	351	436	1.9	0.7	7.454	A
4 - A5076 - Danes Camp Way West	1802	450	316	2377	0.758	1845	2004	14.2	3.4	7.608	A
5 - Hunsbury Hill Avenue	89	22	2023	758	0.117	89	137	0.2	0.1	5.436	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	149	37	1632	930	0.161	150	106	0.3	0.2	4.774	A
2 - A5076 - Danes Camp Way East	1578	394	402	2618	0.603	1583	1380	3.0	1.6	3.655	A

3 - Hunsbury Hill Road	290	73	1627	1017	0.286	292	359	0.7	0.4	5.062	A
4 - A5076 - Danes Camp Way West	1509	377	261	2410	0.626	1515	1657	3.4	1.8	4.230	A
5 - Hunsbury Hill Avenue	74	19	1663	931	0.080	75	113	0.1	0.1	4.245	A

A5076 Hunsbury Hill Road Roundabout - 2021 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	36.87	E

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-5	4 - A5076 - Danes Camp Way West

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2021 DM	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	211	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	1980	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	462	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2144	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	128	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	46	63	93	9
	2 - A5076 - Danes Camp Way East	53	0	91	1761	75
	3 - Hunsbury Hill Road	5	245	0	207	5
	4 - A5076 - Danes Camp Way West	32	1879	0	0	233
	5 - Hunsbury Hill Avenue	6	57	11	54	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	0	0	6	0
	2 - A5076 - Danes Camp Way East	9	0	5	8	0
	3 - Hunsbury Hill Road	0	2	0	1	0
	4 - A5076 - Danes Camp Way West	10	7	3	0	0
	5 - Hunsbury Hill Avenue	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	0.42	11.37	0.7	B	194	290
2 - A5076 - Danes Camp Way East	0.80	7.23	4.3	A	1817	2725
3 - Hunsbury Hill Road	0.72	18.30	2.5	C	424	636
4 - A5076 - Danes Camp Way West	1.02	72.49	50.7	F	1967	2951
5 - Hunsbury Hill Avenue	0.24	8.00	0.3	A	117	176

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	159	40	1682	906	0.175	158	72	0.0	0.2	4.930	A
2 - A5076 - Danes Camp Way East	1491	373	172	2767	0.539	1486	1668	0.0	1.2	3.010	A

3 - Hunsbury Hill Road	348	87	1534	1063	0.327	346	124	0.0	0.5	5.081	A
4 - A5076 - Danes Camp Way West	1614	404	294	2391	0.675	1605	1586	0.0	2.2	4.819	A
5 - Hunsbury Hill Avenue	96	24	1658	933	0.103	96	241	0.0	0.1	4.297	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	190	47	2010	748	0.254	189	86	0.2	0.3	6.597	A
2 - A5076 - Danes Camp Way East	1780	445	206	2745	0.648	1777	1993	1.2	2.0	3.987	A
3 - Hunsbury Hill Road	415	104	1835	914	0.455	414	148	0.5	0.8	7.294	A
4 - A5076 - Danes Camp Way West	1927	482	351	2356	0.818	1918	1898	2.2	4.5	8.551	A
5 - Hunsbury Hill Avenue	115	29	1981	778	0.148	115	288	0.1	0.2	5.426	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	232	58	2372	574	0.405	231	104	0.3	0.7	10.718	B
2 - A5076 - Danes Camp Way East	2180	545	252	2716	0.803	2171	2351	2.0	4.2	6.997	A
3 - Hunsbury Hill Road	509	127	2242	711	0.715	502	181	0.8	2.4	17.015	C
4 - A5076 - Danes Camp Way West	2361	590	428	2310	1.022	2250	2317	4.5	32.2	38.147	E
5 - Hunsbury Hill Avenue	141	35	2335	608	0.232	140	342	0.2	0.3	7.687	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	232	58	2408	556	0.417	232	105	0.7	0.7	11.367	B
2 - A5076 - Danes Camp Way East	2180	545	253	2715	0.803	2180	2387	4.2	4.3	7.226	A
3 - Hunsbury Hill Road	509	127	2251	707	0.720	508	182	2.4	2.5	18.302	C
4 - A5076 - Danes Camp Way West	2361	590	431	2308	1.023	2287	2328	32.2	50.7	72.489	F
5 - Hunsbury Hill Avenue	141	35	2372	591	0.239	141	347	0.3	0.3	8.002	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	190	47	2182	665	0.285	191	89	0.7	0.4	7.801	A

2 - A5076 - Danes Camp Way East	1780	445	208	2744	0.649	1789	2165	4.3	2.0	4.093	A
3 - Hunsbury Hill Road	415	104	1848	907	0.458	422	149	2.5	0.9	7.625	A
4 - A5076 - Danes Camp Way West	1927	482	357	2353	0.819	2109	1913	50.7	5.2	25.974	D
5 - Hunsbury Hill Avenue	115	29	2156	694	0.166	116	310	0.3	0.2	6.225	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	159	40	1702	896	0.177	160	73	0.4	0.2	5.016	A
2 - A5076 - Danes Camp Way East	1491	373	174	2766	0.539	1494	1688	2.0	1.3	3.048	A
3 - Hunsbury Hill Road	348	87	1543	1059	0.328	349	125	0.9	0.5	5.162	A
4 - A5076 - Danes Camp Way West	1614	404	296	2389	0.676	1626	1596	5.2	2.2	5.089	A
5 - Hunsbury Hill Avenue	96	24	1678	923	0.104	97	244	0.2	0.1	4.355	A

A5076 Hunsbury Hill Road Roundabout - 2021 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	104.53	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-15	3 - Hunsbury Hill Road

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2021 DM	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)

1 - Hunsbarrow Road		ONE HOUR	✓	635	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	2111	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	522	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2209	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	147	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	52	75	451	57
	2 - A5076 - Danes Camp Way East	61	0	27	2019	4
	3 - Hunsbury Hill Road	0	192	0	320	10
	4 - A5076 - Danes Camp Way West	49	1773	44	0	343
	5 - Hunsbury Hill Avenue	5	72	9	61	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	2	0	6	0
	2 - A5076 - Danes Camp Way East	0	0	0	5	1
	3 - Hunsbury Hill Road	0	3	0	1	0
	4 - A5076 - Danes Camp Way West	0	4	8	1	0
	5 - Hunsbury Hill Avenue	0	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	1.11	192.33	40.6	F	583	874
2 - A5076 - Danes Camp Way East	0.96	28.85	17.5	D	1937	2906
3 - Hunsbury Hill Road	1.41	498.29	82.5	F	479	718
4 - A5076 - Danes Camp Way West	1.02	65.05	46.0	F	2027	3041
5 - Hunsbury Hill Avenue	0.24	7.24	0.3	A	135	202

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	478	120	1610	940	0.509	474	86	0.0	1.1	7.990	A
2 - A5076 - Danes Camp Way East	1589	397	520	2541	0.625	1582	1564	0.0	1.7	3.906	A
3 - Hunsbury Hill Road	393	98	1987	838	0.469	389	116	0.0	0.9	8.098	A
4 - A5076 - Danes Camp Way West	1663	416	242	2422	0.687	1654	2134	0.0	2.2	4.794	A
5 - Hunsbury Hill Avenue	111	28	1586	968	0.114	110	310	0.0	0.1	4.236	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	571	143	1923	790	0.723	565	103	1.1	2.6	16.289	C
2 - A5076 - Danes Camp Way East	1898	474	621	2476	0.767	1891	1867	1.7	3.3	6.383	A
3 - Hunsbury Hill Road	469	117	2374	646	0.727	463	138	0.9	2.5	19.351	C
4 - A5076 - Danes Camp Way West	1986	496	288	2394	0.830	1976	2548	2.2	4.8	8.688	A
5 - Hunsbury Hill Avenue	132	33	1894	820	0.161	132	370	0.1	0.2	5.281	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	699	175	2227	644	1.086	621	123	2.6	22.0	88.796	F
2 - A5076 - Danes Camp Way East	2324	581	694	2429	0.957	2279	2154	3.3	14.7	20.793	C
3 - Hunsbury Hill Road	575	144	2814	427	1.345	421	159	2.5	40.9	206.233	F
4 - A5076 - Danes Camp Way West	2432	608	289	2393	1.016	2329	2946	4.8	30.5	35.629	E
5 - Hunsbury Hill Avenue	162	40	2188	679	0.238	161	430	0.2	0.3	7.020	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	699	175	2256	629	1.111	625	125	22.0	40.6	192.329	F
2 - A5076 - Danes Camp Way East	2324	581	698	2426	0.958	2313	2183	14.7	17.5	28.845	D
3 - Hunsbury Hill Road	575	144	2851	409	1.406	409	161	40.9	82.5	498.286	F
4 - A5076 - Danes Camp Way West	2432	608	285	2396	1.015	2370	2974	30.5	46.0	65.046	F
5 - Hunsbury Hill Avenue	162	40	2219	664	0.244	162	436	0.3	0.3	7.240	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	571	143	2099	705	0.810	687	108	40.6	11.5	142.986	F
2 - A5076 - Danes Camp Way East	1898	474	737	2400	0.791	1951	2050	17.5	4.1	9.341	A
3 - Hunsbury Hill Road	469	117	2531	568	0.827	561	157	82.5	59.6	428.489	F
4 - A5076 - Danes Camp Way West	1986	496	339	2363	0.840	2146	2753	46.0	6.0	26.468	D
5 - Hunsbury Hill Avenue	132	33	2075	733	0.180	133	409	0.3	0.2	6.059	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	478	120	1717	888	0.538	519	87	11.5	1.2	11.298	B
2 - A5076 - Danes Camp Way East	1589	397	563	2514	0.632	1598	1674	4.1	1.8	4.161	A
3 - Hunsbury Hill Road	393	98	2039	812	0.484	627	122	59.6	1.0	66.827	F
4 - A5076 - Danes Camp Way West	1663	416	339	2363	0.704	1677	2328	6.0	2.5	5.526	A
5 - Hunsbury Hill Avenue	111	28	1694	916	0.121	111	322	0.2	0.1	4.516	A

A5076 Hunsbury Hill Road Roundabout - 2021 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	60.97	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-9	4 - A5076 - Danes Camp Way West

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2021 DS2	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	251	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	2261	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	340	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2233	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	128	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	42	57	137	15
	2 - A5076 - Danes Camp Way East	70	0	72	2072	47
	3 - Hunsbury Hill Road	0	250	0	76	14
	4 - A5076 - Danes Camp Way West	32	1964	0	0	237
	5 - Hunsbury Hill Avenue	6	62	1	59	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	0	0	6	0
	2 - A5076 - Danes Camp Way East	9	0	5	8	0
	3 - Hunsbury Hill Road	0	2	0	1	0
	4 - A5076 - Danes Camp Way West	10	7	3	0	0
	5 - Hunsbury Hill Avenue	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	0.51	13.77	1.0	B	230	345
2 - A5076 - Danes Camp Way East	0.93	18.37	12.0	C	2075	3112
3 - Hunsbury Hill Road	0.73	25.60	2.5	D	312	468
4 - A5076 - Danes Camp Way West	1.07	117.83	91.1	F	2049	3074
5 - Hunsbury Hill Avenue	0.25	8.31	0.3	A	117	176

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	189	47	1748	874	0.216	188	81	0.0	0.3	5.403	A
2 - A5076 - Danes Camp Way East	1702	426	201	2748	0.619	1695	1735	0.0	1.7	3.660	A
3 - Hunsbury Hill Road	256	64	1799	931	0.275	254	97	0.0	0.4	5.395	A
4 - A5076 - Danes Camp Way West	1681	420	297	2389	0.704	1671	1757	0.0	2.5	5.260	A
5 - Hunsbury Hill Avenue	96	24	1733	897	0.107	96	234	0.0	0.1	4.490	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	226	56	2087	711	0.318	225	97	0.3	0.5	7.628	A
2 - A5076 - Danes Camp Way East	2033	508	241	2723	0.747	2027	2071	1.7	3.1	5.533	A
3 - Hunsbury Hill Road	306	76	2152	756	0.404	304	117	0.4	0.7	8.082	A
4 - A5076 - Danes Camp Way West	2007	502	355	2354	0.853	1994	2101	2.5	5.7	10.286	B
5 - Hunsbury Hill Avenue	115	29	2069	736	0.156	115	280	0.1	0.2	5.794	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	276	69	2406	557	0.496	274	115	0.5	1.0	13.020	B
2 - A5076 - Danes Camp Way East	2489	622	294	2688	0.926	2458	2386	3.1	10.9	15.162	C
3 - Hunsbury Hill Road	374	94	2611	528	0.709	368	142	0.7	2.3	22.041	C
4 - A5076 - Danes Camp Way West	2459	615	429	2309	1.065	2276	2549	5.7	51.3	53.661	F
5 - Hunsbury Hill Avenue	141	35	2381	586	0.240	140	324	0.2	0.3	8.068	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

1 - Hunsbarrow Road	276	69	2431	545	0.507	276	116	1.0	1.0	13.772	B
2 - A5076 - Danes Camp Way East	2489	622	296	2687	0.926	2485	2411	10.9	12.0	18.368	C
3 - Hunsbury Hill Road	374	94	2638	514	0.728	373	143	2.3	2.5	25.603	D
4 - A5076 - Danes Camp Way West	2459	615	435	2305	1.066	2300	2577	51.3	91.1	117.826	F
5 - Hunsbury Hill Avenue	141	35	2407	574	0.246	141	328	0.3	0.3	8.314	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	226	56	2382	569	0.397	227	103	1.0	0.7	10.895	B
2 - A5076 - Danes Camp Way East	2033	508	243	2721	0.747	2068	2366	12.0	3.3	6.239	A
3 - Hunsbury Hill Road	306	76	2192	736	0.415	313	118	2.5	0.7	8.795	A
4 - A5076 - Danes Camp Way West	2007	502	364	2348	0.855	2321	2142	91.1	12.6	84.564	F
5 - Hunsbury Hill Avenue	115	29	2369	592	0.194	115	316	0.3	0.2	7.561	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	189	47	1795	851	0.222	191	82	0.7	0.3	5.631	A
2 - A5076 - Danes Camp Way East	1702	426	204	2747	0.620	1708	1782	3.3	1.8	3.758	A
3 - Hunsbury Hill Road	256	64	1814	924	0.277	257	98	0.7	0.4	5.502	A
4 - A5076 - Danes Camp Way West	1681	420	300	2387	0.704	1721	1772	12.6	2.6	6.083	A
5 - Hunsbury Hill Avenue	96	24	1781	874	0.110	97	240	0.2	0.1	4.632	A

A5076 Hunsbury Hill Road Roundabout - 2021 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	188.32	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-20	1 - Hunsbarrow Road

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2021 DS2	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	654	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	1836	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	537	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2420	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	148	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	52	108	428	66
	2 - A5076 - Danes Camp Way East	71	0	11	1749	5
	3 - Hunsbury Hill Road	0	270	0	255	12
	4 - A5076 - Danes Camp Way West	56	1972	50	0	342
	5 - Hunsbury Hill Avenue	5	80	9	54	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	2	0	6	0
	2 - A5076 - Danes Camp Way East	0	0	0	5	1
	3 - Hunsbury Hill Road	0	3	0	1	0
	4 - A5076 - Danes Camp Way West	0	4	8	1	0
	5 - Hunsbury Hill Avenue	0	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	1.25	472.86	77.6	F	600	900
2 - A5076 - Danes Camp Way East	0.82	8.59	4.7	A	1685	2527
3 - Hunsbury Hill Road	1.02	113.99	19.1	F	493	739
4 - A5076 - Danes Camp Way West	1.16	275.30	192.4	F	2221	3331
5 - Hunsbury Hill Avenue	0.27	8.21	0.4	A	136	204

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	492	123	1820	839	0.587	487	99	0.0	1.4	10.428	B
2 - A5076 - Danes Camp Way East	1382	346	532	2533	0.546	1377	1774	0.0	1.2	3.250	A
3 - Hunsbury Hill Road	404	101	1777	943	0.429	401	133	0.0	0.8	6.745	A
4 - A5076 - Danes Camp Way West	1822	455	317	2377	0.767	1809	1861	0.0	3.3	6.416	A
5 - Hunsbury Hill Avenue	111	28	1808	861	0.129	111	317	0.0	0.1	4.842	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	588	147	2162	675	0.871	572	118	1.4	5.5	32.411	D
2 - A5076 - Danes Camp Way East	1651	413	627	2472	0.668	1647	2107	1.2	2.1	4.556	A
3 - Hunsbury Hill Road	483	121	2118	773	0.624	479	157	0.8	1.6	12.343	B
4 - A5076 - Danes Camp Way West	2176	544	378	2340	0.930	2146	2219	3.3	10.7	17.037	C
5 - Hunsbury Hill Avenue	133	33	2147	698	0.191	133	376	0.1	0.2	6.427	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	720	180	2354	583	1.236	576	136	5.5	41.5	164.332	F
2 - A5076 - Danes Camp Way East	2021	505	647	2459	0.822	2011	2283	2.1	4.6	8.241	A
3 - Hunsbury Hill Road	591	148	2493	586	1.008	548	165	1.6	12.6	64.072	F
4 - A5076 - Danes Camp Way West	2664	666	429	2309	1.154	2300	2612	10.7	101.9	95.226	F

5 - Hunsbury Hill Avenue	163	41	2328	612	0.266	162	401	0.2	0.4	8.088	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	720	180	2365	577	1.248	576	137	41.5	77.5	381.707	F
2 - A5076 - Danes Camp Way East	2021	505	647	2459	0.822	2021	2294	4.6	4.7	8.590	A
3 - Hunsbury Hill Road	591	148	2504	581	1.017	565	165	12.6	19.1	113.992	F
4 - A5076 - Danes Camp Way West	2664	666	439	2303	1.157	2302	2630	101.9	192.4	234.327	F
5 - Hunsbury Hill Avenue	163	41	2339	606	0.269	163	402	0.4	0.4	8.207	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	588	147	2331	594	0.991	587	122	77.5	77.6	472.857	F
2 - A5076 - Danes Camp Way East	1651	413	645	2460	0.671	1661	2273	4.7	2.2	4.776	A
3 - Hunsbury Hill Road	483	121	2143	761	0.635	552	163	19.1	1.9	23.453	C
4 - A5076 - Danes Camp Way West	2176	544	418	2316	0.939	2303	2277	192.4	160.4	275.296	F
5 - Hunsbury Hill Avenue	133	33	2320	616	0.216	133	402	0.4	0.3	7.550	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	492	123	2278	619	0.795	611	112	77.6	48.0	372.739	F
2 - A5076 - Danes Camp Way East	1382	346	658	2451	0.564	1385	2230	2.2	1.4	3.547	A
3 - Hunsbury Hill Road	404	101	1879	892	0.453	408	165	1.9	0.9	7.654	A
4 - A5076 - Danes Camp Way West	1822	455	333	2367	0.770	2351	1954	160.4	28.0	146.871	F
5 - Hunsbury Hill Avenue	111	28	2278	636	0.175	112	407	0.3	0.2	6.946	A

A5076 Hunsbury Hill Road Roundabout - 2031 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	48.40	E

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-6	4 - A5076 - Danes Camp Way West

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2031 DM	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	234	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	2262	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	360	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2172	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	175	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	36	59	120	19
	2 - A5076 - Danes Camp Way East	52	0	82	2070	58
	3 - Hunsbury Hill Road	5	263	0	86	6
	4 - A5076 - Danes Camp Way West	31	1912	0	0	229
	5 - Hunsbury Hill Avenue	6	77	0	92	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	0	0	6	0
	2 - A5076 - Danes Camp Way East	9	0	5	8	0
	3 - Hunsbury Hill Road	0	2	0	1	0
	4 - A5076 - Danes Camp Way West	10	7	3	0	0
	5 - Hunsbury Hill Avenue	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	0.50	14.21	1.0	B	215	322
2 - A5076 - Danes Camp Way East	0.93	19.67	12.8	C	2076	3113
3 - Hunsbury Hill Road	0.78	31.29	3.3	D	330	496
4 - A5076 - Danes Camp Way West	1.04	87.98	64.3	F	1993	2990
5 - Hunsbury Hill Avenue	0.33	9.34	0.5	A	161	241

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	176	44	1755	870	0.202	175	70	0.0	0.3	5.319	A
2 - A5076 - Danes Camp Way East	1703	426	217	2738	0.622	1696	1713	0.0	1.8	3.696	A
3 - Hunsbury Hill Road	271	68	1807	927	0.292	269	106	0.0	0.4	5.551	A
4 - A5076 - Danes Camp Way West	1635	409	302	2386	0.685	1626	1775	0.0	2.3	4.978	A
5 - Hunsbury Hill Avenue	132	33	1694	916	0.144	131	234	0.0	0.2	4.583	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	210	53	2097	706	0.298	210	84	0.3	0.4	7.448	A
2 - A5076 - Danes Camp Way East	2033	508	260	2710	0.750	2028	2046	1.8	3.2	5.632	A
3 - Hunsbury Hill Road	324	81	2161	751	0.431	322	126	0.4	0.8	8.504	A

4 - A5076 - Danes Camp Way West	1953	488	361	2350	0.831	1942	2123	2.3	4.9	9.140	A
5 - Hunsbury Hill Avenue	157	39	2024	758	0.208	157	279	0.2	0.3	5.988	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	258	64	2456	534	0.483	256	101	0.4	0.9	13.230	B
2 - A5076 - Danes Camp Way East	2491	623	317	2673	0.932	2457	2394	3.2	11.6	15.927	C
3 - Hunsbury Hill Road	396	99	2621	523	0.758	388	154	0.8	2.8	25.685	D
4 - A5076 - Danes Camp Way West	2391	598	436	2305	1.037	2257	2573	4.9	38.5	43.421	E
5 - Hunsbury Hill Avenue	193	48	2364	594	0.324	192	328	0.3	0.5	8.928	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	258	64	2489	518	0.498	257	102	0.9	1.0	14.211	B
2 - A5076 - Danes Camp Way East	2491	623	319	2672	0.932	2485	2427	11.6	12.8	19.666	C
3 - Hunsbury Hill Road	396	99	2650	509	0.779	395	155	2.8	3.3	31.292	D
4 - A5076 - Danes Camp Way West	2391	598	442	2301	1.039	2288	2602	38.5	64.3	87.984	F
5 - Hunsbury Hill Avenue	193	48	2398	578	0.333	193	332	0.5	0.5	9.337	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	210	53	2320	599	0.351	212	89	1.0	0.6	9.625	A
2 - A5076 - Danes Camp Way East	2033	508	263	2709	0.751	2071	2270	12.8	3.3	6.433	A
3 - Hunsbury Hill Road	324	81	2205	730	0.444	333	129	3.3	0.8	9.458	A
4 - A5076 - Danes Camp Way West	1953	488	372	2344	0.833	2186	2167	64.3	6.0	42.576	E
5 - Hunsbury Hill Avenue	157	39	2251	649	0.243	158	306	0.5	0.3	7.347	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	176	44	1779	859	0.205	177	71	0.6	0.3	5.445	A
2 - A5076 - Danes Camp Way East	1703	426	220	2737	0.622	1709	1737	3.3	1.8	3.797	A

3 - Hunsbury Hill Road	271	68	1822	920	0.295	273	107	0.8	0.4	5.669	A
4 - A5076 - Danes Camp Way West	1635	409	305	2384	0.686	1650	1790	6.0	2.4	5.310	A
5 - Hunsbury Hill Avenue	132	33	1718	904	0.146	132	237	0.3	0.2	4.666	A

A5076 Hunsbury Hill Road Roundabout - 2031 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	225.15	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-21	1 - Hunsbarrow Road

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2031 DM	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	708	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	2020	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	620	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2438	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	182	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	38	75	543	52
	2 - A5076 - Danes Camp Way East	21	0	0	1999	0
	3 - Hunsbury Hill Road	0	200	0	405	15
	4 - A5076 - Danes Camp Way West	58	1902	109	0	369
	5 - Hunsbury Hill Avenue	7	82	12	81	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	2	0	6	0
	2 - A5076 - Danes Camp Way East	0	0	0	5	1
	3 - Hunsbury Hill Road	0	3	0	1	0
	4 - A5076 - Danes Camp Way West	0	4	8	1	0
	5 - Hunsbury Hill Avenue	0	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	1.32	630.01	112.2	F	650	975
2 - A5076 - Danes Camp Way East	0.93	21.94	12.7	C	1854	2780
3 - Hunsbury Hill Road	1.58	694.08	127.8	F	569	853
4 - A5076 - Danes Camp Way West	1.10	172.91	137.7	F	2237	3356
5 - Hunsbury Hill Avenue	0.30	7.92	0.4	A	167	251

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	533	133	1784	857	0.622	526	64	0.0	1.7	11.199	B
2 - A5076 - Danes Camp Way East	1521	380	649	2457	0.619	1514	1661	0.0	1.7	3.978	A

3 - Hunsbury Hill Road	467	117	2017	823	0.567	462	146	0.0	1.3	9.979	A
4 - A5076 - Danes Camp Way West	1835	459	214	2438	0.753	1823	2264	0.0	3.1	5.942	A
5 - Hunsbury Hill Avenue	137	34	1712	907	0.151	136	326	0.0	0.2	4.707	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	636	159	2121	695	0.916	614	77	1.7	7.3	38.998	E
2 - A5076 - Danes Camp Way East	1816	454	761	2385	0.762	1810	1973	1.7	3.3	6.500	A
3 - Hunsbury Hill Road	557	139	2398	634	0.879	540	173	1.3	5.6	34.392	D
4 - A5076 - Danes Camp Way West	2192	548	251	2416	0.907	2169	2687	3.1	8.7	13.970	B
5 - Hunsbury Hill Avenue	164	41	2034	753	0.217	163	386	0.2	0.3	6.157	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	780	195	2329	594	1.312	590	88	7.3	54.6	205.416	F
2 - A5076 - Danes Camp Way East	2224	556	769	2380	0.935	2191	2151	3.3	11.4	17.626	C
3 - Hunsbury Hill Road	683	171	2776	446	1.531	443	184	5.6	65.3	307.426	F
4 - A5076 - Danes Camp Way West	2684	671	220	2435	1.102	2417	3000	8.7	75.4	70.193	F
5 - Hunsbury Hill Avenue	200	50	2217	665	0.301	200	420	0.3	0.4	7.801	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	780	195	2341	589	1.324	588	89	54.6	102.4	489.473	F
2 - A5076 - Danes Camp Way East	2224	556	768	2380	0.934	2219	2161	11.4	12.7	21.941	C
3 - Hunsbury Hill Road	683	171	2802	433	1.577	433	184	65.3	127.8	694.082	F
4 - A5076 - Danes Camp Way West	2684	671	216	2437	1.101	2435	3019	75.4	137.7	163.032	F
5 - Hunsbury Hill Avenue	200	50	2229	659	0.304	200	422	0.4	0.4	7.916	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	636	159	2322	598	1.064	597	82	102.4	112.2	630.013	F

2 - A5076 - Danes Camp Way East	1816	454	756	2388	0.760	1853	2163	12.7	3.4	7.527	A
3 - Hunsbury Hill Road	557	139	2428	619	0.901	614	181	127.8	113.7	658.437	F
4 - A5076 - Danes Camp Way West	2192	548	276	2401	0.913	2383	2766	137.7	89.8	172.915	F
5 - Hunsbury Hill Avenue	164	41	2240	654	0.250	164	419	0.4	0.3	7.418	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	533	133	2173	670	0.796	663	73	112.2	79.6	521.915	F
2 - A5076 - Danes Camp Way East	1521	380	796	2362	0.644	1527	2040	3.4	1.9	4.553	A
3 - Hunsbury Hill Road	467	117	2146	759	0.615	753	177	113.7	42.2	376.188	F
4 - A5076 - Danes Camp Way West	1835	459	326	2371	0.774	2179	2573	89.8	3.8	50.269	F
5 - Hunsbury Hill Avenue	137	34	2108	717	0.191	137	397	0.3	0.2	6.270	A

A5076 Hunsbury Hill Road Roundabout - 2031 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	103.35	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-12	4 - A5076 - Danes Camp Way West

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2031 DS2	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)

1 - Hunsbarrow Road		ONE HOUR	✓	259	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	2425	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	304	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2345	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	171	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	44	57	136	22
	2 - A5076 - Danes Camp Way East	51	0	54	2277	43
	3 - Hunsbury Hill Road	0	259	0	35	10
	4 - A5076 - Danes Camp Way West	32	2066	0	0	247
	5 - Hunsbury Hill Avenue	6	80	0	85	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	0	0	6	0
	2 - A5076 - Danes Camp Way East	9	0	5	8	0
	3 - Hunsbury Hill Road	0	2	0	1	0
	4 - A5076 - Danes Camp Way West	10	7	3	0	0
	5 - Hunsbury Hill Avenue	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	0.56	16.35	1.3	C	238	356
2 - A5076 - Danes Camp Way East	1.00	51.71	38.9	F	2225	3338
3 - Hunsbury Hill Road	0.80	40.57	3.5	E	279	418
4 - A5076 - Danes Camp Way West	1.12	181.37	145.1	F	2152	3228
5 - Hunsbury Hill Avenue	0.33	9.34	0.5	A	157	235

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	195	49	1862	819	0.238	194	67	0.0	0.3	5.918	A
2 - A5076 - Danes Camp Way East	1826	456	224	2733	0.668	1817	1832	0.0	2.1	4.197	A
3 - Hunsbury Hill Road	229	57	1958	852	0.269	227	83	0.0	0.4	5.847	A
4 - A5076 - Danes Camp Way West	1765	441	288	2394	0.737	1754	1898	0.0	2.9	5.874	A
5 - Hunsbury Hill Avenue	129	32	1801	865	0.149	128	241	0.0	0.2	4.884	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	233	58	2220	647	0.360	232	80	0.3	0.6	8.906	A
2 - A5076 - Danes Camp Way East	2180	545	269	2705	0.806	2171	2183	2.1	4.3	7.161	A
3 - Hunsbury Hill Road	273	68	2341	662	0.413	272	99	0.4	0.7	9.358	A
4 - A5076 - Danes Camp Way West	2108	527	345	2360	0.893	2088	2268	2.9	7.8	13.218	B
5 - Hunsbury Hill Avenue	154	38	2146	699	0.220	153	287	0.2	0.3	6.596	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	285	71	2487	519	0.550	283	92	0.6	1.2	15.542	C
2 - A5076 - Danes Camp Way East	2670	667	328	2666	1.001	2578	2442	4.3	27.2	29.843	D
3 - Hunsbury Hill Road	335	84	2787	441	0.760	326	120	0.7	2.8	30.121	D
4 - A5076 - Danes Camp Way West	2582	645	413	2319	1.113	2302	2700	7.8	77.8	74.778	F
5 - Hunsbury Hill Avenue	188	47	2392	581	0.324	188	323	0.3	0.5	9.127	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	285	71	2502	511	0.558	285	93	1.2	1.3	16.348	C
2 - A5076 - Danes Camp Way East	2670	667	330	2665	1.002	2623	2457	27.2	38.9	51.706	F
3 - Hunsbury Hill Road	335	84	2832	418	0.801	332	121	2.8	3.5	40.570	E
4 - A5076 - Danes Camp Way West	2582	645	420	2315	1.115	2313	2744	77.8	145.1	178.380	F
5 - Hunsbury Hill Avenue	188	47	2407	574	0.328	188	325	0.5	0.5	9.337	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	233	58	2446	538	0.433	235	86	1.3	0.8	12.285	B
2 - A5076 - Danes Camp Way East	2180	545	271	2703	0.807	2317	2409	38.9	4.7	13.618	B
3 - Hunsbury Hill Road	273	68	2485	591	0.463	284	103	3.5	0.9	12.336	B
4 - A5076 - Danes Camp Way West	2108	527	361	2350	0.897	2333	2408	145.1	88.9	181.367	F
5 - Hunsbury Hill Avenue	154	38	2378	588	0.262	154	316	0.5	0.4	8.312	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	195	49	2179	667	0.293	196	72	0.8	0.4	7.910	A
2 - A5076 - Danes Camp Way East	1826	456	227	2732	0.668	1836	2148	4.7	2.2	4.379	A
3 - Hunsbury Hill Road	229	57	1979	842	0.272	231	84	0.9	0.4	6.016	A
4 - A5076 - Danes Camp Way West	1765	441	292	2391	0.738	2108	1918	88.9	3.2	37.013	E
5 - Hunsbury Hill Avenue	129	32	2122	711	0.181	129	279	0.4	0.2	6.198	A

A5076 Hunsbury Hill Road Roundabout - 2031 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	A5076-Hunsbury hill Ave rdbt	Standard Roundabout	1, 2, 3, 4, 5	336.03	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-25	1 - Hunsbarrow Road

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2031 DS2	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Hunsbarrow Road		ONE HOUR	✓	699	100.000
2 - A5076 - Danes Camp Way East		ONE HOUR	✓	2059	100.000
3 - Hunsbury Hill Road		ONE HOUR	✓	683	100.000
4 - A5076 - Danes Camp Way West		ONE HOUR	✓	2599	100.000
5 - Hunsbury Hill Avenue		ONE HOUR	✓	182	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	71	124	469	35
	2 - A5076 - Danes Camp Way East	49	0	0	2010	0
	3 - Hunsbury Hill Road	0	245	0	393	45
	4 - A5076 - Danes Camp Way West	51	1977	194	0	377
	5 - Hunsbury Hill Avenue	7	88	17	70	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Hunsbarrow Road	2 - A5076 - Danes Camp Way East	3 - Hunsbury Hill Road	4 - A5076 - Danes Camp Way West	5 - Hunsbury Hill Avenue
From	1 - Hunsbarrow Road	0	2	0	6	0
	2 - A5076 - Danes Camp Way East	0	0	0	5	1
	3 - Hunsbury Hill Road	0	3	0	1	0
	4 - A5076 - Danes Camp Way West	0	4	8	1	0
	5 - Hunsbury Hill Avenue	0	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Hunsbarrow Road	1.33	716.19	120.1	F	641	962
2 - A5076 - Danes Camp Way East	0.96	30.02	17.8	D	1889	2834
3 - Hunsbury Hill Road	1.64	765.71	149.7	F	627	940
4 - A5076 - Danes Camp Way West	1.19	386.26	253.1	F	2385	3577
5 - Hunsbury Hill Avenue	0.31	8.28	0.5	A	167	251

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	526	132	1933	785	0.671	518	80	0.0	2.0	13.682	B
2 - A5076 - Danes Camp Way East	1550	388	675	2440	0.635	1543	1776	0.0	1.8	4.174	A
3 - Hunsbury Hill Road	514	129	1969	847	0.607	508	249	0.0	1.5	10.614	B
4 - A5076 - Danes Camp Way West	1957	489	278	2400	0.815	1939	2199	0.0	4.4	7.826	A
5 - Hunsbury Hill Avenue	137	34	1877	828	0.165	136	341	0.0	0.2	5.247	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	628	157	2267	624	1.006	584	95	2.0	13.0	63.575	F
2 - A5076 - Danes Camp Way East	1851	463	773	2377	0.779	1844	2079	1.8	3.6	6.989	A
3 - Hunsbury Hill Road	614	154	2328	669	0.918	591	288	1.5	7.2	39.405	E
4 - A5076 - Danes Camp Way West	2336	584	324	2372	0.985	2272	2595	4.4	20.5	27.316	D
5 - Hunsbury Hill Avenue	164	41	2198	674	0.243	163	398	0.2	0.3	7.111	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	770	192	2361	579	1.329	577	108	13.0	61.3	247.474	F
2 - A5076 - Danes Camp Way East	2267	567	792	2364	0.959	2222	2146	3.6	14.9	21.664	C
3 - Hunsbury Hill Road	752	188	2714	477	1.578	475	300	7.2	76.5	337.123	F
4 - A5076 - Danes Camp Way West	2862	715	283	2397	1.194	2393	2906	20.5	137.7	125.125	F
5 - Hunsbury Hill Avenue	200	50	2269	640	0.313	200	407	0.3	0.5	8.245	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

1 - Hunsbarrow Road	770	192	2362	579	1.330	578	108	61.3	109.1	539.353	F
2 - A5076 - Danes Camp Way East	2267	567	794	2363	0.959	2255	2146	14.9	17.8	30.017	D
3 - Hunsbury Hill Road	752	188	2749	459	1.638	459	300	76.5	149.7	765.705	F
4 - A5076 - Danes Camp Way West	2862	715	278	2400	1.192	2400	2931	137.7	253.1	298.056	F
5 - Hunsbury Hill Avenue	200	50	2270	639	0.313	200	407	0.5	0.5	8.276	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	628	157	2349	585	1.074	584	98	109.1	120.1	716.188	F
2 - A5076 - Danes Camp Way East	1851	463	779	2373	0.780	1907	2154	17.8	3.9	9.018	A
3 - Hunsbury Hill Road	614	154	2391	637	0.964	633	294	149.7	145.0	752.396	F
4 - A5076 - Danes Camp Way West	2336	584	343	2361	0.990	2351	2681	253.1	249.5	386.257	F
5 - Hunsbury Hill Avenue	164	41	2282	634	0.258	164	412	0.5	0.4	7.746	A

18:00 - 18:15

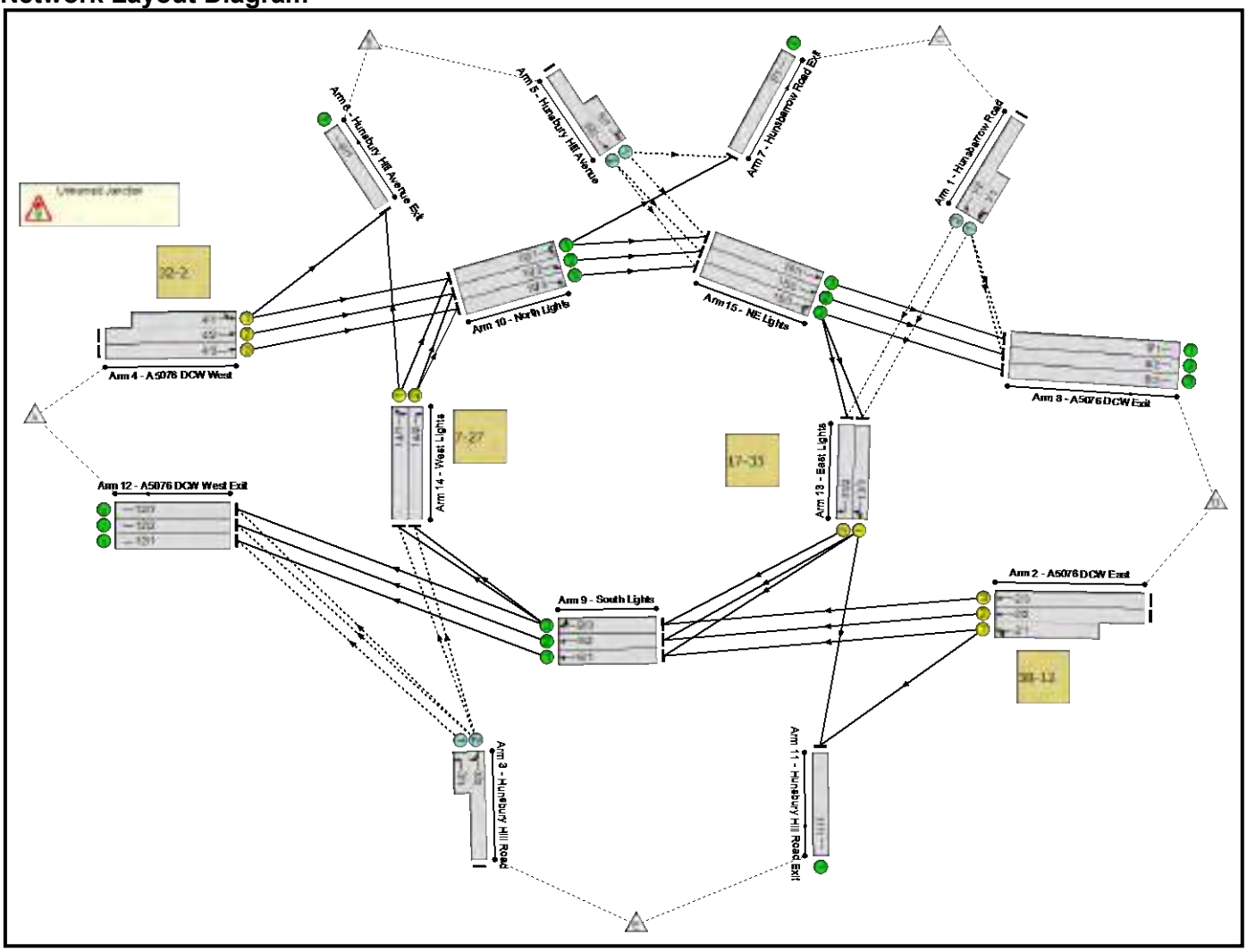
Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Hunsbarrow Road	526	132	2353	583	0.903	578	88	120.1	107.2	708.557	F
2 - A5076 - Danes Camp Way East	1550	388	757	2387	0.649	1558	2174	3.9	2.0	4.593	A
3 - Hunsbury Hill Road	514	129	2027	818	0.628	813	288	145.0	70.4	479.431	F
4 - A5076 - Danes Camp Way West	1957	489	411	2320	0.843	2310	2429	249.5	161.1	320.557	F
5 - Hunsbury Hill Avenue	137	34	2304	623	0.220	137	418	0.4	0.3	7.480	A

Full Input Data And Results

User and Project Details

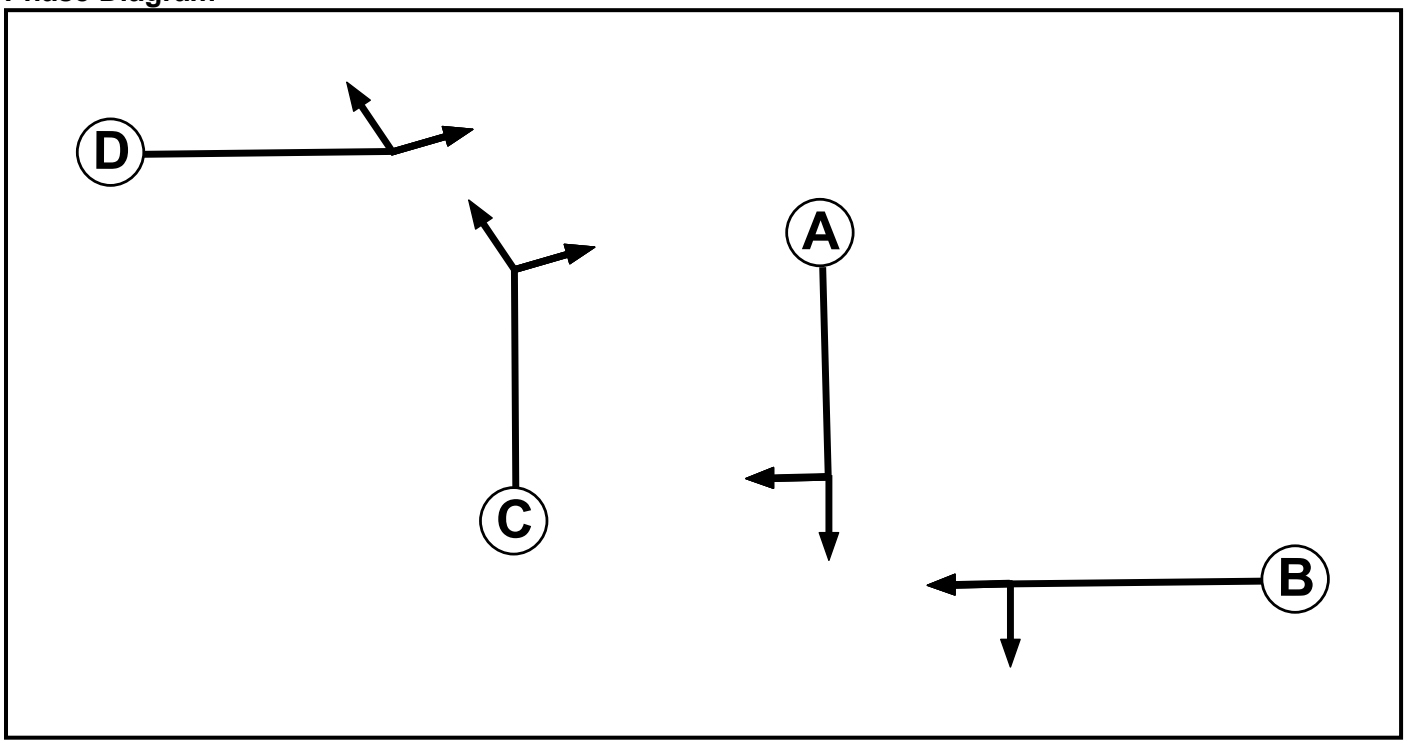
Project:	Rail Central
Title:	Junction 6
Location:	A5076 (west)/ Hunsbury Hill Avenue/ Hunsbarrow Road / A5076, Danes Camp Way / Hunsbury Hill Road
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Phase Intergreens Matrix

		Starting Phase			
		A	B	C	D
Terminating Phase	A		5	-	-
	B	5		-	-
	C	-	-		5
	D	-	-	5	

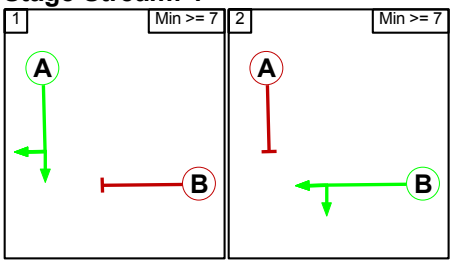
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

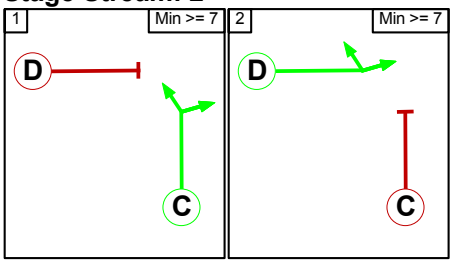
Full Input Data And Results

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		5
	2	5	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Full Input Data And Results

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Hunsbarrow Road)	8/1 (Left)	1000	0	15/1	0.33	All	-	-	-	-	-
				15/2	0.33	All					
				15/3	0.33	To 8/3 (Ahead)					
	8/2 (Left)	1000	0	15/1	0.33	All					
				15/2	0.33	All					
				15/3	0.33	To 8/3 (Ahead)					
	13/1 (Ahead)	1000	0	15/1	0.33	All					
				15/2	0.33	All					
				15/3	0.33	All					
1/2 (Hunsbarrow Road)	13/2 (Ahead)	1000	0	15/1	0.33	All	-	-	-	-	-
				15/2	0.33	All					
				15/3	0.33	All					
3/1 (Hunsbury Hill Road)	12/1 (Left)	1000	0	9/1	0.33	All	-	-	-	-	-
				9/2	0.33	All					
				9/3	0.33	To 12/3 (Ahead)					
3/2 (Hunsbury Hill Road)	12/2 (Left)	1000	0	9/1	0.33	All	-	-	-	-	-
				9/2	0.33	To 12/2 (Ahead)					
				9/3	0.33	To 12/3 (Ahead)					
	12/3 (Left)	1000	0	9/1	0.33	All					
				9/2	0.33	To 12/2 (Ahead)					
				9/3	0.33	To 12/3 (Ahead)					
	14/1 (Ahead)	1000	0	9/1	0.33	All					
				9/2	0.33	All					
				9/3	0.33	All					

Full Input Data And Results

	14/2 (Ahead)	1000	0	9/1	0.33	All					
				9/2	0.33	All					
				9/3	0.33	All					
5/1 (Hunsbury Hill Avenue)	7/1 (Left)	1000	0	10/1	0.33	To 7/1 (Left)	-	-	-	-	-
	15/1 (Ahead)	1000	0	10/1	0.33	All					
5/2 (Hunsbury Hill Avenue)	15/2 (Ahead)	1000	0	10/1	0.33	All	-	-	-	-	-
				10/2	0.33	All					
	15/3 (Ahead)	1000	0	10/1	0.33	All					
				10/2	0.33	All					
				10/3	0.33	All					

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Hunsbarrow Road)	O		2	3	5.0	Geom	-	3.60	0.00	Y	Arm 8 Left	40.00
											Arm 13 Ahead	55.00
1/2 (Hunsbarrow Road)	O		2	3	60.0	Geom	-	3.60	0.00	N	Arm 13 Ahead	55.00
2/1 (A5076 DCW East)	U	B	2	3	10.0	Geom	-	3.70	0.00	Y	Arm 9 Ahead	58.00
											Arm 11 Left	40.00
2/2 (A5076 DCW East)	U	B	2	3	60.0	Geom	-	3.70	0.00	N	Arm 9 Ahead	58.00
2/3 (A5076 DCW East)	U	B	2	3	60.0	Geom	-	3.70	0.00	N	Arm 9 Ahead	58.00
3/1 (Hunsbury Hill Road)	O		2	3	4.0	Geom	-	4.00	0.00	Y	Arm 12 Left	48.00
3/2 (Hunsbury Hill Road)	O		2	3	60.0	Geom	-	3.00	0.00	N	Arm 12 Left	47.00
											Arm 14 Ahead	55.00
4/1 (A5076 DCW West)	U	D	2	3	10.0	Geom	-	3.70	0.00	Y	Arm 6 Left	40.00
											Arm 10 Ahead	58.00
4/2 (A5076 DCW West)	U	D	2	3	60.0	Geom	-	3.70	0.00	N	Arm 10 Ahead	58.00
4/3 (A5076 DCW West)	U	D	2	3	60.0	Geom	-	3.70	0.00	N	Arm 10 Ahead	58.00
5/1 (Hunsbury Hill Avenue)	O		2	3	5.0	Geom	-	3.25	0.00	Y	Arm 7 Left	37.00
											Arm 15 Ahead	58.00
5/2 (Hunsbury Hill Avenue)	O		2	3	60.0	Geom	-	3.25	0.00	N	Arm 15 Ahead	58.00
6/1 (Hunsbury Hill Avenue Exit)	U		2	3	60.0	Geom	-	3.25	0.00	Y		
7/1 (Hunsbarrow Road Exit)	U		2	3	60.0	Geom	-	3.25	0.00	Y		
8/1 (A5076 DCW Exit)	U		2	3	17.0	Inf	-	-	-	-	-	-

Full Input Data And Results

8/2 (A5076 DCW Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/3 (A5076 DCW Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (South Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
9/2 (South Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
9/3 (South Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
10/1 (North Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
10/2 (North Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
10/3 (North Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
11/1 (Hunsbury Hill Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (A5076 DCW West Exit)	U		2	3	17.0	Inf	-	-	-	-	-	-
12/2 (A5076 DCW West Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/3 (A5076 DCW West Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (East Lights)	U	A	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 9 Right Arm 11 Ahead	40.00 Inf
13/2 (East Lights)	U	A	2	3	3.0	Geom	-	4.00	0.00	N	Arm 9 Right	40.00
14/1 (West Lights)	U	C	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf 40.00
14/2 (West Lights)	U	C	2	3	3.0	Geom	-	4.00	0.00	N	Arm 10 Right	40.00
15/1 (NE Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
15/2 (NE Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
15/3 (NE Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DS AM'	08:00	09:00	01:00	
2: '2021 DS PM'	17:00	18:00	01:00	
3: '2031 DS AM'	08:00	09:00	01:00	
4: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	237	32	1964	0	2233
	B	59	0	6	62	1	128
	C	137	15	0	42	57	251
	D	2072	47	70	0	72	2261
	E	76	14	0	250	0	340
	Tot.	2344	313	108	2318	130	5213

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DS AM
Junction: Unnamed Junction	
1/1 (short)	111
1/2 (with short)	251(In) 140(Out)
2/1 (short)	743
2/2 (with short)	1540(In) 797(Out)
2/3	721
3/1 (short)	76
3/2 (with short)	340(In) 264(Out)
4/1 (short)	734
4/2 (with short)	1523(In) 789(Out)
4/3	710
5/1 (short)	68
5/2 (with short)	128(In) 60(Out)
6/1	313
7/1	108
8/1	581
8/2	919
8/3	818
9/1	706
9/2	832
9/3	862
10/1	600
10/2	898
10/3	818
11/1	130
12/1	782
12/2	832
12/3	730
13/1	128
13/2	141
14/1	179
14/2	217
15/1	560
15/2	898
15/3	878

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	37.8 %	1915	1915
				Arm 13 Ahead	55.00	62.2 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	90.3 %	1933	1933
				Arm 11 Left	40.00	9.7 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	0.0 %	2000	2000
				Arm 14 Ahead	55.00	100.0 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	32.3 %	1928	1928
				Arm 10 Ahead	58.00	67.7 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	8.8 %	1889	1889
				Arm 15 Ahead	58.00	91.2 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right Arm 11 Ahead	40.00 Inf	54.7 % 45.3 %	1975	1975
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf 40.00	42.5 % 57.5 %	1972	1972
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	342	56	1972	50	2420
	B	54	0	5	80	9	148
	C	428	66	0	52	108	654
	D	1749	5	71	0	11	1836
	E	255	12	0	270	0	537
	Tot.	2486	425	132	2374	178	5595

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DS PM
Junction: Unnamed Junction	
1/1 (short)	328
1/2 (with short)	654(In) 326(Out)
2/1 (short)	604
2/2 (with short)	1251(In) 647(Out)
2/3	585
3/1 (short)	255
3/2 (with short)	537(In) 282(Out)
4/1 (short)	732
4/2 (with short)	1556(In) 824(Out)
4/3	864
5/1 (short)	85
5/2 (with short)	148(In) 63(Out)
6/1	425
7/1	132
8/1	458
8/2	976
8/3	940
9/1	677
9/2	731
9/3	965
10/1	479
10/2	950
10/3	990
11/1	178
12/1	932
12/2	731
12/3	823
13/1	335
13/2	380
14/1	172
14/2	252
15/1	432
15/2	950
15/3	1053

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	15.9 %	1920	1920
				Arm 13 Ahead	55.00	84.1 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	98.2 %	1935	1935
				Arm 11 Left	40.00	1.8 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	0.0 %	2000	2000
				Arm 14 Ahead	55.00	100.0 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	46.7 %	1925	1925
				Arm 10 Ahead	58.00	53.3 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	5.9 %	1890	1890
				Arm 15 Ahead	58.00	94.1 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right Arm 11 Ahead	40.00 Inf	50.1 % 49.9 %	1978	1978
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf 40.00	48.3 % 51.7 %	1977	1977
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	247	32	2066	0	2345
	B	85	0	6	80	0	171
	C	136	22	0	44	57	259
	D	2277	43	51	0	54	2425
	E	35	10	0	259	0	304
	Tot.	2533	322	89	2449	111	5504

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2031 DS AM
Junction: Unnamed Junction	
1/1 (short)	131
1/2 (with short)	259(In) 128(Out)
2/1 (short)	745
2/2 (with short)	1540(In) 795(Out)
2/3	885
3/1 (short)	35
3/2 (with short)	304(In) 269(Out)
4/1 (short)	714
4/2 (with short)	1481(In) 767(Out)
4/3	864
5/1 (short)	86
5/2 (with short)	171(In) 85(Out)
6/1	322
7/1	89
8/1	595
8/2	889
8/3	965
9/1	734
9/2	838
9/3	1042
10/1	576
10/2	867
10/3	965
11/1	111
12/1	769
12/2	838
12/3	926
13/1	143
13/2	157
14/1	184
14/2	201
15/1	573
15/2	867
15/3	1050

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	33.6 %	1916	1916
				Arm 13 Ahead	55.00	66.4 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	92.8 %	1933	1933
				Arm 11 Left	40.00	7.2 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	0.0 %	2000	2000
				Arm 14 Ahead	55.00	100.0 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	34.6 %	1927	1927
				Arm 10 Ahead	58.00	65.4 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	7.0 %	1889	1889
				Arm 15 Ahead	58.00	93.0 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right Arm 11 Ahead	40.00 Inf	60.1 % 39.9 %	1971	1971
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf 40.00	40.8 % 59.2 %	1971	1971
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	377	51	1977	194	2599
	B	70	0	7	88	17	182
	C	469	35	0	71	124	699
	D	2010	0	49	0	0	2059
	E	393	45	0	245	0	683
	Tot.	2942	457	107	2381	335	6222

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2031 DS PM
Junction: Unnamed Junction	
1/1 (short)	355
1/2 (with short)	699(In) 344(Out)
2/1 (short)	675
2/2 (with short)	1398(In) 723(Out)
2/3	661
3/1 (short)	347
3/2 (with short)	683(In) 336(Out)
4/1 (short)	820
4/2 (with short)	1684(In) 864(Out)
4/3	915
5/1 (short)	95
5/2 (with short)	182(In) 87(Out)
6/1	457
7/1	107
8/1	516
8/2	1021
8/3	844
9/1	790
9/2	838
9/3	1005
10/1	492
10/2	986
10/3	1038
11/1	335
12/1	1137
12/2	861
12/3	944
13/1	565
13/2	344
14/1	129
14/2	245
15/1	480
15/2	986
15/3	1125

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction

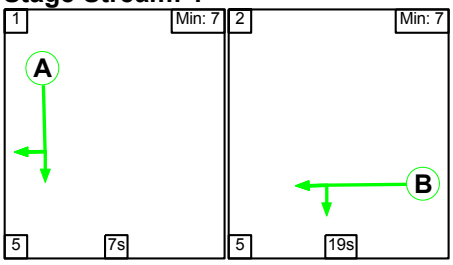
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	20.0 %	1919	1919
				Arm 13 Ahead	55.00	80.0 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	100.0 %	1935	1935
				Arm 11 Left	40.00	0.0 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	13.7 %	1999	1999
				Arm 14 Ahead	55.00	86.3 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	46.0 %	1925	1925
				Arm 10 Ahead	58.00	54.0 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	7.4 %	1889	1889
				Arm 15 Ahead	58.00	92.6 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right Arm 11 Ahead	40.00 Inf	40.7 % 59.3 %	1985	1985
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf 40.00	62.0 % 38.0 %	1987	1987
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

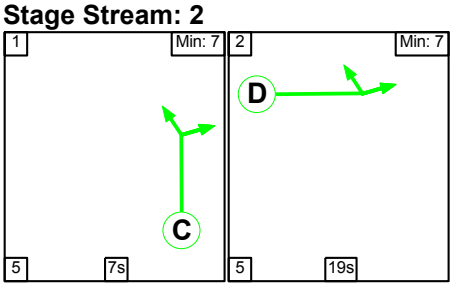
Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

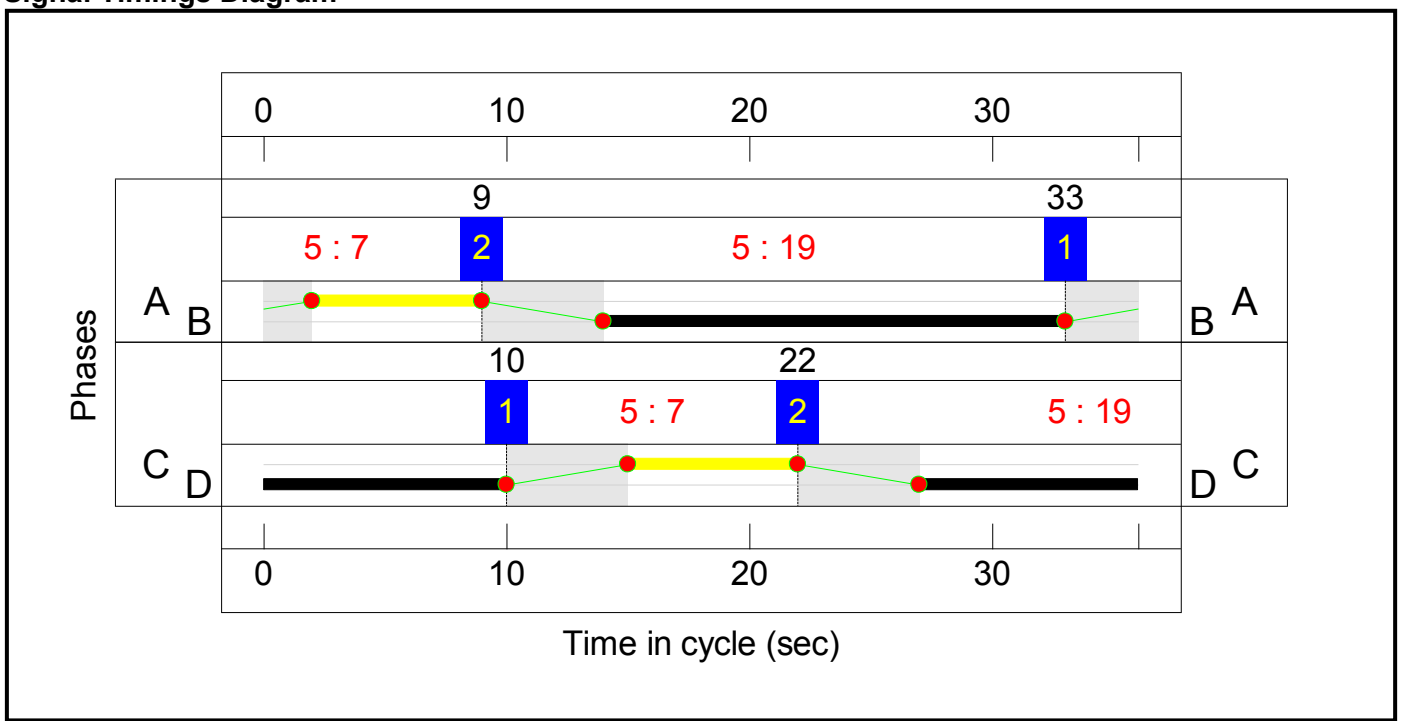
Stage Stream: 1

Stage	1	2
Duration	7	19
Change Point	33	9

Stage Stream: 2

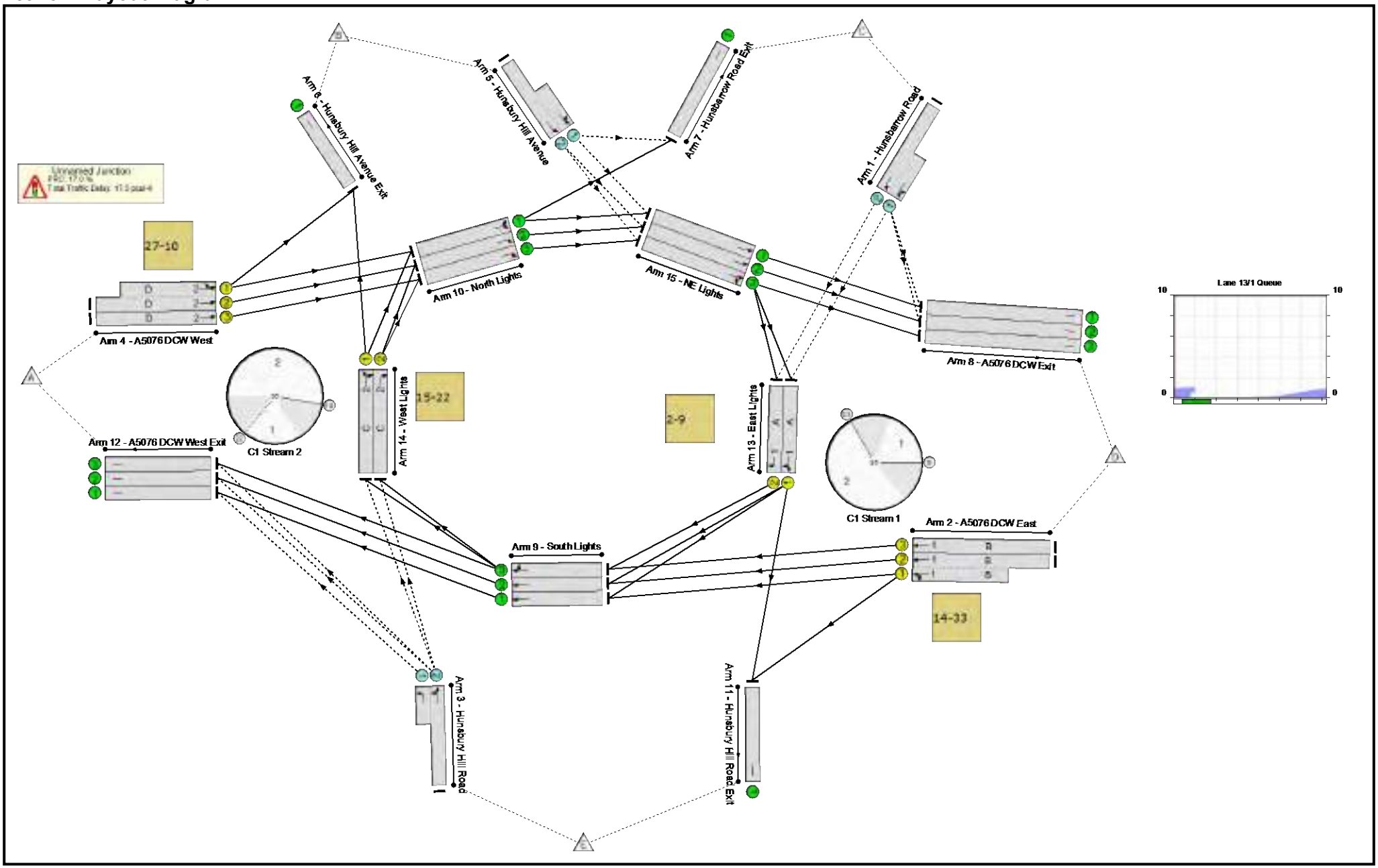
Stage	1	2
Duration	7	19
Change Point	10	22

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.9%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.9%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	251	2059:1915	280+286	49.9 : 38.8%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	19	-	1540	2071:1933	1036+966	76.9 : 76.9%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	19	-	721	2071	1151	62.7%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	340	2000:1954	379+109	69.7 : 69.7%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	19	-	1523	2071:1928	1036+964	76.2 : 76.2%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	19	-	710	2071	1151	61.7%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	128	2028:1889	366+414	16.4 : 16.4%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	313	1940	1940	16.1%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	108	1940	1940	5.6%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	919	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	818	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	706	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	832	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	862	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	600	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	898	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	818	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	130	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	782	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	832	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	730	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	7	-	128	1975	439	29.2%
13/2	East Lights Right	U	1	N/A	A		1	7	-	141	2077	462	30.5%
14/1	West Lights Ahead Right	U	2	N/A	C		1	7	-	179	1972	438	40.8%
14/2	West Lights Right	U	2	N/A	C		1	7	-	217	2077	462	47.0%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	560	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	898	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	878	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1438**	**0**	**0**	**9.6**	**7.8**	**0.0**	**17.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1438**	**0**	**0**	**9.6**	**7.8**	**0.0**	**17.5**	**-**	**-**	**-**	**-**
1/2+1/1	251	251	502	0	0	0.3	0.4	-	0.7	9.4	0.9	0.4	1.3
2/2+2/1	1540	1540	-	-	-	2.5	1.7	-	4.1	9.6	5.8	1.7	7.4
2/3	721	721	-	-	-	1.1	0.8	-	1.9	9.6	4.8	0.8	5.6
3/2+3/1	340	340	680	0	0	0.6	1.1	-	1.7	18.3	2.1	1.1	3.3
4/2+4/1	1523	1523	-	-	-	2.4	1.6	-	4.0	9.5	5.5	1.6	7.1
4/3	710	710	-	-	-	1.1	0.8	-	1.9	9.5	4.7	0.8	5.5
5/2+5/1	128	128	256	0	0	0.0	0.1	-	0.1	3.9	0.3	0.1	0.3
6/1	313	313	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
7/1	108	108	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	919	919	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	706	706	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	862	862	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	600	600	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	898	898	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	130	130	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	782	782	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	730	730	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	128	128	-	-	-	0.3	0.2	-	0.5	14.7	1.0	0.2	1.2
13/2	141	141	-	-	-	0.3	0.2	-	0.5	13.3	1.2	0.2	1.4

Full Input Data And Results

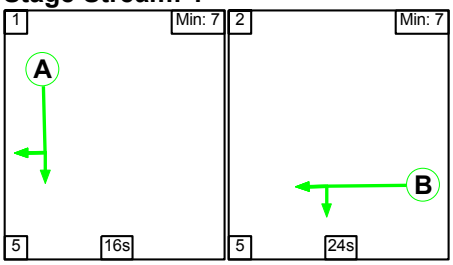
14/1	179	179	-	-	-	0.7	0.3	-	1.0	20.3	1.6	0.3	1.9
14/2	217	217	-	-	-	0.4	0.4	-	0.8	13.5	1.3	0.4	1.7
15/1	560	560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	898	898	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	878	878	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	17.0	Total Delay for Signalled Lanes (pcuHr):	7.10	Cycle Time (s):	36
C1	Stream: 2 PRC for Signalled Lanes (%):	18.2	Total Delay for Signalled Lanes (pcuHr):	7.71	Cycle Time (s):	36
	PRC Over All Lanes (%):	17.0	Total Delay Over All Lanes(pcuHr):	17.46		

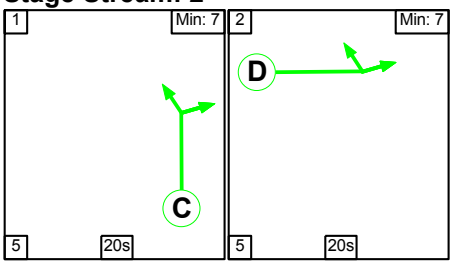
Full Input Data And Results
Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

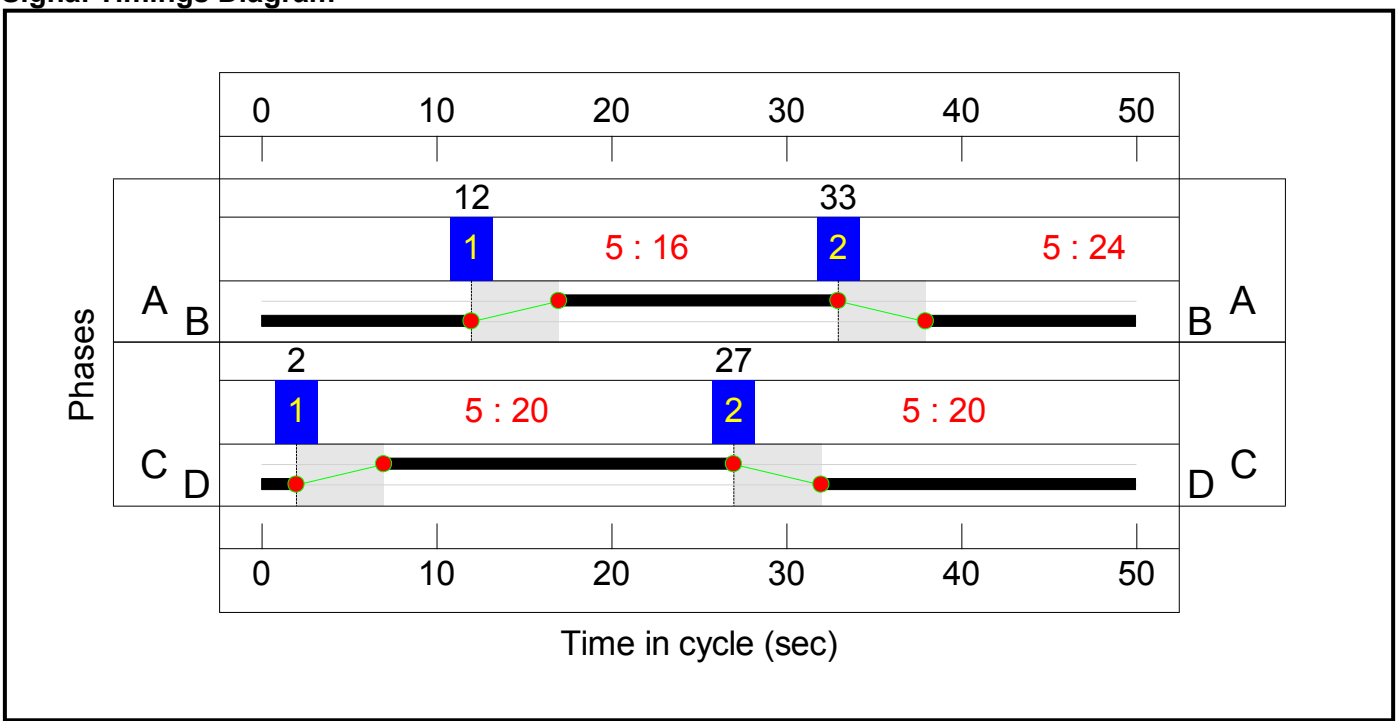
Stage Stream: 1

Stage	1	2
Duration	16	24
Change Point	12	33

Stage Stream: 2

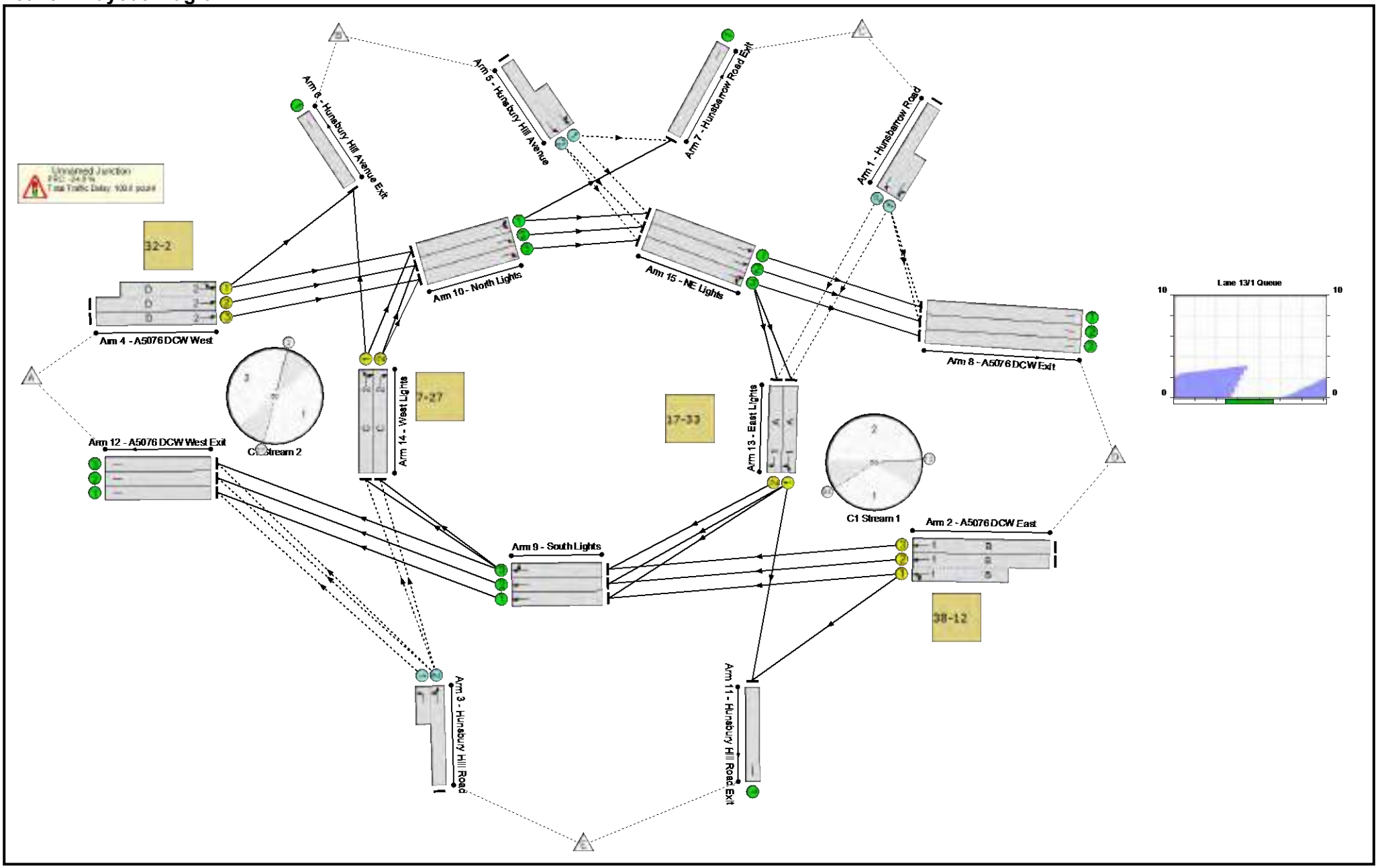
Stage	1	2
Duration	20	20
Change Point	2	27

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.6%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	654	2059:1920	292+296	111.6 : 111.0%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	24	-	1251	2071:1935	886+827	73.0 : 73.0%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	24	-	585	2071	1036	56.5%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	537	2000:1954	388+415	72.7 : 61.4%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	20	-	1556	2071:1925	805+715	102.4 : 102.4%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	20	-	864	2071	870	99.3%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	148	2028:1890	425+574	14.8 : 14.8%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	425	1940	1940	20.9%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	132	1940	1940	6.7%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	458	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	976	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	940	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	677	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	731	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	965	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	479	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	950	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	990	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	178	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	932	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	731	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	823	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	16	-	335	1978	673	45.8%
13/2	East Lights Right	U	1	N/A	A		1	16	-	380	2077	706	49.0%
14/1	West Lights Ahead Right	U	2	N/A	C		1	20	-	172	1977	830	19.9%
14/2	West Lights Right	U	2	N/A	C		1	20	-	252	2077	872	28.9%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	432	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	950	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	1053	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2545**	**0**	**0**	**23.4**	**86.2**	**0.0**	**109.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**2545**	**0**	**0**	**23.4**	**86.2**	**0.0**	**109.6**	**-**	**-**	**-**	**-**
1/2+1/1	654	588	1175	0	0	3.3	37.6	-	40.8	224.8	9.3	37.6	46.9
2/2+2/1	1251	1251	-	-	-	3.2	1.3	-	4.5	13.0	6.5	1.3	7.8
2/3	585	585	-	-	-	1.4	0.6	-	2.1	12.7	5.5	0.6	6.2
3/2+3/1	537	537	1074	0	0	1.0	1.0	-	2.0	13.2	3.1	1.0	4.1
4/2+4/1	1556	1511	-	-	-	6.6	30.8	-	37.4	86.5	14.8	30.8	45.6
4/3	864	864	-	-	-	3.5	13.3	-	16.8	69.9	11.8	13.3	25.1
5/2+5/1	148	148	296	0	0	0.1	0.1	-	0.2	4.3	0.5	0.1	0.5
6/1	406	406	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
7/1	130	130	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	444	444	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	954	954	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	940	940	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	669	669	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	723	723	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	931	931	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	465	465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	931	931	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	990	990	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	167	167	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	924	924	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	723	723	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	796	796	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	308	308	-	-	-	1.4	0.4	-	1.8	21.4	3.1	0.4	3.5
13/2	346	346	-	-	-	1.7	0.5	-	2.2	22.5	3.4	0.5	3.9

Full Input Data And Results

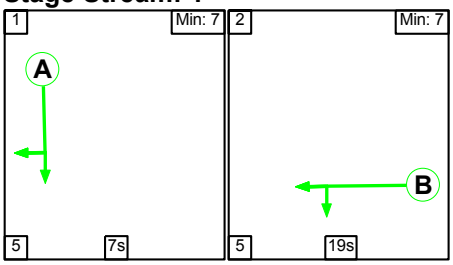
14/1	165	165	-	-	-	0.5	0.1	-	0.6	13.3	1.6	0.1	1.7
14/2	252	252	-	-	-	0.9	0.2	-	1.1	15.7	2.4	0.2	2.6
15/1	420	420	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	931	931	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1053	1053	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	23.2	Total Delay for Signalled Lanes (pcuHr):	10.57	Cycle Time (s): 50
C1	Stream: 2 PRC for Signalled Lanes (%):	-13.8	Total Delay for Signalled Lanes (pcuHr):	55.87	Cycle Time (s): 50
	PRC Over All Lanes (%):	-24.0	Total Delay Over All Lanes(pcuHr):	109.59	

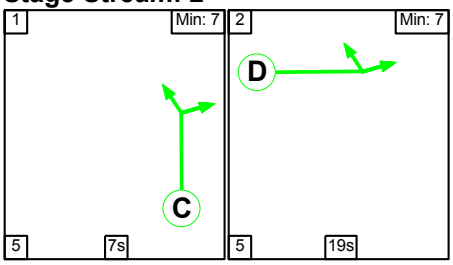
Full Input Data And Results
Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

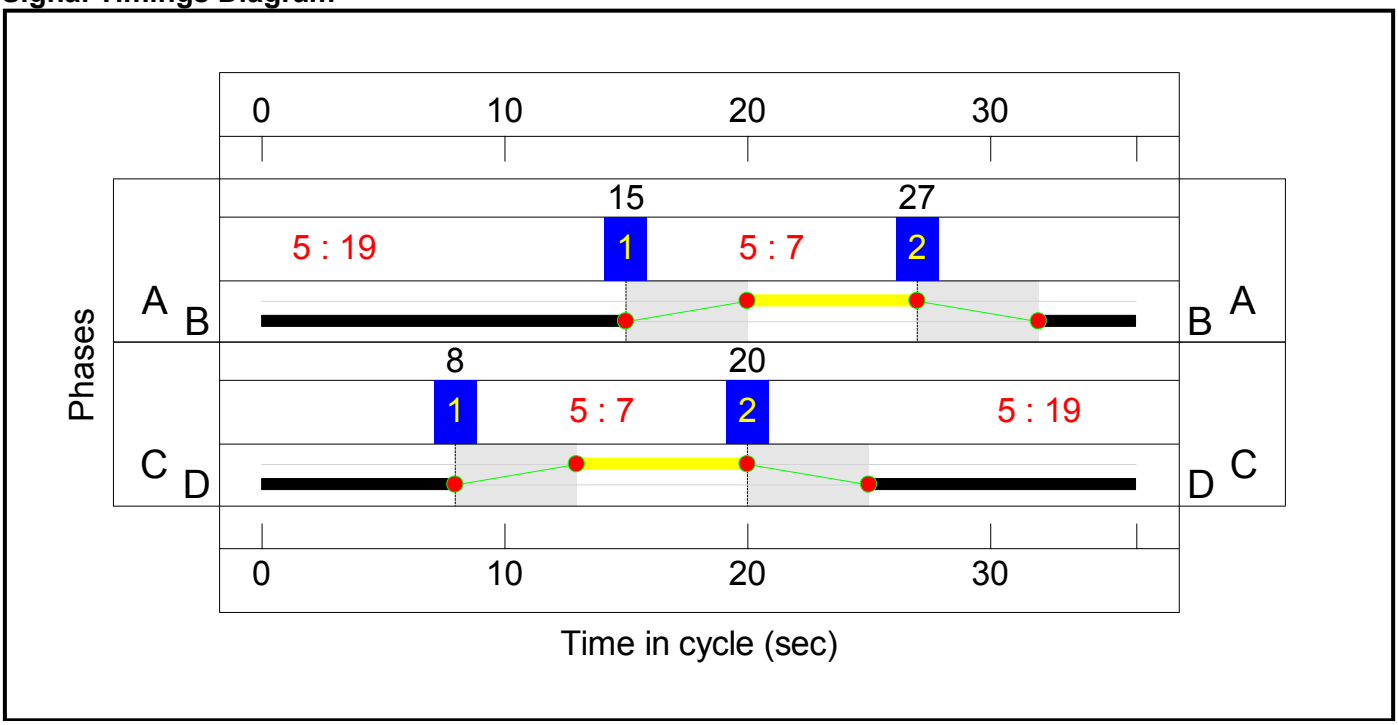
Stage Stream: 1

Stage	1	2
Duration	7	19
Change Point	15	27

Stage Stream: 2

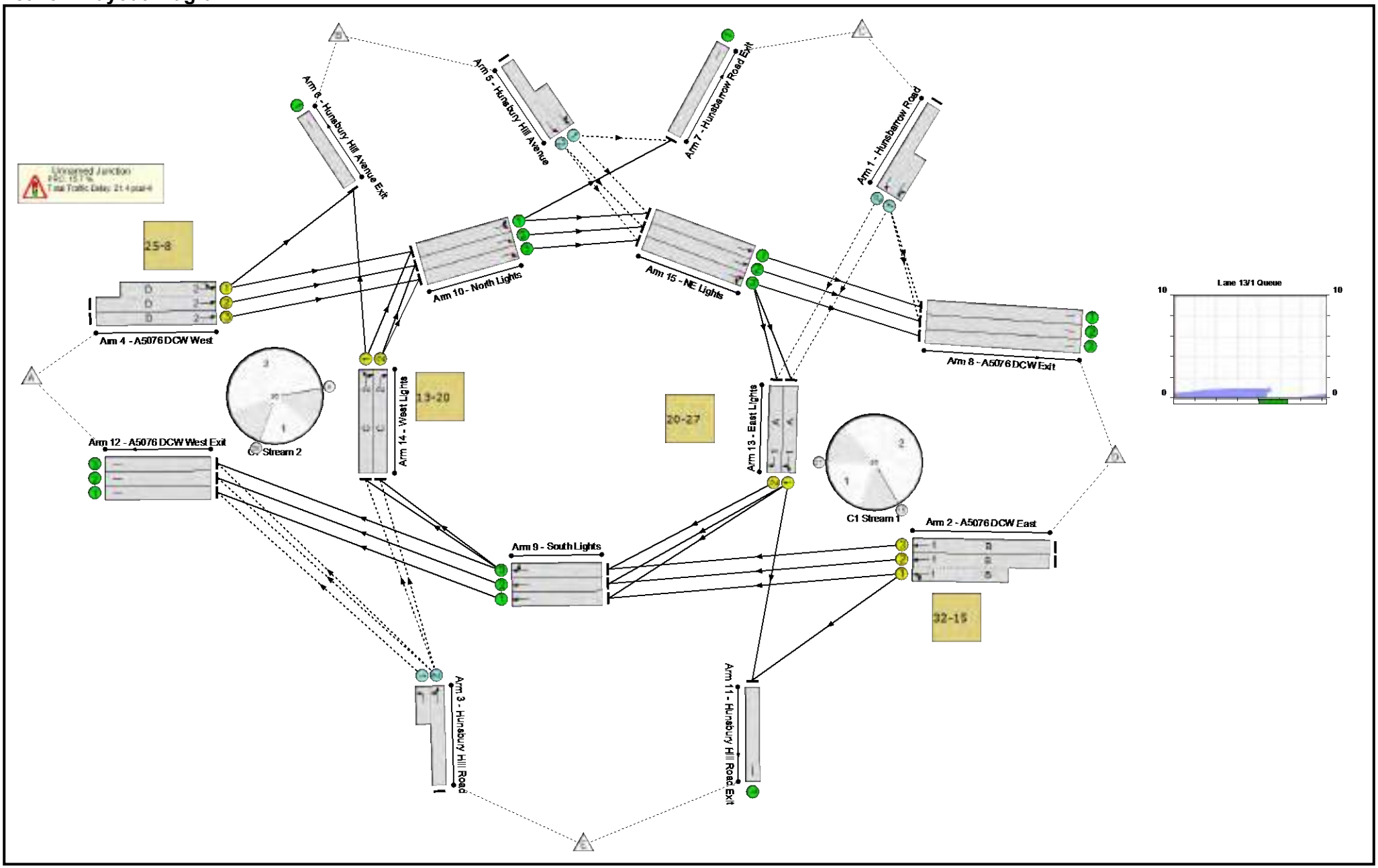
Stage	1	2
Duration	7	19
Change Point	8	20

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.8%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	259	2059:1916	237+244	53.9 : 53.8%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	19	-	1540	2071:1933	1033+968	76.9 : 76.9%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	19	-	885	2071	1151	76.9%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	304	2000:1954	346+45	77.8 : 77.8%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	19	-	1481	2071:1927	1035+964	74.1 : 74.1%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	19	-	864	2071	1151	75.1%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	171	2028:1889	352+356	24.2 : 24.2%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	322	1940	1940	16.6%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	89	1940	1940	4.6%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	595	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	965	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	734	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	838	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	1042	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	576	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	867	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	965	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	111	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	769	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	838	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	926	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	7	-	143	1971	438	32.6%
13/2	East Lights Right	U	1	N/A	A		1	7	-	157	2077	462	34.0%
14/1	West Lights Ahead Right	U	2	N/A	C		1	7	-	184	1971	438	42.0%
14/2	West Lights Right	U	2	N/A	C		1	7	-	201	2077	462	43.5%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	573	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	867	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	1050	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1468**	**0**	**0**	**11.4**	**10.0**	**0.0**	**21.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1468**	**0**	**0**	**11.4**	**10.0**	**0.0**	**21.4**	**-**	**-**	**-**	**-**
1/2+1/1	259	259	518	0	0	0.3	0.6	-	0.9	12.6	0.9	0.6	1.5
2/2+2/1	1540	1540	-	-	-	2.5	1.7	-	4.1	9.6	5.5	1.7	7.2
2/3	885	885	-	-	-	1.5	1.6	-	3.2	12.9	6.6	1.6	8.3
3/2+3/1	304	304	608	0	0	0.7	1.7	-	2.4	27.9	2.3	1.7	4.0
4/2+4/1	1481	1481	-	-	-	2.3	1.4	-	3.7	9.1	5.3	1.4	6.7
4/3	864	864	-	-	-	1.5	1.5	-	3.0	12.3	6.5	1.5	8.0
5/2+5/1	171	171	342	0	0	0.1	0.2	-	0.2	5.1	0.4	0.2	0.6
6/1	322	322	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
7/1	89	89	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	595	595	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	889	889	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	965	965	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	734	734	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	838	838	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	1042	1042	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	576	576	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	867	867	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	965	965	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	111	111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	769	769	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	838	838	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	926	926	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	143	143	-	-	-	0.5	0.2	-	0.8	19.6	0.9	0.2	1.2
13/2	157	157	-	-	-	0.6	0.3	-	0.9	20.2	1.2	0.3	1.4

Full Input Data And Results

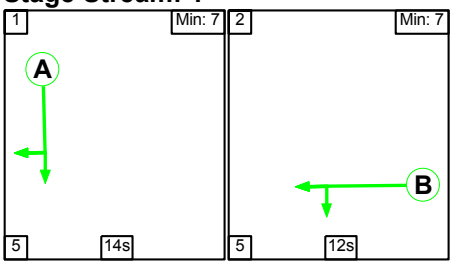
14/1	184	184	-	-	-	0.6	0.4	-	0.9	18.3	1.5	0.4	1.9
14/2	201	201	-	-	-	0.8	0.4	-	1.2	20.8	2.0	0.4	2.4
15/1	573	573	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	867	867	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1050	1050	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	17.0	Total Delay for Signalled Lanes (pcuHr):	8.96	Cycle Time (s):	36
C1	Stream: 2 PRC for Signalled Lanes (%):	19.8	Total Delay for Signalled Lanes (pcuHr):	8.80	Cycle Time (s):	36
	PRC Over All Lanes (%):	15.7	Total Delay Over All Lanes(pcuHr):	21.39		

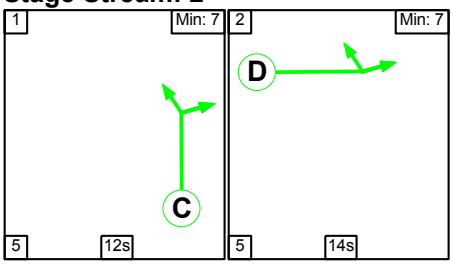
Full Input Data And Results
Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

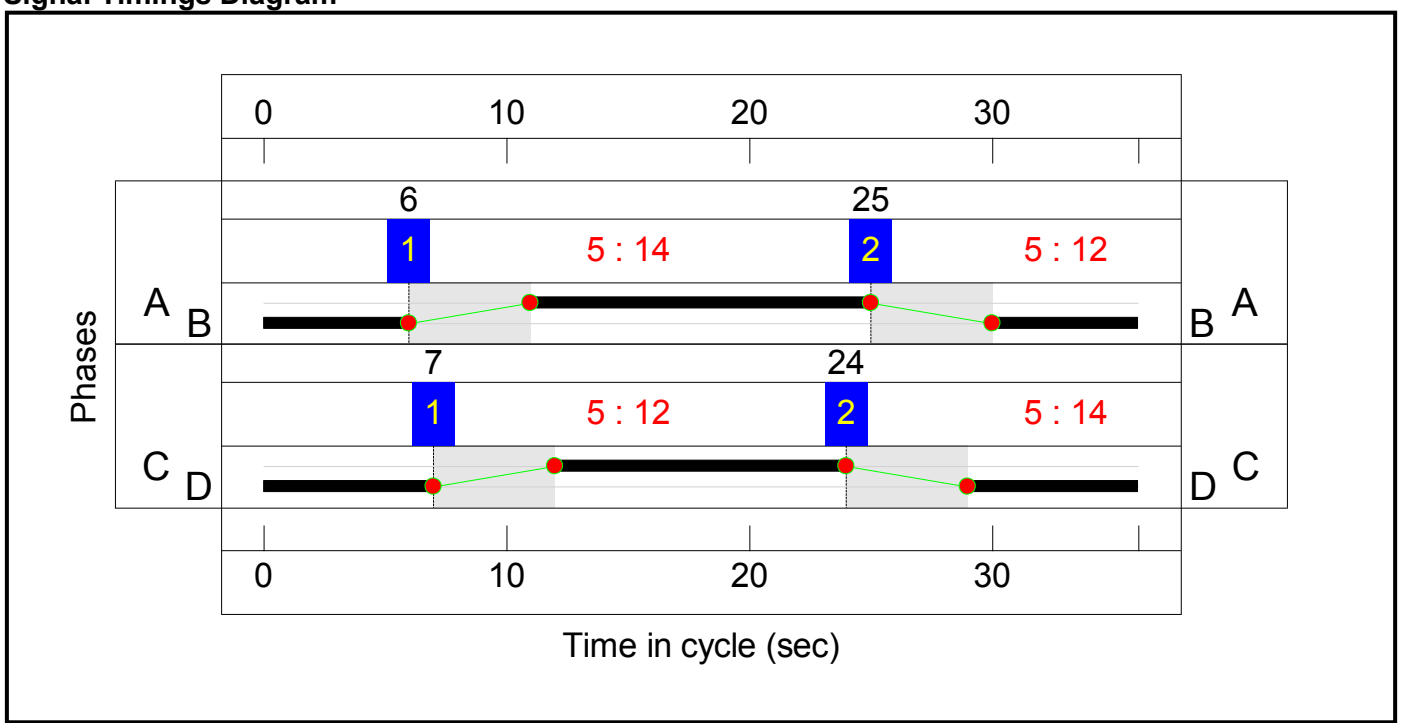
Stage Stream: 1

Stage	1	2
Duration	14	12
Change Point	6	25

Stage Stream: 2

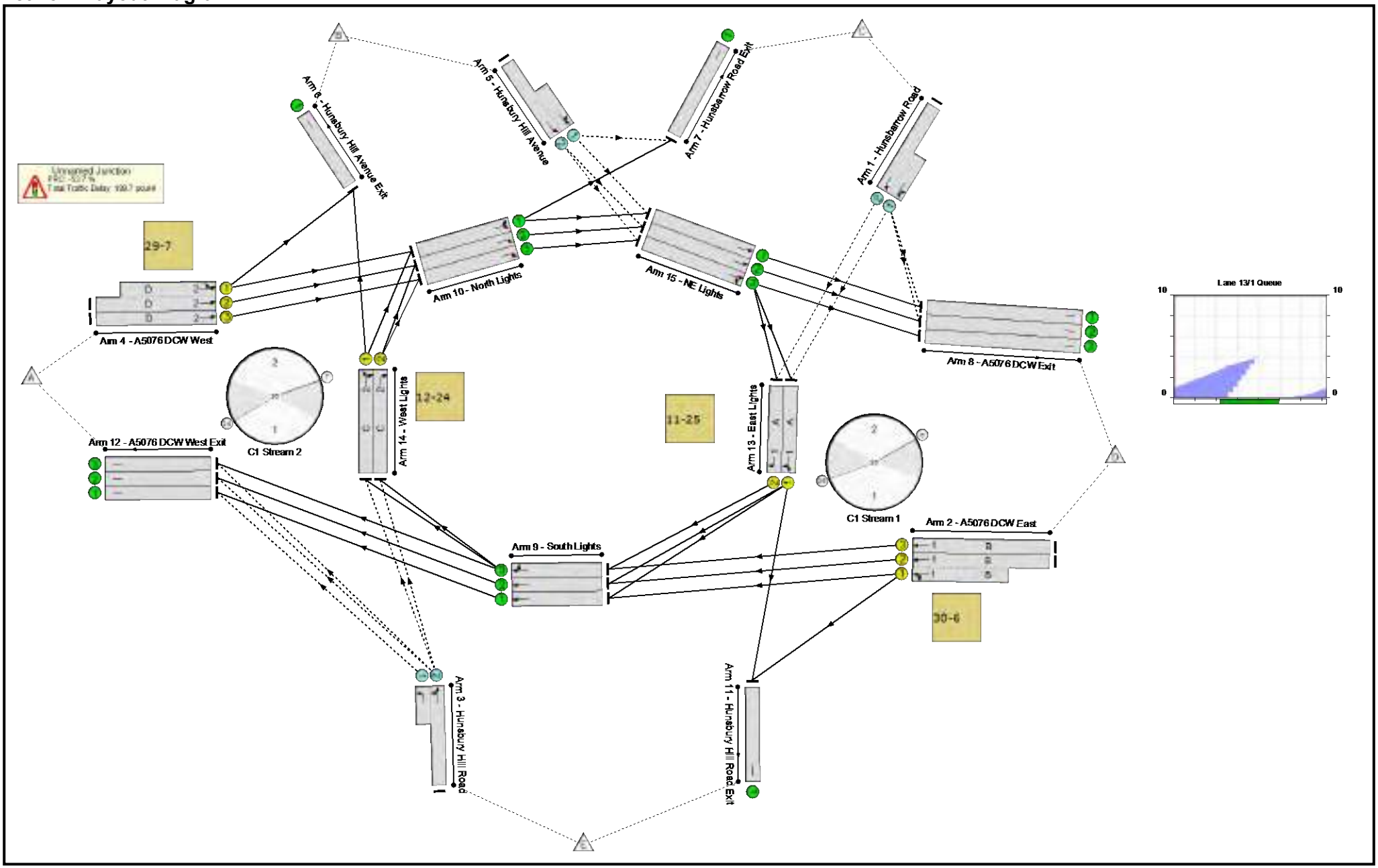
Stage	1	2
Duration	12	14
Change Point	7	24

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.4%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	699	2059:1919	249+258	138.4 : 137.8%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	12	-	1398	2071:1935	748+699	96.7 : 96.6%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	12	-	661	2071	748	88.4%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	683	1999:1954	423+428	79.4 : 81.0%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	14	-	1684	2071:1925	863+802	100.1 : 102.2%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	14	-	915	2071	863	106.0%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	182	2028:1889	406+443	21.5 : 21.5%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	457	1940	1940	22.6%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	107	1940	1940	5.5%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	516	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	1021	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	844	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	790	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	838	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	986	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	1038	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	335	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	1137	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	861	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	944	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	14	-	565	1985	827	57.6%
13/2	East Lights Right	U	1	N/A	A		1	14	-	344	2077	865	28.7%
14/1	West Lights Ahead Right	U	2	N/A	C		1	12	-	129	1987	718	16.6%
14/2	West Lights Right	U	2	N/A	C		1	12	-	245	2077	750	32.7%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	480	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	986	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	1125	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2742**	**0**	**0**	**25.6**	**174.2**	**0.0**	**199.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**2742**	**0**	**0**	**25.6**	**174.2**	**0.0**	**199.7**	**-**	**-**	**-**	**-**
1/2+1/1	699	506	1012	0	0	5.7	98.2	-	103.9	534.9	9.9	98.2	108.1
2/2+2/1	1398	1398	-	-	-	4.4	10.1	-	14.5	37.4	7.0	10.1	17.2
2/3	661	661	-	-	-	2.0	3.5	-	5.5	30.0	6.1	3.5	9.6
3/2+3/1	683	683	1366	0	0	1.5	2.0	-	3.5	18.5	2.9	2.0	4.9
4/2+4/1	1684	1665	-	-	-	5.3	25.8	-	31.1	66.5	8.7	25.8	34.5
4/3	915	863	-	-	-	3.7	33.0	-	36.7	144.2	9.7	33.0	42.6
5/2+5/1	182	182	364	0	0	0.1	0.1	-	0.3	5.0	0.5	0.1	0.7
6/1	439	439	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
7/1	106	106	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	498	498	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1010	1010	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	803	803	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	768	768	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	816	816	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	910	910	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	482	482	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	985	985	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	986	986	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	290	290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1115	1115	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	839	839	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	858	858	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	476	476	-	-	-	1.1	0.7	-	1.7	13.2	3.9	0.7	4.6
13/2	249	249	-	-	-	0.6	0.2	-	0.8	12.0	2.5	0.2	2.7

Full Input Data And Results

14/1	119	119	-	-	-	0.2	0.1	-	0.3	9.8	0.8	0.1	0.9
14/2	245	245	-	-	-	1.0	0.2	-	1.2	18.3	2.4	0.2	2.6
15/1	471	471	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	985	985	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1073	1073	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-7.4	Total Delay for Signalled Lanes (pcuHr):	22.61	Cycle Time (s): 36
C1	Stream: 2 PRC for Signalled Lanes (%):	-17.8	Total Delay for Signalled Lanes (pcuHr):	69.32	Cycle Time (s): 36
	PRC Over All Lanes (%):	-53.7	Total Delay Over All Lanes(pcuHr):	199.73	

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

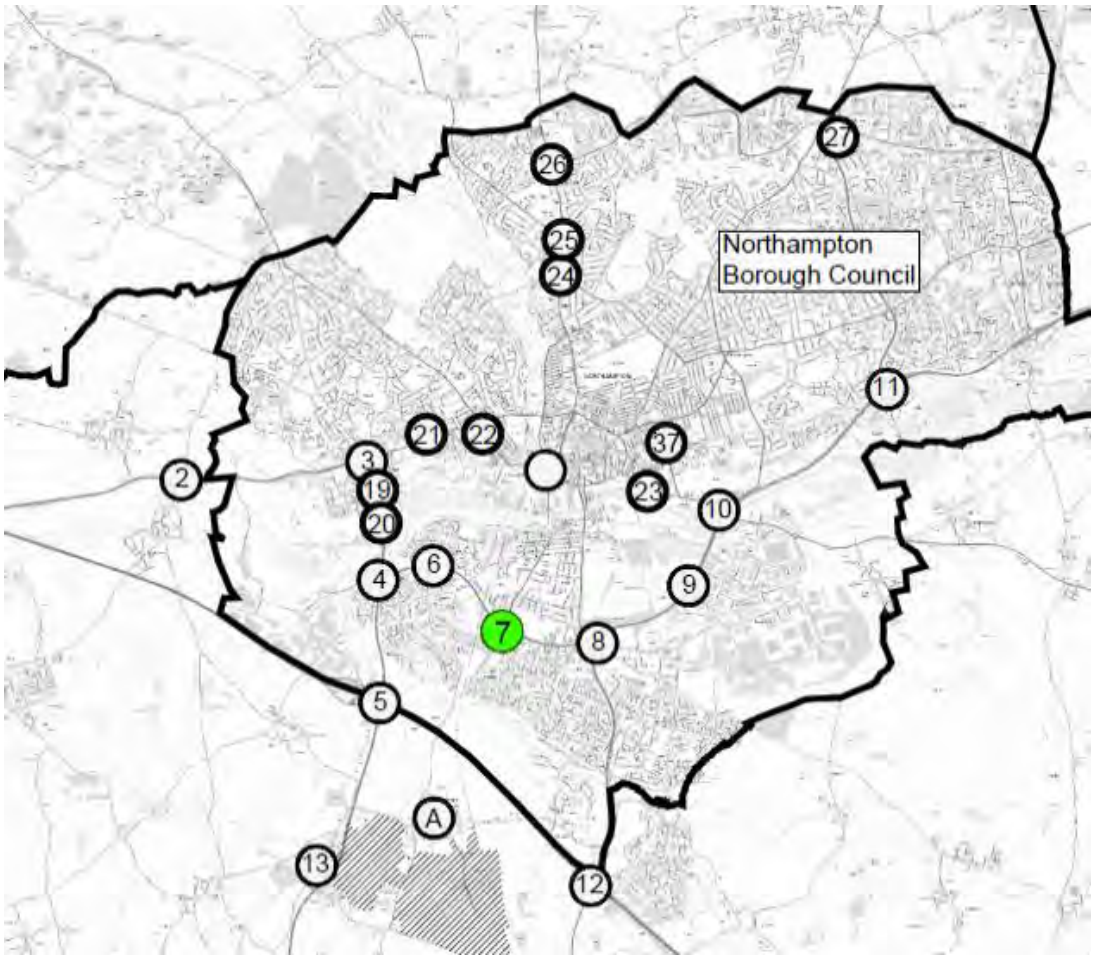
Technical Note No. 16

1 JUNCTION SEVEN – A5076 / TOWCESTER ROAD / TESCO ROUNDABOUT

Existing Junction Description

1.1 Junction Seven is a five arm signalised roundabout to the east of the Tesco Extra and to the south of the Towcester Road Cemetery. It connects the A5076 Danes Camp way to Towcester Road and the Tesco Extra Store Access. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Seven Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction seven were conducted on Thursday 18th June 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.6 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays, included at **Appendix B**.

1.7 For all scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually would operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.8 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015 Base		Average Surveyed Queues	Range of Surveyed Queues	Modelled Max Queue
AM Peak Hour (0800-0900)	Arm 1 – Towcester Road North	7	3-11	7
	Arm 2 – A5076 East	16	12-25	26
	Arm 3 – Tesco Extra Access	6	4-10	5
	Arm 4 – Towcester Road South	6	3-9	12
	Arm 5 – A5076 West	22	10-28	18
PM Peak Hour (1700-1800)	Arm 1 – Towcester Road North	10	8-12	3
	Arm 2 – A5076 East	24	23-29	18
	Arm 3 – Tesco Extra Access	5	2-7	6
	Arm 4 – Towcester Road South	3	1-6	3
	Arm 5 – A5076 West	24	20-27	14

1.9 It is considered that the modelled queues are generally in line with the surveyed queues, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (60 seconds).

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, shown in **Figure EL07** are summarised in **Table 2** and junction analysis results are included at **Appendix C**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2015	82.6%	98.9%	69.2%	103.7%	90.2%	59.2%	90.3%	74.9%	70.3%	81.5%
	2021 DM	113.2%	114.4%	66.5%	112.2%	116.5%	96.6%	104.5%	85.8%	105.7%	91.2%
	2021 DS	117.8%	92.5%	62.6%	114.6%	114.4%	59.9%	92.5%	78.4%	91.3%	93.2%
	2031 DM	122.6%	130.2%	58.0%	130.9%	129.7%	98.0%	106.6%	106.4%	70.7%	89.2%

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
	2031 DS	93.9%	136.9%	55.0%	138.1%	133.5%	74.2%	95.6%	82.8%	71.0%	88.6%
Queue – MMQ (PCU)	2015	7	32	5	25	18	3	18	6	4	14
	2021 DM	58	68	6	39	115	15	68	10	31	28
	2021 DS	47	145	4	290	95	4	26	8	10	27
	2031 DM	62	223	3	70	144	15	76	30	4	19
	2031 DS	10	253	3	87	151	5	27	8	4	21
Average Delay (sec/pcu)	2015	28.2	53.9	29.4	165.0	28.8	18.8	25.6	27.3	34.6	19.0
	2021 DM	289.5	289.5	34.7	280.2	311.1	95.9	128.0	52.5	205.6	33.5
	2021 DS	326.3	319.5	22.5	290.4	265.7	25.4	30.6	34.1	71.1	34.5
	2031 DM	378.1	462.6	19.1	474.8	461.1	80.2	149.5	191.1	36.2	24.9
	2031 DS	57.2	517.1	14.6	542.5	486.3	26.6	36.5	41.2	34.2	22.8

1.11 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2031 AM and PM scenarios, with Arms 2, 4 and 5 further exceeding theoretical capacity by 6.7%, 7.2% and 3.8% respectively, yet Arm 1 being lower by 28.7%, however in the PM peak all arms are lower, particularly Arm3 by 23.6%. Therefore mitigation is considered necessary to address the development's impact.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (PRC)	-15.2	-29.5	-31.6	-45.4	-53.4	-0.3	-17.5	-3.6	-18.4	-6.2
Overall Junction Delay (PCUhr)	85	431	483	759	794	49	136	66	152	67

1.12 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for both 2021 and 2031 by 2.1% and 8% for 2021 AM and 2031 AM respectively. However, there is a decrease of 13.9% and 12.2% for the 2021 PM and 2031 PM respectively. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 52 and 35 PCUhrs for 2021 AM and 2031 AM respectively. Finally, there is a decrease in the between the DM AM and DS AM scenarios by 70 and 85 PCUhrs. Therefore mitigation is considered necessary to address the development's impact due to the impact in the AM peak period.

Results of the Mitigation Modelling

1.13 The proposed mitigation is shown in **Appendix J.6** of the TA and summarised is as follows:

- Provision of additional lane and merge on Towcester Road south exit
- Provision of additional offside lane on the A5076 Danes Camp Way approach;
- Signalisation of the Towcester Road north approach and corresponding traffic signals on the circulatory carriageway
- Lengthening of the nearside lane on the Towcester Road north approach
- Provision of local widening on the circulatory carriageway,
- Lengthening of off side lane on Mere Way approach
- Provision of merge lane on Mere Way exit; and
- Provision of merge lane on Towcester Road south exit.

1.14 The results of the mitigated junction model is shown in **Table 4** and included as **Appendix C**.

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2021 DS	99.8%	87.9%	79.0%	82.0%	93.3%	57.0%	87.6%	86.7%	60.0%	85.3%
	Comparison to 2021 DM	-13.4%	-26.5%	12.5%	-30.2%	-23.2%	-39.6%	-16.9%	0.9%	-45.7%	-5.9%
	2031 DS	109.7%	117.6%	62.3%	87.2%	101.4%	84.1%	92.5%	91.1%	62.1%	86.4%
	Comparison to 2031 DM	-12.9%	-12.6%	4.3%	-43.7%	-28.3%	-13.9%	-14.1%	-15.3%	-8.6%	-2.8%
Queue – MMQ (PCU)	2021 DS	16	19	5	4	18	8	260	4	4	408
	Comparison to 2021 DM	-41	-49	-1	-35	-97	-7	192	-6	-27	381
	2031 DS	31	173	5	9	44	7	22	10	3	14
	Comparison to 2031 DM	21	-80	2	-78	-107	2	-5	2	-1	-7
Average Delay (sec/pcu)	2021 DS	112.6	20.7	41.4	28.8	27.5	92.6	743.7	11.0	14.3	780.2
	Comparison to 2021 DM	-176.9	-268.8	6.7	-251.4	-283.6	-3.3	615.7	-41.5	-191.3	746.7
	2031 DS	243.9	317.8	26.6	43.4	84.1	61.9	31.1	61.9	19.8	21.0
	Comparison to 2031 DM	-134.2	-144.8	7.5	-431.4	-377.0	-18.3	-118.4	-129.2	-16.4	-3.9

1.15 As shown in **Table 3,** the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst the Arms 3 shows to provide less capacity by 4% than in the DM scenario, the other four arms shows an improvement, particularly Arm 4 by 43.7% in 2031 AM peak scenario. Furthermore, there is a reduction in queues 2031 AM peak and PM peak of 241 PCUs and 9 PCUs respectively, and a reduction in overall delay of almost 18 minutes in the AM peak and over four minutes in the PM peak.

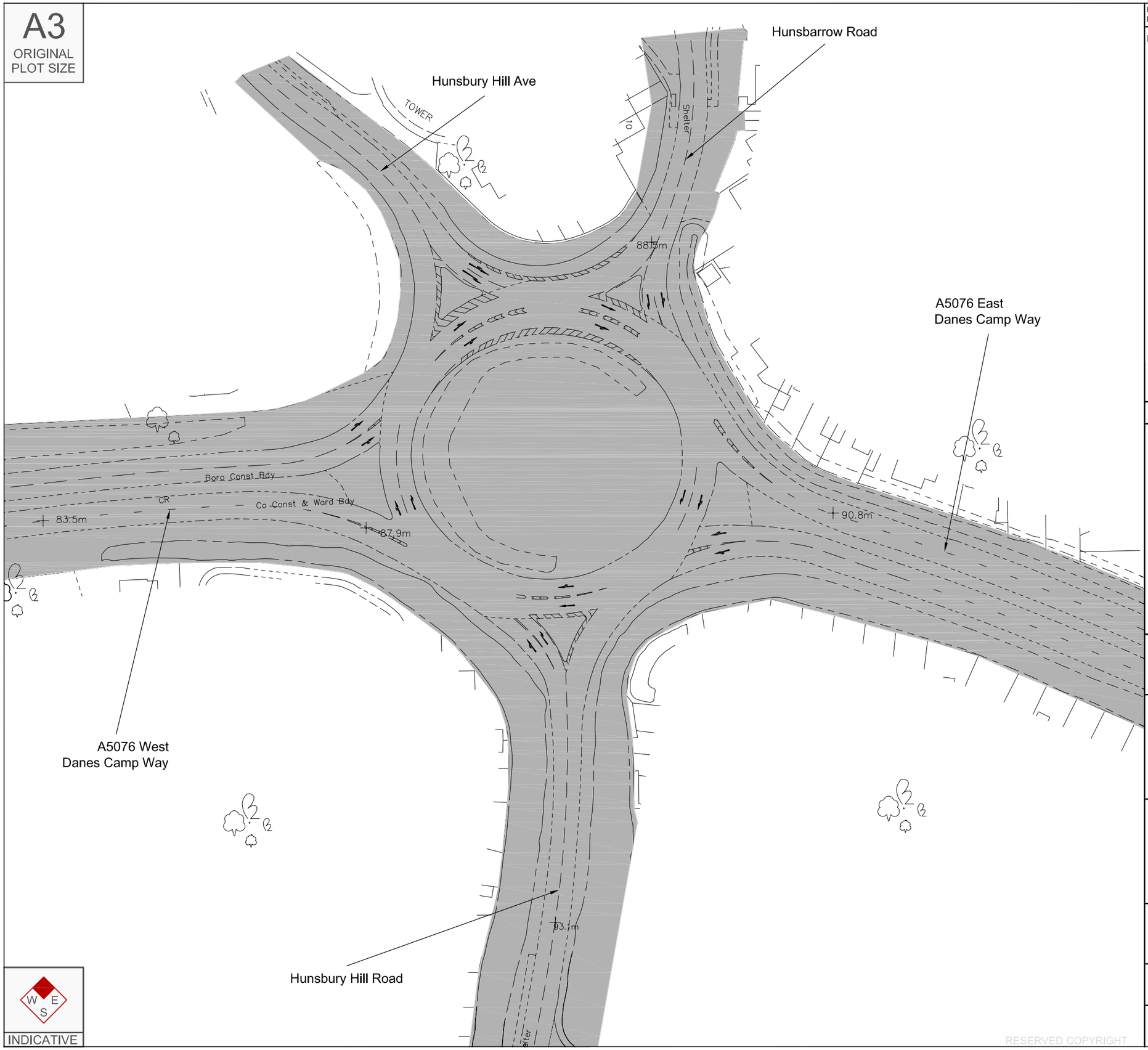
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	-10.9	18.6	-30.7	14.7	2.7	20.2	-2.8	15.6
Overall Junction Delay (PCUhr)	70	-361	351	-408	49	-88	62	-90

1.16 The junction operates 14.7% and 15.6% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario and 2031 DS scenario PM peak than PM peak 2031 DM scenario. Finally, the overall junction delay is 408 and 90 PCUhrs better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400
www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A5076/ Hunsbury Hill Road Roundabout Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	14.06.17	DR	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL06	-

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	24	24	6	10	64
B - Towcester Road S	30	0	130	287	281	728
C - A5076 W	19	111	1	150	1515	1795
D - Towcester Road N	4	352	347	0	202	905
E - Mere Way	11	155	1298	115	39	1618
Total	64	641	1800	559	2047	5110

Modelled Flows
2021 DM
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	22	25	6	15	69
B - Towcester Road S	28	0	168	251	315	761
C - A5076 W	21	159	5	115	1841	2142
D - Towcester Road N	4	180	212	0	302	697
E - Mere Way	15	282	1398	145	53	1894
Total	68	643	1809	517	2526	5563

Modelled Flows
2021 DS2
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	24	24	6	15	70
B - Towcester Road S	28	0	189	275	348	840
C - A5076 W	21	143	15	120	1893	2192
D - Towcester Road N	4	148	223	0	288	663
E - Mere Way	15	237	1600	122	30	2004
Total	68	552	2052	523	2574	5769

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	0	0	0	0	0
B - Towcester Road S	0	0	0	0	0	0
C - A5076 W	0	0	0	0	0	0
D - Towcester Road N	0	0	0	0	0	0
E - Mere Way	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	-1	1	-1	5	5
B - Towcester Road S	-3	0	38	-36	34	33
C - A5076 W	2	48	5	-35	327	347
D - Towcester Road N	0	-172	-135	0	99	-208
E - Mere Way	4	127	101	30	14	276
Total	4	2	9	-42	479	452

2021 DS2 minus 2015 Base
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	1	0	-1	5	6
B - Towcester Road S	-2	0	59	-12	66	112
C - A5076 W	1	32	14	-30	379	397
D - Towcester Road N	0	-204	-124	0	86	-242
E - Mere Way	4	81	303	7	-9	386
Total	4	-89	252	-36	528	658

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	52	141	76	165	434
B - Towcester Road S	21	0	57	71	266	415
C - A5076 W	113	102	0	74	1591	1880
D - Towcester Road N	79	84	321	0	231	715
E - Mere Way	110	236	1448	440	0	2234
Total	323	474	1967	661	2253	5678

2021 DM adjusted to count
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	51	142	75	170	439
B - Towcester Road S	18	0	95	35	300	448
C - A5076 W	115	150	5	39	1918	2227
D - Towcester Road N	79	-88	186	0	330	507
E - Mere Way	114	363	1549	470	14	2510
Total	327	476	1976	619	2732	6130

2021 DS2 adjusted to count
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	53	141	75	170	440
B - Towcester Road S	19	0	116	59	332	527
C - A5076 W	114	134	14	44	1970	2277
D - Towcester Road N	79	-120	197	0	317	473
E - Mere Way	114	317	1751	447	-9	2620
Total	327	385	2219	625	2781	6336

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	26	20	8	22	76
B - Towcester Road S	20	0	47	257	388	712
C - A5076 W	13	131	10	145	1144	1444
D - Towcester Road N	8	460	338	1	562	1369
E - Mere Way	29	354	1475	109	91	2058
Total	71	971	1889	519	2208	5659

Modelled Flows
2021 DM
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	27	20	10	27	82
B - Towcester Road S	20	0	125	316	470	931
C - A5076 W	15	196	6	177	1302	1696
D - Towcester Road N	6	371	136	0	656	1169
E - Mere Way	29	368	1680	102	50	2230
Total	70	962	1966	605	2505	6108

Modelled Flows
2021 DS2
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	28	19	10	26	82
B - Towcester Road S	20	0	114	260	483	877
C - A5076 W	15	243	11	174	1344	1787
D - Towcester Road N	5	335	93	0	527	961
E - Mere Way	31	377	1457	123	63	2050
Total	71	983	1694	567	2442	5757

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	0	0	0	0	0
B - Towcester Road S	0	0	0	0	0	0
C - A5076 W	0	0	0	0	0	0
D - Towcester Road N	0	0	0	0	0	0
E - Mere Way	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	1	0	1	4	6
B - Towcester Road S	0	0	78	60	82	219
C - A5076 W	1	65	-4	32	158	252
D - Towcester Road N	-2	-90	-202	-1	95	-200
E - Mere Way	0	14	205	-7	-41	171
Total	-1	-10	76	86	297	449

2021 DS2 minus 2015 Base
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	2	-1	2	3	6
B - Towcester Road S	0	0	67	3	95	165
C - A5076 W	2	112	1	29	200	343
D - Towcester Road N	-3	-125	-244	-1	-35	-408
E - Mere Way	1	23	-18	14	-28	-8
Total	0	11	-196	47	235	98

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	89	246	84	146	565
B - Towcester Road S	38	0	89	101	146	374
C - A5076 W	173	129	0	97	1406	1805
D - Towcester Road N	98	88	363	0	141	690
E - Mere Way	139	261	1395	262	0	2057
Total	448	567	2093	544	1839	5491

2021 DM adjusted to count
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	90	246	85	150	571
B - Towcester Road S	38	0	167	161	228	593
C - A5076 W	174	194	-4	129	1564	2057
D - Towcester Road N	96	-2	161	-1	236	490
E - Mere Way	139	275	1600	255	-41	2228
Total	447	557	2169	630	2136	5940

2021 DS2 adjusted to count
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	91	245	86	149	571
B - Towcester Road S	38	0	156	104	241	539
C - A5076 W	175	241	1	126	1606	2148
D - Towcester Road N	95	-37	119	-1	106	282
E - Mere Way	140	284	1377	276	-28	2049
Total	448	578	1897	591	2074	5589

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	24	24	6	10	64
B - Towcester Road S	30	0	130	287	281	728
C - A5076 W	19	111	1	150	1515	1795
D - Towcester Road N	4	352	347	0	202	905
E - Mere Way	11	155	1298	115	39	1618
Total	64	641	1800	559	2047	5110

Modelled Flows
2031 DM
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	21	25	8	20	74
B - Towcester Road S	26	0	293	376	447	1142
C - A5076 W	24	141	19	123	1714	2022
D - Towcester Road N	3	168	164	0	364	700
E - Mere Way	16	313	1639	205	78	2252
Total	69	645	2139	712	2624	6189

Modelled Flows
2031 DS2
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	22	24	8	21	75
B - Towcester Road S	29	0	248	395	496	1168
C - A5076 W	22	145	29	119	1711	2026
D - Towcester Road N	3	144	197	0	287	631
E - Mere Way	15	264	1722	176	59	2235
Total	69	574	2220	697	2574	6134

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	0	0	0	0	0
B - Towcester Road S	0	0	0	0	0	0
C - A5076 W	0	0	0	0	0	0
D - Towcester Road N	0	0	0	0	0	0
E - Mere Way	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	-2	0	1	10	10
B - Towcester Road S	-5	0	164	89	166	414
C - A5076 W	5	30	18	-27	200	226
D - Towcester Road N	0	-183	-184	0	162	-205
E - Mere Way	5	158	341	90	39	634
Total	5	3	339	153	577	1078

2031 DS2 minus 2015 Base
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	-2	0	2	11	10
B - Towcester Road S	-1	0	118	108	215	440
C - A5076 W	3	34	28	-31	197	231
D - Towcester Road N	0	-208	-150	0	84	-274
E - Mere Way	4	108	424	60	20	617
Total	5	-67	420	139	527	1024

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	52	141	76	165	434
B - Towcester Road S	21	0	57	71	266	415
C - A5076 W	113	102	0	74	1591	1880
D - Towcester Road N	79	84	321	0	231	715
E - Mere Way	110	236	1448	440	0	2234
Total	323	474	1967	661	2253	5678

2031 DM adjusted to count
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	50	141	77	175	444
B - Towcester Road S	16	0	221	160	432	829
C - A5076 W	118	132	18	47	1791	2106
D - Towcester Road N	79	-99	137	0	393	510
E - Mere Way	115	394	1789	530	39	2868
Total	328	477	2306	814	2830	6756

2031 DS2 adjusted to count
AM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	50	141	78	176	444
B - Towcester Road S	20	0	175	179	481	855
C - A5076 W	116	136	28	43	1788	2111
D - Towcester Road N	79	-124	171	0	315	441
E - Mere Way	114	344	1872	500	20	2851
Total	328	407	2387	800	2780	6702

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	26	20	8	22	76
B - Towcester Road S	20	0	47	257	388	712
C - A5076 W	13	131	10	145	1144	1444
D - Towcester Road N	8	460	338	1	562	1369
E - Mere Way	29	354	1475	109	91	2058
Total	71	971	1889	519	2208	5659

Modelled Flows
2031 DM
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	33	16	12	28	88
B - Towcester Road S	14	0	156	277	385	832
C - A5076 W	20	218	16	196	1236	1687
D - Towcester Road N	7	492	158	0	684	1340
E - Mere Way	31	542	1655	175	51	2454
Total	71	1285	2001	661	2383	6401

Modelled Flows
2031 DS2
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	32	17	10	28	88
B - Towcester Road S	17	0	106	250	394	767
C - A5076 W	18	208	52	200	1334	1812
D - Towcester Road N	6	370	251	0	573	1201
E - Mere Way	31	499	1457	126	75	2188
Total	72	1109	1883	587	2405	6056

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	0	0	0	0	0
B - Towcester Road S	0	0	0	0	0	0
C - A5076 W	0	0	0	0	0	0
D - Towcester Road N	0	0	0	0	0	0
E - Mere Way	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	7	-4	3	5	12
B - Towcester Road S	-6	0	108	21	-3	120
C - A5076 W	6	87	6	51	92	243
D - Towcester Road N	-1	32	-180	-1	122	-28
E - Mere Way	1	189	180	66	-40	396
Total	0	314	112	141	176	742

2031 DS2 minus 2015 Base
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	6	-3	2	6	12
B - Towcester Road S	-3	0	59	-6	6	55
C - A5076 W	4	77	42	56	189	368
D - Towcester Road N	-2	-91	-86	0	12	-168
E - Mere Way	2	145	-18	17	-16	130
Total	1	138	-7	68	197	397

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	89	246	84	146	565
B - Towcester Road S	38	0	89	101	146	374
C - A5076 W	173	129	0	97	1406	1805
D - Towcester Road N	98	88	363	0	141	690
E - Mere Way	139	261	1395	262	0	2057
Total	448	567	2093	544	1839	5491

2031 DM adjusted to count
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	96	242	87	151	577
B - Towcester Road S	32	0	197	122	143	494
C - A5076 W	179	216	6	148	1498	2048
D - Towcester Road N	97	120	183	-1	263	662
E - Mere Way	140	450	1575	328	-40	2453
Total	448	881	2205	685	2015	6233

2031 DS2 adjusted to count
PM Peak

	A- Tesco	B - Towcester Road S	C - A5076 W	D - Towcester Road N	E - Mere Way	Total
A- Tesco	0	95	243	86	152	577
B - Towcester Road S	35	0	148	95	152	429
C - A5076 W	177	206	42	153	1595	2173
D - Towcester Road N	96	-3	277	0	153	522
E - Mere Way	141	406	1377	279	-16	2187
Total	449	705	2086	612	2036	5888

APPENDIX B

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Administration

General Specifications

Customer Name: Northampotonshire County Council

Intersection/ General Description: Mereway / Towcester Rd roundabout

Controller: (•) New ( ) Modification

Area Specifications/ Customer Drawings:

Specification Section:

Contract/Tender Ref:

Quotation No.:

Works Order No.:

Customer Order No.:

Controller/ Serial Number:

S.T.S. /EM Number: 00143 Issue: 1

Equipment Installation by:

Slot Cutting by:

Civil Works by:

Customer's Engineer: J Hale

Telephone Number: 01604 654628

Signal Company Use Only

Signal Engineer: J Hale

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: 4B EA 97 CE

Controller Options

Hardware: T800 Firmware Type and Issue: PB800 ISS 19 Other Options: KTD LO

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack Kit Type Options ( ) ( ) ( ) ( )

Cabinet/Rack Variant Cuckoo Options ☐

Mains Supply: 240 Volts 50 Hz

Peak Lamp Current: 6 Amps

Average Lamp Power: 1000 Watts

Total Average Power: 1100 Watts

Dimming Voltage: 160

Low Inrush Transformer ☐

Answer Issue: 1 Date Created: 30/04/07

Edit Issue: 2

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams [2]

Phases

( ) Current Total Number of Phases [6]

(•) Number of Real Phases [4]

( ) Number of Dummy Phases [2]

Stages

( ) Current Number of stages (inc. ALL-RED stages) [6]

Switched Signs

( ) Number of Switched Signs [0]

Action

[Add At] [Delete At]

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- [x] Serial/Internal UTMC OTU
- [ ] Free-standing OTU
- [ ] Integral TC12 OTU
- [ ] Serial MOVA

- [x] Master Time Clock
- [ ] Holiday Clock
- [x] FT To Current MAX
- [ ] Linked Fixed Time

- [x] Lamp Monitoring
- [ ] RED Lamp Monitoring
- [ ] Pelican/Puffin/Toucan
- [ ] Standalone Manual

- [ ] Extend All Red
- [ ] Speed Measurement
- [ ] Ripple Change
- [ ] London IMU

- [ ] Non-UK
- [ ] Fail to Part Time
- [ ] Fail To Hardware Flashing
- [ ]
- [ ] Download To Level 3

9 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
[ ] Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Hurry Call	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
[x] UTC	○	○	◉	○	○	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] CLF (Base Time)	○	○	○	◉	○	○	○	○	○	○	○	○	○
[x] Vehicle Actuated	○	○	○	○	◉	○	○	○	○	○	○	○	○
[x] Fixed Time	○	○	○	○	○	○	○	○	○	○	◉	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standard.8DF

Default PROM data file

Correspondence Monitoring to inc.

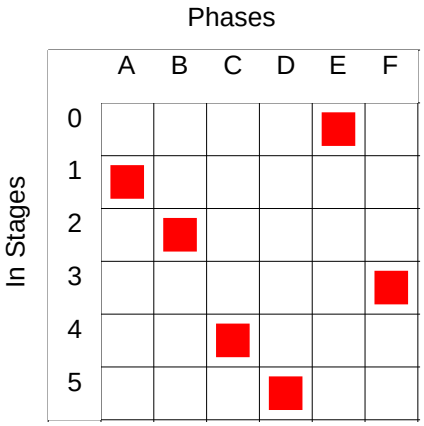
- [x] Reds
- [ ] Switched Signs
- [x] Ambers
- [ ] Ignore Reds and Ambers durin

Flash Rate (ms)

400 Off 400 On

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Phases in Stages



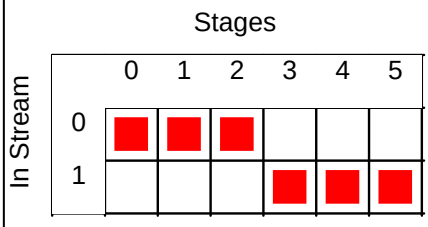
Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	☐	☐						
Startup Stage	1	4						
Switch Off Stage								
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.



Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Phase Type and Conditions

Phase Type and Conditions

(•) Phases A to P ( )

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase
A	Circulatory north bound	0 - UK Traffic	0	0 - I	
B	Danes Camp Way east bound	0 - UK Traffic	0	0 - I	
C	Circulatory south bound	0 - UK Traffic	0	0 - I	
D	Mereway west bound	0 - UK Traffic	0	0 - I	
E	Stream 0 all red	0 - UK Traffic	0	0 - I	
F	Stream 1 all red	0 - UK Traffic	0	0 - I	

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Initialise

To Phase

From Phase	A	B	C	D	E	F
A		Co	o	o	o	o
B	Co		o	o	o	o
C	o	o		Co	o	o
D	o	o	Co		o	o
E	o	o	o	o		o
F	o	o	o	o	o	

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

(•) Phases A to P ( ) Phases Q to X

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	15	20	10	15	0	0	0	0	☐
B	7	0	0.0	30	25	35	30	0	0	0	0	☐
C	7	0	0.0	15	8	25	15	0	0	0	0	☐
D	7	0	0.0	30	35	20	30	0	0	0	0	☐
E	2	0	0.0	0	0	0	0	0	0	0	0	☐
F	2	0	0.0	0	0	0	0	0	0	0	0	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F
A		7			3	
B	7				3	
C				7		3
D			7			3
E	2	2				
F			2	2		

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Intergreen Handset Limits

HIGH 199

Copy Intergreen Values

To Phase

From Phase

	A	B	C	D	E	F
A		7			3	
B	7				3	
C				7		3
D			7			3
E	2	2				
F			2	2		

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.	Phase	Min. Green Min.	Min. Green Max.
A	6	10	Q		
B	6	10	R		
C	6	10	S		
D	6	10	T		
E	1	10	U		
F	1	10	V		
G			W		
H			X		
I			Y		
J			Z		
K			A2		
L			B2		
M			C2		
N			D2		
O			E2		
P			F2		

Max. Green Min. 0 Max. 255

Vehicle Extension Min. 0.0 Max. 10.0

Phase Delay Min. 0 Max. 30

Starting I/G Min. 4 Max. 12

Min Pedestrian Clearance (PBT) Min. 0 Max. 12

Traffic Phase Leaving Min. 3.0 Max. 3.0

Traffic Phase Red/Amber Min. 2 Max. 2

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AXYZ10			
B	BSL20	BMVD20		
C	CXYZ30			
D	DSL40	DMVD40		
E				
F				

Extensions

AXYZ10			
BMVD20			
CXYZ30			
DMVD40			

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F											
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F											
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F											
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D												

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5												
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5												
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5												
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0										

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

CLF - Plan(s)

CLF - Plan(s)

1 Plan No.

Copy From

Plan Specifics

1 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	1	1	1	16			
1	23	1	2	17			
2	45	4	1	18			
3	14	1	4	19			
4	45	1	5	20			
5	1	4	4	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

CLF - Plan(s)

CLF - Plan(s)

2 Plan No.

Copy From

Plan Specifics

2 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	28	1	2	17			
2	50	4	1	18			
3	10	1	4	19			
4	37	1	5	20			
5	0	4	4	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

CLF - Plan(s)

CLF - Plan(s)

3 Plan No.

Copy From

Plan Specifics

3 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	17	1	2	17			
2	45	4	1	18			
3	18	1	4	19			
4	49	1	5	20			
5	10	4	4	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

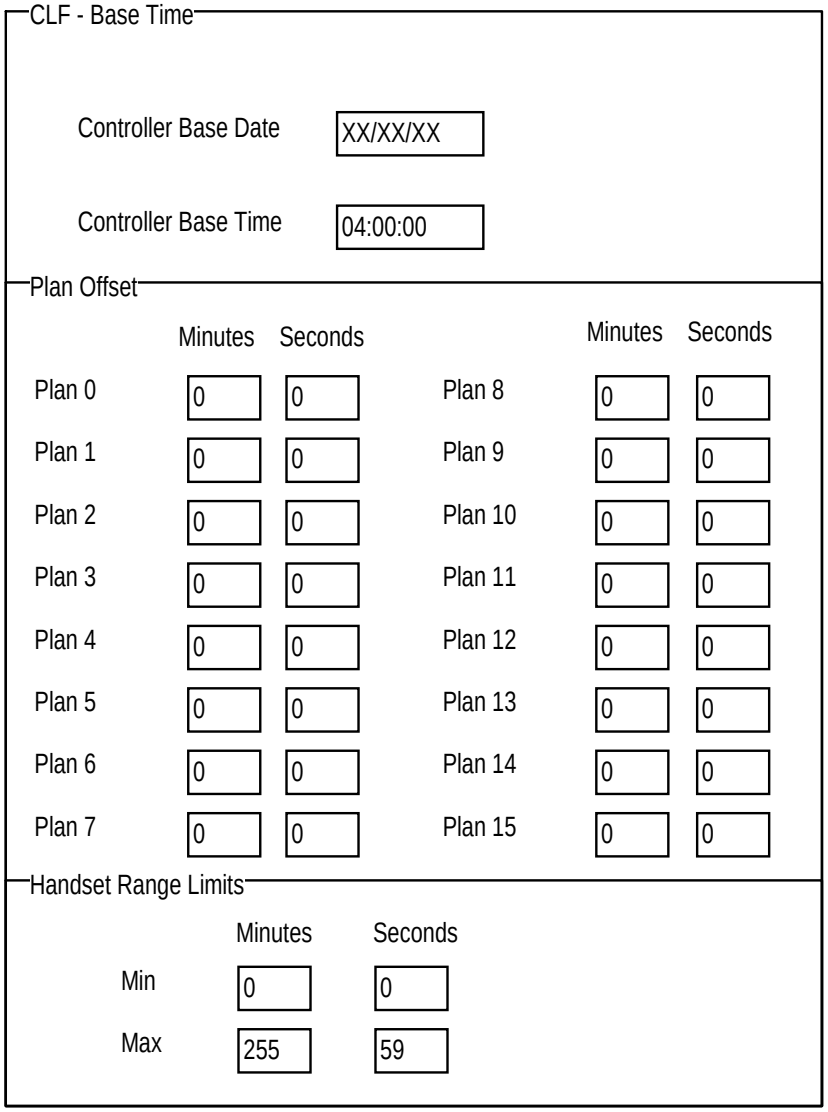
7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

CLF - Base Time



Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

2 Number of Control Words

2 Number of Reply Words

[ ] Controller to respond to TC bit.

[ ] Introduction of UTC to be disabled by Priority and LR'

[ ] Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	04:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	04:00:00

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

UTC Control and Reply Data Format

UTC Control and Reply Data Format

Control Words

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	#F1	#F2	#F3	#F4	D1	D2	D3	D4
Word 2	SO							TS
Word 3								
Word 4								

Reply Words

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	G1	G2	G3	G4	LF1	CF	DF	RR
Word 2								CS
Word 3								
Word 4								
Word 5								
Word 6								
Word 7								
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

UTC Phase Demand and Extend Definitions

UTC Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands, preceed the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	D1			
B	D2			
C	D3			
D	D4			
E				
F				

Extensions

D1			
D2			
D3			
D4			

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

UTC Stage and Mode Data Definitions

UTC Stage and Mode Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0				16			
1	#F1	G1		17			
2	#F2	G2		18			
3				19			
4	#F3	G3		20			
5	#F4	G4		21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☐ RR ☐

Manual Mode Selected:
☐ G1/G2 ☐ RR ☐

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☐ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☐ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

MTC - Time Switch Parameters

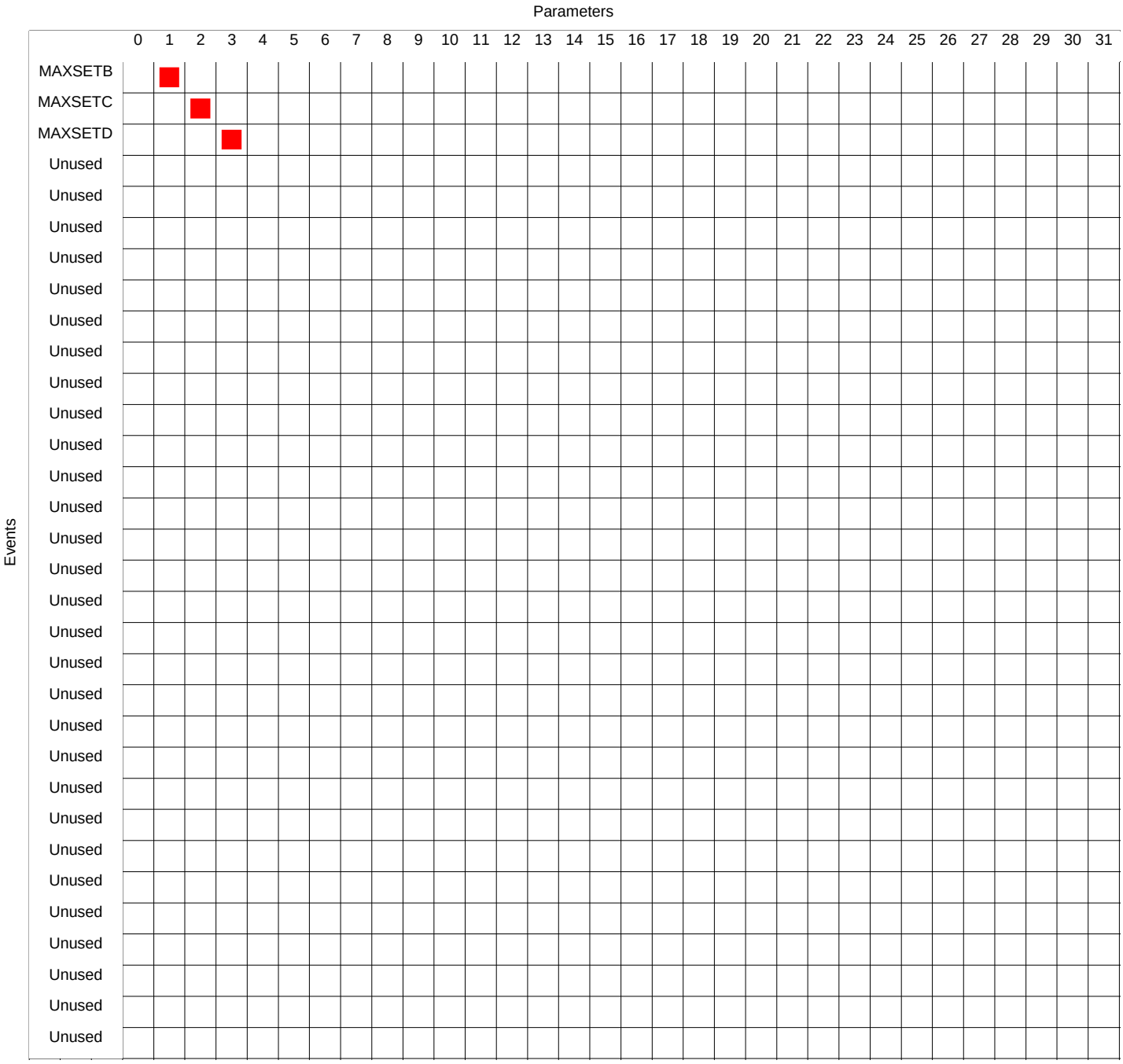
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	No Action	
4	No Action	
5	No Action	
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

MTC - Time Switch Parameters Array



Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

MTC - Timetable

MTC - Timetable

View Timetable Settings

(•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	06:30:00	CLF PLAN 1	1	1
1	9	07:30:00	CLF PLAN 2	1	2
2	9	09:30:00	CLF PLAN 1	1	1
3	9	16:00:00	CLF PLAN 3	1	3
4	9	18:00:00	CLF PLAN 1	1	1
5	9	22:00:00	VA	0	0
6	0	08:30:00	CLF PLAN 1	1	1
7	0	22:00:00	VA	0	0
8	1	09:15:00	CLF PLAN 1	1	1
9	1	22:00:00	VA	0	0
10	7	07:30:00	MAXSET B	2	1
11	7	09:30:00	MAXSET A	2	0
12	7	16:00:00	MAXSET C	2	2
13	7	18:00:00	MAXSET A	2	0
14	0			0	0
15	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

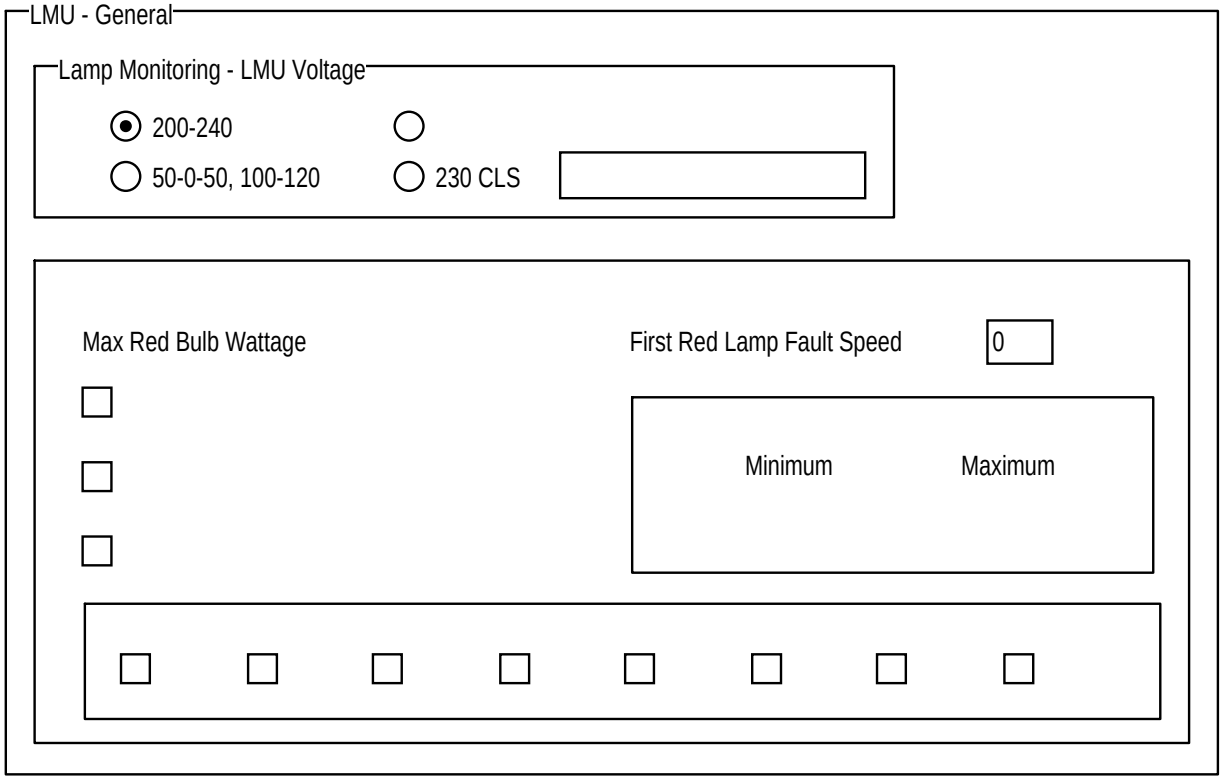
2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

LMU - General



Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

LMU - Sensors

LMU - Sensors

Onboard Sensors

Sensor\ Phase	Sensor Type	Bulb Watts	NLM CLS	Sensor\ Phase	Sensor Type	Bulb Watts	NLM CLS
1 \ A	As Seq.	40	☐	17 \ Q			☐
2 \ B	As Seq.	40	☐	18 \ R			☐
3 \ C	As Seq.	40	☐	19 \ S			☐
4 \ D	As Seq.	40	☐	20 \ T			☐
5 \ E	As Seq.	40	☐	21 \ U			☐
6 \ F	As Seq.	40	☐	22 \ V			☐
7 \ G	As Seq.	40	☐	23 \ W			☐
8 \ H	As Seq.	40	☐	24 \ X			☐
9 \ I			☐	25 \ Y			☐
10 \ J			☐	26 \ Z			☐
11 \ K			☐	27 \ A2			☐
12 \ L			☐	28 \ B2			☐
13 \ M			☐	29 \ C2			☐
14 \ N			☐	30 \ D2			☐
15 \ O			☐	31 \ E2			☐
16 \ P			☐	32 \ F2			☐

External Sensors

Sensor\ Pin	Drive	Sensor Type	Bulb Watts
33 \ b14		Regulatory Sign	7
34 \ z16		Regulatory Sign	7
35 \ z14		Regulatory Sign	7
36 \ z12		Regulatory Sign	7
37 \ b14			
38 \ z16			
39 \ z14			
40 \ z12			
41 \ b14			
42 \ z16			
43 \ z14			
44 \ z12			
45 \ b14			
46 \ z16			
47 \ z14			
48 \ z12			

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All red	0	3						
1	Stages 1 and 4	1	4						
2	Stages 1 and 5	1	5						
3	Stages 2 and 4	2	4						
4	Stages 2 and 5	2	5						
5									
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☐	☐	☑	☐	☑

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	◉	○	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Manual Mode Enable

- ◉ Always
- ○ When Handset Plugged in (Note 1)
- ○ When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Special Conditioning

```
; AUX LED'S
; ~~~~~~~~~
                                                ;AUX 1 LED NOT USED
                                                ;AUX 2 LED NOT USED
(MODE0 EQL<3>)=MIL05                            ;AUX 3 LED LIT WHEN CLF ACTIVE
                                                ;AUX 4 ( HURRY CALL ) LED NOT USED
(MODE0 EQL<6>)=MIL17                            ;AUX 5 ( HIGHER PRIORITY ) LED LIT WHEN UTC ACTIVE

; UTC REPLIES
; ~~~~~~~~~~~
NOT(SYSLED)=CF                                  ;CONTROLLER FAULT LOG ENTRY,  REPLIES UTC CF BIT
NOT(LMPANY0+LMPANY1)=LF1                        ;LAMP FAULT REPLIES LF1 ON ANY STREAM
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(PHASEA)=G1   ;LAMPS OFF AND STAGE CONFIRMS FOR UTC G1 and G2 Bits.
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(PHASEB)=G2
```

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Special Conditioning

```
; REVERT DELAY TIMER STREAM 0 FOR V.A
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT NOT(LCPHA+LCPHB) $
.(EXTAA+EXTAB+MINA+MINB) THN
    RUN<0>
END
(MODE0 EQL<2>).CNDTMA0.NOT(LCPHA+LCPHB)=PRVST0

        LCPHA+UCPHA+EXTAA $                         ;SPECIAL REVERSION
        +LCPHB+UCPHB+EXTAB $
        +LCST1+UCST1 $
        +LCST2+UCST2 $
        +LCST0+UCST0=SCRT0

    IFT SCRT0 THN
     RUN<0>
    END
    NOT(CNDTMA0)=+UCST0

; REVERT DELAY TIMER STREAM 1 FOR V.A
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT NOT(LCPHC+LCPHD) $
.(EXTAC+EXTAD+MINC+MIND) THN
    RUN<0>
END
(MODE0 EQL<2>).CNDTMA0.NOT(LCPHC+LCPHD)=PRVST3

        LCPHC+UCPHC+EXTAC $                         ;SPECIAL REVERSION
        +LCPHD+UCPHD+EXTAD $
        +LCST4+UCST4 $
        +LCST5+UCST5 $
        +LCST3+UCST3=SCRT1

    IFT SCRT1 THN
     RUN<0>
    END
    NOT(CNDTMA0)=+UCST3
```

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Special Conditioning Timers

Special Conditioning Timers

Timers

0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	30	0	255	☐	All red revert delay	16		0	255	☐	
1		0	255	☐		17		0	255	☐	
2		0	255	☐		18		0	255	☐	
3		0	255	☐		19		0	255	☐	
4		0	255	☐		20		0	255	☐	
5		0	255	☐		21		0	255	☐	
6		0	255	☐		22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8		0	255	☐		24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Special Instructions

00143

Board	Position	Skt	Port	Type I or O	Line	Cable	Block
CPU	A	X3I	0	I	00 - 07	101	1TBG
CPU	A	X3I	1	I	08 - 15		1TBH
CPU	A	X3O	11	O	88 - 91	105	1TBX

The socket X3 on the CPU pcb is the double stacked one
X3I = Inner (nearest the board)
X3O = Outer

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Special Instructions

ST800 CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/27000/003	Cabinet 8 Phase wired 8 Phase	1		
3	667/1/27000/002	Cabinet 24 Phase wired 32 Phase			
4	667/1/27001/001	Rack 8 Phase wired 16 Phase			
5	667/1/27001/002	Rack 24 Phase wired 32 Phase			
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23	667/1/27072/001	Cableform 8 Phase (long)			
24	667/1/27002/000	Lamp Switch Kit 8 Phase			
25	667/1/27003/000	I/O Kit			
26	667/1/27005/000	SDE Facility Kit			
27	667/1/27004/000	Integral OTU Kit			
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39	667/1/16260/000	Configuration Eprom (Issue 1. 0)	1		
40					

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Special Instructions

ST800 CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS	
41						
42	667/1/27056/001	Manual Panel Assy (Intersection Cont)				
43	667/1/27056/010	Manual Panel Assy (Sigs on/off)				
44	667/1/27056/000	Manual Panel Blanking Kit				
45						
46						Note 2:
47						Ancillary Processor PLD
48						Variants
49						101 OTU & LMU
50						102 OTU Only
51						103 LMU Only
52	667/7/25171/000	Current Transformer				104 OTU & LMU + Up/Download
53						105 OUT Only + Up/DownLoad
54						NB Controller Has built in LMU
55						So LMU on Ancillary Processor
56						Not required included for info
57						only.
58						
59						
60						Note 3:
61	667/1/27000/101	Cabinet Export 8 Phase wired 16 Phase				Fit Current Transformer
62	667/1/27000/102	Cabinet Export 24 Phase wired 32 Phase				starting from position
63	667/1/27001/101	Rack Export 8 Phase wired 16 Phase				TLB/z/16 on the first phase
64	667/1/27001/102	Rack Export 24 Phase wired 32 Phase				driver PCB. if more than 3
65	667/1/27002/100	Export Lamp Switch Kit				sensors are called up fit the
66	667/1/27084/001	Dimming Assembly (1.5KVA)(Fit Std UK)				4th sensor to the second
67	667/1/27084/002	Dimming Assembly (2.0KVA)				Phases driver PCB, and so on
68	667/1/27084/003	Dimming Assembly (3.0KVA)				until all sensors have been
69	667/1/27130/000	30A Controller Kit				used up.
70						TLB/b/14 - 1st sensor terminal
71	667/1/27001/310	ST800 SE Export Rack up to 8 Phase				TLB/z/16 - 2nd sensor terminal
72	667/1/27223/003	ST800 SE 8 Phase Driver No LMU				TLB/z/14 - 3rd sensor terminal
73	667/1/27223/403	ST800 SE 4 Phase Driver No LMU				TLB/z/12 - 4th sensor terminal
74						TLB/z/12 - 4th sensor terminal
75						
76						
77	667/1/27000/301	ST800 P In a Cabinet 4Ph 1 Stream PED				TLB/z/12 - 4th sensor terminal
78	667/1/27012/000	PED 2nd Stream Kit for ST800 P				
79	667/1/27001/300	ST800 P Rack Only 4Ph 1 Stream PED				

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Special Instructions

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

Port Number & Type

Port: 0

○ ○ ◉ Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	AXYZ10	☑	☐	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	1
○	1	1	I	BSL20	☑	☐	☐	☐	☐	I	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	2
○	2	2	I	BMVD20	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	3
○	3	3	I	CXYZ30	☑	☐	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	4
○	4	4	I	DSL40	☑	☐	☐	☐	☐	I	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	5
○	5	5	I	DMVD40	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	6
○	6	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	7
○	7	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	8

Add | Delete | Move | Clear Used By

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

Aspect Drives

Aspect Drives

(●) A-L ( ) M-X ( ) Y-F2

Phase Driver Card 1

	Used For	Term Block	Term No
A - Red	Phase	1TBA	1
A - Amber	Phase	1TBA	2
A - Green	Phase	1TBA	3
B - Red	Phase	1TBA	4
B - Amber	Phase	1TBA	5
B - Green	Phase	1TBA	6
C - Red	Phase	1TBA	7
C - Amber	Phase	1TBA	8
C - Green	Phase	1TBA	9
D - Red	Phase	1TBA	10
D - Amber	Phase	1TBA	11
D - Green	Phase	1TBA	12

Phase Driver Card 1

	Used For	Term Block	Term No
E - Red			
E - Amber			
E - Green			
F - Red			
F - Amber			
F - Green			
G - Red			
G - Amber			
G - Green			
H - Red			
H - Amber			
H - Green			

Phase Driver Card 2

	Used For	Term Block	Term No
I - Red			
I - Amber			
I - Green			
J - Red			
J - Amber			
J - Green			
K - Red			
K - Amber			
K - Green			
L - Red			
L - Amber			
L - Green			

Works Order :
EM Number : 00143
Engineer : J Hale
Intersection : Mereway / Towcester Rd roundabout

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

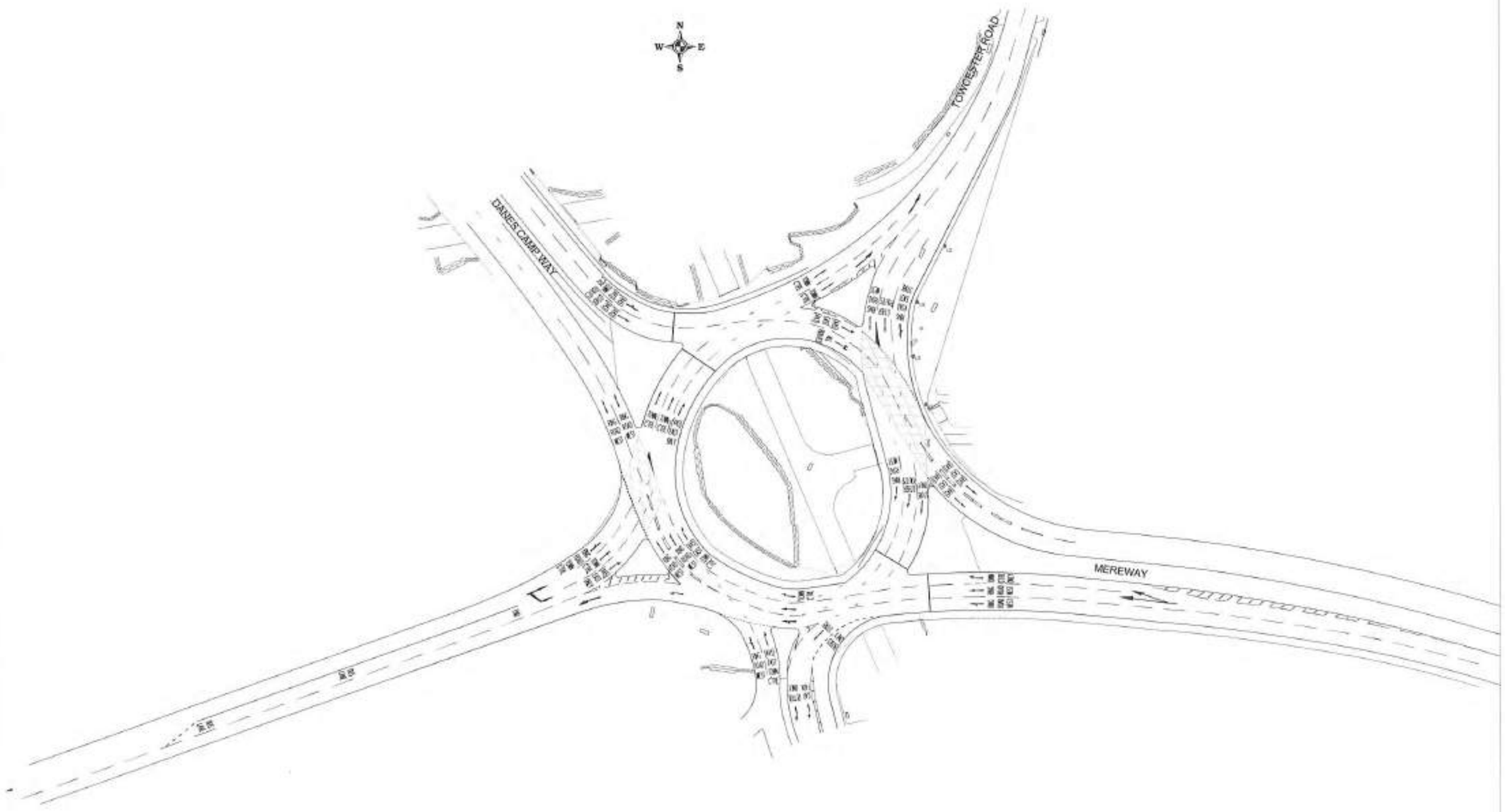
3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays (No configuration data to print)

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 UTC and MOVA
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions
    - 4.3.3.2 UTC Stage and Mode Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces (No configuration data to print)
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 LMU - Sensors
- 4.6 Manual
  - 4.6.1 Manual Panel
  - 4.6.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel (No configuration data to print)
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives
- 7.4 I/O - DFM Group Timings


N
W
E
S
TOWCESTER ROAD
DANES CAMP WAY
MEREWAY

TRAFFIC CONTROL - TIMING CHANGES TCF 8 Rev 1

SITE: Medway / Towcester Rd R/b ORN: 143

Reasons for timing changes:

Queues on Medway.

Type of controller:

Parameter to be changed	existing settings from records	existing settings as found	Required settings
PLN 2			
ACT 1	28	28	21
ACT 3	12	12	10
ACT 4	32	32	37
ACT 5	6	6	255

Engineered by: J Hale

Approved by (if safety related):

Controller records updated by: J Hale

FRAS updated by:

Controller changed by: Date: 18/9/07

APPENDIX C

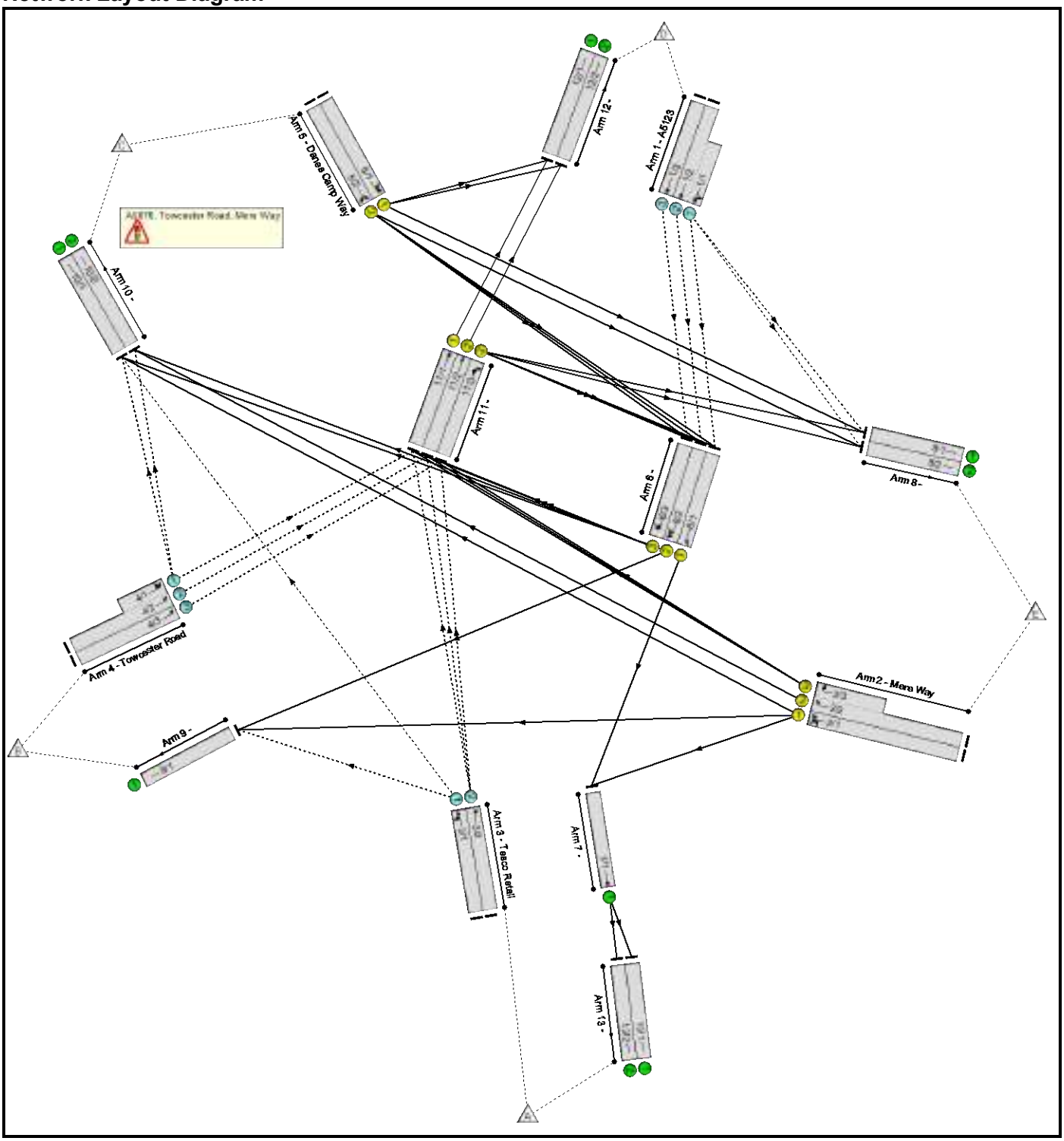
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 7
Location:	Towcester Road / A5076 Danes Camp Way / A5123 Towcester Road / Mere Way/ Tesco Access
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

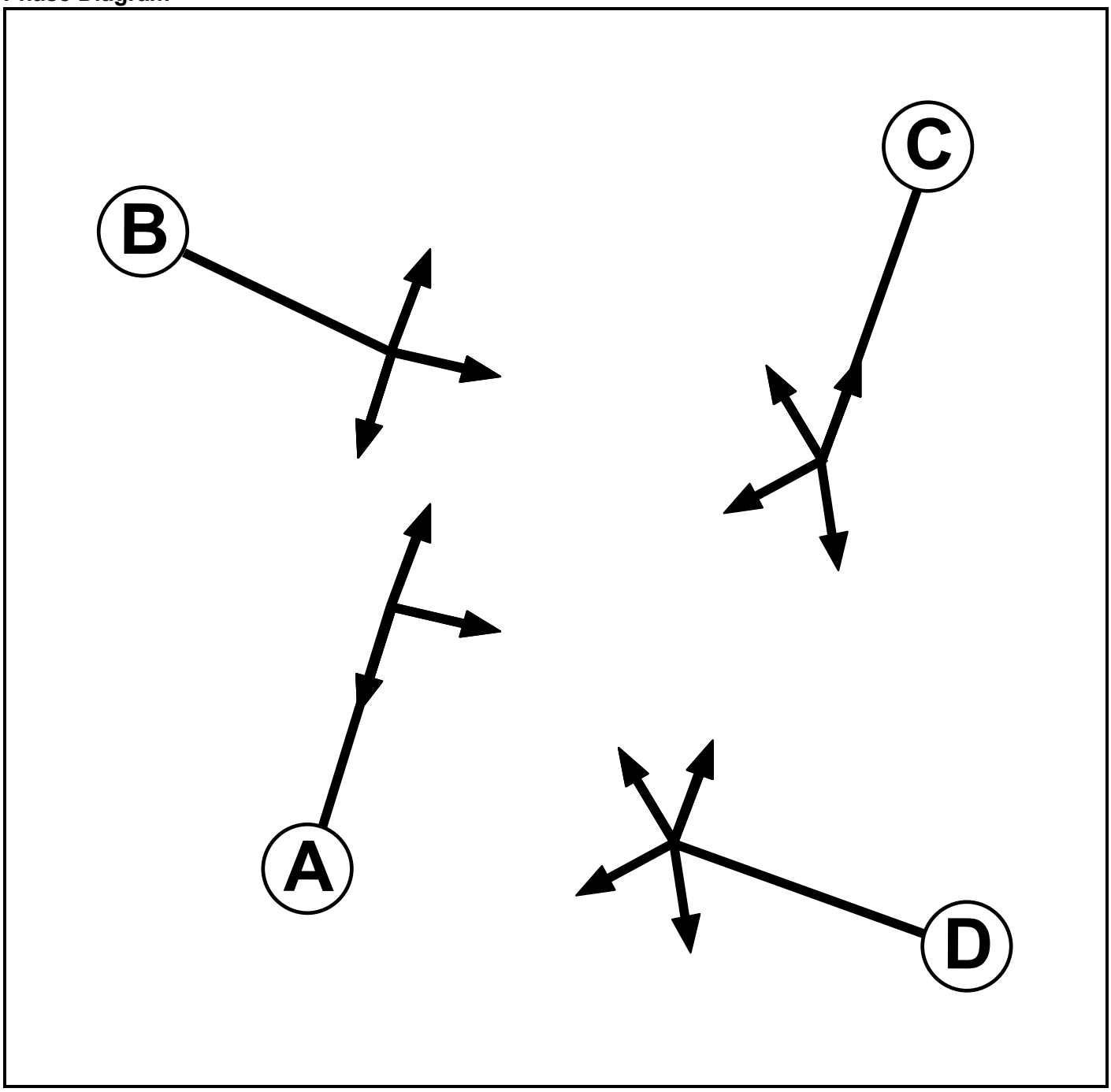
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Full Input Data And Results

Phase Intergreens Matrix

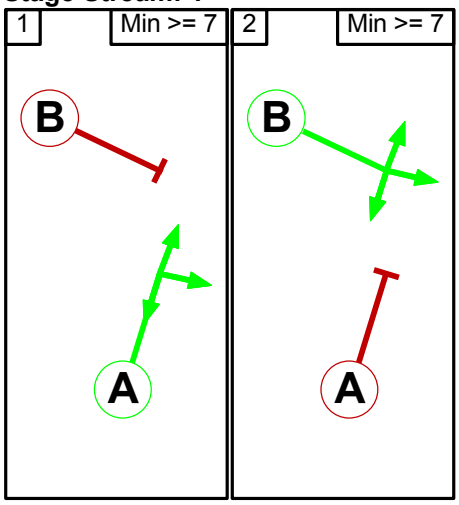
Terminating Phase	Starting Phase A	B	C	D
A		7	-	-
B	7		-	-
C	-	-		7
D	-	-	7	

Phases in Stage

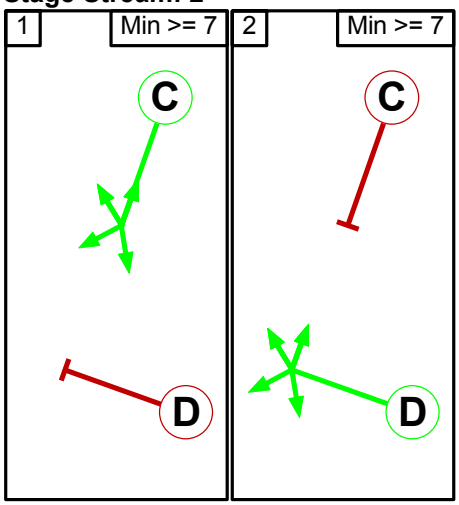
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A5076, Towcester Road, Mere Way											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (A5123)	6/1 (Ahead)	1000	0	5/1	0.33	To 8/1 (Left)	-	-	-	-	-
				5/2	0.33	All					
	8/1 (Left)	1000	0	5/1	0.33	To 8/1 (Left)					
				5/2	0.33	All					
				11/3	0.33	All					
	8/2 (Left)	1000	0	5/1	0.33	To 8/1 (Left)					
				5/2	0.33	All					
				11/3	0.33	All					
1/2 (A5123)	6/2 (Ahead)	1000	0	5/1	0.33	To 8/1 (Left)	-	-	-	-	-
				5/2	0.33	All					
				11/3	0.33	All					
1/3 (A5123)	6/3 (Ahead)	1000	0	5/1	0.33	To 8/1 (Left)	-	-	-	-	-
				5/2	0.33	To 6/1 (Right) To 6/2 (Right) To 6/3 (Right) To 8/2 (Left)					
				11/3	0.33	All					
3/1 (Tesco Retail)	9/1 (Left)	1000	0	2/1	0.33	To 9/1 (Ahead)	-	-	-	-	-
				6/2	0.33	To 9/1 (Ahead)					
	10/1 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 10/1 (Right)					
				2/2	0.33	All					
				6/2	0.33	To 9/1 (Ahead)					
3/2 (Tesco Retail)	11/1 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 10/1 (Right)	-	-	-	-	-
				2/2	0.33	All					
				2/3	0.33	All					

				6/2	0.33	All					
				6/3	0.33	All					
	11/2 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 10/1 (Right)					
				2/2	0.33	All					
				2/3	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					
	11/3 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 10/1 (Right)					
				2/2	0.33	All					
				2/3	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					
4/1 (Towcester Road)	10/1 (Left)	1000	0	3/1	0.33	To 10/1 (Ahead)	-	-	-	-	-
				2/1	0.33	To 10/1 (Right)					
				2/2	0.33	All					
				6/2	0.33	To 10/1 (Right)					
	10/2 (Left)	1000	0	3/1	0.33	To 10/1 (Ahead)					
				2/1	0.33	To 10/1 (Right)					
				2/2	0.33	All					
				6/2	0.33	To 10/1 (Right)					
				6/3	0.33	To 10/2 (Right)					
	11/1 (Ahead)	1000	0	3/1	0.33	To 10/1 (Ahead)					
				3/2	0.33	All					
				2/1	0.33	To 10/1 (Right)					
				2/2	0.33	All					
				2/3	0.33	All					
				6/3	0.33	All					
				6/2	0.33	To 10/1 (Right)					

4/2 (Towcester Road)	11/2 (Ahead)	1000	0	3/1	0.33	To 10/1 (Ahead)	-	-	-	-	-
				3/2	0.33	All					
				2/1	0.33	To 10/1 (Right)					
				2/2	0.33	All					
				2/3	0.33	All					
				6/3	0.33	All					
				6/2	0.33	To 10/1 (Right)					
4/3 (Towcester Road)	11/3 (Ahead)	1000	0	3/1	0.33	To 10/1 (Ahead)	-	-	-	-	-
				3/2	0.33	All					
				2/1	0.33	To 10/1 (Right)					
				2/2	0.33	All					
				2/3	0.33	All					
				6/3	0.33	All					
				6/2	0.33	To 10/1 (Right)					

Full Input Data And Results

Lane Input Data

Junction: A5076, Towcester Road, Mere Way												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5123)	O		2	3	6.6	Geom	-	3.25	0.00	Y	Arm 6 Ahead	62.00
											Arm 8 Left	42.00
1/2 (A5123)	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm 6 Ahead	60.00
1/3 (A5123)	O		2	3	5.4	Geom	-	3.25	0.00	Y	Arm 6 Ahead	60.00
2/1 (Mere Way)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 7 Left	34.00
											Arm 9 Ahead	80.00
											Arm 10 Right	45.00
2/2 (Mere Way)	U	D	2	3	60.0	Geom	-	3.25	0.00	N	Arm 10 Right	55.00
2/3 (Mere Way)	U	D	2	3	7.3	Geom	-	3.40	0.00	N	Arm 11 Right	45.00
3/1 (Tesco Retail)	O		2	3	10.4	Geom	-	3.25	0.00	Y	Arm 9 Left	32.00
											Arm 10 Ahead	48.00
3/2 (Tesco Retail)	O		2	3	10.4	Geom	-	3.25	0.00	Y	Arm 11 Ahead	53.00
4/1 (Towcester Road)	O		2	3	5.0	Geom	-	3.25	0.00	Y	Arm 10 Left	40.00
											Arm 11 Ahead	51.00
4/2 (Towcester Road)	O		2	3	7.3	Geom	-	3.25	0.00	Y	Arm 11 Ahead	51.00
4/3 (Towcester Road)	O		2	3	60.0	Geom	-	3.25	0.00	Y	Arm 11 Ahead	51.00
5/1 (Danes Camp Way)	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 8 Left	42.00
											Arm 12 Left	58.00
5/2 (Danes Camp Way)	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 6 Right	58.00
											Arm 8 Left	58.00
6/1	U	C	2	3	5.0	Geom	-	3.25	0.00	Y	Arm 7 Ahead	41.00
6/2	U	C	2	3	5.0	Geom	-	3.25	0.00	Y	Arm 9 Ahead	41.00

Full Input Data And Results

											Arm 10 Right	39.00
6/3	U	C	2	3	5.0	Geom	-	3.25	0.00	Y	Arm 10 Right	39.00
											Arm 11 U-Turn	Inf
7/1	U		2	3	2.1	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U	A	2	3	5.0	Geom	-	3.25	0.00	Y	Arm 12 Ahead	60.00
11/2	U	A	2	3	5.0	Geom	-	3.25	0.00	Y	Arm 12 Ahead	60.00
11/3	U	A	2	3	5.0	Geom	-	3.25	0.00	Y	Arm 6 U-Turn	60.00
											Arm 8 Right	48.00
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2015 AM base flows '	08:00	09:00	01:00	
2: '2015 PM base flows '	17:00	18:00	01:00	
3: '2021 DM AM'	08:00	09:00	01:00	
4: '2021 DM PM'	17:00	18:00	01:00	
5: '2021 DS2 AM'	08:00	09:00	01:00	
6: '2021 DS2 PM'	17:00	18:00	01:00	
7: '2031 DM AM'	08:00	09:00	01:00	
8: '2031 DM PM'	17:00	18:00	01:00	
9: '2031 DS2 AM'	08:00	09:00	01:00	
10: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2015 AM Base OPT' (FG1: '2015 AM base flows ', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	52	141	76	165	434
	B	21	0	57	71	266	415
	C	113	102	0	74	1591	1880
	D	79	84	321	0	231	715
	E	110	236	1448	440	0	2234
	Tot.	323	474	1967	661	2253	5678

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2015 AM Base OPT
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	310
1/2 (with short)	463(In) 153(Out)
1/3	252
2/1	948
2/2 (with short)	1286(In) 846(Out)
2/3 (short)	440
3/1	193
3/2	241
4/1 (short)	89
4/2 (with short)	128(In) 39(Out)
4/3	287
5/1	935
5/2	945
6/1	213
6/2	255
6/3	252
7/1	323
8/1	1191
8/2	1062
9/1	474
10/1	841
10/2	1126
11/1	294
11/2	293
11/3	452
12/1	331
12/2	330
13/1	163
13/2	160

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	25.5 %	1878	1878
				Arm 8 Left	42.00	74.5 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	11.6 %	1882	1882
				Arm 9 Ahead	80.00	24.9 %		
				Arm 10 Right	45.00	63.5 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	26.9 %	1874	1874
				Arm 10 Ahead	48.00	73.1 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	64.0 %	1875	1875
				Arm 11 Ahead	51.00	36.0 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	92.1 %	1947	1947
				Arm 12 Left	58.00	7.9 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	22.8 %	1964	1964
				Arm 8 Left	58.00	77.2 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	72.9 %	1871	1871
				Arm 10 Right	39.00	27.1 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	4.6 %	1882	1882
				Arm 8 Right	48.00	95.4 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2015 Pm Base OPT' (FG2: '2015 PM base flows ', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	89	246	84	146	565
	B	38	0	89	101	146	374
	C	173	129	0	97	1406	1805
	D	98	88	363	0	141	690
	E	139	261	1395	262	0	2057
	Tot.	448	567	2093	544	1839	5491

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2015 Pm Base OPT
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	239
1/2 (with short)	448(In) 209(Out)
1/3	242
2/1	912
2/2 (with short)	1145(In) 883(Out)
2/3 (short)	262
3/1	335
3/2	230
4/1 (short)	121
4/2 (with short)	190(In) 69(Out)
4/3	184
5/1	898
5/2	907
6/1	309
6/2	338
6/3	242
7/1	448
8/1	1017
8/2	822
9/1	567
10/1	924
10/2	1169
11/1	225
11/2	222
11/3	330
12/1	273
12/2	271
13/1	225
13/2	223

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	41.0 %	1882	1882
				Arm 8 Left	42.00	59.0 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	15.2 %	1882	1882
				Arm 9 Ahead	80.00	28.6 %		
				Arm 10 Right	45.00	56.1 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	26.6 %	1874	1874
				Arm 10 Ahead	48.00	73.4 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	73.6 %	1874	1874
				Arm 11 Ahead	51.00	26.4 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	89.2 %	1948	1948
				Arm 12 Left	58.00	10.8 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	33.3 %	1964	1964
				Arm 8 Left	58.00	66.7 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	64.2 %	1870	1870
				Arm 10 Right	39.00	35.8 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

Full Input Data And Results

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	11.5 %	1883	1883
				Arm 8 Right	48.00	88.5 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	51	142	75	170	438
	B	18	0	95	35	300	448
	C	115	150	5	39	1918	2227
	D	79	0	186	0	330	595
	E	114	363	1549	470	14	2510
	Tot.	326	564	1977	619	2732	6218

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	409
1/2 (with short)	409(In) 0(Out)
1/3	186
2/1	1083
2/2 (with short)	1427(In) 943(Out)
2/3 (short)	484
3/1	193
3/2	245
4/1 (short)	108
4/2 (with short)	130(In) 22(Out)
4/3	318
5/1	1108
5/2	1119
6/1	212
6/2	151
6/3	190
7/1	326
8/1	1476
8/2	1256
9/1	564
10/1	797
10/2	1180
11/1	291
11/2	289
11/3	502
12/1	310
12/2	309
13/1	164
13/2	162

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	19.3 %	1877	1877
				Arm 8 Left	42.00	80.7 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	0.0 %	1940	1940
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	10.5 %	1884	1884
				Arm 9 Ahead	80.00	33.5 %		
				Arm 10 Right	45.00	56.0 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	26.4 %	1874	1874
				Arm 10 Ahead	48.00	73.6 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	88.0 %	1872	1872
				Arm 11 Ahead	51.00	12.0 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	96.5 %	1946	1946
				Arm 12 Left	58.00	3.5 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	24.1 %	1964	1964
				Arm 8 Left	58.00	75.9 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	99.3 %	1872	1872
				Arm 10 Right	39.00	0.7 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

Full Input Data And Results

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	3.6 %	1882	1882
				Arm 8 Right	48.00	96.4 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	90	246	85	150	571
	B	38	0	167	161	228	594
	C	174	194	0	129	1564	2061
	D	96	0	161	0	236	493
	E	139	275	1600	255	0	2269
	Tot.	447	559	2174	630	2178	5988

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	332
1/2 (with short)	332(In) 0(Out)
1/3	161
2/1	1021
2/2 (with short)	1248(In) 993(Out)
2/3 (short)	255
3/1	336
3/2	235
4/1 (short)	223
4/2 (with short)	328(In) 105(Out)
4/3	266
5/1	1026
5/2	1035
6/1	308
6/2	194
6/3	161
7/1	447
8/1	1204
8/2	974
9/1	559
10/1	937
10/2	1237
11/1	249
11/2	252
11/3	416
12/1	313
12/2	317
13/1	224
13/2	223

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	28.9 %	1879	1879
				Arm 8 Left	42.00	71.1 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	0.0 %	1940	1940
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	13.6 %	1882	1882
				Arm 9 Ahead	80.00	26.9 %		
				Arm 10 Right	45.00	59.5 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	26.8 %	1874	1874
				Arm 10 Ahead	48.00	73.2 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	74.9 %	1874	1874
				Arm 11 Ahead	51.00	25.1 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	87.4 %	1948	1948
				Arm 12 Left	58.00	12.6 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	35.6 %	1964	1964
				Arm 8 Left	58.00	64.4 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	100.0 %	1872	1872
				Arm 10 Right	39.00	0.0 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	9.1 %	1882	1882
				Arm 8 Right	48.00	90.9 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2021 DS2 AM' (FG5: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	53	141	75	170	439
	B	19	0	116	59	332	526
	C	114	134	14	44	1970	2276
	D	79	0	197	0	317	593
	E	114	317	1751	447	0	2629
	Tot.	326	504	2219	625	2789	6463

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS2 AM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	396
1/2 (with short)	396(In) 0(Out)
1/3	197
2/1	1134
2/2 (with short)	1495(In) 1048(Out)
2/3 (short)	447
3/1	194
3/2	245
4/1 (short)	143
4/2 (with short)	175(In) 32(Out)
4/3	351
5/1	1133
5/2	1143
6/1	212
6/2	137
6/3	208
7/1	326
8/1	1498
8/2	1291
9/1	504
10/1	905
10/2	1314
11/1	291
11/2	290
11/3	521
12/1	313
12/2	312
13/1	164
13/2	162

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	19.9 %	1877	1877
				Arm 8 Left	42.00	80.1 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	0.0 %	1940	1940
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	10.1 %	1883	1883
				Arm 9 Ahead	80.00	28.0 %		
				Arm 10 Right	45.00	62.0 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	27.3 %	1873	1873
				Arm 10 Ahead	48.00	72.7 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	81.1 %	1873	1873
				Arm 11 Ahead	51.00	18.9 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	96.1 %	1946	1946
				Arm 12 Left	58.00	3.9 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	22.9 %	1964	1964
				Arm 8 Left	58.00	77.1 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	97.8 %	1871	1871
				Arm 10 Right	39.00	2.2 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	3.6 %	1882	1882
				Arm 8 Right	48.00	96.4 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2021 DS2 PM' (FG6: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	91	245	86	149	571
	B	38	0	156	104	241	539
	C	175	241	1	126	1606	2149
	D	95	0	119	0	106	320
	E	140	284	1377	276	0	2077
	Tot.	448	616	1898	592	2102	5656

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS2 PM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	201
1/2 (with short)	246(In) 45(Out)
1/3	74
2/1	907
2/2 (with short)	1170(In) 894(Out)
2/3 (short)	276
3/1	336
3/2	235
4/1 (short)	198
4/2 (with short)	260(In) 62(Out)
4/3	279
5/1	1069
5/2	1080
6/1	308
6/2	286
6/3	75
7/1	448
8/1	1190
8/2	912
9/1	616
10/1	851
10/2	1047
11/1	233
11/2	233
11/3	428
12/1	296
12/2	296
13/1	225
13/2	223

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	47.3 %	1883	1883
				Arm 8 Left	42.00	52.7 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	15.4 %	1883	1883
				Arm 9 Ahead	80.00	31.3 %		
				Arm 10 Right	45.00	53.3 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	27.1 %	1874	1874
				Arm 10 Ahead	48.00	72.9 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	78.8 %	1873	1873
				Arm 11 Ahead	51.00	21.2 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	88.2 %	1948	1948
				Arm 12 Left	58.00	11.8 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	38.6 %	1964	1964
				Arm 8 Left	58.00	61.4 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	84.3 %	1871	1871
				Arm 10 Right	39.00	15.7 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	8.9 %	1882	1882
				Arm 8 Right	48.00	91.1 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	50	141	77	175	443
	B	16	0	221	160	432	829
	C	118	132	18	47	1791	2106
	D	79	0	137	0	393	609
	E	115	394	1789	530	39	2867
	Tot.	328	576	2306	814	2830	6854

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DM AM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	472
1/2 (with short)	472(In) 0(Out)
1/3	137
2/1	1203
2/2 (with short)	1664(In) 1095(Out)
2/3 (short)	569
3/1	191
3/2	252
4/1 (short)	278
4/2 (with short)	381(In) 103(Out)
4/3	448
5/1	1048
5/2	1058
6/1	213
6/2	134
6/3	153
7/1	328
8/1	1519
8/2	1311
9/1	576
10/1	948
10/2	1358
11/1	381
11/2	386
11/3	662
12/1	404
12/2	410
13/1	165
13/2	163

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	16.7 %	1877	1877
				Arm 8 Left	42.00	83.3 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	0.0 %	1940	1940
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	9.6 %	1884	1884
				Arm 9 Ahead	80.00	32.8 %		
				Arm 10 Right	45.00	57.7 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	26.2 %	1874	1874
				Arm 10 Ahead	48.00	73.8 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	79.5 %	1873	1873
				Arm 11 Ahead	51.00	20.5 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	95.5 %	1946	1946
				Arm 12 Left	58.00	4.5 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	25.3 %	1964	1964
				Arm 8 Left	58.00	74.7 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	98.5 %	1871	1871
				Arm 10 Right	39.00	1.5 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	2.4 %	1881	1881
				Arm 8 Right	48.00	97.6 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	96	242	87	151	576
	B	32	0	197	122	143	494
	C	179	216	6	148	1498	2047
	D	97	120	183	0	263	663
	E	140	450	1575	328	0	2493
	Tot.	448	882	2203	685	2055	6273

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DM PM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	360
1/2 (with short)	480(In) 120(Out)
1/3	183
2/1	1098
2/2 (with short)	1395(In) 1067(Out)
2/3 (short)	328
3/1	338
3/2	238
4/1 (short)	207
4/2 (with short)	319(In) 112(Out)
4/3	175
5/1	1020
5/2	1027
6/1	308
6/2	336
6/3	189
7/1	448
8/1	1149
8/2	906
9/1	882
10/1	849
10/2	1354
11/1	258
11/2	279
11/3	326
12/1	332
12/2	353
13/1	225
13/2	223

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	26.9 %	1879	1879
				Arm 8 Left	42.00	73.1 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	12.8 %	1886	1886
				Arm 9 Ahead	80.00	41.0 %		
				Arm 10 Right	45.00	46.3 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	28.4 %	1873	1873
				Arm 10 Ahead	48.00	71.6 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	95.2 %	1871	1871
				Arm 11 Ahead	51.00	4.8 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	85.5 %	1948	1948
				Arm 12 Left	58.00	14.5 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	39.0 %	1964	1964
				Arm 8 Left	58.00	61.0 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	100.0 %	1872	1872
				Arm 10 Right	39.00	0.0 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	9.8 %	1882	1882
				Arm 8 Right	48.00	90.2 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 9: '2031 DS2 AM' (FG9: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	50	141	78	176	445
	B	20	0	175	179	481	855
	C	116	136	28	43	1788	2111
	D	79	0	171	0	315	565
	E	114	344	1872	500	20	2850
	Tot.	329	530	2387	800	2780	6826

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DS2 AM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	394
1/2 (with short)	394(In) 0(Out)
1/3	171
2/1	1164
2/2 (with short)	1686(In) 1166(Out)
2/3 (short)	520
3/1	191
3/2	254
4/1 (short)	250
4/2 (with short)	354(In) 104(Out)
4/3	501
5/1	1050
5/2	1061
6/1	215
6/2	140
6/3	195
7/1	329
8/1	1502
8/2	1278
9/1	530
10/1	939
10/2	1448
11/1	380
11/2	377
11/3	697
12/1	401
12/2	399
13/1	165
13/2	164

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	20.1 %	1877	1877
				Arm 8 Left	42.00	79.9 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	0.0 %	1940	1940
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	9.8 %	1883	1883
				Arm 9 Ahead	80.00	29.6 %		
				Arm 10 Right	45.00	60.7 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	26.2 %	1874	1874
				Arm 10 Ahead	48.00	73.8 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	70.0 %	1874	1874
				Arm 11 Ahead	51.00	30.0 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	95.9 %	1946	1946
				Arm 12 Left	58.00	4.1 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	26.4 %	1964	1964
				Arm 8 Left	58.00	73.6 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	97.1 %	1871	1871
				Arm 10 Right	39.00	2.9 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	2.9 %	1882	1882
				Arm 8 Right	48.00	97.1 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2031 DS2 PM' (FG10: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	95	243	86	152	576
	B	35	0	148	95	152	430
	C	177	206	42	153	1595	2173
	D	96	0	277	0	153	526
	E	141	406	1377	279	0	2203
	Tot.	449	707	2087	613	2052	5908

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DS2 PM
Junction: A5076, Towcester Road, Mere Way	
1/1 (short)	249
1/2 (with short)	382(In) 133(Out)
1/3	144
2/1	974
2/2 (with short)	1229(In) 950(Out)
2/3 (short)	279
3/1	338
3/2	238
4/1 (short)	149
4/2 (with short)	243(In) 94(Out)
4/3	187
5/1	1082
5/2	1091
6/1	308
6/2	346
6/3	179
7/1	449
8/1	1157
8/2	895
9/1	707
10/1	884
10/2	1203
11/1	225
11/2	235
11/3	339
12/1	301
12/2	312
13/1	226
13/2	223

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	3.25	0.00	Y	Arm 6 Ahead	62.00	38.6 %	1881	1881
				Arm 8 Left	42.00	61.4 %		
1/2 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
1/3 (A5123)	3.25	0.00	Y	Arm 6 Ahead	60.00	100.0 %	1893	1893
2/1 (Mere Way)	3.25	0.00	Y	Arm 7 Left	34.00	14.5 %	1886	1886
				Arm 9 Ahead	80.00	41.7 %		
				Arm 10 Right	45.00	43.8 %		
2/2 (Mere Way)	3.25	0.00	N	Arm 10 Right	55.00	100.0 %	2025	2025
2/3 (Mere Way)	3.40	0.00	N	Arm 11 Right	45.00	100.0 %	2027	2027
3/1 (Tesco Retail)	3.25	0.00	Y	Arm 9 Left	32.00	28.1 %	1873	1873
				Arm 10 Ahead	48.00	71.9 %		
3/2 (Tesco Retail)	3.25	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1887	1887
4/1 (Towcester Road)	3.25	0.00	Y	Arm 10 Left	40.00	99.3 %	1870	1870
				Arm 11 Ahead	51.00	0.7 %		
4/2 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
4/3 (Towcester Road)	3.25	0.00	Y	Arm 11 Ahead	51.00	100.0 %	1885	1885
5/1 (Danes Camp Way)	4.00	0.00	Y	Arm 8 Left	42.00	85.9 %	1948	1948
				Arm 12 Left	58.00	14.1 %		
5/2 (Danes Camp Way)	4.00	0.00	Y	Arm 6 Right	58.00	39.0 %	1964	1964
				Arm 8 Left	58.00	61.0 %		
6/1	3.25	0.00	Y	Arm 7 Ahead	41.00	100.0 %	1872	1872
6/2	3.25	0.00	Y	Arm 9 Ahead	41.00	59.5 %	1870	1870
				Arm 10 Right	39.00	40.5 %		
6/3	3.25	0.00	Y	Arm 10 Right	39.00	100.0 %	1868	1868
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893
11/2	3.25	0.00	Y	Arm 12 Ahead	60.00	100.0 %	1893	1893

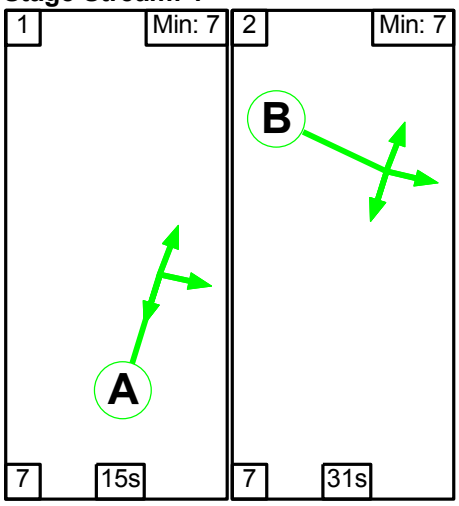
Full Input Data And Results

11/3	3.25	0.00	Y	Arm 6 U-Turn	60.00	10.3 %	1882	1882
				Arm 8 Right	48.00	89.7 %		
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

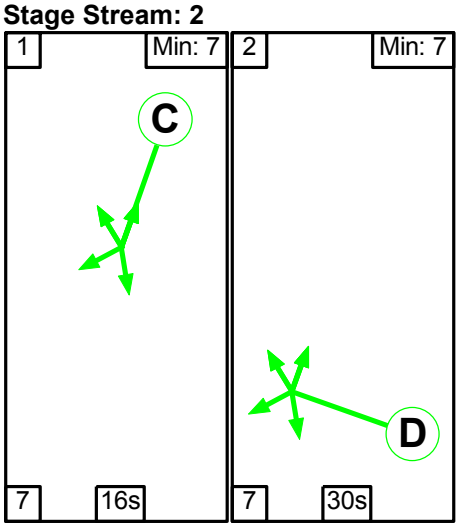
Scenario 1: '2015 AM Base OPT' (FG1: '2015 AM base flows ', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

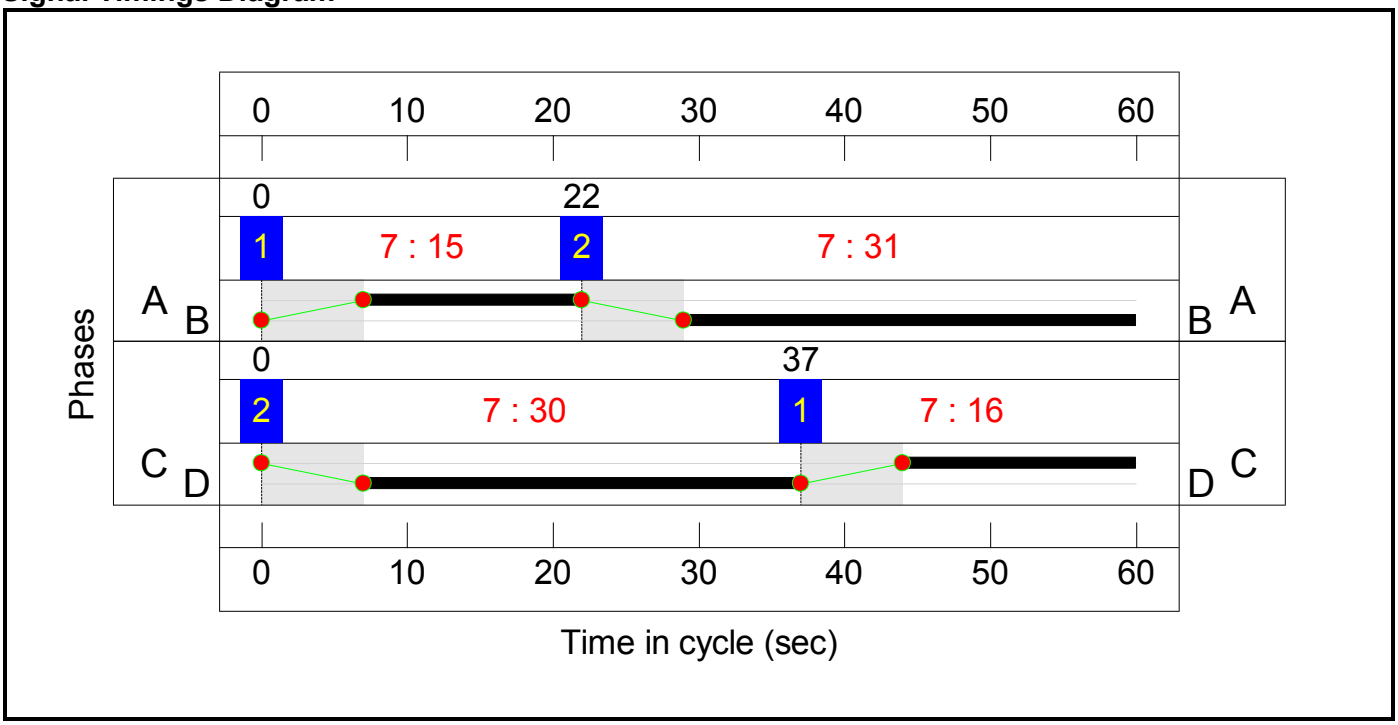
Stage	1	2
Duration	15	31
Change Point	0	22

Stage Stream: 2

Stage	1	2
Duration	16	30
Change Point	37	0

Full Input Data And Results

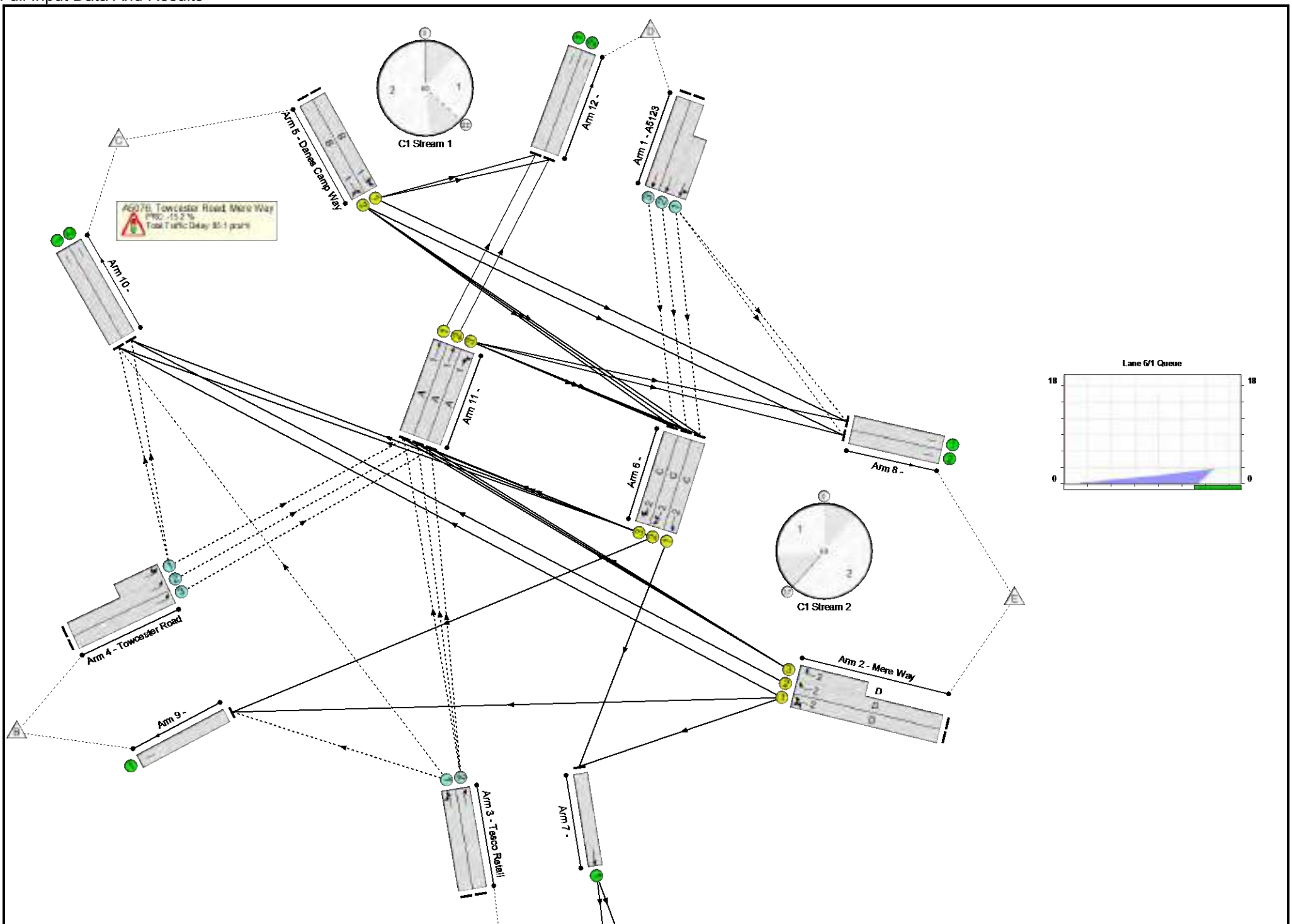
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.7%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.7%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	463	1893:1878	185+375	82.6 : 82.6%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	252	1893	360	70.0%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	30	-	948	1882	972	97.5%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	30	-	1286	2025:2027	855+445	98.9 : 98.9%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	193	1874	438	44.1%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	241	1887	348	69.2%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	128	1885:1875	141+321	27.8 : 27.8%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	287	1885	277	103.7%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	31	-	935	1947	1038	90.0%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	31	-	945	1964	1047	90.2%
6/1	Ahead	U	2	N/A	C		1	16	-	213	1872	530	40.1%
6/2	Ahead Right	U	2	N/A	C		1	16	-	255	1871	530	48.1%
6/3	Right U-Turn	U	2	N/A	C		1	16	-	252	1868	529	47.6%
7/1	Ahead	U	N/A	N/A	-		-	-	-	323	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1191	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1062	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	474	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	841	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1126	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	15	-	294	1893	505	58.2%
11/2	Ahead	U	1	N/A	A		1	15	-	293	1893	505	58.0%
11/3	U-Turn Right	U	1	N/A	A		1	15	-	452	1882	502	88.8%
12/1		U	N/A	N/A	-		-	-	-	331	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	330	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	160	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1294**	**850**	**0**	**28.7**	**56.4**	**0.0**	**85.1**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1294**	**850**	**0**	**28.7**	**56.4**	**0.0**	**85.1**	**-**	**-**	**-**	**-**
1/2+1/1	463	463	444	482	0	1.4	2.3	-	3.6	28.2	4.6	2.3	6.9
1/3	252	252	127	125	0	0.7	1.1	-	1.8	26.1	3.3	1.1	4.4
2/1	948	948	-	-	-	3.7	10.5	-	14.2	53.9	15.3	10.5	25.7
2/2+2/3	1286	1286	-	-	-	4.3	14.8	-	19.1	53.6	16.9	14.8	31.7
3/1	193	193	74	119	0	0.5	0.4	-	0.9	16.5	2.0	0.4	2.4
3/2	241	241	117	124	0	0.9	1.1	-	2.0	29.4	3.4	1.1	4.5
4/2+4/1	128	128	256	0	0	0.3	0.2	-	0.5	13.9	0.8	0.2	1.0
4/3	287	277	277	0	0	1.7	11.4	-	13.2	165.0	13.5	11.4	24.9
5/1	935	935	-	-	-	3.3	4.2	-	7.4	28.7	13.8	4.2	17.9
5/2	945	945	-	-	-	3.3	4.3	-	7.6	28.8	13.9	4.3	18.2
6/1	213	213	-	-	-	0.9	0.3	-	1.3	21.7	2.8	0.3	3.1
6/2	255	255	-	-	-	1.5	0.5	-	2.0	28.3	3.7	0.5	4.1
6/3	252	252	-	-	-	2.0	0.5	-	2.5	35.7	4.2	0.5	4.7
7/1	323	323	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1188	1188	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1059	1059	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	474	474	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	841	841	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1126	1126	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	294	294	-	-	-	1.4	0.7	-	2.0	25.0	3.1	0.7	3.7
11/2	293	293	-	-	-	1.4	0.7	-	2.1	25.2	3.0	0.7	3.7
11/3	446	446	-	-	-	1.4	3.5	-	4.9	39.6	7.4	3.5	10.9
12/1	331	331	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

12/2	330	330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	163	163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	160	160	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

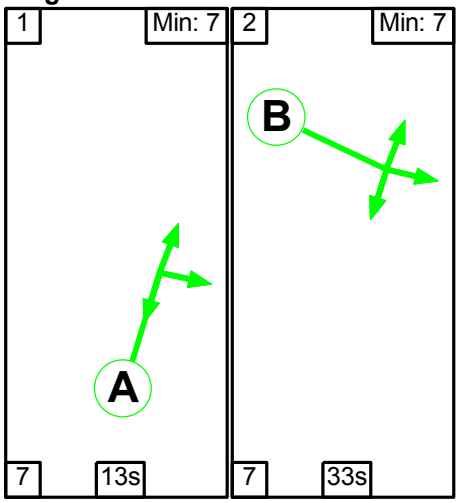
C1 Stream: 1 PRC for Signalled Lanes (%):	-0.2	Total Delay for Signalled Lanes (pcuHr):	24.01	Cycle Time (s):	60
C1 Stream: 2 PRC for Signalled Lanes (%):	-9.9	Total Delay for Signalled Lanes (pcuHr):	39.11	Cycle Time (s):	60
PRC Over All Lanes (%):	-15.2	Total Delay Over All Lanes(pcuHr):	85.07		

Full Input Data And Results

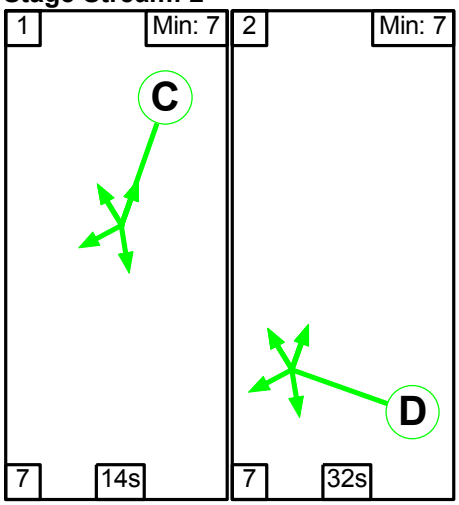
Scenario 2: '2015 Pm Base OPT' (FG2: '2015 PM base flows ', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

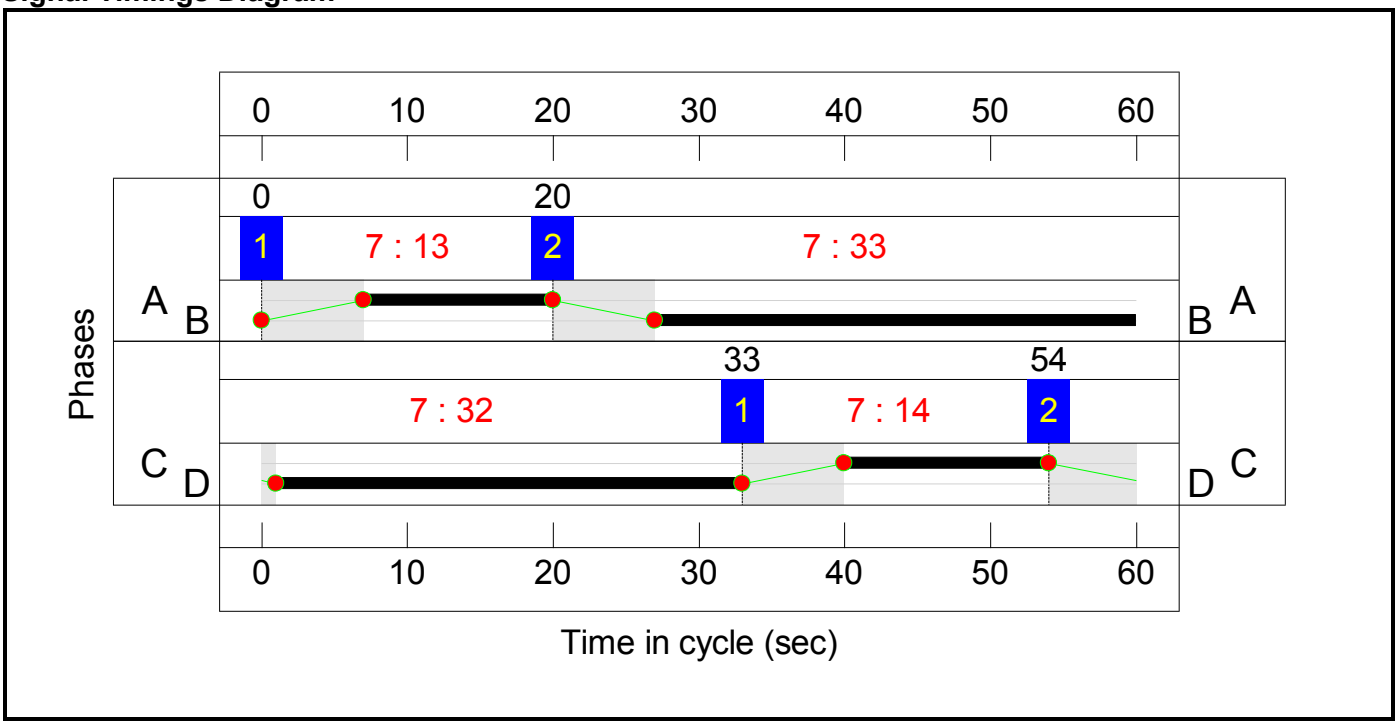
Stage	1	2
Duration	13	33
Change Point	0	20

Stage Stream: 2

Stage	1	2
Duration	14	32
Change Point	33	54

Full Input Data And Results

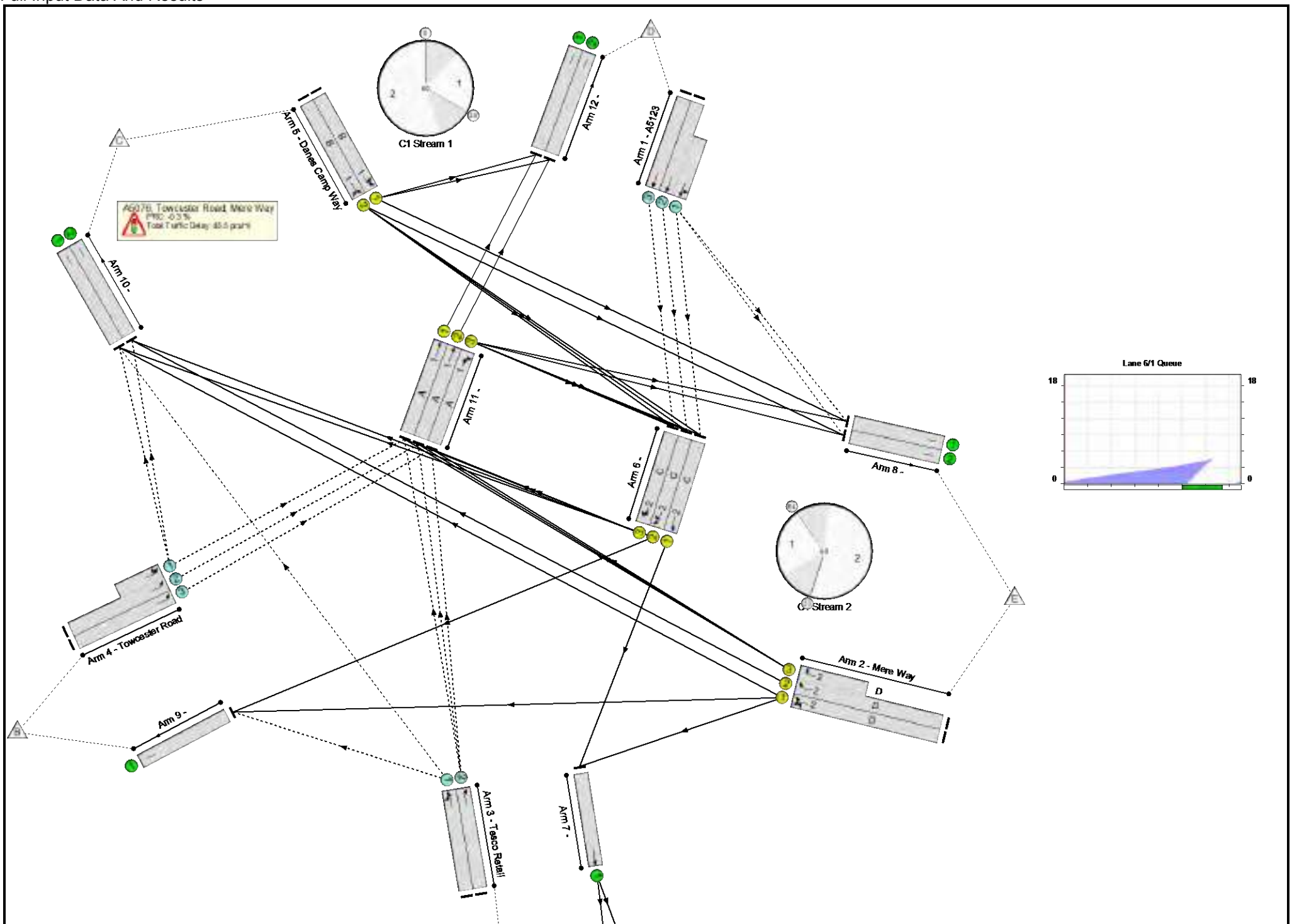
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.3%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.3%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	448	1893:1882	409+432	51.2 : 55.3%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	242	1893	409	59.2%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	32	-	912	1882	1035	88.1%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	32	-	1145	2025:2027	978+290	90.3 : 90.3%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	335	1874	447	74.9%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	230	1887	335	68.8%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	190	1885:1874	177+311	39.0 : 39.0%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	184	1885	262	70.3%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	33	-	898	1948	1104	81.4%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	33	-	907	1964	1113	81.5%
6/1	Ahead	U	2	N/A	C		1	14	-	309	1872	468	66.0%
6/2	Ahead Right	U	2	N/A	C		1	14	-	338	1870	467	72.3%
6/3	Right U-Turn	U	2	N/A	C		1	14	-	242	1868	467	51.8%
7/1	Ahead	U	N/A	N/A	-		-	-	-	448	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1017	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	822	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	567	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	924	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1169	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	13	-	225	1893	442	50.9%
11/2	Ahead	U	1	N/A	A		1	13	-	222	1893	442	50.3%
11/3	U-Turn Right	U	1	N/A	A		1	13	-	330	1883	439	75.1%
12/1		U	N/A	N/A	-		-	-	-	273	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	271	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1513**	**754**	**0**	**25.8**	**22.7**	**0.0**	**48.5**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1513**	**754**	**0**	**25.8**	**22.7**	**0.0**	**48.5**	**-**	**-**	**-**	**-**
1/2+1/1	448	448	500	396	0	1.0	0.6	-	1.5	12.4	2.5	0.6	3.1
1/3	242	242	141	101	0	0.5	0.7	-	1.3	18.8	2.6	0.7	3.3
2/1	912	912	-	-	-	3.0	3.5	-	6.5	25.6	13.2	3.5	16.7
2/2+2/3	1145	1145	-	-	-	3.3	4.3	-	7.7	24.1	14.1	4.3	18.4
3/1	335	335	201	133	0	1.0	1.5	-	2.4	26.0	4.6	1.5	6.0
3/2	230	230	107	123	0	0.7	1.1	-	1.7	27.3	3.3	1.1	4.3
4/2+4/1	190	190	380	0	0	0.4	0.3	-	0.7	13.6	1.1	0.3	1.5
4/3	184	184	184	0	0	0.6	1.2	-	1.8	34.6	2.7	1.2	3.8
5/1	898	898	-	-	-	2.6	2.1	-	4.7	19.0	12.0	2.1	14.1
5/2	907	907	-	-	-	2.6	2.2	-	4.8	19.0	12.1	2.2	14.3
6/1	309	309	-	-	-	1.6	1.0	-	2.6	30.2	4.4	1.0	5.4
6/2	338	338	-	-	-	2.3	1.3	-	3.5	37.7	5.2	1.3	6.5
6/3	242	242	-	-	-	1.9	0.5	-	2.5	36.7	4.0	0.5	4.6
7/1	448	448	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1017	1017	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	822	822	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	567	567	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	924	924	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1169	1169	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	225	225	-	-	-	1.2	0.5	-	1.7	27.8	3.5	0.5	4.0
11/2	222	222	-	-	-	1.2	0.5	-	1.7	28.3	3.5	0.5	4.0
11/3	330	330	-	-	-	1.8	1.5	-	3.3	35.9	5.5	1.5	7.0
12/1	273	273	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

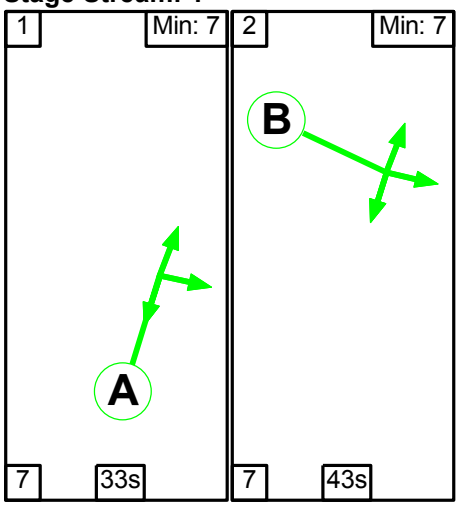
12/2	271	271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	10.4	Total Delay for Signalled Lanes (pcuHr):	16.31	Cycle Time (s):	60
C1	Stream: 2 PRC for Signalled Lanes (%):	-0.3	Total Delay for Signalled Lanes (pcuHr):	22.75	Cycle Time (s):	60
	PRC Over All Lanes (%):	-0.3	Total Delay Over All Lanes(pcuHr):	48.51		

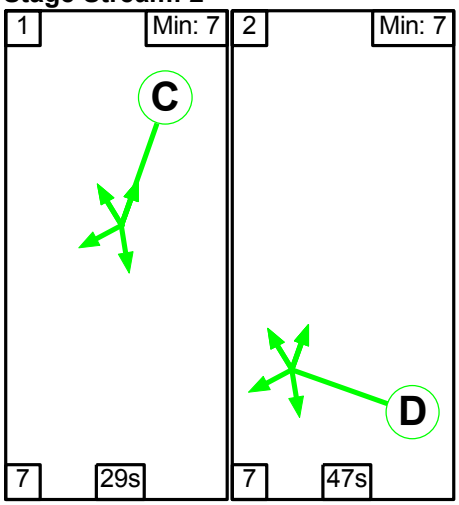
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

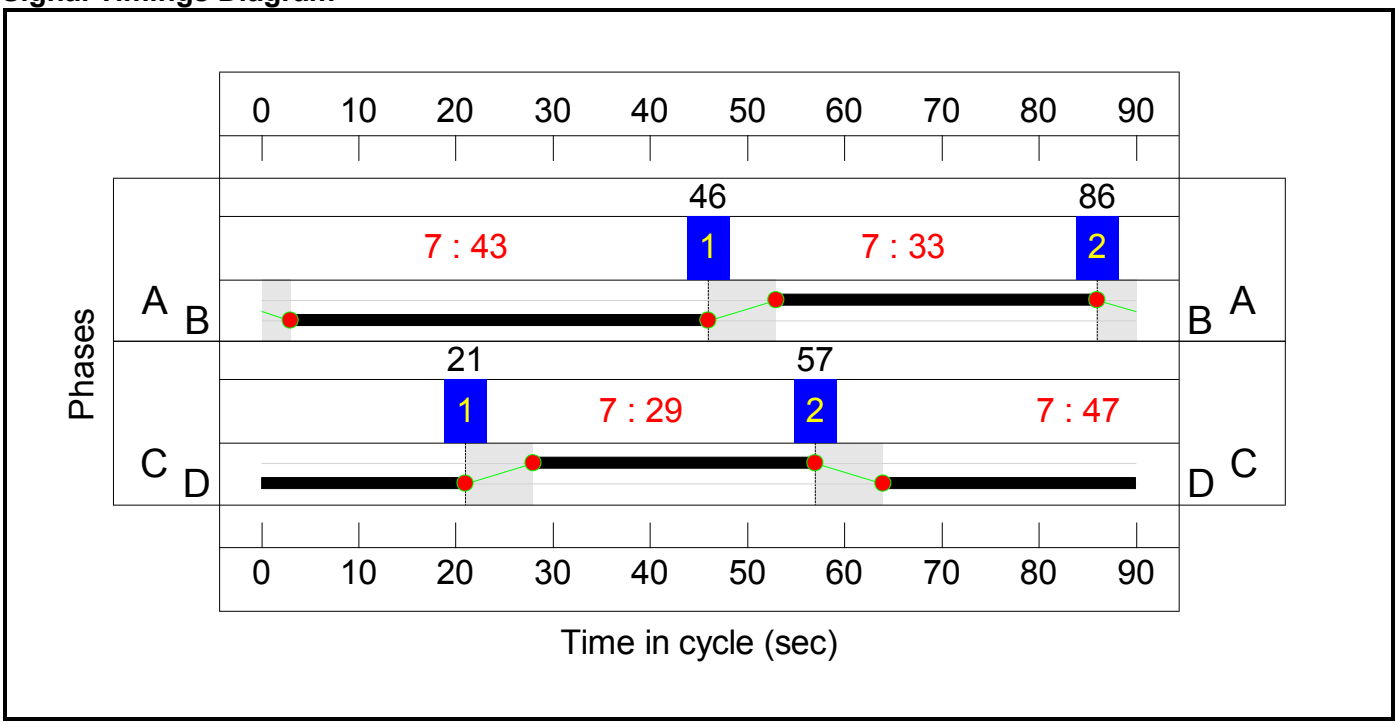
Stage	1	2
Duration	33	43
Change Point	46	86

Stage Stream: 2

Stage	1	2
Duration	29	47
Change Point	21	57

Full Input Data And Results

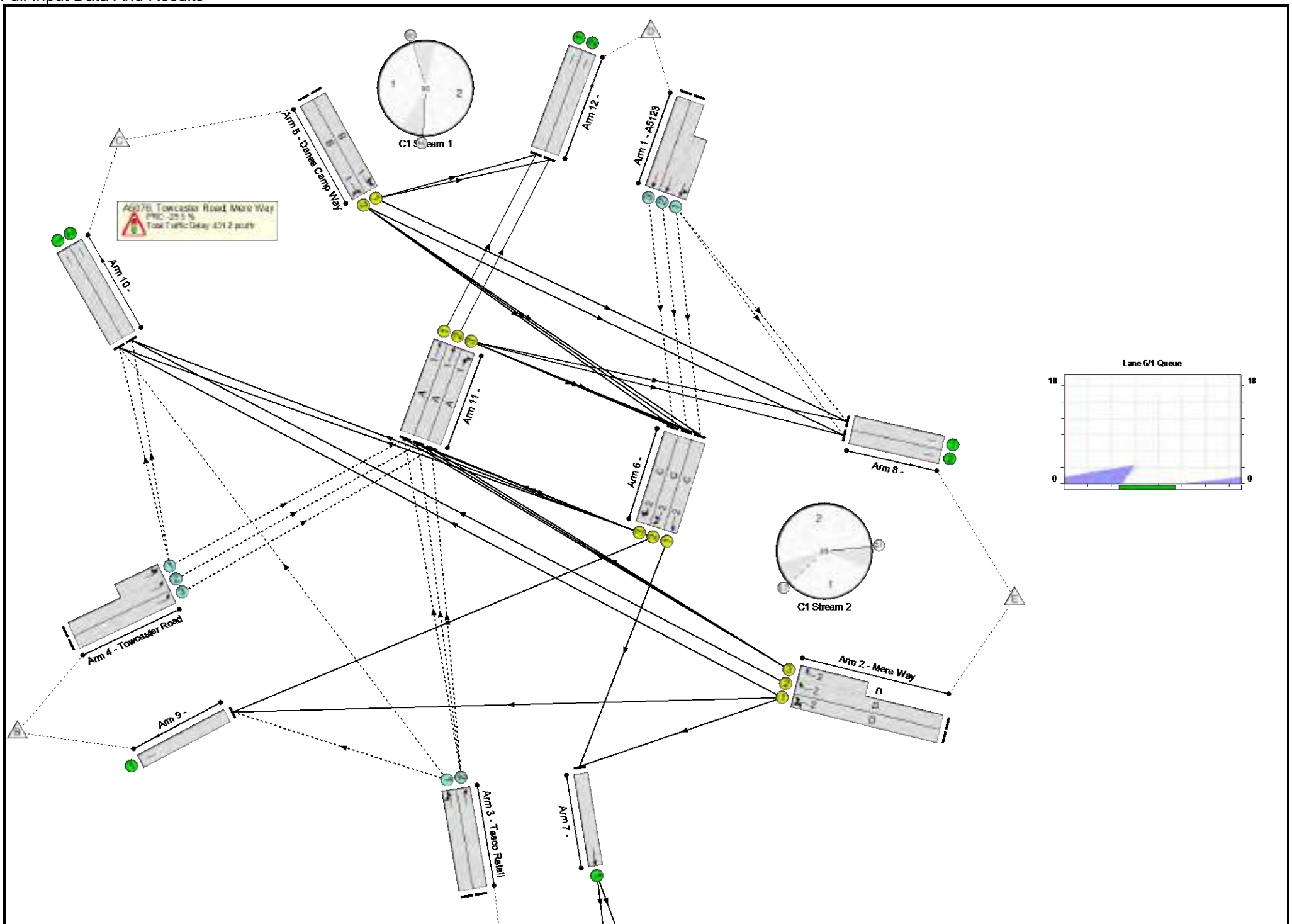
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.5%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.5%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	409	1940:1877	0+361	0.0 : 113.2%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	186	1893	356	52.3%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	47	-	1083	1884	1005	107.8%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	47	-	1427	2025:2027	824+423	114.4 : 114.4%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	193	1874	425	45.4%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	245	1887	368	66.5%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	130	1885:1872	72+352	30.7 : 30.7%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	318	1885	283	112.2%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	43	-	1108	1946	951	116.5%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	43	-	1119	1964	960	116.5%
6/1	Ahead	U	2	N/A	C		1	29	-	212	1872	624	29.6%
6/2	Ahead Right	U	2	N/A	C		1	29	-	151	1872	624	20.8%
6/3	Right U-Turn	U	2	N/A	C		1	29	-	190	1868	623	30.4%
7/1	Ahead	U	N/A	N/A	-		-	-	-	326	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1476	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1256	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	797	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1180	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	33	-	291	1893	715	36.6%
11/2	Ahead	U	1	N/A	A		1	33	-	289	1893	715	36.3%
11/3	U-Turn Right	U	1	N/A	A		1	33	-	502	1882	711	66.1%
12/1		U	N/A	N/A	-		-	-	-	310	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	309	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	162	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1294**	**596**	**0**	**74.9**	**356.2**	**0.0**	**431.2**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1294**	**596**	**0**	**74.9**	**356.2**	**0.0**	**431.2**	**-**	**-**	**-**	**-**
1/2+1/1	409	361	368	355	0	5.3	27.6	-	32.9	289.5	29.9	27.6	57.5
1/3	186	186	107	79	0	0.7	0.5	-	1.3	25.0	3.5	0.5	4.0
2/1	1083	1005	-	-	-	10.2	45.1	-	55.3	184.0	29.0	45.1	74.1
2/2+2/3	1427	1247	-	-	-	16.4	93.7	-	110.2	277.9	38.4	93.7	132.1
3/1	193	193	113	80	0	0.9	0.4	-	1.3	24.0	3.3	0.4	3.7
3/2	245	245	162	83	0	1.4	1.0	-	2.4	34.7	5.0	1.0	5.9
4/2+4/1	130	130	260	0	0	0.5	0.2	-	0.8	21.0	1.9	0.2	2.1
4/3	318	283	283	0	0	3.7	21.1	-	24.8	280.2	17.8	21.1	38.9
5/1	1108	951	-	-	-	13.8	81.7	-	95.5	310.2	31.6	81.7	113.3
5/2	1119	960	-	-	-	13.9	82.8	-	96.7	311.1	31.9	82.8	114.7
6/1	185	185	-	-	-	1.0	0.2	-	1.2	24.1	3.4	0.2	3.6
6/2	130	130	-	-	-	0.2	0.1	-	0.3	7.9	1.4	0.1	1.5
6/3	189	189	-	-	-	2.3	0.2	-	2.5	46.9	4.3	0.2	4.5
7/1	291	291	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1291	1291	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1101	1101	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	516	516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	753	753	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1061	1061	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	261	261	-	-	-	1.6	0.3	-	1.9	26.4	4.2	0.3	4.5
11/2	259	259	-	-	-	1.6	0.3	-	1.9	26.8	4.2	0.3	4.5
11/3	470	470	-	-	-	1.4	1.0	-	2.4	18.0	11.4	1.0	12.4
12/1	278	278	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

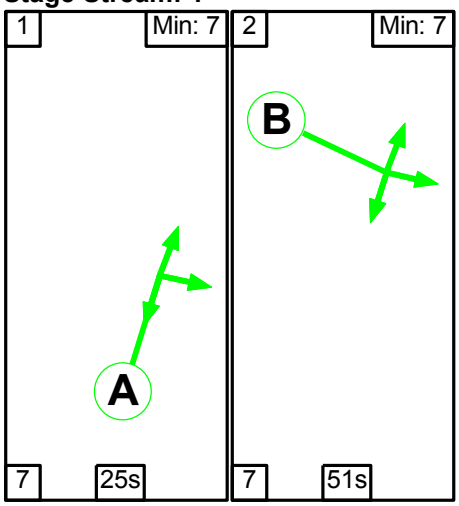
12/2	277	277	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	146	146	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	144	144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -29.5 Total Delay for Signalled Lanes (pcuHr): 198.37 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -27.1 Total Delay for Signalled Lanes (pcuHr): 169.48 Cycle Time (s): 90
PRC Over All Lanes (%): -29.5 Total Delay Over All Lanes(pcuHr): 431.19

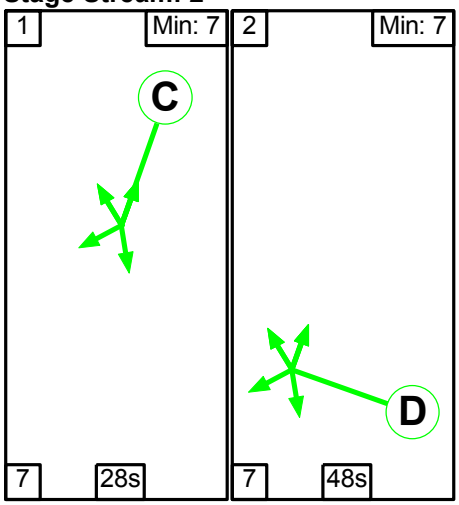
Full Input Data And Results
Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

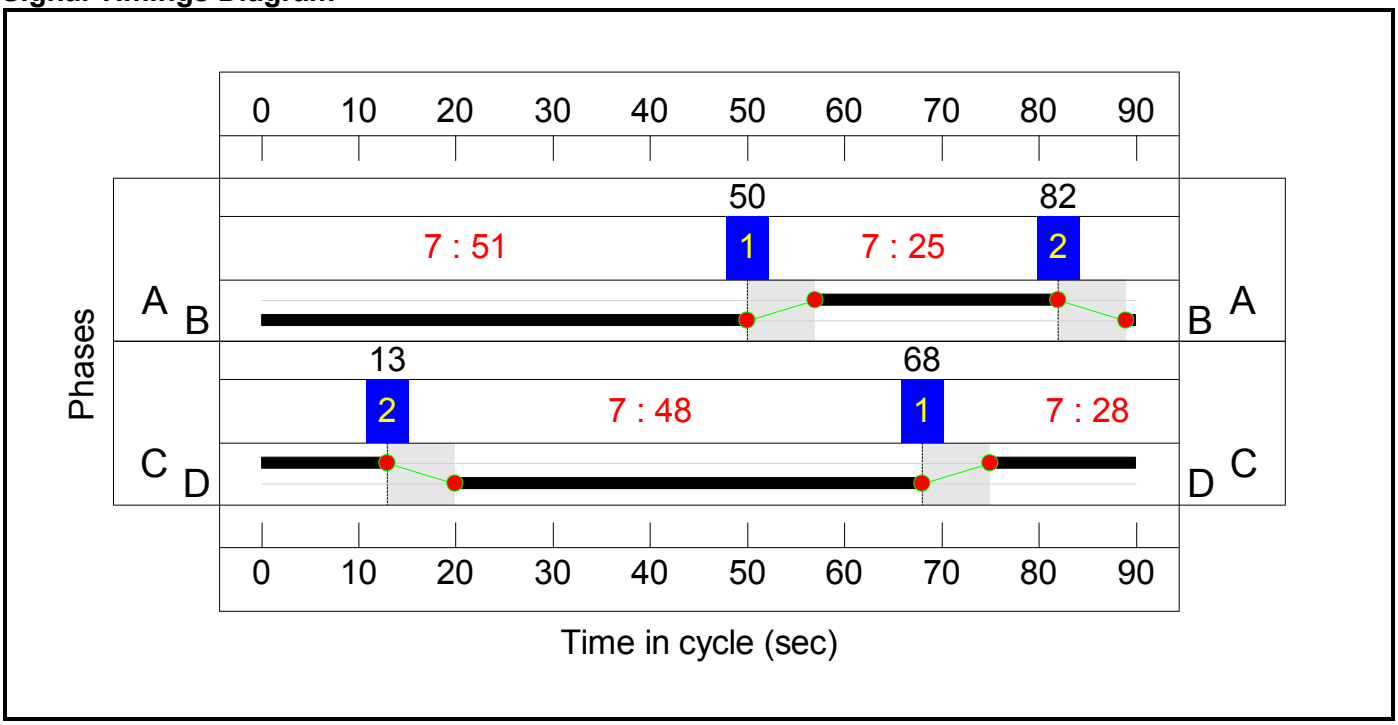
Stage	1	2
Duration	25	51
Change Point	50	82

Stage Stream: 2

Stage	1	2
Duration	28	48
Change Point	68	13

Full Input Data And Results

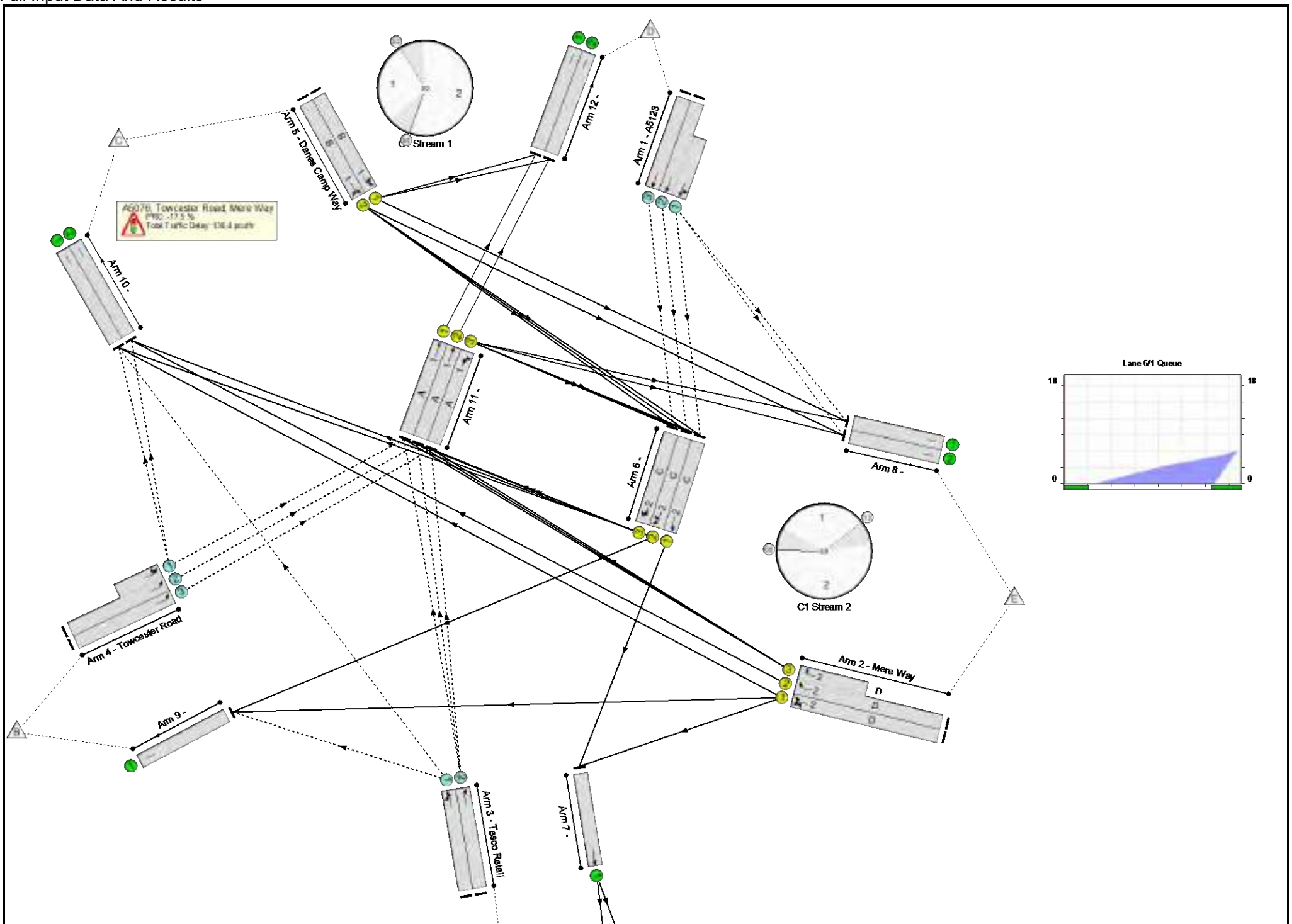
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.7%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.7%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	332	1940:1879	0+344	0.0 : 96.6%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	161	1893	328	49.1%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	48	-	1021	1882	1025	99.6%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	48	-	1248	2025:2027	950+244	104.5 : 104.5%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	336	1874	392	85.8%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	235	1887	354	66.4%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	328	1885:1874	143+304	73.3 : 73.3%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	266	1885	252	105.7%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	51	-	1026	1948	1126	91.2%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	51	-	1035	1964	1135	91.2%
6/1	Ahead	U	2	N/A	C		1	28	-	308	1872	603	50.7%
6/2	Ahead Right	U	2	N/A	C		1	28	-	194	1872	603	32.2%
6/3	Right U-Turn	U	2	N/A	C		1	28	-	161	1868	602	26.7%
7/1	Ahead	U	N/A	N/A	-		-	-	-	447	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1204	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	974	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	559	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	937	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	25	-	249	1893	547	44.5%
11/2	Ahead	U	1	N/A	A		1	25	-	252	1893	547	45.1%
11/3	U-Turn Right	U	1	N/A	A		1	25	-	416	1882	544	73.9%
12/1		U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	317	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1713**	**591**	**0**	**48.3**	**88.1**	**0.0**	**136.4**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1713**	**591**	**0**	**48.3**	**88.1**	**0.0**	**136.4**	**-**	**-**	**-**	**-**
1/2+1/1	332	332	321	343	0	2.2	6.7	-	8.8	95.9	8.1	6.7	14.8
1/3	161	161	85	76	0	0.7	0.5	-	1.1	25.6	2.5	0.5	3.0
2/1	1021	1021	-	-	-	5.8	15.1	-	20.9	73.6	25.2	15.1	40.3
2/2+2/3	1248	1194	-	-	-	8.6	35.8	-	44.4	128.0	32.4	35.8	68.2
3/1	336	336	247	89	0	2.2	2.7	-	4.9	52.5	7.7	2.7	10.4
3/2	235	235	153	82	0	1.4	1.0	-	2.4	36.1	4.8	1.0	5.8
4/2+4/1	328	328	656	0	0	1.8	1.3	-	3.1	34.5	4.8	1.3	6.1
4/3	266	252	252	0	0	2.7	12.5	-	15.2	205.6	18.2	12.5	30.7
5/1	1026	1026	-	-	-	4.8	4.7	-	9.5	33.5	22.8	4.7	27.5
5/2	1035	1035	-	-	-	4.9	4.7	-	9.6	33.4	23.0	4.7	27.7
6/1	306	306	-	-	-	2.1	0.5	-	2.6	31.0	5.9	0.5	6.5
6/2	194	194	-	-	-	2.0	0.2	-	2.3	42.2	4.1	0.2	4.4
6/3	161	161	-	-	-	0.5	0.2	-	0.7	15.7	3.2	0.2	3.4
7/1	445	445	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1198	1198	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	968	968	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	559	559	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	937	937	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1194	1194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	243	243	-	-	-	1.9	0.4	-	2.3	34.1	4.9	0.4	5.3
11/2	246	246	-	-	-	1.8	0.4	-	2.2	32.6	4.6	0.4	5.0
11/3	402	402	-	-	-	4.9	1.4	-	6.3	56.3	8.5	1.4	9.9
12/1	307	307	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

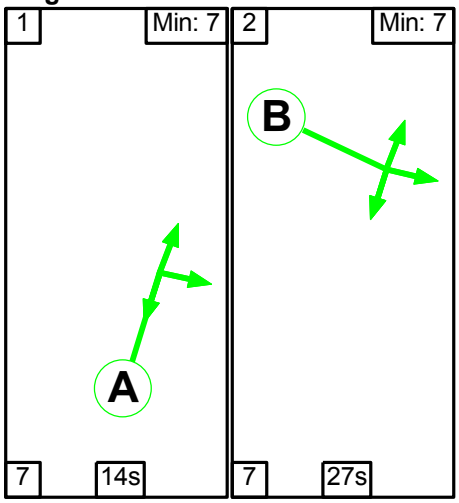
12/2	311	311	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	222	222	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -1.3 Total Delay for Signalled Lanes (pcuHr): 29.98 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): -16.1 Total Delay for Signalled Lanes (pcuHr): 70.85 Cycle Time (s): 90
PRC Over All Lanes (%): -17.5 Total Delay Over All Lanes(pcuHr): 136.41

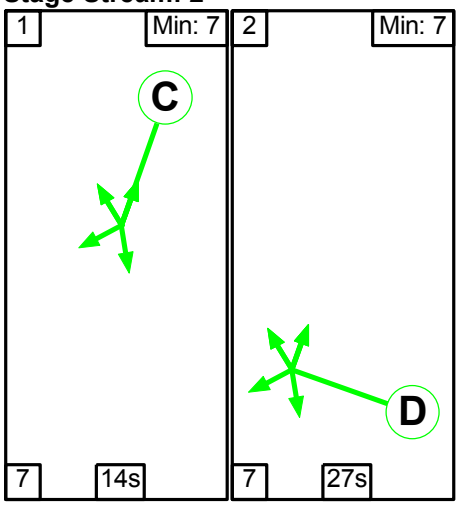
Full Input Data And Results
Scenario 5: '2021 DS2 AM' (FG5: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

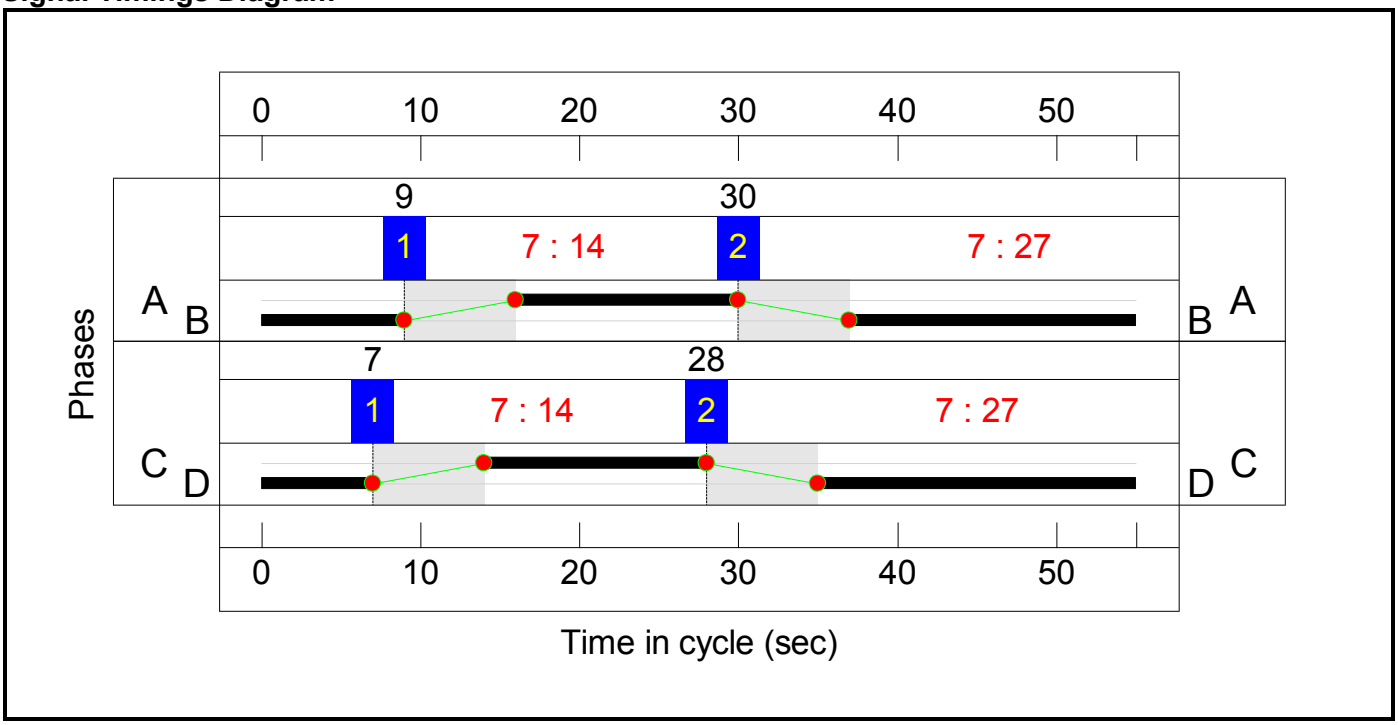
Stage	1	2
Duration	14	27
Change Point	9	30

Stage Stream: 2

Stage	1	2
Duration	14	27
Change Point	7	28

Full Input Data And Results

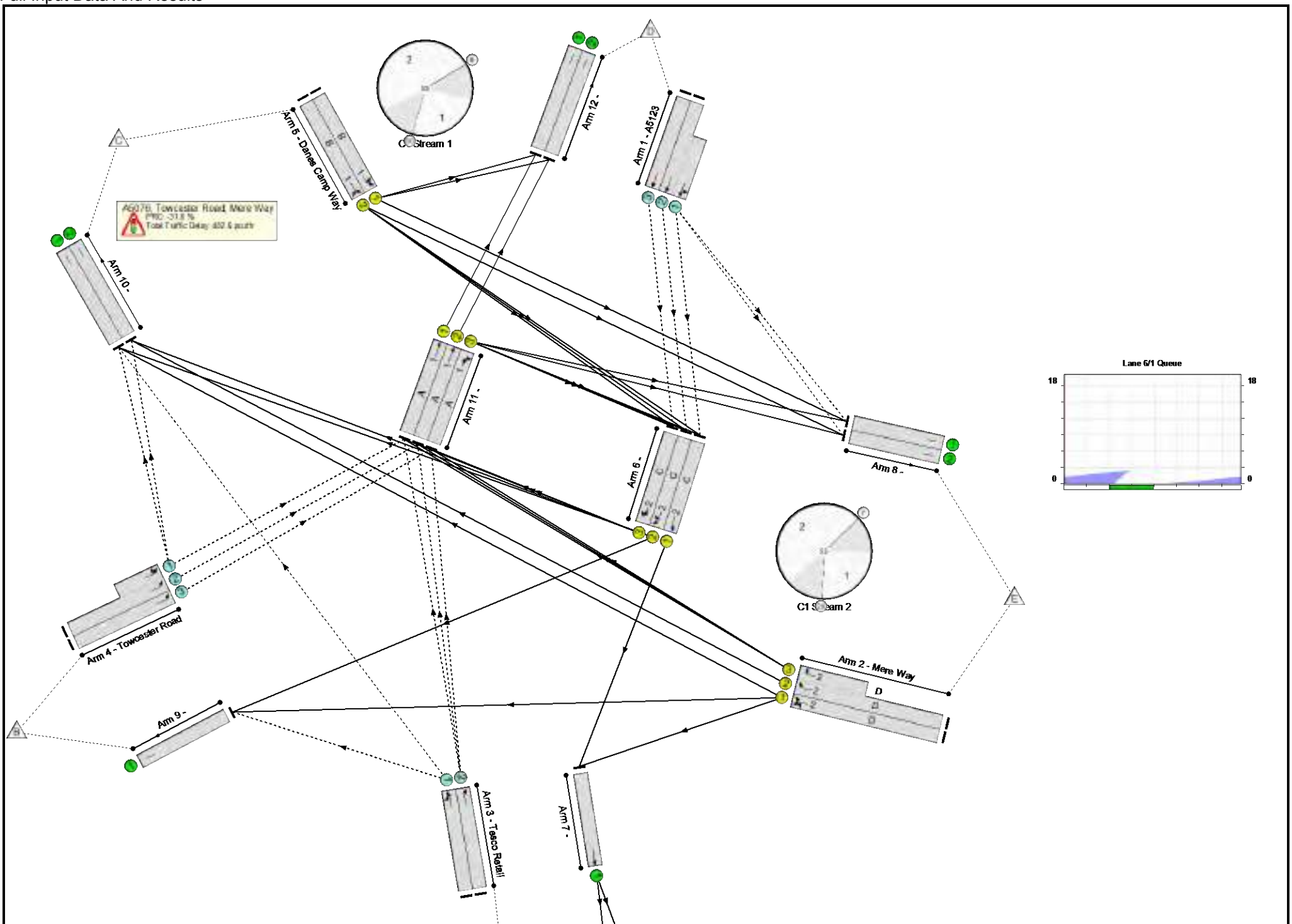
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**118.4%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**118.4%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	396	1940:1877	0+336	0.0 : 117.8%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	197	1893	334	59.0%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	27	-	1134	1883	959	118.3%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	27	-	1495	2025:2027	885+377	118.4 : 118.4%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	194	1873	452	42.9%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	245	1887	392	62.6%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	175	1885:1873	83+369	38.8 : 38.8%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	351	1885	306	114.6%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	27	-	1133	1946	991	114.4%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	27	-	1143	1964	1000	114.3%
6/1	Ahead	U	2	N/A	C		1	14	-	212	1872	511	35.9%
6/2	Ahead Right	U	2	N/A	C		1	14	-	137	1871	510	23.5%
6/3	Right U-Turn	U	2	N/A	C		1	14	-	208	1868	509	40.6%
7/1	Ahead	U	N/A	N/A	-		-	-	-	326	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1498	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1291	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	504	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	905	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1314	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	14	-	291	1893	516	49.6%
11/2	Ahead	U	1	N/A	A		1	14	-	290	1893	516	49.5%
11/3	U-Turn Right	U	1	N/A	A		1	14	-	521	1882	513	92.8%
12/1		U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	162	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1084**	**880**	**0**	**54.3**	**428.3**	**0.0**	**482.6**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1084**	**880**	**0**	**54.3**	**428.3**	**0.0**	**482.6**	**-**	**-**	**-**	**-**
1/2+1/1	396	336	189	483	0	2.9	33.0	-	35.9	326.3	13.6	33.0	46.6
1/3	197	197	66	131	0	0.5	0.7	-	1.2	22.0	2.0	0.7	2.7
2/1	1134	959	-	-	-	9.8	90.8	-	100.6	319.5	20.0	90.8	110.8
2/2+2/3	1495	1262	-	-	-	12.4	119.4	-	131.8	317.4	25.4	119.4	144.8
3/1	194	194	64	130	0	0.5	0.4	-	0.9	15.9	1.9	0.4	2.3
3/2	245	245	109	136	0	0.7	0.8	-	1.5	22.5	2.9	0.8	3.7
4/2+4/1	175	175	350	0	0	0.4	0.3	-	0.7	15.0	1.4	0.3	1.7
4/3	351	306	306	0	0	2.5	25.8	-	28.3	290.4	12.3	25.8	38.1
5/1	1133	991	-	-	-	8.7	74.9	-	83.6	265.7	19.5	74.9	94.4
5/2	1143	1000	-	-	-	8.8	75.4	-	84.1	265.0	19.6	75.4	95.0
6/1	183	183	-	-	-	0.8	0.3	-	1.1	22.1	2.3	0.3	2.6
6/2	120	120	-	-	-	0.4	0.2	-	0.5	16.4	1.7	0.2	1.9
6/3	207	207	-	-	-	0.7	0.3	-	1.0	17.9	1.2	0.3	1.6
7/1	280	280	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1316	1316	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1135	1135	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	438	438	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	796	796	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1150	1150	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	256	256	-	-	-	1.3	0.5	-	1.8	24.9	3.5	0.5	4.0
11/2	255	255	-	-	-	1.3	0.5	-	1.8	24.9	3.6	0.5	4.1
11/3	476	476	-	-	-	2.6	5.1	-	7.7	57.8	6.5	5.1	11.5
12/1	275	275	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

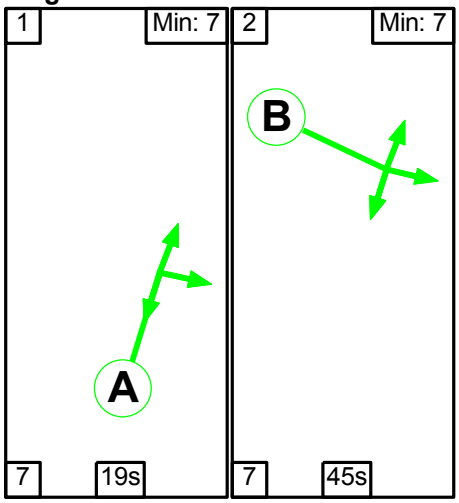
12/2	275	275	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	141	141	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	139	139	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-27.1	Total Delay for Signalled Lanes (pcuHr):	178.95	Cycle Time (s):	55
C1	Stream: 2 PRC for Signalled Lanes (%):	-31.6	Total Delay for Signalled Lanes (pcuHr):	235.15	Cycle Time (s):	55
	PRC Over All Lanes (%):	-31.6	Total Delay Over All Lanes(pcuHr):	482.62		

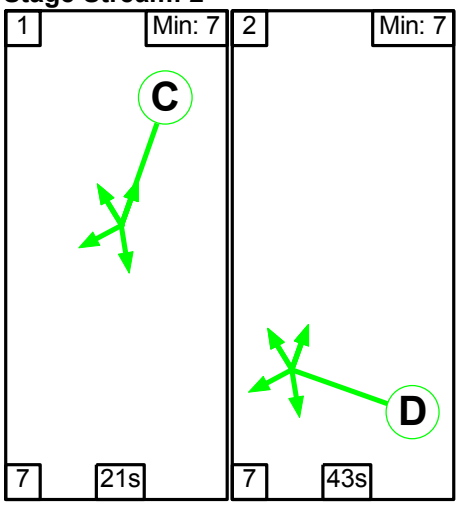
Full Input Data And Results
Scenario 6: '2021 DS2 PM' (FG6: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

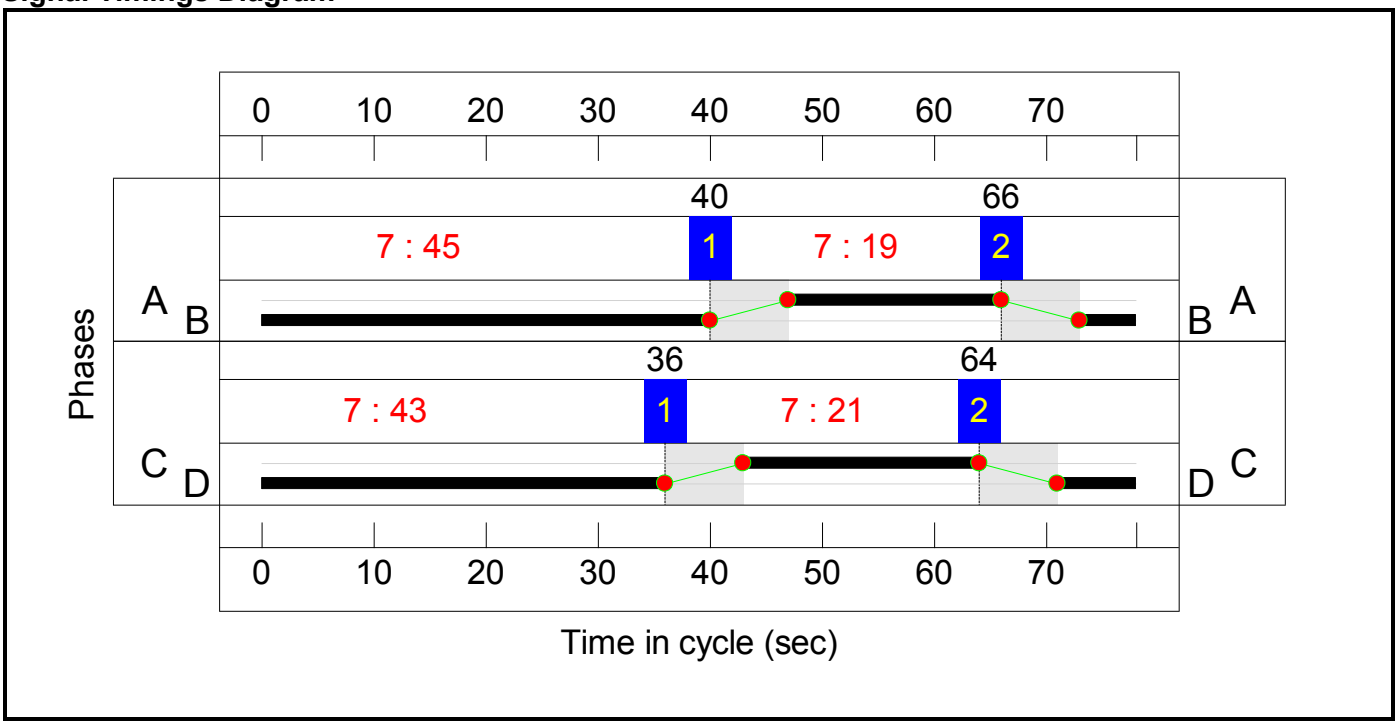
Stage	1	2
Duration	19	45
Change Point	40	66

Stage Stream: 2

Stage	1	2
Duration	21	43
Change Point	36	64

Full Input Data And Results

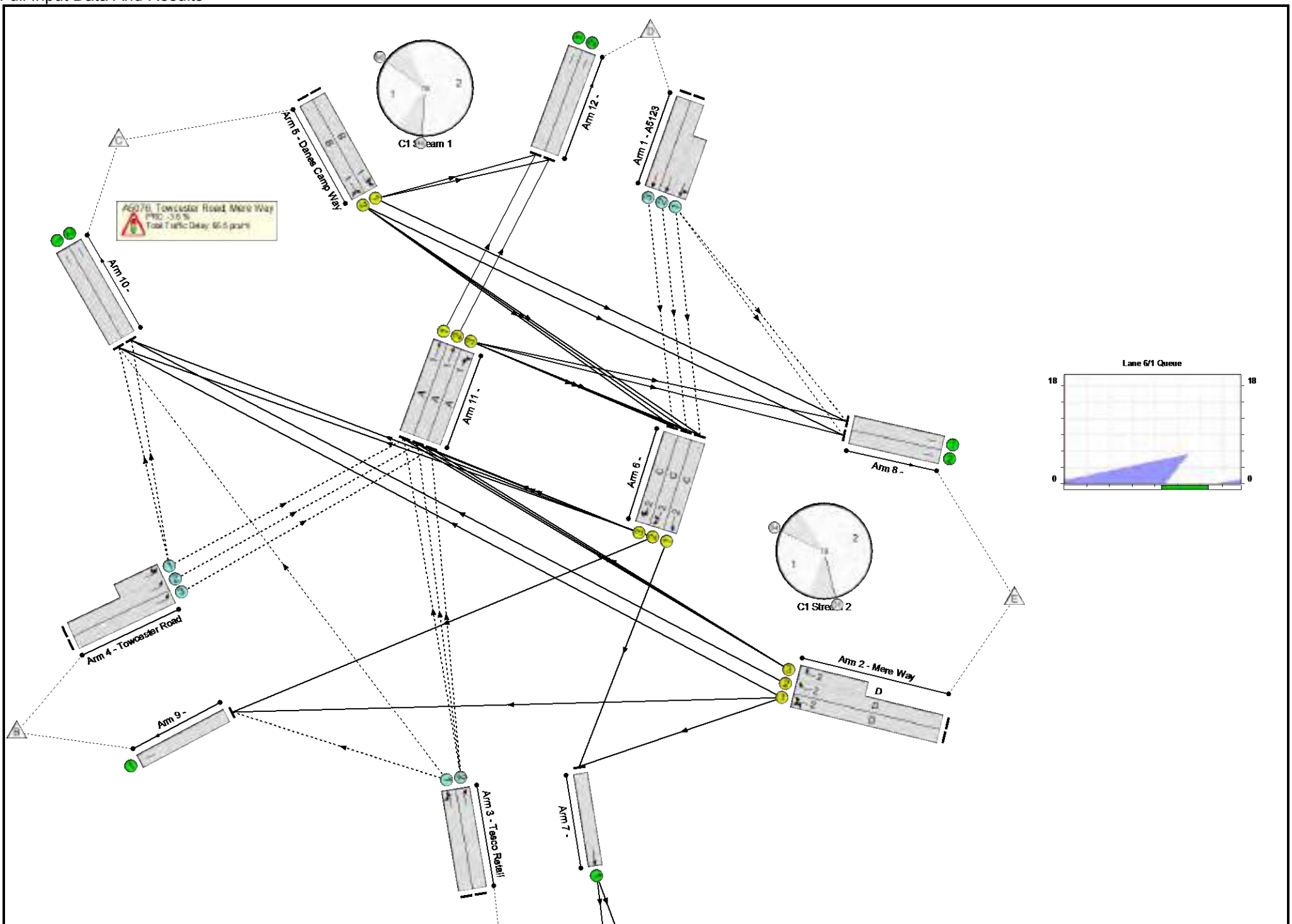
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.2%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.2%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	246	1893:1883	75+335	59.9 : 59.9%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	74	1893	298	24.8%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	43	-	907	1883	1062	85.4%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	43	-	1170	2025:2027	967+299	92.5 : 92.5%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	336	1874	428	78.4%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	235	1887	362	64.8%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	260	1885:1873	117+374	52.9 : 52.9%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	279	1885	306	91.3%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	45	-	1069	1948	1149	93.1%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	45	-	1080	1964	1158	93.2%
6/1	Ahead	U	2	N/A	C		1	21	-	308	1872	528	58.3%
6/2	Ahead Right	U	2	N/A	C		1	21	-	286	1871	528	54.2%
6/3	Right U-Turn	U	2	N/A	C		1	21	-	75	1868	527	14.2%
7/1	Ahead	U	N/A	N/A	-		-	-	-	448	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1190	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	912	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	616	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	851	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1047	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	19	-	233	1893	485	48.0%
11/2	Ahead	U	1	N/A	A		1	19	-	233	1893	485	48.0%
11/3	U-Turn Right	U	1	N/A	A		1	19	-	428	1882	483	88.7%
12/1		U	N/A	N/A	-		-	-	-	296	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	296	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1439**	**497**	**0**	**32.4**	**34.0**	**0.0**	**66.5**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1439**	**497**	**0**	**32.4**	**34.0**	**0.0**	**66.5**	**-**	**-**	**-**	**-**
1/2+1/1	246	246	219	273	0	1.0	0.7	-	1.7	25.4	3.2	0.7	4.0
1/3	74	74	48	26	0	0.3	0.2	-	0.4	20.3	1.0	0.2	1.1
2/1	907	907	-	-	-	3.6	2.8	-	6.4	25.5	16.4	2.8	19.2
2/2+2/3	1170	1170	-	-	-	4.4	5.5	-	9.9	30.6	20.2	5.5	25.7
3/1	336	336	233	103	0	1.4	1.8	-	3.2	34.1	6.3	1.8	8.0
3/2	235	235	140	95	0	1.0	0.9	-	1.9	28.6	4.2	0.9	5.1
4/2+4/1	260	260	520	0	0	0.8	0.6	-	1.4	19.2	3.0	0.6	3.5
4/3	279	279	279	0	0	1.5	4.0	-	5.5	71.1	5.7	4.0	9.7
5/1	1069	1069	-	-	-	4.3	5.8	-	10.2	34.2	20.8	5.8	26.6
5/2	1080	1080	-	-	-	4.4	6.0	-	10.4	34.5	21.3	6.0	27.3
6/1	308	308	-	-	-	1.9	0.7	-	2.6	29.9	5.4	0.7	6.1
6/2	286	286	-	-	-	1.8	0.6	-	2.4	29.8	6.0	0.6	6.6
6/3	75	75	-	-	-	0.2	0.1	-	0.3	15.1	0.4	0.1	0.5
7/1	448	448	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1190	1190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	912	912	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	616	616	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	851	851	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1047	1047	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	233	233	-	-	-	1.6	0.5	-	2.1	32.2	4.5	0.5	5.0
11/2	233	233	-	-	-	1.7	0.5	-	2.1	32.8	4.6	0.5	5.1
11/3	428	428	-	-	-	2.6	3.5	-	6.1	50.9	8.0	3.5	11.5
12/1	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

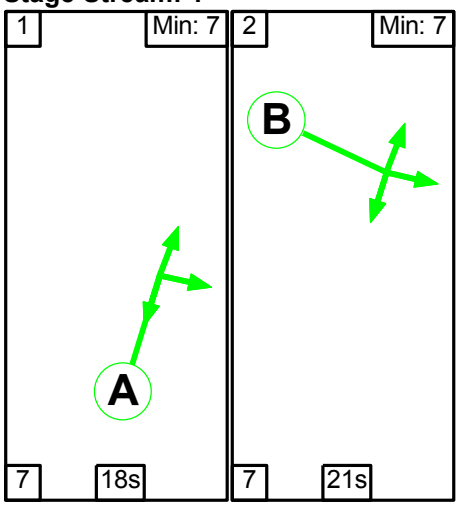
12/2	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-3.6	Total Delay for Signalled Lanes (pcuHr):	30.78	Cycle Time (s):	78
C1	Stream: 2 PRC for Signalled Lanes (%):	-2.7	Total Delay for Signalled Lanes (pcuHr):	21.59	Cycle Time (s):	78
	PRC Over All Lanes (%):	-3.6	Total Delay Over All Lanes(pcuHr):	66.47		

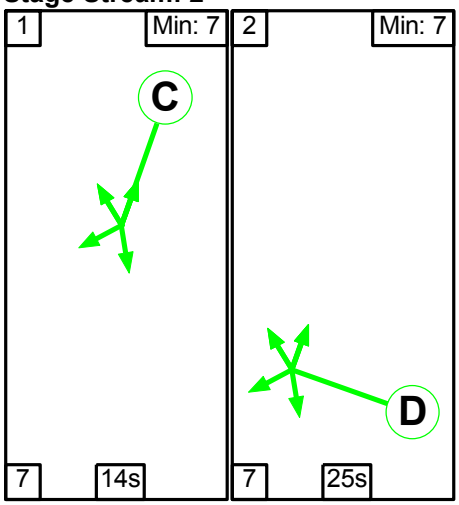
Full Input Data And Results
Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

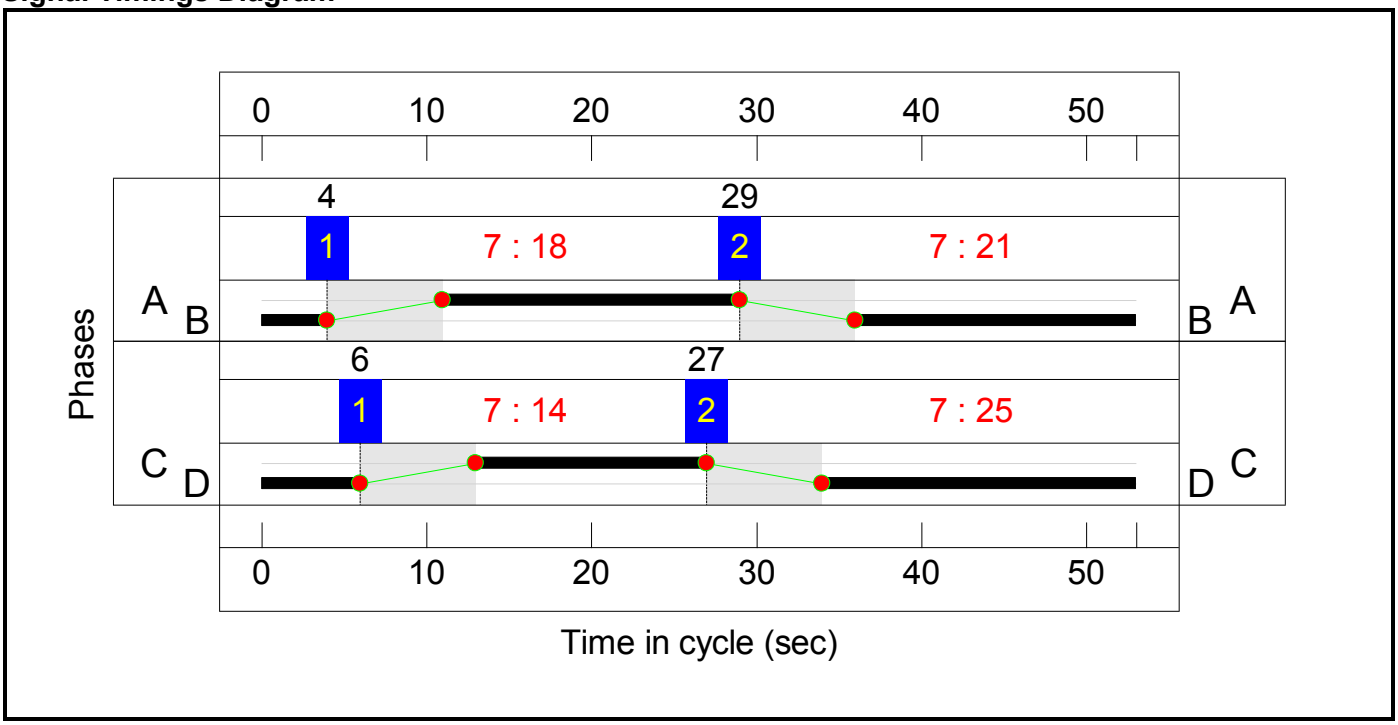
Stage	1	2
Duration	18	21
Change Point	4	29

Stage Stream: 2

Stage	1	2
Duration	14	25
Change Point	6	27

Full Input Data And Results

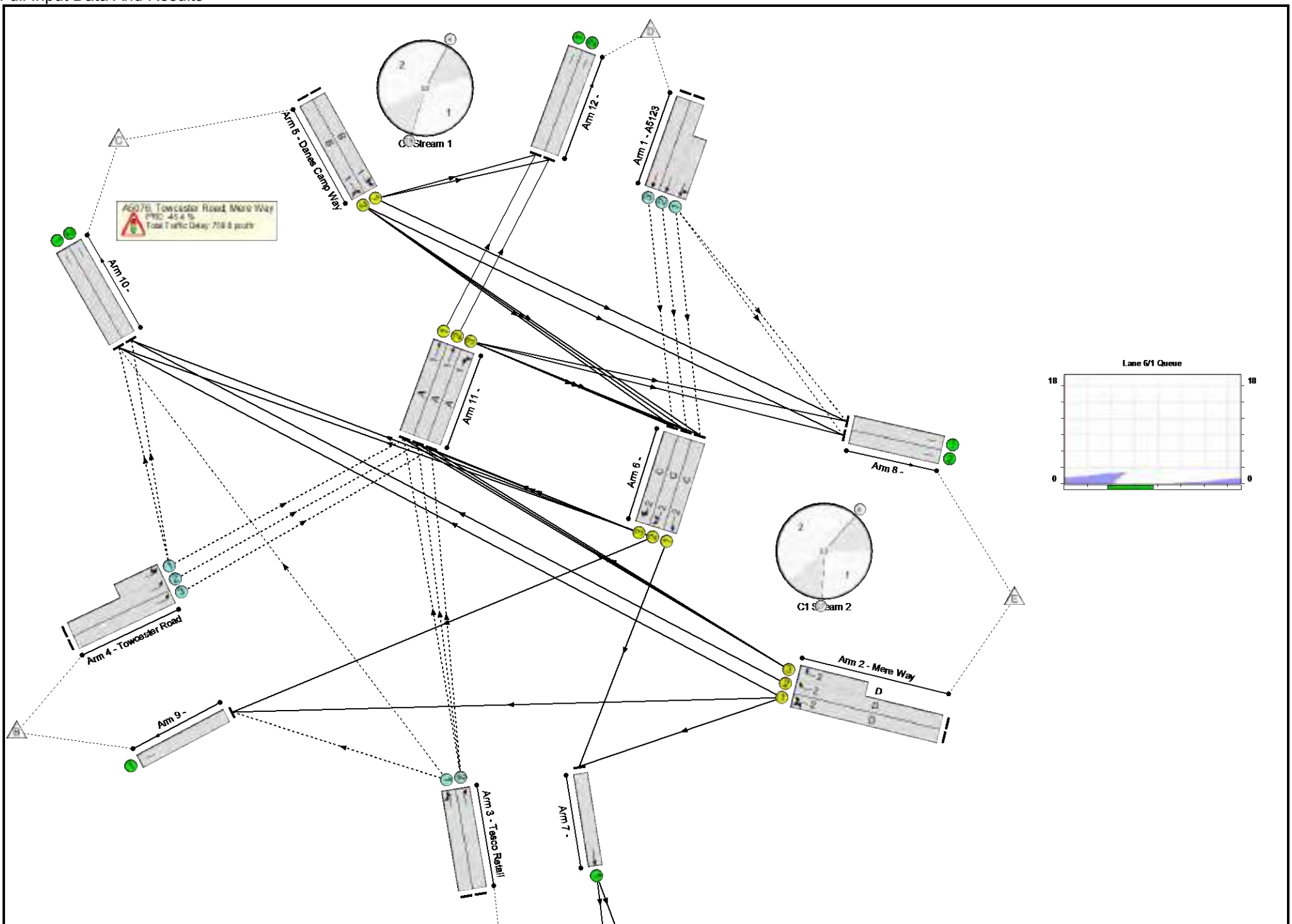
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**130.9%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**130.9%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	472	1940:1877	0+385	0.0 : 122.6%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	137	1893	404	33.9%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	25	-	1203	1884	924	130.2%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	25	-	1664	2025:2027	842+438	130.0 : 130.0%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	191	1874	476	40.1%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	252	1887	435	58.0%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	381	1885:1873	148+400	69.5 : 69.5%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	448	1885	342	130.9%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	21	-	1048	1946	808	129.7%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	21	-	1058	1964	815	129.8%
6/1	Ahead	U	2	N/A	C		1	14	-	213	1872	530	31.6%
6/2	Ahead Right	U	2	N/A	C		1	14	-	134	1871	530	19.5%
6/3	Right U-Turn	U	2	N/A	C		1	14	-	153	1868	529	28.2%
7/1	Ahead	U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1519	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1311	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	576	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	948	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1358	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	18	-	381	1893	679	47.1%
11/2	Ahead	U	1	N/A	A		1	18	-	386	1893	679	47.9%
11/3	U-Turn Right	U	1	N/A	A		1	18	-	662	1881	674	81.2%
12/1		U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	410	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	165	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1584**	**870**	**0**	**70.7**	**688.3**	**0.0**	**759.0**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1584**	**870**	**0**	**70.7**	**688.3**	**0.0**	**759.0**	**-**	**-**	**-**	**-**
1/2+1/1	472	385	264	506	0	3.4	46.1	-	49.6	378.1	15.6	46.1	61.7
1/3	137	137	49	88	0	0.2	0.3	-	0.5	12.0	1.0	0.3	1.2
2/1	1203	924	-	-	-	13.1	141.5	-	154.6	462.6	22.9	141.5	164.4
2/2+2/3	1664	1280	-	-	-	17.3	194.1	-	211.4	457.3	28.7	194.1	222.7
3/1	191	191	56	135	0	0.4	0.3	-	0.8	14.2	1.7	0.3	2.0
3/2	252	252	110	142	0	0.7	0.7	-	1.3	19.1	2.7	0.7	3.4
4/2+4/1	381	381	762	0	0	1.0	1.1	-	2.2	20.5	3.2	1.1	4.4
4/3	448	342	342	0	0	4.2	54.9	-	59.1	474.8	15.1	54.9	70.0
5/1	1048	808	-	-	-	11.9	122.3	-	134.1	460.8	20.5	122.3	142.7
5/2	1058	815	-	-	-	12.0	123.5	-	135.5	461.1	20.7	123.5	144.2
6/1	168	168	-	-	-	0.7	0.2	-	0.9	19.9	2.1	0.2	2.3
6/2	103	103	-	-	-	0.4	0.1	-	0.5	16.6	1.5	0.1	1.6
6/3	149	149	-	-	-	0.4	0.2	-	0.6	15.2	1.1	0.2	1.3
7/1	256	256	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1198	1198	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1038	1038	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	787	787	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1102	1102	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	320	320	-	-	-	1.3	0.4	-	1.7	19.1	3.8	0.4	4.2
11/2	325	325	-	-	-	1.2	0.5	-	1.6	18.0	3.9	0.5	4.3
11/3	547	547	-	-	-	2.6	2.1	-	4.6	30.5	6.3	2.1	8.4
12/1	338	338	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

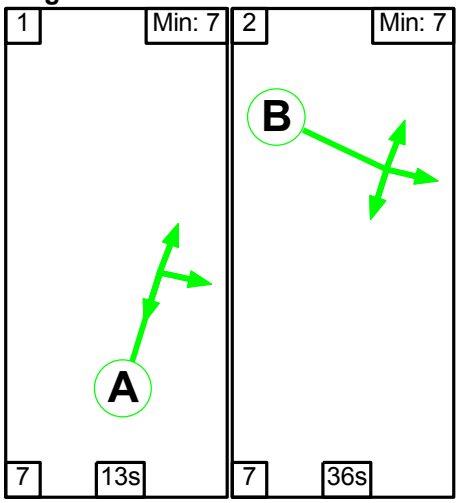
12/2	343	343	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	129	129	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	127	127	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-44.2	Total Delay for Signalled Lanes (pcuHr):	277.62	Cycle Time (s):	53
C1	Stream: 2 PRC for Signalled Lanes (%):	-44.6	Total Delay for Signalled Lanes (pcuHr):	368.00	Cycle Time (s):	53
	PRC Over All Lanes (%):	-45.4	Total Delay Over All Lanes(pcuHr):	758.99		

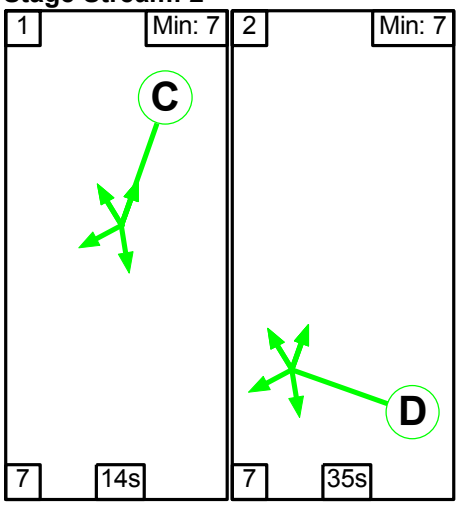
Full Input Data And Results
Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

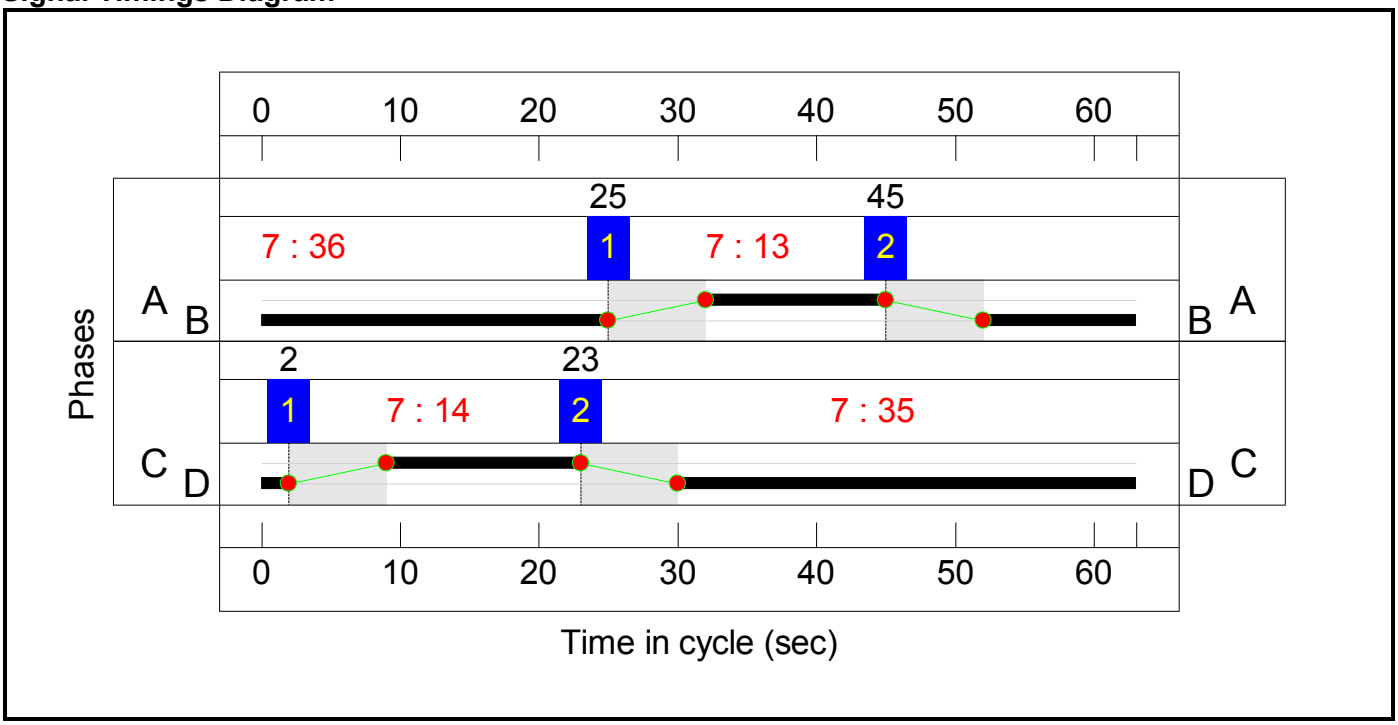
Stage	1	2
Duration	13	36
Change Point	25	45

Stage Stream: 2

Stage	1	2
Duration	14	35
Change Point	2	23

Full Input Data And Results

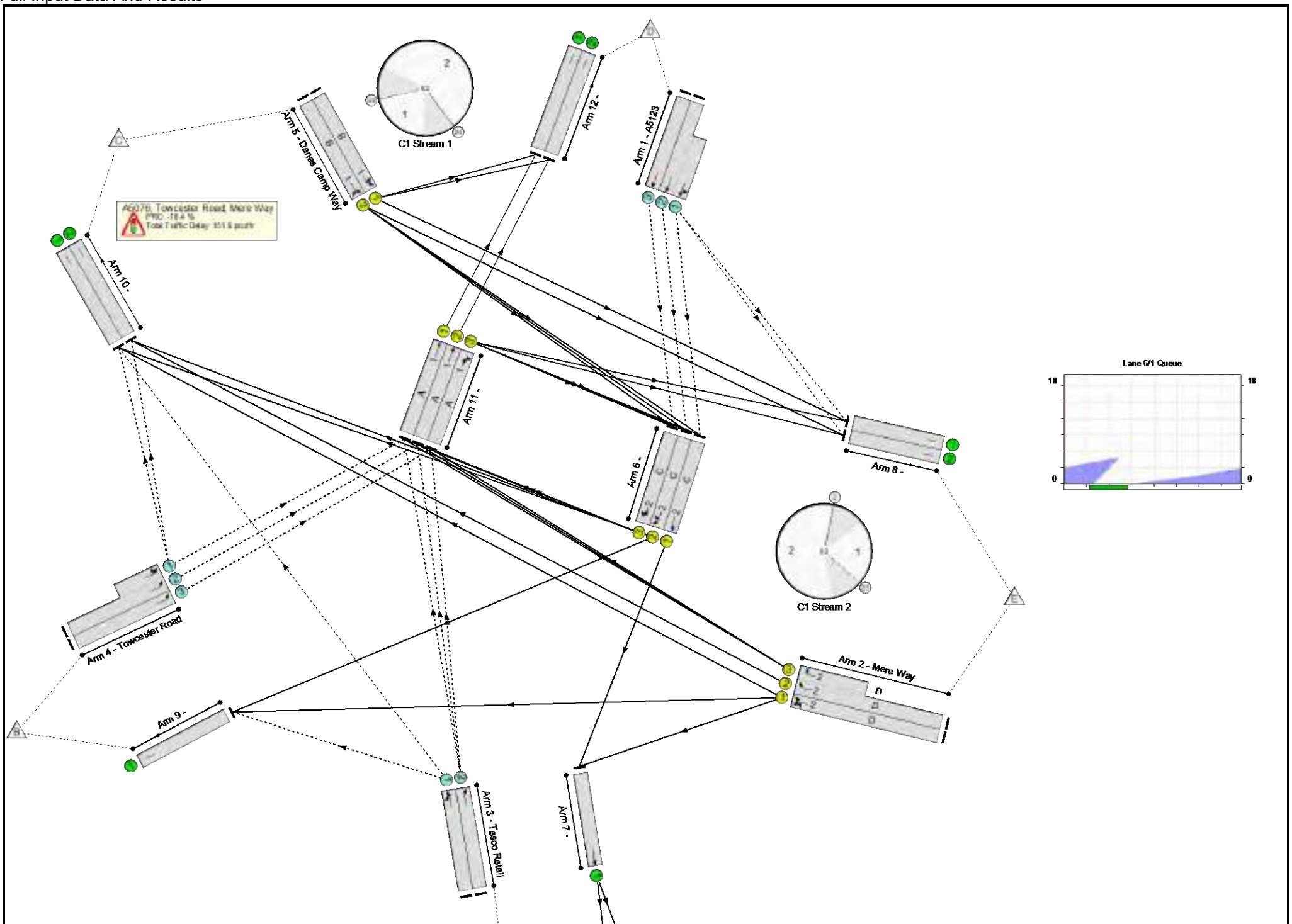
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.6%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.6%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	480	1893:1879	122+367	98.0 : 98.0%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	183	1893	354	51.8%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	35	-	1098	1886	1078	101.9%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	35	-	1395	2025:2027	1001+308	106.6 : 106.6%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	338	1873	318	106.4%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	238	1887	278	85.7%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	319	1885:1871	194+359	57.6 : 57.6%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	175	1885	248	70.7%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	36	-	1020	1948	1144	89.2%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	36	-	1027	1964	1153	89.0%
6/1	Ahead	U	2	N/A	C		1	14	-	308	1872	446	69.1%
6/2	Ahead Right	U	2	N/A	C		1	14	-	336	1872	446	75.4%
6/3	Right U-Turn	U	2	N/A	C		1	14	-	189	1868	445	42.5%
7/1	Ahead	U	N/A	N/A	-		-	-	-	448	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1149	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	906	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	882	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	849	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1354	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	13	-	258	1893	421	58.9%
11/2	Ahead	U	1	N/A	A		1	13	-	279	1893	421	64.0%
11/3	U-Turn Right	U	1	N/A	A		1	13	-	326	1882	418	77.9%
12/1		U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	353	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1551**	**960**	**0**	**36.0**	**115.7**	**0.0**	**151.6**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1551**	**960**	**0**	**36.0**	**115.7**	**0.0**	**151.6**	**-**	**-**	**-**	**-**
1/2+1/1	480	480	435	525	0	1.9	8.7	-	10.7	80.2	6.2	8.7	14.9
1/3	183	183	89	94	0	0.5	0.5	-	1.1	21.0	2.1	0.5	2.6
2/1	1098	1078	-	-	-	4.9	22.4	-	27.3	89.5	19.6	22.4	42.0
2/2+2/3	1395	1309	-	-	-	8.0	50.0	-	57.9	149.5	25.6	50.0	75.6
3/1	338	318	127	190	0	2.3	15.6	-	17.9	191.1	14.6	15.6	30.2
3/2	238	238	87	151	0	1.2	2.7	-	3.8	57.6	3.9	2.7	6.6
4/2+4/1	319	319	638	0	0	0.7	0.7	-	1.4	15.7	2.4	0.7	3.0
4/3	175	175	175	0	0	0.6	1.2	-	1.8	36.2	2.5	1.2	3.6
5/1	1020	1020	-	-	-	3.2	3.9	-	7.1	24.9	15.3	3.9	19.2
5/2	1027	1027	-	-	-	3.2	3.8	-	7.0	24.7	15.4	3.8	19.2
6/1	308	308	-	-	-	1.7	1.1	-	2.8	32.4	4.8	1.1	5.9
6/2	336	336	-	-	-	2.0	1.5	-	3.5	37.6	5.3	1.5	6.8
6/3	189	189	-	-	-	1.8	0.4	-	2.1	40.4	3.3	0.4	3.6
7/1	445	445	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1149	1149	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	825	825	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1288	1288	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	248	248	-	-	-	1.2	0.7	-	1.9	28.0	3.4	0.7	4.1
11/2	269	269	-	-	-	1.5	0.9	-	2.4	31.8	4.2	0.9	5.1
11/3	326	326	-	-	-	1.3	1.7	-	3.0	32.7	5.6	1.7	7.3
12/1	322	322	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

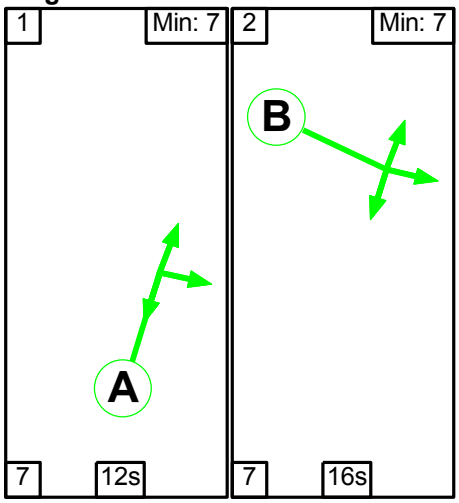
12/2	343	343	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	222	222	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 0.9 Total Delay for Signalled Lanes (pcuHr): 21.35 Cycle Time (s): 63
C1 Stream: 2 PRC for Signalled Lanes (%): -18.4 Total Delay for Signalled Lanes (pcuHr): 93.63 Cycle Time (s): 63
PRC Over All Lanes (%): -18.4 Total Delay Over All Lanes(pcuHr): 151.64

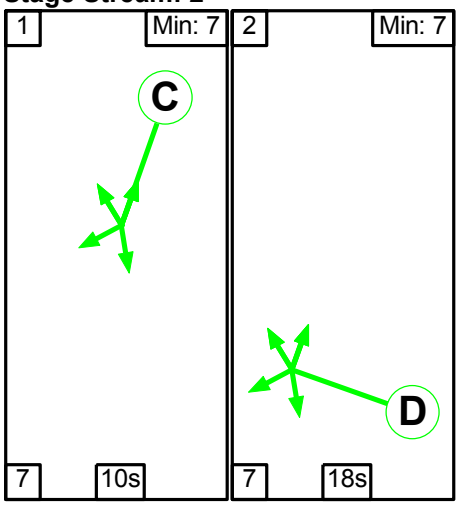
Full Input Data And Results
Scenario 9: '2031 DS2 AM' (FG9: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

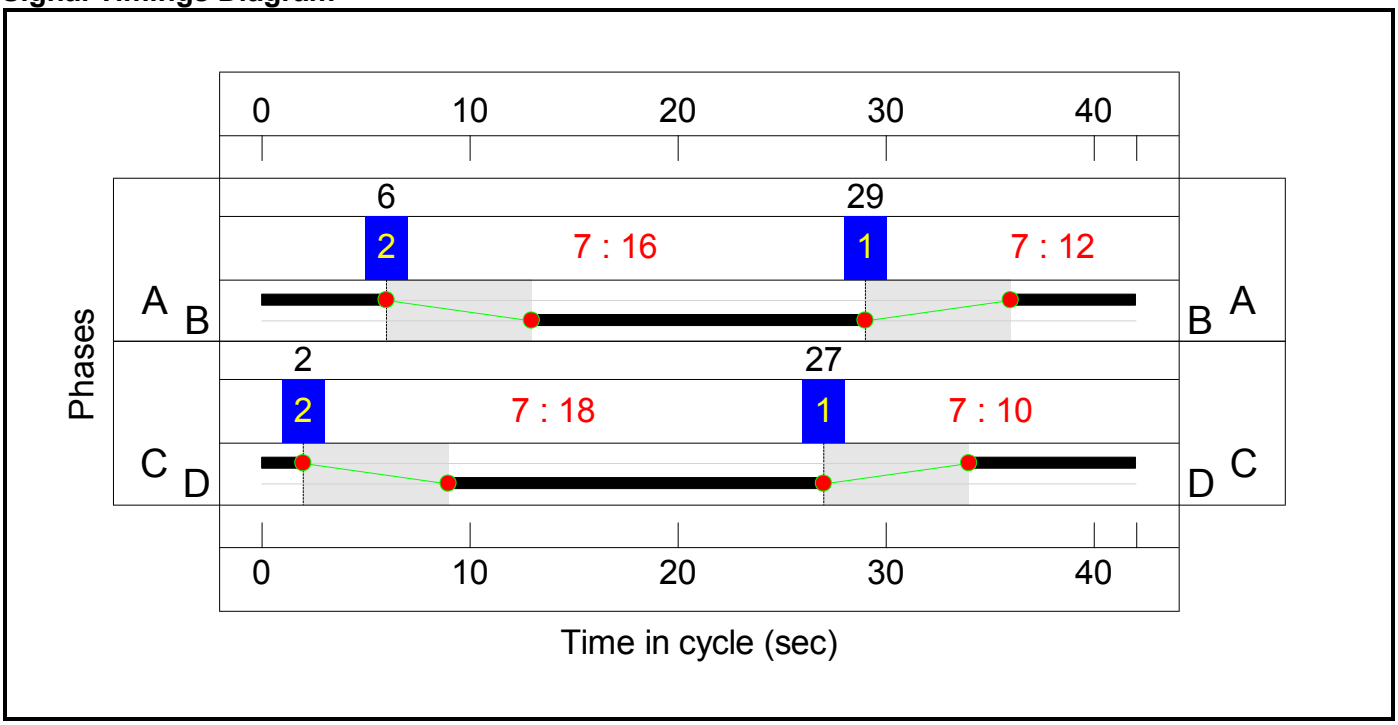
Stage	1	2
Duration	12	16
Change Point	29	6

Stage Stream: 2

Stage	1	2
Duration	10	18
Change Point	27	2

Full Input Data And Results

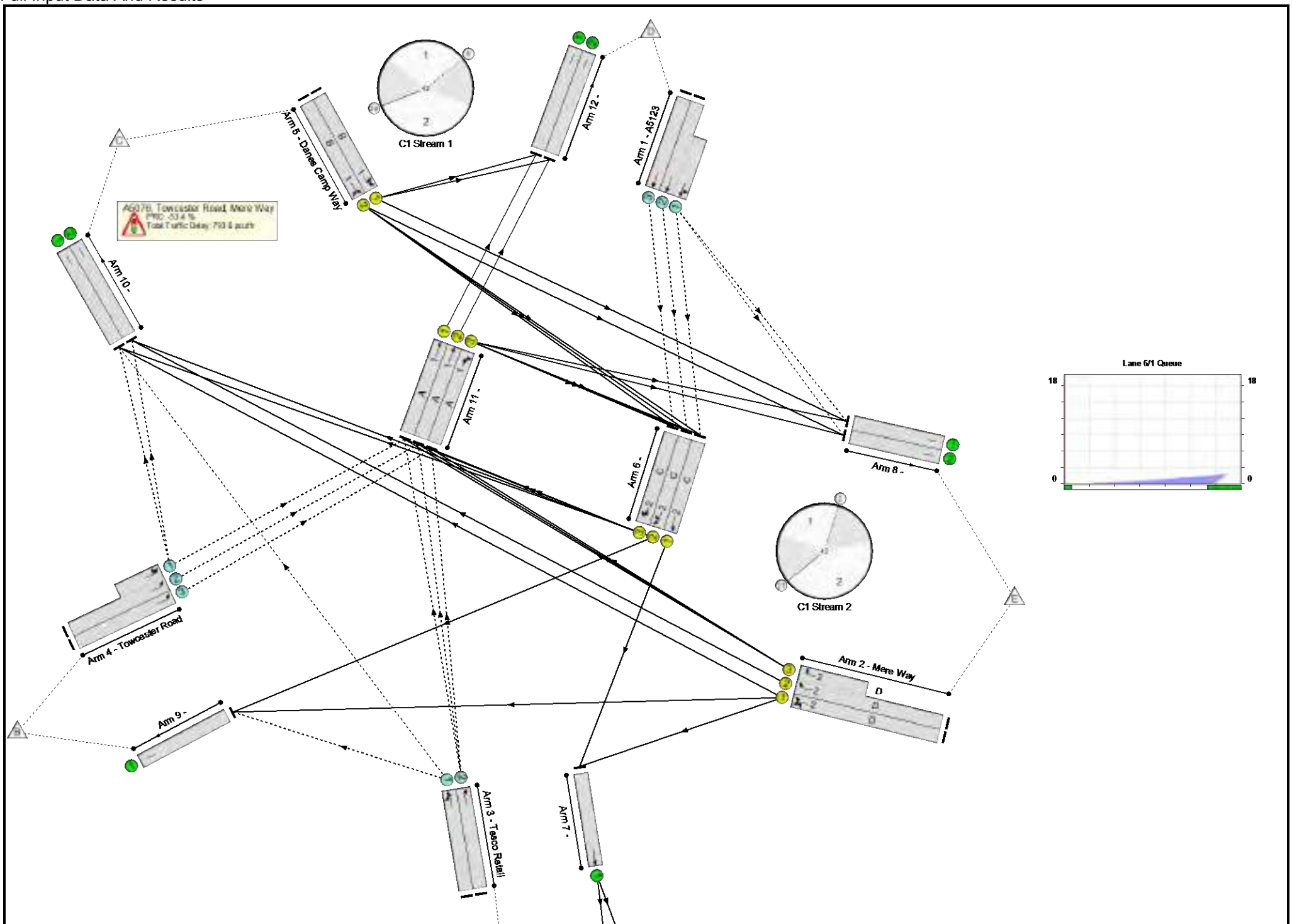
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.1%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.1%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	394	1940:1877	0+420	0.0 : 93.9%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	171	1893	413	41.5%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	18	-	1164	1883	852	136.6%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	18	-	1686	2025:2027	852+380	136.9 : 136.9%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	191	1874	514	37.2%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	254	1887	462	55.0%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	354	1885:1874	171+411	60.8 : 60.8%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	501	1885	363	138.1%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	16	-	1050	1946	788	133.3%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	16	-	1061	1964	795	133.5%
6/1	Ahead	U	2	N/A	C		1	10	-	215	1872	490	36.8%
6/2	Ahead Right	U	2	N/A	C		1	10	-	140	1871	490	21.4%
6/3	Right U-Turn	U	2	N/A	C		1	10	-	195	1868	489	38.6%
7/1	Ahead	U	N/A	N/A	-		-	-	-	329	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1502	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1278	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	530	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	939	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1448	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	12	-	380	1893	586	53.3%
11/2	Ahead	U	1	N/A	A		1	12	-	377	1893	586	52.8%
11/3	U-Turn Right	U	1	N/A	A		1	12	-	697	1882	583	95.0%
12/1		U	N/A	N/A	-		-	-	-	401	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	165	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1463**	**1012**	**0**	**51.6**	**742.0**	**0.0**	**793.6**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1463**	**1012**	**0**	**51.6**	**742.0**	**0.0**	**793.6**	**-**	**-**	**-**	**-**
1/2+1/1	394	394	214	574	0	0.8	5.4	-	6.3	57.2	4.4	5.4	9.8
1/3	171	171	53	118	0	0.2	0.4	-	0.6	11.6	0.9	0.4	1.3
2/1	1164	852	-	-	-	9.3	157.9	-	167.2	517.1	17.2	157.9	175.1
2/2+2/3	1686	1231	-	-	-	13.0	229.2	-	242.2	517.1	24.1	229.2	253.2
3/1	191	191	50	141	0	0.3	0.3	-	0.6	10.9	1.2	0.3	1.5
3/2	254	254	75	179	0	0.4	0.6	-	1.0	14.6	2.0	0.6	2.6
4/2+4/1	354	354	708	0	0	0.6	0.8	-	1.4	14.1	2.2	0.8	2.9
4/3	501	363	363	0	0	4.6	70.9	-	75.5	542.5	15.7	70.9	86.6
5/1	1050	788	-	-	-	8.2	133.1	-	141.4	484.7	15.5	133.1	148.6
5/2	1061	795	-	-	-	8.3	135.0	-	143.3	486.3	15.6	135.0	150.6
6/1	180	180	-	-	-	0.6	0.3	-	0.9	17.5	1.8	0.3	2.0
6/2	105	105	-	-	-	0.2	0.1	-	0.3	10.7	1.1	0.1	1.2
6/3	189	189	-	-	-	0.6	0.3	-	0.9	17.3	1.2	0.3	1.5
7/1	264	264	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1181	1181	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1013	1013	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	749	749	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1128	1128	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	313	313	-	-	-	1.1	0.6	-	1.7	19.3	3.0	0.6	3.6
11/2	310	310	-	-	-	1.1	0.6	-	1.6	19.0	3.3	0.6	3.8
11/3	553	553	-	-	-	2.3	6.5	-	8.8	57.3	6.0	6.5	12.5
12/1	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

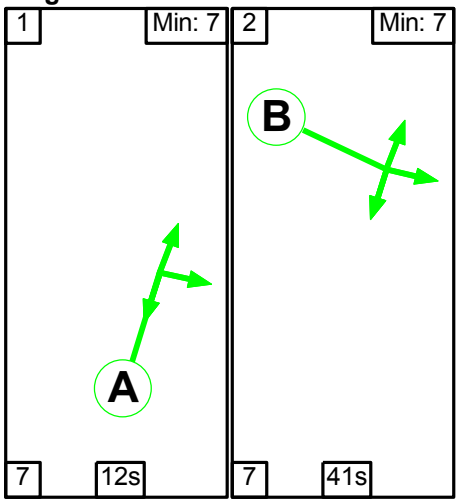
12/2	326	326	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	131	131	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-48.3	Total Delay for Signalled Lanes (pcuHr):	296.82	Cycle Time (s):	42
C1	Stream: 2 PRC for Signalled Lanes (%):	-52.1	Total Delay for Signalled Lanes (pcuHr):	411.46	Cycle Time (s):	42
	PRC Over All Lanes (%):	-53.4	Total Delay Over All Lanes(pcuHr):	793.58		

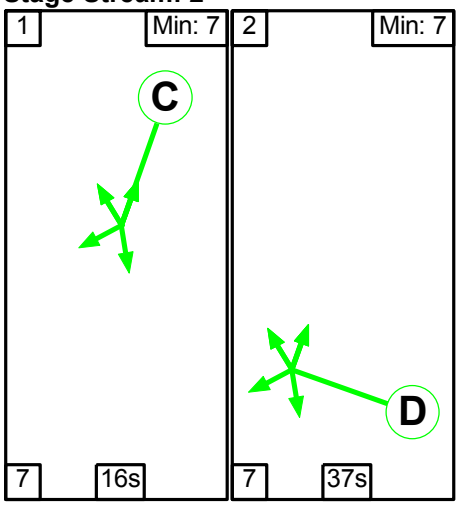
Full Input Data And Results
Scenario 10: '2031 DS2 PM' (FG10: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

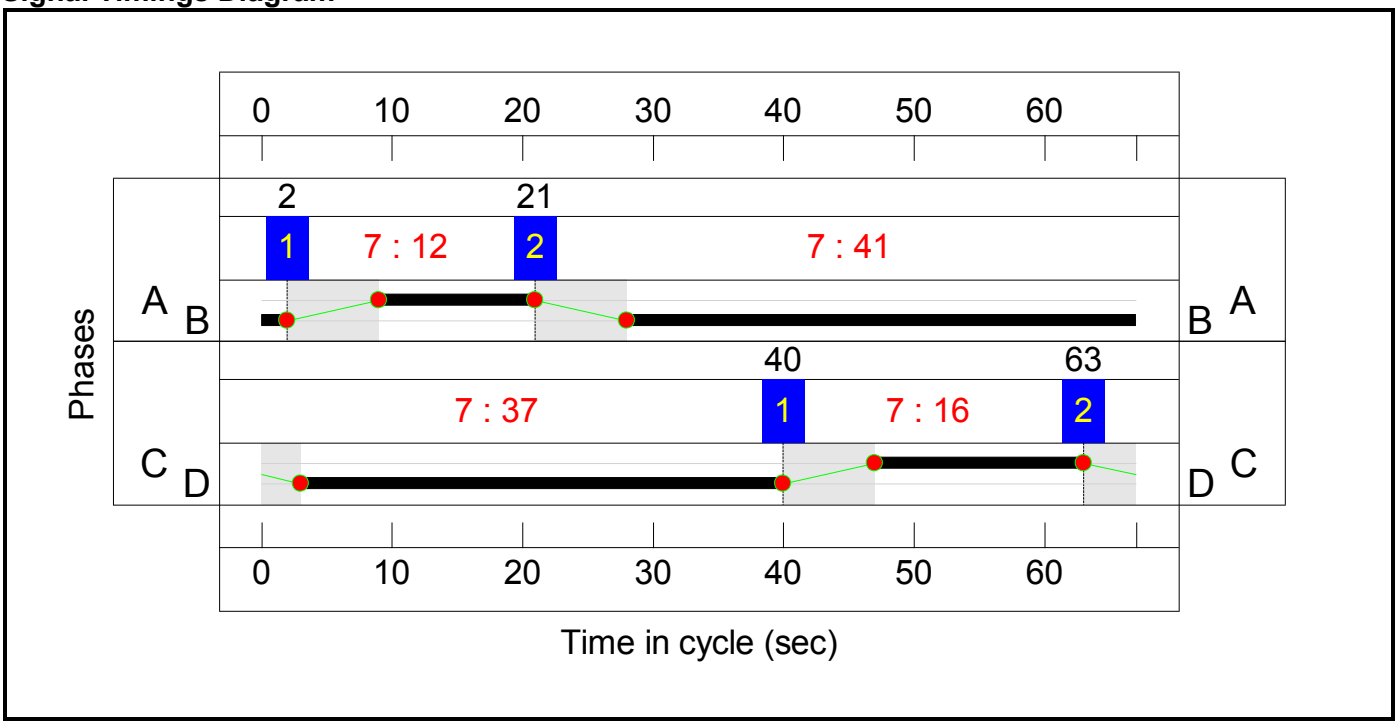
Stage	1	2
Duration	12	41
Change Point	2	21

Stage Stream: 2

Stage	1	2
Duration	16	37
Change Point	40	63

Full Input Data And Results

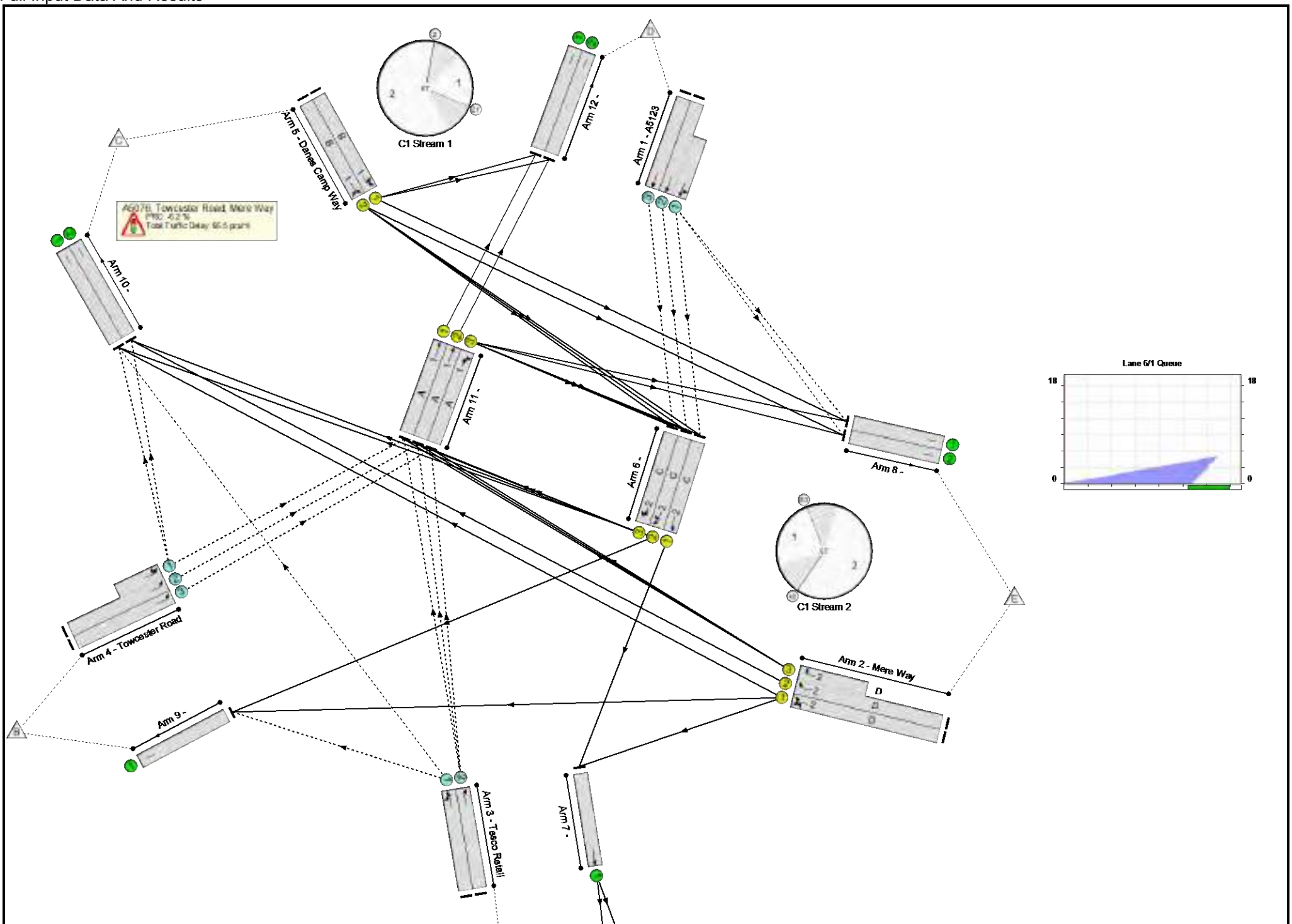
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.6%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.6%**
1/2+1/1	A5123 Ahead Left	O	N/A	N/A	-		-	-	-	382	1893:1881	179+336	74.2 : 74.2%
1/3	A5123 Ahead	O	N/A	N/A	-		-	-	-	144	1893	314	45.9%
2/1	Mere Way Left Ahead Right	U	2	N/A	D		1	37	-	974	1886	1070	91.1%
2/2+2/3	Mere Way Right Right2	U	2	N/A	D		1	37	-	1229	2025:2027	994+292	95.6 : 95.6%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	338	1873	408	82.8%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	238	1887	305	78.0%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	243	1885:1870	263+376	35.7 : 39.7%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	187	1885	263	71.0%
5/1	Danes Camp Way Left Left2	U	1	N/A	B		1	41	-	1082	1948	1221	88.6%
5/2	Danes Camp Way Right Left	U	1	N/A	B		1	41	-	1091	1964	1231	88.6%
6/1	Ahead	U	2	N/A	C		1	16	-	308	1872	475	64.8%
6/2	Ahead Right	U	2	N/A	C		1	16	-	346	1870	474	72.9%
6/3	Right U-Turn	U	2	N/A	C		1	16	-	179	1868	474	37.8%
7/1	Ahead	U	N/A	N/A	-		-	-	-	449	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1157	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	895	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	707	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	884	Inf	Inf	0.0%

Full Input Data And Results

10/2		U	N/A	N/A	-		-	-	-	1203	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	12	-	225	1893	367	61.3%
11/2	Ahead	U	1	N/A	A		1	12	-	235	1893	367	64.0%
11/3	U-Turn Right	U	1	N/A	A		1	12	-	339	1882	365	92.8%
12/1		U	N/A	N/A	-		-	-	-	301	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1464**	**693**	**0**	**29.9**	**36.6**	**0.0**	**66.5**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1464**	**693**	**0**	**29.9**	**36.6**	**0.0**	**66.5**	**-**	**-**	**-**	**-**
1/2+1/1	382	382	366	398	0	1.4	1.4	-	2.8	26.6	3.9	1.4	5.3
1/3	144	144	81	63	0	0.5	0.4	-	0.9	22.1	1.8	0.4	2.2
2/1	974	974	-	-	-	3.5	4.6	-	8.2	30.1	16.0	4.6	20.6
2/2+2/3	1229	1229	-	-	-	4.1	8.3	-	12.5	36.5	19.0	8.3	27.4
3/1	338	338	218	120	0	1.4	2.3	-	3.6	38.7	5.5	2.3	7.8
3/2	238	238	126	112	0	1.0	1.7	-	2.7	41.2	4.0	1.7	5.7
4/2+4/1	243	243	486	0	0	0.3	0.3	-	0.6	9.5	1.4	0.3	1.8
4/3	187	187	187	0	0	0.6	1.2	-	1.8	34.2	2.9	1.2	4.1
5/1	1082	1082	-	-	-	3.2	3.7	-	6.8	22.8	16.8	3.7	20.5
5/2	1091	1091	-	-	-	3.2	3.7	-	6.9	22.7	17.0	3.7	20.7
6/1	308	308	-	-	-	1.9	0.9	-	2.8	32.4	5.0	0.9	5.9
6/2	346	346	-	-	-	2.3	1.3	-	3.6	37.4	5.8	1.3	7.1
6/3	179	179	-	-	-	1.5	0.3	-	1.8	36.1	3.1	0.3	3.4
7/1	449	449	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1157	1157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	895	895	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	707	707	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	884	884	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1203	1203	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	225	225	-	-	-	1.4	0.8	-	2.2	35.7	4.0	0.8	4.8
11/2	235	235	-	-	-	1.7	0.9	-	2.5	38.9	4.2	0.9	5.1
11/3	339	339	-	-	-	2.0	4.8	-	6.8	71.7	6.3	4.8	11.0
12/1	301	301	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

12/2	312	312	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -3.1 Total Delay for Signalled Lanes (pcuHr): 25.24 Cycle Time (s): 67
C1 Stream: 2 PRC for Signalled Lanes (%): -6.2 Total Delay for Signalled Lanes (pcuHr): 28.77 Cycle Time (s): 67
PRC Over All Lanes (%): -6.2 Total Delay Over All Lanes(pcuHr): 66.51

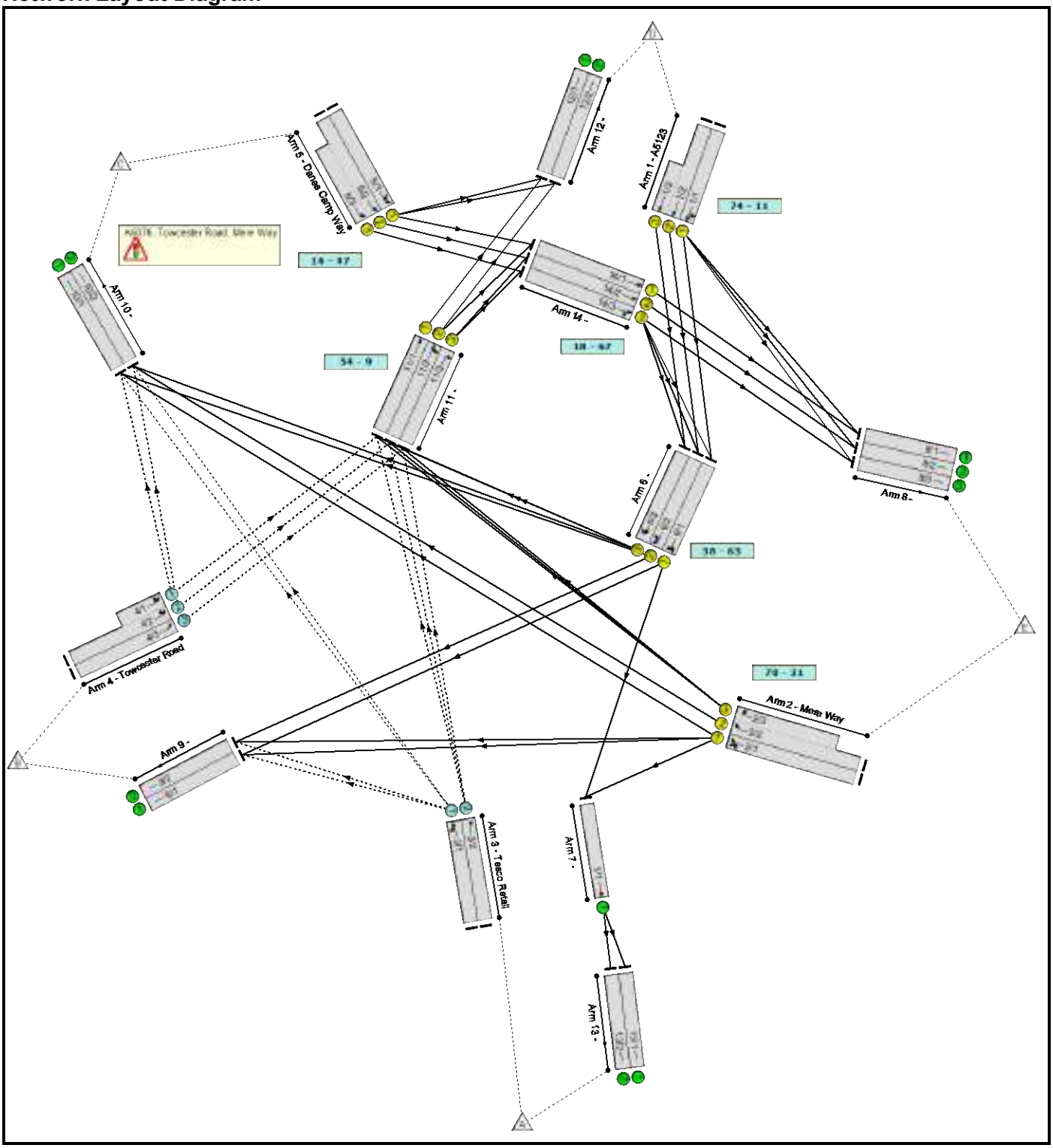
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 7
Location:	Towcester Road / A5076 Danes Camp Way / A5123 Towcester Road / Mere Way/ Tesco Access
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

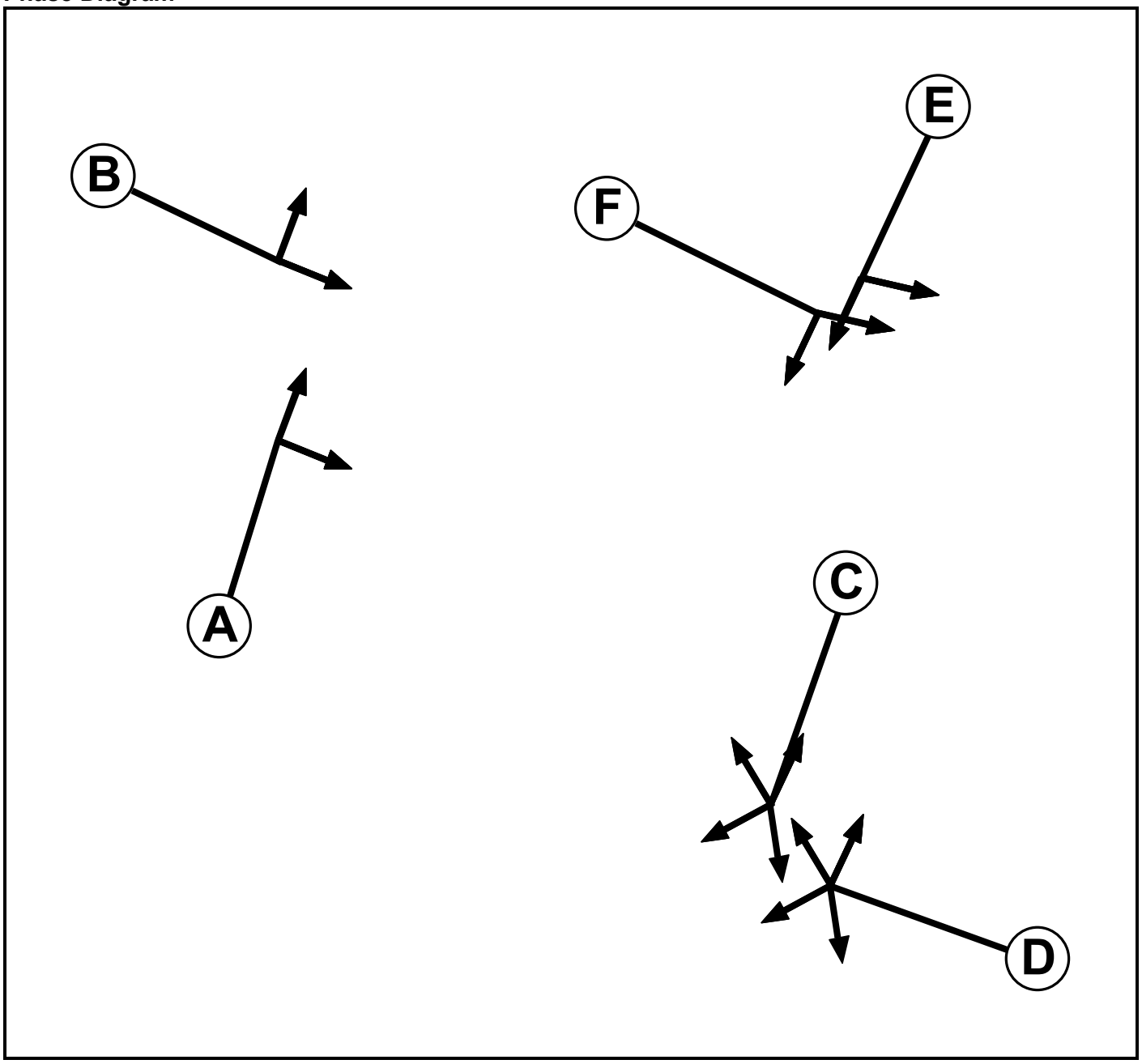
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

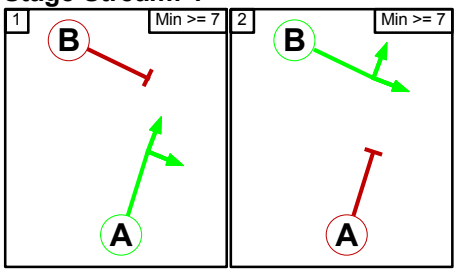
Terminating Phase	Starting Phase A	B	C	D	E	F
A		7	-	-	-	-
B	7		-	-	-	-
C	-	-		7	-	-
D	-	-	7		-	-
E	-	-	-	-		7
F	-	-	-	-	7	

Phases in Stage

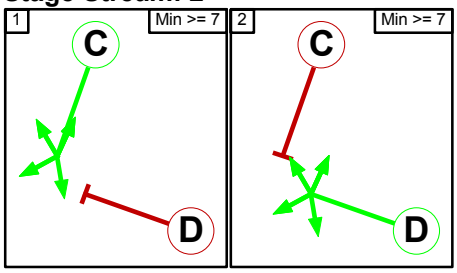
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F

Stage Diagram

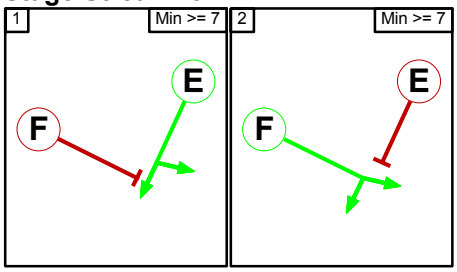
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Full Input Data And Results

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 3

	To Stage		
From Stage		1	2
	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A5076, Towcester Road, Mere Way

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
3/1 (Tesco Retail)	9/1 (Left)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead)	-	-	-	-	-
				6/1	0.33	To 9/1 (Ahead)					
				6/2	0.33	To 9/2 (Ahead)					
				6/2	0.33	All					
	9/2 (Left)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead)					
				6/1	0.33	To 9/1 (Ahead)					
	10/1 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				6/2	0.33	All					
				6/1	0.33	To 9/1 (Ahead)					
				6/3	0.33	To 10/2 (Right)					
				2/2	0.33	All					
	10/2 (Ahead)	1439	0	2/1	1.09	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				2/2	1.09	All					
				2/3	1.09	All					
				6/1	1.09	To 9/1 (Ahead)					
				6/2	1.09	All					
				6/3	1.09	All					
3/2 (Tesco Retail)	11/1 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)	-	-	-	-	-
				2/2	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					

4/1 (Towcester Road)				6/1	0.33	To 9/1 (Ahead)	-	-	-	-	-
				2/3	0.33	All					
	11/2 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				2/2	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					
				6/1	0.33	To 9/1 (Ahead)					
				2/3	0.30	All					
	11/3 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				2/2	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					
				6/1	0.33	To 9/1 (Ahead)					
				2/3	0.33	All					
	10/1 (Left)	1000	0	3/1	0.33	To 10/1 (Ahead)					
				2/1	0.33	To 10/1 (Ahead)					
				6/3	0.33	All					
				6/2	0.33	To 10/1 (Right)					
				2/2	0.33	All					
				3/2	0.33	All					
				2/3	0.33	All					
	11/1 (Ahead)	1000	0	2/1	0.33	To 10/1 (Ahead)					
				2/2	0.33	All					
				2/3	0.33	All					
				3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)					
				3/2	0.33	All					
				6/2	0.33	To 10/1 (Right)					

				6/3	0.33	All						
4/2 (Towcester Road)	10/2 (Left)	1000	0	2/1	0.33	To 10/1 (Ahead)	-	-	-	-	-
				2/2	0.33	All						
				3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)						
				3/2	0.33	All						
				6/2	0.33	To 10/1 (Right)						
				6/3	0.33	All						
	11/2 (Ahead)			2/3	0.33	All						
				3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)						
				3/2	0.33	All						
				2/1	0.33	To 10/1 (Ahead)						
				2/2	0.33	All						
				2/3	0.33	All						
				6/2	0.33	To 10/1 (Right)						
				6/3	0.33	All						
4/3 (Towcester Road)	11/3 (Ahead)	1000	0	3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)	-	-	-	-	-
				3/2	0.33	All						
				2/1	0.33	To 10/1 (Ahead)						
				2/2	0.33	All						
				6/3	0.33	All						
				6/2	0.33	To 10/1 (Right)						
				2/3	0.33	All						

Full Input Data And Results

Lane Input Data

Junction: A5076, Towcester Road, Mere Way												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5123)	U	E	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead	62.00
											Arm 8 Left	42.00
1/2 (A5123)	U	E	2	3	7.0	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
1/3 (A5123)	U	E	2	3	5.4	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
2/1 (Mere Way)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 7 Left	34.00
											Arm 9 Ahead	80.00
											Arm 10 Ahead	56.00
2/2 (Mere Way)	U	D	2	3	60.0	Geom	-	3.50	0.00	N	Arm 10 Ahead	55.00
2/3 (Mere Way)	U	D	2	3	22.6	Geom	-	3.50	0.00	N	Arm 11 Right	45.00
3/1 (Tesco Retail)	O		2	3	10.4	Geom	-	3.50	0.00	Y	Arm 9 Left	32.00
											Arm 10 Ahead	48.00
3/2 (Tesco Retail)	O		2	3	10.4	Geom	-	3.50	0.00	Y	Arm 11 Ahead	53.00
4/1 (Towcester Road)	O		2	3	5.0	Geom	-	3.75	0.00	Y	Arm 10 Left	40.00
											Arm 11 Ahead	51.00
4/2 (Towcester Road)	O		2	3	7.8	Geom	-	3.50	0.00	N	Arm 10 Left	41.00
											Arm 11 Ahead	51.00
4/3 (Towcester Road)	O		2	3	60.0	Geom	-	3.25	0.00	N	Arm 11 Ahead	51.00
5/1 (Danes Camp Way)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 12 Left	42.00
											Arm 14 Ahead	58.00
5/2 (Danes Camp Way)	U	B	2	3	60.0	Geom	-	4.00	0.00	N	Arm 14 Ahead	58.00
5/3 (Danes Camp Way)	U	B	2	3	8.7	Geom	-	3.50	0.00	N	Arm 14 Ahead	57.00
6/1	U	C	2	3	4.0	Geom	-	3.50	0.00	N	Arm 7 Ahead	47.00

Full Input Data And Results

											Arm 9 Ahead	41.00
6/2	U	C	2	3	5.0	Geom	-	3.25	0.00	N	Arm 9 Ahead	41.00
											Arm 10 Right	39.00
6/3	U	C	2	3	6.1	Geom	-	3.25	0.00	N	Arm 10 Right	39.00
											Arm 11 U-Turn	Inf
7/1	U		2	3	2.1	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
8/3	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U	A	2	3	5.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	60.00
11/2	U	A	2	3	6.1	Geom	-	3.50	0.00	N	Arm 12 Ahead	60.00
											Arm 14 Right	Inf
11/3	U	A	2	3	5.6	Geom	-	3.50	0.00	N	Arm 14 Right	48.00
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1	U	F	2	3	5.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	Inf
14/2	U	F	2	3	5.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	Inf
14/3	U	F	2	3	5.0	Geom	-	3.50	0.00	N	Arm 6 Right	Inf
											Arm 8 Ahead	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	

8: '2031 DS PM'	17:00	18:00	01:00	

Scenario 3: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	53	141	75	170	439
	B	19	0	116	59	332	526
	C	114	134	14	44	1970	2276
	D	79	0	197	0	317	593
	E	114	317	1751	447	0	2629
	Tot.	326	504	2219	625	2789	6463

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS AM
Junction: A5076, Towcester Road, Mere Way	
1/1	396
1/2 (with short)	197(In) 69(Out)
1/3 (short)	128
2/1	1052
2/2 (with short)	1577(In) 1130(Out)
2/3 (short)	447
3/1	194
3/2	245
4/1 (short)	171
4/2 (with short)	378(In) 207(Out)
4/3	148
5/1	820
5/2 (with short)	1456(In) 733(Out)
5/3 (short)	723
6/1	217
6/2	199
6/3	141
7/1	326
8/1	1088
8/2	992
8/3	709
9/1	191
9/2	313
10/1	877
10/2	1342
11/1	372
11/2	415
11/3	315
12/1	394
12/2	231
13/1	164
13/2	162
14/1	982
14/2	887
14/3	884

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	19.9 %	1950	1950
				Arm 8 Left	42.00	80.1 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	10.8 %	1915	1915
				Arm 9 Ahead	80.00	30.1 %		
				Arm 10 Ahead	56.00	59.0 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	27.3 %	1898	1898
				Arm 10 Ahead	48.00	72.7 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	67.8 %	1923	1923
				Arm 11 Ahead	51.00	32.2 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	0.0 %	2045	2045
				Arm 11 Ahead	51.00	100.0 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	5.4 %	1914	1914
				Arm 14 Ahead	58.00	94.6 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	97.7 %	2040	2040
				Arm 9 Ahead	41.00	2.3 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	64.8 %	2005	2005
				Arm 10 Right	39.00	35.2 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	50.4 %	2079	2079
				Arm 14 Right	Inf	49.6 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	31.8 %	2105	2105
				Arm 8 Ahead	Inf	68.2 %		

Scenario 4: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	91	245	86	149	571
	B	38	0	156	104	241	539
	C	175	241	1	126	1606	2149
	D	95	0	119	0	106	320
	E	140	284	1377	276	0	2077
	Tot.	448	616	1898	592	2102	5656

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS PM
Junction: A5076, Towcester Road, Mere Way	
1/1	201
1/2 (with short)	119(In) 13(Out)
1/3 (short)	106
2/1	859
2/2 (with short)	1218(In) 942(Out)
2/3 (short)	276
3/1	336
3/2	235
4/1 (short)	209
4/2 (with short)	417(In) 208(Out)
4/3	122
5/1	773
5/2 (with short)	1376(In) 691(Out)
5/3 (short)	685
6/1	309
6/2	253
6/3	107
7/1	448
8/1	877
8/2	847
8/3	378
9/1	189
9/2	427
10/1	705
10/2	1193
11/1	315
11/2	346
11/3	233
12/1	378
12/2	214
13/1	225
13/2	223
14/1	842
14/2	811
14/3	798

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	47.3 %	1956	1956
				Arm 8 Left	42.00	52.7 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	16.3 %	1913	1913
				Arm 9 Ahead	80.00	33.1 %		
				Arm 10 Ahead	56.00	50.6 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	27.1 %	1898	1898
				Arm 10 Ahead	48.00	72.9 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	64.6 %	1923	1923
				Arm 11 Ahead	51.00	35.4 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	10.1 %	2043	2043
				Arm 11 Ahead	51.00	89.9 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	16.3 %	1912	1912
				Arm 14 Ahead	58.00	83.7 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	99.7 %	2040	2040
				Arm 9 Ahead	41.00	0.3 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	94.9 %	2006	2006
				Arm 10 Right	39.00	5.1 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	43.6 %	2082	2082
				Arm 14 Right	Inf	56.4 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	57.0 %	2105	2105
				Arm 8 Ahead	Inf	43.0 %		

Scenario 7: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	50	141	78	176	445
	B	20	0	175	179	481	855
	C	116	136	28	43	1788	2111
	D	79	0	171	0	315	565
	E	114	344	1872	500	20	2850
	Tot.	329	530	2387	800	2780	6826

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS AM
Junction: A5076, Towcester Road, Mere Way	
1/1	394
1/2 (with short)	171(In) 78(Out)
1/3 (short)	93
2/1	1125
2/2 (with short)	1725(In) 1205(Out)
2/3 (short)	520
3/1	191
3/2	254
4/1 (short)	299
4/2 (with short)	588(In) 289(Out)
4/3	267
5/1	797
5/2 (with short)	1314(In) 658(Out)
5/3 (short)	656
6/1	236
6/2	194
6/3	120
7/1	329
8/1	1097
8/2	995
8/3	688
9/1	218
9/2	312
10/1	953
10/2	1434
11/1	475
11/2	520
11/3	459
12/1	496
12/2	304
13/1	165
13/2	164
14/1	992
14/2	890
14/3	883

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	20.1 %	1950	1950
				Arm 8 Left	42.00	79.9 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	10.1 %	1915	1915
				Arm 9 Ahead	80.00	30.6 %		
				Arm 10 Ahead	56.00	59.3 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	26.2 %	1898	1898
				Arm 10 Ahead	48.00	73.8 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	45.8 %	1926	1926
				Arm 11 Ahead	51.00	54.2 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	13.1 %	2043	2043
				Arm 11 Ahead	51.00	86.9 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	5.4 %	1914	1914
				Arm 14 Ahead	58.00	94.6 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	91.1 %	2039	2039
				Arm 9 Ahead	41.00	8.9 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	59.3 %	2005	2005
				Arm 10 Right	39.00	40.7 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	54.2 %	2077	2077
				Arm 14 Right	Inf	45.8 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	34.0 %	2105	2105
				Arm 8 Ahead	Inf	66.0 %		

Scenario 8: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	95	243	86	152	576
	B	35	0	148	95	152	430
	C	177	206	42	153	1595	2173
	D	96	0	277	0	153	526
	E	141	406	1377	279	0	2203
	Tot.	449	707	2087	613	2052	5908

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS PM
Junction: A5076, Towcester Road, Mere Way	
1/1	249
1/2 (with short)	277(In) 49(Out)
1/3 (short)	228
2/1	919
2/2 (with short)	1284(In) 1005(Out)
2/3 (short)	279
3/1	338
3/2	238
4/1 (short)	168
4/2 (with short)	330(In) 162(Out)
4/3	100
5/1	804
5/2 (with short)	1369(In) 680(Out)
5/3 (short)	689
6/1	320
6/2	248
6/3	265
7/1	449
8/1	843
8/2	829
8/3	380
9/1	263
9/2	444
10/1	651
10/2	1436
11/1	319
11/2	282
11/3	198
12/1	395
12/2	218
13/1	226
13/2	223
14/1	792
14/2	778
14/3	789

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	38.6 %	1954	1954
				Arm 8 Left	42.00	61.4 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	15.3 %	1915	1915
				Arm 9 Ahead	80.00	44.2 %		
				Arm 10 Ahead	56.00	40.5 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	28.1 %	1897	1897
				Arm 10 Ahead	48.00	71.9 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	61.9 %	1924	1924
				Arm 11 Ahead	51.00	38.1 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	27.2 %	2041	2041
				Arm 11 Ahead	51.00	72.8 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	19.0 %	1912	1912
				Arm 14 Ahead	58.00	81.0 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	96.3 %	2040	2040
				Arm 9 Ahead	41.00	3.8 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	78.2 %	2006	2006
				Arm 10 Right	39.00	21.8 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

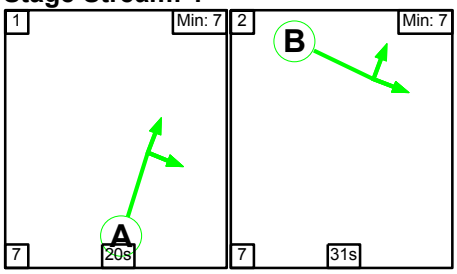
Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	50.0 %	2079	2079
				Arm 14 Right	Inf	50.0 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	58.3 %	2105	2105
				Arm 8 Ahead	Inf	41.7 %		

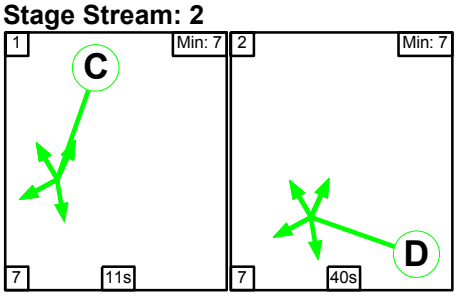
Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

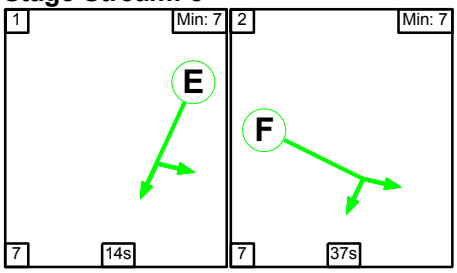
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	31
Change Point	55	17

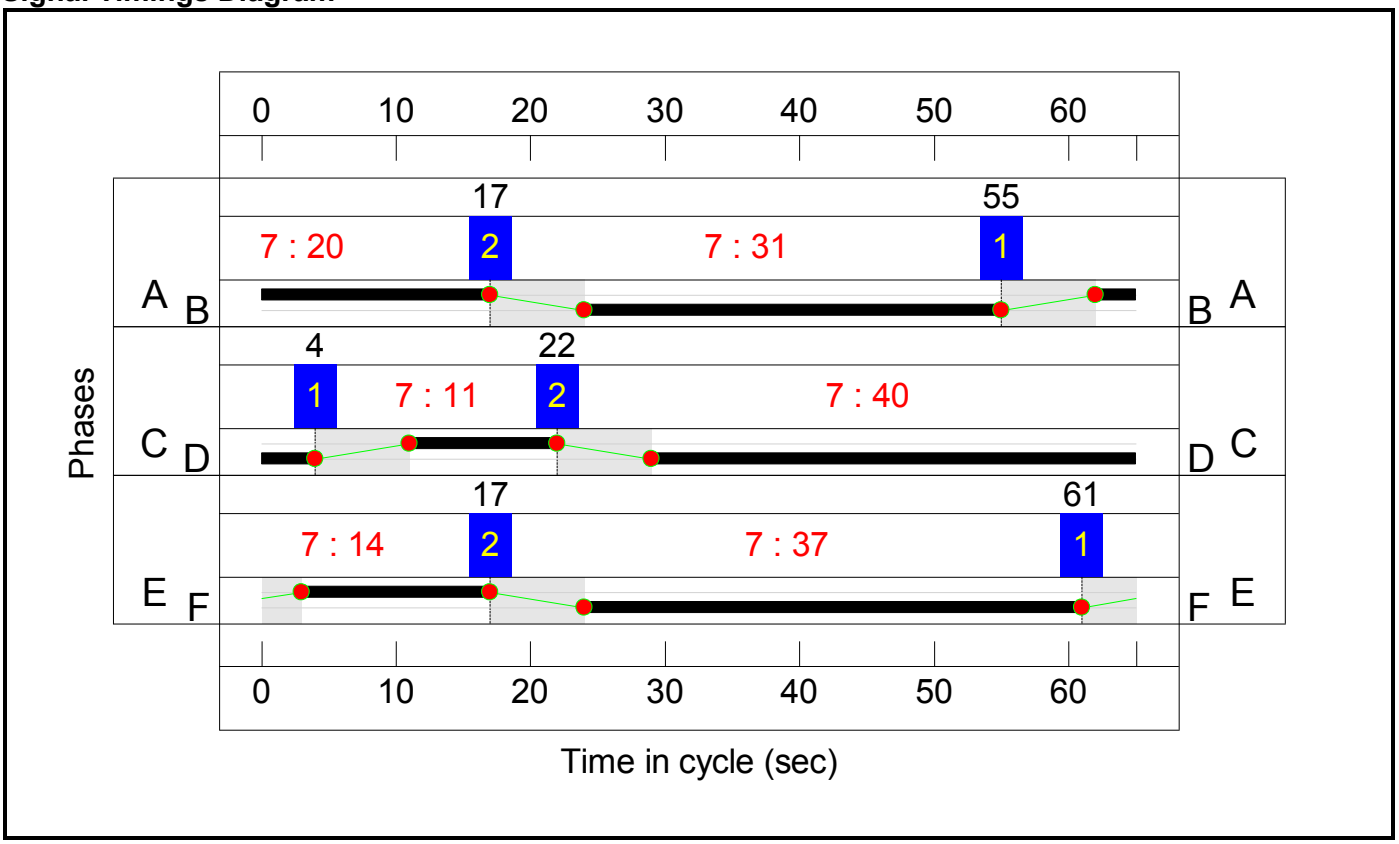
Stage Stream: 2

Stage	1	2
Duration	11	40
Change Point	4	22

Stage Stream: 3

Stage	1	2
Duration	14	37
Change Point	61	17

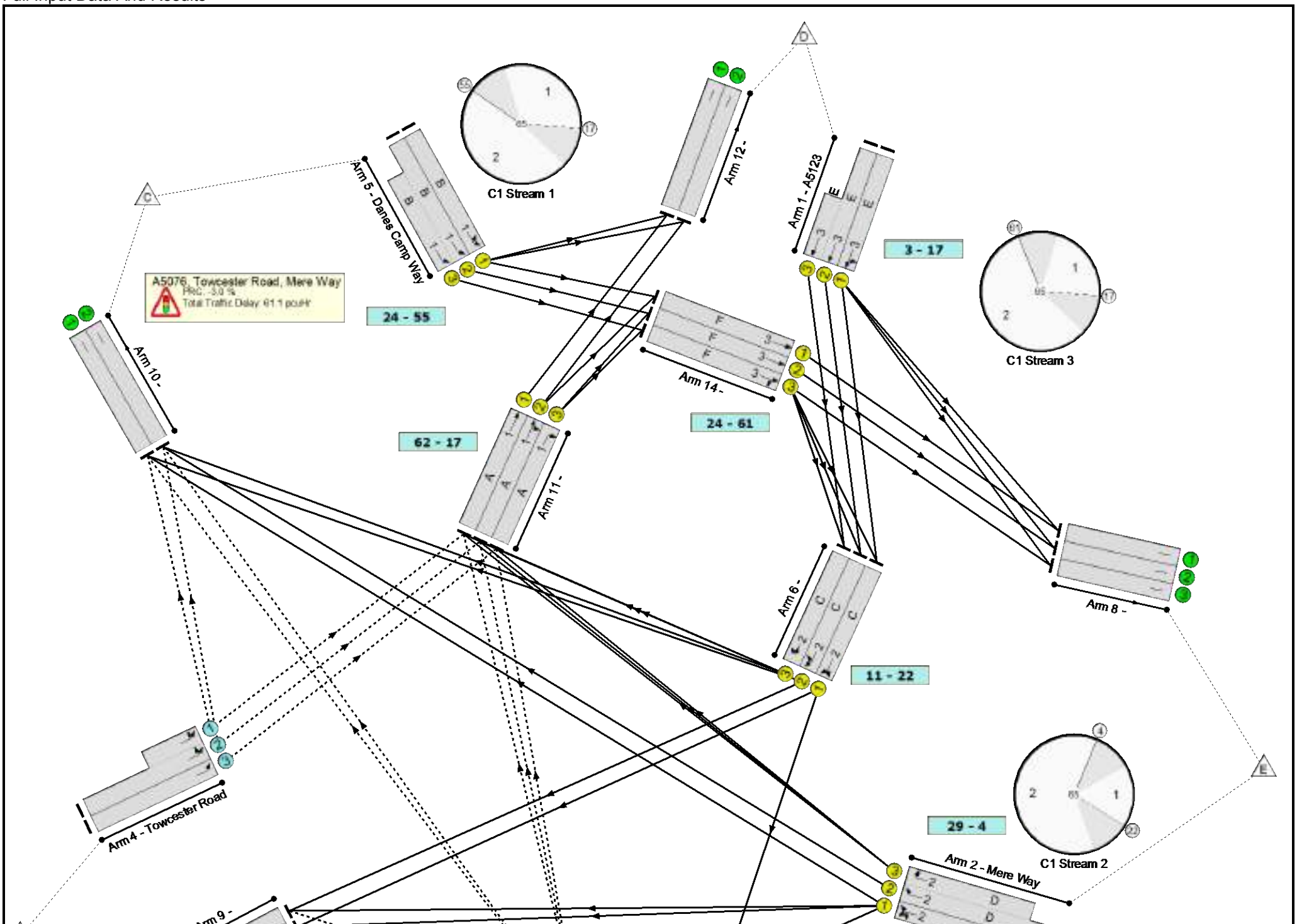
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.7%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.7%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	14	-	409	1950	450	90.9%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	14	-	186	2102:2102	216+421	29.2 : 29.2%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	40	-	970	1916	1209	80.3%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	40	-	1540	2049:2037	1284+588	82.2 : 82.2%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	193	1898	286	67.5%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	245	1911	320	76.5%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	315	2045:1922	270+190	68.6 : 68.6%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	133	2021	270	49.3%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	31	-	824	1915	943	87.4%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	31	-	1403	2101:2051	762+752	92.7 : 92.7%
6/1	Ahead Ahead2	U	2	N/A	C		1	11	-	215	2040	377	57.1%
6/2	Ahead Right	U	2	N/A	C		1	11	-	210	2005	370	56.7%
6/3	Right U-Turn	U	2	N/A	C		1	11	-	128	2003	370	34.6%
7/1	Ahead	U	N/A	N/A	-		-	-	-	326	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1085	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	971	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	676	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	353	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	722	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1255	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	20	-	361	2054	664	54.4%
11/2	Ahead Right	U	1	N/A	A		1	20	-	409	2077	671	61.0%
11/3	Right	U	1	N/A	A		1	20	-	312	2041	659	47.3%
12/1		U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	239	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	162	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	37	-	975	2105	1231	79.2%
14/2	Ahead	U	3	N/A	F		1	37	-	861	2105	1231	70.0%
14/3	Right Ahead	U	3	N/A	F		1	37	-	854	2105	1231	69.4%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**964**	**237**	**0**	**31.8**	**29.4**	**0.0**	**61.1**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**964**	**237**	**0**	**31.8**	**29.4**	**0.0**	**61.1**	**-**	**-**	**-**	**-**
1/1	409	409	-	-	-	2.8	4.1	-	6.9	60.9	7.2	4.1	11.3
1/2+1/3	186	186	-	-	-	1.0	0.2	-	1.3	24.2	1.8	0.2	2.0
2/1	970	970	-	-	-	2.4	2.0	-	4.4	16.4	12.9	2.0	14.9
2/2+2/3	1540	1540	-	-	-	3.5	2.3	-	5.7	13.4	14.4	2.3	16.7
3/1	193	193	71	122	0	0.9	1.0	-	2.0	36.7	3.1	1.0	4.1
3/2	245	245	130	115	0	1.0	1.6	-	2.6	37.8	3.9	1.6	5.5
4/2+4/1	315	315	630	0	0	0.9	1.1	-	2.0	22.8	2.7	1.1	3.8
4/3	133	133	133	0	0	0.3	0.5	-	0.8	22.3	1.6	0.5	2.0
5/1	824	824	-	-	-	3.4	3.3	-	6.7	29.1	13.0	3.3	16.3
5/2+5/3	1403	1403	-	-	-	5.0	5.8	-	10.7	27.5	13.0	5.8	18.7
6/1	215	215	-	-	-	1.3	0.7	-	2.0	32.7	3.2	0.7	3.8
6/2	210	210	-	-	-	1.2	0.7	-	1.9	32.3	3.6	0.7	4.3
6/3	128	128	-	-	-	0.2	0.3	-	0.4	11.7	1.4	0.3	1.7
7/1	326	326	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1085	1085	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	971	971	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	676	676	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	353	353	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	722	722	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1255	1255	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	361	361	-	-	-	1.7	0.6	-	2.3	23.2	5.4	0.6	6.0
11/2	409	409	-	-	-	2.0	0.8	-	2.8	24.7	5.8	0.8	6.6

Full Input Data And Results

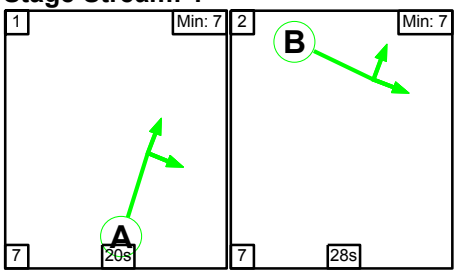
11/3	312	312	-	-	-	1.6	0.4	-	2.0	23.1	3.2	0.4	3.6
12/1	380	380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	239	239	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	164	164	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	162	162	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	975	975	-	-	-	1.0	1.9	-	2.8	10.5	3.9	1.9	5.8
14/2	861	861	-	-	-	0.8	1.2	-	1.9	8.1	3.2	1.2	4.3
14/3	854	854	-	-	-	0.8	1.1	-	1.9	8.0	3.2	1.1	4.3

C1	Stream: 1 PRC for Signalled Lanes (%):	-3.0	Total Delay for Signalled Lanes (pcuHr):	24.52	Cycle Time (s): 65
C1	Stream: 2 PRC for Signalled Lanes (%):	9.4	Total Delay for Signalled Lanes (pcuHr):	14.42	Cycle Time (s): 65
C1	Stream: 3 PRC for Signalled Lanes (%):	-1.0	Total Delay for Signalled Lanes (pcuHr):	14.84	Cycle Time (s): 65
	PRC Over All Lanes (%):	-3.0	Total Delay Over All Lanes(pcuHr):	61.14	

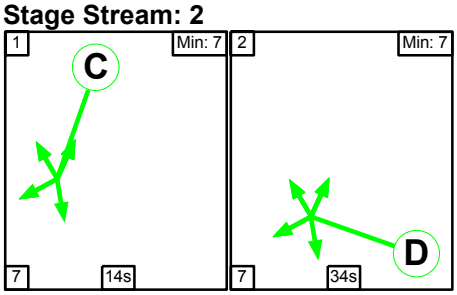
Full Input Data And Results
Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

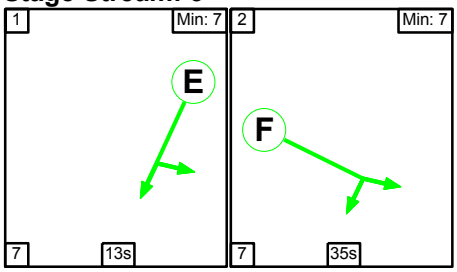
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	28
Change Point	49	14

Stage Stream: 2

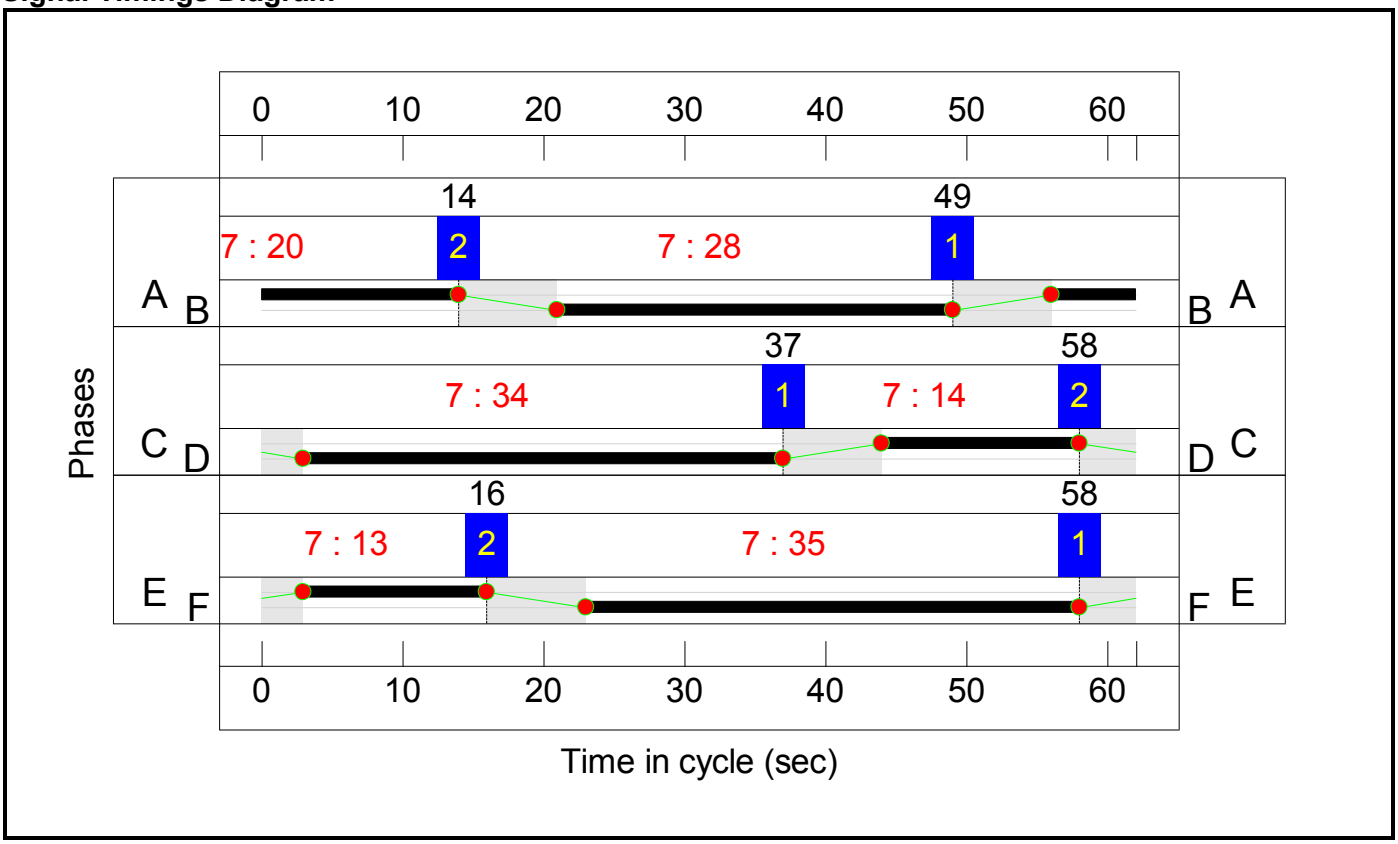
Stage	1	2
Duration	14	34
Change Point	37	58

Stage Stream: 3

Stage	1	2
Duration	13	35
Change Point	58	16

Full Input Data And Results

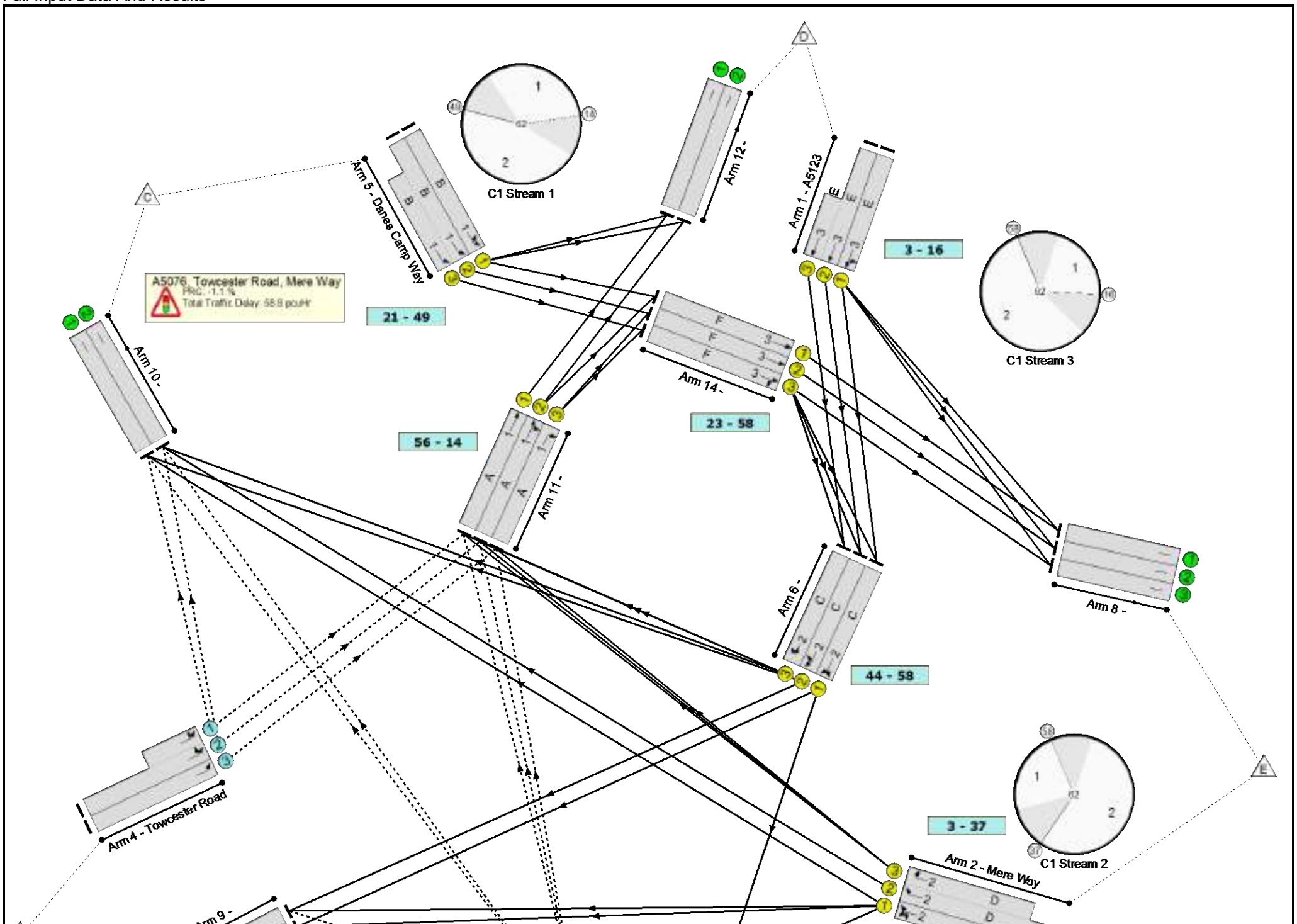
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.9%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**90.9%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	13	-	332	1952	441	75.3%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	13	-	161	2102:2102	34+459	32.7 : 32.7%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	34	-	962	1913	1080	89.1%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	34	-	1307	2049:2037	1157+280	90.9 : 90.9%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	336	1898	370	90.8%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	235	1911	370	63.4%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	446	2041:1926	282+296	77.7 : 76.6%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	148	2021	282	52.5%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	28	-	736	1912	894	82.3%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	28	-	1325	2101:2051	748+738	89.2 : 89.2%
6/1	Ahead Ahead2	U	2	N/A	C		1	14	-	308	2040	494	62.4%
6/2	Ahead Right	U	2	N/A	C		1	14	-	205	2006	485	42.2%
6/3	Right U-Turn	U	2	N/A	C		1	14	-	150	2003	485	31.0%
7/1	Ahead	U	N/A	N/A	-		-	-	-	447	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	870	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	448	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	183	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	376	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	786	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1388	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	20	-	336	2054	696	48.3%
11/2	Ahead Right	U	1	N/A	A		1	20	-	349	2080	705	49.5%
11/3	Right	U	1	N/A	A		1	20	-	232	2041	691	33.6%
12/1		U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	35	-	791	2105	1222	64.7%
14/2	Ahead	U	3	N/A	F		1	35	-	782	2105	1222	64.0%
14/3	Right Ahead	U	3	N/A	F		1	35	-	775	2105	1222	63.4%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1308**	**303**	**0**	**30.0**	**28.7**	**0.0**	**58.8**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1308**	**303**	**0**	**30.0**	**28.7**	**0.0**	**58.8**	**-**	**-**	**-**	**-**
1/1	332	332	-	-	-	2.1	1.5	-	3.6	38.5	5.3	1.5	6.7
1/2+1/3	161	161	-	-	-	0.9	0.2	-	1.1	25.4	2.1	0.2	2.4
2/1	962	962	-	-	-	3.2	3.8	-	7.0	26.2	14.4	3.8	18.3
2/2+2/3	1307	1307	-	-	-	4.0	4.7	-	8.7	23.9	16.1	4.7	20.8
3/1	336	336	152	184	0	1.6	4.0	-	5.6	60.2	5.5	4.0	9.5
3/2	235	235	115	120	0	0.8	0.9	-	1.7	25.4	3.3	0.9	4.1
4/2+4/1	446	446	892	0	0	1.7	1.6	-	3.3	26.6	3.3	1.6	5.0
4/3	148	148	148	0	0	0.4	0.5	-	1.0	23.7	1.9	0.5	2.4
5/1	736	736	-	-	-	2.9	2.3	-	5.2	25.3	10.8	2.3	13.1
5/2+5/3	1325	1325	-	-	-	4.7	3.9	-	8.7	23.6	9.4	3.9	13.4
6/1	308	308	-	-	-	1.4	0.8	-	2.2	26.3	4.8	0.8	5.6
6/2	205	205	-	-	-	0.5	0.4	-	0.9	15.3	2.4	0.4	2.8
6/3	150	150	-	-	-	1.3	0.2	-	1.6	37.6	2.6	0.2	2.8
7/1	447	447	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	870	870	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	448	448	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	183	183	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	376	376	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	786	786	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1388	1388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	336	336	-	-	-	1.0	0.5	-	1.5	15.9	3.7	0.5	4.2
11/2	349	349	-	-	-	0.9	0.5	-	1.3	13.9	4.2	0.5	4.6

Full Input Data And Results

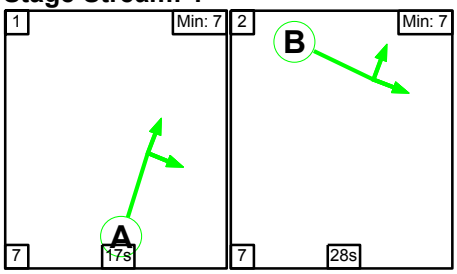
11/3	232	232	-	-	-	0.4	0.3	-	0.6	10.0	2.9	0.3	3.2
12/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	230	230	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	791	791	-	-	-	0.9	0.9	-	1.9	8.4	3.7	0.9	4.6
14/2	782	782	-	-	-	0.6	0.9	-	1.5	6.9	2.1	0.9	3.0
14/3	775	775	-	-	-	0.6	0.9	-	1.5	6.9	2.1	0.9	3.0

C1	Stream: 1 PRC for Signalled Lanes (%):	0.9	Total Delay for Signalled Lanes (pcuHr):	17.33	Cycle Time (s): 62
C1	Stream: 2 PRC for Signalled Lanes (%):	-1.1	Total Delay for Signalled Lanes (pcuHr):	20.37	Cycle Time (s): 62
C1	Stream: 3 PRC for Signalled Lanes (%):	19.5	Total Delay for Signalled Lanes (pcuHr):	9.54	Cycle Time (s): 62
	PRC Over All Lanes (%):	-1.1	Total Delay Over All Lanes(pcuHr):	58.78	

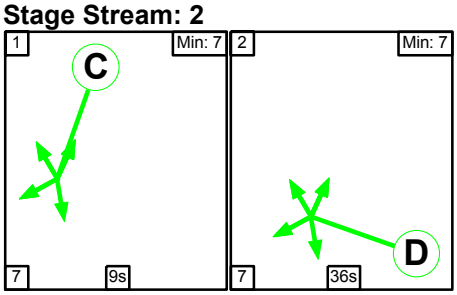
Full Input Data And Results
Scenario 3: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

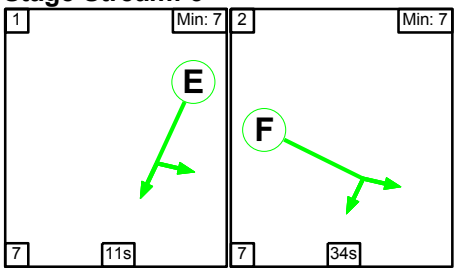
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	28
Change Point	49	14

Stage Stream: 2

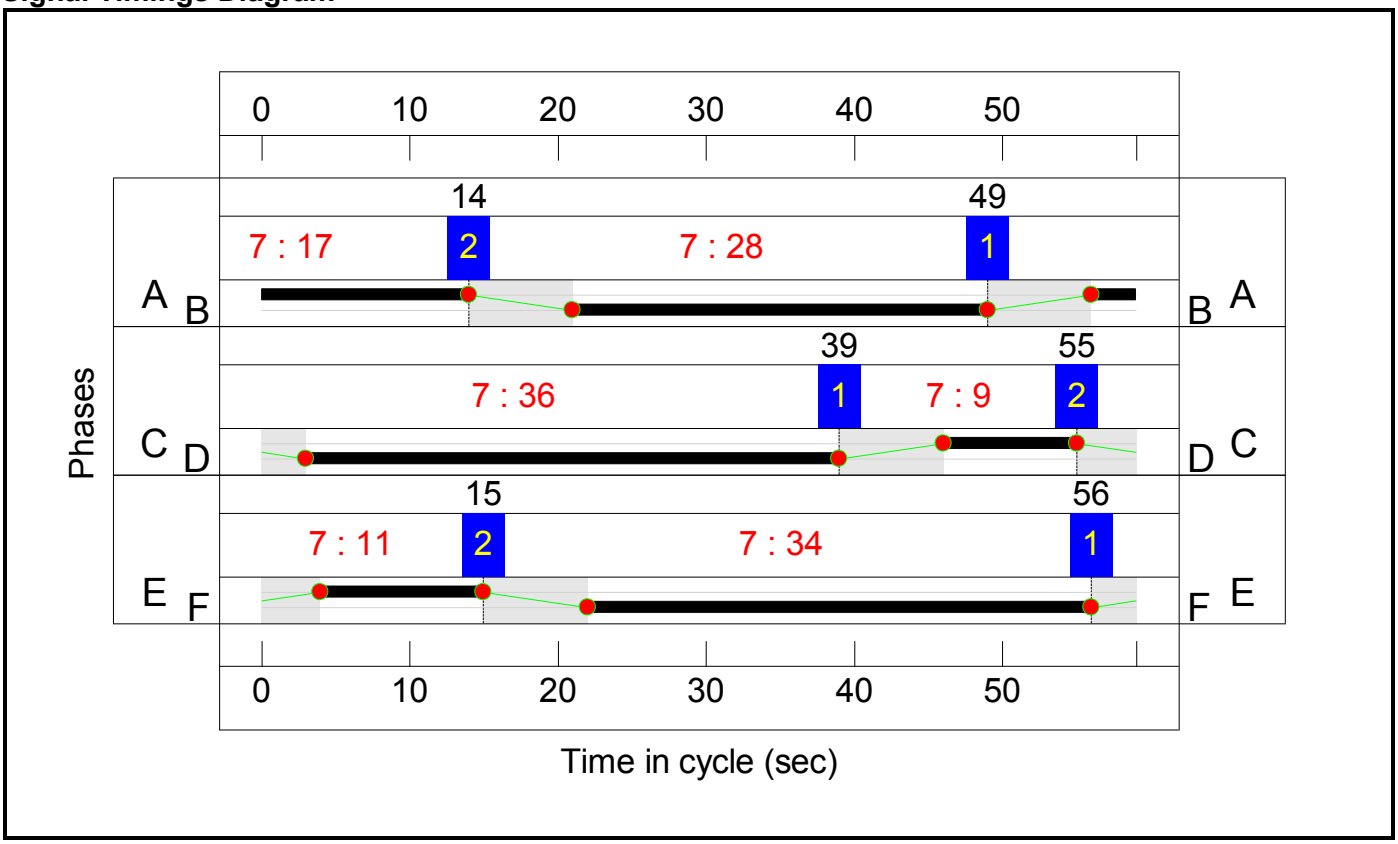
Stage	1	2
Duration	9	36
Change Point	39	55

Stage Stream: 3

Stage	1	2
Duration	11	34
Change Point	56	15

Full Input Data And Results

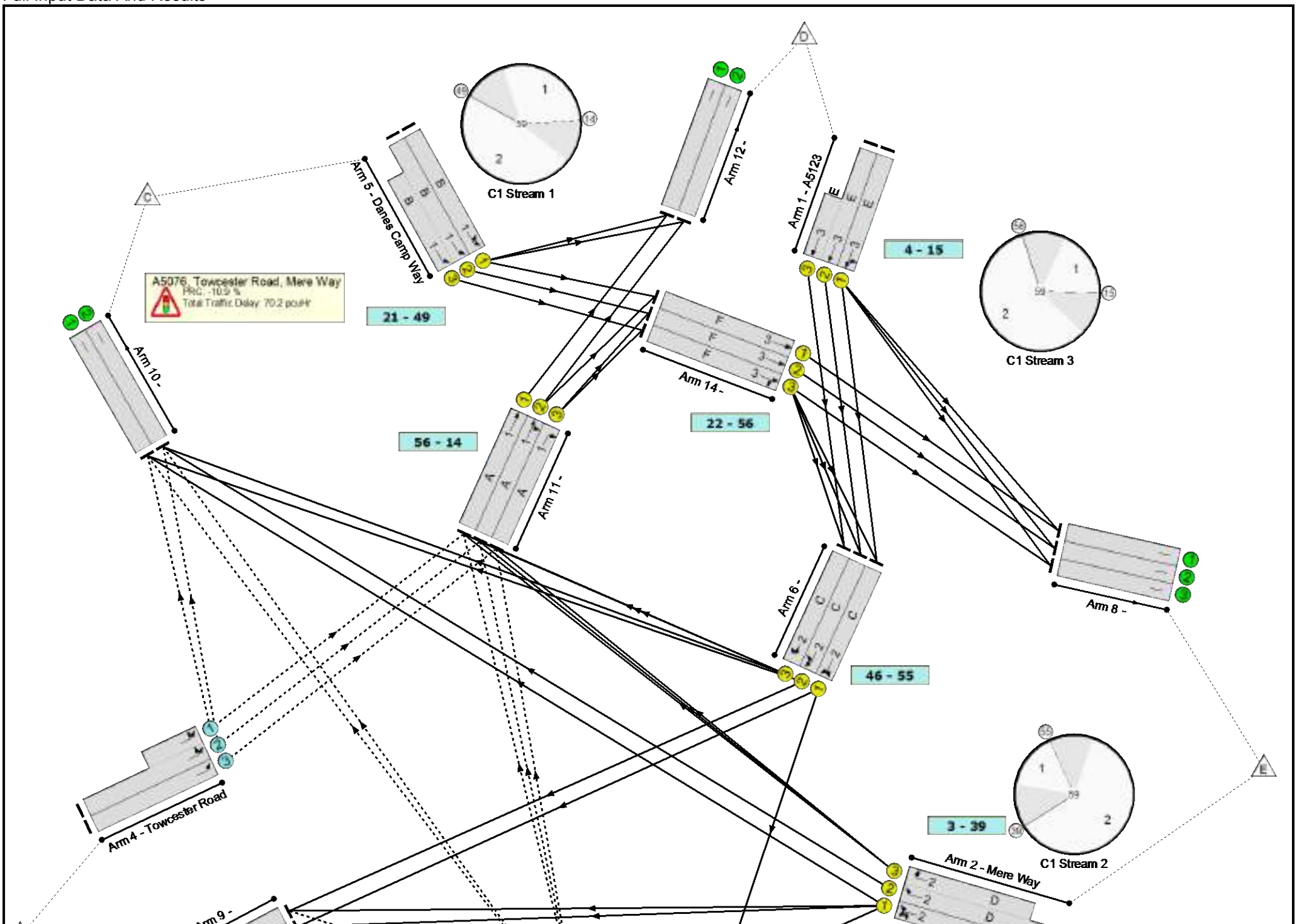
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.8%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**99.8%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	11	-	396	1950	397	99.8%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	11	-	197	2102:2102	211+392	32.7 : 32.7%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	36	-	1052	1915	1201	87.6%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	36	-	1577	2049:2037	1285+508	87.9 : 87.9%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	194	1898	306	63.4%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	245	1911	310	79.0%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	378	2045:1923	252+264	82.0 : 64.9%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	148	2021	252	58.7%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	28	-	820	1914	941	87.2%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	28	-	1456	2101:2051	786+775	93.3 : 93.3%
6/1	Ahead Ahead2	U	2	N/A	C		1	9	-	217	2040	346	62.8%
6/2	Ahead Right	U	2	N/A	C		1	9	-	199	2005	340	58.6%
6/3	Right U-Turn	U	2	N/A	C		1	9	-	141	2003	339	41.5%
7/1	Ahead	U	N/A	N/A	-		-	-	-	326	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1088	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	992	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	191	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	877	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1342	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	17	-	372	2054	627	59.4%
11/2	Ahead Right	U	1	N/A	A		1	17	-	415	2079	634	65.4%
11/3	Right	U	1	N/A	A		1	17	-	315	2041	623	50.6%
12/1		U	N/A	N/A	-		-	-	-	394	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	231	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	162	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	34	-	982	2105	1249	78.6%
14/2	Ahead	U	3	N/A	F		1	34	-	887	2105	1249	71.0%
14/3	Right Ahead	U	3	N/A	F		1	34	-	884	2105	1249	70.8%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1071**	**272**	**0**	**30.9**	**39.3**	**0.0**	**70.2**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1071**	**272**	**0**	**30.9**	**39.3**	**0.0**	**70.2**	**-**	**-**	**-**	**-**
1/1	396	396	-	-	-	2.6	9.8	-	12.4	112.6	6.4	9.8	16.2
1/2+1/3	197	197	-	-	-	1.1	0.2	-	1.3	24.2	1.8	0.2	2.0
2/1	1052	1052	-	-	-	2.7	3.4	-	6.0	20.7	14.0	3.4	17.4
2/2+2/3	1577	1577	-	-	-	3.5	3.5	-	7.1	16.1	15.4	3.5	18.9
3/1	194	194	60	134	0	0.8	0.9	-	1.7	31.1	2.7	0.9	3.6
3/2	245	245	107	138	0	1.0	1.8	-	2.8	41.4	3.6	1.8	5.4
4/2+4/1	378	378	756	0	0	1.4	1.3	-	2.8	26.5	3.1	1.3	4.4
4/3	148	148	148	0	0	0.5	0.7	-	1.2	28.8	2.0	0.7	2.7
5/1	820	820	-	-	-	3.0	3.2	-	6.3	27.5	11.8	3.2	15.1
5/2+5/3	1456	1456	-	-	-	4.8	6.2	-	11.0	27.1	11.5	6.2	17.7
6/1	217	217	-	-	-	1.2	0.8	-	2.0	33.0	3.3	0.8	4.1
6/2	199	199	-	-	-	1.1	0.7	-	1.8	32.4	2.9	0.7	3.6
6/3	141	141	-	-	-	1.2	0.4	-	1.6	40.5	2.3	0.4	2.6
7/1	326	326	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1088	1088	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	992	992	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	191	191	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	877	877	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1342	1342	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	372	372	-	-	-	1.7	0.7	-	2.4	23.4	4.3	0.7	5.0
11/2	415	415	-	-	-	1.4	0.9	-	2.4	20.6	5.0	0.9	5.9

Full Input Data And Results

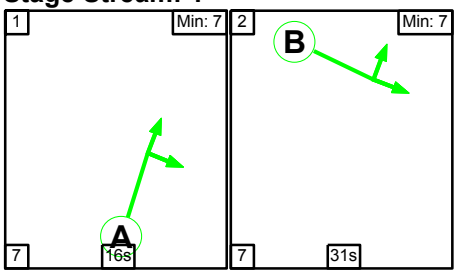
11/3	315	315	-	-	-	0.5	0.5	-	1.0	11.4	3.7	0.5	4.2
12/1	394	394	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	231	231	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	164	164	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	162	162	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	982	982	-	-	-	0.9	1.8	-	2.7	9.9	4.1	1.8	6.0
14/2	887	887	-	-	-	0.7	1.2	-	1.9	7.9	2.8	1.2	4.0
14/3	884	884	-	-	-	0.8	1.2	-	2.0	8.0	2.9	1.2	4.1

C1	Stream: 1 PRC for Signalled Lanes (%):	-3.6	Total Delay for Signalled Lanes (pcuHr):	23.00	Cycle Time (s): 59
C1	Stream: 2 PRC for Signalled Lanes (%):	2.3	Total Delay for Signalled Lanes (pcuHr):	18.46	Cycle Time (s): 59
C1	Stream: 3 PRC for Signalled Lanes (%):	-10.9	Total Delay for Signalled Lanes (pcuHr):	20.30	Cycle Time (s): 59
	PRC Over All Lanes (%):	-10.9	Total Delay Over All Lanes(pcuHr):	70.22	

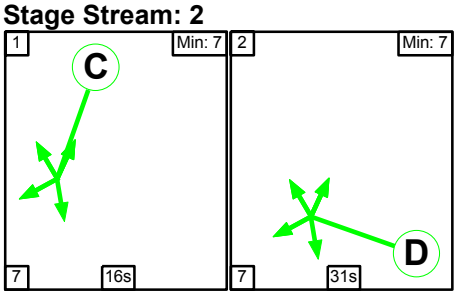
Full Input Data And Results
Scenario 4: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

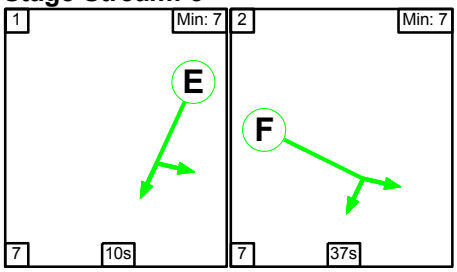
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	31
Change Point	3	26

Stage Stream: 2

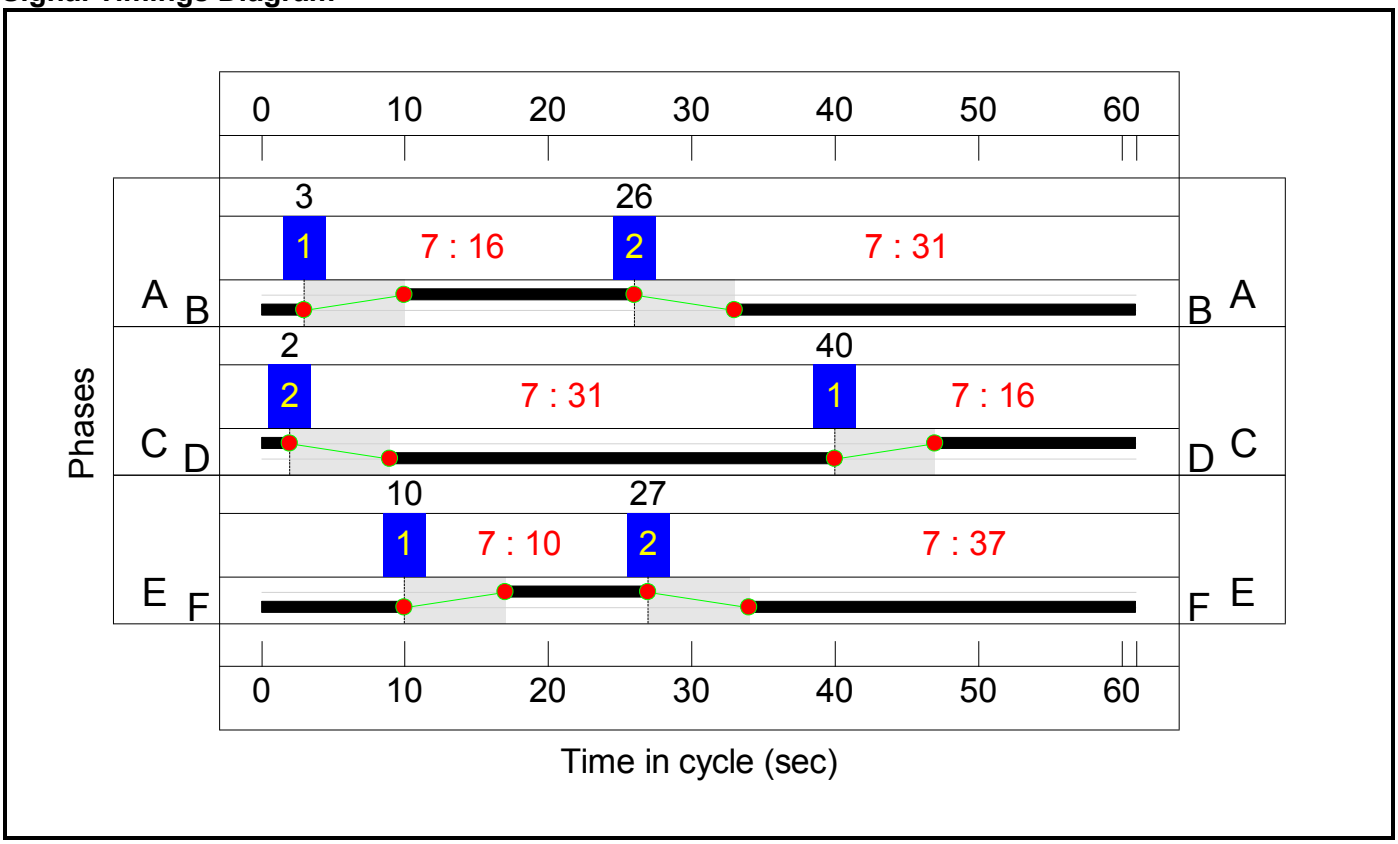
Stage	1	2
Duration	16	31
Change Point	40	2

Stage Stream: 3

Stage	1	2
Duration	10	37
Change Point	10	27

Full Input Data And Results

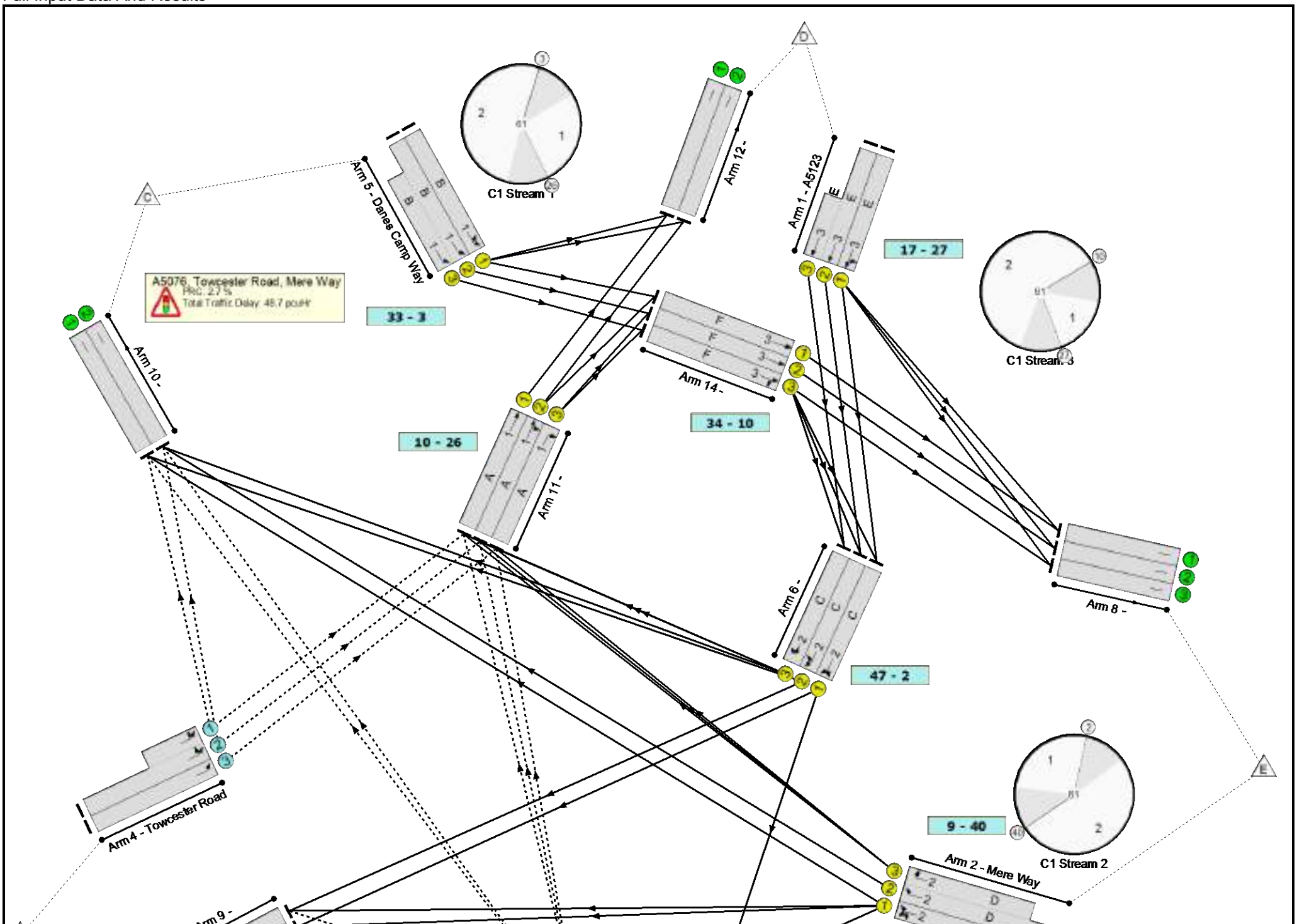
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.6%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.6%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	10	-	201	1956	353	57.0%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	10	-	119	2102:2102	45+369	28.8 : 28.8%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	31	-	859	1913	1004	85.6%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	31	-	1218	2049:2037	1075+315	87.6 : 87.6%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	336	1898	388	86.7%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	235	1911	416	56.5%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	417	2043:1923	347+368	60.0 : 56.8%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	122	2021	347	35.2%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	31	-	773	1912	1003	77.1%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	31	-	1376	2101:2051	810+803	85.3 : 85.3%
6/1	Ahead Ahead2	U	2	N/A	C		1	16	-	309	2040	569	54.4%
6/2	Ahead Right	U	2	N/A	C		1	16	-	253	2006	559	45.3%
6/3	Right U-Turn	U	2	N/A	C		1	16	-	107	2003	558	19.2%
7/1	Ahead	U	N/A	N/A	-		-	-	-	448	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	877	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	847	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	378	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	189	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	705	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1193	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	16	-	315	2054	572	55.0%
11/2	Ahead Right	U	1	N/A	A		1	16	-	346	2082	580	59.6%
11/3	Right	U	1	N/A	A		1	16	-	233	2041	569	41.0%
12/1		U	N/A	N/A	-		-	-	-	378	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	37	-	842	2105	1311	64.2%
14/2	Ahead	U	3	N/A	F		1	37	-	811	2105	1311	61.8%
14/3	Right Ahead	U	3	N/A	F		1	37	-	798	2105	1311	60.9%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1236**	**291**	**0**	**27.3**	**21.4**	**0.0**	**48.7**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1236**	**291**	**0**	**27.3**	**21.4**	**0.0**	**48.7**	**-**	**-**	**-**	**-**
1/1	201	201	-	-	-	1.3	0.7	-	1.9	34.6	3.1	0.7	3.7
1/2+1/3	119	119	-	-	-	0.7	0.2	-	0.9	27.6	1.5	0.2	1.7
2/1	859	859	-	-	-	3.0	2.9	-	5.8	24.5	12.4	2.9	15.3
2/2+2/3	1218	1218	-	-	-	4.0	3.4	-	7.4	21.8	13.9	3.4	17.3
3/1	336	336	166	170	0	1.4	2.9	-	4.3	46.5	5.3	2.9	8.2
3/2	235	235	114	121	0	0.6	0.6	-	1.2	18.9	2.8	0.6	3.5
4/2+4/1	417	417	834	0	0	1.1	0.7	-	1.8	15.5	2.5	0.7	3.2
4/3	122	122	122	0	0	0.2	0.3	-	0.5	15.1	1.1	0.3	1.4
5/1	773	773	-	-	-	2.5	1.7	-	4.1	19.3	10.3	1.7	12.0
5/2+5/3	1376	1376	-	-	-	3.9	2.8	-	6.8	17.7	8.3	2.8	11.1
6/1	309	309	-	-	-	1.2	0.6	-	1.8	21.4	3.8	0.6	4.4
6/2	253	253	-	-	-	0.9	0.4	-	1.3	18.1	1.9	0.4	2.3
6/3	107	107	-	-	-	0.6	0.1	-	0.8	25.3	1.8	0.1	1.9
7/1	448	448	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	877	877	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	847	847	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	378	378	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	189	189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	705	705	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1193	1193	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	315	315	-	-	-	1.2	0.6	-	1.8	21.1	3.2	0.6	3.8
11/2	346	346	-	-	-	1.5	0.7	-	2.3	23.5	5.3	0.7	6.0

Full Input Data And Results

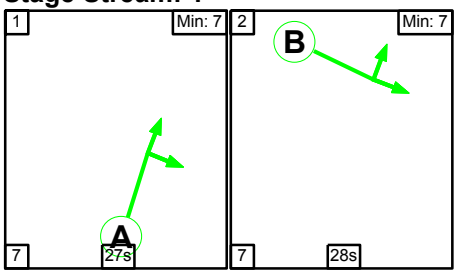
11/3	233	233	-	-	-	1.1	0.3	-	1.4	22.3	3.8	0.3	4.1
12/1	378	378	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	214	214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	842	842	-	-	-	0.9	0.9	-	1.8	7.5	3.7	0.9	4.6
14/2	811	811	-	-	-	0.6	0.8	-	1.4	6.1	2.3	0.8	3.1
14/3	798	798	-	-	-	0.5	0.8	-	1.3	6.0	2.2	0.8	3.0

C1	Stream: 1 PRC for Signalled Lanes (%):	5.6	Total Delay for Signalled Lanes (pcuHr):	16.46	Cycle Time (s): 61
C1	Stream: 2 PRC for Signalled Lanes (%):	2.7	Total Delay for Signalled Lanes (pcuHr):	17.07	Cycle Time (s): 61
C1	Stream: 3 PRC for Signalled Lanes (%):	40.2	Total Delay for Signalled Lanes (pcuHr):	7.31	Cycle Time (s): 61
	PRC Over All Lanes (%):	2.7	Total Delay Over All Lanes(pcuHr):	48.72	

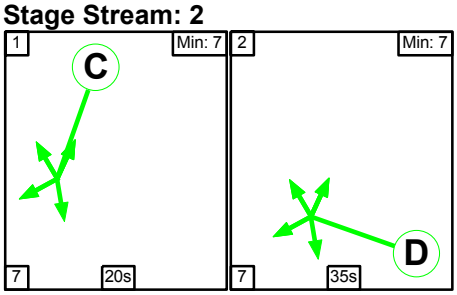
Full Input Data And Results
Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

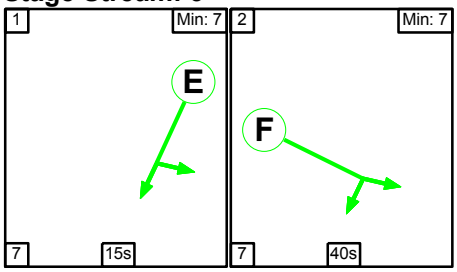
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	27	28
Change Point	26	60

Stage Stream: 2

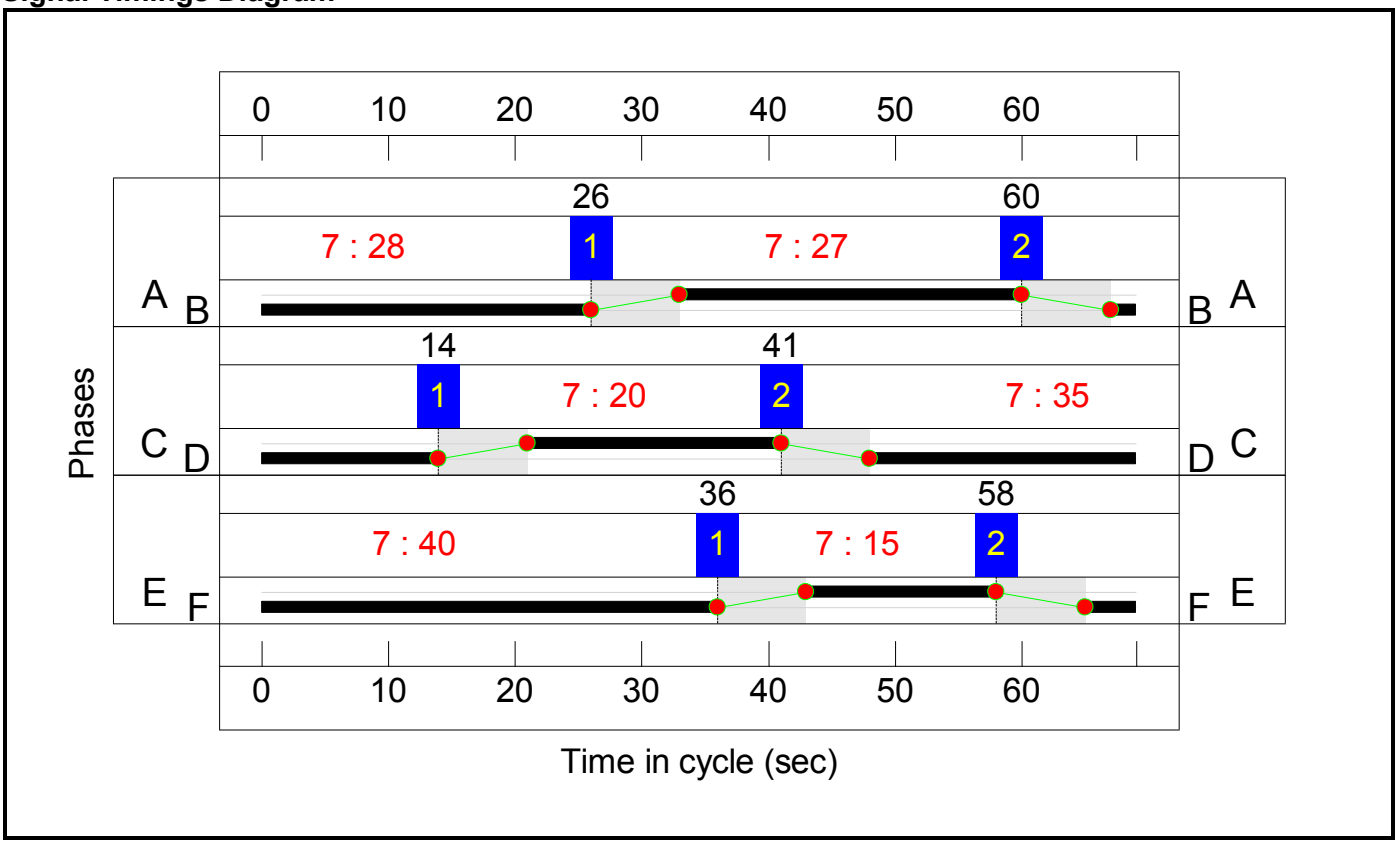
Stage	1	2
Duration	20	35
Change Point	14	41

Stage Stream: 3

Stage	1	2
Duration	15	40
Change Point	36	58

Full Input Data And Results

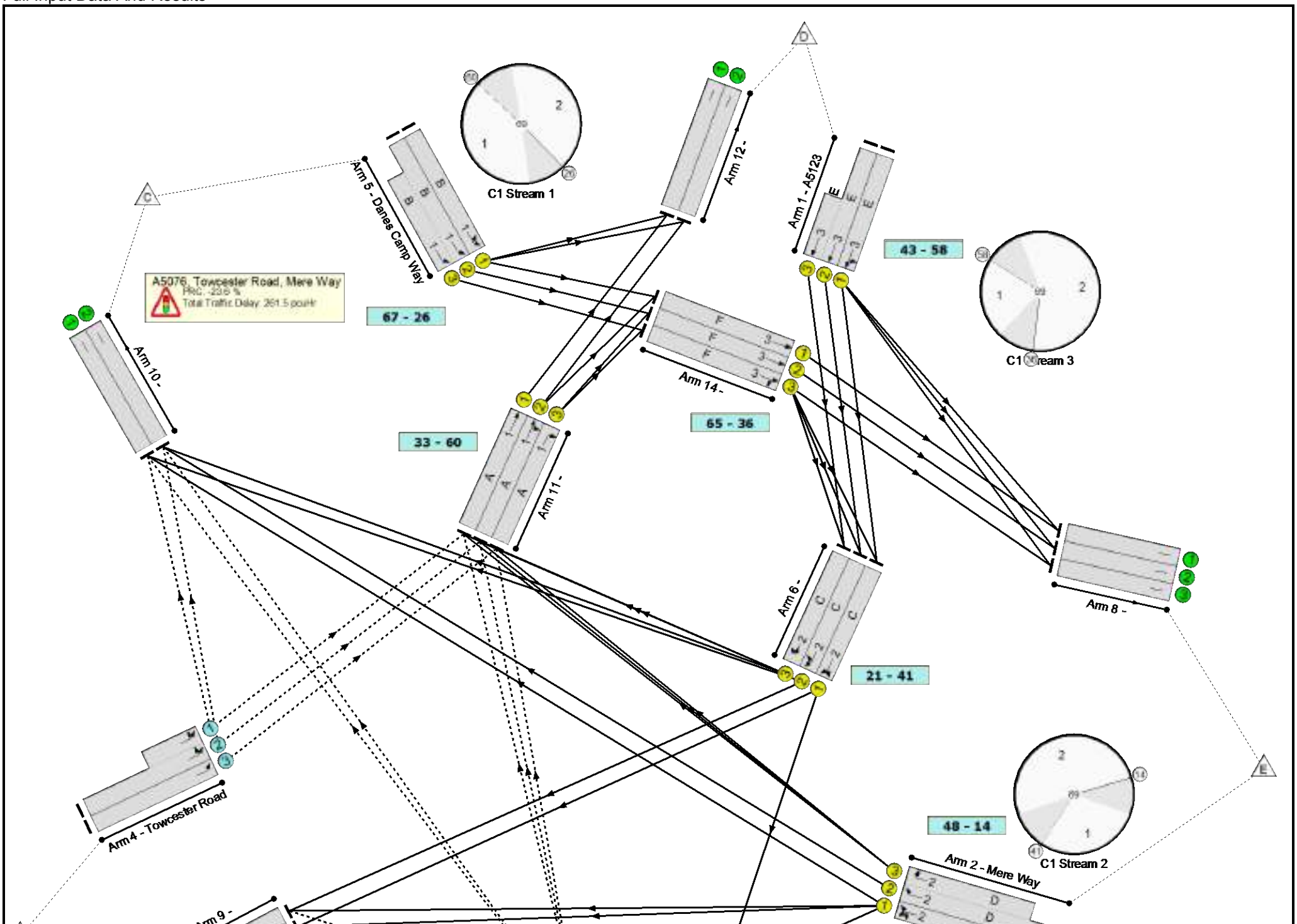
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.2%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.2%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	15	-	472	1949	452	104.4%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	15	-	137	2102:2102	286+401	19.9 : 19.9%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	35	-	1109	1916	1000	110.9%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	35	-	1758	2049:2037	1069+512	111.2 : 111.2%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	191	1898	432	44.3%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	252	1911	398	63.4%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	591	2044:1923	327+338	88.2 : 89.6%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	238	2021	327	72.9%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	28	-	781	1914	804	97.1%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	28	-	1325	2101:2051	664+671	99.2 : 99.2%
6/1	Ahead Ahead2	U	2	N/A	C		1	20	-	224	2039	621	35.6%
6/2	Ahead Right	U	2	N/A	C		1	20	-	179	2005	610	29.3%
6/3	Right U-Turn	U	2	N/A	C		1	20	-	97	2003	610	15.9%
7/1	Ahead	U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1100	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	725	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	343	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	924	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1382	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	27	-	469	2054	834	54.4%
11/2	Ahead Right	U	1	N/A	A		1	27	-	533	2076	842	62.2%
11/3	Right	U	1	N/A	A		1	27	-	427	2041	828	51.4%
12/1		U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	165	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	40	-	969	2105	1251	77.4%
14/2	Ahead	U	3	N/A	F		1	40	-	874	2105	1251	69.8%
14/3	Right Ahead	U	3	N/A	F		1	40	-	878	2105	1251	70.1%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1639**	**224**	**0**	**53.9**	**207.6**	**0.0**	**261.5**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1639**	**224**	**0**	**53.9**	**207.6**	**0.0**	**261.5**	**-**	**-**	**-**	**-**
1/1	472	452	-	-	-	4.0	17.0	-	20.9	159.6	9.4	17.0	26.4
1/2+1/3	137	137	-	-	-	0.8	0.1	-	0.9	24.4	1.2	0.1	1.3
2/1	1109	1000	-	-	-	9.3	59.3	-	68.7	222.9	23.4	59.3	82.7
2/2+2/3	1758	1612	-	-	-	12.7	93.4	-	106.1	217.3	34.8	93.4	128.2
3/1	191	191	76	115	0	0.6	0.4	-	1.0	19.5	2.6	0.4	3.0
3/2	252	252	143	109	0	1.0	0.9	-	1.9	26.5	3.8	0.9	4.6
4/2+4/1	591	591	1182	0	0	3.0	3.6	-	6.6	40.4	5.4	3.6	9.0
4/3	238	238	238	0	0	1.1	1.3	-	2.4	35.8	3.9	1.3	5.2
5/1	781	781	-	-	-	4.2	9.3	-	13.5	62.4	14.5	9.3	23.8
5/2+5/3	1325	1325	-	-	-	6.4	15.7	-	22.1	60.2	16.4	15.7	32.1
6/1	221	221	-	-	-	0.9	0.3	-	1.2	19.5	3.2	0.3	3.4
6/2	179	179	-	-	-	0.7	0.2	-	0.9	18.9	2.3	0.2	2.5
6/3	97	97	-	-	-	0.9	0.1	-	0.9	35.2	1.7	0.1	1.8
7/1	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1094	1094	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	999	999	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	719	719	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	214	214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	324	324	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	865	865	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1262	1262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	454	454	-	-	-	2.5	0.6	-	3.1	24.9	5.9	0.6	6.5
11/2	524	524	-	-	-	1.7	0.8	-	2.5	17.5	6.4	0.8	7.3

Full Input Data And Results

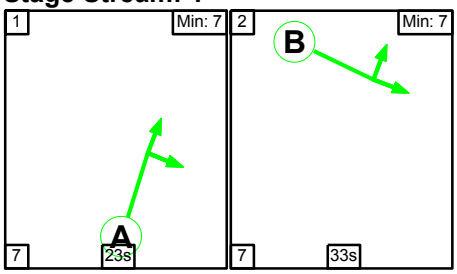
11/3	426	426	-	-	-	0.5	0.5	-	1.0	8.8	4.7	0.5	5.3
12/1	477	477	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	158	158	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	156	156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	969	969	-	-	-	1.1	1.7	-	2.8	10.5	4.7	1.7	6.3
14/2	873	873	-	-	-	1.2	1.1	-	2.3	9.6	4.2	1.1	5.4
14/3	877	877	-	-	-	1.1	1.2	-	2.3	9.5	4.2	1.2	5.3

C1	Stream: 1 PRC for Signalled Lanes (%):	-10.2	Total Delay for Signalled Lanes (pcuHr):	42.41	Cycle Time (s): 69
C1	Stream: 2 PRC for Signalled Lanes (%):	-23.6	Total Delay for Signalled Lanes (pcuHr):	177.88	Cycle Time (s): 69
C1	Stream: 3 PRC for Signalled Lanes (%):	-16.0	Total Delay for Signalled Lanes (pcuHr):	29.30	Cycle Time (s): 69
	PRC Over All Lanes (%):	-23.6	Total Delay Over All Lanes(pcuHr):	261.48	

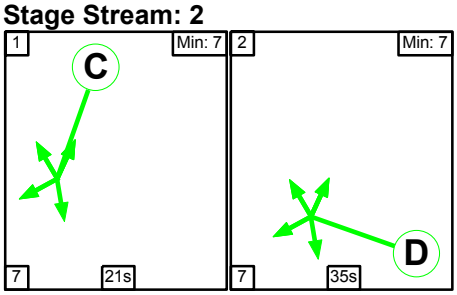
Full Input Data And Results
Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

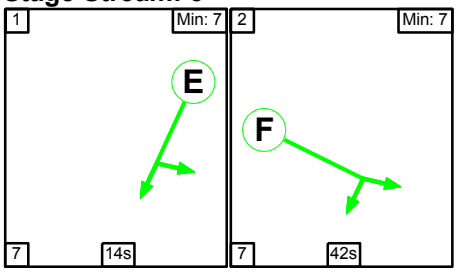
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	33
Change Point	6	36

Stage Stream: 2

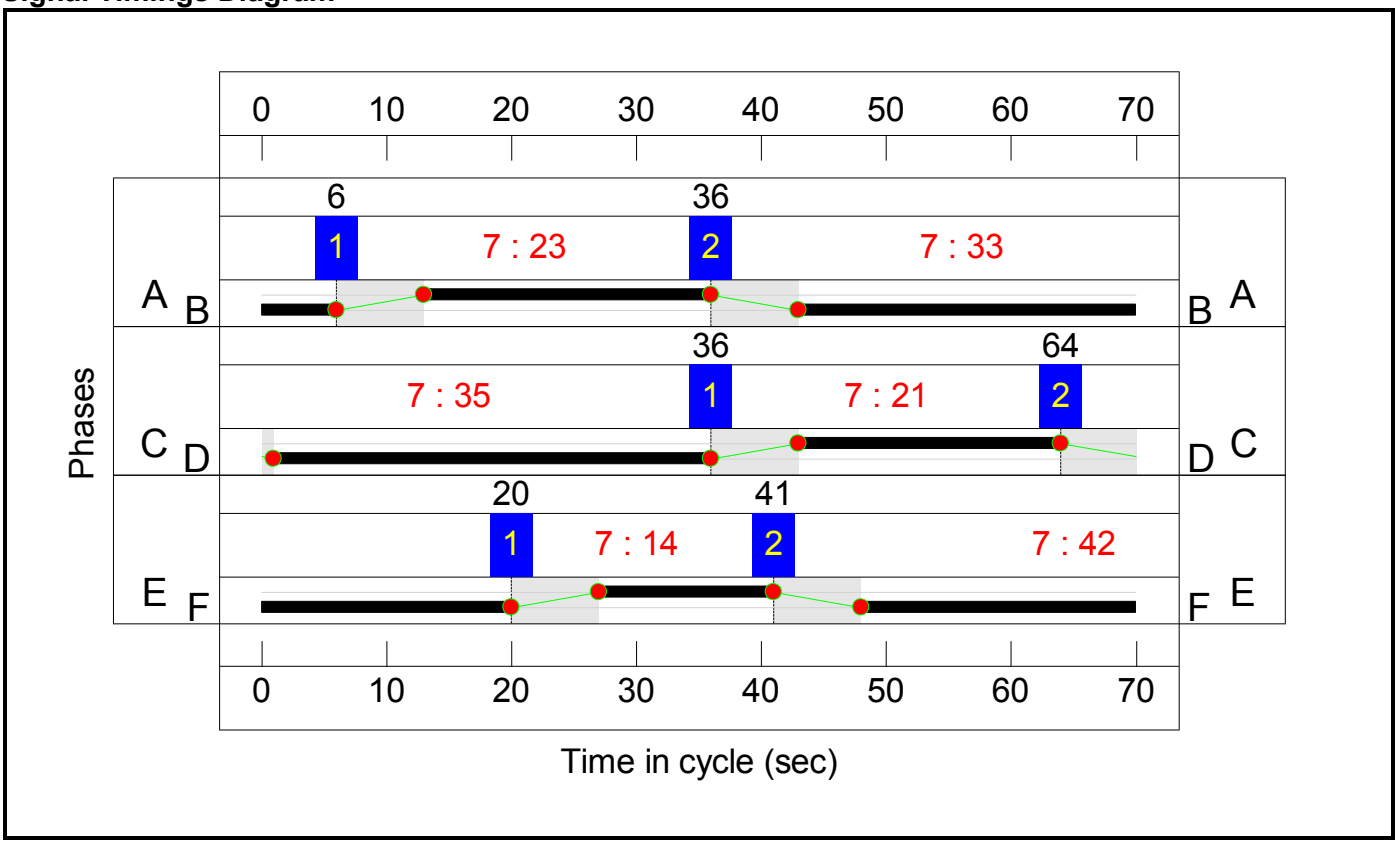
Stage	1	2
Duration	21	35
Change Point	36	64

Stage Stream: 3

Stage	1	2
Duration	14	42
Change Point	20	41

Full Input Data And Results

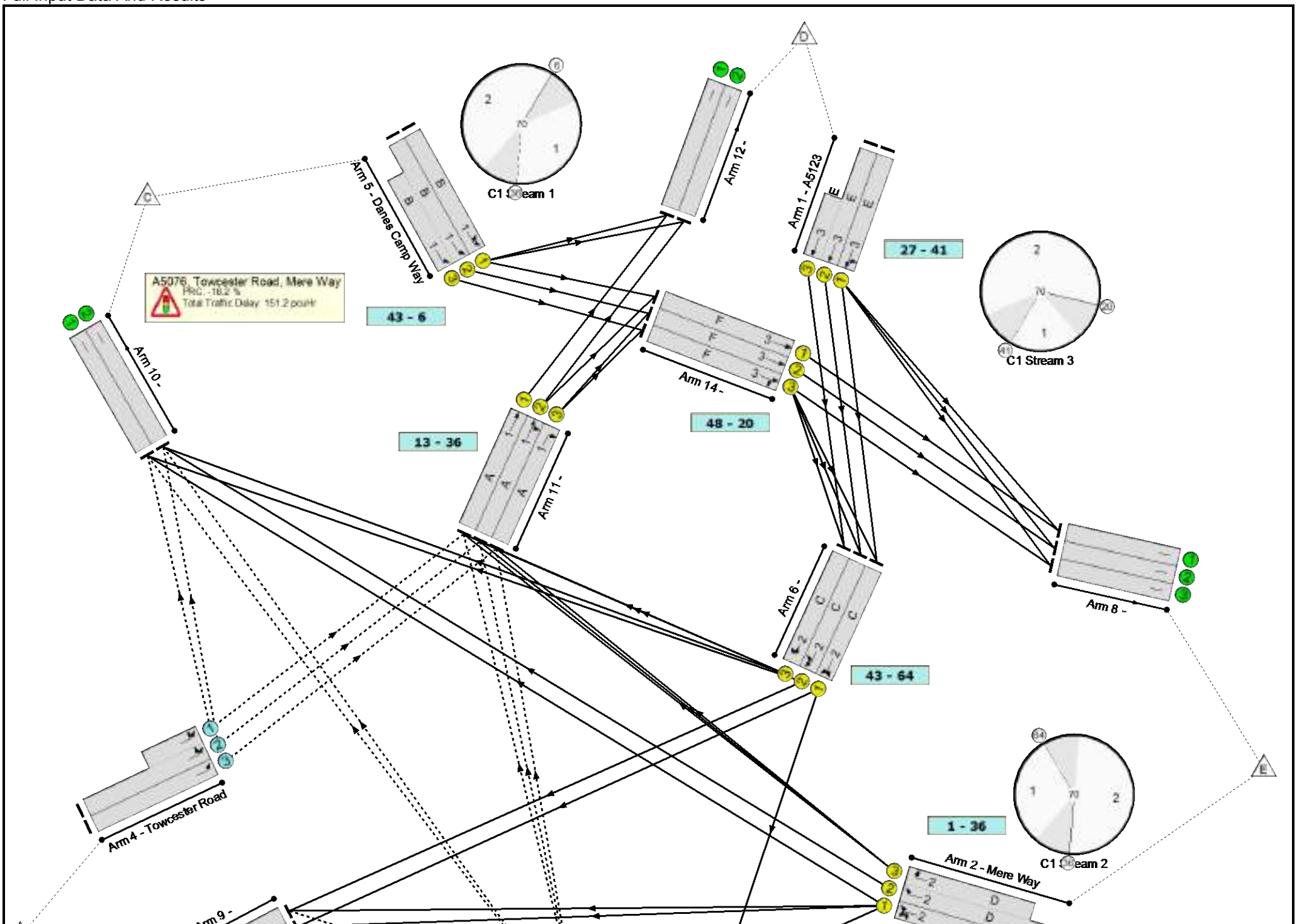
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.4%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.4%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	14	-	360	1951	418	86.1%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	14	-	303	2102:2102	250+381	48.0 : 48.0%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	35	-	1044	1916	985	105.9%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	35	-	1449	2049:2037	1054+308	106.4 : 106.4%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	338	1897	365	92.6%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	238	1911	345	69.1%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	374	2040:1923	277+299	65.6 : 64.2%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	120	2021	277	43.2%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	33	-	755	1912	929	81.3%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	33	-	1292	2101:2051	738+725	88.3 : 88.3%
6/1	Ahead Ahead2	U	2	N/A	C		1	21	-	327	2039	641	51.0%
6/2	Ahead Right	U	2	N/A	C		1	21	-	317	2007	631	50.3%
6/3	Right U-Turn	U	2	N/A	C		1	21	-	189	2003	630	30.0%
7/1	Ahead	U	N/A	N/A	-		-	-	-	448	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	834	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	830	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	391	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	292	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	590	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	704	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1499	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	23	-	371	2054	704	51.8%
11/2	Ahead Right	U	1	N/A	A		1	23	-	305	2077	712	42.6%
11/3	Right	U	1	N/A	A		1	23	-	187	2041	700	26.7%
12/1		U	N/A	N/A	-		-	-	-	445	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	240	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	42	-	746	2105	1293	57.7%
14/2	Ahead	U	3	N/A	F		1	42	-	743	2105	1293	57.5%
14/3	Right Ahead	U	3	N/A	F		1	42	-	736	2105	1293	56.9%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1172**	**272**	**0**	**43.7**	**107.5**	**0.0**	**151.2**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1172**	**272**	**0**	**43.7**	**107.5**	**0.0**	**151.2**	**-**	**-**	**-**	**-**
1/1	360	360	-	-	-	2.7	2.8	-	5.5	54.8	6.7	2.8	9.5
1/2+1/3	303	303	-	-	-	2.0	0.5	-	2.4	28.9	3.0	0.5	3.5
2/1	1044	985	-	-	-	6.9	36.5	-	43.3	149.5	21.4	36.5	57.9
2/2+2/3	1449	1374	-	-	-	8.5	50.6	-	59.1	146.8	29.8	50.6	80.5
3/1	338	338	173	165	0	1.8	4.7	-	6.4	68.4	6.3	4.7	10.9
3/2	238	238	132	106	0	1.0	1.1	-	2.1	32.0	3.8	1.1	4.9
4/2+4/1	374	374	748	0	0	1.5	0.9	-	2.4	23.0	2.9	0.9	3.8
4/3	120	120	120	0	0	0.4	0.4	-	0.8	23.3	1.6	0.4	2.0
5/1	755	755	-	-	-	3.2	2.1	-	5.3	25.4	12.4	2.1	14.5
5/2+5/3	1292	1292	-	-	-	4.8	3.6	-	8.5	23.6	11.2	3.6	14.8
6/1	327	327	-	-	-	1.8	0.5	-	2.4	26.0	4.7	0.5	5.3
6/2	317	317	-	-	-	2.0	0.5	-	2.5	28.2	5.1	0.5	5.6
6/3	189	189	-	-	-	0.4	0.2	-	0.6	12.3	3.6	0.2	3.8
7/1	440	440	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	834	834	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	830	830	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	279	279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	577	577	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	679	679	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1432	1432	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	365	365	-	-	-	1.4	0.5	-	2.0	19.4	6.1	0.5	6.6
11/2	303	303	-	-	-	1.9	0.4	-	2.3	26.9	5.6	0.4	6.0

Full Input Data And Results

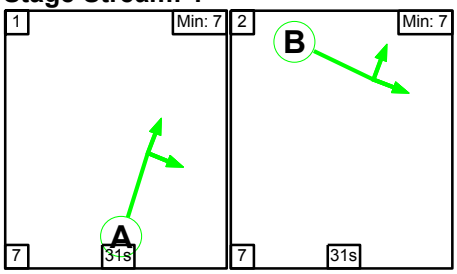
11/3	187	187	-	-	-	1.4	0.2	-	1.6	30.3	3.6	0.2	3.8
12/1	439	439	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	238	238	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	221	221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	219	219	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	746	746	-	-	-	0.9	0.7	-	1.6	7.6	4.2	0.7	4.9
14/2	743	743	-	-	-	0.5	0.7	-	1.2	5.9	2.5	0.7	3.1
14/3	736	736	-	-	-	0.6	0.7	-	1.2	6.1	3.0	0.7	3.6

C1	Stream: 1 PRC for Signalled Lanes (%):	1.9	Total Delay for Signalled Lanes (pcuHr):	19.60	Cycle Time (s): 70
C1	Stream: 2 PRC for Signalled Lanes (%):	-18.2	Total Delay for Signalled Lanes (pcuHr):	107.94	Cycle Time (s): 70
C1	Stream: 3 PRC for Signalled Lanes (%):	4.5	Total Delay for Signalled Lanes (pcuHr):	11.93	Cycle Time (s): 70
	PRC Over All Lanes (%):	-18.2	Total Delay Over All Lanes(pcuHr):	151.18	

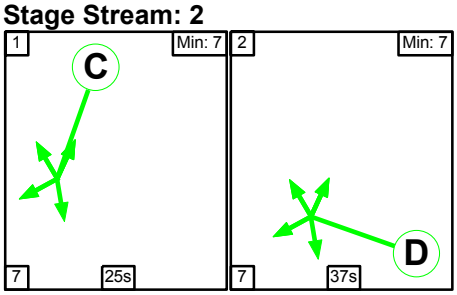
Full Input Data And Results
Scenario 7: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

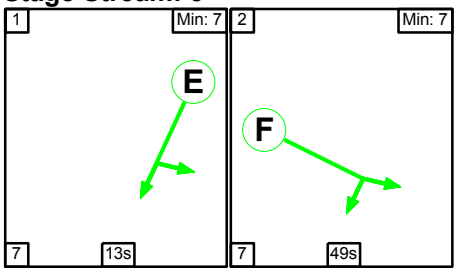
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	31	31
Change Point	47	9

Stage Stream: 2

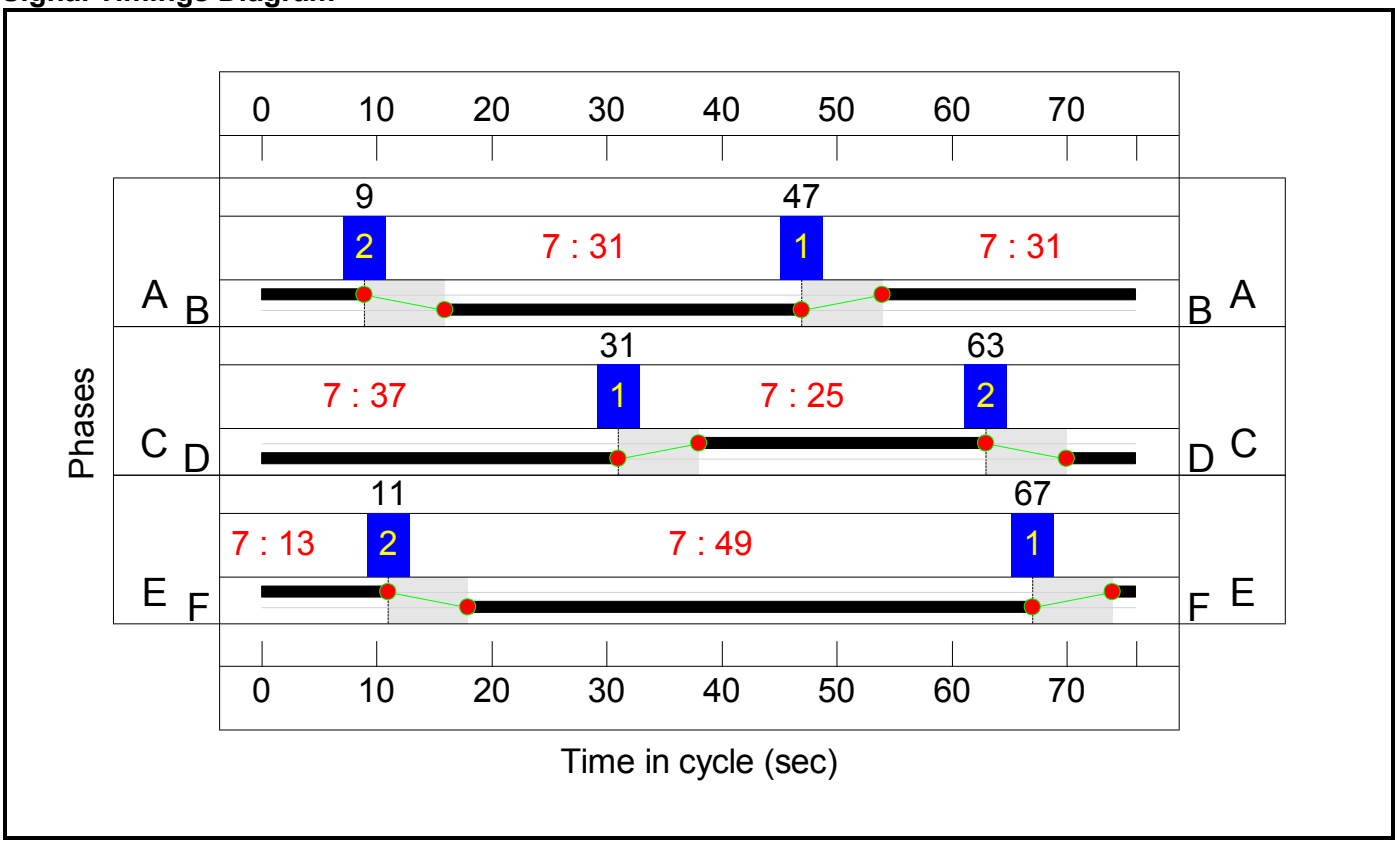
Stage	1	2
Duration	25	37
Change Point	31	63

Stage Stream: 3

Stage	1	2
Duration	13	49
Change Point	67	11

Full Input Data And Results

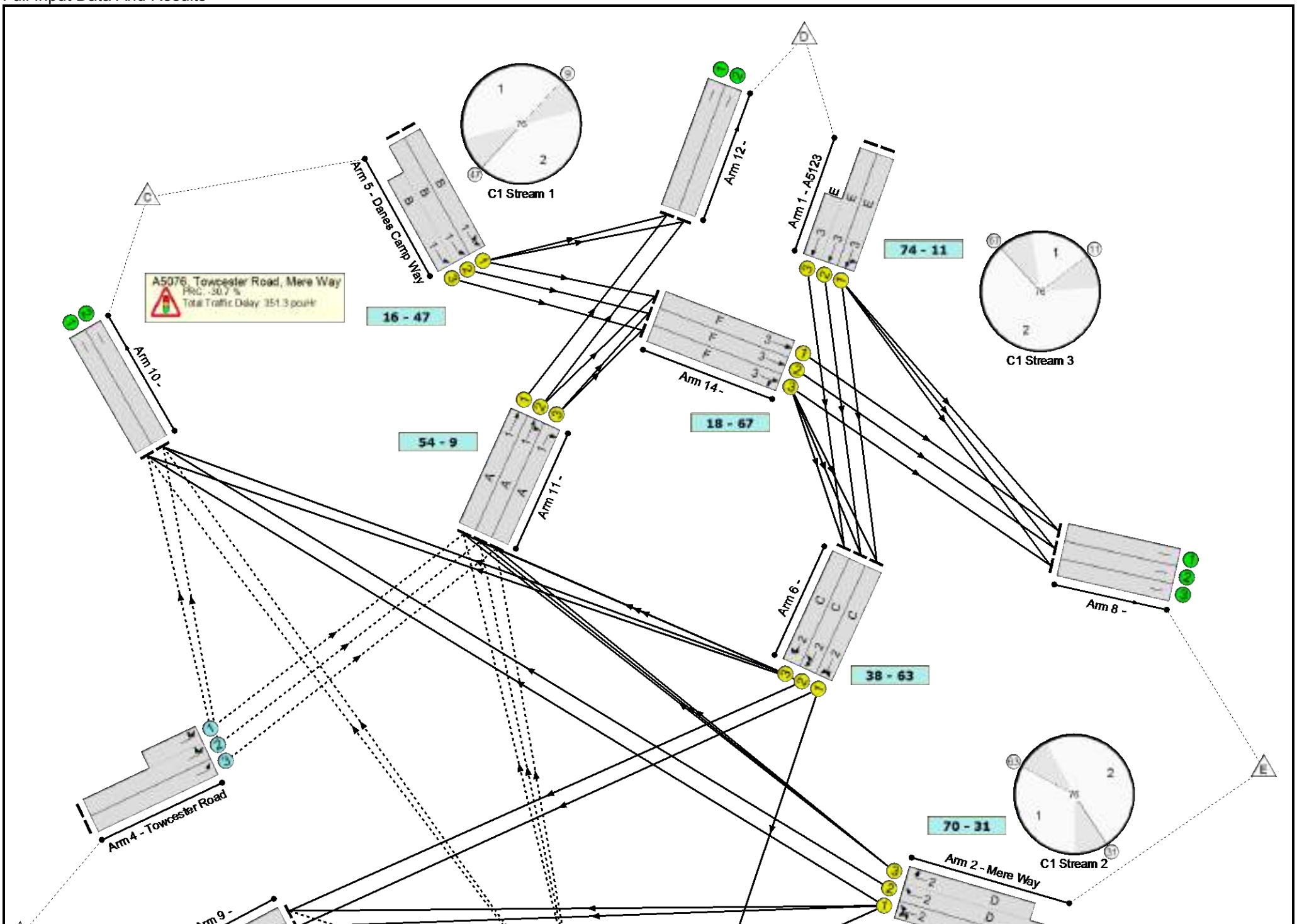
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.6%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.6%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	13	-	394	1950	359	109.7%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	13	-	171	2102:2102	274+327	28.4 : 28.4%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	37	-	1125	1915	957	117.5%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	37	-	1725	2049:2037	1025+442	117.6 : 117.6%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	191	1898	443	43.1%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	254	1911	408	62.3%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	588	2043:1926	335+343	86.3 : 87.2%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	267	2021	335	79.7%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	31	-	797	1914	806	98.9%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	31	-	1314	2101:2051	649+647	101.4 : 101.4%
6/1	Ahead Ahead2	U	2	N/A	C		1	25	-	236	2039	698	32.6%
6/2	Ahead Right	U	2	N/A	C		1	25	-	194	2005	686	28.1%
6/3	Right U-Turn	U	2	N/A	C		1	25	-	120	2003	685	17.5%
7/1	Ahead	U	N/A	N/A	-		-	-	-	329	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1097	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	995	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	688	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	953	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1434	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	31	-	475	2054	865	50.1%
11/2	Ahead Right	U	1	N/A	A		1	31	-	520	2077	875	55.7%
11/3	Right	U	1	N/A	A		1	31	-	459	2041	859	53.1%
12/1		U	N/A	N/A	-		-	-	-	496	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	165	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	49	-	992	2105	1385	71.6%
14/2	Ahead	U	3	N/A	F		1	49	-	890	2105	1385	63.6%
14/3	Right Ahead	U	3	N/A	F		1	49	-	883	2105	1385	63.1%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1685**	**203**	**0**	**63.3**	**288.0**	**0.0**	**351.3**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1685**	**203**	**0**	**63.3**	**288.0**	**0.0**	**351.3**	**-**	**-**	**-**	**-**
1/1	394	359	-	-	-	4.8	21.9	-	26.7	243.9	9.1	21.9	30.9
1/2+1/3	171	171	-	-	-	1.3	0.2	-	1.5	30.6	1.7	0.2	1.9
2/1	1125	957	-	-	-	12.3	87.0	-	99.3	317.8	27.3	87.0	114.3
2/2+2/3	1725	1467	-	-	-	17.2	132.5	-	149.7	312.4	40.8	132.5	173.3
3/1	191	191	87	104	0	0.7	0.4	-	1.0	19.6	2.8	0.4	3.2
3/2	254	254	155	99	0	1.1	0.8	-	1.9	26.6	4.2	0.8	5.0
4/2+4/1	588	588	1176	0	0	3.1	3.1	-	6.2	38.0	5.8	3.1	8.9
4/3	267	267	267	0	0	1.4	1.9	-	3.2	43.4	5.0	1.9	6.8
5/1	797	797	-	-	-	4.8	12.1	-	16.9	76.3	16.6	12.1	28.7
5/2+5/3	1314	1297	-	-	-	7.6	23.1	-	30.7	84.1	20.5	23.1	43.6
6/1	227	227	-	-	-	0.8	0.2	-	1.0	16.5	3.4	0.2	3.7
6/2	192	192	-	-	-	0.8	0.2	-	1.0	18.5	2.8	0.2	3.0
6/3	120	120	-	-	-	0.8	0.1	-	0.9	28.2	2.2	0.1	2.3
7/1	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1087	1087	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	976	976	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	673	673	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	192	192	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	285	285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1253	1253	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	433	433	-	-	-	1.7	0.5	-	2.2	18.1	4.8	0.5	5.3
11/2	487	487	-	-	-	1.5	0.6	-	2.1	15.6	5.5	0.6	6.2

Full Input Data And Results

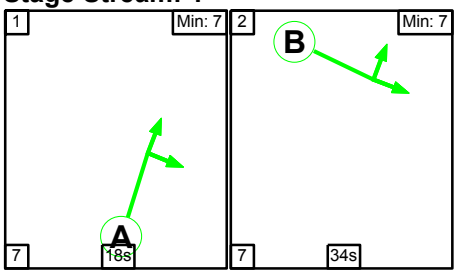
11/3	457	457	-	-	-	0.6	0.6	-	1.2	9.2	6.5	0.6	7.0
12/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	272	272	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	152	152	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	151	151	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	991	991	-	-	-	1.1	1.3	-	2.4	8.6	5.9	1.3	7.2
14/2	880	880	-	-	-	0.9	0.9	-	1.7	7.1	3.6	0.9	4.5
14/3	873	873	-	-	-	0.9	0.9	-	1.7	7.1	3.6	0.9	4.5

C1	Stream: 1 PRC for Signalled Lanes (%):	-12.6	Total Delay for Signalled Lanes (pcuHr):	53.05	Cycle Time (s): 76
C1	Stream: 2 PRC for Signalled Lanes (%):	-30.7	Total Delay for Signalled Lanes (pcuHr):	251.97	Cycle Time (s): 76
C1	Stream: 3 PRC for Signalled Lanes (%):	-21.9	Total Delay for Signalled Lanes (pcuHr):	33.97	Cycle Time (s): 76
	PRC Over All Lanes (%):	-30.7	Total Delay Over All Lanes(pcuHr):	351.32	

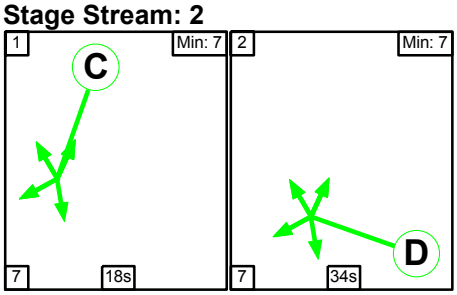
Full Input Data And Results
Scenario 8: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

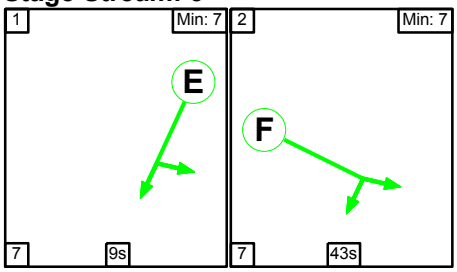
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	34
Change Point	5	30

Stage Stream: 2

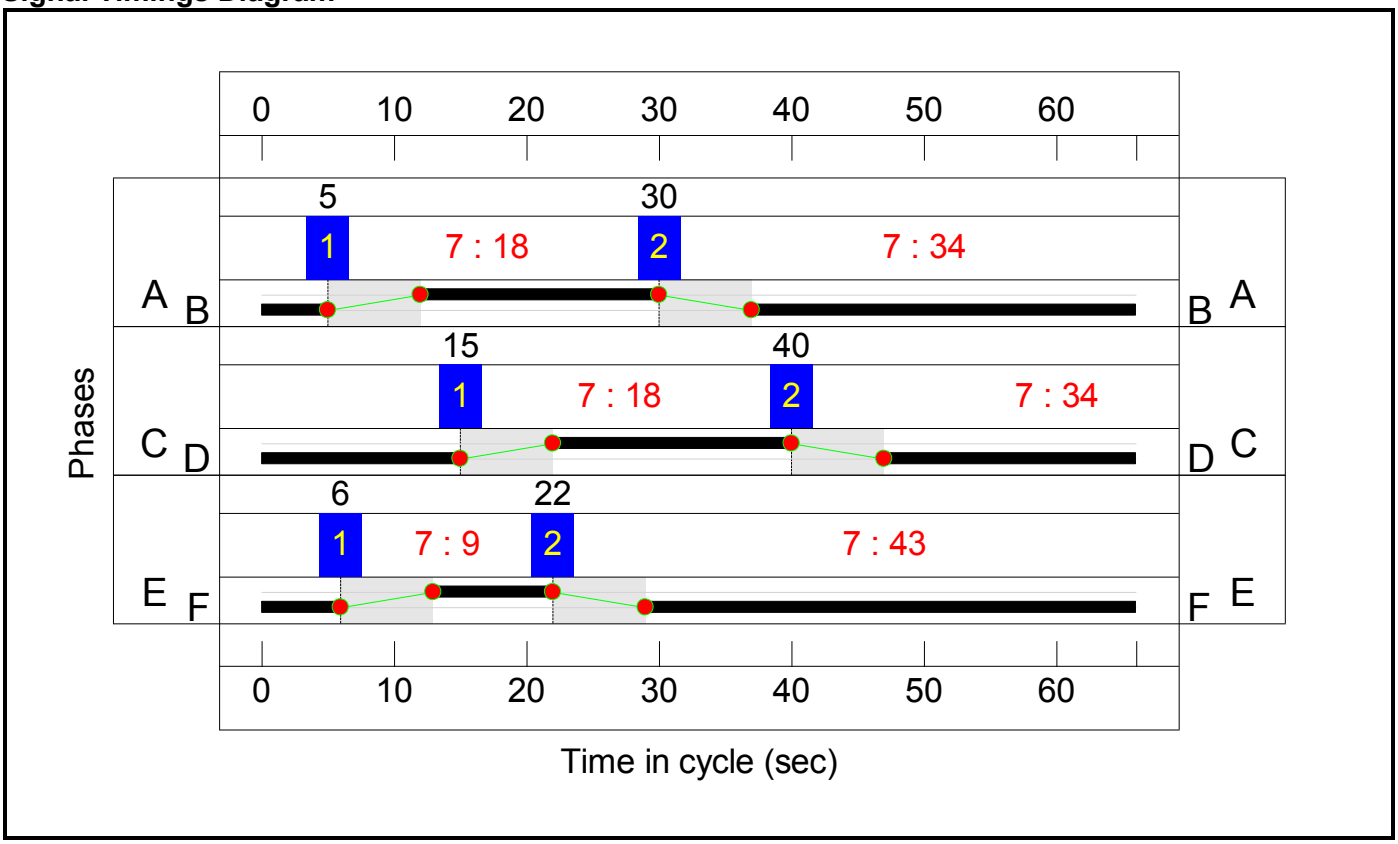
Stage	1	2
Duration	18	34
Change Point	15	40

Stage Stream: 3

Stage	1	2
Duration	9	43
Change Point	6	22

Full Input Data And Results

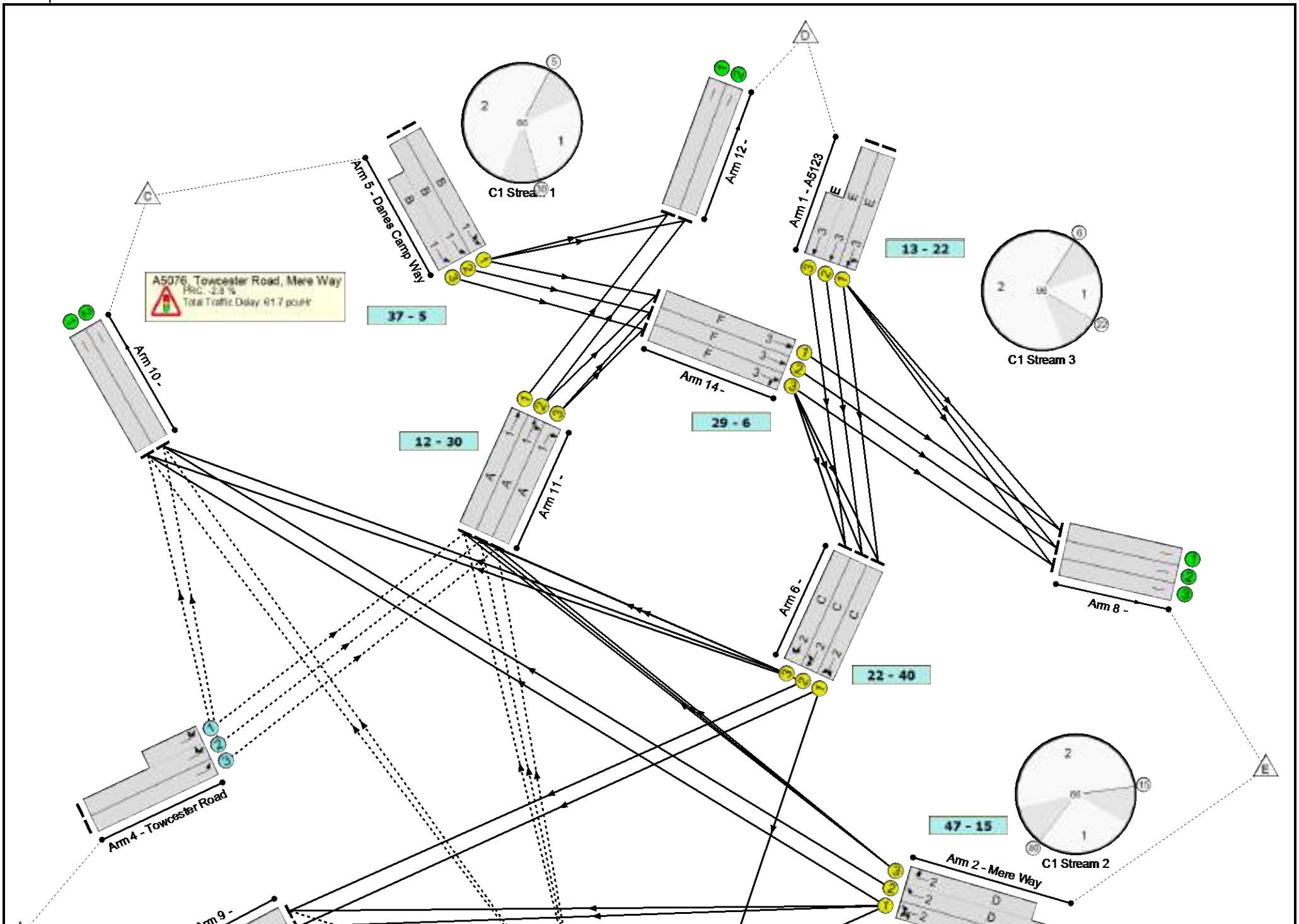
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.5%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.5%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	9	-	249	1954	296	84.1%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	9	-	277	2102:2102	67+311	73.2 : 73.2%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	34	-	919	1915	1016	90.5%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	34	-	1284	2049:2037	1087+302	92.5 : 92.5%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	338	1897	371	91.1%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	238	1911	359	66.3%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	330	2041:1924	261+280	62.1 : 59.9%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	100	2021	261	38.4%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	34	-	804	1912	1014	79.3%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	34	-	1369	2101:2051	787+797	86.4 : 86.4%
6/1	Ahead Ahead2	U	2	N/A	C		1	18	-	320	2040	587	54.5%
6/2	Ahead Right	U	2	N/A	C		1	18	-	248	2006	577	42.9%
6/3	Right U-Turn	U	2	N/A	C		1	18	-	265	2003	577	46.0%
7/1	Ahead	U	N/A	N/A	-		-	-	-	449	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	843	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	829	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	263	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	444	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1436	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	18	-	319	2054	591	53.9%
11/2	Ahead Right	U	1	N/A	A		1	18	-	282	2079	599	47.1%
11/3	Right	U	1	N/A	A		1	18	-	198	2041	588	33.7%
12/1		U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	43	-	792	2105	1403	56.4%
14/2	Ahead	U	3	N/A	F		1	43	-	778	2105	1403	55.4%
14/3	Right Ahead	U	3	N/A	F		1	43	-	789	2105	1403	56.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1052**	**284**	**0**	**32.3**	**29.4**	**0.0**	**61.7**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1052**	**284**	**0**	**32.3**	**29.4**	**0.0**	**61.7**	**-**	**-**	**-**	**-**
1/1	249	249	-	-	-	1.9	2.4	-	4.3	61.9	4.4	2.4	6.8
1/2+1/3	277	277	-	-	-	2.0	1.3	-	3.4	43.6	3.9	1.3	5.3
2/1	919	919	-	-	-	3.6	4.4	-	7.9	31.1	15.1	4.4	19.4
2/2+2/3	1284	1284	-	-	-	4.6	5.6	-	10.2	28.6	16.8	5.6	22.3
3/1	338	338	167	171	0	1.7	4.1	-	5.8	61.9	5.9	4.1	10.0
3/2	238	238	125	113	0	0.9	1.0	-	1.8	27.7	3.6	1.0	4.5
4/2+4/1	330	330	660	0	0	1.0	0.8	-	1.8	19.2	2.3	0.8	3.1
4/3	100	100	100	0	0	0.2	0.3	-	0.5	19.8	1.0	0.3	1.3
5/1	804	804	-	-	-	2.8	1.9	-	4.7	21.0	11.8	1.9	13.7
5/2+5/3	1369	1369	-	-	-	4.1	3.1	-	7.2	19.0	9.1	3.1	12.2
6/1	320	320	-	-	-	1.6	0.6	-	2.2	25.1	5.0	0.6	5.6
6/2	248	248	-	-	-	1.5	0.4	-	1.8	26.7	4.2	0.4	4.5
6/3	265	265	-	-	-	0.4	0.4	-	0.8	10.9	4.5	0.4	4.9
7/1	449	449	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	843	843	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	829	829	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	380	380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	263	263	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	444	444	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1436	1436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	319	319	-	-	-	1.7	0.6	-	2.2	25.4	4.8	0.6	5.3
11/2	282	282	-	-	-	1.6	0.4	-	2.0	25.6	3.4	0.4	3.8

Full Input Data And Results

11/3	198	198	-	-	-	1.0	0.3	-	1.2	22.7	1.8	0.3	2.1
12/1	395	395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	218	218	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	792	792	-	-	-	0.6	0.6	-	1.3	5.9	3.3	0.6	4.0
14/2	778	778	-	-	-	0.6	0.6	-	1.2	5.4	2.6	0.6	3.3
14/3	789	789	-	-	-	0.6	0.6	-	1.2	5.5	2.7	0.6	3.3

C1 Stream: 1 PRC for Signalled Lanes (%):	4.2	Total Delay for Signalled Lanes (pcuHr):	17.41	Cycle Time (s):	66
C1 Stream: 2 PRC for Signalled Lanes (%):	-2.8	Total Delay for Signalled Lanes (pcuHr):	23.02	Cycle Time (s):	66
C1 Stream: 3 PRC for Signalled Lanes (%):	7.0	Total Delay for Signalled Lanes (pcuHr):	11.30	Cycle Time (s):	66
PRC Over All Lanes (%):	-2.8	Total Delay Over All Lanes(pcuHr):	61.69		

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

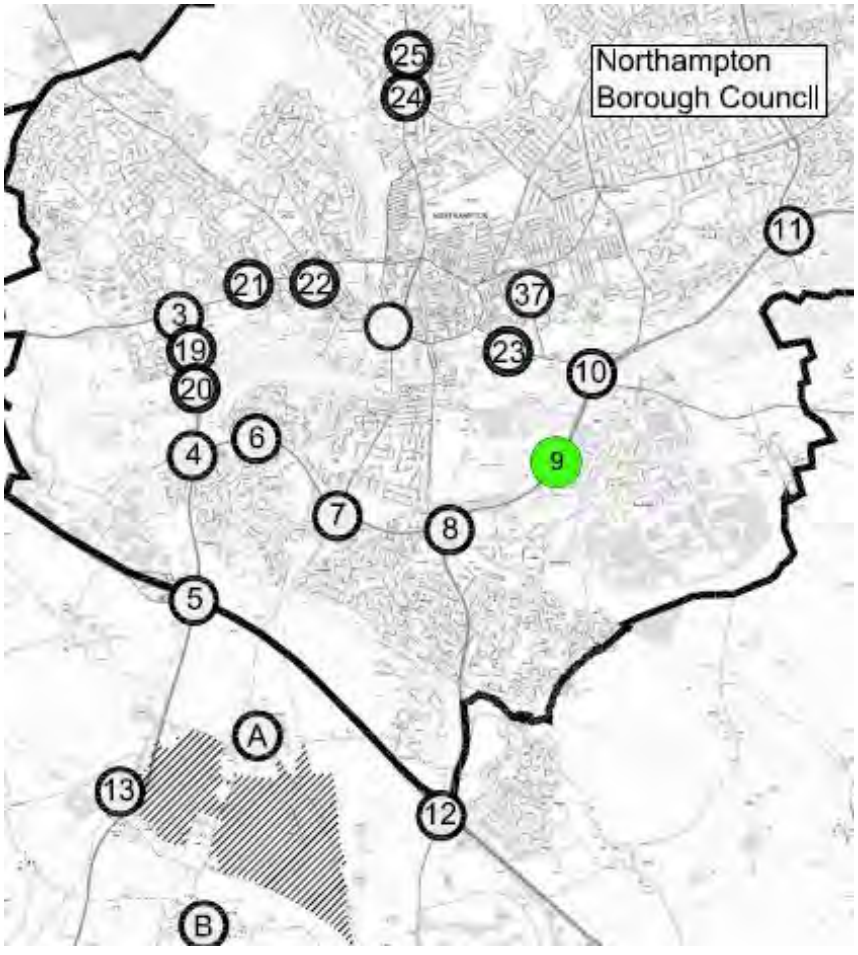
Technical Note No. 17

1 JUNCTION NINE – A45 NENE VALLEY WAY / EAGLE DRIVE AND CASWELL ROAD

Existing Junction Description

1.1 Junction Nine is a grade separated signalised roundabout to the west of Delapre Golf Centre and to the north of the Brackmills Industrial Estate, it connects the A45 Nene Valley Way to Eagle Drive and Caswell Road (the access to Brackmills Industrial Estate). The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Nine Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Thursday 27th March 2014 for the hours of 06:30 to 09:30 and 15:00 to 18:30 to establish the existing flows.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.6 The junction has been set up based on the guidance provided within the LinSig 3 handbook and industry standard guidance. Default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied, further to comments received from NCC and in accordance with guidance contained in LTN 1/09.

1.7 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays, included at **Appendix B**

1.8 For all scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.9 The base flows provided by NCC did not include queue data, however based on previous NCC comments on other junctions, the standard set up of the model is considered appropriate, therefore queues are considered appropriate.

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, shown in **Figure EL09** are summarised in **Table 2** and junction analysis results are included at **Appendix C.**

1.11 The names of each arm is as follows:

- Arm 1 – A45 East
- Arm 2 – Caswell Road
- Arm 3 – A45 West
- Arm 4 – Eagle Drive

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2015	89.0%	48.5%	77.1%	20.9%	21.8%	100.1%	59.6%	46.9%
	2021 DM	94.5%	55.8%	76.1%	21.9%	22.8%	145.0%	77.7%	35.2%
	2021 DS	89.2%	58.8%	73.1%	18.4%	58.7%	133.7%	54.4%	61.5%
	2031 DM	87.70%	79.50%	79.00%	25.30%	27.30%	138.00%	61.60%	36.30%
	2031 DS	84.3%	77.3%	81.1%	26.7%	27.9%	145.9%	57.5%	39.1%
Queue – MMQ (PCU)	2015	11	1	11	0	2	52	3	1
	2021 DM	18	1	11	0	1	280	5	1
	2021 DS	13	2	9	0	3	213	3	2
	2031 DM	12	6	12	1	2	240	3	1
	2031 DS	11	5	12	1	2	279	3	1
Average Delay (sec/pcu)	2015	31.1	4.2	14.8	17.7	12.1	59.2	50.7	16.0
	2021 DM	33.5	4.9	21.8	17.4	6.1	599.7	44.7	44.7
	2021 DS	21.6	5.3	22.6	13.8	21.2	485.4	26.1	21.6
	2031 DM	25.6	10.7	21.7	18.7	6.5	531.5	31.6	8.3
	2031 DS	25.0	9.5	23.9	19.4	6.6	601.3	30.1	8.5

1.12 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2031 PM scenario, with Arm B exceeding theoretical capacity by 7.9% as a result. There is also and increase in queues on Arm B for 2031 PM of 39 PCUs. Therefore mitigation is considered necessary to address the development's impact.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (DoS)	1.1	-5.0	0.1	2.6	6.7	-11.2	-61.1	-48.6	-53.3	-61.6
Overall Junction Delay (PCUhr)	32	39	30	33	31	40	488	355	408	482

1.13 There is a significant increase overall junction capacity between the DM 2031 and DS 2031 PM scenario by 8.3%. However, Overall junction delay increases between the DM PM and DS PM scenarios by 74 PCUhrs for 2031. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.14 The proposed mitigation is shown in **Appendix J.7** of the TA and summarised is as follows:

- Provision of traffic signal control on Caswell Road approach and circulatory carriageway.

1.15 The results of the mitigated junction model is shown in **Table 4** and included as **Appendix C.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**
DoS (%)	**2021 DS**	85.3%	60.7%	74.7%	16.8%	28.2%	133.7%	87.3%	115.5%
	Comparison to 2021 DM	-9.2%	4.9%	-1.4%	-5.1%	5.4%	-11.3%	9.6%	80.3%
	2031 DS	83.1%	69.8%	80.6%	23.8%	33.6%	114.1%	76.7%	107.9%
	Comparison to 2031 DM	-4.6%	-9.7%	1.6%	-1.5%	6.3%	-23.9%	15.1%	71.6%
	2021 DS	10	6	7	0	3	31	8	24

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
Queue – MMQ (PCU)	Comparison to 2021 DM	-8	5	-4	0	1	-250	3	23
	2031 DS	10	9	11	1	3	102	6	3
	Comparison to 2031 DM	-2	3	0	0	1	-139	3	2
Average Delay (sec/pcu)	2021 DS	18.6	13.5	20.2	11.8	10.3	18.8	92.2	323.0
	Comparison to 2021 DM	-14.9	8.6	-1.6	-5.6	4.2	-580.9	47.5	278.3
	2031 DS	23.9	14.5	22.0	17.3	9.2	196.1	75.8	35.8
	Comparison to 2031 DM	-1.7	3.8	0.3	-1.4	2.7	-335.4	44.2	27.5

1.16 As shown in **Table 4,** the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst Arm 3 shows to provide less capacity than in the DM scenario, the other three arms shows an improvement particularly Arm 2 by 9.7% in 2031 AM peak scenario. Furthermore, there is a reduction in queues 2031 PM peak of 133 PCUs, and a reduction in overall delay of over four minutes in the PM peak.

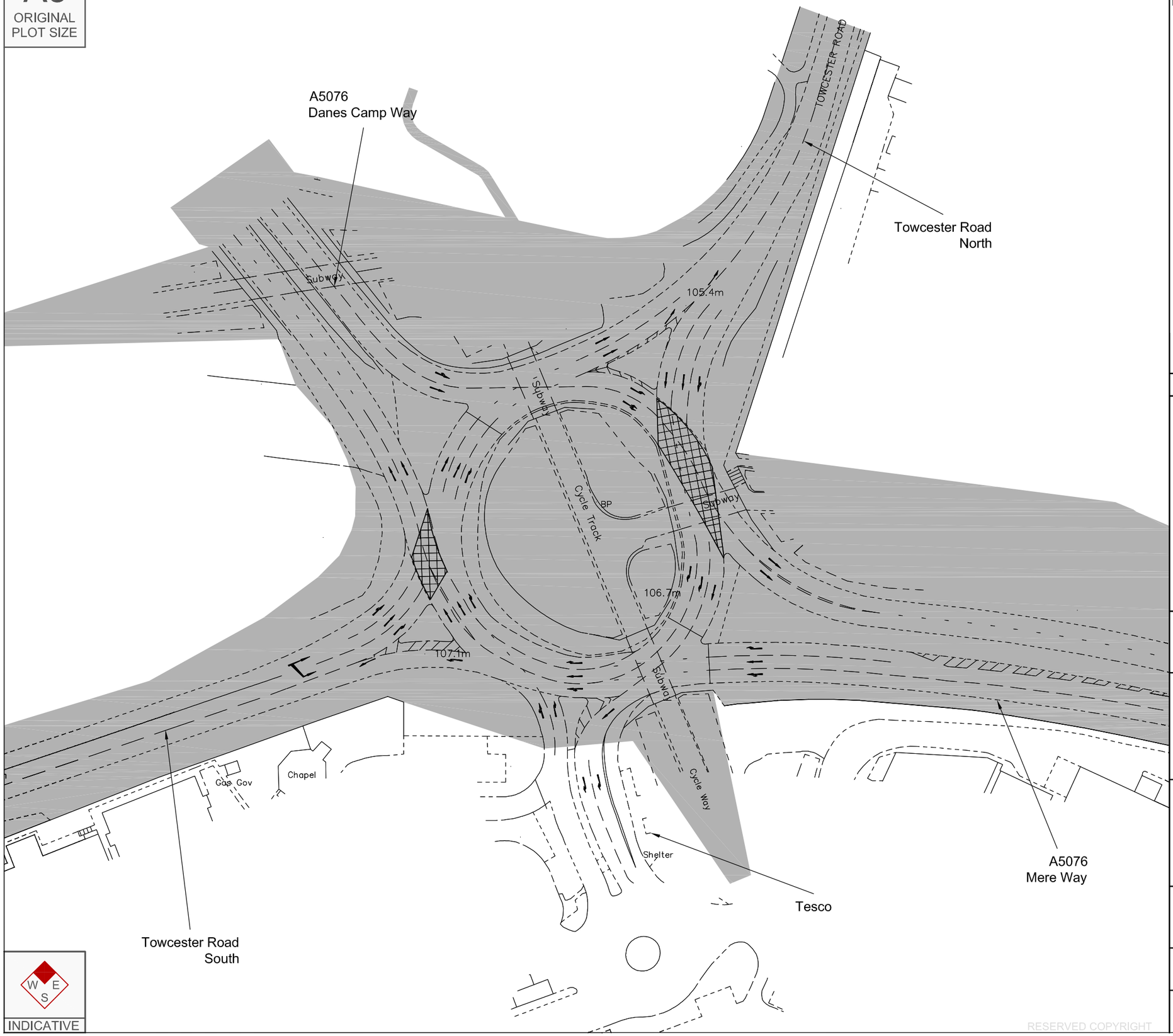
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM
Overall Junction capacity (DoS)	1.6	6.6	8.3	5.7	-28.3	32.8	-26.8	26.5
Overall Junction Delay (PCUhr)	29	-10	32	-1	49	-440	221	-188

1.17 The junction operates 5.7% and 26.5% better in 2031 DS scenario AM peak than AM peak 2031 and DM scenario in 2031 DS scenario PM peak than PM peak 2031 DM scenario respectively. Finally, the overall junction delay is 188 PCUhrs better in 2031 DS scenario PM peak

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A5076 / Towcester Road / Tesco Roundabout Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	12.06.17	JD	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL07	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

2015 BASE
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	3,412	0	3,412
C - A45 SLIP IN	0	763	0	9	772
D- Caswell Road	150	0	355	1	505
F - A45 NB IN	4,300	1,330	5	11	5,645
G - Eagle Drive	24	3	6	0	34
Total	4,474	2,096	3,779	20	10,368

2021 DM
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	4,482	0	4,482
C - A45 SLIP IN	0	1,111	0	11	1,122
D- Caswell Road	515	0	234	2	751
F - A45 NB IN	5,033	977	0	10	6,020
G - Eagle Drive	26	4	5	0	36
Total	5,574	2,093	4,722	22	12,411

2021 DS2
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	4,558	0	4,558
C - A45 SLIP IN	0	1,141	0	10	1,152
D- Caswell Road	517	0	269	3	788
F - A45 NB IN	5,155	770	0	9	5,935
G - Eagle Drive	26	4	6	0	36
Total	5,698	1,916	4,833	22	12,469

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0
C - A45 SLIP IN	0	0	0	0	0
D- Caswell Road	0	0	0	0	0
F - A45 NB IN	0	0	0	0	0
G - Eagle Drive	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,070	0	1,070
C - A45 SLIP IN	0	348	-0	2	350
D- Caswell Road	365	0	-120	1	246
F - A45 NB IN	733	-352	-5	-1	374
G - Eagle Drive	2	1	-1	0	2
Total	1,100	-3	943	3	2,043

2021 DS2 minus 2015 Base
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,146	0	1,146
C - A45 SLIP IN	0	378	-0	2	380
D- Caswell Road	367	0	-86	2	283
F - A45 NB IN	855	-560	-5	-1	289
G - Eagle Drive	2	1	0	0	3
Total	1,224	-180	1,054	3	2,101

3 Adjusted Flows by adding the Change in Flows (2) to the

Observed 2015 Count
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0
C - A45 SLIP IN	4	986	398	94	1,482
D- Caswell Road	304	3	292	24	623
F - A45 NB IN	13	1,048	447	105	1,613
G - Eagle Drive	18	9	20	0	47
Total	339	2,046	1,157	223	3,765

2021 DM adjusted to count
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,070	0	1,070
C - A45 SLIP IN	4	1,334	398	96	1,832
D- Caswell Road	669	3	172	25	869
F - A45 NB IN	746	696	442	104	1,987
G - Eagle Drive	20	10	19	0	49
Total	1,439	2,043	2,100	226	5,808

2021 DS2 adjusted to count
AM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,146	0	1,146
C - A45 SLIP IN	4	1,364	398	96	1,862
D- Caswell Road	671	3	206	26	906
F - A45 NB IN	868	488	442	104	1,902
G - Eagle Drive	20	10	20	0	50
Total	1,563	1,866	2,211	226	5,866

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	3,886	0	3,886
C - A45 SLIP IN	0	76	193	1	270
D- Caswell Road	467	0	812	0	1,279
F - A45 NB IN	5,054	730	9	5	5,798
G - Eagle Drive	113	19	131	0	262
Total	5,634	824	5,031	7	11,496

Modelled Flows
2021 DM
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	5,002	0	5,002
C - A45 SLIP IN	0	176	33	2	211
D- Caswell Road	1,585	0	614	0	2,200
F - A45 NB IN	4,937	891	0	5	5,833
G - Eagle Drive	168	58	49	0	275
Total	6,690	1,124	5,698	7	13,520

Modelled Flows
2021 DS2
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	5,033	0	5,033
C - A45 SLIP IN	0	178	20	2	199
D- Caswell Road	1,248	0	683	0	1,931
F - A45 NB IN	5,264	808	0	5	6,078
G - Eagle Drive	111	115	49	0	275
Total	6,623	1,101	5,785	7	13,517

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0
C - A45 SLIP IN	0	0	0	0	0
D- Caswell Road	0	0	0	0	0
F - A45 NB IN	0	0	0	0	0
G - Eagle Drive	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,115	0	1,115
C - A45 SLIP IN	0	100	-160	1	-59
D- Caswell Road	1,118	0	-198	0	920
F - A45 NB IN	-117	161	-9	-0	35
G - Eagle Drive	55	39	-81	0	13
Total	1,057	300	667	0	2,024

2021 DS2 minus 2015 Base
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,147	0	1,147
C - A45 SLIP IN	-0	102	-173	1	-70
D- Caswell Road	781	0	-129	0	652
F - A45 NB IN	210	79	-9	0	280
G - Eagle Drive	-1	96	-82	0	13
Total	990	277	754	1	2,021

3 Adjusted Flows by adding the Change in Flows (2) to the

Observed 2015 Count
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0
C - A45 SLIP IN	6	309	21	23	359
D- Caswell Road	1,254	8	660	9	1,931
F - A45 NB IN	9	242	35	36	322
G - Eagle Drive	102	14	53	0	169
Total	1,371	573	769	68	2,781

2021 DM adjusted to count
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,115	0	1,115
C - A45 SLIP IN	6	409	-139	24	300
D- Caswell Road	2,372	8	462	9	2,851
F - A45 NB IN	-108	403	26	36	357
G - Eagle Drive	157	53	-28	0	182
Total	2,428	873	1,436	68	4,805

2021 DS2 adjusted to count
PM Peak

	A- A45 NB OUT	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	1,147	0	1,147
C - A45 SLIP IN	6	411	-152	24	289
D- Caswell Road	2,035	8	531	9	2,583
F - A45 NB IN	219	321	26	36	602
G - Eagle Drive	101	110	-29	0	182
Total	2,361	850	1,523	69	4,802

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	3,412	0	3,412
C - A45 SLIP IN	0	0	763	0	9	772
D- Caswell Road	150	0	0	355	1	505
F - A45 NB IN	4,300	0	1,330	5	11	5,645
G - Eagle Drive	24	0	3	6	0	34
Total	4,474	0	2,096	3,779	20	10,368

Modelled Flows
2031 DM
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	4,009	0	4,009
C - A45 SLIP IN	12	0	960	112	9	1,094
D- Caswell Road	468	0	0	504	2	974
F - A45 NB IN	4,853	0	1,063	0	12	5,928
G - Eagle Drive	25	0	9	6	0	41
Total	5,359	0	2,032	4,630	23	12,045

Modelled Flows
2031 DS2
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	4,053	0	4,053
C - A45 SLIP IN	2	0	864	77	9	953
D- Caswell Road	470	0	0	492	2	964
F - A45 NB IN	4,820	0	1,082	0	12	5,915
G - Eagle Drive	24	0	8	9	0	41
Total	5,317	0	1,955	4,632	23	11,926

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0	0
C - A45 SLIP IN	0	0	0	0	0	0
D- Caswell Road	0	0	0	0	0	0
F - A45 NB IN	0	0	0	0	0	0
G - Eagle Drive	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	597	0	597
C - A45 SLIP IN	12	0	197	111	1	322
D- Caswell Road	318	0	0	149	1	469
F - A45 NB IN	554	0	-267	-5	1	283
G - Eagle Drive	1	0	6	-0	0	7
Total	886	0	-63	851	3	1,677

2031 DS2 minus 2015 Base
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	641	0	641
C - A45 SLIP IN	2	0	101	77	-0	181
D- Caswell Road	320	0	0	137	2	459
F - A45 NB IN	521	0	-247	-5	1	269
G - Eagle Drive	-0	0	5	3	0	8
Total	843	0	-141	853	3	1,558

3 Adjusted Flows by adding the Change in Flows (2) to the

Observed 2015 Count
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0	0
C - A45 SLIP IN	4	0	986	398	94	1,482
D- Caswell Road	304	0	3	292	24	623
F - A45 NB IN	13	0	1,048	447	105	1,613
G - Eagle Drive	18	0	9	20	0	47
Total	339	0	2,046	1,157	223	3,765

2031 DM adjusted to count
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	597	0	597
C - A45 SLIP IN	16	0	1,183	509	95	1,804
D- Caswell Road	622	0	3	441	25	1,092
F - A45 NB IN	567	0	781	442	106	1,896
G - Eagle Drive	19	0	15	20	0	54
Total	1,225	0	1,983	2,008	226	5,442

2031 DS2 adjusted to count
AM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	641	0	641
C - A45 SLIP IN	6	0	1,087	475	94	1,663
D- Caswell Road	624	0	3	429	26	1,082
F - A45 NB IN	534	0	801	442	106	1,882
G - Eagle Drive	18	0	14	23	0	55
Total	1,182	0	1,905	2,010	226	5,323

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	3,886	0	3,886
C - A45 SLIP IN	0	0	76	193	1	270
D- Caswell Road	467	0	0	812	0	1,279
F - A45 NB IN	5,054	0	730	9	5	5,798
G - Eagle Drive	113	0	19	131	0	262
Total	5,634	0	824	5,031	7	11,496

Modelled Flows
2031 DM
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	4,354	0	4,354
C - A45 SLIP IN	0	0	256	266	0	523
D- Caswell Road	1,330	0	0	725	2	2,057
F - A45 NB IN	4,587	0	818	0	5	5,411
G - Eagle Drive	162	0	70	67	0	299
Total	6,079	0	1,144	5,412	7	12,643

Modelled Flows
2031 DS2
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	4,257	0	4,257
C - A45 SLIP IN	0	0	266	124	1	391
D- Caswell Road	1,273	0	0	922	1	2,196
F - A45 NB IN	4,673	0	793	0	5	5,471
G - Eagle Drive	144	0	75	80	0	299
Total	6,090	0	1,134	5,383	7	12,614

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0	0
C - A45 SLIP IN	0	0	0	0	0	0
D- Caswell Road	0	0	0	0	0	0
F - A45 NB IN	0	0	0	0	0	0
G - Eagle Drive	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	468	0	468
C - A45 SLIP IN	-0	0	180	73	-1	253
D- Caswell Road	863	0	0	-87	1	778
F - A45 NB IN	-467	0	89	-9	0	-387
G - Eagle Drive	49	0	51	-64	0	36
Total	445	0	320	381	1	1,148

2031 DS2 minus 2015 Base
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	370	0	370
C - A45 SLIP IN	0	0	190	-69	-0	121
D- Caswell Road	806	0	0	110	1	917
F - A45 NB IN	-381	0	63	-9	0	-327
G - Eagle Drive	31	0	56	-51	0	37
Total	456	0	310	351	1	1,118

3 Adjusted Flows by adding the Change in Flows (2) to the

Observed 2015 Count
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	0	0	0
C - A45 SLIP IN	6	0	309	21	23	359
D- Caswell Road	1,254	0	8	660	9	1,931
F - A45 NB IN	9	0	242	35	36	322
G - Eagle Drive	102	0	14	53	0	169
Total	1,371	0	573	769	68	2,781

2031 DM adjusted to count
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	468	0	468
C - A45 SLIP IN	6	0	489	94	22	612
D- Caswell Road	2,117	0	8	573	10	2,709
F - A45 NB IN	-458	0	331	26	36	-65
G - Eagle Drive	151	0	65	-11	0	205
Total	1,816	0	893	1,150	69	3,929

2031 DS2 adjusted to count
PM Peak

	A- A45 NB OUT	C - A45 SLIP IN	D- Caswell Road	E - A45 SB OUT	G - Eagle Drive	Total
B - A45 S	0	0	0	370	0	370
C - A45 SLIP IN	6	0	499	-48	23	480
D- Caswell Road	2,060	0	8	770	10	2,848
F - A45 NB IN	-372	0	305	26	36	-5
G - Eagle Drive	133	0	70	2	0	206
Total	1,827	0	883	1,120	69	3,899

APPENDIX B

CUSTOMER DOCUMENTATION

Project :- 00142A Version :- 2 Date :- 17-Jul-98

Customer :- NORTHAMPTONSHIRE COUNTY COUNCIL

Site :- BRACKMILLS ROUNDABOUT A (W/B)

Engineer :- R.LEATHERSICH

Telephone :- 01604 620222

Produced by

TLC 3 Database Generator :- Release 3 Issue 15 (20-Feb-97)

MISCELLANEOUS DETAILS

Coded by DJP

Special features :- ALL RED REVERSION AFTER DELAY

Country :-	44	Mains :-	50Hz
Manually selected modes revert on police-panel door closure ?	N	Dimming :-	160V
Need date/time on cold start ?	N	Starting i/g :-	7

Mode Priorities

1 Manual

2 UTC - - - - - - "TS" sets time to 04:00:00

3 VA (manually selected)

4 Fixed Time (manually selected)

5 Cableless Linking

6 VA (automatically selected)

STAGE - PHASE ALLOCATION

Stage stream 1

Stage	Phases
1 *	B
2	A
3	C

Start_up stage in each stream is marked thus *.

STAGE SEQS: FXT+VA+CLF+MAN

Y = permitted move, Ya = extra i/g on max change,
Yx = extra i/g on max change if extended, Ys = Conditional movement.

Stream 1

From \ To	1	2	3
1		Y	Y
2	Y		Y
3	Y	Y	

MANUAL BUTTON INFORMATION

Button	Stage	Phases
All-Red	3	C
1	1	B
2	2	A
3	-	
4	-	
5	-	
6	-	
7	-	
8	-	

DETECTOR DETAILS

Types :- I = internal pack, X = external/ped button, Z = dummy
O/C = normally open/closed, P = p.d. on 9/18 hr fault

Functions :- R = regular loop, P/B = ped btn without/with "WAIT"
M = MOVA, S/T = SCOOT Occupancy/Count, Q = queue
V = speed, K/W = puffin kerbside/crossing, Z = dummy
L = latching, N = non-latching (call/cancel)
U = unidirectional

No	Title	Type	Func	Phase/stg dem	Phase/stg ext	Timings cal	Timings can	Timings ext	MOVA ID/ dfm	MOVA ID/ Sct	MOVA ID/ fctr
1	S10	IO-	RL-	A					9		
2	S20	IO-	RL-	B					9		
3	SPARE	IO-	RN-								
4	SPARE	IO-	RN-								
5	SPARE	IO-	RN-								
6	SPARE	IO-	RN-								
7	SPARE	IO-	RN-								
8	SPARE	IO-	RN-								
9	MVD 10	XOP	RL-	A	A			0.5	9		
10	MVD 20	XOP	RL-	B	B			0.5	9		
11	SPARE	XO-	RN-								
12	SPARE	XO-	RN-								
13	SPARE	XO-	RN-								
14	SPARE	XO-	RN-								
15	SPARE	XO-	RN-								
16	SPARE	XO-	RN-								
17	SPARE	XO-	RN-								
18	SPARE	XO-	RN-								

No	Title	Type	Func	Phase/stg dem	ext	Timings cal	can	ext	dfn	MOVA ID/ Sct	fctr
19	SPARE	XO-	RN-								
20	SPARE	XO-	RN-								
21	SPARE	XO-	RN-								
22	SPARE	XO-	RN-								
23	SPARE	XO-	RN-								
24	SPARE	XO-	RN-								
25	SPARE	XO-	RN-								
26	SPARE	XO-	RN-								
27	SPARE	XO-	RN-								
28	SPARE	XO-	RN-								
29	SPARE	XO-	RN-								
30	SPARE	XO-	RN-								
31	SPARE	XO-	RN-								
32	SPARE	XO-	RN-								

No	Title	Dummy condition / Input address	Wait lamp accessed as
1	S10	card 1 input 1	
2	S20	card 1 input 2	
3	SPARE	card 1 input 3	
4	SPARE	card 1 input 4	
5	SPARE	card 1 input 5	
6	SPARE	card 1 input 6	
7	SPARE	card 1 input 7	
8	SPARE	card 1 input 8	
9	MVD 10	card 1 input 9	
10	MVD 20	card 1 input 10	
11	SPARE	card 1 input 11	
12	SPARE	card 1 input 12	
13	SPARE	card 1 input 13	
14	SPARE	card 1 input 14	
15	SPARE	card 1 input 15	
16	SPARE	card 1 input 16	
17	SPARE	card 1 input 17	
18	SPARE	card 1 input 18	
19	SPARE	card 1 input 19	
20	SPARE	card 1 input 20	
21	SPARE	card 1 input 21	
22	SPARE	card 1 input 22	
23	SPARE	card 1 input 23	
24	SPARE	card 1 input 24	

No	Title	Dummy condition / Input address	Wait lamp accessed as
25	SPARE	card 1 input 25	
26	SPARE	card 1 input 26	
27	SPARE	card 1 input 27	
28	SPARE	card 1 input 28	
29	SPARE	card 1 input 29	
30	SPARE	card 1 input 30	
31	SPARE	card 1 input 31	
32	SPARE	card 1 input 32	

PHASE DETAILS

Types :- FT/FC = Full traffic (British/overseas), DU = dummy
IF/AF = Indicative or Filter arrow, ends in bkout/flashing green
PW/QW = Ped-with-traffic, without/with audible or tactile signal
PU = Ped-with-traffic, puffin sequence
PP/QP = Pelican ped -/+ audible/tactile, PT = Pelican traffic

Phase	location	type	minimum	Assoc'd blackout phase	/flash	maximum greens
A	A45 (W/B)	FT	7 (6)	0 (0)		20 20 20 20
B	CIRCULATING	FT	7 (6)	0 (0)		20 20 20 20
C	DUMMY	DU	1 (0)	0 (0)		0 0 0 0

Phase Appearance:-
0 = Always
1 = If demanded at start of interstage
2 = If demanded during interstage or stage
3 = If demanded during window

Phase Termination:-
0 = At end of stage
1 = When associated phase gains right of way
2 = When associated phase loses right of way
3 = After minimun green
4 = After maximun timer expires
5 = After special condition

Phase	location	type	appearance condition	termination condition	colour option
A	A45 (W/B)	FT	0	0	1
B	CIRCULATING	FT	0	0	1
C	DUMMY	DU	0	0	1

PHASE INTERGREEN DETAILS

	A	B	C
A	-	7 (6)	3 (2)
B	7 (6)		3 (2)
C	2 (1)	2 (1)	

STAGE CHANGE TIMINGS

Change 1 :	stages	1 --> 2
	lose	B [0]
	gain	A [0]
Change 2 :	stages	1 --> 3
	lose	B [0]
	gain	C [0]
Change 3 :	stages	2 --> 1
	lose	A [0]
	gain	B [0]
Change 4 :	stages	2 --> 3
	lose	A [0]
	gain	C [0]
Change 5 :	stages	3 --> 1
	lose	C [0]
	gain	B [0]
Change 6 :	stages	3 --> 2
	lose	C [0]
	gain	A [0]

CHANGE CONDNS - VA

STAGE 1

1 --> 2 Movement no. 1 (change no. 1) Regular maximum.

Demand	dA
Inhibit	f
Extend	eB

1 --> 3 Movement no. 2 (change no. 2) Regular maximum.

Demand	AR
Inhibit	dA
Extend	eB

STAGE 2

2 --> 1 Movement no. 5 (change no. 3) Regular maximum.

Demand	dB
Inhibit	f
Extend	eA

2 --> 3 Movement no. 6 (change no. 4) Regular maximum.

Demand	AR
Inhibit	dB
Extend	eA

STAGE 3

3 --> 1 Movement no. 9 (change no. 5)

Demand	dB
Inhibit	f
Extend	f

3 --> 2 Movement no. 10 (change no. 6)

Demand	dA
Inhibit	dB
Extend	f

CHANGE CONDNS - CLF

STAGE 1

1 --> 2 Movement no. 4 (change no. 1)

Demand	cF2 & (cD2 + dA)
Inhibit	cP1 & eB + cF1
Extend	f

Quit if inhibited or minima unexpired.

STAGE 2

2 --> 1 Movement no. 8 (change no. 3)

Demand	cF1 & (cD1 + dB)
Inhibit	cP1 & eA + cF2
Extend	f

Quit if inhibited or minima unexpired.

STAGE 3

3 --> 1 Movement no. 12 (change no. 5)

Demand	cF1 & (cD1 + dB)
Inhibit	f
Extend	f

Quit if inhibited or minima unexpired.

3 --> 2 Movement no. 13 (change no. 6)

Demand	cF2 & (cD2 + dA)
Inhibit	f
Extend	f

Quit if inhibited or minima unexpired.

CHANGE CONDNS - UTC

STAGE 1

1 --> 2 Movement no. 3 (change no. 1)

Demand	uF2 & dA
Inhibit	uF1 & eB
Extend	f

STAGE 2

2 --> 3 Movement no. 7 (change no. 4)

Demand	uF1 & dB
Inhibit	uF2 & eA
Extend	f

STAGE 3

3 --> 1 Movement no. 11 (change no. 5)

Demand	t
Inhibit	f
Extend	f

TIMETABLE DETAILS

Influence bits :-

PL6 PL3 PL2 PL1 -- -- -- -- MX24 MX34 -- -- -- -- -- SG1

Entry	Time	Days	Function & Value		Influence bit pattern
1:	06 30 00	MTWTF..	PL	1	0001 xxxx xxxx xxxx
2:	07 30 00	MTWTF..	PL	2	0010 xxxx xxxx xxxx
3:	09 15 00	MTWTF..	PL	1	0001 xxxx xxxx xxxx
4:	16 00 00	MTWTF..	PL	3	0100 xxxx xxxx xxxx
5:	18 15 00	MTWTF..	PL	0	0000 xxxx xxxx xxxx
6:	00:00:00	.....	PL	0	0000 xxxx xxxx xxxx
7:	00:00:00	.....	PL	0	0000 xxxx xxxx xxxx
8:	00:00:00	.....	PL	0	0000 xxxx xxxx xxxx
9:	00:00:00	.....	PL	1	0001 xxxx xxxx xxxx
10:	00:00:00	.....	PL	1	0001 xxxx xxxx xxxx
11:	00:00:00	.....	PL	1	0001 xxxx xxxx xxxx
12:	00:00:00	.....	PL	2	0010 xxxx xxxx xxxx
13:	00:00:00	.....	PL	2	0010 xxxx xxxx xxxx
14:	00:00:00	.....	PL	2	0010 xxxx xxxx xxxx
15:	00:00:00	.....	PL	3	0100 xxxx xxxx xxxx
16:	00:00:00	.....	PL	3	0100 xxxx xxxx xxxx
17:	00:00:00	.....	PL	3	0100 xxxx xxxx xxxx
18:	00:00:00	.....	MX	1	xxxx xxxx 00xx xxxx
19:	00:00:00	.....	MX	1	xxxx xxxx 00xx xxxx
20:	00:00:00	.....	MX	1	xxxx xxxx 00xx xxxx
21:	00:00:00	.....	MX	1	xxxx xxxx 00xx xxxx

Entry	Time	Days	Function & Value		Influence bit pattern
22:	00:00:00	.....	MX	2	xxxx xxxx 10xx xxxx
23:	00:00:00	.....	MX	2	xxxx xxxx 10xx xxxx
24:	00:00:00	.....	MX	2	xxxx xxxx 10xx xxxx
25:	00:00:00	.....	MX	2	xxxx xxxx 10xx xxxx
26:	00:00:00	.....	MX	3	xxxx xxxx 01xx xxxx
27:	00:00:00	.....	MX	3	xxxx xxxx 01xx xxxx
28:	00:00:00	.....	MX	3	xxxx xxxx 01xx xxxx
29:	00:00:00	.....	MX	3	xxxx xxxx 01xx xxxx
30:	00:00:00	.....	MX	4	xxxx xxxx 11xx xxxx
31:	00:00:00	.....	MX	4	xxxx xxxx 11xx xxxx
32:	00:00:00	.....	MX	4	xxxx xxxx 11xx xxxx
33:	00:00:00	.....	MX	4	xxxx xxxx 11xx xxxx
34:	03 59 00	MTWTFSS	IQ	1	xxxx xxxx xxxx xxx1
35:	03 59 03	M.....	DQ	1	xxxx xxxx xxxx xxx0
36:	03 59 05	.T.....	DQ	1	xxxx xxxx xxxx xxx0
37:	03 59 07	..W....	DQ	1	xxxx xxxx xxxx xxx0
38:	03 59 09	...T...	DQ	1	xxxx xxxx xxxx xxx0
39:	03 59 11	....F..	DQ	1	xxxx xxxx xxxx xxx0
40:	03 59 13	.....S.	DQ	1	xxxx xxxx xxxx xxx0
41:	03 59 15	......S	DQ	1	xxxx xxxx xxxx xxx0
42:	04 01 00	MTWTFSS	IQ	1	xxxx xxxx xxxx xxx1
43:	04 01 03	M.....	DQ	1	xxxx xxxx xxxx xxx0
44:	04 01 05	.T.....	DQ	1	xxxx xxxx xxxx xxx0
45:	04 01 07	..W....	DQ	1	xxxx xxxx xxxx xxx0

Entry	Time	Days	Function & Value	Influence bit pattern
46:	04 01 09	...T...	DQ 1	xxxx xxxx xxxx xxx0
47:	04 01 11	....F..	DQ 1	xxxx xxxx xxxx xxx0
48:	04 01 13	.....S.	DQ 1	xxxx xxxx xxxx xxx0
49:	04 01 15	......S	DQ 1	xxxx xxxx xxxx xxx0

Influence bits :-
-- -- -- -- -- -- -- -- -- -- -- cD2 cF2 cP1 cD1 cF1

Plan 1 Cycletime = 40 Offset = 0 Sync = t (adjusted daily)
Call condition = p1

Action No.	Action time	Influence type	Influence stage	Influence Pattern
1:	0	IM	1	xxxx xxxx xxx0 0011
2:	15	PR	2	xxxx xxxx xxx0 1100
3:	20	DD	2	xxxx xxxx xxx0 1000
4:	27	PR	1	xxxx xxxx xxx0 0101
5:	255			xxxx xxxx xxxx xxxx
6:	255			xxxx xxxx xxxx xxxx
7:	255			xxxx xxxx xxxx xxxx
8:	255			xxxx xxxx xxxx xxxx
9:	255			xxxx xxxx xxxx xxxx
10:	255			xxxx xxxx xxxx xxxx
11:	255			xxxx xxxx xxxx xxxx
12:	255			xxxx xxxx xxxx xxxx
13:	255			xxxx xxxx xxxx xxxx
14:	255			xxxx xxxx xxxx xxxx
15:	255			xxxx xxxx xxxx xxxx
16:	255			xxxx xxxx xxxx xxxx

Plan 2 Cycletime = 60 Offset = 0 Sync = t (adjusted daily)
Call condition = p2

Action No.	Action time	Influence type	Influence stage	Influence Pattern
1:	0	IM	1	xxxx xxxx xxx0 0011
2:	30	PR	2	xxxx xxxx xxx0 1100
3:	41	IM	2	xxxx xxxx xxx1 1000
4:	55	PR	1	xxxx xxxx xxx0 0101
5:	255			xxxx xxxx xxxx xxxx
6:	255			xxxx xxxx xxxx xxxx
7:	255			xxxx xxxx xxxx xxxx
8:	255			xxxx xxxx xxxx xxxx
9:	255			xxxx xxxx xxxx xxxx
10:	255			xxxx xxxx xxxx xxxx
11:	255			xxxx xxxx xxxx xxxx
12:	255			xxxx xxxx xxxx xxxx
13:	255			xxxx xxxx xxxx xxxx
14:	255			xxxx xxxx xxxx xxxx
15:	255			xxxx xxxx xxxx xxxx
16:	255			xxxx xxxx xxxx xxxx

Influence bits :-
-- -- -- -- -- -- -- -- -- -- -- cD2 cF2 cP1 cD1 cF1

Plan 3 Cycletime = 60 Offset = 0 Sync = t (adjusted daily)
Call condition = p3

Action No.	Action time	Influence type	Influence stage	Influence Pattern
1:	0	IM	1	xxxx xxxx xxx0 0011
2:	28	PR	2	xxxx xxxx xxx0 1100
3:	38	IM	2	xxxx xxxx xxx1 1000
4:	55	PR	1	xxxx xxxx xxx0 0101
5:	255			xxxx xxxx xxxx xxxx
6:	255			xxxx xxxx xxxx xxxx
7:	255			xxxx xxxx xxxx xxxx
8:	255			xxxx xxxx xxxx xxxx
9:	255			xxxx xxxx xxxx xxxx
10:	255			xxxx xxxx xxxx xxxx
11:	255			xxxx xxxx xxxx xxxx
12:	255			xxxx xxxx xxxx xxxx
13:	255			xxxx xxxx xxxx xxxx
14:	255			xxxx xxxx xxxx xxxx
15:	255			xxxx xxxx xxxx xxxx
16:	255			xxxx xxxx xxxx xxxx

OTU INTERFACE

Bit	Control Word		Reply Word	
1	D1	card 2 input 32	..	not assigned
2	F1	card 2 input 31	G1	card 2 output 12
3	D2	card 2 input 30	..	not assigned
4	F2	card 2 input 29	G2	card 2 output 11
5	S0	card 2 input 28	CF	card 2 output 10
6	..	not assigned	DF	card 2 output 9
7	TS04	card 2 input 27	RT	card 2 output 8
8	..	not assigned	LF	card 2 output 7
9	..	not assigned	..	not assigned
10	..	not assigned	..	not assigned
11	..	not assigned	..	not assigned
12	..	not assigned	..	not assigned
13	..	not assigned	..	not assigned
14	..	not assigned	..	not assigned
15	..	not assigned	..	not assigned
16	..	not assigned	..	not assigned

LAMP MONITORING OPTION

Phase monitored: A, B

SPECIAL EVENTS

Event name	Pulse ?	Event number	Up-ramp time	Down-ramp time
won	N	2	0.25	0
lfl	N	14	0.25	0.25
utcm	N	15	0	0.25
utsm	Y	16	0	0.75
tds	N	30	0	4.75

DIGITAL OUTPUTS

Types: CO = contact, LV = 24Vdc, AC = 240Vac, DM = dimmable mains
LK = pelican link (contact), SP = SDE/SA phase green (contact)
HC = hurrycall confirm (contact)

Driving condition	Output address	Type	Active state
%out8	card 1 output 1	CO	High / closed
%out8	card 1 output 2	CO	High / closed
%out8	card 1 output 3	CO	High / closed
%out8	card 1 output 4	CO	High / closed
%out8	card 1 output 5	CO	High / closed
%out8	card 1 output 6	CO	High / closed
%out8	card 1 output 7	CO	High / closed
%out8	card 1 output 8	CO	High / closed

LONG-TERM TIMERS

No	Period	Initialising condition	Enabling condition
1	0:00:30	INPUTS	%ltrn1

EVENT FORMULAE

Event no.	name	Formula
2	won	= -f
3	veA	= ed9
4	veB	= ed10
5	woff	= woff + won.F & -won & -off
6	%bo	= bo
7	rdA	= veA.O + rdA & -gA
8	rdB	= veB.O + rdB & -gB
9	off	= woff + (sr & -won) + off & -won.R # %bo.R
10	dB	= dpB + rdB + uD1
11	eB	= epB + ed10 + uD1
12	dA	= dpA + rdA + uD2
13	eA	= epA + ed9 + uD2
14	lf1	= -lf1 & lf
15	utcm	= xfdx
16	utsm	= -uTS
17	qG1G2	= mM + bn + lof + off + bf+bv
18	INPUTS	= dA + dB + eA + eB
19	tPL2	= tPL012 & tPL258

Event no.	name	Formula
20	tPL3	= tPL345 & tPL036
21	%out8	= s1
22	df1	= df + bt # lf1
23	dim	= iss & -uSO & -sw32
24	zutc	= utcm & -bm
25	zman	= bm
26	zclf	= -tPL0 & -(bf+bv)
27	qCF	= cf
28	qDF	= df
29	zva	= -bf
30	tds	= utsm.F & utsm.UF
31	qLF	= lf
32	tSG1	= tSG1
33	qG1	= s1 & gB + qG1G2
34	qG2	= s2 & gA + qG1G2
35	AR	= ltx1
36		= uF2 & dA
37		= uF1 & eB
38		= uF1 & dB
39		= uF2 & eA
40	%ltrn1	= -INPUTS
41	tPL1	= tPL012 & tPL147
42	%cd032	= cF2 & (cD2 + dA)
43	%ci012	= cP1 & eB + cF1

Event no.	name	Formula
44	%cd031	= cF1 & (cD1 + dB)
45	%ci021	= cP1 & eA + cF2

Administration

General Specifications

Customer Name	Kier WSP - Northampton Highways	Customer Order No.	856864643
Intersection/ General Description	Brackmills Roundabout Eastbound, Northampton Reference: ORN146	Controller/ Serial Number	
		S.T.S. /EM Number	nn0002 Issue 0
Controller	(•) New ( ) Modification	Equipment Installation by	
Area Specifications/ Customer Drawings		Slot Cutting by	
Specification Section	MCE 0141 Issue A	Civil Works by	
Contract/Tender Ref:		Customer's Engineer	Marcus Grant / Tanya Soar
Quotation No.		Telephone Number	07500 579320 / 01604 883498
Works Order No.			

Signal Company Use Only

Signal Engineer: Dave Vernon

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: CC EE DC 4B

Controller Options

Hardware: T800 Firmware Type and Issue: PB800 ISS 31 Other Options: KTD LO

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack Kit Type Options ( ) ( ) ( ) ( )

Cabinet/Rack Variant Cuckoo Options [ ]

Mains Supply	230 Volts	50 Hz					
Peak Lamp Current	1 Amps	Dimming Voltage	160	Answer Issue	2	Date Created	20/04/2017
Average Lamp Power	1 Watts						
Total Average Power	1 Watts	Low Inrush Transformer	[ ]	Edit Issue	4		

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

( ) Current Number of Streams: 1

Phases

( ) Current Total Number of Phases: 3

(•) Number of Real Phases: 2

( ) Number of Dummy Phases: 1

Stages

( ) Current Number of stages (inc. ALL-RED stages): 3

Switched Signs

( ) Number of Switched Signs: 0

Action

Add At | Delete At

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- ☐ Serial/Internal UTMC OTU
- ☐ Free-standing OTU
- ☐ Integral TC12 OTU
- ☐ Serial MOVA

- ☑ Master Time Clock
- ☐ Holiday Clock
- ☑ FT To Current MAX
- ☐ Linked Fixed Time

- ☑ Lamp Monitoring
- ☐ RED Lamp Monitoring
- ☐ Pelican/Puffin/Toucan
- ☐ Standalone Manual

- ☐ Extend All Red
- ☐ Speed Measurement
- ☐ Ripple Change
- ☐ London IMU

- ☐ Non-UK
- ☐ Fail to Part Time
- ☐ Fail To Hardware Flashing
- ☐
- ☐ Download To Level 3

7 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
☐ Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Hurry Call	○	○	○	○	○	○	○	○	○	○	○	○	○
☐	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
☐ Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
☐ UTC	○	○	○	○	○	○	○	○	○	○	○	○	○
☐	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ CLF (Non-Base Time)	○	○	◉	○	○	○	○	○	○	○	○	○	○
☐ CLF (Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Vehicle Actuated	○	○	○	◉	○	○	○	○	○	○	○	○	○
☑ Fixed Time	○	○	○	○	◉	○	○	○	○	○	○	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standard.8DF
Default PROM data file

Correspondence Monitoring to inc.

- ☑ Reds
- ☐ Switched Signs
- ☑ Ambers
- ☐ Ignore Reds and Ambers during

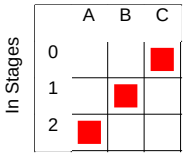
Flash Rate (ms)

400 Off 400 On

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Phases in Stages

Phases



Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions								
Startup Stage	1							
Switch Off Stage								
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream

	0	1	2
0	■	■	■

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Phase Type and Conditions

Phase Type and Conditions

◉ Phases A to P ○

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase
A	A45 Eastbound	0 - UK Trafic	0	0 - E	
B	Circulating	0 - UK Trafic	0	0 - E	
C	DummyAll Red	2 - UK GreenArrow	0	0 - E	

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term'l sw hen Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

Initialise

To Phase

From Phase

	A	B	C
A		Co	o
B	Co		o
C	o	o	

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

◉ Phases A to P ○

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	20	20	20	20	0	0	0	0	☐
B	7	0	0.0	20	20	20	20	0	0	0	0	☐
C	1	0	0.0	0	0	0	0	0	0	0	0	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C
A		7	3
B	7		3
C	2	2	

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Intergreen Handset Limits

HIGH 30

Copy Intergreen Values

To Phase

From Phase	A	B	C
A		6	2
B	6		2
C	1	1	

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.
A	6	255
B	6	255
C	0	255
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		

Phase	Min. Green Min.	Min. Green Max.
Q		
R		
S		
T		
U		
V		
W		
X		
Y		
Z		
A2		
B2		
C2		
D2		
E2		
F2		

Max. Green: Min. 0 Max. 255

Vehicle Extension: Min. 0.0 Max. 10.0

Phase Delay: Min. 0 Max. 10

Starting I/G: Min. 4 Max. 12

Min Pedestrian Clearance (PBT): Min. 0 Max. 12

Traffic Phase Leaving: Min. 3.0 Max. 3.0

Traffic Phase Red/Amber: Min. 2 Max. 2

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(•) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	S10	MVD10		
B	S20	MVD20		
C				

Extensions

MVD10			
MVD20			

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B														

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0													

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

CLF - Plan(s)

CLF - Plan(s)

0 Plan No.

Copy From

Plan Specifics

0 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 40

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	2	1	16			
1	15	4	2	17			
2	20	2	2	18			
3	27	4	1	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

CLF - Plan(s)

CLF - Plan(s)

Plan No. 1

Copy From

Plan Specifics

Influence Set 1

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	75

Slow

Fast

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	34	2	1	16			
1	48	4	2	17			
2	54	1	2	18			
3	69	4	1	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

CLF - Plan(s)

CLF - Plan(s)

Plan No. 2

Copy From

Plan Specifics

Influence Set 2

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	60

Slow

Fast

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	2	1	1	16			
1	36	4	2	17			
2	41	2	2	18			
3	43	4	1	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

CLF - Demand Dependent Moves

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered. The data specified on this screen will also change the screen CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages	A	B	C
0			
1		■	
2	■		

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

MTC - Time Switch Parameters

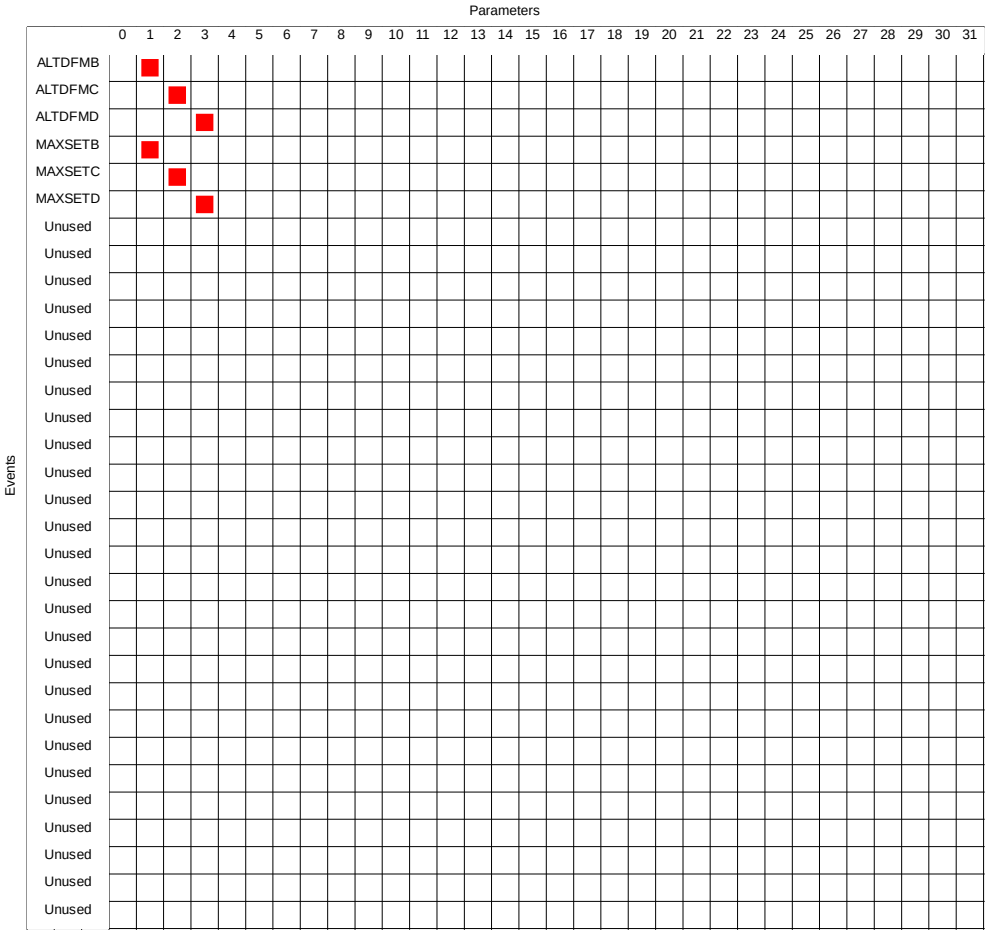
MTC - Time Switch Parameters

	Type	Event
0	Alternate DFM	ALTDFMB
1	Alternate DFM	ALTDFMC
2	Alternate DFM	ALTDFMD
3	Alternate Max	MAXSETB
4	Alternate Max	MAXSETC
5	Alternate Max	MAXSETD
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

MTC - Time Switch Parameters Array



Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

MTC - Timetable

MTC - Timetable

View Timetable Settings: (•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	06:30:00	Introduce CLF Plan 0 - Off Peak	1	0
1	9	07:30:00	Introduce CLF Plan 1 - AM Peak	1	1
2	9	09:15:00	Intorduce CLF Plan 0 - Off Peak	1	0
3	9	16:00:00	Introduce CLF Plan 2 - PM Peak	1	2
4	9	18:15:00	Isolate to VA	0	0
5	0			0	0
6	0			0	0
7	0			0	0
8	0			0	0
9	0			0	0
10	0			0	0
11	0			0	0
12	0			0	0
13	0			0	0
14	0			0	0
15	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

(•) 200-240 ( )
( ) 50-0-50, 100-120 ( ) 230 CLS

Max Red Bulb Wattage

First Red Lamp Fault Speed

Minimum Maximum

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

LMU - Sensors

LMU - Sensors

Onboard Sensors

Sensor\ Phase	Sensor Type	Bulb Watts	Sensor\ Phase	Sensor Type	Bulb Watts
1 \ A	As Seq.	40	17 \ Q		
2 \ B	As Seq.	40	18 \ R		
3 \ C	As Seq.	40	19 \ S		
4 \ D	As Seq.	40	20 \ T		
5 \ E	As Seq.	40	21 \ U		
6 \ F	As Seq.	40	22 \ V		
7 \ G	As Seq.	40	23 \ W		
8 \ H	As Seq.	40	24 \ X		
9 \ I			25 \ Y		
10 \ J			26 \ Z		
11 \ K			27 \ A2		
12 \ L			28 \ B2		
13 \ M			29 \ C2		
14 \ N			30 \ D2		
15 \ O			31 \ E2		
16 \ P			32 \ F2		

External Sensors

Sensor\ Pin	Drive	Sensor Type	Bulb Watts
33 \ b14		Regulatory Sign	7
34 \ z16		Regulatory Sign	7
35 \ z14		Regulatory Sign	7
36 \ z12		Regulatory Sign	7
37 \ b14			
38 \ z16			
39 \ z14			
40 \ z12			
41 \ b14			
42 \ z16			
43 \ z14			
44 \ z12			
45 \ b14			
46 \ z16			
47 \ z14			
48 \ z12			

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

LMU Sensor Load Types

LMU Sensor Load Types

Screen Select: 1 of 1

Sensor	Phase	Sensor Type	LED R+W	Load Type	LLF Profile
1	A	As Seq.	Auto		
2	B	As Seq.	Auto		
3	C	As Seq.	Auto		
4	D	As Seq.	Auto		
5	E	As Seq.	Auto		
6	F	As Seq.	Auto		
7	G	As Seq.	Auto		
8	H	As Seq.	Auto		
33	N/A	Regulatory Sign	Auto		
34	N/A	Regulatory Sign	Auto		
35	N/A	Regulatory Sign	Auto		
36	N/A	Regulatory Sign	Auto		

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0 1 2 3 4 5 6 7
0	All Red	0
1	A43 East Bound	1
2	Circulatory	2
3		
4		
5		
6		
7		

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☐	☐	☐	☐	☑

Manual Mode Enable

- (•) Always
- ( ) When Handset Plugged in (Note 1)
- ( ) When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	(•)	( )	( )	( )
RR	(•)	( )	( )	( )

Manual Signals On

- ( ) Immediate Signals On
- (•) As Start-Up

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Special Conditioning

```
; UTC REPLIES
; ===========
NOT(SYSLED) = CF                          ; Any lamp controller logged fault
NOT(FLF55) = LF                           ; Any lamp fault, inc box signs

; RTC SYNCH CONFIRM SIGNAL.
; -------------------------
; CONFIRM SIGNALS REPLY ONE MINUTE BEFORE AND ONE MINUTE AFTER THE SYNCH TIME
; AS FOLLOWS:-

; SYNCH TIME SET TO 4 HOURS 30 MINUTES THEN:-

((RTCTOD EQL<3>).(RTCMIN EQL<59>))+((RTCTOD EQL<4>).(RTCMIN EQL<01>)) = 1SCRT201

(RTCDYS EQL<2>).(1SCRT201).NOT(RTCSEC GRT<2>)  =  1SCRT202 ; MON ---- FOR 3  SECS
(RTCDYS EQL<3>).(1SCRT201).NOT(RTCSEC GRT<4>)  = +1SCRT202 ; TUE ---- FOR 5  SECS
(RTCDYS EQL<4>).(1SCRT201).NOT(RTCSEC GRT<6>)  = +1SCRT202 ; WED ---- FOR 7  SECS
(RTCDYS EQL<5>).(1SCRT201).NOT(RTCSEC GRT<8>)  = +1SCRT202 ; THU ---- FOR 9  SECS
(RTCDYS EQL<6>).(1SCRT201).NOT(RTCSEC GRT<10>) = +1SCRT202 ; FRI ---- FOR 11 SECS
(RTCDYS EQL<0>).(1SCRT201).NOT(RTCSEC GRT<12>) = +1SCRT202 ; SAT ---- FOR 13 SECS
(RTCDYS EQL<1>).(1SCRT201).NOT(RTCSEC GRT<14>) = +1SCRT202 ; SUN ---- FOR 15 SECS

NOT(1SCRT202) = 1RT


; MANUAL PANEL
; ============
(MODE0 EQL <6>) = MIL17                   ; UTC active, illuminate HP L.E.D.
```

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Special Instructions

nn0002

Board	Position	Skt	Port	Type I or O	Line	Cable	Block
CPU	A	X3I	0	I	00 - 07	101	1TBG
CPU	A	X3I	1	I	08 - 15		1TBH
CPU	A	X3O	11	O	88 - 91	105	1TBX

The socket X3 on the CPU pcb is the double stacked one
X3I = Inner (nearest the board)
X3O = Outer

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Special Instructions

ST800 CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/27000/003	Cabinet 8 Phase wired 8 Phase	1		
3	667/1/27000/002	Cabinet 24 Phase wired 32 Phase			
4	667/1/27001/001	Rack 8 Phase wired 16 Phase			
5	667/1/27001/002	Rack 24 Phase wired 32 Phase			
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23	667/1/27072/001	Cableform 8 Phase (long)			
24	667/1/27002/000	Lamp Switch Kit 8 Phase			
25	667/1/27003/000	I/O Kit			
26	667/1/27005/000	SDE Facility Kit			
27	667/1/27004/000	Integral OTU Kit			
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39	667/1/16260/000	Configuration Eprom (Issue 1. 0)	1		
40					

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Last Modified 21/04/2017, Issue 0.2.4 Form Ref: 6 (2)

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Special Instructions

ST800 CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/27056/001	Manual Panel Assy (Intersection Cont)			
43	667/1/27056/010	Manual Panel Assy (Sigs on/off)			
44	667/1/27056/000	Manual Panel Blanking Kit			
45					
46					Note 2:
47					Ancillary Processor PLD
48					Variants
49					101 OTU & LMU
50					102 OTU Only
51					103 LMU Only
52	667/7/25171/000	Current Transformer			104 OTU & LMU + Up/Download
53					105 OUT Only + Up/DownLoad
54					NB Controller Has built in LMU
55	667/1/27002/002	Lamp Switch Kit 8 Phase CLS			So LMU on Ancillary Processor
56	667/1/27002/102	Lamp Switch Kit 8 Phase Export CLS			Not required included for info
57					only.
58	667/1/27000/800	CLS Mod Kit (firmware only)			
59					
60					Note 3:
61	667/1/27000/101	Cabinet Export 8 Phase wired 16 Phase			Fit Current Transformer
62	667/1/27000/102	Cabinet Export 24 Phase wired 32 Phase			starting from position
63	667/1/27001/101	Rack Export 8 Phase wired 16 Phase			TLB/z/16 on the first phase
64	667/1/27001/102	Rack Export 24 Phase wired 32 Phase			driver PCB. if more than 3
65	667/1/27002/100	Export Lamp Switch Kit			sensors are called up fit the
66	667/1/27084/001	Dimming Assembly (1.5KVA)(Fit Std UK)			4th sensor to the second
67	667/1/27084/002	Dimming Assembly (2.0KVA)			Phases driver PCB, and so on
68	667/1/27084/003	Dimming Assembly (3.0KVA)			until all sensors have been
69	667/1/27130/000	30A Controller Kit			used up.
70					TLB/b/14 - 1st sensor terminal
71	667/1/27001/310	ST800 SE Export Rack up to 8 Phase			TLB/z/16 - 2nd sensor terminal
72	667/1/27223/003	ST800 SE 8 Phase Driver No LMU			TLB/z/14 - 3rd sensor terminal
73	667/1/27223/403	ST800 SE 4 Phase Driver No LMU			TLB/z/12 - 4th sensor terminal
74					2nd Phases driver PCB
75					TLB/b/14 - 5th sensor terminal
76					TLB/z/16 - 6th sensor terminal
77	667/1/27000/301	ST800 P In a Cabinet 4Ph 1 Stream PED			
78	667/1/27012/000	PED 2nd Stream Kit for ST800 P			
79	667/1/27001/300	ST800 P Rack Only 4Ph 1 Stream PED			

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Special Instructions

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Port Number & Type

Port: 0

Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	S10	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	1
○	1	1	I	S20	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	2
○	2	2	I	MVD10	☑	☐	☑	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	3
○	3	3	I	MVD20	☑	☐	☑	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	4
○	4	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	5
○	5	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	6
○	6	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	7
○	7	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	8

Add | Delete | Move | Clear Used By

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

Aspect Drives

Aspect Drives

A-L | M-X | Y-F2

Phase Driver Card 1

	Used For	Term Block	Term No
A - Red	Phase	1TBA	1
A - Amber	Phase	1TBA	2
A - Green	Phase	1TBA	3
B - Red	Phase	1TBA	4
B - Amber	Phase	1TBA	5
B - Green	Phase	1TBA	6
C - Red			
C - Amber			
C - Green			
D - Red			
D - Amber			
D - Green			

Phase Driver Card 1

	Used For	Term Block	Term No
E - Red			
E - Amber			
E - Green			
F - Red			
F - Amber			
F - Green			
G - Red			
G - Amber			
G - Green			
H - Red			
H - Amber			
H - Green			

Phase Driver Card 2

	Used For	Term Block	Term No
I - Red			
I - Amber			
I - Green			
J - Red			
J - Amber			
J - Green			
K - Red			
K - Amber			
K - Green			
L - Red			
L - Amber			
L - Green			

Works Order :
EM Number : nn0002
Engineer : Dave Vernon
Intersection : Brackmills Roundabout Eastbound, Northampton Reference: ORN146

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)				
	InActive (Hrs)				
Group 2	Active (Mins)				
	InActive (Hrs)				
Group 3	Active (Mins)				
	InActive (Hrs)				
Group 4	Active (Mins)				
	InActive (Hrs)				
Group 5	Active (Mins)				
	InActive (Hrs)				
Group 6	Active (Mins)				
	InActive (Hrs)				
Group 7	Active (Mins)				
	InActive (Hrs)				

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	255
InActive (Hrs)	0	255

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays (No configuration data to print)

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Demand Dependent Moves
- 4.3 Master Time Clock
  - 4.3.1 MTC - Time Switch Parameters
  - 4.3.2 MTC - Time Switch Parameters Array
  - 4.3.3 MTC - Day Type
  - 4.3.4 MTC - Timetable
- 4.4 Integral Lamp Monitoring
  - 4.4.1 LMU - General
  - 4.4.2 LMU - Sensors
  - 4.4.3 LMU Sensor Load Types
- 4.5 Manual
  - 4.5.1 Manual Panel
  - 4.5.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers (No configuration data to print)
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel (No configuration data to print)
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives
- 7.4 I/O - DFM Group Timings

Traffic Control – Timing Changes

SITE: Brackmills R'about ORN: 142

Reasons for timing changes: Correction

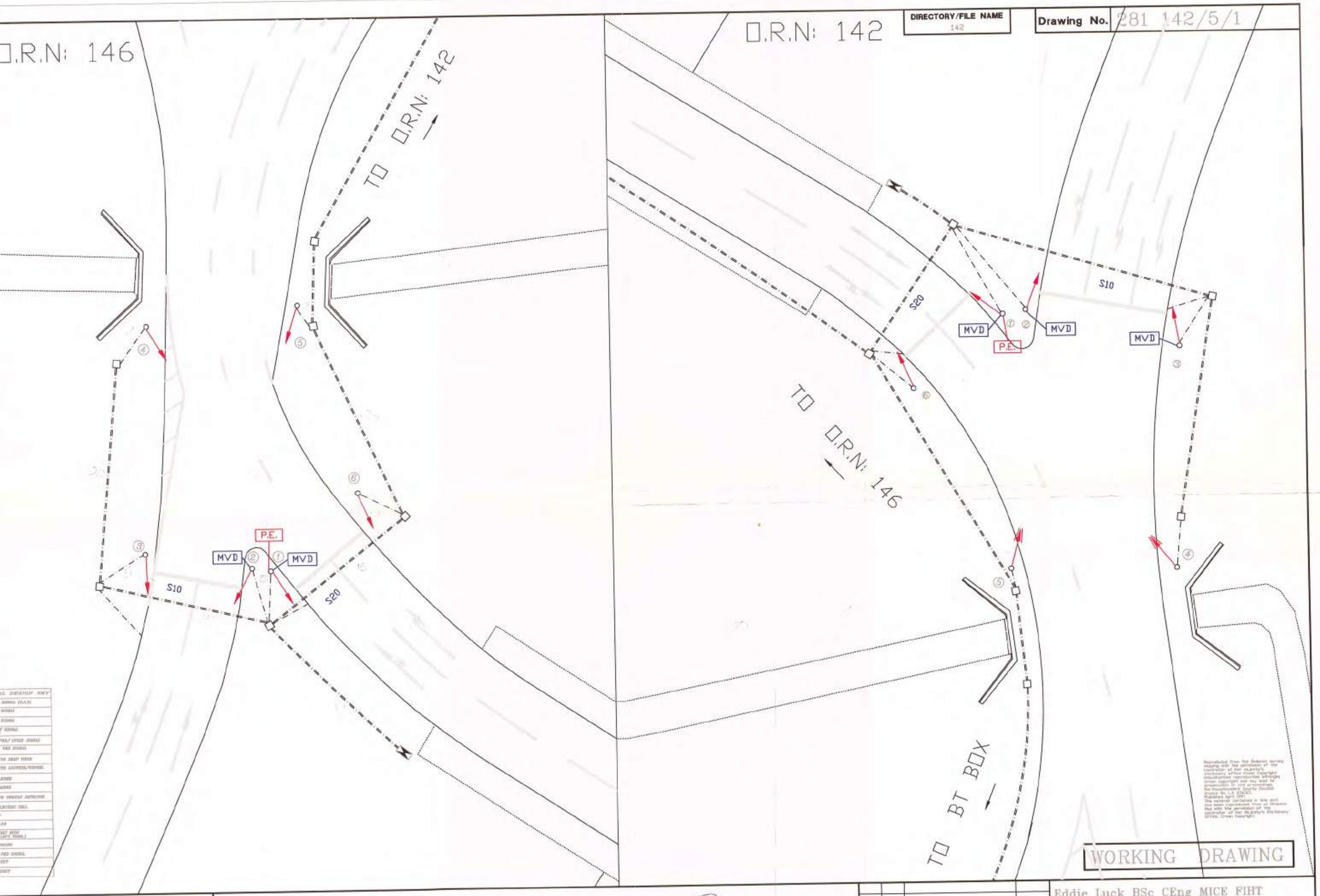
Type of Controller:

Parameter to be Changed	Existing settings		Required settings
	From records	As found	
PLN 2			
CYC	75	60	75
ACT 1	0	0	0
ACT 2	30	30	30
ACT 3	43	41	43
ACT 4	65	55	65

Engineer: Marcus Grant

Approved by (if safety related):

Controller changed by: Marcus Grant Date: 17/09/14



orthamptonshire
ounty Council

NORTHAMPTON (146)

BRACKMILLS RDBT A/B

TRAFFIC CONTROL INSTALLATION

App	No	Revision	Date
	A	ORIGINAL	

Eddie Luck BSc CEng MICE FIHT
County Transportation Officer

	Name	Date
Designed		Scale 1/200
Drawn		
Checked		Date Issued
Approved		

Drawing No. 281 142/5/1

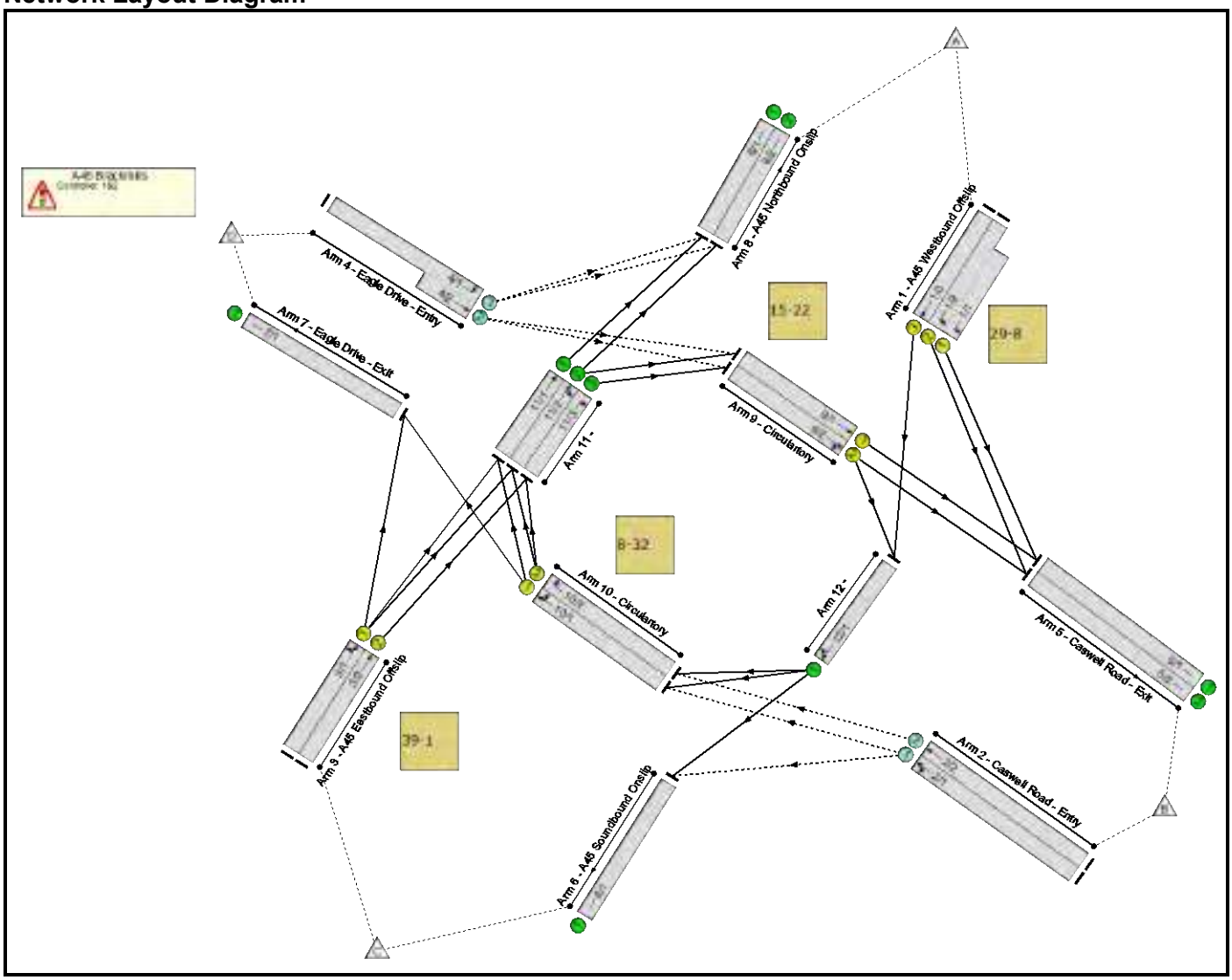
APPENDIX C

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 9
Location:	A45 (south) / Eagle Drive/ A45 (north) / Caswell Road
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

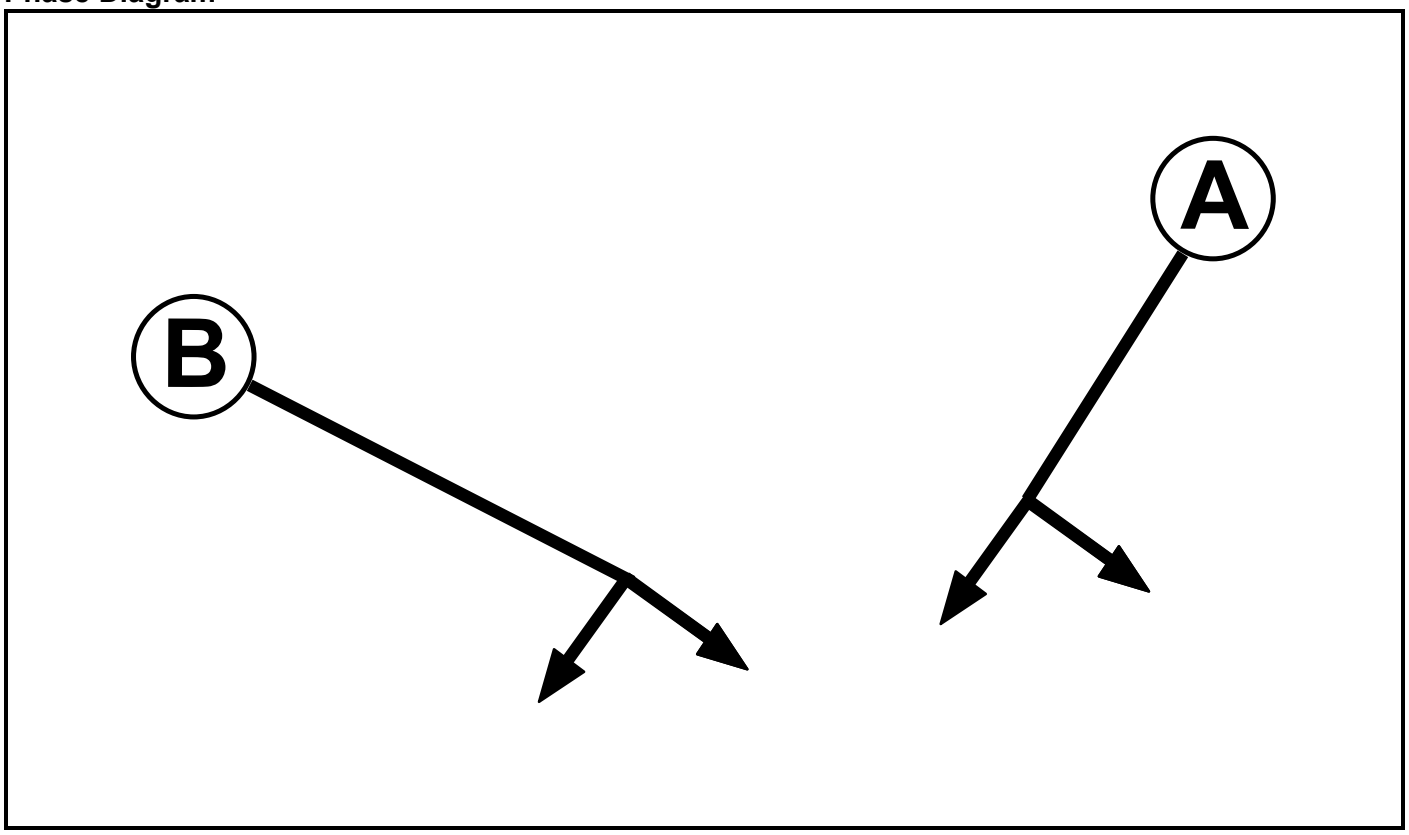
Network Layout Diagram



Full Input Data And Results

C1 - ORN142

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

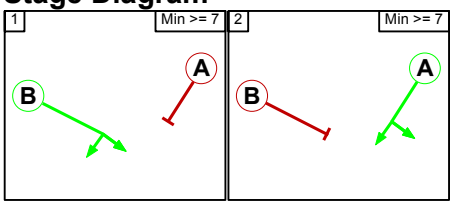
Phase Intergreens Matrix

	Starting Phase		
Terminating Phase		A	B
	A		7
	B	7	

Phases in Stage

Stage No.	Phases in Stage
1	B
2	A

Stage Diagram



Full Input Data And Results

Phase Delays

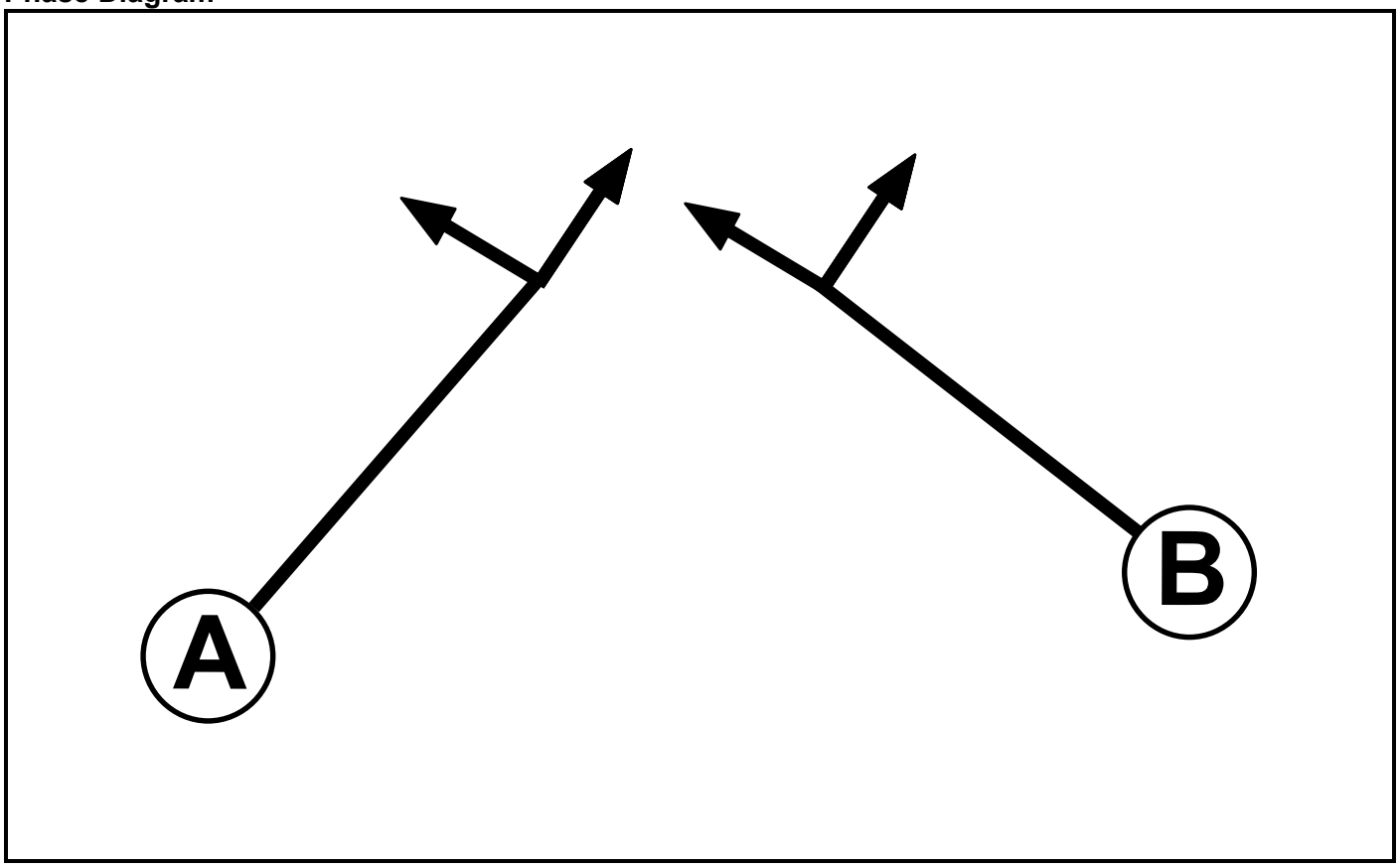
Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
		1	2
From Stage	1		7
	2	7	

C2 - ORN146

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

Full Input Data And Results

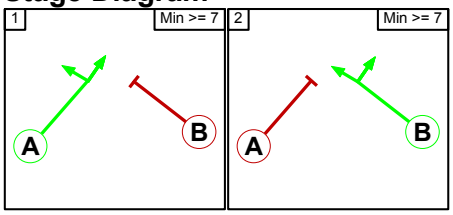
Phase Intergreens Matrix

Terminating Phase	Starting Phase		
		A	B
A			7
B	7		

Phases in Stage

Stage No.	Phases in Stage
1	A
2	B

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage	To Stage		
		1	2
1			7
2	7		

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 Brackmills

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (Caswell Road - Entry)	6/1 (Left)	1000	0	12/1	0.33	To 6/1 (Ahead)	-	-	-	-	-
	10/1 (Ahead)	1000	0	12/1	0.33	To 6/1 (Ahead) To 10/1 (Right)					
2/2 (Caswell Road - Entry)	10/2 (Ahead)	1000	0	12/1	0.33	All	-	-	-	-	-
4/1 (Eagle Drive - Entry)	8/1 (Left)	1000	0	11/1	0.33	All	-	-	-	-	-
	8/2 (Left)	1000	0	11/1	0.33	All					
				11/2	0.33	To 8/2 (Ahead)					
4/2 (Eagle Drive - Entry)	9/1 (Ahead)	1000	0	11/1	0.33	All	-	-	-	-	-
				11/2	0.33	All					
	9/2 (Ahead)	1000	0	11/1	1.09	All					
				11/2	1.09	All					
				11/3	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: A45 Brackmills												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A45 Westbound Offslip)	U	A	2	3	10.0	User	1800	-	-	-	-	-
1/2 (A45 Westbound Offslip)	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A45 Westbound Offslip)	U	A	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Caswell Road - Entry)	O		2	3	60.0	Inf	-	-	-	-	-	-
2/2 (Caswell Road - Entry)	O		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (A45 Eastbound Offslip)	U	A	2	3	60.0	User	1800	-	-	-	-	-
3/2 (A45 Eastbound Offslip)	U	A	2	3	60.0	User	1800	-	-	-	-	-
4/1 (Eagle Drive - Entry)	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 8 Left	52.00
4/2 (Eagle Drive - Entry)	O		2	3	5.2	Inf	-	-	-	-	-	-
5/1 (Caswell Road - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Caswell Road - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (A45 Soundbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Eagle Drive - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (A45 Northbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (A45 Northbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Circulartory)	U	B	2	3	15.0	User	1900	-	-	-	-	-

Full Input Data And Results

9/2 (Circulartory)	U	B	2	3	15.0	User	1900	-	-	-	-	-
10/1 (Circulartory)	U	B	2	3	16.0	User	1900	-	-	-	-	-
10/2 (Circulartory)	U	B	2	3	16.0	User	1900	-	-	-	-	-
11/1	U		2	3	15.7	Inf	-	-	-	-	-	-
11/2	U		2	3	15.7	Inf	-	-	-	-	-	-
11/3	U		2	3	15.7	Inf	-	-	-	-	-	-
12/1	U		2	3	17.4	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2014 Base AM'	08:00	09:00	01:00	
2: '2014 Base PM'	17:00	18:00	01:00	
3: '2021 20% Dev AM'	08:00	09:00	01:00	
4: '2021 20% Dev PM'	17:00	18:00	01:00	
5: '2021 DM AM'	08:00	09:00	01:00	
6: '2021 DM PM'	17:00	18:00	01:00	
7: '2021 DM + 2021 DS 20% AM'	08:00	09:00	01:00	F5 + F3
8: '2021 DM + 2021 DS 20% PM'	17:00	18:00	01:00	F6 + F4
9: '2021 DS AM'	08:00	09:00	01:00	
10: '2021 DS PM'	17:00	18:00	01:00	
11: '2031 DM AM'	08:00	09:00	01:00	
12: '2031 DM PM'	17:00	18:00	01:00	
13: '2031 DS AM'	08:00	09:00	01:00	
14: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2014 Base AM' (FG1: '2014 Base AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	986	0	94	1080
	B	304	0	292	24	620
	C	0	1048	447	105	1600
	D	18	9	20	0	47
	Tot.	322	2043	759	223	3347

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2014 Base AM
Junction: A45 Brackmills	
1/1 (short)	493
1/2 (with short)	986(In) 493(Out)
1/3	94
2/1	405
2/2	215
3/1	848
3/2	752
4/1 (with short)	47(In) 18(Out)
4/2 (short)	29
5/1	1245
5/2	798
6/1	759
7/1	223
8/1	98
8/2	224
9/1	752
9/2	772
10/1	207
10/2	215
11/1	89
11/2	958
11/3	752
12/1	561

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 2: '2014 Base PM' (FG2: '2014 Base PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	309	0	23	332
	B	1254	0	660	9	1923
	C	0	242	35	36	313
	D	102	14	53	0	169
	Tot.	1356	565	748	68	2737

Traffic Lane Flows

Lane	Scenario 2: 2014 Base PM
Junction: A45 Brackmills	
1/1 (short)	154
1/2 (with short)	309(In) 155(Out)
1/3	23
2/1	969
2/2	954
3/1	159
3/2	154
4/1 (with short)	169(In) 102(Out)
4/2 (short)	67
5/1	291
5/2	274
6/1	748
7/1	68
8/1	351
8/2	1005
9/1	137
9/2	207
10/1	332
10/2	954
11/1	300
11/2	1077
11/3	154
12/1	111

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1334	0	96	1430
	B	669	0	172	25	866
	C	0	696	442	104	1242
	D	20	10	19	0	49
	Tot.	689	2040	633	225	3587

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: A45 Brackmills	
1/1 (short)	667
1/2 (with short)	1334(In) 667(Out)
1/3	96
2/1	461
2/2	405
3/1	674
3/2	568
4/1 (with short)	49(In) 20(Out)
4/2 (short)	29
5/1	1247
5/2	793
6/1	633
7/1	225
8/1	274
8/2	415
9/1	580
9/2	587
10/1	385
10/2	405
11/1	264
11/2	975
11/3	568
12/1	557

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	409	0	24	433
	B	2372	0	462	9	2843
	C	0	403	26	36	465
	D	157	53	0	0	210
	Tot.	2529	865	488	69	3951

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: A45 Brackmills	
1/1 (short)	204
1/2 (with short)	409(In) 205(Out)
1/3	24
2/1	1429
2/2	1414
3/1	232
3/2	233
4/1 (with short)	210(In) 157(Out)
4/2 (short)	53
5/1	444
5/2	421
6/1	488
7/1	69
8/1	1036
8/2	1493
9/1	240
9/2	242
10/1	991
10/2	1414
11/1	958
11/2	1610
11/3	233
12/1	50

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 5: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1364	0	96	1460
	B	671	0	206	26	903
	C	0	488	442	104	1034
	D	20	10	20	0	50
	Tot.	691	1862	668	226	3447

Traffic Lane Flows

Lane	Scenario 5: 2021 DS AM
Junction: A45 Brackmills	
1/1 (short)	682
1/2 (with short)	1364(In) 682(Out)
1/3	96
2/1	487
2/2	416
3/1	570
3/2	464
4/1 (with short)	50(In) 20(Out)
4/2 (short)	30
5/1	1158
5/2	704
6/1	668
7/1	226
8/1	265
8/2	426
9/1	476
9/2	484
10/1	377
10/2	416
11/1	255
11/2	882
11/3	464
12/1	558

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 6: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	411	0	24	435
	B	2035	0	531	9	2575
	C	0	321	26	36	383
	D	101	110	0	0	211
	Tot.	2136	842	557	69	3604

Traffic Lane Flows

Lane	Scenario 6: 2021 DS PM
Junction: A45 Brackmills	
1/1 (short)	205
1/2 (with short)	411(In) 206(Out)
1/3	24
2/1	1319
2/2	1256
3/1	192
3/2	191
4/1 (with short)	211(In) 101(Out)
4/2 (short)	110
5/1	428
5/2	414
6/1	557
7/1	69
8/1	829
8/2	1307
9/1	223
9/2	234
10/1	812
10/2	1256
11/1	779
11/2	1412
11/3	191
12/1	50

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 7: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1183	0	95	1278
	B	622	0	441	25	1088
	C	0	781	442	106	1329
	D	19	15	20	0	54
	Tot.	641	1979	903	226	3749

Traffic Lane Flows

Lane	Scenario 7: 2031 DM AM
Junction: A45 Brackmills	
1/1 (short)	591
1/2 (with short)	1183(In) 592(Out)
1/3	95
2/1	664
2/2	424
3/1	711
3/2	618
4/1 (with short)	54(In) 19(Out)
4/2 (short)	35
5/1	1211
5/2	768
6/1	903
7/1	226
8/1	207
8/2	434
9/1	620
9/2	638
10/1	318
10/2	424
11/1	198
11/2	1029
11/3	618
12/1	557

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 8: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	489	0	22	511
	B	2117	0	573	10	2700
	C	0	331	26	36	393
	D	151	65	0	0	216
	Tot.	2268	885	599	68	3820

Traffic Lane Flows

Lane	Scenario 8: 2031 DM PM
Junction: A45 Brackmills	
1/1 (short)	244
1/2 (with short)	489(In) 245(Out)
1/3	22
2/1	1362
2/2	1338
3/1	196
3/2	197
4/1 (with short)	216(In) 151(Out)
4/2 (short)	65
5/1	455
5/2	430
6/1	599
7/1	68
8/1	854
8/2	1414
9/1	211
9/2	211
10/1	811
10/2	1338
11/1	779
11/2	1498
11/3	197
12/1	48

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 9: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1087	0	94	1181
	B	624	0	429	26	1079
	C	0	801	442	106	1349
	D	18	14	23	0	55
	Tot.	642	1902	894	226	3664

Traffic Lane Flows

Lane	Scenario 9: 2031 DS AM
Junction: A45 Brackmills	
1/1 (short)	543
1/2 (with short)	1087(In) 544(Out)
1/3	94
2/1	645
2/2	434
3/1	706
3/2	643
4/1 (with short)	55(In) 18(Out)
4/2 (short)	37
5/1	1157
5/2	745
6/1	894
7/1	226
8/1	199
8/2	443
9/1	614
9/2	666
10/1	310
10/2	434
11/1	190
11/2	1034
11/3	643
12/1	559

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 10: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	499	0	23	522
	B	2060	0	770	10	2840
	C	0	305	26	36	367
	D	133	70	2	0	205
	Tot.	2193	874	798	69	3934

Traffic Lane Flows

Lane	Scenario 10: 2031 DS PM
Junction: A45 Brackmills	
1/1 (short)	249
1/2 (with short)	499(In) 250(Out)
1/3	23
2/1	1435
2/2	1405
3/1	183
3/2	184
4/1 (with short)	205(In) 133(Out)
4/2 (short)	72
5/1	450
5/2	424
6/1	798
7/1	69
8/1	721
8/2	1472
9/1	201
9/2	202
10/1	688
10/2	1405
11/1	655
11/2	1552
11/3	184
12/1	51

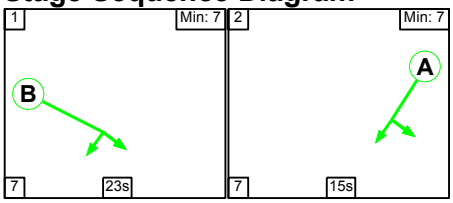
Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Westbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Westbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Westbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Caswell Road - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (A45 Eastbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Eastbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry)	4.00	0.00	Y	Arm 8 Left	52.00	100.0 %	1959	1959
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

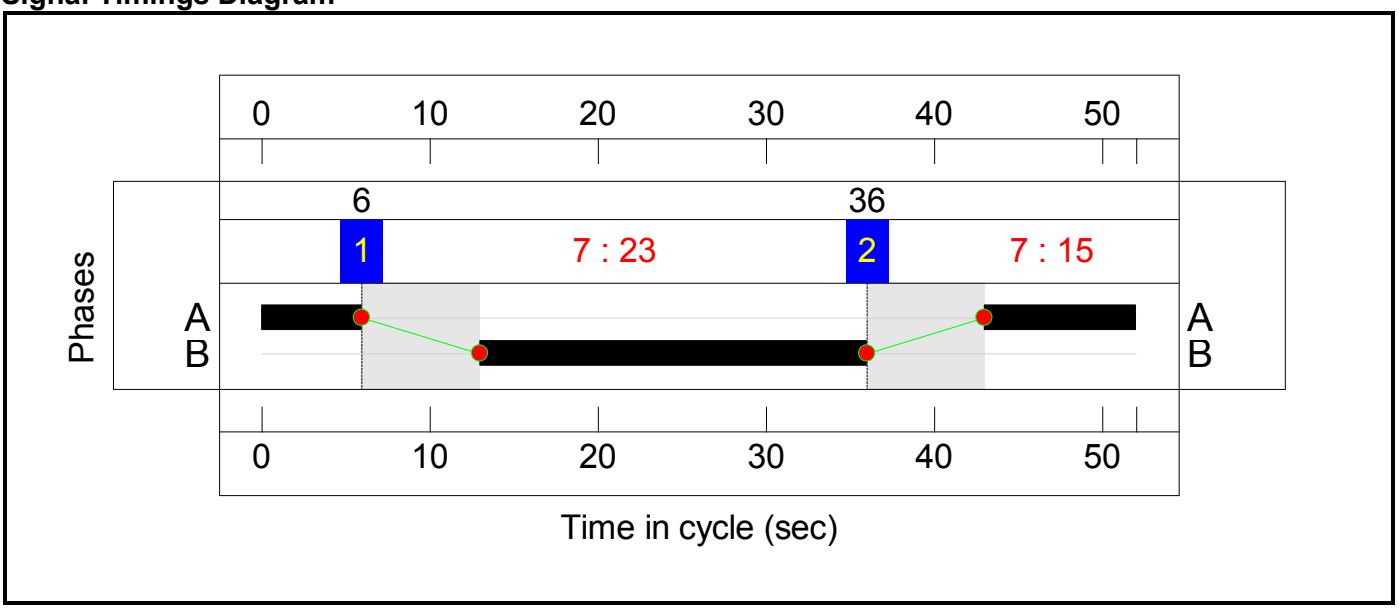
Scenario 1: '2014 Base AM' (FG1: '2014 Base AM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



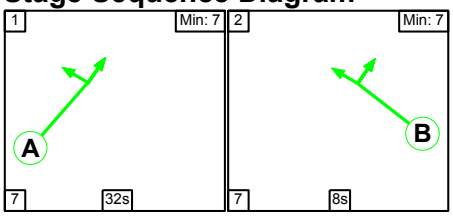
Stage Timings

Stage	1	2
Duration	23	15
Change Point	6	36

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

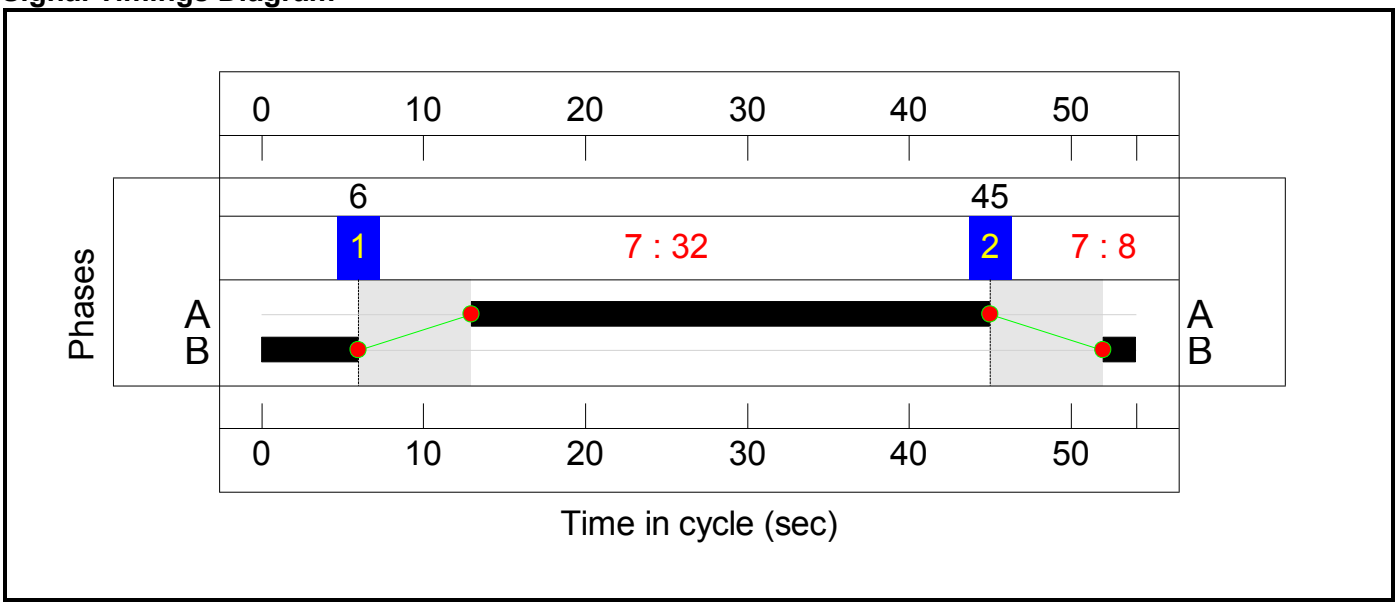


Stage Timings

Stage	1	2
Duration	32	8
Change Point	6	45

Full Input Data And Results

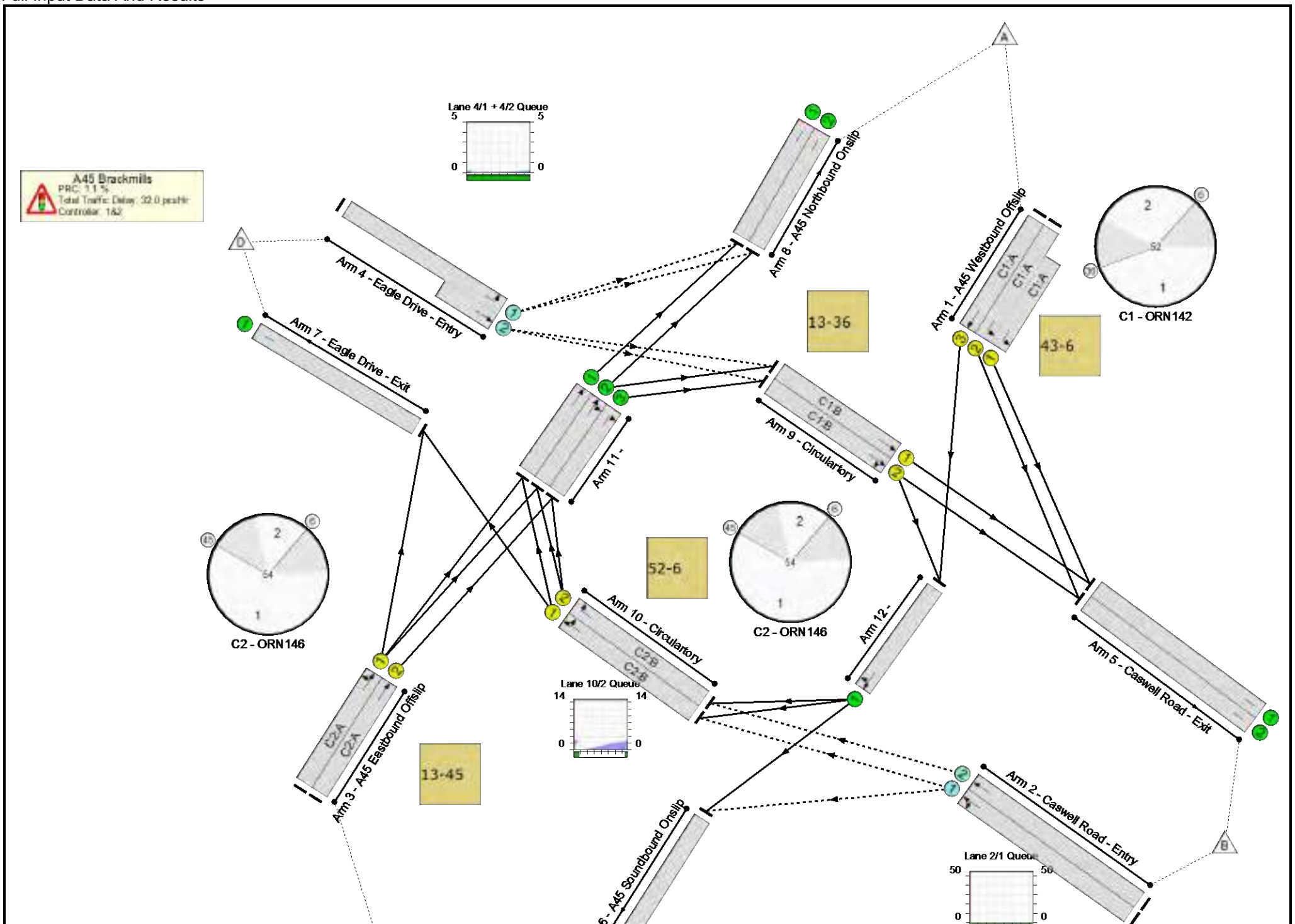
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.0%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.0%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	15	-	986	1800:1800	554+554	89.0 : 89.0%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	15	-	94	1800	554	17.0%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	405	Inf	836	48.5%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	215	Inf	815	26.4%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	32	-	848	1800	1100	77.1%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	32	-	752	1800	1100	68.4%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	47	1959: Inf	86+139	20.9 : 20.9%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1245	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	798	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	759	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	98	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	23	-	752	1900	877	85.8%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	23	-	772	1900	877	88.0%

Full Input Data And Results

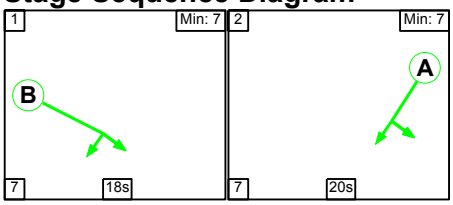
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	8	-	207	1900	317	65.4%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	8	-	215	1900	317	67.9%
11/1	Ahead	U	N/A	N/A	-		-	-	-	89	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	958	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	752	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	561	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**714**	**0**	**0**	**16.2**	**15.7**	**0.0**	**32.0**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**714**	**0**	**0**	**16.2**	**15.7**	**0.0**	**32.0**	**-**	**-**	**-**	**-**
1/2+1/1	986	986	-	-	-	4.7	3.8	-	8.5	31.1	6.7	3.8	10.5
1/3	94	94	-	-	-	0.3	0.1	-	0.4	17.1	1.0	0.1	1.1
2/1	405	405	405	0	0	0.0	0.5	-	0.5	4.2	0.0	0.5	0.5
2/2	215	215	215	0	0	0.0	0.2	-	0.2	3.0	0.0	0.2	0.2
3/1	848	848	-	-	-	1.8	1.7	-	3.5	14.8	9.2	1.7	10.8
3/2	752	752	-	-	-	1.5	1.1	-	2.5	12.2	7.5	1.1	8.6
4/1+4/2	47	47	94	0	0	0.1	0.1	-	0.2	17.7	0.3	0.1	0.4
5/1	1245	1245	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	798	798	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	759	759	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	98	98	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	752	752	-	-	-	2.6	2.9	-	5.5	26.3	9.6	2.9	12.5
9/2	772	772	-	-	-	2.7	3.5	-	6.2	28.8	10.1	3.5	13.5
10/1	207	207	-	-	-	1.2	0.9	-	2.1	37.2	2.9	0.9	3.8
10/2	215	215	-	-	-	1.3	1.0	-	2.3	38.5	3.0	1.0	4.0
11/1	89	89	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	958	958	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	752	752	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	561	561	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%): 1.1	Total Delay for Signalled Lanes (pcuHr): 20.62	Cycle Time (s): 52
C2 - ORN146	PRC for Signalled Lanes (%): 16.7	Total Delay for Signalled Lanes (pcuHr): 10.46	Cycle Time (s): 54
	PRC Over All Lanes (%): 1.1	Total Delay Over All Lanes(pcuHr): 31.96	

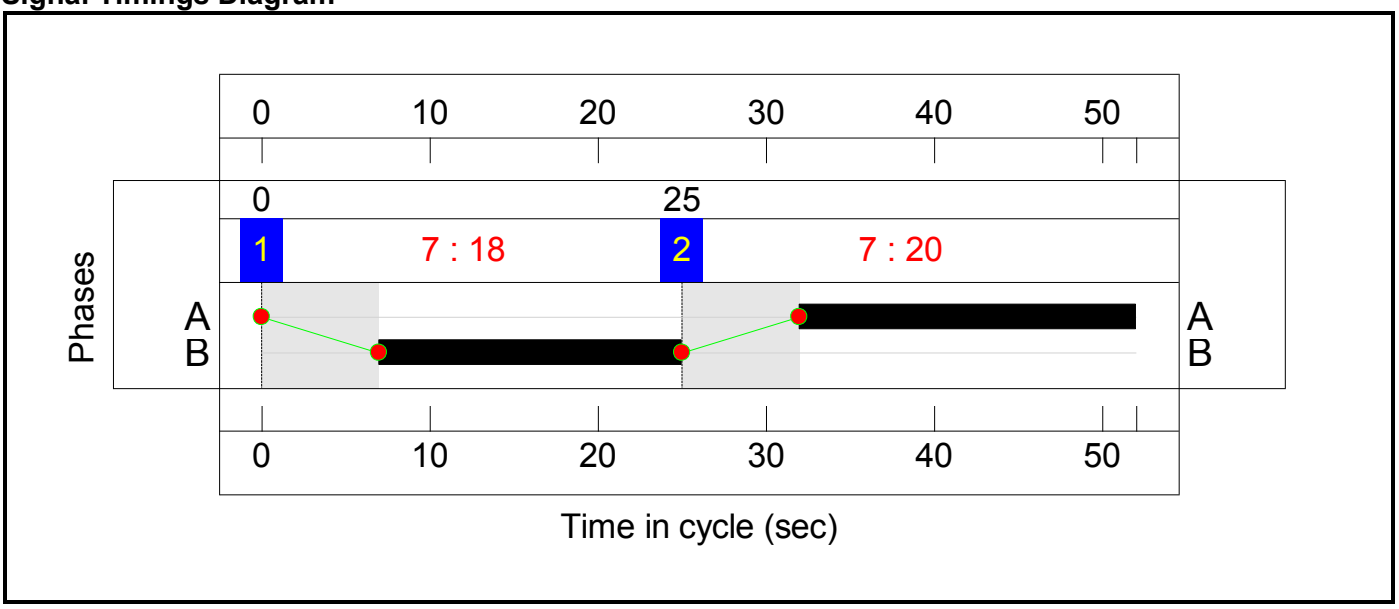
Full Input Data And Results
Scenario 2: '2014 Base PM' (FG2: '2014 Base PM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



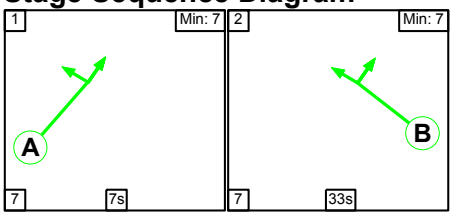
Stage Timings

Stage	1	2
Duration	18	20
Change Point	0	25

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

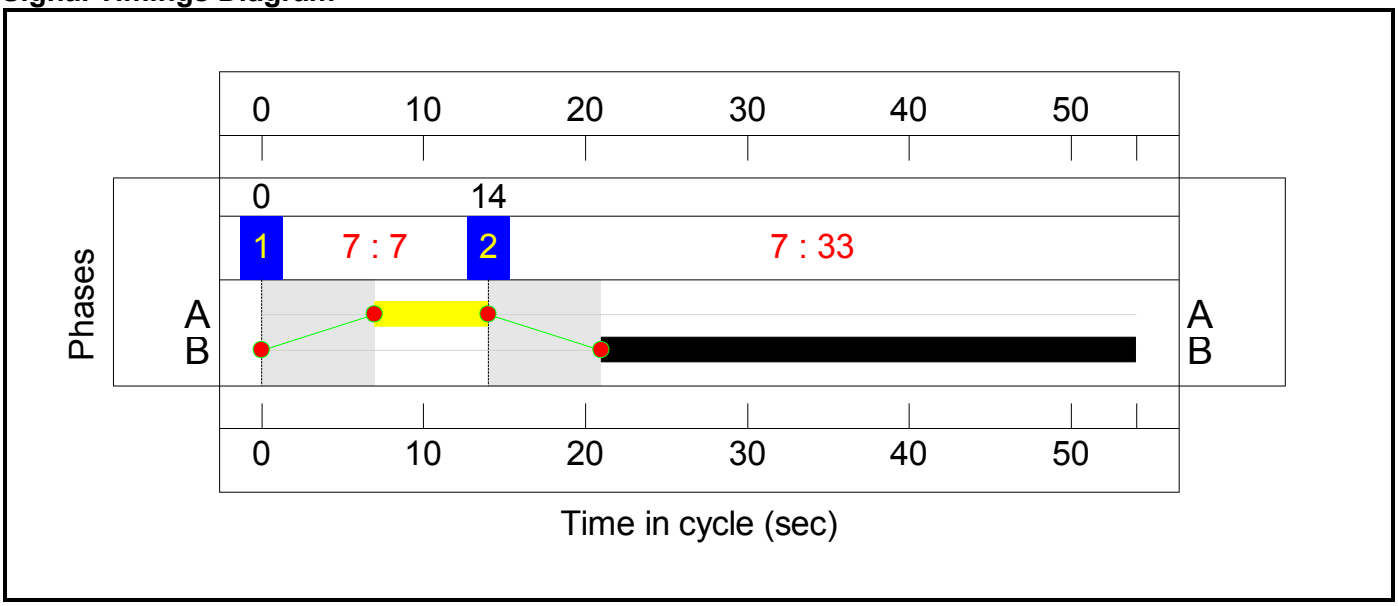


Stage Timings

Stage	1	2
Duration	7	33
Change Point	0	14

Full Input Data And Results

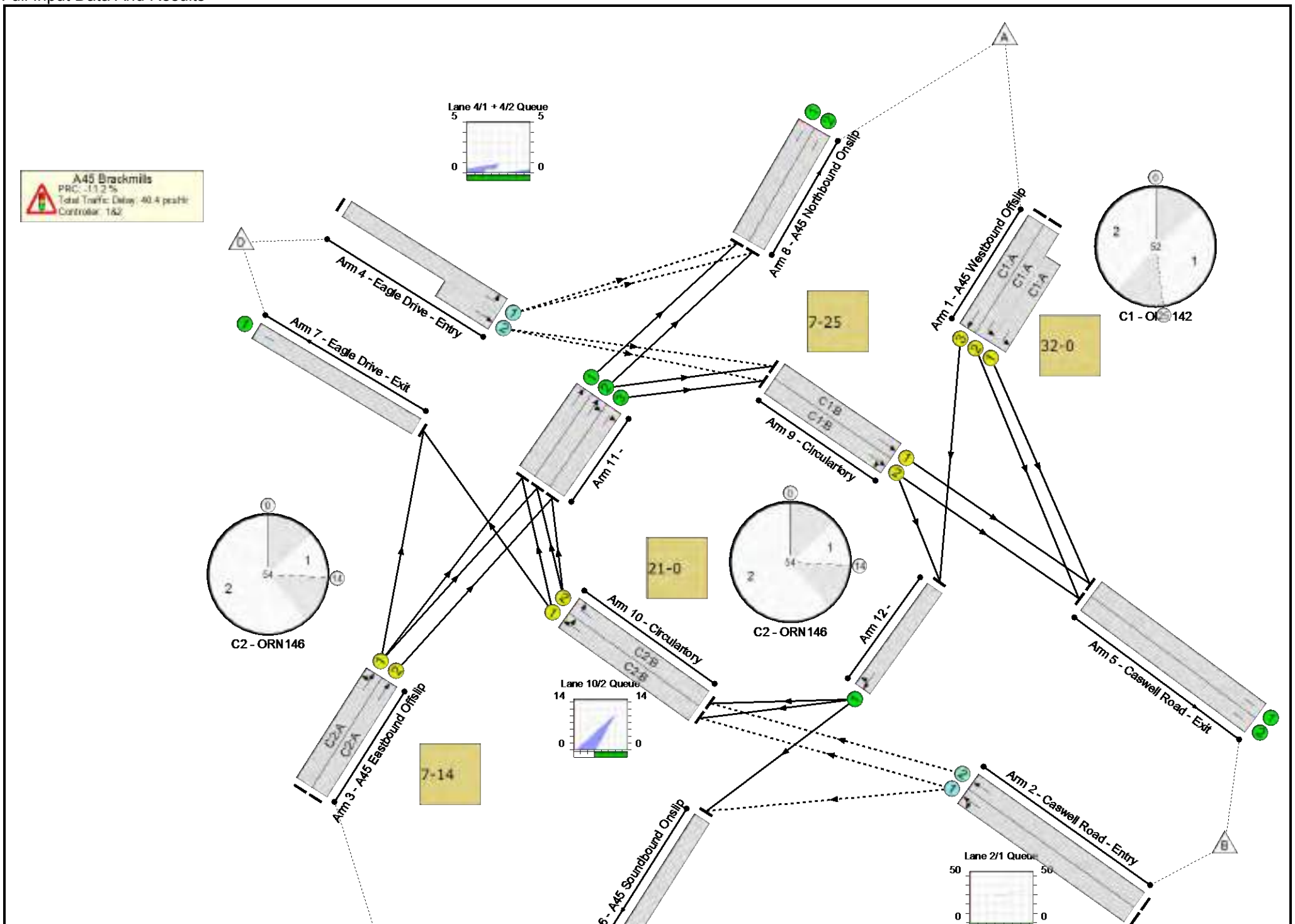
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.1%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.1%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	20	-	309	1800:1800	710+705	21.8 : 21.8%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	20	-	23	1800	727	3.2%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	969	Inf	968	100.1%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	954	Inf	963	99.1%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	7	-	159	1800	267	59.6%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	7	-	154	1800	267	57.8%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	169	1959: Inf	218+143	46.9 : 46.9%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	291	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	274	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	748	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	68	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	351	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	18	-	137	1900	694	19.7%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	18	-	207	1900	694	29.8%

Full Input Data And Results

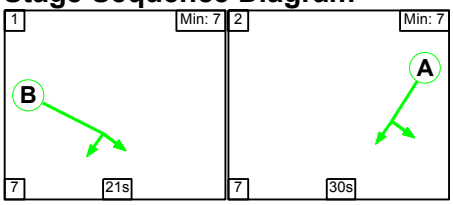
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	33	-	332	1900	1196	27.7%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	33	-	954	1900	1196	79.7%
11/1	Ahead	U	N/A	N/A	-		-	-	-	300	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1077	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	154	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	111	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2260**	**0**	**0**	**6.9**	**33.6**	**0.0**	**40.4**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**2260**	**0**	**0**	**6.9**	**33.6**	**0.0**	**40.4**	**-**	**-**	**-**	**-**
1/2+1/1	309	309	-	-	-	0.9	0.1	-	1.0	11.7	1.4	0.1	1.6
1/3	23	23	-	-	-	0.1	0.0	-	0.1	12.1	0.2	0.0	0.2
2/1	969	968	968	0	0	0.2	15.8	-	15.9	59.2	36.6	15.8	52.4
2/2	954	954	954	0	0	0.1	13.3	-	13.4	50.7	10.6	13.3	23.9
3/1	159	159	-	-	-	1.0	0.7	-	1.7	38.0	2.2	0.7	2.9
3/2	154	154	-	-	-	0.9	0.7	-	1.6	37.2	2.1	0.7	2.8
4/1+4/2	169	169	338	0	0	0.3	0.4	-	0.8	16.0	0.9	0.4	1.4
5/1	291	291	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	274	274	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	68	68	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1005	1005	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	137	137	-	-	-	0.4	0.1	-	0.6	14.5	1.3	0.1	1.5
9/2	207	207	-	-	-	0.7	0.2	-	0.9	15.4	2.1	0.2	2.3
10/1	332	332	-	-	-	0.4	0.2	-	0.6	6.6	2.2	0.2	2.4
10/2	954	954	-	-	-	2.0	1.9	-	3.9	14.8	10.6	1.9	12.5
11/1	300	300	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1077	1077	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	154	154	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	111	111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%):	201.8	Total Delay for Signalled Lanes (pcuHr):	2.53	Cycle Time (s): 52
C2 - ORN146	PRC for Signalled Lanes (%):	12.9	Total Delay for Signalled Lanes (pcuHr):	7.79	Cycle Time (s): 54
	PRC Over All Lanes (%):	-11.2	Total Delay Over All Lanes(pcuHr):	40.42	

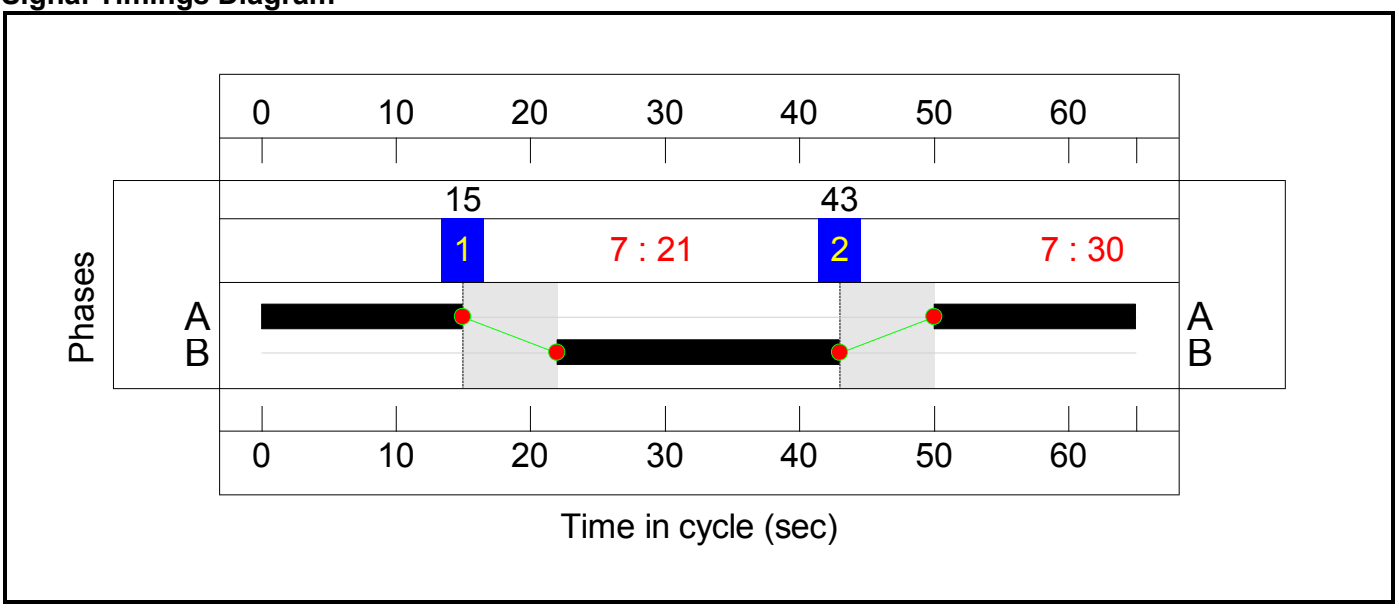
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



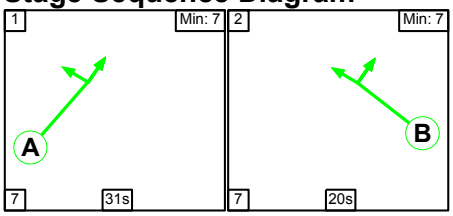
Stage Timings

Stage	1	2
Duration	21	30
Change Point	15	43

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

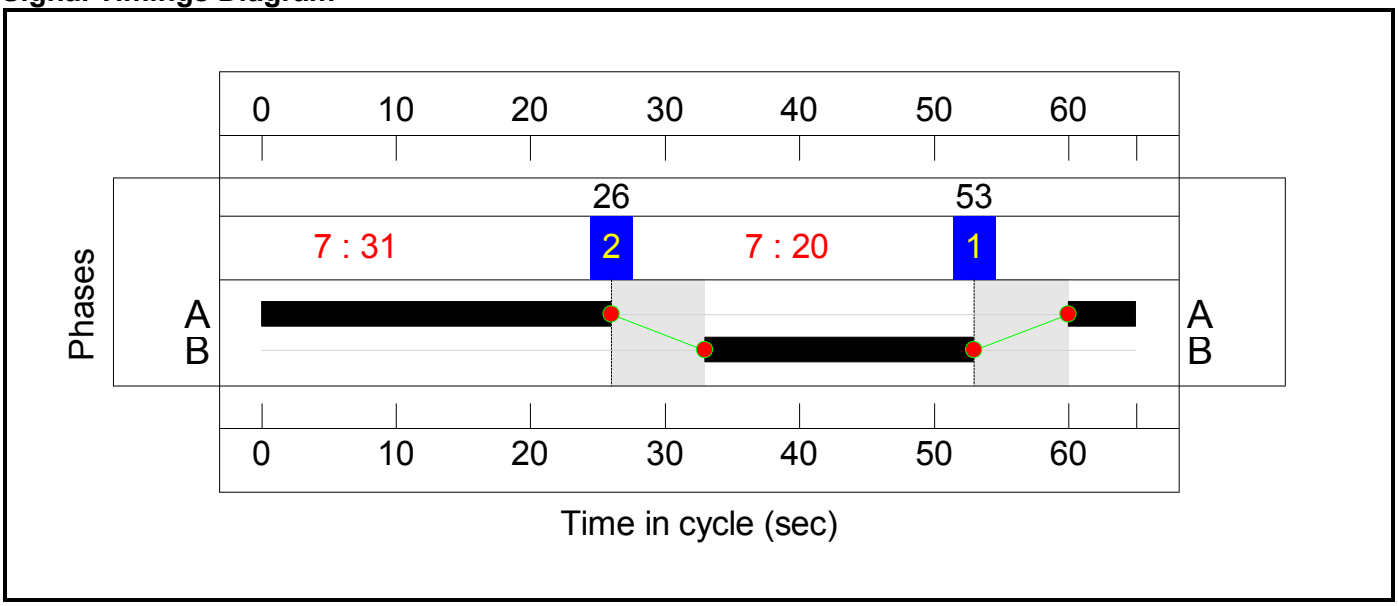


Stage Timings

Stage	1	2
Duration	31	20
Change Point	53	26

Full Input Data And Results

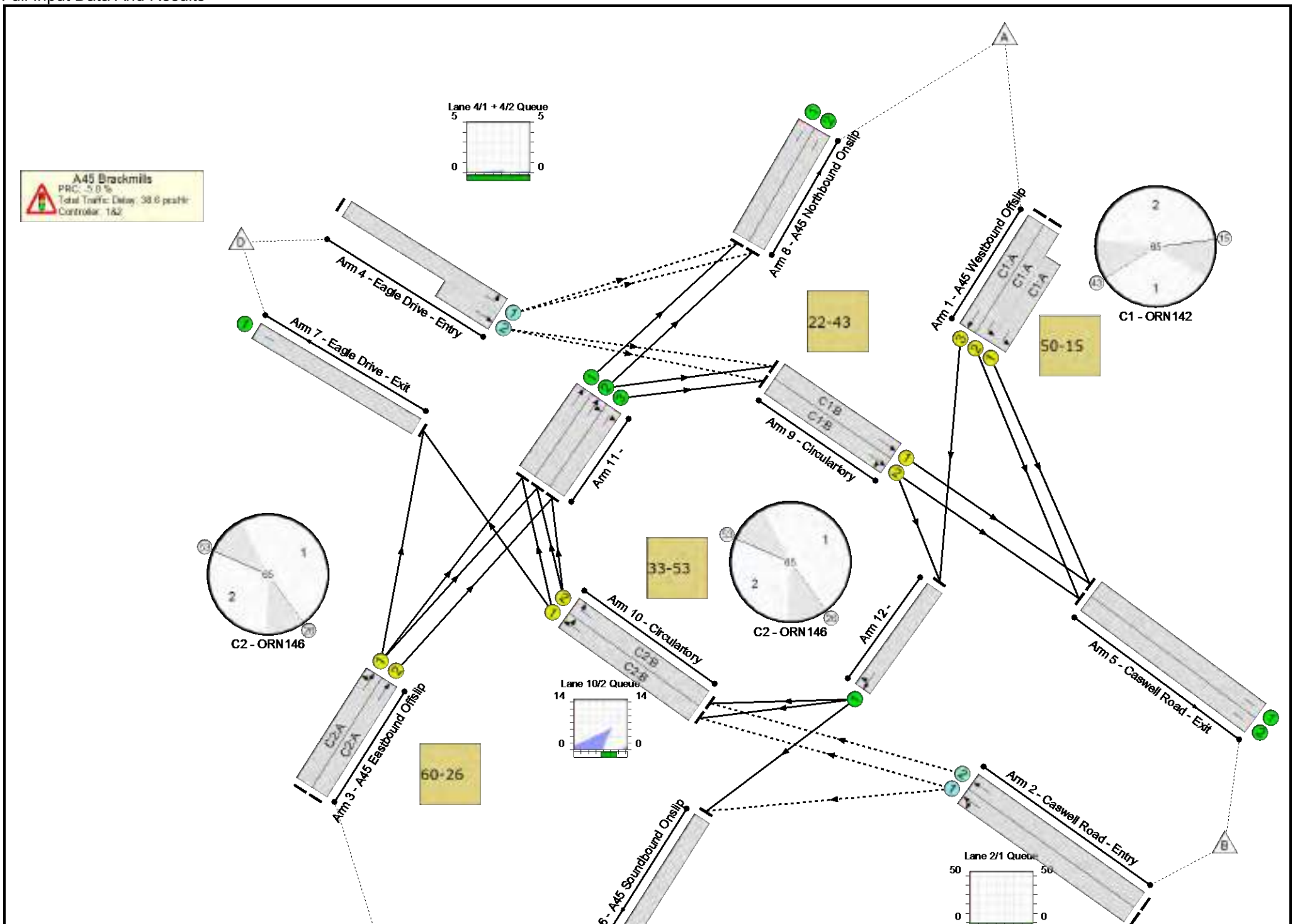
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.5%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.5%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	30	-	1334	1800:1800	706+706	94.5 : 94.5%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	30	-	96	1800	858	11.2%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	461	Inf	827	55.8%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	405	Inf	816	49.6%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	31	-	674	1800	886	76.1%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	31	-	568	1800	886	64.1%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	49	1959: Inf	91+133	21.9 : 21.9%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1247	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	793	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	633	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	274	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	21	-	580	1900	643	90.2%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	21	-	587	1900	643	91.3%

Full Input Data And Results

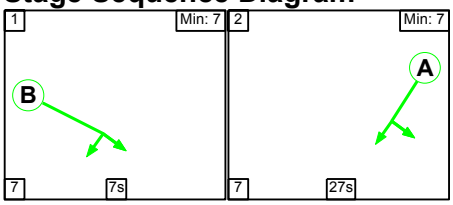
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	20	-	385	1900	614	62.7%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	20	-	405	1900	614	66.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	264	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	975	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	568	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	557	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**964**	**0**	**0**	**17.2**	**21.3**	**0.0**	**38.6**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**964**	**0**	**0**	**17.2**	**21.3**	**0.0**	**38.6**	**-**	**-**	**-**	**-**
1/2+1/1	1334	1334	-	-	-	5.2	7.2	-	12.4	33.5	10.7	7.2	17.9
1/3	96	96	-	-	-	0.3	0.1	-	0.3	11.8	0.9	0.1	1.0
2/1	461	461	461	0	0	0.0	0.6	-	0.6	4.9	0.0	0.6	0.6
2/2	405	405	405	0	0	0.0	0.5	-	0.5	4.4	0.0	0.5	0.5
3/1	674	674	-	-	-	2.5	1.6	-	4.1	21.8	9.7	1.6	11.3
3/2	568	568	-	-	-	1.9	0.9	-	2.8	17.9	7.6	0.9	8.5
4/1+4/2	49	49	98	0	0	0.1	0.1	-	0.2	17.4	0.3	0.1	0.4
5/1	1247	1247	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	793	793	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	274	274	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	580	580	-	-	-	1.3	4.1	-	5.4	33.4	9.8	4.1	13.9
9/2	587	587	-	-	-	1.5	4.5	-	6.1	37.1	10.1	4.5	14.6
10/1	385	385	-	-	-	2.2	0.8	-	3.0	28.4	6.1	0.8	7.0
10/2	405	405	-	-	-	2.1	1.0	-	3.1	27.5	6.2	1.0	7.1
11/1	264	264	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	975	975	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	568	568	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	557	557	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%): -5.0	Total Delay for Signalled Lanes (pcuHr): 24.18	Cycle Time (s): 65	
C2 - ORN146	PRC for Signalled Lanes (%): 18.3	Total Delay for Signalled Lanes (pcuHr): 13.02	Cycle Time (s): 65	
	PRC Over All Lanes (%): -5.0	Total Delay Over All Lanes(pcuHr): 38.56		

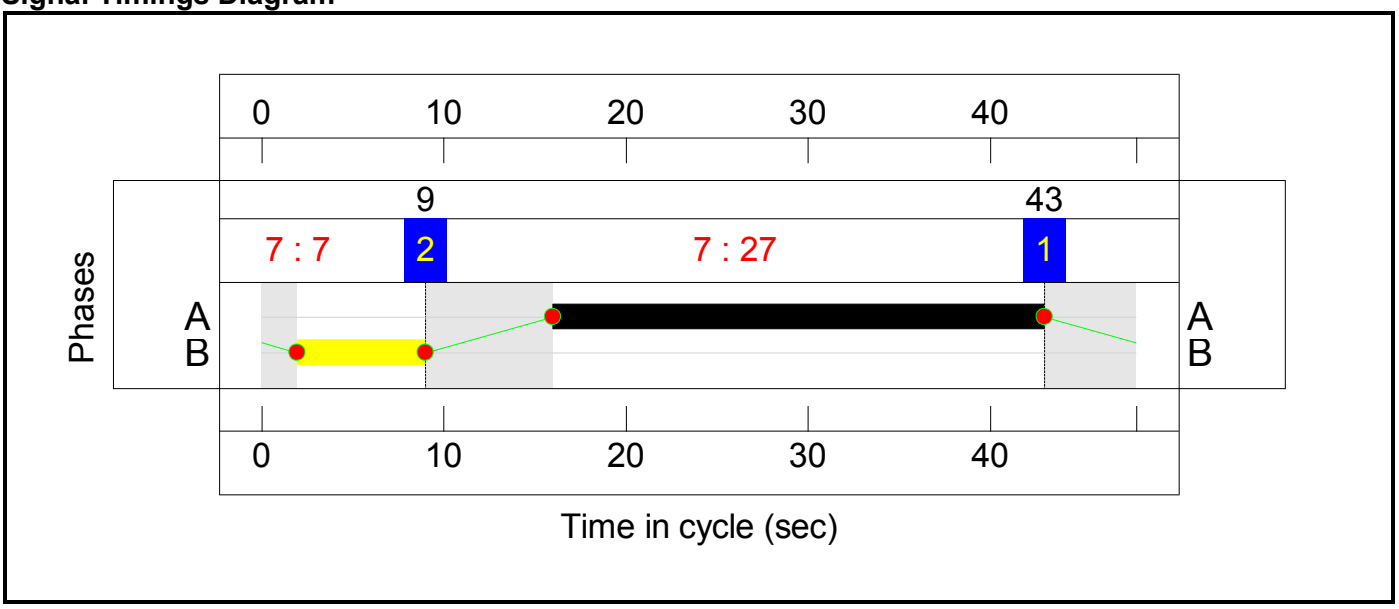
Full Input Data And Results
Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



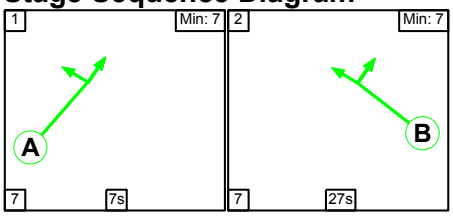
Stage Timings

Stage	1	2
Duration	7	27
Change Point	43	9

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

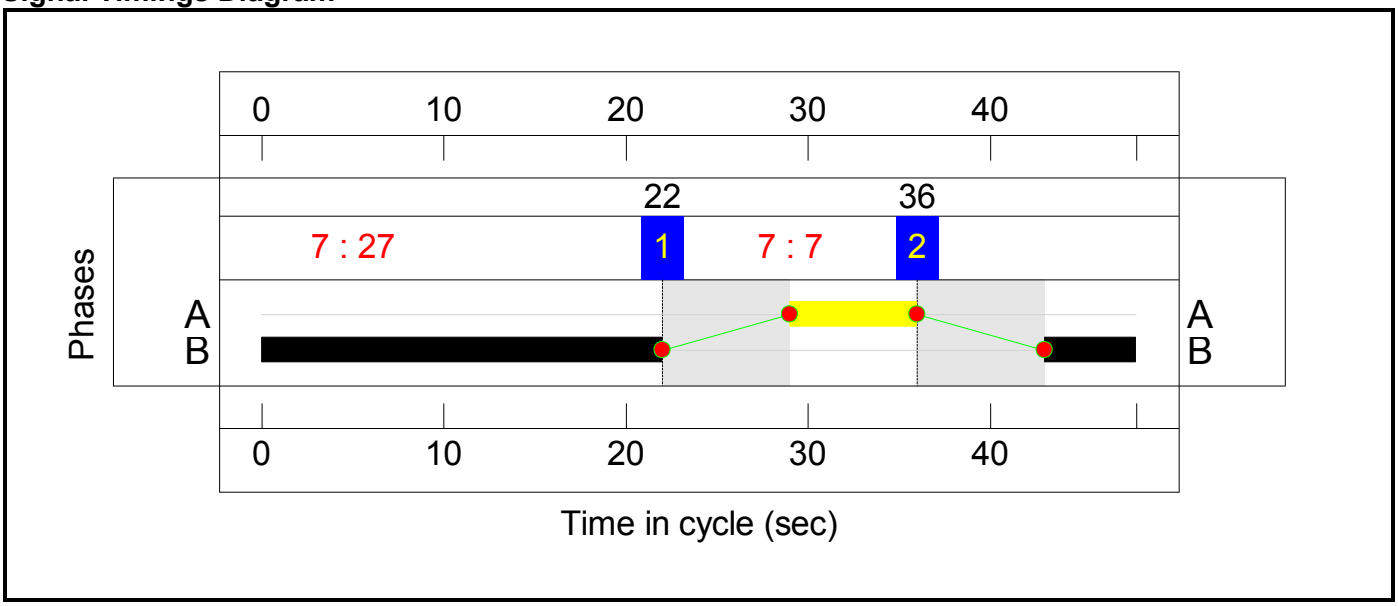


Stage Timings

Stage	1	2
Duration	7	27
Change Point	22	36

Full Input Data And Results

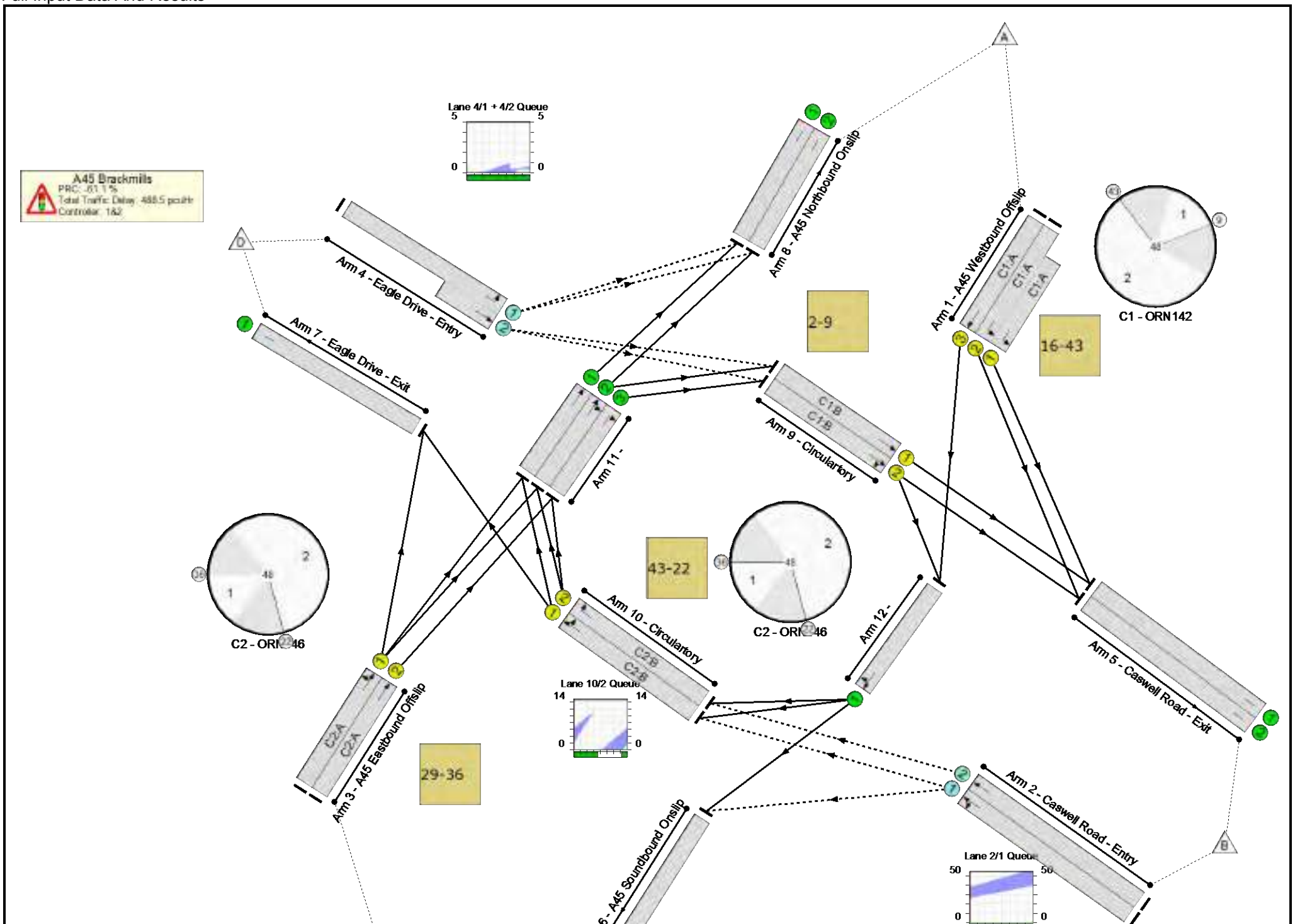
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.0%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.0%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	27	-	409	1800:1800	897+893	22.8 : 22.8%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	27	-	24	1800	1050	2.3%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	1429	Inf	986	145.0%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	1414	Inf	983	143.8%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	7	-	232	1800	300	77.3%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	7	-	233	1800	300	77.7%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	210	1959: Inf	523+151	30.0 : 35.2%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	444	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	421	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	488	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	69	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1036	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1493	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	7	-	240	1900	317	75.8%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	7	-	242	1900	317	76.4%

Full Input Data And Results

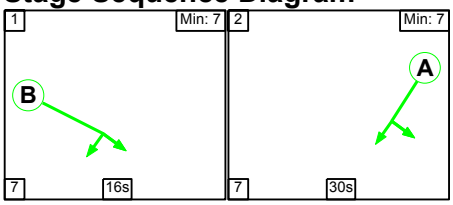
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	27	-	991	1900	1108	62.4%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	27	-	1414	1900	1108	88.7%
11/1	Ahead	U	N/A	N/A	-		-	-	-	958	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1610	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	50	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2389**	**0**	**0**	**37.0**	**451.5**	**0.0**	**488.5**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**2389**	**0**	**0**	**37.0**	**451.5**	**0.0**	**488.5**	**-**	**-**	**-**	**-**
1/2+1/1	409	409	-	-	-	0.5	0.1	-	0.7	6.0	1.3	0.1	1.4
1/3	24	24	-	-	-	0.0	0.0	-	0.0	6.1	0.1	0.0	0.1
2/1	1429	986	986	0	0	14.8	223.2	-	238.1	599.7	57.2	223.2	280.4
2/2	1414	983	983	0	0	14.4	217.0	-	231.4	589.2	56.6	217.0	273.6
3/1	232	232	-	-	-	1.2	1.6	-	2.9	44.4	2.9	1.6	4.5
3/2	233	233	-	-	-	1.2	1.7	-	2.9	44.7	2.9	1.7	4.6
4/1+4/2	210	210	420	0	0	0.3	0.2	-	0.5	9.4	1.0	0.2	1.2
5/1	444	444	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	345	345	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	739	739	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1062	1062	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	240	240	-	-	-	0.4	1.5	-	1.9	28.7	2.9	1.5	4.4
9/2	242	242	-	-	-	0.4	1.6	-	1.9	29.0	2.9	1.6	4.5
10/1	691	691	-	-	-	1.2	0.8	-	2.1	10.8	6.0	0.8	6.8
10/2	983	983	-	-	-	2.3	3.7	-	6.0	22.1	11.2	3.7	14.9
11/1	661	661	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1179	1179	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	233	233	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	50	50	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%):	17.8	Total Delay for Signalled Lanes (pcuHr):	4.59	Cycle Time (s): 48
C2 - ORN146	PRC for Signalled Lanes (%):	1.5	Total Delay for Signalled Lanes (pcuHr):	13.86	Cycle Time (s): 48
	PRC Over All Lanes (%):	-61.1	Total Delay Over All Lanes(pcuHr):	488.49	

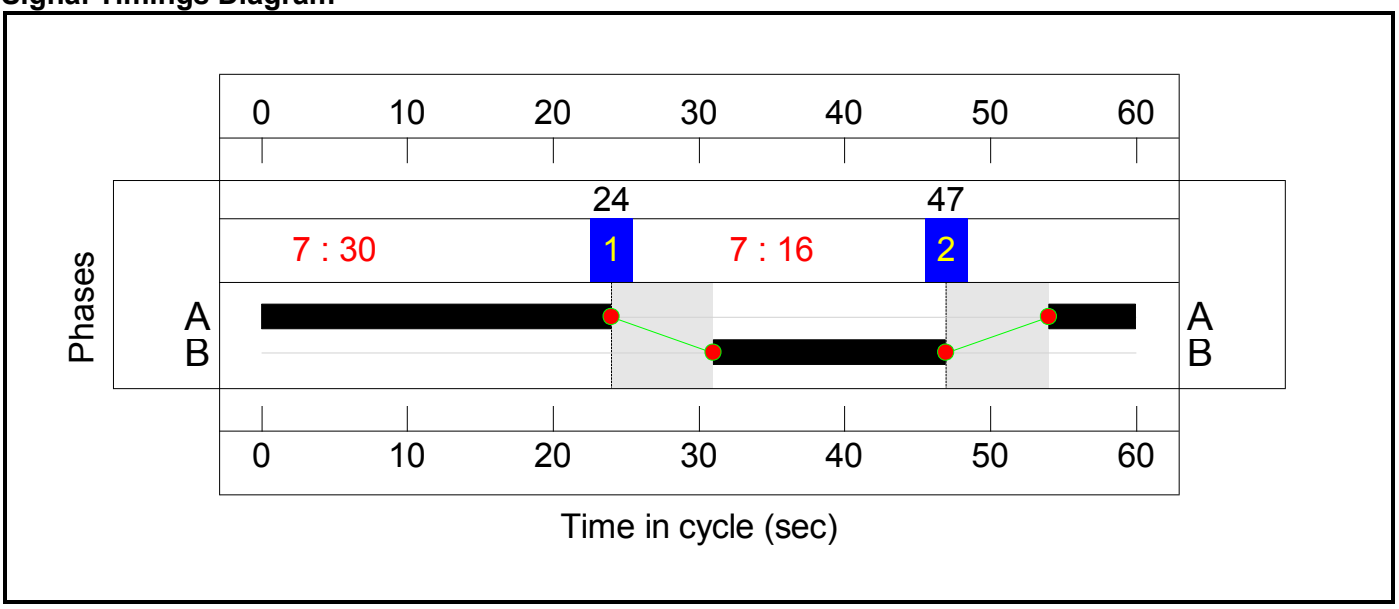
Full Input Data And Results
Scenario 5: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



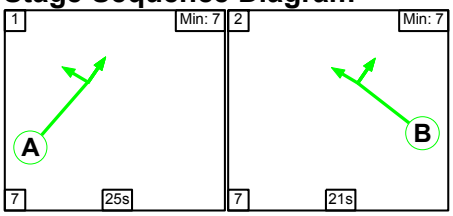
Stage Timings

Stage	1	2
Duration	16	30
Change Point	24	47

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

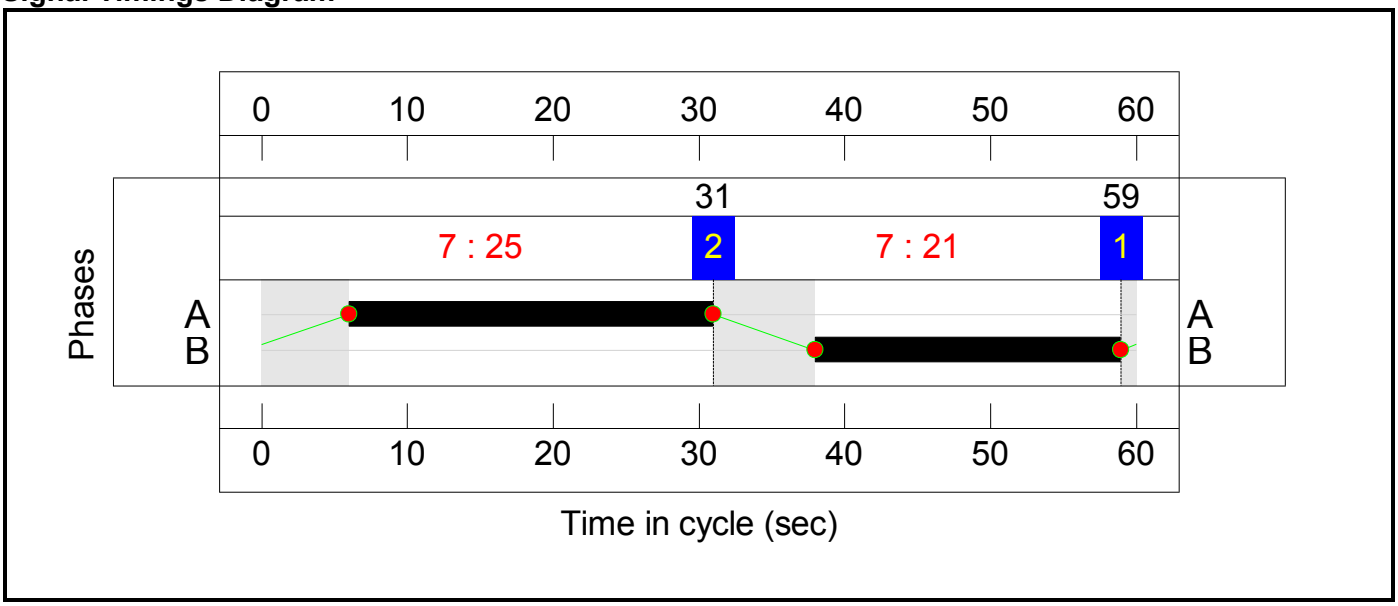


Stage Timings

Stage	1	2
Duration	25	21
Change Point	59	31

Full Input Data And Results

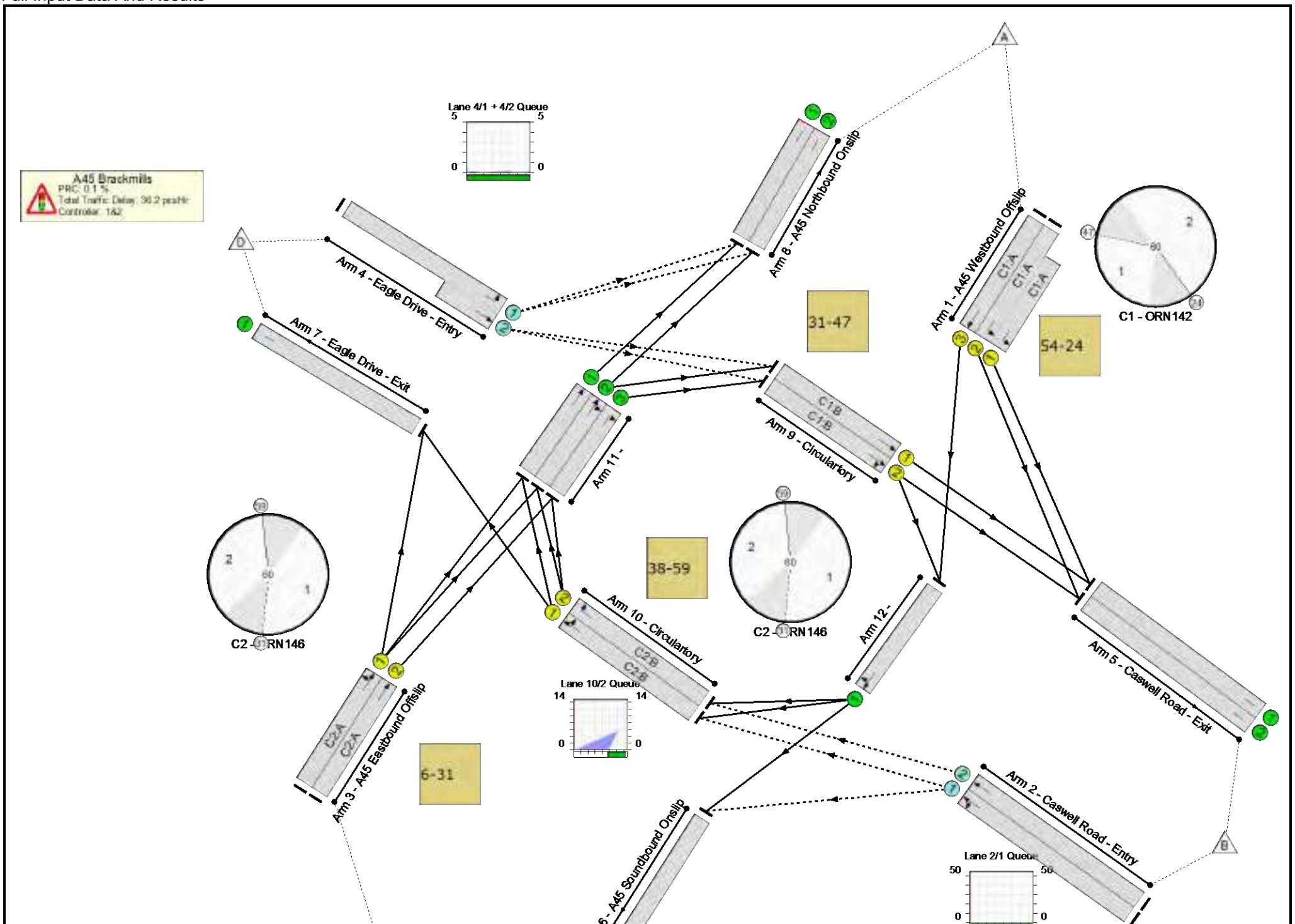
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.9%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.9%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	30	-	1364	1800:1800	765+765	89.2 : 89.2%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	30	-	96	1800	930	10.3%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	487	Inf	828	58.8%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	416	Inf	816	51.0%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	25	-	570	1800	780	73.1%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	25	-	464	1800	780	59.5%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	50	1959: Inf	109+163	18.4 : 18.4%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1158	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	704	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	668	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	265	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	426	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	16	-	476	1900	538	88.4%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	16	-	484	1900	538	89.9%

Full Input Data And Results

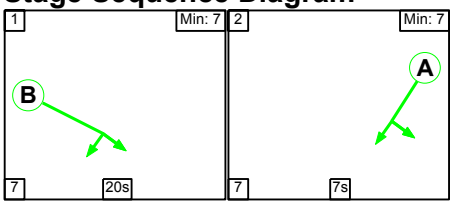
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	21	-	377	1900	697	54.1%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	21	-	416	1900	697	59.7%
11/1	Ahead	U	N/A	N/A	-		-	-	-	255	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	882	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	464	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1003**	**0**	**0**	**14.2**	**16.1**	**0.0**	**30.2**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**1003**	**0**	**0**	**14.2**	**16.1**	**0.0**	**30.2**	**-**	**-**	**-**	**-**
1/2+1/1	1364	1364	-	-	-	4.3	3.9	-	8.2	21.6	8.7	3.9	12.6
1/3	96	96	-	-	-	0.2	0.1	-	0.3	9.6	0.8	0.1	0.9
2/1	487	487	487	0	0	0.0	0.7	-	0.7	5.3	1.4	0.7	2.1
2/2	416	416	416	0	0	0.0	0.5	-	0.5	4.5	0.1	0.5	0.6
3/1	570	570	-	-	-	2.2	1.3	-	3.6	22.6	7.8	1.3	9.1
3/2	464	464	-	-	-	1.7	0.7	-	2.4	18.7	5.8	0.7	6.5
4/1+4/2	50	50	100	0	0	0.1	0.1	-	0.2	13.8	0.2	0.1	0.3
5/1	1158	1158	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	704	704	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	668	668	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	265	265	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	426	426	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	476	476	-	-	-	1.0	3.4	-	4.4	33.6	7.5	3.4	10.9
9/2	484	484	-	-	-	1.2	3.9	-	5.1	37.9	7.6	3.9	11.5
10/1	377	377	-	-	-	1.7	0.6	-	2.3	22.2	5.3	0.6	5.9
10/2	416	416	-	-	-	1.8	0.7	-	2.5	21.8	5.5	0.7	6.3
11/1	255	255	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	882	882	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	464	464	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%):	0.1	Total Delay for Signalled Lanes (pcuHr):	17.99	Cycle Time (s): 60
C2 - ORN146	PRC for Signalled Lanes (%):	23.2	Total Delay for Signalled Lanes (pcuHr):	10.82	Cycle Time (s): 60
	PRC Over All Lanes (%):	0.1	Total Delay Over All Lanes(pcuHr):	30.24	

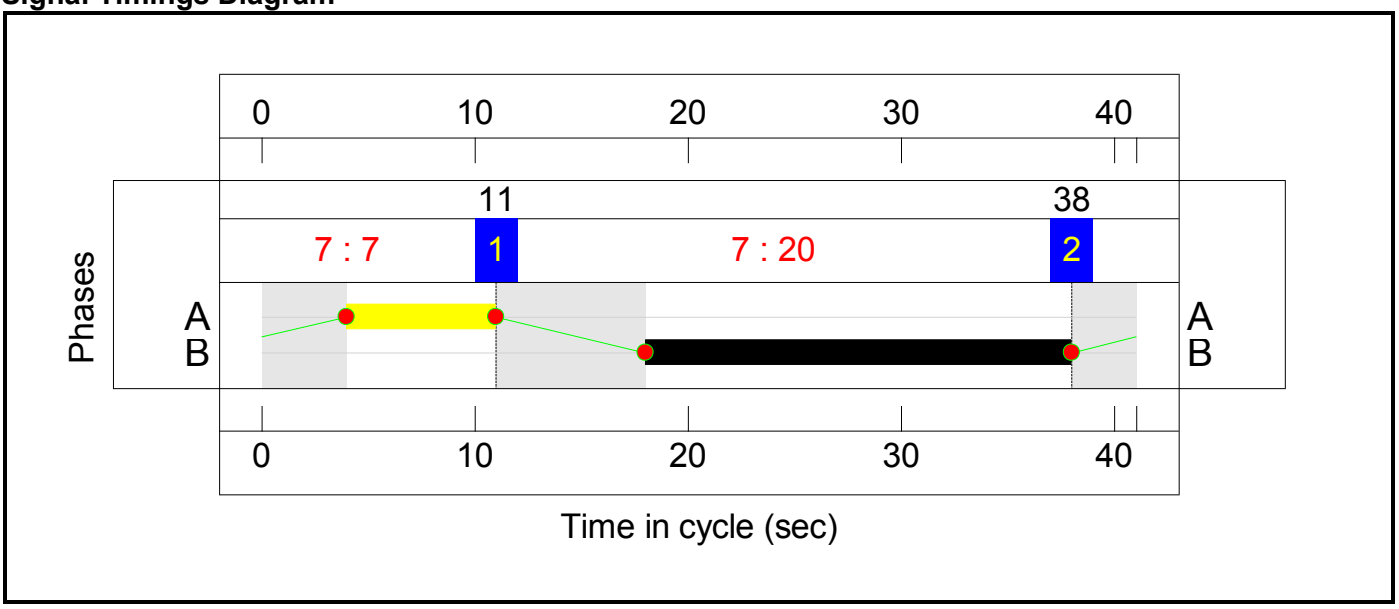
Full Input Data And Results
Scenario 6: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



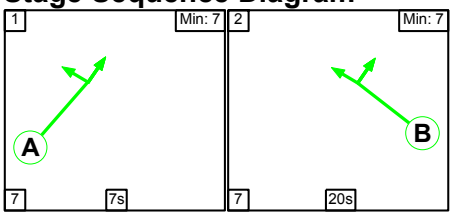
Stage Timings

Stage	1	2
Duration	20	7
Change Point	11	38

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

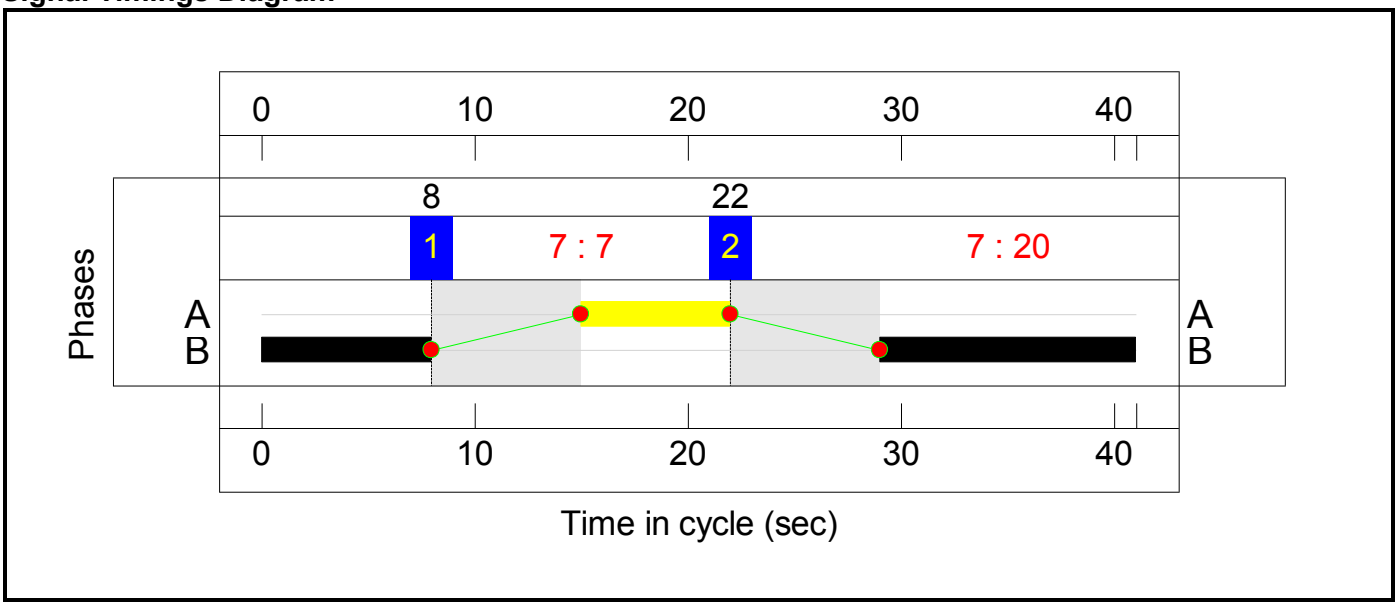


Stage Timings

Stage	1	2
Duration	7	20
Change Point	8	22

Full Input Data And Results

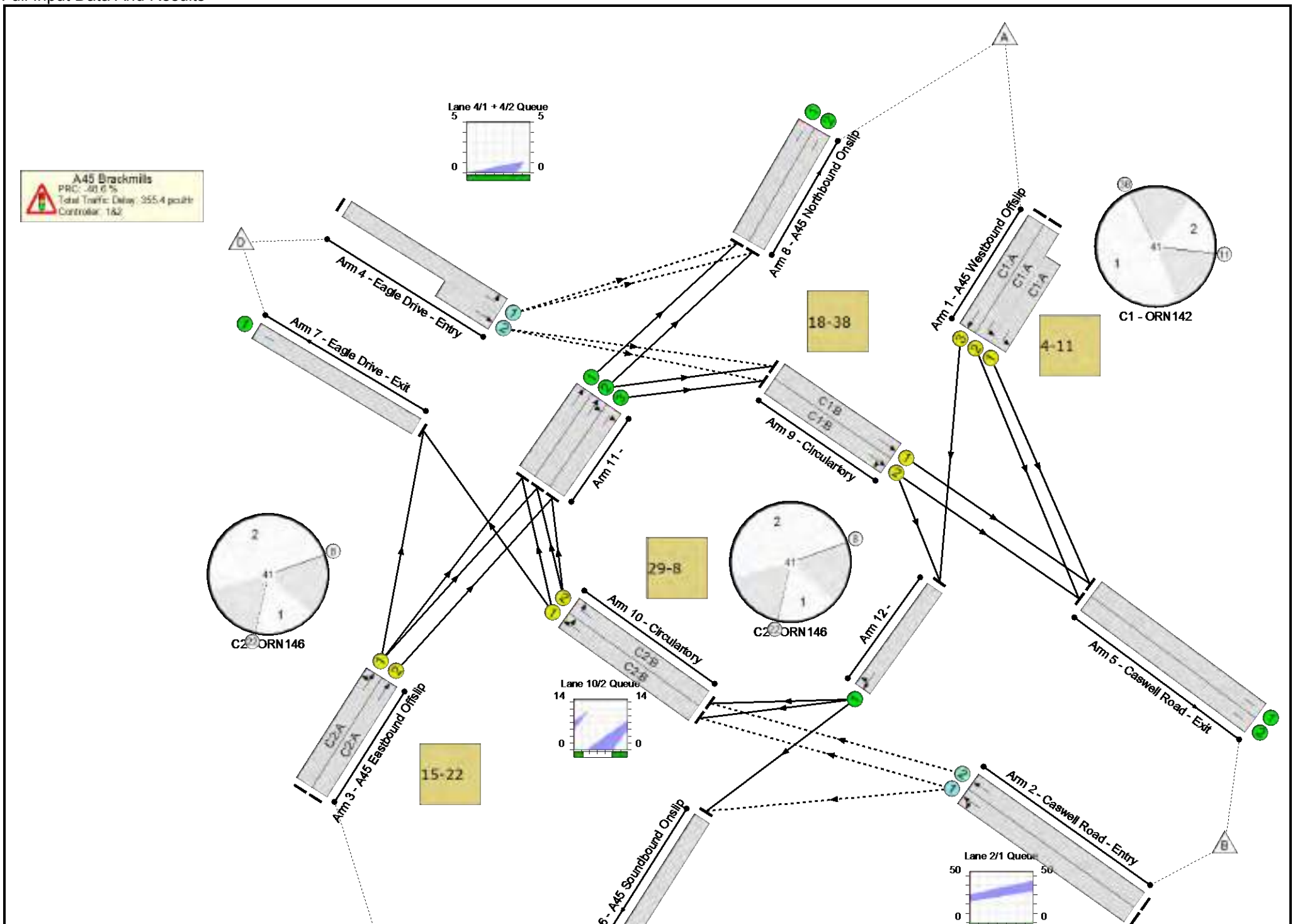
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**133.7%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**133.7%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	7	-	411	1800:1800	351+351	58.7 : 58.4%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	7	-	24	1800	351	6.8%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	1319	Inf	986	133.7%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	1256	Inf	983	127.7%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	7	-	192	1800	351	54.7%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	7	-	191	1800	351	54.4%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	211	1959: Inf	164+179	61.5 : 61.5%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	428	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	414	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	557	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	69	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	829	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1307	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	20	-	223	1900	973	22.9%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	20	-	234	1900	973	24.0%

Full Input Data And Results

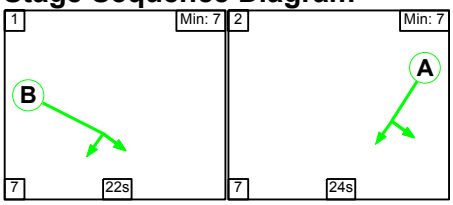
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	20	-	812	1900	973	63.0%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	20	-	1256	1900	973	101.0%
11/1	Ahead	U	N/A	N/A	-		-	-	-	779	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1412	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	191	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	50	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2392**	**0**	**0**	**26.2**	**329.2**	**0.0**	**355.4**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**2392**	**0**	**0**	**26.2**	**329.2**	**0.0**	**355.4**	**-**	**-**	**-**	**-**
1/2+1/1	411	411	-	-	-	1.7	0.7	-	2.4	21.2	2.1	0.7	2.8
1/3	24	24	-	-	-	0.1	0.0	-	0.1	19.2	0.2	0.0	0.3
2/1	1319	986	986	0	0	9.5	168.3	-	177.8	485.4	45.1	168.3	213.4
2/2	1256	983	983	0	0	7.8	138.7	-	146.5	419.8	42.9	138.7	181.6
3/1	192	192	-	-	-	0.8	0.6	-	1.4	26.1	1.9	0.6	2.5
3/2	191	191	-	-	-	0.8	0.6	-	1.4	26.0	1.9	0.6	2.5
4/1+4/2	211	211	422	0	0	0.5	0.8	-	1.3	21.6	1.1	0.8	1.9
5/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	414	414	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	67	67	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	223	223	-	-	-	0.4	0.1	-	0.6	9.2	1.0	0.1	1.1
9/2	234	234	-	-	-	0.4	0.2	-	0.5	8.1	0.9	0.2	1.0
10/1	613	613	-	-	-	1.2	0.8	-	2.1	12.2	5.0	0.8	5.8
10/2	983	973	-	-	-	2.9	18.4	-	21.3	78.1	11.3	18.4	29.7
11/1	583	583	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1129	1129	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	191	191	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	50	50	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%):	53.4	Total Delay for Signalled Lanes (pcuHr):	3.64	Cycle Time (s): 41
C2 - ORN146	PRC for Signalled Lanes (%):	-12.3	Total Delay for Signalled Lanes (pcuHr):	26.18	Cycle Time (s): 41
	PRC Over All Lanes (%):	-48.6	Total Delay Over All Lanes(pcuHr):	355.39	

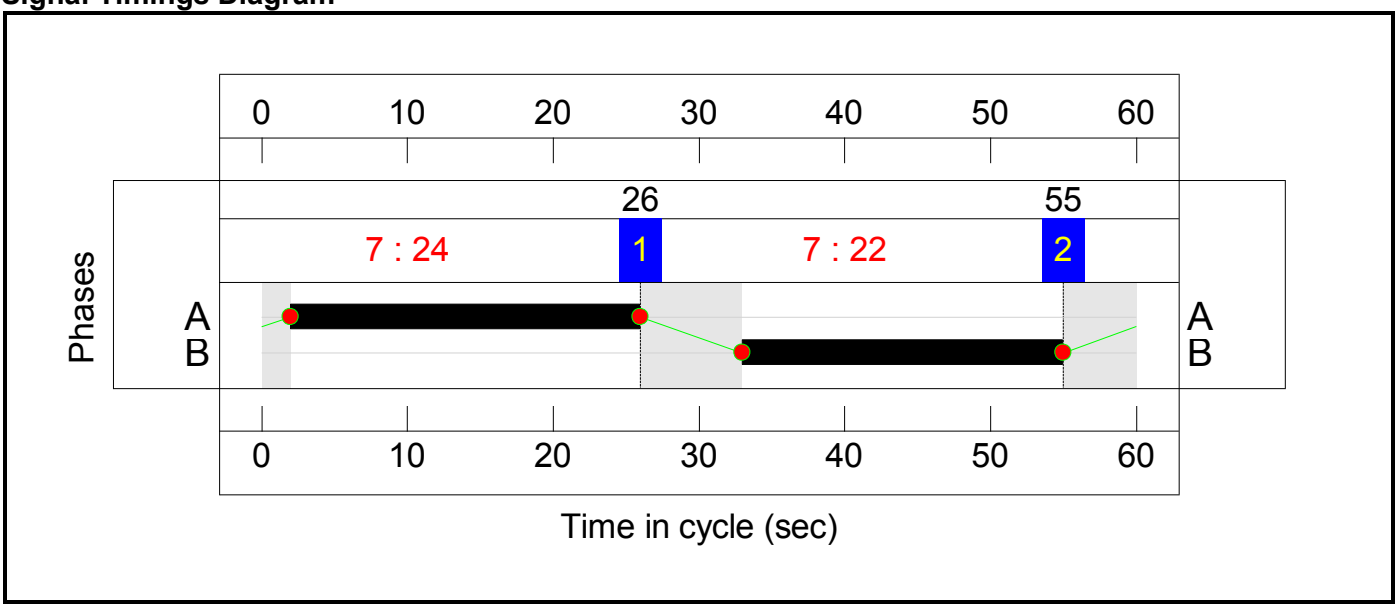
Full Input Data And Results
Scenario 7: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



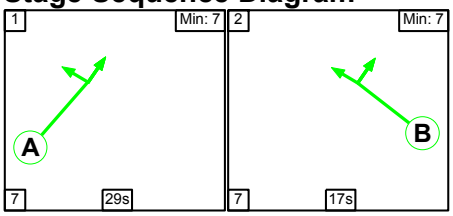
Stage Timings

Stage	1	2
Duration	22	24
Change Point	26	55

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

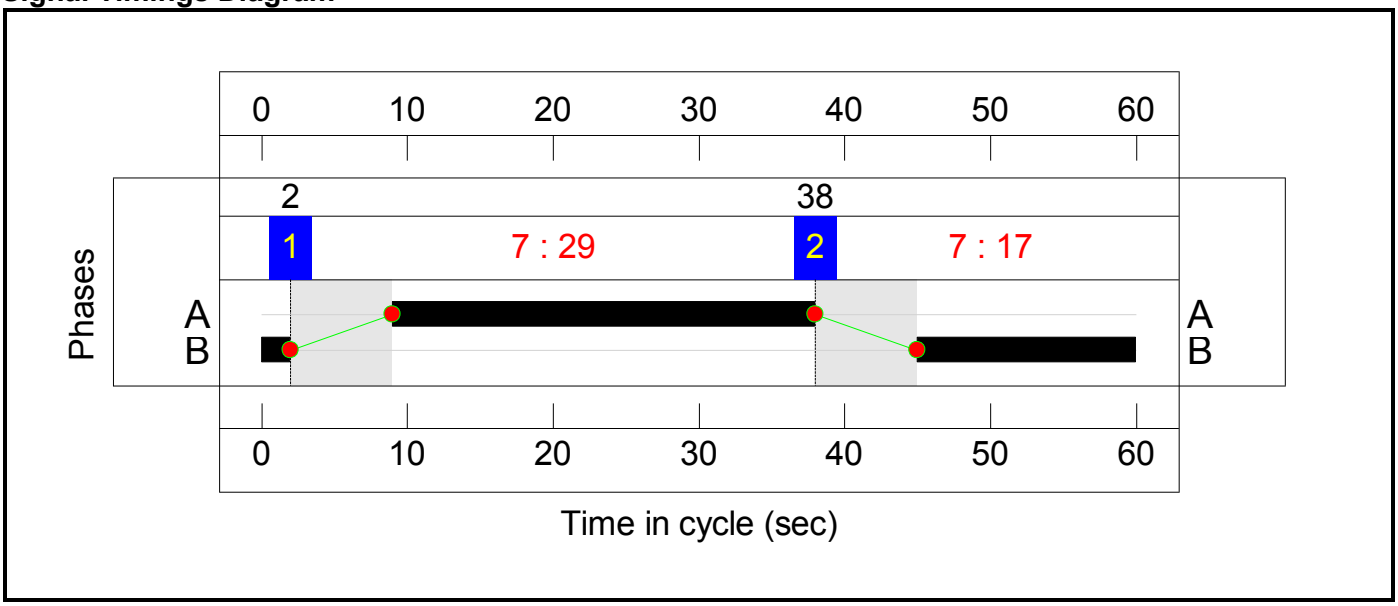


Stage Timings

Stage	1	2
Duration	29	17
Change Point	2	38

Full Input Data And Results

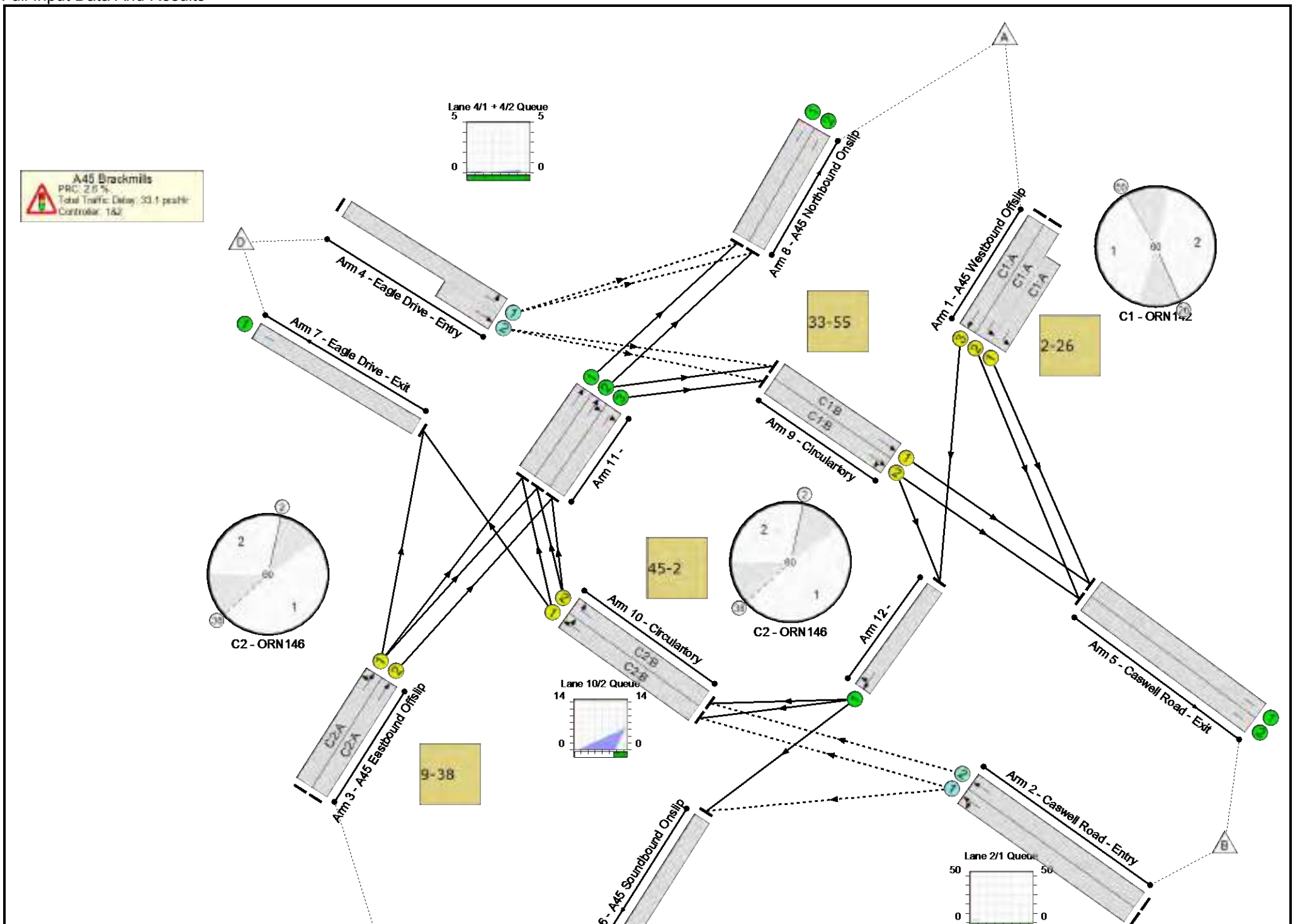
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.7%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.7%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	24	-	1183	1800:1800	675+674	87.7 : 87.7%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	24	-	95	1800	750	12.7%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	664	Inf	836	79.5%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	424	Inf	816	52.0%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	29	-	711	1800	900	79.0%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	29	-	618	1800	900	68.7%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	54	1959: Inf	75+138	25.3 : 25.3%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1211	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	768	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	903	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	207	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	434	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	22	-	620	1900	728	85.1%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	22	-	638	1900	728	87.6%

Full Input Data And Results

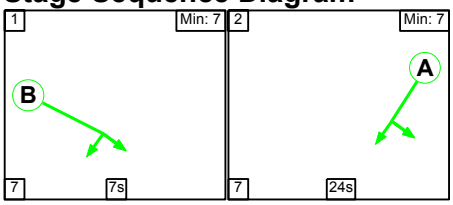
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	17	-	318	1900	570	55.8%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	17	-	424	1900	570	74.4%
11/1	Ahead	U	N/A	N/A	-		-	-	-	198	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1029	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	618	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	557	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1196**	**0**	**0**	**16.0**	**17.1**	**0.0**	**33.1**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**1196**	**0**	**0**	**16.0**	**17.1**	**0.0**	**33.1**	**-**	**-**	**-**	**-**
1/2+1/1	1183	1183	-	-	-	5.0	3.4	-	8.4	25.6	8.6	3.4	12.0
1/3	95	95	-	-	-	0.3	0.1	-	0.4	13.5	1.0	0.1	1.0
2/1	664	664	664	0	0	0.1	1.9	-	2.0	10.7	4.4	1.9	6.3
2/2	424	424	424	0	0	0.0	0.5	-	0.5	4.6	0.0	0.5	0.5
3/1	711	711	-	-	-	2.4	1.8	-	4.3	21.7	9.7	1.8	11.5
3/2	618	618	-	-	-	2.0	1.1	-	3.0	17.8	7.7	1.1	8.8
4/1+4/2	54	54	108	0	0	0.1	0.2	-	0.3	18.7	0.3	0.2	0.5
5/1	1211	1211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	768	768	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	903	903	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	207	207	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	434	434	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	620	620	-	-	-	1.0	2.7	-	3.7	21.6	9.2	2.7	11.9
9/2	638	638	-	-	-	1.2	3.3	-	4.5	25.5	9.7	3.3	13.0
10/1	318	318	-	-	-	1.7	0.6	-	2.3	26.1	4.8	0.6	5.4
10/2	424	424	-	-	-	2.2	1.4	-	3.7	31.0	6.4	1.4	7.8
11/1	198	198	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1029	1029	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	618	618	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	557	557	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%):	2.6	Total Delay for Signalled Lanes (pcuHr):	17.02	Cycle Time (s): 60
C2 - ORN146	PRC for Signalled Lanes (%):	13.9	Total Delay for Signalled Lanes (pcuHr):	13.30	Cycle Time (s): 60
	PRC Over All Lanes (%):	2.6	Total Delay Over All Lanes(pcuHr):	33.10	

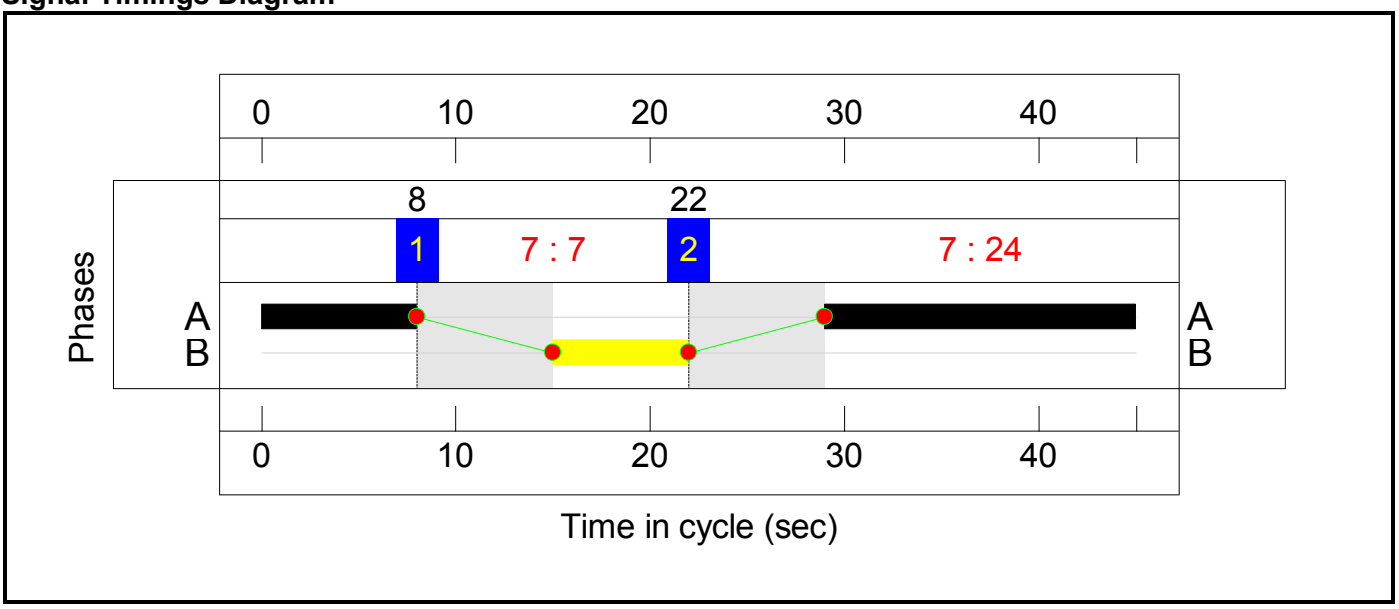
Full Input Data And Results
Scenario 8: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



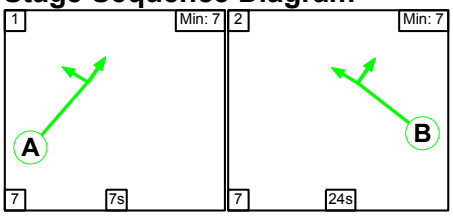
Stage Timings

Stage	1	2
Duration	7	24
Change Point	8	22

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

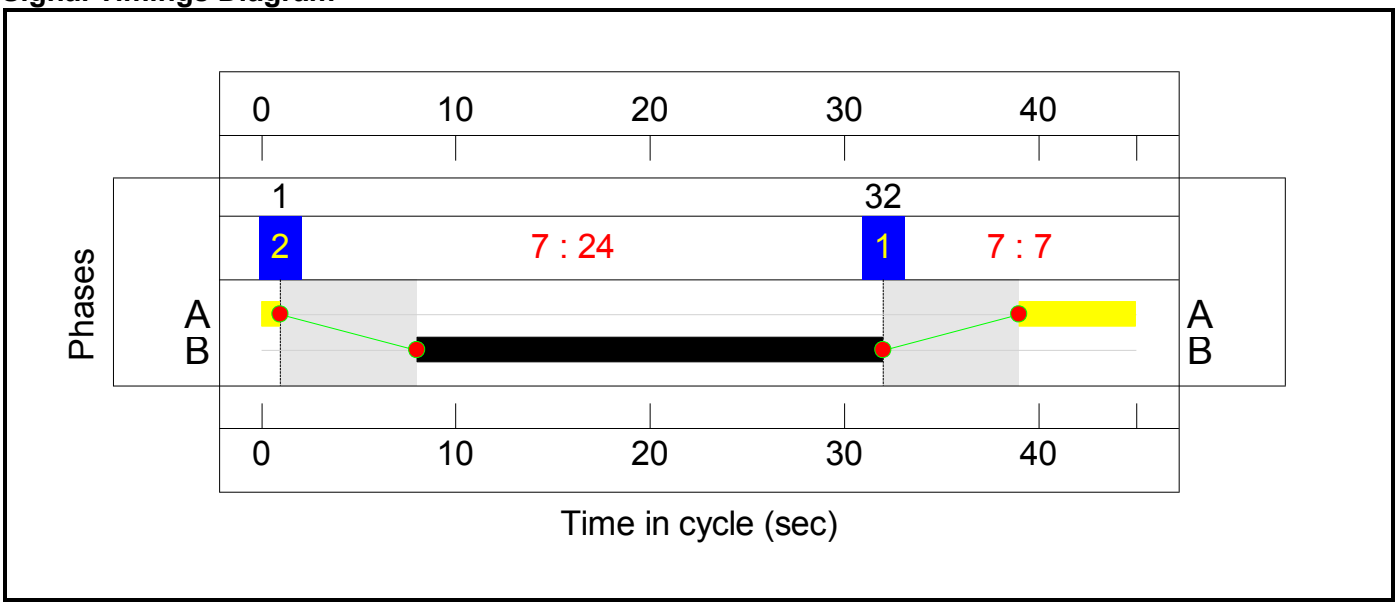


Stage Timings

Stage	1	2
Duration	7	24
Change Point	32	1

Full Input Data And Results

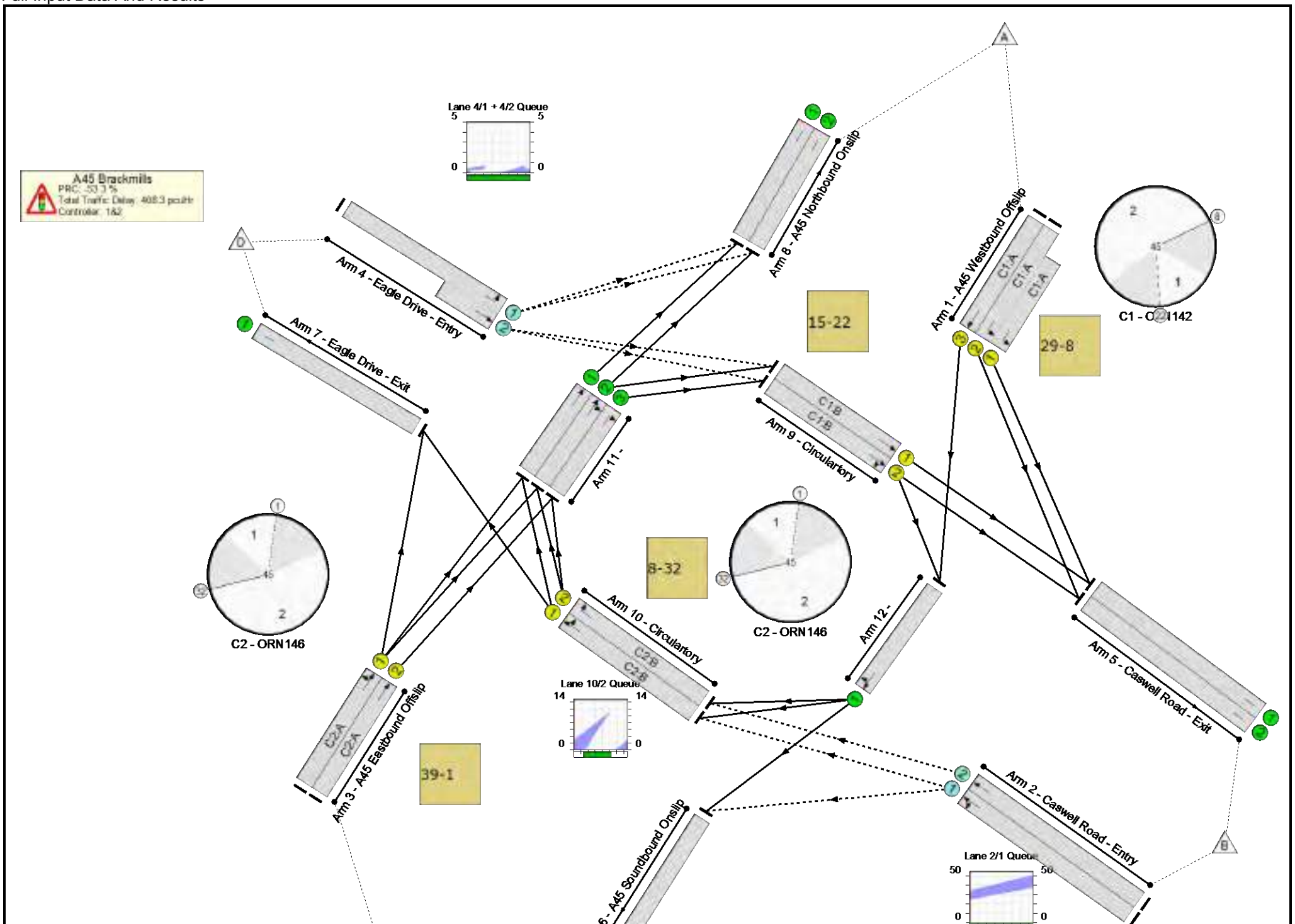
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.0%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.0%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	24	-	489	1800:1800	897+893	27.3 : 27.3%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	24	-	22	1800	1000	2.2%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	1362	Inf	987	138.0%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	1338	Inf	984	136.0%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	7	-	196	1800	320	61.3%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	7	-	197	1800	320	61.6%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	216	1959: Inf	551+179	27.4 : 36.3%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	455	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	430	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	599	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	68	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1414	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	7	-	211	1900	338	62.5%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	7	-	211	1900	338	62.5%

Full Input Data And Results

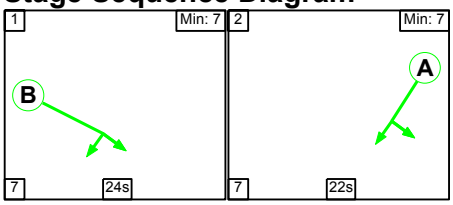
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	24	-	811	1900	1056	56.2%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	24	-	1338	1900	1056	93.2%
11/1	Ahead	U	N/A	N/A	-		-	-	-	779	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1498	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	48	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2403**	**0**	**0**	**29.9**	**378.4**	**0.0**	**408.3**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**2403**	**0**	**0**	**29.9**	**378.4**	**0.0**	**408.3**	**-**	**-**	**-**	**-**
1/2+1/1	489	489	-	-	-	0.7	0.2	-	0.9	6.5	1.6	0.2	1.8
1/3	22	22	-	-	-	0.0	0.0	-	0.0	6.5	0.1	0.0	0.1
2/1	1362	987	987	0	0	11.7	189.3	-	201.1	531.5	51.1	189.3	240.4
2/2	1338	984	984	0	0	11.1	178.9	-	190.0	511.3	50.2	178.9	229.1
3/1	196	196	-	-	-	0.9	0.8	-	1.7	31.4	2.2	0.8	3.0
3/2	197	197	-	-	-	0.9	0.8	-	1.7	31.6	2.2	0.8	3.0
4/1+4/2	216	216	432	0	0	0.3	0.2	-	0.5	8.3	0.7	0.2	0.9
5/1	455	455	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	430	430	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	441	441	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	65	65	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	639	639	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	211	211	-	-	-	0.3	0.8	-	1.1	19.4	2.3	0.8	3.1
9/2	211	211	-	-	-	0.3	0.8	-	1.1	19.2	2.3	0.8	3.1
10/1	594	594	-	-	-	1.0	0.6	-	1.7	10.2	4.8	0.6	5.4
10/2	984	984	-	-	-	2.5	5.9	-	8.4	30.7	11.2	5.9	17.1
11/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1144	1144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	197	197	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	48	48	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%):	44.1	Total Delay for Signalled Lanes (pcuHr):	3.19	Cycle Time (s): 45
C2 - ORN146	PRC for Signalled Lanes (%):	-3.6	Total Delay for Signalled Lanes (pcuHr):	13.50	Cycle Time (s): 45
	PRC Over All Lanes (%):	-53.3	Total Delay Over All Lanes(pcuHr):	408.31	

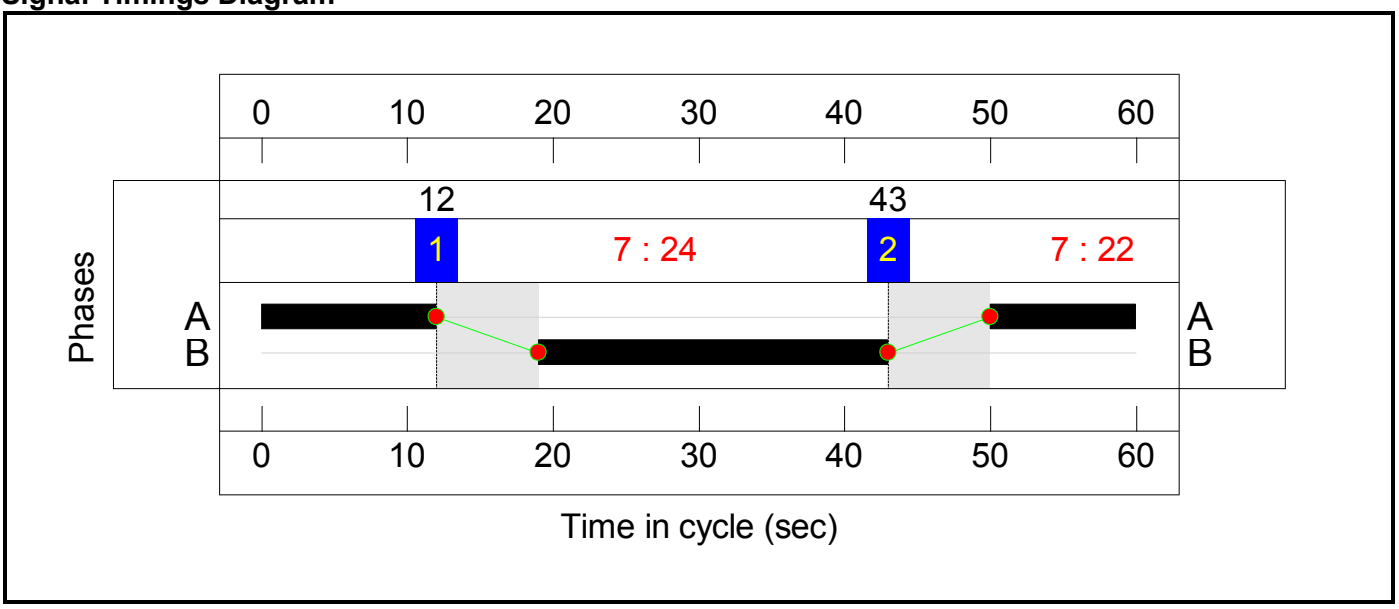
Full Input Data And Results
Scenario 9: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



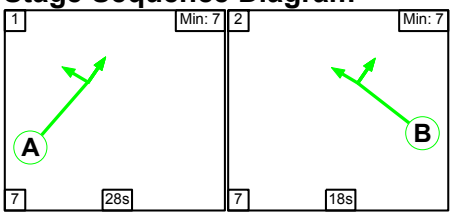
Stage Timings

Stage	1	2
Duration	24	22
Change Point	12	43

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

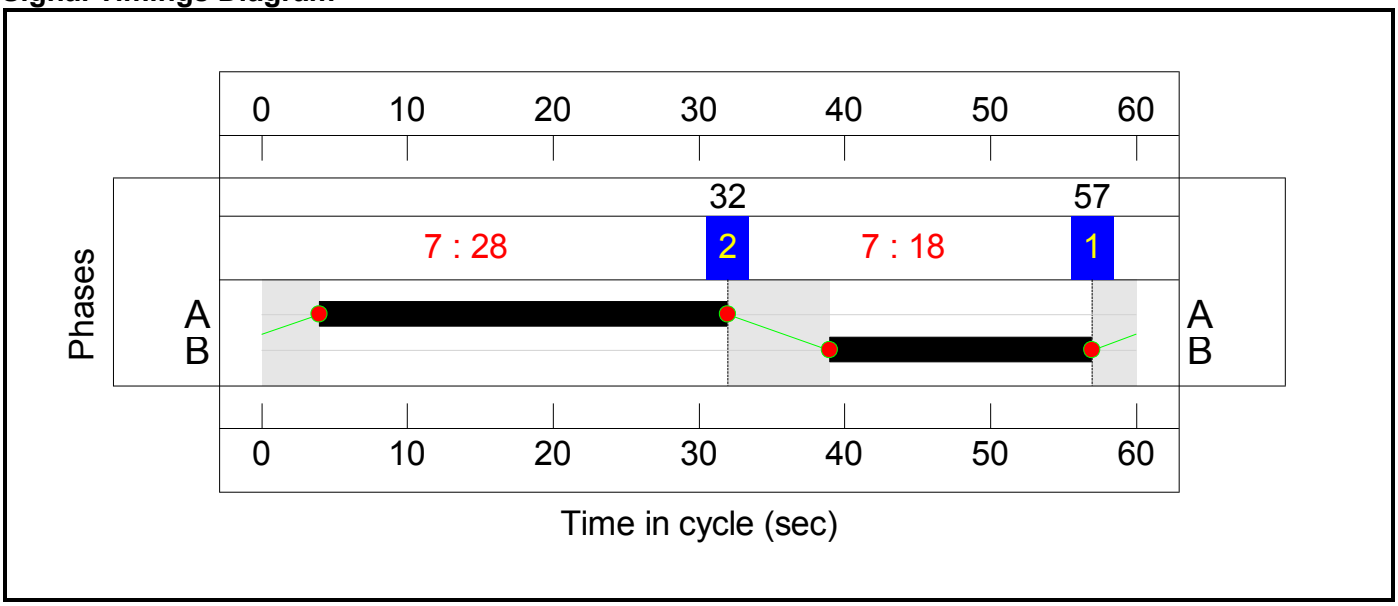


Stage Timings

Stage	1	2
Duration	28	18
Change Point	57	32

Full Input Data And Results

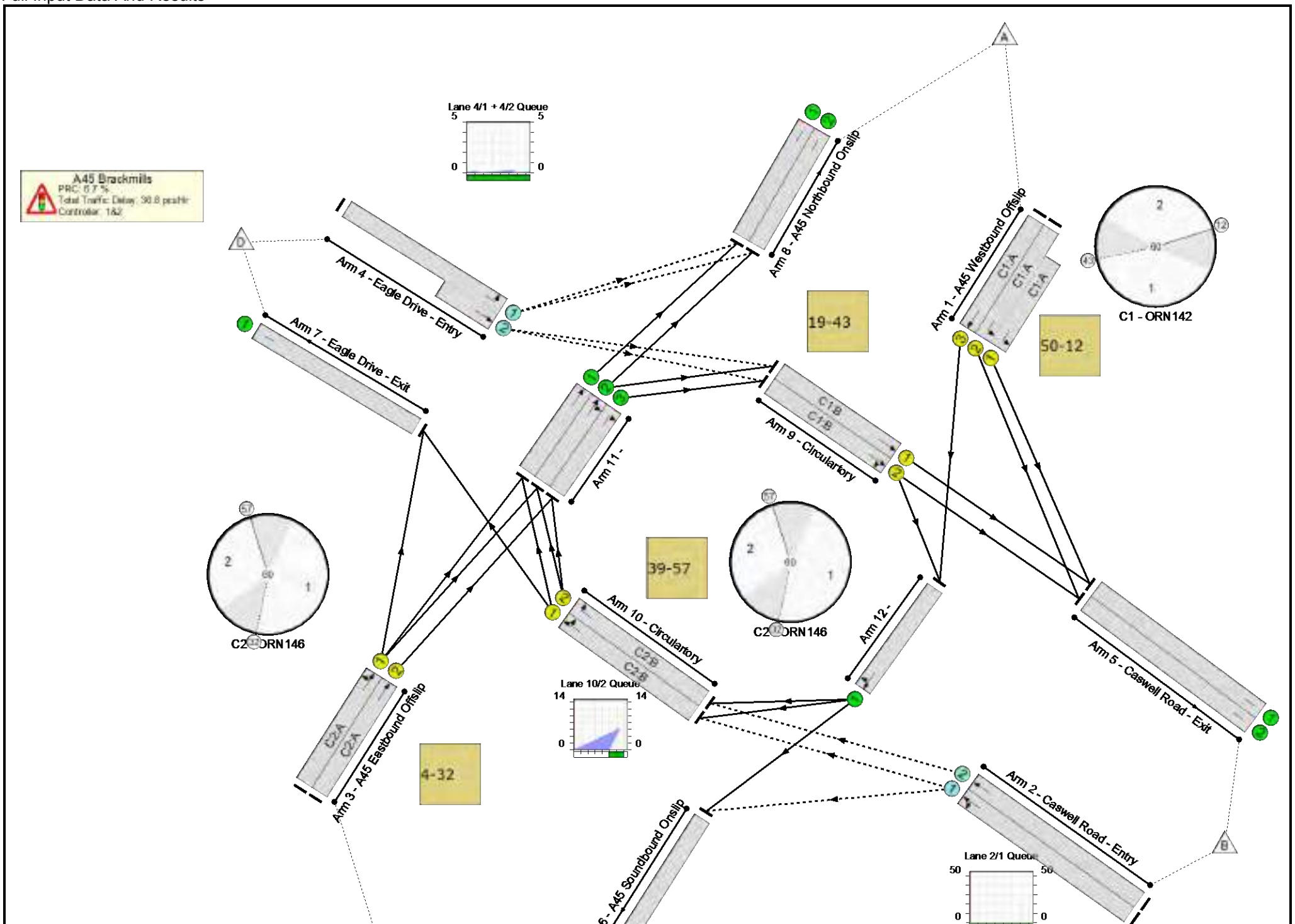
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**84.3%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**84.3%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	22	-	1087	1800:1800	645+644	84.3 : 84.3%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	22	-	94	1800	690	13.6%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	645	Inf	835	77.3%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	434	Inf	815	53.2%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	28	-	706	1800	870	81.1%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	28	-	643	1800	870	73.9%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	55	1959: Inf	67+138	26.7 : 26.7%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1157	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	745	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	894	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	199	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	443	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	24	-	614	1900	792	77.6%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	24	-	666	1900	792	84.1%

Full Input Data And Results

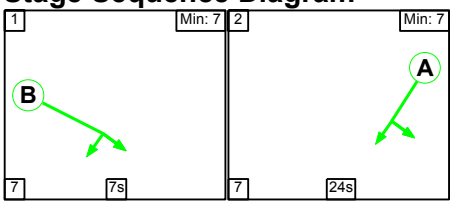
10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	18	-	310	1900	602	51.5%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	18	-	434	1900	602	72.1%
11/1	Ahead	U	N/A	N/A	-		-	-	-	190	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1034	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	643	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	559	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1189**	**0**	**0**	**16.2**	**14.7**	**0.0**	**30.8**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**1189**	**0**	**0**	**16.2**	**14.7**	**0.0**	**30.8**	**-**	**-**	**-**	**-**
1/2+1/1	1087	1087	-	-	-	4.9	2.6	-	7.6	25.0	8.0	2.6	10.6
1/3	94	94	-	-	-	0.3	0.1	-	0.4	15.1	1.0	0.1	1.1
2/1	645	645	645	0	0	0.0	1.7	-	1.7	9.5	3.6	1.7	5.3
2/2	434	434	434	0	0	0.0	0.6	-	0.6	4.7	0.0	0.6	0.6
3/1	706	706	-	-	-	2.6	2.1	-	4.7	23.9	10.0	2.1	12.1
3/2	643	643	-	-	-	2.2	1.4	-	3.6	20.3	8.6	1.4	10.0
4/1+4/2	55	55	110	0	0	0.1	0.2	-	0.3	19.4	0.3	0.2	0.5
5/1	1157	1157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	745	745	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	894	894	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	199	199	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	443	443	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	614	614	-	-	-	1.0	1.7	-	2.7	15.6	2.8	1.7	4.5
9/2	666	666	-	-	-	1.0	2.5	-	3.6	19.3	4.3	2.5	6.8
10/1	310	310	-	-	-	1.8	0.5	-	2.3	26.8	4.5	0.5	5.1
10/2	434	434	-	-	-	2.2	1.3	-	3.5	28.7	6.4	1.3	7.7
11/1	190	190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1034	1034	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	643	643	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	559	559	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN142	PRC for Signalled Lanes (%):	6.7	Total Delay for Signalled Lanes (pcuHr):	14.18	Cycle Time (s): 60
C2 - ORN146	PRC for Signalled Lanes (%):	10.9	Total Delay for Signalled Lanes (pcuHr):	14.08	Cycle Time (s): 60
	PRC Over All Lanes (%):	6.7	Total Delay Over All Lanes(pcuHr):	30.82	

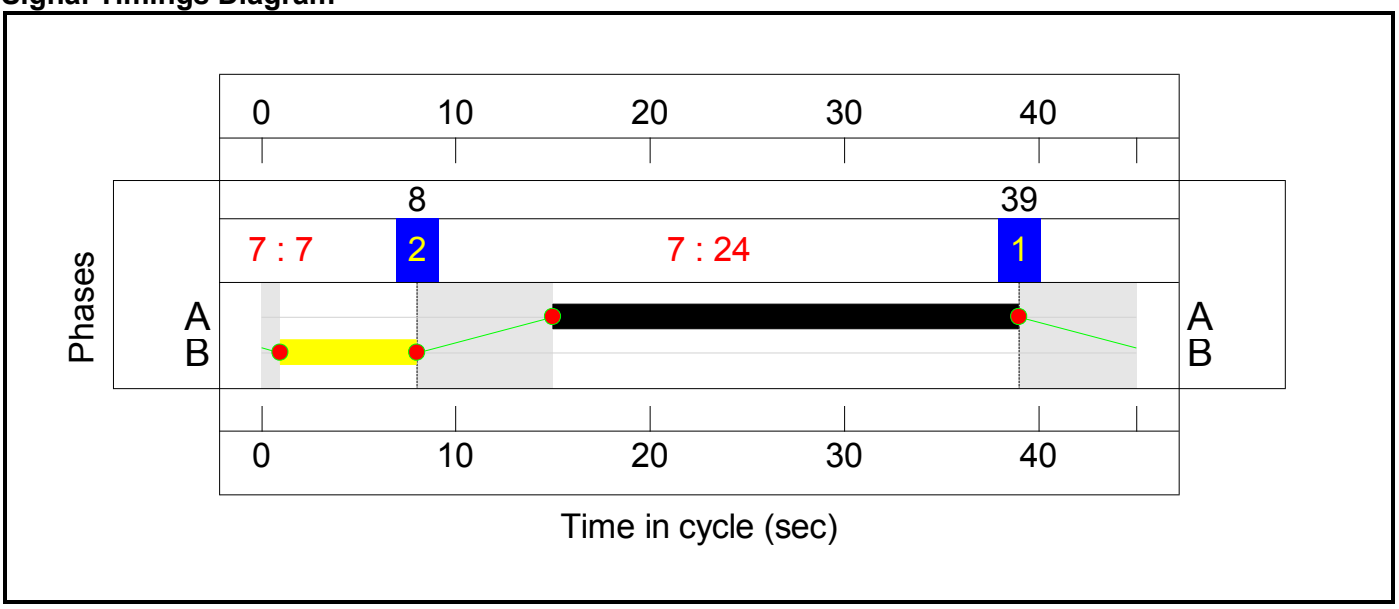
Full Input Data And Results
Scenario 10: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')
C1 - ORN142
Stage Sequence Diagram



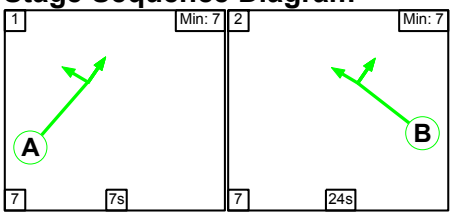
Stage Timings

Stage	1	2
Duration	7	24
Change Point	39	8

Signal Timings Diagram



C2 - ORN146
Stage Sequence Diagram

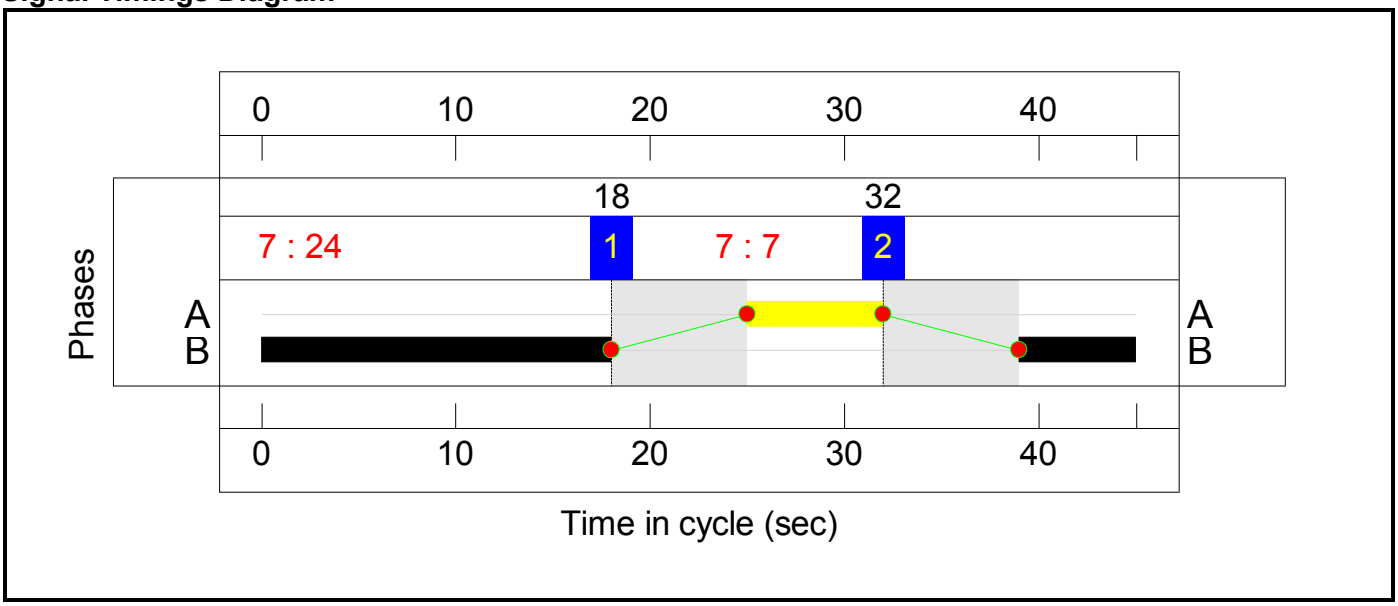


Stage Timings

Stage	1	2
Duration	7	24
Change Point	18	32

Full Input Data And Results

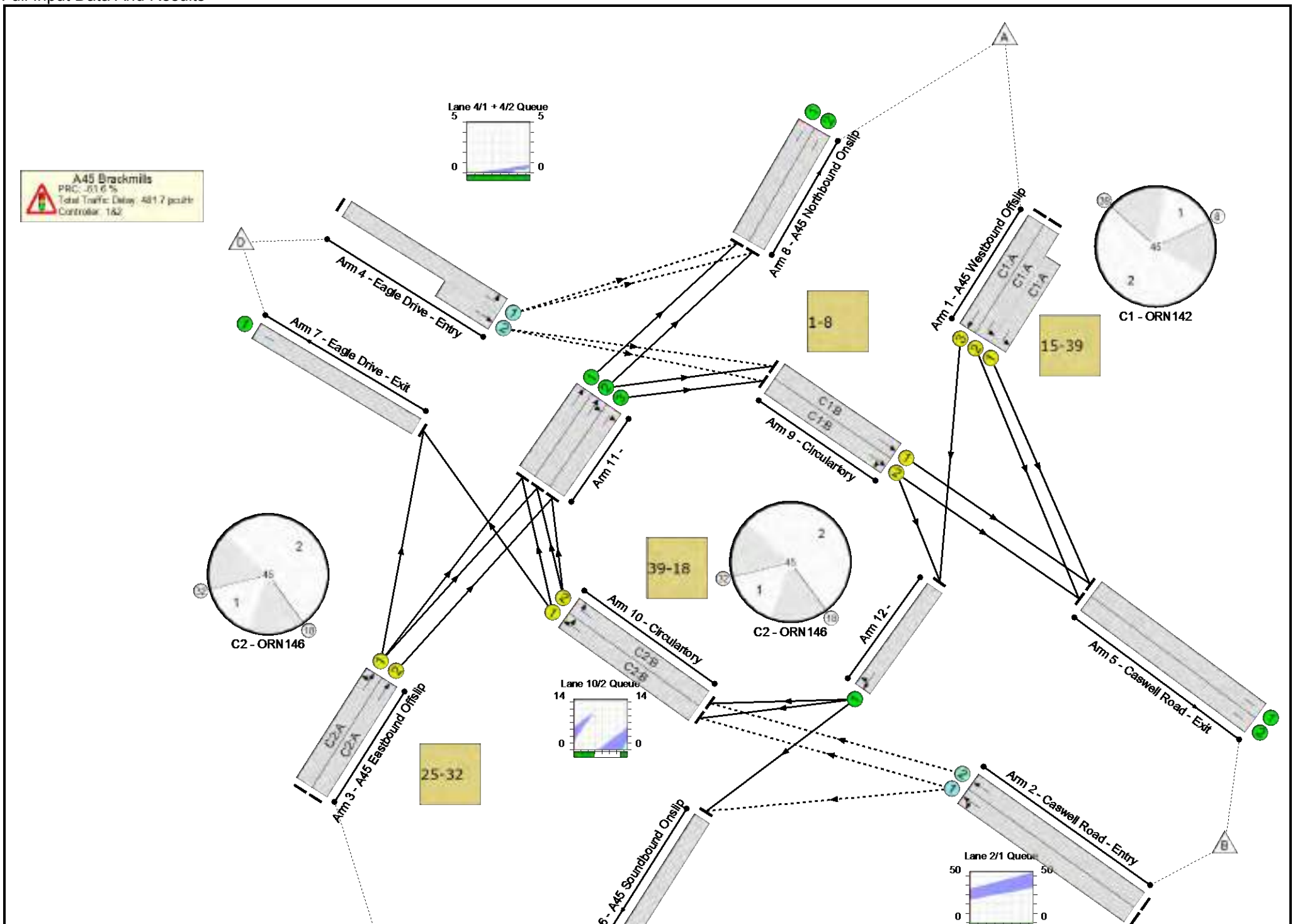
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.4%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.4%**
1/2+1/1	A45 Westbound Offslip Left	U	N/A	N/A	C1:A		1	24	-	499	1800:1800	897+893	27.9 : 27.9%
1/3	A45 Westbound Offslip Ahead	U	N/A	N/A	C1:A		1	24	-	23	1800	1000	2.3%
2/1	Caswell Road - Entry Left Ahead	O	N/A	N/A	-		-	-	-	1435	Inf	987	145.4%
2/2	Caswell Road - Entry Ahead	O	N/A	N/A	-		-	-	-	1405	Inf	983	142.9%
3/1	A45 Eastbound Offslip Left Ahead	U	N/A	N/A	C2:A		1	7	-	183	1800	320	57.2%
3/2	A45 Eastbound Offslip Ahead	U	N/A	N/A	C2:A		1	7	-	184	1800	320	57.5%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	205	1959: Inf	477+184	27.9 : 39.1%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	450	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	424	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	798	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	69	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	721	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1472	Inf	Inf	0.0%
9/1	Circulartory Ahead	U	N/A	N/A	C1:B		1	7	-	201	1900	338	59.5%
9/2	Circulartory Ahead Right	U	N/A	N/A	C1:B		1	7	-	202	1900	338	59.8%

Full Input Data And Results

10/1	Circulartory Ahead Right	U	N/A	N/A	C2:B		1	24	-	688	1900	1056	45.5%
10/2	Circulartory Right	U	N/A	N/A	C2:B		1	24	-	1405	1900	1056	93.1%
11/1	Ahead	U	N/A	N/A	-		-	-	-	655	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1552	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	184	Inf	Inf	0.0%
12/1	Ahead Right	U	N/A	N/A	-		-	-	-	51	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2380**	**0**	**0**	**33.9**	**447.8**	**0.0**	**481.7**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**2380**	**0**	**0**	**33.9**	**447.8**	**0.0**	**481.7**	**-**	**-**	**-**	**-**
1/2+1/1	499	499	-	-	-	0.7	0.2	-	0.9	6.6	1.6	0.2	1.8
1/3	23	23	-	-	-	0.0	0.0	-	0.0	6.5	0.1	0.0	0.1
2/1	1435	987	987	0	0	14.1	225.6	-	239.7	601.3	53.8	225.6	279.4
2/2	1405	983	983	0	0	13.2	212.7	-	226.0	579.0	52.7	212.7	265.4
3/1	183	183	-	-	-	0.9	0.7	-	1.5	30.0	2.1	0.7	2.7
3/2	184	184	-	-	-	0.9	0.7	-	1.5	30.1	2.1	0.7	2.8
4/1+4/2	205	205	410	0	0	0.3	0.2	-	0.5	8.5	0.8	0.2	1.0
5/1	450	450	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	424	424	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	516	516	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1050	1050	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	201	201	-	-	-	0.3	0.7	-	1.0	18.4	2.1	0.7	2.9
9/2	202	202	-	-	-	0.3	0.7	-	1.0	18.2	2.2	0.7	2.9
10/1	480	480	-	-	-	0.8	0.4	-	1.2	8.9	3.5	0.4	3.9
10/2	983	983	-	-	-	2.5	5.8	-	8.3	30.4	11.2	5.8	17.0
11/1	450	450	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1130	1130	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	184	184	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	51	51	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

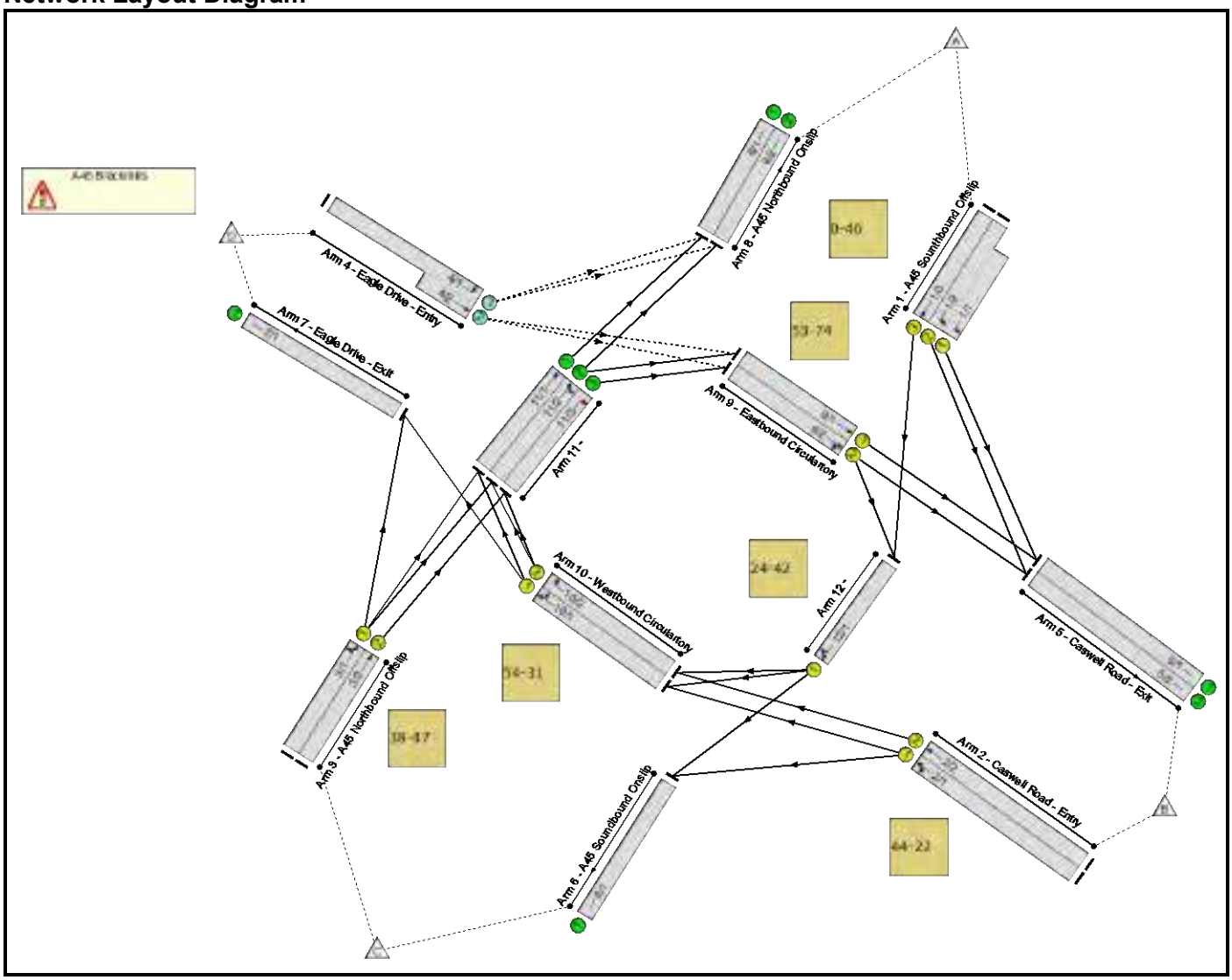
C1 - ORN142	PRC for Signalled Lanes (%):	50.5	Total Delay for Signalled Lanes (pcuHr):	3.00	Cycle Time (s): 45
C2 - ORN146	PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	12.56	Cycle Time (s): 45
	PRC Over All Lanes (%):	-61.6	Total Delay Over All Lanes(pcuHr):	481.69	

Full Input Data And Results

User and Project Details

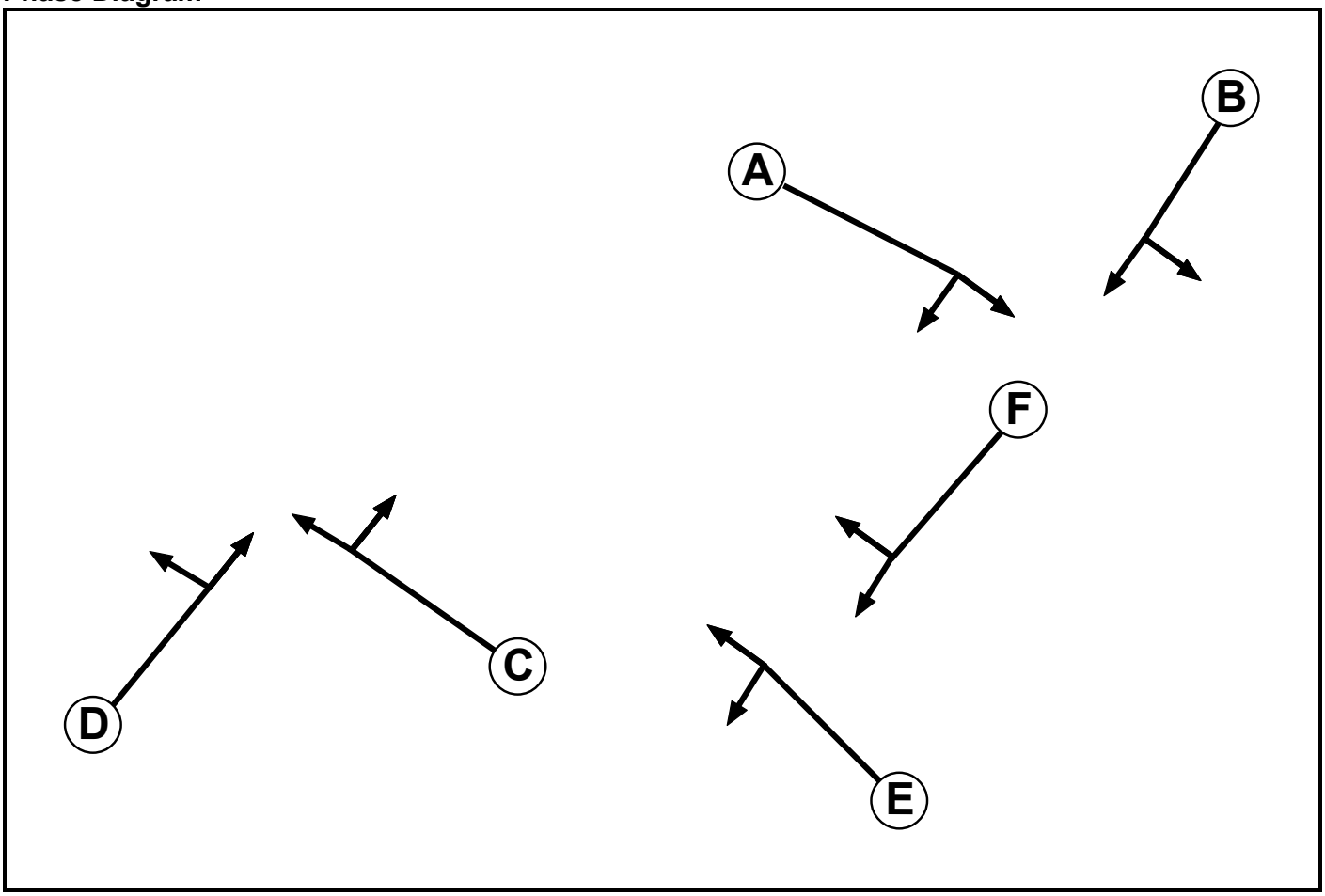
Project:	Rail Central
Title:	Junction 9
Location:	A45 (south) / Eagle Drive/ A45 (north) / Caswell Road
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

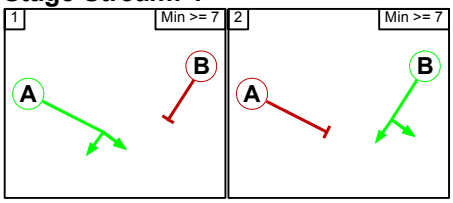
Terminating Phase	Starting Phase					
	A	B	C	D	E	F
A		7	-	-	-	-
B	7		-	-	-	-
C	-	-		7	-	-
D	-	-	7		-	-
E	-	-	-	-		-
F	-	-	-	-	-	

Phases in Stage

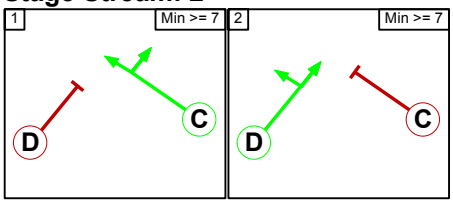
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	F
3	2	E

Stage Diagram

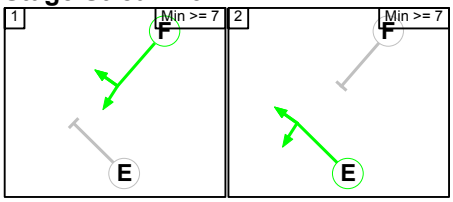
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		2
	2	2	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 Brackmills											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
4/1 (Eagle Drive - Entry)	8/1 (Left)	1000	0	11/1	0.33	All	-	-	-	-	-
	8/2 (Left)			11/1	1.09	All					
				11/2	1.09	To 8/2 (Ahead)					
4/2 (Eagle Drive - Entry)	9/1 (Ahead)	1000	0	11/1	0.33	All	-	-	-	-	-
				11/2	0.33	All					
	9/2 (Ahead)			11/1	1.09	All					
				11/2	1.09	All					
				11/3	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: A45 Brackmills

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A45 Sounthbound Offslip)	U	B	2	3	10.0	User	1800	-	-	-	-	-
1/2 (A45 Sounthbound Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A45 Sounthbound Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Caswell Road - Entry)	U	E	2	3	60.0	User	1800	-	-	-	-	-
2/2 (Caswell Road - Entry)	U	E	2	3	60.0	User	1800	-	-	-	-	-
3/1 (A45 Northbound Offslip)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/2 (A45 Northbound Offslip)	U	D	2	3	60.0	User	1800	-	-	-	-	-
4/1 (Eagle Drive - Entry)	O		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Eagle Drive - Entry)	O		2	3	5.2	Inf	-	-	-	-	-	-
5/1 (Caswell Road - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Caswell Road - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (A45 Soundbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Eagle Drive - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (A45 Northbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (A45 Northbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Eastbound Circulartory)	U	A	2	3	15.0	User	1900	-	-	-	-	-

9/2 (Eastbound Circulartory)	U	A	2	3	15.0	User	1900	-	-	-	-	-
10/1 (Westbound Circulartory)	U	C	2	3	16.0	User	1900	-	-	-	-	-
10/2 (Westbound Circulartory)	U	C	2	3	16.0	User	1900	-	-	-	-	-
11/1	U		2	3	15.7	Inf	-	-	-	-	-	-
11/2	U		2	3	15.7	Inf	-	-	-	-	-	-
11/3	U		2	3	15.7	Inf	-	-	-	-	-	-
12/1	U	F	2	3	17.4	User	1900	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	
8: '2031 DS PM'	17:00	18:00	01:00	

Scenario 3: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1364	0	96	1460
	B	671	0	206	26	903
	C	0	488	442	104	1034
	D	20	10	20	0	50
	Tot.	691	1862	668	226	3447

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS AM
Junction: A45 Brackmills	
1/1 (short)	682
1/2 (with short)	1364(In) 682(Out)
1/3	96
2/1	534
2/2	369
3/1	568
3/2	466
4/1 (with short)	50(In) 20(Out)
4/2 (short)	30
5/1	1156
5/2	706
6/1	668
7/1	226
8/1	312
8/2	379
9/1	474
9/2	486
10/1	424
10/2	369
11/1	302
11/2	833
11/3	466
12/1	558

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Scenario 4: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	411	0	24	435
	B	2035	0	531	9	2575
	C	0	321	26	36	383
	D	101	110	0	0	211
	Tot.	2136	842	557	69	3604

Traffic Lane Flows

Lane	Scenario 4: 2021 DS PM
Junction: A45 Brackmills	
1/1 (short)	205
1/2 (with short)	411(In) 206(Out)
1/3	24
2/1	1449
2/2	1126
3/1	191
3/2	192
4/1 (with short)	211(In) 101(Out)
4/2 (short)	110
5/1	458
5/2	384
6/1	557
7/1	69
8/1	959
8/2	1177
9/1	253
9/2	204
10/1	942
10/2	1126
11/1	909
11/2	1281
11/3	192
12/1	50

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Scenario 7: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1087	0	94	1181
	B	624	0	429	26	1079
	C	0	801	442	106	1349
	D	18	14	23	0	55
	Tot.	642	1902	894	226	3664

Traffic Lane Flows

Lane	Scenario 7: 2031 DS AM
Junction: A45 Brackmills	
1/1 (short)	543
1/2 (with short)	1087(In) 544(Out)
1/3	94
2/1	708
2/2	371
3/1	712
3/2	637
4/1 (with short)	55(In) 18(Out)
4/2 (short)	37
5/1	1163
5/2	739
6/1	894
7/1	226
8/1	262
8/2	380
9/1	620
9/2	660
10/1	373
10/2	371
11/1	253
11/2	977
11/3	637
12/1	559

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Scenario 8: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	499	0	23	522
	B	2060	0	770	10	2840
	C	0	305	26	36	367
	D	133	70	2	0	205
	Tot.	2193	874	798	69	3934

Traffic Lane Flows

Lane	Scenario 8: 2031 DS PM
Junction: A45 Brackmills	
1/1 (short)	249
1/2 (with short)	499(In) 250(Out)
1/3	23
2/1	1424
2/2	1416
3/1	183
3/2	184
4/1 (with short)	205(In) 133(Out)
4/2 (short)	72
5/1	442
5/2	432
6/1	798
7/1	69
8/1	710
8/2	1483
9/1	193
9/2	210
10/1	677
10/2	1416
11/1	644
11/2	1563
11/3	184
12/1	51

Full Input Data And Results

Lane Saturation Flows

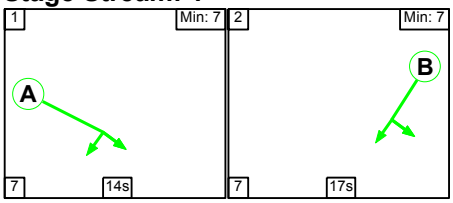
Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

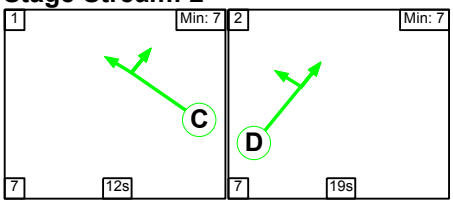
Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

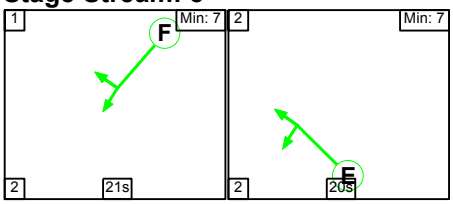
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	14	17
Change Point	20	41

Stage Stream: 2

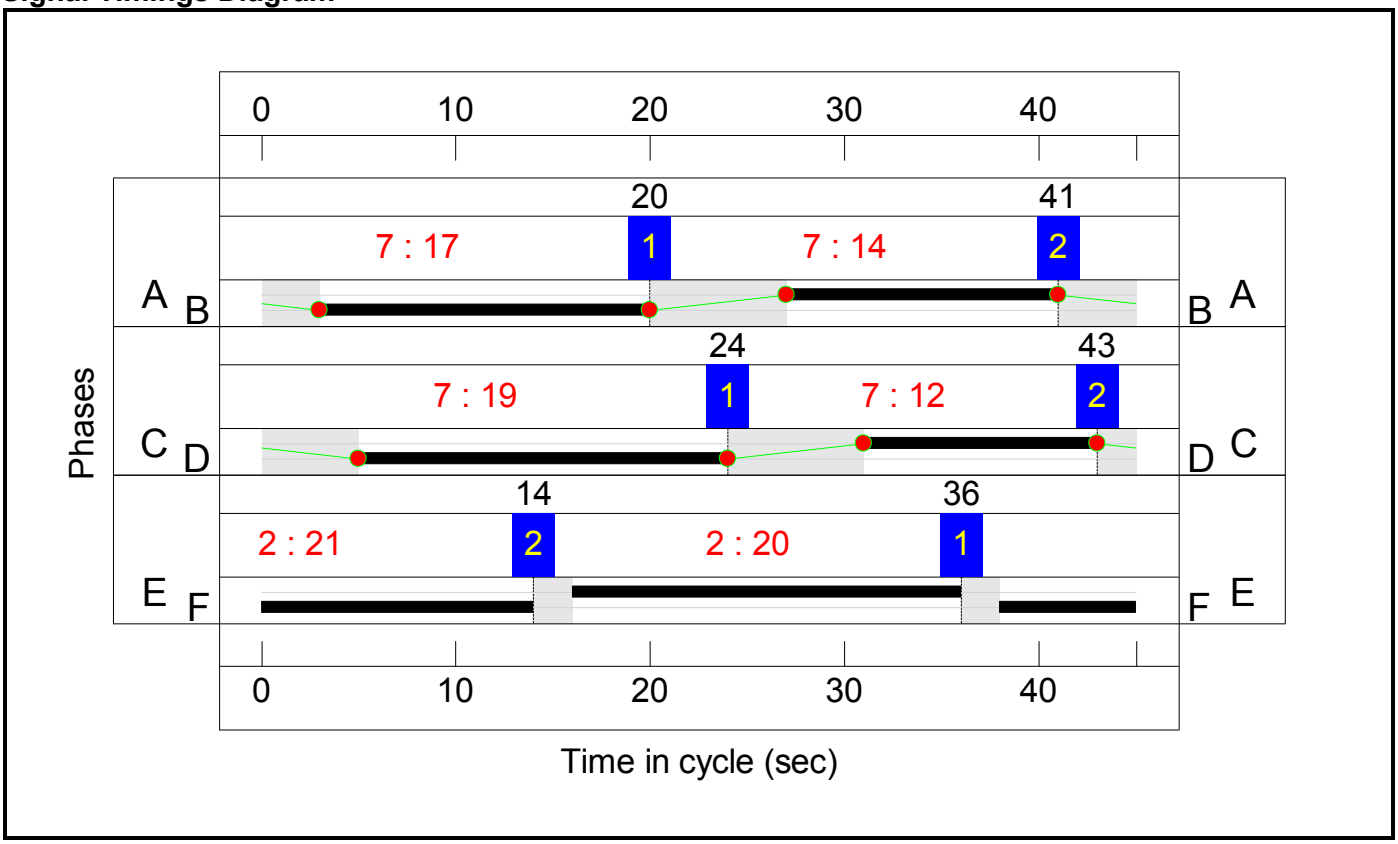
Stage	1	2
Duration	12	19
Change Point	24	43

Stage Stream: 3

Stage	1	2
Duration	21	20
Change Point	36	14

Full Input Data And Results

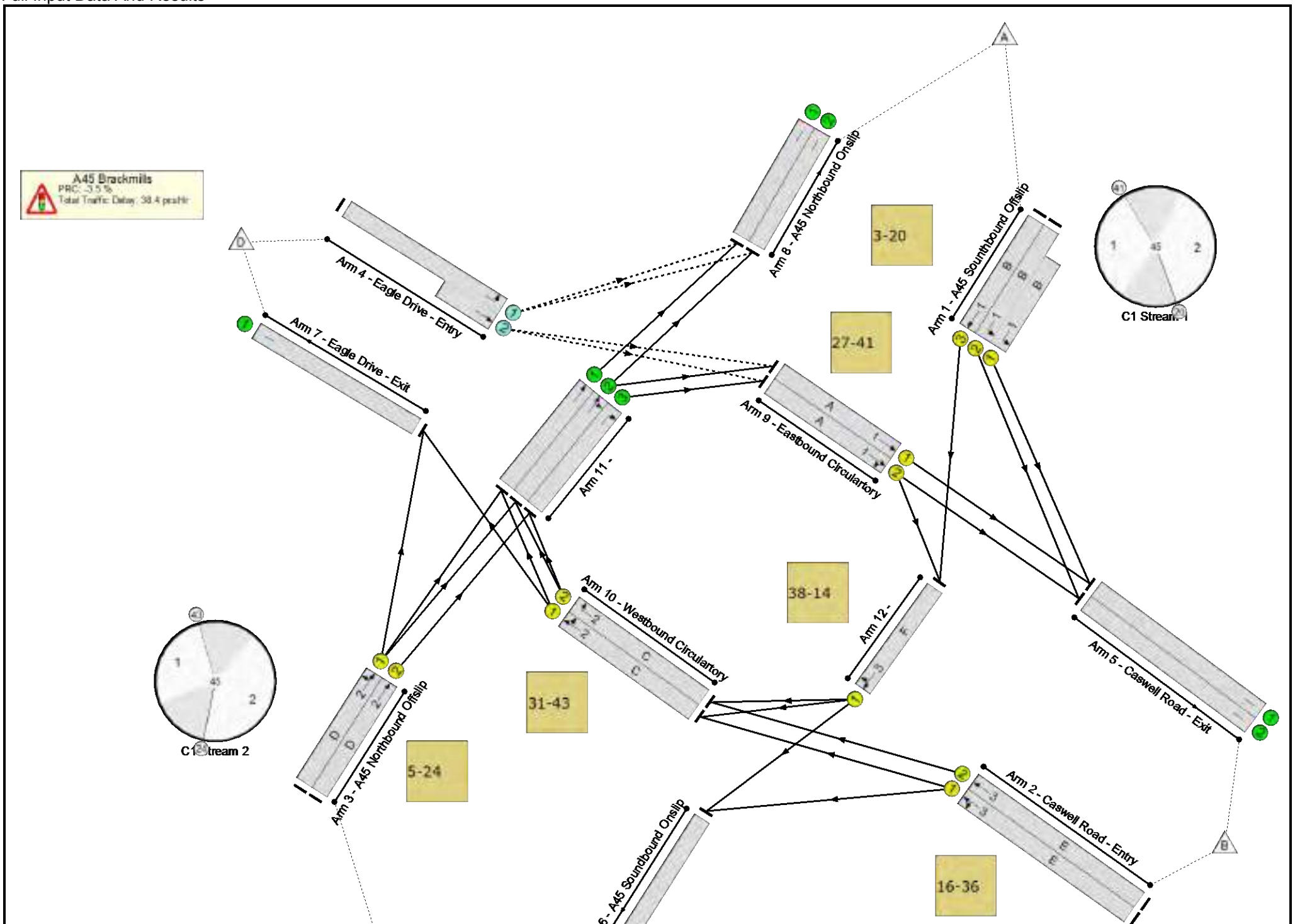
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.2%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.2%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	17	-	1334	1800:1800	720+720	92.6 : 92.6%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	17	-	96	1800	720	13.3%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	20	-	489	1800	840	58.2%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	20	-	377	1800	840	44.9%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	19	-	671	1800	800	83.9%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	19	-	571	1800	800	71.4%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	49	Inf : Inf	103+150	19.4 : 19.4%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1244	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	796	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	633	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	387	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	14	-	577	1900	633	91.1%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	14	-	590	1900	633	93.2%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	12	-	413	1900	549	75.2%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	12	-	377	1900	549	68.7%
11/1	Ahead	U	N/A	N/A	-		-	-	-	292	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	944	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	571	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	21	-	557	1900	929	60.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**98**	**0**	**0**	**14.5**	**23.9**	**0.0**	**38.4**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**98**	**0**	**0**	**14.5**	**23.9**	**0.0**	**38.4**	**-**	**-**	**-**	**-**
1/2+1/1	1334	1334	-	-	-	4.8	5.7	-	10.5	28.2	7.8	5.7	13.5
1/3	96	96	-	-	-	0.2	0.1	-	0.3	11.5	0.7	0.1	0.8
2/1	489	489	-	-	-	1.2	0.7	-	1.9	13.9	4.3	0.7	5.0
2/2	377	377	-	-	-	0.8	0.4	-	1.3	12.0	3.1	0.4	3.5
3/1	671	671	-	-	-	2.1	2.5	-	4.6	24.5	7.3	2.5	9.8
3/2	571	571	-	-	-	1.6	1.2	-	2.8	18.0	5.7	1.2	6.9
4/1+4/2	49	49	98	0	0	0.1	0.1	-	0.2	13.9	0.2	0.1	0.3
5/1	1244	1244	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	796	796	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	387	387	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	577	577	-	-	-	0.8	4.4	-	5.3	32.8	6.6	4.4	11.0
9/2	590	590	-	-	-	1.0	5.4	-	6.4	39.1	7.0	5.4	12.5
10/1	413	413	-	-	-	1.1	1.5	-	2.5	22.2	4.8	1.5	6.3
10/2	377	377	-	-	-	0.6	1.1	-	1.7	16.5	4.0	1.1	5.1
11/1	292	292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	944	944	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	571	571	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	557	557	-	-	-	0.2	0.7	-	1.0	6.3	1.6	0.7	2.4

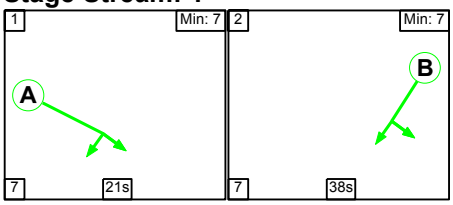
C1	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	22.43	Cycle Time (s): 45
C1	Stream: 2 PRC for Signalled Lanes (%):	7.3	Total Delay for Signalled Lanes (pcuHr):	11.69	Cycle Time (s): 45
C1	Stream: 3 PRC for Signalled Lanes (%):	50.1	Total Delay for Signalled Lanes (pcuHr):	4.12	Cycle Time (s): 45
	PRC Over All Lanes (%):	-3.5	Total Delay Over All Lanes(pcuHr):	38.43	

Full Input Data And Results

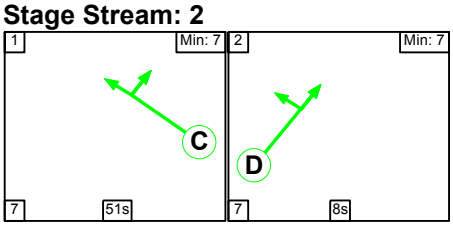
Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

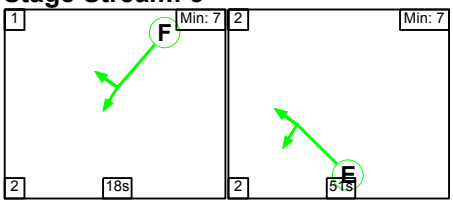
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	38
Change Point	70	25

Stage Stream: 2

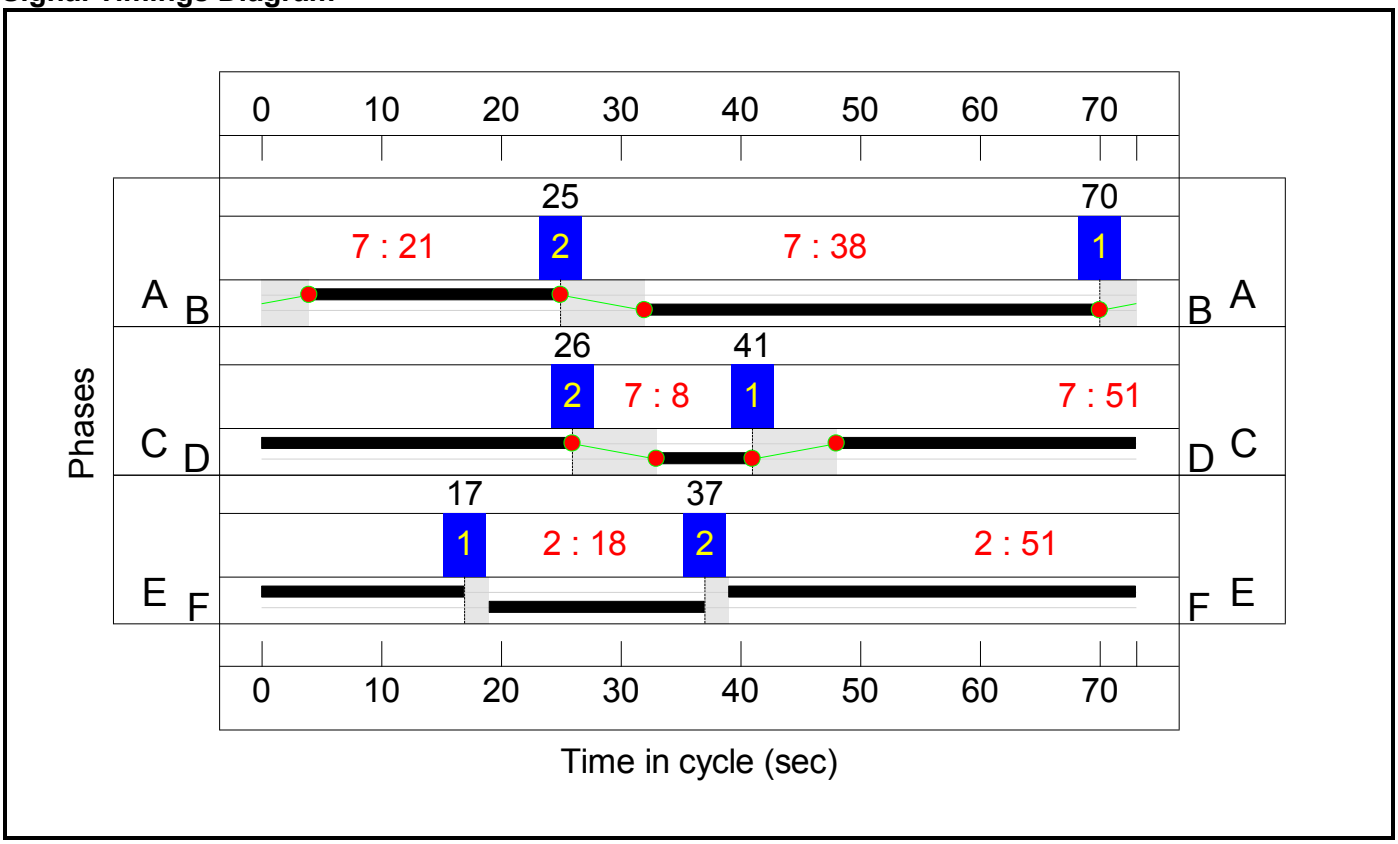
Stage	1	2
Duration	51	8
Change Point	41	26

Stage Stream: 3

Stage	1	2
Duration	18	51
Change Point	17	37

Full Input Data And Results

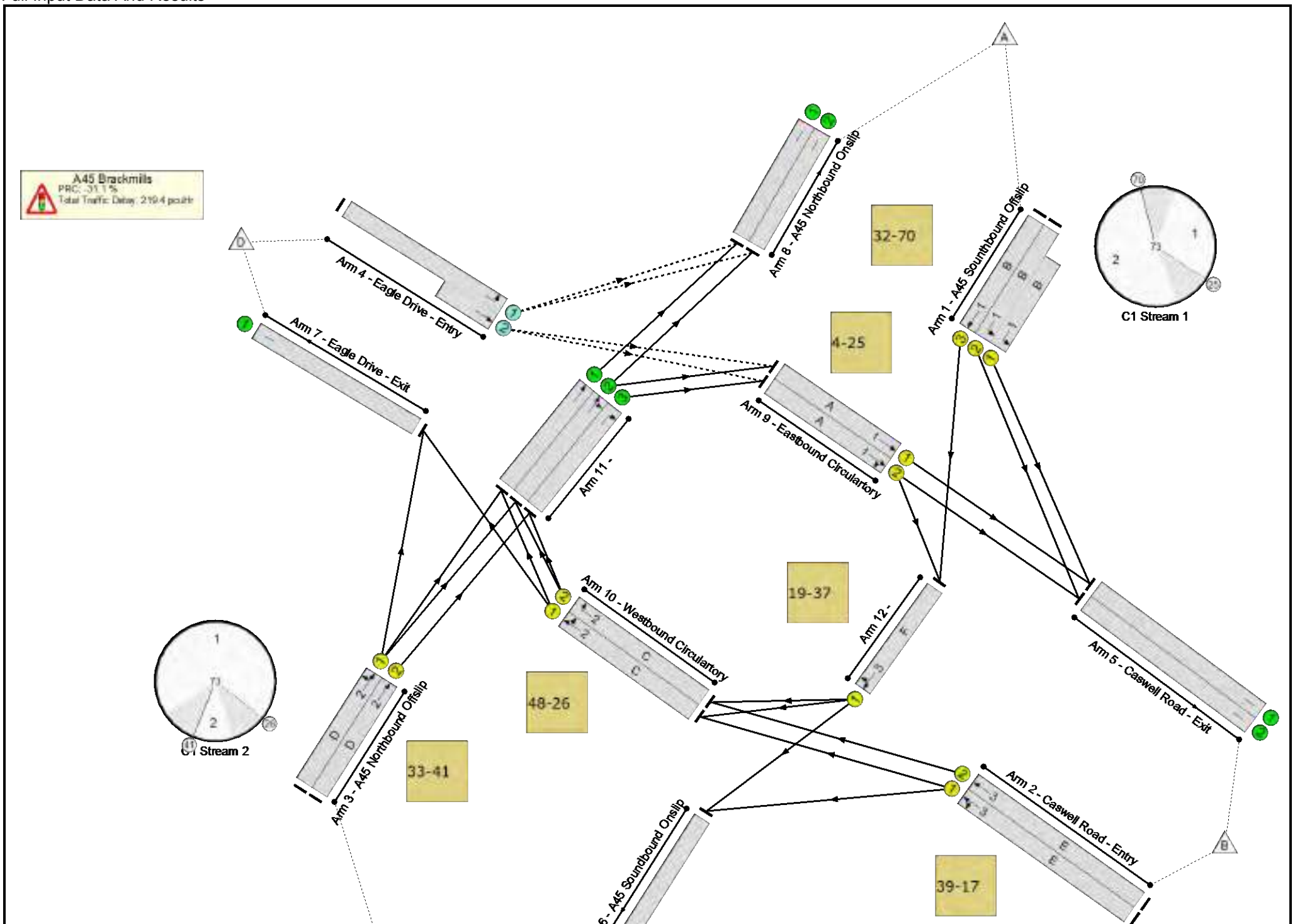
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**118.0%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**118.0%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	38	-	409	1800:1800	728+724	28.2 : 28.2%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	38	-	24	1800	962	2.5%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	51	-	1513	1800	1282	118.0%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	51	-	1330	1800	1282	103.7%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	8	-	232	1800	222	104.5%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	8	-	233	1800	222	105.0%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	210	Inf : Inf	201+49	78.1 : 109.3%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	414	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	488	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	69	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1120	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1409	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	21	-	247	1900	573	40.9%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	21	-	235	1900	573	39.1%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	51	-	1075	1900	1353	67.6%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	51	-	1330	1900	1353	94.7%
11/1	Ahead	U	N/A	N/A	-		-	-	-	1042	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1526	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	18	-	50	1900	495	9.9%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**411**	**0**	**0**	**31.6**	**187.8**	**0.0**	**219.4**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**411**	**0**	**0**	**31.6**	**187.8**	**0.0**	**219.4**	**-**	**-**	**-**	**-**
1/2+1/1	409	409	-	-	-	1.0	0.2	-	1.2	10.7	2.2	0.2	2.4
1/3	24	24	-	-	-	0.1	0.0	-	0.1	10.1	0.2	0.0	0.2
2/1	1513	1282	-	-	-	14.2	118.6	-	132.8	315.9	35.4	118.6	154.0
2/2	1330	1282	-	-	-	5.9	33.8	-	39.7	107.3	27.9	33.8	61.7
3/1	232	222	-	-	-	2.4	10.5	-	12.9	200.2	4.9	10.5	15.5
3/2	233	222	-	-	-	2.4	10.9	-	13.3	205.3	4.9	10.9	15.8
4/1+4/2	210	206	411	0	0	1.7	4.6	-	6.3	107.9	3.0	4.6	7.6
5/1	438	438	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	416	416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	961	961	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1361	1361	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	234	234	-	-	-	1.7	0.3	-	2.0	31.0	4.7	0.3	5.1
9/2	224	224	-	-	-	1.6	0.3	-	1.9	30.1	4.5	0.3	4.9
10/1	915	915	-	-	-	0.3	1.0	-	1.3	5.1	2.3	1.0	3.3
10/2	1282	1282	-	-	-	0.2	7.4	-	7.7	21.5	7.4	7.4	14.8
11/1	883	883	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1470	1470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	222	222	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	49	49	-	-	-	0.3	0.1	-	0.3	25.5	0.7	0.1	0.8

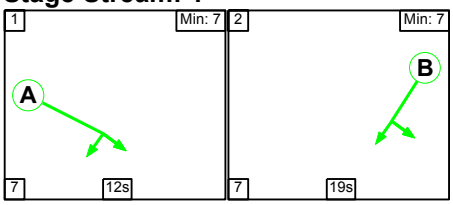
C1	Stream: 1 PRC for Signalled Lanes (%):	120.1	Total Delay for Signalled Lanes (pcuHr):	5.17	Cycle Time (s): 73
C1	Stream: 2 PRC for Signalled Lanes (%):	-16.7	Total Delay for Signalled Lanes (pcuHr):	35.16	Cycle Time (s): 73
C1	Stream: 3 PRC for Signalled Lanes (%):	-31.1	Total Delay for Signalled Lanes (pcuHr):	172.79	Cycle Time (s): 73
	PRC Over All Lanes (%):	-31.1	Total Delay Over All Lanes(pcuHr):	219.41	

Full Input Data And Results

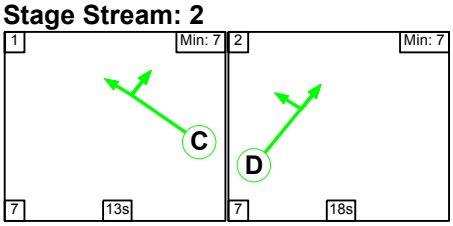
Scenario 3: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

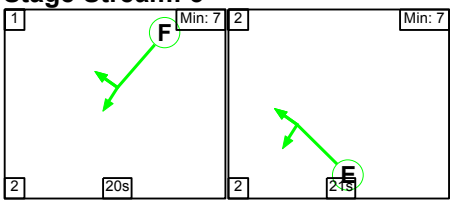
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	12	19
Change Point	27	1

Stage Stream: 2

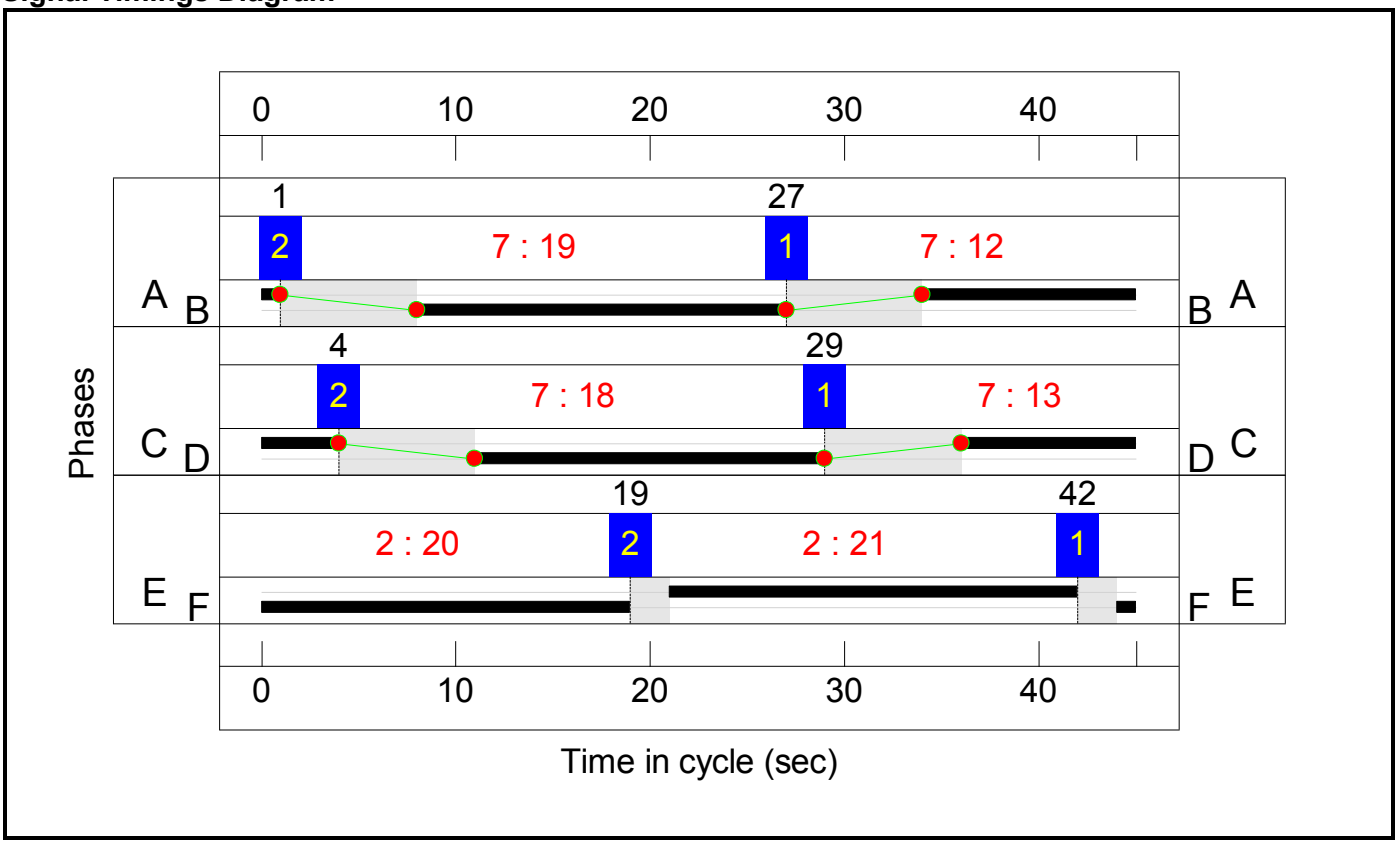
Stage	1	2
Duration	13	18
Change Point	29	4

Stage Stream: 3

Stage	1	2
Duration	20	21
Change Point	42	19

Full Input Data And Results

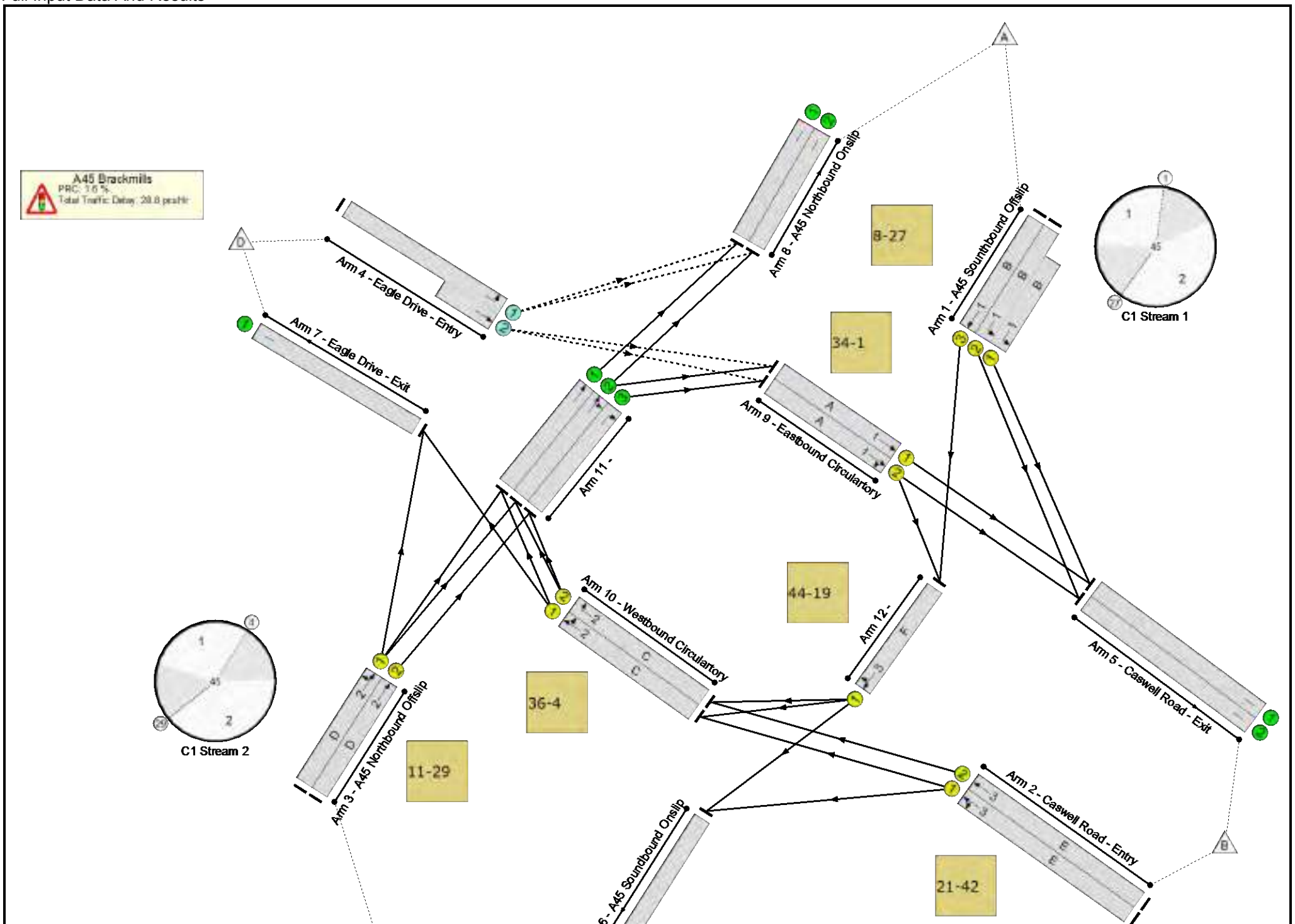
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.5%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.5%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	19	-	1364	1800:1800	800+800	85.3 : 85.3%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	19	-	96	1800	800	12.0%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	21	-	534	1800	880	60.7%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	21	-	369	1800	880	41.9%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	18	-	568	1800	760	74.7%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	18	-	466	1800	760	61.3%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	50	Inf : Inf	119+179	16.8 : 16.8%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1156	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	706	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	668	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	379	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	12	-	474	1900	549	86.4%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	12	-	486	1900	549	88.5%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	13	-	424	1900	591	71.7%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	13	-	369	1900	591	62.4%
11/1	Ahead	U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	833	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	466	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	20	-	558	1900	887	62.9%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**100**	**0**	**0**	**13.1**	**15.7**	**0.0**	**28.8**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**100**	**0**	**0**	**13.1**	**15.7**	**0.0**	**28.8**	**-**	**-**	**-**	**-**
1/2+1/1	1364	1364	-	-	-	4.2	2.8	-	7.1	18.6	7.6	2.8	10.4
1/3	96	96	-	-	-	0.2	0.1	-	0.3	9.9	0.7	0.1	0.8
2/1	534	534	-	-	-	1.2	0.8	-	2.0	13.5	4.7	0.8	5.5
2/2	369	369	-	-	-	0.8	0.4	-	1.1	10.9	2.9	0.4	3.2
3/1	568	568	-	-	-	1.7	1.5	-	3.2	20.2	5.8	1.5	7.3
3/2	466	466	-	-	-	1.3	0.8	-	2.1	16.2	4.5	0.8	5.3
4/1+4/2	50	50	100	0	0	0.1	0.1	-	0.2	11.8	0.2	0.1	0.3
5/1	1156	1156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	706	706	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	668	668	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	312	312	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	379	379	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	474	474	-	-	-	0.8	2.9	-	3.7	28.1	5.4	2.9	8.4
9/2	486	486	-	-	-	0.9	3.5	-	4.4	32.4	5.6	3.5	9.1
10/1	424	424	-	-	-	1.1	1.2	-	2.3	19.6	4.8	1.2	6.1
10/2	369	369	-	-	-	0.6	0.8	-	1.4	14.0	3.9	0.8	4.7
11/1	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	833	833	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	466	466	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	558	558	-	-	-	0.2	0.8	-	1.1	7.0	1.2	0.8	2.0

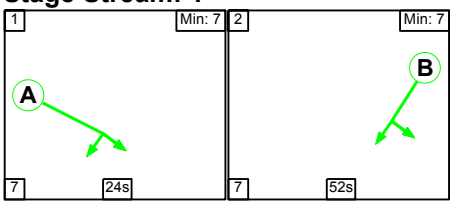
C1	Stream: 1 PRC for Signalled Lanes (%):	1.6	Total Delay for Signalled Lanes (pcuHr):	15.41	Cycle Time (s): 45
C1	Stream: 2 PRC for Signalled Lanes (%):	20.4	Total Delay for Signalled Lanes (pcuHr):	9.02	Cycle Time (s): 45
C1	Stream: 3 PRC for Signalled Lanes (%):	43.0	Total Delay for Signalled Lanes (pcuHr):	4.22	Cycle Time (s): 45
	PRC Over All Lanes (%):	1.6	Total Delay Over All Lanes(pcuHr):	28.81	

Full Input Data And Results

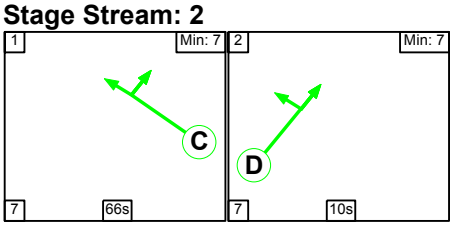
Scenario 4: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

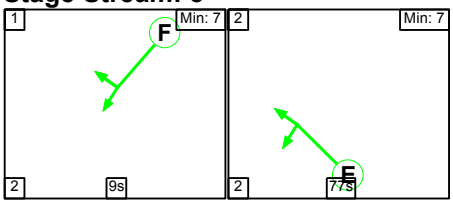
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	52
Change Point	59	0

Stage Stream: 2

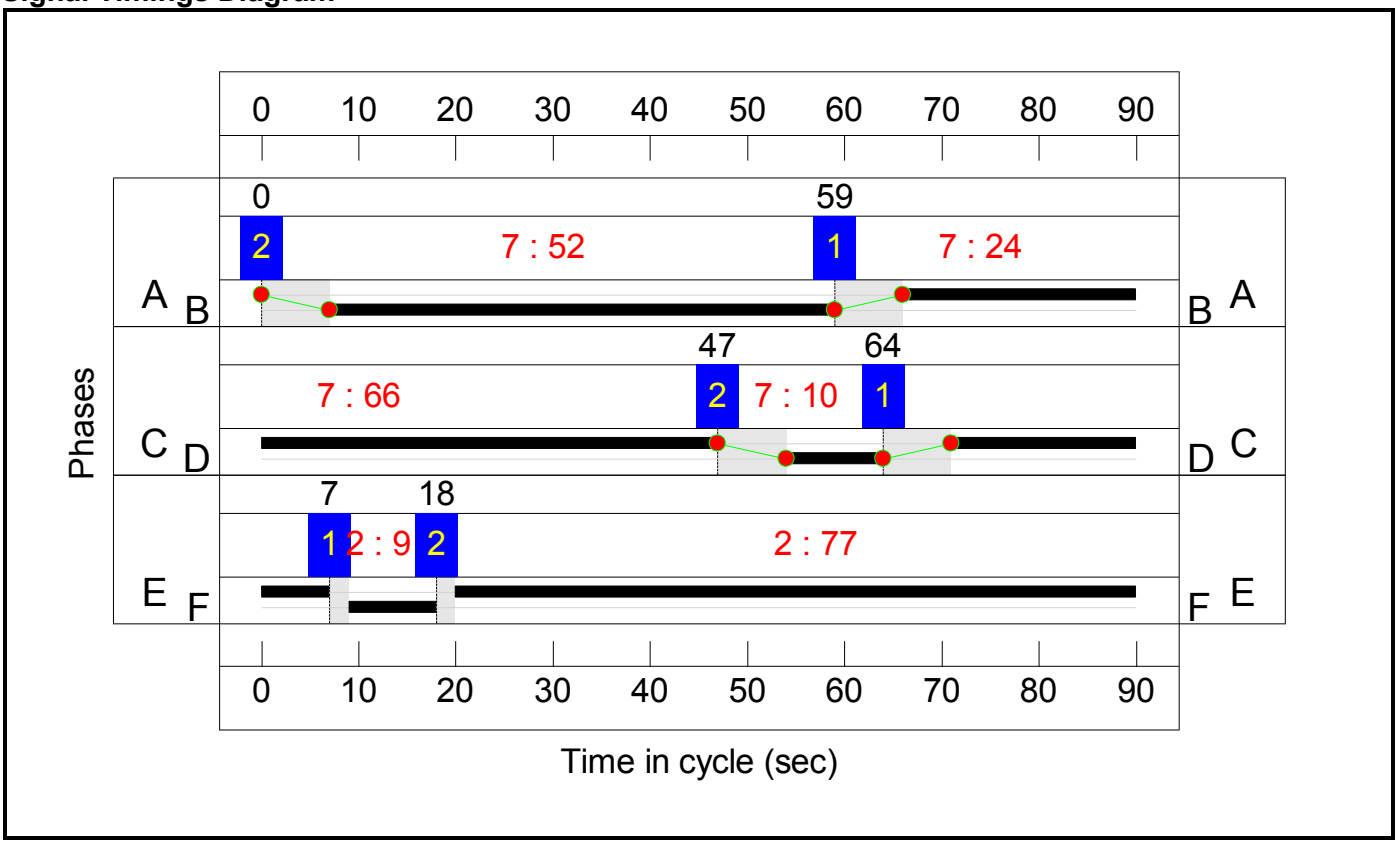
Stage	1	2
Duration	66	10
Change Point	64	47

Stage Stream: 3

Stage	1	2
Duration	9	77
Change Point	7	18

Full Input Data And Results

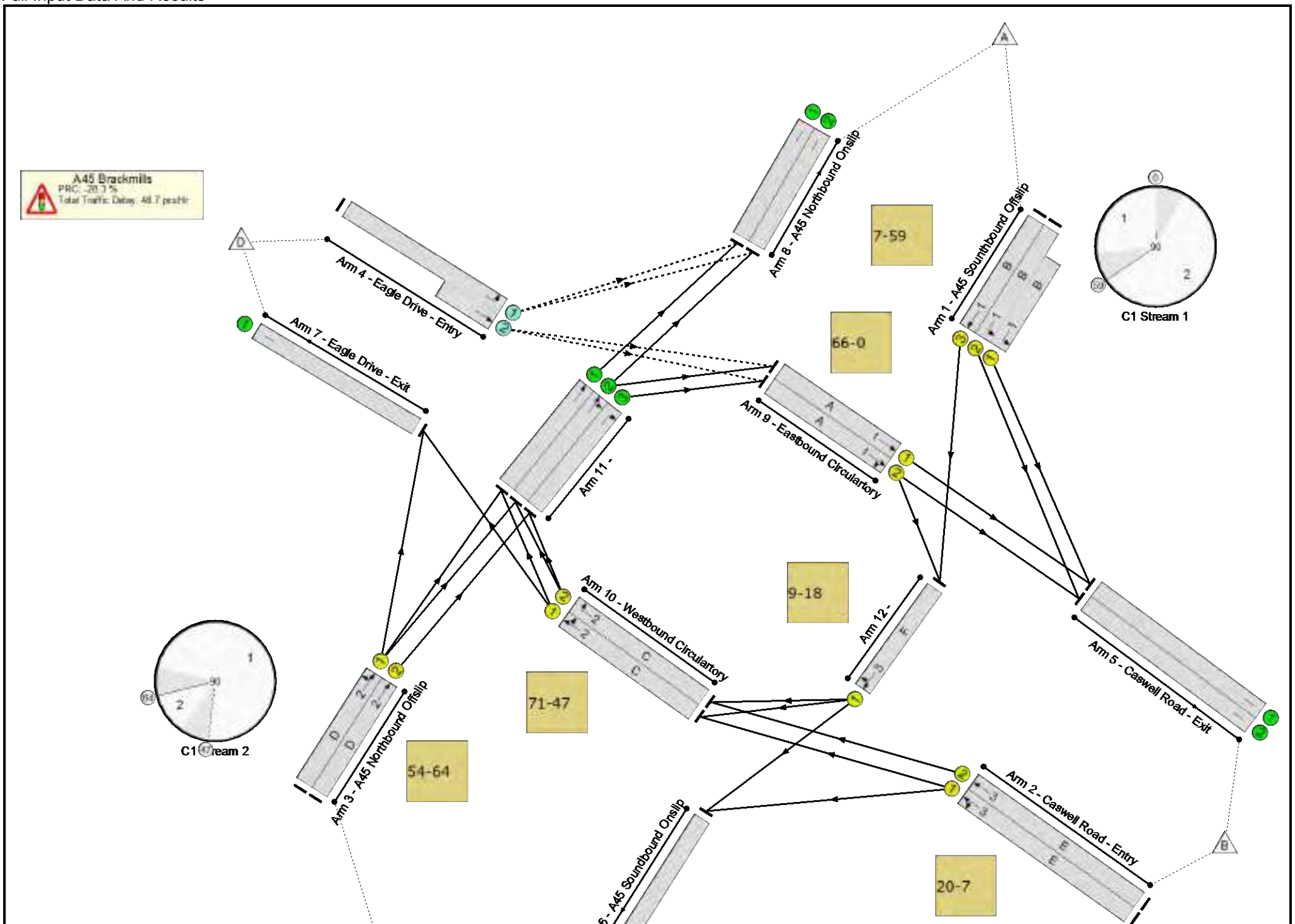
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.5%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.5%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	52	-	411	1800:1800	731+727	28.2 : 28.2%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	52	-	24	1800	1060	2.3%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	77	-	1449	1800	1560	92.9%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	77	-	1126	1800	1560	72.2%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	10	-	191	1800	220	86.8%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	10	-	192	1800	220	87.3%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	211	Inf : Inf	88+95	115.1 : 115.5%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	458	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	557	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	69	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	959	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1177	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	24	-	253	1900	528	45.4%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	24	-	204	1900	528	38.3%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	66	-	942	1900	1414	66.6%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	66	-	1126	1900	1414	79.6%
11/1	Ahead	U	N/A	N/A	-		-	-	-	909	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1281	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	192	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	9	-	50	1900	211	23.7%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**392**	**0**	**0**	**14.8**	**33.9**	**0.0**	**48.7**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**392**	**0**	**0**	**14.8**	**33.9**	**0.0**	**48.7**	**-**	**-**	**-**	**-**
1/2+1/1	411	411	-	-	-	1.0	0.2	-	1.2	10.3	2.3	0.2	2.5
1/3	24	24	-	-	-	0.1	0.0	-	0.1	9.5	0.2	0.0	0.3
2/1	1449	1449	-	-	-	1.7	5.9	-	7.6	18.8	24.6	5.9	30.5
2/2	1126	1126	-	-	-	0.7	1.3	-	2.0	6.3	10.0	1.3	11.3
3/1	191	191	-	-	-	2.1	2.8	-	4.8	90.9	4.7	2.8	7.4
3/2	192	192	-	-	-	2.1	2.8	-	4.9	92.2	4.7	2.8	7.5
4/1+4/2	211	196	392	0	0	1.8	17.1	-	18.9	323.0	7.1	17.1	24.1
5/1	445	445	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	382	382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	557	557	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	69	69	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	959	959	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1177	1177	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	240	240	-	-	-	0.4	0.4	-	0.8	12.7	1.6	0.4	2.0
9/2	202	202	-	-	-	0.1	0.3	-	0.4	7.2	0.2	0.3	0.5
10/1	942	942	-	-	-	2.1	1.0	-	3.1	12.0	14.9	1.0	15.9
10/2	1126	1126	-	-	-	2.5	1.9	-	4.4	14.0	18.2	1.9	20.1
11/1	909	909	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1281	1281	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	192	192	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	50	50	-	-	-	0.3	0.2	-	0.5	33.0	1.0	0.2	1.1

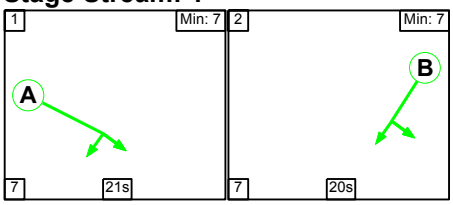
C1	Stream: 1 PRC for Signalled Lanes (%):	98.0	Total Delay for Signalled Lanes (pcuHr):	2.50	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	3.1	Total Delay for Signalled Lanes (pcuHr):	17.26	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-3.2	Total Delay for Signalled Lanes (pcuHr):	9.97	Cycle Time (s): 90
	PRC Over All Lanes (%):	-28.3	Total Delay Over All Lanes(pcuHr):	48.65	

Full Input Data And Results

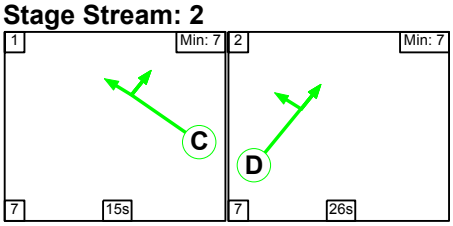
Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

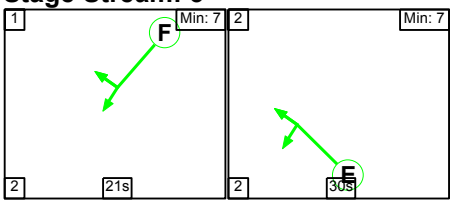
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	20
Change Point	22	50

Stage Stream: 2

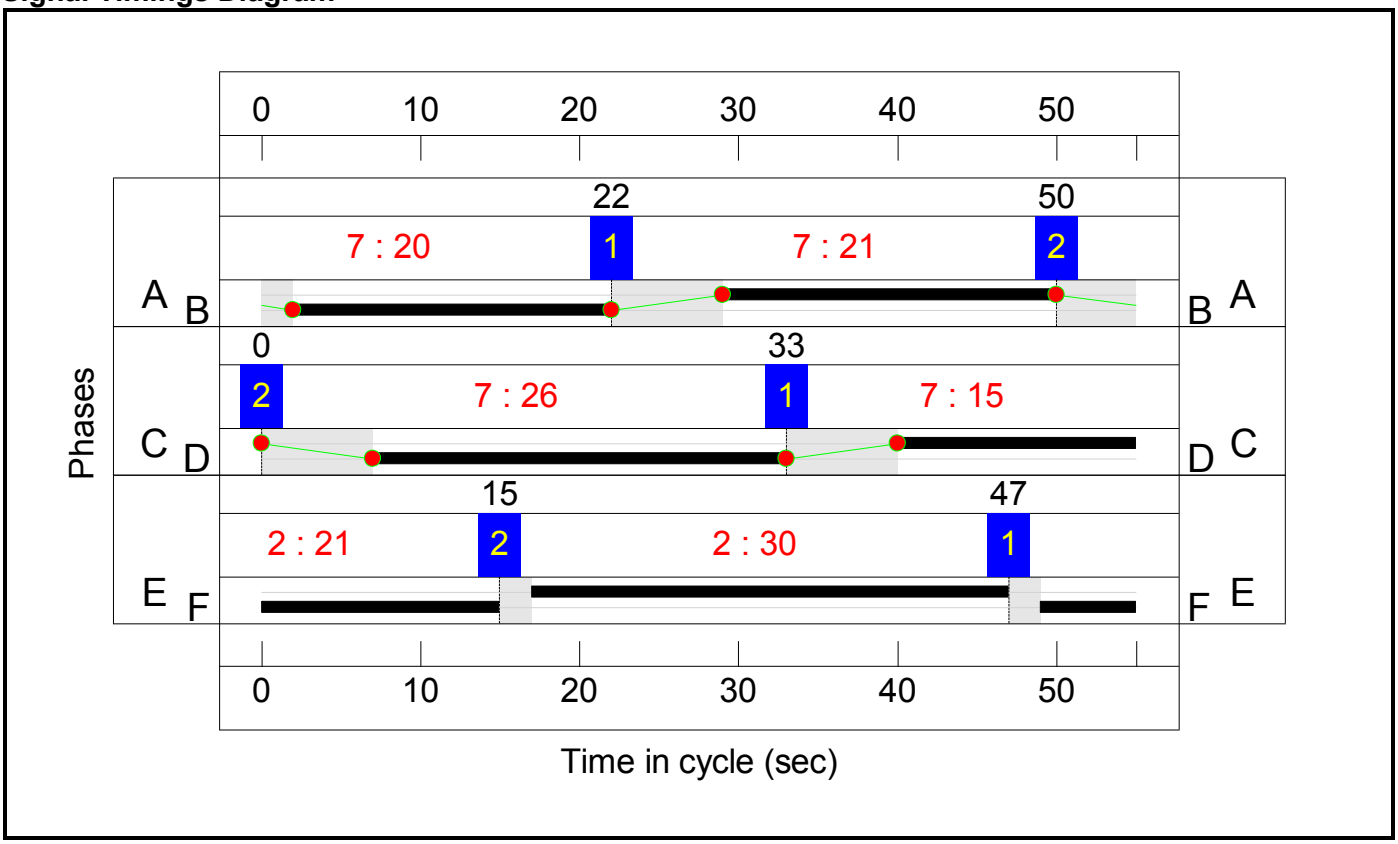
Stage	1	2
Duration	15	26
Change Point	33	0

Stage Stream: 3

Stage	1	2
Duration	21	30
Change Point	47	15

Full Input Data And Results

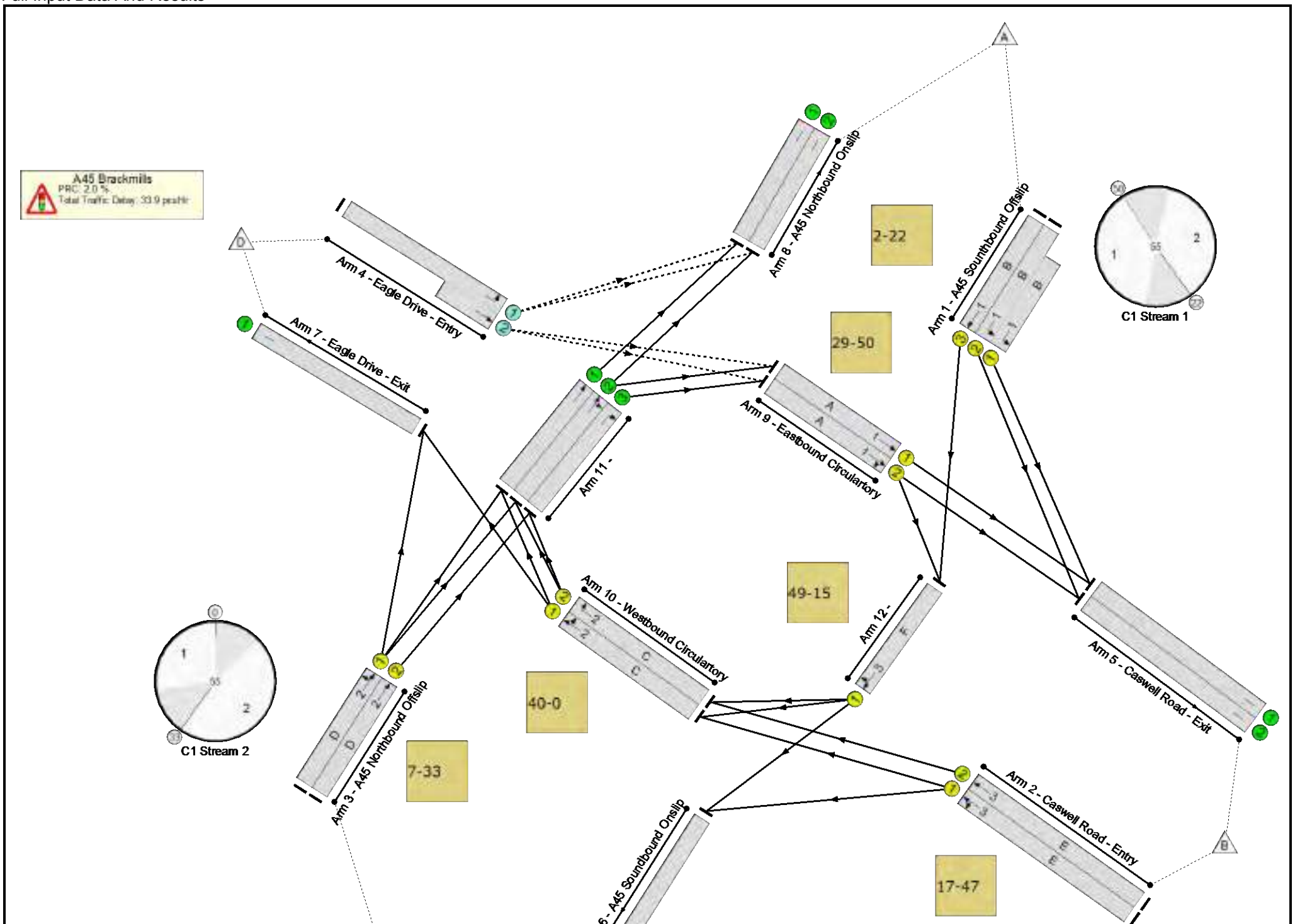
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.2%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.2%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	20	-	1183	1800:1800	671+670	88.2 : 88.2%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	20	-	95	1800	687	13.8%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	30	-	724	1800	1015	71.4%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	30	-	364	1800	1015	35.9%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	26	-	696	1800	884	78.8%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	26	-	633	1800	884	71.6%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	54	Inf : Inf	86+159	22.1 : 22.1%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1196	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	903	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	267	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	374	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	21	-	605	1900	760	79.6%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	21	-	653	1900	760	85.9%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	15	-	378	1900	553	68.4%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	15	-	364	1900	553	65.9%
11/1	Ahead	U	N/A	N/A	-		-	-	-	258	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	954	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	633	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	21	-	557	1900	760	73.3%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**108**	**0**	**0**	**17.4**	**16.6**	**0.0**	**33.9**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**108**	**0**	**0**	**17.4**	**16.6**	**0.0**	**33.9**	**-**	**-**	**-**	**-**
1/2+1/1	1183	1183	-	-	-	5.1	3.6	-	8.7	26.6	8.2	3.6	11.8
1/3	95	95	-	-	-	0.3	0.1	-	0.4	14.1	0.9	0.1	1.0
2/1	724	724	-	-	-	1.8	1.2	-	3.0	14.9	8.0	1.2	9.3
2/2	364	364	-	-	-	0.7	0.3	-	0.9	9.3	3.0	0.3	3.3
3/1	696	696	-	-	-	2.2	1.8	-	4.1	21.0	8.7	1.8	10.5
3/2	633	633	-	-	-	1.9	1.3	-	3.2	18.1	7.6	1.3	8.8
4/1+4/2	54	54	108	0	0	0.1	0.1	-	0.2	16.1	0.3	0.1	0.4
5/1	1196	1196	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	903	903	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	267	267	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	374	374	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	605	605	-	-	-	0.7	1.9	-	2.6	15.6	7.6	1.9	9.5
9/2	653	653	-	-	-	1.0	2.9	-	3.9	21.3	9.0	2.9	11.9
10/1	378	378	-	-	-	1.4	1.1	-	2.5	24.0	5.3	1.1	6.4
10/2	364	364	-	-	-	1.1	1.0	-	2.0	20.2	4.9	1.0	5.8
11/1	258	258	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	954	954	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	557	557	-	-	-	1.0	1.4	-	2.4	15.2	7.2	1.4	8.5

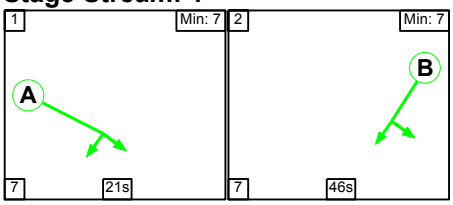
C1	Stream: 1 PRC for Signalled Lanes (%):	2.0	Total Delay for Signalled Lanes (pcuHr):	15.59	Cycle Time (s): 55
C1	Stream: 2 PRC for Signalled Lanes (%):	14.3	Total Delay for Signalled Lanes (pcuHr):	11.81	Cycle Time (s): 55
C1	Stream: 3 PRC for Signalled Lanes (%):	22.8	Total Delay for Signalled Lanes (pcuHr):	6.30	Cycle Time (s): 55
	PRC Over All Lanes (%):	2.0	Total Delay Over All Lanes(pcuHr):	33.95	

Full Input Data And Results

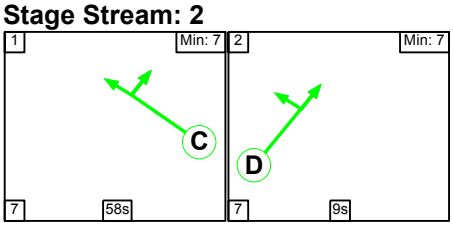
Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

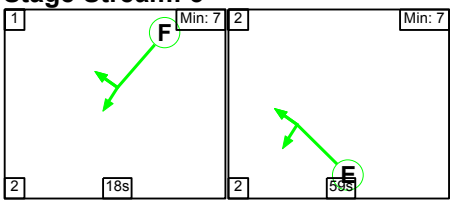
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	46
Change Point	46	74

Stage Stream: 2

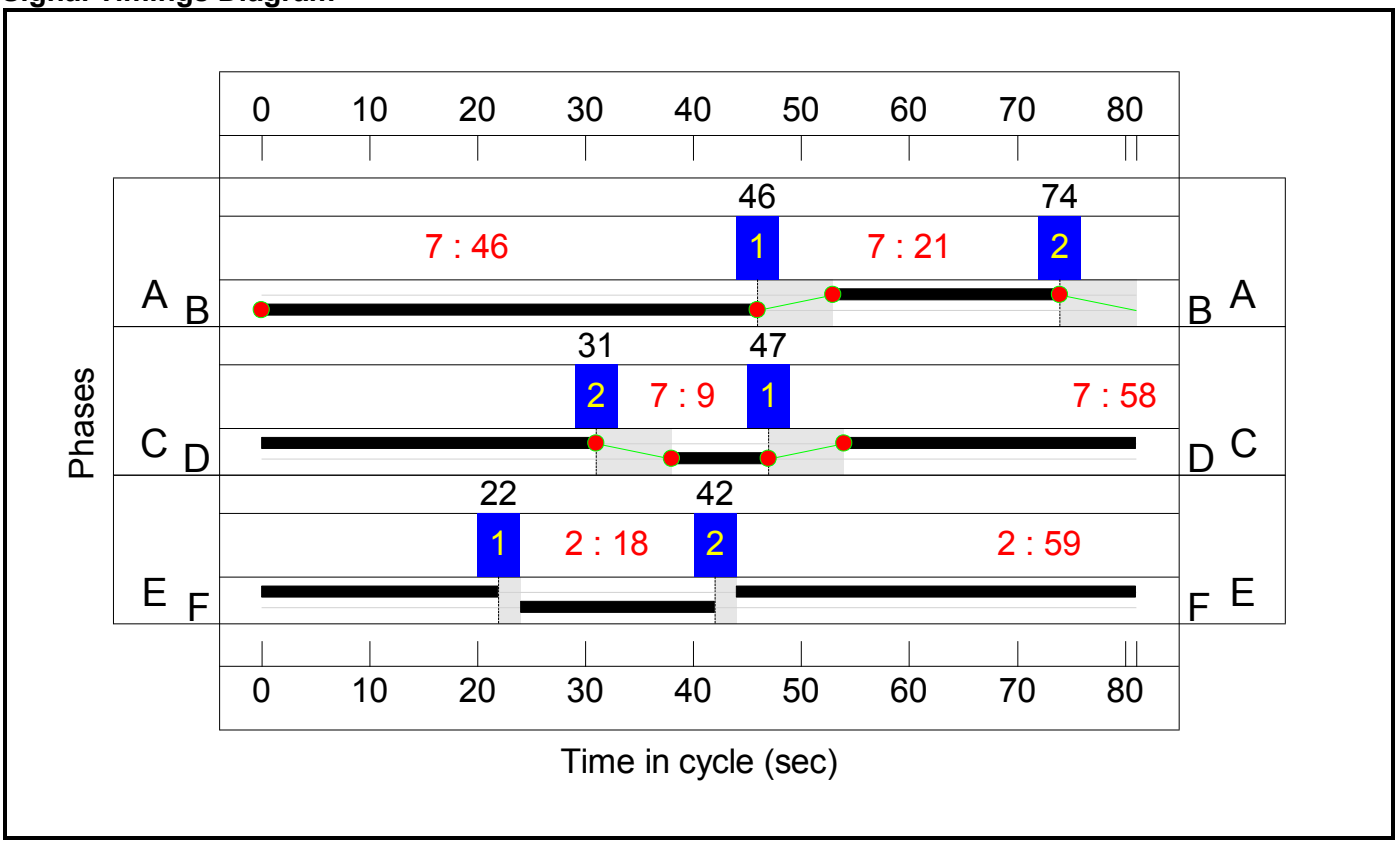
Stage	1	2
Duration	58	9
Change Point	47	31

Stage Stream: 3

Stage	1	2
Duration	18	59
Change Point	22	42

Full Input Data And Results

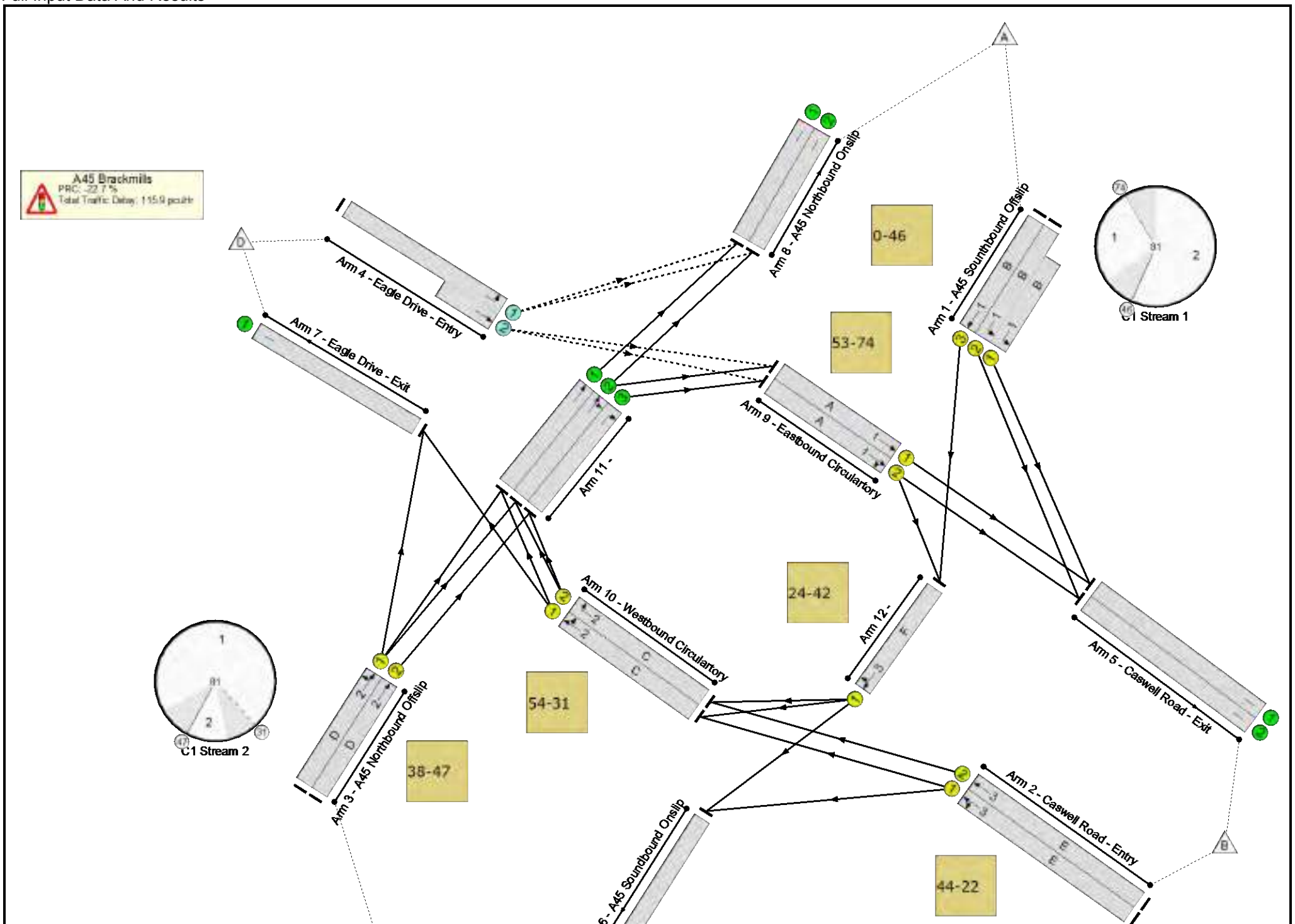
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.4%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.4%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	46	-	489	1800:1800	745+742	32.9 : 32.9%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	46	-	22	1800	1044	2.1%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	59	-	1472	1800	1333	110.4%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	59	-	1228	1800	1333	92.1%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	9	-	196	1800	222	88.2%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	9	-	197	1800	222	88.7%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	216	Inf : Inf	208+62	72.8 : 104.3%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	459	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	426	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	599	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	68	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	964	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1304	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	21	-	215	1900	516	41.2%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	21	-	207	1900	516	40.0%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	58	-	921	1900	1384	60.4%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	58	-	1228	1900	1384	88.7%
11/1	Ahead	U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1388	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	18	-	48	1900	446	10.8%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**427**	**0**	**0**	**21.4**	**94.5**	**0.0**	**115.9**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**427**	**0**	**0**	**21.4**	**94.5**	**0.0**	**115.9**	**-**	**-**	**-**	**-**
1/2+1/1	489	489	-	-	-	1.1	0.2	-	1.4	10.1	2.7	0.2	2.9
1/3	22	22	-	-	-	0.0	0.0	-	0.1	9.1	0.2	0.0	0.2
2/1	1472	1333	-	-	-	10.7	74.3	-	85.0	208.0	36.2	74.3	110.5
2/2	1228	1228	-	-	-	2.9	5.3	-	8.2	24.1	22.5	5.3	27.8
3/1	196	196	-	-	-	1.9	3.0	-	4.9	90.7	4.3	3.0	7.3
3/2	197	197	-	-	-	1.9	3.1	-	5.0	92.1	4.3	3.1	7.5
4/1+4/2	216	213	427	0	0	1.8	3.2	-	5.0	84.0	3.2	3.2	6.4
5/1	457	457	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	426	426	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	545	545	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	67	67	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	880	880	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1304	1304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	213	213	-	-	-	0.1	0.3	-	0.4	6.9	0.7	0.3	1.0
9/2	207	207	-	-	-	0.0	0.3	-	0.4	6.6	0.2	0.3	0.5
10/1	836	836	-	-	-	0.2	0.8	-	1.0	4.3	2.3	0.8	3.1
10/2	1228	1228	-	-	-	0.2	3.8	-	4.0	11.7	13.2	3.8	17.0
11/1	805	805	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1388	1388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	197	197	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	48	48	-	-	-	0.3	0.1	-	0.4	30.1	1.0	0.1	1.0

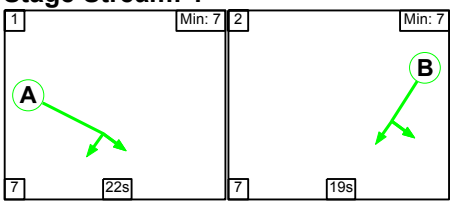
C1	Stream: 1 PRC for Signalled Lanes (%):	118.3	Total Delay for Signalled Lanes (pcuHr):	2.21	Cycle Time (s): 81
C1	Stream: 2 PRC for Signalled Lanes (%):	1.4	Total Delay for Signalled Lanes (pcuHr):	14.96	Cycle Time (s): 81
C1	Stream: 3 PRC for Signalled Lanes (%):	-22.7	Total Delay for Signalled Lanes (pcuHr):	93.65	Cycle Time (s): 81
	PRC Over All Lanes (%):	-22.7	Total Delay Over All Lanes(pcuHr):	115.86	

Full Input Data And Results

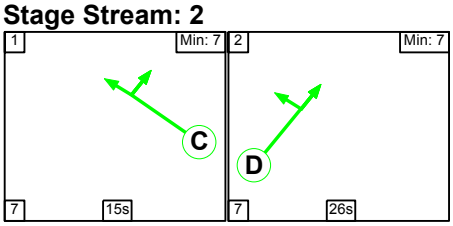
Scenario 7: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

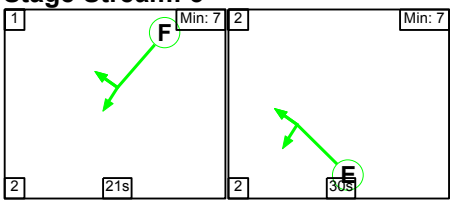
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	22	19
Change Point	3	32

Stage Stream: 2

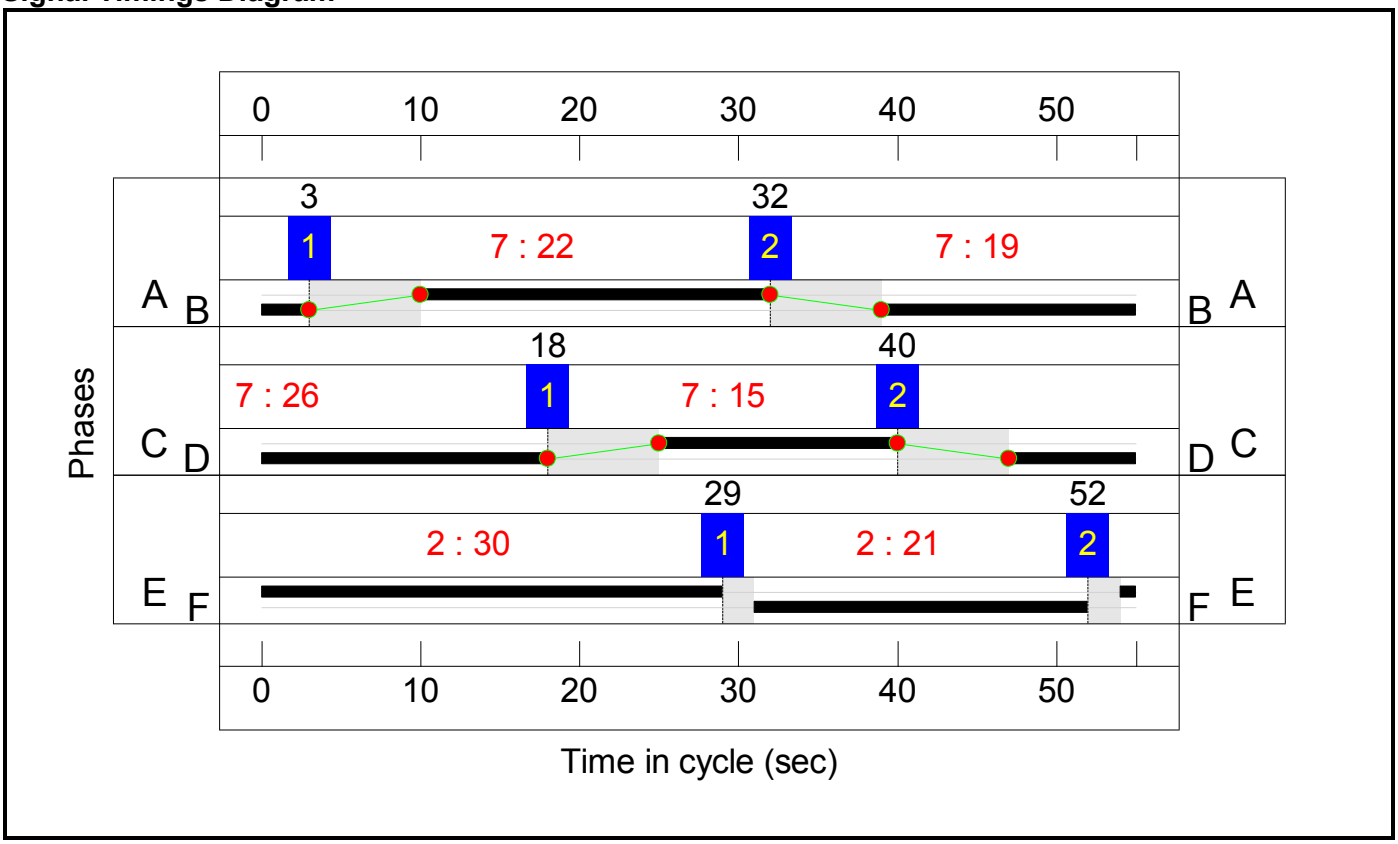
Stage	1	2
Duration	15	26
Change Point	18	40

Stage Stream: 3

Stage	1	2
Duration	21	30
Change Point	29	52

Full Input Data And Results

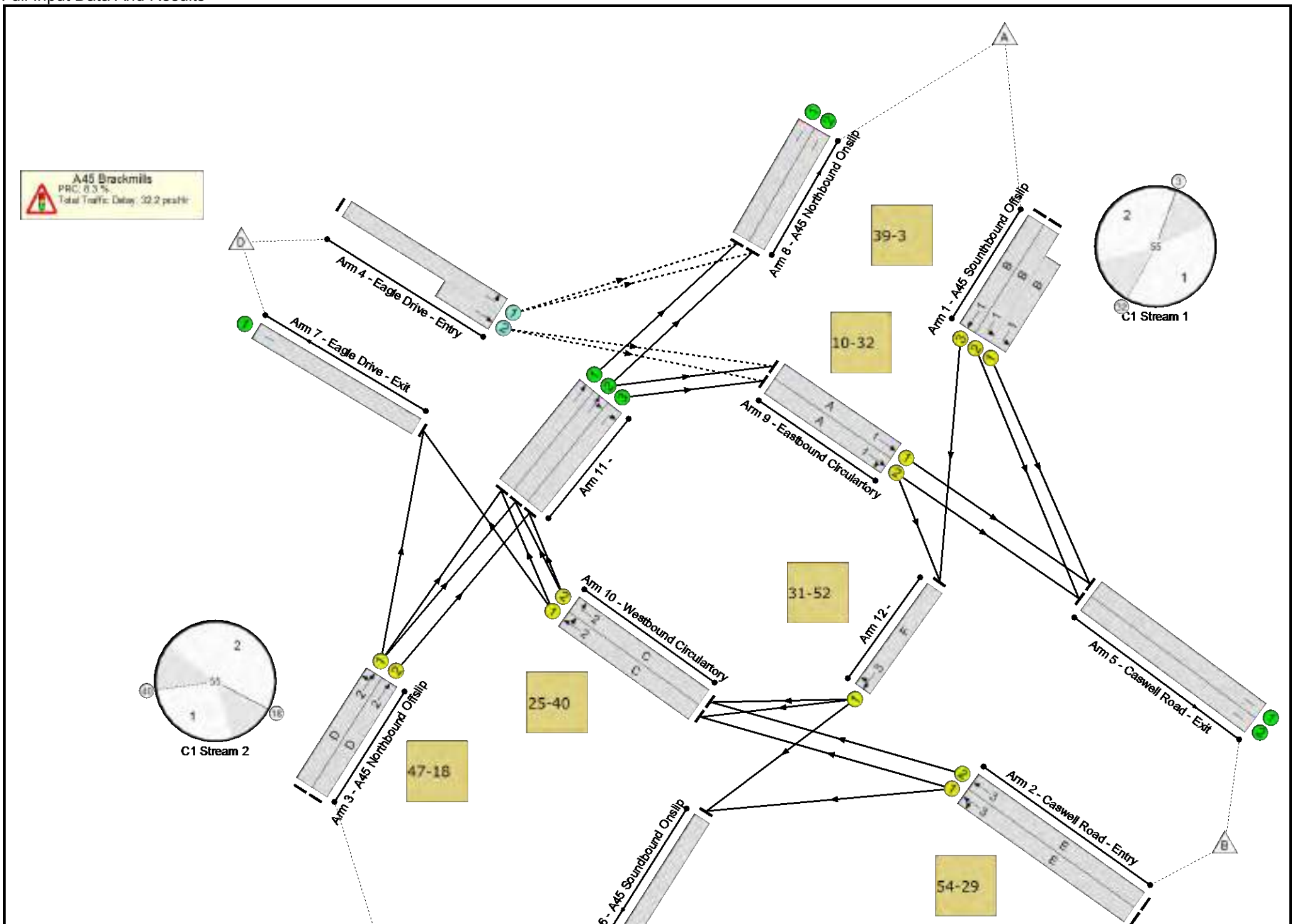
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**83.1%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**83.1%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	19	-	1087	1800:1800	655+653	83.1 : 83.1%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	19	-	94	1800	655	14.4%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	30	-	708	1800	1015	69.8%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	30	-	371	1800	1015	36.6%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	26	-	712	1800	884	80.6%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	26	-	637	1800	884	72.1%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	55	Inf : Inf	76+156	23.8 : 23.8%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1163	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	739	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	894	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	262	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	22	-	620	1900	795	78.0%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	22	-	660	1900	795	83.1%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	15	-	373	1900	553	67.5%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	15	-	371	1900	553	67.1%
11/1	Ahead	U	N/A	N/A	-		-	-	-	253	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	977	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	637	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	21	-	559	1900	760	73.6%

Full Input Data And Results

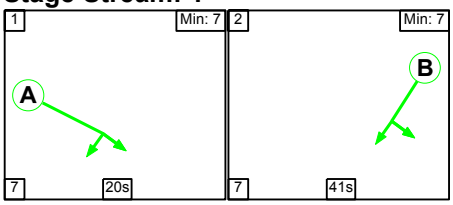
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**110**	**0**	**0**	**17.3**	**14.9**	**0.0**	**32.2**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**110**	**0**	**0**	**17.3**	**14.9**	**0.0**	**32.2**	**-**	**-**	**-**	**-**
1/2+1/1	1087	1087	-	-	-	4.8	2.4	-	7.2	23.9	7.6	2.4	10.0
1/3	94	94	-	-	-	0.3	0.1	-	0.4	15.0	0.9	0.1	1.0
2/1	708	708	-	-	-	1.7	1.1	-	2.8	14.5	7.7	1.1	8.8
2/2	371	371	-	-	-	0.7	0.3	-	1.0	9.4	3.1	0.3	3.4
3/1	712	712	-	-	-	2.3	2.0	-	4.4	22.0	9.1	2.0	11.1
3/2	637	637	-	-	-	2.0	1.3	-	3.2	18.3	7.6	1.3	8.9
4/1+4/2	55	55	110	0	0	0.1	0.2	-	0.3	17.3	0.3	0.2	0.5
5/1	1163	1163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	739	739	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	894	894	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	262	262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	380	380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	620	620	-	-	-	0.7	1.7	-	2.4	14.1	4.3	1.7	6.0
9/2	660	660	-	-	-	0.9	2.4	-	3.2	17.6	8.1	2.4	10.4
10/1	373	373	-	-	-	1.5	1.0	-	2.5	24.1	5.1	1.0	6.2
10/2	371	371	-	-	-	1.3	1.0	-	2.3	22.4	5.2	1.0	6.2
11/1	253	253	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	977	977	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	637	637	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	559	559	-	-	-	1.1	1.4	-	2.5	15.9	7.2	1.4	8.6

C1	Stream: 1 PRC for Signalled Lanes (%):	8.3	Total Delay for Signalled Lanes (pcuHr):	13.27	Cycle Time (s): 55
C1	Stream: 2 PRC for Signalled Lanes (%):	11.7	Total Delay for Signalled Lanes (pcuHr):	12.39	Cycle Time (s): 55
C1	Stream: 3 PRC for Signalled Lanes (%):	22.4	Total Delay for Signalled Lanes (pcuHr):	6.28	Cycle Time (s): 55
	PRC Over All Lanes (%):	8.3	Total Delay Over All Lanes(pcuHr):	32.21	

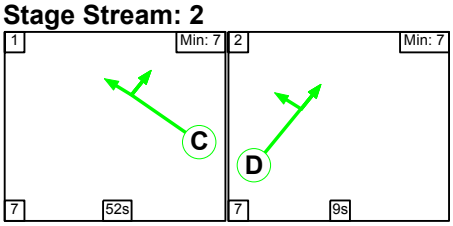
Full Input Data And Results
Scenario 8: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

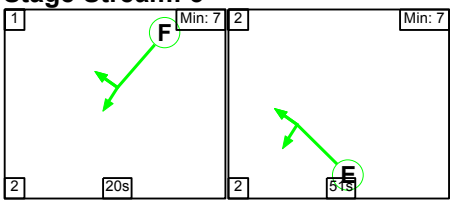
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	41
Change Point	11	38

Stage Stream: 2

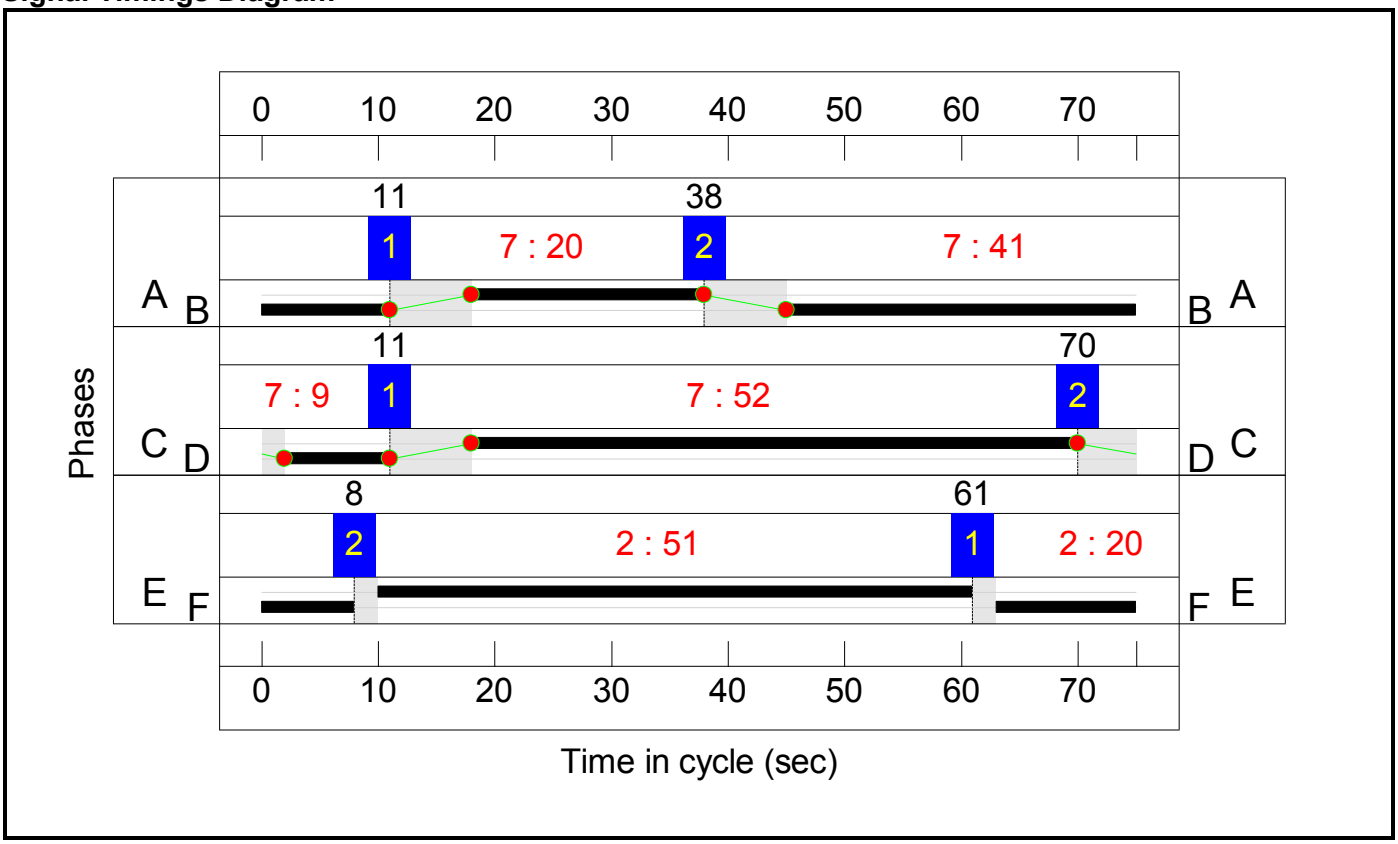
Stage	1	2
Duration	52	9
Change Point	11	70

Stage Stream: 3

Stage	1	2
Duration	20	51
Change Point	61	8

Full Input Data And Results

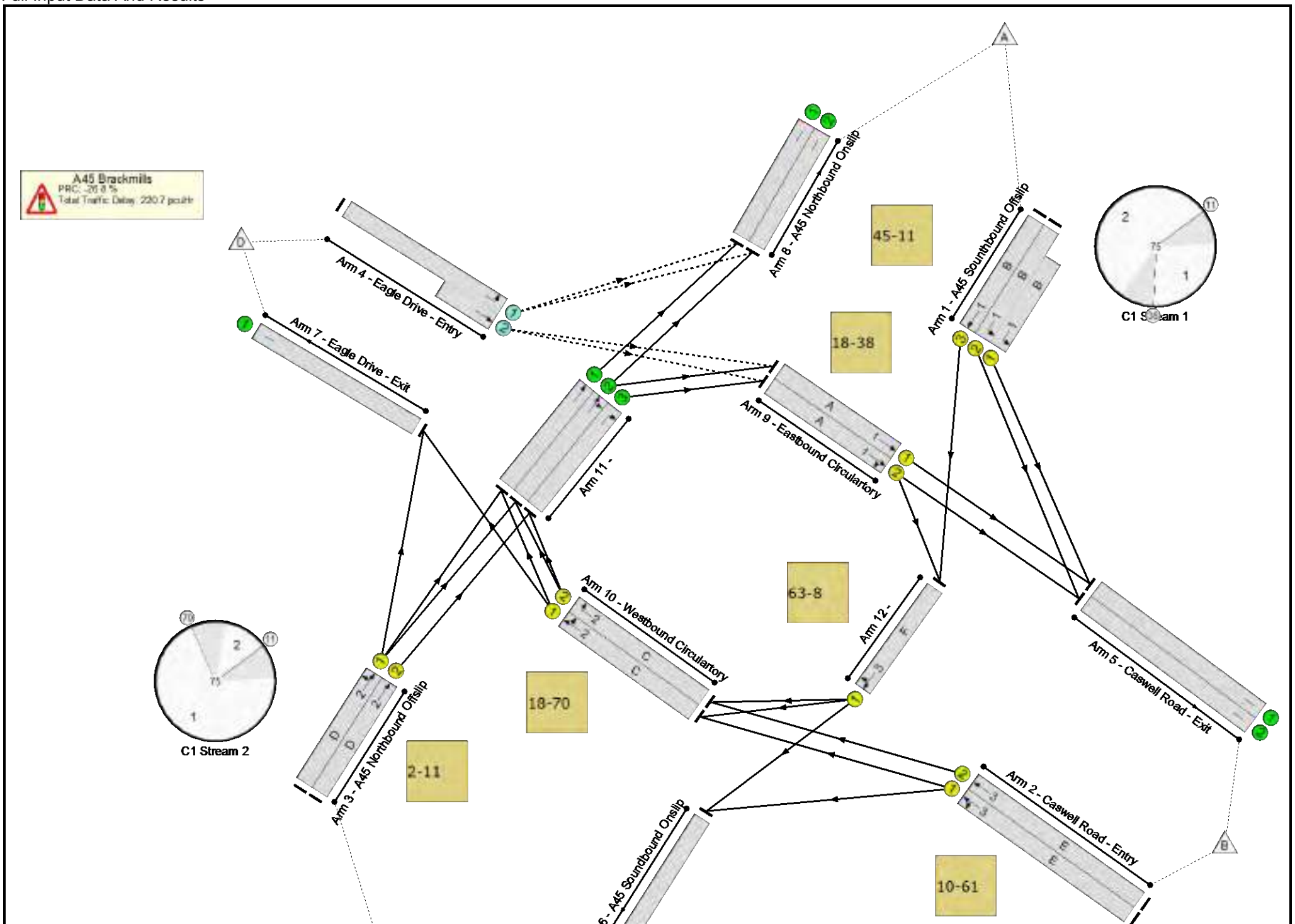
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.1%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.1%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	41	-	499	1800:1800	745+742	33.6 : 33.6%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	41	-	23	1800	1008	2.3%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	51	-	1424	1800	1248	114.1%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	51	-	1416	1800	1248	113.5%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	9	-	183	1800	240	76.3%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	9	-	184	1800	240	76.7%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	205	Inf : Inf	219+67	60.8 : 107.9%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	432	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	798	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	69	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	710	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1483	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	20	-	193	1900	532	35.6%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	20	-	210	1900	532	39.1%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	52	-	677	1900	1343	44.4%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	52	-	1416	1900	1343	92.9%
11/1	Ahead	U	N/A	N/A	-		-	-	-	644	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1563	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	184	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	20	-	51	1900	532	9.6%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**399**	**0**	**0**	**26.6**	**194.0**	**0.0**	**220.7**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**399**	**0**	**0**	**26.6**	**194.0**	**0.0**	**220.7**	**-**	**-**	**-**	**-**
1/2+1/1	499	499	-	-	-	1.2	0.3	-	1.4	10.3	2.6	0.3	2.9
1/3	23	23	-	-	-	0.0	0.0	-	0.1	9.3	0.2	0.0	0.2
2/1	1424	1248	-	-	-	10.0	91.9	-	101.9	257.7	33.3	91.9	125.2
2/2	1416	1248	-	-	-	9.8	88.0	-	97.8	248.6	33.0	88.0	121.0
3/1	183	183	-	-	-	1.6	1.5	-	3.1	61.3	3.7	1.5	5.2
3/2	184	184	-	-	-	1.6	1.6	-	3.2	61.8	3.7	1.6	5.2
4/1+4/2	205	200	399	0	0	1.7	3.9	-	5.5	97.2	3.9	3.9	7.8
5/1	439	439	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	430	430	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	703	703	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	68	68	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	630	630	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1315	1315	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	190	190	-	-	-	0.0	0.3	-	0.3	6.1	0.4	0.3	0.6
9/2	208	208	-	-	-	0.0	0.3	-	0.4	6.3	0.3	0.3	0.6
10/1	596	596	-	-	-	0.2	0.4	-	0.6	3.5	1.1	0.4	1.5
10/2	1248	1248	-	-	-	0.2	5.9	-	6.0	17.4	2.1	5.9	8.0
11/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1395	1395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	184	184	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	51	51	-	-	-	0.3	0.1	-	0.3	24.2	0.9	0.1	1.0

C1	Stream: 1 PRC for Signalled Lanes (%):	130.1	Total Delay for Signalled Lanes (pcuHr):	2.17	Cycle Time (s): 75
C1	Stream: 2 PRC for Signalled Lanes (%):	-3.3	Total Delay for Signalled Lanes (pcuHr):	12.90	Cycle Time (s): 75
C1	Stream: 3 PRC for Signalled Lanes (%):	-26.8	Total Delay for Signalled Lanes (pcuHr):	200.06	Cycle Time (s): 75
	PRC Over All Lanes (%):	-26.8	Total Delay Over All Lanes(pcuHr):	220.66	

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

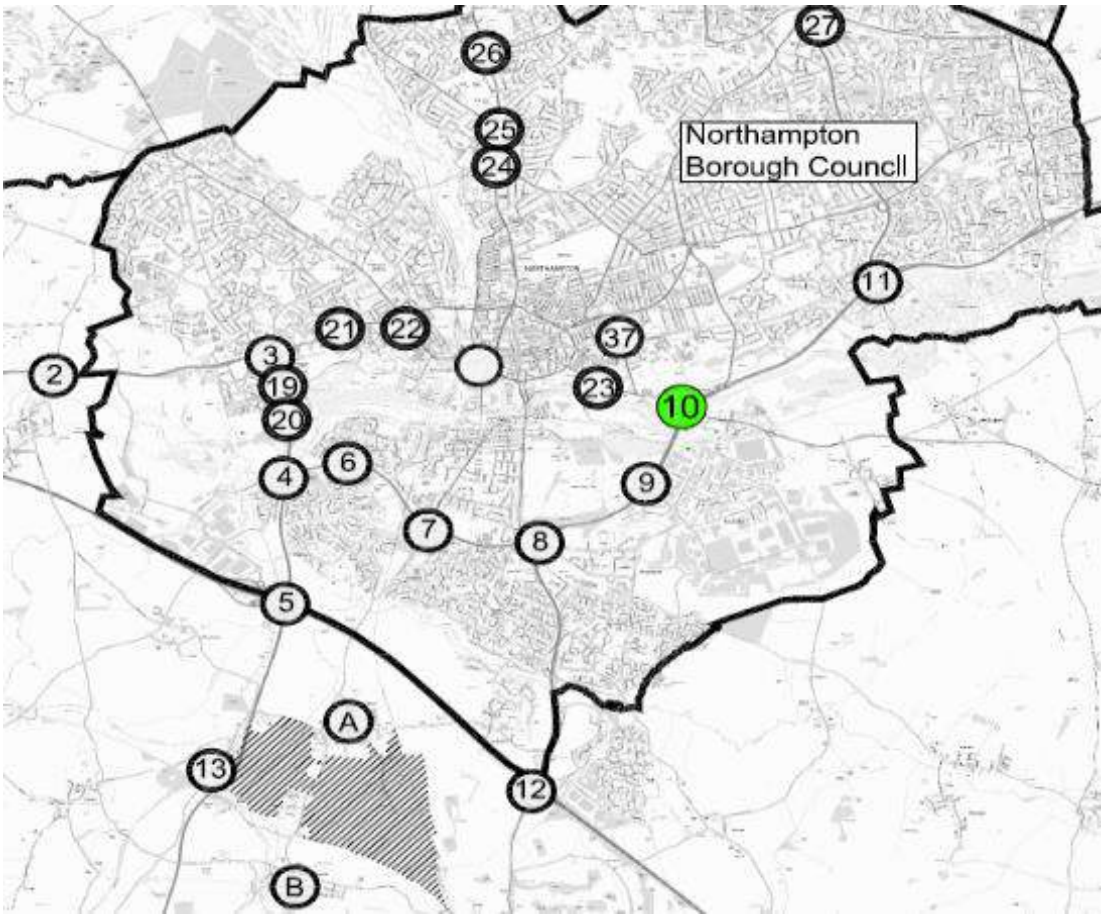
Technical Note No. 18

1 JUNCTION TEN – BARNES MEADOW INTERCHANGE

Existing Junction Description

1.1 Junction ten is a five arm signalised gyratory to the north of the Nene Whitewater Centre. It connects the A45 Nene Valley Way to A428, Bedford Road and Rushmere Road. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Ten Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction ten were conducted on Thursday 22nd October 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.6 The junction has been set up based on the guidance provided within the LinSig 3 handbook and industry standard guidance. Default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied, further to comments received from NCC and in accordance with guidance contained in LTN 1/09.

1.7 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays, included at **Appendix B**.

1.8 For all scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction actually would operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.9 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A45 North	13	8-18	26
	Arm 2 – A428 East	6	4-9	18
	Arm 3 – A45 South	6	4-9	24
	Arm 4 – A428 Bedford Road	6	2-9	19
	Arm 5 – A5095	30	10-42	9
PM Peak Hour (1700-1800)	Arm 1 – A45 North	9	8-13	6
	Arm 2 – A428 East	6	4-7	15
	Arm 3 – A45 South	5	4-7	7
	Arm 4 – A428 Bedford Road	7	5-10	17
	Arm 5 – A5095	6	5-7	6

1.10 It is considered that the modelled queues are generally in line with the surveyed queues, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle for both controllers (70 and 76 seconds).

Results of the Base Modelling

1.11 The results of the modelling for the existing junction layout, shown in **Figure EL10** are summarised in **Table 2** and junction analysis results are included at **Appendix C**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm5
DoS (%)	2015	109.6%	94.2%	78.1%	79.3%	79.3%	91.2%	93.2%	65.8%	87.3%	69.7%
	2021 DM	112.4%	100.2%	105.1%	108.6%	74.2%	89.7%	93.1%	81.1%	95.7%	70.9%
	2021 DS	112.4%	96.4%	80.0%	90.4%	86.3%	100.2%	116.3%	94.9%	106.9%	78.2%
	2031 DM	106.5%	105.7%	107.2%	90.1%	67.5%	97.6%	130.0%	87.9%	107.0%	133.0%
	2031 DS	114.3%	112.9%	96.7%	90.2%	76.0%	100.5%	128.1%	106.7%	110.1%	127.3%

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm5
Queue – MMQ (PCU)	2015	43	12	11	12	8	5	15	7	18	5
	2021 DM	9	7	16	2	7	10	16	16	15	7
	2021 DS	45	18	53	15	7	19	87	14	62	6
	2031 DM	35	38	25	12	5	19	162	10	77	70
	2031 DS	57	59	13	12	6	21	162	15	77	60
Average Delay (sec/pcu)	2015	165.2	69.5	31.5	17.5	39.0	53.6	59.7	26.3	22.7	41.7
	2021 DM	35.9	64.7	51.2	41.7	43.3	35.9	64.7	51.2	41.7	43.3
	2021 DS	255.1	57.8	249.1	29.6	47.3	117.1	306.1	77.8	162.6	49.1
	2031 DM	166.3	148.0	193.7	27.7	23.4	80.2	468.2	59.6	158.8	519.0
	2031 DS	270.4	251.2	101.1	27.9	29.0	112.7	450.0	114.8	211.4	453.9

1.12 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2021 AM and PM scenarios, Arms 1, 2 and 4 exceeding theoretical capacity by 10.5%, 23.2% and 10.2% in PM peak as a result. Furthermore, there is an increase in queueing in both 2021 AM and PM scenarios of 96 PCUs and 125 PCUs respectively. Therefore mitigation is considered necessary to address the development's impact.

1.13 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2031 AM and PM scenarios, with Arms 1 and 2 further exceeding theoretical capacity in the AM peak by 7.8% and 7.2% respectively and Arms 1, 3 and 4 in the PM peak by 2.9%, 18.8% and 4.1% respectively as a result. Therefore mitigation is considered necessary to address the development's impact.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (DoS)	-21.8	-24.9	-24.9	-19.1	-27.0	-3.5	-6.4	-29.2	-47.8	-42.4
Overall Junction Delay (PCUhr)	140	242	197	176	216	89	101	237	446	470

1.14 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for 2031 increase by 7.9% increase. There is also an increase of 22.8% and a decrease of 5.4% for the 2021 PM and 2031 PM respectively. Furthermore, there is an increase in overall junction delay between the DM PM and DS PM scenarios by 127 and 24 PCUhrs for 2021 PM and 2031 PM respectively. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.15 The proposed mitigation is shown in **Appendix J.8** of the TA and summarised is as follows:

- Provision of an additional lane on the A428 West approach;
- Provision of an additional lane for right movements on the eastern circulatory approach; and
- Changing road markings for the existing two lanes to straight ahead and right lane and a right turn only lane on the southern circulatory.

1.16 The results of the mitigated junction model is shown in **Table 4** and included as **Appendix C.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 5**	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 5**
DoS (%)	**2021 DS**	100.3%	88.1%	101.3%	107.0%	86.3%	85.4%	93.6%	76.1%	94.3%	87.2%
	Comparison to 2021 DM	-12.1%	-12.1%	-3.8%	-1.6%	12.1%	-4.3%	0.5%	-5.0%	-1.4%	16.3%
	2031 DS	101.6%	103.5%	82.2%	87.0%	89.7%	92.1%	121.7%	80.0%	103.7%	128.8%

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
	Comparison to 2031 DM	-4.9%	-2.2%	-25.0%	-3.1%	22.2%	-5.5%	-8.3%	-7.9%	-3.3%	-4.2%
Queue – MMQ (PCU)	2021 DS	17	10	28	55	6	11	22	9	23	7
	Comparison to 2021 DM	8	3	12	53	-1	2	6	-7	8	0
	2031 DS	27	34	8	12	9	17	145	11	64	65
	Comparison to 2031 DM	-8	-4	-17	-1	4	-3	-18	1	-13	-5
Average Delay (sec/pcu)	2021 DS	67.8	57.8	103.7	166.2	37.2	46.7	40.2	37.1	36.5	57.0
	Comparison to 2021 DM	31.9	-6.9	52.5	124.5	-6.1	10.8	-24.5	-14.1	-5.2	13.7
	2031 DS	101.4	122.1	41.2	23.7	41.2	55.2	384.6	50.1	114.7	492.0
	Comparison to 2031 DM	-64.9	-25.9	-152.5	-4.0	17.8	-25.0	-83.6	-9.5	-44.1	-27.0

1.17 As shown in **Table 4**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2021 DM scenarios. Whilst Arm five shows a decrease in capacity of 12.1%, the other four arms shows an improvement of 29.6% and therefore the junction operates 17.5% better in 2021 DS scenario AM peak than AM peak 2021 DM scenario.

1.18 As shown in **Table 4**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst Arm five shows a decrease in capacity of 22.2%, the other four arms shows an improvement of 35.2% and therefore the junction operates 13% better in 2031 AM. All five arms show an improvements 29.2 % or the 2031 PM peak scenario. Furthermore, there is a reduction in queues AM peak and PM peak of 25 and 37 respectively, and a reduction in overall delay of almost four minute minutes in the AM peak and over three minutes in the PM peak.

Table 5 – Mitigated Overall Junction Modelling Results

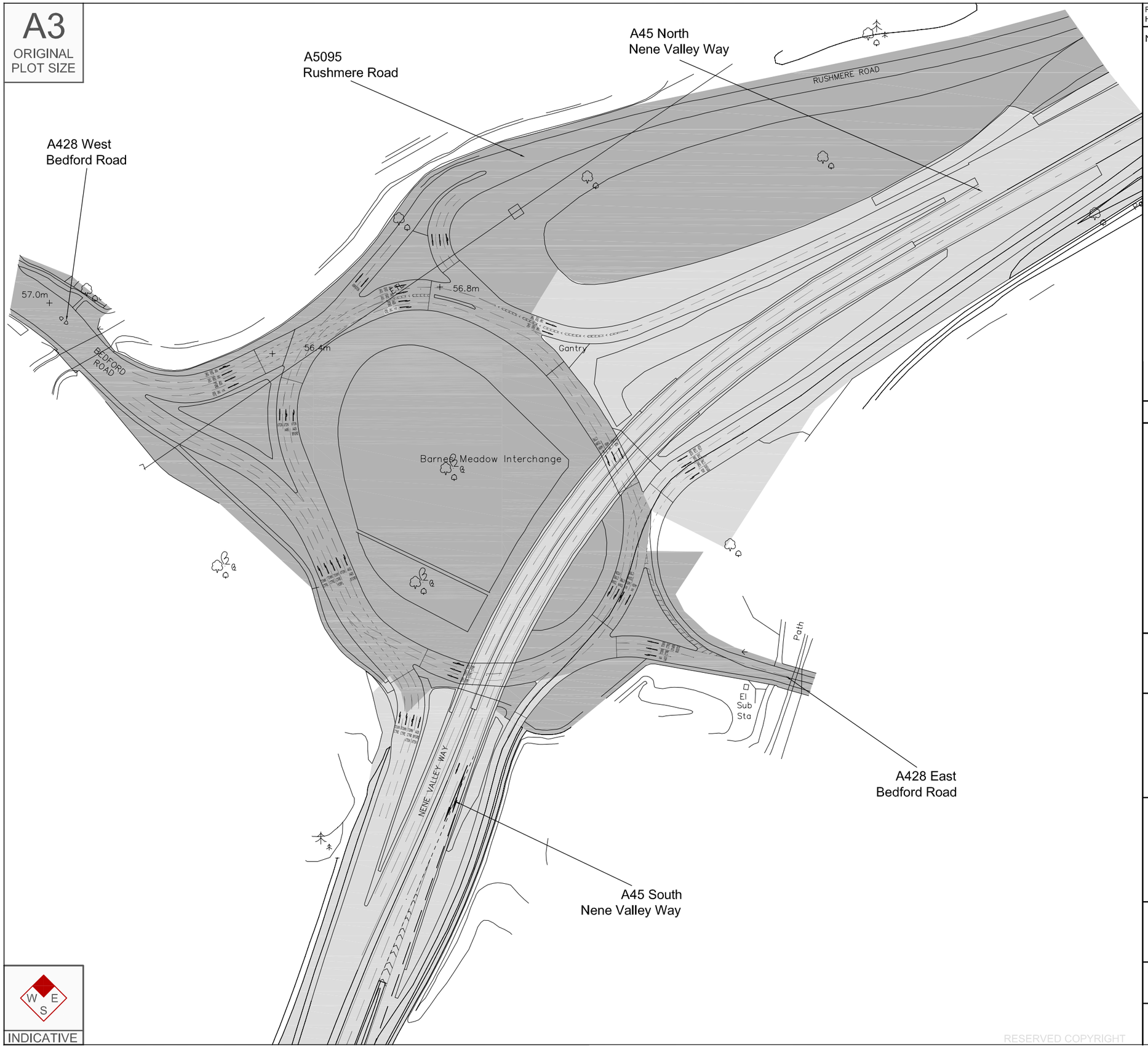
Peak Period	AM				PM			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	-18.8	6.1	-15.0	4.1	-4.7	1.7	-43.1	4.7
Overall Junction Delay (PCUhr)	156	-86	169	-7	129	28	397	-50

1.19 The junction operates 6.1% and 1.7% better in 2021 DS scenario AM peak than AM peak 2021 DM scenario and 2021 DS scenario PM peak than PM peak 2021 DM scenario. Finally, the overall junction delay is 86 PCUhr better in 2021 DS scenario AM.

1.20 The junction operates 4.1% and 4.7% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario and 2031 DS scenario PM peak than PM peak 2031 DM scenario. Finally, the overall junction delay is 7 PCUhr and 50 PCUhr better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



W E S

INDICATIVE

RESERVED COPYRIGHT

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A45 Barnes Meadow Interchange Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	12.06.17	JD	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL10	

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	50	517	306	0	872
B - A5095	2	0	64	701	0	767
D - A45 SB IN	1114	35	0	804	2853	4807
E - A428 W	369	91	67	0	0	527
F - A45 S	941	509	2842	179	0	4471
Total	2426	684	3491	1990	2853	11445

Modelled Flows
2021 DM
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	57	635	627	0	1320
B - A5095	2	0	20	559	0	581
D - A45 SB IN	1107	53	0	584	3623	5367
E - A428 W	347	66	63	0	0	476
F - A45 S	1082	525	3759	178	0	5544
Total	2538	701	4477	1948	3623	13287

Modelled Flows
2021 DS2
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	5	64	615	616	0	1300
B - A5095	2	0	14	528	0	545
D - A45 SB IN	1108	45	0	501	3686	5339
E - A428 W	360	68	73	0	0	501
F - A45 S	1093	521	3775	293	0	5682
Total	2567	697	4477	1938	3686	13366

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	0	0	0	0	0
B - A5095	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - A428 W	0	0	0	0	0	0
F - A45 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	8	119	321	0	447
B - A5095	0	0	-44	-142	0	-186
D - A45 SB IN	-7	18	0	-221	769	559
E - A428 W	-22	-25	-5	0	0	-51
F - A45 S	140	16	916	0	0	1073
Total	112	17	986	-42	769	1842

2021 DS2 minus 2015 Base
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	5	14	98	310	0	427
B - A5095	1	0	-51	-173	0	-223
D - A45 SB IN	-7	10	0	-304	833	532
E - A428 W	-9	-23	6	0	0	-26
F - A45 S	151	12	933	114	0	1210
Total	141	13	986	-52	833	1920

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	67	222	317	262	868
B - A5095	184	0	56	169	422	831
D - A45 SB IN	479	140	0	1101	0	1720
E - A428 W	304	24	338	0	667	1333
F - A45 S	522	185	0	751	0	1458
Total	1489	416	616	2338	1351	6210

2021 DM adjusted to count
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	75	341	638	262	1315
B - A5095	184	0	12	27	422	645
D - A45 SB IN	472	158	0	880	769	2279
E - A428 W	282	-1	333	0	667	1282
F - A45 S	662	201	916	751	0	2531
Total	1601	433	1602	2296	2120	8052

2021 DS2 adjusted to count
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	5	81	320	627	262	1295
B - A5095	185	0	5	-4	422	608
D - A45 SB IN	472	150	0	797	833	2252
E - A428 W	295	1	344	0	667	1307
F - A45 S	673	197	933	865	0	2668
Total	1630	429	1602	2286	2184	8130

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	11	1053	392	0	1456
B - A5095	2	0	244	65	0	312
D - A45 SB IN	691	4	0	228	2294	3217
E - A428 W	476	471	479	1	0	1427
F - A45 S	631	565	4068	250	0	5514
Total	1800	1051	5845	936	2294	11925

Modelled Flows
2021 DM
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	12	1183	515	0	1710
B - A5095	5	0	155	106	0	266
D - A45 SB IN	916	1	0	270	3219	4405
E - A428 W	531	512	354	0	0	1398
F - A45 S	693	617	5144	169	0	6623
Total	2145	1142	6836	1060	3219	14402

Modelled Flows
2021 DS2
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	22	1416	498	0	1936
B - A5095	7	0	257	138	0	401
D - A45 SB IN	967	2	0	265	3155	4389
E - A428 W	504	455	485	0	0	1445
F - A45 S	609	566	4519	242	0	5937
Total	2088	1045	6677	1143	3155	14107

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	0	0	0	0	0
B - A5095	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - A428 W	0	0	0	0	0	0
F - A45 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	1	130	123	0	254
B - A5095	3	0	-89	40	0	-45
D - A45 SB IN	225	-4	0	42	926	1188
E - A428 W	55	42	-125	-1	0	-29
F - A45 S	62	52	1076	-80	0	1110
Total	345	91	991	124	926	2477

2021 DS2 minus 2015 Base
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	11	363	106	0	480
B - A5095	5	0	12	72	0	90
D - A45 SB IN	276	-2	0	37	861	1172
E - A428 W	28	-15	5	-1	0	18
F - A45 S	-22	1	451	-8	0	423
Total	288	-6	832	206	861	2182

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	121	406	305	375	1207
B - A5095	67	0	131	106	213	517
D - A45 SB IN	150	98	0	583	0	831
E - A428 W	257	73	1205	0	786	2321
F - A45 S	317	454	0	575	0	1346
Total	791	746	1742	1569	1374	6222

2021 DM adjusted to count
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	122	536	428	375	1461
B - A5095	70	0	42	146	213	472
D - A45 SB IN	375	94	0	625	926	2019
E - A428 W	312	115	1080	-1	786	2292
F - A45 S	379	506	1076	495	0	2456
Total	1136	837	2733	1693	2300	8699

2021 DS2 adjusted to count
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	132	769	411	375	1687
B - A5095	72	0	143	178	213	607
D - A45 SB IN	426	96	0	620	861	2003
E - A428 W	285	58	1210	-1	786	2339
F - A45 S	295	455	451	567	0	1769
Total	1079	740	2574	1775	2235	8404

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	50	517	306	0	872
B - A5095	2	0	64	701	0	767
D - A45 SB IN	1,114	35	0	804	2,853	4,807
E - A428 W	369	91	67	0	0	527
F - A45 S	941	509	2,842	179	0	4,471
Total	2,426	684	3,491	1,990	2,853	11,445

Modelled Flows
2031 DM
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	7	86	938	624	0	1,655
B - A5095	13	0	119	713	0	845
D - A45 SB IN	1,274	86	0	413	2,471	4,243
E - A428 W	362	125	88	0	0	576
F - A45 S	822	414	3,981	127	0	5,343
Total	2,478	711	5,126	1,876	2,471	12,662

Modelled Flows
2031 DS2
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	7	86	945	613	0	1,652
B - A5095	18	0	150	737	0	905
D - A45 SB IN	1,321	93	0	411	2,281	4,106
E - A428 W	362	120	113	1	0	595
F - A45 S	790	412	3,965	122	0	5,288
Total	2,499	711	5,173	1,883	2,281	12,546

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	0	0	0	0	0
B - A5095	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - A428 W	0	0	0	0	0	0
F - A45 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	7	36	421	318	0	783
B - A5095	11	0	55	11	0	77
D - A45 SB IN	160	51	0	-392	-383	-564
E - A428 W	-7	35	21	0	0	49
F - A45 S	-120	-96	1,138	-52	0	871
Total	52	26	1,635	-114	-383	1,216

2031 DS2 minus 2015 Base
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	7	37	429	307	0	779
B - A5095	16	0	86	36	0	138
D - A45 SB IN	207	58	0	-393	-573	-701
E - A428 W	-7	29	45	1	0	68
F - A45 S	-152	-97	1,123	-57	0	817
Total	72	27	1,683	-108	-573	1,101

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	67	222	317	262	868
B - A5095	184	0	56	169	422	831
D - A45 SB IN	479	140	0	1101	0	1,720
E - A428 W	304	24	338	0	667	1,333
F - A45 S	522	185	0	751	0	1,458
Total	1,489	416	616	2,338	1,351	6,210

2031 DM adjusted to count
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	7	103	643	635	262	1,651
B - A5095	195	0	111	180	422	908
D - A45 SB IN	639	191	0	709	-383	1,156
E - A428 W	297	59	359	0	667	1,382
F - A45 S	402	89	1,138	699	0	2,329
Total	1,541	442	2,251	2,224	968	7,426

2031 DS2 adjusted to count
AM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	7	104	651	624	262	1,647
B - A5095	200	0	142	205	422	969
D - A45 SB IN	686	198	0	708	-573	1,019
E - A428 W	297	53	383	1	667	1,401
F - A45 S	370	88	1,123	694	0	2,275
Total	1,561	443	2,299	2,230	778	7,311

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	11	1,053	392	0	1,456
B - A5095	2	0	244	65	0	312
D - A45 SB IN	691	4	0	228	2,294	3,217
E - A428 W	476	471	479	1	0	1,427
F - A45 S	631	565	4,068	250	0	5,514
Total	1,800	1,051	5,845	936	2,294	11,925

Modelled Flows
2031 DM
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	3	25	1,662	420	0	2,110
B - A5095	13	0	486	177	0	676
D - A45 SB IN	1,101	10	0	240	2,972	4,323
E - A428 W	471	594	503	0	0	1,568
F - A45 S	561	544	4,302	129	0	5,535
Total	2,149	1,172	6,952	966	2,972	14,211

Modelled Flows
2031 DS2
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	43	1,681	447	0	2,171
B - A5095	7	0	479	170	0	656
D - A45 SB IN	1,019	2	0	200	2,798	4,020
E - A428 W	525	573	483	3	0	1,584
F - A45 S	562	542	4,265	140	0	5,508
Total	2,114	1,159	6,908	960	2,798	13,940

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	0	0	0	0	0
B - A5095	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - A428 W	0	0	0	0	0	0
F - A45 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	3	14	609	28	0	654
B - A5095	12	0	241	112	0	364
D - A45 SB IN	410	6	0	12	678	1,106
E - A428 W	-5	123	23	-1	0	140
F - A45 S	-70	-21	234	-121	0	21
Total	349	121	1,107	30	678	2,285

2031 DS2 minus 2015 Base
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	32	628	55	0	715
B - A5095	5	0	235	105	0	345
D - A45 SB IN	329	-3	0	-28	505	803
E - A428 W	49	102	4	2	0	157
F - A45 S	-69	-23	197	-110	0	-5
Total	314	108	1,063	24	505	2,014

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	121	406	305	375	1,207
B - A5095	67	0	131	106	213	517
D - A45 SB IN	150	98	0	583	0	831
E - A428 W	257	73	1205	0	786	2,321
F - A45 S	317	454	0	575	0	1,346
Total	791	746	1,742	1,569	1,374	6,222

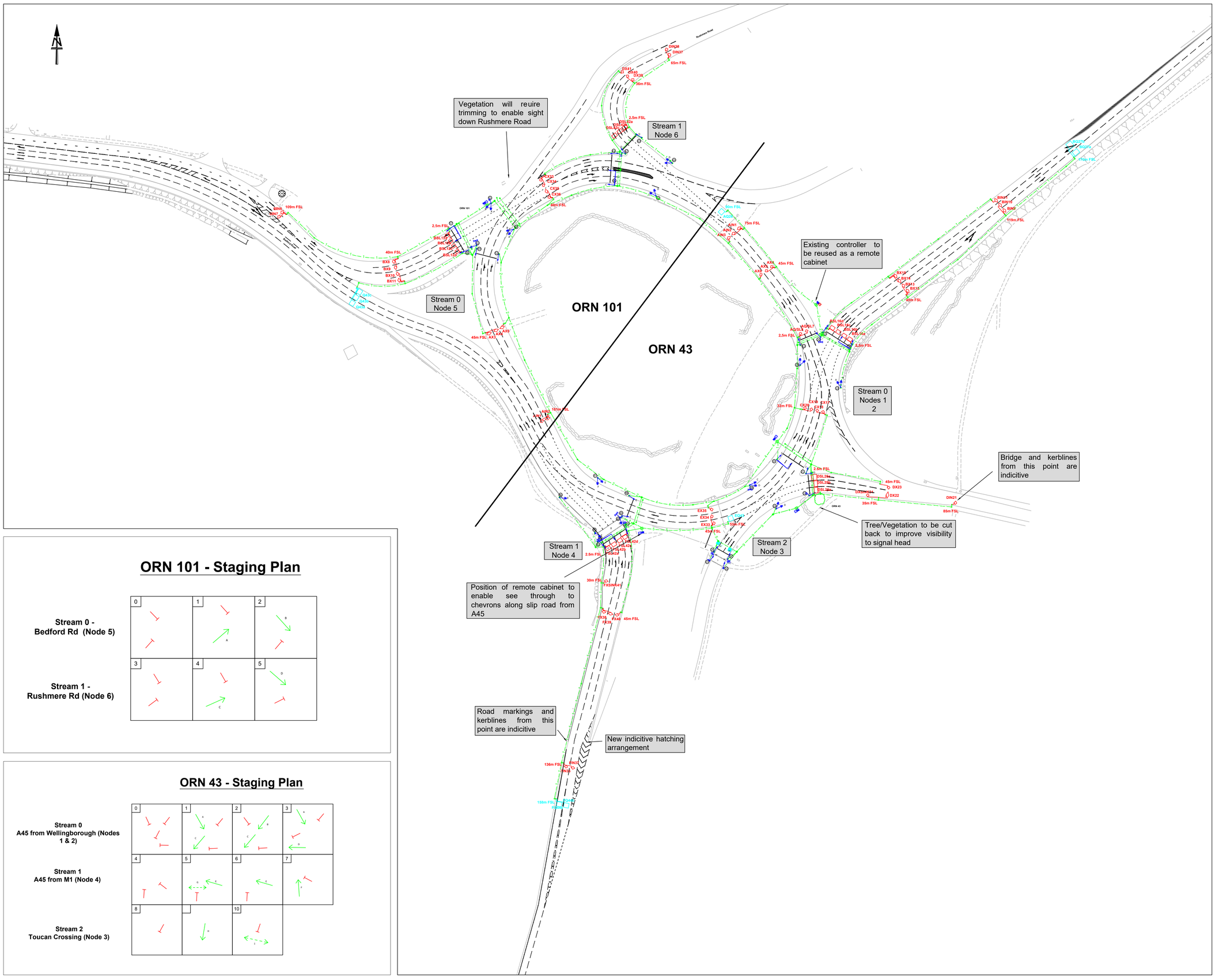
2031 DM adjusted to count
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	3	135	1,015	333	375	1,861
B - A5095	79	0	372	218	213	881
D - A45 SB IN	560	104	0	595	678	1,937
E - A428 W	252	196	1,228	-1	786	2,461
F - A45 S	247	433	234	454	0	1,367
Total	1,140	867	2,849	1,599	2,052	8,507

2031 DS2 adjusted to count
PM Peak

	A - A428 E	B - A5095	C - A45 NB OUT	E - A428 W	F - A45 S	Total
A - A428 E	0	153	1,034	360	375	1,922
B - A5095	72	0	366	211	213	862
D - A45 SB IN	479	95	0	555	505	1,634
E - A428 W	306	175	1,209	2	786	2,478
F - A45 S	248	431	197	465	0	1,341
Total	1,105	854	2,805	1,593	1,879	8,236

APPENDIX B



ORN 101 - Staging Plan

Stream 0 - Bedford Rd (Node 5)

Stream 1 - Rushmere Rd (Node 6)

ORN 43 - Staging Plan

Stream 0
A45 from Wellingborough (Nodes 1 & 2)

Stream 1
A45 from M1 (Node 4)

Stream 2
Toucan Crossing (Node 3)

Key

- 4m pole
- Stub pole
- Wide base 6m pole with double head
- Primary Signal Head
- Secondary Signal Head
- Mast Arm
- Louvred Aspect
- Nearside TOUCAN Head with Push Button
- Push Button
- Tactile Knob
- Photo cell
- Bus Priority Aerial
- Pole Number
- MOVA Loop
- Stopline Loop
- 1 x 50mm Polyethelene Duct
- 1 x 100mm Polyethelene Duct
- 2 x 100mm Polyethelene Duct
- 3 x 100mm Polyethelene Duct
- 4 x 100mm Polyethelene Duct
- 5 x 100mm Polyethelene Duct
- 6 x 100mm Polyethelene Duct
- 7 x 100mm Polyethelene Duct
- 1 x 100mm Polyethelene Duct purple
- 1 x 150mm Polyethelene Duct white
- 00 x 600 Access Chamber
- 600 x 600 Access Chamber
- 600 x 600 Access Chamber serving white ducts
- 450 x 450 Access Chamber
- 300 x 450 Loop Chamber
- Carriageway LoopBox
- Pole Retention Socket
- Wide Base Pole Retention Socket
- Drawcord Holder
- Electricity Feeder Pillar with Mains Supply
- Electricity Feeder Pillar
- Controller
- Remote Cabinet

REV	DATE	BY	DESCRIPTION	CHK	APD
H	10/09/10	SC	Amended as per ECI comments	AJL	AA
G	20/07/10	SC	Stop lines repositioned	AJL	RE
F	17/05/10	SC	Key amended	AJL	RE
E	12/04/10	SC	Mains supply pillar added	AJL	RE
D	22/03/10	SC	BIN 6 & 7 relocated,Staging plan added,BP aerial	AJL	RE

DRAWING STATUS: **CONSTRUCTION**

MGWSP — Northamptonshire County Council

Delivering transport and highways services together

PROJECT: **Northampton to Wellingborough BRT**

TITLE: **Proposed General Arrangement Barnes Meadow Roundabout**

SCALE @ A1:	CHECKED:	APPROVED:
1:1000	AJL	RE
	DESIGN-DRAWN: DB/SC	DATE: 22/12/09

PROJECT No:	DRAWING No:	REV:
NH09DC26	NH09DC26/S326/R330/BM/003	H

CAD File: N:\ASSET INTEGRITY\NETWORK COORDINATION\NETCOM\GENERAL\NORTHAMPTONSHIRE SITE DRAWINGS\043, 101 N. BARNES MEADOW RBOUT\NH09DC26_S326_R330_BM_003_006 TRAFFIC SIGNALS - MAST ARMS SECOND ISSUE.DWG

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Administration

General Specifications

Customer Name	Northamptonshire County Council	Customer Order No.	853219390
Intersection/ General Description	Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) ,A45 N-Bnd - Northampton ORN043	Controller/ Serial Number	7048684
		S.T.S. /EM Number	37280 Issue 1
Controller	(•) New ( ) Modification	Equipment Installation by	Siemens Mobility Traffic Solutions
Area Specifications/ Customer Drawings	NH09DC26 / S326 / R330 / BM006	Slot Cutting by	Siemens Mobility Traffic Solutions
Specification Section	Rev D	Civil Works by	Siemens Mobility Traffic Solutions
Contract/Tender Ref:	MASTER CONTROLLER	Customer's Engineer	A.Poole
Quotation No.		Telephone Number	0113-3956617
Works Order No.	460517250		

Signal Company Use Only

Signal Engineer: Kevin L Roberts

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: 89 1B 6C 9A

Controller Options

Hardware: ST900 ELV | Firmware Type and Issue: PB801 ISS 7 | Other Options

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet | Kit Type Options: (•) UK-Std ( ) Non-UK ( ) ( )

Cabinet/Rack Variant: Grey | Cuckoo Options: None | Gemini Unit Fitted: ☑

Mains Supply	230 Volts	50 Hz					
Peak Lamp Current	10 Amps	Dimming Voltage	27.5	Answer Issue	0	Date Created	03/02/11
Average Lamp Power	1200 Watts						
Total Average Power	1400 Watts	Low Inrush Transformer	☐	Edit Issue	2		

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams 3

Phases

( ) Current Total Number of Phases 12

(•) Number of Real Phases 9

( ) Number of Dummy Phases 3

Stages

( ) Current Number of stages (inc. ALL-RED stages) 11

Switched Signs

( ) Number of Switched Signs 0

Action

Add At | Delete At

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- [x] Serial/Internal UTMC OTU
- [ ] Free-standing OTU
- [ ] Integral TC12 OTU
- [x] Serial MOVA

- [x] Master Time Clock
- [ ] Holiday Clock
- [x] FT To Current MAX
- [ ] Linked Fixed Time

- [x] Lamp Monitoring
- [x] RED Lamp Monitoring
- [ ] Pelican/Puffin/Toucan
- [ ] Standalone Manual

- [ ] Extend All Red
- [ ] Speed Measurement
- [ ] Ripple Change
- [ ] London IMU

- [ ] Non-UK
- [ ] Fail to Part Time
- [ ] Fail To Hardware Flashing
- [ ]
- [ ] Download To Level 3

12 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
[ ] Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Hurry Call	○	○	○	○	◉	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
[x] UTC	○	○	◉	○	○	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] CLF (Base Time)	○	○	○	◉	○	○	○	○	○	○	○	○	○
[x] Vehicle Actuated	○	○	○	○	○	◉	○	○	○	○	○	○	○
[x] Fixed Time	○	○	○	○	○	○	○	○	○	○	◉	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standardPB801.8df
Default PROM data file

Correspondence Monitoring to inc.

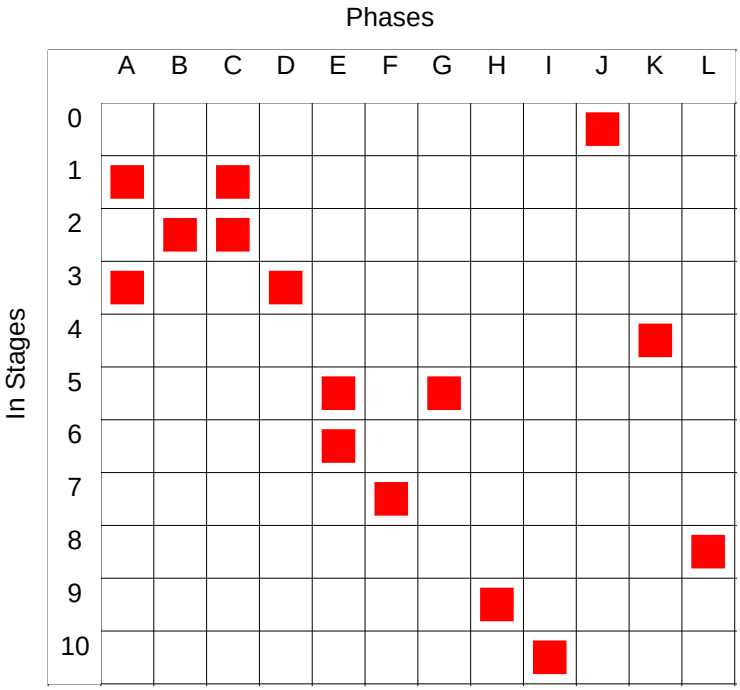
- [x] Reds
- [ ] Switched Signs
- [x] Ambers
- [ ] Ignore Reds and Ambers durin

Flash Rate (ms)

400 Off 400 On

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phases in Stages



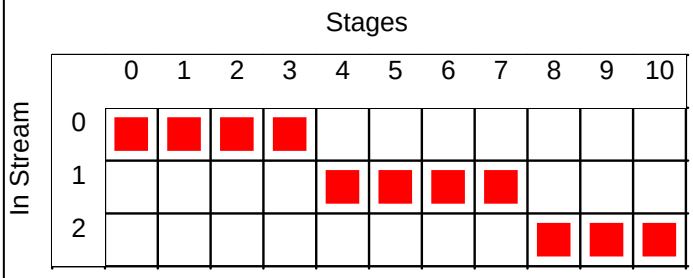
Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	1	6	9					
Startup Stage	1	6	9					
Switch Off Stage								
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.



Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phase Type and Conditions

Phase Type and Conditions

(●) Phases A to P ( ) Manual Output Allocation ☑

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	Circulatory @ A45 Southbound Slip	0 - UK Traffic	0	0 - I		1	1	1
B	A45 Southbound Slip Entry	0 - UK Traffic	0	0 - I		2	2	2
C	Circulatory @ Bedford Road Westbound	0 - UK Traffic	0	0 - I		2	2	2
D	Bedford Road Westbound Entry	0 - UK Traffic	0	0 - I		1	1	1
E	Circulatory @ A45 Northbound Slip	0 - UK Traffic	0	0 - I		1	1	1
F	A45 Northbound Slip Entry	0 - UK Traffic	0	0 - I		2	2	2
G	Pedestrians across A45 Northbound Slip	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
H	A45 Southbound Slip Exit	0 - UK Traffic	0	0 - I		1	1	1
I	Pedestrians across A45 Exit	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
J	Dummy All Red Stage 0 Stream 0	2 - UK GreenArrow	0	0 - I				
K	Dummy All Red Stage 4 Stream 1	2 - UK GreenArrow	0	0 - I				
L	Dummy All Red Stage 8 Stream 2	2 - UK GreenArrow	0	0 - I				

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ 2 ○ ○ ○ ○ ○ ○

Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase

	A	B	C	D	E	F	G	H	I	J	K	L
A		Co	o	o						o		
B	Co		o	o						o		
C	o	o		Co						o		
D	o	o	Co							o		
E						Co	o				o	
F					Co		Co				o	
G					o	Co					o	
H									Co			o
I								Co				o
J	o	o	o	o								
K					o	o	o					
L								o	o			

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

(●) Phases A to P ( ) Phases Q to X

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	30	35	45	25	0	0	0	0	☐
B	7	0	0.0	20	25	15	15	0	0	0	0	☐
C	7	0	0.0	40	45	40	35	0	0	0	0	☐
D	7	0	0.0	15	15	20	15	0	0	0	0	☐
E	7	0	0.0	30	40	35	25	0	0	0	0	☐
F	7	0	0.0	15	20	25	15	0	0	0	0	☐
G	7	0	0.0	0	0	0	0	0	0	0	0	☐
H	7	0	0.0	40	50	50	40	0	0	0	0	☐
I	6	0	0.0	0	0	0	0	0	0	0	0	☐
J	3	0	0.0	0	0	0	0	0	0	0	0	☐
K	3	0	0.0	0	0	0	0	0	0	0	0	☐
L	3	0	0.0	0	0	0	0	0	0	0	0	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ 2 ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L
A		5								3		
B	5									3		
C				5						3		
D			5							3		
E						5					3	
F					5		5				3	
G						14					3	
H									5			3
I								8				3
J	2	2	2	2								
K					2	2	2					
L								2	2			

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Intergreen Handset Limits

HIGH 30

Copy Intergreen Values

To Phase

From Phase

	A	B	C	D	E	F	G	H	I	J	K	L
A		5								3		
B	5									3		
C				5						3		
D			5							3		
E						5					3	
F					5		5				3	
G						13					3	
H									5			3
I								7				3
J	2	2	2	2								
K					2	2	2					
L								2	2			

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.	Phase	Min. Green Min.	Min. Green Max.
A	7	30	Q		
B	7	30	R		
C	7	30	S		
D	7	30	T		
E	7	30	U		
F	7	30	V		
G	6	30	W		
H	7	30	X		
I	5	30	Y		
J	0	30	Z		
K	0	30	A2		
L	0	30	B2		
M			C2		
N			D2		
O			E2		
P			F2		

Max. Green Min. 0 Max. 255

Vehicle Extension Min. 0.0 Max. 10.0

Phase Delay Min. 0 Max. 10

Starting I/G Min. 10 Max. 15

Min Pedestrian Clearance (PBT) Min. 0 Max. 12

Traffic Phase Leaving Min. 3.0 Max. 3.0

Traffic Phase Red/Amber Min. 2 Max. 2

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AIN1	AIN2	AIN3	AX4
B	BIN9	BIN10	BIN11	BX12
C	CX17	CX18	CX19	CX20
D	DIN21	DX22	DX23	DXSINK24
E	EX33	EX34	EX35	
F	FIN36	FIN37	FX38	FX39
G	GPB			
H				
I	IPB			
J				
K				
L				

Extensions

AIN1	AIN2	AIN3	AX4
BIN9	BIN10	BIN11	BX12
CX17	CX18	CX19	CX20
	DX22	DX23	
EX33	EX34	EX35	
		FX38	FX39

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F	G	H	I	J	K	L					
☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F	G	H	I	J	K	L					
☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F	G	H	I	J	K	L					
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D	E	F		H								

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5	6	7	8	9	10						
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5	6	7	8	9	10						
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5	6	7	8	9	10						
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0	0	0	0					

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Phase Delays

Phase Delays

(●) Phase Delays 0-29 ( ) Phase Delays 30-59 ( ) Phase Delays 60-89 ( ) Phase Delays 90-119

No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds	No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds
0	C	2	3	5	15				0
1	E	5	7	9	16				0
2				0	17				0
3				0	18				0
4				0	19				0
5				0	20				0
6				0	21				0
7				0	22				0
8				0	23				0
9				0	24				0
10				0	25				0
11				0	26				0
12				0	27				0
13				0	28				0
14				0	29				0

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☑	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

CLF - Plan(s)

CLF - Plan(s)

1 Plan No.

Copy From

Plan Specifics

1 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 40

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	3	16			
1	19	1	1	17			
2	20	1	7	18			
3	28	1	2	19			
4	39	1	5	20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

CLF - Plan(s)

CLF - Plan(s)

Plan No. 2

Copy From

Plan Specifics

Influence Set 2

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	3	16			
1	20	1	1	17			
2	24	1	7	18			
3	36	1	2	19			
4	50	1	5	20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

CLF - Plan(s)

CLF - Plan(s)

Plan No. 3

Copy From

Plan Specifics

Influence Set 3

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	3	16			
1	27	1	7	17			
2	28	1	1	18			
3	43	1	2	19			
4	55	1	5	20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

CLF - Plan(s)

CLF - Plan(s)

Plan No. 4

Copy From

Plan Specifics

Influence Set 4

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 40

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	3	16			
1	19	1	1	17			
2	20	1	7	18			
3	28	1	2	19			
4	39	1	5	20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

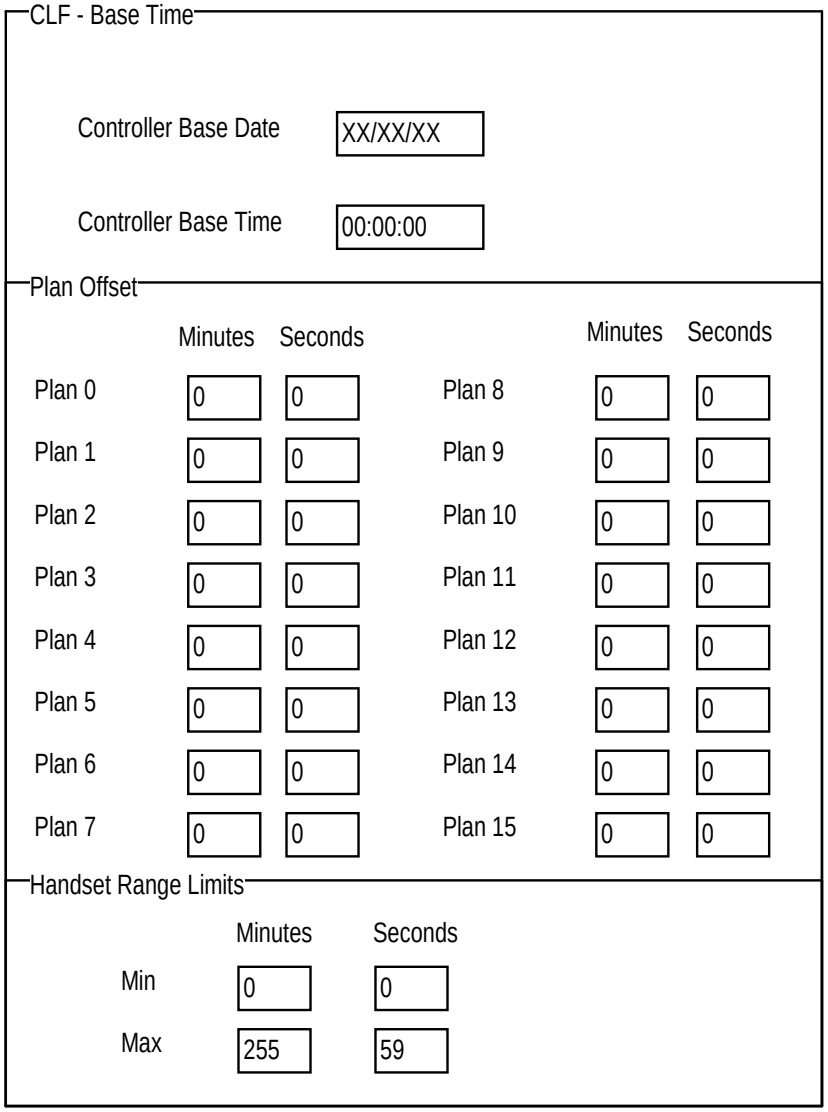
7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

CLF - Base Time



Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

3 Number of Control Words

3 Number of Reply Words

[ ] Controller to respond to TC bit.

[ ] Introduction of UTC to be disabled by Priority and LR

[ ] Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	04:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	04:00:00

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

UTC Control and Reply Data Format

UTC Control and Reply Data Format

Control Words

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	F1	F2	F3	F5	F6	F7		MOVA0
Word 2					BD1	SO	TS	DX1
Word 3	MO			MO2				MOVA1
Word 4								

Reply Words

Word 1	G1	G2	G3	G5	G6	G7		
Word 2			CF	DF	LF1	RF1	CC	RR
Word 3	MR	MF	ML	MR2	MF2	ML2		CRB1
Word 4								
Word 5								
Word 6								
Word 7								
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

UTC Phase Demand and Extend Definitions

UTC Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands, preceed the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	DX1			
B	DX1			
C	DX1			
D	DX1			
E	DX1			
F	DX1			
G	DX1			
H				
I				
J				
K				
L				

Extensions

DX1			
DX1			
DX1			
DX1			
DX1			
DX1			
DX1			

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

UTC Stage and Mode Data Definitions

UTC Stage and Mode Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0				16			
1	F1	G1		17			
2	F2	G2		18			
3	F3	G3		19			
4				20			
5	F5	G5		21			
6	F6	G6		22			
7	F7	G7		23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☑ RR ☐

Manual Mode Selected:
☐ G1/G2 ☑ RR ☐

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☑ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☑ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☑ Combined

Set Selection

○ ○ ○ ○ ○

1	AIN1	2	AIN2	3	AIN3	4	AX4	5	AX5	6	AX6	7	AQSL7	8	AQSL8
9	BIN9	10	BIN10	11	BIN11	12	BX12	13	BX13	14	BX14	15	BX15	16	
17	CX17	18	CX18	19	CX19	20	CX20	21	DIN21	22	DX22	23	DX23	24	DXSINK24
25		26	AQ26	27		28		29		30		31		32	
33	EX33	34	EX34	35	EX35	36	FIN36	37	FIN37	38	FX38	39	FX39	40	FX40
41	FXSINK41	42		43	EQ43	44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Note - only 32 detectors available on MOVA 4.0

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

MTC - Time Switch Parameters

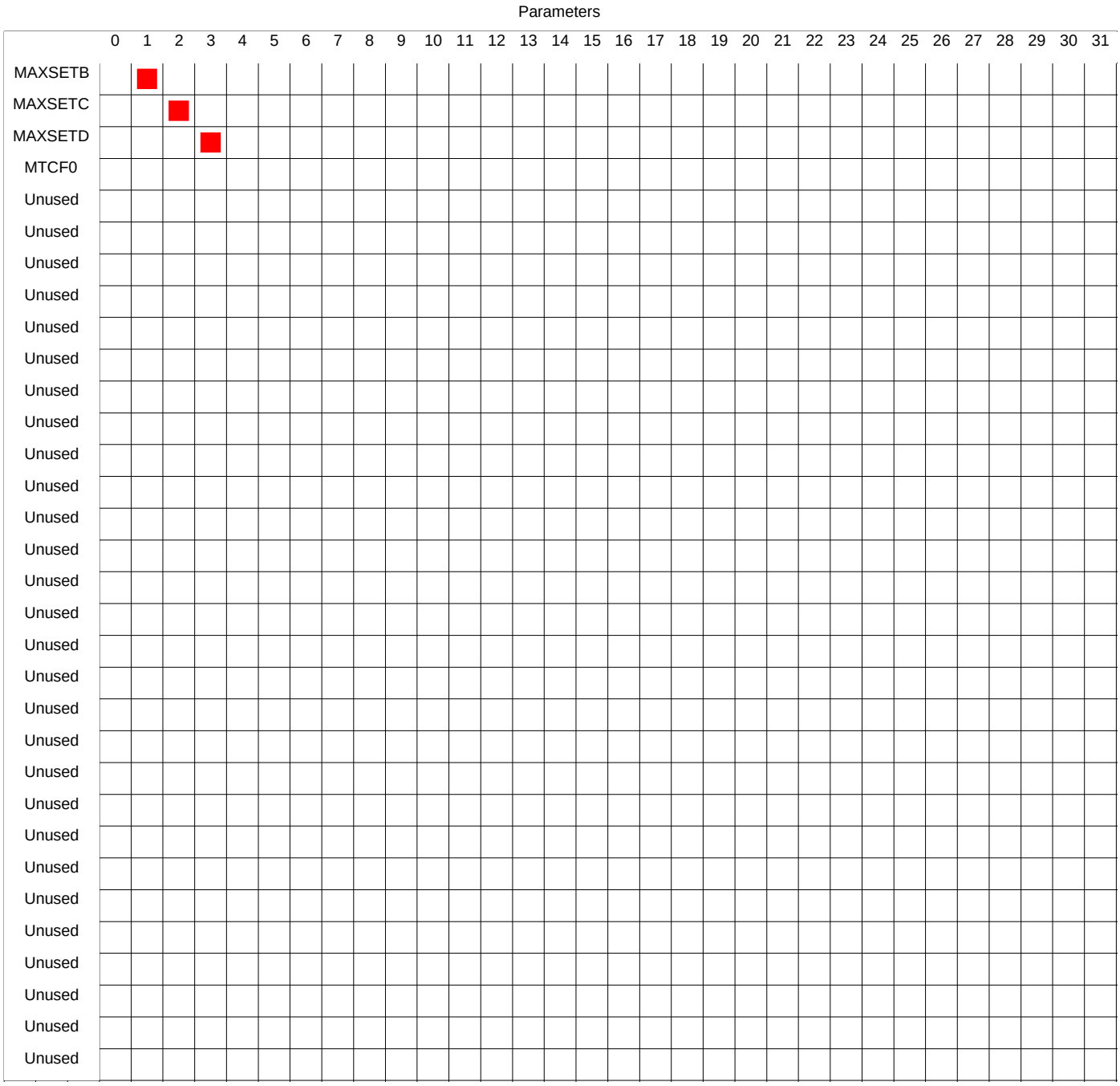
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	Conditioning	MTCF0
4	No Action	
5	No Action	
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

MTC - Time Switch Parameters Array



Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

MTC - Timetable

MTC - Timetable

View Timetable Settings

(•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	07:00:00	MAXSET B	2	1
1	9	09:30:00	MAXSET A	2	0
2	9	15:45:00	MAXSET C	2	2
3	9	18:30:00	MAXSET A	2	0
4	9	20:30:00	MAXSET D	2	3
5	0	07:30:00	MAXSET A	2	0
6	0	18:30:00	MAXSET D	2	3
7	1	09:00:00	MAXSET A	2	0
8	1	18:00:00	MAXSET D	2	3
9	7	01:00:00	CLF PLAN 4	1	4
10	7	06:00:00	CLF PLAN 1	1	1
11	9	07:00:00	CLF PLAN 2	1	2
12	9	09:30:00	CLF PLAN 1	1	1
13	9	15:45:00	CLF PLAN 3	1	3
14	9	19:30:00	CLF PLAN 1	1	1
15	7	01:00:30	MOVA Off	4	3

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

MTC - Timetable

MTC - Timetable

View Timetable Settings

○ 0 - 15 ◉ 16 - 31 ○ 32 - 47 ○ 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
16	7	01:00:30	MOVA On	3	3
17	7	02:00:00	MOVA Off	4	3
18	7	02:00:30	MOVA On	3	3
19	0			0	0
20	0			0	0
21	0			0	0
22	0			0	0
23	0			0	0
24	0			0	0
25	0			0	0
26	0			0	0
27	0			0	0
28	0			0	0
29	0			0	0
30	0			0	0
31	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

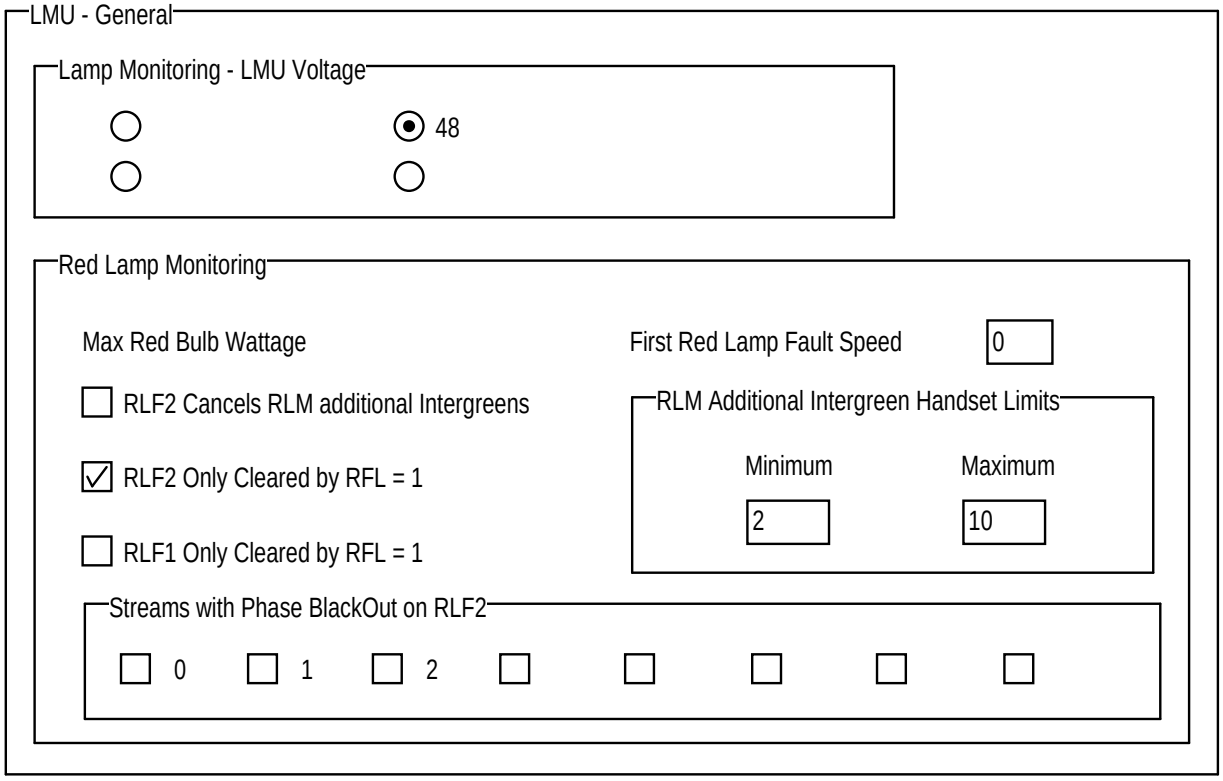
2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

LMU - General



Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
A	Red	1	As Seq.	1: Siemens Helios ELV	○	D	Amber	4	As Seq.	1: Siemens Helios ELV	○
A	Amber	1	As Seq.	1: Siemens Helios ELV	○	D	Green	4	As Seq.	1: Siemens Helios ELV	○
A	Green	1	As Seq.	1: Siemens Helios ELV	○	E	Red	5	As Seq.	1: Siemens Helios ELV	○
B	Red	2	As Seq.	1: Siemens Helios ELV	○	E	Amber	5	As Seq.	1: Siemens Helios ELV	○
B	Red	2	As Seq.	1: Siemens Helios ELV	○	E	Green	5	As Seq.	1: Siemens Helios ELV	○
B	Amber	2	As Seq.	1: Siemens Helios ELV	○	F	Red	6	As Seq.	1: Siemens Helios ELV	○
B	Amber	2	As Seq.	1: Siemens Helios ELV	○	F	Red	6	As Seq.	1: Siemens Helios ELV	○
B	Green	2	As Seq.	1: Siemens Helios ELV	○	F	Amber	6	As Seq.	1: Siemens Helios ELV	○
B	Green	2	As Seq.	1: Siemens Helios ELV	○	F	Amber	6	As Seq.	1: Siemens Helios ELV	○
C	Red	3	As Seq.	1: Siemens Helios ELV	○	F	Green	6	As Seq.	1: Siemens Helios ELV	○
C	Red	3	As Seq.	1: Siemens Helios ELV	○	F	Green	6	As Seq.	1: Siemens Helios ELV	○
C	Amber	3	As Seq.	1: Siemens Helios ELV	○	G	Red	7	R,G	3: Siemens LED Nearside Indicator	○
C	Amber	3	As Seq.	1: Siemens Helios ELV	○	G	Amber	8	Wait	2: Siemens LED Demand Indicator	○
C	Green	3	As Seq.	1: Siemens Helios ELV	○	G	Green	7	R,G	3: Siemens LED Nearside Indicator	○
C	Green	3	As Seq.	1: Siemens Helios ELV	○	G	Green	N/A	N/A	N/A	○
D	Red	4	As Seq.	1: Siemens Helios ELV	○	H	Red	9	As Seq.	1: Siemens Helios ELV	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 2 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
H	Amber	9	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
H	Green	9	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
I	Red	10	R,G	3: Siemens LED Nearside Indicator	○	N/A	N/A		N/A	N/A	○
I	Amber	11	Wait	2: Siemens LED Demand Indicator	○	N/A	N/A		N/A	N/A	○
I	Green	10	R,G	3: Siemens LED Nearside Indicator	○	N/A	N/A		N/A	N/A	○
I	Green	N/A	N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Integral LMU External Sensors for Regulatory Signs

Integral LMU External Sensors for Regulatory Signs

External Sensors (1)

Sensor	Load Type
48	4: Siemens ELV Regulatory S
47	4: Siemens ELV Regulatory S
46	4: Siemens ELV Regulatory S
45	4: Siemens ELV Regulatory S

External Sensors (4)

Sensor	Load Type

External Sensors (2)

Sensor	Load Type
44	4: Siemens ELV Regulatory S
43	4: Siemens ELV Regulatory S
42	4: Siemens ELV Regulatory S
41	4: Siemens ELV Regulatory S

External Sensors (5)

Sensor	Load Type

External Sensors (3)

Sensor	Load Type

External Sensors (6)

Sensor	Load Type

Note: Sensors which have been used as Onboard sensors will not be available here.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

RLM Additional Intergreens

Phases Delayed

Phases with RLF1

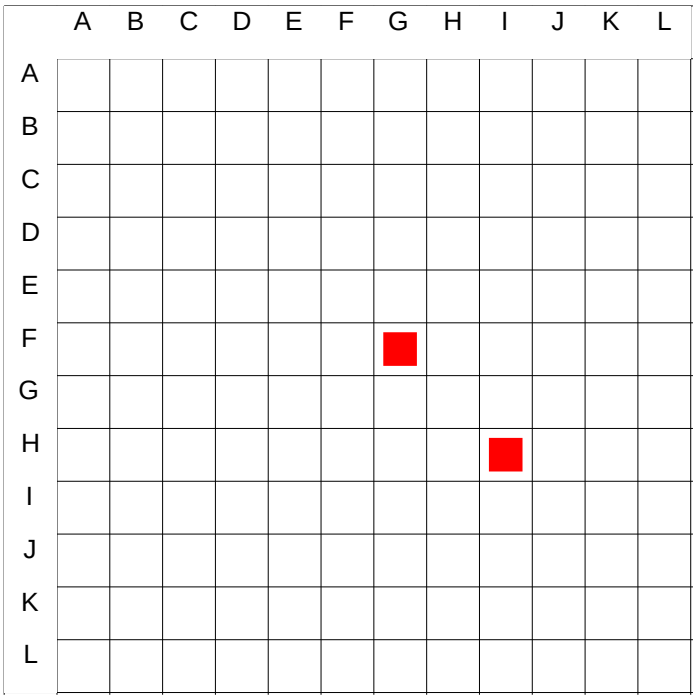
	A	B	C	D	E	F	G	H	I	J	K	L
A												
B												
C												
D												
E												
F							2					
G												
H									2			
I												
J												
K												
L												

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

RLM Phase Inhibits

Phases Inhibited/Blacked-Out

Phases with RLF2



Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Hurry Call

Hurry Call

Hurry Call	Stage Called	Call Input Name	Cancel Input Name	Confirm Output Name	Delay Time	Hold Time	Prevent Time
0	3	*SCRT0			0	1	45
1	2	*SCRT1			0	10	60
2	5	*SCRT2			0	15	45
3	7	*SCRT3			0	10	60
4					0	0	0
5					0	0	0
6					0	0	0
7					0	0	0

Hurry Call Limit Values

	Min.	Max.
Call Delay	0	255
Call Hold	0	255
Call Prevent	0	255

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red Stage 0 Strm 0 / All Red Stage 4 Strm 1 / All Red Stage 4 Strm 2	0	4	8					
1	Internals Phases A C, Internal Phase E _A45 S-Bnd Exit	1	5	9					
2	Internals Phases A C, A45 N-Bnd _A45 S-Bnd Exit	1	7	9					
3	A45 S-Bnd Internal Phase C, Internal Phase E _A45 S-Bnd Exit	2	5	9					
4	Internal Phase A _Bedford Rd, A45 N-Bnd, Ped Xing A45 S-Bnd Exit	3	7	10					
5									
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	○	◉	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Manual Mode Enable

- ○ Always
- ○ When Handset Plugged in (Note 1)
- ◉ When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; AUX LED's
; ~~~~~~~~~
MAUXSW1=MIL22                                   ;AUX 1 LED LIT WHEN AUX1 SWITCH ACTIVE ( dimming override ).
                                                ;AUX 2 LED FLASH WHEN BD1 UTC INPUT ACTIVE.
                                                ;AUX 3 "MOVA ON CONTROL (FLASHING 1 STREAM, SOLID BOTH)".
(MODE0 EQL<5>+(MODE1 EQL<5>))=MIL07             ;AUX 4 ( HURRY CALL ) LED LIT HURRY CALL ACTIVE EITHER STREAM
                                                ;AUX 5 ( HIGHER PRIORITY ) LED LIT ( SEE SPECIAL INSTRUCTIONS )

; SWITCH DEMANDS
; ~~~~~~~~~~~~~~
MAUXSW2=+LCPHG                                  ;SWITCH 2 INSERTS A DEMAND FOR PED PHASE G
MAUXSW3=+LCPHI                                  ;SWITCH 3 INSERTS A DEMAND FOR PED PHASE I

; UTC REPLY BITS
; ~~~~~~~~~~~~~~
NOT(LMPANY0+LMPANY1+LMPANY2)=LF1                ;LF1 REPLY FOR ANY LAMP FAULT ANY STREAM
NOT(LMP2RED0+LMP2RED1+LMP2RED2)=RF1             ;RF1 REPLY FOR ANY 2ND RED LAMP FAULT ANY STREAM
NOT(FLFCOM)=CF

; PREVENTS
; ~~~~~~~~
(MODE1 EQL<2>).STAGE7.NOT(LCPHG)=PRVST5         ;IN V.A MODE _STAGE 7 PREVENTS STAGE 5 UNLESS A
                                                ;DEMAND FOR PHASE G PED


; T900 SPECIAL FACILITIES
; ~~~~~~~~~~~~~~~~~~~~~~
MAXSETB+MAXSETF=ESPTX1                          ;MAXSET INFORMATION ALSO SENT ALONG SERIAL LINK
MAXSETC+MAXSETG=ESPTX2
MAXSETD+MAXSETH=ESPTX3
MAXSETE=ESPTX4
TRUE=ESPTX5                                     ;FLAG TO DETECT SERIAL LINK DISCONNECTION

; DOOR SWITCH OMU SERIAL LINK
; ~~~~~~~~~~~~~~~~~~~~~~~~~~
NOT(DOORSW)=ESPTX0                              ;DOOR OPEN SEND SIGNAL TO OMU VIA SERIAL LINK

; DOOR CLOSED DISABLES MANUAL PANEL
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
DOORSW:=MNCONT                                  ;DOOR CLOSED DISABLES MANUAL MODE CONTROL
       *=MSCONT
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; ADDITIONAL DETECTOR DEMANDS / EXTENSIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
CCTO0+CCTO1=LCPHA
AQSL7_EXT+AQSL8_EXT:=+EXOA
                    *=+EXCA
AIN1+AIN2+AIN3+AX4=+LCPHA
AX5+AX6=+LCPHA
AX5_EXT+AX6_EXT:=+EXOA
                *=+EXCA
BX13+BX14+BX15=+LCPHB
BX13_EXT+BX14_EXT+BX15_EXT:=+EXOB
                           *=+EXCB
BSL16A+BSL16B+BSL16C+BSL16D:=+LCPHB
                            *=MOVADET16
BSL16A_EXT+BSL16B_EXT+BSL16C_EXT+BSL16D_EXT:=+EXOB
                                                *=+EXCB
DSL25A+DSL25B+DSL25C:=+LCPHD
                     *=MOVADET25
DSL25A_EXT+DSL25B_EXT+DSL25C_EXT:=+EXOD
                                  *=+EXCD
FX40:=+LCPHF
    *=MOVADET40
FX40_EXT:=+EXOF
         *=+EXCF
FSL42AB+FSL42C+FSL42D:=+LCPHF
                      *=MOVADET42
FSL42AB_EXT+FSL42C_EXT+FSL42D_EXT:=+EXOF
                                   *=+EXCF
IPB=+LCPHD
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; UTC REPLY BITS
; ==============
; G1/G2 UTC REPLY
; ~~~~~~~~~~~~~~~
IFT MOVA0 THN                                   ;IF IN MOVA 'MODE' THEN NORMAL STAGE CONFIRMS
    NOT(STAGE1) = G1                            ;FOR MOVA APPLY I.E. G1/G2 IS NOT REPORTED
    NOT(STAGE2) = G2                            ;FOR LAMP SUPPLY FAILURE IN 'MOVA' MODE
ELS

    LMPON.SWLMPS.NOT(FLF17).NOT(STAGE1)=G1      ;IN UTC 'MODE' STAGE CONFIRMS FOR UTC REQUIRE
    LMPON.SWLMPS.NOT(FLF17).NOT(STAGE2)=G2      ;LAMPS OFF CONDITIONING FOR G1 _G2 BITS
END

; MOVA STREAMS OPERATIONAL CONTROL AND REPLY BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; INPUTS FROM UTMC UNIT TO CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
MOVAF8=MOVA0                                    ;MOVA OPERATIONAL ON STREAM 0
MOVAF24=MOVA1                                   ;MOVA OPERATIONAL ON STREAM 1

; MAKE MOVA NON-DEMAND DEPENDENT
; ------------------------------
MOVA0.F1  = +UCST1
MOVA0.F2  = +UCST2
MOVA0.F3  = +UCST3
MOVA1.F5  = +UCST5
MOVA1.F6  = +UCST6
MOVA1.F7  = +UCST7
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; MOVA CRB TOGGLE 180 SECONDS STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (PRSLMPRA+PRSLMPAA+PRSLMPGA) THN                ;MIN LAMPS OFF TIME STREAM 0
    RUN<95>
END
IFT NOT(MODE0 EQL<6>).NOT(CNDTMA94).SSNRM THN       ;NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<94>
END
IFT CNDTER94+((PRVMOD0 EQL<6>).NOT(MODE0 EQL<6>)) THN
    LOD<10> 1SCRTCH0
    TRUE=2SCRT1
END                                                 ;START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST0 EQL<0>)=.2SCRT1
IFT (1SCRTST0 GRT<0>) THN
    DEC 1SCRTCH0
END
(SSNRM XOR (SSMAN.NOT(MANMOP))).(MTCF0) $
.(NOT(2SCRT1)+(MODE0 EQL<6>)) $                     ;WHEN TIMER TERMINATES TOGGLE CRB
.CNDTMA95.NOT(2SCRT60).NOT(2SCRT61)=MOVACRB         ;DISABLE MOVACRB, WHEN TIMER TERMINATES TOGGLE CRB

; MOVA CRB1 TOGGLE 180 SECONDS STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (PRSLMPRE+PRSLMPAE+PRSLMPGE) THN                ;MIN LAMPS OFF TIME STREAM 1
    RUN<93>
END
IFT NOT(MODE1 EQL<6>).NOT(CNDTMA92).SSNRM THN       ;NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<92>
END
IFT CNDTER92+((PRVMOD1 EQL<6>) $
.NOT(MODE1 EQL<6>)) THN
    LOD<10> 1SCRTCH1
    TRUE=2SCRT2
END                                                 ;START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST1 EQL<0>)=.2SCRT2
IFT (1SCRTST1 GRT<0>) THN
    DEC 1SCRTCH1
END
(SSNRM XOR (SSMAN.NOT(MANMOP))).(MTCF0) $
. (NOT(2SCRT2)+(MODE1 EQL<6>)) $                    ;WHEN TIMER TERMINATES TOGGLE CRB.
.CNDTMA93.NOT(2SCRT61)=CRB1
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; MOVA RUNNING LED INDICATION
; ===========================
; IF ALL STREAMS ON THE WEST AND EAST CONTROLLERS ARE RUNNING MOVA THEN ILLUMINATE THE AUX LED 3
; BUT IF ANY STREAM ON EITHER CONTROLLER FALLS OFF MOVA FLASH THE AUX 3 LED.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT MOVA0.MOVA1 THN                                 ;IF BOTH STREAMS ARE RUNNING MOVA
    TRUE = MIL05                                    ;THEN ILLUMINATE AUX LED 3
ELS
    IFT MOVA0+MOVA1 THN                             ;IF ONE OR MORE STREAMS ARE NOT RUNNING MOVA
        INC 1SCRTCH29                               ;THEN FLASH AUX LED 3
        1SCRT232=MIL05
    ELS
        FALSE =MIL05                                ;IF NEITHER STREAM RUNNING MOVA EXTINGUISH AUX LED 3
    END
END

; UTC RUNNING LED INDICATION
; ==========================
; IF BOTH STREAMS ON THE EAST CONTROLLER ARE RUNNING UTC MODE THEN ILLUMINATE THE HIGHER PRIORITY LED
; BUT IF ANY STREAM FALLS OFF UTC THEN FLASH HIGHER PRIORITY LED.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<6>.NOT(MOVA0)) $
.(MODE1 EQL<6>.NOT(MOVA1)) THN                      ;IF BOTH STREAMS ARE RUNNING UTC
    TRUE = MIL17                                    ;THEN ILLUMINATE HIGHER PRIORITY LED
ELS
    IFT (MODE0 EQL<6>.NOT(MOVA0)) $                 ;IF ONE OR MORE STREAMS ARE NOT RUNNING UTC
        +(MODE1 EQL<6>.NOT(MOVA1)) THN
       INC 1SCRTCH29                                ;THEN FLASH THE HIGHER PRIORITY LED
        1SCRT232=MIL17
    ELS
        FALSE =MIL17                                ;IF NEITHER STREAM RUNNING UTC EXTINGUISH HIGHER PRIORITY LED
    END
END
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; MOVA CALL CANCEL UNITS
; ======================
; QUEUE ON CIRCULATORY (PHASE A)
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; AQ26 CALL CANCEL OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~~
IFT CCTO2.NOT(SCRT0).NOT(PHASEA) THN                ;IF AQ26 C/CANCEL ACTIVE THEN
    RUN<1>                                          ;RUN 'MOVADET PULSE' TIMER
    RUN<2>                                          ;RUN 'OUTPUT' TIMER
END
CCTO2+CNDTMA1=+MOVADET28                            ;WHEN 'MOVADET PULSE' TIMER ACTIVE OUTPUT TO MOVADET28
CCTO2+CNDTMA2=AQEAST                                ;WHEN 'OUTPUT' TIMER ACTIVE OUTPUT TO AQEAST
CCTO2=SCRT0                                         ;STATE OF INPUT 200MS PREVIOUSLY

; QUEUE ON A45 S/B OFFSLIP
; ~~~~~~~~~~~~~~~~~~~~~~~
; BQ27A OR BQ27B CALL CANCEL OUTPUTS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (CCTO3+CCTO4).NOT(SCRT1) THN                    ;IF BQ27A OR BQ27B C/CANCEL ACTIVE THEN
    RUN<3>                                          ;RUN 'MOVADET PULSE' TIMER
END
CNDTMA3=+MOVADET29                                  ;WHEN 'MOVADET PULSE' TIMER ACTIVE OUTPUT TO MOVADET29
BQ27A+BQ27B=+MOVADET27                              ;B QUEUE LOOPS ACTIVATE MOVADET27
CCTO3+CCTO4=SCRT1                                   ;STATE OF INPUT 200MS PREVIOUSLY

; QUEUE ON CIRCULATORY (PHASE E)
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; EQ43 CALL CANCEL OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~~
IFT CCTO5.NOT(SCRT2) THN                            ;IF EQ43 C/CANCEL ACTIVE THEN
    RUN<7>                                          ;RUN 'MOVADET PULSE' TIMER
END
CNDTMA7=+MOVADET45                                  ;WHEN 'MOVADET PULSE' TIMER ACTIVE OUTPUT TO MOVADET45
CCTO5=SCRT2                                         ;STATE OF INPUT 200MS PREVIOUSLY

; QUEUE ON A45 N/B OFFSLIP
; ~~~~~~~~~~~~~~~~~~~~~~~
; FQ44A OR FQ44B CALL CANCEL OUTPUTS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (CCTO6+CCTO7).NOT(SCRT3) THN                    ;IF FQ44A OR FQ44B C/CANCEL ACTIVE THEN
    RUN<8>                                          ;RUN 'MOVADET PULSE' TIMER
END
CNDTMA8=+MOVADET46                                  ;WHEN 'MOVADET PULSE' TIMER ACTIVE OUTPUT TO MOVADET46
CCTO6+CCTO7=SCRT3                                   ;STATE OF INPUT 200MS PREVIOUSLY
FQ44A+FQ44B=+MOVADET44                              ;F QUEUE LOOPS ACTIVATE MOVADET44

; AQSL7 _AQSL8 USED AS 'IN' LOOPS AS WELL AS QUEUE
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; AQ 'IN' LOOPS
; ~~~~~~~~~~~~~
AQSL7.(PHASEA+FROMA)=+MOVADET7                      ;AQSL7 ONLY ACTIVE IN MOVA WHEN PHASE A ACTIVE OR LEAVING
AQSL8.(PHASEA+FROMA)=+MOVADET8                      ;AQSL8 ONLY ACTIVE IN MOVA WHEN PHASE A ACTIVE OR LEAVING

; AQSL7 _AQSL8 CALL CANCEL OUTPUTS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (CCTO0+CCTO1).PHASEA THN                        ;IF AQSL7 OR AQSL8 C/CANCEL ACTIVE THEN
    TRUE=+MOVADET56                                 ;RUN MOVADET56
END
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; STREAM 0 LINKING - INPUT FROM WEST CONTROLLER WHEN PHASE D ACTIVE ON WEST CONTROLLER (WESTD)
; ============================================================================================
; KEY TO FLAGS, TIMERS AND CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; FLAGS                                                TIMERS
; ~~~~~                                                ~~~~~~
; 2SCRT32 = 'INPUT ACTIVE' FLAG                        CND TIMER 9  = PULSE DELAY TIMER
; 2SCRT33 = 'HOLD DELAY TIMER' TERMINATED FLAG         CND TIMER 10 = PULSE TIMER
; 2SCRT34 = 'DOWNSTREAM PHASE EXTENSION ENABLED'FLAG   CND TIMER 11 = HOLD DELAY TIMER
; 2SCRT35 = 'HOLD OUPUT ENABLE' FLAG                   CND TIMER 12 = HOLD EXTEND TIMER
; 2SCRT36 = 'OVERRIDE TIMER EXPIRED' FLAG              CND TIMER 13 = OVERRIDE TIMER
;
; CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~
; CFE0 = PULSE ENABLE SWITCH
; CFE1 = PHASE EXTENSION HOLD ENABLE SWITCH
; CFE2 = PHASE EXTENSION HOLD EXTEND SWITCH
; CFE3 = HOLD ENABLE SWITCH
; ============================================================================
; WESTD PULSE (MOVADET48)
; ~~~~~~~~~~~~~~~~~~~~~~
IFT WESTD.NOT(2SCRT32) THN                           ;WHEN INPUT ACTIVE RUN PULSE DELAY TIMER.
    RUN<9>
END
IFT CNDTER9 THN                                      ;WHEN PULSE DELAY TIMER EXPIRES RUN PULSE TIMER.
    RUN<10>
END
WESTD.CNDTMA10.CFE0=+MOVADET48                       ;WHEN PULSE TIMER AND INPUT ACTIVE SET MOVA OUTPUT
                                                     ;(ENABLED BY COND SWITCH).

; WESTD HOLD (MOVADET49)
; ~~~~~~~~~~~~~~~~~~~~~
IFT WESTD.NOT(2SCRT32) THN                           ;WHEN INPUT ACTIVE RUN HOLD DELAY TIMER.
    RUN<11>
END
IFT CNDTER11 THN                                     ;SET FLAG WHEN "HOLD DELAY TIMER" TERMINATES
    TRUE=2SCRT33
END

CNDTMA13.((WESTD.2SCRT33.(CFE1+EXTAA)) $             ;IF CFE1=0 THE HOLD IS SET WHEN DLY TMR TERMINATES.
+(CNDTMA12.(CFE2+EXTAA)))=2SCRT35                    ;IF CFE1=1 THE HOLD IS DEPENDANT ON PHASE A EXTENSIONS.
                                                     ;IN ALL CASES THE HOLD IS NOT SET IF O/R TMR HAS EXPIRED.

IFT (NOT(WESTD).2SCRT32.NOT(CNDTMA12)) THN           ;WHEN INPUT TERMINATES THEN RUN EXTEND HOLD TIMER.
    RUN<12>
END
CNDTER13=+2SCRT36                                    ;"OVERRIDE TIMER" EXPIRED FLAG.
2SCRT35=+MOVADET49                                   ;"HOLD OUTPUT" FLAG ACTIVE ENABLES MOVA OUTPUT
                                                     ;(ENABLED BY COND SWITCH CFE3=1).
IFT CNDTER11 THN                                     ;WHEN HOLD DELAY TIMER EXPIRES RUN OVERRIDE TIMER.
    RUN<13>
END
IFT NOT(WESTD) THN                                   ;"HOLD DELAY TIMER TERMINATED" FLAG RESET WHEN INPUT CLEARS
    FALSE=2SCRT33
END
WESTD=2SCRT32                                        ;"WESTD" FLAG SET 200ms AFTER INPUT ACTIVE
NOT(CNDTMA13)=.2SCRT36                               ;"OVERRIDE TIMER" EXPIRED FLAG RESET WHEN O/RIDE TIMER STARTS
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; STREAM 1 LINKING
; ================
; LINK FROM STREAM 0 (PHASE B) TO STREAM 1 (PHASE E)
; ================================================
; KEY TO FLAGS, TIMERS AND CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;
; FLAGS                                                TIMERS
; ~~~~~                                                ~~~~~~
; 2SCRT37 =  'HOLD TIMER TERMINATED' FLAG              CND TIMER 14 = PULSE DELAY TIMER
; 2SCRT38 =  'PHASE B EXT ENABLE' FLAG                 CND TIMER 15 = PULSE TIMER
; 2SCRT39 =  'PHASE E EXT ENABLE' FLAG                 CND TIMER 16 = HOLD DELAY TIMER
; 2SCRT40 =  'PHASE C EXT ENABLE' FLAG                 CND TIMER 17 = HOLD EXTEND TIMER
; 2SCRT41 =  'HOLD OUPUT ENABLE' FLAG                  CND TIMER 18 = OVERRIDE TIMER
; 2SCRT42 =  'OVERRIDE TIMER EXPIRED' FLAG             CND TIMER 19 = HOLD EXTEND TIMER
; 2SCRT43 =  '2ND HOLD OUPUT ENABLE' FLAG
;
; CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~
; CFE4 = PULSE ENABLE SWITCH
; CFE5 = PHASE B EXT ENABLE SWITCH
; CFE6 = PHASE E EXT ENABLE SWITCH
; CFE7 = PHASE C EXT ENABLE SWITCH
; CFE8 = HOLD EXTENSION ENABLE SWITCH
; CFE9  = PHASE E HOLD EXTENSION ENABLE SWITCH
; CFE10 = PHASE C HOLD EXTENSION ENABLE SWITCH
; ================================================================================
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~
;
; MOVADET50 PULSE OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~~
IFT BTOROW.NOT(CNDTMA14) THN                    ;RUN 'PULSE DELAY' TIMER WHEN PHASE GAINS ROW.
    RUN<14>
END
IFT CNDTER14 THN                                ;WHEN DELAY TIMER HAS EXPIRED RUN 'PULSE OUTPUT' TIMER
    RUN<15>
END
CNDTMA15.CFE4=MOVADET50                         ;WHEN 'PULSE OUTPUT TIMER ACTIVE OUTPUT TO MOVADET
                                                ;(ENABLED BY COND SWITCH CFE4=1)).

; MOVADET51 HOLD OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~
IFT BTOROW.NOT(CNDTMA16) THN                    ;RUN 'HOLD DELAY' TIMER WHEN PHASE GAINS ROW.
   RUN<16>
END
IFT CNDTER16 THN                                ;SET FLAG WHEN 'HOLD DELAY TIMER TERMINATES'.
    TRUE=2SCRT37
END
CNDTMA18.((PHASEB.2SCRT37.(CFE5+EXTAB) $
.(CFE6+EXTAE).(CFE7+EXTAC)) $                   ;SET THE 'HOLD OUTPUT'FLAG WHEN THE 'HOLD DELAY
+(CNDTMA17.(CFE8+EXTAE)))=2SCRT41               ;TIMERS EXPIRE AND THE ABOVE CONDITIONS ARE MET
CNDTMA19.(CFE9+EXTAE).(CFE10+EXTAC)=2SCRT43
IFT TERMB.NOT(CNDTMA17).NOT(CNDTMA19) THN       ;RUN 'HOLD EXTEND' TIMER TO HOLD OUTPUT WHEN PHASE
    RUN<17>                                     ;TERMINATES
    RUN<19>
END
2SCRT41=MOVADET51                               ;'HOLD OUTPUT' FLAG SETS MOVADET
2SCRT43=MOVADET52                               ;'HOLD OUTPUT' FLAG SETS MOVADET
IFT CNDTER16 THN                                ;WHEN 'HOLD DELAY TIMER' TERMINATES RUN THE
    RUN<18>                                     ;'OVERRIDE TIMER'
END
IFT TERMB THN                                   ;HOLD DELAY TIMER TERMINATED
    FALSE=2SCRT37                               ;FLAG RESET WHEN PHASE TERMINATES
END
NOT(CNDTMA18)=.2SCRT42                          ;'OVERRIDE TIMER EXPIRED' FLAG RESET WHEN TIMER STARTS.
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; LINK FROM STREAM 0 (PHASE D) TO STREAM 1 (PHASE E)
; ================================================
; KEY TO FLAGS, TIMERS AND CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; FLAGS                                          TIMERS
; ~~~~~                                          ~~~~~~
; 2SCRT44 =  'HOLD TIMER TERMINATED' FLAG        CND TIMER 20 = PULSE DELAY TIMER
; 2SCRT45 =  'PHASE B EXT ENABLE' FLAG           CND TIMER 21 = PULSE TIMER
; 2SCRT46 =  'PHASE E EXT ENABLE' FLAG           CND TIMER 22 = HOLD DELAY TIMER
; 2SCRT47 =  'PHASE C EXT ENABLE' FLAG           CND TIMER 23 = HOLD EXTEND TIMER
; 2SCRT48 =  'HOLD OUPUT ENABLE' FLAG            CND TIMER 24 = OVERRIDE TIMER
; 2SCRT49 =  'OVERRIDE TIMER EXPIRED' FLAG
;
; CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~
; CFE11 = PULSE ENABLE SWITCH
; CFE12 = PHASE D EXT ENABLE SWITCH
; CFE13 = PHASE E EXT ENABLE SWITCH
; CFE14 = PHASE E EXT HOLD ENABLE SWITCH
; ================================================================================
; MOVADET53 PULSE OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~
IFT DTOROW.NOT(CNDTMA20) THN                    ;RUN 'PULSE DELAY' TIMER WHEN PHASE GAINS ROW.
    RUN<20>
END
IFT CNDTER20 THN                                ;WHEN DELAY TIMER HAS EXPIRED RUN 'PULSE OUTPUT' TIMER
    RUN<21>
END
CNDTMA21.CFE11=MOVADET53                        ;WHEN 'PULSE OUTPUT TIMER ACTIVE OUTPUT TO MOVADET
                                                ;(ENABLED BY COND SWITCH CFE11=1)).

; MOVADET54 HOLD OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~
IFT DTOROW.NOT(CNDTMA22) THN                    ;RUN 'HOLD DELAY' TIMER WHEN PHASE GAINS ROW.
   RUN<22>
END
IFT CNDTER22 THN                                ;SET FLAG WHEN 'HOLD DELAY TIMER TERMINATES'.
    TRUE=2SCRT44
END
CNDTMA24.((PHASED.2SCRT44.(CFE12+EXTAD) $
.(CFE13+EXTAE)) $                               ;SET THE 'HOLD OUTPUT'FLAG WHEN THE 'HOLD DELAY
+(CNDTMA23.(CFE14+EXTAE)))=2SCRT48              ;TIMERS EXPIRE AND THE ABOVE CONDITIONS ARE MET
IFT TERMD.NOT(CNDTMA23) THN                     ;RUN 'HOLD EXTEND' TIMER TO HOLD OUTPUT WHEN PHASE
    RUN<23>                                     ;TERMINATES
END
CNDTER24=+2SCRT49                               ;'OVERRIDE TIMER EXPIRED' FLAG
2SCRT48=MOVADET54                               ;'HOLD OUTPUT' FLAG SETS MOVADET
IFT CNDTER22 THN                                ;WHEN 'HOLD DELAY TIMER' TERMINATES RUN THE
    RUN<24>                                     ;'OVERRIDE TIMER'
END
IFT TERMD THN                                   ;HOLD DELAY TIMER TERMINATED
    FALSE=2SCRT44                               ;FLAG RESET WHEN PHASE TERMINATES
END
NOT(CNDTMA24)=.2SCRT49                          ;'OVERRIDE TIMER EXPIRED' FLAG RESET WHEN TIMER STARTS.
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; MOVA OFFLINE TIMER (STREAM 1)
; ================================================================================================
; FLAGS                                                TIMERS
; ~~~~~                                                ~~~~~~
; 2SCRT54   = 'MOVA ACTIVE' FLAG                     CND TIMER36 = 'MOVA OFFLINE MINUTES' TIMER
; 2SCRT55   = 'SCRATCH BYTE LOADED' FLAG
; 2SCRT56   = 'MINUTES TIMER ACTIVE' FLAG             CONDITIONING SWITCH
; 2SCRT57   = 'SCRATCH BYTE DECREMENT ENABLE' FLAG    ~~~~~~~~~~~~~~~~~~
; 2SCRT58   = 'PRESET TIME ELAPSED' FLAG              CFE17='CRB DISABLE' FLAG
; 2SCRT59   = 'MOVA OFFLINE' FLAG
; 2SCRT60   = 'MOVACRB DISABLE' FLAG
; 2SCRT61   = 'MOVA OFFLINE ON WEST CONTROLLER' FLAG
; 1SCRTCH10  = 'SECONDS SCRATCH BYTE'
; ================================================================================================
IFT NOT(MOVA1).CRB1.2SCRT54.NOT(2SCRT55) THN        ;IF MOVA OFFLINE AND 'MOVA ACTIVE' FLAG SET THEN LOAD 60 INTO
    LOD<60>1SCRTCH10                                ;SCRATCH BYTE 0 AND SET 'SCRATCH BYTE RE-LOAD' FLAG
    TRUE=2SCRT55                                    ;TO PREVENT AN UNWANTED RE-LOAD.
END
NOT(CNDTER36)=.2SCRT56                              ;RESET 'MINUTES TIMER ACTIVE' FLAG WHEN 'MINUTES'
                                                    ;TIMER TERMINATED.
IFT 2SCRT55.NOT(2SCRT56).NOT(1SCRTST10 EQL<0>) THN  ;IF 'SCRATCH BYTE LOADED' FLAG IS SET AND SCRATCH BYTE
    RUN<36>                                          ;IS NOT EQUAL TO 0 AND THE 'MINUTES TIMER ACTIVE' FLAG
    TRUE=2SCRT56                                    ;IS RESET RE-RUN THE 'MINUTES' TIMER AND SET THE
                                                    ;'MINUTES TIMER ACTIVE' FLAG TO PREVENT AN UNWANTED RE-START
    IFT 2SCRT57 THN                                 ;IF 'SCRATCH BYTE DECREMENT ENABLE' FLAG THEN DECREMENT
        DEC 1SCRTCH10                               ;SCRATCH BYTE.
    END                                             ;SET THE 'SCRATCH BYTE DECREMENT ENABLE' TO PREVENT
    TRUE=2SCRT57                                    ;DECREMENT OF SCRATCH BYTE ON FIRST PASS.  THIS ENSURES
END                                                 ;SECONDS TO MINUTES RATIO REMAINS CORRECT.
2SCRT57.1SCRTST10 EQL<0> =2SCRT58                   ;'PRESET TIME ELAPSED' FLAG  SET WHEN SCRATCH BYTE EQUALS ZERO.
IFT 1SCRTST10 EQL<0> THN                            ;WHEN SCRATCH BYTE DECREMENTS TO 0 THEN THE
    FALSE=2SCRT55                                   ;'SCRATCH BYTE LOADED' FLAG IS RESET
END

MOVA1=2SCRT54                                       ;MOVA JUST GONE ACTIVE.

IFT NOT(MOVA1).2SCRT58 THN                          ;IF MOVA IS OFFLINE AND THE TIMER HAS EXPIRED THEN
    TRUE=2SCRT59                                    ;SET 'MOVA OFFLINE' FLAG.
ELS
    IFT MOVA1 THN                                   ;OTHERWISE IF MOVA OPERATIONAL THEN CLEAR THE
    FALSE:::=2SCRT59                                ;'MOVA OFFLINE' FLAGAND THE 'PRESET TIME ELAPSED' FLAG
           *=2SCRT56                                ;AND THE 'MINUTES TIMER ACTIVE' AND THE
           *=2SCRT57                                ;'SCRATCHBYTE DECREMENT ENABLE' FLAGS
           *=2SCRT58
 END
END

2SCRT59.CFE17:=2SCRT60                              ;'MOVACRB DISABLE' FLAG AND SET THE 'MOVA DISABLED EAST'
              *=MOVASTOP                            ;OUTPUT TO THE WEST CONTROLLER (ENABLED BY CFE17=1)
; MOVA DISABLE IF MOVA OFFLINE ON WEST CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
MOVADISW.CFE18=2SCRT61                              ;IF MOVA IS OFFLINE ON THE WEST CONTROLLER DISABLE
                                                    ;THE CRB INPUTS TO BOTH STREAMS (ENABLED BY CFE18=1)
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; DELAYED REVERT
; ~~~~~~~~~~~~~~
; PHASE B REVERT
; ~~~~~~~~~~~~~~
IFT EXTAB THN                                          ;IF PHASE EXTENSIONS HAVE JUST EXPIRED THEN RUN
    RUN<30>                                           ;A 'PULSE DELAY' TIMER.
END

IFT CNDTER30.PHASEB THN                                ;WHEN THAT TIMER EXPIRES RUN A 'MOVADET PULSE' TIMER
    RUN<31>
END
CNDTMA31=+MOVADET57                                    ;MOVADET ACTIVE WHEN PULSE TIMER RUNNING

; PHASE D REVERT
; ~~~~~~~~~~~~~~
IFT EXTAD THN                                          ;IF PHASE EXTENSIONS HAVE JUST EXPIRED THEN RUN
    RUN<32>                                           ;A 'PULSE DELAY' TIMER.
END
IFT CNDTER32.PHASED THN                                ;WHEN THAT TIMER EXPIRES RUN A 'MOVADET PULSE' TIMER
    RUN<33>
END
CNDTMA33=+MOVADET58                                    ;MOVADET ACTIVE WHEN PULSE TIMER RUNNING

; PHASE F REVERT
; ~~~~~~~~~~~~~~
IFT EXTAF THN                                          ;IF PHASE EXTENSIONS HAVE JUST EXPIRED THEN RUN
    RUN<34>                                           ;A 'PULSE DELAY' TIMER.
END
IFT CNDTER34.PHASEF THN                                ;WHEN THAT TIMER EXPIRES RUN A 'MOVADET PULSE' TIMER
    RUN<35>
END
CNDTMA35=+MOVADET59                                    ;MOVADET ACTIVE WHEN PULSE TIMER RUNNING
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; PEDESTRIAN LINK 0
; WHEN PHASE C TERMINATES, A 6 SECOND DELAY TIMER(PIR25) IS STARTED.
; WHEN THIS TIMER TERMINATES THE LIFT 'STAGE PREVENT' TIMER IS RUN FOR
; 2 SECONDS(PIR26), ALSO WHEN PHASE B STARTS THEN AN OVERRIDE TIMER
; IS RUN FOR 30 SECONDS(PIR27) WHICH WHEN TERMINATED LIFTS
; THE STAGE PREVENT.
IFT TERMC THN                           ; PHASE PHASE1 TERMINATING
    RUN<25>                             ; RUN DELAY TIMER
ELS
    IFT CNDTER25 THN                    ; DELAY TIMER JUST FINISHED?
        RUN<26>                         ; START INHIBIT RELEASE TIMER
    ELS
        IFT (PHASEB.NOT(2SCRT51)) THN   ; PHASE B STARTING
            RUN<27>                     ; START OVERRIDE TIMER
            TRUE=2SCRT51                ; SET OVERRIDE TIMER ACTIVE FLAG
        ELS
            IFT PHASEB.2SCRT51.CNDTER27 THN
                                        ; IS OVERRIDE TIMER TERMINATING?
                RUN<27>                 ; RUN OVERRIDE TIMER AGAIN
                RUN<26>                 ; RUN INHIBIT RELEASE TIMER
            END
        END
    END
END
NOT(CNDTMA26)=PRVST10                   ; PREVENT STAGE 10 UNLESS INHIBIT RELEASE TIMER
                                        ; IS RUNNING
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; BUS PRIORITY INPUTS INTO MOVA
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; BUS PRIORITY INPUT
; ~~~~~~~~~~~~~~~~~~
IFT BD1.NOT(SCRT0) THN                          ;IF BUS PRIORITY HOLD INPUT ACTIVE THEN
   RUN<7>                                       ;RUN 'MOVA PULSE' TIMER
END
BD1=SCRT0

CNDTMA7:=+MOVADET16                             ;IF 'MOVA PULSE' TIMER ACTIVE THEN OUTPUT
       *=MIL23                                  ;TO MOVADET16 AND ILLUMINATE AUX LED 2
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; Q43 EXIT BLOCKING
; ~~~~~~~~~~~~~~~~
IFT Q43AECIP THN
    TRUE=2SCRT62
END
IFT 2SCRT62.PHASEA.NOT(CNDTMA28) THN
    RUN<28>
END
CNDTMA28=+MOVADET55
IFT CNDTER28.2SCRT62 THN
    FALSE=2SCRT62
END
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; TACTILE OUTPUTS
; ~~~~~~~~~~~~~~~
; TACTILE OUTPUT STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~
LMPON.PHASEG.NOT(LMP2RED1)=TACTG                    ;TACTILE OUTPUT UNLESS 2 RED LAMPS FAULT

; TACTILE OUTPUT STREAM 2
; ~~~~~~~~~~~~~~~~~~~~~~~
LMPON.PHASEI.NOT(LMP2RED2)=TACTI                    ;TACTILE OUTPUT UNLESS 2 RED LAMPS FAULT

; PEDESTRIAN CONFIRM TO MOVA
; ~~~~~~~~~~~~~~~~~~~~~~~~~~
PRSLMPAG.NOT(LMUINHG)=+MOVADET47                    ;DEMAND FOR PHASE G SETS MOVADET47 UNLESS INHIBITED BY RLM

; PEDESTRIAN CONFIRM TO MOVA
; ~~~~~~~~~~~~~~~~~~~~~~~~~~
PRSLMPAI.NOT(LMUINHI)=+MOVADET30                    ;DEMAND FOR PHASE I SETS MOVADET30 UNLESS INHIBITED BY RLM
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; MASTER TIME SYNC PULSE WHICH IS SENT TO SLAVE CONTROLLER E04160-2
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
(RTCTOD EQL<03>).(RTCMIN EQL<59>).(RTCSEC EQL<58>)=1SCRT246
(RTCTOD EQL<04>).(RTCMIN EQL<00>).(RTCSEC EQL<00>)=1SCRT247
(1SCRT246+1SCRT247)=TIMESYNC
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; LINKING OUTPUT TO WEST CONTROLLER (EASTF)
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
PHASEF.(MINF+EXTAF+CFE16)=EASTF
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning

```
; ST900ELV LAMP SUPPLY FOR GEMINI II
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LMPON.SWLMPS.NOT(FLF17)=LAMPSUP                ;LAMP SUPPLY FAIL SENDS LAMPSUP OUTPUT TO INSTATION
```

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning Timers

Special Conditioning Timers

Timers

0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0		0	255	☐		16	4	0	255	☐	MOVADET51 HOLD DLY TMR
1	8	0	255	☐	MOVADET28 PULSE TIMER	17	3	0	255	☐	MOVADET51 HOLD EXT TMR
2	8	0	255	☐	AQEAST PULSE TIMER	18	60	0	255	☐	MOVADET51 HOLD O/R TMR
3	8	0	255	☐	MOVADET29 PULSE TIMER	19	14	0	255	☐	MOVADET52 HOLD EXT TMR
4	3	0	255	☐	MOVADET31 PULSE TIMER	20	255	0	255	☐	MOVADET53 PULSE DLY TMR
5	1	0	255	☐	MOVADET32 PULSE TIMER	21	8	0	255	☐	MOVADET53 PULSE TMR
6	60	0	255	☐	AUX LED 2 TIMER	22	255	0	255	☐	MOVADET54 HOLD DLY TMR
7	8	0	255	☐	MOVADET44 PULSE TIMER	23	255	0	255	☐	MOVADET54 HOLD EXT TMR
8	8	0	255	☐	MOVADET46 PULSE TIMER	24	60	0	255	☐	MOVADET54 HOLD O/R TMR
9	255	0	255	☐	MOVADET48 PULSE DLY TMR	25	6	0	31.8	☑	STAGE PREVENT DELAY TIMER
10	8	0	255	☐	MOVADET48 PULSE TMR	26	2	0	255	☐	STAGE P'VENT LIFT TMR
11	255	0	255	☐	MOVADET49 HOLD DLY TMR	27	30	0	255	☐	PHASE B ST P'VENT O/R TMR
12	10	0	255	☐	MOVADET49 HOLD EXT TMR	28	8	0	255	☐	MOVADET55 PULSE TIMER
13	60	0	255	☐	MOVADET49 HOLD O/R TMR	29		0	255	☐	
14	15	0	255	☐	MOVADET50 PULSE DLY TMR	30	10	0	255	☐	MOVADET57 PULSE DLY TMR
15	8	0	255	☐	MOVADET50 PULSE TMR	31	2	0	255	☐	MOVADET57 PULSE TMR

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning Timers

Special Conditioning Timers

Timers

32-63

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
32	10	0	255	☐	MOVADET58 PULSE DLY TMR	48		0	255	☐	
33	2	0	255	☐	MOVADET58 PULSE TMR	49		0	255	☐	
34	10	0	255	☐	MOVADET59 PULSE DLY TMR	50		0	255	☐	
35	2	0	255	☐	MOVADET59 PULSE TMR	51		0	255	☐	
36	5	0	255	☐	MOVA OFFLINE TIMER	52		0	255	☐	
37		0	255	☐		53		0	255	☐	
38		0	255	☐		54		0	255	☐	
39		0	255	☐		55		0	255	☐	
40		0	255	☐		56		0	255	☐	
41		0	255	☐		57		0	255	☐	
42		0	255	☐		58		0	255	☐	
43		0	255	☐		59		0	255	☐	
44		0	255	☐		60		0	255	☐	
45		0	255	☐		61		0	255	☐	
46		0	255	☐		62		0	255	☐	
47		0	255	☐		63		0	255	☐	

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Conditioning Timers

Special Conditioning Timers

Timers

64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
64		0	255	☐		80		0	255	☐	
65		0	255	☐		81		0	255	☐	
66		0	255	☐		82		0	255	☐	
67		0	255	☐		83		0	255	☐	
68		0	255	☐		84		0	255	☐	
69		0	255	☐		85		0	255	☐	
70		0	255	☐		86		0	255	☐	
71		0	255	☐		87		0	255	☐	
72		0	255	☐		88		0	255	☐	
73		0	255	☐		89		0	255	☐	
74		0	255	☐		90		0	255	☐	
75		0	255	☐		91		0	255	☐	
76		0	255	☐		92	180	0	255	☐	MOVA CRB TOGGLE STREAM 1
77		0	255	☐		93	1	1	5	☐	MIN LAMPS OFF STREAM 1
78		0	255	☐		94	180	0	255	☐	MOVA CRB TOGGLE STREAM 0
79		0	255	☐		95	1	1	5	☐	MIN LAMPS OFF STREAM 0

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Instructions

37280

Card Type	Rack Posn	Addr.	Port	Type	Line	Term Posn
Serial IO 24/16	1 I/O1	01	0	I	000 - 007	1 I/O1
Serial IO 24/16	1 I/O1	01	1	I	008 - 015	1 I/O1
Serial IO 24/16	1 I/O1	01	2	I	016 - 023	1 I/O1
Serial IO 24/16	1 I/O1	01	3	O	024 - 031	1 I/O1
Serial IO 24/16	1 I/O1	01	4	O	032 - 039	1 I/O1
Serial IO 24/4	1 I/O2	02	5	I	040 - 047	1 I/O2
Serial IO 24/4	1 I/O2	02	6	I	048 - 055	1 I/O2
Serial IO 24/4	1 I/O2	02	7	I	056 - 063	1 I/O2
Serial IO 24/4	1 I/O2	02	8	O	064 - 067	1 I/O2
Serial IO 24/4	2 I/O1	03	9	I	072 - 079	2 I/O1
Serial IO 24/4	2 I/O1	03	10	I	080 - 087	2 I/O1
Serial IO 24/4	2 I/O1	03	11	I	088 - 095	2 I/O1
Serial IO 24/4	2 I/O1	03	12	O	096 - 099	2 I/O1
CPU	A					

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/32900/020	ST900 ELV Cabinet UK 20A 1 LSLS - Grey	1		
3	667/1/32900/040	ST900 ELV Cabinet UK 40A 1 LSLS - Grey			
4	667/1/32900/021	ST900 ELV Cabinet UK 20A 1 LSLS - Black			
5	667/1/32900/041	ST900 ELV Cabinet UK 40A 1 LSLS - Black			
6					
7					
8					
9	667/1/32943/001	ELV Lamp switch (LSLS) kit	1		
10	667/1/32960/001	ELV Lamp switch (LSLS) backplane kit	1		
11	667/1/32995/002	ST900 I/O card kit (4 outputs)	2		
12	667/1/32995/001	ST900 I/O card kit (16 outputs)	1		
13					
14					
15					
16	667/1/27004/000	Integral TC12 OTU kit			
17	667/1/27005/000	SDE Facility kit			
18	667/1/32910/000	ST900 Intelligent detector backplane kit			
19	667/1/33002/000	ELV detector 6U rack expansion kit			
20	667/1/33074/000	ST900 ELV 24 V detector supply Kit (6A)			
21	667/1/20690/001	19" Detector Rack			
22					
23	667/1/32985/000	ELV 20A to 40A upgrade kit			
24					
25					
26	667/1/33070/000	ELV Regulatory Sign expansion kit			
27	667/1/32950/000	ELV Audible supply kit			
28	667/1/33009/000	ST900 300mA RCD kit			
29					
30	667/1/32900/001	Expansion cabinet kit - Black			
31	667/1/32900/000	Expansion cabinet kit - Grey			
32	667/1/33072/000	Cabinet mounted cut-out connection kit			
33					
34					
35					
36	667/1/27056/001	Manual Panel Full kit			
37	667/1/27110/000	Manual Panel RS232 kit			
38					
39					
40	667/1/16260/000	Configuration Eprom (Issue 1. 0)	1		

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/32900/920	ST900 ELV cuckoo Kit - T200			
43	667/1/32900/921	ST900 ELV cuckoo Kit - T400			
44	667/1/32900/922	ST900 ELV cuckoo Kit - T800			
45	667/1/32900/923	ST900 ELV cuckoo Kit - Microsense			
46	667/1/32900/925	ST900 ELV cuckoo Kit - Peek			
47					
48					
49					
50					
51					
52	667/1/33073/000	ST900 Isolator locking kit			
53	667/2/20234/000	Screw Lock Key			
54					
55					
56	667/1/27104/000	ST800 / ST900 DFM Lens Kit			
57	667/1/21150/002	ST800 / ST900 Gas Plinth			
58	667/2/27096/000	ST800 / ST900 Mounting Stool			
59					
60					
61					
62	667/1/26271/000	Telephone Kit (Lightning protection)			
63	667/1/27118/000	Surge Arrester (Lightning protection)			
64					
65					
66					
67	667/1/32900/120	ST900 ELV Cabinet Export 20A 1 LSLS - Grey			
68	667/1/32900/140	ST900 ELV Cabinet Export 40A 1 LSLS - Grey			
69	667/1/32900/121	ST900 ELV Cabinet Export 20A 1 LSLS - Black			
70	667/1/32900/141	ST900 ELV Cabinet Export 40A 1 LSLS - Black			
71					
72					
73	667/1/32900/900	ST900 ELV export rack Kit			
74	667/1/32945/000	ST900 ELV additional LSLS rack wiring kit			
75					
76	667/1/27007/000	IRM Facility			
77					
78					
79					
80					

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Special Instructions

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Call Cancel

Call Cancel

Unit No.	Input Name	Call Delay	Cancel Delay	Phase Demanded (Unlatched Demand)
0	AQSL7	2	2	
1	AQSL8	2	2	
2	AQ26	6	0	A
3	BQ27A	10	0	B
4	BQ27B	10	0	B
5	EQ43	6	0	E
6	FQ44A	6	0	F
7	FQ44B	6	0	F

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 0

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	0	0	I	AIN1	☑	☐	☐	☐	☐	Y	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	1	1	I	AIN2	☑	☐	☐	☐	☐	Y	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	2	2	I	AIN3	☑	☐	☐	☐	☐	Y	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	3	3	I	AX4	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	4	4	I	AX5	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	5	5	I	AX6	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	6	6	I	AQSL7	☑	☐	☐	☐	☐	Y	0	2.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	1I/O1	6
○	7	7	I	AQSL8	☑	☐	☐		☐	Y	0	2.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 1

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	8	0	I	BIN9	☑	☐	☐	☐	☐	Y	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	8
○	9	1	I	BIN10	☑	☐	☐	☐	☐	Y	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	9
○	10	2	I	BIN11	☑	☐	☐	☐	☐	Y	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	10
○	11	3	I	BX12	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	11
○	12	4	I	BX13	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	12
○	13	5	I	BX14	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	13
○	14	6	I	BX15	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	14
○	15	7	I	BSL16A	☑	☐	☐		☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 2

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	16	0	I	BSL16B	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	16
○	17	1	I	BSL16C	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	17
○	18	2	I	BSL16D	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	18
○	19	3	I	CX17	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	19
○	20	4	I	CX18	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	20
○	21	5	I	CX19	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	21
○	22	6	I	CX20	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	22
○	23	7	I	DIN21	☑	☐	☐		☐	Y	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 3

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	24	0	O	AQEAST	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	25	1	O	EASTF	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	26	2	O	MOVASTOP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	27	3	O	TACTG	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	28	4	O	TACTI	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	29	5	O	TIMESYNC	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	30	6	O	LAMPSUP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	31	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 5

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	40	0	I	DX22	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	0
○	41	1	I	DX23	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	1
○	42	2	I	DXSINK24	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	2
○	43	3	I	DSL25A	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	3
○	44	4	I	DSL25B	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	4
○	45	5	I	DSL25C	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	5
○	46	6	I	EX33	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	6
○	47	7	I	EX34	☑	☐	☐		☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 6

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	48	0	I	EX35	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	8
○	49	1	I	FIN36	☑	☐	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	9
○	50	2	I	FIN37	☑	☐	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	10
○	51	3	I	FX38	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	11
○	52	4	I	FX39	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	12
○	53	5	I	FX40	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	13
○	54	6	I	FXSINK41	☑	☐	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	14
○	55	7	I	FSL42AB	☑	☐	☐		☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 7

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	56	0	I	FSL42C	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	16
○	57	1	I	FSL42D	☑	☐	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	17
○	58	2	I	AQ26	☑	☐	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	1I/O2	18
○	59	3	I	BQ27A	☑	☐	☐	☐	☐	Y	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	1I/O2	19
○	60	4	I	BQ27B	☑	☐	☐	☐	☐	Y	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	1I/O2	20
○	61	5	I	EQ43	☑	☐	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	1I/O2	21
○	62	6	I	FQ44A	☑	☐	☐	☐	☐	Y	0	3.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	1I/O2	22
○	63	7	I	FQ44B	☑	☐	☐		☐	Y	0	3.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	1I/O2	23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 9

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	72	0	I	IPB	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	0
○	73	1	I	GPB	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	1
○	74	2	I	PHDECIP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	2
○	75	3	I	Q43AECIP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	3
○	76	4	I	HOLD	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	4
○	77	5	I	CANCEL	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	5
○	78	6	I	WESTD	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	6
○	79	7	I	MOVADISW	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 1 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	D	Amber	Phase
31	A	Amber	Phase	15	D	Green	Phase
30	A	Green	Phase	14	E	Red	Phase
29	B	Red	Phase	13	E	Amber	Phase
28	B	Red	Phase	12	E	Green	Phase
27	B	Amber	Phase	11	F	Red	Phase
26	B	Amber	Phase	10	F	Red	Phase
25	B	Green	Phase	9	F	Amber	Phase
24	B	Green	Phase	8	F	Amber	Phase
23	C	Red	Phase	7	F	Green	Phase
22	C	Red	Phase	6	F	Green	Phase
21	C	Amber	Phase	5	G	Red	Phase
20	C	Amber	Phase	4	G	Amber	Phase
19	C	Green	Phase	3	G	Green	Phase
18	C	Green	Phase	2	G	Green	Phase
17	D	Red	Phase	1	H	Red	Phase

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 2 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	H	Amber	Phase	16	N/A	N/A	N/A
31	H	Green	Phase	15	N/A	N/A	N/A
30	I	Red	Phase	14	N/A	N/A	N/A
29	I	Amber	Phase	13	N/A	N/A	N/A
28	I	Green	Phase	12	N/A	N/A	N/A
27	I	Green	Phase	11	N/A	N/A	N/A
26	N/A	N/A	N/A	10	N/A	N/A	N/A
25	N/A	N/A	N/A	9	N/A	N/A	N/A
24	N/A	N/A	N/A	8	N/A	N/A	N/A
23	N/A	N/A	N/A	7	N/A	N/A	N/A
22	N/A	N/A	N/A	6	N/A	N/A	N/A
21	N/A	N/A	N/A	5	N/A	N/A	N/A
20	N/A	N/A	N/A	4	N/A	N/A	N/A
19	N/A	N/A	N/A	3	N/A	N/A	N/A
18	N/A	N/A	N/A	2	N/A	N/A	N/A
17	N/A	N/A	N/A	1	N/A	N/A	N/A

Works Order : 460517250
EM Number : 37280
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt, A45 S-Bnd, Bedford Rd (W-Bnd) & A45 N-Bnd - Northampton ORN043

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)				
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 UTC and MOVA
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions
    - 4.3.3.2 UTC Stage and Mode Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces (No configuration data to print)
  - 4.3.4 UTC and MOVA Detectors
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral LMU Onboard Sensors
  - 4.5.3 Integral LMU External Sensors for Regulatory Signs
  - 4.5.4 RLM Additional Intergreens
  - 4.5.5 RLM Phase Inhibits
- 4.6 Hurry Call
- 4.7 Manual
  - 4.7.1 Manual Panel
  - 4.7.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives (ELV Controllers)
- 7.4 I/O - DFM Group Timings

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Administration

General Specifications

Customer Name	Northamptonshire County Council	Customer Order No.	853219390
Intersection/ General Description	Barnes Meadow Rdbt Bedford Rd (E-Bnd) Rushmere - Northampton ORN101	Controller/ Serial Number	7048696
		S.T.S. /EM Number	37279 Issue 1
Controller	(•) New ( ) Modification	Equipment Installation by	Siemens Mobility Traffic Solutions
Area Specifications/ Customer Drawings	NHO9DC26 / S326 / R330 / BM004	Slot Cutting by	Siemens Mobility Traffic Solutions
Specification Section	Rev D	Civil Works by	Siemens Mobility Traffic Solutions
Contract/Tender Ref:	SLAVE CONTROLLER	Customer's Engineer	A.Poole
Quotation No.		Telephone Number	0113-3956617
Works Order No.	460517250		

Signal Company Use Only

Signal Engineer: Kevin L Roberts

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: 75 14 B4 23

Controller Options

Hardware: ST900 ELV | Firmware Type and Issue: PB801 ISS 7 | Other Options:

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet | Kit Type Options: (•) UK-Std ( ) Non-UK ( ) ( )

Cabinet/Rack Variant: Grey | Cuckoo Options: None | Gemini Unit Fitted: ☑

Mains Supply	230 Volts	50 Hz					
Peak Lamp Current	10 Amps	Dimming Voltage	27.5	Answer Issue	0	Date Created	03/02/11
Average Lamp Power	1200 Watts						
Total Average Power	1400 Watts	Low Inrush Transformer	☐	Edit Issue	3		

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams: 2

Phases

Current Total Number of Phases: 6

( ) (•) Number of Real Phases: 4

( ) Number of Dummy Phases: 2

Stages

( ) Current Number of stages (inc. ALL-RED stages): 6

Switched Signs

( ) Number of Switched Signs: 0

Action

Add At | Delete At

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- [x] Serial/Internal UTMC OTU
- [ ] Free-standing OTU
- [ ] Integral TC12 OTU
- [x] Serial MOVA

- [x] Master Time Clock
- [ ] Holiday Clock
- [x] FT To Current MAX
- [ ] Linked Fixed Time
- [x] Lamp Monitoring
- [ ] RED Lamp Monitoring
- [ ] Pelican/Puffin/Toucan
- [ ] Standalone Manual
- [ ] Extend All Red
- [ ] Speed Measurement
- [ ] Ripple Change
- [ ] London IMU
- [ ] Non-UK
- [ ] Fail to Part Time
- [ ] Fail To Hardware Flashing
- [ ]
- [ ] Download To Level 3

8 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
[ ] Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Hurry Call	○	○	○	○	◉	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
[x] UTC	○	○	◉	○	○	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] CLF (Base Time)	○	○	○	◉	○	○	○	○	○	○	○	○	○
[x] Vehicle Actuated	○	○	○	○	○	◉	○	○	○	○	○	○	○
[x] Fixed Time	○	○	○	○	○	○	○	○	○	○	◉	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standardPB801.8df
Default PROM data file

Correspondence Monitoring to inc.

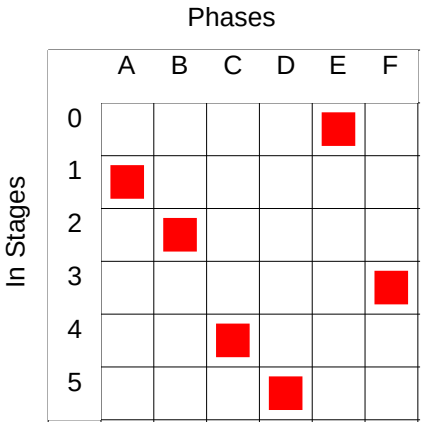
- [x] Reds
- [ ] Switched Signs
- [x] Ambers
- [ ] Ignore Reds and Ambers durin

Flash Rate (ms)

400 Off 400 On

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Phases in Stages



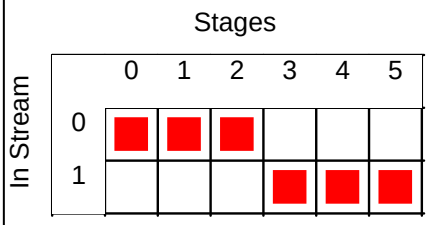
Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	1	4						
Startup Stage	1	4						
Switch Off Stage								
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.



Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Phase Type and Conditions

Phase Type and Conditions

(•) Phases A to P ( ) Manual Output Allocation ☑

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	Circulatory @ Bedford Road Eastbound	0 - UK Traffic	0	0 - I		1	1	1
B	Bedford Road Eastbound Entry	0 - UK Traffic	0	0 - I		2	2	2
C	Circulatory @ Rushmere Road	0 - UK Traffic	0	0 - I		2	2	2
D	Rushmere Road Entry	0 - UK Traffic	0	0 - I		1	1	1
E	Dummy All Red Stage 0 Stream 0	2 - UK GreenArrow	0	0 - I				
F	Dummy All Red Stage 3 Stream 1	2 - UK GreenArrow	0	0 - I				

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase

	A	B	C	D	E	F
A		Co			o	
B	Co				o	
C				Co		o
D			Co			o
E	o	o				
F			o	o		

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

(•) Phases A to P ( ) Phases Q to X

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	20	30	25	20	0	0	0	0	☐
B	7	0	0.0	15	30	45	20	0	0	0	0	☐
C	7	0	0.0	40	60	60	35	0	0	0	0	☐
D	7	0	0.0	15	20	20	15	0	0	0	0	☐
E	3	0	0.0	0	0	0	0	0	0	0	0	☐
F	3	0	0.0	0	0	0	0	0	0	0	0	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F
A		5			3	
B	5				3	
C				5		3
D			5			3
E	2	2				
F			2	2		

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Intergreen Handset Limits

HIGH 30

Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E	F
A		5			3	
B	5				3	
C				5		3
D			5			3
E	2	2				
F			2	2		

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.	Phase	Min. Green Min.	Min. Green Max.
A	7	30	Q		
B	7	30	R		
C	7	30	S		
D	7	30	T		
E	0	30	U		
F	0	30	V		
G			W		
H			X		
I			Y		
J			Z		
K			A2		
L			B2		
M			C2		
N			D2		
O			E2		
P			F2		

Max. Green
Min. 0 Max. 255

Vehicle Extension
Min. 0.0 Max. 10.0

Phase Delay
Min. 0 Max. 10

Starting I/G
Min. 8 Max. 15

Min Pedestrian Clearance (PBT)
Min. 0 Max. 12

Traffic Phase Leaving
Min. 3.0 Max. 3.0

Traffic Phase Red/Amber
Min. 2 Max. 2

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

VA Demand and Extend Definitions

VA Demand and Extend Definitions

Phases A to P ○

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AIN1	AIN2	AX3	AX4
B	BX8	BX9	BX10	BX11
C	CX33	CX34	CX35	CX36
D	DX39	DX40	DX41	
E				
F				

Extensions

AIN1	AIN2	AX3	AX4
BX8	BX9	BX10	BX11
CX33	CX34	CX35	CX36
DX39	DX40	DX41	

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F											
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F											
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F											
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D												

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5												
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5												
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5												
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0										

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

CLF - Plan(s)

CLF - Plan(s)

Plan No. 1

Copy From

Plan Specifics

Influence Set 1

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 40

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	29	1	1	16			
1	12	1	2	17			
2	3	1	4	18			
3	31	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

CLF - Plan(s)

CLF - Plan(s)

Plan No. 2

Copy From

Plan Specifics

Influence Set 2

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	42	1	1	16			
1	15	1	2	17			
2	35	4	1	18			
3	17	1	4	19			
4	56	1	5	20			
5	12	4	4	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

CLF - Plan(s)

CLF - Plan(s)

Plan No. 3

Copy From

Plan Specifics

Influence Set 3

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	41	1	1	16			
1	9	1	2	17			
2	34	4	1	18			
3	9	1	4	19			
4	54	1	5	20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

CLF - Plan(s)

CLF - Plan(s)

Plan No. 4

Copy From

Plan Specifics

Influence Set 4

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 40

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	29	1	1	16			
1	12	1	2	17			
2	33	1	4	18			
3	31	2	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

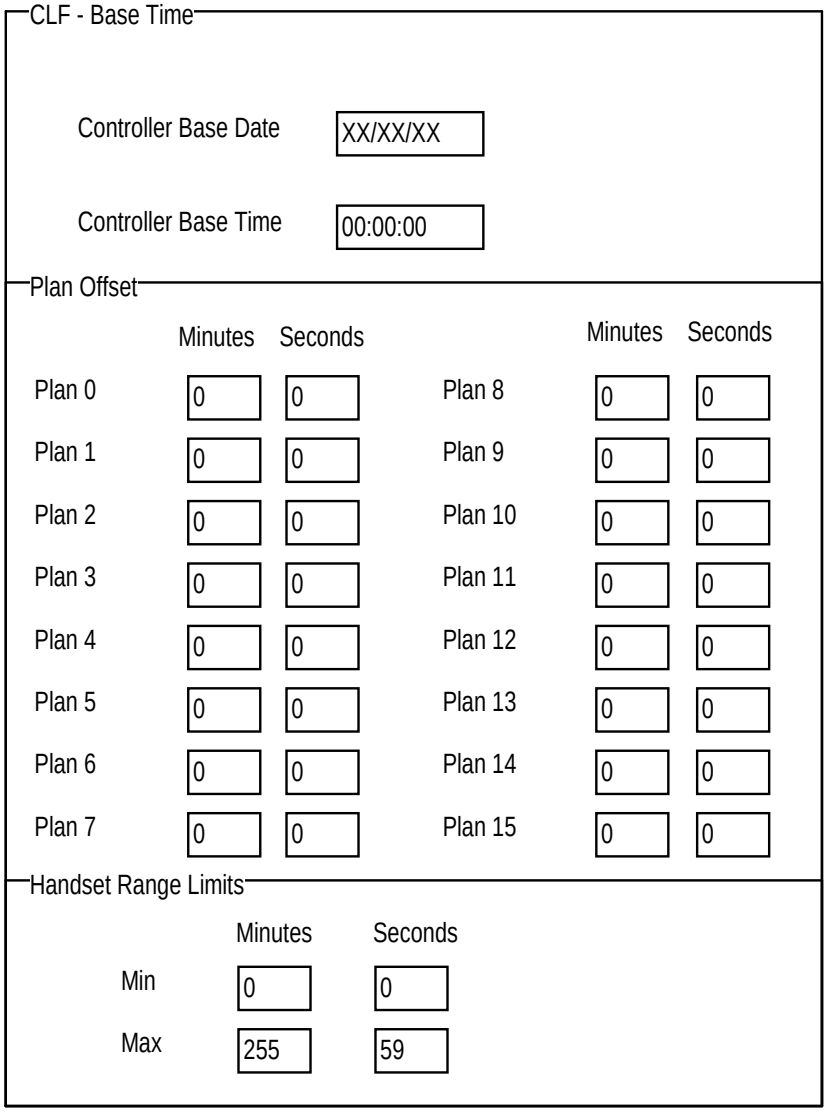
7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

CLF - Base Time



Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

CLF - Demand Dependent Moves

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered. The data specified on this screen will also change the screen CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages

	A	B	C	D	E	F
0						
1						
2						
3						
4						
5				■		

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

3 Number of Control Words

3 Number of Reply Words

[ ] Controller to respond to TC bit.

[ ] Introduction of UTC to be disabled by Priority and LR

[ ] Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

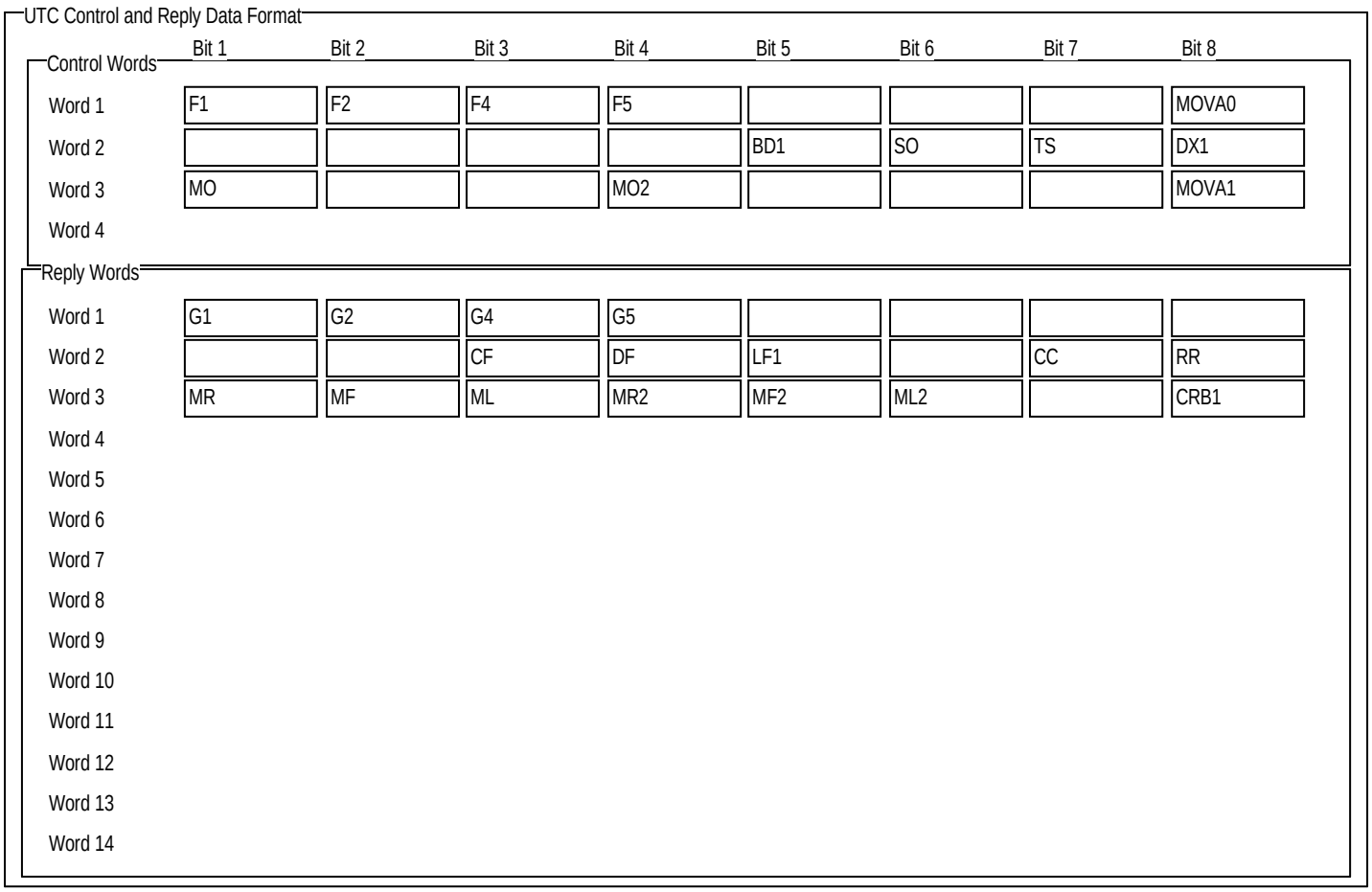
Day	Time
Time Only	04:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	04:00:00

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

UTC Control and Reply Data Format



Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

UTC Phase Demand and Extend Definitions

UTC Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands, preceed the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	DX1			
B	DX1			
C	DX1			
D	DX1			
E				
F				

Extensions

DX1			
DX1			
DX1			
DX1			

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

UTC Stage and Mode Data Definitions

UTC Stage and Mode Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0				16			
1	F1	G1		17			
2	F2	G2		18			
3				19			
4	F4	G4		20			
5	F5	G5		21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☑ RR ☐

Manual Mode Selected:
☐ G1/G2 ☑ RR ☐

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☑ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☑ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

UTC Demand Dependent Forces

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered. The data specified on this screen will also change the screen CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages

	A	B	C	D	E	F
0						
1						
2						
3						
4						
5				■		

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☑ Combined

Set Selection

○ ○ ○ ○ ○

1	AIN1	2	AIN2	3	AX3	4	AX4	5	AX5	6	BIN6	7	BIN7	8	BX8
9	BX9	10	BX10	11	BX11	12		13		14		15		16	
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33	CX33	34	CX34	35	CX35	36	CX36	37	DIN37	38	DIN38	39	DX39	40	DX40
41	DX41	42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Note - only 32 detectors available on MOVA 4.0

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

MTC - Time Switch Parameters

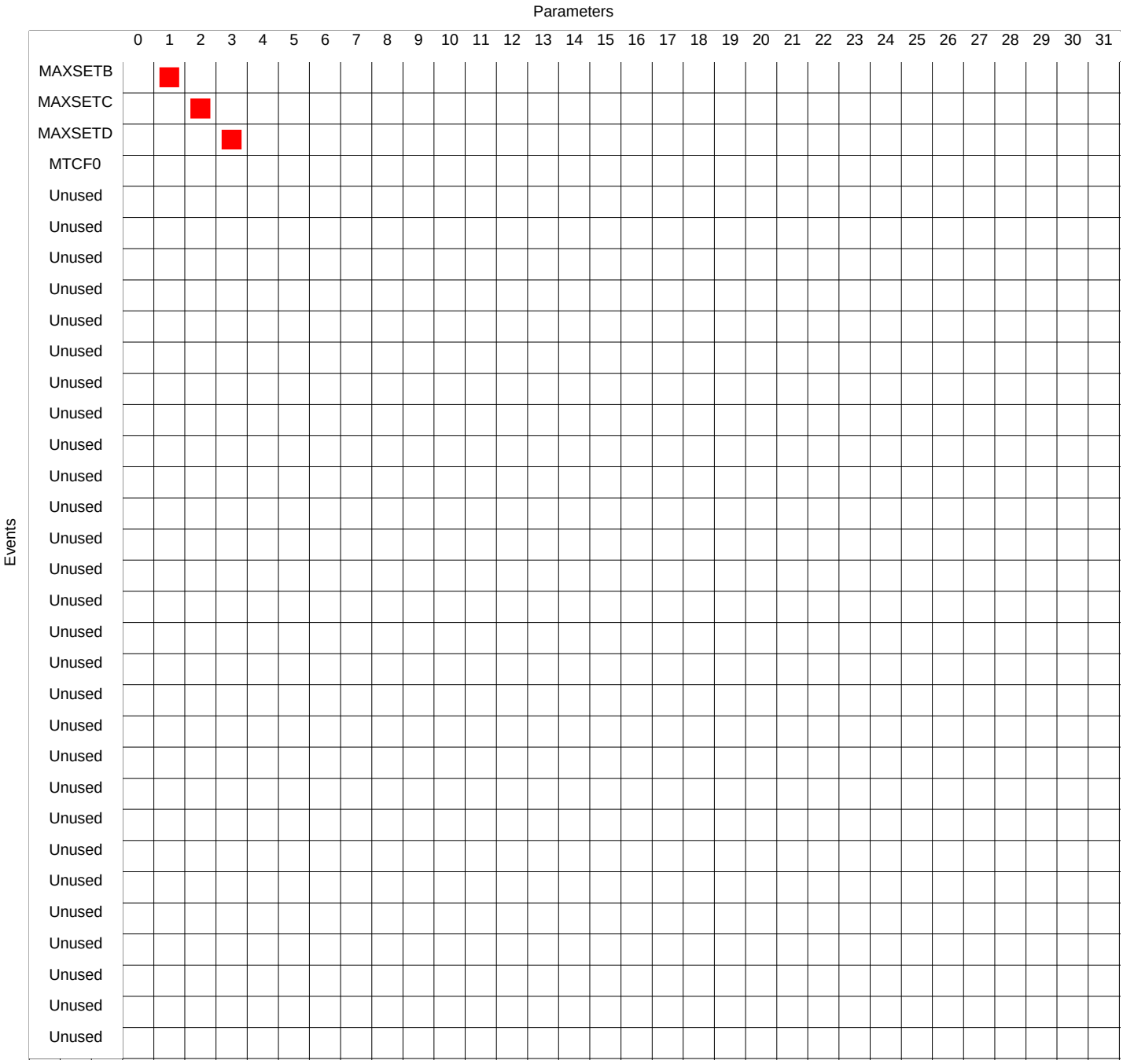
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	Conditioning	MTCF0
4	No Action	
5	No Action	
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

MTC - Time Switch Parameters Array



Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

MTC - Timetable

MTC - Timetable

View Timetable Settings

(•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	07:00:00	MAXSET B	2	1
1	9	09:30:00	MAXSET A	2	0
2	9	15:45:00	MAXSET C	2	2
3	9	18:30:00	MAXSET A	2	0
4	9	20:30:00	MAXSET D	2	3
5	0	07:30:00	MAXSET A	2	0
6	0	18:30:00	MAXSET D	2	3
7	1	09:00:00	MAXSET A	2	0
8	1	18:00:00	MAXSET D	2	3
9	7	01:00:00	CLF PLAN 4	1	4
10	7	06:00:00	CLF PLAN 1	1	1
11	9	07:00:00	CLF PLAN 2	1	2
12	9	09:30:00	CLF PLAN 1	1	1
13	9	15:45:00	CLF PLAN 3	1	3
14	9	19:30:00	CLF PLAN 1	1	1
15	7	01:00:00	MOVA Off	4	3

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

MTC - Timetable

MTC - Timetable

View Timetable Settings

○ 0 - 15 ◉ 16 - 31 ○ 32 - 47 ○ 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
16	7	01:00:30	MOVA On	3	3
17	7	02:00:00	MOVA Off	4	3
18	7	02:00:30	MOVA On	3	3
19	0			0	0
20	0			0	0
21	0			0	0
22	0			0	0
23	0			0	0
24	0			0	0
25	0			0	0
26	0			0	0
27	0			0	0
28	0			0	0
29	0			0	0
30	0			0	0
31	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

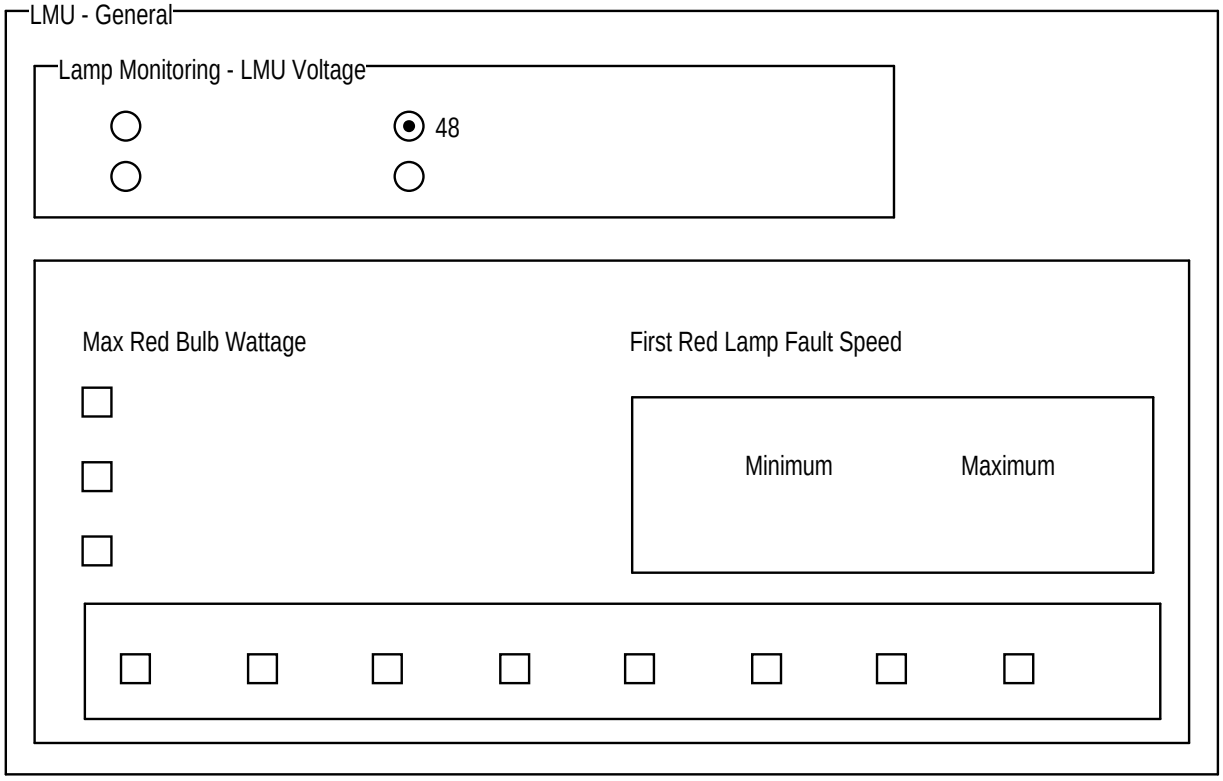
2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

LMU - General



Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
1	1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
A	Red	1	As Seq.	1: Siemens Helios ELV	○	D	Amber	4	As Seq.	1: Siemens Helios ELV	○
A	Amber	1	As Seq.	1: Siemens Helios ELV	○	D	Green	4	As Seq.	1: Siemens Helios ELV	○
A	Green	1	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Red	2	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Red	2	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Amber	2	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Amber	2	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Green	2	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Green	2	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Red	3	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Red	3	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Amber	3	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Amber	3	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Green	3	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Green	3	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
D	Red	4	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Integral LMU External Sensors for Regulatory Signs

Integral LMU External Sensors for Regulatory Signs

External Sensors (1)

Sensor	Load Type
48	4: Siemens ELV Regulatory S
47	4: Siemens ELV Regulatory S
46	4: Siemens ELV Regulatory S
45	4: Siemens ELV Regulatory S

External Sensors (4)

Sensor	Load Type

External Sensors (2)

Sensor	Load Type

External Sensors (5)

Sensor	Load Type

External Sensors (3)

Sensor	Load Type

External Sensors (6)

Sensor	Load Type

Note: Sensors which have been used as Onboard sensors will not be available here.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Hurry Call

Hurry Call

Hurry Call	Stage Called	Call Input Name	Cancel Input Name	Confirm Output Name	Delay Time	Hold Time	Prevent Time
0	1	*ROUGH3			0	5	60
1	4	*ROUGH4			0	5	60
2					0	0	0
3					0	0	0
4					0	0	0
5					0	0	0
6					0	0	0
7					0	0	0

Hurry Call Limit Values

	Min.	Max.
Call Delay	0	255
Call Hold	0	255
Call Prevent	0	255

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	Called Stage for Stream 1
0	All Red Stage 0 Stream 0 / All Red Stage 3 Stream 1	0	3
1	Circulatory @ Bedford Road Eastbound / Circulatory @ Rushmere Road	1	4
2	Bedford Road Eastbound Entry / Circulatory @ Rushmere Road	2	4
3	Circulatory @ Bedford Road Eastbound / Rushmere Road Entry	1	5
4			
5			
6			
7			

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☑
Dim Override	○	◉	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Manual Mode Enable

- ○ Always
- ○ When Handset Plugged in (Note 1)
- ◉ When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; AUX LED's
; ~~~~~~~~~
MAUXSW1=MIL22                                   ;AUX 1 LED LIT WHEN AUX1 SWITCH ACTIVE ( dimming override ).
                                                ;AUX 2 LED FLASH WHEN BD1 UTC INPUT ACTIVE.
                                                ;AUX 3 "MOVA ON CONTROL (FLASHING 1 STREAM, SOLID BOTH)".
                                                ;AUX 4 ( HURRY CALL ) LED LIT HURRY CALL ACTIVE EITHER STREAM
                                                ;AUX 5 ( HIGHER PRIORITY ) LED LIT ( SEE SPECIAL INSTRUCTIONS )

; UTC REPLY BITS
; ~~~~~~~~~~~~~~
NOT(LMPANY0+LMPANY1)=LF1                        ;LF1 REPLY FOR ANY LAMP FAULT ANY STREAM
NOT(FLFCOM)=CF

; T900 SPECIAL FACILITIES
; ~~~~~~~~~~~~~~~~~~~~~~
MAXSETB+MAXSETF=ESPTX1                          ;MAXSET INFORMATION ALSO SENT ALONG SERIAL LINK
MAXSETC+MAXSETG=ESPTX2
MAXSETD+MAXSETH=ESPTX3
MAXSETE=ESPTX4
TRUE=ESPTX5                                     ;FLAG TO DETECT SERIAL LINK DISCONNECTION

; DOOR SWITCH OMU SERIAL LINK
; ~~~~~~~~~~~~~~~~~~~~~~~~~~
NOT(DOORSW)=ESPTX0                              ;DOOR OPEN SEND SIGNAL TO OMU VIA SERIAL LINK

; DOOR CLOSED DISABLES MANUAL PANEL
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
DOORSW:=MNCONT                                  ;DOOR CLOSED DISABLES MANUAL MODE CONTROL
       *=MSCONT
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; ADDITIONAL DETECTOR DEMANDS / EXTENSIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
AX5=+LCPHA
AX3_EXT+AX4_EXT+AX5_EXT:=+EXOA
                        *=+EXCA
BIN6=+LCPHB
BIN7=+LCPHB
BSL12A+BSL12B+BSL12C+BSL12D:=+LCPHB
                             *=MOVADET12
BSL12A_EXT+BSL12B_EXT+BSL12C_EXT+BSL12D:=+EXOB
                                        *=+EXCB
DIN37+DIN38=+LCPHD
DSL42A+DSL42B+DSL42C:=+LCPHD
                     *=MOVADET42
DSL42A_EXT+DSL42B_EXT+DSL42C_EXT:=+EXOD
                                  *=+EXCD
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; UTC REPLY BITS
; ==============
; G1/G2 UTC REPLY
; ~~~~~~~~~~~~~~~
IFT MOVA0 THN                                   ;IF IN MOVA 'MODE' THEN NORMAL STAGE CONFIRMS
    NOT(STAGE1) = G1                            ;FOR MOVA APPLY I.E. G1/G2 IS NOT REPORTED
    NOT(STAGE2) = G2                            ;FOR LAMP SUPPLY FAILURE IN 'MOVA' MODE
ELS

    LMPON.SWLMPS.NOT(FLF17).NOT(STAGE1)=G1      ;IN UTC 'MODE' STAGE CONFIRMS FOR UTC REQUIRE
    LMPON.SWLMPS.NOT(FLF17).NOT(STAGE2)=G2      ;LAMPS OFF CONDITIONING FOR G1 _G2 BITS
END

; MOVA STREAMS OPERATIONAL CONTROL AND REPLY BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; INPUTS FROM UTMC UNIT TO CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
MOVAF8=MOVA0                                    ;MOVA OPERATIONAL ON STREAM 0
MOVAF24=MOVA1                                   ;MOVA OPERATIONAL ON STREAM 1

; MAKE MOVA NON-DEMAND DEPENDENT
; ------------------------------
MOVA0.F1 = +UCST1
MOVA0.F2 = +UCST2
MOVA1.F4 = +UCST4
MOVA1.F5 = +UCST5
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; MOVA CRB TOGGLE 180 SECONDS STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (PRSLMPRA+PRSLMPAA+PRSLMPGA) THN                ;MIN LAMPS OFF TIME STREAM 0
    RUN<95>
END
IFT NOT(MODE0 EQL<6>).NOT(CNDTMA94).SSNRM THN       ;NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<94>
END
IFT CNDTER94+((PRVMOD0 EQL<6>).NOT(MODE0 EQL<6>)) THN
    LOD<10> 1SCRTCH0
    TRUE=2SCRT1
END                                                 ;START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST0 EQL<0>)=.2SCRT1
IFT (1SCRTST0 GRT<0>) THN
    DEC 1SCRTCH0
END
(SSNRM XOR (SSMAN.NOT(MANMOP))).(MTCF0) $           ;WHEN TIMER TERMINATES TOGGLE CRB.
.(NOT(2SCRT1)+(MODE0 EQL<6>)).CNDTMA95.NOT $        ;DISABLE MOVACRB IF NOT IN NORMAL, MOVA OFFLINE
(2SCRT57+2SCRT58)=MOVACRB                           ;ON STREAM 1 OR ON THE EAST CONTROLLER

; MOVA CRB1 TOGGLE 180 SECONDS STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (PRSLMPRC+PRSLMPAC+PRSLMPGC) THN                ;MIN LAMPS OFF TIME STREAM 1
    RUN<93>
END
IFT NOT(MODE1 EQL<6>).NOT(CNDTMA92).SSNRM THN       ;NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<92>
END
IFT CNDTER92+((PRVMOD1 EQL<6>).NOT(MODE1 EQL<6>)) THN
    LOD<10> 1SCRTCH1
    TRUE=2SCRT2
END                                                 ;START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST1 EQL<0>)=.2SCRT2
IFT (1SCRTST1 GRT<0>) THN
    DEC 1SCRTCH1
END
(SSNRM XOR (SSMAN.NOT(MANMOP))).(MTCF0) $           ;WHEN TIMER TERMINATES TOGGLE CRB.
.(NOT(2SCRT2)+(MODE1 EQL<6>)).CNDTMA93 $
.NOT(2SCRT58)=CRB1                                  ;DISABLE CRB1 IF FLAG IS SET FROM EAST CONTROLLER
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; MOVA RUNNING LED INDICATION
; ===========================
; IF BOTH STREAMS ON THE WEST CONTROLLER ARE RUNNING MOVA THEN ILLUMINATE THE AUX LED 3
; BUT IF ANY STREAM FALLS OFF MOVA FLASH THE AUX 3 LED.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT MOVA0.MOVA1 THN                                 ;IF BOTH STREAMS ARE RUNNING MOVA
    TRUE = MIL05                                    ;THEN ILLUMINATE AUX LED 3
ELS
    IFT MOVA0+MOVA1 THN                             ;IF ONE OR MORE STREAMS ARE NOT RUNNING MOVA
        INC 1SCRTCH29                               ;THEN FLASH AUX LED 3
        1SCRT232=MIL05
    ELS
        FALSE =MIL05                                ;IF NEITHER STREAM RUNNING MOVA EXTINGUISH AUX LED 3
    END
END

; UTC RUNNING LED INDICATION
; ==========================
; IF BOTH STREAMS ON THE WEST CONTROLLER ARE RUNNING UTC MODE THEN ILLUMINATE THE HIGHER PRIORITY LED
; BUT IF ANY STREAM FALLS OFF UTC THEN FLASH HIGHER PRIORITY LED.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<6>.NOT(MOVA0)) $
.(MODE1 EQL<6>.NOT(MOVA1)) THN                      ;IF BOTH STREAMS ARE RUNNING UTC
    TRUE = MIL17                                    ;THEN ILLUMINATE HIGHER PRIORITY LED
ELS
    IFT (MODE0 EQL<6>.NOT(MOVA0)) $                 ;IF ONE OR MORE STREAMS ARE NOT RUNNING UTC
        +(MODE1 EQL<6>.NOT(MOVA1)) THN
       INC 1SCRTCH29                                ;THEN FLASH THE HIGHER PRIORITY LED
        1SCRT232=MIL17
    ELS
        FALSE =MIL17                                ;IF NEITHER STREAM RUNNING UTC EXTINGUISH HIGHER PRIORITY LED
    END
END
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; MOVA CALL CANCEL UNITS
; ======================
; AIN1 _AIN2 PULSES MOVA DETECTOR 13
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; MOVA AIN1 _AIN2 DETECTOR PULSE
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (CCTO0+CCTO1).NOT(SCRT3).NOT(CNDTMA1) THN        ;AIN1 OR AIN2 TO PULSE MOVADET13
    RUN<0>                                          ;RUN MOVADET PULSE TIMER
    RUN<1>                                          ;RUN INHIBIT TIMER
END

CNDTMA0:=+MOVADET13                                ;IF MOVADET PULSE TIMER ACTIVE OUTPUT TO MOVADET13
       *=ROUGH3                                    ;AND SET IN ALL MODES HURRY CALL 0
CCTO0+CCTO1=SCRT3                                   ;SET BIT TO STOP REPULSE

; Q43 C/CANCEL O/P'S TO EAST CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (CCTO5+CCTO6+CCTO7).NOT(SCRT4).NOT(CNDTMA28) THN
    RUN<27>                                         ;RUN MOVADET PULSE TIMER
    RUN<28>                                         ;RUN INHIBIT TIMER
END
CNDTMA27=Q43AWCOP                                   ;WHEN TIMER ACTIVE SEND O/P Q43AWCOP TO EAST CONTROLLER
CCTO5+CCTO6+CCTO7=SCRT4                             ;SET BIT TO STOP REPULSE
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; UTC WATCHDOG FACILITY STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; Timer     Value       Min     Max    Description
; -----     -----       ---     ---    -----------
; PIR64     200         120     200    UTC F1 bit Watchdog Timer 1 (STREAM 0)
; PIR65     0           0       100    UTC F1 bit Watchdog Timer 2 (STREAM 0)
; PIR66     200         120     200    UTC F2 bit Watchdog Timer 1 (STREAM 0)
; PIR67     0           0       100    UTC F2 bit Watchdog Timer 2 (STREAM 0)
; PIR70     200         120     200    UTC F4 bit Watchdog Timer 1 (STREAM 1)
; PIR71     0           0       100    UTC F4 bit Watchdog Timer 2 (STREAM 1)
; PIR72     200         120     200    UTC F5 bit Watchdog Timer 1 (STREAM 1)
; PIR73     0           0       100    UTC F5 bit Watchdog Timer 2 (STREAM 1)
; The time value is the addition of PIR20 and PIR21 for F1 etc.
; Clear 'UTC Watchdog Timed Out' scratch bit - it will be set if any timeout detected.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
FALSE=2SCRT254                                          ;STREAM 0
FALSE=2SCRT255                                          ;STREAM 1

; Clear all 'previous state' stores while UTC (on stream 0) is inactive AND not already disabled.
; This stops spurious failure being detected, eg due to timers being cleared on startup
; after an F bit has already gone active.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (NOT(MODE0 EQL<6>)).(NOT(ROUGH1)) THN
   FALSE = 2SCRT240
   FALSE = 2SCRT241
END

; Clear all 'previous state' stores while UTC (on stream 1) is inactive AND not already disabled.
; This stops spurious failure being detected, eg due to timers being cleared on startup
; after an F bit has already gone active.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (NOT(MODE1 EQL<6>)).(NOT(ROUGH2)) THN
   FALSE = 2SCRT243
   FALSE = 2SCRT244
END
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~
;
; ------------------ MONITOR F1 FOR BEING STUCK ACTIVE STREAM 0 ----------------------
;
; If F1 is active
; ~~~~~~~~~~~~~~~
IFT F1.NOT(MOVA0) THN                              ;If this force bit has just changed from inactive to active
    IFT NOT 2SCRT240 THN
        RUN<64>                                    ;Load and start timer for this F bit
ELS
        IFT  NOT(CNDTMA64+CNDTMA65) THN            ;If Timer is inactive (timed out)
            TRUE = 2SCRT254                        ;Set the overall timeout indication
        END
    END
END
IFT CNDTMA64 THN                                   ;If Timer 'n' is running?
    RUN <65>                                       ;Start Timer 'n+1'
END

F1.NOT(MOVA0)=2SCRT240                             ;Save the state of the force bit for next pass through

; ------------------ MONITOR F2 FOR BEING STUCK ACTIVE STREAM 0 ----------------------
;
; If F2 is active
; ~~~~~~~~~~~~~~~
IFT F2.NOT(MOVA0) THN                              ;If this force bit has just changed from inactive to active
    IFT NOT 2SCRT241 THN
        RUN<66>                                    ;Load and start timer for this F bit
ELS
        IFT  NOT(CNDTMA66+CNDTMA67) THN            ;If Timer is inactive (timed out)
            TRUE = 2SCRT254                        ;Set the overall timeout indication
        END
    END
END
IFT CNDTMA66 THN                                   ;If Timer 'n' is running?
    RUN <67>                                       ;Start Timer 'n+1'
END
F2.NOT(MOVA0)=2SCRT241                             ;Save the state of the force bit for next pass through
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~
;
; ------------------ MONITOR F4 FOR BEING STUCK ACTIVE STREAM 1 ----------------------
;
; If F4 is active
; ~~~~~~~~~~~~~~~
IFT F4.NOT(MOVA1) THN                              ;If this force bit has just changed from inactive to active
    IFT NOT 2SCRT243 THN
        RUN<70>                                    ;Load and start timer for this F bit
ELS
        IFT  NOT(CNDTMA70+CNDTMA71) THN            ;If Timer is inactive (timed out)
            TRUE = 2SCRT255                        ;Set the overall timeout indication
        END
    END
END
IFT CNDTMA70 THN                                   ;If Timer 'n' is running?
    RUN <71>                                       ;Start Timer 'n+1'
END

F4.NOT(MOVA1)=2SCRT243                             ;Save the state of the force bit for next pass through

; ------------------ MONITOR F5 FOR BEING STUCK ACTIVE STREAM 1 ----------------------
;
; If F5 is active
; ~~~~~~~~~~~~~~~
IFT F5.NOT(MOVA1) THN                              ;If this force bit has just changed from inactive to active
    IFT NOT 2SCRT244 THN
        RUN<72>                                    ;Load and start timer for this F bit
ELS
        IFT  NOT(CNDTMA72+CNDTMA73) THN            ;If Timer is inactive (timed out)
            TRUE = 2SCRT255                        ;Set the overall timeout indication
        END
    END
END
IFT CNDTMA72 THN                                   ;If Timer 'n' is running?
    RUN <73>                                       ;Start Timer 'n+1'
END
F5.NOT(MOVA1)=2SCRT244                             ;Save the state of the force bit for next pass through
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~~
;
; Has UTC Watchdog timeout been detected?
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT 2SCRT254+2SCRT255 THN                    ;If the UTC Watchdog has expired set the FLF27 Fault Flag
   TRUE = 1CN1FLF                            ;Set the Special Conditioning Fault log 1 (FLF 27) in
   TRUE = 1CN1FLD0                           ;the Fault log (FLF27=255 _FLD 18 = 00000001)
ELS
  FALSE = 1CN1FLF                            ;Clear the Special Conditioning Fault log 1 entry
  FALSE = 1CN1FLD0                           ;in the fault log
END
2SCRT254+2SCRT238= ROUGH1                    ;Disable UTC on Stream 0 if UTC Watchdog has timed out
2SCRT255+2SCRT239= ROUGH2                    ;Disable UTC on Stream 1 if UTC Watchdog has timed out
2SCRT254 = 2SCRT238                          ;State of 2SCRT255 200mS ago (to avoid briefly entering
                                             ;UTC mode after UTC had been disabled due to Watchdog timing
                                             ;out and then the stuck Force bit goes inactive)
2SCRT255 = 2SCRT239                          ;State of 2SCRT255 200mS ago (to avoid briefly entering
                                             ;UTC mode after UTC had been disabled due to Watchdog timing
                                             ;out and then the stuck Force bit goes inactive)
ROUGH1+ROUGH2=UTCONT                         ;UTC Mode disabled if UTC Watchdog timed out
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; STREAM 0 LINKING - INPUT FROM EAST CONTROLLER WHEN PHASE F ACTIVE ON EAST CONTROLLER (ECPHF)
; ================================================================================================
; KEY TO FLAGS, TIMERS AND CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; FLAGS                                                TIMERS
; ~~~~~                                                ~~~~~~
; 2SCRT32 = 'INPUT ACTIVE' FLAG                        CND TIMER 2 = PULSE DELAY TIMER
; 2SCRT33 = 'HOLD DELAY TIMER' TERMINATED FLAG         CND TIMER 3 = PULSE TIMER
; 2SCRT34 = 'DOWNSTREAM PHASE EXTENSION ENABLED'FLAG   CND TIMER 4 = HOLD DELAY TIMER
; 2SCRT35 = 'HOLD OUPUT ENABLE' FLAG                   CND TIMER 5 = HOLD EXTEND TIMER
; 2SCRT36 = 'OVERRIDE TIMER EXPIRED' FLAG              CND TIMER 6 = OVERRIDE TIMER
;
; CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~
; CFE0 = PULSE DISABLE SWITCH
; CFE1 = 'EXTENSION DEPENDENCY DURING INPUT' DISABLE SWITCH
; CFE2 = 'EXTENSION DEPENDENCY AFTER INPUT' DISABLE SWITCH
; ================================================================================================

; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~~
;
; Linking (from East controller)
; ==============================
; A green confirm is required for phase F from the East controller, via a link cable det 33. This confirm is used to
; produce the Force and Hold bits for the linked MOVA control of phase A (circ). It may be dropped after expiry of
; the VA extensions on the East controller, to avoid the stage holding the confirm in the absence of traffic.
;
                                                     ; FORCE (EastF FA MOVADET 14) sent 8 sec (timer PIR 2)
                                                     ; after start of phase F (east controller),
                                                     ; for 8 sec (timer PIR 3), if CFE 0=1.
; ECPHF PULSE (MOVADET14)
; ~~~~~~~~~~~~~~~~~~~~~~~
IFT ECPHF.NOT(2SCRT32) THN                           ;WHEN INPUT ACTIVE RUN PULSE DELAY TIMER.
    RUN<2>
END
IFT CNDTER2 THN                                      ;WHEN PULSE DELAY TIMER EXPIRES RUN PULSE TIMER.
    RUN<3>
END
ECPHF.CNDTMA3.CFE0=+MOVADET14                        ;WHEN PULSE TIMER AND INPUT ACTIVE SET MOVA OUTPUT
                                                     ;(ENABLED BY COND SWITCH).
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~~
;
                                                    ;HOLD (EastF HA MOVADET 15) sent 255 sec (timer PIR 4) after
                                                    ;start of phase F (east controller), for the duration of the
                                                    ;green, subject to an override timer (PIR 6) initially set to
                                                    ;60 sec. If CFE 1=0, conditional on VA extensions on phase A.
                                                    ;HOLD (EastF HA MOVADET 15) to remain active for 2 sec
                                                    ;(timer PIR 5) following termination of phase F (east
                                                    ;controller). If CFE 2=0 the link will be conditional on
                                                    ;VA ext's on phase A (this controller)
                                                    ;(after F green terminates (east controller)).
; ECPHF HOLD (MOVADET15)
; ~~~~~~~~~~~~~~~~~~~~~~
IFT ECPHF.NOT(2SCRT32) THN                          ;WHEN INPUT ACTIVE RUN HOLD DELAY TIMER.
    RUN<4>
END
IFT CNDTER4 THN                                     ;SET FLAG WHEN "HOLD DELAY TIMER" TERMINATES
    TRUE=2SCRT33
END
EXTAA=2SCRT34                                       ;DOWNSTREAM PHASE EXTENSIONS ENABLED FLAG

(CNDTMA5.(CFE2+EXTAA)) $
+(ECPHF.2SCRT33.(CFE1+2SCRT34) $
.NOT(2SCRT36))=+2SCRT35                             ;SET FLAG TO ENABLE "HOLD OUTPUT" IF PHASE EXT PRESENT

IFT (NOT(ECPHF).(2SCRT34+CFE1).2SCRT33 $
.NOT(CNDTMA5)) THN                                  ;IF EXTENSIONS ACTIVE WHEN INPUT TERMINATES THEN
    RUN<5>                                          ;EXTEND HOLD.
END
NOT(CNDTER5+CNDTER6) $
.(((2SCRT34.ECPHF.NOT(CFE1))+(ECPHF.CFE1)) $
+(NOT(ECPHF).((NOT(CFE2).2SCRT34)+CFE2)))=.2SCRT35   ;WHEN ANY TIMER TERMINATES THEY RESET 'HOLD OUTPUT' FLAG
CNDTER6=+2SCRT36                                    ;"OVERRIDE TIMER" EXPIRED FLAG.
2SCRT35=+MOVADET15                                  ;"HOLD OUTPUT" FLAG ACTIVE ENABLES MOVA OUTPUT

IFT CNDTER4 THN                                     ;WHEN HOLD DELAY TIMER EXPIRES RUN OVERRIDE TIMER.
    RUN<6>
END
IFT NOT(ECPHF) THN                                  ;"HOLD DELAY TIMER TERMINATED" FLAG RESET WHEN INPUT CLEARS
    FALSE=2SCRT33
END
ECPHF=2SCRT32                                       ;"ECPHF" FLAG SET 200ms AFTER INPUT ACTIVE
NOT(CNDTMA6)=.2SCRT36                               ;"OVERRIDE TIMER" EXPIRED FLAG RESET WHEN O/RIDE TIMER STARTS
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; STREAM 1 LINKING
; ================
; LINK FROM STREAM 0 (PHASE A) TO STREAM 1 (PHASE C)
; ================================================
; KEY TO FLAGS, TIMERS AND CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;
; FLAGS                                                TIMERS
; ~~~~~                                                ~~~~~~
; 2SCRT37 =  'PHASE D C/CANCEL OUTPUT' FLAG            CND TIMER 10  = PULSE DELAY TIMER
; 2SCRT38 =  'PHASE A STARTING FLAG' FLAG              CND TIMER 11  = PULSE TIMER
; 2SCRT39 =  'HOLD TIMER TERMINATED' FLAG              CND TIMER 12  = HOLD DELAY TIMER
; 2SCRT40 =  'ADDITIONAL HOLD TIMER TERMINATED' FLAG   CND TIMER 13  = ADDITIONAL HOLD DELAY TIMER
; 2SCRT41 =  NOT USED                                  CND TIMER 14  = HOLD EXTEND TIMER
; 2SCRT42 =  'HOLD OUTPUT ENABLE' FLAG                 CND TIMER 15  = OVERRIDE TIMER
; 2SCRT43 =  'OVERRIDE TIMER EXPIRED' FLAG
;
; CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~
; CFE3 = PULSE DISABLE SWITCH
; CFE4 = 'PHASE A EXT NOT REQUIRED FOR HOLD DURING A GREEN' SWITCH
; CFE5 = 'PHASE C EXT NOT REQUIRED FOR HOLD DURING A GREEN' SWITCH
; CFE6 = 'PHASE C EXT NOT REQUIRED FOR HOLD AFTER A GREEN' SWITCH
; ============================================================================================
; DX C/CANCEL AND PHASE A STARTING FLAGS TO ENABLE PHASE C TO BE HELD BY PHASE A AND B
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;
; STREAM 1 LINKING
; ================
; LINK FROM STREAM 0 (PHASE B) TO STREAM 1 (PHASE C)
; ================================================
; KEY TO FLAGS, TIMERS AND CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; FLAGS                                                TIMERS
; ~~~~~                                                ~~~~~~
; 2SCRT44 =  'HOLD TIMER TERMINATED' FLAG              CND TIMER 16  = PULSE DELAY TIMER
; 2SCRT45 =  'EXTENSIONS ACTIVE' FLAG                  CND TIMER 17  = PULSE TIMER
; 2SCRT46 =  'HOLD OUTPUT ENABLE' FLAG                 CND TIMER 18  = HOLD DELAY TIMER
; 2SCRT47 =  'OVERRIDE TIMER EXPIRED' FLAG             CND TIMER 19  = HOLD EXTEND TIMER
;                                                      CND TIMER 20  = OVERRIDE TIMER
; CONDITIONING SWITCHES
; ~~~~~~~~~~~~~~~~~~~~
; CFE7  = PULSE ENABLE SWITCH
; CFE8  = 'PHASE B EXT NOT REQUIRED FOR HOLD DURING B GREEN' SWITCH
; CFE9  = 'PHASE C EXT NOT REQUIRED FOR HOLD DURING B GREEN' SWITCH
; CFE10 = 'PHASE C EXT NOT REQUIRED FOR HOLD AFTER B GREEN' SWITCH
; ============================================================================================
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~~
;
; MOVADET45 PULSE OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~~
IFT BTOROW.NOT(CNDTMA16) THN                    ;RUN 'PULSE DELAY' TIMER WHEN PHASE GAINS ROW.
    RUN<16>
END
IFT CNDTER16 THN                                ;WHEN DELAY TIMER HAS EXPIRED RUN 'PULSE OUTPUT' TIMER
    RUN<17>
END
CNDTMA17.CFE7=MOVADET45                         ;WHEN 'PULSE OUTPUT TIMER ACTIVE OUTPUT TO MOVADET
                                                ;(ENABLED BY COND SWITCH).

; MOVADET46 HOLD OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~
IFT BTOROW.NOT(CNDTMA18) THN                    ;RUN 'HOLD DELAY' TIMER WHEN PHASE GAINS ROW.
   RUN<18>
END

IFT CNDTER18 THN                                ;SET FLAG WHEN 'HOLD DELAY TIMER TERMINATES'.
    TRUE=2SCRT44
END

CNDTMA20.((2SCRT44.(CFE8+EXTAB).(CFE9+EXTAC)) $ ;SET THE 'HOLD OUTPUT'FLAG WHEN THE 'HOLD DELAY
+((NOT(2SCRT44)+TERMB) $
.(EXTAC+CFE10).CNDTMA19))=2SCRT46                ;TIMERS EXPIRE AND THE ABOVE CONDITIONS ARE MET

IFT TERMB.NOT(CNDTMA19) THN                     ;RUN 'HOLD EXTEND' TIMER TO HOLD OUTPUT WHEN PHASE
    RUN<19>                                     ;TERMINATES
END

CNDTER20=+2SCRT47                               ;'OVERRIDE TIMER EXPIRED' FLAG
2SCRT46=MOVADET46                               ;'HOLD OUTPUT' FLAG SETS MOVADET

IFT CNDTER18 THN                                ;WHEN 'HOLD DELAY TIMER' TERMINATES RUN THE
    RUN<20>                                     ;'OVERRIDE TIMER'
END

IFT TERMB THN                                   ;'HOLD DELAY TIMER TERMINATED' FLAG RESET
    FALSE=2SCRT44                               ;WHEN PHASE TERMINATES
END

NOT(CNDTMA20)=.2SCRT47                          ;'OVERRIDE TIMER EXPIRED' FLAG RESET WHEN TIMER STARTS.

IFT (CCTO2+CCTO3+CCTO4).NOT(PHASED) THN         ;IF ANY OF THE DX C/CANCEL UNITS ACTIVE AND PHASE D
    TRUE=2SCRT37                                ;NOT RUNNING SET THE 'PHASE D C/CANCEL OUTPUT' FLAG
END
IFT TERMA THN                                   ;IF PHASE A IS STARTING THEN SET THE
    TRUE=2SCRT38                                ;'PHASE A STARTING FLAG' FLAG
END
IFT DTOROW+PHASED THN                           ;WHEN PHASE D STARTS CLEAR BOTH OF THE FLAGS
    FALSE:=2SCRT37
         *=2SCRT38
END
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; CONTINUED FROM LAST PAGE
; ~~~~~~~~~~~~~~~~~~~~~~~
;
; MOVADET43 PULSE OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~
IFT TERMB.NOT(CNDTMA10) THN                          ;RUN 'PULSE DELAY' TIMER WHEN PHASE GAINS ROW.
    RUN<10>
END
IFT CNDTER10 THN                                     ;WHEN DELAY TIMER HAS EXPIRED RUN 'PULSE OUTPUT' TIMER
    RUN<11>
END
CNDTMA11.CFE3=MOVADET43                              ;WHEN 'PULSE OUTPUT TIMER ACTIVE OUTPUT TO MOVADET
                                                     ;(ENABLED BY COND SWITCH).

; MOVADET44 HOLD OUTPUT
; ~~~~~~~~~~~~~~~~~~~~
IFT TERMB.NOT(CNDTMA12) THN                          ;RUN 'HOLD DELAY' TIMER WHEN PHASE GAINS ROW.
   RUN<12>
END

IFT CNDTER12 THN                                     ;SET FLAG WHEN 'HOLD DELAY TIMER TERMINATES'.
    TRUE=2SCRT39
    RUN<13>
END
IFT CNDTER13 THN                                     ;SET FLAG WHEN 'ADD HOLD DELAY TIMER TERMINATES'.
    TRUE=2SCRT40
END

CNDTMA15.((2SCRT39.((CNDTMA13.2SCRT68 $
.NOT(2SCRT37+2SCRT38) $                              ;SET THE 'HOLD OUTPUT'FLAG WHEN THE 'HOLD DELAY
.(CFE4+EXTAA).(CFE5+EXTAC))+(2SCRT40.(CFE4+EXTAA) $  ;TIMERS EXPIRE AND THE ABOVE CONDITIONS ARE MET
.(CFE5+EXTAC))))+(NOT(2SCRT39).(EXTAC+CFE6).CNDTMA14))=2SCRT42

IFT TERMA THN                                        ;RUN 'HOLD EXTEND' TIMER TO HOLD OUTPUT WHEN PHASE
    RUN<14>                                          ;TERMINATES
END

CNDTER15=+2SCRT43                                    ;'OVERRIDE TIMER EXPIRED' FLAG
2SCRT42=MOVADET44                                    ;'HOLD OUTPUT' FLAG SETS MOVADET

IFT CNDTER12 THN                                     ;WHEN 'HOLD DELAY TIMER' TERMINATES RUN THE
    RUN<15>                                          ;'OVERRIDE TIMER'
END

IFT TERMA THN                                        ;HOLD AND ADD HOLD DELAY TIMER TERMINATED
    FALSE=2SCRT39                                    ;FLAGS RESET WHEN PHASE TERMINATES
    FALSE=2SCRT40
END

NOT(CNDTMA14)=.2SCRT43                               ;'OVERRIDE TIMER EXPIRED' FLAG RESET WHEN TIMER STARTS.
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; QUEUE ON CIRCULATORY PHASE A ON THE EAST CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; INPUT IS AQEAST
; ~~~~~~~~~~~~~~~
IFT AQEAST.NOT(2SCRT48) $
.NOT(CNDTMA22) THN                                  ;AQEAST INPUT ACTIVE
    RUN<21>                                         ;RUNS PULSE TIMER
    RUN<22>                                         ;RUNS INHIBIT TIMER
END
CNDTMA21:=+MOVADET47                                ;PULSE TIMER RUNNING SETS MOVADET47
        *=ROUGH4                                    ;AND FLAGS A VA HURRY CALL 1
   AQEAST=2SCRT48                                   ;SET FLAG TO STOP TIMER RUNNING AGAIN

; DELAYED REVERT
; ~~~~~~~~~~~~~~
IFT EXTAB THN                                       ;IF PHASE EXTENSIONS HAVE JUST EXPIRED THEN RUN
    RUN<23>                                         ;A 'PULSE DELAY' TIMER.
END

IFT CNDTER23 THN                                    ;WHEN THAT TIMER EXPIRES RUN A 'MOVADET PULSE' TIMER
        RUN<24>
END

CNDTMA24=+MOVADET48                                 ;MOVADET ACTIVE WHEN PULSE TIMER RUNNING
IFT EXTAD THN                                       ;IF PHASE EXTENSIONS HAVE JUST EXPIRED THEN RUN
    RUN<25>                                         ;A 'PULSE DELAY' TIMER.
END
IFT CNDTER25 THN                                    ;WHEN THAT TIMER EXPIRES RUN A 'MOVADET PULSE' TIMER
    RUN<26>
END

CNDTMA26=+MOVADET49
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; MOVA OFFLINE TIMER (STREAM 1)
; ================================================================================================
; FLAGS                                                TIMERS
; ~~~~~                                                ~~~~~~
; 2SCRT51   = 'MOVA ACTIVE' FLAG                       CND TIMER 29  = 'MOVA OFFLINE MINUTES' TIMER
; 2SCRT52   = 'SCRATCH BYTE LOADED' FLAG
; 2SCRT53   = 'MINUTES TIMER ACTIVE' FLAG              CONDITIONING SWITCH
; 2SCRT54   = 'SCRATCH BYTE DECREMENT ENABLE' FLAG     ~~~~~~~~~~~~~~~~~~
; 2SCRT55   = 'PRESET TIME ELAPSED' FLAG               CFE11=DISABLE MOVA IF NOT RUNNING ON STREAM 1
; 2SCRT56   = 'MOVA OFFLINE' FLAG                      CFE12=DISABLE MOVA IF NOT RUNNING ON EAST CONTROLLER
; 2SCRT57   = 'MOVACRB DISABLE' FLAG
; 2SCRT58   = 'MOVA OFFLINE ON EAST CONTROLLER' FLAG
; 1SCRTCH10 = 'SECONDS SCRATCH BYTE'
; ================================================================================================
IFT NOT(MOVA1).2SCRT51.NOT(2SCRT52) THN               ;IF MOVA OFFLINE AND 'MOVA ACTIVE' FLAG SET THEN LOAD 60 INTO
    LOD<60>1SCRTCH10                                  ;SCRATCH BYTE 0 AND SET 'SCRATCH BYTE RE-LOAD' FLAG
    TRUE=2SCRT52                                      ;TO PREVENT AN UNWANTED RE-LOAD.
END
NOT(CNDTER29)=.2SCRT53                                ;RESET 'MINUTES TIMER ACTIVE' FLAG WHEN 'MINUTES'
                                                      ;TIMER TERMINATED.
IFT 2SCRT52.NOT(2SCRT53).NOT(1SCRTST10 EQL<0>) THN    ;IF 'SCRATCH BYTE LOADED' FLAG IS SET AND SCRATCH BYTE
    RUN<29>                                           ;IS NOT EQUAL TO 0 AND THE 'MINUTES TIMER ACTIVE' FLAG
    TRUE=2SCRT53                                      ;IS RESET RE-RUN THE 'MINUTES' TIMER AND SET THE
                                                      ;'MINUTES TIMER ACTIVE' FLAG TO PREVENT AN UNWANTED RE-START
    IFT 2SCRT54 THN                                   ;IF 'SCRATCH BYTE DECREMENT ENABLE' FLAG THEN DECREMENT
        DEC 1SCRTCH10                                 ;SCRATCH BYTE.
    END                                               ;SET THE 'SCRATCH BYTE DECREMENT ENABLE' TO PREVENT
    TRUE=2SCRT54                                      ;DECREMENT OF SCRATCH BYTE ON FIRST PASS.  THIS ENSURES
END                                                   ;SECONDS TO MINUTES RATIO REMAINS CORRECT.
2SCRT54.1SCRTST10 EQL<0> =2SCRT55                     ;'PRESET TIME ELAPSED' FLAG  SET WHEN SCRATCH BYTE EQUALS ZERO.
IFT 1SCRTST10 EQL<0> THN                              ;WHEN SCRATCH BYTE DECREMENTS TO 0 THEN THE
    FALSE=2SCRT52                                     ;'SCRATCH BYTE LOADED' FLAG IS RESET
END

MOVA1=2SCRT51                                         ;MOVA JUST GONE ACTIVE.

IFT NOT(MOVA1).2SCRT55 THN                            ;IF MOVA IS OFFLINE ON STREAM 1 AND THE TIMER HAS EXPIRED THEN
    TRUE=2SCRT56                                      ;SET 'MOVA OFFLINE' FLAG.
ELS
    IFT MOVA1 THN                                     ;OTHERWISE IF MOVA OPERATIONAL THEN CLEAR THE
    FALSE:::=2SCRT56                                  ;'MOVA OFFLINE' FLAG AND THE 'PRESET TIME ELAPSED' FLAG
           *=2SCRT53                                  ;AND THE 'MINUTES TIMER ACTIVE' AND THE
           *=2SCRT54                                  ;'SCRATCHBYTE DECREMENT ENABLE' FLAGS
           *=2SCRT55
  END
END

2SCRT56.CFE11:=2SCRT57                                ;'MOVACRB DISABLE' FLAG AND SET THE 'MOVA DISABLED WEST'
            *=MOVADISW                                ;OUTPUT TO THE EAST CONTROLLER

; MOVA DISABLE IF MOVA OFFLINE ON EAST CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
MOVADISE.CFE12=2SCRT58                                ;IF MOVA IS OFFLINE ON THE EAST CONTROLLER DISABLE
                                                      ;THE CRB INPUTS TO BOTH STREAMS
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; ADDITIONAL CALL CANCEL UNIT 8 FOR AX4 LOOP
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; 2SCRT59   = 'CALL DELAY TIMER EXPIRED FLAG' FOR AX4. TIMER 33
; 2SCRT60   = AX4 CALL CANCEL OUTPUT. TIMER 34
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT AX4.NOT(CNDTMA33) THN                          ;IF THE C/CANCEL LOOP IS ACTIVE AND THE 'CALL DELAY'
    RUN<34>                                        ;TIMER HAS EXPIRED LOAD THE 'CALL CANCEL' TIMER AND
    TRUE=+2SCRT59                                  ;SET 'CALL DELAY TIMER EXPIRED FLAG'
END
IFT NOT(AX4).NOT(CNDTMA34) THN                     ;IF THE C/CANCEL LOOP IS INACTIVE AND THE 'CALL CANCEL'
    RUN<33>                                        ;TIMER HAS EXPIRED LOAD THE 'CALL CANCEL' TIMER AND
    FALSE=.2SCRT59                                 ;CLEAR 'CALL DELAY TIMER EXPIRED FLAG'
END
2SCRT59=2SCRT60

; ADDITIONAL CALL CANCEL UNIT 9 FOR AX5 LOOP
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; 2SCRT61   = 'CALL DELAY TIMER EXPIRED FLAG' FOR AX5. TIMER 35
; 2SCRT62   = AX5 CALL CANCEL OUTPUT. TIMER 36
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT AX5.NOT(CNDTMA35) THN                          ;IF THE C/CANCEL LOOP IS ACTIVE AND THE 'CALL DELAY'
    RUN<36>                                        ;TIMER HAS EXPIRED LOAD THE 'CALL CANCEL' TIMER AND
    TRUE=+2SCRT61                                  ;SET 'CALL DELAY TIMER EXPIRED FLAG'
END
IFT NOT(AX4).NOT(CNDTMA36) THN                     ;IF THE C/CANCEL LOOP IS INACTIVE AND THE 'CALL CANCEL'
    RUN<35>                                        ;TIMER HAS EXPIRED LOAD THE 'CALL CANCEL' TIMER AND
    FALSE=.2SCRT61                                 ;CLEAR 'CALL DELAY TIMER EXPIRED FLAG'
END
2SCRT61=2SCRT62
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; ADDITIONAL QUEUE ACTIVE TIMER (STREAM 1)
; ================================================================================================
; FLAGS                                                 TIMERS
; ~~~~~                                                 ~~~~~~
; 2SCRT63    = 'SCRATCH BYTE LOADED' FLAG               CND TIMER 37  = 'AX4 OR AX5 QUEUE MINUTES' TIMER
; 2SCRT64    = 'MINUTES TIMER ACTIVE' FLAG
; 2SCRT65    = 'SCRATCH BYTE DECREMENT ENABLE' FLAG
; 2SCRT66    = 'PRESET TIME ELAPSED' FLAG
; 2SCRT67    = 'TIMER EXPIRED' FLAG
; 2SCRT68    = 'AX4 OR AX5 C/CANCEL ACTIVE' FLAG
; 1SCRTCH11  = 'SECONDS SCRATCH BYTE'
; ================================================================================================
IFT NOT(MODE0 EQL<8>).(2SCRT60+2SCRT62) $
.NOT(2SCRT63) THN                                       ;IF AX4 OR AX5 C/CANCEL UNITS ACTIVE THEN LOAD 60 INTO
    LOD<60>1SCRTCH11                                    ;SCRATCH BYTE 0 AND SET 'SCRATCH BYTE RE-LOAD' FLAG
    TRUE=2SCRT63
    TRUE=2SCRT68                                        ;TO PREVENT AN UNWANTED RE-LOAD.
END
NOT(CNDTER37)=.2SCRT64                                  ;RESET 'MINUTES TIMER ACTIVE' FLAG WHEN 'MINUTES'
                                                        ;TIMER TERMINATED.
IFT 2SCRT63.NOT(2SCRT64).NOT(1SCRTST11 EQL<0>) THN      ;IF 'SCRATCH BYTE LOADED' FLAG IS SET AND SCRATCH BYTE
    RUN<37>                                             ;IS NOT EQUAL TO 0 AND THE 'MINUTES TIMER ACTIVE' FLAG
    TRUE=2SCRT64                                        ;IS RESET RE-RUN THE 'MINUTES' TIMER AND SET THE
                                                        ;'MINUTES TIMER ACTIVE' FLAG TO PREVENT AN UNWANTED RE-START
    IFT 2SCRT65 THN                                     ;IF 'SCRATCH BYTE DECREMENT ENABLE' FLAG THEN DECREMENT
        DEC 1SCRTCH11                                   ;SCRATCH BYTE.
    END                                                 ;SET THE 'SCRATCH BYTE DECREMENT ENABLE' TO PREVENT
    TRUE=2SCRT65                                        ;DECREMENT OF SCRATCH BYTE ON FIRST PASS.  THIS ENSURES
END                                                     ;SECONDS TO MINUTES RATIO REMAINS CORRECT.
2SCRT65.1SCRTST11 EQL<0> =2SCRT66                       ;'PRESET TIME ELAPSED' FLAG  SET WHEN SCRATCH BYTE EQUALS ZERO.
IFT 1SCRTST11 EQL<0> THN                                ;WHEN SCRATCH BYTE DECREMENTS TO 0 THEN THE
    FALSE=2SCRT63                                       ;'SCRATCH BYTE LOADED' FLAG IS RESET
END

IFT 2SCRT66 THN                                         ;IF THE TIMER HAS EXPIRED THEN
    TRUE=2SCRT67                                        ;SET 'TIMER EXPIRED' FLAG.
ELS
    IFT 2SCRT67.2SCRT68 THN                             ;IF 'TIMER EXPIRED' FLAG AND THE 'QUEUE ACTIVE' FLAG
    FALSE::::=2SCRT64                                   ;ARE SET THEN CLEAR THE TIMER FLAGS AND THE
            *=2SCRT65                                   ;'QUEUE ACTIVE' FLAG.
            *=2SCRT66
            *=2SCRT67
            *=2SCRT68
    END
END
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; BUS PRIORITY INPUTS INTO MOVA
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; BUS PRIORITY INPUT
; ~~~~~~~~~~~~~~~~~~
IFT BD1.NOT(SCRT0) THN                          ;IF BUS PRIORITY HOLD INPUT ACTIVE THEN
   RUN<7>                                       ;RUN 'MOVA PULSE' TIMER
END
BD1=SCRT0

CNDTMA7:=+MOVADET16                             ;IF 'MOVA PULSE' TIMER ACTIVE THEN OUTPUT
       *=MIL23                                  ;TO MOVADET16 AND ILLUMINATE AUX LED 2
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; PHASED GREEN CONFIRM TO EAST CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
PHASED.EXTAD=PHDWCOP                                ;WHEN PHASE D AND EXTENSION ACTIVE SENDS OUTPUT PHDWCOP
                                                    ;TO EAST CONTROLLER
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; SLAVE INPUT TIME SYNC PULSE WHICH IS RECEIVED FROM MASTER CONTROLLER E37280
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; TIME SYNC
; ~~~~~~~~~
TIMESYNC=TS
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning

```
; ST900ELV LAMP SUPPLY FOR GEMINI II
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LMPON.SWLMPS.NOT(FLF17)=LAMPSUP                    ;LAMP SUPPLY FAIL SENDS LAMPSUP OUTPUT TO INSTATION
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning Timers

Special Conditioning Timers

Timers: 0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	8	0	255	☐	MOVADET5 PULSE TIMER	16	5	0	255	☐	MOVADET45 PULSE DLY TMR
1	2	0	255	☐	MOVADET5 PULSE INH TIMER	17	8	0	255	☐	MOVADET45 PULSE TMR
2	8	0	255	☐	MOVADET14 PULSE DLY TMR	18	12	0	255	☐	MOVADET46 HOLD DLY TMR
3	8	0	255	☐	MOVADET14 PULSE TMR	19	5	0	255	☐	MOVADET46 HOLD EXT TMR
4	255	0	255	☐	MOVADET15 HOLD DLY TMR	20	60	0	255	☐	MOVADET46 HOLD O/R TMR
5	2	0	255	☐	MOVADET15 HOLD EXT TMR	21	8	0	255	☐	MOVADET47 PULSE TIMER
6	60	0	255	☐	MOVADET15 HOLD O/R TMR	22	2	0	255	☐	MOVADET47 INHIBIT TIMER
7	5	0	255	☐	MOVADET16 PULSE TIMER	23	10	0	255	☐	MOVADET48 PULSE DLY TMR
8	2	0	255	☐	MOVADET17 PULSE TIMER	24	2	0	255	☐	MOVADET48 PULSE TMR
9	60	0	255	☐	AUX LED 2 TIMER	25	6	0	255	☐	MOVADET49 PULSE DLY TMR
10	255	0	255	☐	MOVADET43 PULSE DLY TMR	26	10	0	255	☐	MOVADET49 PULSE TMR
11	8	0	255	☐	MOVADET43 PULSE TMR	27	8	0	255	☐	Q43AWCOP PULSE TIMER
12	5	0	255	☐	MOVADET44 HOLD DLY TMR	28	2	0	255	☐	Q43AWCOP INHIBIT TIMER
13	5	0	255	☐	MOVADET44 ADD HOLD DLY	29	5	0	255	☐	MOVA OFFLINE TIMER
14	5	0	255	☐	MOVADET44 HOLD EXT TMR	30		0	255	☐	
15	60	0	255	☐	MOVADET44 HOLD O/R TMR	31		0	255	☐	

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning Timers

Special Conditioning Timers

Timers

32-63

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
32	2	0	255	☐	AQSL7 OR AQSL8 PULSE TIMER	48		0	255	☐	
33	6	0	255	☐	AX4 CALL DELAY TIMER	49		0	255	☐	
34	0	0	255	☐	AX4 CANCEL DELAY TIMER	50		0	255	☐	
35	6	0	255	☐	AX5 CALL DELAY TIMER	51		0	255	☐	
36	0	0	255	☐	AX5 CANCEL DELAY TIMER	52		0	255	☐	
37	30	0	255	☐	AX QUEUE LONG TIMER	53		0	255	☐	
38		0	255	☐		54		0	255	☐	
39		0	255	☐		55		0	255	☐	
40		0	255	☐		56		0	255	☐	
41		0	255	☐		57		0	255	☐	
42		0	255	☐		58		0	255	☐	
43		0	255	☐		59		0	255	☐	
44		0	255	☐		60		0	255	☐	
45		0	255	☐		61		0	255	☐	
46		0	255	☐		62		0	255	☐	
47		0	255	☐		63		0	255	☐	

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Conditioning Timers

Special Conditioning Timers

Timers: 64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
64	200	120	200	☐	UTC F1 bit Watchdog Timer 1	80		0	255	☐	
65	0	0	100	☐	UTC F1 bit Watchdog Timer 2	81		0	255	☐	
66	200	120	200	☐	UTC F2 bit Watchdog Timer 1	82		0	255	☐	
67	0	0	100	☐	UTC F2 bit Watchdog Timer 2	83		0	255	☐	
68		0	255	☐		84		0	255	☐	
69		0	255	☐		85		0	255	☐	
70	200	120	200	☐	UTC F4 bit Watchdog Timer 1	86		0	255	☐	
71	0	0	100	☐	UTC F4 bit Watchdog Timer 2	87		0	255	☐	
72	200	120	200	☐	UTC F5 bit Watchdog Timer 1	88		0	255	☐	
73	0	0	100	☐	UTC F5 bit Watchdog Timer 2	89		0	255	☐	
74		0	255	☐		90		0	255	☐	
75		0	255	☐		91		0	255	☐	
76	5	0	255	☐	BD1 FORCE BIT MIN TIMER	92	180	0	255	☐	MOVA CRB TOGGLE STREAM 1
77		0	255	☐		93	1	1	5	☐	MIN LAMPS OFF STREAM 1
78		0	255	☐		94	180	0	255	☐	MOVA CRB TOGGLE STREAM 0
79		0	255	☐		95	1	1	5	☐	MIN LAMPS OFF STREAM 0

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Instructions

37279

Card Type	Rack Posn	Addr.	Port	Type	Line	Term Posn
Intelligent Backplane 16/0	Rack	01	0	I	000 - 007	2 LT1
Intelligent Backplane 16/0	Rack	01	1	I	008 - 015	2 LT1
Intelligent Backplane 16/0	Rack	02	2	I	016 - 023	2 LT2
Intelligent Backplane 16/0	Rack	02	3	I	024 - 031	2 LT2
Serial IO 24/16	1 I/O1	03	4	I	032 - 039	1 I/O1
Serial IO 24/16	1 I/O1	03	5	I	040 - 047	1 I/O1
Serial IO 24/16	1 I/O1	03	6	I	048 - 055	1 I/O1
Serial IO 24/16	1 I/O1	03	7	O	056 - 063	1 I/O1
Serial IO 24/16	1 I/O1	03	8	O	064 - 071	1 I/O1
CPU	A					

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/32900/020	ST900 ELV Cabinet UK 20A 1 LSLS - Grey	1		
3	667/1/32900/040	ST900 ELV Cabinet UK 40A 1 LSLS - Grey			
4	667/1/32900/021	ST900 ELV Cabinet UK 20A 1 LSLS - Black			
5	667/1/32900/041	ST900 ELV Cabinet UK 40A 1 LSLS - Black			
6					
7					
8					
9	667/1/32943/001	ELV Lamp switch (LSLS) kit			
10	667/1/32960/001	ELV Lamp switch (LSLS) backplane kit			
11	667/1/32995/002	ST900 I/O card kit (4 outputs)			
12	667/1/32995/001	ST900 I/O card kit (16 outputs)	1		
13					
14					
15					
16	667/1/27004/000	Integral TC12 OTU kit			
17	667/1/27005/000	SDE Facility kit			
18	667/1/32910/000	ST900 Intelligent detector backplane kit	2		
19	667/1/33002/000	ELV detector 6U rack expansion kit	1		
20	667/1/33074/000	ST900 ELV 24 V detector supply Kit (6A)			
21	667/1/20690/001	19" Detector Rack			
22					
23	667/1/32985/000	ELV 20A to 40A upgrade kit			
24					
25					
26	667/1/33070/000	ELV Regulatory Sign expansion kit			
27	667/1/32950/000	ELV Audible supply kit			
28	667/1/33009/000	ST900 300mA RCD kit			
29					
30	667/1/32900/001	Expansion cabinet kit - Black			
31	667/1/32900/000	Expansion cabinet kit - Grey			
32	667/1/33072/000	Cabinet mounted cut-out connection kit			
33					
34					
35					
36	667/1/27056/001	Manual Panel Full kit			
37	667/1/27110/000	Manual Panel RS232 kit			
38					
39					
40	667/1/16260/000	Configuration Eprom (Issue 1. 0)	1		

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/32900/920	ST900 ELV cuckoo Kit - T200			
43	667/1/32900/921	ST900 ELV cuckoo Kit - T400			
44	667/1/32900/922	ST900 ELV cuckoo Kit - T800			
45	667/1/32900/923	ST900 ELV cuckoo Kit - Microsense			
46	667/1/32900/925	ST900 ELV cuckoo Kit - Peek			
47					
48					
49					
50					
51					
52	667/1/33073/000	ST900 Isolator locking kit			
53	667/2/20234/000	Screw Lock Key			
54					
55					
56	667/1/27104/000	ST800 / ST900 DFM Lens Kit			
57	667/1/21150/002	ST800 / ST900 Gas Plinth			
58	667/2/27096/000	ST800 / ST900 Mounting Stool			
59					
60					
61					
62	667/1/26271/000	Telephone Kit (Lightning protection)			
63	667/1/27118/000	Surge Arrester (Lightning protection)			
64					
65					
66					
67	667/1/32900/120	ST900 ELV Cabinet Export 20A 1 LSLS - Grey			
68	667/1/32900/140	ST900 ELV Cabinet Export 40A 1 LSLS - Grey			
69	667/1/32900/121	ST900 ELV Cabinet Export 20A 1 LSLS - Black			
70	667/1/32900/141	ST900 ELV Cabinet Export 40A 1 LSLS - Black			
71					
72					
73	667/1/32900/900	ST900 ELV export rack Kit			
74	667/1/32945/000	ST900 ELV additional LSLS rack wiring kit			
75					
76	667/1/27007/000	IRM Facility			
77					
78					
79					
80					

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Instructions

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Special Instructions

```
; SPECIAL INSTRUCTIONS FOR TIME SYNCH
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
TS BIT ON THE UTC BIT PATTERN IS NOT USED BUT THIS CONTROLLER IS SYNCHRONISED FROM THE MASTER CONTROLLER ( ORN043 )
;
; ================================================================================================================
```

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Call Cancel

Call Cancel

Unit No.	Input Name	Call Delay	Cancel Delay	Phase Demanded (Unlatched Demand)
0	AIN1	6	0	
1	AIN2	6	0	
2	DX39	6	0	
3	DX40	6	0	
4	DX41	6	0	
5	Q43A	8	0	
6	Q43B	8	0	
7	Q43C	8	0	

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 0

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	AIN1	☑	☑	☐	☐	☐	Y	0	5.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT1	A1
○	1	1	I	AIN2	☑	☑	☐	☐	☐	Y	0	5.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT1	A2
○	2	2	I	AX3	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A3
○	3	3	I	AX4	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A4
○	4	4	I	AX5	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B1
○	5	5	I	BIN6	☑	☑	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B2
○	6	6	I	BIN7	☑	☑	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B3
○	7	7	I	BX8	☑	☑	☐		☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 1

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	8	0	I	BX9	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C1
○	9	1	I	BX10	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C2
○	10	2	I	BX11	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C3
○	11	3	I	BSL12A	☑	☑	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C4
○	12	4	I	BSL12B	☑	☑	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D1
○	13	5	I	BSL12C	☑	☑	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D2
○	14	6	I	BSL12D	☑	☑	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D3
○	15	7	I	CX33	☑	☑	☐		☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 2

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	16	0	I	CX34	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A1
○	17	1	I	CX35	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A2
○	18	2	I	CX36	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A3
○	19	3	I	DIN37	☑	☑	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A4
○	20	4	I	DIN38	☑	☑	☐	☐	☐	Y	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B1
○	21	5	I	DX39	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	B2
○	22	6	I	DX40	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	B3
○	23	7	I	DX41	☑	☑	☐		☐	A	0	4.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 3

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	24	0	I	DSL42A	☑	☑	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C1
○	25	1	I	DSL42B	☑	☑	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C2
○	26	2	I	DSL42C	☑	☑	☐	☐	☐	A	0	1.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C3
○	27	3	I	Q43A	☑	☑	☐	☐	☐	Y	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	C4
○	28	4	I	Q43B	☑	☑	☐	☐	☐	Y	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	D1
○	29	5	I	Q43C	☑	☑	☐	☐	☐	Y	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	D2
○	30	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D3
○	31	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 4

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	32	0	I	AQEAST	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	33	1	I	ECPHF	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	34	2	I	MOVADISE	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	35	3	I	STOPMOVA	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	36	4	I	HOLD	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	37	5	I	CANCEL	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	38	6	I	TIMESYNC	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	39	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 7

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	56	0	O	PHDWCOP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	57	1	O	Q43AWCOP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	58	2	O	MOVADISW	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	59	3	O	LAMPSUP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	60	4	O		☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	61	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	62	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	63	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 1 of 1 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	D	Amber	Phase
31	A	Amber	Phase	15	D	Green	Phase
30	A	Green	Phase	14	N/A	N/A	N/A
29	B	Red	Phase	13	N/A	N/A	N/A
28	B	Red	Phase	12	N/A	N/A	N/A
27	B	Amber	Phase	11	N/A	N/A	N/A
26	B	Amber	Phase	10	N/A	N/A	N/A
25	B	Green	Phase	9	N/A	N/A	N/A
24	B	Green	Phase	8	N/A	N/A	N/A
23	C	Red	Phase	7	N/A	N/A	N/A
22	C	Red	Phase	6	N/A	N/A	N/A
21	C	Amber	Phase	5	N/A	N/A	N/A
20	C	Amber	Phase	4	N/A	N/A	N/A
19	C	Green	Phase	3	N/A	N/A	N/A
18	C	Green	Phase	2	N/A	N/A	N/A
17	D	Red	Phase	1	N/A	N/A	N/A

Works Order : 460517250
EM Number : 37279
Engineer : Kevin L Roberts
Intersection : Barnes Meadow Rdbt Bedford Rd (E-Bnd) & Rushmere - Northampton ORN101

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays (No configuration data to print)

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves
- 4.3 UTC and MOVA
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions
    - 4.3.3.2 UTC Stage and Mode Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces
  - 4.3.4 UTC and MOVA Detectors
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral LMU Onboard Sensors
  - 4.5.3 Integral LMU External Sensors for Regulatory Signs
- 4.6 Hurry Call
- 4.7 Manual
  - 4.7.1 Manual Panel
  - 4.7.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives (ELV Controllers)
- 7.4 I/O - DFM Group Timings

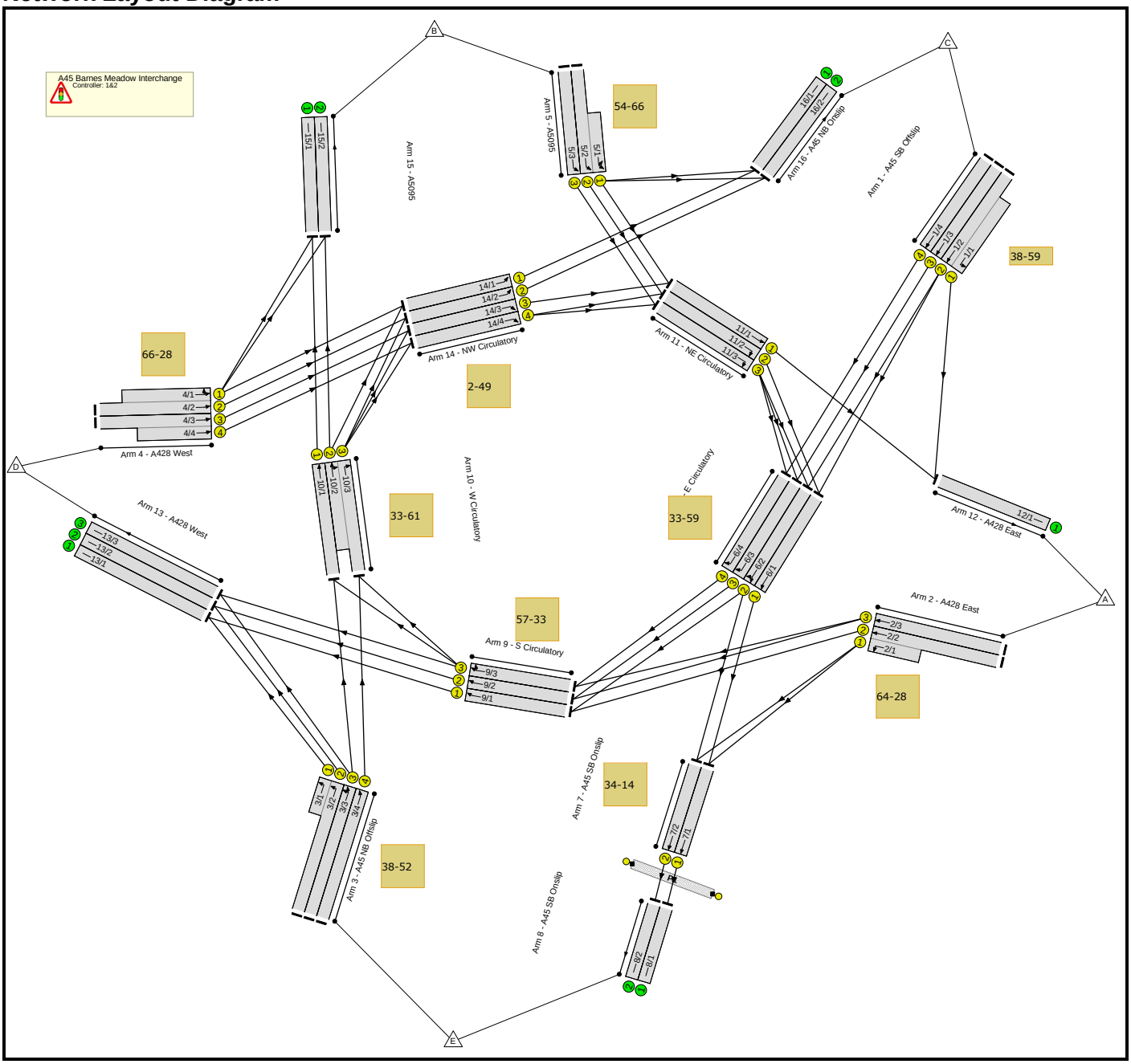
APPENDIX C

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 10
Location:	A45, Nene Valley Way (south); A428, Bedford Road (west)/ A5095, Rushmere Road/ A45, Nene Valley Way (north)/ A428, Bedford Road (east)
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

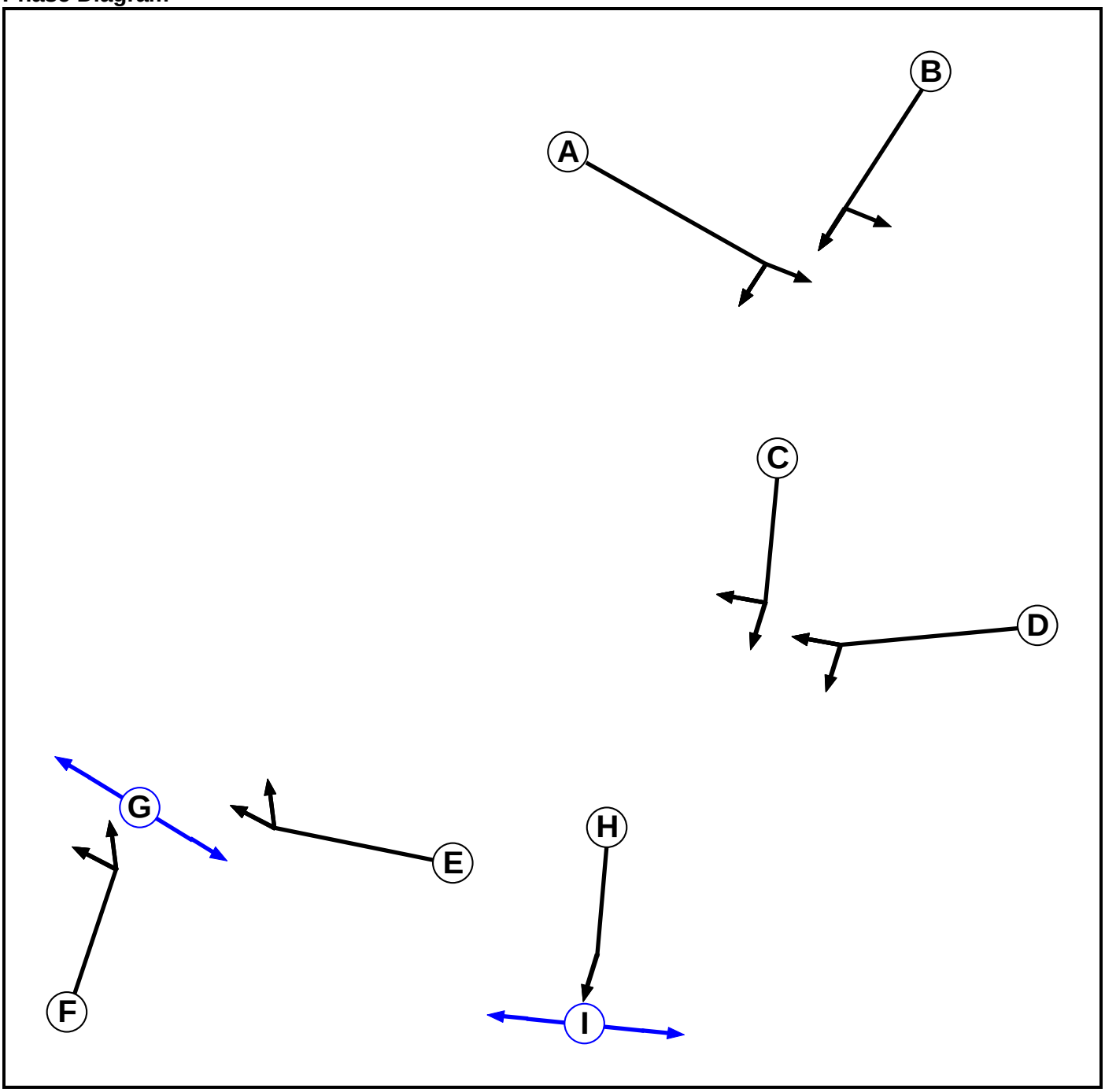
Network Layout Diagram



Full Input Data And Results

C1 - ORN 43

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Traffic	2		7	7
F	Traffic	2		7	7
G	Pedestrian	2		7	7
H	Traffic	3		7	7
I	Pedestrian	3		7	7

Phase Intergreens Matrix

		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		5	-	-	-	-	-	-	-
	B	5		-	-	-	-	-	-	-
	C	-	-		5	-	-	-	-	-
	D	-	-	5		-	-	-	-	-
	E	-	-	-	-		5	-	-	-
	F	-	-	-	-	5		5	-	-
	G	-	-	-	-	-	14		-	-
	H	-	-	-	-	-	-	-		5
	I	-	-	-	-	-	-	-	8	

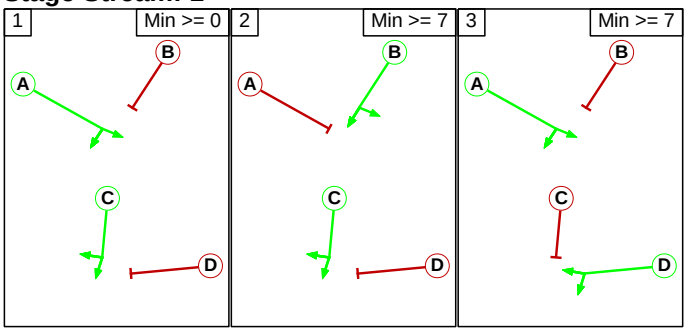
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A C
1	2	B C
1	3	A D
2	1	E G
2	2	E
2	3	F
3	1	H
3	2	I

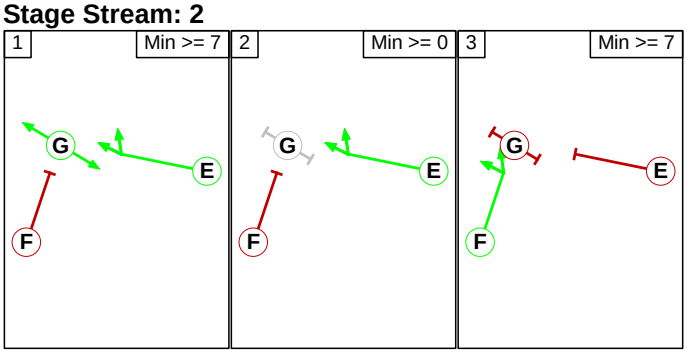
Full Input Data And Results

Stage Diagram

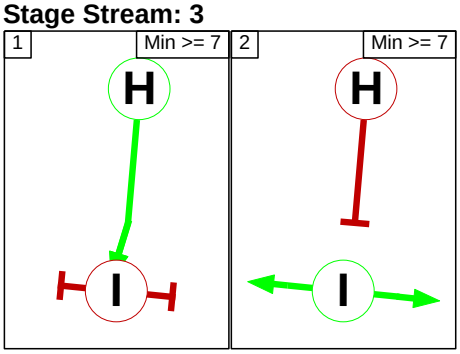
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage	1		5	5
	2	5		5
	3	5	5	

Stage Stream: 2

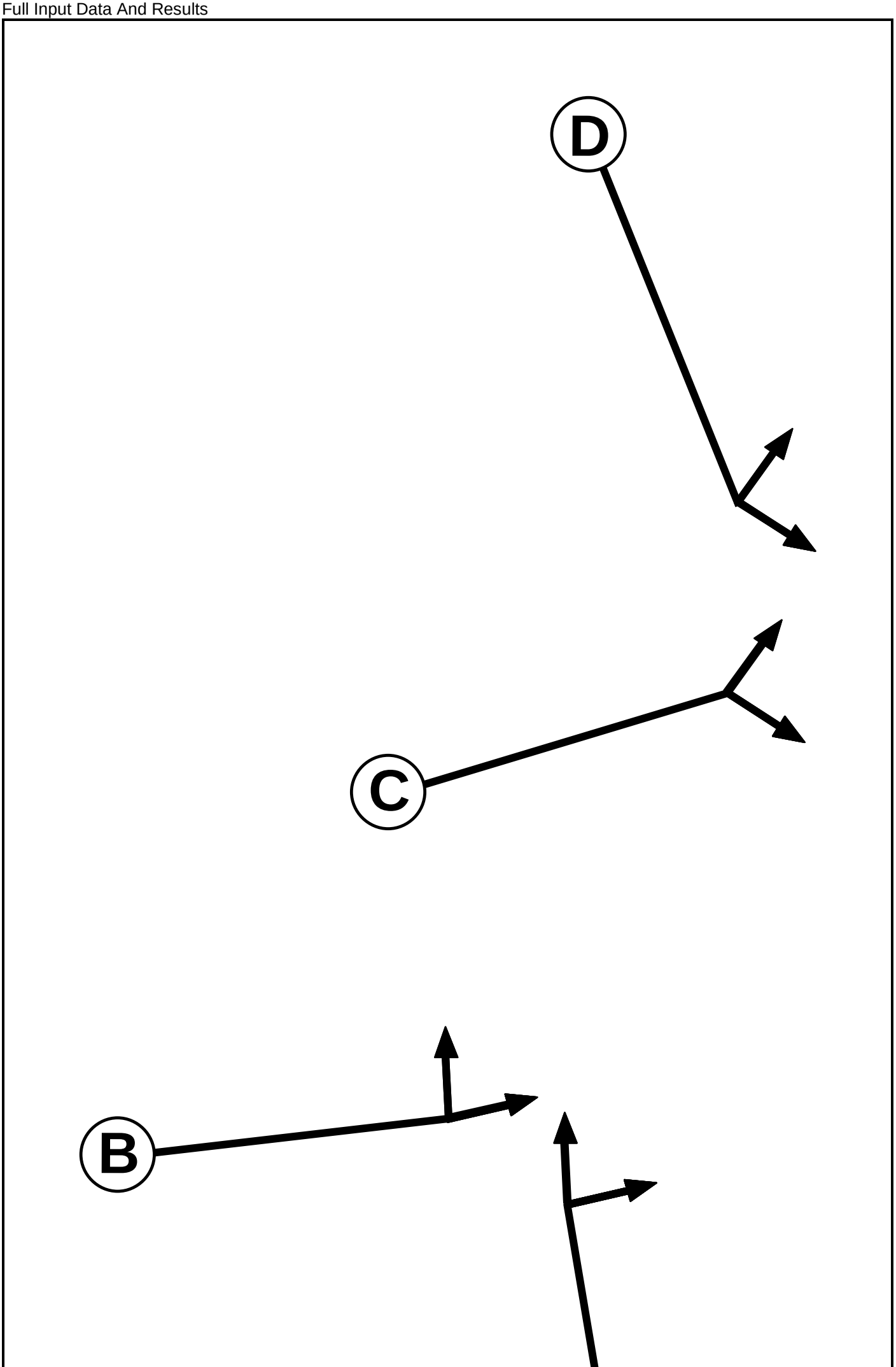
	To Stage		
From Stage	1		0	14
	2	0		5
	3	5	5	

Stage Stream: 3

	To Stage		
From Stage	1		5
	2	8	

Full Input Data And Results

C2 - ORN101
Phase Diagram


D
C
B

Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Phase Intergreens Matrix

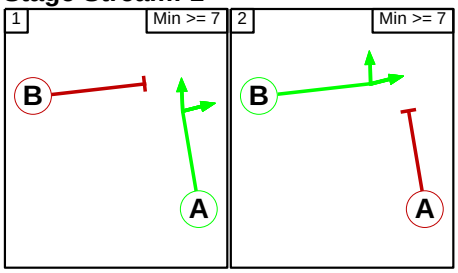
		Starting Phase			
		A	B	C	D
Terminating Phase	A		5	-	-
	B	5		-	-
	C	-	-		5
	D	-	-	5	

Phases in Stage

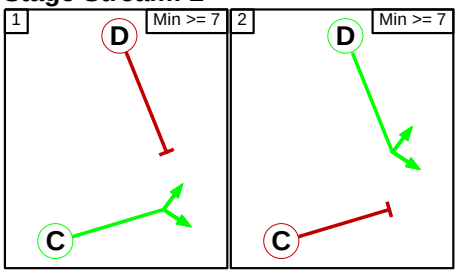
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 Barnes Meadow Interchange
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: A45 Barnes Meadow Interchange

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A45 SB Offslip)	U	B	2	3	15.0	User	1800	-	-	-	-	-
1/2 (A45 SB Offslip)	U	B	2	3	27.0	User	1800	-	-	-	-	-
1/3 (A45 SB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/4 (A45 SB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (A428 East)	U	D	2	3	6.1	User	1800	-	-	-	-	-
2/2 (A428 East)	U	D	2	3	7.0	User	1800	-	-	-	-	-
2/3 (A428 East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/1 (A45 NB Offslip)	U	F	2	3	4.3	User	1800	-	-	-	-	-
3/2 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/3 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/4 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/1 (A428 West)	U	B	2	3	10.4	User	1800	-	-	-	-	-
4/2 (A428 West)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/3 (A428 West)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/4 (A428 West)	U	B	2	3	8.7	User	1800	-	-	-	-	-
5/1 (A5095)	U	D	2	3	7.0	User	1800	-	-	-	-	-
5/2 (A5095)	U	D	2	3	12.2	User	1800	-	-	-	-	-
5/3 (A5095)	U	D	2	3	60.0	User	1800	-	-	-	-	-
6/1 (E Circulatory)	U	C	2	3	8.0	User	1900	-	-	-	-	-
6/2 (E Circulatory)	U	C	2	3	8.0	User	1900	-	-	-	-	-

Full Input Data And Results

6/3 (E Circulatory)	U	C	2	3	9.0	User	1900	-	-	-	-	-
6/4 (E Circulatory)	U	C	2	3	12.0	User	1900	-	-	-	-	-
7/1 (A45 SB Onslip)	U	H	2	3	4.3	User	1800	-	-	-	-	-
7/2 (A45 SB Onslip)	U	H	2	3	4.3	User	1800	-	-	-	-	-
8/1 (A45 SB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (A45 SB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (S Circulatory)	U	E	2	3	11.3	User	1900	-	-	-	-	-
9/2 (S Circulatory)	U	E	2	3	13.0	User	1900	-	-	-	-	-
9/3 (S Circulatory)	U	E	2	3	13.0	User	1900	-	-	-	-	-
10/1 (W Circulatory)	U	A	2	3	10.4	User	1900	-	-	-	-	-
10/2 (W Circulatory)	U	A	2	3	10.4	User	1900	-	-	-	-	-
10/3 (W Circulatory)	U	A	2	3	24.3	User	1900	-	-	-	-	-
11/1 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
11/2 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
11/3 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
12/1 (A428 East)	U		2	3	60.0	User	1900	-	-	-	-	-
13/1 (A428 West)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2 (A428 West)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/3 (A428 West)	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/2 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/3 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-

14/4 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
15/1 (A5095)	U		2	3	60.0	Inf	-	-	-	-	-	-
15/2 (A5095)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/1 (A45 NB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/2 (A45 NB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2015 Base AM'	08:00	09:00	01:00	
2: '2015 Base PM'	17:00	18:00	01:00	
3: '2021 20% Dev AM'	08:00	09:00	01:00	
4: '2021 20% Dev PM'	17:00	18:00	01:00	
5: '2021 DM AM'	08:00	09:00	01:00	
6: '2021 DM PM'	17:00	18:00	01:00	
7: '2021 DM + 2021 DS 20% AM'	08:00	09:00	01:00	F5 + F3
8: '2021 DM + 2021 DS 20% PM'	17:00	18:00	01:00	F6 + F4
9: '2021 DS AM'	08:00	09:00	01:00	
10: '2021 DS PM'	17:00	18:00	01:00	
11: '2031 DM AM'	08:00	09:00	01:00	
12: '2031 DM PM'	17:00	18:00	01:00	
13: '2031 DS AM'	08:00	09:00	01:00	
14: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2015 Base AM' (FG1: '2015 Base AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	67	222	317	262	868
	B	184	0	56	169	422	831
	C	479	140	0	1101	0	1720
	D	304	24	338	0	667	1333
	E	522	185	0	751	0	1458
	Tot.	1489	416	616	2338	1351	6210

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2015 Base AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	479
1/2 (with short)	887(In) 408(Out)
1/3	418
1/4	415
2/1 (short)	262
2/2 (with short)	570(In) 308(Out)
2/3	298
3/1 (short)	298
3/2 (with short)	596(In) 298(Out)
3/3	340
3/4	522
4/1 (short)	164
4/2 (with short)	362(In) 198(Out)
4/3 (with short)	971(In) 304(Out)
4/4 (short)	667
5/1 (short)	240
5/2 (with short)	545(In) 305(Out)
5/3	286
6/1	646
6/2	853
6/3	543
6/4	457
7/1	758
7/2	593
8/1	758
8/2	593
9/1	718
9/2	551
9/3	747
10/1	392
10/2 (short)	221
10/3 (with short)	744(In) 523(Out)
11/1	1010

Full Input Data And Results

11/2	646
11/3	612
12/1	1489
13/1	1016
13/2	849
13/3	473
14/1	361
14/2	199
14/3	826
14/4	667
15/1	404
15/2	12
16/1	389
16/2	227

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 2: '2015 Base PM' (FG2: '2015 Base PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	121	406	305	375	1207
	B	67	0	131	106	213	517
	C	150	98	0	583	0	831
	D	257	73	1205	0	786	2321
	E	317	454	0	575	0	1346
	Tot.	791	746	1742	1569	1374	6222

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2015 Base PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	150
1/2 (with short)	408(In) 258(Out)
1/3	215
1/4	208
2/1 (short)	375
2/2 (with short)	680(In) 305(Out)
2/3	527
3/1 (short)	287
3/2 (with short)	574(In) 287(Out)
3/3	364
3/4	408
4/1 (short)	638
4/2 (with short)	1278(In) 640(Out)
4/3 (with short)	1043(In) 257(Out)
4/4 (short)	786
5/1 (short)	198
5/2 (with short)	376(In) 178(Out)
5/3	141
6/1	616
6/2	641
6/3	307
6/4	222
7/1	731
7/2	643
8/1	731
8/2	643
9/1	563
9/2	307
9/3	749
10/1	455
10/2 (short)	465
10/3 (with short)	941(In) 476(Out)
11/1	641

Full Input Data And Results

11/2	616
11/3	489
12/1	791
13/1	850
13/2	594
13/3	125
14/1	812
14/2	799
14/3	574
14/4	786
15/1	491
15/2	255
16/1	877
16/2	865

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	75	341	638	262	1316
	B	184	0	12	27	422	645
	C	472	158	0	880	0	1510
	D	282	0	333	0	667	1282
	E	662	201	0	751	0	1614
	Tot.	1600	434	686	2296	1351	6367

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	472
1/2 (with short)	648(In) 176(Out)
1/3	451
1/4	411
2/1 (short)	262
2/2 (with short)	766(In) 504(Out)
2/3	550
3/1 (short)	313
3/2 (with short)	626(In) 313(Out)
3/3	326
3/4	662
4/1 (short)	166
4/2 (with short)	333(In) 167(Out)
4/3 (with short)	949(In) 282(Out)
4/4 (short)	667
5/1 (short)	196
5/2 (with short)	441(In) 245(Out)
5/3	204
6/1	584
6/2	687
6/3	472
6/4	411
7/1	697
7/2	654
8/1	697
8/2	654
9/1	686
9/2	604
9/3	829
10/1	434
10/2 (short)	171
10/3 (with short)	1003(In) 832(Out)
11/1	1128

Full Input Data And Results

11/2	584
11/3	532
12/1	1600
13/1	999
13/2	917
13/3	380
14/1	337
14/2	337
14/3	944
14/4	667
15/1	434
15/2	0
16/1	343
16/2	343

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	122	536	428	375	1461
	B	70	0	42	146	213	471
	C	375	94	0	625	0	1094
	D	312	115	1080	0	786	2293
	E	379	506	0	495	0	1380
	Tot.	1136	837	1658	1694	1374	6699

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	375
1/2 (with short)	482(In) 107(Out)
1/3	326
1/4	286
2/1 (short)	375
2/2 (with short)	803(In) 428(Out)
2/3	658
3/1 (short)	247
3/2 (with short)	495(In) 248(Out)
3/3	442
3/4	443
4/1 (short)	618
4/2 (with short)	1195(In) 577(Out)
4/3 (with short)	1098(In) 312(Out)
4/4 (short)	786
5/1 (short)	112
5/2 (with short)	317(In) 205(Out)
5/3	154
6/1	535
6/2	597
6/3	446
6/4	286
7/1	709
7/2	665
8/1	709
8/2	665
9/1	561
9/2	446
9/3	944
10/1	595
10/2 (short)	408
10/3 (with short)	1042(In) 634(Out)
11/1	761

Full Input Data And Results

11/2	535
11/3	610
12/1	1136
13/1	808
13/2	694
13/3	192
14/1	784
14/2	832
14/3	691
14/4	786
15/1	652
15/2	185
16/1	805
16/2	853

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 7: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	5	81	320	627	262	1295
	B	185	0	5	0	422	612
	C	472	150	0	797	0	1419
	D	295	1	344	0	667	1307
	E	673	197	0	865	0	1735
	Tot.	1630	429	669	2289	1351	6368

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2021 DS AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	472
1/2 (with short)	583(In) 111(Out)
1/3	444
1/4	392
2/1 (short)	262
2/2 (with short)	766(In) 504(Out)
2/3	529
3/1 (short)	347
3/2 (with short)	694(In) 347(Out)
3/3	368
3/4	673
4/1 (short)	65
4/2 (with short)	345(In) 280(Out)
4/3 (with short)	962(In) 295(Out)
4/4 (short)	667
5/1 (short)	190
5/2 (with short)	449(In) 259(Out)
5/3	163
6/1	567
6/2	633
6/3	444
6/4	392
7/1	688
7/2	663
8/1	688
8/2	663
9/1	615
9/2	566
9/3	799
10/1	405
10/2 (short)	343
10/3 (with short)	1021(In) 678(Out)
11/1	1158

Full Input Data And Results

11/2	567
11/3	522
12/1	1630
13/1	962
13/2	913
13/3	414
14/1	384
14/2	280
14/3	973
14/4	667
15/1	405
15/2	24
16/1	386
16/2	283

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 8: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	132	769	411	375	1687
	B	72	0	143	178	213	606
	C	426	96	0	620	0	1142
	D	285	58	1210	0	786	2339
	E	295	455	0	567	0	1317
	Tot.	1078	741	2122	1776	1374	7091

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2021 DS PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	426
1/2 (with short)	426(In) 0(Out)
1/3	379
1/4	337
2/1 (short)	375
2/2 (with short)	786(In) 411(Out)
2/3	901
3/1 (short)	283
3/2 (with short)	567(In) 284(Out)
3/3	427
3/4	323
4/1 (short)	653
4/2 (with short)	1268(In) 615(Out)
4/3 (with short)	1071(In) 285(Out)
4/4 (short)	786
5/1 (short)	215
5/2 (with short)	418(In) 203(Out)
5/3	188
6/1	525
6/2	554
6/3	477
6/4	337
7/1	688
7/2	686
8/1	688
8/2	686
9/1	491
9/2	477
9/3	1238
10/1	655
10/2 (short)	415
10/3 (with short)	1092(In) 677(Out)
11/1	652

Full Input Data And Results

11/2	525
11/3	652
12/1	1078
13/1	774
13/2	761
13/3	241
14/1	982
14/2	997
14/3	580
14/4	786
15/1	684
15/2	57
16/1	1053
16/2	1069

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	7	103	643	635	262	1650
	B	195	0	111	180	422	908
	C	639	191	0	709	0	1539
	D	297	59	359	0	667	1382
	E	402	89	0	699	0	1190
	Tot.	1540	442	1113	2223	1351	6669

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DM AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	639
1/2 (with short)	639(In) 0(Out)
1/3	534
1/4	366
2/1 (short)	262
2/2 (with short)	897(In) 635(Out)
2/3	753
3/1 (short)	278
3/2 (with short)	555(In) 277(Out)
3/3	233
3/4	402
4/1 (short)	218
4/2 (with short)	418(In) 200(Out)
4/3 (with short)	964(In) 297(Out)
4/4 (short)	667
5/1 (short)	306
5/2 (with short)	635(In) 329(Out)
5/3	273
6/1	603
6/2	592
6/3	608
6/4	366
7/1	706
7/2	645
8/1	706
8/2	645
9/1	741
9/2	608
9/3	1119
10/1	383
10/2 (short)	335
10/3 (with short)	1052(In) 717(Out)
11/1	901

Full Input Data And Results

11/2	603
11/3	666
12/1	1540
13/1	1019
13/2	885
13/3	319
14/1	494
14/2	508
14/3	706
14/4	667
15/1	412
15/2	30
16/1	549
16/2	564

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	3	135	1015	333	375	1861
	B	79	0	372	218	213	882
	C	560	104	0	595	0	1259
	D	252	196	1228	0	786	2462
	E	247	433	0	454	0	1134
	Tot.	1141	868	2615	1600	1374	7598

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DM PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	560
1/2 (with short)	560(In) 0(Out)
1/3	409
1/4	290
2/1 (short)	375
2/2 (with short)	708(In) 333(Out)
2/3	1153
3/1 (short)	227
3/2 (with short)	454(In) 227(Out)
3/3	336
3/4	344
4/1 (short)	754
4/2 (with short)	1424(In) 670(Out)
4/3 (with short)	1038(In) 252(Out)
4/4 (short)	786
5/1 (short)	451
5/2 (with short)	451(In) 0(Out)
5/3	431
6/1	519
6/2	565
6/3	542
6/4	290
7/1	676
7/2	698
8/1	676
8/2	698
9/1	418
9/2	542
9/3	1443
10/1	575
10/2 (short)	645
10/3 (with short)	1362(In) 717(Out)
11/1	581

Full Input Data And Results

11/2	519
11/3	698
12/1	1141
13/1	645
13/2	769
13/3	186
14/1	1106
14/2	1137
14/3	502
14/4	786
15/1	673
15/2	195
16/1	1292
16/2	1323

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 11: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	7	104	651	624	262	1648
	B	200	0	142	205	422	969
	C	686	198	0	708	0	1592
	D	297	53	383	1	667	1401
	E	370	88	0	694	0	1152
	Tot.	1560	443	1176	2232	1351	6762

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	686
1/2 (with short)	686(In) 0(Out)
1/3	463
1/4	443
2/1 (short)	262
2/2 (with short)	886(In) 624(Out)
2/3	762
3/1 (short)	259
3/2 (with short)	518(In) 259(Out)
3/3	264
3/4	370
4/1 (short)	226
4/2 (with short)	436(In) 210(Out)
4/3 (with short)	965(In) 297(Out)
4/4 (short)	668
5/1 (short)	342
5/2 (with short)	659(In) 317(Out)
5/3	310
6/1	605
6/2	601
6/3	552
6/4	443
7/1	713
7/2	638
8/1	713
8/2	638
9/1	741
9/2	552
9/3	1205
10/1	390
10/2 (short)	338
10/3 (with short)	1028(In) 690(Out)
11/1	874

Full Input Data And Results

11/2	605
11/3	690
12/1	1560
13/1	1000
13/2	811
13/3	421
14/1	511
14/2	523
14/3	674
14/4	668
15/1	416
15/2	27
16/1	582
16/2	594

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 12: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	153	1034	360	375	1922
	B	72	0	366	211	213	862
	C	479	95	0	555	0	1129
	D	306	175	1209	2	786	2478
	E	248	431	0	465	0	1144
	Tot.	1105	854	2609	1593	1374	7535

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	479
1/2 (with short)	479(In) 0(Out)
1/3	365
1/4	285
2/1 (short)	375
2/2 (with short)	735(In) 360(Out)
2/3	1187
3/1 (short)	232
3/2 (with short)	465(In) 233(Out)
3/3	340
3/4	339
4/1 (short)	733
4/2 (with short)	1384(In) 651(Out)
4/3 (with short)	1094(In) 306(Out)
4/4 (short)	788
5/1 (short)	438
5/2 (with short)	438(In) 0(Out)
5/3	424
6/1	525
6/2	549
6/3	503
6/4	285
7/1	677
7/2	697
8/1	677
8/2	697
9/1	435
9/2	503
9/3	1472
10/1	588
10/2 (short)	643
10/3 (with short)	1373(In) 730(Out)
11/1	626

Full Input Data And Results

11/2	525
11/3	687
12/1	1105
13/1	667
13/2	736
13/3	190
14/1	1110
14/2	1133
14/3	554
14/4	788
15/1	675
15/2	179
16/1	1293
16/2	1316

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A428 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A428 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A428 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A428 West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (A5095 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A5095 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A5095 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800

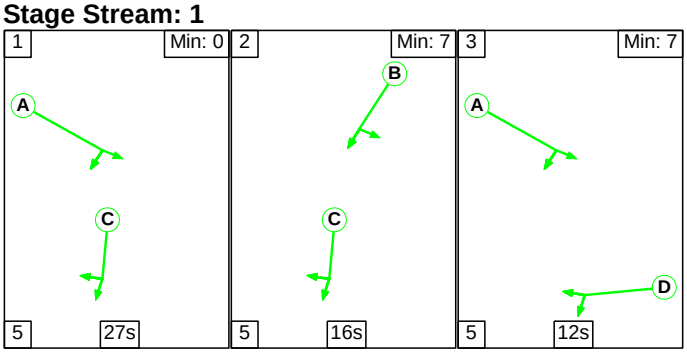
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 East Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (A428 West Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (A428 West Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (A428 West Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (A5095 Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5095 Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

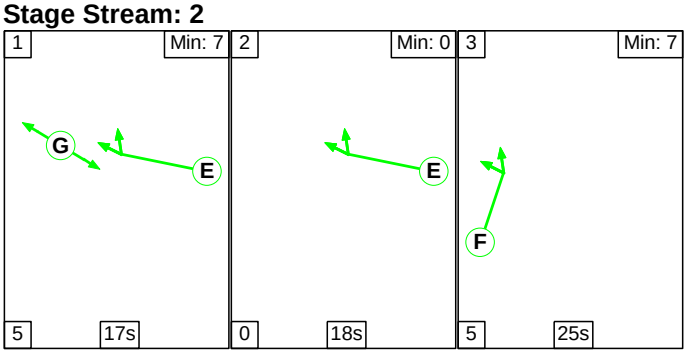
Scenario 1: '2015 Base AM' (FG1: '2015 Base AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

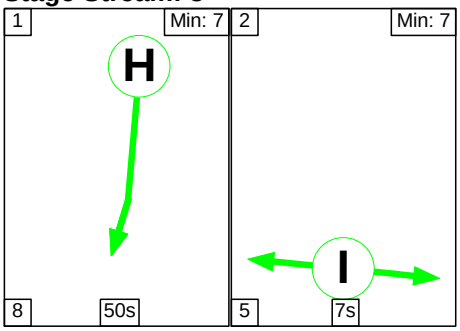
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	27	16	12
Change Point	54	16	37

Stage Stream: 2

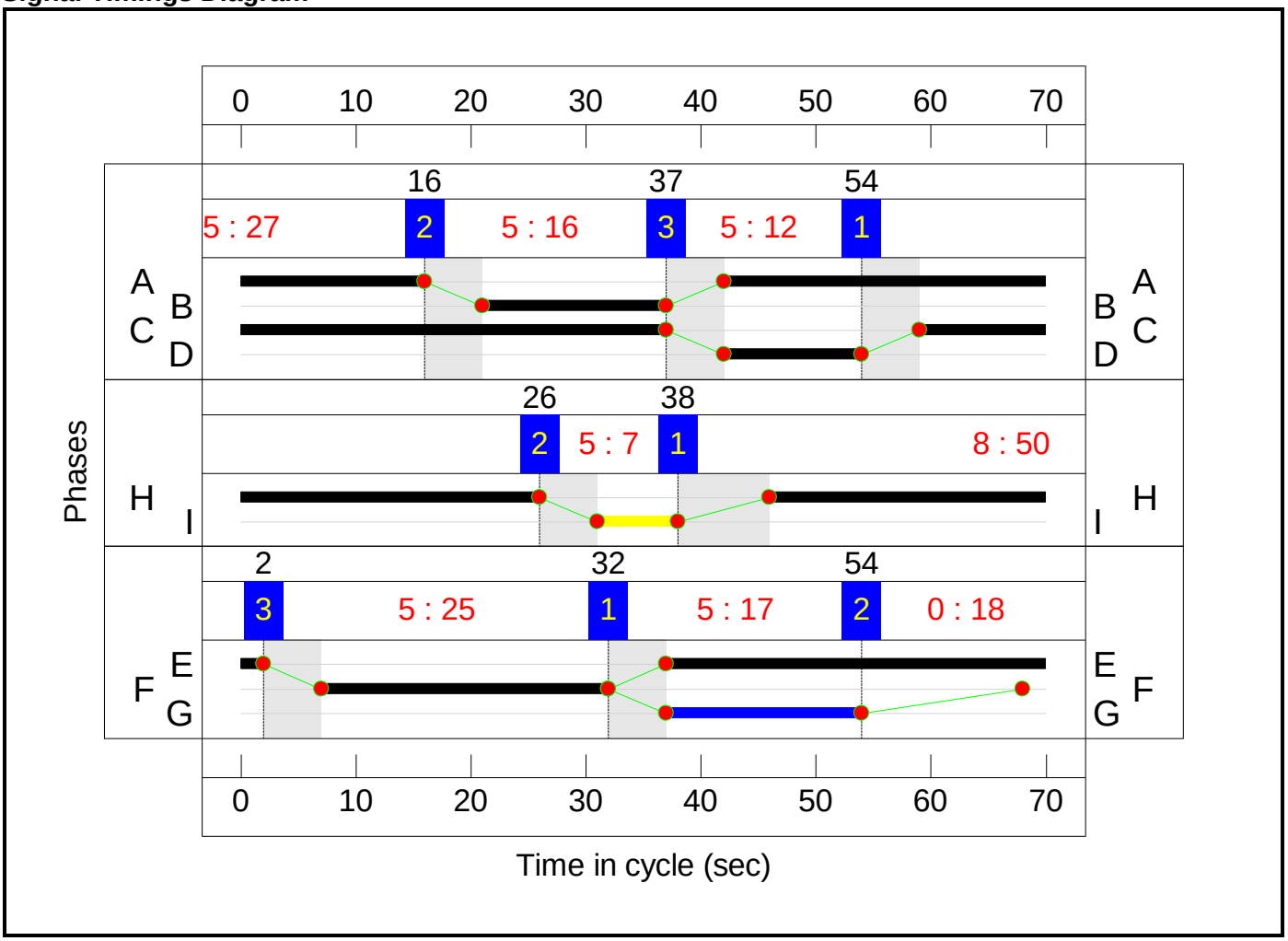
Stage	1	2	3
Duration	17	18	25
Change Point	32	54	2

Stage Stream: 3

Stage	1	2
Duration	50	7
Change Point	38	26

Full Input Data And Results

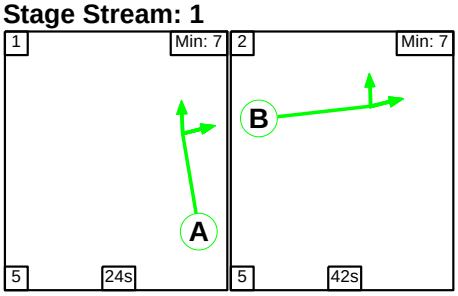
Signal Timings Diagram



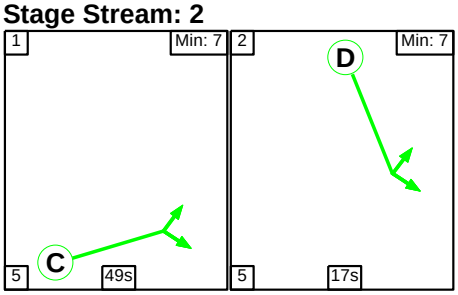
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

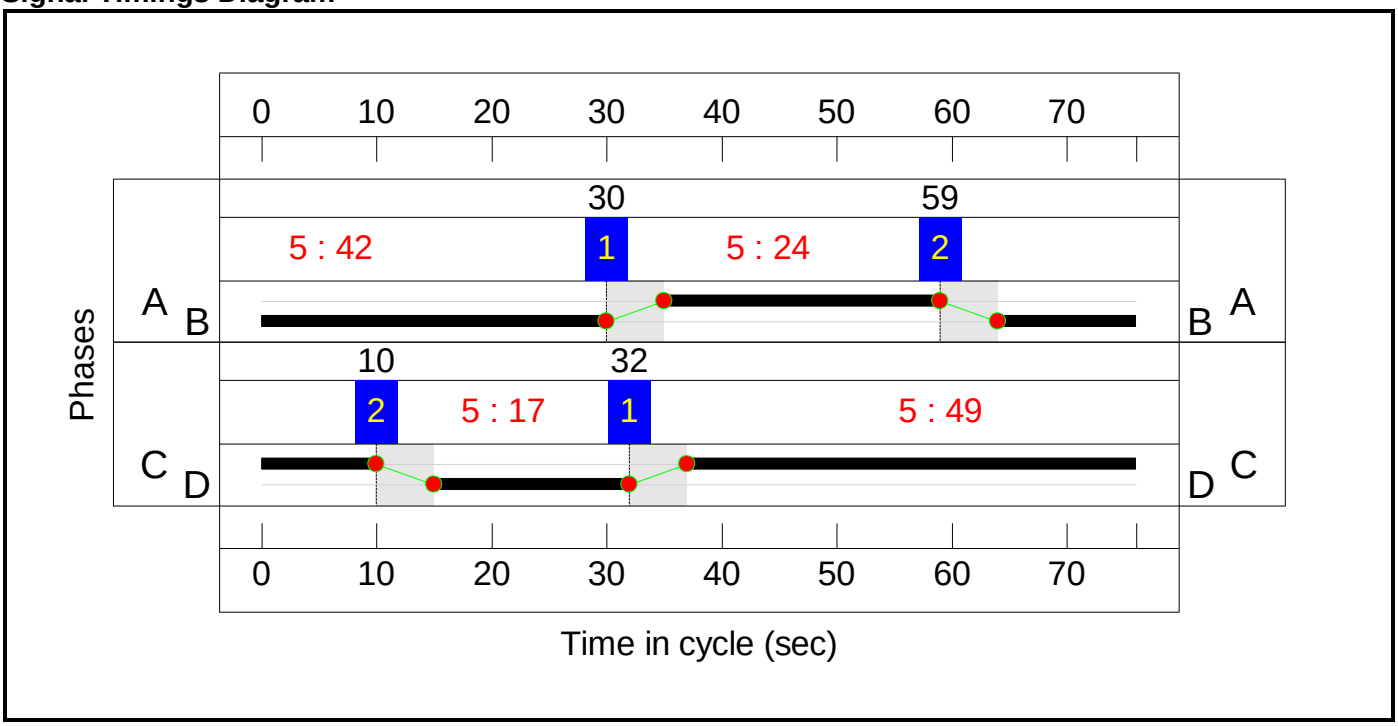
Stage Stream: 1

Stage	1	2
Duration	24	42
Change Point	30	59

Stage Stream: 2

Stage	1	2
Duration	49	17
Change Point	32	10

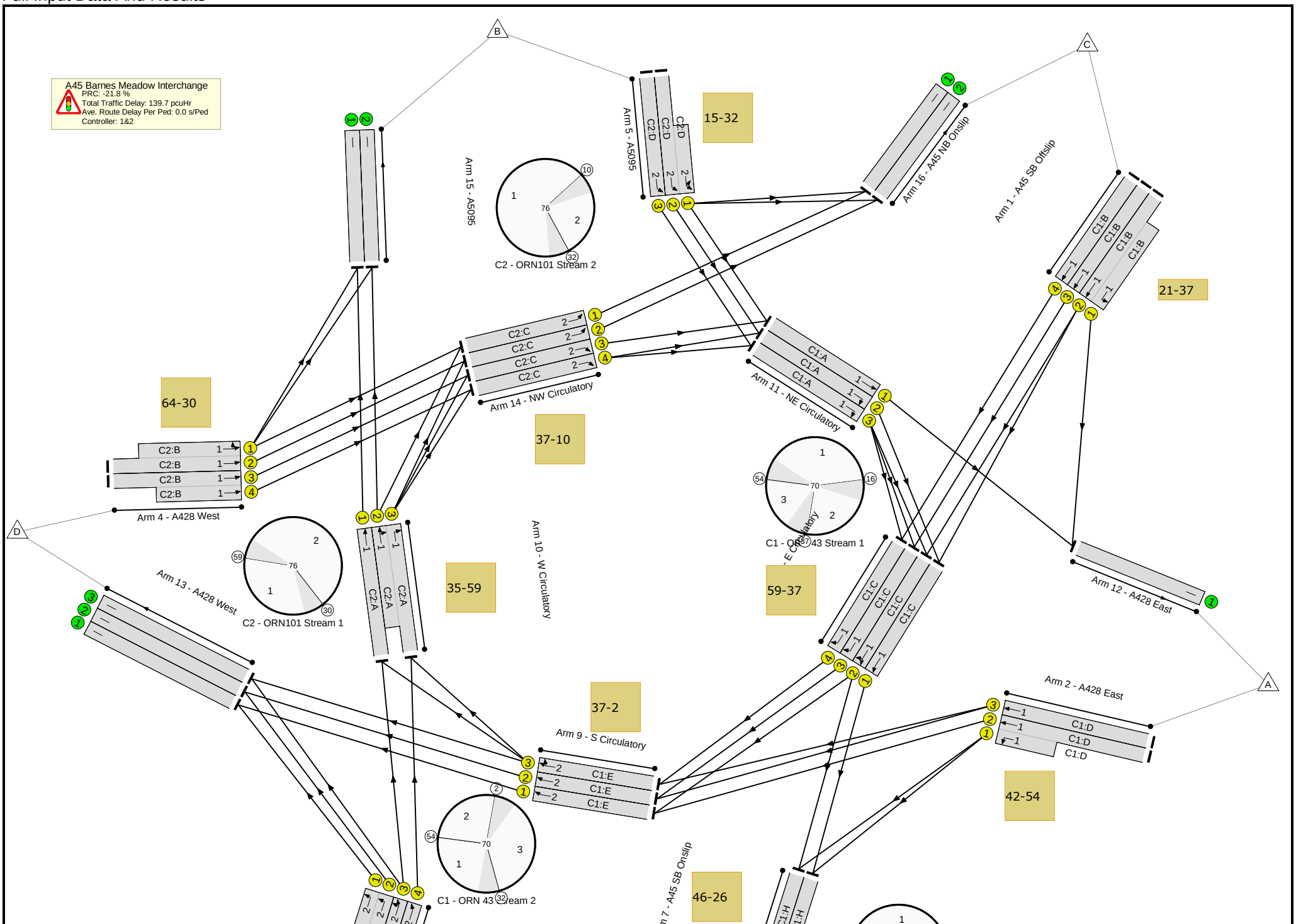
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**109.6%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**109.6%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	16	-	887	1800:1800	437+437	93.3 : 109.6%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	16	-	418	1800	437	95.6%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	16	-	415	1800	437	94.9%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	12	-	570	1800:1800	327+278	94.2 : 94.2%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	12	-	298	1800	334	89.1%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	25	-	596	1800:1800	449+449	66.4 : 66.4%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	25	-	340	1800	669	50.9%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	25	-	522	1800	669	78.1%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	42	-	362	1800:1800	787+652	25.2 : 25.2%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	42	-	971	1800:1800	383+841	79.3 : 79.3%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	17	-	545	1800:1800	385+303	79.3 : 79.3%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	17	-	286	1800	426	67.1%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	48	-	646	1900	1330	48.6%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	48	-	853	1900	1330	64.1%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	48	-	543	1900	1330	40.8%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	48	-	457	1900	1330	34.4%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	50	-	758	1800	1311	57.8%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	50	-	593	1800	1311	45.2%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	758	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	35	-	718	1900	977	73.5%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	35	-	551	1900	977	56.4%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	35	-	747	1900	977	76.4%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	24	-	392	1900	625	62.7%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	24	-	744	1900:1900	592+250	88.3 : 88.3%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	44	-	1010	1900	1221	82.7%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	44	-	646	1900	1221	52.9%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	44	-	612	1900	1221	50.1%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1489	1900	1900	76.2%
13/1	A428 West	U	N/A	N/A	-		-	-	-	1016	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	849	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	473	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	49	-	361	1900	1250	28.9%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	49	-	199	1900	1250	15.9%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	49	-	826	1900	1250	66.1%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	49	-	667	1900	1250	53.4%
15/1	A5095	U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	12	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	389	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	227	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**58.7**	**81.1**	**0.0**	**139.7**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**58.7**	**81.1**	**0.0**	**139.7**	**-**	**-**	**-**	**-**
1/2+1/1	887	845	-	-	-	7.7	33.0	-	40.7	165.2	10.1	33.0	43.1
1/3	418	418	-	-	-	3.0	6.5	-	9.5	82.1	8.0	6.5	14.5
1/4	415	415	-	-	-	3.0	6.1	-	9.1	78.6	7.8	6.1	13.9
2/2+2/1	570	570	-	-	-	4.4	6.1	-	10.4	65.9	5.8	6.1	11.9
2/3	298	298	-	-	-	2.3	3.5	-	5.8	69.5	5.6	3.5	9.1
3/2+3/1	596	596	-	-	-	2.7	1.0	-	3.7	22.5	4.6	1.0	5.6
3/3	340	340	-	-	-	1.6	0.5	-	2.1	22.5	5.1	0.5	5.6
3/4	522	522	-	-	-	2.8	1.7	-	4.6	31.5	8.8	1.7	10.6
4/2+4/1	362	362	-	-	-	0.8	0.2	-	1.0	9.7	2.0	0.2	2.2
4/3+4/4	971	971	-	-	-	2.8	1.9	-	4.7	17.5	10.3	1.9	12.2
5/2+5/1	545	545	-	-	-	4.0	1.9	-	5.8	38.5	5.8	1.9	7.7
5/3	286	286	-	-	-	2.1	1.0	-	3.1	39.0	5.4	1.0	6.4
6/1	646	646	-	-	-	1.4	0.5	-	1.9	10.4	9.8	0.5	10.3
6/2	853	853	-	-	-	1.7	0.9	-	2.6	11.0	8.6	0.9	9.5
6/3	543	543	-	-	-	0.9	0.3	-	1.2	8.3	3.8	0.3	4.2
6/4	457	457	-	-	-	0.7	0.3	-	1.0	7.8	2.8	0.3	3.0
7/1	758	758	-	-	-	0.1	0.7	-	0.8	3.6	8.2	0.7	8.9
7/2	593	593	-	-	-	0.0	0.4	-	0.4	2.7	4.6	0.4	5.0
8/1	758	758	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	718	718	-	-	-	0.3	1.4	-	1.7	8.6	5.8	1.4	7.2
9/2	551	551	-	-	-	1.1	0.6	-	1.8	11.5	7.5	0.6	8.1
9/3	747	747	-	-	-	0.5	1.6	-	2.1	10.4	6.5	1.6	8.1
10/1	392	392	-	-	-	2.3	0.8	-	3.2	29.2	7.0	0.8	7.8

Full Input Data And Results

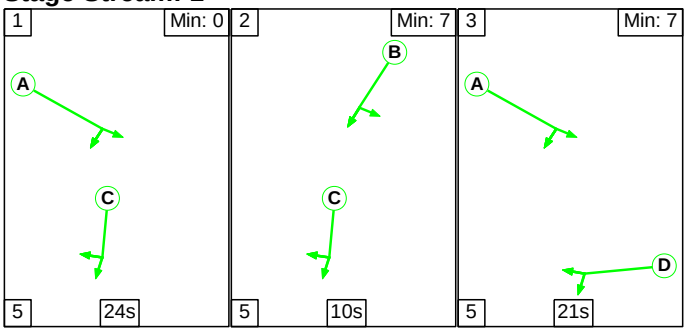
10/3+10/2	744	744	-	-	-	4.6	3.5	-	8.1	39.4	10.2	3.5	13.7
11/1	1010	1010	-	-	-	2.7	2.3	-	5.0	17.9	14.9	2.3	17.2
11/2	646	646	-	-	-	1.2	0.6	-	1.8	9.9	6.6	0.6	7.2
11/3	612	612	-	-	-	1.1	0.5	-	1.6	9.5	6.1	0.5	6.6
12/1	1447	1447	-	-	-	0.0	1.6	-	1.6	3.9	0.0	1.6	1.6
13/1	1016	1016	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	849	849	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	473	473	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	361	361	-	-	-	0.2	0.2	-	0.4	3.9	1.0	0.2	1.2
14/2	199	199	-	-	-	0.3	0.1	-	0.4	6.6	1.4	0.1	1.5
14/3	826	826	-	-	-	0.5	1.0	-	1.5	6.4	3.7	1.0	4.7
14/4	667	667	-	-	-	1.6	0.6	-	2.1	11.6	6.0	0.6	6.5
15/1	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	12	12	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	227	227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-21.8	Total Delay for Signalled Lanes (pcuHr):	90.62	Cycle Time (s):	70		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	15.3	Total Delay for Signalled Lanes (pcuHr):	16.04	Cycle Time (s):	70		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	55.7	Total Delay for Signalled Lanes (pcuHr):	1.20	Cycle Time (s):	70		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	2.0	Total Delay for Signalled Lanes (pcuHr):	17.02	Cycle Time (s):	76		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	13.5	Total Delay for Signalled Lanes (pcuHr):	13.28	Cycle Time (s):	76		
	PRC Over All Lanes (%):	-21.8	Total Delay Over All Lanes(pcuHr):	139.75				

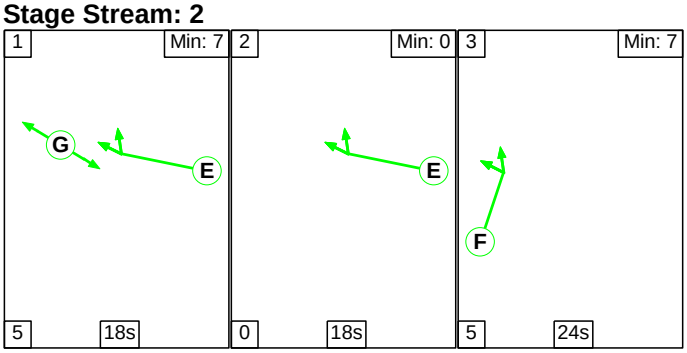
Full Input Data And Results
Scenario 2: '2015 Base PM' (FG2: '2015 Base PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

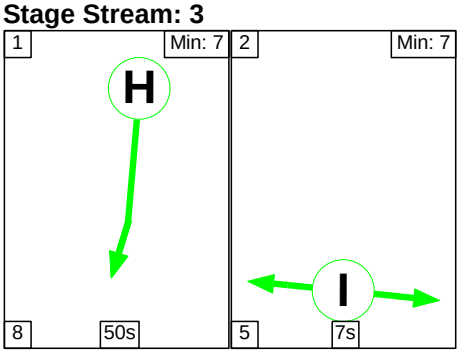
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	24	10	21
Change Point	0	29	44

Stage Stream: 2

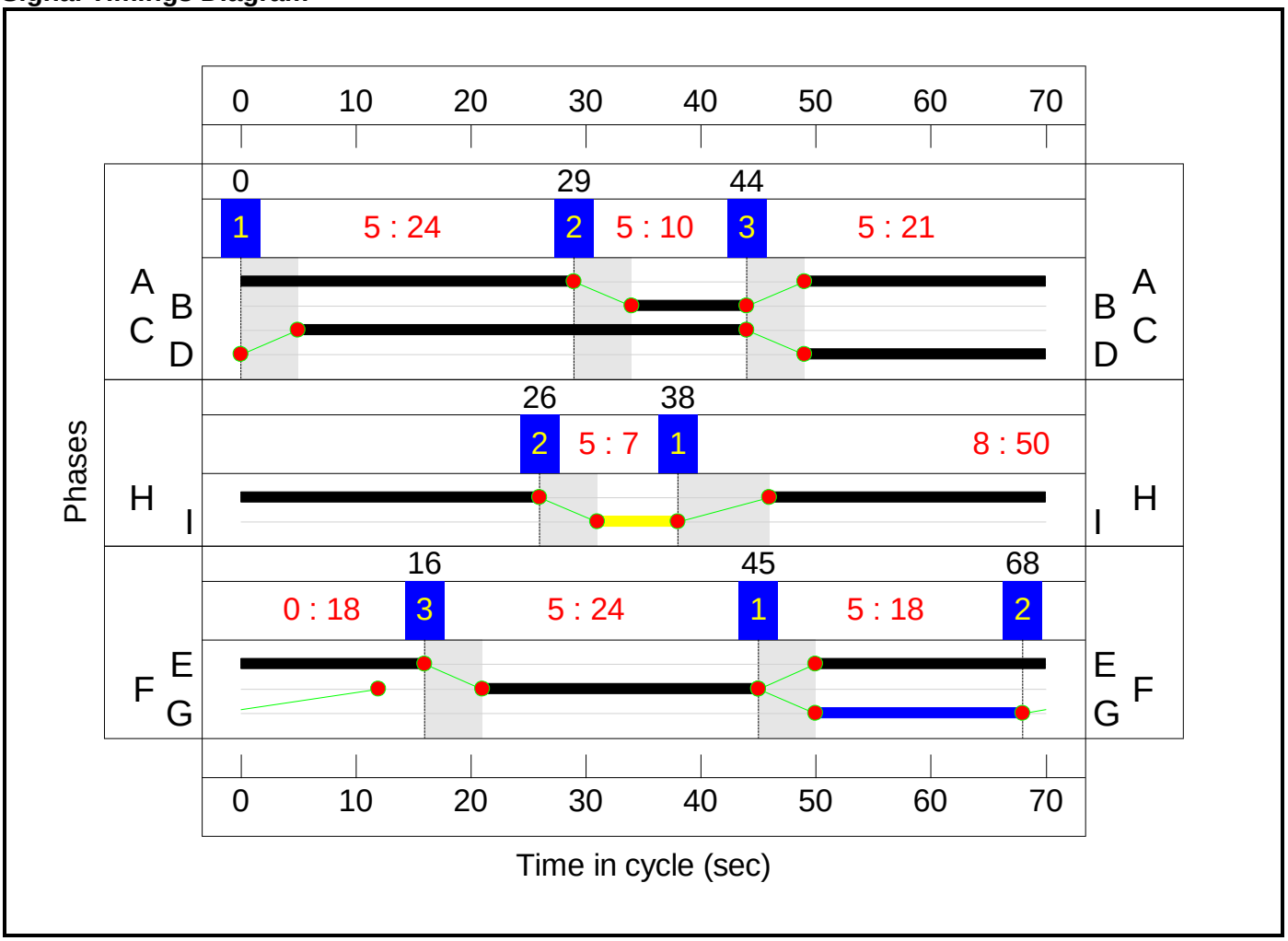
Stage	1	2	3
Duration	18	18	24
Change Point	45	68	16

Stage Stream: 3

Stage	1	2
Duration	50	7
Change Point	38	26

Full Input Data And Results

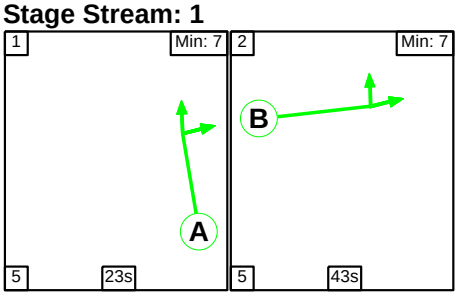
Signal Timings Diagram



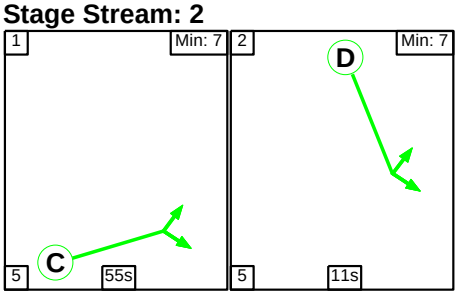
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

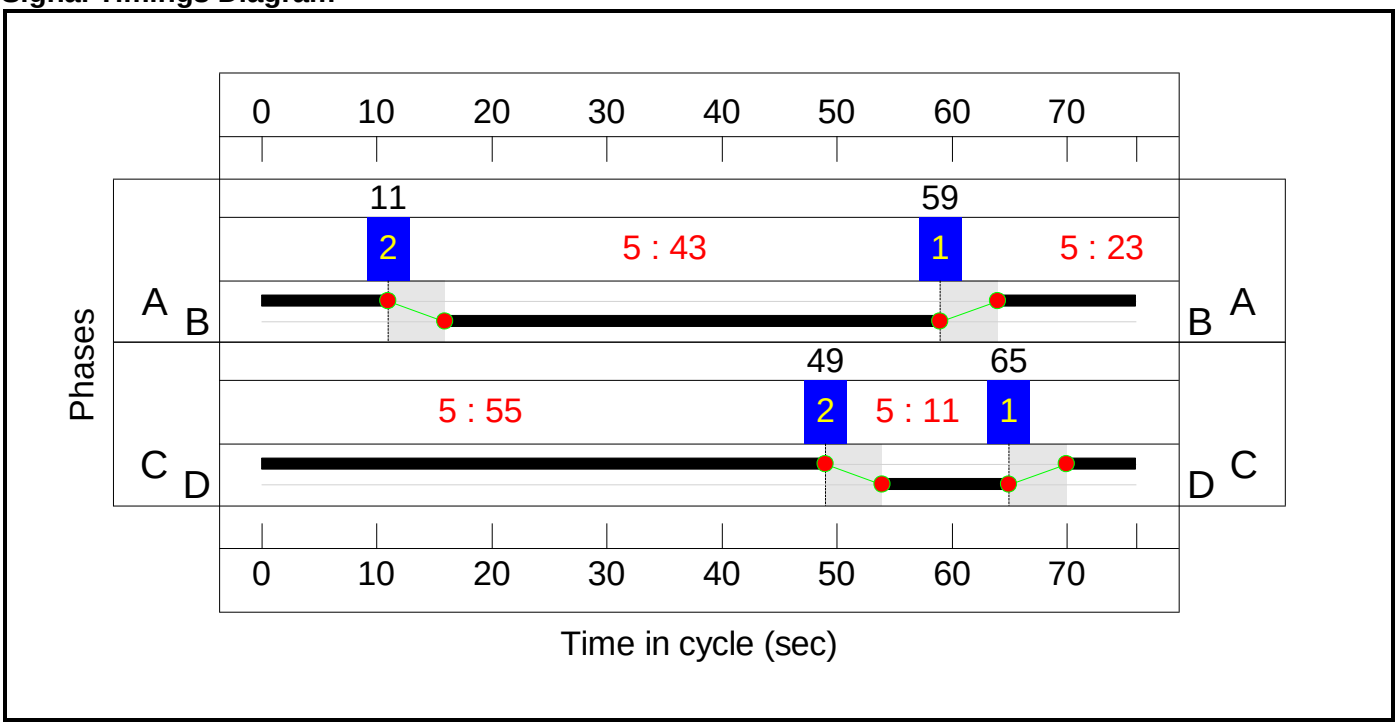
Stage Stream: 1

Stage	1	2
Duration	23	43
Change Point	59	11

Stage Stream: 2

Stage	1	2
Duration	55	11
Change Point	65	49

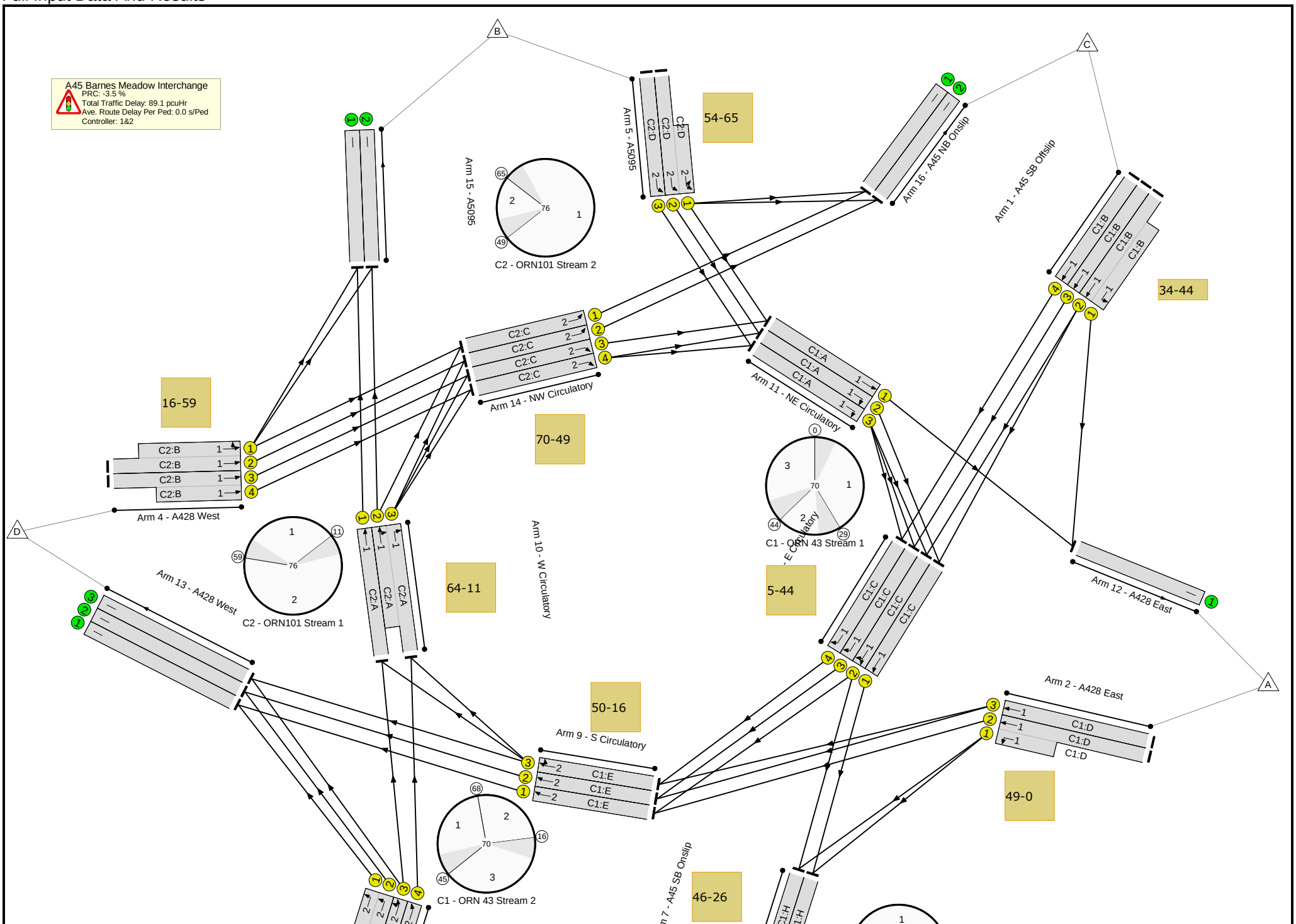
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.2%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.2%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	10	-	408	1800:1800	283+212	91.2 : 70.9%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	10	-	215	1800	283	76.0%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	10	-	208	1800	283	73.5%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	21	-	680	1800:1800	370+455	82.5 : 82.5%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	21	-	527	1800	566	93.2%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	24	-	574	1800:1800	436+436	65.8 : 65.8%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	24	-	364	1800	643	56.6%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	24	-	408	1800	643	63.5%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	43	-	1278	1800:1800	773+771	82.8 : 82.8%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	43	-	1043	1800:1800	294+900	87.3 : 87.3%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	11	-	376	1800:1800	256+284	69.7 : 69.7%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	11	-	141	1800	284	49.6%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	39	-	616	1900	1086	56.7%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	39	-	641	1900	1086	59.0%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	39	-	307	1900	1086	28.3%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	39	-	222	1900	1086	20.4%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	50	-	731	1800	1311	55.7%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	50	-	643	1800	1311	49.0%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	731	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	643	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	36	-	563	1900	1004	56.1%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	36	-	307	1900	1004	30.6%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	36	-	749	1900	1004	74.6%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	23	-	455	1900	600	75.8%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	23	-	941	1900:1900	553+540	86.1 : 86.1%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	50	-	641	1900	1384	46.3%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	50	-	616	1900	1384	44.5%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	50	-	489	1900	1384	35.3%
12/1	A428 East	U	N/A	N/A	-		-	-	-	791	1900	1900	41.6%
13/1	A428 West	U	N/A	N/A	-		-	-	-	850	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	125	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	55	-	812	1900	1400	58.0%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	55	-	799	1900	1400	57.1%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	55	-	574	1900	1400	41.0%
14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	55	-	786	1900	1400	56.1%
15/1	A5095	U	N/A	N/A	-		-	-	-	491	Inf	Inf	0.0%

Full Input Data And Results

15/2	A5095	U	N/A	N/A	-		-	-	-	255	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	877	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	865	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**53.2**	**35.9**	**0.0**	**89.1**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**53.2**	**35.9**	**0.0**	**89.1**	**-**	**-**	**-**	**-**
1/2+1/1	408	408	-	-	-	3.2	2.2	-	5.5	48.1	4.9	2.2	7.1
1/3	215	215	-	-	-	1.7	1.5	-	3.2	53.6	4.0	1.5	5.5
1/4	208	208	-	-	-	1.6	1.3	-	3.0	51.3	3.8	1.3	5.2
2/2+2/1	680	680	-	-	-	3.8	2.3	-	6.1	32.4	6.5	2.3	8.8
2/3	527	527	-	-	-	3.4	5.3	-	8.7	59.7	9.8	5.3	15.1
3/2+3/1	574	574	-	-	-	2.7	1.0	-	3.7	23.2	4.5	1.0	5.4
3/3	364	364	-	-	-	1.8	0.6	-	2.5	24.6	5.7	0.6	6.3
3/4	408	408	-	-	-	2.1	0.9	-	3.0	26.3	6.6	0.9	7.4
4/2+4/1	1278	1278	-	-	-	3.7	2.4	-	6.1	17.1	8.7	2.4	11.1
4/3+4/4	1043	1043	-	-	-	3.3	3.3	-	6.6	22.7	14.6	3.3	17.9
5/2+5/1	376	376	-	-	-	3.1	1.1	-	4.3	40.9	3.9	1.1	5.0
5/3	141	141	-	-	-	1.1	0.5	-	1.6	41.7	2.7	0.5	3.2
6/1	616	616	-	-	-	2.2	0.7	-	2.8	16.6	9.9	0.7	10.5
6/2	641	641	-	-	-	2.4	0.7	-	3.1	17.4	8.0	0.7	8.7
6/3	307	307	-	-	-	0.8	0.2	-	1.0	11.9	2.5	0.2	2.7
6/4	222	222	-	-	-	0.5	0.1	-	0.7	10.9	1.4	0.1	1.5
7/1	731	731	-	-	-	0.7	0.6	-	1.4	6.7	7.9	0.6	8.5
7/2	643	643	-	-	-	0.3	0.5	-	0.8	4.3	4.0	0.5	4.5
8/1	731	731	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	643	643	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	563	563	-	-	-	0.3	0.6	-	1.0	6.3	3.3	0.6	3.9
9/2	307	307	-	-	-	0.6	0.2	-	0.9	10.2	4.0	0.2	4.2
9/3	749	749	-	-	-	0.3	1.5	-	1.7	8.2	2.9	1.5	4.4
10/1	455	455	-	-	-	3.0	1.5	-	4.5	35.6	8.6	1.5	10.1

Full Input Data And Results

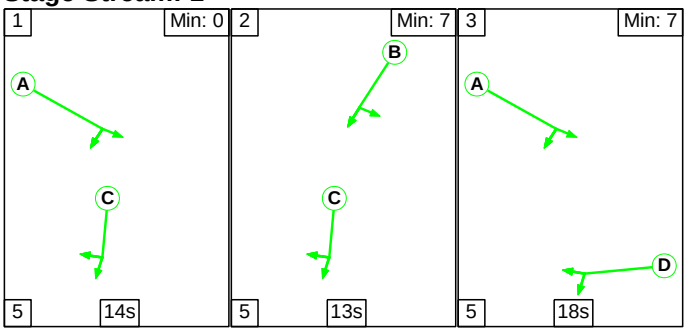
10/3+10/2	941	941	-	-	-	6.2	3.0	-	9.2	35.1	9.1	3.0	12.1
11/1	641	641	-	-	-	0.7	0.4	-	1.1	6.3	5.0	0.4	5.4
11/2	616	616	-	-	-	0.7	0.4	-	1.1	6.2	4.8	0.4	5.2
11/3	489	489	-	-	-	0.5	0.3	-	0.7	5.5	3.4	0.3	3.7
12/1	791	791	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
13/1	850	850	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	594	594	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	125	125	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	812	812	-	-	-	0.6	0.7	-	1.3	5.6	4.9	0.7	5.6
14/2	799	799	-	-	-	0.6	0.7	-	1.3	5.7	4.3	0.7	4.9
14/3	574	574	-	-	-	0.2	0.3	-	0.6	3.7	2.8	0.3	3.2
14/4	786	786	-	-	-	0.8	0.6	-	1.4	6.6	3.9	0.6	4.5
15/1	491	491	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	255	255	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	877	877	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	865	865	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	37.05	Cycle Time (s):	70		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	20.7	Total Delay for Signalled Lanes (pcuHr):	12.73	Cycle Time (s):	70		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	61.5	Total Delay for Signalled Lanes (pcuHr):	2.12	Cycle Time (s):	70		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	3.1	Total Delay for Signalled Lanes (pcuHr):	26.32	Cycle Time (s):	76		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	29.2	Total Delay for Signalled Lanes (pcuHr):	10.48	Cycle Time (s):	76		
	PRC Over All Lanes (%):	-3.5	Total Delay Over All Lanes(pcuHr):	89.05				

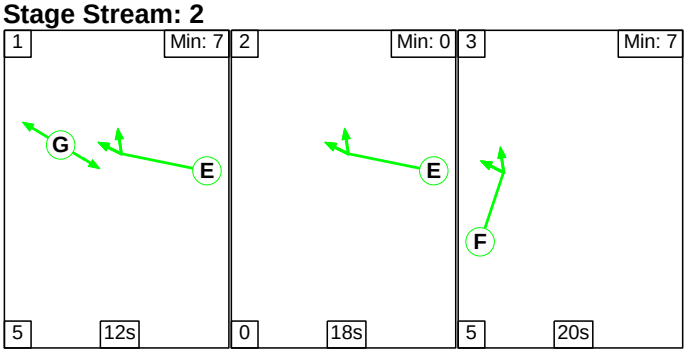
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

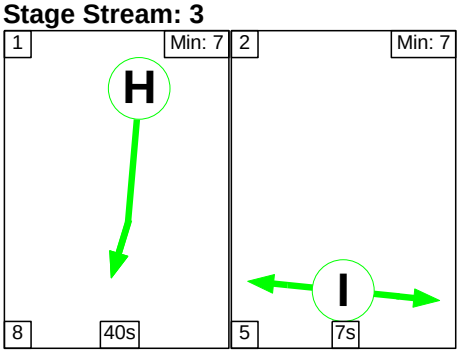
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	14	13	18
Change Point	0	19	37

Stage Stream: 2

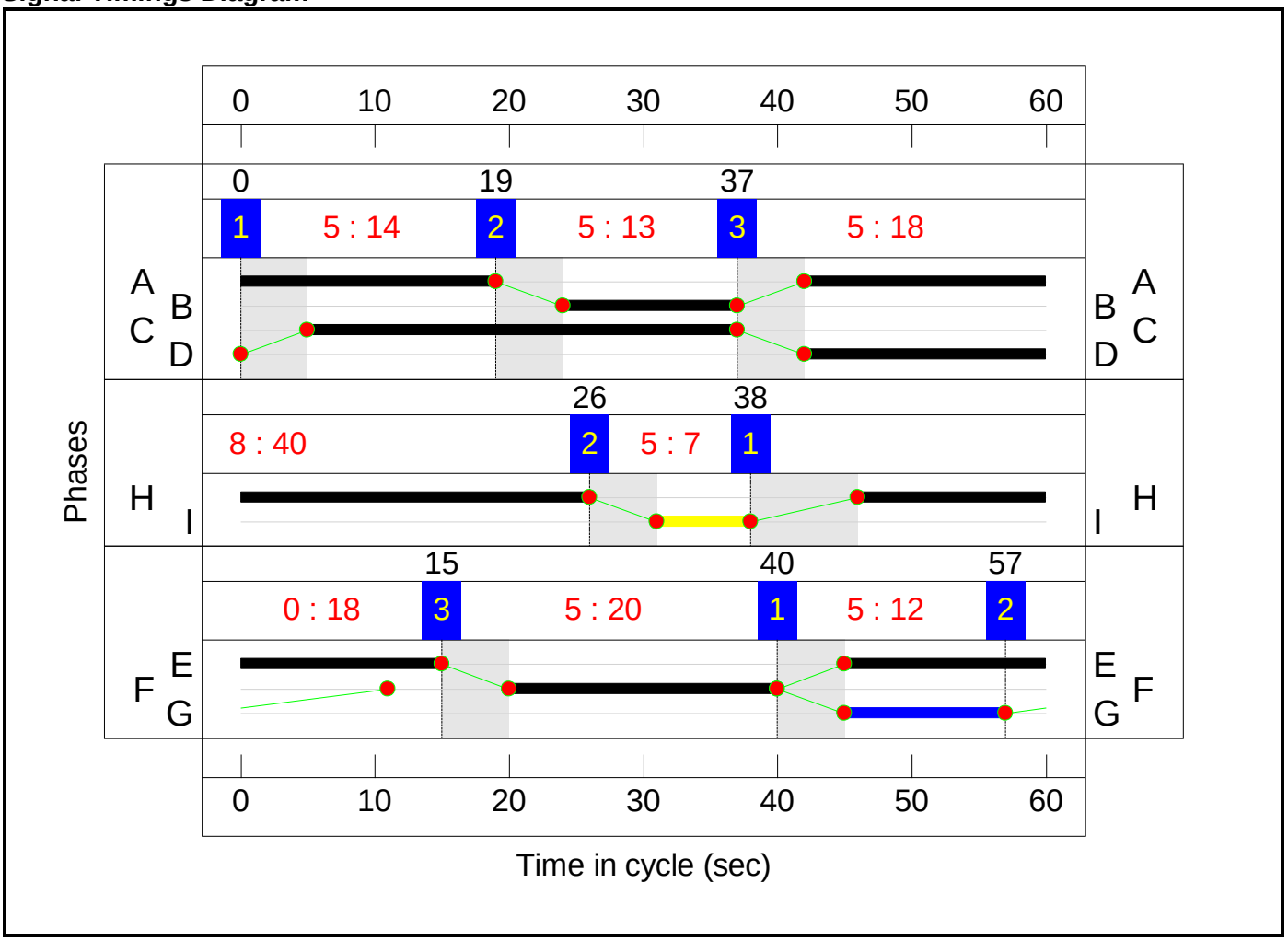
Stage	1	2	3
Duration	12	18	20
Change Point	40	57	15

Stage Stream: 3

Stage	1	2
Duration	40	7
Change Point	38	26

Full Input Data And Results

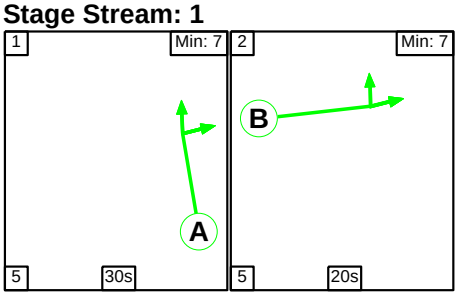
Signal Timings Diagram



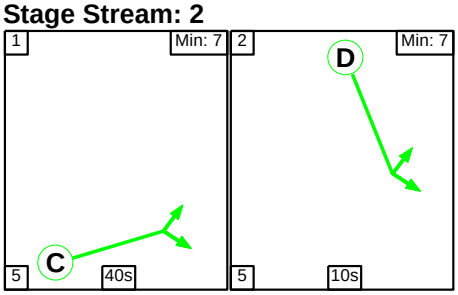
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

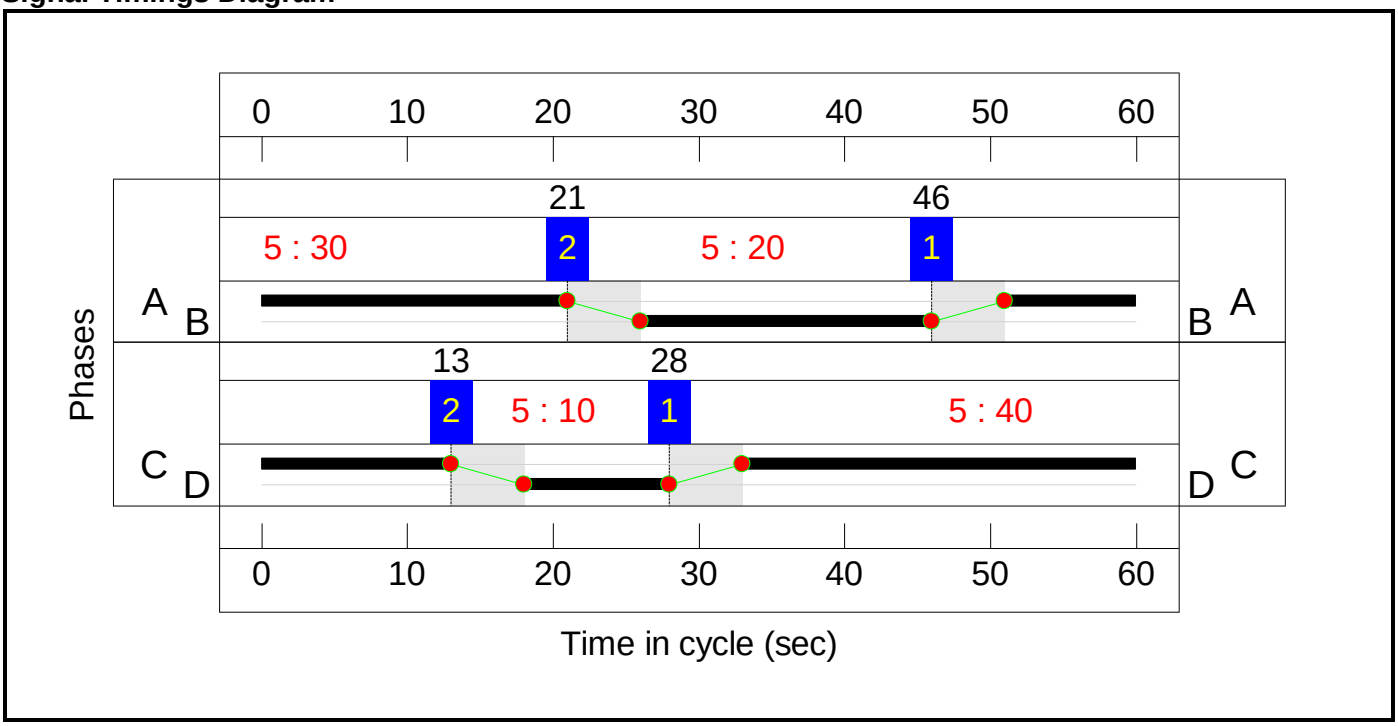
Stage Stream: 1

Stage	1	2
Duration	30	20
Change Point	46	21

Stage Stream: 2

Stage	1	2
Duration	40	10
Change Point	28	13

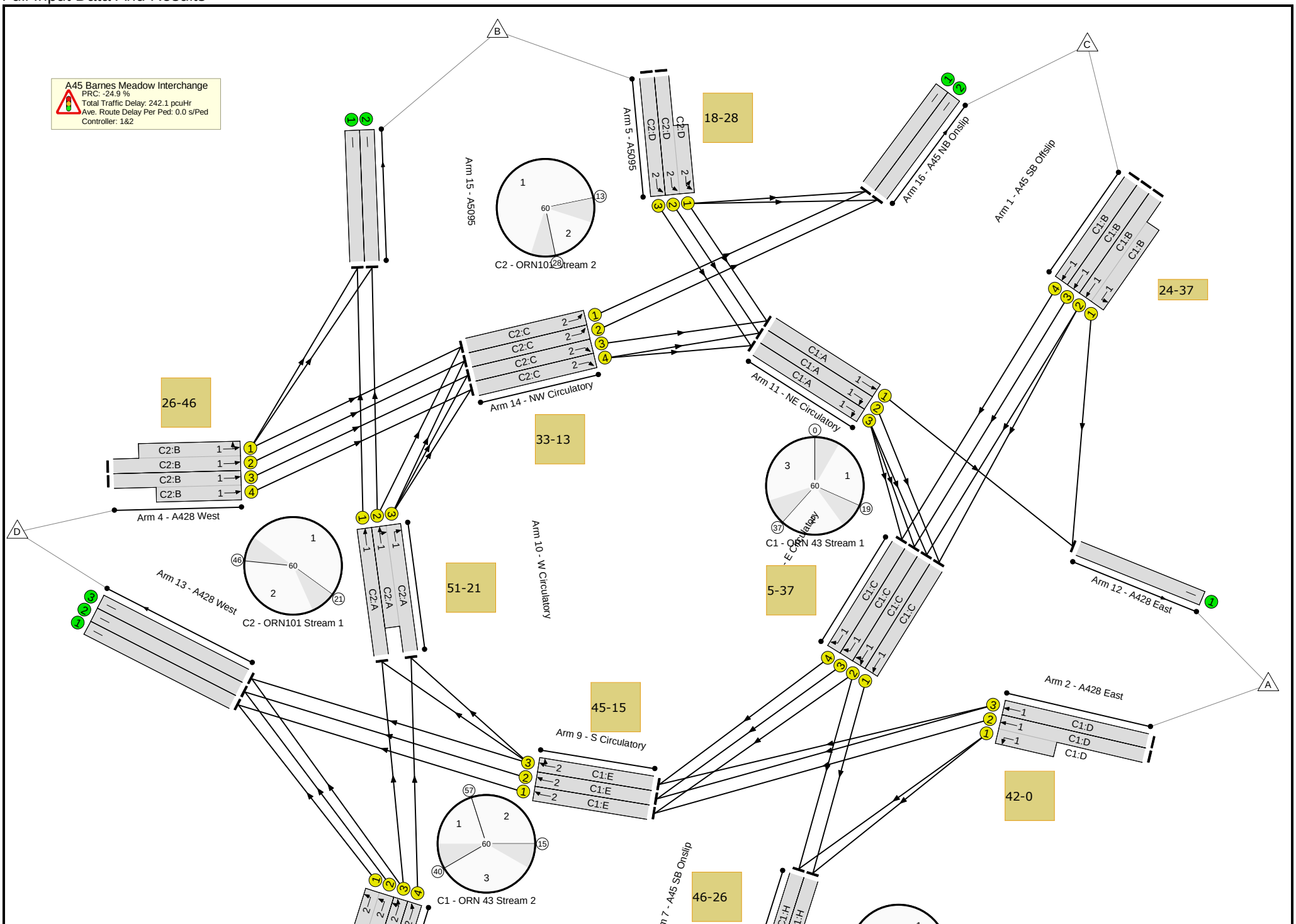
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.4%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.4%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	13	-	648	1800:1800	157+420	112.4 : 112.4%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	13	-	451	1800	420	107.4%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	13	-	411	1800	420	97.9%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	18	-	766	1800:1800	503+261	100.2 : 100.2%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	18	-	550	1800	570	96.5%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	20	-	626	1800:1800	448+448	69.8 : 69.8%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	20	-	326	1800	630	51.7%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	20	-	662	1800	630	105.1%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	20	-	333	1800:1800	630+628	26.5 : 26.5%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	20	-	949	1800:1800	260+614	108.6 : 108.6%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	10	-	441	1800:1800	330+264	74.2 : 74.2%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	10	-	204	1800	330	61.8%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	32	-	584	1900	1045	53.3%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	32	-	687	1900	1045	63.3%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	32	-	472	1900	1045	42.2%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	32	-	411	1900	1045	39.3%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	40	-	697	1800	1230	54.5%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	40	-	654	1800	1230	51.0%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	697	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	654	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	30	-	686	1900	982	69.8%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	30	-	604	1900	982	58.4%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	30	-	829	1900	982	84.4%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	30	-	434	1900	982	44.2%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	30	-	1003	1900:1900	930+191	86.0 : 89.5%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	37	-	1128	1900	1203	89.2%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	37	-	584	1900	1203	46.3%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	37	-	532	1900	1203	42.1%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1600	1900	1900	78.6%
13/1	A428 West	U	N/A	N/A	-		-	-	-	999	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	917	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	40	-	337	1900	1298	26.0%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	40	-	337	1900	1298	26.0%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	40	-	944	1900	1298	68.5%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	40	-	667	1900	1298	47.3%
15/1	A5095	U	N/A	N/A	-		-	-	-	434	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	343	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	343	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**61.5**	**180.7**	**0.0**	**242.1**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**61.5**	**180.7**	**0.0**	**242.1**	**-**	**-**	**-**	**-**
1/2+1/1	648	596	-	-	-	5.2	39.8	-	45.0	250.0	8.7	39.8	48.5
1/3	451	420	-	-	-	3.6	20.9	-	24.5	195.8	8.0	20.9	28.9
1/4	411	411	-	-	-	2.6	8.1	-	10.7	94.1	6.7	8.1	14.9
2/2+2/1	766	764	-	-	-	4.1	14.3	-	18.4	86.3	9.6	14.3	23.9
2/3	550	550	-	-	-	3.1	7.7	-	10.8	70.9	9.0	7.7	16.8
3/2+3/1	626	626	-	-	-	2.7	1.1	-	3.8	21.9	4.1	1.1	5.2
3/3	326	326	-	-	-	1.4	0.5	-	1.9	21.4	4.3	0.5	4.8
3/4	662	630	-	-	-	4.4	23.1	-	27.5	149.6	11.6	23.1	34.7
4/2+4/1	333	333	-	-	-	1.3	0.2	-	1.5	15.9	1.9	0.2	2.1
4/3+4/4	949	874	-	-	-	6.5	43.0	-	49.5	187.7	15.5	43.0	58.5
5/2+5/1	441	441	-	-	-	2.8	1.4	-	4.2	34.4	3.8	1.4	5.2
5/3	204	204	-	-	-	1.3	0.8	-	2.1	36.7	3.1	0.8	3.9
6/1	557	557	-	-	-	2.6	0.6	-	3.2	20.6	9.3	0.6	9.8
6/2	661	661	-	-	-	2.3	0.9	-	3.2	17.4	8.4	0.9	9.2
6/3	441	441	-	-	-	1.3	0.4	-	1.7	13.7	3.0	0.4	3.4
6/4	411	411	-	-	-	1.1	0.3	-	1.4	12.7	2.5	0.3	2.9
7/1	670	670	-	-	-	0.1	0.6	-	0.7	3.8	7.2	0.6	7.8
7/2	628	628	-	-	-	0.0	0.5	-	0.6	3.2	5.2	0.5	5.7
8/1	670	670	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	628	628	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	685	685	-	-	-	0.4	1.1	-	1.6	8.2	4.8	1.1	5.9
9/2	573	573	-	-	-	1.4	0.7	-	2.1	13.2	6.5	0.7	7.2
9/3	829	829	-	-	-	1.3	2.6	-	4.0	17.3	11.3	2.6	13.9
10/1	434	434	-	-	-	1.2	0.4	-	1.6	13.6	4.5	0.4	4.9

Full Input Data And Results

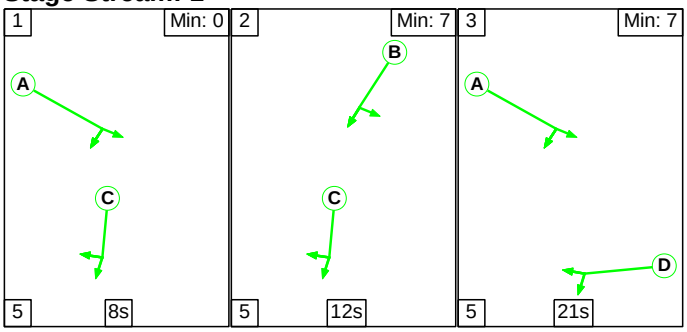
10/3+10/2	971	971	-	-	-	3.6	3.1	-	6.8	25.0	16.0	3.1	19.1
11/1	1074	1074	-	-	-	2.6	3.9	-	6.5	21.9	11.7	3.9	15.6
11/2	557	557	-	-	-	1.1	0.4	-	1.5	9.6	7.0	0.4	7.4
11/3	506	506	-	-	-	0.8	0.4	-	1.2	8.6	5.5	0.4	5.9
12/1	1494	1494	-	-	-	0.0	1.8	-	1.8	4.4	0.0	1.8	1.8
13/1	998	998	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	886	886	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	380	380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	337	337	-	-	-	0.8	0.2	-	1.0	10.4	5.0	0.2	5.1
14/2	337	337	-	-	-	0.8	0.2	-	1.0	10.3	5.0	0.2	5.1
14/3	890	890	-	-	-	0.8	1.1	-	1.9	7.8	5.6	1.1	6.7
14/4	614	614	-	-	-	0.0	0.4	-	0.5	2.8	2.7	0.4	3.1
15/1	434	434	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	343	343	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	343	343	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-24.9	Total Delay for Signalled Lanes (pcuHr):	128.17	Cycle Time (s):	60		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-16.8	Total Delay for Signalled Lanes (pcuHr):	40.89	Cycle Time (s):	60		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	65.2	Total Delay for Signalled Lanes (pcuHr):	1.27	Cycle Time (s):	60		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-20.6	Total Delay for Signalled Lanes (pcuHr):	59.34	Cycle Time (s):	60		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	21.2	Total Delay for Signalled Lanes (pcuHr):	10.63	Cycle Time (s):	60		
	PRC Over All Lanes (%):	-24.9	Total Delay Over All Lanes(pcuHr):	242.12				

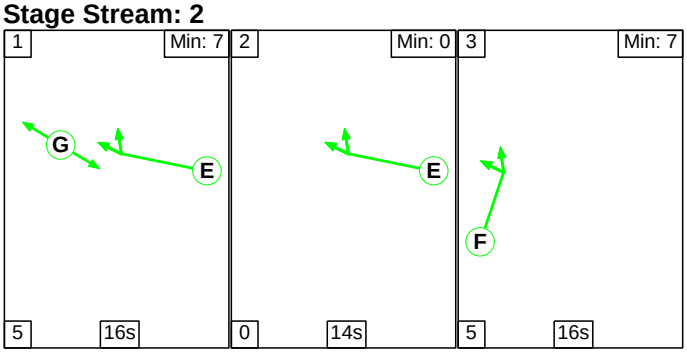
Full Input Data And Results
Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

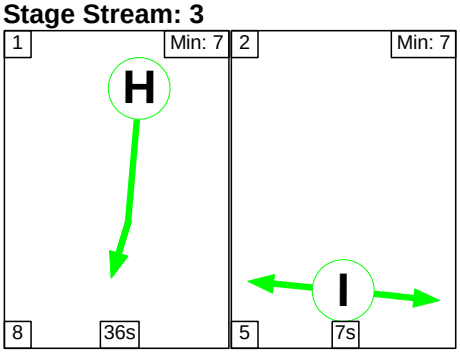
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	8	12	21
Change Point	19	32	49

Stage Stream: 2

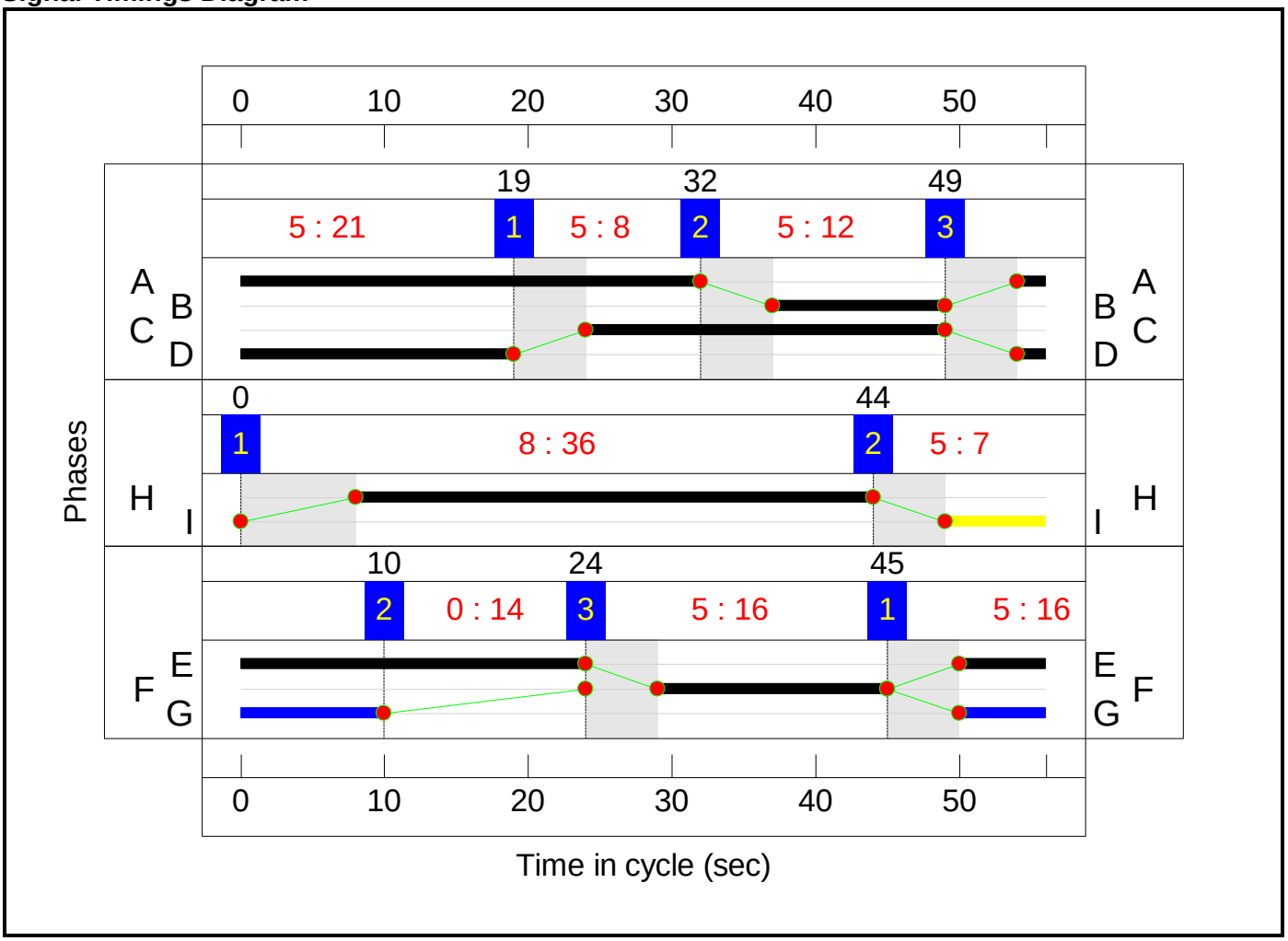
Stage	1	2	3
Duration	16	14	16
Change Point	45	10	24

Stage Stream: 3

Stage	1	2
Duration	36	7
Change Point	0	44

Full Input Data And Results

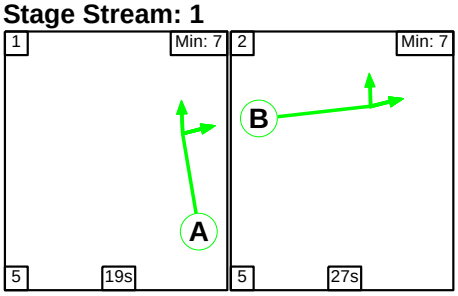
Signal Timings Diagram



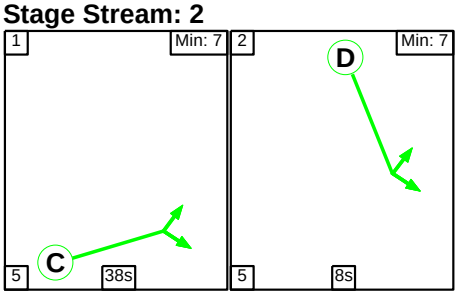
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

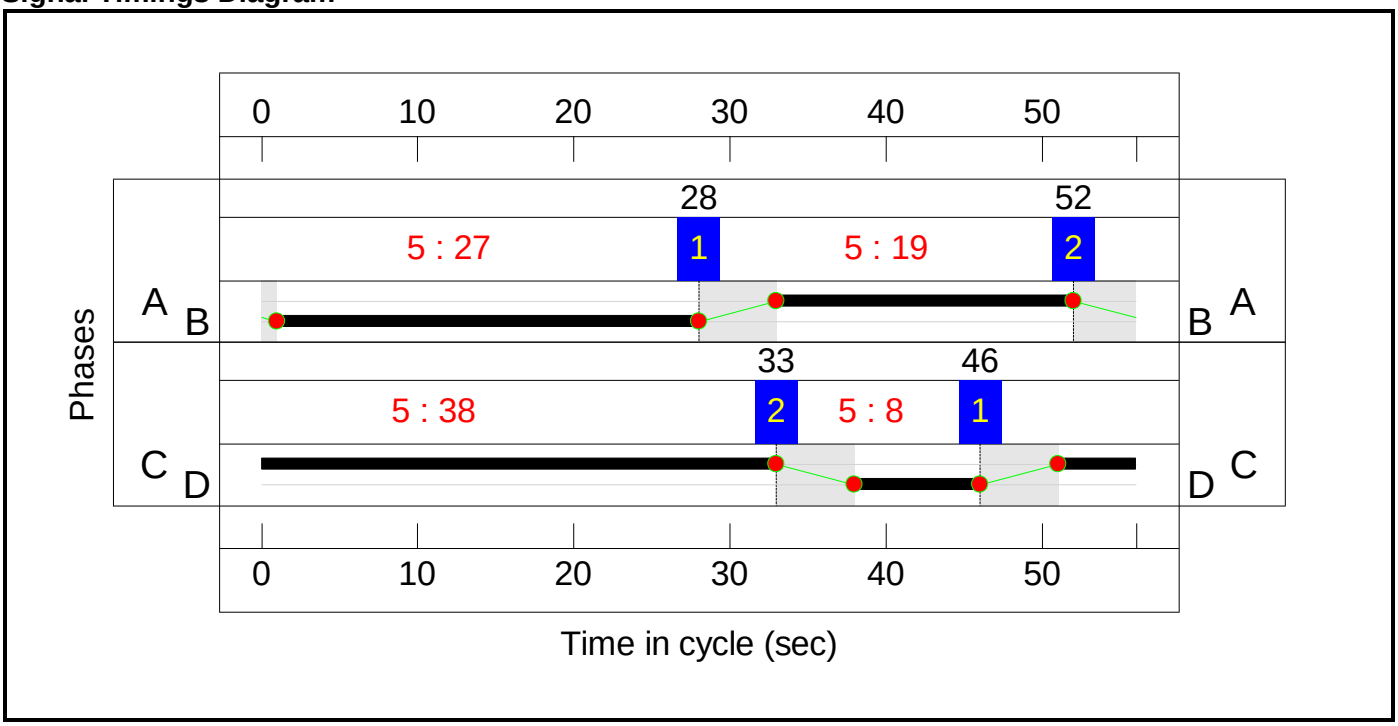
Stage Stream: 1

Stage	1	2
Duration	19	27
Change Point	28	52

Stage Stream: 2

Stage	1	2
Duration	38	8
Change Point	46	33

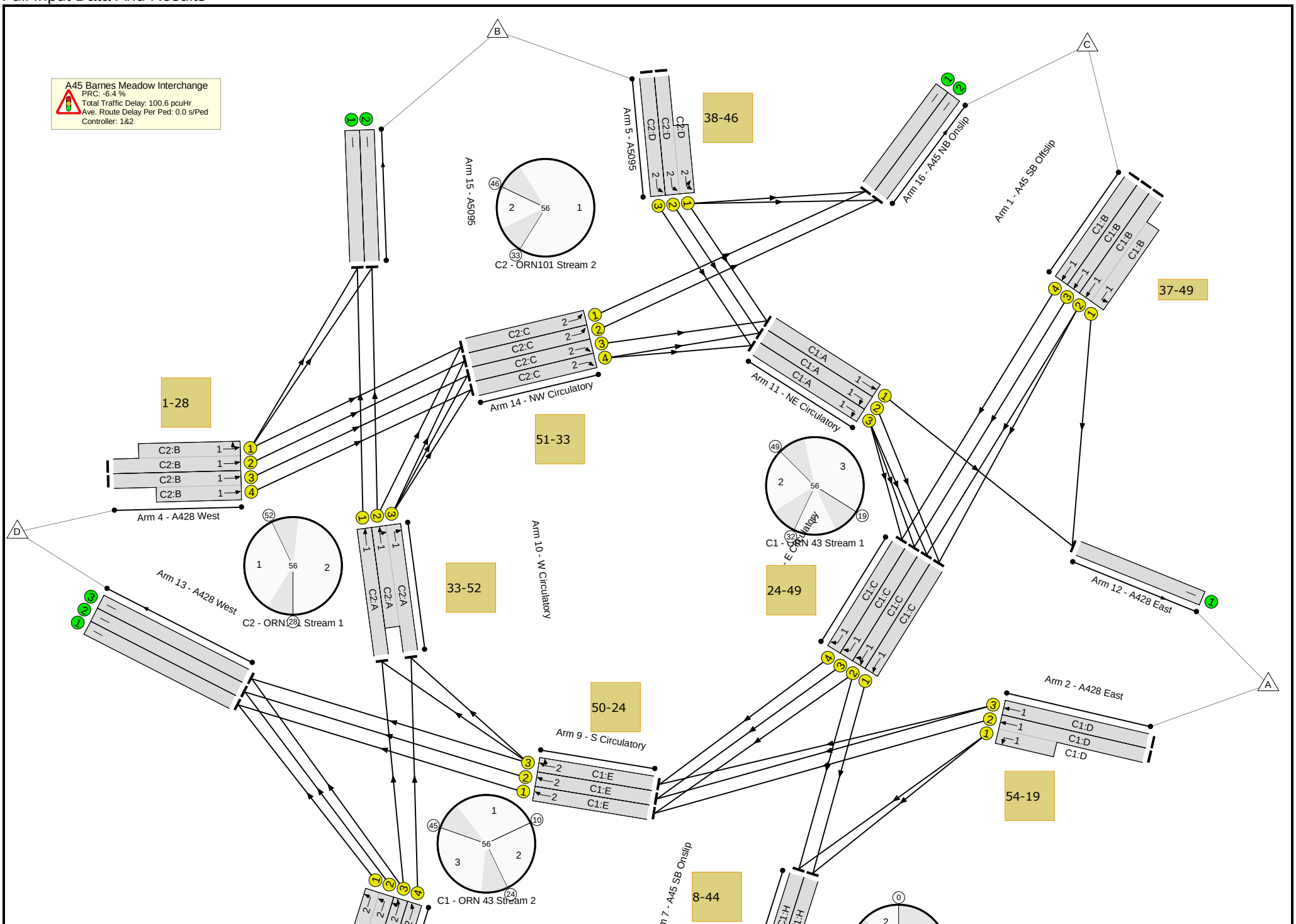
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.7%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.7%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	12	-	482	1800:1800	119+418	89.7 : 89.7%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	12	-	326	1800	418	78.0%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	12	-	286	1800	418	68.4%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	21	-	803	1800:1800	563+493	76.1 : 76.1%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	21	-	658	1800	707	93.1%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	16	-	495	1800:1800	417+415	59.5 : 59.5%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	16	-	442	1800	546	80.9%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	16	-	443	1800	546	81.1%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	27	-	1195	1800:1800	744+797	77.5 : 77.5%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	27	-	1098	1800:1800	326+821	95.7 : 95.7%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	8	-	317	1800:1800	289+158	70.9 : 70.9%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	8	-	154	1800	289	53.2%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	25	-	535	1900	882	60.6%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	25	-	597	1900	882	67.7%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	25	-	446	1900	882	50.6%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	25	-	286	1900	882	32.4%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	36	-	709	1800	1189	59.6%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	36	-	665	1800	1189	55.9%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	665	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	30	-	561	1900	1052	53.3%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	30	-	446	1900	1052	42.4%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	30	-	944	1900	1052	89.8%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	19	-	595	1900	679	87.7%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	19	-	1042	1900:1900	679+437	93.4 : 93.4%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	34	-	761	1900	1187	64.1%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	34	-	535	1900	1187	45.1%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	34	-	610	1900	1187	51.4%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1136	1900	1900	59.8%
13/1	A428 West	U	N/A	N/A	-		-	-	-	808	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	694	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	192	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	38	-	784	1900	1323	59.2%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	38	-	832	1900	1323	62.9%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	38	-	691	1900	1323	52.2%
14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	38	-	786	1900	1323	59.4%
15/1	A5095	U	N/A	N/A	-		-	-	-	652	Inf	Inf	0.0%

Full Input Data And Results

15/2	A5095	U	N/A	N/A	-		-	-	-	185	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	805	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	853	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**46.6**	**54.1**	**0.0**	**100.6**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**46.6**	**54.1**	**0.0**	**100.6**	**-**	**-**	**-**	**-**
1/2+1/1	482	482	-	-	-	2.7	3.8	-	6.5	48.8	5.6	3.8	9.5
1/3	326	326	-	-	-	1.8	1.7	-	3.5	39.1	4.7	1.7	6.4
1/4	286	286	-	-	-	1.6	1.1	-	2.6	33.1	4.1	1.1	5.1
2/2+2/1	803	803	-	-	-	3.0	1.6	-	4.5	20.4	5.2	1.6	6.8
2/3	658	658	-	-	-	3.0	5.5	-	8.4	46.2	9.7	5.5	15.2
3/2+3/1	495	495	-	-	-	2.2	0.7	-	2.9	21.1	3.1	0.7	3.8
3/3	442	442	-	-	-	2.2	2.0	-	4.2	34.6	6.3	2.0	8.3
3/4	443	443	-	-	-	2.2	2.1	-	4.3	34.8	6.3	2.1	8.3
4/2+4/1	1195	1195	-	-	-	3.5	1.7	-	5.2	15.6	7.2	1.7	8.9
4/3+4/4	1098	1098	-	-	-	3.5	8.4	-	11.9	38.9	12.7	8.4	21.0
5/2+5/1	317	317	-	-	-	1.9	1.2	-	3.1	35.4	3.0	1.2	4.2
5/3	154	154	-	-	-	0.9	0.6	-	1.5	34.8	2.2	0.6	2.7
6/1	535	535	-	-	-	2.3	0.8	-	3.0	20.5	8.2	0.8	9.0
6/2	597	597	-	-	-	1.6	1.0	-	2.7	16.2	7.6	1.0	8.6
6/3	446	446	-	-	-	1.2	0.5	-	1.7	14.1	3.1	0.5	3.6
6/4	286	286	-	-	-	0.4	0.2	-	0.6	8.1	0.8	0.2	1.0
7/1	709	709	-	-	-	0.2	0.7	-	1.0	4.9	6.2	0.7	6.9
7/2	665	665	-	-	-	0.2	0.6	-	0.9	4.6	3.0	0.6	3.6
8/1	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	561	561	-	-	-	0.4	0.6	-	0.9	6.0	2.0	0.6	2.5
9/2	446	446	-	-	-	1.4	0.4	-	1.7	14.1	6.9	0.4	7.2
9/3	944	944	-	-	-	0.9	4.1	-	4.9	18.9	5.1	4.1	9.2
10/1	595	595	-	-	-	1.4	3.3	-	4.7	28.6	3.9	3.3	7.2

Full Input Data And Results

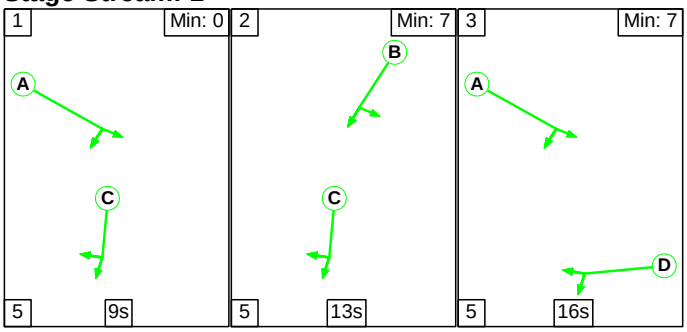
10/3+10/2	1042	1042	-	-	-	2.9	6.1	-	9.0	31.1	6.9	6.1	13.0
11/1	761	761	-	-	-	0.5	0.9	-	1.4	6.5	2.3	0.9	3.2
11/2	535	535	-	-	-	1.1	0.4	-	1.5	10.0	5.2	0.4	5.6
11/3	610	610	-	-	-	1.3	0.5	-	1.8	10.6	5.2	0.5	5.7
12/1	1136	1136	-	-	-	0.0	0.7	-	0.7	2.4	0.0	0.7	0.7
13/1	808	808	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	694	694	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	192	192	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	784	784	-	-	-	0.8	0.7	-	1.6	7.2	4.6	0.7	5.3
14/2	832	832	-	-	-	0.8	0.8	-	1.7	7.2	4.2	0.8	5.1
14/3	691	691	-	-	-	0.5	0.5	-	1.1	5.6	5.9	0.5	6.5
14/4	786	786	-	-	-	0.1	0.7	-	0.8	3.9	0.4	0.7	1.2
15/1	652	652	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	185	185	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	805	805	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	853	853	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-3.4	Total Delay for Signalled Lanes (pcuHr):	38.49	Cycle Time (s):	56		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	0.3	Total Delay for Signalled Lanes (pcuHr):	19.04	Cycle Time (s):	56		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	51.0	Total Delay for Signalled Lanes (pcuHr):	1.81	Cycle Time (s):	56		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-6.4	Total Delay for Signalled Lanes (pcuHr):	30.79	Cycle Time (s):	56		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	27.0	Total Delay for Signalled Lanes (pcuHr):	9.77	Cycle Time (s):	56		
	PRC Over All Lanes (%):	-6.4	Total Delay Over All Lanes(pcuHr):	100.63				

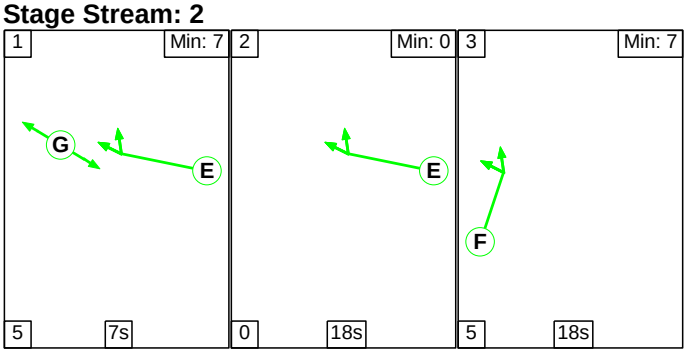
Full Input Data And Results
Scenario 5: '2021 DS 20% AM' (FG7: '2021 DM + 2021 DS 20% AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

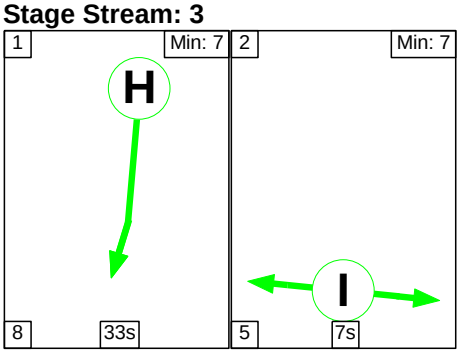
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	9	13	16
Change Point	40	1	19

Stage Stream: 2

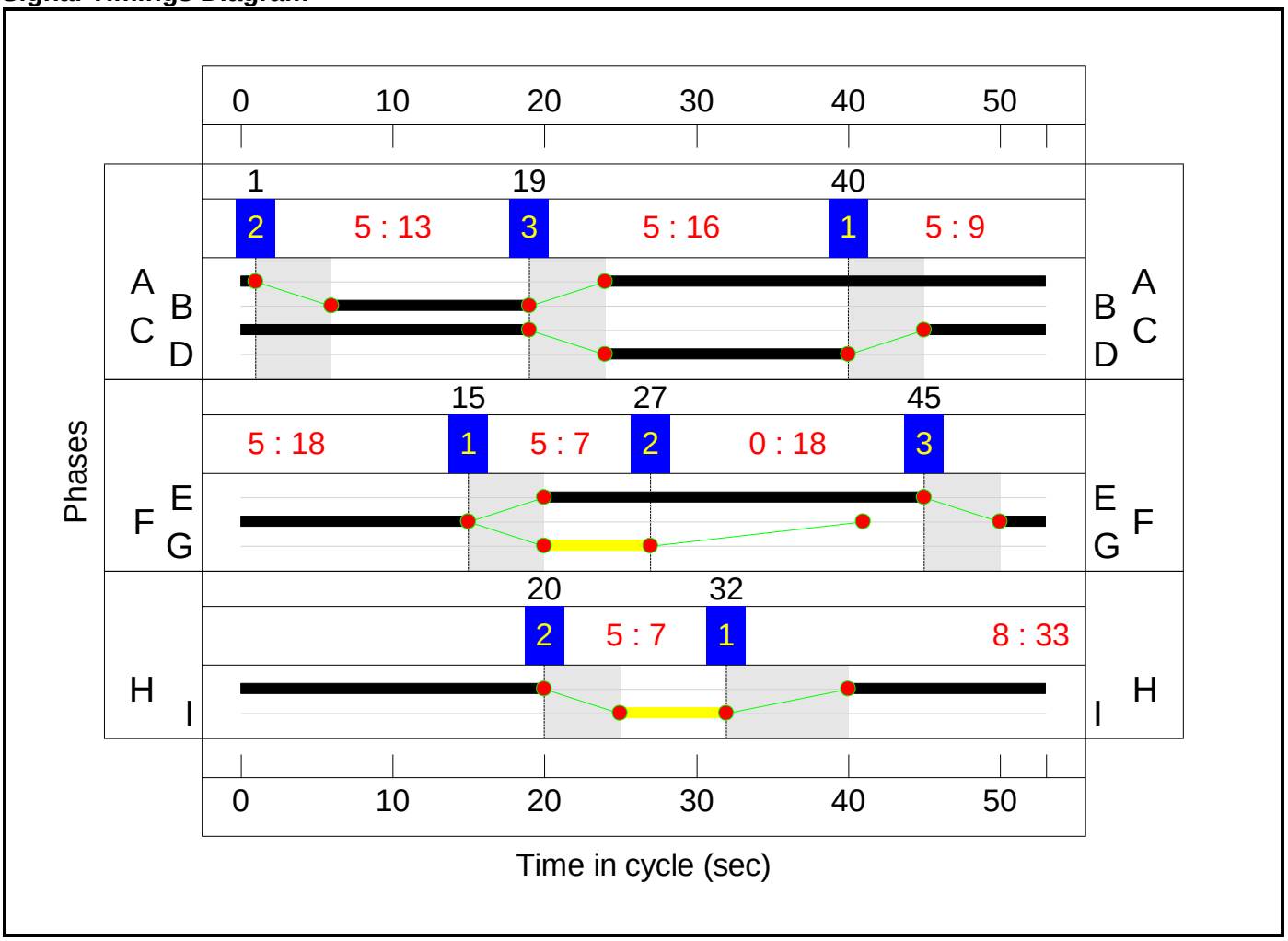
Stage	1	2	3
Duration	7	18	18
Change Point	15	27	45

Stage Stream: 3

Stage	1	2
Duration	33	7
Change Point	32	20

Full Input Data And Results

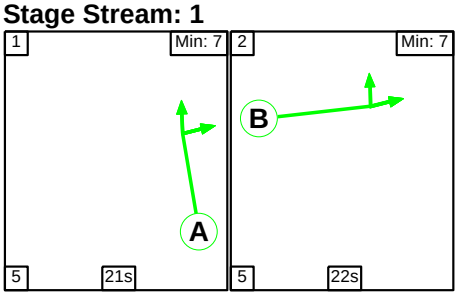
Signal Timings Diagram



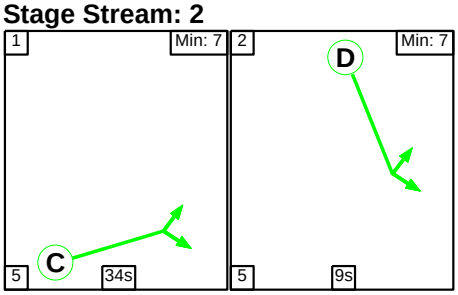
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

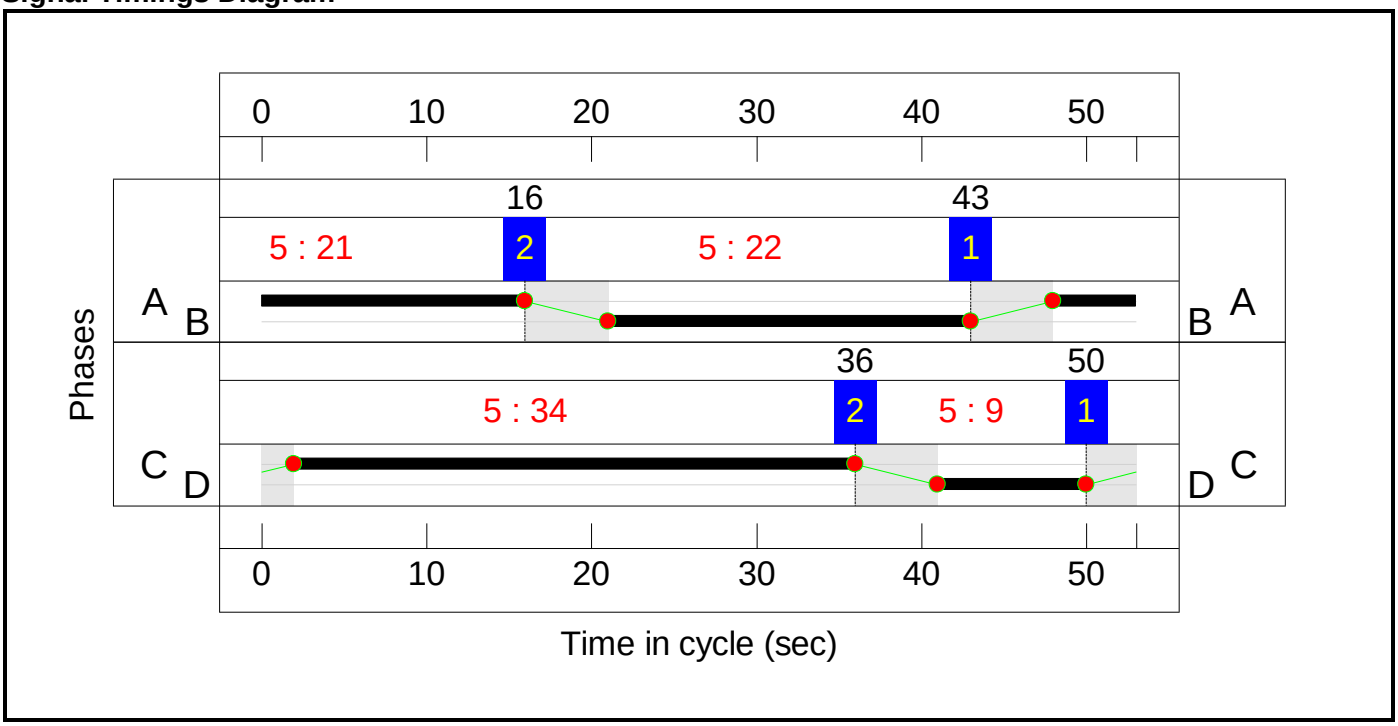
Stage Stream: 1

Stage	1	2
Duration	21	22
Change Point	43	16

Stage Stream: 2

Stage	1	2
Duration	34	9
Change Point	50	36

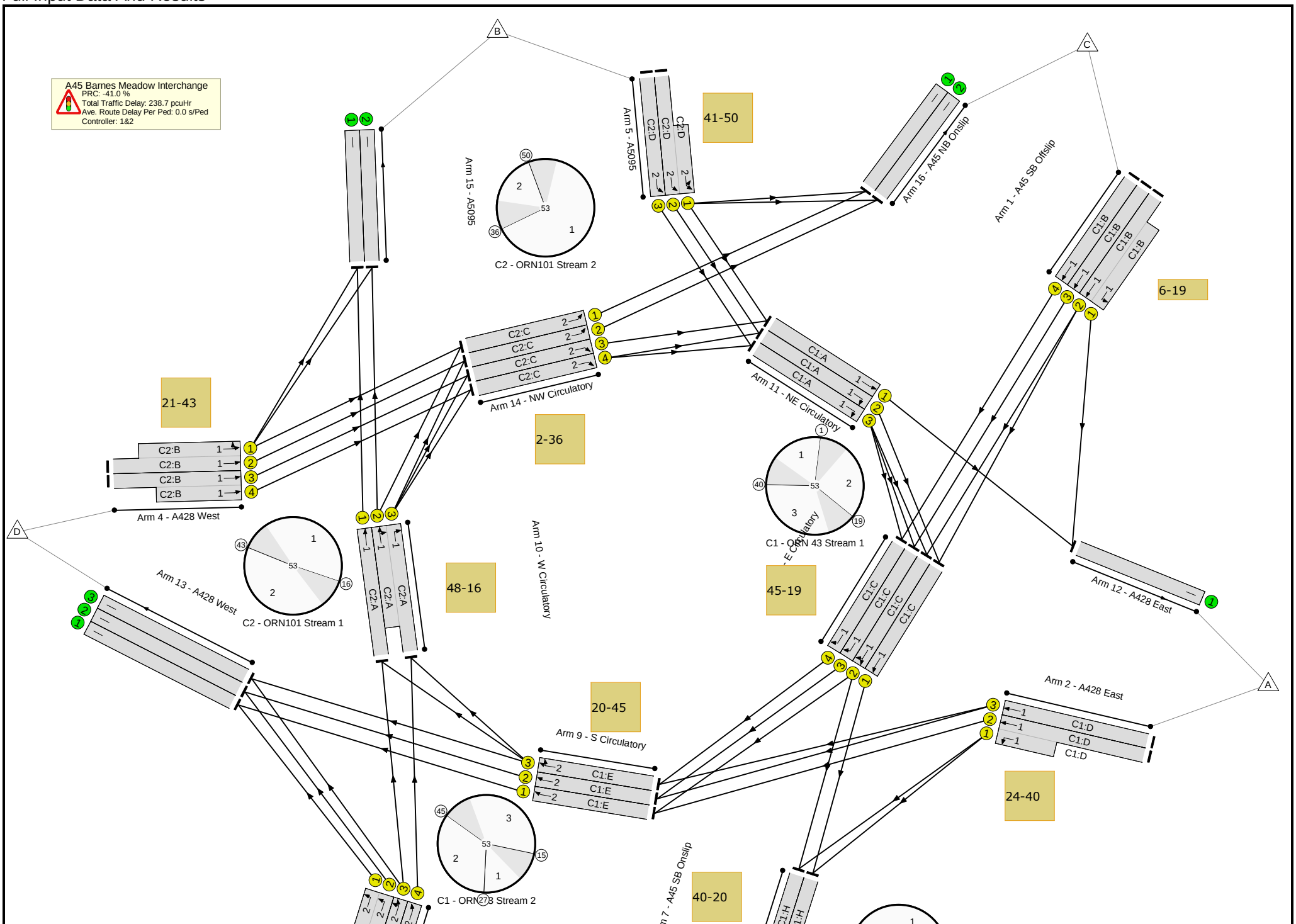
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.9%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.9%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	13	-	616	1800:1800	145+475	99.3 : 99.3%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	13	-	456	1800	475	95.9%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	13	-	438	1800	475	92.1%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	16	-	771	1800:1800	524+273	96.7 : 96.7%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	16	-	547	1800	577	94.7%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	18	-	630	1800:1800	474+474	66.5 : 66.5%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	18	-	322	1800	645	49.9%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	18	-	662	1800	645	102.6%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	22	-	333	1800:1800	482+763	26.7 : 26.7%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	22	-	949	1800:1800	314+743	89.7 : 89.7%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	9	-	440	1800:1800	340+273	71.8 : 71.8%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	9	-	205	1800	340	60.4%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	27	-	573	1900	1004	57.1%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	27	-	668	1900	1004	66.5%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	27	-	475	1900	1004	47.3%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	27	-	438	1900	1004	43.6%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	33	-	695	1800	1155	60.2%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	33	-	658	1800	1155	57.0%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	695	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	658	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	25	-	659	1900	932	70.7%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	25	-	604	1900	932	64.8%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	25	-	856	1900	932	91.8%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	21	-	434	1900	789	55.0%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	21	-	1003	1900:1900	789+2	124.8 : 126.9%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	30	-	1128	1900	1111	83.1%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	30	-	573	1900	1111	51.6%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	30	-	543	1900	1111	48.9%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1600	1900	1900	73.4%
13/1	A428 West	U	N/A	N/A	-		-	-	-	974	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	919	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	403	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	34	-	206	1900	1255	16.3%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	34	-	468	1900	1255	36.7%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	34	-	944	1900	1255	58.9%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	34	-	667	1900	1255	53.2%
15/1	A5095	U	N/A	N/A	-		-	-	-	434	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	212	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	474	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**56.7**	**181.9**	**0.0**	**238.7**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**56.7**	**181.9**	**0.0**	**238.7**	**-**	**-**	**-**	**-**
1/2+1/1	616	616	-	-	-	3.2	11.3	-	14.5	84.8	6.8	11.3	18.1
1/3	456	456	-	-	-	2.4	6.9	-	9.3	73.4	6.6	6.9	13.5
1/4	438	438	-	-	-	2.3	4.7	-	7.0	57.4	6.2	4.7	10.9
2/2+2/1	771	771	-	-	-	3.5	8.7	-	12.2	57.1	7.8	8.7	16.6
2/3	547	547	-	-	-	2.7	6.4	-	9.0	59.4	7.7	6.4	14.1
3/2+3/1	630	630	-	-	-	2.3	1.0	-	3.3	18.9	3.6	1.0	4.6
3/3	322	322	-	-	-	1.2	0.5	-	1.7	18.8	3.7	0.5	4.2
3/4	662	645	-	-	-	3.6	17.7	-	21.3	115.8	10.0	17.7	27.7
4/2+4/1	333	333	-	-	-	0.9	0.2	-	1.1	11.4	1.9	0.2	2.1
4/3+4/4	949	949	-	-	-	3.3	4.1	-	7.4	27.9	8.7	4.1	12.8
5/2+5/1	440	440	-	-	-	2.4	1.3	-	3.7	30.2	3.3	1.3	4.6
5/3	205	205	-	-	-	1.1	0.8	-	1.9	32.9	2.7	0.8	3.5
6/1	573	573	-	-	-	1.6	0.7	-	2.3	14.5	8.1	0.7	8.8
6/2	668	668	-	-	-	1.6	1.0	-	2.5	13.7	7.5	1.0	8.5
6/3	475	475	-	-	-	1.2	0.4	-	1.6	12.2	2.5	0.4	3.0
6/4	438	438	-	-	-	1.0	0.4	-	1.4	11.3	2.1	0.4	2.5
7/1	695	695	-	-	-	0.3	0.8	-	1.1	5.6	6.2	0.8	7.0
7/2	658	658	-	-	-	0.4	0.7	-	1.0	5.6	5.1	0.7	5.7
8/1	695	695	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	658	658	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	659	659	-	-	-	0.6	1.2	-	1.8	10.0	2.8	1.2	4.0
9/2	604	604	-	-	-	1.6	0.9	-	2.6	15.2	7.5	0.9	8.4
9/3	856	856	-	-	-	1.8	5.0	-	6.8	28.7	9.6	5.0	14.6
10/1	434	434	-	-	-	1.1	0.6	-	1.7	14.2	4.1	0.6	4.7

Full Input Data And Results

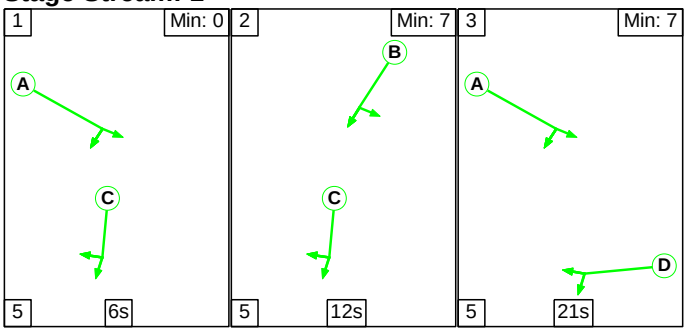
10/3+10/2	986	790	-	-	-	9.5	100.5	-	110.0	401.5	21.9	100.5	122.4
11/1	924	924	-	-	-	2.5	2.4	-	4.9	19.0	11.4	2.4	13.8
11/2	573	573	-	-	-	1.3	0.5	-	1.8	11.3	4.3	0.5	4.9
11/3	543	543	-	-	-	1.0	0.5	-	1.5	10.0	3.9	0.5	4.4
12/1	1396	1396	-	-	-	0.0	1.4	-	1.4	3.5	0.0	1.4	1.4
13/1	974	974	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	919	919	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	403	403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	205	205	-	-	-	0.2	0.1	-	0.3	4.9	0.8	0.1	0.9
14/2	460	460	-	-	-	0.2	0.3	-	0.4	3.5	1.7	0.3	2.0
14/3	740	740	-	-	-	0.3	0.7	-	1.0	4.8	1.7	0.7	2.4
14/4	667	667	-	-	-	1.7	0.6	-	2.2	12.1	5.2	0.6	5.8
15/1	434	434	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	466	466	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-10.3	Total Delay for Signalled Lanes (pcuHr):	68.05	Cycle Time (s):	53		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-14.0	Total Delay for Signalled Lanes (pcuHr):	37.49	Cycle Time (s):	53		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	49.5	Total Delay for Signalled Lanes (pcuHr):	2.11	Cycle Time (s):	53		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-41.0	Total Delay for Signalled Lanes (pcuHr):	120.12	Cycle Time (s):	53		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	25.3	Total Delay for Signalled Lanes (pcuHr):	9.52	Cycle Time (s):	53		
	PRC Over All Lanes (%):	-41.0	Total Delay Over All Lanes(pcuHr):	238.66				

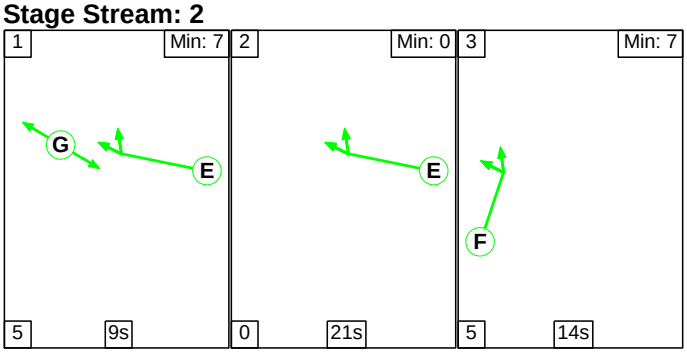
Full Input Data And Results
Scenario 6: '2021 DS 20% PM' (FG8: '2021 DM + 2021 DS 20% PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

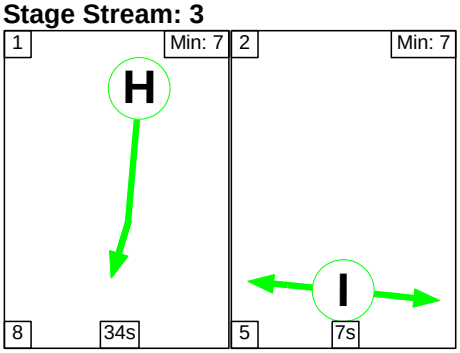
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	6	12	21
Change Point	11	22	39

Stage Stream: 2

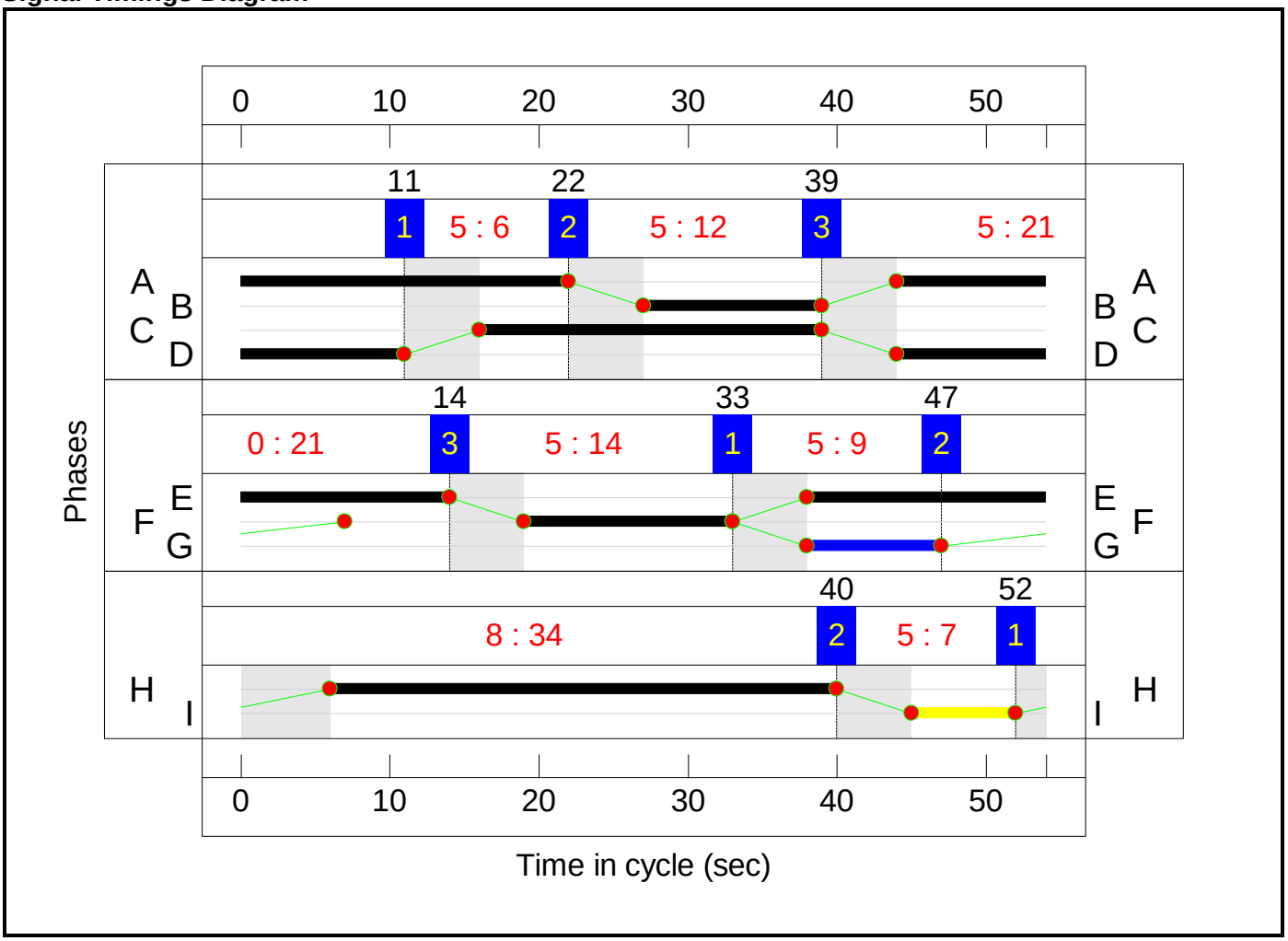
Stage	1	2	3
Duration	9	21	14
Change Point	33	47	14

Stage Stream: 3

Stage	1	2
Duration	34	7
Change Point	52	40

Full Input Data And Results

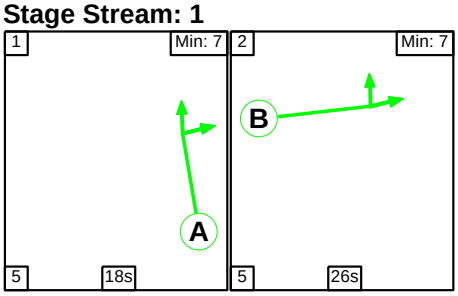
Signal Timings Diagram



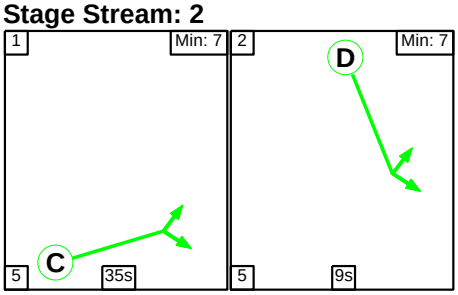
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

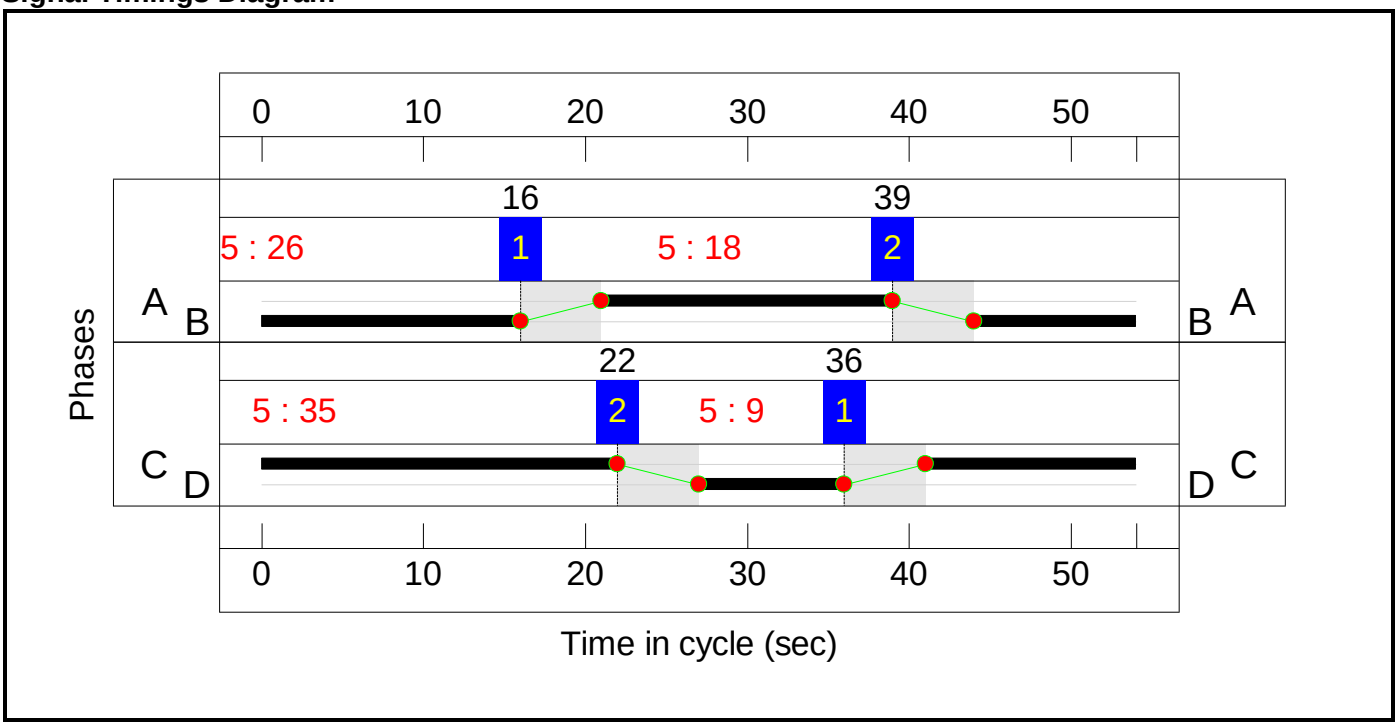
Stage Stream: 1

Stage	1	2
Duration	18	26
Change Point	16	39

Stage Stream: 2

Stage	1	2
Duration	35	9
Change Point	36	22

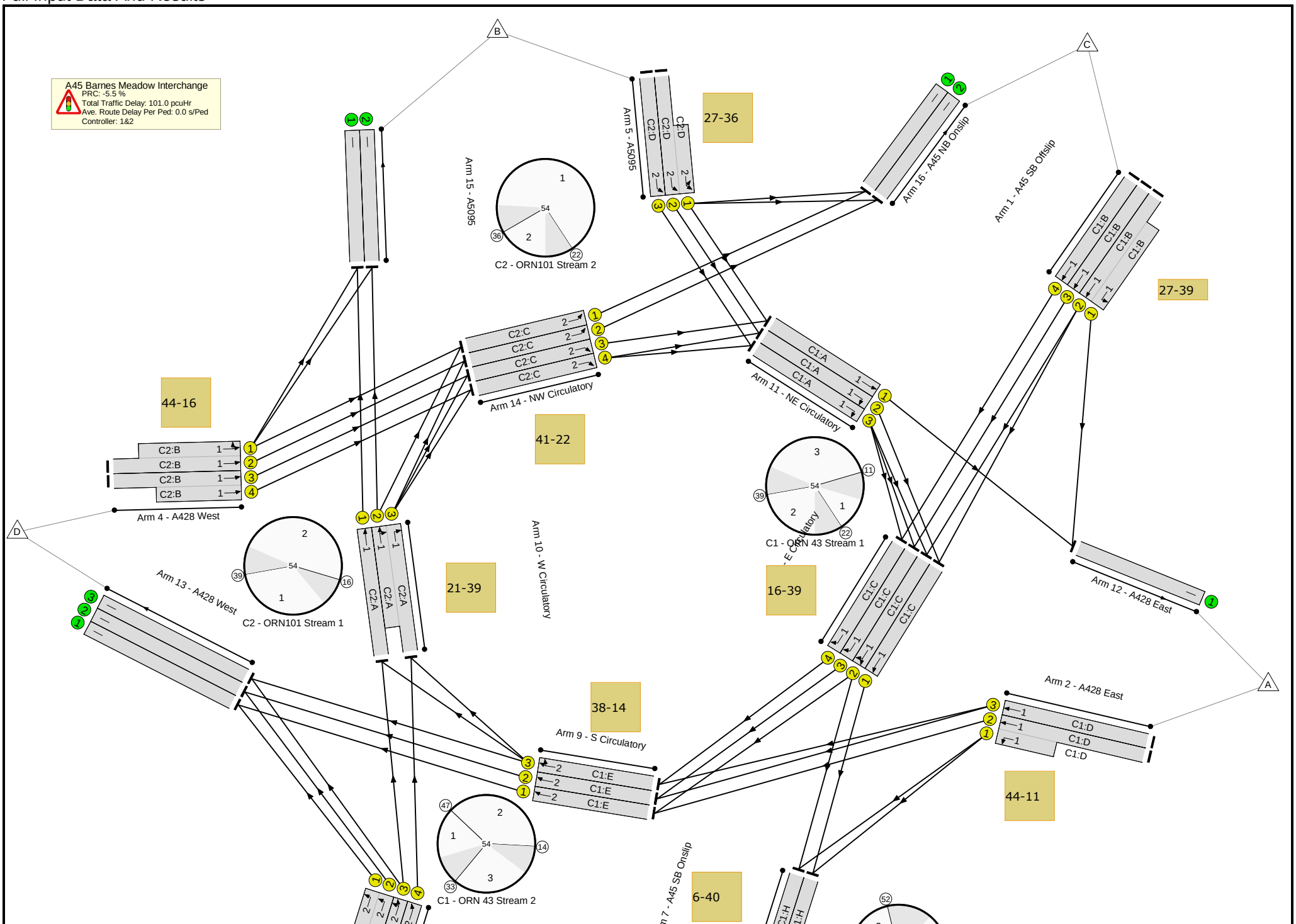
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.0%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.0%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	12	-	488	1800:1800	131+433	86.5 : 86.5%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	12	-	323	1800	433	74.5%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	12	-	283	1800	433	65.3%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	21	-	803	1800:1800	583+511	73.4 : 73.4%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	21	-	658	1800	733	89.7%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	14	-	496	1800:1800	398+398	62.3 : 62.3%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	14	-	444	1800	500	88.8%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	14	-	442	1800	500	88.4%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	26	-	1198	1800:1800	752+810	76.7 : 76.7%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	26	-	1098	1800:1800	328+828	95.0 : 95.0%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	9	-	318	1800:1800	333+181	61.8 : 61.8%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	9	-	153	1800	333	45.9%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	23	-	533	1900	844	63.1%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	23	-	592	1900	844	70.1%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	23	-	456	1900	844	54.0%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	23	-	283	1900	844	33.5%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	34	-	707	1800	1167	60.6%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	34	-	667	1800	1167	57.2%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	707	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	667	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	30	-	554	1900	1091	50.8%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	30	-	456	1900	1091	41.8%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	30	-	941	1900	1091	86.3%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	18	-	601	1900	669	89.9%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	18	-	1037	1900:1900	669+425	94.8 : 94.8%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	32	-	762	1900	1161	65.6%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	32	-	533	1900	1161	45.9%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	32	-	612	1900	1161	52.7%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1137	1900	1900	59.8%
13/1	A428 West	U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	704	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	189	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	35	-	788	1900	1267	62.2%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	35	-	831	1900	1267	65.6%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	35	-	692	1900	1267	54.6%
14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	35	-	786	1900	1267	62.1%
15/1	A5095	U	N/A	N/A	-		-	-	-	658	Inf	Inf	0.0%

Full Input Data And Results

15/2	A5095	U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	809	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	852	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**46.9**	**54.1**	**0.0**	**101.0**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**46.9**	**54.1**	**0.0**	**101.0**	**-**	**-**	**-**	**-**
1/2+1/1	488	488	-	-	-	2.6	3.0	-	5.6	40.9	5.3	3.0	8.3
1/3	323	323	-	-	-	1.7	1.4	-	3.1	34.9	4.4	1.4	5.8
1/4	283	283	-	-	-	1.5	0.9	-	2.4	30.3	3.8	0.9	4.7
2/2+2/1	803	803	-	-	-	2.7	1.4	-	4.1	18.3	4.9	1.4	6.2
2/3	658	658	-	-	-	2.7	4.0	-	6.7	36.6	9.1	4.0	13.1
3/2+3/1	496	496	-	-	-	2.3	0.8	-	3.1	22.3	3.1	0.8	3.9
3/3	444	444	-	-	-	2.3	3.5	-	5.8	47.3	6.3	3.5	9.8
3/4	442	442	-	-	-	2.3	3.4	-	5.7	46.4	6.3	3.4	9.7
4/2+4/1	1198	1198	-	-	-	3.4	1.6	-	5.0	15.0	7.1	1.6	8.7
4/3+4/4	1098	1098	-	-	-	3.4	7.5	-	10.9	35.7	11.8	7.5	19.3
5/2+5/1	318	318	-	-	-	1.8	0.8	-	2.6	28.9	2.8	0.8	3.6
5/3	153	153	-	-	-	0.8	0.4	-	1.3	29.5	2.0	0.4	2.5
6/1	533	533	-	-	-	2.3	0.9	-	3.1	21.2	8.0	0.9	8.8
6/2	592	592	-	-	-	1.6	1.2	-	2.7	16.6	7.2	1.2	8.4
6/3	456	456	-	-	-	1.2	0.6	-	1.8	14.3	3.0	0.6	3.6
6/4	283	283	-	-	-	0.4	0.3	-	0.6	7.9	0.7	0.3	1.0
7/1	707	707	-	-	-	0.4	0.8	-	1.2	6.0	6.1	0.8	6.8
7/2	667	667	-	-	-	0.5	0.7	-	1.1	6.1	3.6	0.7	4.3
8/1	707	707	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	667	667	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	554	554	-	-	-	0.3	0.5	-	0.9	5.6	1.7	0.5	2.2
9/2	456	456	-	-	-	1.0	0.4	-	1.4	10.9	6.6	0.4	7.0
9/3	941	941	-	-	-	0.9	3.0	-	3.9	15.1	5.4	3.0	8.4
10/1	601	601	-	-	-	2.1	4.0	-	6.1	36.3	4.8	4.0	8.8

Full Input Data And Results

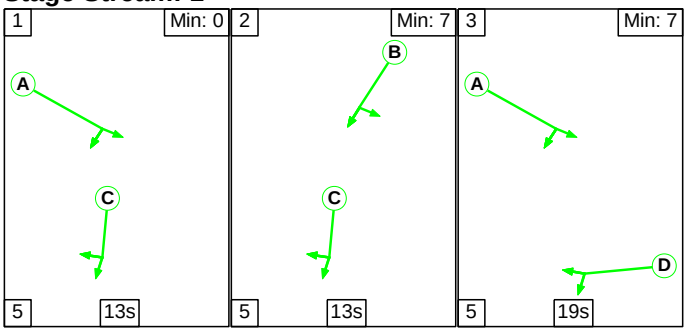
10/3+10/2	1037	1037	-	-	-	3.4	7.3	-	10.7	37.1	6.9	7.3	14.2
11/1	762	762	-	-	-	0.5	1.0	-	1.4	6.8	2.1	1.0	3.1
11/2	533	533	-	-	-	1.0	0.4	-	1.4	9.8	4.7	0.4	5.1
11/3	612	612	-	-	-	1.2	0.6	-	1.7	10.1	4.6	0.6	5.1
12/1	1137	1137	-	-	-	0.0	0.7	-	0.7	2.4	0.0	0.7	0.7
13/1	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	704	704	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	189	189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	788	788	-	-	-	1.0	0.8	-	1.8	8.2	4.4	0.8	5.2
14/2	831	831	-	-	-	0.8	0.9	-	1.7	7.5	4.0	0.9	4.9
14/3	692	692	-	-	-	1.0	0.6	-	1.6	8.1	8.4	0.6	9.0
14/4	786	786	-	-	-	0.1	0.8	-	0.9	4.1	0.3	0.8	1.1
15/1	658	658	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	179	179	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	809	809	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	852	852	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	0.3	Total Delay for Signalled Lanes (pcuHr):	34.75	Cycle Time (s):	54		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	1.4	Total Delay for Signalled Lanes (pcuHr):	20.79	Cycle Time (s):	54		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	48.5	Total Delay for Signalled Lanes (pcuHr):	2.31	Cycle Time (s):	54		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-5.5	Total Delay for Signalled Lanes (pcuHr):	32.62	Cycle Time (s):	54		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	37.2	Total Delay for Signalled Lanes (pcuHr):	9.80	Cycle Time (s):	54		
	PRC Over All Lanes (%):	-5.5	Total Delay Over All Lanes(pcuHr):	101.01				

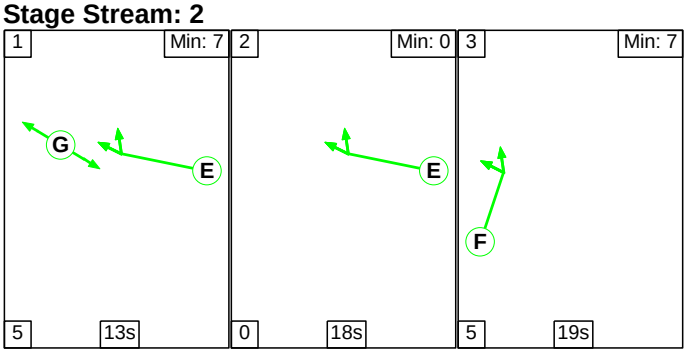
Full Input Data And Results
Scenario 7: '2021 DS AM' (FG9: '2021 DS AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

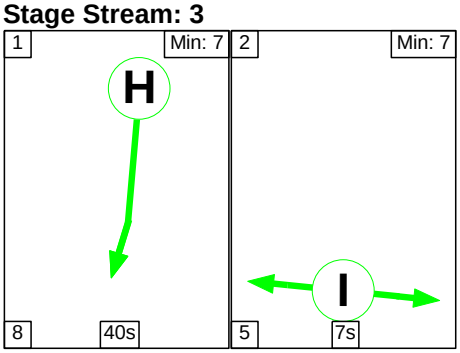
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	13	13	19
Change Point	40	58	16

Stage Stream: 2

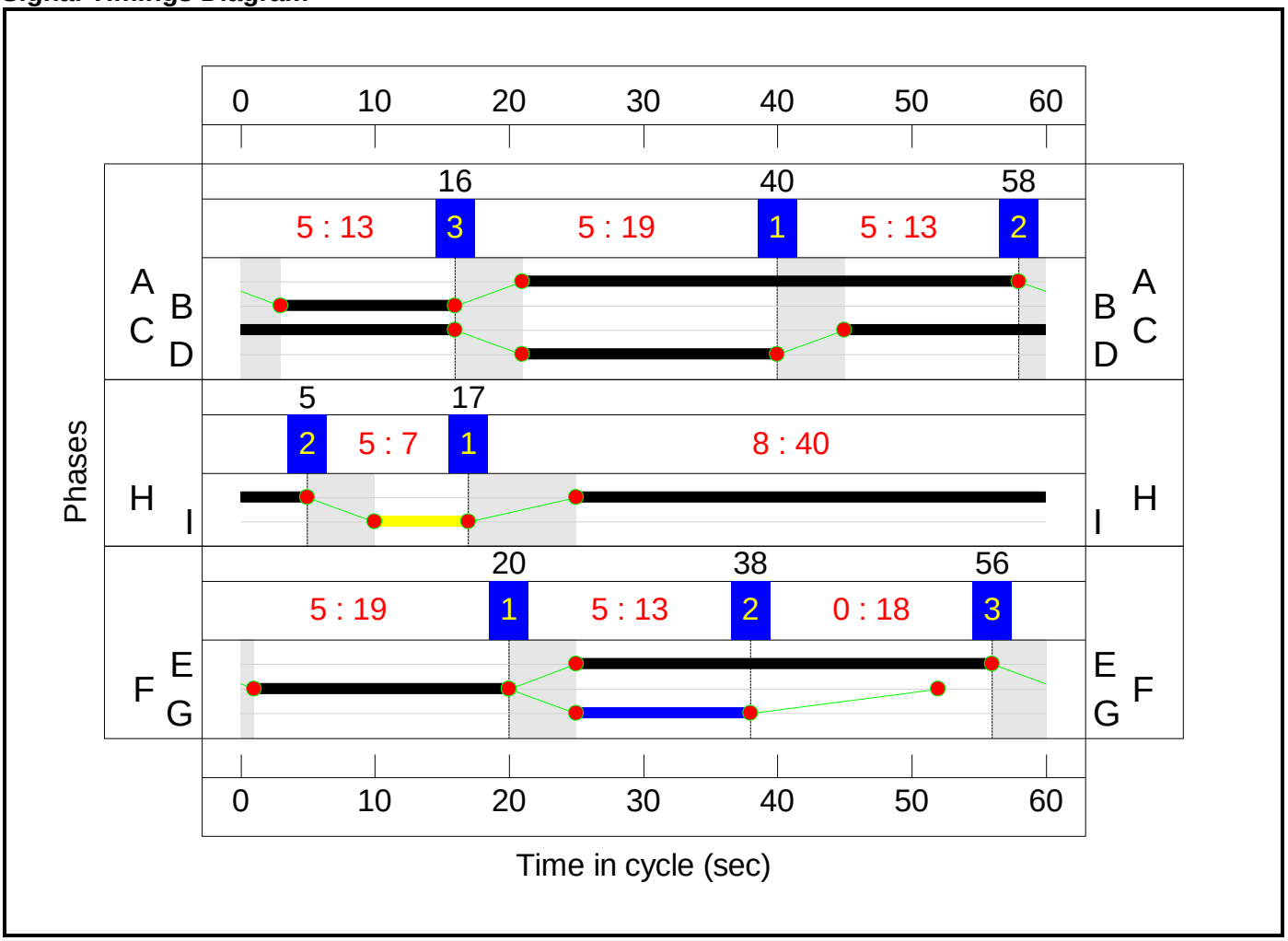
Stage	1	2	3
Duration	13	18	19
Change Point	20	38	56

Stage Stream: 3

Stage	1	2
Duration	40	7
Change Point	17	5

Full Input Data And Results

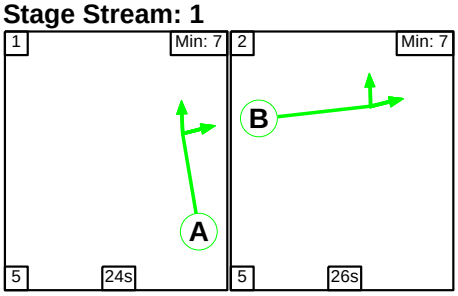
Signal Timings Diagram



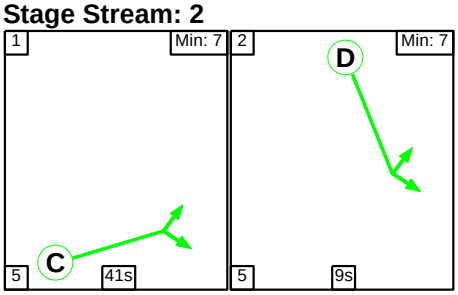
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

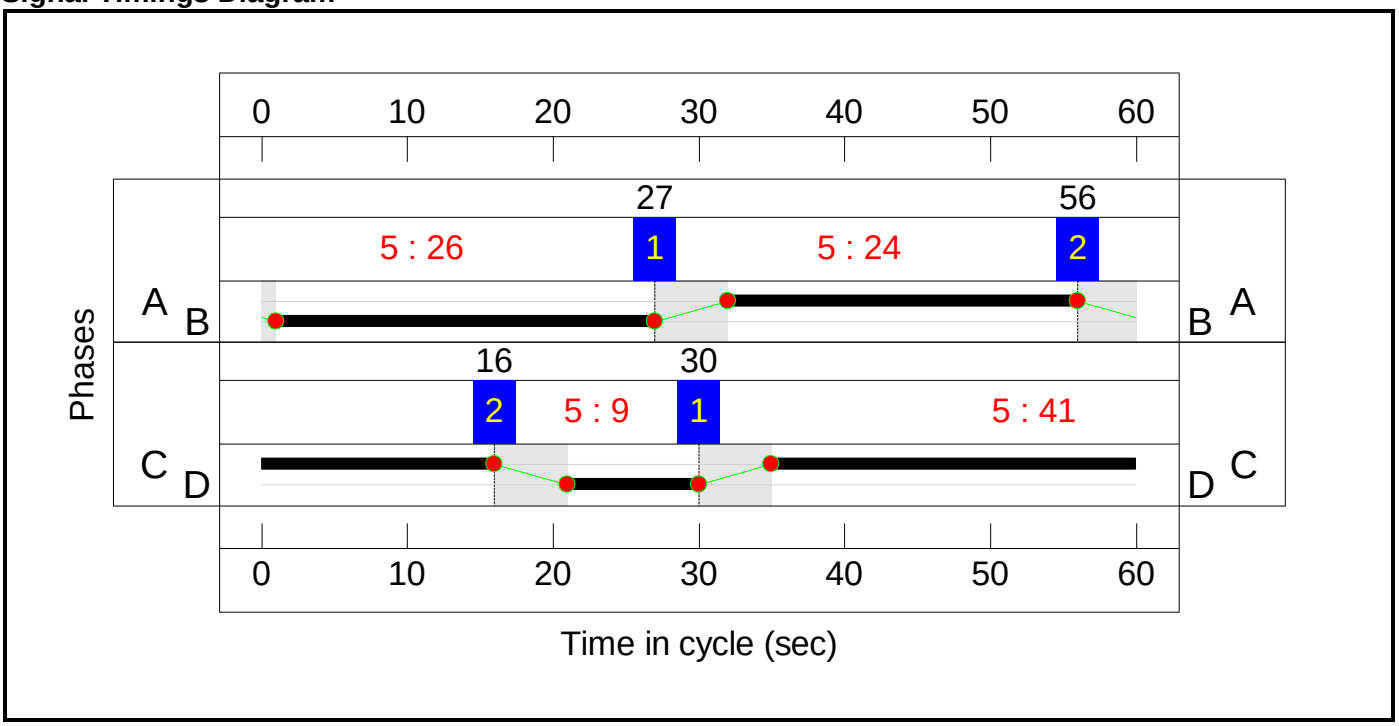
Stage Stream: 1

Stage	1	2
Duration	24	26
Change Point	27	56

Stage Stream: 2

Stage	1	2
Duration	41	9
Change Point	30	16

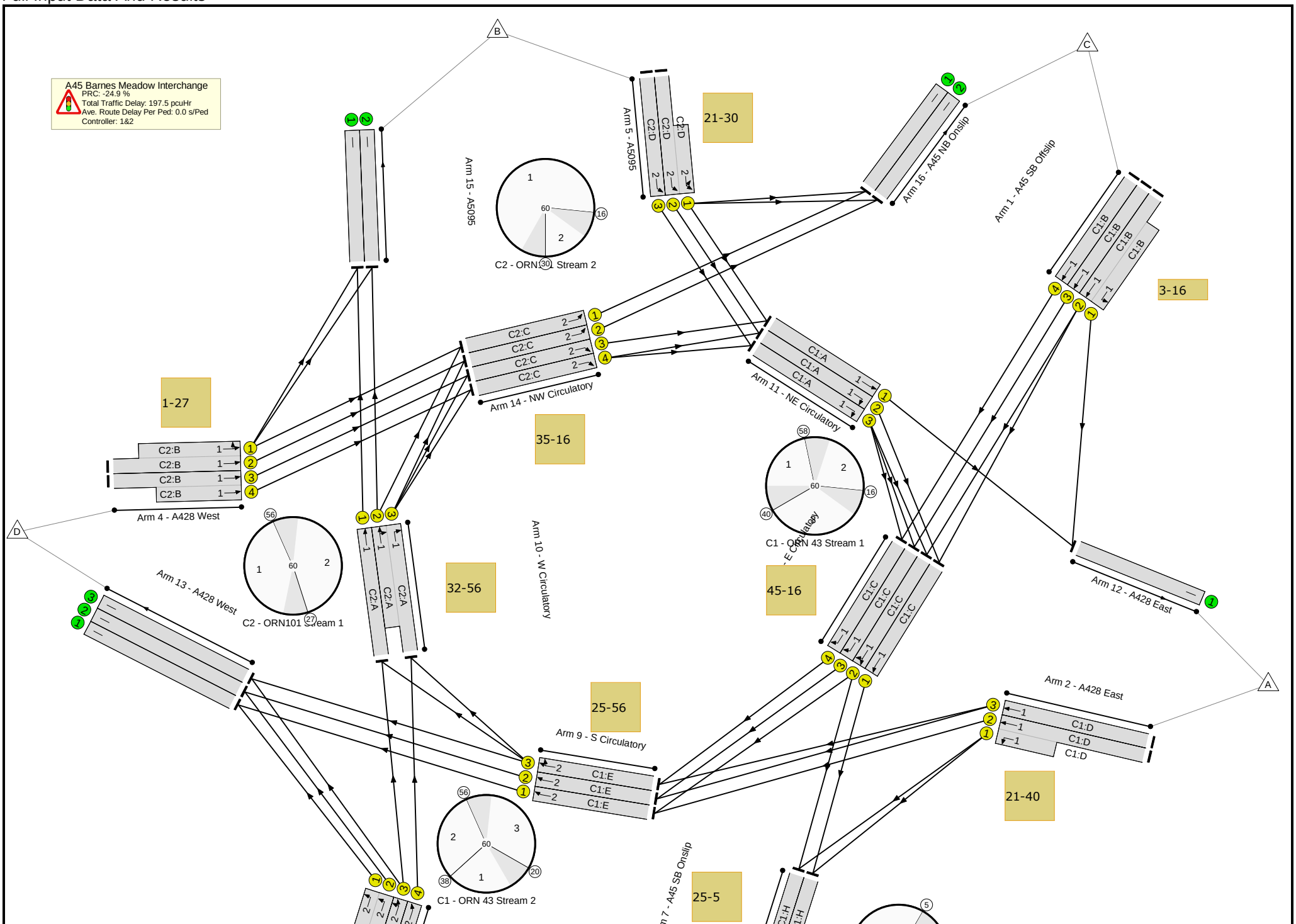
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.4%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.4%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	13	-	583	1800:1800	99+420	112.4 : 112.4%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	13	-	444	1800	420	105.7%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	13	-	392	1800	420	93.3%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	19	-	766	1800:1800	523+272	96.4 : 96.4%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	19	-	529	1800	600	88.2%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	19	-	694	1800:1800	434+434	80.0 : 80.0%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	19	-	368	1800	600	61.3%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	19	-	673	1800	600	112.2%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	26	-	345	1800:1800	786+182	35.6 : 35.6%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	26	-	962	1800:1800	326+738	90.4 : 90.4%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	9	-	449	1800:1800	300+220	86.3 : 86.3%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	9	-	163	1800	300	54.3%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	31	-	567	1900	1013	56.0%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	31	-	633	1900	1013	62.5%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	31	-	444	1900	1013	41.4%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	31	-	392	1900	1013	38.7%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	40	-	688	1800	1230	55.9%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	40	-	663	1800	1230	53.9%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	688	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	663	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	31	-	615	1900	1013	60.7%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	31	-	566	1900	1013	53.5%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	31	-	799	1900	1013	78.8%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	24	-	405	1900	792	51.2%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	24	-	1021	1900:1900	744+376	81.3 : 91.2%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	37	-	1158	1900	1203	90.2%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	37	-	567	1900	1203	47.1%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	37	-	522	1900	1203	43.4%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1630	1900	1900	79.2%
13/1	A428 West	U	N/A	N/A	-		-	-	-	962	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	913	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	414	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	41	-	384	1900	1330	28.9%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	41	-	280	1900	1330	21.1%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	41	-	973	1900	1330	67.7%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	41	-	667	1900	1330	50.2%
15/1	A5095	U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	24	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	386	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	283	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**56.1**	**141.4**	**0.0**	**197.5**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**56.1**	**141.4**	**0.0**	**197.5**	**-**	**-**	**-**	**-**
1/2+1/1	583	531	-	-	-	5.2	36.1	-	41.3	255.1	8.7	36.1	44.9
1/3	444	420	-	-	-	3.6	18.1	-	21.7	175.8	7.8	18.1	25.9
1/4	392	392	-	-	-	2.5	5.1	-	7.6	69.6	6.3	5.1	11.4
2/2+2/1	766	766	-	-	-	3.8	8.5	-	12.3	57.8	9.2	8.5	17.6
2/3	529	529	-	-	-	2.8	3.4	-	6.2	42.0	8.2	3.4	11.6
3/2+3/1	694	694	-	-	-	3.2	2.0	-	5.2	26.7	5.5	2.0	7.5
3/3	368	368	-	-	-	1.7	0.8	-	2.5	24.5	5.1	0.8	5.9
3/4	673	600	-	-	-	5.9	40.6	-	46.6	249.1	12.4	40.6	53.1
4/2+4/1	345	345	-	-	-	1.0	0.3	-	1.3	13.4	3.0	0.3	3.3
4/3+4/4	962	962	-	-	-	3.6	4.3	-	7.9	29.6	10.3	4.3	14.6
5/2+5/1	449	449	-	-	-	3.0	2.9	-	5.9	47.3	4.2	2.9	7.1
5/3	163	163	-	-	-	1.0	0.6	-	1.6	35.9	2.4	0.6	3.0
6/1	567	567	-	-	-	1.7	0.6	-	2.4	15.1	9.2	0.6	9.8
6/2	633	633	-	-	-	1.6	0.8	-	2.5	14.0	8.1	0.8	9.0
6/3	420	420	-	-	-	1.2	0.4	-	1.6	13.6	2.7	0.4	3.1
6/4	392	392	-	-	-	1.0	0.3	-	1.3	12.3	2.2	0.3	2.5
7/1	688	688	-	-	-	0.3	0.6	-	0.9	5.0	7.2	0.6	7.9
7/2	663	663	-	-	-	0.2	0.6	-	0.7	4.1	6.6	0.6	7.2
8/1	688	688	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	663	663	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	615	615	-	-	-	0.2	0.8	-	1.0	5.9	2.1	0.8	2.9
9/2	542	542	-	-	-	1.0	0.6	-	1.6	10.7	5.7	0.6	6.2
9/3	799	799	-	-	-	1.2	1.8	-	3.0	13.5	10.7	1.8	12.6
10/1	405	405	-	-	-	1.4	0.5	-	1.9	16.7	4.9	0.5	5.4

Full Input Data And Results

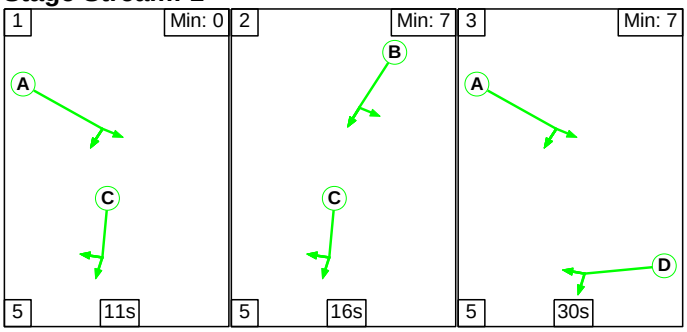
10/3+10/2	948	948	-	-	-	3.6	2.7	-	6.3	23.7	10.0	2.7	12.7
11/1	1085	1085	-	-	-	2.7	4.3	-	7.0	23.2	11.3	4.3	15.6
11/2	567	567	-	-	-	0.1	0.4	-	0.6	3.6	1.3	0.4	1.8
11/3	522	522	-	-	-	0.2	0.4	-	0.5	3.7	1.8	0.4	2.2
12/1	1505	1505	-	-	-	0.0	1.9	-	1.9	4.5	0.0	1.9	1.9
13/1	962	962	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	889	889	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	414	414	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	384	384	-	-	-	0.1	0.2	-	0.3	2.4	0.3	0.2	0.5
14/2	280	280	-	-	-	0.3	0.1	-	0.4	5.1	1.4	0.1	1.6
14/3	900	900	-	-	-	0.3	1.0	-	1.3	5.3	1.7	1.0	2.8
14/4	667	667	-	-	-	1.8	0.5	-	2.3	12.6	6.5	0.5	7.0
15/1	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	24	24	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	386	386	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	283	283	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-24.9	Total Delay for Signalled Lanes (pcuHr):	104.90	Cycle Time (s):	60		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-24.6	Total Delay for Signalled Lanes (pcuHr):	59.85	Cycle Time (s):	60		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	60.9	Total Delay for Signalled Lanes (pcuHr):	1.70	Cycle Time (s):	60		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-1.3	Total Delay for Signalled Lanes (pcuHr):	17.32	Cycle Time (s):	60		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	4.2	Total Delay for Signalled Lanes (pcuHr):	11.82	Cycle Time (s):	60		
	PRC Over All Lanes (%):	-24.9	Total Delay Over All Lanes(pcuHr):	197.47				

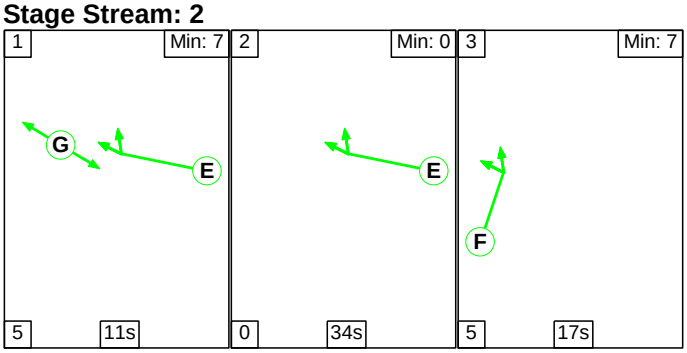
Full Input Data And Results
Scenario 8: '2021 DS PM' (FG10: '2021 DS PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

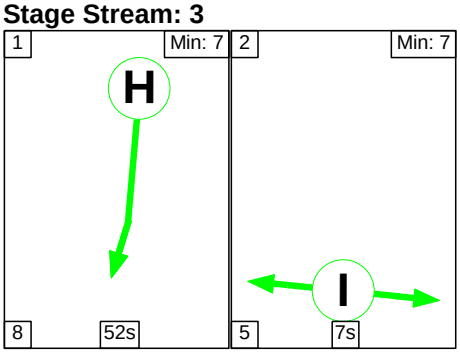
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	11	16	30
Change Point	12	28	49

Stage Stream: 2

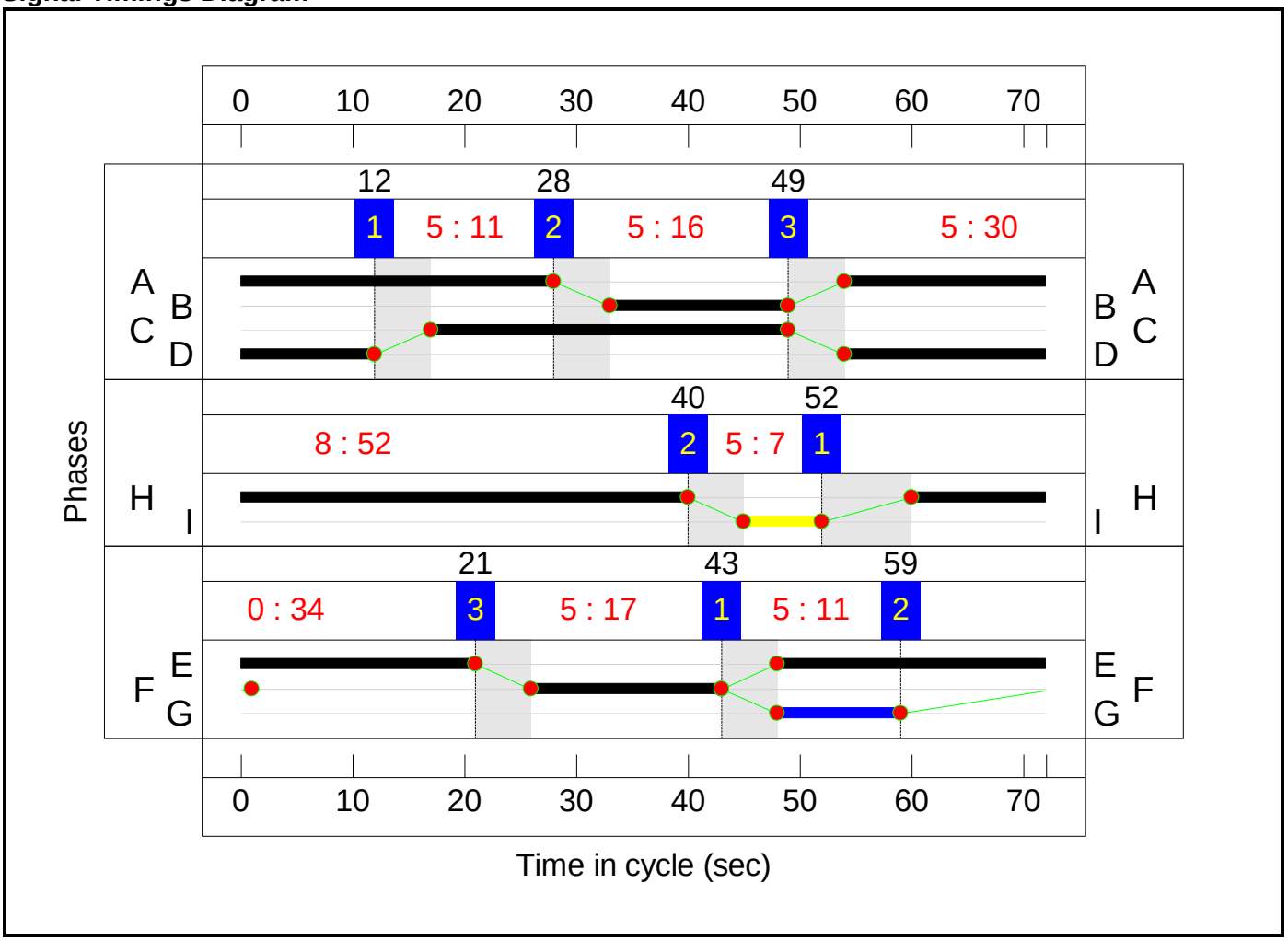
Stage	1	2	3
Duration	11	34	17
Change Point	43	59	21

Stage Stream: 3

Stage	1	2
Duration	52	7
Change Point	52	40

Full Input Data And Results

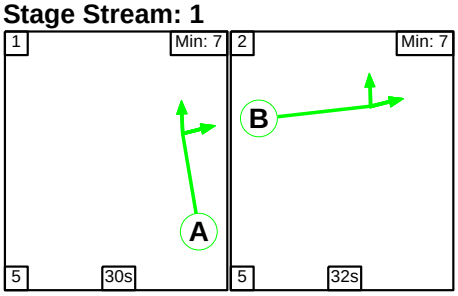
Signal Timings Diagram



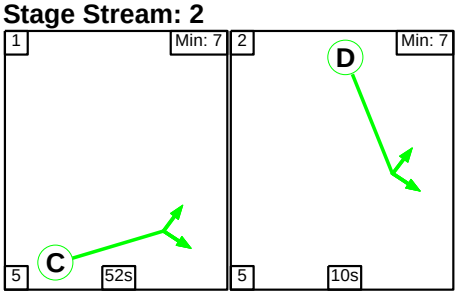
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

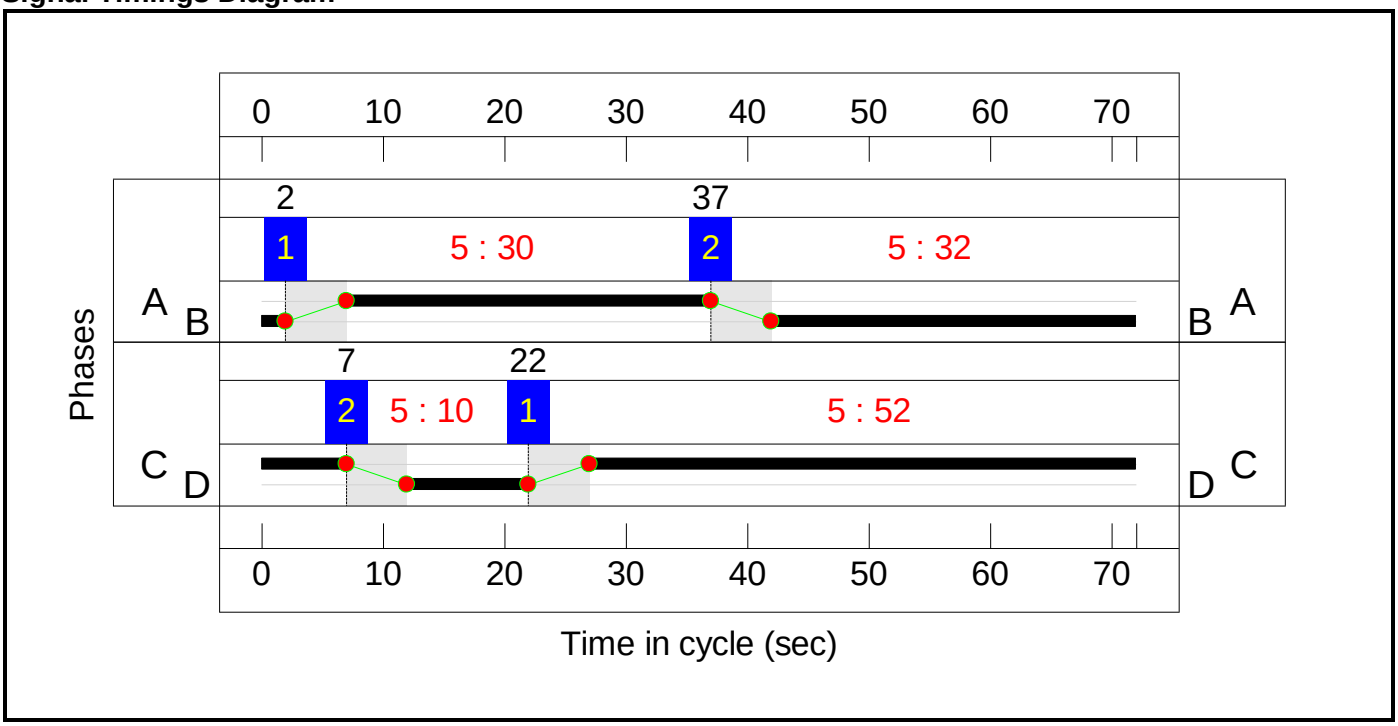
Stage Stream: 1

Stage	1	2
Duration	30	32
Change Point	2	37

Stage Stream: 2

Stage	1	2
Duration	52	10
Change Point	22	7

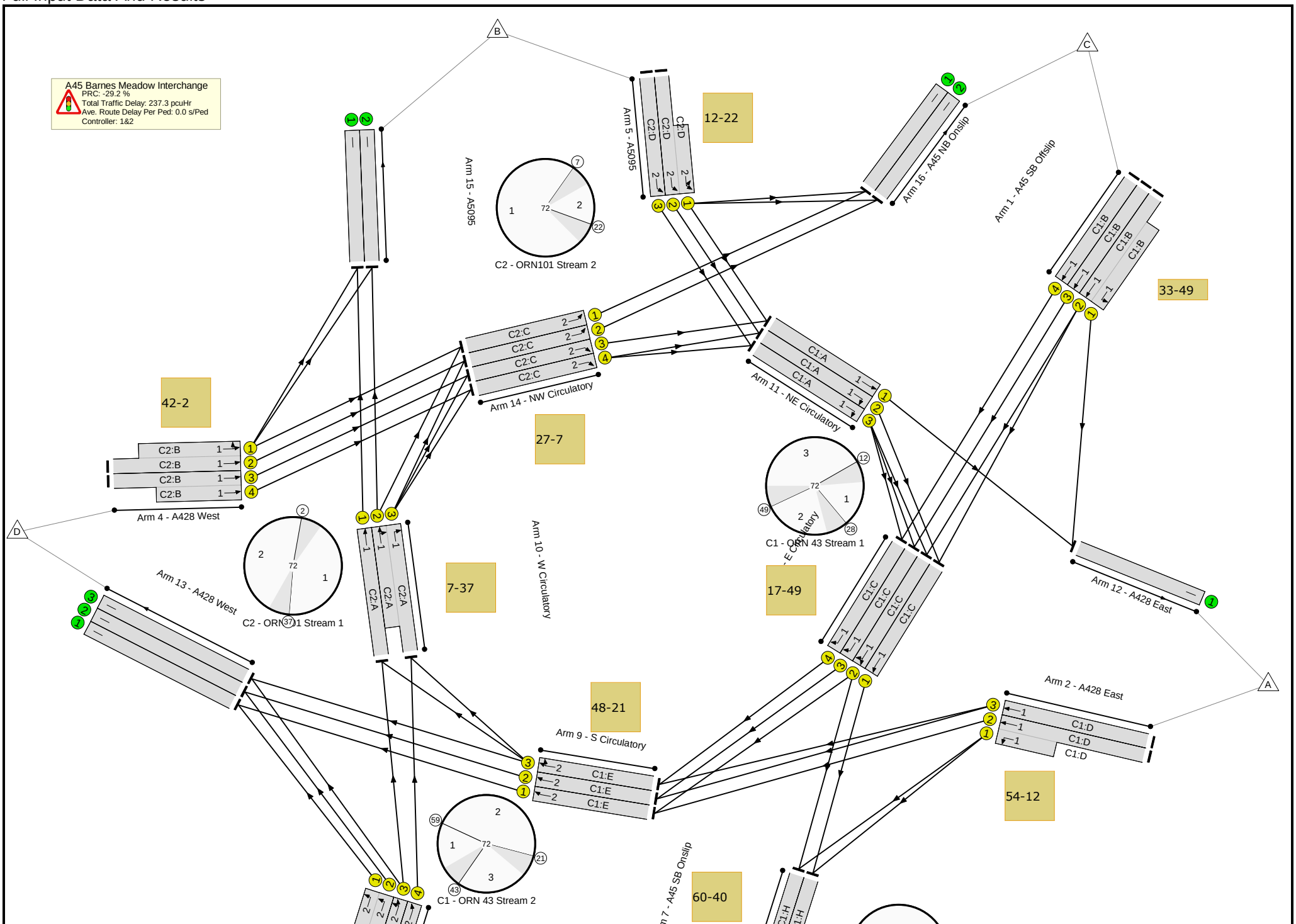
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.3%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.3%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	16	-	426	1800:1800	0+425	0.0 : 100.2%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	16	-	379	1800	425	89.2%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	16	-	337	1800	425	79.3%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	30	-	786	1800:1800	553+504	74.4 : 74.4%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	30	-	901	1800	775	116.3%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	17	-	567	1800:1800	337+336	84.3 : 84.3%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	17	-	427	1800	450	94.9%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	17	-	323	1800	450	71.8%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	32	-	1268	1800:1800	644+684	95.5 : 95.5%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	32	-	1071	1800:1800	267+735	106.9 : 106.9%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	10	-	418	1800:1800	275+275	73.8 : 78.2%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	10	-	188	1800	275	68.4%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	32	-	525	1900	871	57.9%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	32	-	554	1900	871	60.2%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	32	-	477	1900	871	54.8%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	32	-	337	1900	871	38.7%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	52	-	688	1800	1325	50.4%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	52	-	686	1800	1325	49.5%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	688	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	686	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	45	-	491	1900	1214	40.4%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	45	-	477	1900	1214	39.3%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	45	-	1238	1900	1214	91.6%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	30	-	655	1900	818	77.8%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	30	-	1092	1900:1900	712+436	87.6 : 82.7%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	46	-	652	1900	1240	51.1%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	46	-	525	1900	1240	40.7%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	46	-	652	1900	1240	50.2%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1078	1900	1900	55.7%
13/1	A428 West	U	N/A	N/A	-		-	-	-	774	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	761	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	241	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	52	-	982	1900	1399	66.3%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	52	-	997	1900	1399	67.5%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	52	-	580	1900	1399	40.2%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	52	-	786	1900	1399	52.6%
15/1	A5095	U	N/A	N/A	-		-	-	-	684	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	57	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1053	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1069	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**73.2**	**164.1**	**0.0**	**237.3**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**73.2**	**164.1**	**0.0**	**237.3**	**-**	**-**	**-**	**-**
1/2+1/1	426	425	-	-	-	3.3	10.6	-	13.9	117.1	8.5	10.6	19.1
1/3	379	379	-	-	-	2.8	3.6	-	6.4	60.5	7.3	3.6	10.8
1/4	337	337	-	-	-	2.4	1.8	-	4.3	45.5	6.3	1.8	8.1
2/2+2/1	786	786	-	-	-	3.3	1.4	-	4.7	21.5	6.1	1.4	7.5
2/3	901	775	-	-	-	10.2	66.4	-	76.6	306.1	20.5	66.4	86.9
3/2+3/1	567	567	-	-	-	3.8	2.6	-	6.4	40.4	6.0	2.6	8.5
3/3	427	427	-	-	-	3.1	6.1	-	9.2	77.8	8.3	6.1	14.4
3/4	323	323	-	-	-	2.2	1.2	-	3.5	38.6	5.8	1.2	7.1
4/2+4/1	1268	1268	-	-	-	5.8	8.2	-	14.0	39.8	12.9	8.2	21.1
4/3+4/4	1071	1002	-	-	-	7.3	41.0	-	48.4	162.6	21.1	41.0	62.2
5/2+5/1	418	418	-	-	-	3.4	1.5	-	4.9	42.6	4.1	1.5	5.7
5/3	188	188	-	-	-	1.5	1.1	-	2.6	49.1	3.6	1.1	4.6
6/1	504	504	-	-	-	2.1	0.7	-	2.7	19.6	9.9	0.7	10.6
6/2	524	524	-	-	-	2.6	0.8	-	3.4	23.1	10.4	0.8	11.2
6/3	477	477	-	-	-	1.2	0.6	-	1.8	13.2	2.2	0.6	2.8
6/4	337	337	-	-	-	0.5	0.3	-	0.8	8.9	1.0	0.3	1.3
7/1	667	667	-	-	-	0.1	0.5	-	0.6	3.3	8.1	0.5	8.6
7/2	656	656	-	-	-	0.1	0.5	-	0.6	3.1	6.6	0.5	7.1
8/1	667	667	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	656	656	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	491	491	-	-	-	0.3	0.3	-	0.6	4.3	1.6	0.3	2.0
9/2	477	477	-	-	-	1.7	0.3	-	2.0	15.3	9.5	0.3	9.8
9/3	1112	1112	-	-	-	0.7	5.0	-	5.7	18.5	7.4	5.0	12.4
10/1	637	637	-	-	-	5.4	1.7	-	7.2	40.5	11.9	1.7	13.6

Full Input Data And Results

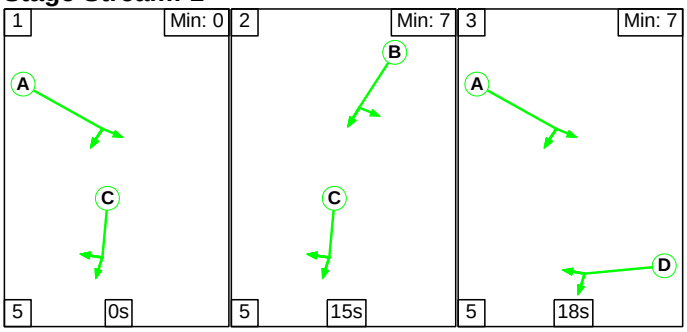
10/3+10/2	984	984	-	-	-	4.3	2.9	-	7.2	26.3	14.4	2.9	17.3
11/1	634	634	-	-	-	1.8	0.5	-	2.4	13.4	9.6	0.5	10.1
11/2	504	504	-	-	-	0.4	0.3	-	0.7	5.3	1.3	0.3	1.7
11/3	622	622	-	-	-	0.4	0.5	-	0.9	5.0	1.3	0.5	1.8
12/1	1059	1059	-	-	-	0.0	0.6	-	0.6	2.1	0.0	0.6	0.6
13/1	774	774	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	761	761	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	241	241	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	928	928	-	-	-	0.9	1.0	-	1.9	7.2	6.6	1.0	7.6
14/2	944	944	-	-	-	0.3	1.0	-	1.4	5.2	6.5	1.0	7.6
14/3	562	562	-	-	-	1.1	0.3	-	1.5	9.4	5.9	0.3	6.2
14/4	735	735	-	-	-	0.2	0.6	-	0.7	3.5	0.6	0.6	1.2
15/1	666	666	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	999	999	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1016	1016	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-29.2	Total Delay for Signalled Lanes (pcuHr):	118.45	Cycle Time (s):	72		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-5.4	Total Delay for Signalled Lanes (pcuHr):	27.39	Cycle Time (s):	72		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	78.7	Total Delay for Signalled Lanes (pcuHr):	1.17	Cycle Time (s):	72		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-18.8	Total Delay for Signalled Lanes (pcuHr):	76.75	Cycle Time (s):	72		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	15.1	Total Delay for Signalled Lanes (pcuHr):	12.90	Cycle Time (s):	72		
	PRC Over All Lanes (%):	-29.2	Total Delay Over All Lanes(pcuHr):	237.29				

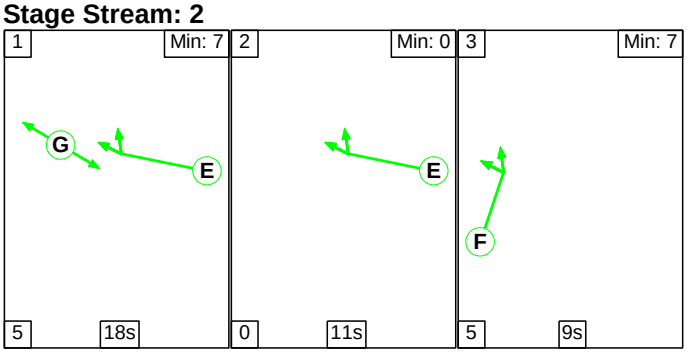
Full Input Data And Results
Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

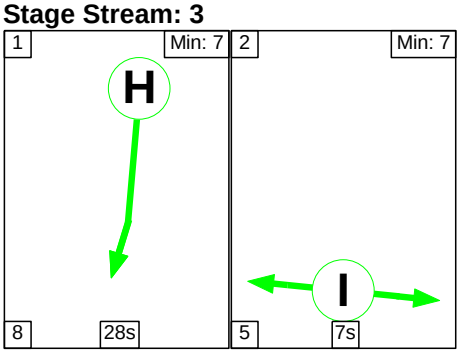
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	0	15	18
Change Point	36	41	13

Stage Stream: 2

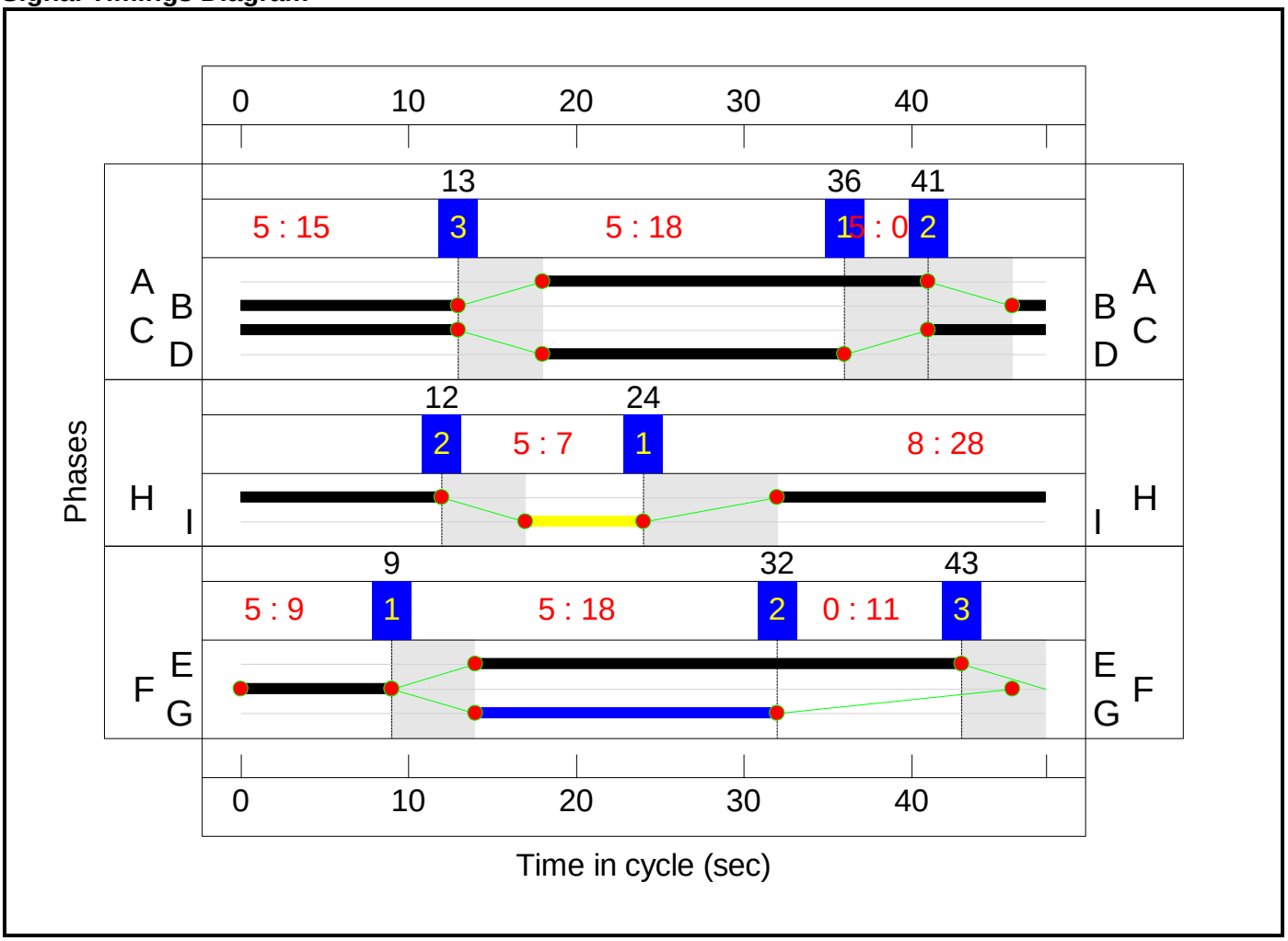
Stage	1	2	3
Duration	18	11	9
Change Point	9	32	43

Stage Stream: 3

Stage	1	2
Duration	28	7
Change Point	24	12

Full Input Data And Results

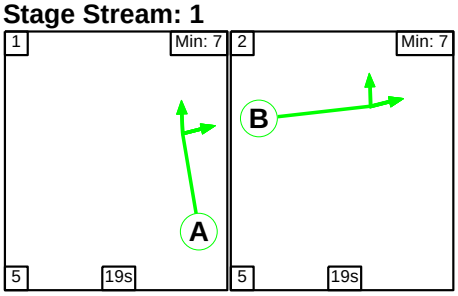
Signal Timings Diagram



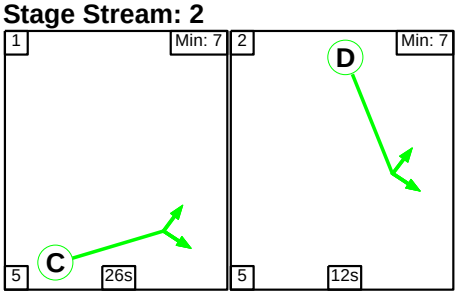
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

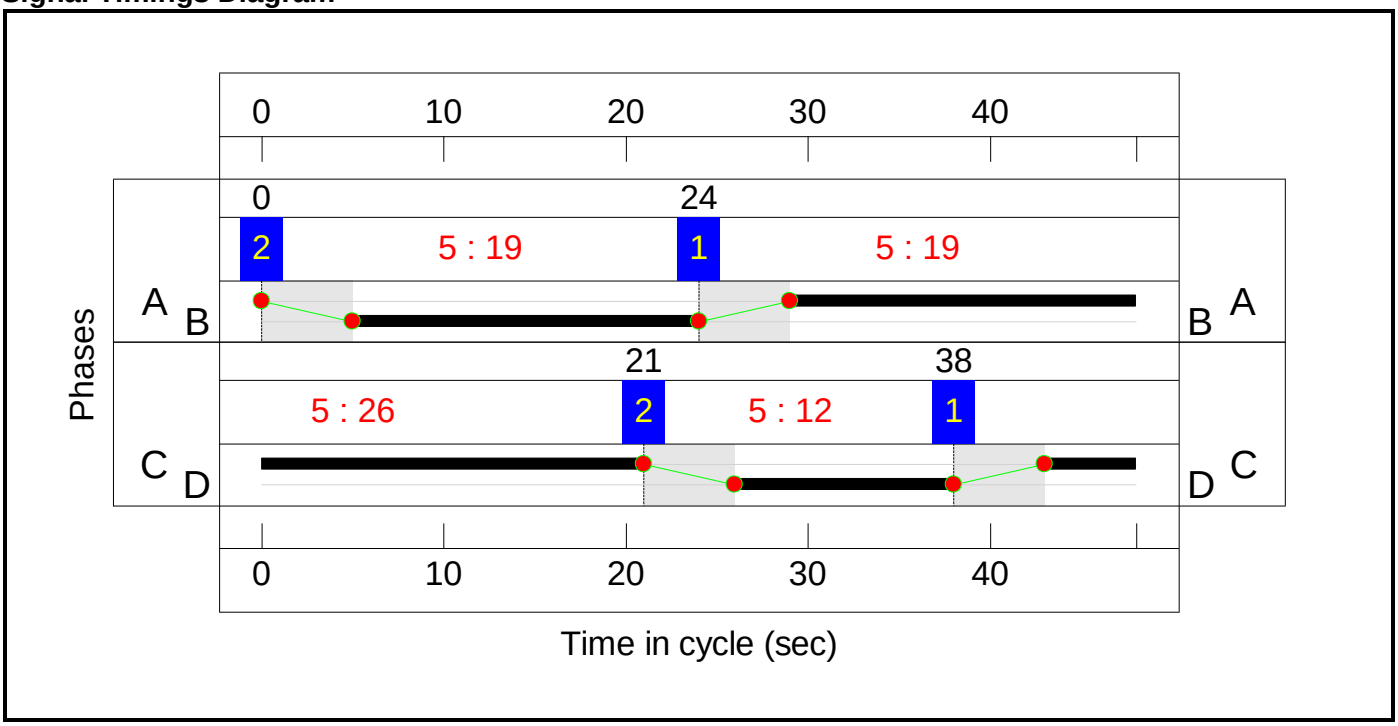
Stage Stream: 1

Stage	1	2
Duration	19	19
Change Point	24	0

Stage Stream: 2

Stage	1	2
Duration	26	12
Change Point	38	21

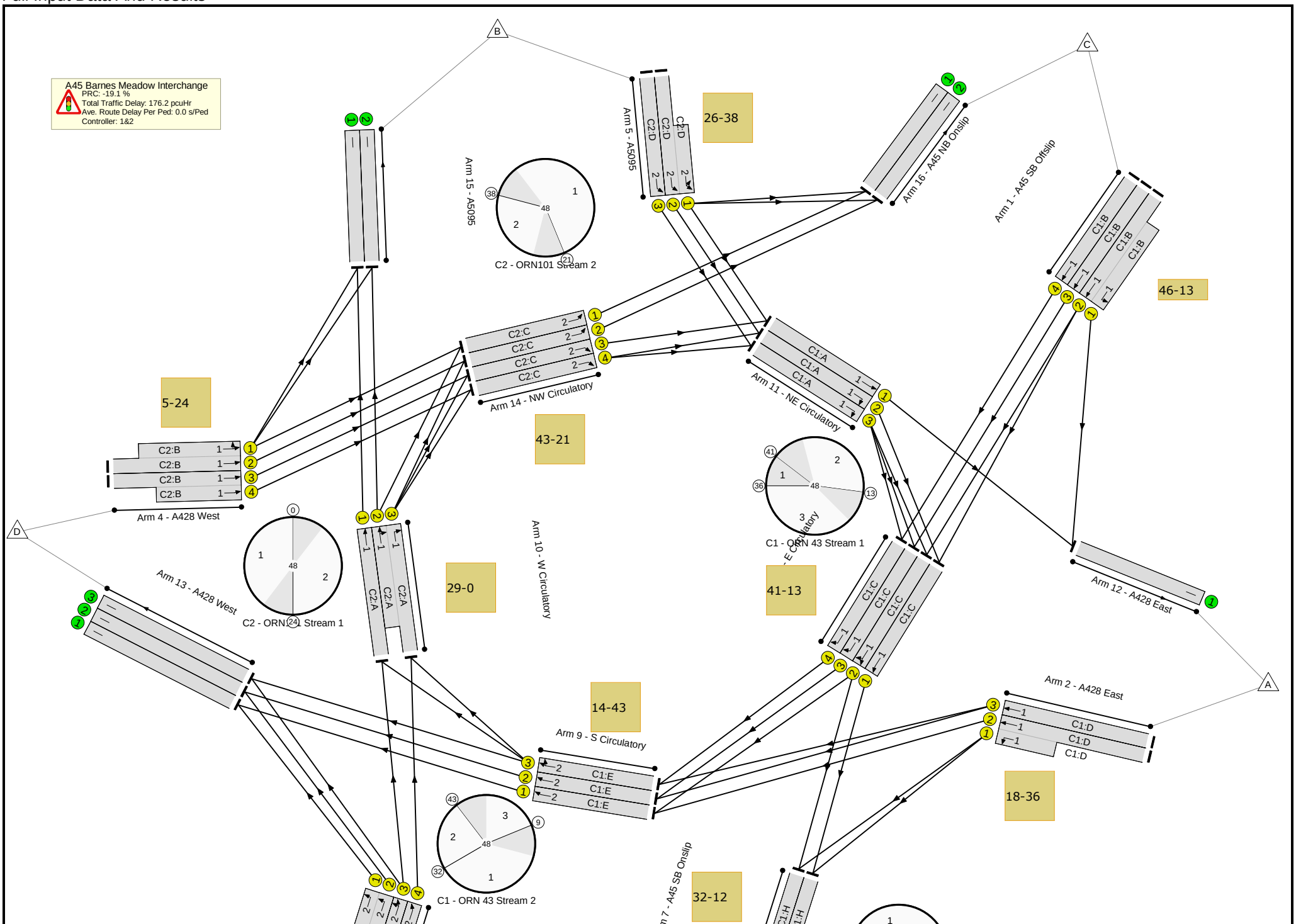
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.2%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.2%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	15	-	639	1800:1800	0+600	0.0 : 106.5%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	15	-	534	1800	600	89.0%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	15	-	366	1800	600	61.0%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	18	-	897	1800:1800	641+265	99.0 : 99.0%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	18	-	753	1800	713	105.7%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	9	-	555	1800:1800	354+355	78.3 : 78.3%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	9	-	233	1800	375	62.1%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	9	-	402	1800	375	107.2%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	19	-	418	1800:1800	688+750	29.1 : 29.1%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	19	-	964	1800:1800	330+740	90.1 : 90.1%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	12	-	635	1800:1800	488+453	67.5 : 67.5%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	12	-	273	1800	488	56.0%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	20	-	603	1900	831	72.5%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	20	-	592	1900	831	71.2%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	20	-	608	1900	831	73.1%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	20	-	366	1900	831	44.0%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	28	-	706	1800	1087	64.9%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	28	-	645	1800	1087	59.3%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	706	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	29	-	741	1900	1187	62.4%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	29	-	608	1900	1187	51.2%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	29	-	1119	1900	1187	90.8%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	19	-	383	1900	792	47.7%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	19	-	1052	1900:1900	792+370	85.0 : 85.7%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	23	-	901	1900	950	92.0%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	23	-	603	1900	950	63.5%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	23	-	666	1900	950	70.1%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1540	1900	1900	77.6%
13/1	A428 West	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	885	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	26	-	494	1900	1069	44.5%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	26	-	508	1900	1069	46.0%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	26	-	706	1900	1069	63.5%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	26	-	667	1900	1069	62.4%
15/1	A5095	U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	30	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	549	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**52.1**	**124.1**	**0.0**	**176.2**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**52.1**	**124.1**	**0.0**	**176.2**	**-**	**-**	**-**	**-**
1/2+1/1	639	600	-	-	-	3.8	25.7	-	29.5	166.3	9.0	25.7	34.8
1/3	534	534	-	-	-	2.3	3.6	-	5.9	39.7	6.7	3.6	10.3
1/4	366	366	-	-	-	1.4	0.8	-	2.1	21.0	4.1	0.8	4.8
2/2+2/1	897	897	-	-	-	3.2	12.9	-	16.1	64.7	9.2	12.9	22.1
2/3	753	713	-	-	-	3.8	27.2	-	31.0	148.0	10.6	27.2	37.8
3/2+3/1	555	555	-	-	-	2.7	1.8	-	4.5	29.3	3.4	1.8	5.2
3/3	233	233	-	-	-	1.1	0.8	-	1.9	29.8	2.8	0.8	3.6
3/4	402	375	-	-	-	2.8	18.8	-	21.6	193.7	5.7	18.8	24.6
4/2+4/1	418	418	-	-	-	1.1	0.2	-	1.3	11.0	1.9	0.2	2.1
4/3+4/4	964	964	-	-	-	3.2	4.2	-	7.4	27.7	8.2	4.2	12.4
5/2+5/1	635	635	-	-	-	2.7	1.0	-	3.8	21.3	3.8	1.0	4.9
5/3	273	273	-	-	-	1.1	0.6	-	1.8	23.4	3.1	0.6	3.7
6/1	603	603	-	-	-	2.4	1.3	-	3.7	22.2	8.0	1.3	9.3
6/2	592	592	-	-	-	2.5	1.2	-	3.7	22.6	7.9	1.2	9.1
6/3	608	608	-	-	-	1.2	1.3	-	2.5	14.8	2.7	1.3	4.0
6/4	366	366	-	-	-	0.3	0.4	-	0.7	7.0	0.6	0.4	1.0
7/1	706	706	-	-	-	0.3	0.9	-	1.2	6.1	6.1	0.9	7.0
7/2	645	645	-	-	-	0.3	0.7	-	1.1	5.9	3.0	0.7	3.7
8/1	706	706	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	645	645	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	741	741	-	-	-	0.3	0.8	-	1.2	5.7	1.8	0.8	2.6
9/2	608	608	-	-	-	1.6	0.5	-	2.1	12.6	8.1	0.5	8.6
9/3	1079	1079	-	-	-	0.9	4.6	-	5.4	18.1	5.5	4.6	10.0
10/1	377	377	-	-	-	0.8	0.5	-	1.3	12.0	3.9	0.5	4.4

Full Input Data And Results

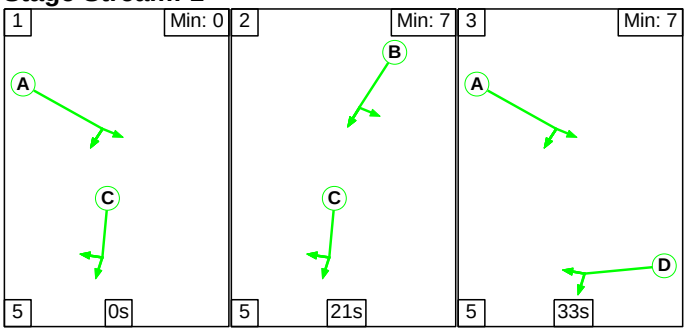
10/3+10/2	990	990	-	-	-	3.7	2.8	-	6.5	23.7	7.9	2.8	10.7
11/1	874	874	-	-	-	2.7	5.1	-	7.7	31.9	10.6	5.1	15.6
11/2	603	603	-	-	-	1.2	0.9	-	2.1	12.5	3.9	0.9	4.8
11/3	666	666	-	-	-	1.2	1.2	-	2.4	12.7	4.8	1.2	6.0
12/1	1474	1474	-	-	-	0.0	1.7	-	1.7	4.2	0.0	1.7	1.7
13/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	885	885	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	319	319	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	476	476	-	-	-	0.5	0.4	-	0.9	6.8	3.2	0.4	3.6
14/2	491	491	-	-	-	0.4	0.4	-	0.8	6.2	1.9	0.4	2.3
14/3	679	679	-	-	-	1.0	0.9	-	1.8	9.7	5.9	0.9	6.8
14/4	667	667	-	-	-	1.6	0.8	-	2.4	13.0	3.8	0.8	4.6
15/1	406	406	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	30	30	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	531	531	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	547	547	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-18.3	Total Delay for Signalled Lanes (pcuHr):	107.46	Cycle Time (s):	48		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-19.1	Total Delay for Signalled Lanes (pcuHr):	36.78	Cycle Time (s):	48		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	38.6	Total Delay for Signalled Lanes (pcuHr):	2.26	Cycle Time (s):	48		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-0.1	Total Delay for Signalled Lanes (pcuHr):	16.48	Cycle Time (s):	48		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	33.4	Total Delay for Signalled Lanes (pcuHr):	11.53	Cycle Time (s):	48		
	PRC Over All Lanes (%):	-19.1	Total Delay Over All Lanes(pcuHr):	176.22				

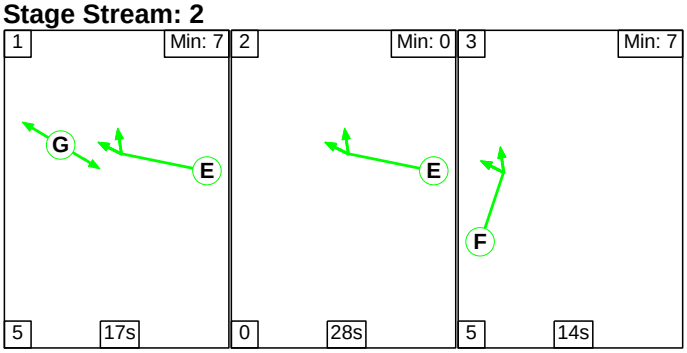
Full Input Data And Results
Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

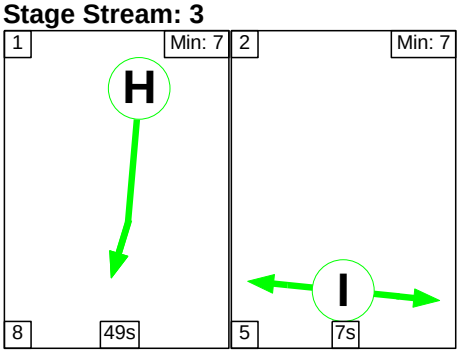
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	0	21	33
Change Point	28	33	59

Stage Stream: 2

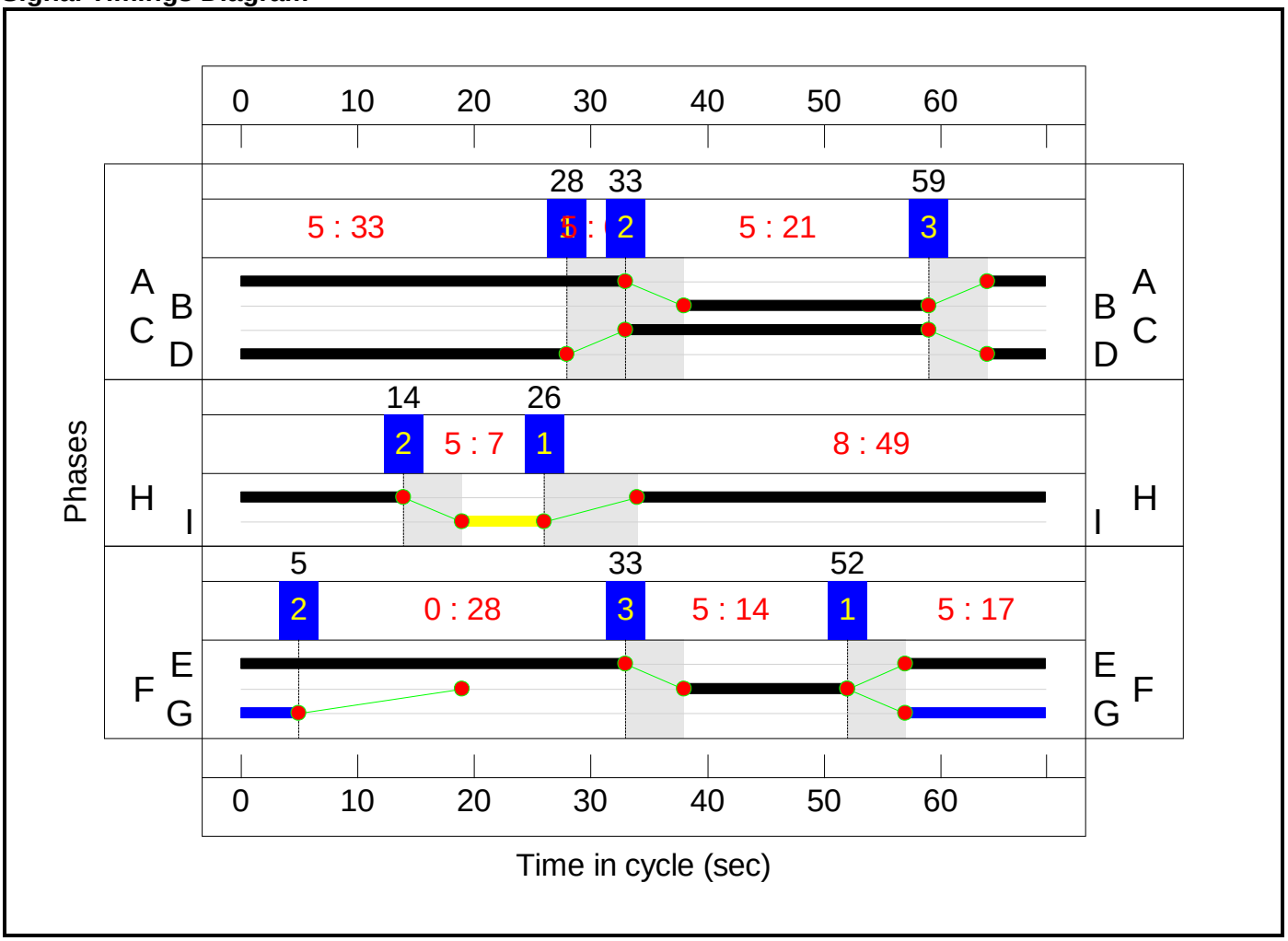
Stage	1	2	3
Duration	17	28	14
Change Point	52	5	33

Stage Stream: 3

Stage	1	2
Duration	49	7
Change Point	26	14

Full Input Data And Results

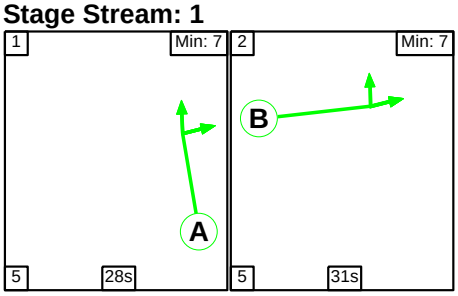
Signal Timings Diagram



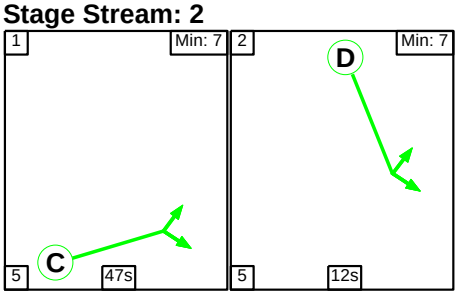
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

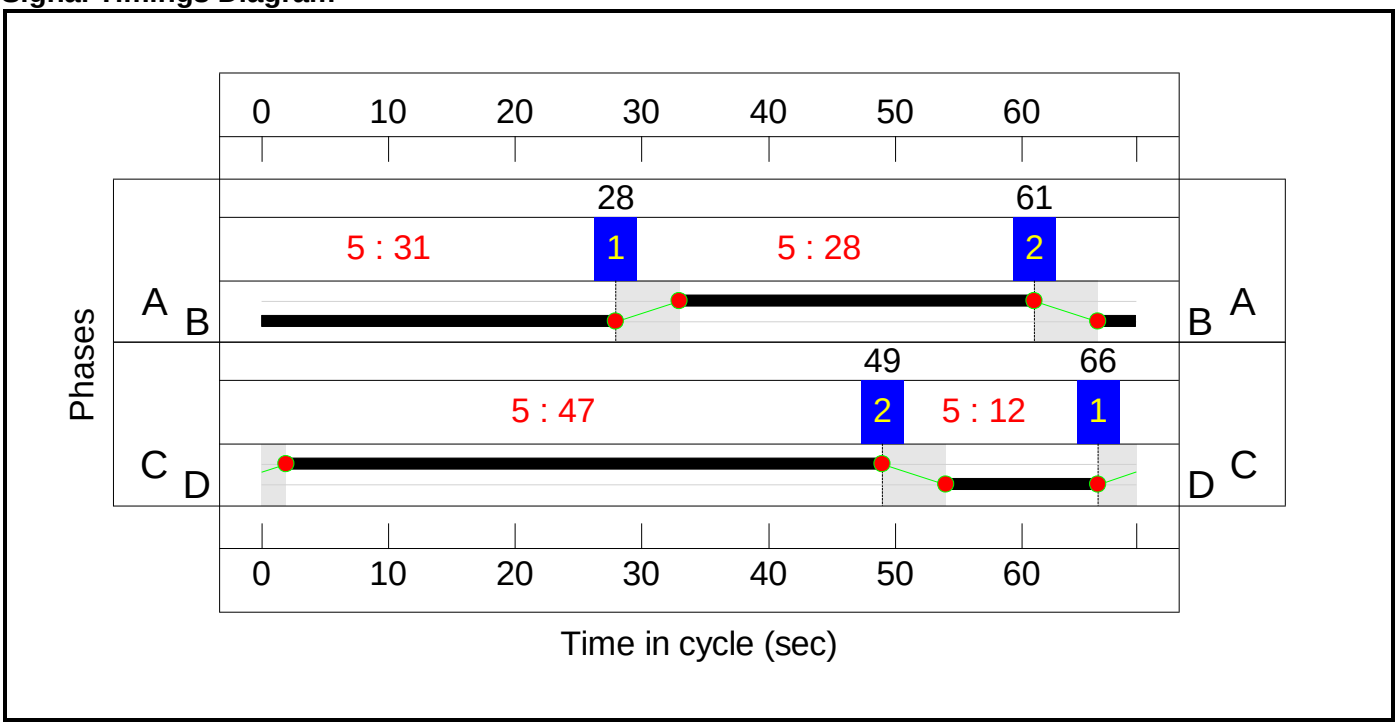
Stage Stream: 1

Stage	1	2
Duration	28	31
Change Point	28	61

Stage Stream: 2

Stage	1	2
Duration	47	12
Change Point	66	49

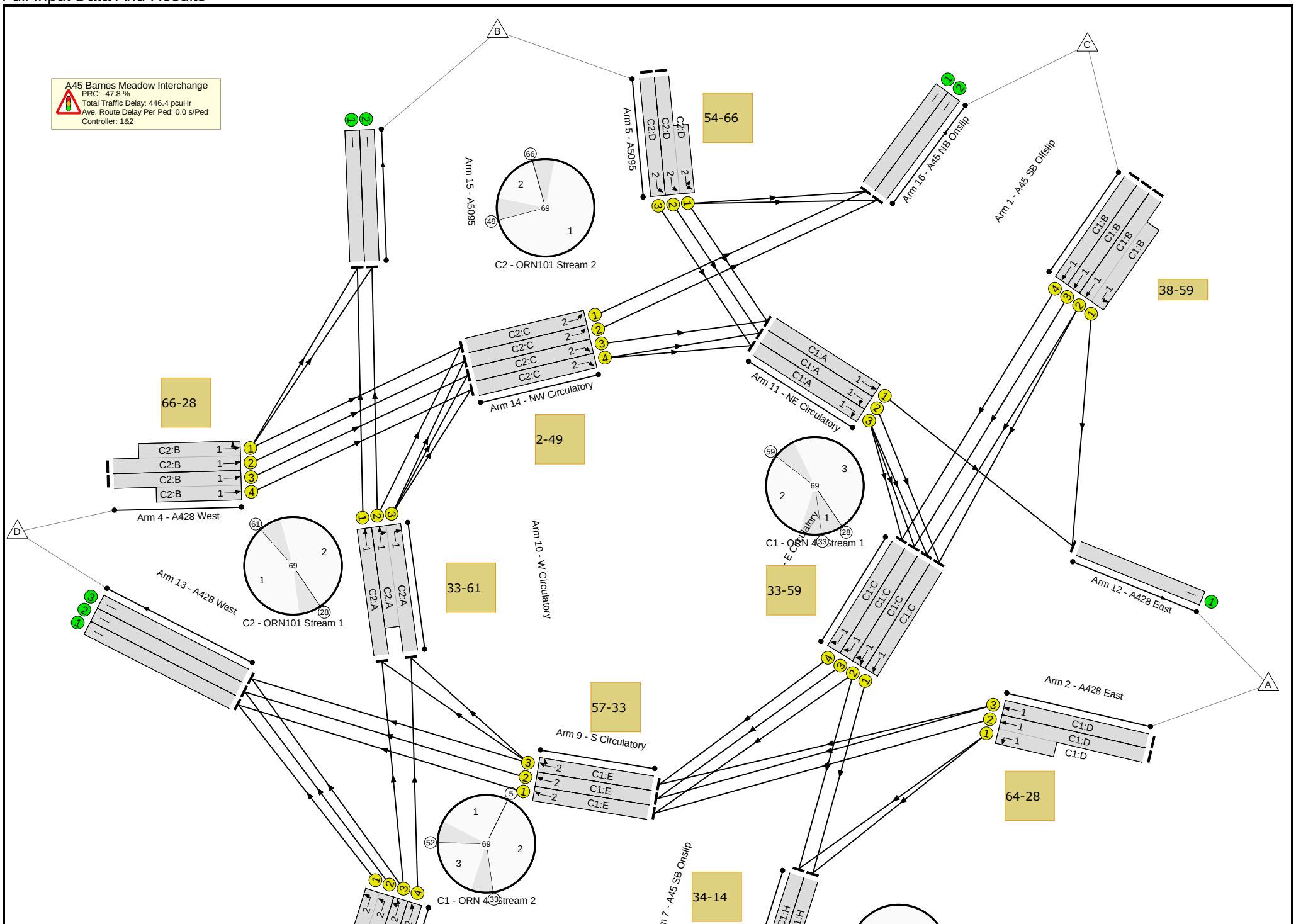
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**133.0%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**133.0%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	21	-	560	1800:1800	0+574	0.0 : 97.6%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	21	-	409	1800	574	71.3%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	21	-	290	1800	574	50.5%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	33	-	708	1800:1800	552+621	60.3 : 60.3%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	33	-	1153	1800	887	130.0%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	14	-	454	1800:1800	312+312	72.8 : 72.8%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	14	-	336	1800	391	85.9%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	14	-	344	1800	391	87.9%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	31	-	1424	1800:1800	626+705	107.0 : 107.0%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	31	-	1038	1800:1800	243+757	103.8 : 103.8%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	12	-	451	1800:1800	0+339	0.0 : 133.0%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	12	-	431	1800	339	127.1%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	26	-	519	1900	743	67.3%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	26	-	565	1900	743	66.1%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	26	-	542	1900	743	69.1%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	26	-	290	1900	743	39.0%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	49	-	676	1800	1304	50.4%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	49	-	698	1800	1304	49.3%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	676	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	698	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	45	-	418	1900	1267	31.6%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	45	-	542	1900	1267	40.6%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	45	-	1443	1900	1267	92.9%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	28	-	575	1900	799	68.1%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	28	-	1362	1900:1900	684+615	89.0 : 84.3%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	38	-	581	1900	1074	51.4%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	38	-	519	1900	1074	46.6%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	38	-	698	1900	1074	55.5%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1141	1900	1900	58.5%
13/1	A428 West	U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	769	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	47	-	1106	1900	1322	71.4%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	47	-	1137	1900	1322	74.6%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	47	-	502	1900	1322	37.2%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	47	-	786	1900	1322	57.3%
15/1	A5095	U	N/A	N/A	-		-	-	-	673	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	195	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1292	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1323	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**84.3**	**362.1**	**0.0**	**446.4**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**84.3**	**362.1**	**0.0**	**446.4**	**-**	**-**	**-**	**-**
1/2+1/1	560	560	-	-	-	3.6	8.9	-	12.5	80.2	10.6	8.9	19.4
1/3	409	409	-	-	-	2.4	1.2	-	3.6	31.5	6.8	1.2	8.0
1/4	290	290	-	-	-	1.5	0.5	-	2.0	25.4	4.5	0.5	5.0
2/2+2/1	708	708	-	-	-	2.2	0.8	-	2.9	14.9	4.6	0.8	5.3
2/3	1153	887	-	-	-	14.8	135.2	-	150.0	468.2	27.2	135.2	162.4
3/2+3/1	454	454	-	-	-	3.1	1.3	-	4.4	34.6	3.8	1.3	5.2
3/3	336	336	-	-	-	2.4	2.8	-	5.2	55.6	6.2	2.8	8.9
3/4	344	344	-	-	-	2.5	3.2	-	5.7	59.6	6.3	3.2	9.5
4/2+4/1	1424	1331	-	-	-	9.6	53.2	-	62.8	158.8	23.8	53.2	77.0
4/3+4/4	1038	1000	-	-	-	6.1	28.1	-	34.2	118.8	19.6	28.1	47.7
5/2+5/1	451	339	-	-	-	7.1	57.9	-	65.0	519.0	12.1	57.9	69.9
5/3	431	339	-	-	-	7.1	48.2	-	55.2	461.3	11.8	48.2	60.0
6/1	500	500	-	-	-	3.0	1.0	-	4.0	29.0	9.6	1.0	10.6
6/2	492	492	-	-	-	3.7	1.0	-	4.6	33.9	9.4	1.0	10.4
6/3	514	514	-	-	-	1.1	1.1	-	2.3	15.8	2.7	1.1	3.8
6/4	290	290	-	-	-	0.3	0.3	-	0.6	7.1	0.4	0.3	0.8
7/1	657	657	-	-	-	0.2	0.5	-	0.7	3.7	7.7	0.5	8.2
7/2	643	643	-	-	-	0.2	0.5	-	0.7	3.7	2.0	0.5	2.5
8/1	657	657	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	643	643	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	400	400	-	-	-	0.3	0.2	-	0.5	4.6	1.6	0.2	1.8
9/2	514	514	-	-	-	1.7	0.3	-	2.0	14.1	9.8	0.3	10.2
9/3	1177	1177	-	-	-	1.3	5.8	-	7.1	21.6	7.1	5.8	12.9
10/1	544	544	-	-	-	1.7	1.1	-	2.7	18.1	4.6	1.1	5.6

Full Input Data And Results

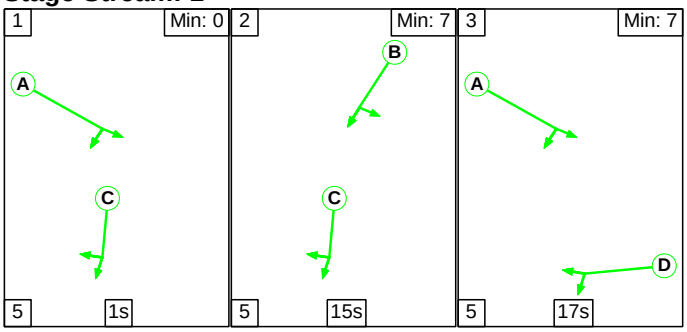
10/3+10/2	1127	1127	-	-	-	3.1	3.2	-	6.3	20.1	8.2	3.2	11.4
11/1	552	552	-	-	-	0.6	0.5	-	1.2	7.6	2.2	0.5	2.7
11/2	500	500	-	-	-	1.2	0.4	-	1.7	12.1	3.3	0.4	3.7
11/3	596	596	-	-	-	0.8	0.6	-	1.4	8.7	7.6	0.6	8.3
12/1	1112	1112	-	-	-	0.0	0.7	-	0.7	2.3	0.0	0.7	0.7
13/1	627	627	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	741	741	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	186	186	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	943	943	-	-	-	1.0	1.2	-	2.2	8.4	7.0	1.2	8.2
14/2	985	985	-	-	-	0.7	1.5	-	2.2	8.0	10.7	1.5	12.1
14/3	492	492	-	-	-	1.1	0.3	-	1.4	10.0	7.1	0.3	7.4
14/4	757	757	-	-	-	0.0	0.7	-	0.7	3.2	0.0	0.7	0.7
15/1	635	635	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	189	189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1083	1083	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1125	1125	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-44.4	Total Delay for Signalled Lanes (pcuHr):	186.75	Cycle Time (s):	69		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-3.2	Total Delay for Signalled Lanes (pcuHr):	24.85	Cycle Time (s):	69		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	78.7	Total Delay for Signalled Lanes (pcuHr):	1.33	Cycle Time (s):	69		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-18.9	Total Delay for Signalled Lanes (pcuHr):	106.09	Cycle Time (s):	69		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	-47.8	Total Delay for Signalled Lanes (pcuHr):	126.66	Cycle Time (s):	69		
	PRC Over All Lanes (%):	-47.8	Total Delay Over All Lanes(pcuHr):	446.38				

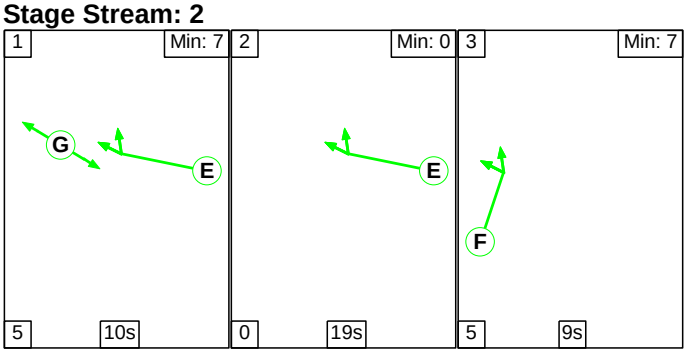
Full Input Data And Results
Scenario 11: '2031 DS AM' (FG13: '2031 DS AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

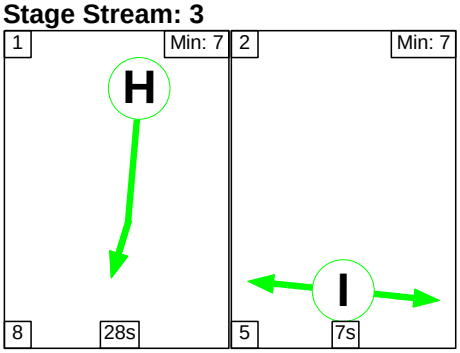
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	1	15	17
Change Point	0	6	26

Stage Stream: 2

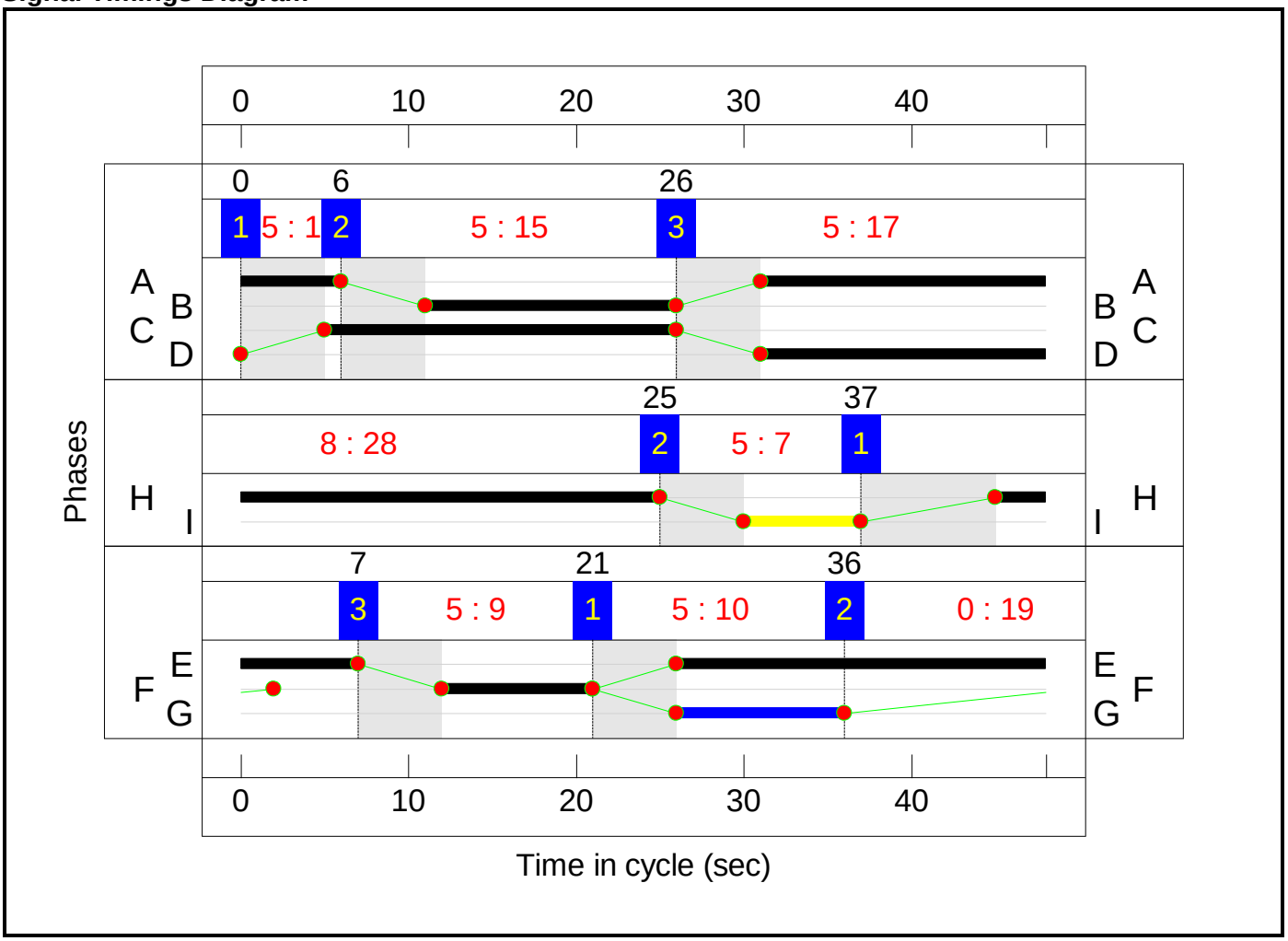
Stage	1	2	3
Duration	10	19	9
Change Point	21	36	7

Stage Stream: 3

Stage	1	2
Duration	28	7
Change Point	37	25

Full Input Data And Results

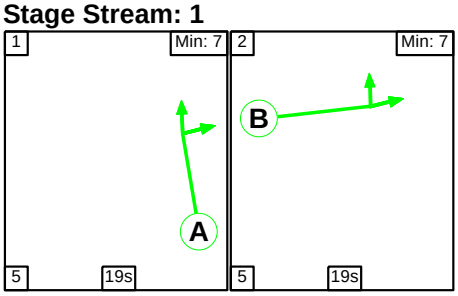
Signal Timings Diagram



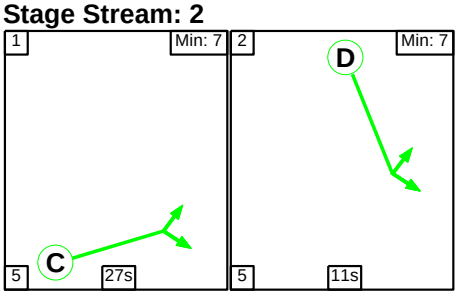
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

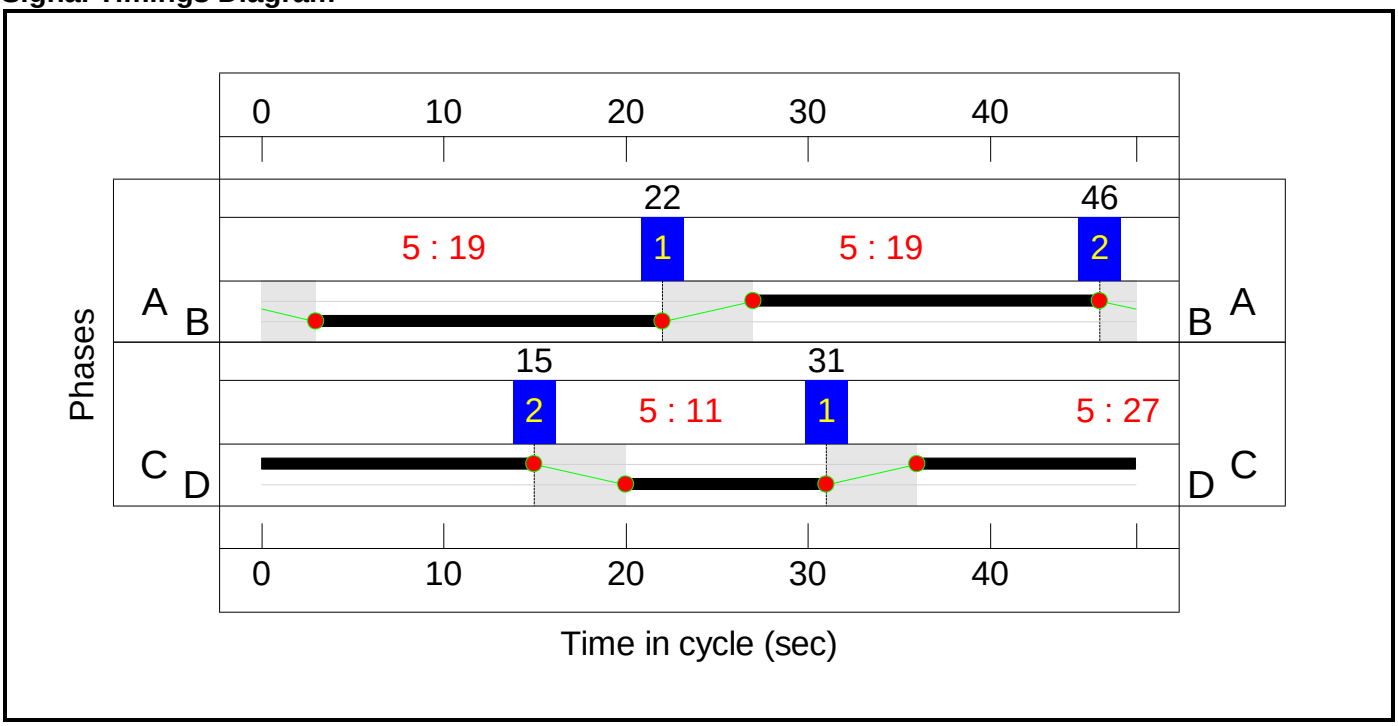
Stage Stream: 1

Stage	1	2
Duration	19	19
Change Point	22	46

Stage Stream: 2

Stage	1	2
Duration	27	11
Change Point	31	15

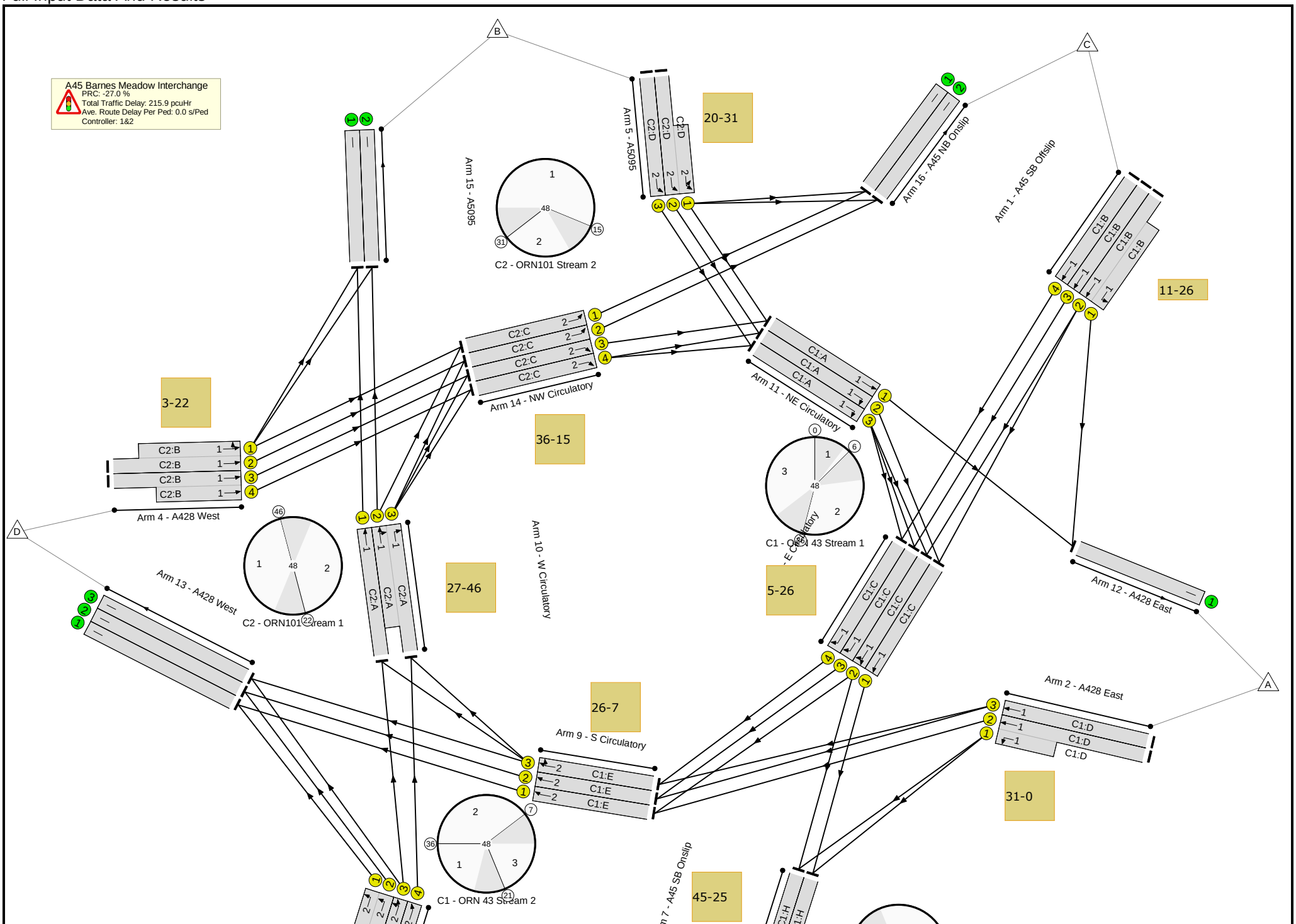
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.3%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.3%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	15	-	686	1800:1800	0+600	0.0 : 114.3%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	15	-	463	1800	600	77.2%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	15	-	443	1800	600	73.8%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	17	-	886	1800:1800	614+258	101.6 : 101.6%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	17	-	762	1800	675	112.9%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	9	-	518	1800:1800	354+354	73.1 : 73.1%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	9	-	264	1800	375	70.4%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	9	-	370	1800	375	98.7%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	19	-	436	1800:1800	697+750	30.1 : 30.1%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	19	-	965	1800:1800	329+740	90.2 : 90.2%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	11	-	659	1800:1800	421+450	75.3 : 76.0%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	11	-	310	1800	450	68.9%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	21	-	605	1900	871	69.5%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	21	-	601	1900	871	69.0%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	21	-	552	1900	871	63.4%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	21	-	443	1900	871	50.9%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	28	-	713	1800	1087	65.4%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	28	-	638	1800	1087	58.4%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	638	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	29	-	741	1900	1187	61.6%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	29	-	552	1900	1187	46.5%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	29	-	1205	1900	1187	94.1%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	19	-	390	1900	792	47.8%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	19	-	1028	1900:1900	792+388	82.5 : 77.2%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	23	-	874	1900	950	91.9%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	23	-	605	1900	950	63.7%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	23	-	690	1900	950	72.6%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1560	1900	1900	77.5%
13/1	A428 West	U	N/A	N/A	-		-	-	-	1000	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	811	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	421	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	27	-	511	1900	1108	42.6%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	27	-	523	1900	1108	44.0%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	27	-	674	1900	1108	60.7%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	27	-	668	1900	1108	60.3%
15/1	A5095	U	N/A	N/A	-		-	-	-	416	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	27	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	582	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**54.9**	**161.1**	**0.0**	**215.9**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**54.9**	**161.1**	**0.0**	**215.9**	**-**	**-**	**-**	**-**
1/2+1/1	686	600	-	-	-	4.9	46.7	-	51.5	270.4	10.3	46.7	57.0
1/3	463	463	-	-	-	1.8	1.7	-	3.5	27.2	5.5	1.7	7.2
1/4	443	443	-	-	-	1.7	1.4	-	3.1	25.4	5.2	1.4	6.6
2/2+2/1	886	872	-	-	-	3.6	18.8	-	22.4	91.0	9.3	18.8	28.1
2/3	762	675	-	-	-	5.7	47.5	-	53.2	251.2	11.8	47.5	59.4
3/2+3/1	518	518	-	-	-	2.5	1.3	-	3.9	26.9	3.2	1.3	4.5
3/3	264	264	-	-	-	1.3	1.2	-	2.5	33.5	3.2	1.2	4.4
3/4	370	370	-	-	-	1.9	8.4	-	10.4	101.1	4.8	8.4	13.3
4/2+4/1	436	436	-	-	-	1.1	0.2	-	1.3	11.1	2.0	0.2	2.2
4/3+4/4	965	965	-	-	-	3.2	4.3	-	7.5	27.9	8.2	4.3	12.4
5/2+5/1	659	659	-	-	-	3.0	1.5	-	4.6	24.9	4.2	1.5	5.7
5/3	310	310	-	-	-	1.4	1.1	-	2.5	29.0	3.7	1.1	4.8
6/1	605	605	-	-	-	2.5	1.1	-	3.7	21.9	8.1	1.1	9.2
6/2	601	601	-	-	-	2.4	1.1	-	3.5	20.7	8.0	1.1	9.1
6/3	552	552	-	-	-	0.8	0.9	-	1.6	10.7	2.2	0.9	3.1
6/4	443	443	-	-	-	0.5	0.5	-	1.0	7.9	0.9	0.5	1.4
7/1	711	711	-	-	-	0.3	0.9	-	1.2	6.1	6.1	0.9	7.1
7/2	636	636	-	-	-	0.3	0.7	-	1.0	5.8	1.7	0.7	2.4
8/1	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	636	636	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	731	731	-	-	-	0.4	0.8	-	1.2	6.1	2.1	0.8	2.9
9/2	552	552	-	-	-	1.2	0.4	-	1.6	10.6	7.3	0.4	7.7
9/3	1118	1118	-	-	-	1.0	6.7	-	7.7	24.8	7.0	6.7	13.7
10/1	378	378	-	-	-	1.0	0.5	-	1.4	13.6	3.0	0.5	3.4

Full Input Data And Results

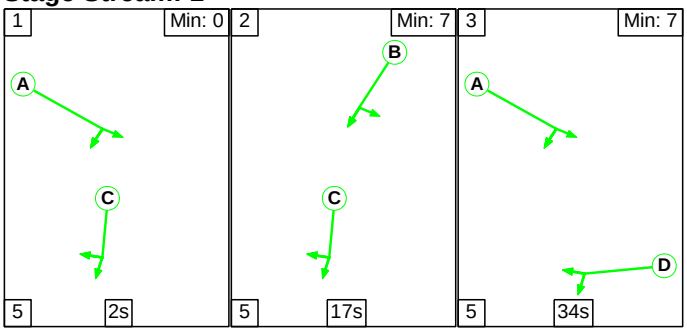
10/3+10/2	953	953	-	-	-	3.9	2.1	-	6.0	22.6	8.7	2.1	10.8
11/1	873	873	-	-	-	2.6	5.0	-	7.6	31.4	8.6	5.0	13.6
11/2	605	605	-	-	-	0.9	0.9	-	1.8	10.4	5.9	0.9	6.8
11/3	690	690	-	-	-	1.2	1.3	-	2.5	13.0	6.5	1.3	7.8
12/1	1473	1473	-	-	-	0.0	1.7	-	1.7	4.2	0.0	1.7	1.7
13/1	990	990	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	811	811	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	472	472	-	-	-	0.5	0.4	-	0.9	6.7	4.4	0.4	4.8
14/2	487	487	-	-	-	0.5	0.4	-	0.9	6.9	4.2	0.4	4.6
14/3	673	673	-	-	-	0.4	0.8	-	1.2	6.4	1.4	0.8	2.2
14/4	668	668	-	-	-	2.3	0.8	-	3.1	16.6	5.8	0.8	6.5
15/1	404	404	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	27	27	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	543	543	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-27.0	Total Delay for Signalled Lanes (pcuHr):	155.32	Cycle Time (s):	48		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-9.6	Total Delay for Signalled Lanes (pcuHr):	27.29	Cycle Time (s):	48		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	37.6	Total Delay for Signalled Lanes (pcuHr):	2.22	Cycle Time (s):	48		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-0.3	Total Delay for Signalled Lanes (pcuHr):	16.25	Cycle Time (s):	48		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	18.4	Total Delay for Signalled Lanes (pcuHr):	13.14	Cycle Time (s):	48		
	PRC Over All Lanes (%):	-27.0	Total Delay Over All Lanes(pcuHr):	215.94				

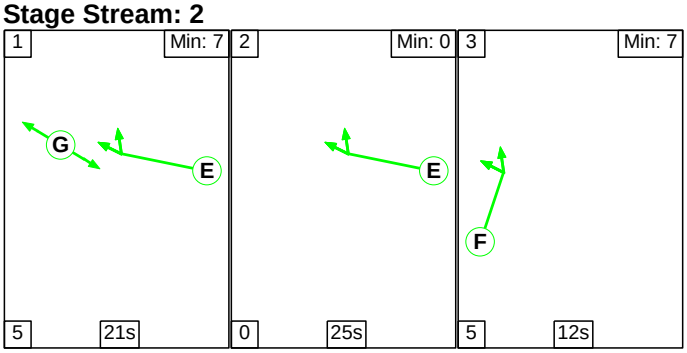
Full Input Data And Results
Scenario 12: '2031 DS PM' (FG14: '2031 DS PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

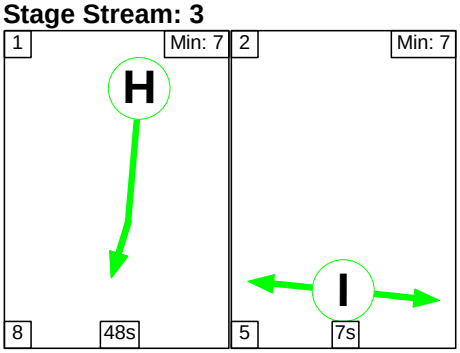
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2	3
Duration	2	17	34
Change Point	7	14	36

Stage Stream: 2

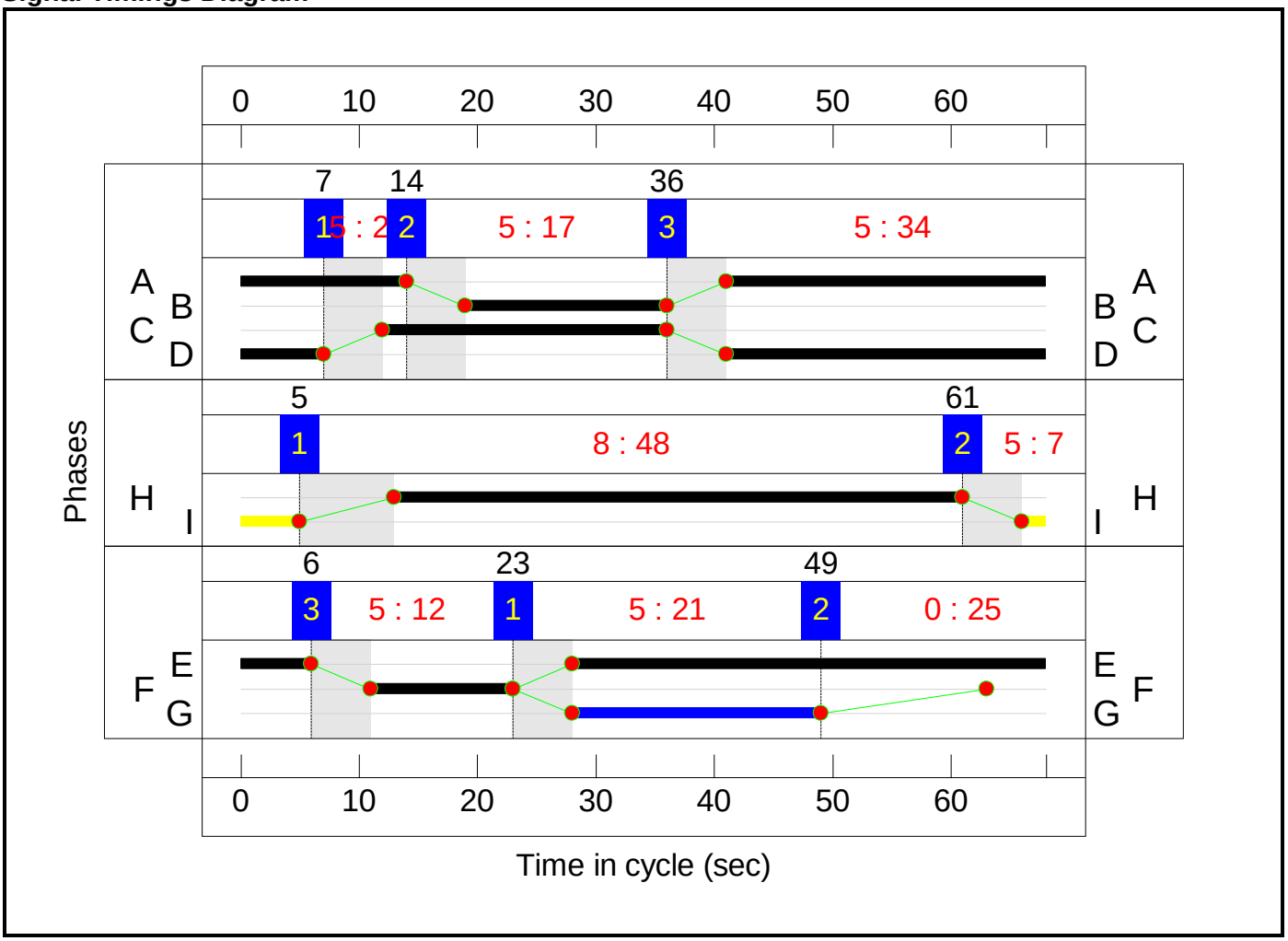
Stage	1	2	3
Duration	21	25	12
Change Point	23	49	6

Stage Stream: 3

Stage	1	2
Duration	48	7
Change Point	5	61

Full Input Data And Results

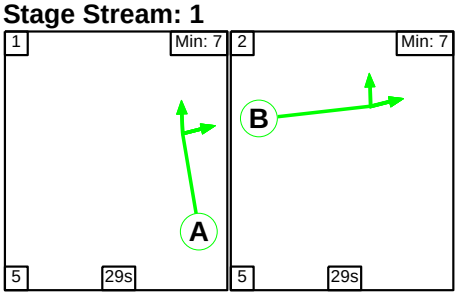
Signal Timings Diagram



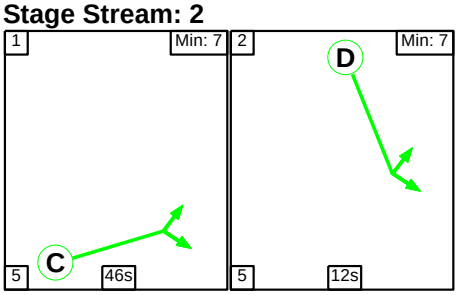
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

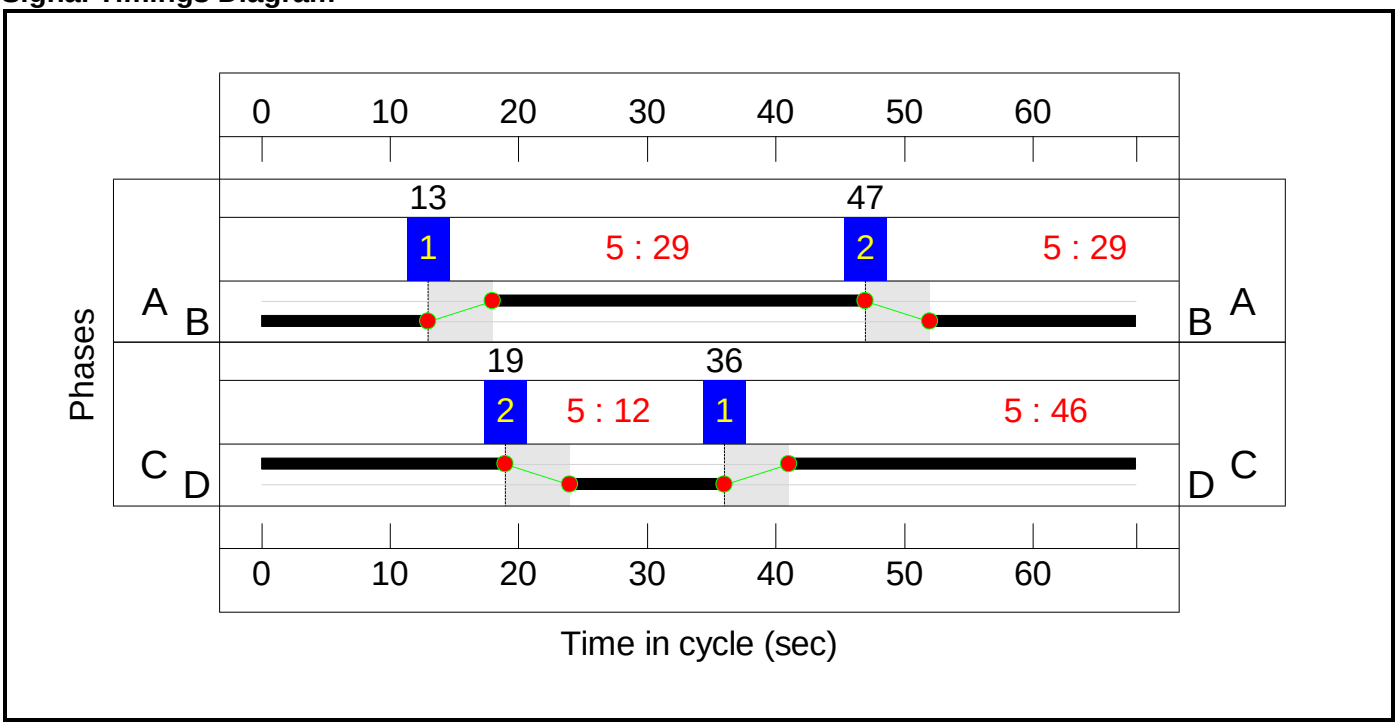
Stage Stream: 1

Stage	1	2
Duration	29	29
Change Point	13	47

Stage Stream: 2

Stage	1	2
Duration	46	12
Change Point	36	19

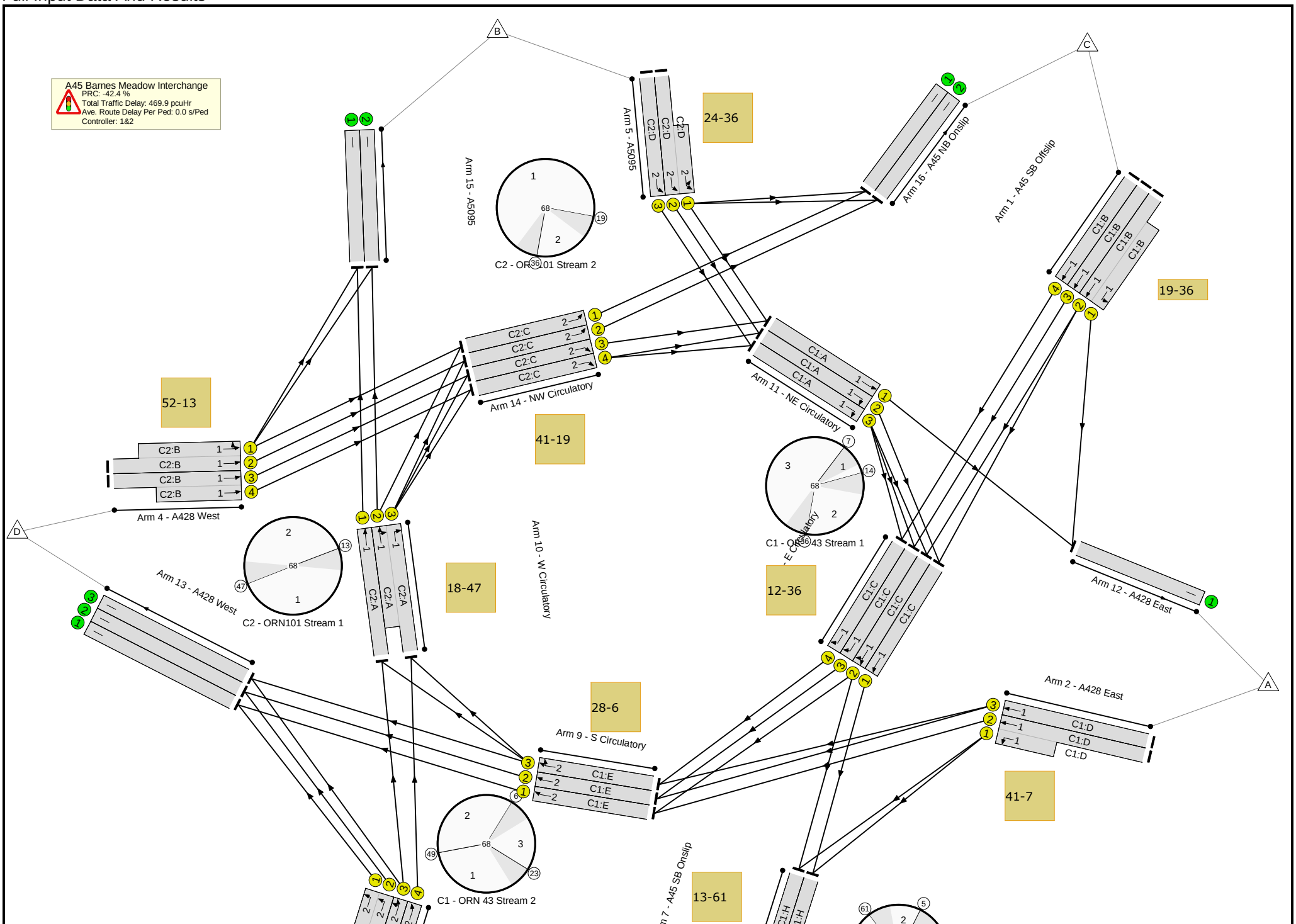
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.1%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.1%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	17	-	479	1800:1800	0+476	0.0 : 100.5%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	17	-	365	1800	476	76.6%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	17	-	285	1800	476	59.8%
2/2+2/1	A428 East Left Ahead	U	1:1	N/A	C1:D		1	34	-	735	1800:1800	608+633	59.3 : 59.3%
2/3	A428 East Ahead	U	1:1	N/A	C1:D		1	34	-	1187	1800	926	128.1%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	12	-	465	1800:1800	290+289	80.3 : 80.3%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	12	-	340	1800	344	98.8%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	12	-	339	1800	344	98.5%
4/2+4/1	A428 West Ahead Left	U	2:1	N/A	C2:B		1	29	-	1384	1800:1800	610+687	106.7 : 106.7%
4/3+4/4	A428 West Ahead	U	2:1	N/A	C2:B		1	29	-	1094	1800:1800	278+716	110.1 : 110.1%
5/2+5/1	A5095 Left U-Turn	U	2:2	N/A	C2:D		1	12	-	438	1800:1800	0+344	0.0 : 127.3%
5/3	A5095 Left	U	2:2	N/A	C2:D		1	12	-	424	1800	344	123.2%
6/1	E Circulatory Ahead	U	1:1	N/A	C1:C		1	24	-	525	1900	699	68.2%
6/2	E Circulatory Ahead Right	U	1:1	N/A	C1:C		1	24	-	549	1900	699	67.4%
6/3	E Circulatory Right	U	1:1	N/A	C1:C		1	24	-	503	1900	699	68.3%

Full Input Data And Results

6/4	E Circulatory Right	U	1:1	N/A	C1:C		1	24	-	285	1900	699	40.8%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	48	-	677	1800	1297	48.5%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	48	-	697	1800	1297	48.8%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	677	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	697	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	46	-	435	1900	1313	32.0%
9/2	S Circulatory Ahead	U	1:2	N/A	C1:E		1	46	-	503	1900	1313	36.3%
9/3	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	46	-	1472	1900	1313	92.3%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	29	-	588	1900	838	66.1%
10/3+10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	29	-	1373	1900:1900	710+625	87.9 : 83.4%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	41	-	626	1900	1174	49.6%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	41	-	525	1900	1174	40.6%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	41	-	687	1900	1174	49.7%
12/1	A428 East	U	N/A	N/A	-		-	-	-	1105	1900	1900	55.7%
13/1	A428 West	U	N/A	N/A	-		-	-	-	667	Inf	Inf	0.0%
13/2	A428 West	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
13/3	A428 West	U	N/A	N/A	-		-	-	-	190	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	46	-	1110	1900	1313	72.6%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	46	-	1133	1900	1313	75.1%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	46	-	554	1900	1313	40.0%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	46	-	788	1900	1313	54.5%
15/1	A5095	U	N/A	N/A	-		-	-	-	675	Inf	Inf	0.0%
15/2	A5095	U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1293	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1316	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**87.6**	**382.4**	**0.0**	**469.9**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**87.6**	**382.4**	**0.0**	**469.9**	**-**	**-**	**-**	**-**
1/2+1/1	479	476	-	-	-	3.4	11.6	-	15.0	112.7	9.1	11.6	20.7
1/3	365	365	-	-	-	2.3	1.6	-	3.9	38.8	6.3	1.6	7.9
1/4	285	285	-	-	-	1.7	0.7	-	2.5	31.2	4.7	0.7	5.4
2/2+2/1	735	735	-	-	-	2.1	0.7	-	2.8	13.6	4.3	0.7	5.0
2/3	1187	926	-	-	-	15.9	132.5	-	148.4	450.0	29.0	132.5	161.5
3/2+3/1	465	465	-	-	-	3.3	2.0	-	5.3	40.8	4.1	2.0	6.0
3/3	340	340	-	-	-	2.6	8.2	-	10.8	114.8	6.3	8.2	14.6
3/4	339	339	-	-	-	2.6	8.0	-	10.6	112.5	6.3	8.0	14.3
4/2+4/1	1384	1297	-	-	-	9.8	50.2	-	60.0	156.0	22.4	50.2	72.6
4/3+4/4	1094	993	-	-	-	9.0	55.2	-	64.2	211.4	21.6	55.2	76.8
5/2+5/1	438	344	-	-	-	6.1	49.2	-	55.2	453.9	10.9	49.2	60.1
5/3	424	344	-	-	-	5.5	42.4	-	48.0	407.4	9.5	42.4	52.0
6/1	477	477	-	-	-	3.0	1.1	-	4.1	30.6	9.0	1.1	10.1
6/2	471	471	-	-	-	3.6	1.0	-	4.6	35.3	8.9	1.0	9.9
6/3	477	477	-	-	-	1.3	1.1	-	2.4	18.2	2.9	1.1	4.0
6/4	285	285	-	-	-	0.3	0.3	-	0.6	8.0	0.5	0.3	0.8
7/1	629	629	-	-	-	0.2	0.5	-	0.6	3.6	7.1	0.5	7.6
7/2	633	633	-	-	-	0.2	0.5	-	0.7	3.7	1.1	0.5	1.6
8/1	629	629	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	421	421	-	-	-	0.3	0.2	-	0.5	4.4	1.8	0.2	2.1
9/2	477	477	-	-	-	0.4	0.3	-	0.7	5.5	8.1	0.3	8.4
9/3	1211	1211	-	-	-	1.8	5.4	-	7.2	21.4	9.8	5.4	15.2
10/1	554	554	-	-	-	1.4	1.0	-	2.4	15.4	9.0	1.0	10.0

Full Input Data And Results

10/3+10/2	1146	1146	-	-	-	3.5	2.9	-	6.4	20.1	10.0	2.9	13.0
11/1	582	582	-	-	-	0.6	0.5	-	1.1	6.5	2.7	0.5	3.2
11/2	477	477	-	-	-	1.4	0.3	-	1.7	13.2	4.2	0.3	4.6
11/3	583	583	-	-	-	1.6	0.5	-	2.1	12.9	8.7	0.5	9.2
12/1	1059	1059	-	-	-	0.0	0.6	-	0.6	2.1	0.0	0.6	0.6
13/1	653	653	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	710	710	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	190	190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	954	954	-	-	-	1.7	1.3	-	3.0	11.4	8.3	1.3	9.6
14/2	986	986	-	-	-	1.5	1.5	-	3.0	10.9	7.2	1.5	8.7
14/3	526	526	-	-	-	0.5	0.3	-	0.8	5.6	4.8	0.3	5.1
14/4	716	716	-	-	-	0.1	0.6	-	0.7	3.6	0.4	0.6	1.0
15/1	636	636	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1098	1098	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1130	1130	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

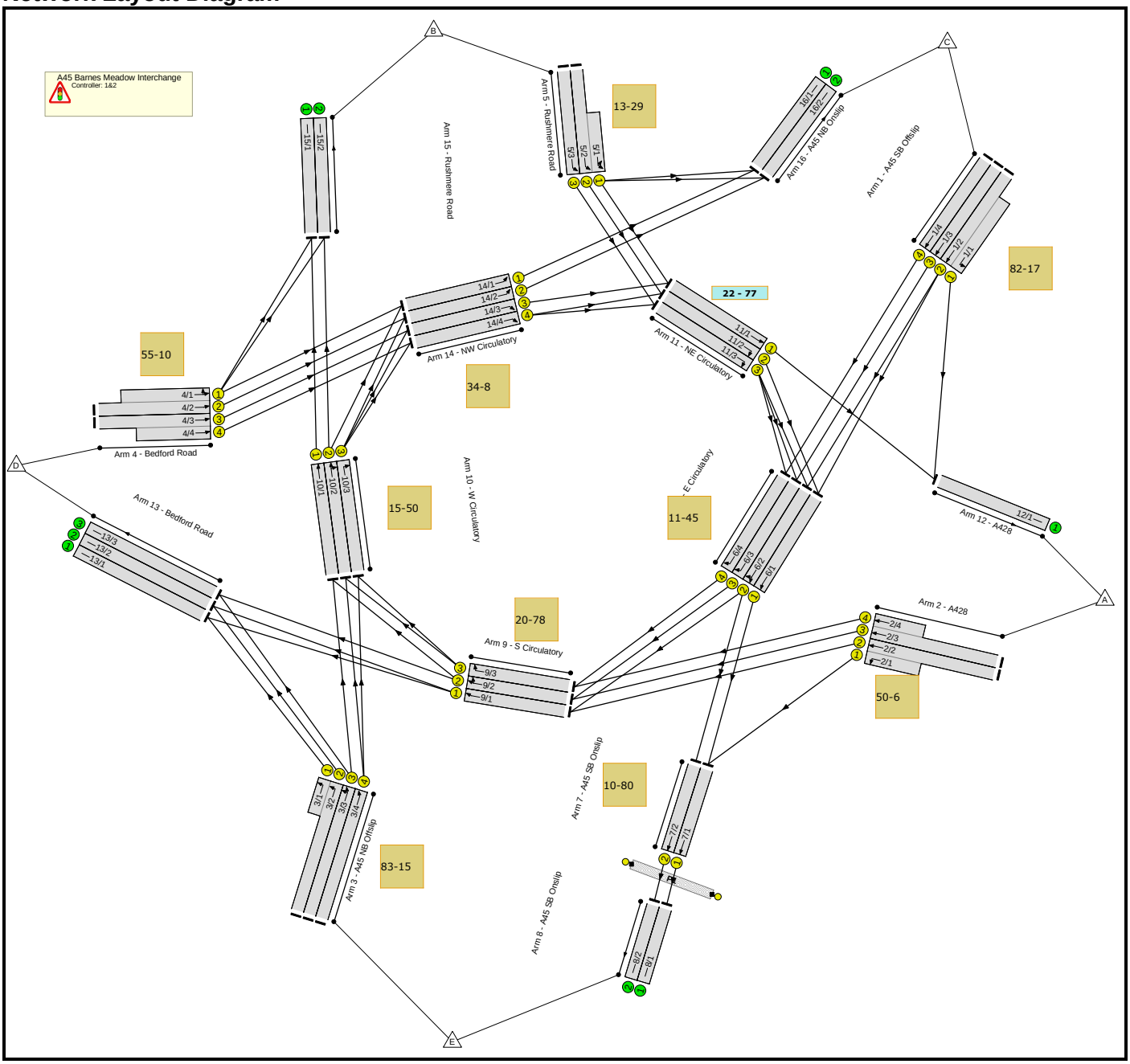
C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-42.4	Total Delay for Signalled Lanes (pcuHr):	189.15	Cycle Time (s): 68
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-9.8	Total Delay for Signalled Lanes (pcuHr):	35.15	Cycle Time (s): 68
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	84.5	Total Delay for Signalled Lanes (pcuHr):	1.28	Cycle Time (s): 68
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-22.4	Total Delay for Signalled Lanes (pcuHr):	132.98	Cycle Time (s): 68
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	-41.4	Total Delay for Signalled Lanes (pcuHr):	110.75	Cycle Time (s): 68
	PRC Over All Lanes (%):	-42.4	Total Delay Over All Lanes(pcuHr):	469.93	

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 10
Location:	A45, Nene Valley Way (south); A428, Bedford Road (west)/ A5095, Rushmere Road/ A45, Nene Valley Way (north)/ A428, Bedford Road (east)
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

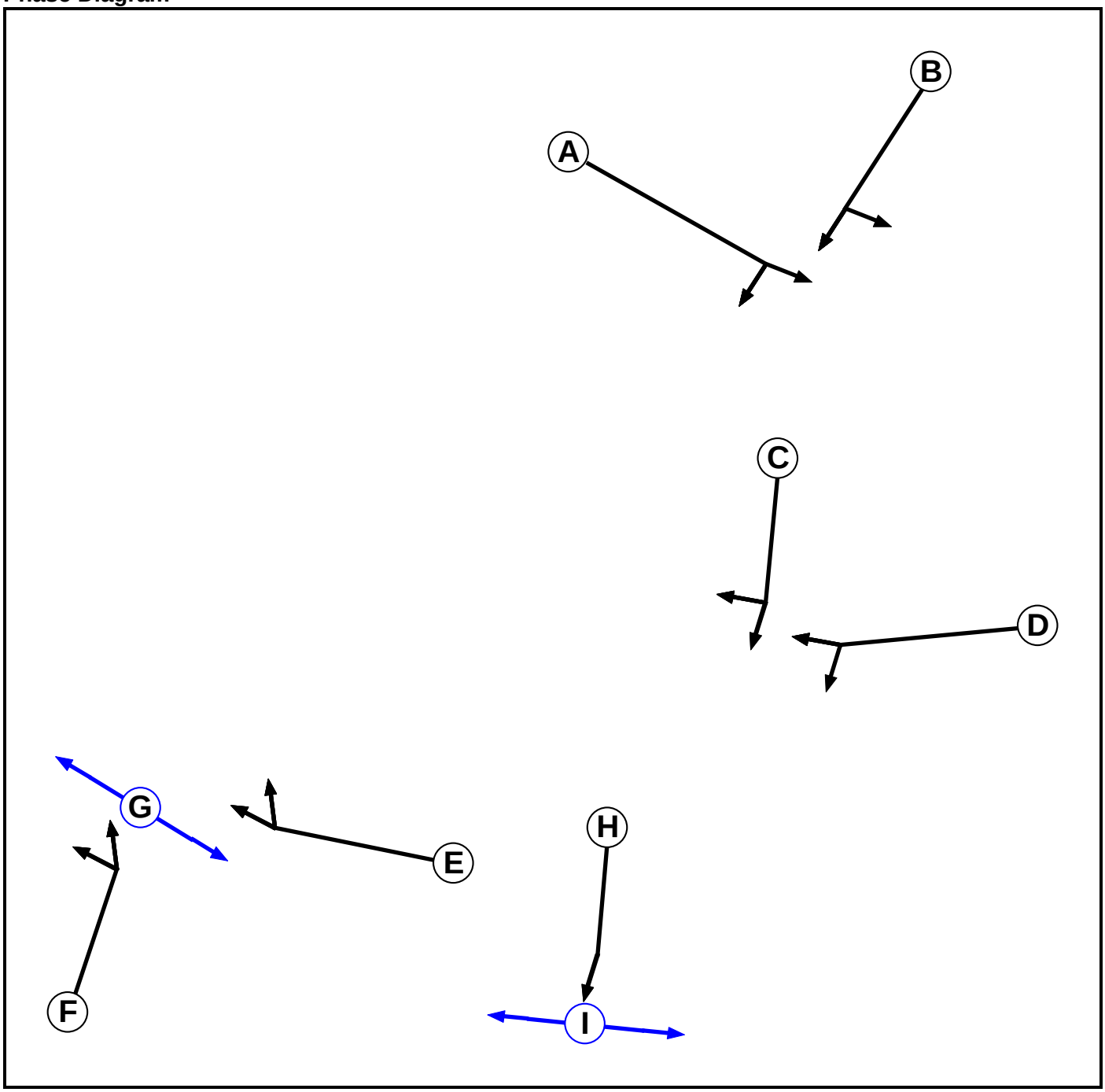
Network Layout Diagram



Full Input Data And Results

C1 - ORN 43

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	4		7	7
D	Traffic	4		7	7
E	Traffic	2		7	7
F	Traffic	2		7	7
G	Pedestrian	2		7	7
H	Traffic	3		7	7
I	Pedestrian	3		7	7

Phase Intergreens Matrix

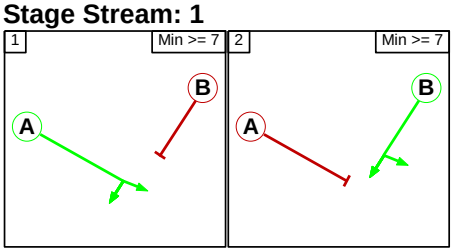
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		5	-	-	-	-	-	-	-
	B	5		-	-	-	-	-	-	-
	C	-	-		5	-	-	-	-	-
	D	-	-	5		-	-	-	-	-
	E	-	-	-	-		5	-	-	-
	F	-	-	-	-	5		5	-	-
	G	-	-	-	-	-	14		-	-
	H	-	-	-	-	-	-	-		5
	I	-	-	-	-	-	-	-	8	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	E G
2	2	E
2	3	F
3	1	H
3	2	I
4	1	C
4	2	D

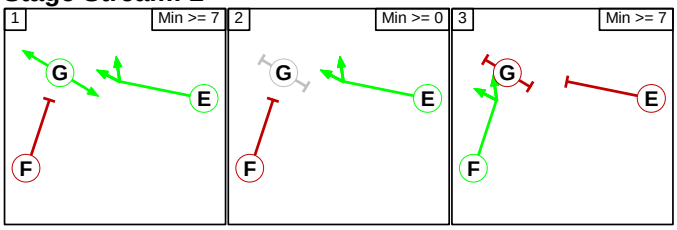
Stage Diagram

Stage Stream: 1

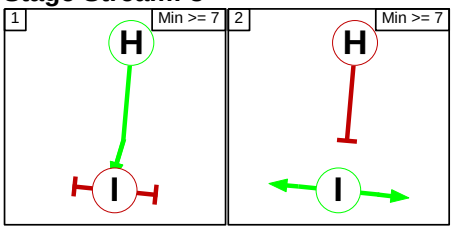


Full Input Data And Results

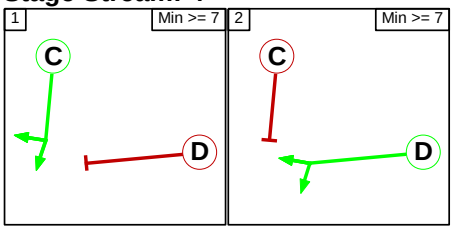
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage	To Stage 1	To Stage 2
1		5
2	5	

Full Input Data And Results

Stage Stream: 2

	To Stage			
		1	2	3
From Stage	1		0	14
	2	0		5
	3	5	5	

Stage Stream: 3

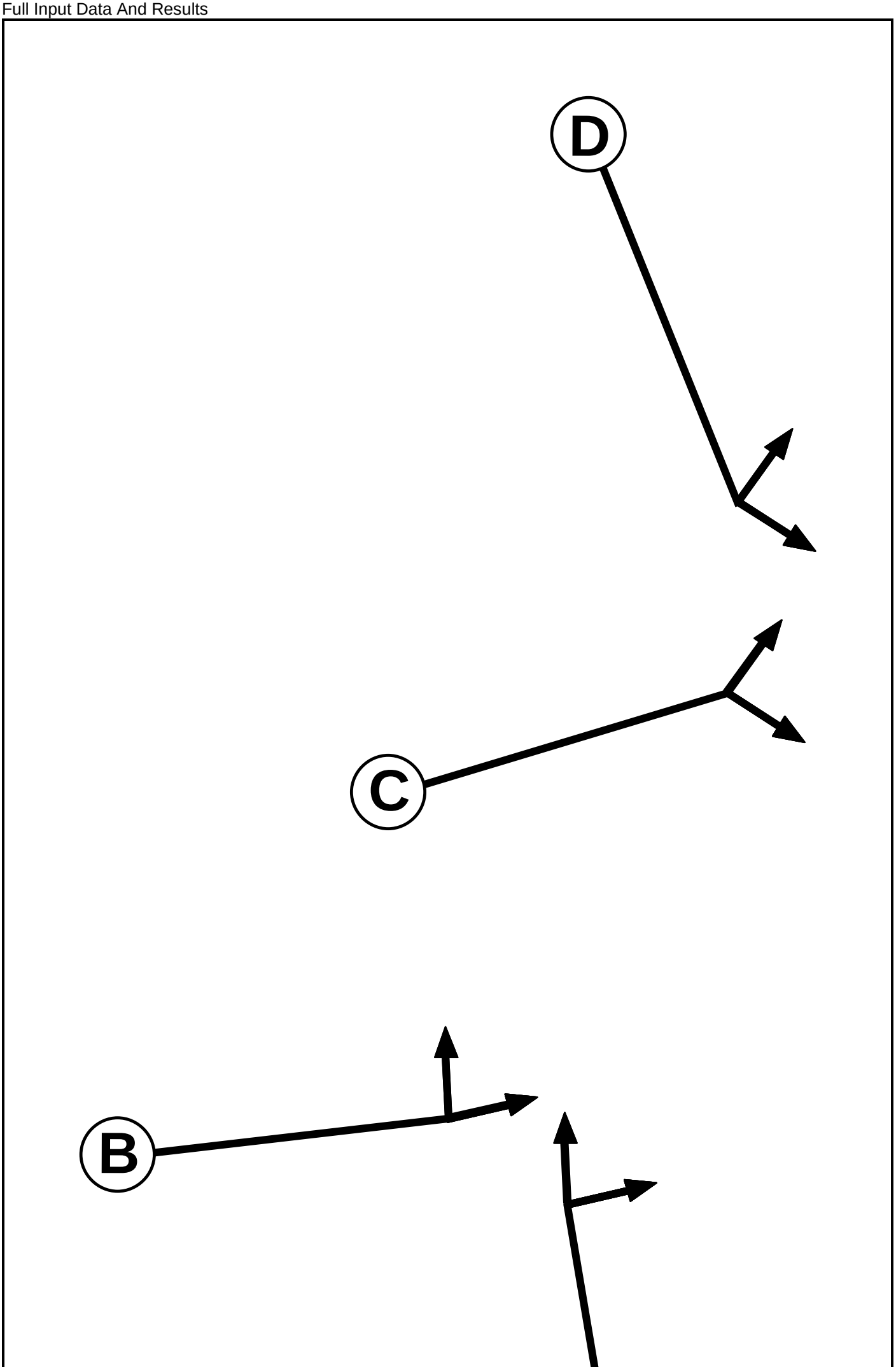
	To Stage		
		1	2
From Stage	1		5
	2	8	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

C2 - ORN101
Phase Diagram


D
C
B

Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Phase Intergreens Matrix

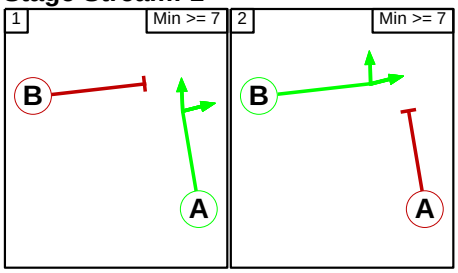
		Starting Phase			
		A	B	C	D
Terminating Phase	A		5	-	-
	B	5		-	-
	C	-	-		5
	D	-	-	5	

Phases in Stage

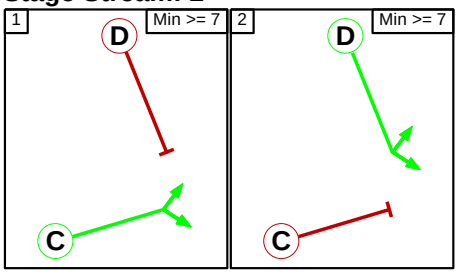
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 Barnes Meadow Interchange
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: A45 Barnes Meadow Interchange												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A45 SB Offslip)	U	B	2	3	15.0	User	1800	-	-	-	-	-
1/2 (A45 SB Offslip)	U	B	2	3	27.0	User	1800	-	-	-	-	-
1/3 (A45 SB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/4 (A45 SB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (A428)	U	D	2	3	6.5	User	1800	-	-	-	-	-
2/2 (A428)	U	D	2	3	7.0	User	1800	-	-	-	-	-
2/3 (A428)	U	D	2	3	60.0	User	1800	-	-	-	-	-
2/4 (A428)	U	D	2	3	6.0	User	1800	-	-	-	-	-
3/1 (A45 NB Offslip)	U	F	2	3	4.3	User	1800	-	-	-	-	-
3/2 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/3 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/4 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/1 (Bedford Road)	U	B	2	3	10.4	User	1800	-	-	-	-	-
4/2 (Bedford Road)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/3 (Bedford Road)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/4 (Bedford Road)	U	B	2	3	8.7	User	1800	-	-	-	-	-
5/1 (Rushmere Road)	U	D	2	3	7.0	User	1800	-	-	-	-	-
5/2 (Rushmere Road)	U	D	2	3	12.2	User	1800	-	-	-	-	-
5/3 (Rushmere Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
6/1 (E Circulatory)	U	C	2	3	8.0	User	1900	-	-	-	-	-
6/2 (E Circulatory)	U	C	2	3	8.0	User	1900	-	-	-	-	-

Full Input Data And Results

6/3 (E Circulatory)	U	C	2	3	9.0	User	1900	-	-	-	-	-
6/4 (E Circulatory)	U	C	2	3	12.0	User	1900	-	-	-	-	-
7/1 (A45 SB Onslip)	U	H	2	3	4.3	User	1800	-	-	-	-	-
7/2 (A45 SB Onslip)	U	H	2	3	4.3	User	1800	-	-	-	-	-
8/1 (A45 SB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (A45 SB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (S Circulatory)	U	E	2	3	11.3	User	1900	-	-	-	-	-
9/2 (S Circulatory)	U	E	2	3	13.0	User	1900	-	-	-	-	-
9/3 (S Circulatory)	U	E	2	3	13.0	User	1900	-	-	-	-	-
10/1 (W Circulatory)	U	A	2	3	10.4	User	1900	-	-	-	-	-
10/2 (W Circulatory)	U	A	2	3	24.3	User	1900	-	-	-	-	-
10/3 (W Circulatory)	U	A	2	3	24.3	User	1900	-	-	-	-	-
11/1 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
11/2 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
11/3 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
12/1 (A428)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (Bedford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2 (Bedford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/3 (Bedford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/2 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/3 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/4 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
15/1 (Rushmere Road)	U		2	3	60.0	Inf	-	-	-	-	-	-

15/2 (Rushmere Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/1 (A45 NB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/2 (A45 NB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	
8: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	5	81	320	627	262	1295
	B	185	0	5	0	422	612
	C	472	150	0	797	0	1419
	D	295	1	344	0	667	1307
	E	673	197	0	865	0	1735
	Tot.	1630	429	669	2289	1351	6368

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DS AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	472
1/2 (with short)	828(In) 356(Out)
1/3	441
1/4	150
2/1 (short)	262
2/2 (with short)	652(In) 390(Out)
2/3 (with short)	643(In) 264(Out)
2/4 (short)	379
3/1 (short)	336
3/2 (with short)	672(In) 336(Out)
3/3	390
3/4	673
4/1 (short)	134
4/2 (with short)	345(In) 211(Out)
4/3 (with short)	962(In) 295(Out)
4/4 (short)	667
5/1 (short)	190
5/2 (with short)	442(In) 252(Out)
5/3	170
6/1	544
6/2	901
6/3	441
6/4	150
7/1	806
7/2	545
8/1	806
8/2	545
9/1	746
9/2	705
9/3	529
10/1	224
10/2	473
10/3	729

Full Input Data And Results

11/1	1158
11/2	544
11/3	545
12/1	1630
13/1	709
13/2	709
13/3	871
14/1	402
14/2	262
14/3	973
14/4	667
15/1	224
15/2	205
16/1	405
16/2	264

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 2: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	132	769	411	375	1687
	B	72	0	143	178	213	606
	C	426	96	0	620	0	1142
	D	285	58	1210	0	786	2339
	E	295	455	0	567	0	1317
	Tot.	1078	741	2122	1776	1374	7091

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DS PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	426
1/2 (with short)	622(In) 196(Out)
1/3	442
1/4	78
2/1 (short)	375
2/2 (with short)	786(In) 411(Out)
2/3 (with short)	901(In) 132(Out)
2/4 (short)	769
3/1 (short)	280
3/2 (with short)	561(In) 281(Out)
3/3	387
3/4	369
4/1 (short)	568
4/2 (with short)	1268(In) 700(Out)
4/3 (with short)	1071(In) 285(Out)
4/4 (short)	786
5/1 (short)	215
5/2 (with short)	424(In) 209(Out)
5/3	182
6/1	567
6/2	644
6/3	604
6/4	78
7/1	942
7/2	432
8/1	942
8/2	432
9/1	623
9/2	736
9/3	847
10/1	531
10/2	589
10/3	627

Full Input Data And Results

11/1	652
11/2	567
11/3	610
12/1	1078
13/1	592
13/2	592
13/3	592
14/1	947
14/2	1032
14/3	580
14/4	786
15/1	560
15/2	181
16/1	1019
16/2	1103

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 3: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	7	104	651	624	262	1648
	B	200	0	142	205	422	969
	C	686	198	0	708	0	1592
	D	297	53	383	1	667	1401
	E	370	88	0	694	0	1152
	Tot.	1560	443	1176	2232	1351	6762

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2031 DS AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	686
1/2 (with short)	716(In) 30(Out)
1/3	678
1/4	198
2/1 (short)	262
2/2 (with short)	886(In) 624(Out)
2/3 (with short)	762(In) 104(Out)
2/4 (short)	658
3/1 (short)	270
3/2 (with short)	539(In) 269(Out)
3/3	243
3/4	370
4/1 (short)	199
4/2 (with short)	436(In) 237(Out)
4/3 (with short)	965(In) 297(Out)
4/4 (short)	668
5/1 (short)	342
5/2 (with short)	688(In) 346(Out)
5/3	281
6/1	625
6/2	699
6/3	679
6/4	198
7/1	887
7/2	464
8/1	887
8/2	464
9/1	859
9/2	783
9/3	856
10/1	192
10/2	638
10/3	588

Full Input Data And Results

11/1	874
11/2	625
11/3	670
12/1	1560
13/1	700
13/2	698
13/3	834
14/1	586
14/2	448
14/3	674
14/4	668
15/1	218
15/2	225
16/1	657
16/2	519

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 4: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	153	1034	360	375	1922
	B	72	0	366	211	213	862
	C	479	95	0	555	0	1129
	D	306	175	1209	2	786	2478
	E	248	431	0	465	0	1144
	Tot.	1105	854	2609	1593	1374	7535

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2031 DS PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	479
1/2 (with short)	697(In) 218(Out)
1/3	412
1/4	20
2/1 (short)	375
2/2 (with short)	735(In) 360(Out)
2/3 (with short)	1187(In) 153(Out)
2/4 (short)	1034
3/1 (short)	232
3/2 (with short)	465(In) 233(Out)
3/3	368
3/4	311
4/1 (short)	702
4/2 (with short)	1384(In) 682(Out)
4/3 (with short)	1094(In) 306(Out)
4/4 (short)	788
5/1 (short)	438
5/2 (with short)	438(In) 0(Out)
5/3	424
6/1	607
6/2	658
6/3	577
6/4	20
7/1	982
7/2	392
8/1	982
8/2	392
9/1	626
9/2	730
9/3	1054
10/1	596
10/2	647
10/3	718

Full Input Data And Results

11/1	626
11/2	607
11/3	605
12/1	1105
13/1	545
13/2	546
13/3	502
14/1	1091
14/2	1152
14/3	554
14/4	788
15/1	683
15/2	171
16/1	1274
16/2	1335

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

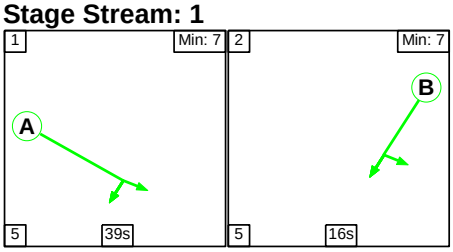
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

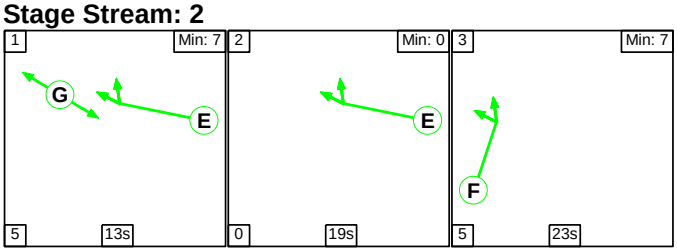
Scenario 1: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

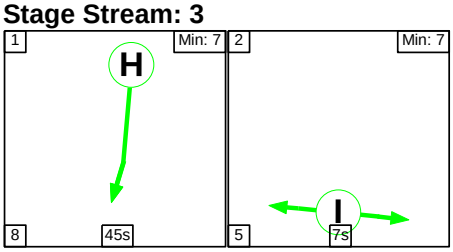
Stage Stream: 1



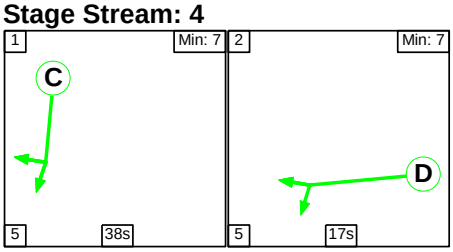
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	39	16
Change Point	52	31

Stage Stream: 2

Stage	1	2	3
Duration	13	19	23
Change Point	6	24	43

Stage Stream: 3

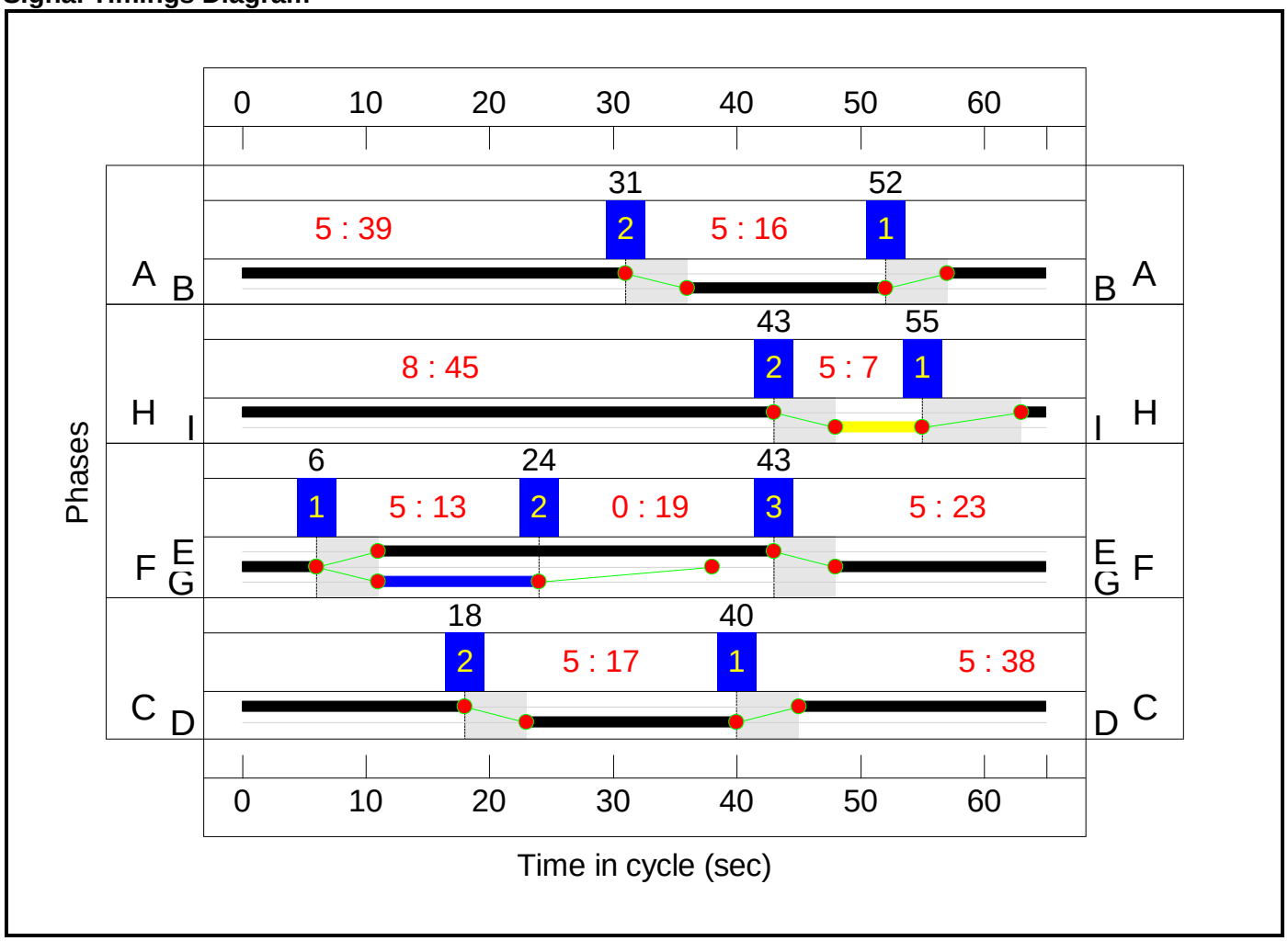
Stage	1	2
Duration	45	7
Change Point	55	43

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	38	17
Change Point	40	18

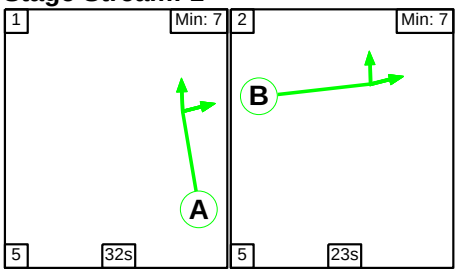
Signal Timings Diagram



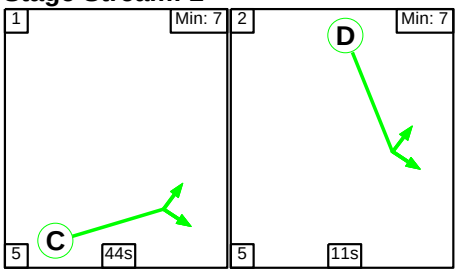
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

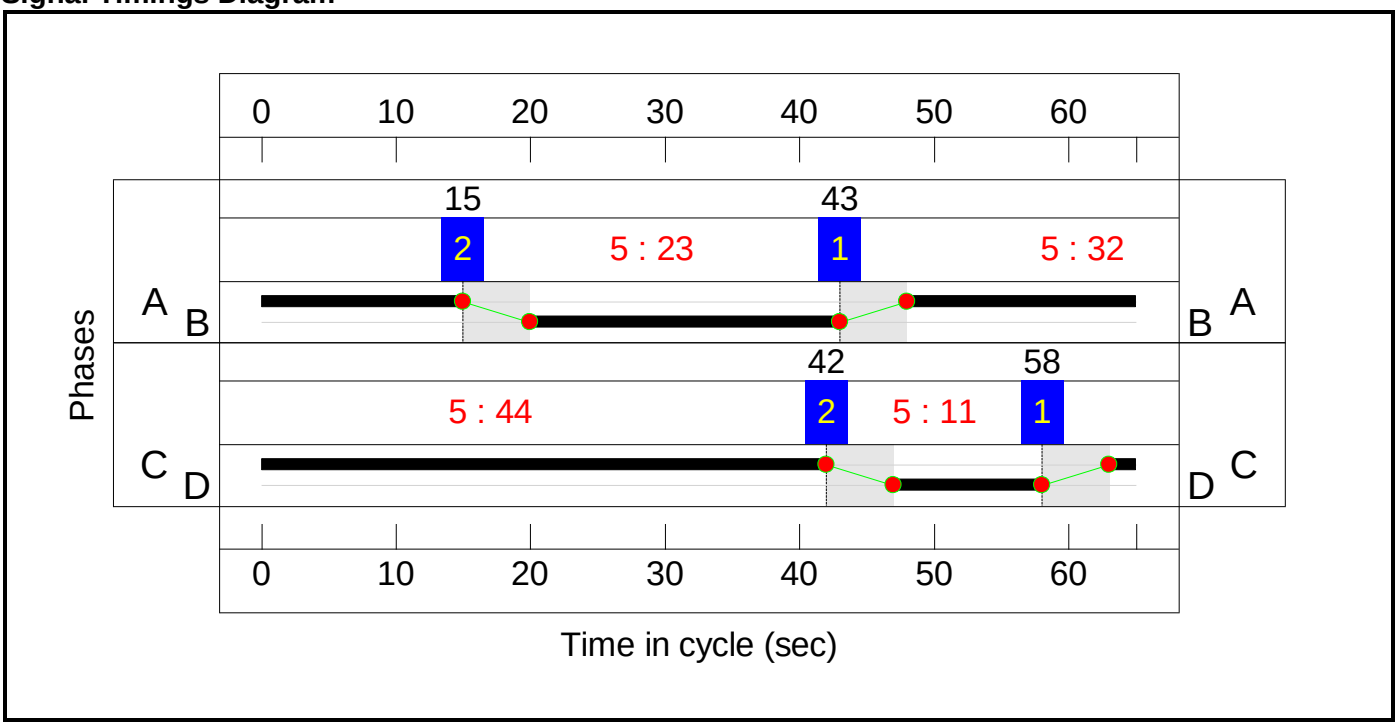
Stage Stream: 1

Stage	1	2
Duration	32	23
Change Point	43	15

Stage Stream: 2

Stage	1	2
Duration	44	11
Change Point	58	42

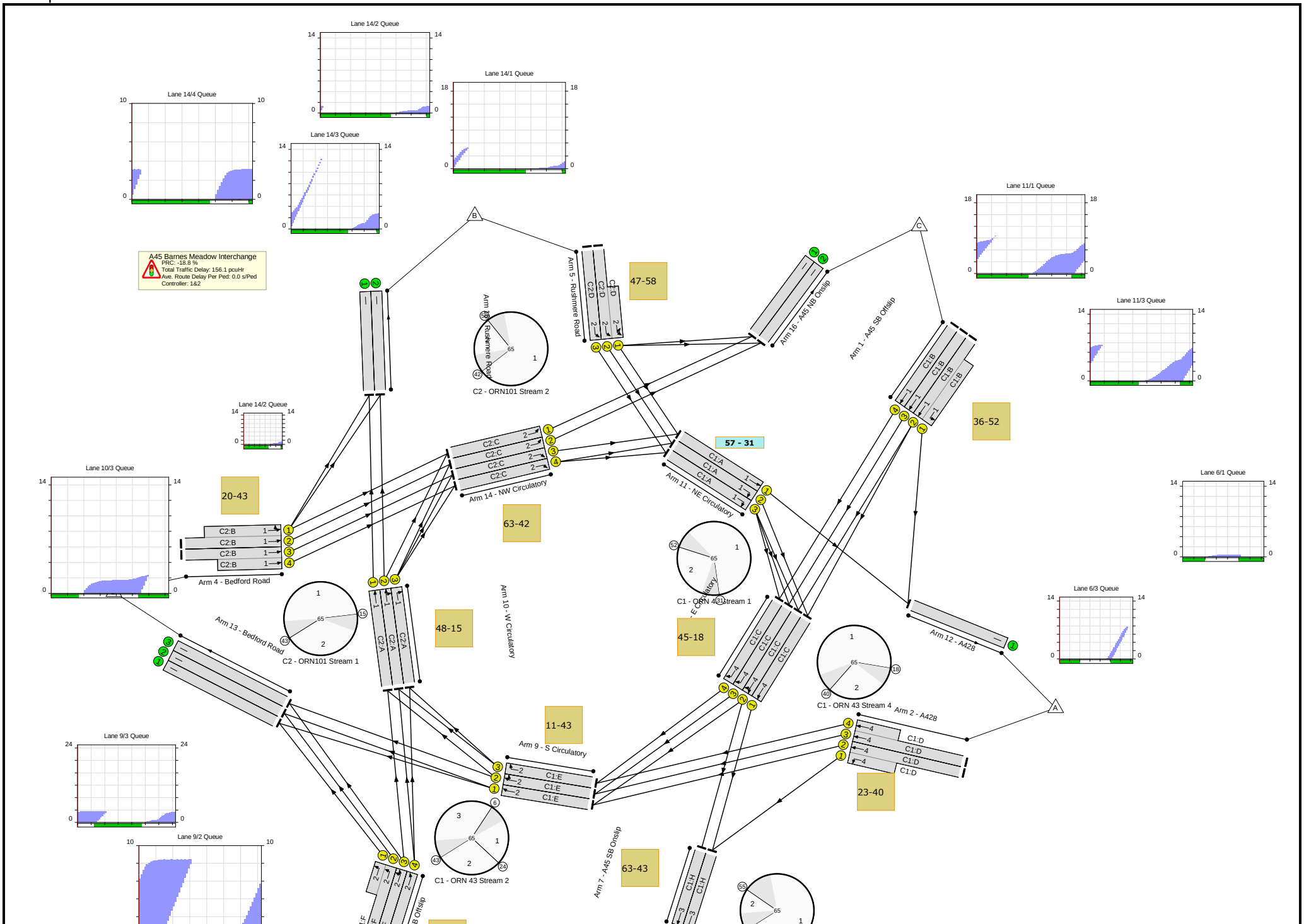
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.0%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.0%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	16	-	828	1800:1800	395+471	90.1 : 100.3%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	16	-	441	1800	471	93.7%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	16	-	150	1800	471	31.9%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	17	-	652	1800:1800	453+304	86.1 : 86.1%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	17	-	643	1800:1800	300+430	88.1 : 88.1%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	23	-	672	1800:1800	456+456	73.8 : 73.8%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	23	-	390	1800	665	58.7%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	23	-	673	1800	665	101.3%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	23	-	345	1800:1800	639+406	33.0 : 33.0%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	23	-	962	1800:1800	276+624	107.0 : 107.0%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	11	-	442	1800:1800	332+251	75.8 : 75.8%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	11	-	170	1800	332	51.2%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	38	-	544	1900	1140	46.1%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	38	-	901	1900	1140	76.9%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	38	-	441	1900	1140	38.7%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	38	-	150	1900	1140	13.2%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	45	-	806	1800	1274	61.8%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	45	-	545	1800	1274	40.9%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	806	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	545	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	32	-	746	1900	965	77.3%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	32	-	705	1900	965	73.1%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	32	-	529	1900	965	54.8%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	32	-	224	1900	965	23.2%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	32	-	473	1900	965	49.0%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	32	-	729	1900	965	74.7%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	39	-	1158	1900	1169	96.7%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	39	-	544	1900	1169	44.9%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	39	-	545	1900	1169	44.5%
12/1	A428	U	N/A	N/A	-		-	-	-	1630	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	871	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	44	-	402	1900	1315	30.6%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	44	-	262	1900	1315	19.9%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	44	-	973	1900	1315	71.9%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	44	-	667	1900	1315	47.4%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	205	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	264	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**56.5**	**99.6**	**0.0**	**156.1**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**56.5**	**99.6**	**0.0**	**156.1**	**-**	**-**	**-**	**-**
1/2+1/1	828	827	-	-	-	5.4	8.4	-	13.7	59.7	8.5	8.4	16.9
1/3	441	441	-	-	-	2.9	5.4	-	8.3	67.8	7.7	5.4	13.1
1/4	150	150	-	-	-	0.8	0.2	-	1.0	25.0	2.2	0.2	2.4
2/2+2/1	652	652	-	-	-	3.8	2.9	-	6.7	37.1	6.4	2.9	9.3
2/3+2/4	643	643	-	-	-	3.7	3.4	-	7.2	40.1	6.7	3.4	10.1
3/2+3/1	672	672	-	-	-	3.0	1.4	-	4.4	23.4	5.4	1.4	6.8
3/3	390	390	-	-	-	1.8	0.7	-	2.5	23.0	5.6	0.7	6.3
3/4	673	665	-	-	-	4.1	15.2	-	19.4	103.7	12.3	15.2	27.5
4/2+4/1	345	345	-	-	-	1.4	0.2	-	1.6	17.0	2.7	0.2	2.9
4/3+4/4	962	899	-	-	-	6.7	37.7	-	44.4	166.2	16.8	37.7	54.5
5/2+5/1	442	442	-	-	-	3.0	1.5	-	4.6	37.2	4.3	1.5	5.8
5/3	170	170	-	-	-	1.1	0.5	-	1.6	34.9	2.7	0.5	3.3
6/1	525	525	-	-	-	0.1	0.4	-	0.6	3.9	0.4	0.4	0.8
6/2	877	877	-	-	-	0.6	1.6	-	2.2	9.1	6.7	1.6	8.4
6/3	441	441	-	-	-	0.4	0.3	-	0.7	5.8	7.8	0.3	8.1
6/4	150	150	-	-	-	0.1	0.1	-	0.2	4.8	2.3	0.1	2.3
7/1	787	787	-	-	-	0.1	0.8	-	0.9	4.2	5.0	0.8	5.8
7/2	521	521	-	-	-	0.1	0.3	-	0.5	3.2	4.5	0.3	4.9
8/1	787	787	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	521	521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	746	746	-	-	-	2.8	1.7	-	4.5	21.5	7.4	1.7	9.0
9/2	705	705	-	-	-	3.1	1.3	-	4.5	22.8	8.4	1.3	9.8
9/3	529	529	-	-	-	1.4	0.6	-	2.0	13.6	3.6	0.6	4.2
10/1	224	224	-	-	-	0.1	0.2	-	0.3	4.3	0.5	0.2	0.6

Full Input Data And Results

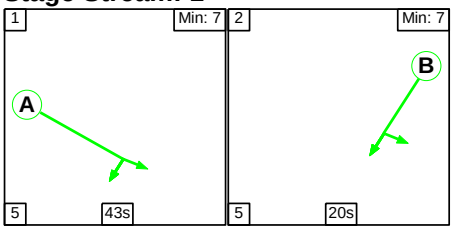
10/2	473	473	-	-	-	2.1	0.5	-	2.6	19.8	8.5	0.5	9.0
10/3	721	721	-	-	-	0.8	1.5	-	2.3	11.4	2.3	1.5	3.8
11/1	1130	1130	-	-	-	2.2	9.7	-	11.9	37.8	9.5	9.7	19.2
11/2	525	525	-	-	-	1.2	0.4	-	1.6	11.1	8.0	0.4	8.4
11/3	521	521	-	-	-	1.5	0.4	-	1.9	12.9	7.6	0.4	8.0
12/1	1601	1601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	871	871	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	402	402	-	-	-	0.3	0.2	-	0.5	4.8	4.9	0.2	5.1
14/2	262	262	-	-	-	0.2	0.1	-	0.3	4.4	1.3	0.1	1.4
14/3	945	945	-	-	-	0.7	1.3	-	2.0	7.5	12.3	1.3	13.5
14/4	624	624	-	-	-	0.9	0.5	-	1.4	7.9	3.1	0.5	3.6
15/1	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	205	205	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	264	264	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-11.4	Total Delay for Signalled Lanes (pcuHr):	38.41	Cycle Time (s): 65
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-12.5	Total Delay for Signalled Lanes (pcuHr):	37.14	Cycle Time (s): 65
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	45.7	Total Delay for Signalled Lanes (pcuHr):	1.38	Cycle Time (s): 65
C1 - ORN 43	Stream: 4 PRC for Signalled Lanes (%):	2.2	Total Delay for Signalled Lanes (pcuHr):	17.57	Cycle Time (s): 65
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-18.8	Total Delay for Signalled Lanes (pcuHr):	51.18	Cycle Time (s): 65
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	18.7	Total Delay for Signalled Lanes (pcuHr):	10.42	Cycle Time (s): 65
	PRC Over All Lanes (%):	-18.8	Total Delay Over All Lanes(pcuHr):	156.10	

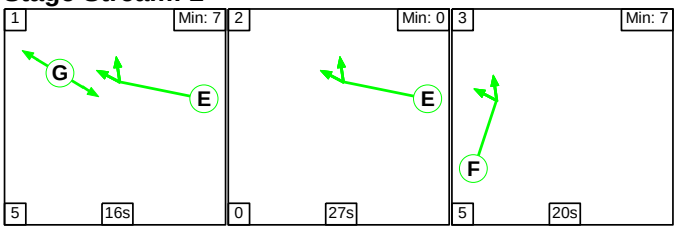
Full Input Data And Results
Scenario 2: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

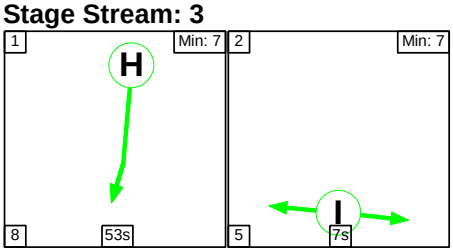
Stage Stream: 1



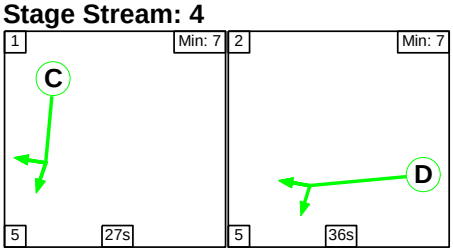
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	43	20
Change Point	39	14

Stage Stream: 2

Stage	1	2	3
Duration	16	27	20
Change Point	0	21	48

Stage Stream: 3

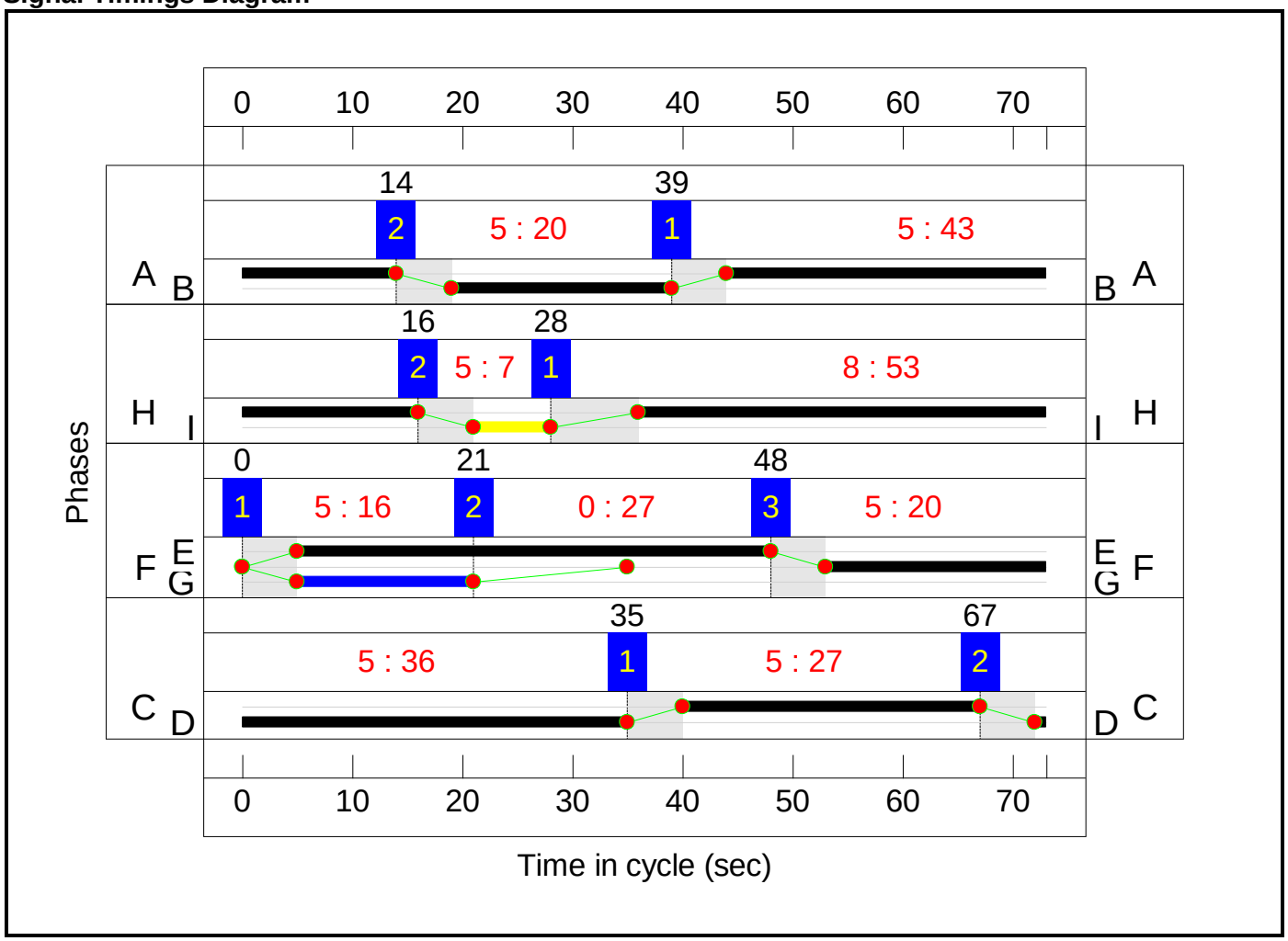
Stage	1	2
Duration	53	7
Change Point	28	16

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	27	36
Change Point	35	67

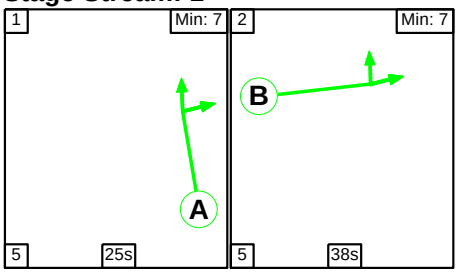
Signal Timings Diagram



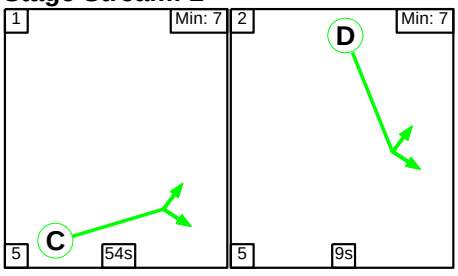
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

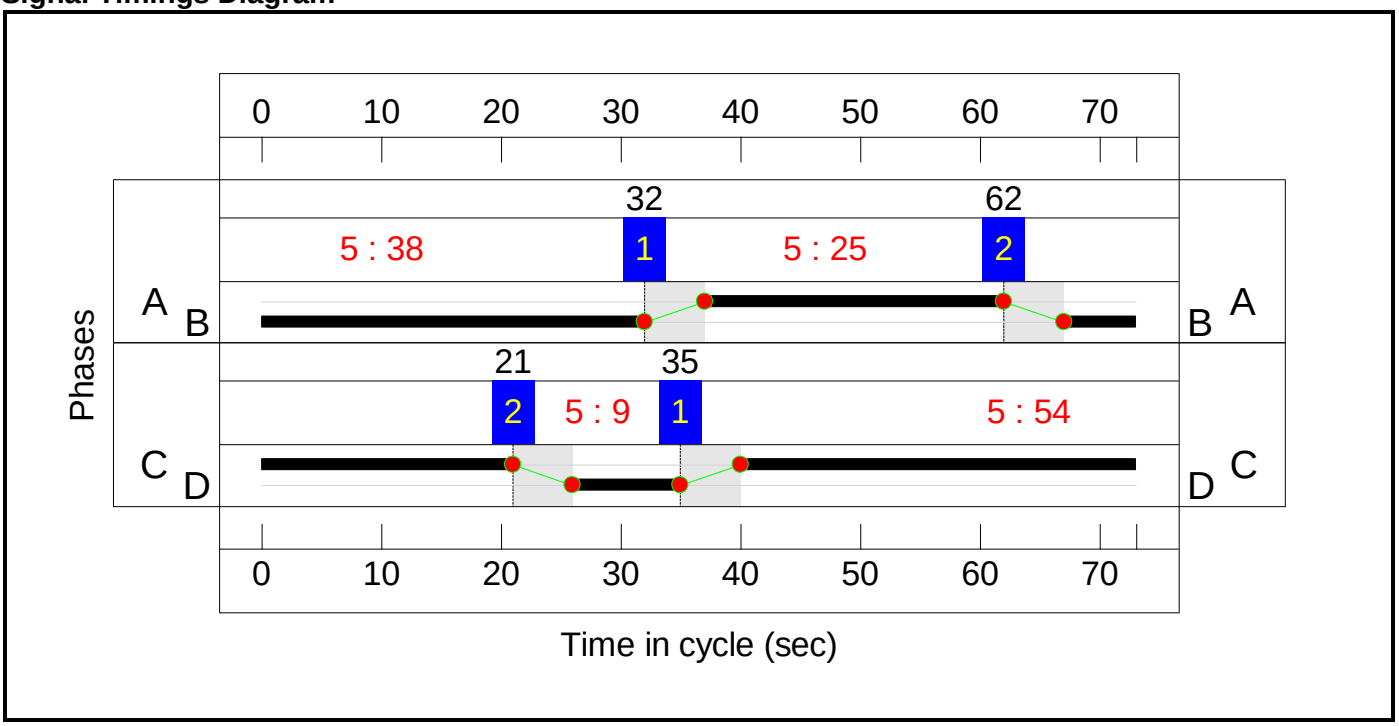
Stage Stream: 1

Stage	1	2
Duration	25	38
Change Point	32	62

Stage Stream: 2

Stage	1	2
Duration	54	9
Change Point	35	21

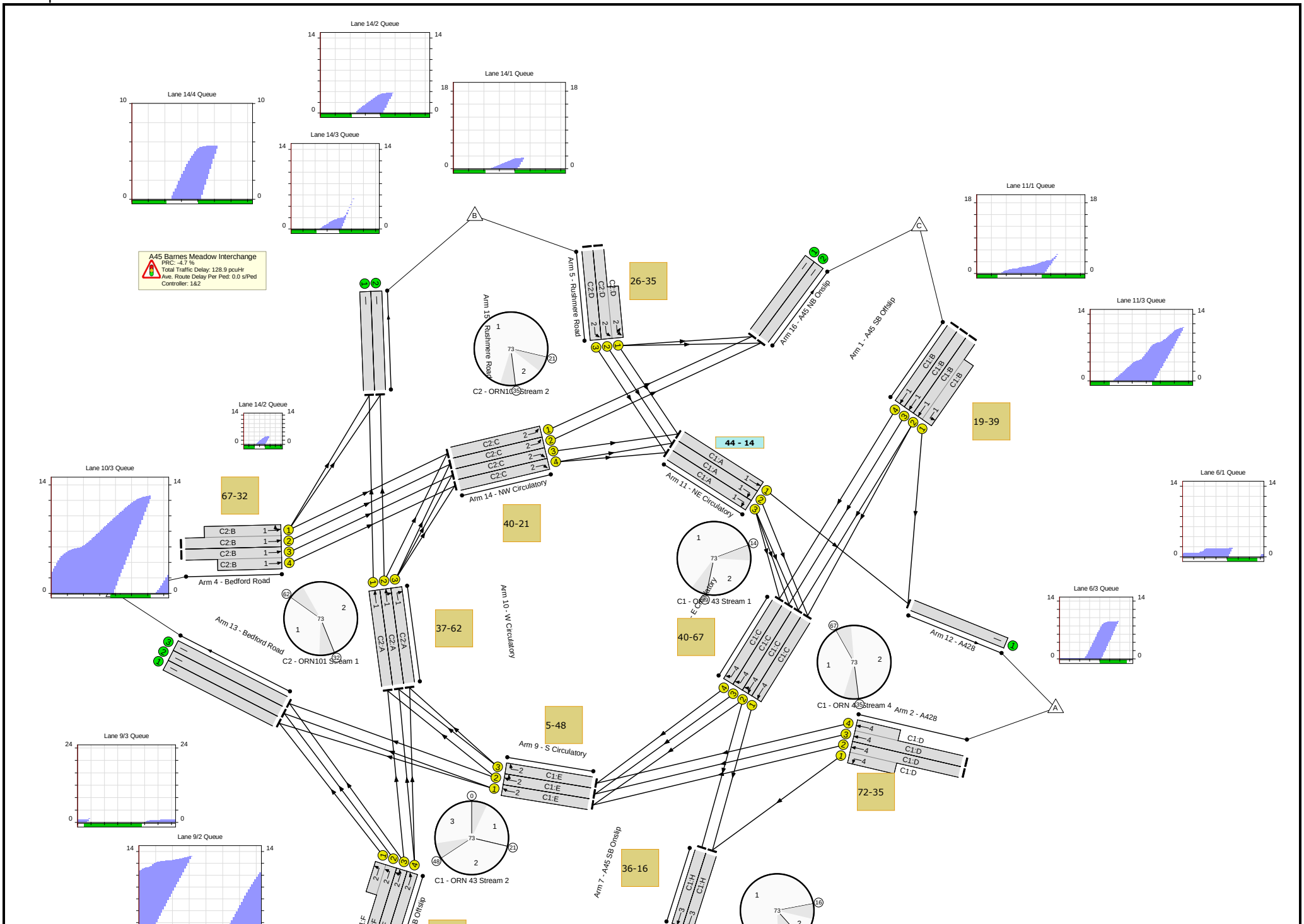
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.3%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.3%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	20	-	622	1800:1800	238+518	82.3 : 82.3%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	20	-	442	1800	518	85.4%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	20	-	78	1800	518	15.1%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	36	-	786	1800:1800	638+583	64.4 : 64.4%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	36	-	901	1800:1800	141+822	93.6 : 93.6%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	20	-	561	1800:1800	369+368	76.1 : 76.1%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	20	-	387	1800	518	74.7%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	20	-	369	1800	518	71.3%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	38	-	1268	1800:1800	768+623	91.2 : 91.2%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	38	-	1071	1800:1800	302+834	94.3 : 94.3%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	9	-	424	1800:1800	247+247	84.8 : 87.2%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	9	-	182	1800	247	73.8%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	27	-	567	1900	729	77.8%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	27	-	644	1900	729	88.4%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	27	-	604	1900	729	82.9%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	27	-	78	1900	729	10.7%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	53	-	942	1800	1332	70.7%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	53	-	432	1800	1332	32.4%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	942	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	432	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	43	-	623	1900	1145	54.4%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	43	-	736	1900	1145	64.3%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	43	-	847	1900	1145	74.0%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	25	-	531	1900	677	78.5%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	25	-	589	1900	677	87.0%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	25	-	627	1900	677	92.7%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	43	-	652	1900	1145	56.9%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	43	-	567	1900	1145	49.5%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	43	-	610	1900	1145	53.3%
12/1	A428	U	N/A	N/A	-		-	-	-	1078	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	592	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	592	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	592	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	54	-	947	1900	1432	66.2%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	54	-	1032	1900	1432	72.1%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	54	-	580	1900	1432	40.5%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	54	-	786	1900	1432	54.9%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	560	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	181	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1103	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**69.8**	**59.0**	**0.0**	**128.9**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**69.8**	**59.0**	**0.0**	**128.9**	**-**	**-**	**-**	**-**
1/2+1/1	622	622	-	-	-	4.0	2.2	-	6.2	36.2	8.0	2.2	10.3
1/3	442	442	-	-	-	3.0	2.7	-	5.7	46.7	8.3	2.7	11.1
1/4	78	78	-	-	-	0.4	0.1	-	0.5	23.5	1.2	0.1	1.3
2/2+2/1	786	786	-	-	-	2.5	0.9	-	3.4	15.5	5.3	0.9	6.2
2/3+2/4	901	901	-	-	-	4.0	6.1	-	10.1	40.2	15.7	6.1	21.8
3/2+3/1	561	561	-	-	-	3.4	1.6	-	5.0	32.0	5.4	1.6	7.0
3/3	387	387	-	-	-	2.5	1.4	-	4.0	37.1	7.1	1.4	8.5
3/4	369	369	-	-	-	2.4	1.2	-	3.6	35.2	6.7	1.2	7.9
4/2+4/1	1268	1268	-	-	-	4.3	4.8	-	9.1	25.9	11.5	4.8	16.2
4/3+4/4	1071	1071	-	-	-	4.1	6.8	-	10.8	36.5	16.5	6.8	23.3
5/2+5/1	424	424	-	-	-	3.6	2.8	-	6.5	54.9	4.2	2.8	7.1
5/3	182	182	-	-	-	1.5	1.4	-	2.9	57.0	3.5	1.4	4.9
6/1	567	567	-	-	-	0.8	1.7	-	2.5	15.9	1.7	1.7	3.4
6/2	644	644	-	-	-	2.4	3.5	-	5.9	33.2	11.0	3.5	14.5
6/3	604	604	-	-	-	1.9	2.3	-	4.2	25.3	9.2	2.3	11.5
6/4	78	78	-	-	-	0.3	0.1	-	0.3	16.0	1.5	0.1	1.6
7/1	942	942	-	-	-	0.4	1.2	-	1.6	5.9	7.0	1.2	8.2
7/2	432	432	-	-	-	0.0	0.2	-	0.2	2.0	2.5	0.2	2.7
8/1	942	942	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	432	432	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	623	623	-	-	-	1.9	0.6	-	2.5	14.5	10.3	0.6	10.9
9/2	736	736	-	-	-	4.7	0.9	-	5.6	27.4	13.3	0.9	14.2
9/3	847	847	-	-	-	0.3	1.4	-	1.7	7.3	1.6	1.4	3.0
10/1	531	531	-	-	-	5.1	1.8	-	6.9	46.8	10.6	1.8	12.4

Full Input Data And Results

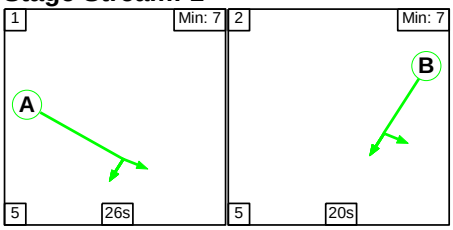
10/2	589	589	-	-	-	2.8	3.1	-	6.0	36.6	11.4	3.1	14.6
10/3	627	627	-	-	-	5.2	5.2	-	10.4	59.6	12.6	5.2	17.8
11/1	652	652	-	-	-	0.8	0.7	-	1.4	8.0	4.8	0.7	5.5
11/2	567	567	-	-	-	2.2	0.5	-	2.7	17.3	10.4	0.5	10.9
11/3	610	610	-	-	-	2.6	0.6	-	3.1	18.5	11.2	0.6	11.7
12/1	1078	1078	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	947	947	-	-	-	0.4	1.0	-	1.4	5.2	2.6	1.0	3.5
14/2	1032	1032	-	-	-	0.7	1.3	-	2.0	6.8	3.8	1.3	5.0
14/3	580	580	-	-	-	0.3	0.3	-	0.7	4.2	6.3	0.3	6.7
14/4	786	786	-	-	-	1.2	0.6	-	1.8	8.2	5.6	0.6	6.2
15/1	560	560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	181	181	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1103	1103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1	PRC for Signalled Lanes (%):	5.4	Total Delay for Signalled Lanes (pcuHr):	19.79	Cycle Time (s):	73	
C1 - ORN 43	Stream: 2	PRC for Signalled Lanes (%):	18.2	Total Delay for Signalled Lanes (pcuHr):	22.41	Cycle Time (s):	73	
C1 - ORN 43	Stream: 3	PRC for Signalled Lanes (%):	27.2	Total Delay for Signalled Lanes (pcuHr):	1.80	Cycle Time (s):	73	
C1 - ORN 43	Stream: 4	PRC for Signalled Lanes (%):	-3.9	Total Delay for Signalled Lanes (pcuHr):	26.47	Cycle Time (s):	73	
C2 - ORN101	Stream: 1	PRC for Signalled Lanes (%):	-4.7	Total Delay for Signalled Lanes (pcuHr):	43.26	Cycle Time (s):	73	
C2 - ORN101	Stream: 2	PRC for Signalled Lanes (%):	3.2	Total Delay for Signalled Lanes (pcuHr):	15.14	Cycle Time (s):	73	
		PRC Over All Lanes (%):	-4.7	Total Delay Over All Lanes(pcuHr):	128.86			

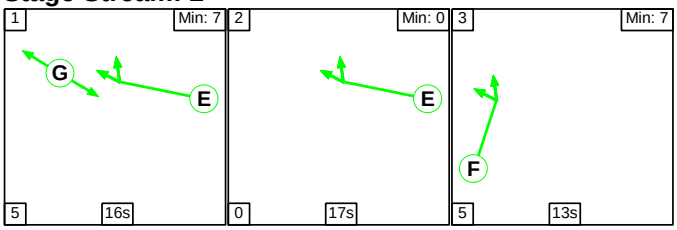
Full Input Data And Results
Scenario 3: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

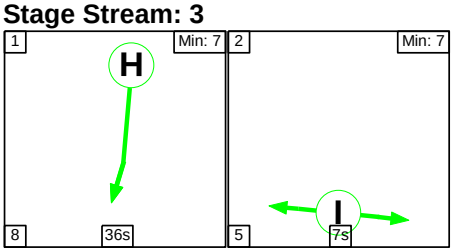
Stage Stream: 1



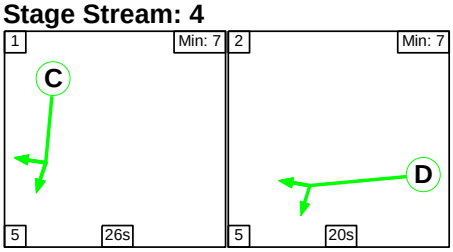
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	20
Change Point	6	37

Stage Stream: 2

Stage	1	2	3
Duration	16	17	13
Change Point	30	51	12

Stage Stream: 3

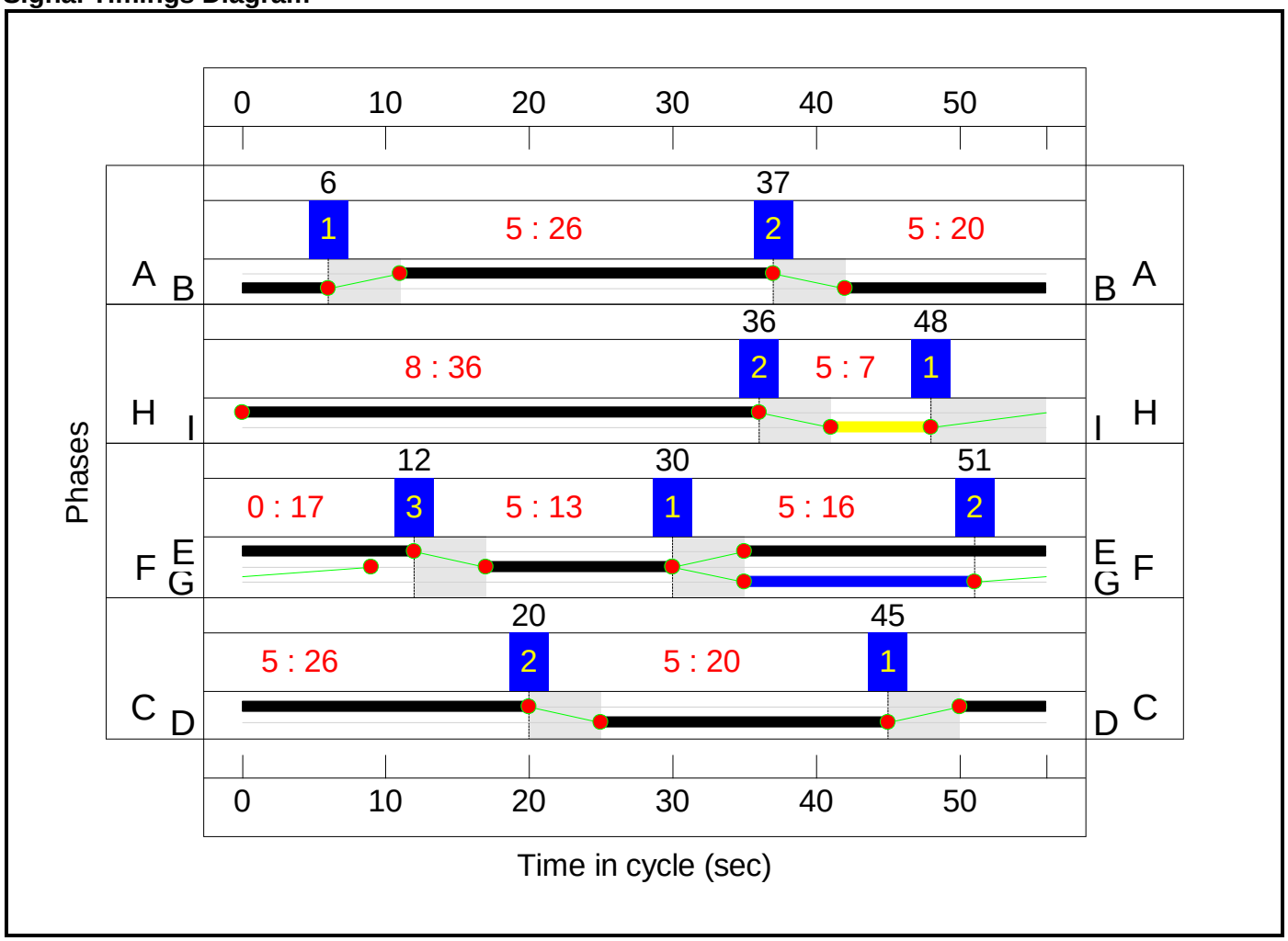
Stage	1	2
Duration	36	7
Change Point	48	36

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	26	20
Change Point	45	20

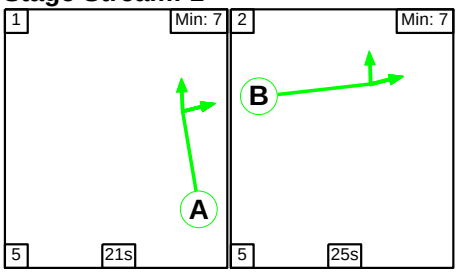
Signal Timings Diagram



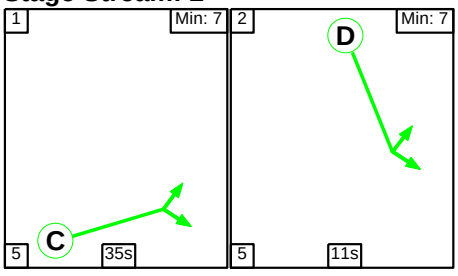
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

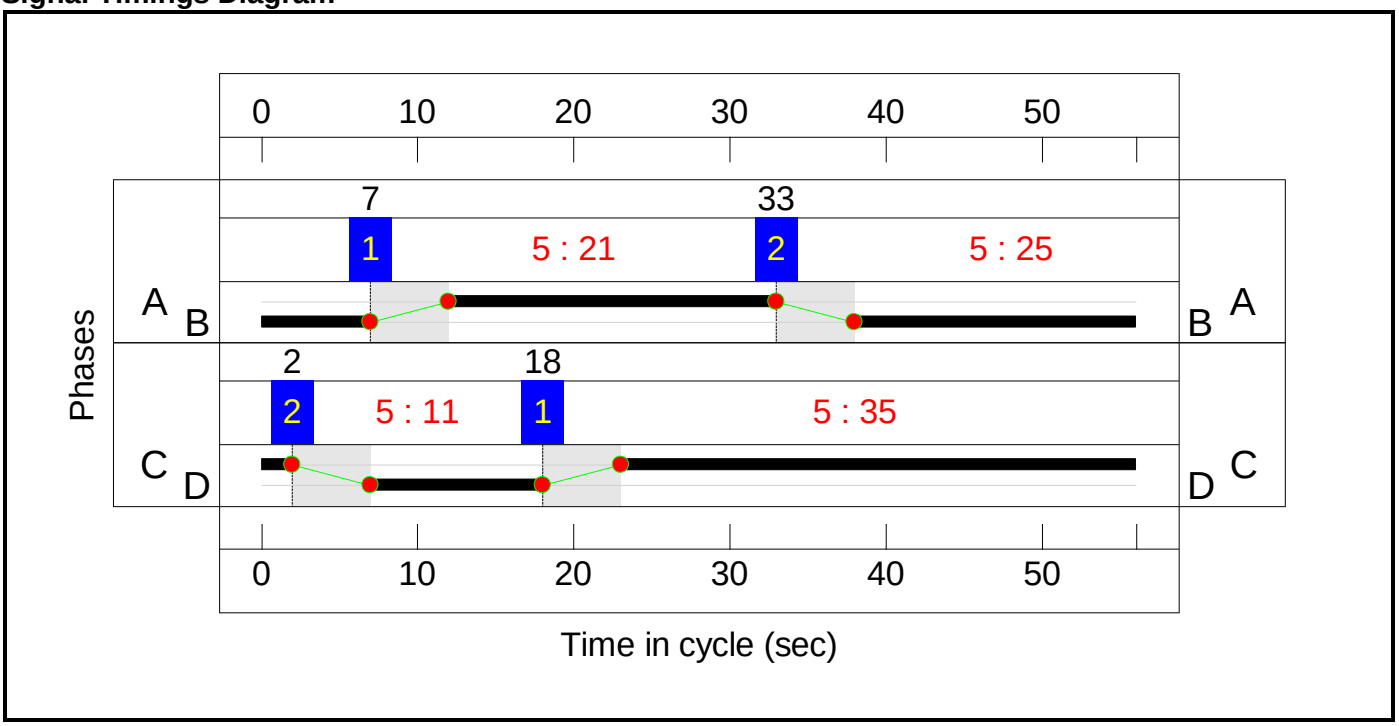
Stage Stream: 1

Stage	1	2
Duration	21	25
Change Point	7	33

Stage Stream: 2

Stage	1	2
Duration	35	11
Change Point	18	2

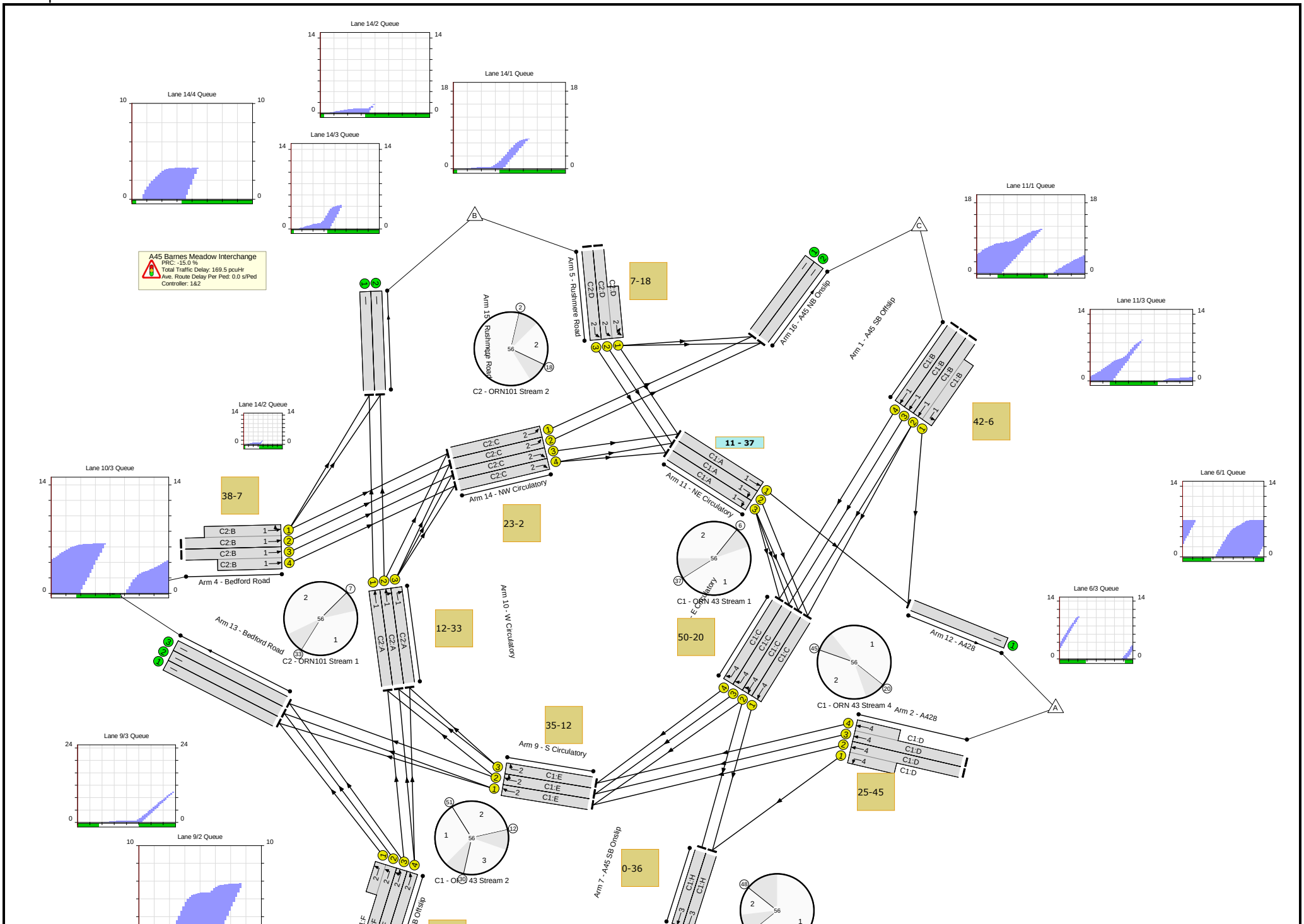
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.5%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.5%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	20	-	716	1800:1800	30+675	101.6 : 101.6%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	20	-	678	1800	675	100.4%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	20	-	198	1800	675	29.3%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	20	-	886	1800:1800	612+257	101.9 : 101.9%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	20	-	762	1800:1800	100+636	103.5 : 103.5%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	13	-	539	1800:1800	367+369	73.3 : 73.3%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	13	-	243	1800	450	54.0%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	13	-	370	1800	450	82.2%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	25	-	436	1800:1800	769+645	30.8 : 30.8%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	25	-	965	1800:1800	341+768	87.0 : 87.0%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	11	-	688	1800:1800	386+386	89.7 : 88.7%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	11	-	281	1800	386	72.9%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	26	-	625	1900	916	68.2%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	26	-	699	1900	916	76.3%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	26	-	679	1900	916	73.8%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	26	-	198	1900	916	21.6%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	36	-	887	1800	1189	74.2%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	36	-	464	1800	1189	39.0%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	887	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	464	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	33	-	859	1900	1154	73.4%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	33	-	783	1900	1154	67.3%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	33	-	856	1900	1154	72.3%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	21	-	192	1900	746	25.2%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	21	-	638	1900	746	83.5%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	21	-	588	1900	746	77.8%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	26	-	874	1900	916	95.4%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	26	-	625	1900	916	68.2%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	26	-	670	1900	916	73.1%
12/1	A428	U	N/A	N/A	-		-	-	-	1560	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	700	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	698	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	834	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	35	-	586	1900	1221	46.7%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	35	-	448	1900	1221	36.1%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	35	-	674	1900	1221	55.2%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	35	-	668	1900	1221	54.7%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	657	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	519	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**59.0**	**110.5**	**0.0**	**169.5**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**59.0**	**110.5**	**0.0**	**169.5**	**-**	**-**	**-**	**-**
1/2+1/1	716	705	-	-	-	3.6	16.6	-	20.2	101.4	10.7	16.6	27.2
1/3	678	675	-	-	-	3.4	13.8	-	17.2	91.2	10.6	13.8	24.4
1/4	198	198	-	-	-	0.7	0.2	-	0.9	16.1	2.1	0.2	2.4
2/2+2/1	886	869	-	-	-	4.3	19.6	-	23.9	97.2	11.8	19.6	31.4
2/3+2/4	762	736	-	-	-	4.1	21.8	-	25.9	122.1	11.7	21.8	33.5
3/2+3/1	539	539	-	-	-	2.8	1.4	-	4.1	27.6	3.7	1.4	5.0
3/3	243	243	-	-	-	1.2	0.6	-	1.8	26.9	3.2	0.6	3.8
3/4	370	370	-	-	-	2.0	2.2	-	4.2	41.2	5.3	2.2	7.5
4/2+4/1	436	436	-	-	-	1.1	0.2	-	1.3	11.0	2.2	0.2	2.5
4/3+4/4	965	965	-	-	-	3.2	3.2	-	6.4	23.7	8.7	3.2	11.9
5/2+5/1	688	688	-	-	-	4.1	3.8	-	7.9	41.2	5.2	3.8	9.0
5/3	281	281	-	-	-	1.6	1.3	-	2.9	37.3	4.1	1.3	5.4
6/1	625	625	-	-	-	3.6	1.1	-	4.6	26.6	7.3	1.1	8.3
6/2	699	699	-	-	-	4.1	1.6	-	5.6	29.1	8.4	1.6	10.0
6/3	676	676	-	-	-	0.4	1.4	-	1.8	9.5	10.3	1.4	11.7
6/4	198	198	-	-	-	0.1	0.1	-	0.2	4.4	2.2	0.1	2.3
7/1	882	882	-	-	-	0.9	1.4	-	2.3	9.6	8.6	1.4	10.0
7/2	464	464	-	-	-	0.1	0.3	-	0.4	3.1	2.5	0.3	2.8
8/1	882	882	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	464	464	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	847	847	-	-	-	1.0	1.4	-	2.4	10.0	10.3	1.4	11.7
9/2	776	776	-	-	-	2.0	1.0	-	3.0	14.1	5.8	1.0	6.8
9/3	834	834	-	-	-	0.5	1.3	-	1.8	7.8	9.7	1.3	11.0
10/1	188	188	-	-	-	0.6	0.2	-	0.8	14.5	2.0	0.2	2.2

Full Input Data And Results

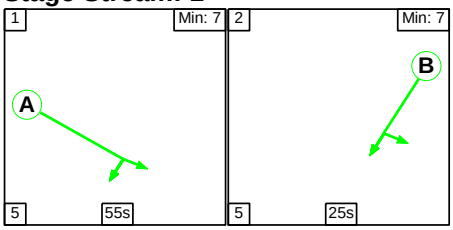
10/2	623	623	-	-	-	2.8	2.4	-	5.2	30.1	9.7	2.4	12.1
10/3	581	581	-	-	-	3.0	1.7	-	4.7	29.1	6.4	1.7	8.1
11/1	874	874	-	-	-	3.7	7.6	-	11.3	46.4	11.2	7.6	18.8
11/2	625	625	-	-	-	0.7	1.1	-	1.7	10.0	4.8	1.1	5.9
11/3	670	670	-	-	-	1.2	1.3	-	2.5	13.4	8.6	1.3	9.9
12/1	1549	1549	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	694	694	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	692	692	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	831	831	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	571	571	-	-	-	0.6	0.4	-	1.1	6.7	7.0	0.4	7.4
14/2	441	441	-	-	-	0.2	0.3	-	0.5	4.1	1.7	0.3	2.0
14/3	674	674	-	-	-	0.6	0.6	-	1.2	6.5	4.2	0.6	4.8
14/4	668	668	-	-	-	1.1	0.6	-	1.7	9.0	3.3	0.6	3.9
15/1	214	214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	642	642	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	512	512	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-12.9	Total Delay for Signalled Lanes (pcuHr):	53.71	Cycle Time (s): 56
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	9.5	Total Delay for Signalled Lanes (pcuHr):	17.37	Cycle Time (s): 56
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	21.3	Total Delay for Signalled Lanes (pcuHr):	2.75	Cycle Time (s): 56
C1 - ORN 43	Stream: 4 PRC for Signalled Lanes (%):	-15.0	Total Delay for Signalled Lanes (pcuHr):	62.08	Cycle Time (s): 56
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	3.5	Total Delay for Signalled Lanes (pcuHr):	18.35	Cycle Time (s): 56
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	0.3	Total Delay for Signalled Lanes (pcuHr):	15.22	Cycle Time (s): 56
	PRC Over All Lanes (%):	-15.0	Total Delay Over All Lanes(pcuHr):	169.48	

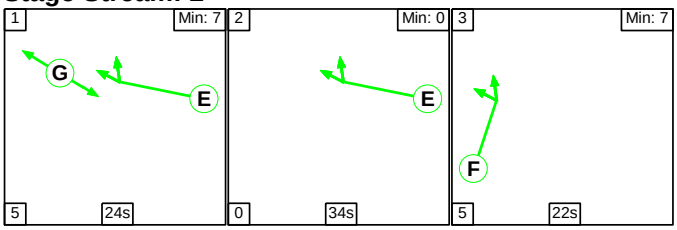
Full Input Data And Results
Scenario 4: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

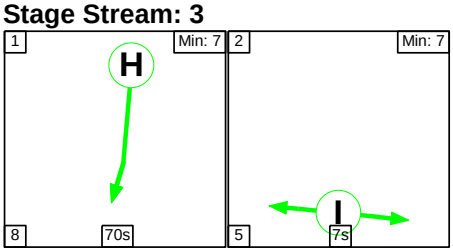
Stage Stream: 1



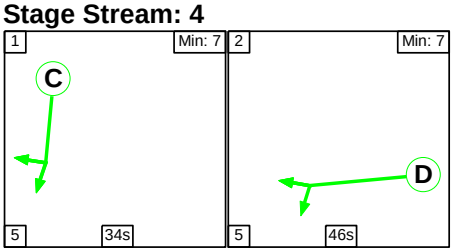
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	55	25
Change Point	17	77

Stage Stream: 2

Stage	1	2	3
Duration	24	34	22
Change Point	15	44	78

Stage Stream: 3

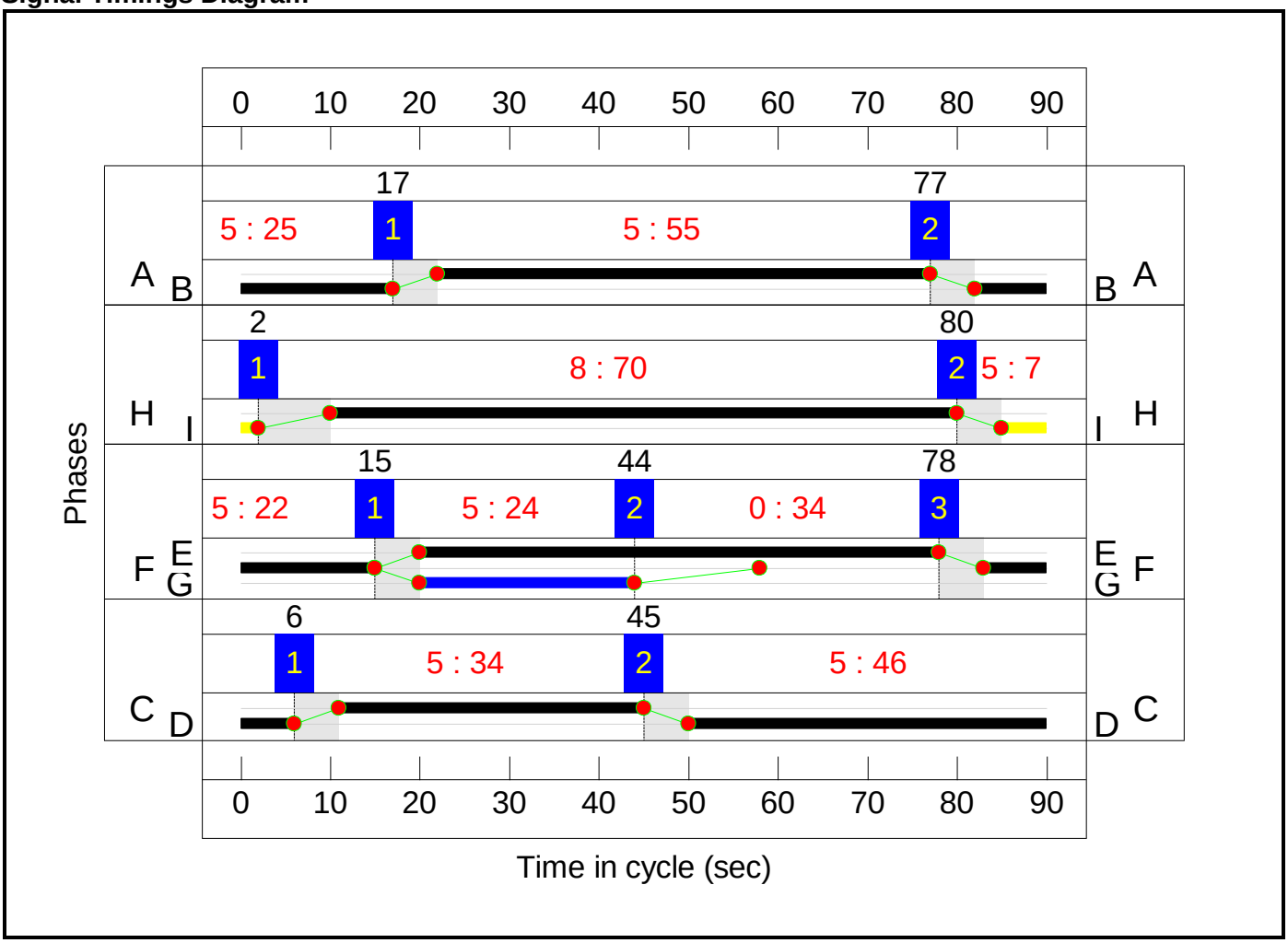
Stage	1	2
Duration	70	7
Change Point	2	80

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	34	46
Change Point	6	45

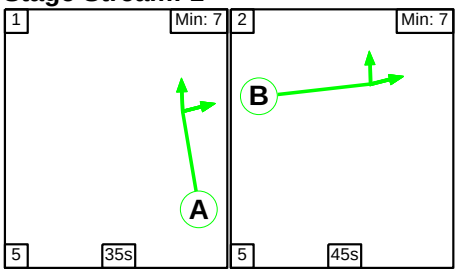
Signal Timings Diagram



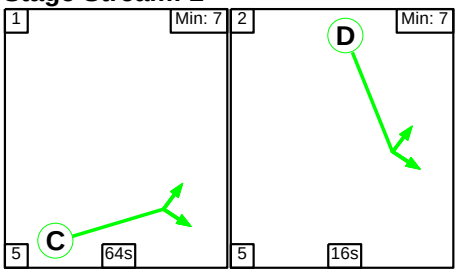
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

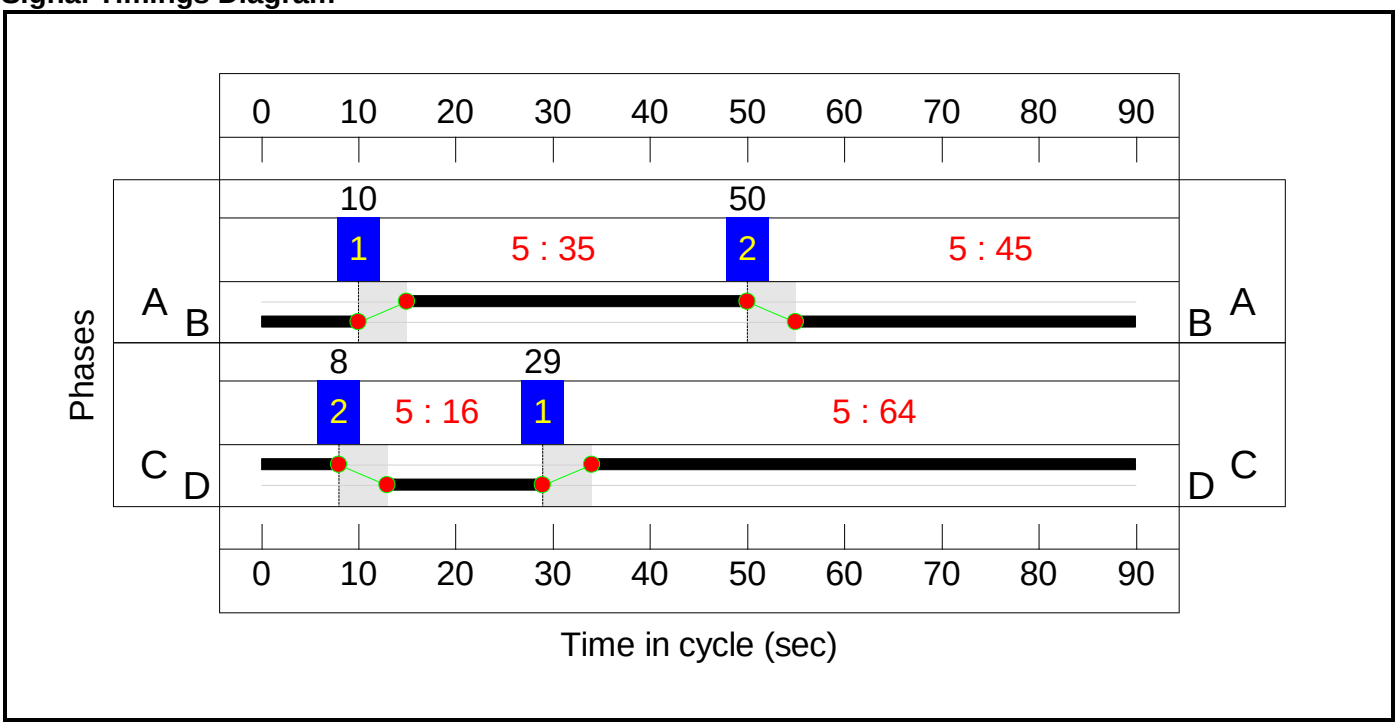
Stage Stream: 1

Stage	1	2
Duration	35	45
Change Point	10	50

Stage Stream: 2

Stage	1	2
Duration	64	16
Change Point	29	8

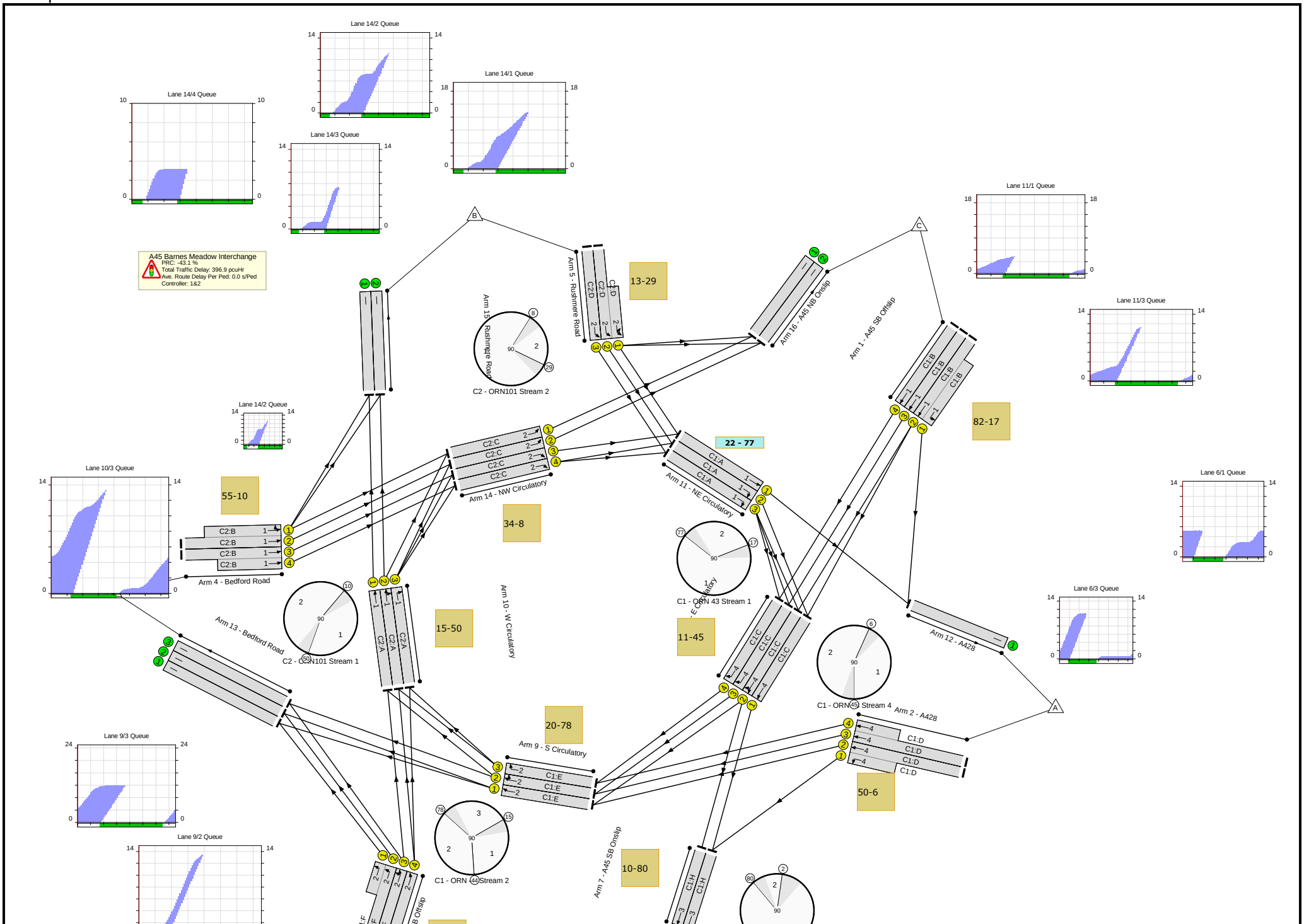
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.8%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.8%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	25	-	697	1800:1800	237+520	92.1 : 92.1%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	25	-	412	1800	520	79.2%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	25	-	20	1800	520	3.8%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	46	-	735	1800:1800	589+614	61.1 : 61.1%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	46	-	1187	1800:1800	126+850	121.7 : 121.7%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	22	-	465	1800:1800	320+318	72.9 : 72.9%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	22	-	368	1800	460	80.0%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	22	-	311	1800	460	67.6%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	45	-	1384	1800:1800	658+677	103.7 : 103.7%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	45	-	1094	1800:1800	299+771	102.2 : 102.2%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	16	-	438	1800:1800	0+340	0.0 : 128.8%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	16	-	424	1800	340	124.7%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	34	-	607	1900	739	80.4%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	34	-	658	1900	739	81.5%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	34	-	577	1900	739	73.7%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	34	-	20	1900	739	2.7%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	70	-	982	1800	1420	68.2%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	70	-	392	1800	1420	24.4%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	982	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	58	-	626	1900	1246	49.5%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	58	-	730	1900	1246	53.8%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	58	-	1054	1900	1246	69.8%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	35	-	596	1900	760	74.8%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	35	-	647	1900	760	71.9%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	35	-	718	1900	760	83.5%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	55	-	626	1900	1182	51.0%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	55	-	607	1900	1182	50.2%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	55	-	605	1900	1182	43.7%
12/1	A428	U	N/A	N/A	-		-	-	-	1105	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	545	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	546	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	502	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	64	-	1091	1900	1372	70.8%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	64	-	1152	1900	1372	76.1%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	64	-	554	1900	1372	39.9%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	64	-	788	1900	1372	56.2%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	683	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	171	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1274	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1335	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**103.7**	**293.1**	**0.0**	**396.9**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**103.7**	**293.1**	**0.0**	**396.9**	**-**	**-**	**-**	**-**
1/2+1/1	697	697	-	-	-	5.7	5.0	-	10.7	55.2	11.6	5.0	16.6
1/3	412	412	-	-	-	3.4	1.8	-	5.2	45.6	9.4	1.8	11.2
1/4	20	20	-	-	-	0.1	0.0	-	0.1	26.7	0.4	0.0	0.4
2/2+2/1	735	735	-	-	-	2.6	0.8	-	3.4	16.7	5.6	0.8	6.4
2/3+2/4	1187	976	-	-	-	18.3	108.5	-	126.8	384.6	36.4	108.5	144.9
3/2+3/1	465	465	-	-	-	3.7	1.3	-	5.0	39.0	5.8	1.3	7.1
3/3	368	368	-	-	-	3.2	1.9	-	5.1	50.1	8.6	1.9	10.5
3/4	311	311	-	-	-	2.6	1.0	-	3.6	42.1	6.9	1.0	7.9
4/2+4/1	1384	1335	-	-	-	9.6	34.5	-	44.1	114.7	29.6	34.5	64.0
4/3+4/4	1094	1071	-	-	-	7.2	23.4	-	30.6	100.6	26.1	23.4	49.5
5/2+5/1	438	340	-	-	-	8.7	51.1	-	59.9	492.0	14.3	51.1	65.4
5/3	424	340	-	-	-	8.0	44.4	-	52.4	444.5	12.7	44.4	57.1
6/1	594	594	-	-	-	2.4	2.0	-	4.4	26.7	5.2	2.0	7.2
6/2	602	602	-	-	-	2.2	2.1	-	4.4	26.0	7.9	2.1	10.0
6/3	545	545	-	-	-	2.0	1.4	-	3.4	22.5	11.0	1.4	12.4
6/4	20	20	-	-	-	0.1	0.0	-	0.1	13.3	0.4	0.0	0.4
7/1	969	969	-	-	-	0.3	1.1	-	1.3	5.0	6.7	1.1	7.8
7/2	346	346	-	-	-	0.0	0.2	-	0.2	1.7	0.0	0.2	0.2
8/1	969	969	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	346	346	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	616	616	-	-	-	0.7	0.5	-	1.2	7.0	7.9	0.5	8.4
9/2	670	670	-	-	-	0.9	0.6	-	1.5	7.9	13.4	0.6	14.0
9/3	870	870	-	-	-	3.7	1.2	-	4.9	20.2	11.9	1.2	13.0
10/1	569	569	-	-	-	2.2	1.5	-	3.6	23.1	13.0	1.5	14.4

Full Input Data And Results

10/2	547	547	-	-	-	2.9	1.3	-	4.2	27.6	8.3	1.3	9.5
10/3	634	634	-	-	-	3.2	2.4	-	5.6	31.7	13.3	2.4	15.7
11/1	603	603	-	-	-	0.9	0.5	-	1.4	8.3	4.3	0.5	4.8
11/2	594	594	-	-	-	3.3	0.5	-	3.8	22.8	10.2	0.5	10.7
11/3	517	517	-	-	-	1.1	0.4	-	1.5	10.2	11.3	0.4	11.7
12/1	1082	1082	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	540	540	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	541	541	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	972	972	-	-	-	1.8	1.2	-	3.0	11.1	13.1	1.2	14.3
14/2	1044	1044	-	-	-	1.6	1.6	-	3.2	11.1	11.2	1.6	12.8
14/3	547	547	-	-	-	0.6	0.3	-	1.0	6.3	7.3	0.3	7.7
14/4	771	771	-	-	-	0.8	0.6	-	1.5	6.8	3.2	0.6	3.8
15/1	653	653	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	168	168	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1114	1114	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1186	1186	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-2.4	Total Delay for Signalled Lanes (pcuHr):	22.69	Cycle Time (s): 90
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	12.5	Total Delay for Signalled Lanes (pcuHr):	21.34	Cycle Time (s): 90
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	31.9	Total Delay for Signalled Lanes (pcuHr):	1.51	Cycle Time (s): 90
C1 - ORN 43	Stream: 4 PRC for Signalled Lanes (%):	-35.2	Total Delay for Signalled Lanes (pcuHr):	142.45	Cycle Time (s): 90
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-15.2	Total Delay for Signalled Lanes (pcuHr):	88.05	Cycle Time (s): 90
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	-43.1	Total Delay for Signalled Lanes (pcuHr):	120.81	Cycle Time (s): 90
	PRC Over All Lanes (%):	-43.1	Total Delay Over All Lanes(pcuHr):	396.86	

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

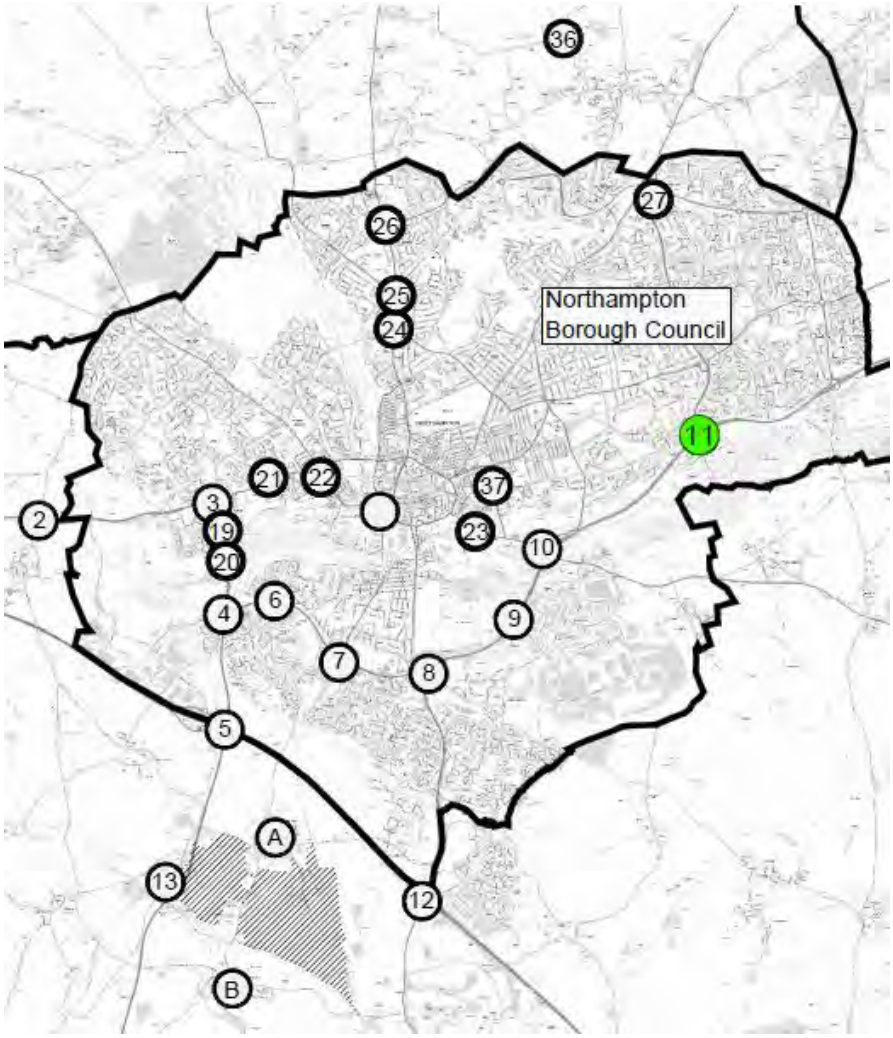
Technical Note No. 19

1 JUNCTION ELEVEN – A45 / A43 / LUMBERTUBS WAY

Existing Junction

1.1 Junction Eleven is a four arm signalised grade separated to the north of the Riverside Retail Park. It connects the A45 to the A43 Lumbertubs Way and Ferries Row. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Eleven Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction eleven were conducted on Thursday 22nd October 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.6 The junction has been set up based on the guidance provided within the LinSig 3 handbook and industry standard guidance. Default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied, further to comments received from NCC and in accordance with guidance contained in LTN 1/09.

1.7 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays, included at **Appendix B**.

1.8 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.9 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015 Base		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A45 North	5	4-7	8
	Arm 2 – Ferris Row	3	2-6	2
	Arm 3 – A45 South	10	8-12	16
	Arm 4 – A43	11	9-14	22
PM Peak Hour (1700-1800)	Arm 1 – A45 North	5	3-6	11
	Arm 2 – Ferris Row	5	3-8	12
	Arm 3 – A45 South	17	12-20	33
	Arm 4 – A43	14	11-18	26

1.10 It is considered that the modelled queues are generally in line with the surveyed queues, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (96 seconds in the AM peak period and 67 seconds in the PM peak period)

Results of the Base Modelling

1.11 The results of the modelling for the existing junction layout, shown in **Figure EL11** are summarised in **Table 2** and junction analysis results are included at **Appendix C**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2015	104.0%	92.9%	79.4%	105.1%	107.3%	106.4%	101.8%	95.3%
	2021 DM	100.8%	86.9%	85.6%	113.3%	92.5%	89.6%	116.3%	104.3%
	2021 DS	95.4%	49.1%	88.1%	117.9%	92.5%	119.4%	122.7%	105.2%
	2031 DM	121.10%	53.90%	76.40%	121.30%	100.40%	112.40%	113.50%	111.00%
	2031 DS	107.2%	44.7%	77.0%	120.3%	107.3%	100.4%	112.4%	97.8%
	2015	20	10	17	77	23	43	45	27

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
Queue – MMQ (PCU)	2021 DM	17	8	20	133	9	13	151	116
	2021 DS	12	4	22	163	9	90	200	85
	2031 DM	33	4	13	199	12	72	126	117
	2031 DS	19	4	13	188	23	38	118	43
Average Delay (sec/pcu)	2015	151.5	115.0	17.9	139.2	138.1	172.2	85.0	35.6
	2021 DM	143.2	83.0	16.6	256.4	70.7	50.4	298.1	190.4
	2021 DS	93.2	47.4	17.0	319.7	70.2	356.6	383.6	126.5
	2031 DM	324.4	59.9	11.7	301.8	78.4	252.0	255.3	222.4
	2031 DS	184.5	21.1	11.4	353.9	164.1	110.6	246.9	43.4

1.12 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2021 AM and PM scenarios, with Arm 4 in the AM peak and Arms 2, 3 and 4 in the PM peak exceeding theoretical capacity as a result by 4.6%, 29.8%, 6.4% and 1.1% respectively. There is also a significant increase in queueing on Arm 4 of 30 PCUs during the AM peak and Arms 2 and 3 of 77 PCUs and 49 PCUs respectively, in the PM peak. Therefore mitigation is considered necessary to address the development's impact.

1.13 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2031 AM and PM scenarios, with Arm 1 exceeding theoretical capacity by 6.9% as a result, in the PM peak. Therefore mitigation is considered necessary to address the development's impact.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2015	2021 DM	2021 DS	2031 DM	2031 DS	2015	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (DoS)	-16.8	-25.9	-31.0	-34.7	-33.7	-19.2	-29.2	-36.3	-26.2	-24.9
Overall Junction Delay (PCUhr)	147	252	291	351	335	180	398	498	403	260

1.14 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for 2021 by 5.1% and an increase of 7.1% for the 2021 PM. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 39 for 2021 AM and 100 PCUhrs for the 2021 PM. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.15 The proposed mitigation is shown in **Appendix J.9** in the TA and summarised is as follows:

- Additional third lane on the western circulatory for right turning traffic; and
- Changing road markings for the existing two lanes to straight ahead only lane and an ahead and right turn only lane on the western circulatory

1.16 The results of the mitigated junction model is shown in **Table 3** and included as **Appendix C.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2021 DS	103.7%	49.1%	81.2%	103.8%	102.1%	104.9%	103.7%	95.9%
	Comparison to 2021 DM	2.9%	-37.8%	-4.4%	-9.5%	9.6%	15.3%	-12.6%	-8.4%
	2031 DS	98.6%	44.7%	74.7%	107.7%	88.3%	85.0%	91.4%	91.2%
	Comparison to 2031 DM	-22.5%	-9.2%	-1.7%	-13.6%	-12.1%	-27.4%	-22.1%	-19.8%
Queue – MMQ (PCU)	2021 DS	20	3	19	78	18	53	82	39
	Comparison to 2021 DM	4	-6	-2	-55	8	40	-69	-77
	2031 DS	9	3	15	108	9	12	30	30
	Comparison to 2031 DM	-24	-1	2	-91	-3	-60	-96	-87
Average Delay (sec/pcu)	2021 DS	170.6	10.4	13.0	108.9	139.7	143.7	103.6	31.3
	Comparison to 2021 DM	27.4	-72.6	-3.6	-147.5	69.0	93.3	-194.5	-159.1
	2031 DS	78.7	11.0	13.7	164.3	55.8	33.2	22.8	20.7

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	Comparison to 2031 DM	-245.7	-48.9	2.0	-137.5	-22.6	-218.8	-232.5	-201.7

1.17 As shown in **Table 4**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2021 DM scenarios. Whilst Arm One shows a decrease in capacity by 2.9%, the other three arms shows improvements, particularly Arm 1 by 37.8% in 2021 AM peak, Furthermore, there is a reduction in queues AM peak and PM peak of 58 PCUs and 98 PCUs respectively, and a reduction in overall delay of over seven minutes in the AM peak and over 11 minutes in the PM peak.

1.18 As shown in **Table 4**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. All arms show improvements, particularly Arm 1 in the AM peak and Arm 2 in the PM peak of 22.5% and 27.4% respectively. Furthermore, there is a reduction in queues AM peak and PM peak of 114 PCUs and 245 PCUs respectively, and a reduction in overall delay of over three minutes in the AM peak and PM peak.

Table 5 – Mitigated Overall Junction Modelling Results

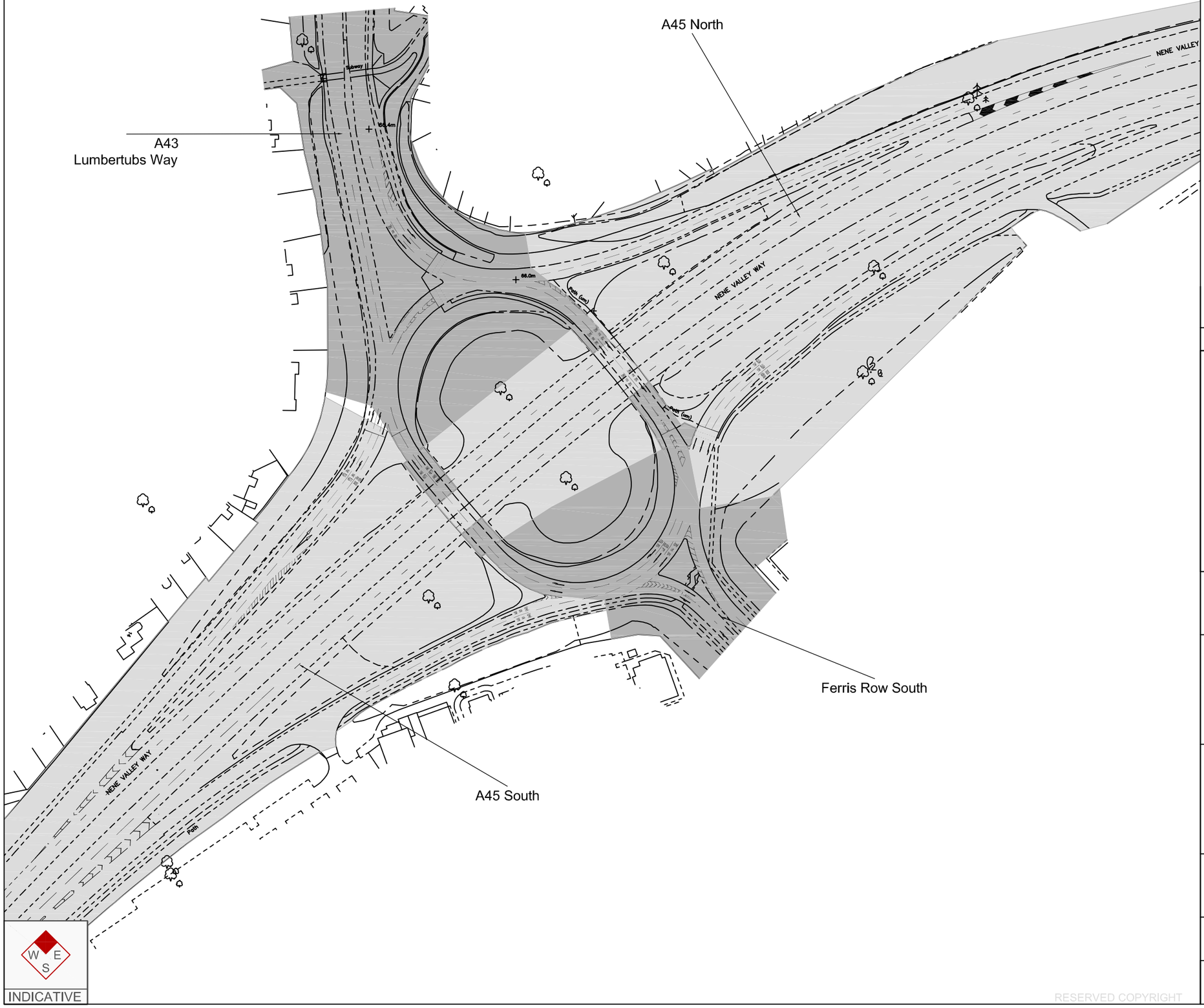
Peak Period	AM				PM			
Scenarios	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM
Overall Junction capacity (DoS)	-15.4	10.5	-19.6	15.1	-16.5	12.7	-1.6	23.3
Overall Junction Delay (PCUhr)	133	-120	168	-183	168	-231	76	-184

1.19 The junction operates 10.5% and 12.7% better in 2021 AM peak and 2021 PM peak scenarios respectively. Finally, the overall junction delay is 120 and 231 PCUhrs better in 2021 DS scenario AM and PM peak respectively

1.20 The junction operates 15.1% and 23.3% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario and 2031 DS scenario PM peak than PM peak 2031 DM scenario. Finally, the overall junction delay is 183 and 184 PCUhrs better in 2031 DS scenario AM and PM peak respectively

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A45/A43 Roundabout Lumbertubs Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	12.06.17	JD	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL11	-

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	58	445	33	2,158	2,693
C - A45 WB IN	481	0	102	3,471	4,054
E - Ferris Row In	149	29	0	0	178
F - A45 EB IN	1,589	1,797	78	33	3,497
Total	2,277	2,271	213	5,661	10,422

Modelled Flows
2021 DM
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	135	497	39	2,345	3,015
C - A45 WB IN	349	0	130	3,862	4,341
E - Ferris Row In	106	35	0	57	198
F - A45 EB IN	2,077	2,340	59	0	4,476
Total	2,667	2,871	228	6,263	12,029

Modelled Flows
2021 DS2
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	149	516	35	2,408	3,107
C - A45 WB IN	318	0	116	3,879	4,313
E - Ferris Row In	113	34	0	37	185
F - A45 EB IN	2,092	2,320	63	1	4,476
Total	2,672	2,870	214	6,325	12,081

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	0	0	0	0
C - A45 WB IN	0	0	0	0	0
E - Ferris Row In	0	0	0	0	0
F - A45 EB IN	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	77	52	6	187	321
C - A45 WB IN	-132	0	28	391	287
E - Ferris Row In	-42	6	0	57	20
F - A45 EB IN	487	543	-18	-33	978
Total	390	600	15	602	1,607

2021 DS2 minus 2015 Base
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	91	71	2	250	414
C - A45 WB IN	-163	0	14	408	259
E - Ferris Row In	-35	5	0	37	7
F - A45 EB IN	502	523	-15	-32	979
Total	395	598	2	663	1,659

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	289	241	1,972	2,502
C - A45 WB IN	435	0	234	0	234
E - Ferris Row In	88	88	0	189	277
F - A45 EB IN	1,618	0	253	0	253
Total	2,141	377	728	2,161	5,407

2021 DM adjusted to count
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	77	341	247	2,159	2,823
C - A45 WB IN	303	0	262	391	521
E - Ferris Row In	46	94	0	246	297
F - A45 EB IN	2,105	543	235	-33	1,231
Total	2,531	977	743	2,763	7,014

2021 DS2 adjusted to count
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	91	360	243	2,222	2,916
C - A45 WB IN	272	0	248	0	493
E - Ferris Row In	53	93	0	226	284
F - A45 EB IN	2,120	0	238	-32	1,232
Total	2,536	975	730	2,824	7,066

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	21	341	0	1,834	2,196
C - A45 WB IN	741	0	105	1,986	2,832
E - Ferris Row In	500	34	0	73	607
F - A45 EB IN	1,753	3,392	281	0	5,426
Total	3,015	3,768	385	3,893	11,061

Modelled Flows
2021 DM
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	78	514	115	2,126	2,833
C - A45 WB IN	557	0	75	2,564	3,196
E - Ferris Row In	194	53	0	210	457
F - A45 EB IN	2,533	3,459	42	0	6,034
Total	3,362	4,025	233	4,900	12,520

Modelled Flows
2021 DS2
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	75	355	225	2,057	2,713
C - A45 WB IN	531	0	88	2,659	3,278
E - Ferris Row In	200	58	0	357	615
F - A45 EB IN	2,701	3,697	70	16	6,483
Total	3,507	4,110	383	5,089	13,089

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	0	0	0	0
C - A45 WB IN	0	0	0	0	0
E - Ferris Row In	0	0	0	0	0
F - A45 EB IN	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	57	172	115	292	637
C - A45 WB IN	-184	0	-29	578	365
E - Ferris Row In	-306	19	0	137	-150
F - A45 EB IN	780	66	-239	0	608
Total	347	258	-153	1,007	1,459

2021 DS2 minus 2015 Base
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	54	14	225	223	517
C - A45 WB IN	-210	0	-17	673	446
E - Ferris Row In	-300	24	0	283	8
F - A45 EB IN	947	304	-211	16	1,057
Total	492	342	-3	1,196	2,027

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	285	307	1,720	2,312
C - A45 WB IN	521	0	239	0	239
E - Ferris Row In	292	302	0	299	601
F - A45 EB IN	1,985	0	320	0	320
Total	2,798	587	866	2,019	6,270

2021 DM adjusted to count
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	57	457	422	2,012	2,949
C - A45 WB IN	337	0	210	578	604
E - Ferris Row In	-14	321	0	436	451
F - A45 EB IN	2,765	66	81	0	928
Total	3,145	845	713	3,026	7,729

2021 DS2 adjusted to count
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	54	299	532	1,943	2,829
C - A45 WB IN	311	0	222	0	685
E - Ferris Row In	-8	326	0	582	609
F - A45 EB IN	2,932	0	109	16	1,377
Total	3,290	929	863	3,215	8,297

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	58	445	33	2,158	2,693
C - A45 WB IN	481	0	102	3,471	4,054
E - Ferris Row In	149	29	0	0	178
F - A45 EB IN	1,589	1,797	78	33	3,497
Total	2,277	2,271	213	5,661	10,422

Modelled Flows
2031 DM
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	204	576	18	2,564	3,362
C - A45 WB IN	273	0	85	4,076	4,435
E - Ferris Row In	124	41	0	0	1,319
F - A45 EB IN	1,652	3,056	71	0	4,779
Total	2,253	3,673	1,340	6,629	13,894

Modelled Flows
2031 DS2
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	149	547	11	2,598	3,305
C - A45 WB IN	274	0	61	4,149	4,484
E - Ferris Row In	123	39	0	0	1,225
F - A45 EB IN	1,691	3,069	82	8	4,851
Total	2,237	3,656	1,258	6,714	13,865

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	0	0	0	0
C - A45 WB IN	0	0	0	0	0
E - Ferris Row In	0	0	0	0	0
F - A45 EB IN	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	147	131	-14	406	669
C - A45 WB IN	-208	0	-16	606	381
E - Ferris Row In	-25	12	0	0	1,141
F - A45 EB IN	62	1,259	-7	-33	1,281
Total	-24	1,401	1,127	968	3,472

2031 DS2 minus 2015 Base
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	91	102	-22	440	612
C - A45 WB IN	-207	0	-41	679	431
E - Ferris Row In	-26	10	0	0	1,047
F - A45 EB IN	101	1,272	4	-24	1,353
Total	-40	1,384	1,046	1,053	3,443

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	289	241	1,972	2,502
C - A45 WB IN	435	0	234	0	234
E - Ferris Row In	88	88	0	189	277
F - A45 EB IN	1,618	0	253	0	253
Total	2,141	377	728	2,161	5,407

2031 DM adjusted to count
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	147	420	227	2,378	3,171
C - A45 WB IN	227	0	218	606	615
E - Ferris Row In	63	100	0	189	1,418
F - A45 EB IN	1,680	1,259	246	-33	1,534
Total	2,117	1,778	1,855	3,129	8,879

2031 DS2 adjusted to count
AM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	91	391	219	2,412	3,114
C - A45 WB IN	228	0	193	679	665
E - Ferris Row In	62	98	0	189	1,324
F - A45 EB IN	1,719	1,272	257	-24	1,606
Total	2,101	1,761	1,774	3,214	8,850

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	21	341	0	1,834	2,196
C - A45 WB IN	741	0	105	1,986	2,832
E - Ferris Row In	500	34	0	73	607
F - A45 EB IN	1,753	3,392	281	0	5,426
Total	3,015	3,768	385	3,893	11,061

Modelled Flows
2031 DM
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	61	293	256	2,027	2,637
C - A45 WB IN	545	0	127	3,166	3,838
E - Ferris Row In	236	73	0	376	685
F - A45 EB IN	2,330	3,896	49	26	6,301
Total	3,173	4,261	432	5,595	13,460

Modelled Flows
2031 DS2
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	86	275	103	2,103	2,566
C - A45 WB IN	693	0	62	3,111	3,866
E - Ferris Row In	187	61	0	204	452
F - A45 EB IN	2,237	3,994	41	14	6,285
Total	3,203	4,329	206	5,432	13,169

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	0	0	0	0
C - A45 WB IN	0	0	0	0	0
E - Ferris Row In	0	0	0	0	0
F - A45 EB IN	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	40	-49	256	193	441
C - A45 WB IN	-196	0	22	1,180	1,006
E - Ferris Row In	-264	38	0	303	78
F - A45 EB IN	577	503	-232	26	874
Total	158	493	46	1,702	2,399

2031 DS2 minus 2015 Base
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	65	-67	103	269	370
C - A45 WB IN	-48	0	-43	1,125	1,034
E - Ferris Row In	-313	27	0	131	-156
F - A45 EB IN	484	601	-239	14	859
Total	188	561	-179	1,538	2,108

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	0	285	307	1,720	2,312
C - A45 WB IN	521	0	239	0	239
E - Ferris Row In	292	302	0	299	601
F - A45 EB IN	1,985	0	320	0	320
Total	2,798	587	866	2,019	6,270

2031 DM adjusted to count
PM Peak

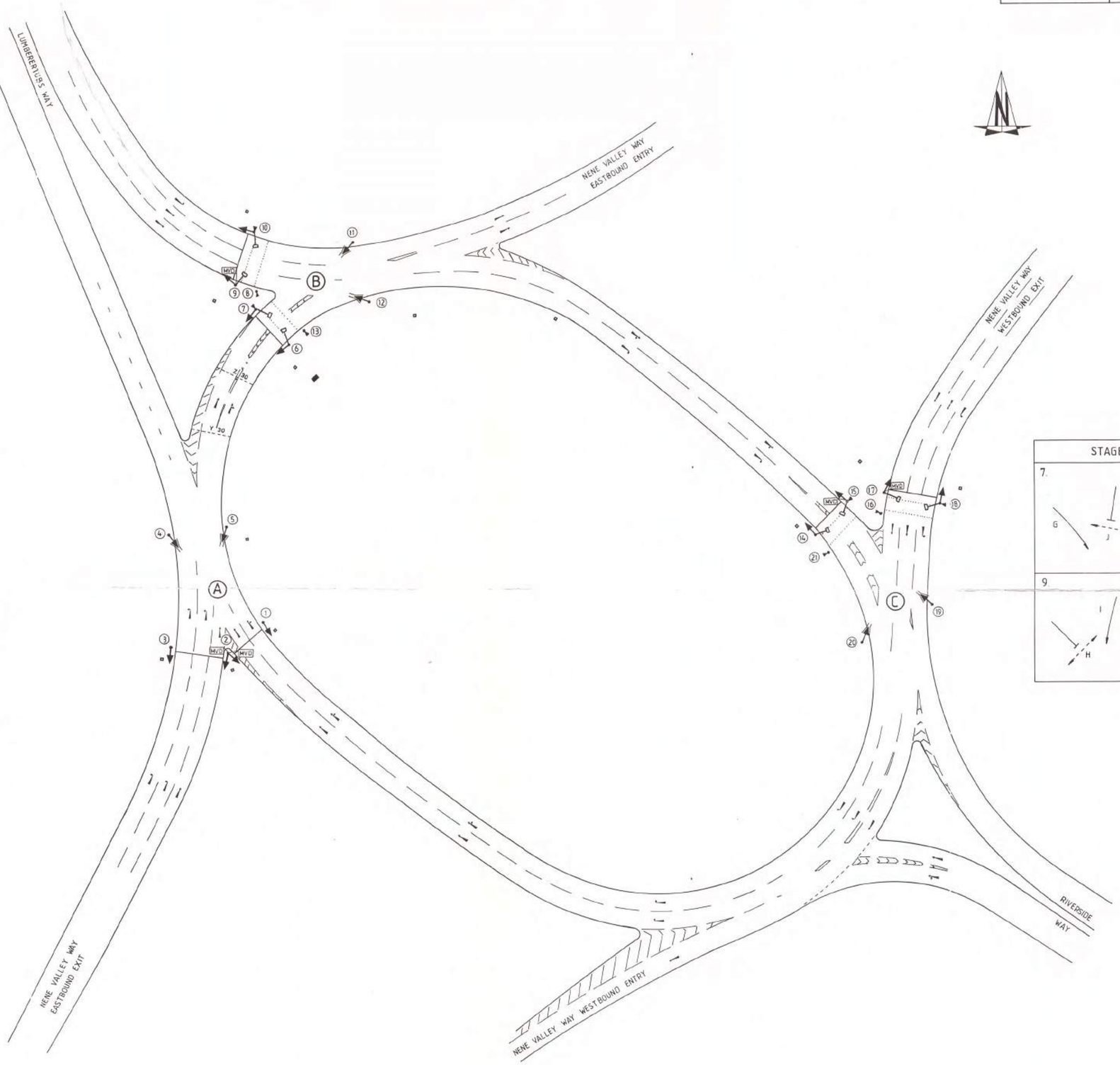
	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	40	236	563	1,913	2,753
C - A45 WB IN	325	0	261		1,245
E - Ferris Row In	28	340	0	602	679
F - A45 EB IN	2,562		88	26	1,194
Total	2,956	1,080	912	3,721	8,669

2031 DS2 adjusted to count
PM Peak

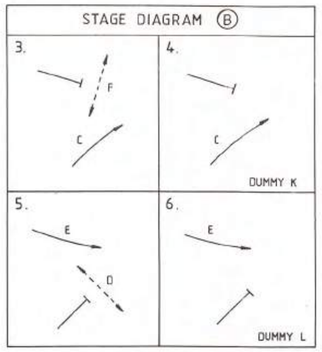
	H - A43 NB OUT	B - A45 EB OUT	D - Ferris Row Out	G - A45 WB OUT	Total
A - A43 SB IN	65	218	410	1,989	2,682
C - A45 WB IN	473	0	196	1,125	1,273
E - Ferris Row In	-21	329	0	430	445
F - A45 EB IN	2,469	601	81	14	1,179
Total	2,986	1,148	687	3,557	8,378

APPENDIX B

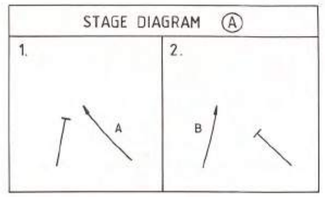
Drawing No.	281 133 / 1 / 1



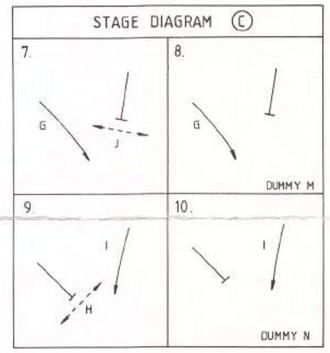
STAGE DIAGRAM (B)



STAGE DIAGRAM (A)



STAGE DIAGRAM (C)



KEY

- 3 ASPECT SIGNAL R.A.G.
- DITTO WITH DEEP VISOR
- DITTO WITH TUNNEL VISOR
- PEDESTRIAN SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- MVD MICROWAVE VEHICLE DETECTOR
- LOOP DETECTOR
- CONTROLLER
- DUCT CHAMBER

Northamptonshire

NORTHAMPTON
NENE VALLEY WAY / LUMBERTUBS WAY
TRAFFIC SIGNAL LAYOUT

No.	Revision	Date

	Name	Date
Drawn	J J P	27 · 4 · 95
Traced		
Checked		
Approved		2 · 5 · 95
Date Issued		

Scale 1 : 500

Michael J. Kendrick C.Eng.,M.I.C.E.,F.I.H.T.
Director of Planning and Transportation

Drawing No. 281 133 / 1 / 1

U.D.O. 3461/92

CUSTOMER DOCUMENTATION

Project :- 00133A Version :- 2 Date :- 26-APR-04

Customer :- NORTHAMPTONSHIRE COUNTY COUNCIL

Site :- NORTHANPTON:NENE VALLEY WAY / LUMBERTUBS WAY

Engineer :- R.LEATHERSICH

Telephone :- 01604 620222

Produced by

TLC 3 Database Generator :- Release 3 Issue 15 (20-Feb-97)

CHKSUM FF06 BZEC

MISCELLANEOUS DETAILS

Coded by JA

Country :-	44	Mains :-	50Hz
Manually selected modes revert on police-panel door closure ?	N	Dimming :-	160V
Need date/time on cold start ?	N	Starting i/g :-	

Mode Priorities

1 Manual

2 VA (manually selected)

3 Fixed Time (manually selected)

4 UTC - - - - - - "TS" sets time to 12:00:00

5 Cableless Linking

6 VA (automatically selected)

SITE LAYOUT

STAGE - PHASE ALLOCATION

Stage stream 1		Stage stream 2		Stage stream 3	
Stage	Phases	Stage	Phases	Stage	Phases
1 *	A	3	C, F	7	G, J
2	B	4 *	C, K	8 *	G, M
11	All-Red	5	D, E	9	H, I
		6	E, L	10	I, N
		12	All-Red	13	All-Red

Start_up stage in each stream is marked thus *.

STAGE SEQS: FXT+VA+CLF+MAN

Y = permitted move, Ya = extra i/g on max change,
Yx = extra i/g on max change if extended, Ys = Conditional movement.

Stream 1

From \ To	1	2	11
1		Y	Y
2	Y		Y
11	Y	Y	

Stream 2

From \ To	3	4	5	6	12
3		Y	Y	Y	Y
4	Y		Y	Y	Y
5	Y	Y		Y	Y
6	Y	Y	Y		Y
12	Y	Y	Y	Y	

Stream 3

From \ To	7	8	9	10	13
7		Y	Y	Y	Y
8	Y		Y	Y	Y
9	Y	Y		Y	Y
10	Y	Y	Y		Y
13	Y	Y	Y	Y	

MANUAL BUTTON INFORMATION

Button	Stage	Phases
All-Red	13	–
	11	–
	12	–
1	1	A
2	2	B
3	3	C, F
4	5	D, E
5	7	G, J
6	9	H, I
7	–	
8	–	

DETECTOR DETAILS

Types :- I = internal pack, X = external/ped button, Z = dummy
O/C = normally open/closed, P = p.d. on 9/18 hr fault

Functions :- R = regular loop, P/B = ped btn without/with "WAIT"
M = MOVA, S/T = SCOOT Occupancy/Count, Q = queue
V = speed, K/W = puffin kerbside/crossing, Z = dummy
L = latching, N = non-latching (call/cancel)
U = unidirectional

No	Title	Type	Func	Phase/stg dem	Phase/stg ext	Timings cal	Timings can	Timings ext	MOVA ID/ dfm	MOVA ID/ Sct	MOVA ID/ fctr
1	A M10	XOP	RL-	A	A			.25	9		
2	B M20	XOP	RL-	B	B			.25	9		
3	C XYZ30	IOP	RL-	C	C			1.5	9		
4	E M40	XOP	RL-	E	E			.25	9		
5	G M50	XOP	RL-	G	G			.25	9		
6	I M60	XOP	RL-	I	I			.25	9		
7	D P/BUTONS	XOP	BL-	D					9		
8	F P/BUTTONS	XOP	BL-	F					9		
9	H P/BUTTONS	XOP	BL-	H					9		
10	J P/BUTTONS	XOP	BL-	J					9		
11	E S10	XO-	rL-	E					9		
12	B S20	XO-	rL-	B					9		

No	Title	Dummy condition / Input address	Wait lamp accessed as
1	A M10	card 1 input 1	
2	B M20	card 1 input 2	
3	C XYZ30	card 1 input 3	
4	E M40	card 1 input 4	
5	G M50	card 1 input 5	
6	I M60	card 1 input 6	
7	D P/BUTONS	card 1 input 7	(amber D)
8	F P/BUTTONS	card 1 input 8	(amber F)
9	H P/BUTTONS	card 1 input 9	(amber H)
10	J P/BUTTONS	card 1 input 10	(red K)
11	E S10	card 1 input 11	
12	B S20	card 1 input 12	

PHASE DETAILS

Types :- FT/FC = Full traffic (British/overseas), DU = dummy
IF/AF = Indicative or Filter arrow, ends in bkout/flashing green
PW/QW = Ped-with-traffic, without/with audible or tactile signal
PU = Ped-with-traffic, puffin sequence
PP/QP = Pelican ped -/+ audible/tactile, PT = Pelican traffic

Phase	location	type	minimum	Assoc'd blackout phase /flash	maximum greens
A	ROUNDABOUT	FT	7 (6)	0 (0)	16 24 24 16
B	NVW E/B SLIP	FT	7 (6)	0 (0)	16 14 20 16
C	RDBT	FT	7 (6)	0 (0)	16 16 16 16
D	RDBT PEDS	PW	7 (6)	0 (0)	0 0 0 0
E	LUMBERTUBS WAY	FT	7 (6)	0 (0)	20 28 22 20
F	LUMBERTUBS PEDS	PW	8 (7)	0 (0)	0 0 0 0
G	ROUNDABOUT	FT	7 (6)	0 (0)	16 26 24 16
H	ROUNDABOUT PEDS	PW	7 (6)	0 (0)	0 0 0 0
I	NVW W/B SLIP	FT	7 (6)	0 (0)	16 24 22 16
J	NVW W/B PEDS	FT	8 (7)	0 (0)	0 0 0 0
K	DUMMY	DU	1 (0)	0 (0)	0 0 0 0
L	DUMMY	DU	1 (0)	0 (0)	0 0 0 0
M	DUMMY	DU	1 (0)	0 (0)	0 0 0 0
N	DUMMY	DU	1 (0)	0 (0)	0 0 0 0

Phase Appearance:-
0 = Always
1 = If demanded at start of interstage
2 = If demanded during interstage or stage
3 = If demanded during window

Phase Termination:-
0 = At end of stage
1 = When associated phase gains right of way
2 = When associated phase loses right of way
3 = After minimum green
4 = After maximum timer expires
5 = After special condition

Phase	location	type	appearance condition	termination condition	colour option
A	ROUNDABOUT	FT	0	0	1
B	NVW R/B SLIP	FT	0	0	1
C	RDBT	FT	0	0	1
D	RDBT PEDS	PW	0	0	1
E	LUMBERTUBS WAY	FT	0	0	1
F	LUMBERTUBS PEDS	PW	0	0	1
G	ROUNDABOUT	FT	0	0	1
H	ROUNDABOUT PEDS	PW	0	0	1
I	NVW W/B SLIP	FT	0	0	1
J	NVW W/B PEDS	FT	0	0	1
K	DUMMY	DU	0	0	1
L	DUMMY	DU	0	0	1
M	DUMMY	DU	0	0	1
N	DUMMY	DU	0	0	1

PHASE INTERGREEN DETAILS

	to B
from A	5 (4)

	to D	to E	to L
from C	5 (4)	5 (4)	5 (4)

	to A
from B	5 (4)

	to C	to F	to K
from E	5 (4)	5 (4)	5 (4)

	to C	to L
from D	9 (8)	3 (2)

	to H	to I	to N
from G	5 (4)	7 (6)	7 (6)

	to E	to K
from F	10 (9)	4 (3)

	to G	to J	to M
from I	7 (6)	5 (4)	7 (6)

	to G	to N
from H	9 (8)	2 (1)

	to I	to M
from J	10 (9)	2 (1)

	to E	to F
from K	5 (4)	2 (1)

	to C	to D
from L	5 (4)	2 (1)

	to I	to J
from M	7 (6)	2 (1)

	to G	to H
from N	7 [6]	2 (1)

STAGE CHANGE TIMINGS

```
Change 1  :     stages   1 -->  2
                lose     A [0]
                gain     B [0]

Change 2  :     stages   1 --> 11
                lose     A [0]

Change 3  :     stages   2 -->  1
                lose     B [0]
                gain     A [0]

Change 4  :     stages   2 --> 11
                lose     B [0]

Change 5  :     stages  11 -->  1
                gain     A [0]

Change 6  :     stages  11 -->  2
                gain     B [0]

Change 7  :     stages   3 -->  4
                lose     F [0]
                gain     K [0]

Change 8  :     stages   3 -->  5
                lose     C [0],  F [0]
                gain     D [0],  E [0]

Change 9  :     stages   3 -->  6
                lose     C [0],  F [0]
                gain     E [0],  L [0]

Change 10 :     stages   3 --> 12
                lose     C [0],  F [0]

Change 11 :     stages   4 -->  3
                lose     K [0]
                gain     F [0]

Change 12 :     stages   4 -->  5
                lose     C [0],  K [0]
                gain     D [0],  E [0]

Change 13 :     stages   4 -->  6
                lose     C [0],  K [0]
                gain     E [0],  L [0]
```

```
Change 14 :     stages   4 --> 12
                lose     C [0],  K [0]

Change 15 :     stages   5 -->  3
                lose     D [0],  E [0]
                gain     C [0],  F [0]

Change 16 :     stages   5 -->  4
                lose     D [0],  E [0]
                gain     C [0],  K [0]

Change 17 :     stages   5 -->  6
                lose     D [0]
                gain     L [0]

Change 18 :     stages   5 --> 12
                lose     D [0],  E [0]

Change 19 :     stages   6 -->  3
                lose     E [0],  L [0]
                gain     C [0],  F [0]

Change 20 :     stages   6 -->  4
                lose     E [0],  L [0]
                gain     C [0],  K [0]

Change 21 :     stages   6 -->  5
                lose     L [0]
                gain     D [0]

Change 22 :     stages   6 --> 12
                lose     E [0],  L [0]

Change 23 :     stages  12 -->  3
                gain     C [0],  F [0]

Change 24 :     stages  12 -->  4
                gain     C [0],  K [0]

Change 25 :     stages  12 -->  5
                gain     D [0],  E [0]

Change 26 :     stages  12 -->  6
                gain     E [0],  L [0]

Change 27 :     stages   7 -->  8
                lose     J [0]
                gain     M [0]

Change 28 :     stages   7 -->  9
                lose     G [0],  J [0]
                gain     H [0],  I [0]
```

```
Change 29 :     stages   7 --> 10
                lose     G [0],  J [0]
                gain     I [0],  N [0]

Change 30 :     stages   7 --> 13
                lose     G [0],  J [0]

Change 31 :     stages   8 -->  7
                lose     M [0]
                gain     J [0]

Change 32 :     stages   8 -->  9
                lose     G [0],  M [0]
                gain     H [0],  I [0]

Change 33 :     stages   8 --> 10
                lose     G [0],  M [0]
                gain     I [0],  N [0]

Change 34 :     stages   8 --> 13
                lose     G [0],  M [0]

Change 35 :     stages   9 -->  7
                lose     H [0],  I [0]
                gain     G [0],  J [0]

Change 36 :     stages   9 -->  8
                lose     H [0],  I [0]
                gain     G [0],  M [0]

Change 37 :     stages   9 --> 10
                lose     H [0]
                gain     N [0]

Change 38 :     stages   9 --> 13
                lose     H [0],  I [0]

Change 39 :     stages  10 -->  7
                lose     I [0],  N [0]
                gain     G [0],  J [0]

Change 40 :     stages  10 -->  8
                lose     I [0],  N [0]
                gain     G [0],  M [0]

Change 41 :     stages  10 -->  9
                lose     N [0]
                gain     H [0]

Change 42 :     stages  10 --> 13
                lose     I [0],  N [0]
```

```
Change 43 :     stages  13 -->  7
                gain     G [0],  J [0]

Change 44 :     stages  13 -->  8
                gain     G [0],  M [0]

Change 45 :     stages  13 -->  9
                gain     H [0],  I [0]

Change 46 :     stages  13 --> 10
                gain     I [0],  N [0]
```

CHANGE CONDNS - FXT + VA

STAGE 1

1 --> 2 Movement no. 1 (change no. 1) Regular maximum.

Demand	dB
Inhibit	f
Extend	eA

STAGE 2

2 --> 1 Movement no. 4 (change no. 3) Regular maximum.

Demand	dA
Inhibit	f
Extend	eB

STAGE 3

3 --> 4 Movement no. 7 (change no. 7)

Demand	t
Inhibit	f
Extend	f

STAGE 4

4 --> 5 Movement no. 10 (change no. 12) Regular maximum.

Demand	dD
Inhibit	f
Extend	eC

```
 4 -->  6   Movement no. 11   (change no. 13)   Regular maximum.

            Demand         dE
            Inhibit        dD
            Extend         eC


 4 -->  3   Movement no. 12   (change no. 11)

            Demand         dF
            Inhibit        dD + dE
            Extend         f

STAGE 5

 5 -->  6   Movement no. 16   (change no. 17)

            Demand         t
            Inhibit        f
            Extend         f

STAGE 6

 6 -->  3   Movement no. 19   (change no. 19)   Regular maximum.

            Demand         dF
            Inhibit        f
            Extend         eE


 6 -->  4   Movement no. 20   (change no. 20)   Regular maximum.

            Demand         dC
            Inhibit        dF
            Extend         eE


 6 -->  5   Movement no. 21   (change no. 21)

            Demand         dD
            Inhibit        dC + dF
            Extend         f

STAGE 7

 7 -->  8   Movement no. 27   (change no. 27)

            Demand         t
            Inhibit        f
            Extend         f
```

STAGE 8

8 --> 9 Movement no. 29 (change no. 32) Regular maximum.

Demand	dH
Inhibit	f
Extend	eG

8 --> 10 Movement no. 30 (change no. 33) Regular maximum.

Demand	dI
Inhibit	dH
Extend	eG

8 --> 7 Movement no. 31 (change no. 31)

Demand	dJ
Inhibit	dH + dI
Extend	f

STAGE 9

9 --> 10 Movement no. 34 (change no. 37)

Demand	t
Inhibit	f
Extend	f

STAGE 10

10 --> 7 Movement no. 36 (change no. 39) Regular maximum.

Demand	dJ
Inhibit	f
Extend	eI

10 --> 8 Movement no. 37 (change no. 40) Regular maximum.

Demand	dG
Inhibit	dJ
Extend	eI

10 --> 9 Movement no. 38 (change no. 41)

Demand	dH
Inhibit	dG + dpJ
Extend	f

STAGE 11

11 --> 1 Movement no. 41 (change no. 5)

Demand t
Inhibit f
Extend f

STAGE 12

12 --> 3 Movement no. 43 (change no. 23)

Demand t
Inhibit f
Extend f

STAGE 13

13 --> 7 Movement no. 45 (change no. 43)

Demand t
Inhibit f
Extend f

CHANGE CONDNS - CLF

STAGE 1

1 --> 2 Movement no. 3 (change no. 1)

Demand cF2 & (cD2 + dB)
Inhibit cP1 & eA + cF1
Extend f
Quit if inhibited or minima unexpired.

STAGE 2

2 --> 1 Movement no. 6 (change no. 3)

Demand cP1 & (cD1 + dA)
Inhibit cP1 & eB + cF2
Extend f
Quit if inhibited or minima unexpired.

STAGE 3

3 --> 5 Movement no. 9 (change no. 8)

```
Demand          cF5 & (cD5 + dD + dE)
Inhibit         cP2 & eC + cF3
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 4

4 --> 5 Movement no. 14 (change no. 12)

```
Demand          cF5 & (cD5 + dD + dE)
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

4 --> 3 Movement no. 15 (change no. 11)

```
Demand          cF3 & dF
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 5

5 --> 3 Movement no. 18 (change no. 15)

```
Demand          cF3 & (dC + dF)
Inhibit         cP2 & eE + cF5
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 6

6 --> 3 Movement no. 25 (change no. 19)

```
Demand          cF3 & (dC + dF)
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

6 --> 5 Movement no. 26 (change no. 21)

```
Demand          cF5 & (cD5 + dD)
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 7

7 --> 9 Movement no. 28 (change no. 28)

```
Demand          cF9 & (cD9 + dH + dI)
Inhibit         cP3 & (eG + mF) + cF7
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 8

8 --> 9 Movement no. 32 (change no. 32)

```
Demand          cF9 & (cD9 + dH + dI)
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

8 --> 7 Movement no. 33 (change no. 31)

```
Demand          cF7 & (cD7 + dpJ)
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 9

9 --> 7 Movement no. 35 (change no. 35)

```
Demand          cF7 & (cD7 + dG + dpJ)
Inhibit         cP3 & eI + cF9
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 10

10 --> 7 Movement no. 39 (change no. 39)

```
Demand          cF7 & (cD7 + dG + dpJ)
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

10 --> 9 Movement no. 40 (change no. 41)

```
Demand          cF9 & (cD9 + dH)
Inhibit         f
Extend          f
Quit if inhibited or minima unexpired.
```

STAGE 11

11 --> 1 Movement no. 42 (change no. 5)

Demand	t
Inhibit	f
Extend	f

STAGE 12

12 --> 4 Movement no. 44 (change no. 24)

Demand	t
Inhibit	f
Extend	f

STAGE 13

13 --> 8 Movement no. 46 (change no. 44)

Demand	t
Inhibit	f
Extend	f

CHANGE CONDNS - UTC

STAGE 1

1 --> 2 Movement no. 2 (change no. 1)

Demand	uF2 & dB
Inhibit	f
Extend	f

STAGE 2

2 --> 1 Movement no. 5 (change no. 3)

Demand	uF1 & dA
Inhibit	f
Extend	f

STAGE 3

3 --> 4 Movement no. 8 (change no. 7)

Demand	t
Inhibit	f
Extend	f

STAGE 4

4 --> 5 Movement no. 13 (change no. 12)

Demand	uF4 & (dD + dE)
Inhibit	uF3 & eC
Extend	f

STAGE 5

5 --> 6 Movement no. 17 (change no. 17)

Demand	t
Inhibit	f
Extend	f

STAGE 6

6 --> 3 Movement no. 22 (change no. 19)

Demand	uF3 & (dC + dF)
Inhibit	uF6
Extend	f

Quit if inhibited or minima unexpired.

6 --> 4 Movement no. 23 (change no. 20)

Demand	uF4 & (dC + mF)
Inhibit	uF6
Extend	f

Quit if inhibited or minima unexpired.

6 --> 5 Movement no. 24 (change no. 21)

Demand	uF5 & dD
Inhibit	uF6
Extend	f

Quit if inhibited or minima unexpired.

STAGE 11

11 --> 1 Movement no. 42 (change no. 5)

Demand	t
Inhibit	f
Extend	f

STAGE 12

12 --> 4 Movement no. 44 (change no. 24)

Demand	t
Inhibit	f
Extend	f

STAGE 13

13 --> 8 Movement no. 46 (change no. 44)

Demand	t
Inhibit	f
Extend	f

TIMETABLE DETAILS

Influence bits :-

PL6 PL3 PL2 PL1 -- -- -- -- MX24 MX34 -- -- -- -- -- --

Entry	Time	Days	Function & Value		Influence bit pattern
1:	06:45:00	MTWTF..	PL	2	0010 xxxx xxxx xxxx
2:	07:45:00	MTWTF..	PL	1	0001 xxxx xxxx xxxx
3:	09:15:00	MTWTF..	PL	2	0010 xxxx xxxx xxxx
4:	09:45:00	.....	PL	0	0000 xxxx xxxx xxxx
5:	15:45:00	MTWTF..	PL	2	0010 xxxx xxxx xxxx
6:	16:15:00	MTWTF..	PL	3	0100 xxxx xxxx xxxx
7:	18:15:00	MTWTF..	PL	2	0010 xxxx xxxx xxxx
8:	18:45:00	MTWTF..	PL	0	0000 xxxx xxxx xxxx
9:	10:00:00	.....S.	PL	2	0010 xxxx xxxx xxxx
10:	17:00:00	.....S.	PL	0	0000 xxxx xxxx xxxx
11:	00:00:00	.....	PL	2	0010 xxxx xxxx xxxx
12:	00:00:00	.....	PL	2	0010 xxxx xxxx xxxx
13:	07:30:00	MTWTF..	MX	2	xxxx xxxx 10xx xxxx
14:	09:30:00	MTWTF..	MX	1	xxxx xxxx 00xx xxxx
15:	16:00:00	MTWTF..	MX	3	xxxx xxxx 01xx xxxx
16:	18:00	MTWTF..	MX	1	xxxx xxxx 00xx xxxx

OTU INTERFACE

Bit	Control Word		Reply Word	
1	F1	card 1 input 32	G1	card 1 output 12
2	D1	card 1 input 31	..	not assigned
3	F2	card 1 input 30	G2	card 1 output 11
4	D2	card 1 input 29	..	not assigned
5	F3	card 1 input 28	G3	card 1 output 10
6	D3	card 1 input 27	..	not assigned
7	F4	card 1 input 26	G4	card 1 output 9
8	D4	card 1 input 25	..	not assigned
9	F5	card 1 input 24	G5	card 1 output 8
10	D5	card 1 input 23	..	not assigned
11	F6	card 1 input 22	G6	card 1 output 7
12	D6	card 1 input 21	..	not assigned
13	..	not assigned	..	not assigned
14	..	not assigned	CF	card 1 output 6
15	..	not assigned	DF	card 1 output 5
16	..	not assigned	LF	card 1 output 4

LAMP MONITORING OPTION

Phase monitored: A, B, C*, D, E*, F, G*, H, I*, J

* - Red lamp failure on this phase affects safety

SPECIAL EVENTS

Event name	Pulse ?	Event number	Up-ramp time	Down-ramp time
won	N	2	0.25	0
utcm	N	19	0	0.25
lfl	N	24	0.25	0.25
gclrC	Y	34	0	5.75
gclrE	Y	35	0	5.75
gclrG	Y	36	0	7.75

EVENT FORMULAE

Event no.	name	Formula
2	won	= -f
3	woff	= woff + won.F & -won & -off
4	%bo	= bo
5	veA	= ed1
6	veB	= ed2
7	veC	= ed3
8	veE	= ed4
9	veG	= ed5
10	veI	= ed6
11	off	= woff + (ar & -won) + off & -won.R # %bo.R
12	rdA	= veA.O + rdA & -gA
13	rdB	= veB.O + rdB & -gB
14	rdC	= veC.O + rdC & -gC

Event no.	name	Formula
15	rdE	= veE.O + rdE & -gE
16	rdG	= veG.O + rdG & -gG
17	rdI	= veI.O + rdI & -gI
18	utcm2	= uF3+uF4 + uF5+uF6
19	utcm	= utcm1 & utcm2
20	dA	= dpA + rdA + mF + uD1
21	eA	= epA + ed1 + mF + uD1
22	dB	= dpB + rdB + mF + uD2
23	eB	= epB + ed2 + mF + uD2
24	lf1	= -lf1 & lf
25	dC	= dpC + rdC + mF + uD3
26	eC	= epC + ed3 + mF + uD3
27	dE	= dpE + rdE + mF + uD4
28	eE	= epE + ed4 + mF + uD4
29	dG	= dpG + rdG + mF + uD5
30	eG	= epG + ed5 + mF + uD5
31	dI	= dpI + rdI + mF + uD6
32	eI	= epI + ed6 + mF + uD6
33	qG1G2	= mM + bm + lof + off
34	gclrC	= -gC
35	gclrE	= -gE
36	gclrG	= -gG
37	dD	= dpD & -sf2C
38	dF	= dpF & -sf2E

Event no.	name	Formula
39	dH	= dpH & -sf2G
40	uF6	= uF6
41	qG6	= s6 & gE & gL
42	zutc	= utcm & -(bf+bv+bm)
43	zman	= bm
44	qCF	= cf
45	qDF	= df
46	qLF	= lf
47	zclf	= -tPL0 & -(bf+bv)
48	qG1	= s1 & gA + qG1G2
49	qG2	= s2 & gB + qG1G2
50	qG3	= s3 & gC & gF + qG1G2
51	qG4	= s4 & gC & gK + qG1G2
52		= dD + dE
53		= dC + dF
54		= dH + dI
55		= dG + dpJ
56		= uF2 & dB
57		= uF1 & dA
58		= uF4 & (dD + dE)
59		= uF3 & eC
60	zva	= -bf
61	dfl	= df + bt # lfl
62	dim	= iss & -sw32

Event no.	name	Formula
63	%cd012	= cF2 & (cD2 + dB)
64	%ci012	= cP1 & eA + cF1
65	%cd021	= cF1 & (cD1 + dA)
66	%ci021	= cP1 & eB + cF2
67	%cd045	= cF5 & (cD5 + dD + dE)
68	%ci035	= cP2 & eC + cF3
69	%cd043	= cF3 & dF
70	%cd063	= cF3 & (dC + dF)
71	%ci053	= cP2 & eE + cF5
72	%ud063	= uF3 & (dC + dF)
73	%ud064	= uF4 & (dC + mF)
74	%ud065	= uF5 & dD
75	%cd065	= cF5 & (cD5 + dD)
76	%cd089	= cF9 & (cD9 + dH + dI)
77	%ci079	= cP3 & (eG + mF) + cF7
78	%cd087	= cF7 & (cD7 + dpJ)
79	%cd107	= cF7 & (cD7 + dG + dpJ)
80	%ci097	= cP3 & eI + cF9
81	%cd109	= cF9 & (cD9 + dH)
82	begD	= -sf2C
83	finD	= sf2C
84	qG5	= s5 & gD & gE
85	lmxD	= sf1C & gclrC
86	begF	= -sf2E

Event no.	name	Formula
87	finF	= sf2E
88	dJ	= dpJ
89	lmxF	= sf1E & gclrE
90	begH	= -sf2G
91	finH	= sf2G
92	mnc	= mF
93	lmxH	= sf1G & gclrG

TRAFFIC CONTROL – TIMING CHANGES	TCF 8 Rev 1

SITE: A45 Riverside / A43 Lumbertubs Way	**ORN:** 133
Reasons for timing changes: Amend timetable to allow Plan 2 to run on Sundays (in addition to Saturdays) 10:00-17:00	

Type of Controller: TSC3			
Parameter to be changed	**Existing Settings**		**Required Settings**
	From records	**As found**	
TMT 9	SUN 2	SUN 2	SUN 1
TMT 10	SUN 2	SUN 2	SUN 1
08/7/15			
TMT 2	TIM 07 45 00	TIM 07 45 00	TIM 07 30 00

Engineered by: Tanya
Approved by (if safety related):
Controller records updated by:
FRAS updated by:

Controller changed by: Tanya	**Date:** 04/06/15

ORN 133 ~ Nene Valley Way / Lumbercubs Way / Riverside

Date:
Form: 14 - 1

CABLELESS LINK MODE

PLAN No 1 (AM peak)				PLAN No 2 (off peak)			
Stream No	Action Time	Influence	Related Stage	Stream No	Action Time	Influence	Related Stage
	5	B IM	1	1	0	B IM	1
	36	B IM	2	1	30	C DD	2
	65	E PRV	1	1	45	E PRV	1
	43	C DD	3	2	25	C DD	3
	63	E PRV	5	2	47	E PRV	5
	73	B IM	5	2	0	B IM	5
	23	D HOLD	STREAM 2	2	10	D HOLD	STREAM 2
	6	B IM	7	3	54	B IM	7
	40	D HOLD	STREAM 3	3	0	D HOLD	STREAM 3
	58	B DD	9	3	37	C DD	9
	65	E PRV	7	3	42	E PPV	7
Cycle Time	75			Cycle Time	60		

Stage A - Phase B

ORN 133: Nene Valley Way / Lumbercubs Way / Riverside

*Date: 11/10/04

Date:

Form: 14 - 2

CABLELESS LINK MODE

PLAN No 3 (PM peak)				PLAN No 4 (nightime off peak)			
Stream No	Action Time	Influence	Related Stage	Stream No	Action Time	Influence	Related Stage
	73	B IM	1				
	28	B IM	2				
	60	E PRV	1				
	30	C DD	3				
	55	E PRV	5				
	0	B IM	5				
	10	D HOLD	STREAM 3				
	65	B IM	7				
	0	D HOLD	STREAM 3				
	43	B IM	9				
	50	E PRV	7				
Cycle Time 75				Cycle Time			

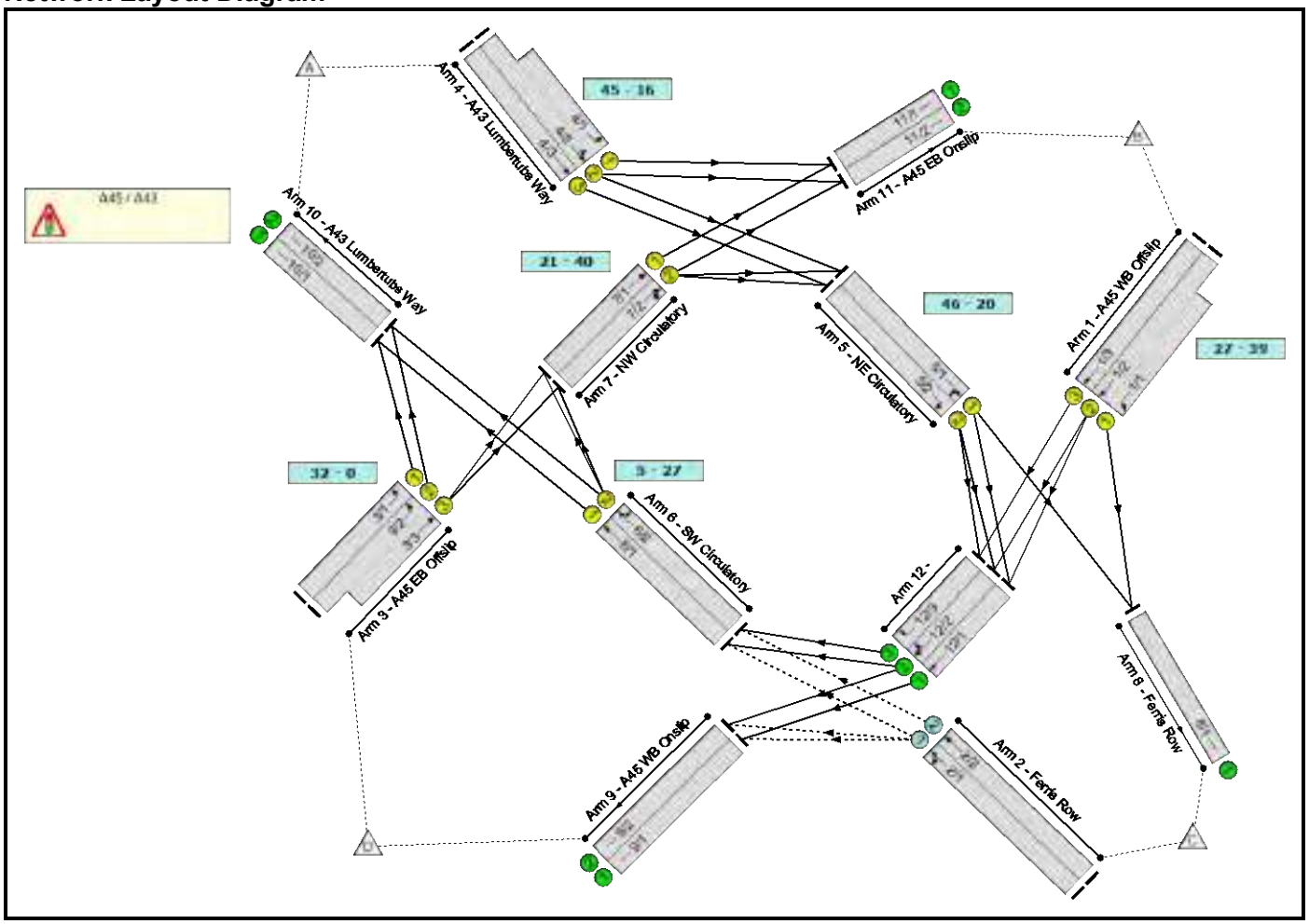
APPENDIX C

Full Input Data And Results

User and Project Details

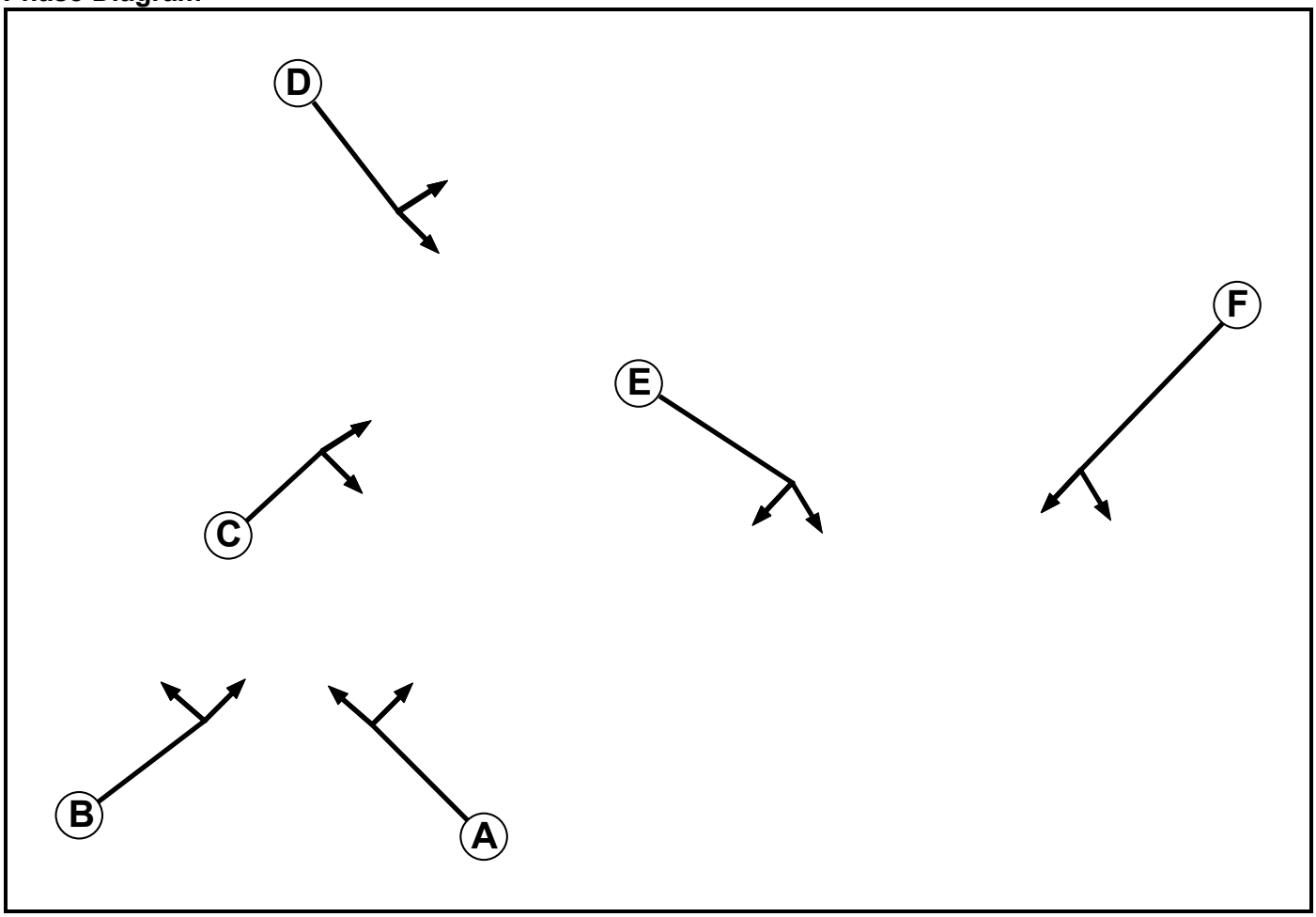
Project:	Rail Central
Title:	Junction 11
Location:	A45, Nene Valley Way (south); A43, Lumbertubs Way/ A45, Nene Valley Way (north)/ Ferris Row
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

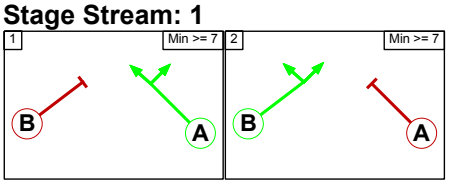
Terminating Phase	Starting Phase					
	A	B	C	D	E	F
A		5	-	-	-	-
B	5		-	-	-	-
C	-	-		5	-	-
D	-	-	5		-	-
E	-	-	-	-		7
F	-	-	-	-	7	

Phases in Stage

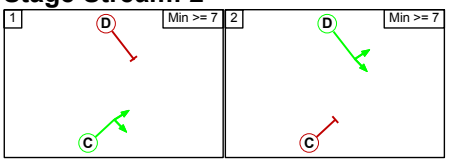
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F

Stage Diagram

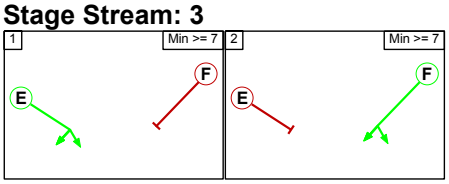
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 3

	To Stage		
From Stage		1	2
	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 / A43

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (Ferris Row)	6/1 (Ahead)	1000	0	12/1	0.33	All	-	-	-	-	-
				12/2	0.33	All					
	9/1 (Left)	1250	0	12/1	0.33	All					
	9/2 (Left)	1000	0	12/1	0.33	All					
				12/2	0.33	To 9/2 (Ahead)					
2/2 (Ferris Row)	6/2 (Ahead)	1250	0	12/1	0.33	All	-	-	-	-	-
				12/2	0.33	All					
				12/3	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A45 / A43

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A45 WB Offslip)	U	F	2	3	11.3	User	1800	-	-	-	-	-
1/2 (A45 WB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A45 WB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Ferris Row)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
											Arm 9 Left	120.00
2/2 (Ferris Row)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
3/1 (A45 EB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/2 (A45 EB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/3 (A45 EB Offslip)	U	B	2	3	12.2	User	1800	-	-	-	-	-
4/1 (A43 Lumbertubs Way)	U	D	2	3	9.0	User	1800	-	-	-	-	-
4/2 (A43 Lumbertubs Way)	U	D	2	3	60.0	User	1800	-	-	-	-	-
4/3 (A43 Lumbertubs Way)	U	D	2	3	60.0	User	1800	-	-	-	-	-
5/1 (NE Circulatory)	U	E	2	3	19.0	User	1900	-	-	-	-	-
5/2 (NE Circulatory)	U	E	2	3	20.5	User	1900	-	-	-	-	-
6/1 (SW Circulatory)	U	A	2	3	20.7	User	1900	-	-	-	-	-
6/2 (SW Circulatory)	U	A	2	3	24.3	User	1900	-	-	-	-	-
7/1 (NW Circulatory)	U	C	2	3	5.9	User	1900	-	-	-	-	-

7/2 (NW Circulatory)	U	C	2	3	6.4	User	1900	-	-	-	-	-
8/1 (Ferris Row)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (A45 WB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A45 WB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A45 EB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A45 EB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	6.1	Inf	-	-	-	-	-	-
12/2	U		2	3	6.1	Inf	-	-	-	-	-	-
12/3	U		2	3	6.1	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2015 Base AM'	08:00	09:00	01:00	
2: '2015 Base PM'	17:00	18:00	01:00	
3: '2021 DM AM'	08:00	09:00	01:00	
4: '2021 DM PM'	17:00	18:00	01:00	
5: '2021 DS AM'	08:00	09:00	01:00	
6: '2021 DS PM'	17:00	18:00	01:00	
7: '2031 DM AM'	08:00	09:00	01:00	
8: '2031 DM PM'	17:00	18:00	01:00	
9: '2031 DS AM'	08:00	09:00	01:00	
10: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2015 Base AM' (FG1: '2015 Base AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	289	241	1972	2502
	B	435	0	234	0	669
	C	88	88	0	189	365
	D	1618	0	253	0	1871
	Tot.	2141	377	728	2161	5407

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2015 Base AM
Junction: A45 / A43	
1/1 (short)	234
1/2 (with short)	460(In) 226(Out)
1/3	209
2/1	218
2/2	147
3/1	841
3/2 (with short)	1030(In) 777(Out)
3/3 (short)	253
4/1 (short)	280
4/2 (with short)	1300(In) 1020(Out)
4/3	1202
5/1	1264
5/2	1202
6/1	255
6/2	356
7/1	88
7/2	253
8/1	728
9/1	864
9/2	1297
10/1	1096
10/2	1045
11/1	368
11/2	9
12/1	770
12/2	1428
12/3	209

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	13.3 % 86.7 %	1944	1944
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2015 Base PM' (FG2: '2015 Base PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	285	307	1720	2312
	B	521	0	239	0	760
	C	292	302	0	299	893
	D	1985	0	320	0	2305
	Tot.	2798	587	866	2019	6270

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2015 Base PM
Junction: A45 / A43	
1/1 (short)	239
1/2 (with short)	556(In) 317(Out)
1/3	204
2/1	462
2/2	431
3/1	1034
3/2 (with short)	1271(In) 951(Out)
3/3 (short)	320
4/1 (short)	285
4/2 (with short)	1186(In) 901(Out)
4/3	1126
5/1	1221
5/2	1126
6/1	480
6/2	635
7/1	289
7/2	333
8/1	866
9/1	743
9/2	1276
10/1	1514
10/2	1284
11/1	574
11/2	13
12/1	594
12/2	1443
12/3	204

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	35.3 % 64.7 %	1949	1949
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	77	341	247	2159	2824
	B	303	0	262	0	565
	C	46	94	0	246	386
	D	2015	0	235	0	2250
	Tot.	2441	435	744	2405	6025

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: A45 / A43	
1/1 (short)	262
1/2 (with short)	339(In) 77(Out)
1/3	226
2/1	292
2/2	94
3/1	1049
3/2 (with short)	1201(In) 966(Out)
3/3 (short)	235
4/1 (short)	297
4/2 (with short)	1464(In) 1167(Out)
4/3	1360
5/1	1358
5/2	1360
6/1	200
6/2	320
7/1	94
7/2	235
8/1	744
9/1	999
9/2	1406
10/1	1249
10/2	1192
11/1	391
11/2	44
12/1	876
12/2	1437
12/3	226

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	15.8 % 84.2 %	1945	1945
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	57	457	422	2012	2948
	B	337	0	210	0	547
	C	0	321	0	436	757
	D	2765	0	81	0	2846
	Tot.	3159	778	713	2448	7098

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: A45 / A43	
1/1 (short)	210
1/2 (with short)	432(In) 222(Out)
1/3	115
2/1	436
2/2	321
3/1	1389
3/2 (with short)	1457(In) 1376(Out)
3/3 (short)	81
4/1 (short)	272
4/2 (with short)	1550(In) 1278(Out)
4/3	1398
5/1	1174
5/2	1398
6/1	279
6/2	436
7/1	174
7/2	228
8/1	713
9/1	889
9/2	1559
10/1	1668
10/2	1491
11/1	446
11/2	332
12/1	671
12/2	1620
12/3	115

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	0.0 % 100.0 %	1941	1941
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 5: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	91	360	243	2222	2916
	B	272	0	248	0	520
	C	53	93	0	226	372
	D	2120	0	238	0	2358
	Tot.	2536	453	729	2448	6166

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS AM
Junction: A45 / A43	
1/1 (short)	248
1/2 (with short)	406(In) 158(Out)
1/3	114
2/1	227
2/2	145
3/1	1092
3/2 (with short)	1266(In) 1028(Out)
3/3 (short)	238
4/1 (short)	210
4/2 (with short)	1507(In) 1297(Out)
4/3	1409
5/1	1385
5/2	1409
6/1	250
6/2	259
7/1	93
7/2	238
8/1	729
9/1	1017
9/2	1431
10/1	1342
10/2	1194
11/1	303
11/2	150
12/1	904
12/2	1567
12/3	114

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	0.4 % 99.6 %	1941	1941
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 6: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	54	299	532	1943	2828
	B	311	0	222	0	533
	C	0	326	0	582	908
	D	2932	0	109	16	3057
	Tot.	3297	625	863	2541	7326

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS PM
Junction: A45 / A43	
1/1 (short)	222
1/2 (with short)	431(In) 209(Out)
1/3	102
2/1	582
2/2	326
3/1	1479
3/2 (with short)	1578(In) 1453(Out)
3/3 (short)	125
4/1 (short)	178
4/2 (with short)	1462(In) 1284(Out)
4/3	1366
5/1	1286
5/2	1368
6/1	263
6/2	428
7/1	184
7/2	267
8/1	863
9/1	936
9/2	1605
10/1	1742
10/2	1555
11/1	362
11/2	263
12/1	645
12/2	1577
12/3	102

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	0.0 % 100.0 %	1941	1941
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	147	420	227	2378	3172
	B	227	0	218	0	445
	C	63	100	0	189	352
	D	1680	0	246	0	1926
	Tot.	2117	520	691	2567	5895

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DM AM
Junction: A45 / A43	
1/1 (short)	218
1/2 (with short)	348(In) 130(Out)
1/3	97
2/1	189
2/2	163
3/1	836
3/2 (with short)	1090(In) 844(Out)
3/3 (short)	246
4/1 (short)	241
4/2 (with short)	1651(In) 1410(Out)
4/3	1521
5/1	1477
5/2	1521
6/1	277
6/2	260
7/1	87
7/2	259
8/1	691
9/1	1098
9/2	1469
10/1	1113
10/2	1004
11/1	328
11/2	192
12/1	1004
12/2	1651
12/3	97

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	0.0 % 100.0 %	1941	1941
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	40	236	563	1913	2752
	B	325	0	261	0	586
	C	28	340	0	602	970
	D	2562	0	88	26	2676
	Tot.	2955	576	912	2541	6984

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DM PM
Junction: A45 / A43	
1/1 (short)	261
1/2 (with short)	467(In) 206(Out)
1/3	119
2/1	602
2/2	368
3/1	1282
3/2 (with short)	1394(In) 1280(Out)
3/3 (short)	114
4/1 (short)	143
4/2 (with short)	1421(In) 1278(Out)
4/3	1331
5/1	1296
5/2	1334
6/1	246
6/2	487
7/1	187
7/2	267
8/1	912
9/1	946
9/2	1595
10/1	1528
10/2	1427
11/1	330
11/2	246
12/1	645
12/2	1540
12/3	119

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	0.0 % 100.0 %	1941	1941
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 9: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	91	391	219	2412	3113
	B	228	0	193	0	421
	C	62	98	0	189	349
	D	1719	0	257	0	1976
	Tot.	2100	489	669	2601	5859

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DS AM
Junction: A45 / A43	
1/1 (short)	193
1/2 (with short)	349(In) 156(Out)
1/3	72
2/1	189
2/2	160
3/1	859
3/2 (with short)	1117(In) 860(Out)
3/3 (short)	257
4/1 (short)	224
4/2 (with short)	1610(In) 1386(Out)
4/3	1503
5/1	1476
5/2	1503
6/1	247
6/2	232
7/1	88
7/2	267
8/1	669
9/1	1094
9/2	1507
10/1	1106
10/2	994
11/1	312
11/2	177
12/1	1000
12/2	1659
12/3	72

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	0.0 % 100.0 %	1941	1941
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 10: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	65	218	410	1989	2682
	B	473	0	196	0	669
	C	0	329	0	430	759
	D	2469	0	81	14	2564
	Tot.	3007	547	687	2433	6674

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DS PM
Junction: A45 / A43	
1/1 (short)	196
1/2 (with short)	475(In) 279(Out)
1/3	194
2/1	430
2/2	329
3/1	1236
3/2 (with short)	1328(In) 1233(Out)
3/3 (short)	95
4/1 (short)	127
4/2 (with short)	1385(In) 1258(Out)
4/3	1297
5/1	1261
5/2	1298
6/1	344
6/2	523
7/1	177
7/2	247
8/1	687
9/1	985
9/2	1448
10/1	1580
10/2	1427
11/1	304
11/2	243
12/1	770
12/2	1577
12/3	194

Full Input Data And Results

Lane Saturation Flows

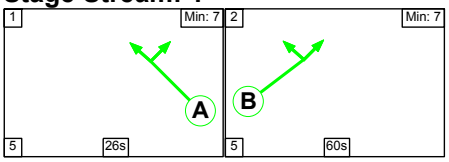
Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 WB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 WB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 120.00	0.0 % 100.0 %	1941	1941
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1965	1965
3/1 (A45 EB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 EB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 EB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf

11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

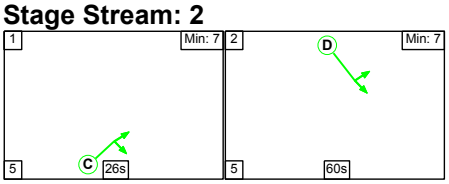
Scenario 1: '2015 Base AM' (FG1: '2015 Base AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

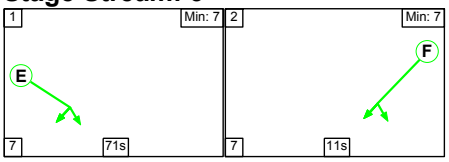
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	60
Change Point	14	45

Stage Stream: 2

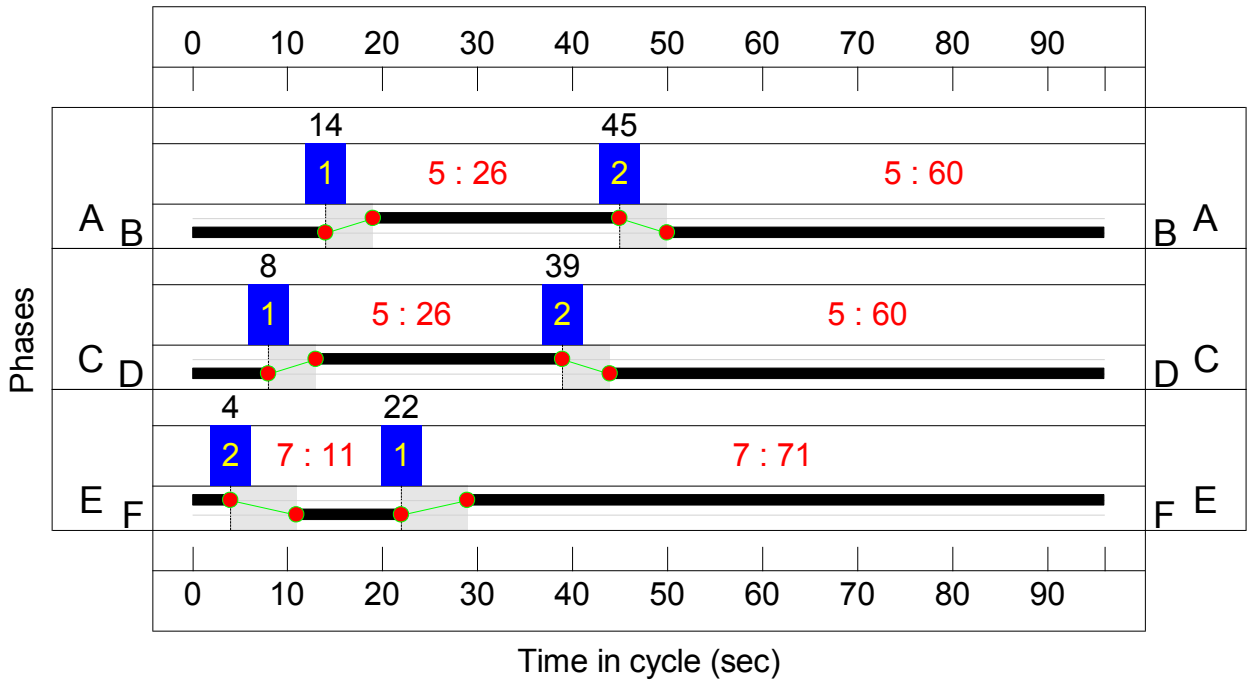
Stage	1	2
Duration	26	60
Change Point	8	39

Stage Stream: 3

Stage	1	2
Duration	71	11
Change Point	22	4

Full Input Data And Results

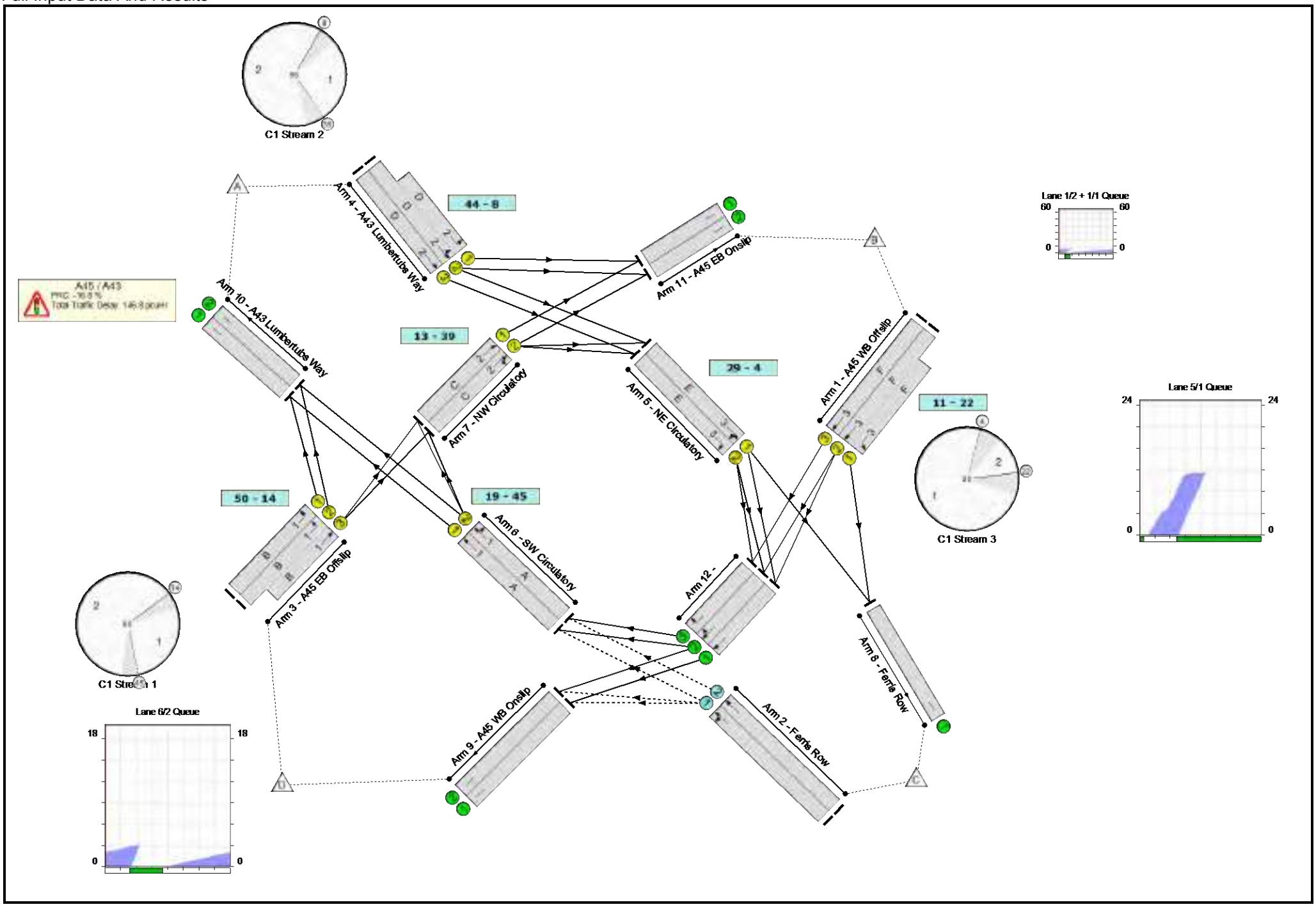
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.1%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**105.1%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	11	-	460	1800:1800	225+225	100.4 : 104.0%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	11	-	209	1800	225	92.9%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	218	1944	430	50.7%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	147	1965	488	30.1%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	60	-	841	1800	1144	73.5%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	60	-	1030	1800:1800	979+319	79.4 : 79.4%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	60	-	1300	1800:1800	970+266	105.1 : 105.1%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	60	-	1202	1800	1144	105.1%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	71	-	1264	1900	1425	85.2%
5/2	NE Circulatory Right	U	3	N/A	E		1	71	-	1202	1900	1425	80.3%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	26	-	255	1900	534	47.5%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	26	-	356	1900	534	66.6%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	26	-	88	1900	534	16.5%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	26	-	253	1900	534	47.3%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	728	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	864	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1297	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1096	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1045	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	368	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	9	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	770	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1428	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	209	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**365**	**0**	**0**	**41.1**	**105.7**	**0.0**	**146.8**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**365**	**0**	**0**	**41.1**	**105.7**	**0.0**	**146.8**	**-**	**-**	**-**	**-**
1/2+1/1	460	450	-	-	-	5.8	13.5	-	19.4	151.5	6.5	13.5	20.0
1/3	209	209	-	-	-	2.4	4.3	-	6.7	115.0	5.5	4.3	9.8
2/1	218	218	218	0	0	0.6	0.5	-	1.1	18.1	3.3	0.5	3.8
2/2	147	147	147	0	0	0.0	0.2	-	0.2	5.3	0.2	0.2	0.5
3/1	841	841	-	-	-	2.8	1.4	-	4.2	17.9	15.2	1.4	16.6
3/2+3/3	1030	1030	-	-	-	3.0	1.9	-	4.9	17.0	13.9	1.9	15.8
4/2+4/1	1300	1236	-	-	-	9.3	39.9	-	49.3	136.5	37.1	39.9	77.1
4/3	1202	1144	-	-	-	9.3	37.2	-	46.5	139.2	33.6	37.2	70.8
5/1	1215	1215	-	-	-	2.3	2.8	-	5.1	15.0	11.5	2.8	14.3
5/2	1144	1144	-	-	-	1.5	2.0	-	3.5	11.0	6.0	2.0	8.1
6/1	254	254	-	-	-	0.2	0.5	-	0.6	9.2	0.4	0.5	0.8
6/2	356	356	-	-	-	1.1	1.0	-	2.1	21.6	3.3	1.0	4.3
7/1	88	88	-	-	-	0.2	0.1	-	0.3	13.7	0.4	0.1	0.5
7/2	253	253	-	-	-	2.6	0.4	-	3.0	43.2	6.7	0.4	7.2
8/1	707	707	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	826	826	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1239	1239	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1095	1095	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1045	1045	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	354	354	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	9	9	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	732	732	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1369	1369	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	209	209	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

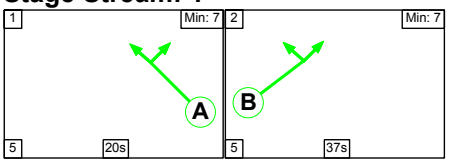
C1	Stream: 1	PRC for Signalled Lanes (%):	13.4	Total Delay for Signalled Lanes (pcuHr):	11.81	Cycle Time (s):	96
C1	Stream: 2	PRC for Signalled Lanes (%):	-16.8	Total Delay for Signalled Lanes (pcuHr):	99.13	Cycle Time (s):	96
C1	Stream: 3	PRC for Signalled Lanes (%):	-15.6	Total Delay for Signalled Lanes (pcuHr):	34.59	Cycle Time (s):	96
		PRC Over All Lanes (%):	-16.8	Total Delay Over All Lanes(pcuHr):	146.84		

Full Input Data And Results

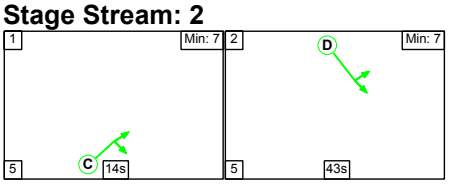
Scenario 2: '2015 Base PM' (FG2: '2015 Base PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

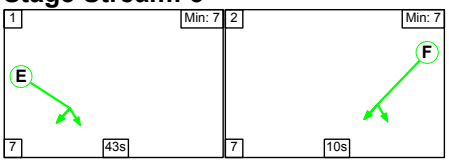
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	37
Change Point	66	24

Stage Stream: 2

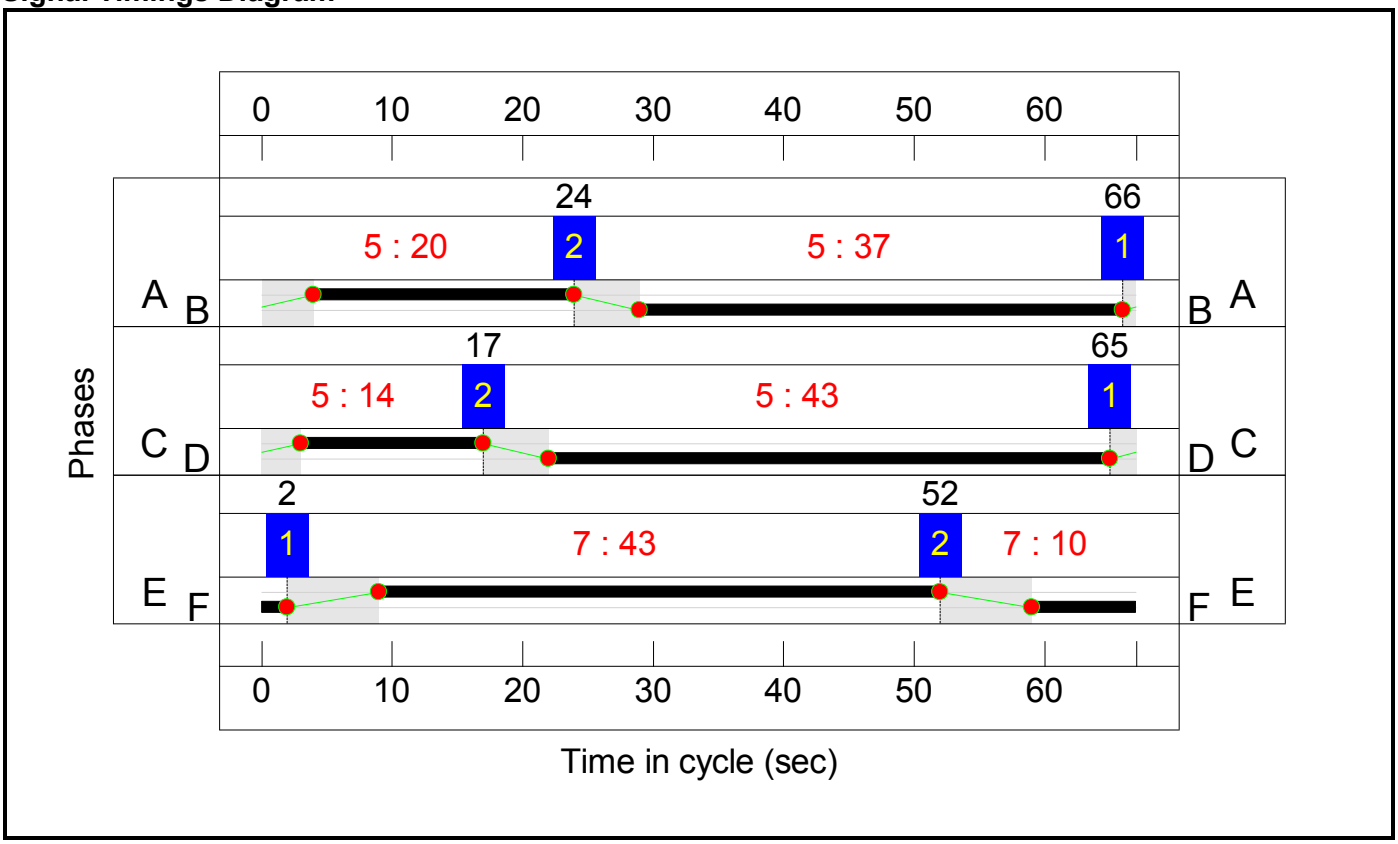
Stage	1	2
Duration	14	43
Change Point	65	17

Stage Stream: 3

Stage	1	2
Duration	43	10
Change Point	2	52

Full Input Data And Results

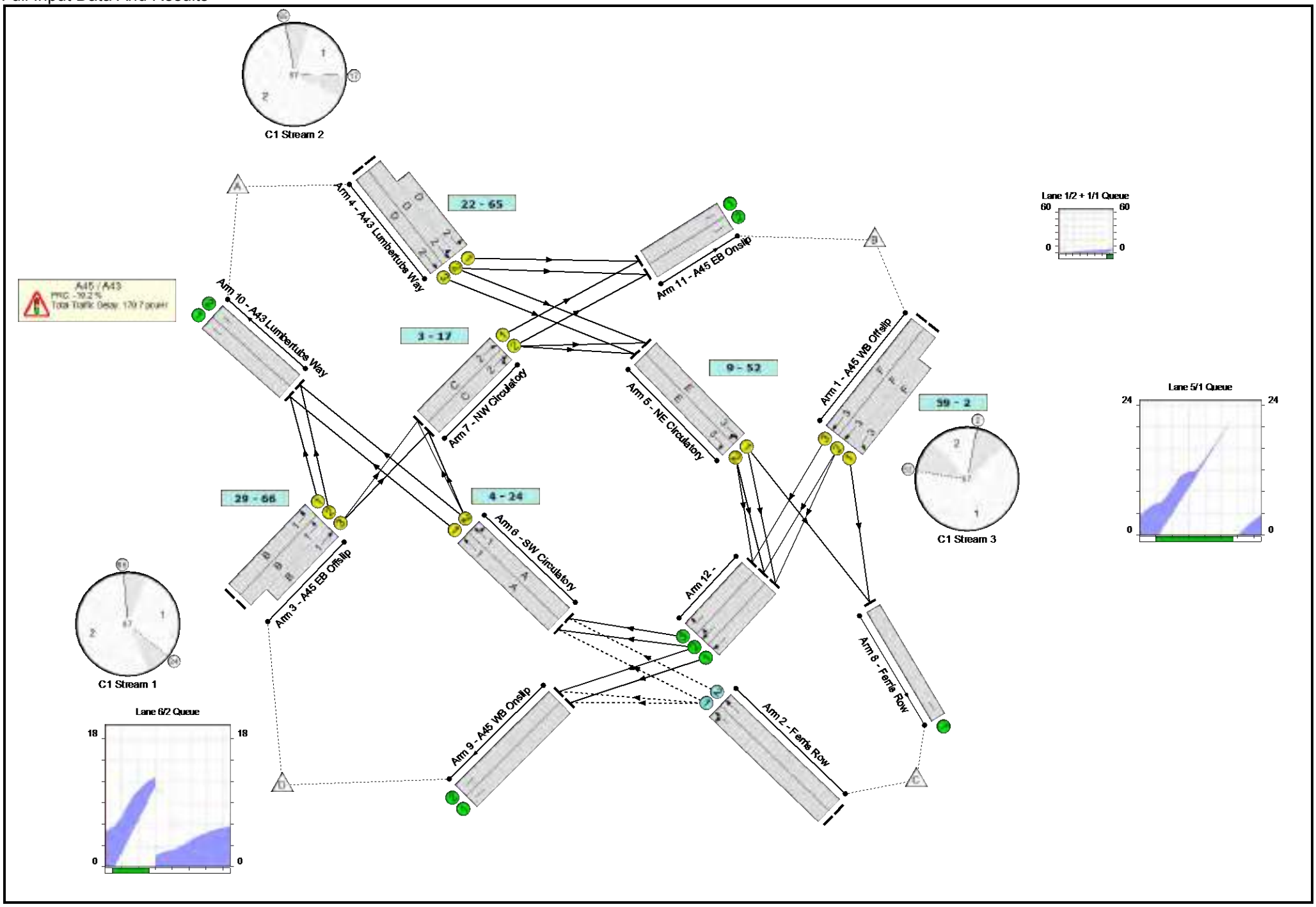
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.3%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.3%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	10	-	556	1800:1800	296+296	107.3 : 80.9%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	10	-	204	1800	296	69.0%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	462	1949	434	106.4%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	431	1965	517	83.3%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	37	-	1034	1800	1021	101.3%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	37	-	1271	1800:1800	934+314	101.8 : 101.8%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	43	-	1186	1800:1800	1014+321	88.8 : 88.8%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	43	-	1126	1800	1182	95.3%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	43	-	1221	1900	1248	97.4%
5/2	NE Circulatory Right	U	3	N/A	E		1	43	-	1126	1900	1248	90.2%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	20	-	480	1900	596	75.3%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	20	-	635	1900	596	106.6%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	14	-	289	1900	425	63.7%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	14	-	333	1900	425	76.7%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	743	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1276	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1514	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1284	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	574	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	13	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1443	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	204	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**865**	**0**	**0**	**38.8**	**140.9**	**0.0**	**179.7**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**865**	**0**	**0**	**38.8**	**140.9**	**0.0**	**179.7**	**-**	**-**	**-**	**-**
1/2+1/1	556	535	-	-	-	4.7	16.7	-	21.3	138.1	5.9	16.7	22.6
1/3	204	204	-	-	-	1.5	1.1	-	2.6	45.6	3.6	1.1	4.7
2/1	462	434	434	0	0	2.3	19.8	-	22.1	172.2	23.1	19.8	42.9
2/2	431	431	431	0	0	0.2	2.4	-	2.6	21.5	2.8	2.4	5.1
3/1	1034	1021	-	-	-	4.7	19.7	-	24.4	85.0	19.5	19.7	39.2
3/2+3/3	1271	1248	-	-	-	4.8	24.5	-	29.3	83.0	20.7	24.5	45.2
4/2+4/1	1186	1186	-	-	-	2.4	3.8	-	6.2	18.9	13.9	3.8	17.7
4/3	1126	1126	-	-	-	3.3	7.8	-	11.1	35.6	19.1	7.8	26.9
5/1	1215	1215	-	-	-	2.6	11.1	-	13.6	40.4	20.6	11.1	31.7
5/2	1126	1126	-	-	-	3.1	4.3	-	7.5	23.8	9.5	4.3	13.8
6/1	449	449	-	-	-	0.6	1.5	-	2.1	16.5	2.2	1.5	3.7
6/2	635	596	-	-	-	4.0	25.9	-	29.9	169.6	12.6	25.9	38.4
7/1	271	271	-	-	-	2.2	0.9	-	3.1	41.0	3.0	0.9	3.9
7/2	326	326	-	-	-	2.4	1.6	-	4.0	43.7	6.0	1.6	7.6
8/1	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	734	734	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1267	1267	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1470	1470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1246	1246	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	556	556	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	12	12	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	594	594	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1422	1422	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	204	204	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

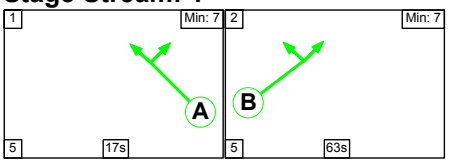
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	-18.5	Total Delay for Signalled Lanes (pcuHr):	85.65	Cycle Time (s):	67
C1	Stream: 2	PRC for Signalled Lanes (%):	-5.8	Total Delay for Signalled Lanes (pcuHr):	24.41	Cycle Time (s):	67
C1	Stream: 3	PRC for Signalled Lanes (%):	-19.2	Total Delay for Signalled Lanes (pcuHr):	45.02	Cycle Time (s):	67
		PRC Over All Lanes (%):	-19.2	Total Delay Over All Lanes(pcuHr):	179.75		

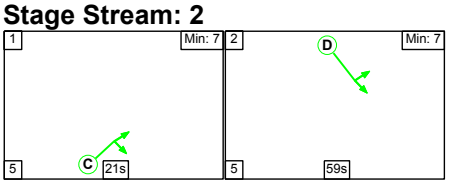
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

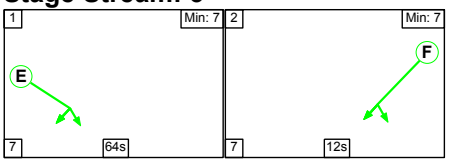
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	63
Change Point	50	72

Stage Stream: 2

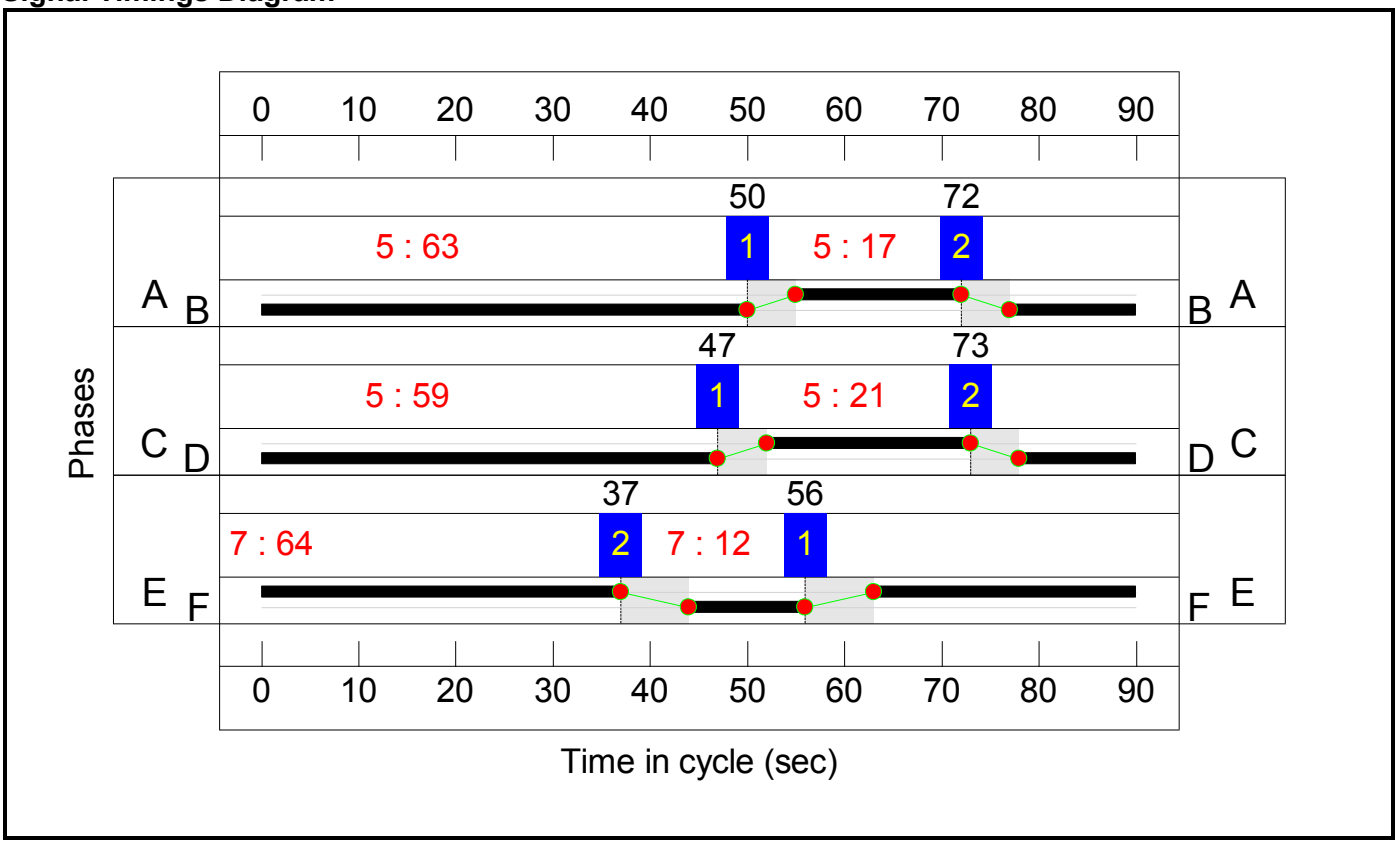
Stage	1	2
Duration	21	59
Change Point	47	73

Stage Stream: 3

Stage	1	2
Duration	64	12
Change Point	56	37

Full Input Data And Results

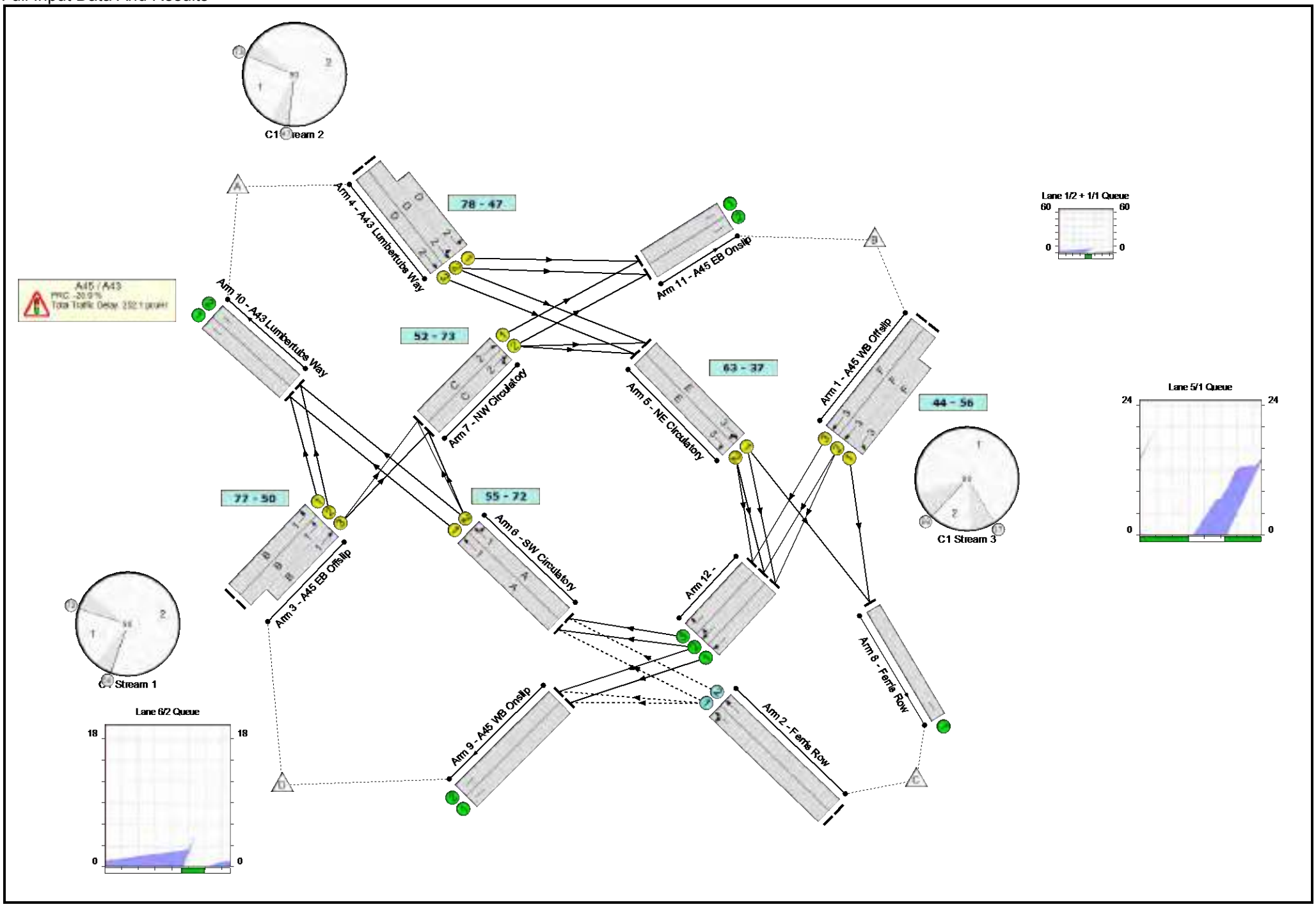
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.3%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.3%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	12	-	339	1800:1800	76+260	100.8 : 100.8%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	12	-	226	1800	260	86.9%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	292	1945	430	68.0%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	94	1965	499	18.8%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	63	-	1049	1800	1280	82.0%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	63	-	1201	1800:1800	1129+275	85.6 : 85.6%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	59	-	1464	1800:1800	1030+262	113.3 : 113.3%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	59	-	1360	1800	1200	113.3%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	64	-	1358	1900	1372	89.3%
5/2	NE Circulatory Right	U	3	N/A	E		1	64	-	1360	1900	1372	87.4%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	17	-	200	1900	380	50.2%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	17	-	320	1900	380	84.2%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	21	-	94	1900	464	20.2%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	21	-	235	1900	464	50.6%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	744	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	999	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1406	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1249	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1192	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	391	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	44	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	876	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1437	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	226	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**386**	**0**	**0**	**47.9**	**204.2**	**0.0**	**252.1**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**386**	**0**	**0**	**47.9**	**204.2**	**0.0**	**252.1**	**-**	**-**	**-**	**-**
1/2+1/1	339	337	-	-	-	3.6	9.9	-	13.5	143.2	6.6	9.9	16.5
1/3	226	226	-	-	-	2.4	2.8	-	5.2	83.0	5.5	2.8	8.4
2/1	292	292	292	0	0	0.8	1.0	-	1.8	22.7	4.1	1.0	5.2
2/2	94	94	94	0	0	0.0	0.1	-	0.1	4.4	0.0	0.1	0.1
3/1	1049	1049	-	-	-	2.6	2.2	-	4.9	16.6	18.1	2.2	20.3
3/2+3/3	1201	1201	-	-	-	2.5	2.9	-	5.4	16.2	16.9	2.9	19.8
4/2+4/1	1464	1292	-	-	-	13.1	90.2	-	103.3	254.1	42.3	90.2	132.5
4/3	1360	1200	-	-	-	12.8	84.0	-	96.8	256.4	38.0	84.0	122.0
5/1	1226	1226	-	-	-	2.8	4.0	-	6.8	20.0	19.0	4.0	23.0
5/2	1200	1200	-	-	-	2.4	3.4	-	5.8	17.4	9.0	3.4	12.4
6/1	191	191	-	-	-	1.0	0.5	-	1.5	28.4	3.4	0.5	3.9
6/2	320	320	-	-	-	1.2	2.5	-	3.6	40.8	3.8	2.5	6.3
7/1	94	94	-	-	-	0.2	0.1	-	0.3	10.8	0.2	0.1	0.3
7/2	235	235	-	-	-	2.5	0.5	-	3.0	46.6	5.9	0.5	6.4
8/1	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	896	896	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1255	1255	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1240	1240	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1192	1192	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	356	356	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	39	39	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	773	773	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1277	1277	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	226	226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

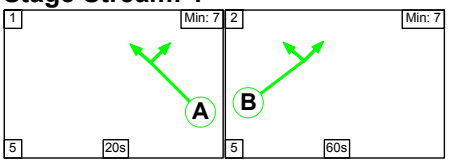
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	5.2	Total Delay for Signalled Lanes (pcuHr):	15.37	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-25.9	Total Delay for Signalled Lanes (pcuHr):	203.50	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-12.0	Total Delay for Signalled Lanes (pcuHr):	31.30	Cycle Time (s):	90
		PRC Over All Lanes (%):	-25.9	Total Delay Over All Lanes(pcuHr):	252.12		

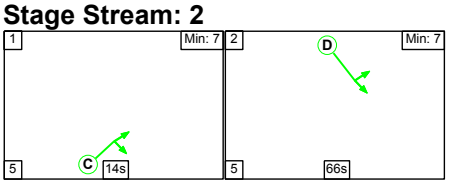
Full Input Data And Results
Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

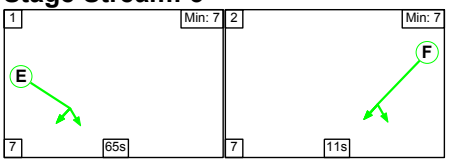
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	60
Change Point	40	65

Stage Stream: 2

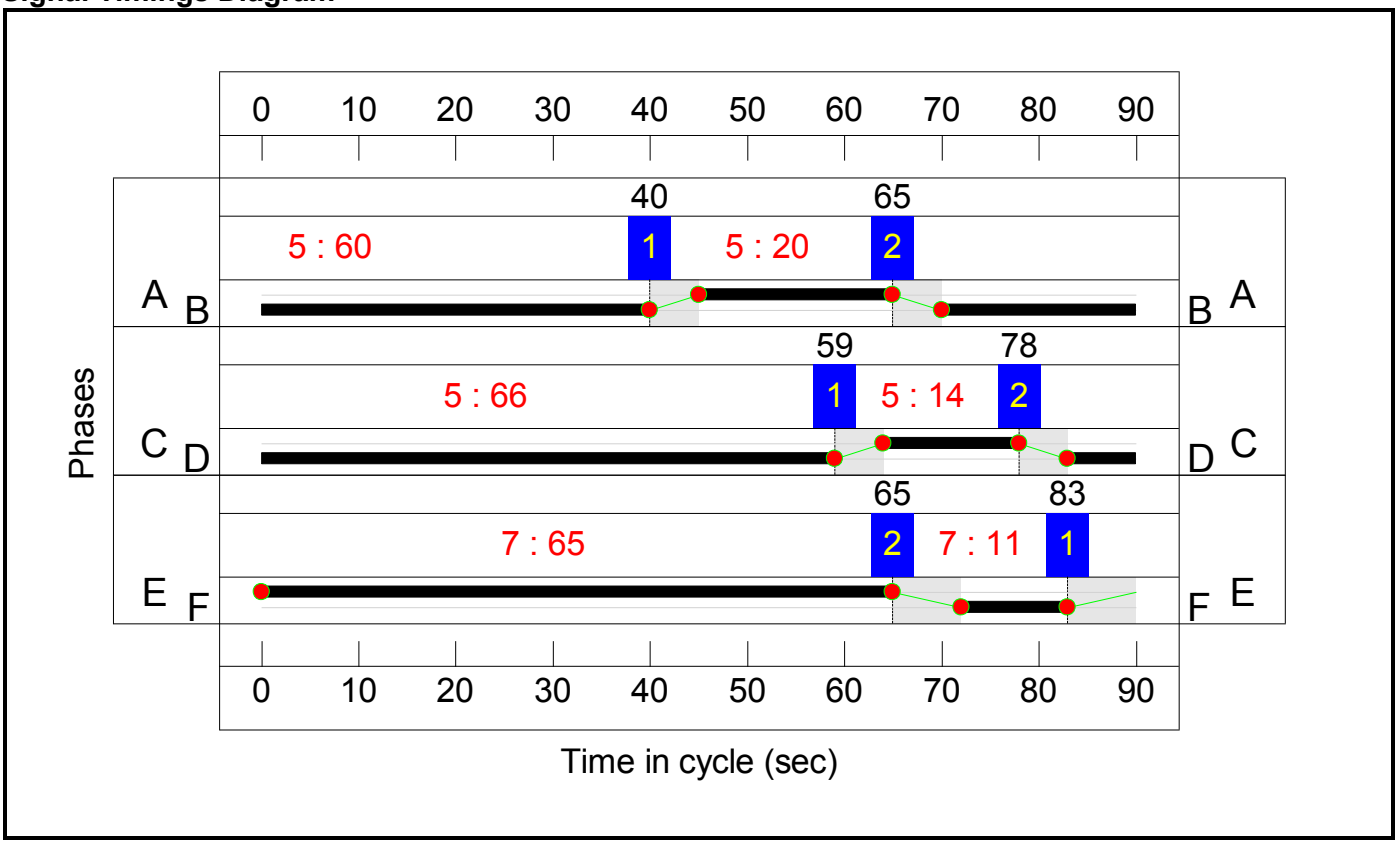
Stage	1	2
Duration	14	66
Change Point	59	78

Stage Stream: 3

Stage	1	2
Duration	65	11
Change Point	83	65

Full Input Data And Results

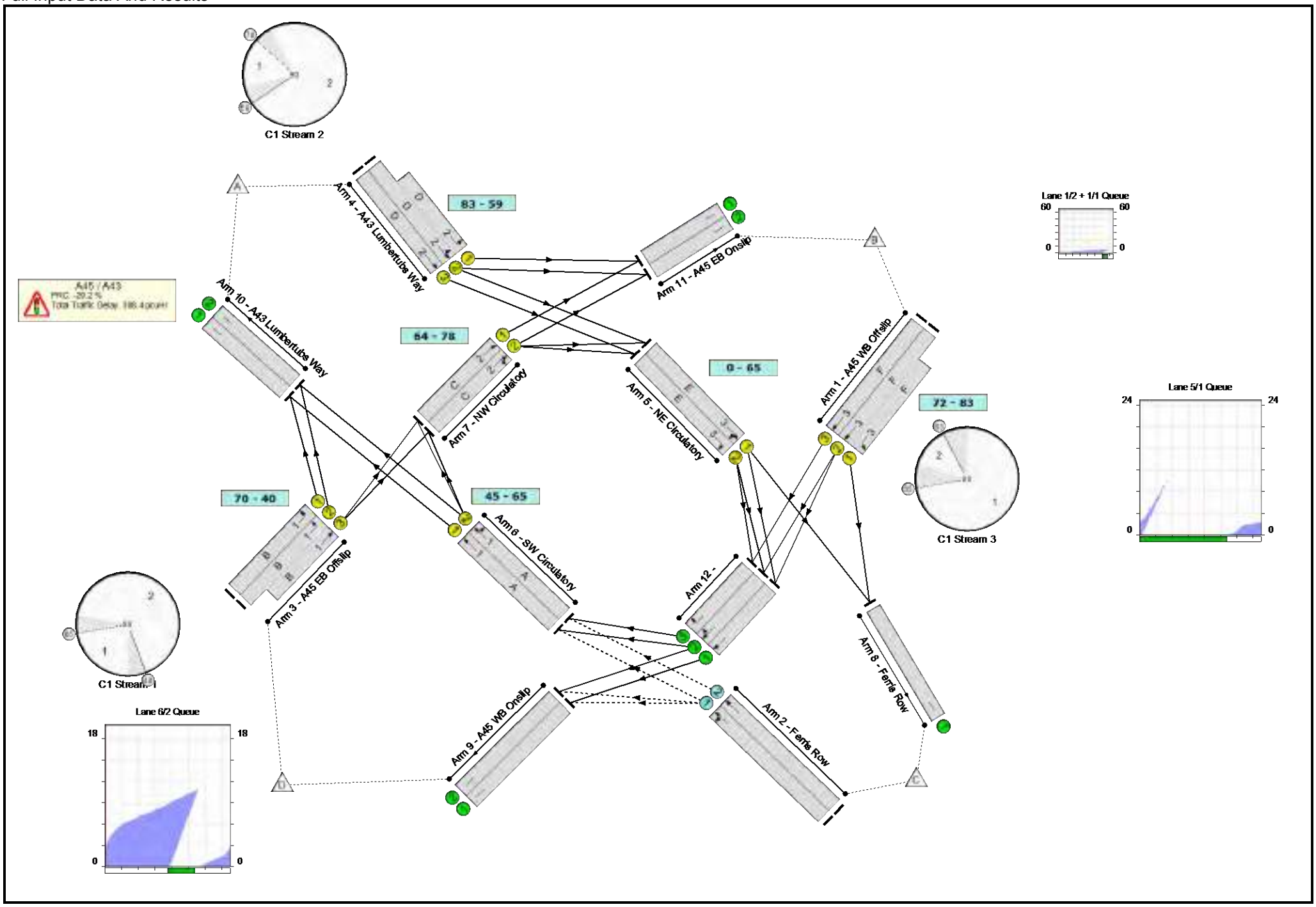
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.3%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**116.3%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	11	-	432	1800:1800	240+240	92.5 : 87.5%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	11	-	115	1800	240	47.9%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	436	1941	487	89.6%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	321	1965	494	65.0%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	60	-	1389	1800	1220	113.9%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	60	-	1457	1800:1800	1183+70	116.3 : 116.3%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	66	-	1550	1800:1800	1168+249	109.4 : 109.4%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	66	-	1398	1800	1340	104.3%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	65	-	1174	1900	1393	76.7%
5/2	NE Circulatory Right	U	3	N/A	E		1	65	-	1398	1900	1393	96.2%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	20	-	279	1900	443	62.4%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	20	-	436	1900	443	98.3%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	14	-	174	1900	317	54.9%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	14	-	228	1900	317	68.4%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1559	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1668	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1491	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	446	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	671	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1620	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	115	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**757**	**0**	**0**	**63.0**	**335.3**	**0.0**	**398.4**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**757**	**0**	**0**	**63.0**	**335.3**	**0.0**	**398.4**	**-**	**-**	**-**	**-**
1/2+1/1	432	432	-	-	-	4.6	3.9	-	8.5	70.7	5.4	3.9	9.3
1/3	115	115	-	-	-	1.2	0.5	-	1.6	50.4	2.7	0.5	3.1
2/1	436	436	436	0	0	1.6	3.8	-	5.4	44.6	9.6	3.8	13.3
2/2	321	321	321	0	0	0.0	0.9	-	0.9	10.6	2.1	0.9	3.1
3/1	1389	1220	-	-	-	13.5	88.4	-	101.9	264.1	38.9	88.4	127.4
3/2+3/3	1457	1253	-	-	-	15.2	105.5	-	120.7	298.1	45.7	105.5	151.2
4/2+4/1	1550	1417	-	-	-	9.9	72.1	-	82.0	190.4	44.0	72.1	116.1
4/3	1398	1340	-	-	-	6.9	38.2	-	45.1	116.1	36.4	38.2	74.6
5/1	1069	1069	-	-	-	0.7	1.6	-	2.3	7.8	10.1	1.6	11.7
5/2	1340	1340	-	-	-	0.3	9.3	-	9.6	25.9	9.5	9.3	18.8
6/1	277	277	-	-	-	3.3	0.8	-	4.1	54.0	6.7	0.8	7.6
6/2	436	436	-	-	-	4.8	8.8	-	13.5	111.7	10.8	8.8	19.6
7/1	174	174	-	-	-	0.2	0.6	-	0.8	17.0	3.3	0.6	3.9
7/2	217	217	-	-	-	0.9	1.1	-	1.9	31.8	4.5	1.1	5.6
8/1	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	831	831	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1503	1503	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1497	1497	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1298	1298	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	316	316	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	613	613	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1562	1562	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	115	115	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

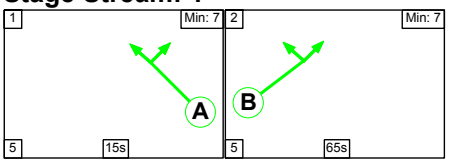
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	-29.2	Total Delay for Signalled Lanes (pcuHr):	240.23	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-21.6	Total Delay for Signalled Lanes (pcuHr):	129.79	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-6.9	Total Delay for Signalled Lanes (pcuHr):	22.03	Cycle Time (s):	90
		PRC Over All Lanes (%):	-29.2	Total Delay Over All Lanes(pcuHr):	398.40		

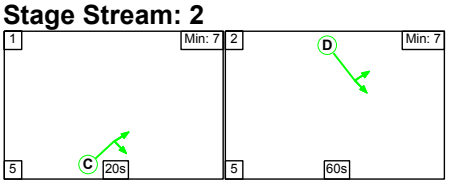
Full Input Data And Results
Scenario 5: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

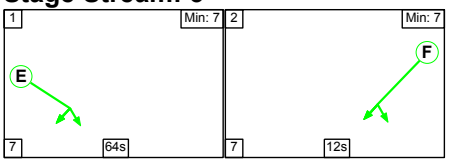
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	15	65
Change Point	49	69

Stage Stream: 2

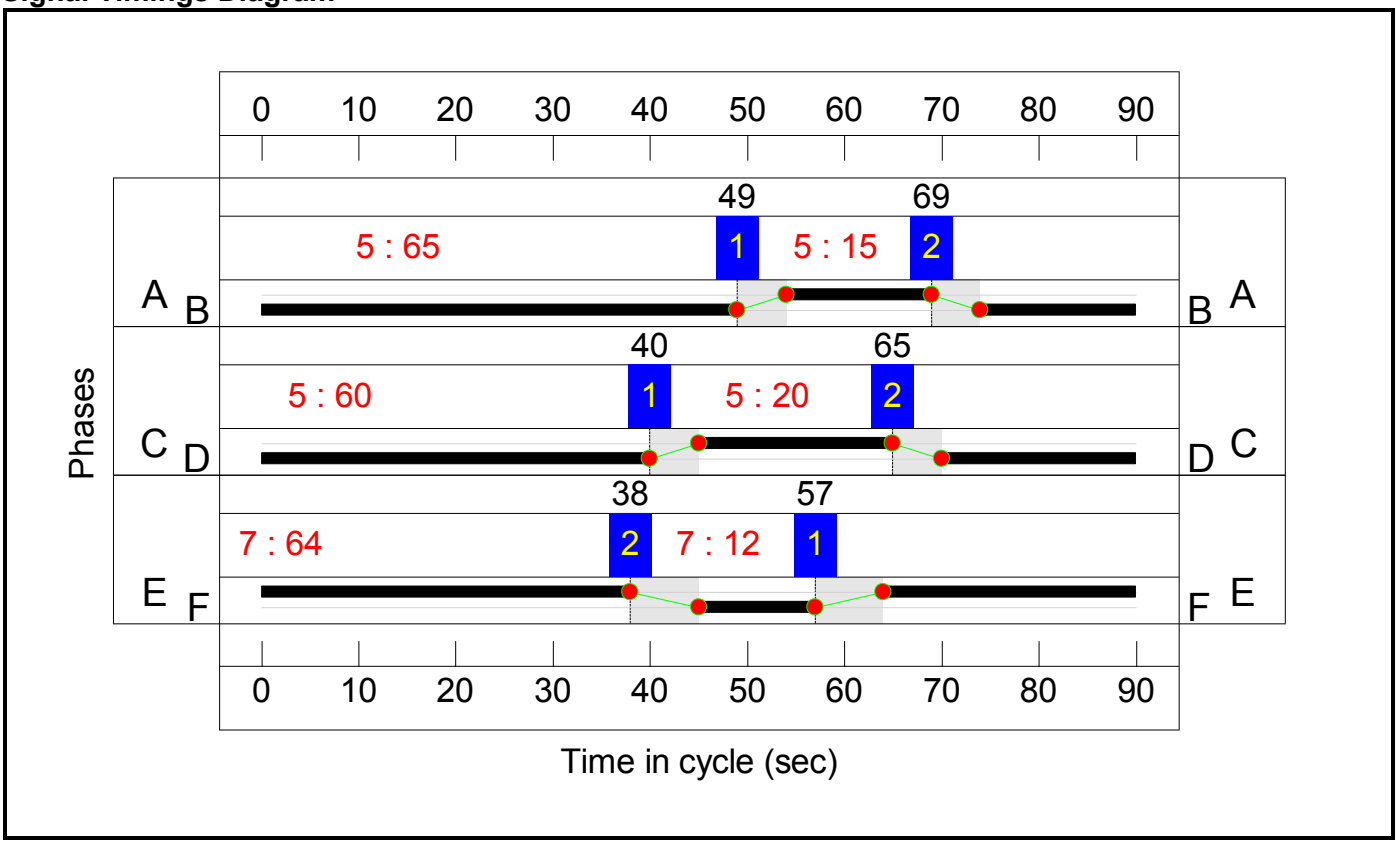
Stage	1	2
Duration	20	60
Change Point	40	65

Stage Stream: 3

Stage	1	2
Duration	64	12
Change Point	57	38

Full Input Data And Results

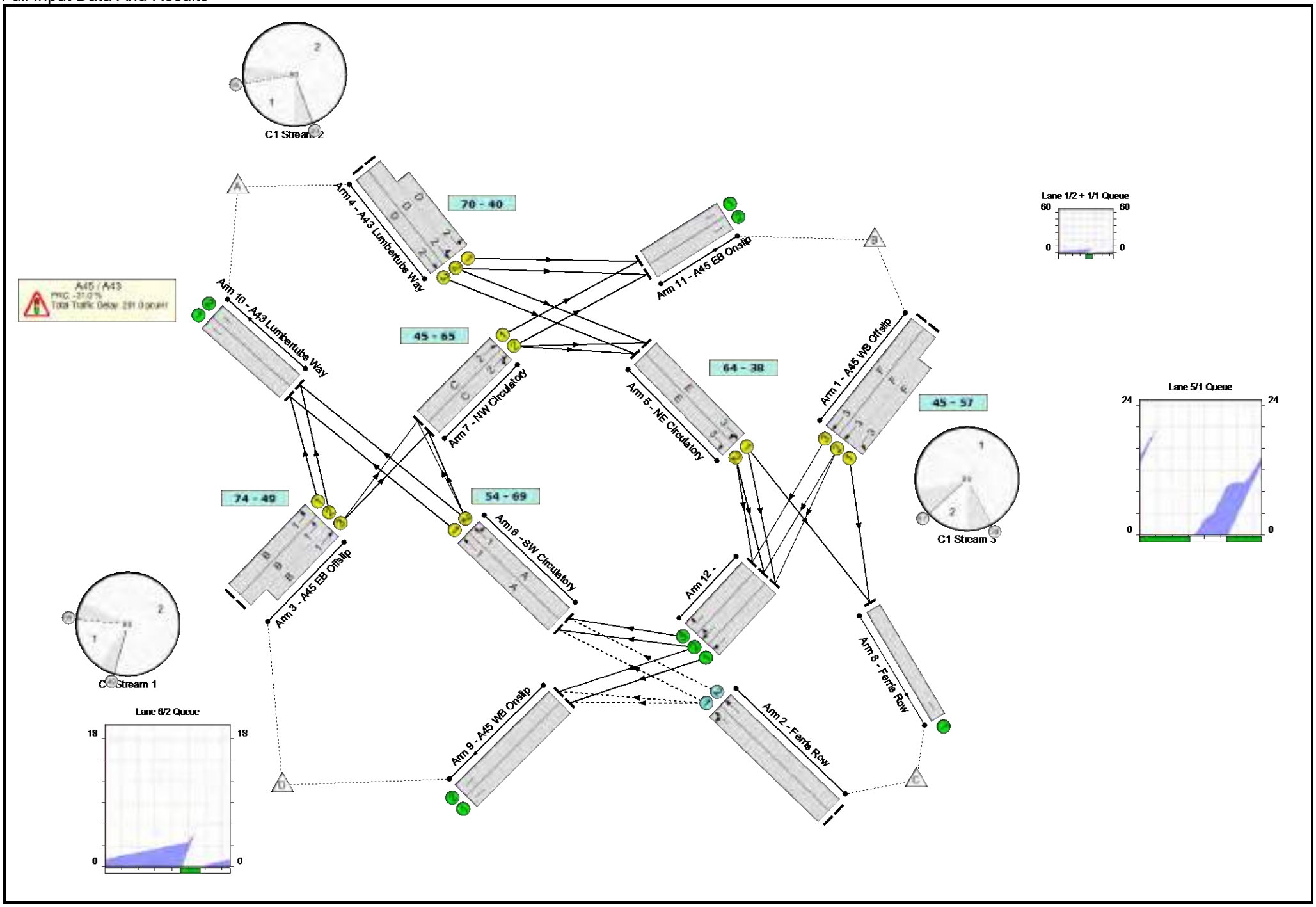
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.9%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.9%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	12	-	406	1800:1800	166+260	95.4 : 95.4%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	12	-	114	1800	260	43.8%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	227	1941	462	49.1%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	145	1965	505	28.7%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	65	-	1092	1800	1320	82.7%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	65	-	1266	1800:1800	1167+270	88.1 : 88.1%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	60	-	1507	1800:1800	1100+178	117.9 : 117.9%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	60	-	1409	1800	1220	115.5%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	64	-	1385	1900	1372	88.2%
5/2	NE Circulatory Right	U	3	N/A	E		1	64	-	1409	1900	1372	88.9%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	15	-	250	1900	338	70.4%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	15	-	259	1900	338	76.7%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	20	-	93	1900	443	21.0%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	20	-	238	1900	443	53.7%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	729	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1017	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1431	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1342	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1194	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	150	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	904	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1567	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	114	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**372**	**0**	**0**	**51.3**	**239.8**	**0.0**	**291.0**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**372**	**0**	**0**	**51.3**	**239.8**	**0.0**	**291.0**	**-**	**-**	**-**	**-**
1/2+1/1	406	406	-	-	-	4.2	6.3	-	10.5	93.2	6.1	6.3	12.4
1/3	114	114	-	-	-	1.1	0.4	-	1.5	47.4	2.6	0.4	3.0
2/1	227	227	227	0	0	0.6	0.5	-	1.1	16.9	3.3	0.5	3.8
2/2	145	145	145	0	0	0.0	0.2	-	0.2	5.0	0.0	0.2	0.2
3/1	1092	1092	-	-	-	2.5	2.3	-	4.8	15.9	18.5	2.3	20.8
3/2+3/3	1266	1266	-	-	-	2.5	3.5	-	6.0	17.0	18.9	3.5	22.4
4/2+4/1	1507	1278	-	-	-	16.3	117.6	-	133.8	319.7	45.7	117.6	163.3
4/3	1409	1220	-	-	-	14.5	98.1	-	112.6	287.7	40.0	98.1	138.0
5/1	1211	1211	-	-	-	2.5	3.6	-	6.1	18.1	19.6	3.6	23.2
5/2	1220	1220	-	-	-	1.4	3.8	-	5.2	15.3	5.0	3.8	8.9
6/1	238	238	-	-	-	1.2	1.2	-	2.3	35.4	2.7	1.2	3.9
6/2	259	259	-	-	-	1.6	1.6	-	3.2	44.3	4.9	1.6	6.5
7/1	93	93	-	-	-	0.8	0.1	-	1.0	36.9	1.1	0.1	1.2
7/2	238	238	-	-	-	2.2	0.6	-	2.8	42.1	5.8	0.6	6.4
8/1	692	692	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	880	880	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1254	1254	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1330	1330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1194	1194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	271	271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	127	127	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	767	767	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1378	1378	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	114	114	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

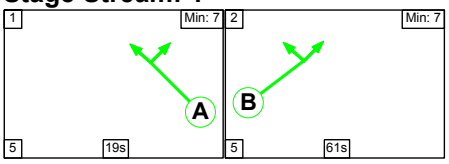
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	2.2	Total Delay for Signalled Lanes (pcuHr):	16.33	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-31.0	Total Delay for Signalled Lanes (pcuHr):	250.16	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-6.0	Total Delay for Signalled Lanes (pcuHr):	23.29	Cycle Time (s):	90
		PRC Over All Lanes (%):	-31.0	Total Delay Over All Lanes(pcuHr):	291.05		

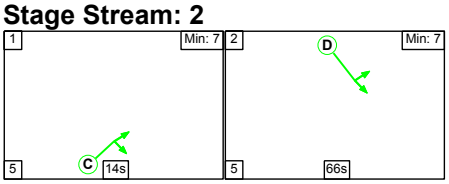
Full Input Data And Results
Scenario 6: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

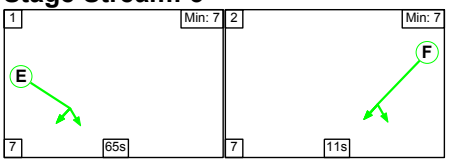
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	61
Change Point	38	62

Stage Stream: 2

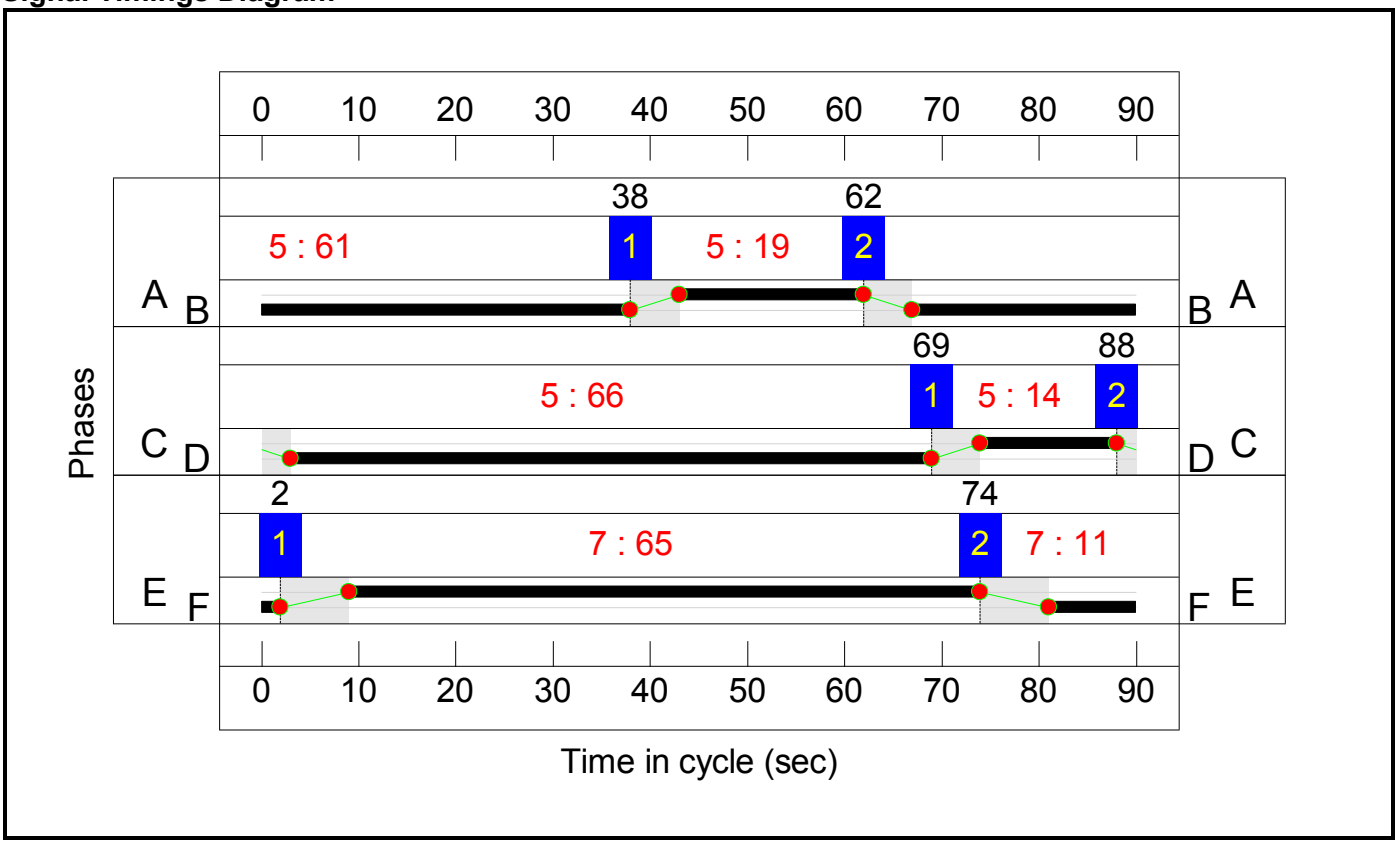
Stage	1	2
Duration	14	66
Change Point	69	88

Stage Stream: 3

Stage	1	2
Duration	65	11
Change Point	2	74

Full Input Data And Results

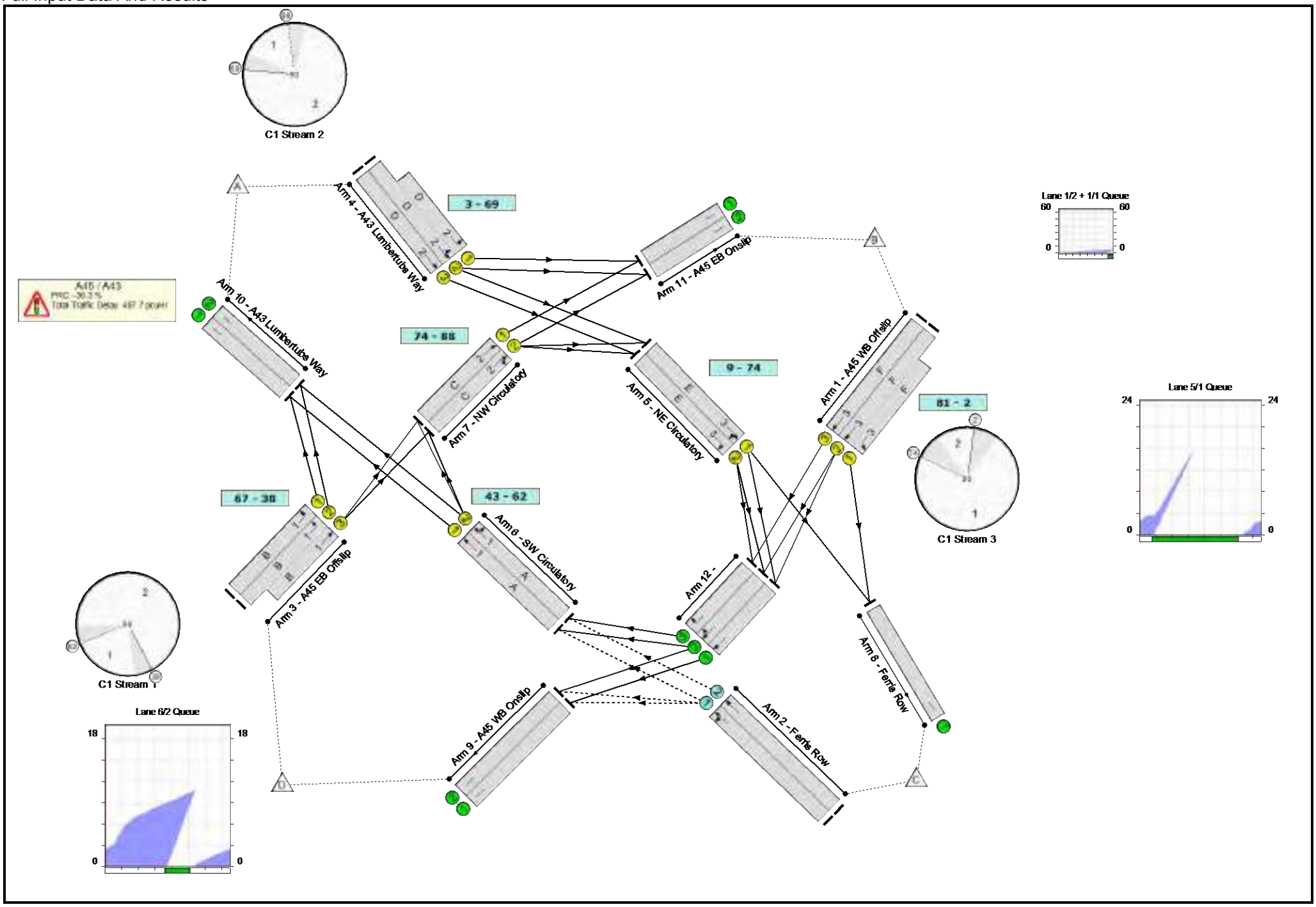
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**122.7%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**122.7%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	11	-	431	1800:1800	240+240	87.1 : 92.5%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	11	-	102	1800	240	42.5%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	582	1941	487	119.4%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	326	1965	503	64.8%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	61	-	1479	1800	1240	119.3%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	61	-	1578	1800:1800	1184+102	122.7 : 122.7%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	66	-	1462	1800:1800	1221+169	105.2 : 105.2%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	66	-	1366	1800	1340	101.9%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	65	-	1286	1900	1393	86.5%
5/2	NE Circulatory Right	U	3	N/A	E		1	65	-	1368	1900	1393	96.3%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	19	-	263	1900	422	62.0%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	19	-	428	1900	422	101.4%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	14	-	184	1900	317	57.1%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	14	-	267	1900	317	76.2%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	863	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	936	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1605	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1742	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1555	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	362	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	263	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1577	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	102	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**813**	**0**	**0**	**73.4**	**424.3**	**0.0**	**497.7**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**813**	**0**	**0**	**73.4**	**424.3**	**0.0**	**497.7**	**-**	**-**	**-**	**-**
1/2+1/1	431	431	-	-	-	4.6	3.8	-	8.4	70.2	5.4	3.8	9.2
1/3	102	102	-	-	-	1.0	0.4	-	1.4	48.8	2.3	0.4	2.7
2/1	582	487	487	0	0	7.4	50.3	-	57.6	356.6	40.1	50.3	90.4
2/2	326	326	326	0	0	0.0	0.9	-	0.9	10.3	2.4	0.9	3.3
3/1	1479	1240	-	-	-	17.1	122.5	-	139.6	339.8	42.9	122.5	165.5
3/2+3/3	1578	1286	-	-	-	19.6	148.5	-	168.1	383.6	51.0	148.5	199.5
4/2+4/1	1462	1390	-	-	-	7.1	44.3	-	51.4	126.5	40.8	44.3	85.1
4/3	1366	1340	-	-	-	5.4	26.1	-	31.5	83.0	34.8	26.1	60.9
5/1	1206	1206	-	-	-	1.2	3.1	-	4.3	12.8	15.4	3.1	18.5
5/2	1342	1342	-	-	-	0.5	9.5	-	10.0	26.7	10.0	9.5	19.5
6/1	262	262	-	-	-	2.6	0.8	-	3.4	46.4	6.4	0.8	7.2
6/2	428	422	-	-	-	4.6	11.9	-	16.5	138.6	10.8	11.9	22.7
7/1	181	181	-	-	-	0.8	0.7	-	1.5	30.0	4.5	0.7	5.2
7/2	241	241	-	-	-	1.6	1.5	-	3.2	47.0	6.0	1.5	7.6
8/1	817	817	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	855	855	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1532	1532	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1502	1502	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1286	1286	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	255	255	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	611	611	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1551	1551	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	102	102	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

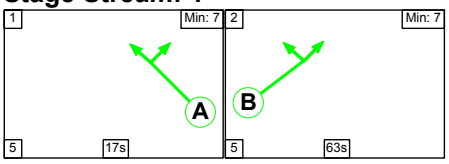
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	-36.3	Total Delay for Signalled Lanes (pcuHr):	327.58	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-16.9	Total Delay for Signalled Lanes (pcuHr):	87.50	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-7.0	Total Delay for Signalled Lanes (pcuHr):	24.03	Cycle Time (s):	90
		PRC Over All Lanes (%):	-36.3	Total Delay Over All Lanes(pcuHr):	497.68		

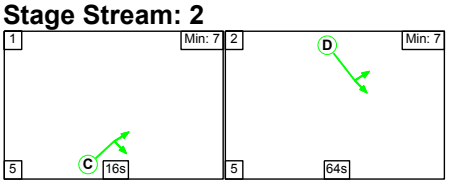
Full Input Data And Results
Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

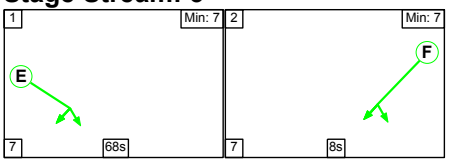
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	63
Change Point	0	22

Stage Stream: 2

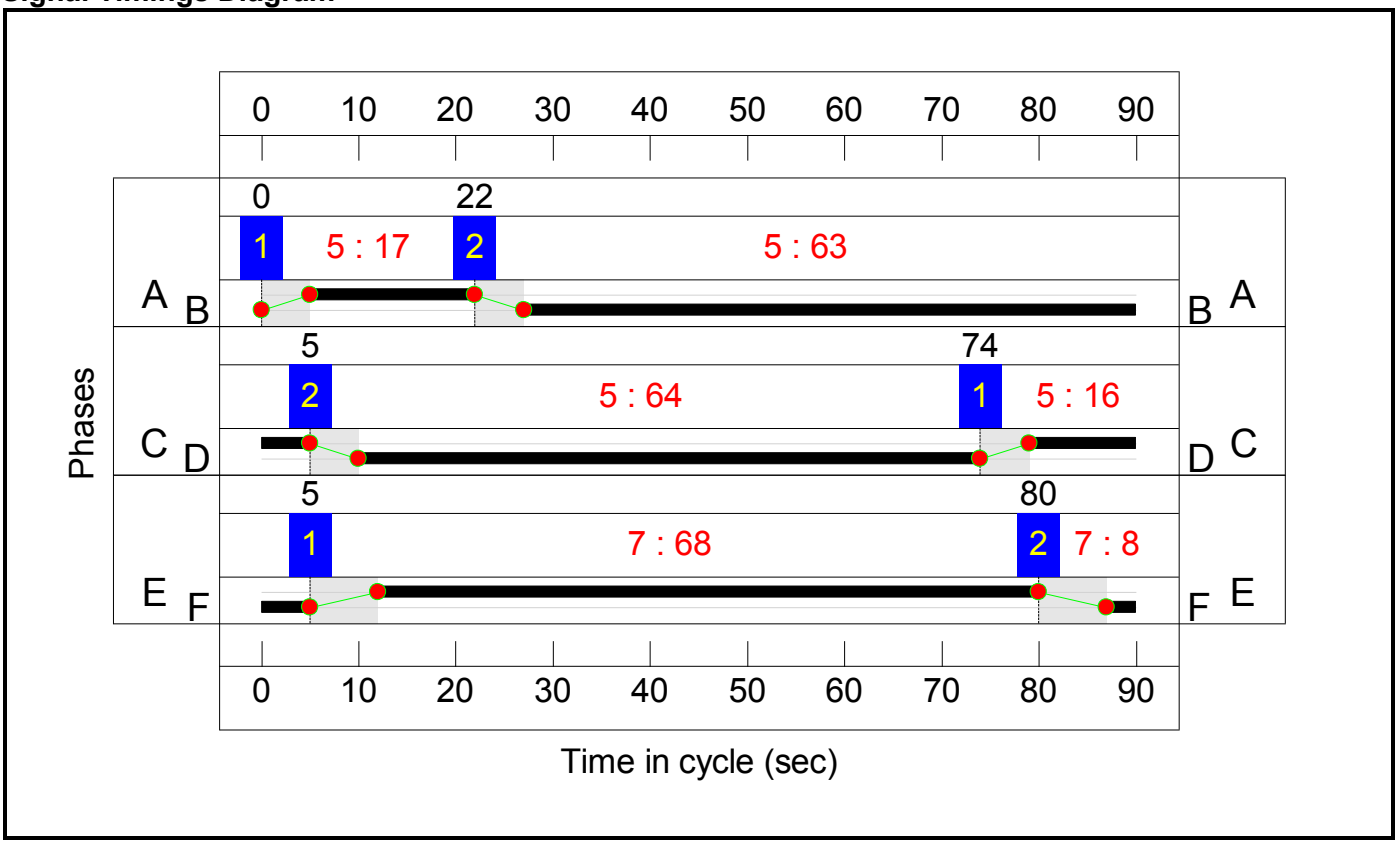
Stage	1	2
Duration	16	64
Change Point	74	5

Stage Stream: 3

Stage	1	2
Duration	68	8
Change Point	5	80

Full Input Data And Results

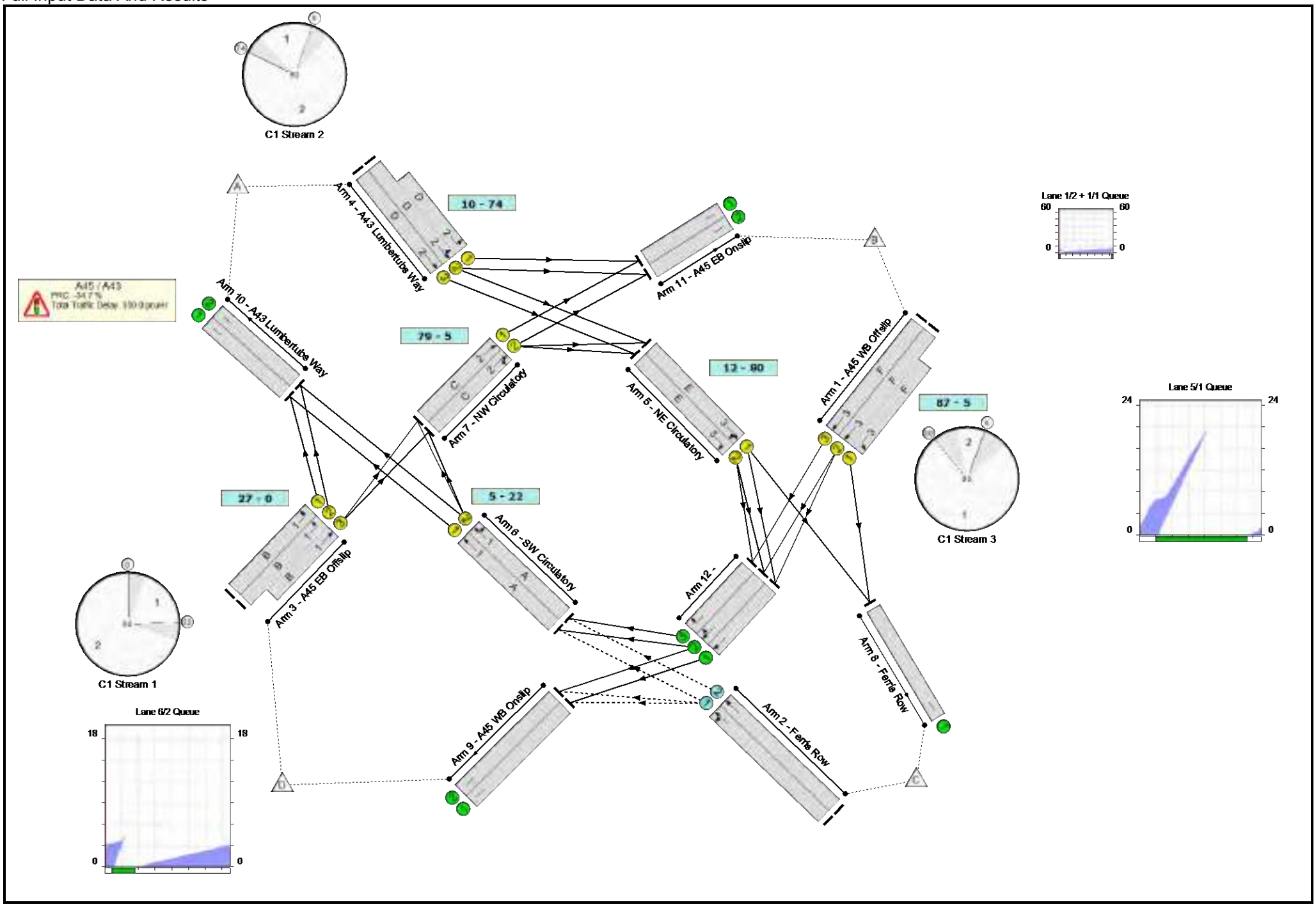
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**121.3%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**121.3%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	8	-	348	1800:1800	180+180	72.2 : 121.1%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	8	-	97	1800	180	53.9%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	189	1941	435	43.5%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	163	1965	473	34.5%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	63	-	836	1800	1280	65.3%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	63	-	1090	1800:1800	1105+322	76.4 : 76.4%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	64	-	1651	1800:1800	1163+199	121.3 : 121.3%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	64	-	1521	1800	1300	117.0%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	68	-	1477	1900	1457	86.6%
5/2	NE Circulatory Right	U	3	N/A	E		1	68	-	1521	1900	1457	89.2%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	17	-	277	1900	380	67.3%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	17	-	260	1900	380	68.4%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	16	-	87	1900	359	24.2%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	16	-	259	1900	359	72.2%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	691	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1098	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1469	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1113	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1004	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	192	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1004	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1651	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	97	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**352**	**0**	**0**	**49.4**	**301.5**	**0.0**	**350.9**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**352**	**0**	**0**	**49.4**	**301.5**	**0.0**	**350.9**	**-**	**-**	**-**	**-**
1/2+1/1	348	310	-	-	-	5.6	25.8	-	31.4	324.4	6.7	25.8	32.5
1/3	97	97	-	-	-	1.0	0.6	-	1.6	59.9	2.3	0.6	2.9
2/1	189	189	189	0	0	0.6	0.4	-	1.0	18.7	3.1	0.4	3.5
2/2	163	163	163	0	0	0.0	0.3	-	0.3	5.9	0.9	0.3	1.1
3/1	836	836	-	-	-	1.6	0.9	-	2.6	11.1	11.1	0.9	12.1
3/2+3/3	1090	1090	-	-	-	2.0	1.6	-	3.6	11.7	11.3	1.6	12.9
4/2+4/1	1651	1362	-	-	-	16.1	147.5	-	163.7	356.9	51.1	147.5	198.6
4/3	1521	1300	-	-	-	13.7	113.8	-	127.5	301.8	43.6	113.8	157.4
5/1	1261	1261	-	-	-	1.8	3.1	-	5.0	14.2	19.6	3.1	22.7
5/2	1300	1300	-	-	-	0.2	3.9	-	4.2	11.6	1.0	3.9	5.0
6/1	256	256	-	-	-	1.4	1.0	-	2.4	33.5	3.7	1.0	4.7
6/2	260	260	-	-	-	1.5	1.1	-	2.6	36.0	4.4	1.1	5.4
7/1	87	87	-	-	-	1.5	0.2	-	1.7	69.9	2.2	0.2	2.3
7/2	259	259	-	-	-	2.3	1.3	-	3.6	49.4	6.1	1.3	7.3
8/1	613	613	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	922	922	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1269	1269	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1092	1092	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1004	1004	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	286	286	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	161	161	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	828	828	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1430	1430	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	97	97	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

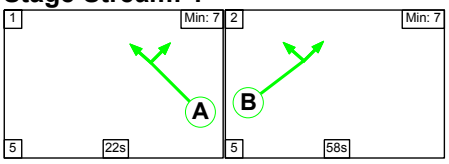
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	17.8	Total Delay for Signalled Lanes (pcuHr):	11.10	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-34.7	Total Delay for Signalled Lanes (pcuHr):	296.41	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-34.6	Total Delay for Signalled Lanes (pcuHr):	42.11	Cycle Time (s):	90
		PRC Over All Lanes (%):	-34.7	Total Delay Over All Lanes(pcuHr):	350.88		

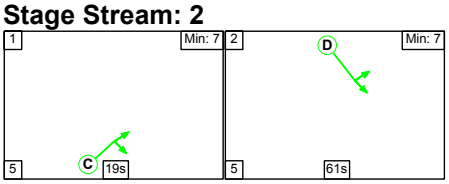
Full Input Data And Results
Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

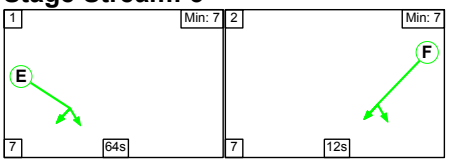
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	22	58
Change Point	0	27

Stage Stream: 2

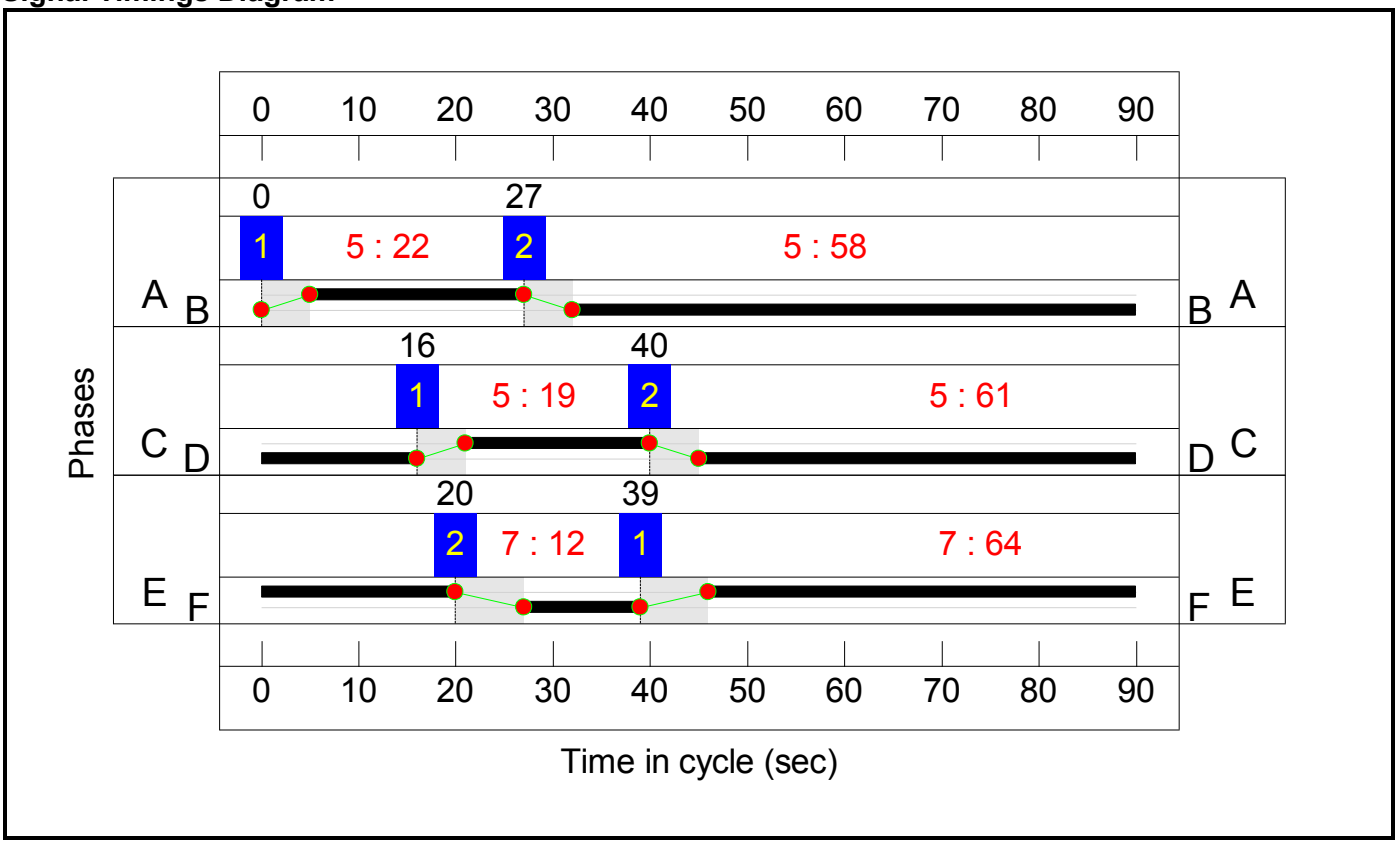
Stage	1	2
Duration	19	61
Change Point	16	40

Stage Stream: 3

Stage	1	2
Duration	64	12
Change Point	39	20

Full Input Data And Results

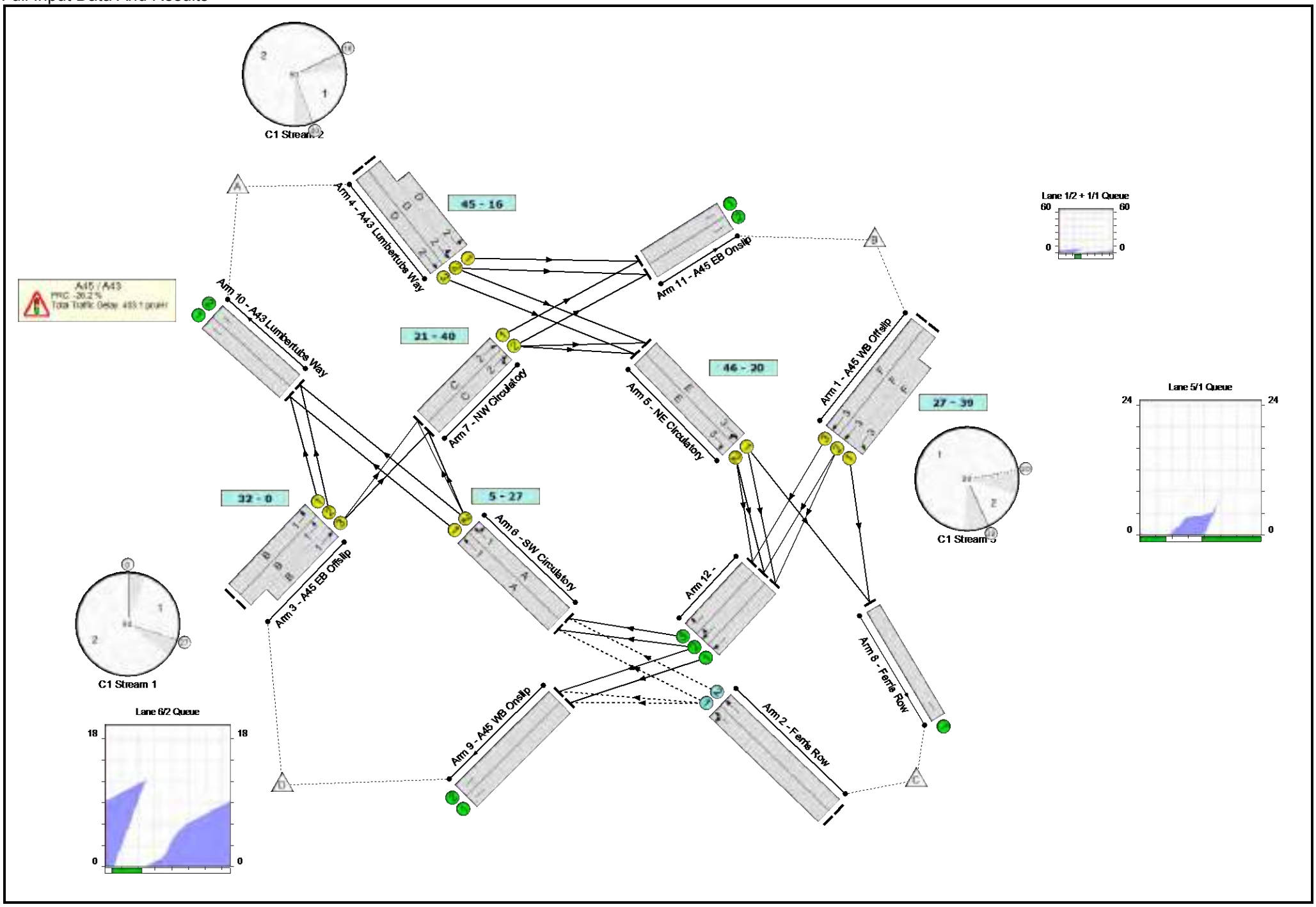
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.5%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.5%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	12	-	467	1800:1800	247+260	83.3 : 100.4%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	12	-	119	1800	260	45.8%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	602	1941	535	112.4%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	368	1965	541	68.0%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	58	-	1282	1800	1180	108.6%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	58	-	1394	1800:1800	1127+100	113.5 : 113.5%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	61	-	1421	1800:1800	1151+129	111.0 : 111.0%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	61	-	1331	1800	1240	107.3%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	64	-	1296	1900	1372	84.9%
5/2	NE Circulatory Right	U	3	N/A	E		1	64	-	1334	1900	1372	90.6%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	22	-	246	1900	486	50.1%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	22	-	487	1900	486	100.3%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	19	-	187	1900	422	44.1%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	19	-	267	1900	422	59.9%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	912	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	946	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1595	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1528	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1427	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	330	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	246	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1540	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	119	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**903**	**0**	**0**	**68.1**	**335.1**	**0.0**	**403.1**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**903**	**0**	**0**	**68.1**	**335.1**	**0.0**	**403.1**	**-**	**-**	**-**	**-**
1/2+1/1	467	466	-	-	-	5.0	5.2	-	10.2	78.4	6.6	5.2	11.8
1/3	119	119	-	-	-	1.2	0.4	-	1.6	48.0	2.7	0.4	3.1
2/1	602	535	535	0	0	4.8	37.3	-	42.1	252.0	34.4	37.3	71.8
2/2	368	368	368	0	0	0.0	1.1	-	1.1	10.3	0.6	1.1	1.7
3/1	1282	1180	-	-	-	11.4	56.7	-	68.0	191.1	36.1	56.7	92.7
3/2+3/3	1394	1228	-	-	-	11.7	87.1	-	98.9	255.3	39.1	87.1	126.2
4/2+4/1	1421	1280	-	-	-	12.7	75.1	-	87.8	222.4	41.6	75.1	116.7
4/3	1331	1240	-	-	-	10.0	51.9	-	62.0	167.6	35.5	51.9	87.5
5/1	1165	1165	-	-	-	0.9	2.7	-	3.7	11.3	6.9	2.7	9.7
5/2	1243	1243	-	-	-	0.6	4.5	-	5.0	14.6	2.1	4.5	6.6
6/1	243	243	-	-	-	3.2	0.5	-	3.7	54.7	5.9	0.5	6.4
6/2	487	486	-	-	-	5.5	11.4	-	16.9	124.7	12.2	11.4	23.6
7/1	186	186	-	-	-	0.1	0.4	-	0.5	9.7	1.6	0.4	2.0
7/2	253	253	-	-	-	1.0	0.7	-	1.7	24.6	4.0	0.7	4.7
8/1	845	845	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	848	848	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1473	1473	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1423	1423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1274	1274	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	315	315	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	236	236	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	581	581	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1449	1449	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	119	119	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

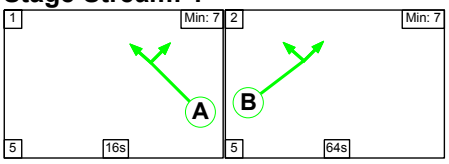
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	-26.2	Total Delay for Signalled Lanes (pcuHr):	187.47	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-23.3	Total Delay for Signalled Lanes (pcuHr):	151.99	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	20.47	Cycle Time (s):	90
		PRC Over All Lanes (%):	-26.2	Total Delay Over All Lanes(pcuHr):	403.13		

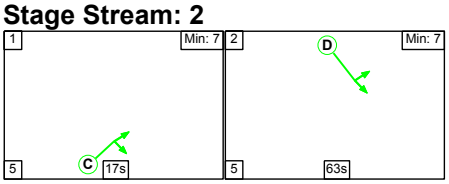
Full Input Data And Results
Scenario 9: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

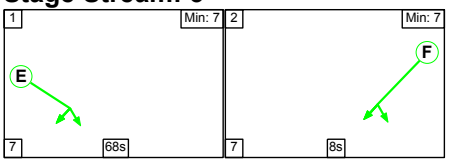
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	64
Change Point	41	62

Stage Stream: 2

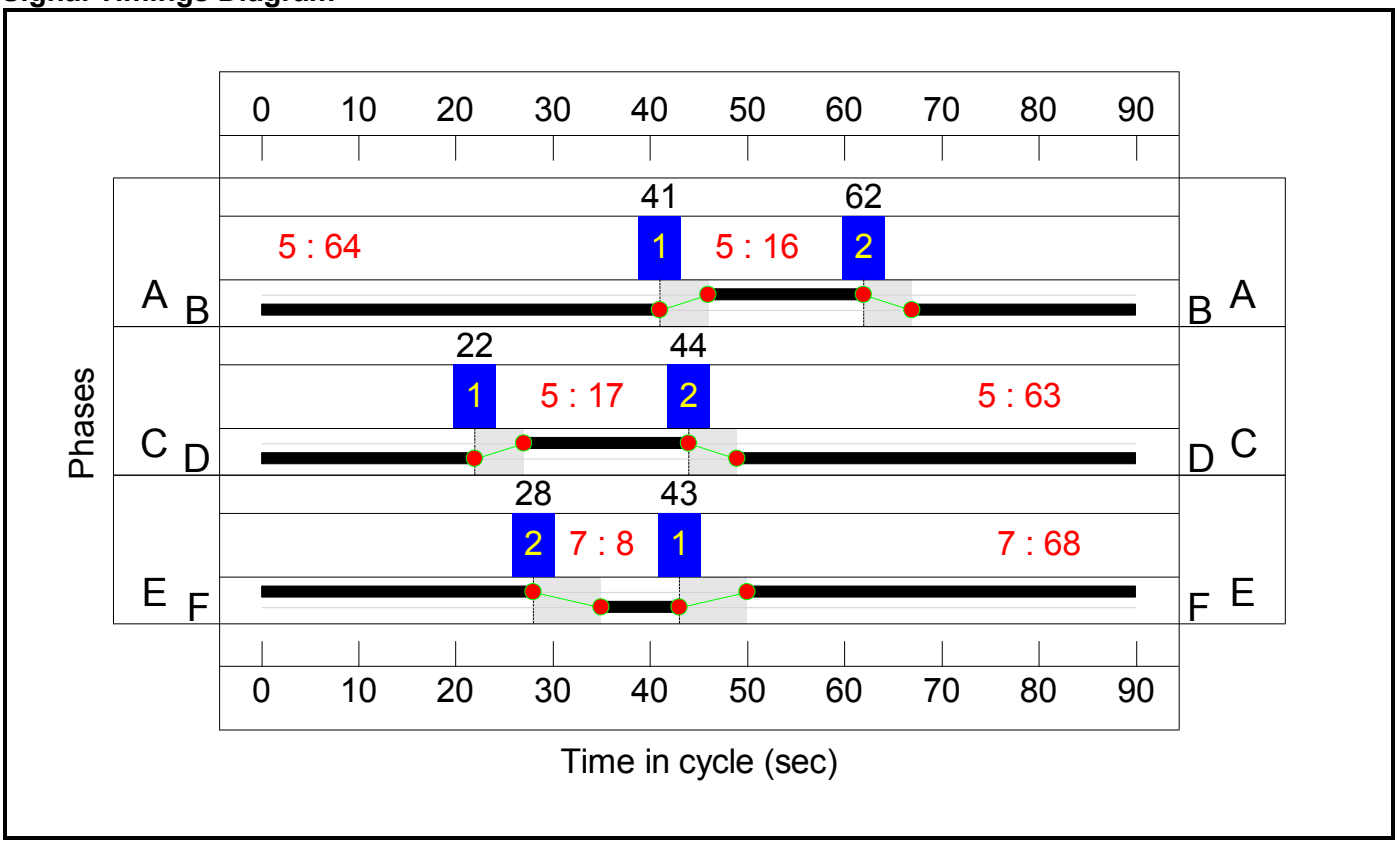
Stage	1	2
Duration	17	63
Change Point	22	44

Stage Stream: 3

Stage	1	2
Duration	68	8
Change Point	43	28

Full Input Data And Results

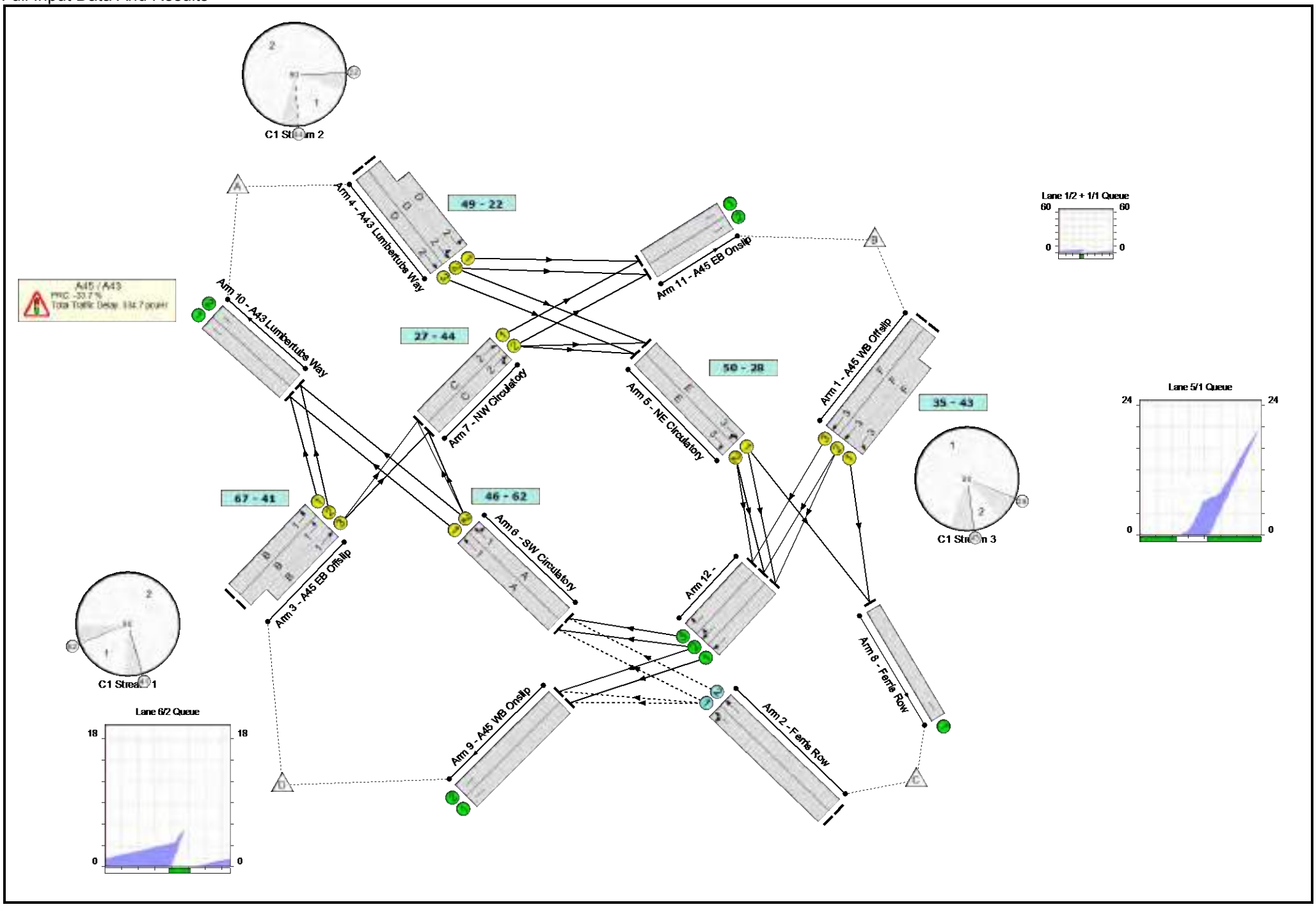
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**120.3%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**120.3%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	8	-	349	1800:1800	180+180	86.7 : 107.2%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	8	-	72	1800	180	40.0%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	189	1941	423	44.7%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	160	1965	478	33.5%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	64	-	859	1800	1300	66.1%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	64	-	1117	1800:1800	1117+334	77.0 : 77.0%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	63	-	1610	1800:1800	1152+186	120.3 : 120.3%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	63	-	1503	1800	1280	117.4%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	68	-	1476	1900	1457	87.2%
5/2	NE Circulatory Right	U	3	N/A	E		1	68	-	1503	1900	1457	87.9%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	16	-	247	1900	359	65.1%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	16	-	232	1900	359	64.6%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	17	-	88	1900	380	23.2%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	17	-	267	1900	380	70.3%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	669	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1094	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1507	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1106	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	994	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	177	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	1000	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1659	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	72	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**349**	**0**	**0**	**54.1**	**280.6**	**0.0**	**334.7**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**349**	**0**	**0**	**54.1**	**280.6**	**0.0**	**334.7**	**-**	**-**	**-**	**-**
1/2+1/1	349	336	-	-	-	4.4	13.5	-	17.9	184.5	5.1	13.5	18.6
1/3	72	72	-	-	-	0.8	0.3	-	1.1	54.6	1.7	0.3	2.0
2/1	189	189	189	0	0	0.7	0.4	-	1.1	21.1	3.2	0.4	3.6
2/2	160	160	160	0	0	0.0	0.3	-	0.3	5.8	0.8	0.3	1.1
3/1	859	859	-	-	-	1.6	1.0	-	2.6	10.7	11.2	1.0	12.2
3/2+3/3	1117	1117	-	-	-	1.9	1.7	-	3.5	11.4	11.2	1.7	12.9
4/2+4/1	1610	1338	-	-	-	19.5	138.8	-	158.3	353.9	49.6	138.8	188.4
4/3	1503	1280	-	-	-	17.0	114.8	-	131.8	315.7	43.1	114.8	157.9
5/1	1270	1270	-	-	-	1.9	3.3	-	5.1	14.6	19.6	3.3	22.9
5/2	1280	1280	-	-	-	0.2	3.5	-	3.7	10.4	1.0	3.5	4.5
6/1	233	233	-	-	-	0.9	0.9	-	1.8	28.2	2.7	0.9	3.7
6/2	232	232	-	-	-	1.5	0.9	-	2.4	37.4	5.0	0.9	5.9
7/1	88	88	-	-	-	1.5	0.2	-	1.6	66.7	2.2	0.2	2.4
7/2	267	267	-	-	-	2.3	1.2	-	3.4	46.4	6.2	1.2	7.3
8/1	619	619	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	925	925	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1298	1298	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1092	1092	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	994	994	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	274	274	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	149	149	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	831	831	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1436	1436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	72	72	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

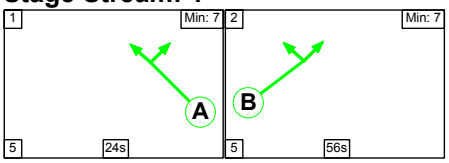
Full Input Data And Results

C1	Stream: 1	PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	10.33	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-33.7	Total Delay for Signalled Lanes (pcuHr):	295.17	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-19.1	Total Delay for Signalled Lanes (pcuHr):	27.83	Cycle Time (s):	90
		PRC Over All Lanes (%):	-33.7	Total Delay Over All Lanes(pcuHr):	334.70		

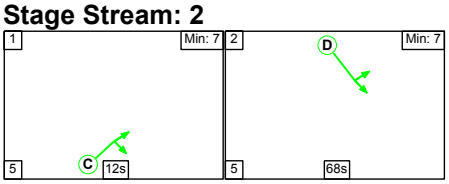
Full Input Data And Results
Scenario 10: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

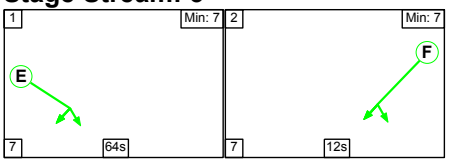
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	56
Change Point	11	40

Stage Stream: 2

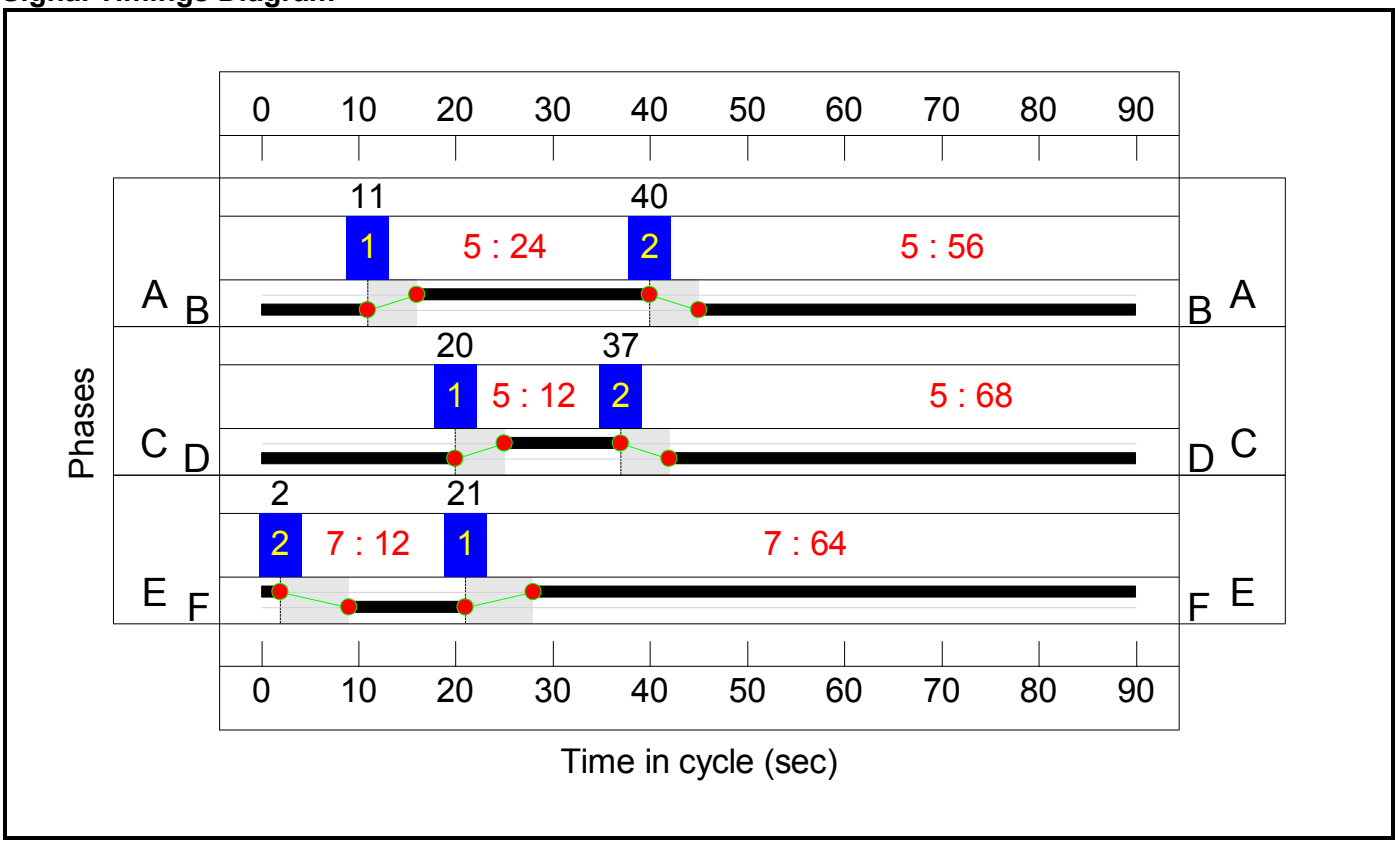
Stage	1	2
Duration	12	68
Change Point	20	37

Stage Stream: 3

Stage	1	2
Duration	64	12
Change Point	21	2

Full Input Data And Results

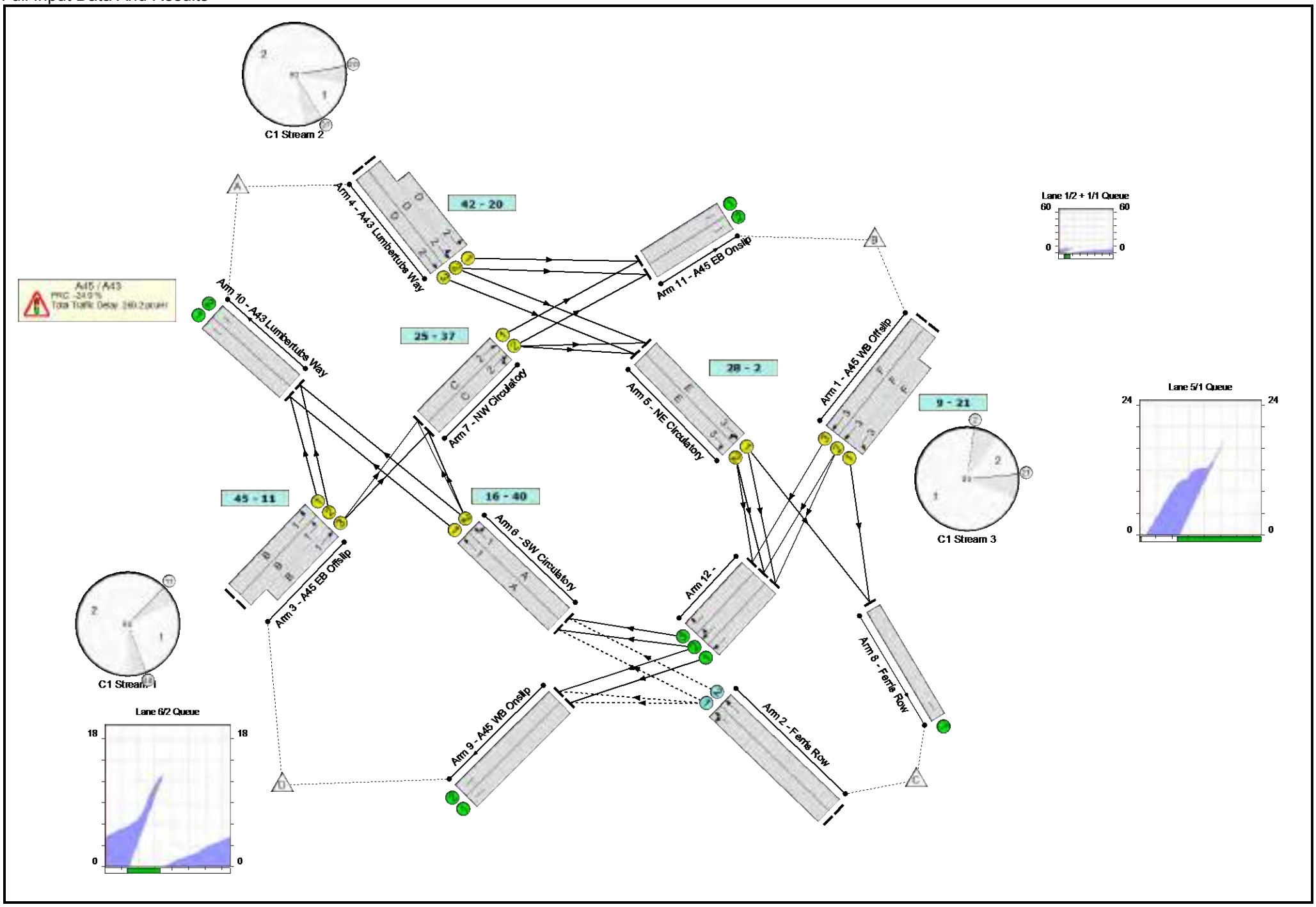
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.4%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.4%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	12	-	475	1800:1800	260+240	107.3 : 81.6%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	12	-	194	1800	260	74.6%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	430	1941	428	100.4%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	329	1965	418	78.7%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	56	-	1236	1800	1140	108.4%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	56	-	1328	1800:1800	1097+85	112.4 : 112.4%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	68	-	1385	1800:1800	1286+130	97.8 : 97.8%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	68	-	1297	1800	1380	94.0%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	64	-	1261	1900	1372	91.1%
5/2	NE Circulatory Right	U	3	N/A	E		1	64	-	1298	1900	1372	94.6%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	24	-	344	1900	528	61.6%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	24	-	523	1900	528	99.1%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	12	-	177	1900	274	64.5%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	12	-	247	1900	274	86.2%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	687	Inf	Inf	0.0%
9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	985	Inf	Inf	0.0%

Full Input Data And Results

9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1448	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1580	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1427	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	243	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	770	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1577	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**757**	**0**	**0**	**53.5**	**206.8**	**0.0**	**260.2**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**757**	**0**	**0**	**53.5**	**206.8**	**0.0**	**260.2**	**-**	**-**	**-**	**-**
1/2+1/1	475	456	-	-	-	5.9	15.8	-	21.6	164.1	7.5	15.8	23.2
1/3	194	194	-	-	-	2.0	1.4	-	3.4	63.1	4.6	1.4	6.0
2/1	430	428	428	0	0	2.4	10.8	-	13.2	110.6	27.4	10.8	38.1
2/2	329	329	329	0	0	0.2	1.8	-	1.9	21.3	5.7	1.8	7.4
3/1	1236	1140	-	-	-	10.9	53.7	-	64.6	188.2	33.3	53.7	87.0
3/2+3/3	1328	1182	-	-	-	13.7	77.4	-	91.1	246.9	40.3	77.4	117.7
4/2+4/1	1385	1385	-	-	-	3.4	12.4	-	15.8	41.0	31.0	12.4	43.4
4/3	1297	1297	-	-	-	3.2	6.7	-	9.9	27.4	27.0	6.7	33.7
5/1	1251	1251	-	-	-	2.9	4.8	-	7.7	22.1	18.0	4.8	22.7
5/2	1298	1298	-	-	-	2.8	7.3	-	10.1	28.1	11.2	7.3	18.5
6/1	325	325	-	-	-	0.8	0.8	-	1.6	17.3	1.9	0.8	2.7
6/2	523	523	-	-	-	2.9	10.3	-	13.2	90.5	12.9	10.3	23.2
7/1	177	177	-	-	-	0.8	0.9	-	1.7	33.7	2.3	0.9	3.2
7/2	237	237	-	-	-	1.7	2.7	-	4.5	67.9	5.5	2.7	8.2
8/1	678	678	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	983	983	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1447	1447	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1465	1465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1291	1291	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	243	243	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	769	769	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1558	1558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	194	194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

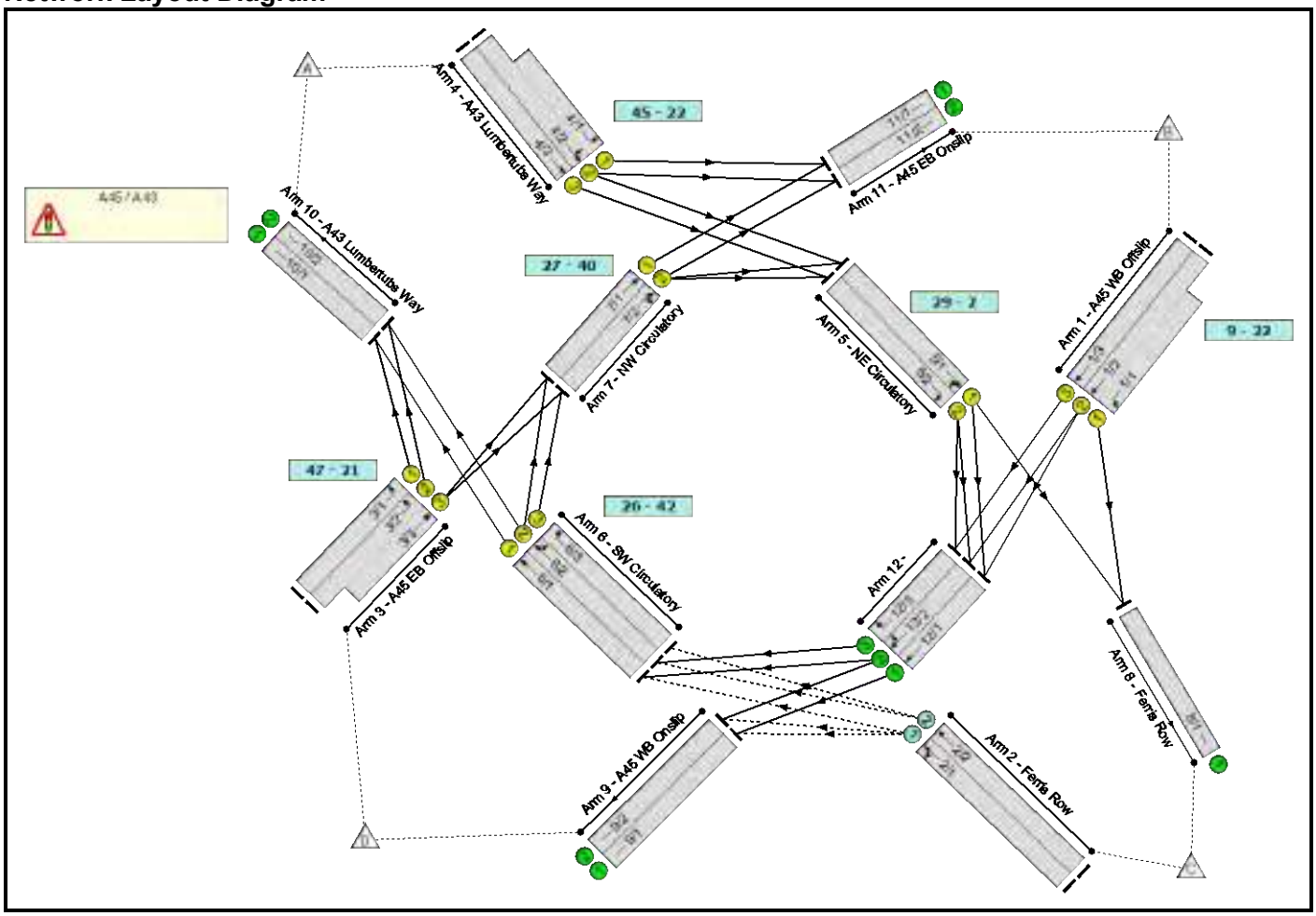
C1	Stream: 1	PRC for Signalled Lanes (%):	-24.9	Total Delay for Signalled Lanes (pcuHr):	170.42	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	-8.7	Total Delay for Signalled Lanes (pcuHr):	31.79	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-19.2	Total Delay for Signalled Lanes (pcuHr):	42.87	Cycle Time (s):	90
		PRC Over All Lanes (%):	-24.9	Total Delay Over All Lanes(pcuHr):	260.23		

Full Input Data And Results

User and Project Details

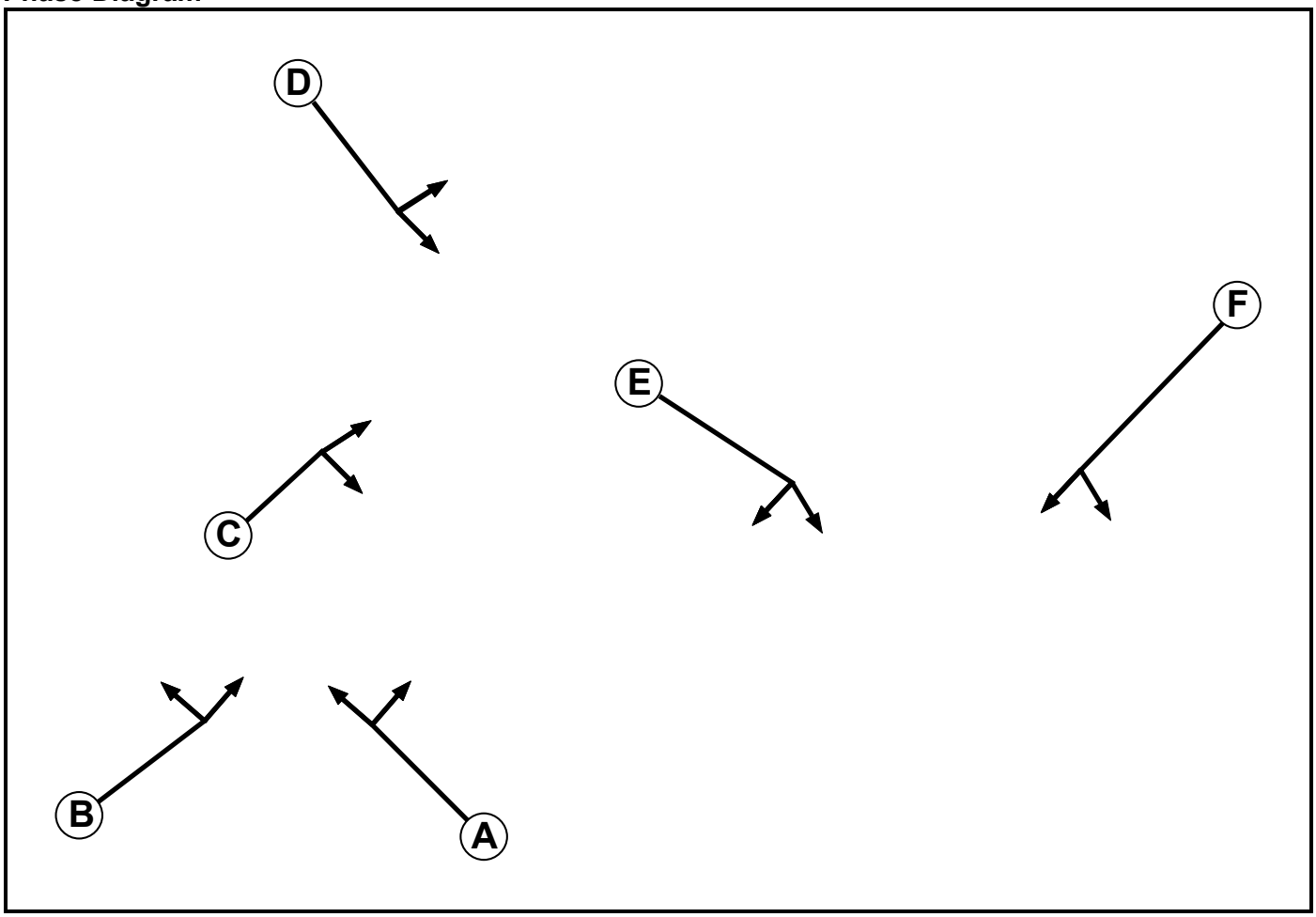
Project:	Rail Central
Title:	Junction 11
Location:	A45, Nene Valley Way (south); A43, Lumbertubs Way/ A45, Nene Valley Way (north)/ Ferris Row
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

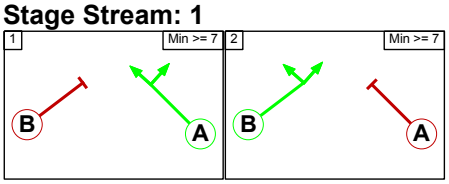
Terminating Phase	Starting Phase						
		A	B	C	D	E	F
	A		5	-	-	-	-
	B	5		-	-	-	-
	C	-	-		5	-	-
	D	-	-	5		-	-
	E	-	-	-	-		7
	F	-	-	-	-	7	

Phases in Stage

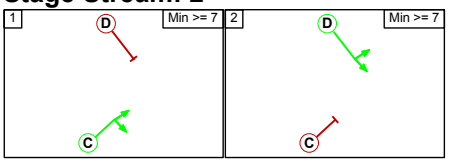
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F

Stage Diagram

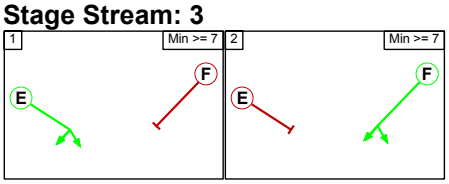
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 3

	To Stage		
From Stage		1	2
	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 / A43

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (Ferris Row)	6/1 (Ahead)	1100	0	12/1	0.33	All	-	-	-	-	-
				12/2	0.33	All					
	9/1 (Left)	1100	0	12/1	0.33	All					
	9/2 (Left)	1100	0	12/1	0.33	All					
				12/2	0.33	To 9/2 (Ahead)					
2/2 (Ferris Row)	6/2 (Ahead)	1300	0	12/1	0.33	All	-	-	-	-	-
				12/2	0.33	All					
				12/3	0.33	All					
	6/3 (Ahead)	1300	0	12/1	0.33	All					
				12/2	0.33	All					
				12/3	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A45 / A43

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A45 WB Offslip)	U	F	2	3	11.3	Geom	-	3.75	0.00	Y	Arm 8 Left	90.00
1/2 (A45 WB Offslip)	U	F	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 12 Ahead	140.00
1/3 (A45 WB Offslip)	U	F	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 12 Ahead	190.00
2/1 (Ferris Row)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
											Arm 9 Left	110.00
2/2 (Ferris Row)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	50.00
3/1 (A45 EB Offslip)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 10 Left	100.00
3/2 (A45 EB Offslip)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 10 Left	120.00
3/3 (A45 EB Offslip)	U	B	2	3	12.2	Geom	-	3.50	0.00	Y	Arm 7 Ahead	200.00
4/1 (A43 Lumbertubs Way)	U	D	2	3	9.0	Geom	-	4.00	0.00	Y	Arm 11 Left	75.00
4/2 (A43 Lumbertubs Way)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Ahead	110.00
											Arm 11 Left	85.00
4/3 (A43 Lumbertubs Way)	U	D	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 5 Ahead	120.00
5/1 (NE Circulatory)	U	E	2	3	19.0	User	2100	-	-	-	-	-
5/2 (NE Circulatory)	U	E	2	3	20.5	User	2100	-	-	-	-	-
6/1 (SW Circulatory)	U	A	2	3	20.7	User	2100	-	-	-	-	-
6/2 (SW Circulatory)	U	A	2	3	24.3	User	2100	-	-	-	-	-
6/3 (SW Circulatory)	U	A	2	3	24.3	User	2100	-	-	-	-	-

7/1 (NW Circulatory)	U	C	2	3	5.9	User	2100	-	-	-	-	-
7/2 (NW Circulatory)	U	C	2	3	6.4	User	2100	-	-	-	-	-
8/1 (Ferris Row)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (A45 WB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A45 WB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A45 EB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A45 EB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	6.1	Inf	-	-	-	-	-	-
12/2	U		2	3	6.1	Inf	-	-	-	-	-	-
12/3	U		2	3	6.1	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DS AM'	08:00	09:00	01:00	
2: '2021 DS PM'	17:00	18:00	01:00	
3: '2031 DS AM'	08:00	09:00	01:00	
4: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	91	360	243	2222	2916
	B	272	0	248	0	520
	C	53	93	0	226	372
	D	2120	0	238	0	2358
	Tot.	2536	453	729	2448	6166

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DS AM
Junction: A45 / A43	
1/1 (short)	248
1/2 (with short)	389(In) 141(Out)
1/3	131
2/1	226
2/2	146
3/1	1101
3/2 (with short)	1257(In) 1019(Out)
3/3 (short)	238
4/1 (short)	213
4/2 (with short)	1490(In) 1277(Out)
4/3	1426
5/1	1368
5/2	1426
6/1	231
6/2	226
6/3	52
7/1	41
7/2	290
8/1	729
9/1	1000
9/2	1448
10/1	1332
10/2	1204
11/1	254
11/2	199
12/1	887
12/2	1566
12/3	132

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	100.0 %	1944	1944
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 110.00	0.0 % 100.0 %	1939	1939
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead Arm 11 Left	110.00 85.00	88.5 % 11.5 %	1938	1938
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	54	299	532	1943	2828
	B	311	0	222	0	533
	C	0	326	0	582	908
	D	2932	0	109	16	3057
	Tot.	3297	625	863	2541	7326

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DS PM
Junction: A45 / A43	
1/1 (short)	222
1/2 (with short)	439(In) 217(Out)
1/3	94
2/1	582
2/2	326
3/1	1483
3/2 (with short)	1574(In) 1449(Out)
3/3 (short)	125
4/1 (short)	179
4/2 (with short)	1450(In) 1271(Out)
4/3	1378
5/1	1275
5/2	1379
6/1	271
6/2	252
6/3	168
7/1	158
7/2	293
8/1	863
9/1	925
9/2	1616
10/1	1754
10/2	1543
11/1	337
11/2	288
12/1	634
12/2	1596
12/3	94

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	100.0 %	1944	1944
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1939	1939
				Arm 9 Left	110.00	100.0 %		
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead	110.00	90.6 %	1938	1938
				Arm 11 Left	85.00	9.4 %		
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	91	391	219	2412	3113
	B	228	0	193	0	421
	C	62	98	0	189	349
	D	1719	0	257	0	1976
	Tot.	2100	489	669	2601	5859

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2031 DS AM
Junction: A45 / A43	
1/1 (short)	193
1/2 (with short)	351(In) 158(Out)
1/3	70
2/1	189
2/2	160
3/1	888
3/2 (with short)	1088(In) 831(Out)
3/3 (short)	257
4/1 (short)	226
4/2 (with short)	1591(In) 1365(Out)
4/3	1522
5/1	1457
5/2	1522
6/1	249
6/2	224
6/3	6
7/1	92
7/2	263
8/1	669
9/1	1075
9/2	1526
10/1	1137
10/2	963
11/1	318
11/2	171
12/1	981
12/2	1680
12/3	70

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	100.0 %	1944	1944
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1939	1939
				Arm 9 Left	110.00	100.0 %		
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead	110.00	87.9 %	1938	1938
				Arm 11 Left	85.00	12.1 %		
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	65	218	410	1989	2682
	B	473	0	196	0	669
	C	0	329	0	430	759
	D	2469	0	81	14	2564
	Tot.	3007	547	687	2433	6674

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2031 DS PM
Junction: A45 / A43	
1/1 (short)	196
1/2 (with short)	463(In) 267(Out)
1/3	206
2/1	430
2/2	329
3/1	1239
3/2 (with short)	1325(In) 1230(Out)
3/3 (short)	95
4/1 (short)	127
4/2 (with short)	1366(In) 1239(Out)
4/3	1316
5/1	1241
5/2	1318
6/1	332
6/2	358
6/3	177
7/1	152
7/2	272
8/1	687
9/1	965
9/2	1468
10/1	1571
10/2	1436
11/1	279
11/2	268
12/1	750
12/2	1585
12/3	206

Full Input Data And Results

Lane Saturation Flows

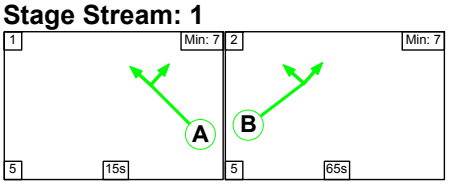
Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	100.0 %	1944	1944
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1939	1939
				Arm 9 Left	110.00	100.0 %		
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead	110.00	92.7 %	1938	1938
				Arm 11 Left	85.00	7.3 %		
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

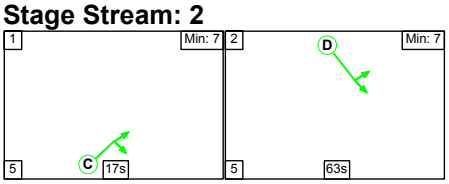
Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

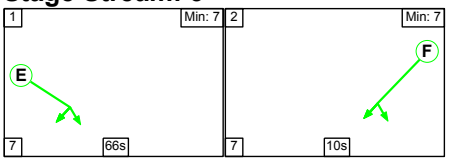
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	15	65
Change Point	19	39

Stage Stream: 2

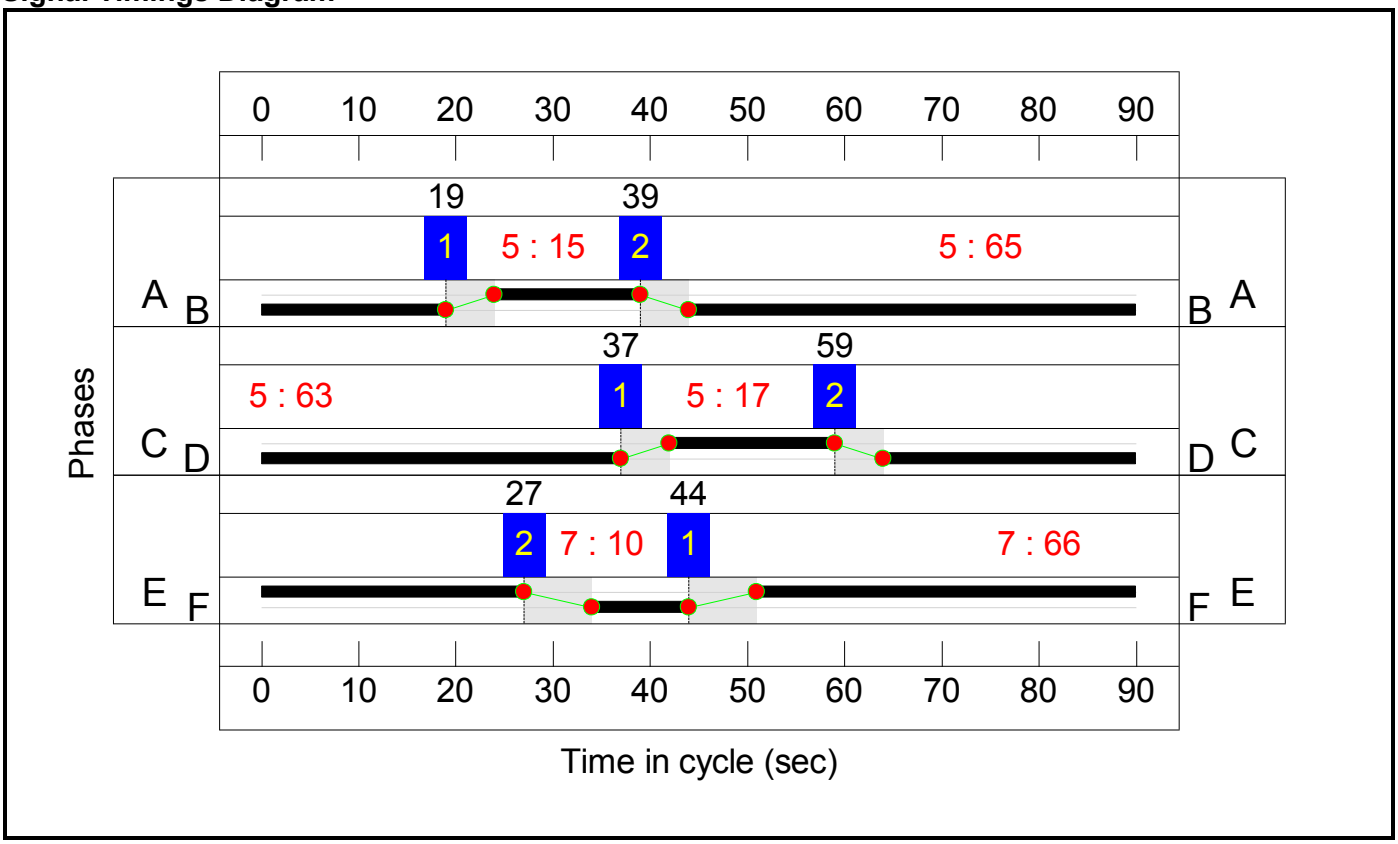
Stage	1	2
Duration	17	63
Change Point	37	59

Stage Stream: 3

Stage	1	2
Duration	66	10
Change Point	44	27

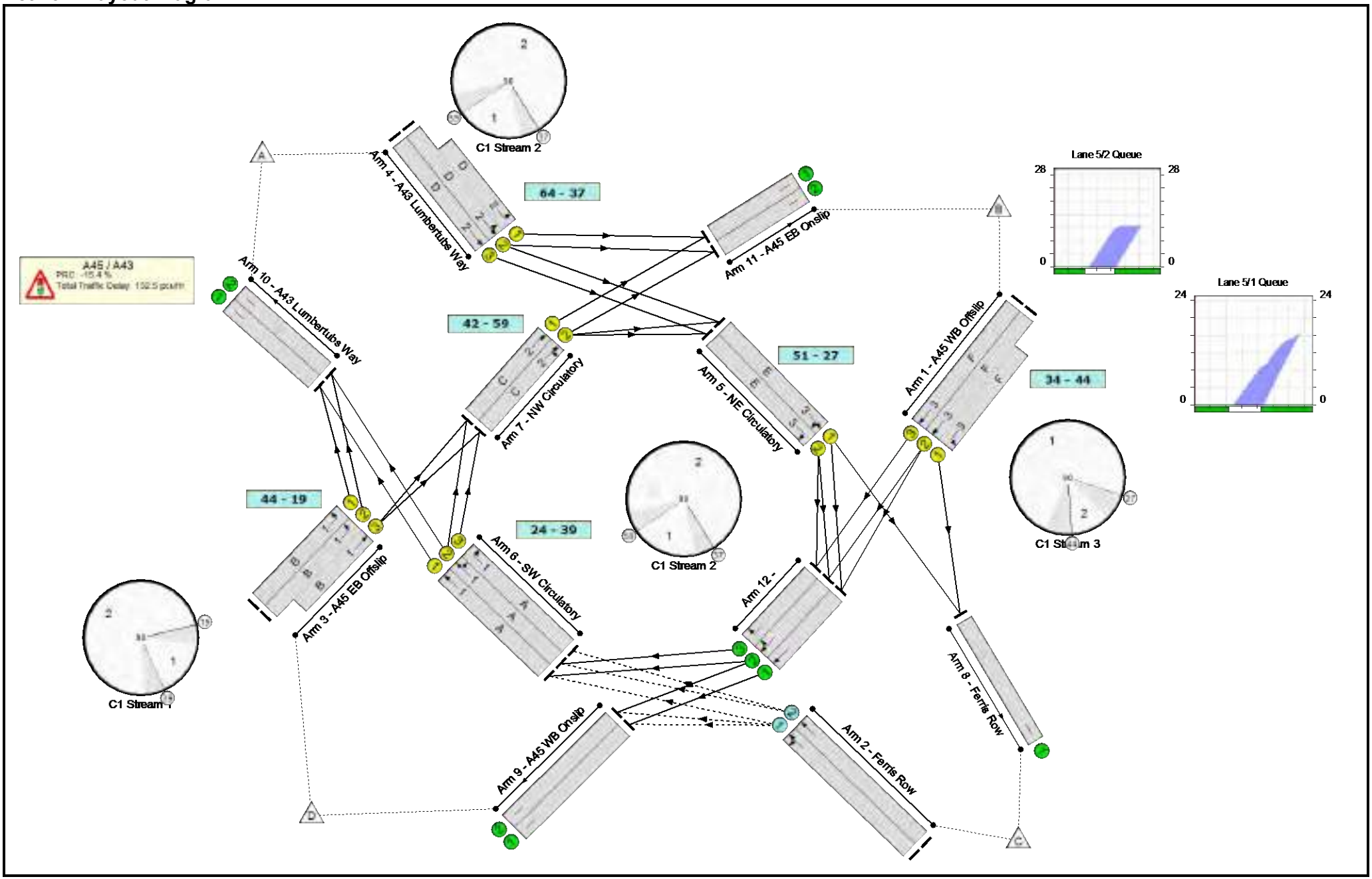
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.8%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.8%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	10	-	389	1944:1957	136+239	103.7 : 103.7%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	10	-	131	1950	238	55.0%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	226	1939	460	49.1%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	146	1908	467	31.2%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	65	-	1101	1936	1420	77.5%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	65	-	1257	1941:1950	1255+293	81.2 : 81.2%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	63	-	1490	1938:1975	1230+205	103.8 : 103.8%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	63	-	1426	1965	1397	102.1%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	66	-	1368	2100	1563	84.8%
5/2	NE Circulatory Right	U	3	N/A	E		1	66	-	1426	2100	1563	89.4%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	15	-	231	2100	373	61.4%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	15	-	226	2100	373	60.5%
6/3	SW Circulatory Right	U	1	N/A	A		1	15	-	52	2100	373	13.9%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	17	-	41	2100	420	9.8%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	17	-	290	2100	420	69.0%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	729	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1000	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1448	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1332	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1204	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	254	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	199	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	887	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1566	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	132	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**372**	**0**	**0**	**39.1**	**93.5**	**0.0**	**132.5**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**372**	**0**	**0**	**39.1**	**93.5**	**0.0**	**132.5**	**-**	**-**	**-**	**-**
1/2+1/1	389	380	-	-	-	4.5	13.9	-	18.4	170.6	6.4	13.9	20.3
1/3	131	131	-	-	-	1.4	0.6	-	2.0	53.8	3.1	0.6	3.7
2/1	226	226	226	0	0	0.2	0.5	-	0.7	10.4	2.1	0.5	2.6
2/2	146	146	146	0	0	0.0	0.2	-	0.2	5.9	0.5	0.2	0.8
3/1	1101	1101	-	-	-	2.3	1.7	-	4.0	13.0	16.8	1.7	18.5
3/2+3/3	1257	1257	-	-	-	2.2	2.1	-	4.3	12.3	15.3	2.1	17.5
4/2+4/1	1490	1435	-	-	-	7.5	37.5	-	45.1	108.9	40.4	37.5	78.0
4/3	1426	1397	-	-	-	6.5	27.4	-	33.9	85.5	36.4	27.4	63.7
5/1	1326	1326	-	-	-	2.8	2.7	-	5.5	15.0	17.1	2.7	19.8
5/2	1397	1397	-	-	-	3.1	4.0	-	7.1	18.4	12.8	4.0	16.8
6/1	229	229	-	-	-	2.9	0.8	-	3.7	58.2	5.5	0.8	6.3
6/2	226	226	-	-	-	3.0	0.8	-	3.7	59.5	5.5	0.8	6.2
6/3	52	52	-	-	-	0.4	0.1	-	0.5	36.6	1.1	0.1	1.2
7/1	41	41	-	-	-	0.1	0.1	-	0.1	9.3	0.9	0.1	0.9
7/2	290	290	-	-	-	2.2	1.1	-	3.3	41.3	5.4	1.1	6.5
8/1	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	967	967	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1421	1421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1330	1330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1204	1204	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	246	246	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	194	194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1537	1537	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

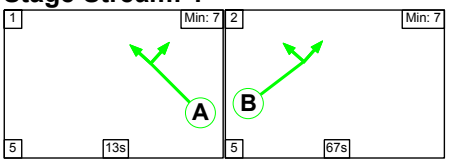
12/3	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	10.8	Total Delay for Signalled Lanes (pcuHr):	16.24	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-15.4	Total Delay for Signalled Lanes (pcuHr):	82.37	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-15.2	Total Delay for Signalled Lanes (pcuHr):	33.04	Cycle Time (s):	90
	PRC Over All Lanes (%):	-15.4	Total Delay Over All Lanes(pcuHr):	132.55		

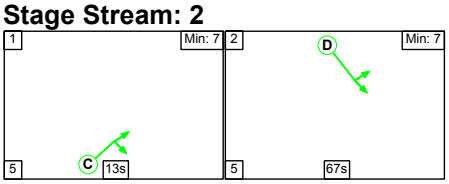
Full Input Data And Results
Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

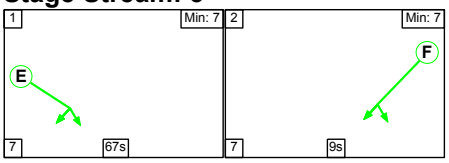
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	67
Change Point	30	48

Stage Stream: 2

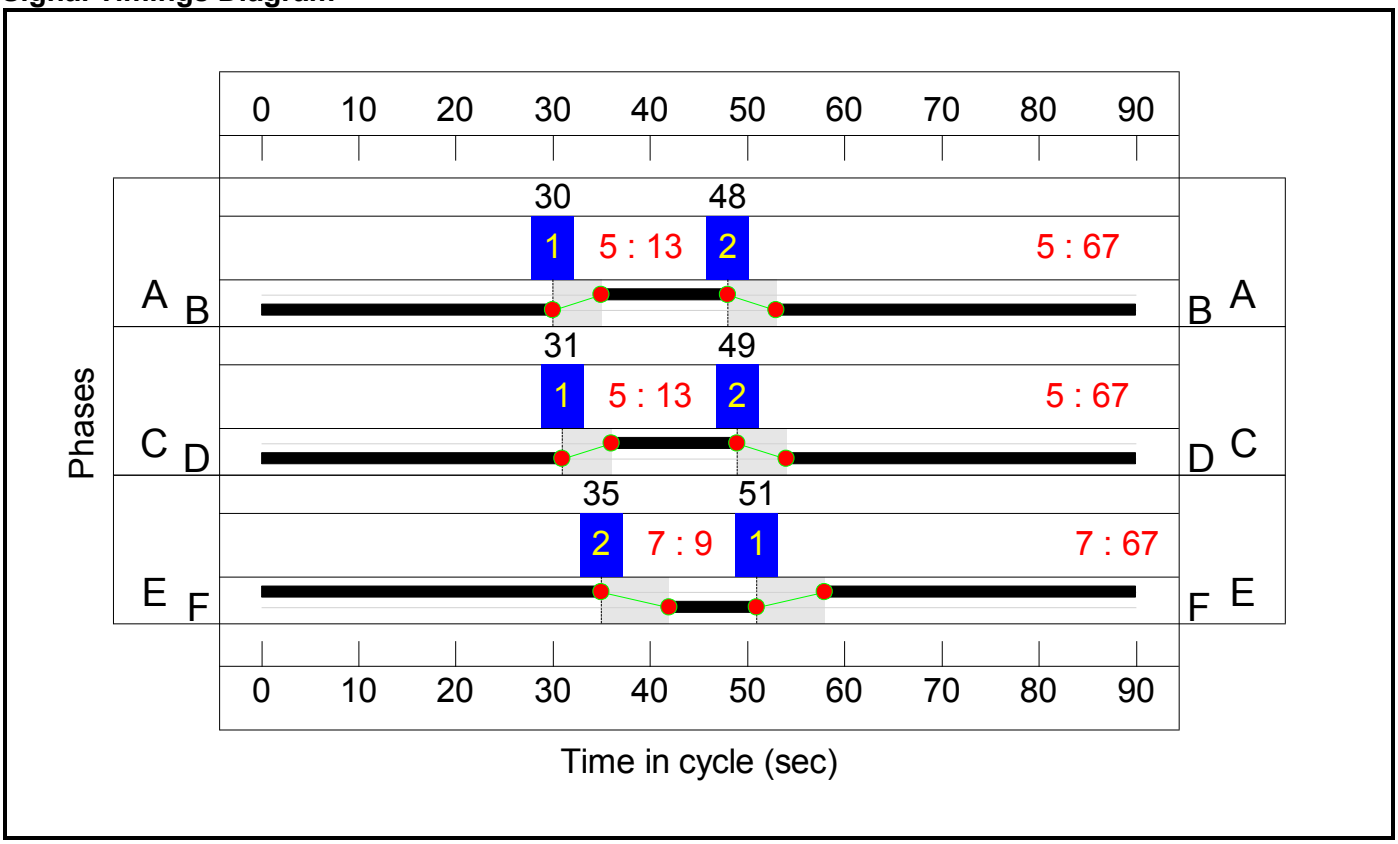
Stage	1	2
Duration	13	67
Change Point	31	49

Stage Stream: 3

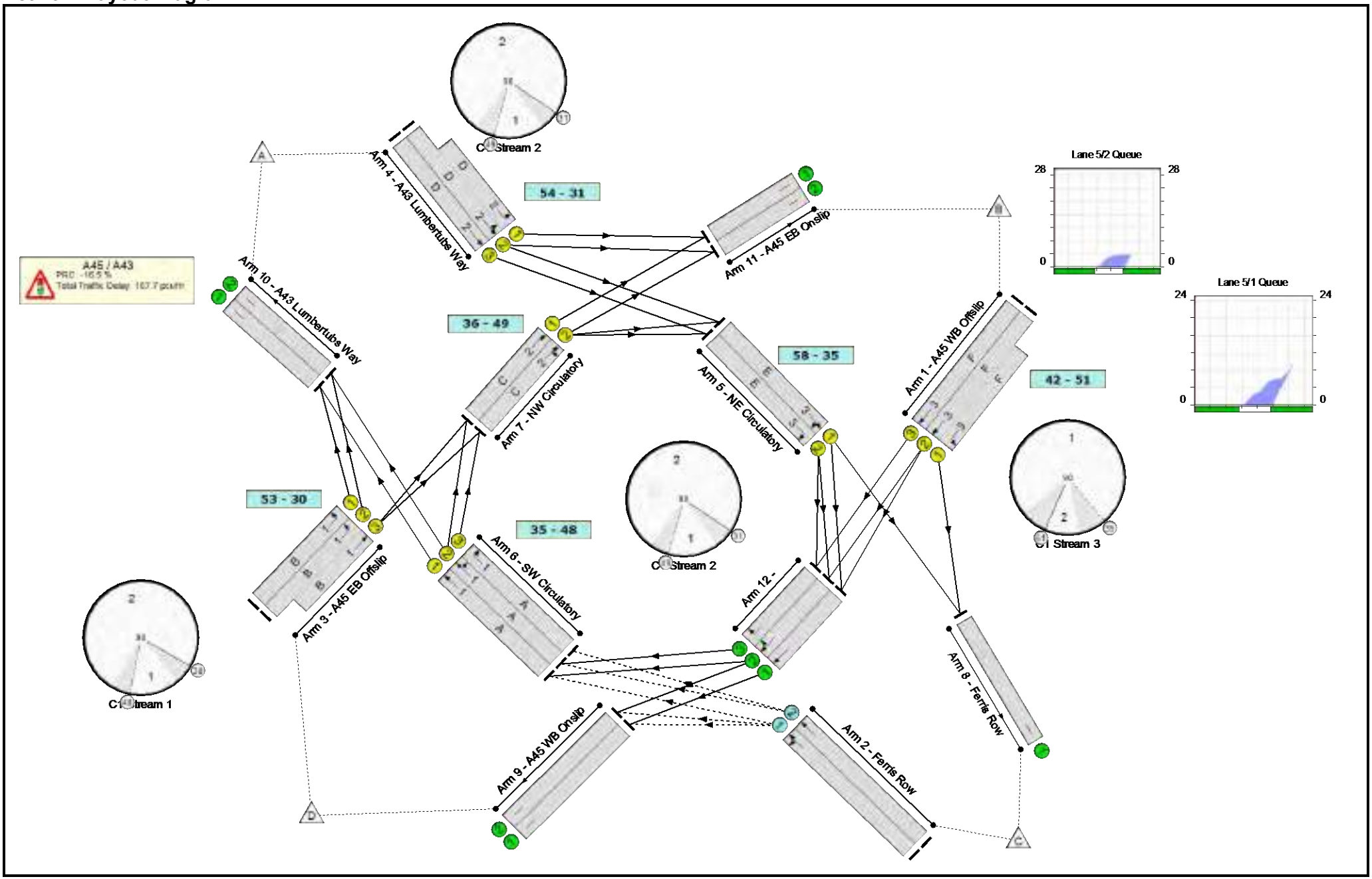
Stage	1	2
Duration	67	9
Change Point	51	35

Full Input Data And Results

Signal Timings Diagram



Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.9%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.9%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	9	-	439	1944:1957	216+217	100.5 : 102.1%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	9	-	94	1950	217	43.4%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	582	1939	555	104.9%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	326	1908	534	61.1%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	67	-	1483	1936	1463	101.4%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	67	-	1574	1941:1950	1398+121	103.7 : 103.7%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	67	-	1450	1938:1975	1325+187	95.9 : 95.9%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	67	-	1378	1965	1485	92.8%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	67	-	1275	2100	1587	80.1%
5/2	NE Circulatory Right	U	3	N/A	E		1	67	-	1379	2100	1587	86.9%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	13	-	271	2100	327	82.7%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	13	-	252	2100	327	77.1%
6/3	SW Circulatory Right	U	1	N/A	A		1	13	-	168	2100	327	51.4%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	13	-	158	2100	327	48.4%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	13	-	293	2100	327	88.3%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	863	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	925	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1616	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1754	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1543	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	337	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	288	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	634	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1596	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	94	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**881**	**0**	**0**	**42.8**	**124.9**	**0.0**	**167.7**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**881**	**0**	**0**	**42.8**	**124.9**	**0.0**	**167.7**	**-**	**-**	**-**	**-**
1/2+1/1	439	433	-	-	-	5.1	12.0	-	17.0	139.7	5.7	12.0	17.6
1/3	94	94	-	-	-	1.0	0.4	-	1.4	51.9	2.2	0.4	2.6
2/1	582	555	555	0	0	2.7	20.6	-	23.2	143.7	32.3	20.6	52.9
2/2	326	326	326	0	0	0.0	0.8	-	0.8	8.6	0.2	0.8	1.0
3/1	1483	1463	-	-	-	5.6	25.0	-	30.5	74.1	37.6	25.0	62.6
3/2+3/3	1574	1518	-	-	-	7.2	38.1	-	45.3	103.6	44.1	38.1	82.1
4/2+4/1	1450	1450	-	-	-	3.5	9.1	-	12.6	31.3	30.1	9.1	39.3
4/3	1378	1378	-	-	-	3.4	5.8	-	9.3	24.2	27.9	5.8	33.8
5/1	1271	1271	-	-	-	1.1	2.0	-	3.1	8.9	9.4	2.0	11.4
5/2	1379	1379	-	-	-	0.8	3.2	-	4.0	10.5	3.7	3.2	6.9
6/1	270	270	-	-	-	4.0	2.2	-	6.2	82.6	6.7	2.2	8.9
6/2	252	252	-	-	-	3.2	1.6	-	4.8	69.0	6.1	1.6	7.7
6/3	168	168	-	-	-	1.6	0.5	-	2.2	46.2	3.8	0.5	4.4
7/1	158	158	-	-	-	1.6	0.5	-	2.1	47.8	2.0	0.5	2.4
7/2	289	289	-	-	-	1.9	3.2	-	5.2	64.4	4.3	3.2	7.5
8/1	855	855	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	911	911	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1602	1602	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1733	1733	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1492	1492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	337	337	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	288	288	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1595	1595	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

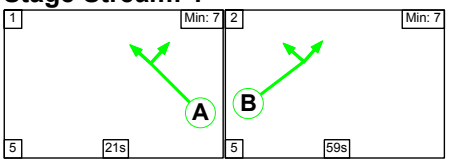
12/3	94	94	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-15.2	Total Delay for Signalled Lanes (pcuHr):	88.99	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-6.6	Total Delay for Signalled Lanes (pcuHr):	29.15	Cycle Time (s):	90		
C1	Stream: 3 PRC for Signalled Lanes (%):	-13.4	Total Delay for Signalled Lanes (pcuHr):	25.54	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-16.5	Total Delay Over All Lanes(pcuHr):	167.69				

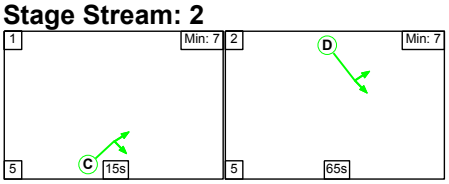
Full Input Data And Results
Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

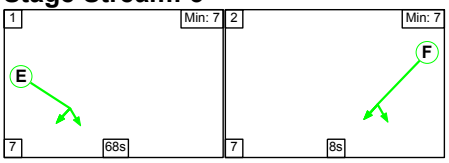
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	59
Change Point	34	60

Stage Stream: 2

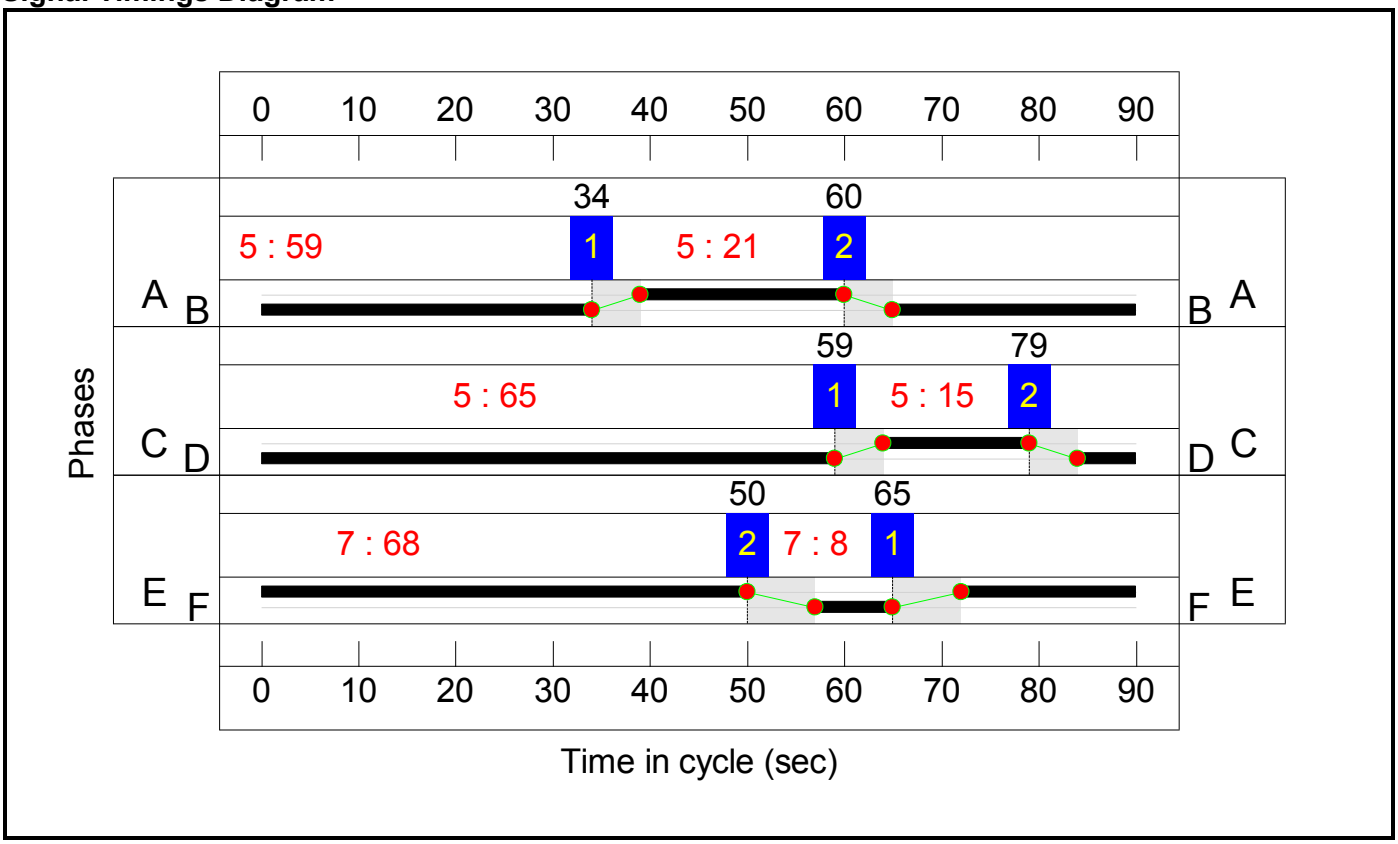
Stage	1	2
Duration	15	65
Change Point	59	79

Stage Stream: 3

Stage	1	2
Duration	68	8
Change Point	65	50

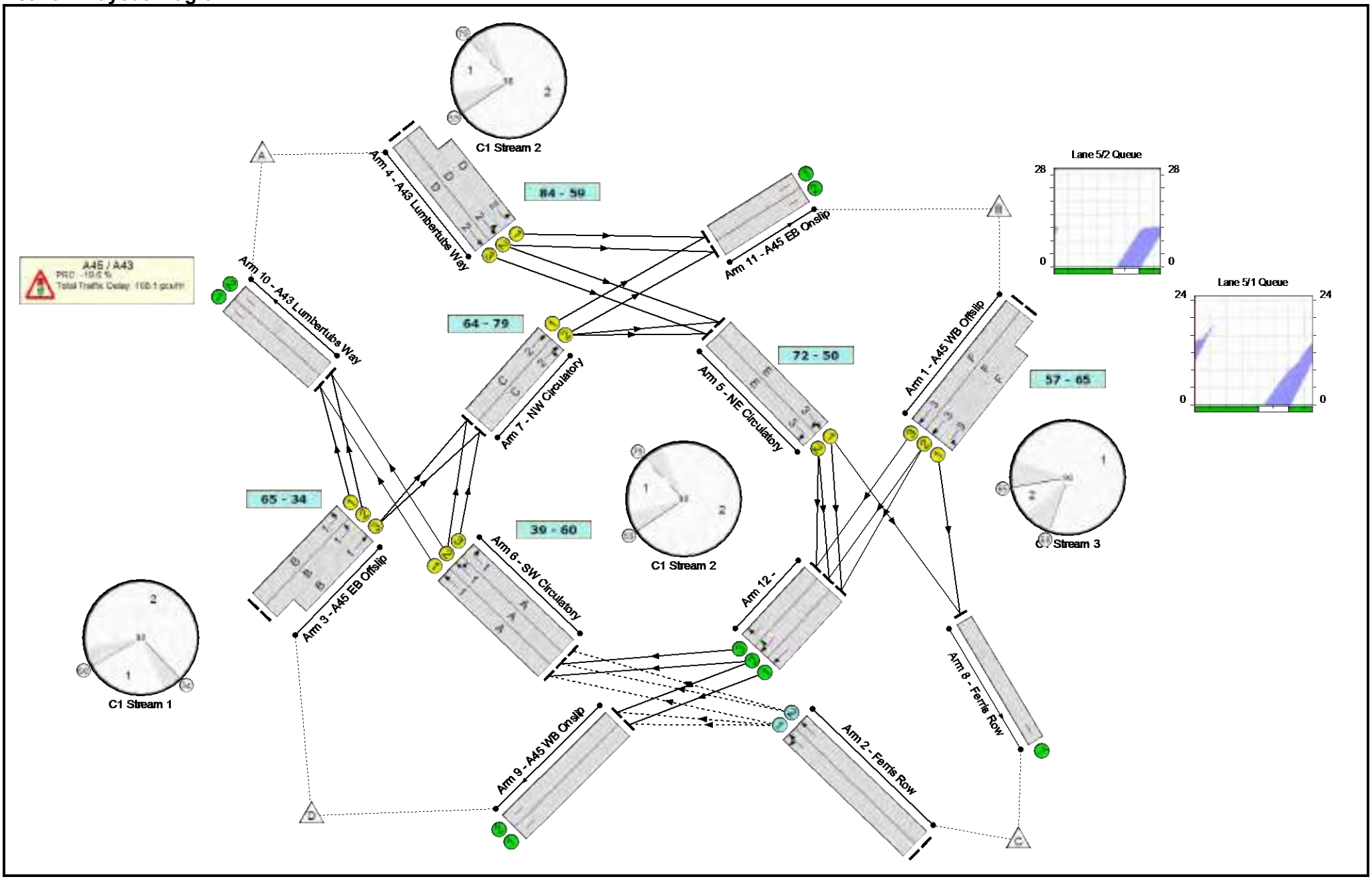
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.7%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**107.7%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	8	-	351	1944:1957	194+196	81.3 : 98.6%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	8	-	70	1950	195	35.9%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	189	1939	423	44.7%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	160	1908	449	35.7%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	59	-	888	1936	1291	68.8%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	59	-	1088	1941:1950	1112+344	74.7 : 74.7%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	65	-	1591	1938:1975	1268+210	107.7 : 107.7%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	65	-	1522	1965	1441	105.6%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	68	-	1457	2100	1610	85.2%
5/2	NE Circulatory Right	U	3	N/A	E		1	68	-	1522	2100	1610	89.5%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	21	-	249	2100	513	47.6%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	21	-	224	2100	513	43.6%
6/3	SW Circulatory Right	U	1	N/A	A		1	21	-	6	2100	513	1.2%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	15	-	92	2100	373	24.6%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	15	-	263	2100	373	70.4%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	669	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1075	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1526	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1137	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	963	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	318	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	171	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	981	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1680	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	70	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**349**	**0**	**0**	**40.4**	**127.7**	**0.0**	**168.1**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**349**	**0**	**0**	**40.4**	**127.7**	**0.0**	**168.1**	**-**	**-**	**-**	**-**
1/2+1/1	351	351	-	-	-	3.9	3.8	-	7.7	78.7	4.8	3.8	8.5
1/3	70	70	-	-	-	0.7	0.3	-	1.0	52.1	1.6	0.3	1.9
2/1	189	189	189	0	0	0.2	0.4	-	0.6	11.0	2.1	0.4	2.5
2/2	160	160	160	0	0	0.0	0.3	-	0.3	6.6	0.6	0.3	0.9
3/1	888	888	-	-	-	2.3	1.1	-	3.4	13.7	13.6	1.1	14.7
3/2+3/3	1088	1088	-	-	-	2.4	1.5	-	3.9	12.9	12.0	1.5	13.5
4/2+4/1	1591	1478	-	-	-	9.6	63.0	-	72.6	164.3	44.7	63.0	107.7
4/3	1522	1441	-	-	-	8.5	48.4	-	56.8	134.5	40.1	48.4	88.4
5/1	1371	1371	-	-	-	2.5	2.8	-	5.3	13.9	18.8	2.8	21.6
5/2	1441	1441	-	-	-	2.7	4.1	-	6.8	17.0	12.3	4.1	16.3
6/1	244	244	-	-	-	2.7	0.5	-	3.2	47.0	5.7	0.5	6.1
6/2	224	224	-	-	-	2.2	0.4	-	2.6	41.5	5.0	0.4	5.4
6/3	6	6	-	-	-	0.0	0.0	-	0.0	29.2	0.1	0.0	0.1
7/1	92	92	-	-	-	0.3	0.2	-	0.5	18.8	2.2	0.2	2.4
7/2	263	263	-	-	-	2.3	1.2	-	3.5	47.4	4.1	1.2	5.3
8/1	653	653	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	1005	1005	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1450	1450	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1132	1132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	963	963	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	159	159	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	911	911	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1599	1599	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

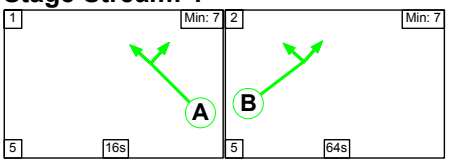
12/3	70	70	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	20.4	Total Delay for Signalled Lanes (pcuHr):	13.09	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-19.6	Total Delay for Signalled Lanes (pcuHr):	133.41	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-9.6	Total Delay for Signalled Lanes (pcuHr):	20.76	Cycle Time (s):	90
	PRC Over All Lanes (%):	-19.6	Total Delay Over All Lanes(pcuHr):	168.14		

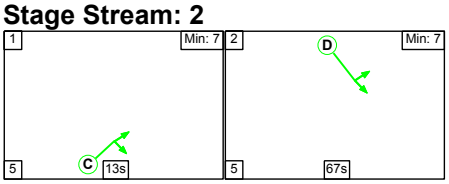
Full Input Data And Results
Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

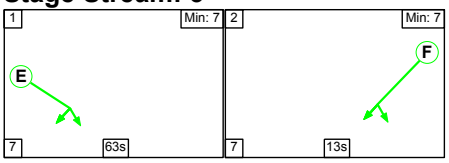
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	64
Change Point	21	42

Stage Stream: 2

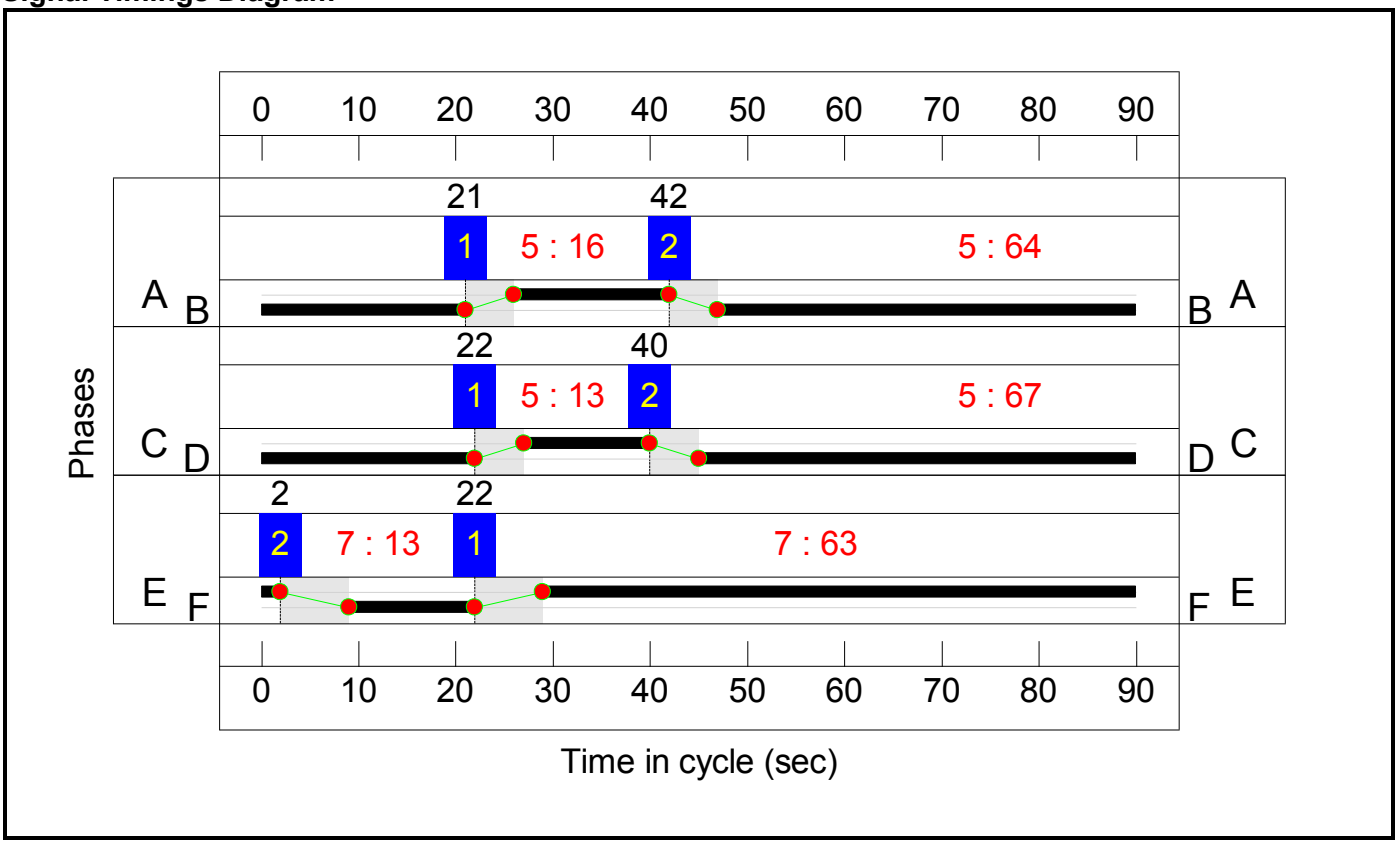
Stage	1	2
Duration	13	67
Change Point	22	40

Stage Stream: 3

Stage	1	2
Duration	63	13
Change Point	22	2

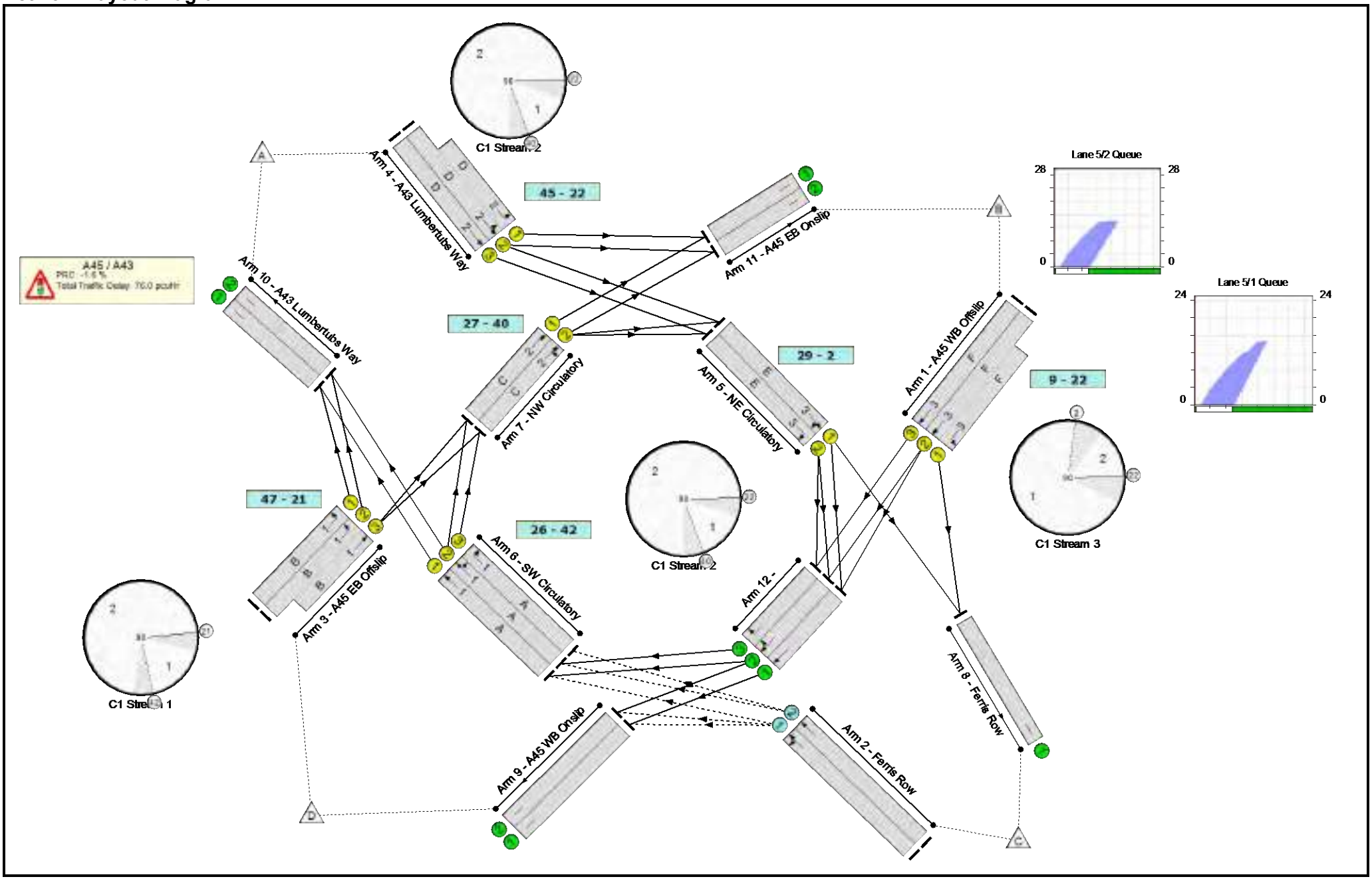
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
A45 / A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	13	-	463	1944:1957	302+249	88.3 : 78.6%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	13	-	206	1950	303	67.9%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	430	1939	506	85.0%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	329	1908	461	71.3%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	64	-	1239	1936	1398	88.6%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	64	-	1325	1941:1950	1345+104	91.4 : 91.4%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	67	-	1366	1938:1975	1358+139	91.2 : 91.2%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	67	-	1316	1965	1485	88.6%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	63	-	1241	2100	1493	83.1%
5/2	NE Circulatory Right	U	3	N/A	E		1	63	-	1318	2100	1493	88.3%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	16	-	332	2100	397	83.7%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	16	-	358	2100	397	90.3%
6/3	SW Circulatory Right	U	1	N/A	A		1	16	-	177	2100	397	44.6%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	13	-	152	2100	327	46.5%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	13	-	272	2100	327	83.3%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	687	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	965	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1468	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1571	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1436	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	279	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	268	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	750	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1585	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	206	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**759**	**0**	**0**	**36.0**	**40.0**	**0.0**	**76.0**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**759**	**0**	**0**	**36.0**	**40.0**	**0.0**	**76.0**	**-**	**-**	**-**	**-**
1/2+1/1	463	463	-	-	-	4.7	2.5	-	7.2	55.8	6.5	2.5	9.0
1/3	206	206	-	-	-	2.1	1.0	-	3.1	54.0	4.8	1.0	5.8
2/1	430	430	430	0	0	1.3	2.7	-	4.0	33.2	9.2	2.7	11.8
2/2	329	329	329	0	0	0.1	1.2	-	1.4	14.9	2.3	1.2	3.5
3/1	1239	1239	-	-	-	3.3	3.7	-	7.0	20.4	23.7	3.7	27.5
3/2+3/3	1325	1325	-	-	-	3.5	4.9	-	8.4	22.8	25.5	4.9	30.4
4/2+4/1	1366	1366	-	-	-	3.0	4.9	-	7.9	20.7	25.3	4.9	30.1
4/3	1316	1316	-	-	-	3.0	3.7	-	6.7	18.4	24.1	3.7	27.9
5/1	1241	1241	-	-	-	3.1	2.4	-	5.5	16.1	14.7	2.4	17.1
5/2	1318	1318	-	-	-	3.5	3.6	-	7.1	19.5	14.1	3.6	17.7
6/1	332	332	-	-	-	1.9	2.4	-	4.3	47.1	4.3	2.4	6.7
6/2	358	358	-	-	-	2.2	3.9	-	6.0	60.7	7.7	3.9	11.6
6/3	177	177	-	-	-	1.6	0.4	-	2.0	39.9	3.9	0.4	4.3
7/1	152	152	-	-	-	0.8	0.4	-	1.3	30.3	1.0	0.4	1.5
7/2	272	272	-	-	-	1.8	2.3	-	4.1	54.6	3.5	2.3	5.8
8/1	687	687	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	965	965	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1468	1468	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1571	1571	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1436	1436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	279	279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	268	268	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	750	750	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1585	1585	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

12/3	206	206	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-1.6	Total Delay for Signalled Lanes (pcuHr):	27.76	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-1.4	Total Delay for Signalled Lanes (pcuHr):	19.98	Cycle Time (s):	90		
C1	Stream: 3 PRC for Signalled Lanes (%):	1.9	Total Delay for Signalled Lanes (pcuHr):	22.93	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-1.6	Total Delay Over All Lanes(pcuHr):	76.00				

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

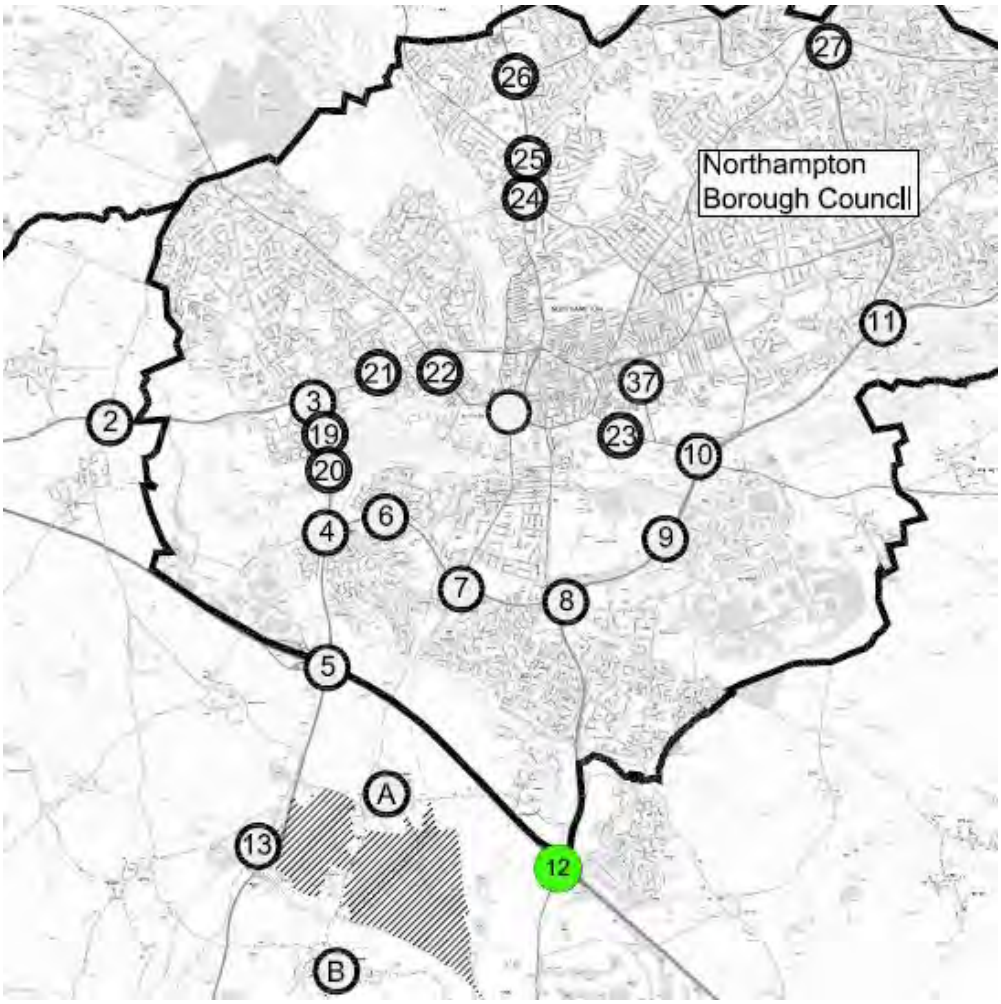
Technical Note No. 20

1 JUNCTION TWELVE – M1 J15

Site Description of the Base Junction

1.1 Junction Twelve is a five arm signalised gyratory to the west of the Yusen Logistics Ltd – Head Office. It connects the M1, the A45, Saxon Avenue and the A5086 Upton Way. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Twelve Location Plan



Base Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Thursday 22nd October 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the baseline flows along with queue length surveys recorded at five minute intervals. The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios. This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.3 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.4 The junction has been set up based on the guidance provided within the LinSig 3 handbook and industry standard guidance. Default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied, further to comments received from NCC and in accordance with guidance contained in LTN 1/09.

1.5 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays included **Appendix B**.

1.6 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.7 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A45	30	19-40	63
	Arm 2 – Saxon Avenue	8	7-10	3
	Arm 3 – M1 South	10	3-20	15
	Arm 4 – A508	41	29-55	41
	Arm 5 – M1 North	22	11-32	8
PM Peak Hour (1700-1800)	Arm 1 – A45	36	28-44	197
	Arm 2 – Saxon Avenue	8	4-13	15
	Arm 3 – M1 South	15	8-22	103
	Arm 4 – A508	64	53-72	122
	Arm 5 – M1 North	13	9-15	12

1.8 It is considered that the modelled queues are generally in line with the surveyed queue, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (62 seconds for the AM peak period and 80 seconds for the PM peak period).

Results of the Base Modelling

1.9 The results of the modelling for the existing junction layout, Shown in **Figure EL12** are summarised in **Table 2** and junction analysis results are included at **Appendix C**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2015	100%	48%	96%	71%	85%	98%	82%	88%	89%	163%
	2021 DM	115%	56%	99%	103%	88%	132%	54%	91%	146%	144%
	2021 DS	125%	49%	104%	146%	144%	154%	57%	100%	154%	138%
	2031 DM	145%	46%	119%	102%	103%	150%	55%	130%	154%	152%
	2031 DS	165%	46%	119%	97%	118%	149%	56%	93%	151%	144%
	2015	36	4	24	12	7	128	4	13	10	7

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
Queue – MMQ (PCU)	2021 DM	139	3	34	36	15	37	9	17	28	13
	2021 DS	206	2	54	26	13	343	3	27	144	108
	2031 DM	316	2	142	30	32	272	3	111	186	116
	2031 DS	449	2	139	23	57	326	4	22	173	118
Average Delay (sec/pcu)	2015	87.4	18.2	59.7	30.3	31.2	403.0	21.4	28.2	36.0	25.4
	2021 DM	279.6	106.9	47.6	136.7	110.1	33.9	106.9	47.6	66.2	63.6
	2021 DS	419.7	35.6	133.3	82.0	99.8	686.5	24.6	74.7	698.9	557.3
	2031 DM	629.8	32.7	342.7	136.2	143.2	643.0	16.5	449.8	684.4	665.9
	2031 DS	799.2	32.7	340.1	76.6	341.7	663.2	29.5	47.4	690.3	630.6

1.10 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2021 AM and PM scenarios, with Arms 1, 3, 4 and 5 exceeding theoretical capacity further as a result, in the AM peak and Arms 1, 3 and 5. There is also a significant increase in queueing on Arm 1 of 67 PCU in the AM peak and a total of 521 PCU during the PM peak. Therefore mitigation is considered necessary to address the development's impact.

1.11 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2031 AM and PM scenarios, with Arms 1 and 5 exceeding theoretical capacity further as a result, both peak periods. There is also a significant increase in queueing on Arms 1 and 5 during both peak periods and Arm 1 in the PM. Therefore mitigation is considered necessary to address the development's impact.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (DoS)	101	118	129	151	174	172	152	161	161	157
Overall Junction Delay (PCUhr)	122	283	350	626	778	236	852	923	1168	911

1.12 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for 2021 by 11% and 9% for the AM and PM peak respectively. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 67 and 71 PCUhrs for 2021 AM and PM peaks respectively. Therefore mitigation is considered necessary to address the development's impact.

1.13 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for 2031 by 23% for 2031 AM. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 152 and 317 PCUhrs for 2031 AM peak scenario. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.14 The proposed mitigation is shown in **Appendix J.10** in the TA and summarised is as follows:

- Provision of an additional lane on the A45 approach;
- Provision of an additional lane on the northern circulatory;
- Provision of an additional lane on the M1 South off slip.

1.15 The results of the mitigated junction model is shown in **Table 4** and included as **Appendix C.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 5**	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 5**
DoS (%)	**2021 DS**	98.7%	32.7%	92.5%	97.8%	77.4%	140.6%	35.1%	84.5%	133.9%	143.1%
	Comparison to 2021 DM	-16.3%	-23.7%	-6.7%	-5.5%	-21.0%	9.1%	-18.8%	-6.7%	-11.8%	-1.3%

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
	2031 DS	117.1%	26.3%	97.2%	106.7%	113.2%	96.3%	57.9%	91.5%	143.1%	146.6%
	Comparison to 2031 DM	-27.6%	-19.6%	-21.7%	4.3%	10.5%	-54.0%	2.9%	-38.0%	-10.7%	-5.2%
Queue – MMQ (PCU)	**2021 DS**	39	2	25	17	3	25	4	15	14	12
	Comparison to 2021 DM	-101	-1	-9	-19	-11	-12	-5	-2	-14	-1
	2031 DS	101	2	30	31	46	34	4	21	175	125
	Comparison to 2031 DM	-215	-1	-112	1	13	-238	2	-91	-12	9
Average Delay (sec/pcu)	**2021 DS**	63	24	47	85	30	21	35	28	44	51
	Comparison to 2021 DM	-217	-83	-1	-52	-80	-13	-72	-20	-22	-12
	2031 DS	325	16.4	50	182	227	46	32	41	604	625
	Comparison to 2031 DM	-305	-16	-293	46	84	-597	15	-408	-81	-41

1.16 As shown in **Table 3**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2021 DM scenarios. All arms shows an improvement and therefore the junction operates 73.2% better in 2021 AM peak. Whilst Arm One decreases in capacity, the other four arms shows an improvement and therefore the junction operates 29.5% better in the 2021 PM scenarios. Furthermore, there is a reduction in queues AM peak and PM peak of 141 and 35 respectively, and a reduction in overall delay of over seven minutes in the AM peak and over two minutes in the PM peak.

1.17 As shown in **Table 3**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst Arm five shows a decrease in capacity, the other four arms shows an improvement and therefore the junction operates 13% and 29.2% better in 2031 AM and PM peaks. Furthermore, there is a reduction in queues AM peak and PM peak of 25 and 37 respectively, and a reduction in overall delay of almost four minute minutes in the AM peak and over three minutes in the PM peak.

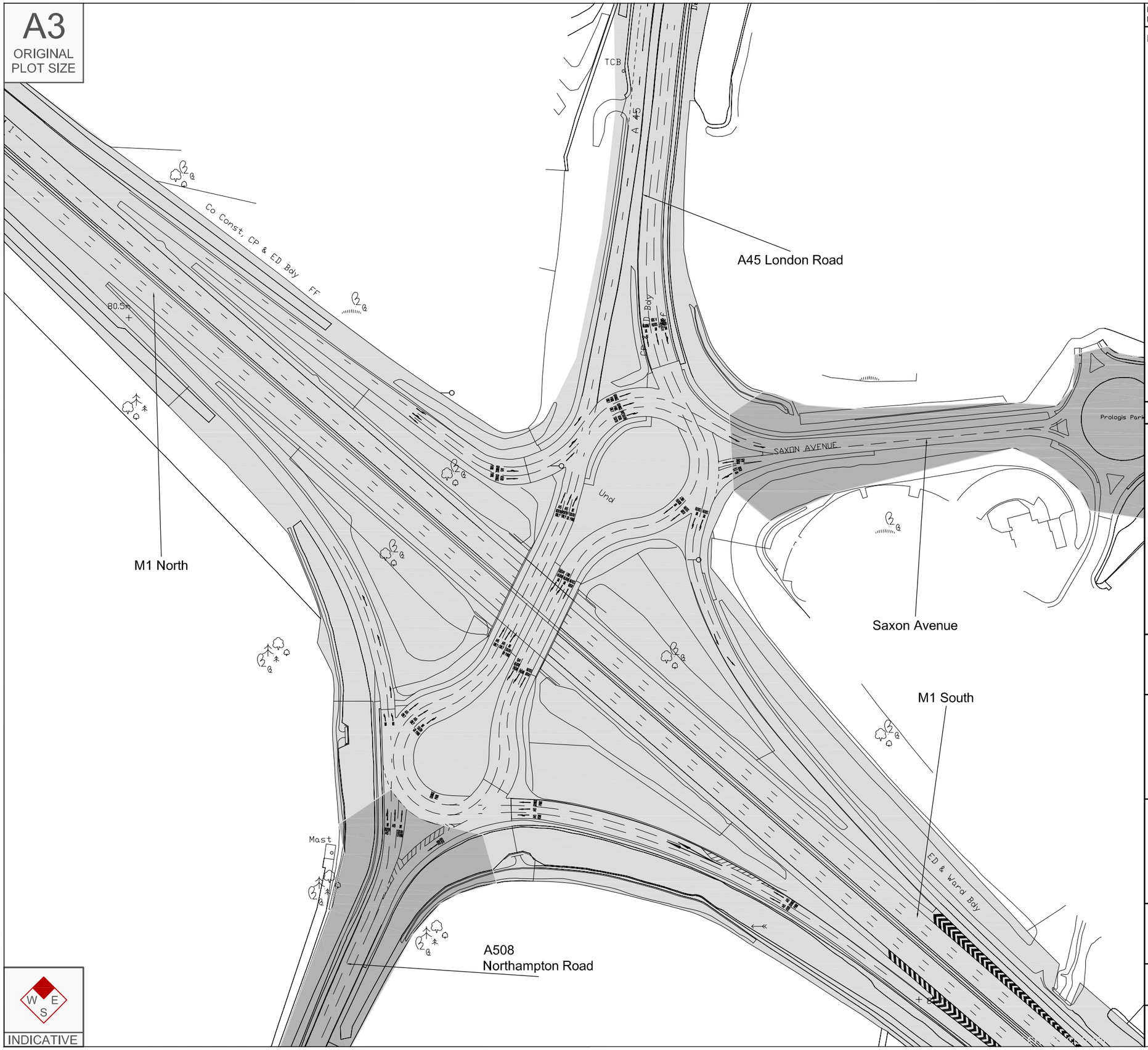
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	100	-18	120	-31	149	-3	153	-8
Overall Junction Delay (PCUhr)	146	-137	481	-146	895	42	561	-606

1.18 The junction operates 18% and 3% better in 2021 AM peak and 2021 PM peak. Furthermore, the junction operates 8% better than the 2031 scenario PM peak than PM peak 2031. Finally, the overall junction delay is 146 and 606 PCUhrs better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
M1 Junction 15
Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:2000	26.05.17	JD	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL12	

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1347	164	3319	274	5105
D - A45 SB IN	639	4	115	1232	727	2718
E - Saxon Avenue	29	201	0	44	26	300
G - M1 NB IN	3020	1047	9	0	19	4095
H - A508	338	328	17	92	0	774
Total	4026	2927	305	4688	1047	12992

Modelled Flows
2021 DM
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1654	126	3865	264	5909
D - A45 SB IN	1285	42	126	1479	896	3827
E - Saxon Avenue	16	37	0	48	19	119
G - M1 NB IN	3404	1308	59	0	89	4860
H - A508	394	305	26	89	0	815
Total	5098	3346	337	5481	1268	15530

Modelled Flows
2021 DS2
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1678	115	3866	246	5905
D - A45 SB IN	1404	40	128	1494	865	3931
E - Saxon Avenue	23	42	0	49	11	124
G - M1 NB IN	3511	1319	74	0	79	4982
H - A508	402	299	26	89	0	816
Total	5339	3377	343	5497	1201	15758

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - Saxon Avenue	0	0	0	0	0	0
G - M1 NB IN	0	0	0	0	0	0
H - A508	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	307	-38	545	-11	805
D - A45 SB IN	646	37	11	247	168	1109
E - Saxon Avenue	-13	-164	0	4	-7	-181
G - M1 NB IN	384	261	49	0	70	765
H - A508	56	-22	9	-3	0	40
Total	1072	419	32	794	221	2538

2021 DS2 minus 2015 Base
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	331	-49	546	-28	801
D - A45 SB IN	764	36	13	262	137	1212
E - Saxon Avenue	-6	-159	0	5	-15	-176
G - M1 NB IN	491	271	65	0	60	887
H - A508	64	-29	9	-3	0	41
Total	1313	450	39	810	154	2766

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1210	144	0	258	1612
D - A45 SB IN	766	0	82	1017	581	2446
E - Saxon Avenue	35	163	0	81	27	306
G - M1 NB IN	0	928	67	0	31	1026
H - A508	113	363	28	62	0	566
Total	914	2664	321	1160	897	5956

2021 DM adjusted to count
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1517	106	545	247	2417
D - A45 SB IN	1412	37	93	1264	749	3555
E - Saxon Avenue	22	-1	0	85	20	125
G - M1 NB IN	384	1189	116	0	101	1791
H - A508	169	341	37	59	0	606
Total	1986	3083	353	1954	1118	8494

2021 DS2 adjusted to count
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1541	95	546	230	2413
D - A45 SB IN	1530	36	95	1279	718	3658
E - Saxon Avenue	29	4	0	86	12	130
G - M1 NB IN	491	1199	132	0	91	1913
H - A508	177	334	37	59	0	607
Total	2227	3114	360	1970	1051	8722

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	902	78	3558	213	4538
D - A45 SB IN	958	27	114	996	721	2095
E - Saxon Avenue	29	148	0	11	9	187
G - M1 NB IN	3440	1067	29	0	30	4536
H - A508	313	454	8	29	0	803
Total	4739	2599	229	4592	974	12160

Modelled Flows
2021 DM
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1114	68	4233	198	5613
D - A45 SB IN	1419	52	125	1216	690	3502
E - Saxon Avenue	37	40	0	11	8	96
G - M1 NB IN	3431	1469	33	0	118	5052
H - A508	469	582	16	85	0	1152
Total	5357	3258	242	5545	1013	15414

Modelled Flows
2021 DS2
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1256	71	4324	239	5890
D - A45 SB IN	1790	30	125	1154	801	3900
E - Saxon Avenue	24	29	0	11	4	68
G - M1 NB IN	3729	1336	32	0	75	5173
H - A508	488	577	14	68	0	1147
Total	6031	3228	242	5556	1120	16177

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - Saxon Avenue	0	0	0	0	0	0
G - M1 NB IN	0	0	0	0	0	0
H - A508	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	212	-10	676	-15	1075
D - A45 SB IN	461	25	11	221	-32	1407
E - Saxon Avenue	8	-107	0	0	-1	-92
G - M1 NB IN	-8	402	4	0	88	515
H - A508	156	128	8	56	0	348
Total	617	659	12	952	40	3255

2021 DS2 minus 2015 Base
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	353	-6	766	26	1352
D - A45 SB IN	832	3	11	159	79	1805
E - Saxon Avenue	-5	-119	0	0	-4	-119
G - M1 NB IN	289	269	3	0	45	636
H - A508	175	123	6	39	0	343
Total	1291	629	13	964	146	4017

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	962	102	0	181	1245
D - A45 SB IN	882	0	149	1061	846	2938
E - Saxon Avenue	30	246	0	66	20	362
G - M1 NB IN	0	1020	54	0	55	1129
H - A508	204	559	37	36	0	836
Total	1116	2787	342	1163	1102	6510

2021 DM adjusted to count
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1174	92	676	166	2320
D - A45 SB IN	1343	25	160	1282	814	4345
E - Saxon Avenue	38	139	0	66	19	270
G - M1 NB IN	-8	1422	58	0	143	1644
H - A508	360	687	45	92	0	1184
Total	1733	3446	354	2115	1142	9765

2021 DS2 adjusted to count
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1315	96	766	207	2597
D - A45 SB IN	1714	3	160	1220	925	4743
E - Saxon Avenue	25	127	0	66	16	243
G - M1 NB IN	289	1289	57	0	100	1765
H - A508	379	682	43	75	0	1179
Total	2407	3416	355	2127	1248	10527

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1,347	164	3,319	274	5,105
D - A45 SB IN	639	4	115	1,232	727	2,718
E - Saxon Avenue	29	201	0	44	26	300
G - M1 NB IN	3,020	1,047	9	0	19	4,095
H - A508	338	328	17	92	0	774
Total	4,026	2,927	305	4,688	1,047	12,992

Modelled Flows
2031 DM
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	3	1,799	177	4,120	341	6,441
D - A45 SB IN	1,513	43	121	1,212	945	3,834
E - Saxon Avenue	11	45	0	53	11	121
G - M1 NB IN	3,489	1,143	56	0	62	4,749
H - A508	425	501	43	122	0	1,091
Total	5,440	3,531	397	5,508	1,359	16,236

Modelled Flows
2031 DS2
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1,750	178	4,123	354	6,405
D - A45 SB IN	1,747	50	120	1,278	862	4,058
E - Saxon Avenue	17	41	0	55	6	119
G - M1 NB IN	3,667	1,211	50	0	77	5,005
H - A508	435	492	34	127	0	1,088
Total	5,866	3,544	382	5,584	1,300	16,675

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - Saxon Avenue	0	0	0	0	0	0
G - M1 NB IN	0	0	0	0	0	0
H - A508	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	3	452	14	801	67	1,336
D - A45 SB IN	874	39	6	-20	218	1,116
E - Saxon Avenue	-18	-156	0	9	-15	-179
G - M1 NB IN	469	96	47	0	43	654
H - A508	87	173	26	30	0	317
Total	1,414	604	92	820	312	3,244

2031 DS2 minus 2015 Base
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	403	14	804	80	1,300
D - A45 SB IN	1,108	45	5	46	135	1,339
E - Saxon Avenue	-13	-160	0	11	-19	-181
G - M1 NB IN	647	164	41	0	58	910
H - A508	97	165	17	35	0	314
Total	1,840	617	77	896	253	3,683

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1210	144	0	258	1612
D - A45 SB IN	766	0	82	1017	581	2446
E - Saxon Avenue	35	163	0	81	27	306
G - M1 NB IN	0	928	67	0	31	1026
H - A508	113	363	28	62	0	566
Total	914	2664	321	1160	897	5956

2031 DM adjusted to count
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	3	1662	158	801	325	2948
D - A45 SB IN	1640	39	88	997	799	3562
E - Saxon Avenue	17	7	0	90	12	127
G - M1 NB IN	469	1024	114	0	74	1680
H - A508	200	536	54	92	0	883
Total	2328	3268	413	1980	1209	9200

2031 DS2 adjusted to count
AM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1613	158	804	338	2912
D - A45 SB IN	1874	45	87	1063	716	3785
E - Saxon Avenue	22	3	0	92	8	125
G - M1 NB IN	647	1092	108	0	89	1936
H - A508	210	528	45	97	0	880
Total	2754	3281	398	2056	1150	9639

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	902	78	3,558	213	4,751
D - A45 SB IN	958	27	114	996	721	2,816
E - Saxon Avenue	29	148	0	11	9	196
G - M1 NB IN	3,440	1,067	29	0	30	4,567
H - A508	313	454	8	29	0	803
Total	4,739	2,599	229	4,592	974	13,133

Modelled Flows
2031 DM
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1,250	55	4,515	170	5,990
D - A45 SB IN	1,494	80	130	1,151	644	3,499
E - Saxon Avenue	40	54	0	11	8	113
G - M1 NB IN	3,544	1,620	87	0	194	5,445
H - A508	489	509	16	76	0	1,089
Total	5,566	3,511	288	5,753	1,016	16,136

Modelled Flows
2031 DS2
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1,253	96	4,547	213	6,108
D - A45 SB IN	1,699	51	122	1,089	720	3,682
E - Saxon Avenue	35	31	0	11	7	83
G - M1 NB IN	3,996	1,521	42	0	95	5,655
H - A508	452	549	14	76	0	1,091
Total	6,183	3,404	274	5,723	1,035	16,619

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	0	0	0	0	0
D - A45 SB IN	0	0	0	0	0	0
E - Saxon Avenue	0	0	0	0	0	0
G - M1 NB IN	0	0	0	0	0	0
H - A508	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	347	-23	957	-43	1,239
D - A45 SB IN	536	52	16	156	-77	683
E - Saxon Avenue	11	-94	0	1	-1	-83
G - M1 NB IN	104	553	58	0	164	879
H - A508	176	55	7	47	0	285
Total	827	913	59	1,161	43	3,002

2031 DS2 minus 2015 Base
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	350	18	989	0	1,358
D - A45 SB IN	741	23	8	94	-1	865
E - Saxon Avenue	6	-117	0	1	-2	-113
G - M1 NB IN	557	453	13	0	65	1,088
H - A508	139	95	6	47	0	288
Total	1,444	805	45	1,131	62	3,486

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	962	102	0	181	1245
D - A45 SB IN	882	0	149	1061	846	2938
E - Saxon Avenue	30	246	0	66	20	362
G - M1 NB IN	0	1020	54	0	55	1129
H - A508	204	559	37	36	0	836
Total	1116	2787	342	1163	1102	6510

2031 DM adjusted to count
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1309	79	957	138	2484
D - A45 SB IN	1418	52	165	1217	769	3621
E - Saxon Avenue	41	152	0	67	19	279
G - M1 NB IN	104	1573	112	0	219	2008
H - A508	380	614	44	83	0	1121
Total	1943	3700	401	2324	1145	9512

2031 DS2 adjusted to count
PM Peak

	A - M1 NB OUT	C - A45 NB OUT	E - Saxon Avenue	F - M1 SB OUT	H - A508	Total
B - M1 SB IN	0	1312	120	989	181	2603
D - A45 SB IN	1623	23	157	1155	845	3803
E - Saxon Avenue	36	129	0	67	18	249
G - M1 NB IN	557	1473	67	0	120	2217
H - A508	343	654	43	83	0	1124
Total	2560	3592	387	2294	1164	9996

APPENDIX B

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Administration

General Specifications

Customer Name: A - One +

Intersection/ General Description: M1 J15 East Side Northampton

Controller: (•) New ( ) Modification

Area Specifications/ Customer Drawings: 854832241 / D / 001

Specification Section:

Contract/Tender Ref:

Quotation No.:

Works Order No.:

Customer Order No.: 855072037

Controller/ Serial Number: 7064219

S.T.S. /EM Number: 84018 Issue: 2

Equipment Installation by: Siemens Mobility Traffic Solutions

Slot Cutting by: Siemens Mobility Traffic Solutions

Civil Works by: Civils Contractor

Customer's Engineer: STUART MINCIN

Telephone Number: 07941 500897

Signal Company Use Only

Signal Engineer: P M ROUSE

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: B6 DB 93 BE

Controller Options

Hardware: ST950 ELV

Firmware Type and Issue: 46059 ISS 5

Other Options

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet

Kit Type Options: (•) UK-Std ( ) Non-UK ( ) ( )

Cabinet/Rack Variant: Grey

Cuckoo Options: None

Gemini Unit Fitted: ☑

Mains Supply: 230 Volts 50 Hz

Peak Lamp Current: 6 Amps

Average Lamp Power: 200 Watts

Total Average Power: 300 Watts

Dimming Voltage: 27.5

Low Inrush Transformer: ☐

Answer Issue: 0

Date Created: 22/05/2014

Edit Issue: 4

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams: 2

Phases

( ) Current Total Number of Phases: 6

(•) Number of Real Phases: 4

( ) Number of Dummy Phases: 2

Stages

( ) Current Number of stages (inc. ALL-RED stages): 6

Switched Signs

( ) Number of Switched Signs: 0

Action

Add At | Delete At

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- [ ] Serial/Internal UTMC OTU
- [ ] Free-standing OTU
- [ ]
- [ ]

- [x] Master Time Clock
- [ ] Holiday Clock
- [x] FT To Current MAX
- [ ] Linked Fixed Time

- [x] Lamp Monitoring
- [ ] RED Lamp Monitoring
- [ ] Pelican/Puffin/Toucan
- [ ] Standalone Manual

- [x] Extend All Red
- [ ] Speed Measurement
- [ ] Ripple Change
- [ ]

- [ ] Non-UK
- [ ] Fail to Part Time
- [ ] Fail To Hardware Flashing
- [ ]
- [ ] Download To Level 3

7 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
[ ] Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Hurry Call	○	○	○	◉	○	○	○	○	○	○	○	○	○
[ ] LRT	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
[ ] UTC	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] MOVA Mode	○	○	◉	○	○	○	○	○	○	○	○	○	○
[ ] CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] CLF (Base Time)	○	○	○	○	◉	○	○	○	○	○	○	○	○
[x] Vehicle Actuated	○	○	○	○	○	◉	○	○	○	○	○	○	○
[x] Fixed Time	○	○	○	○	○	○	◉	○	○	○	○	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standard46059.8df
Default PROM data file

Correspondence Monitoring to inc.

- [x] Reds
- [ ] Switched Signs
- [x] Ambers
- [ ] Ignore Reds and Ambers durin

Flash Rate (ms)

400 Off 400 On

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Phases in Stages

Phases

In Stages

	A	B	C	D	E	F
0					■	
1	■					
2		■				
3						■
4			■			
5				■		

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	2	5						
Startup Stage	2	5						
Switch Off Stage	0	3						
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream	0	1	2	3	4	5
0	■	■	■			
1				■	■	■

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Phase Type and Conditions

Phase Type and Conditions

◉ Phases A to P ○ Manual Output Allocation ☑ Improved GA Appearance ☐

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	A45 Westbound	0 - UK Traffic	0	0 - I		2	2	2
B	East Circulatory	0 - UK Traffic	0	0 - I		2	2	2
C	M1 Southbound Off - Slip	0 - UK Traffic	0	0 - I		2	2	2
D	North Circulatory	0 - UK Traffic	0	0 - I		1	1	1
E	Dummy All Red Stage 0 Stream 0	2 - UK GreenArrow	0	0 - I				
F	Dummy All Red Stage 3 Stream 1	2 - UK GreenArrow	0	0 - I				

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase	A	B	C	D	E	F
A	■	Co			o	
B	Co	■			o	
C			■	Co		o
D			Co	■		o
E	o	o			■	
F			o	o		■

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Phase Minimums. Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

◉ Phases A to P ○

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	50	50	50	50	50	50	50	50	☐
B	7	0	0.0	20	20	20	20	20	20	20	20	☐
C	7	0	0.0	35	35	35	35	35	35	35	35	☐
D	7	0	0.0	50	50	50	50	50	50	50	50	☐
E	2	0	0.0	0	0	0	0	0	0	0	0	☐
F	2	0	0.0	0	0	0	0	0	0	0	0	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F
A		7			3	
B	7				3	
C				7		3
D			6			3
E	2	2				
F			2	2		

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Intergreen Handset Limits

HIGH 30 Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E	F
A		5			3	
B	5				3	
C				5		3
D			5			3
E	2	2				
F			2	2		

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.
A	7	30
B	7	30
C	7	30
D	7	30
E	0	30
F	0	30
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		

Phase	Min. Green Min.	Min. Green Max.
Q		
R		
S		
T		
U		
V		
W		
X		
Y		
Z		
A2		
B2		
C2		
D2		
E2		
F2		

Max. Green: Min. 0 Max. 255

Vehicle Extension: Min. 0.0 Max. 10.0

Phase Delay: Min. 0 Max. 16

Starting I/G: Min. 7 Max. 7

Min Pedestrian Clearance (PBT): Min. 0 Max. 0

Traffic Phase Leaving: Min. 3.0 Max. 3.0

Traffic Phase Red/Amber: Min. 2 Max. 2

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(•) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AX4	AX5	AX6	
B	BX10	BX11	BX12	
C	CX36	CX37	CX38	
D	DX46	DX47	DX48	
E				
F				

Extensions

AX4	AX5	AX6	
BX10	BX11	BX12	
CX36	CX37	CX38	
DX46	DX47	DX48	

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F										
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F										
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F										
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D												

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5										
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5										
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5										
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0										

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

0	1	2	3	4	5										
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage	1	2	1	4	5	4		
Time	10	10	10	10	10	10		
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Note:
Fixed Time mode may be used by the Reserve State, therefore, the Stage Moves and Times section should always be configured (unless Linked Fixed Time is selected instead).

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Plan(s)

CLF - Plan(s)

Plan No. 0

Copy From

Plan Specifics

Influence Set 0

Copy From

Entry Point (secs) 255
Exit Point (secs) 255
Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range
Min. 0
Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	54	1	1	16			
1	29	1	2	17			
2	25	1	4	18			
3	49	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Plan(s)

CLF - Plan(s)

1 Plan No.

Copy From

Plan Specifics

1 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 80

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	72	1	1	16			
1	43	1	2	17			
2	32	1	4	18			
3	69	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Plan(s)

CLF - Plan(s)

2 Plan No.

Copy From

Plan Specifics

2 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	54	1	1	16			
1	29	1	2	17			
2	21	1	4	18			
3	49	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Plan(s)

CLF - Plan(s)

3 Plan No.

Copy From

Plan Specifics

3 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 80

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	74	1	1	16			
1	45	1	2	17			
2	36	1	4	18			
3	69	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Plan(s)

CLF - Plan(s)

4 Plan No.

Copy From

Plan Specifics

4 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 80

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	74	1	1	16			
1	50	1	2	17			
2	39	1	4	18			
3	69	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Plan(s)

CLF - Plan(s)

5 Plan No.

Copy From

Plan Specifics

5 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	54	1	1	16			
1	29	1	2	17			
2	21	1	4	18			
3	49	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Plan(s)

CLF - Plan(s)

6 Plan No.

Copy From

Plan Specifics

6 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	54	1	1	16			
1	29	1	2	17			
2	21	1	4	18			
3	49	1	5	19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

CLF - Base Time

CLF - Base Time

Controller Base Date: XX/XX/XX

Controller Base Time: 02:00:00

Plan Offset

	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Handset Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

MOVA Stages

MOVA Stages

Stage	Force Bit	Green Confirm Bit	Stage	Force Bit	Green Confirm Bit
0			16		
1	MOVA0F1	MOVA0CON1	17		
2	MOVA0F2	MOVA0CON2	18		
3			19		
4	MOVA1F1	MOVA1CON1	20		
5	MOVA1F2	MOVA1CON2	21		
6			22		
7			23		
8			24		
9			25		
10			26		
11			27		
12			28		
13			29		
14			30		
15			31		

NOTE: If a MOVA Kernel does not map to the same numbered stream (0-3), refer to the help.

Mode Data Definitions

Manual Mode Operative: ☐ G1/G2 ☑ RR/CRB

Manual Mode Selected: ☐ G1/G2 ☑ RR/CRB

No Lamp Power, or Lamps Off due to RLM or Part Time: ☐ G1/G2 ☑ RR/CRB

Normal NOT selected on the Manual Panel: ☐ G1/G2 ☑ RR/CRB

RR Button Selected: ☐ G1/G2 ☐ RR/CRB

Report as UTC Mode ☐

MOVA Control Timer (x10): 24

MOVA Deactivate Timer: 2.0

MOVA Release Timer: 1

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☑ Combined

Set Selection

○ ○ ○ ○ ○

1	AIN1	2	AIN2	3	AIN3	4	AX4	5	AX5	6	AX6	7	ASL7	8	ASL8
9	ASL9	10	BX10	11	BX11	12	BX12	13	BIN13	14		15		16	
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33		34	CIN34	35	CIN35	36	CX36	37	CX37	38	CX38	39	CSL39	40	CSL40
41	CSL41	42		43	DIN43	44	DIN44	45	DIN45	46	DX46	47	DX47	48	DX48
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

MTC - Time Switch Parameters

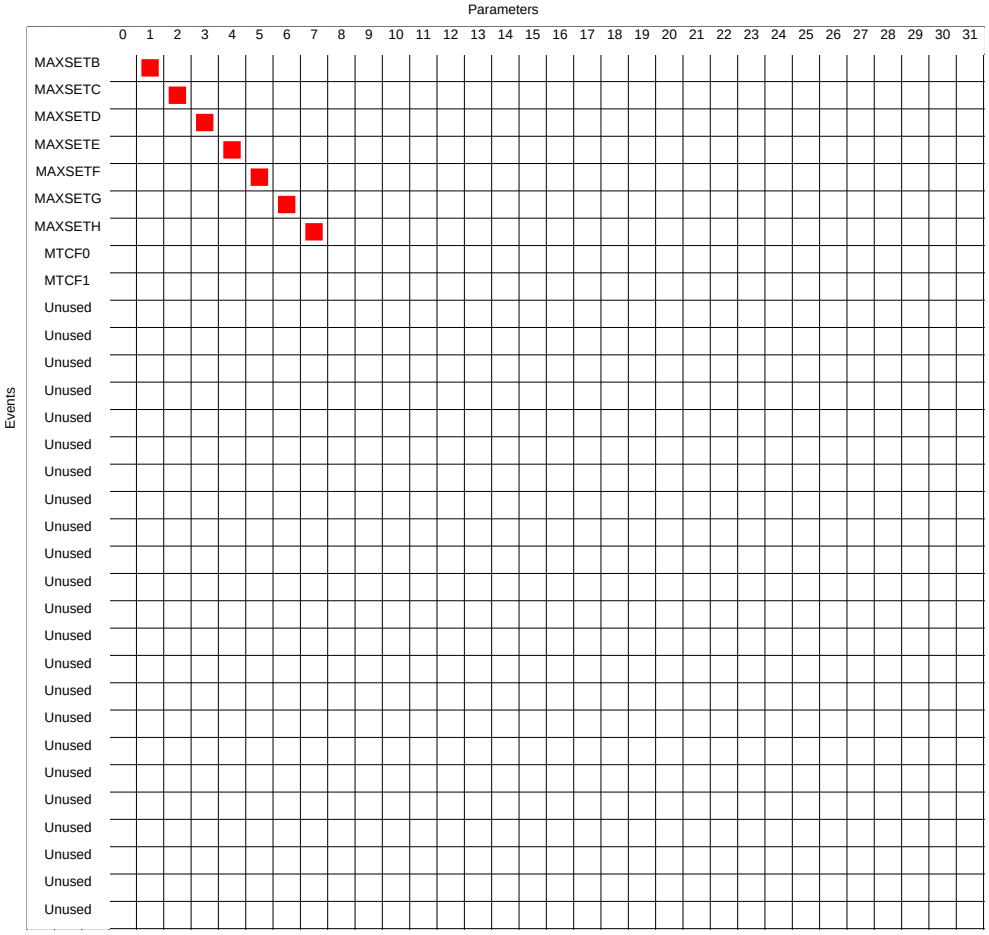
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	Alternate Max	MAXSETE
4	Alternate Max	MAXSETF
5	Alternate Max	MAXSETG
6	Alternate Max	MAXSETH
7	Conditioning	MTCF0
8	Conditioning	MTCF1
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

MTC - Time Switch Parameters Array



Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

MTC - Timetable

MTC - Timetable

View Timetable Settings: (•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	07:00:00	MAXSET A	2	0
1	9	09:30:00	MAXSET B	2	1
2	9	15:30:00	MAXSET C	2	2
3	9	19:00:00	MAXSET D	2	3
4	0	09:00:00	MAXSET E	2	4
5	0	20:00:00	MAXSET F	2	5
6	1	07:00:00	MAXSET G	2	6
7	1	20:00:00	MAXSET H	2	7
8	9	06:30:00	CLF PLAN 4	1	4
9	9	07:30:00	CLF PLAN 1	1	1
10	9	09:30:00	CLF PLAN 2	1	2
11	9	15:30:00	CLF PLAN 3	1	3
12	9	19:00:00	CLF PLAN 0	1	0
13	0	08:00:00	CLF PLAN 5	1	5
14	0	20:00:00	CLF PLAN 0	1	0
15	1	09:00:00	CLF PLAN 6	1	6

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

MTC - Timetable

MTC - Timetable

View Timetable Settings: ( ) 0 - 15 (•) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
16	1	20:00:00	CLF PLAN 0	1	0
17	7		DISABLE CRB	3	7
18	7		ENQBLE CRB	4	7
19	9	06:00:00	ENABLE SQ14	3	8
20	9	19:00:00	DISABLE SQ14	4	8
21	0			0	0
22	0			0	0
23	0			0	0
24	0			0	0
25	0			0	0
26	0			0	0
27	0			0	0
28	0			0	0
29	0			0	0
30	0			0	0
31	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

○ ◉ 48
○ ○

Max Red Bulb Wattage

☐
☐
☐

First Red Lamp Fault Speed

Minimum Maximum

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
1	1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Phase	Aspect	Sensor #	Sensor Type
A	Red	1	As Seq.	C	Green	3	As Seq.
A	Red	1	As Seq.	C	Green	3	As Seq.
A	Amber	1	As Seq.	D	Red	4	As Seq.
A	Amber	1	As Seq.	D	Amber	4	As Seq.
A	Green	1	As Seq.	D	Green	4	As Seq.
A	Green	1	As Seq.	N/A	N/A		
B	Red	2	As Seq.	N/A	N/A		
B	Red	2	As Seq.	N/A	N/A		
B	Amber	2	As Seq.	N/A	N/A		
B	Amber	2	As Seq.	N/A	N/A		
B	Green	2	As Seq.	N/A	N/A		
B	Green	2	As Seq.	N/A	N/A		
C	Red	3	As Seq.	N/A	N/A		
C	Red	3	As Seq.	N/A	N/A		
C	Amber	3	As Seq.	N/A	N/A		
C	Amber	3	As Seq.	N/A	N/A		

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Integral LMU External Sensors for Regulatory Signs

Integral LMU External Sensors for Regulatory Signs

External Sensors (1)

Sensor	Sensor Type
96	Regulatory Sign
95	Regulatory Sign
94	Regulatory Sign
93	Regulatory Sign

External Sensors (2)

Sensor	Sensor Type

External Sensors (3)

Sensor	Sensor Type

External Sensors (4)

Sensor	Sensor Type

External Sensors (5)

Sensor	Sensor Type

External Sensors (6)

Sensor	Sensor Type

Note: Sensors which have been used as Onboard sensors will not be available here.

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

LMU Sensor Load Types

LMU Sensor Load Types

Screen Select: 1 of 1

Sensor	Phase	Sensor Type	LED R+W	Load Type	LLF Profile
1	A	As Seq.		1: Siemens Helios ELV	
2	B	As Seq.		1: Siemens Helios ELV	
3	C	As Seq.		1: Siemens Helios ELV	
4	D	As Seq.		1: Siemens Helios ELV	
93	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	
94	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	
95	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	
96	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Hurry Call

Hurry Call

Hurry Call	Stage Called	Call Input Name	Cancel Input Name	Confirm Output Name	Delay Time	Hold Time	Prevent Time
0	4	*SCRT1			0	2	60
1	5	*SCRT2			0	2	60
2	2	*SCRT3			0	2	60
3					0	0	0
4					0	0	0
5					0	0	0
6					0	0	0
7	2	*ROUGH2			0	2	0

Hurry Call Limit Values

	Min.	Max.
Call Delay	0	255
Call Hold	0	255
Call Prevent	0	255

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red Stage 0 - Strm 0 / All Red Stage 3 - Strm 1	0	3						
1	East Circulatory / M1 Southbound Off - Slip	2	4						
2	A45 Westbound / North Circulatory	1	5						
3	East Circulatory / North Circulatory	2	5						
4	A45 Westbound / M1 Southbound Off - Slip	1	4						
5									
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

General Buttons

	None	SW1	SW2	SW3
Momentary		☑	☑	☑
Dim Override	◉	○	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Manual Mode Enable

- ◉ Always
- ○ When Handset Plugged in (Note 1)
- ○ When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

Mode Select Switches Disabled

☐ VA ☑ Fixed Time ☐ CLF

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Extend All Red - General

Extend All Red - General

Auto Extend to Max

Part Time	☐
Emergency Vehicle	☐
Hurry Call	☐
LRT	☐
Priority	☐
Manual	☐
Manual Step On	☐
UTC	☐
MOVA	☐
CLF	☐
VA*	☐
Fixed Time	☐

* Selecting Extend to Max on VA mode will also cause Extend to Max on CLF, UTC and Priority modes.

All Red Timings

Stream	0	1	2	3	4	5	6	7
Extension Time	1.0	0.0						
Max Time	5	0						

Detectors Associated with All Red Extension Units

Unit	Associated Detectors							
1	SQ14							
2	SQ14							
3								
4								
5								
6								
7								

The association between detectors and extension units must be performed in special conditioning.

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Extend All Red - Stage To Stage Moves

To Stage

From Stage	0	1	2	3	4	5
0	■					
1		■	2			
2		1	■			
3				■		
4					■	
5						■

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Extend All Red - Independent Intergreens

Phase Not Affected by Hold

Phase Terminating

	A	B	C	D	E	F
A	■					
B		■				
C			■			
D				■		
E					■	
F						■

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Reserve State

Reserve State

		Stream	0	1	2	3	4	5	6	7
Entry										
		Go to Switch Off Stage	☐	☐	☐	☐	☐	☐	☐	☐
	Timeout (seconds)	Part Time on App Failure or Timeout	☐	☐	☐	☐	☐	☐	☐	☐
Limited Time										
		Fixed Time	◉	◉	◉	◉	◉	◉	◉	◉
	Timeout (seconds)	Part Time	○	○	○	○	○	○	○	○
		Hold Stage	○	○	○	○	○	○	○	○
After Timeout										
		Fixed Time	◉	◉	◉	◉	◉	◉	◉	◉
		Part Time	○	○	○	○	○	○	○	○
		Hold Stage	○	○	○	○	○	○	○	○

Global Settings

☑ Use Defaults

☐

Timeouts

0 = Use Firmware default

Last Modified 28/08/2015, Issue 2.0.4 Form Ref: 4.9

Special Conditioning

```
; AUX LED'S
; ~~~~~~~~~
(MODE0 EQL<16>)=MIL22                    ;AUX 1 LED LIT WHEN STREAM 0 IS RUNNING MOVA
(MODE1 EQL<16>)=MIL23                    ;AUX 2 LED LIT WHEN STREAM 1 IS RUNNING MOVA
WMOVA=MIL05                              ;AUX 3 LED LIT WHEN WMOVA 0 IS ACTIVE
(MODE0 EQL<5>)=MIL07                     ;AUX 4 ( HURRY CALL ) LED ACTIVE HURRY CALL ACTIVE

IFT (MODE0 EQL<8>) THN                   ;H/P LED LIT WHEN ALL STREAMS ARE RUNNUNG MOVA
    RUN<90>
END
IFT CNDTER90 THN                         ;H/P WILL BE FLASHED IF ANY STREAM IS RUNNING MOVA
    RUN<91>
END
IFT CNDTER91 THN
    RUN<90>
END

IFT (MODE0 EQL<16>).(MODE1 EQL<16>).WMOVA THN
    TRUE=MIL17
ELS
    FALSE=MIL17
    IFT ((MODE0 EQL<16>)+(MODE1 EQL<16>)+WMOVA) THN
        CNDTMA91=MIL17
    END
END


; DISABLE CLF MODE
; ================

((MODE0 EQL<16>)+(MODE1 EQL<16>)+WMOVA):=DISCLF0 ; DISABLE CLF IF ANY STREAM ON EITHER CONTROLLER IS UNDER MOVA
                                       *=DISCLF1 ; CONTROL


; DEMANDS AND EXTENDS
; ~~~~~~~~~~~~~~~~~~~
(ASL7+ASL8+ASL9)=+LCPHA
(ASL7_ext+ASL8_ext+ASL9_ext):=+EXOA
                             *=+EXCA

(CSL39+CSL40+CSL41)=+LCPHC
(CSL39_ext+CSL40_ext+CSL41):=+EXOC
                            *=+EXCC

BIN13_ext:=+EXOB
         *=+EXCB

(CIN34_ext+CIN35_ext):=+EXOC
                      *=+EXCC

(DIN43_ext+DIN44_ext+DIN45_ext):=+EXOD
                                *=+EXCD


; POSITIVE REVERT
; ===============

TRUE:=+LCPHB                                    ;ENSURE REVERT IS STAGES 2 + 5
    *=+LCPHD
```


Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning

```
; HURRY CALLS V/A
; ~~~~~~~~~~~~~~~
(MODE1 EQL<2>).CNDTMA3=SCRT1                ;CQ33 ACTIVE AFTER THE CALL DELAY HURRY CALL STAGE 4
(MODE1 EQL<2>).CNDTMA4=SCRT2                ;DQ42 ACTIVE AFTER THE CALL DELAY HURRY CALL STAGE 5
(MODE0 EQL<2>).CNDTMA2=SCRT3                ;BX10,BX11,BX12,BIN13 ACTIVE AFTER THE CALL DELAY H/CALL STAGE 2


; EXTRA INTERGREENS CONTROLLED BY ALL RED LOOP SQ14
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
MTCF1.NOT(CFF0).CCTO0:=IGEO1                ;VA AND MOVA MODE EXTEND ALL RED INTERGREENS TO STAGE 1 BY QUEUES
                      *=IGEC1               ;DETECTED ON CALL CANCEL UNIT 0, QUEUES DETECTED ON SQ14 LOOP
                                            ;DISABLED BY SETTING CFF0=1

MTCF1.CFF1.CCTO0:=IGEO2                     ;VA AND MOVA MODE EXTEND ALL RED INTERGREENS TO STAGE 1 BY QUEUES
                 *=IGEC2                    ;DETECTED ON CALL CANCEL UNIT 0, QUEUES DETECTED ON SQ14 LOOP
                                            ;ENABLED BY SETTING CFF1=1
```

Special Conditioning

```
; MOVA CRB TOGGLE 2 MINUTES STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (PRSLMPRB+PRSLMPAB+PRSLMPGB) THN                    ;TIMER TO STOP MOVACRB BEING TOGGLED BY THE LAMP TEST
    RUN<95>
END
IFT NOT(MODE0 EQL<16>).NOT(CNDTMA94).(SSNRM+SSFIX) THN  ;NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<94>
END
IFT CNDTER94+((PRVMOD0 EQL<16>).NOT(MODE0 EQL<16>)) THN
    LOD<10> 1SCRTCH0
    TRUE=2SCRT9
END                                                     ;START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST0 EQL<0>)=.2SCRT9
IFT (1SCRTST0 GRT<0>) THN
    DEC 1SCRTCH0
END
(SSNRM+SSFIX).(NOT(2SCRT9)+(MODE0 EQL<16>)) $           ;WHEN TIMER TERMINATES TOGGLE CRB
.CNDTMA95.NOT(MTCF0)=MOVA0CRB

; MOVA CRB TOGGLE 2 MINUTES STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (PRSLMPRD+PRSLMPAD+PRSLMPGD) THN                    ;TIMER TO STOP MOVACRB BEING TOGGLED BY THE LAMP TEST
    RUN<87>
END
IFT NOT(MODE1 EQL<16>).NOT(CNDTMA88).(SSNRM+SSFIX) THN  ;NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<88>
END
IFT CNDTER88+((PRVMOD1 EQL<16>).NOT(MODE1 EQL<16>)) THN
    LOD<10> 1SCRTCH1
    TRUE=2SCRT10
END                                                     ;START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST1 EQL<0>)=.2SCRT10
IFT (1SCRTST1 GRT<0>) THN
    DEC 1SCRTCH1
END
(SSNRM+SSFIX).(NOT(2SCRT10)+(MODE1 EQL<16>)) $          ;WHEN TIMER TERMINATES TOGGLE CRB
.CNDTMA87.NOT(MTCF0)=MOVA1CRB

; LAMPS OFF REPLY TO THE OMU (LAMPS OFF RELAY MUST BE FITTED TO ENABLE THIS TO WORK)
; ==================================================================================

LMPON.SWLMPS.NOT(FLF17)=LAMPSUP                         ; IF LAMPS ARE SWITCHED OFF OR FAIL SEND REPLY BY
                                                        ; USING AN I/O OUTPUT CALLED "LAMPSUP"
```


Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning

```
; DETECTION
; ~~~~~~~~~
; STREAM 0
; ========
; BX10, BX11, BX12 OR BIN13 LOOPS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (CCTO3+CCTO4+CCTO5+CCTO6).NOT(CNDTMA2).NOT(2SCRT3) THN     ;BX10,BX11,BX12,BIN13 ACTIVE AFTER THE
    RUN<2>                                                    ;CALL DELAY SETS
END                                                           ;2SCRT3 AND STARTS TIMER 2
CNDTMA2=+MOVADET14                                            ;TIMER 2 ACTIVE SETS MOVADET 14
(CCTO3+CCTO4+CCTO5+CCTO6)=2SCRT3                              ;BX10 CLEAR RESETS 2SCRT3



; STREAM 1
; ========
; CQ33 LOOPS
; ~~~~~~~~~~
IFT CCTO1.NOT(CNDTMA3).NOT(2SCRT1) THN              ;CQ33 ACTIVE AFTER THE CALL CANCEL UNIT 1 DELAY SETS 2SCRT1
    RUN<3>                                          ;AND STARTS TIMER 3
END
CNDTMA3=+MOVADET33                                  ;TIMER 3 ACTIVE SETS MOVADET 33
CCTO1=2SCRT1                                        ;CQ33 CLEAR RESETS 2SCRT1


; DQ42,DIN43,DIN44 OR DIN45 LOOPS
; ===============================
IFT (CCTO2+1SCRT249+1SCRT250+1SCRT251).NOT(CNDTMA4).NOT(2SCRT2) THN   ;DQ42 ACTIVE AFTER THE C/CANCEL
    RUN<4>                                                            ;UNIT 2 DELAY SETS 2SCRT2
END                                                                   ;AND STARTS TIMER 4
CNDTMA4=+MOVADET42                                                    ;TIMER 4 ACTIVE SETS MOVADET 42
(CCTO2+1SCRT249+1SCRT250+1SCRT251)=2SCRT2                             ;DQ42 CLEAR RESETS 2SCRT2
```

Special Conditioning

```
; MASTER TIME SYNC PULSE WHICH IS SENT TO OTHER CONTROLLER
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
(RTCTOD EQL<01>).(RTCMIN EQL<59>).(RTCSEC EQL<58>)=1SCRT247
(RTCTOD EQL<02>).(RTCMIN EQL<00>).(RTCSEC EQL<00>)=1SCRT248
(1SCRT247+1SCRT248)=TSYNC
```


Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning

```
; USE OF CONDITIONING SWITCHES FOR ENABLING / DISABLING PURPOSES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;CFF0    =  DISABLES EXTRA INTERGREEN TO STAGE 2
;CFF1    =  ENABLES EXTRA INTERGREEN TO STAGE 1


; MOVA LINKING
; ~~~~~~~~~~~~

(MODE0 EQL<16>)=EMOVA0                                  ; SET OUTPUTS WHEN MOVA IS RUNNING
(MODE1 EQL<16>)=EMOVA1

IFT TERMB THN
    TRUE=2SCRT24
END
IFT TERMA THN
    FALSE=2SCRT24
END
LMPON.2SCRT24=EPHSA                                     ; SET OUTPUT WHEN PHASE B LOSES RIGHT OF
                                                        ; UNTIL PHASE A LOSES RIGHT OF WAY


; LINKS FROM EASTSIDE STREAM 0 TO EASTSIDE STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

; MOVA HOLD DET64
; ~~~~~~~~~~~~~~~
IFT PRSLMPRC.(CX38+CSL41) THN
    TRUE=2SCRT4
END
IFT CTOROW THN
    FALSE=2SCRT4
END
IFT TERMB THN
    TRUE=2SCRT0
    RUN<29>
END
IFT (TERMA+CNDTER29) THN
    FALSE=2SCRT0
END
2SCRT4.2SCRT0=MOVADET64

(MODE1 EQL<2>).MOVADET64::=2SCRT27
                          *=+EXOD
                          *=+EXCD


; LINKS FROM EASTSIDE STREAM 1 TO EASTSIDE STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

; MOVA PULSE DET31
; ~~~~~~~~~~~~~~~~
IFT CTOROW.NOT(CNDTMA5) THN                             ;RUN DELAY TIMER WHEN PHASE C GAINS ROW.
    RUN<5>
END
IFT CNDTER5 THN                                         ;WHEN DELAY TIMER HAS EXPIRED RUN OUTPUT TIMER
    RUN<6>
END
PHASEC.CNDTMA6=+MOVADET31                               ;SEND PULSE OUTPUT TO STREAM 0

(MODE0 EQL<2>).CNDTMA6=ROUGH2                           ; IN V/A HURRY CALL STAGE 2
```

Special Conditioning

```
; MOVA HOLD DET32
; ~~~~~~~~~~~~~~~
IFT TERMD.NOT(CNDTMA7) THN                          ;RUN MIN HOLD OUTPUT PHASE D LOSES ROW.
    RUN<7>
END
CNDTMA8.CNDTMA7=+MOVADET32                          ; MIN HOLD OUTPUT
CNDTMA8.PHASEC.(CX38_ext+CSL41_ext)=+MOVADET32      ; ONLY SEND OUTPUT IF EXTS ARE ACTIVE FROM CX38 OR CSL41
IFT PHASED THN                                      ; RUN OVERRIDE TIMER WHEN PHASE D GAINS ROW
    RUN<8>
END

(MODE0 EQL<2>).MOVADET32::=2SCRT22
                          *=+EXOB
                          *=+EXCB


; MOVA HOLD DET30
; ~~~~~~~~~~~~~~~
IFT DTOROW.NOT(CNDTMA12) THN                        ;RUN DELAY TIMER WHEN PHASE D GAINS ROW.
    RUN<12>
END
CNDTER12.PHASED=+2SCRT21                            ;SET SCRATCH BIT TO HOLD OUTPUT.
IFT TERMD.NOT(CNDTMA13) THN                         ;RUN DELAY TIMER TO HOLD OUTPUT AND RESET
    RUN<13>                                         ;SCRATCH BIT.
END
NOT(CNDTER13+CNDTER14)=.2SCRT21                     ;TIMER TERMINATED RESETS 2SCRT21 AND LIFTS THE OUTPUT.
LCPHC.2SCRT21=MOVADET30                             ;SCRATCH BIT OR TIMER ACTIVE SETS OUTPUT.
IFT CNDTER12 THN                                    ;RUN OVERRIDE TIMER WHEN OUTPUT GOES ACTIVE.
    RUN<14>
END

(MODE0 EQL<2>).MOVADET30::=2SCRT23
                          *=+EXOB
                          *=+EXCB

(2SCRT22+2SCRT23)=PRVST1
```


Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning

```
; BQ63 QUEUE LOOPS
; ~~~~~~~~~~~~~~~~
IFT BX10.(NOT CNDTMA32) THN                         ; BX10 CALL / CANCEL TIMERS USING AUXILIARY TIMERS
    RUN <33>
    TRUE=+1SCRT240
END
IFT (NOT BX10).(NOT CNDTMA33) THN
    RUN <32>
    FALSE=.1SCRT240
END

IFT BX11.(NOT CNDTMA34) THN                         ; BX11 CALL / CANCEL TIMERS USING AUXILIARY TIMERS
    RUN <35>
    TRUE=+1SCRT241
END
IFT (NOT BX11).(NOT CNDTMA35) THN
    RUN <34>
    FALSE=.1SCRT241
END

IFT BX12.(NOT CNDTMA36) THN                         ; BX12 CALL / CANCEL TIMERS USING AUXILIARY TIMERS
    RUN <37>
    TRUE=+1SCRT242
END
IFT (NOT BX12).(NOT CNDTMA37) THN
    RUN <36>
    FALSE=.1SCRT242
END

(1SCRT240+1SCRT241+1SCRT242).NOT(PHASEB)=MOVADET63  ; ANY BX LOOP AFTER THE CALL DELAY

(MODE1 EQL<2>).MOVADET63::=2SCRT26
                          *=+EXOD
                          *=+EXCD


; DIN QUEUE LOOPS TO MOVADET42
; ============================
IFT DIN43.(NOT CNDTMA48) THN                        ; DIN43 CALL / CANCEL TIMERS USING AUXILIARY TIMERS
    RUN <49>
    TRUE=+1SCRT249
END
IFT (NOT DIN43).(NOT CNDTMA49) THN
    RUN <48>
    FALSE=.1SCRT249
END

IFT DIN44.(NOT CNDTMA50) THN                        ; DIN44 CALL / CANCEL TIMERS USING AUXILIARY TIMERS
    RUN <51>
    TRUE=+1SCRT250
END
IFT (NOT DIN44).(NOT CNDTMA51) THN
    RUN <50>
    FALSE=.1SCRT250
END

IFT DIN45.(NOT CNDTMA52) THN                        ; DIN45 CALL / CANCEL TIMERS USING AUXILIARY TIMERS
    RUN <51>
    TRUE=+1SCRT251
```

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning

```
END
IFT (NOT DIN45).(NOT CNDTMA51) THN
    RUN <52>
    FALSE=.1SCRT251
END

(2SCRT26+2SCRT27)=PRVST4
```


Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning Timers

Special Conditioning Timers

Timers: 0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0		0	255	☐		16		0	255	☐	
1		0	255	☐		17		0	255	☐	
2	2	1	10	☐	O/P MOVADET14 FROM BX	18		0	255	☐	
3	2	1	10	☐	O/P MOVADET33 FROM CQ33	19		0	255	☐	
4	2	1	10	☐	O/P MOVADET42 FROM DQ42	20		0	255	☐	
5	4	0	255	☐	M DET31 PULSE DELAY TMR	21		0	255	☐	
6	2	0	255	☐	M DET31 PULSE TMR	22		0	255	☐	
7	8	0	255	☐	M DET32 MIN HOLD ON	23		0	255	☐	
8	30	0	255	☐	M DET32 OVERRIDE TMR	24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12	15	0	255	☐	M DET30 HOLD DELAY TMR	28		0	255	☐	
13	0	0	255	☐	M DET30 HOLD EXTEND TMR	29	45	0	255	☐	M DET64 OVERRIDE
14	60	0	255	☐	M DET30 OVERRIDE TMR	30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning Timers

Special Conditioning Timers

Timers: 32-63

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
32	5	0	255	☐	M DET63 CALL DELAY BX10	48	6	0	255	☐	DIN43 CALL DELAY
33	2	0	255	☐	M DET63 CANCEL DELAY BX10	49	0	0	255	☐	DIN43 CANCEL DELAY
34	5	0	255	☐	M DET63 CALL DELAY BX11	50	6	0	255	☐	DIN44 CALL DELAY
35	2	0	255	☐	M DET63 CANCEL DELAY BX11	51	0	0	255	☐	DIN44 CANCEL DELAY
36	5	0	255	☐	M DET63 CALL DELAY BX12	52	6	0	255	☐	DIN45 CALL DELAY
37	2	0	255	☐	M DET63 CANCEL DELAY BX12	53	0	0	255	☐	DIN45 CANCEL DELAY
38		0	255	☐		54		0	255	☐	
39		0	255	☐		55		0	255	☐	
40		0	255	☐		56		0	255	☐	
41		0	255	☐		57		0	255	☐	
42		0	255	☐		58		0	255	☐	
43		0	255	☐		59		0	255	☐	
44		0	255	☐		60		0	255	☐	
45		0	255	☐		61		0	255	☐	
46		0	255	☐		62		0	255	☐	
47		0	255	☐		63		0	255	☐	

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Conditioning Timers

Special Conditioning Timers

Timers: 64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
64		0	255	☐		80		0	255	☐	
65		0	255	☐		81		0	255	☐	
66		0	255	☐		82		0	255	☐	
67		0	255	☐		83		0	255	☐	
68		0	255	☐		84		0	255	☐	
69		0	255	☐		85		0	255	☐	
70		0	255	☐		86		0	255	☐	
71		0	255	☐		87	1	1	5	☐	MIN LAMPS OFF TIMER - STR 1
72		0	255	☐		88	120	0	255	☐	MOVA CRB TOGGLE- STR 1
73		0	255	☐		89		0	255	☐	
74		0	255	☐		90	1	0	255	☐	FLASH TIMER ON STREAMS
75		0	255	☐		91	1	0	255	☐	FLASH TIMER OFF STREAMS
76		0	255	☐		92		0	255	☐	
77		0	255	☐		93		0	255	☐	
78		0	255	☐		94	120	0	255	☐	MOVA CRB TOGGLE - STR 0
79		0	255	☐		95	1	1	5	☐	MIN LAMPS OFF TIMER - STR 0

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Instructions

84018

Card Type	Rack Posn	Addr.	Port	Type	Line	Term Posn
Intelligent Backplane 16/0	Rack	01	0	I	000 - 007	2 LT1
Intelligent Backplane 16/0	Rack	01	1	I	008 - 015	2 LT1
Serial IO 24/16	1 I/O1	02	2	I	016 - 023	1 I/O1
Serial IO 24/16	1 I/O1	02	3	I	024 - 031	1 I/O1
Serial IO 24/16	1 I/O1	02	4	I	032 - 039	1 I/O1
Serial IO 24/16	1 I/O1	02	5	O	040 - 047	1 I/O1
Serial IO 24/16	1 I/O1	02	6	O	048 - 055	1 I/O1
Serial IO 24/16	1 I/O2	03	7	I	056 - 063	1 I/O2
Serial IO 24/16	1 I/O2	03	8	I	064 - 071	1 I/O2
Serial IO 24/16	1 I/O2	03	9	I	072 - 079	1 I/O2
Serial IO 24/16	1 I/O2	03	10	O	080 - 087	1 I/O2
Serial IO 24/16	1 I/O2	03	11	O	088 - 095	1 I/O2
CPU	A					

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/45950/020	ST950ELV CAB UK 20A 1LSLS GRY	1		
3	667/1/45950/040	ST950ELV CAB UK 40A 1LSLS GRY			
4	667/1/45950/021	ST950ELV CAB UK 20A 1LSLS BLK			
5	667/1/45950/041	ST950ELV CAB UK 40A 1LSLS BLK			
6	667/1/45950/520	ST950ELV CAB UK 20A 1LSLS LOW INRUSH GRY			
7	667/1/45950/521	ST950ELV CAB UK 20A 1LSLS LOW INRUSH BLK			
8					
9	667/1/32943/001	ELV Lamp switch (LSLS) kit			
10	667/1/32960/001	ELV Lamp switch (LSLS) backplane kit			
11	667/1/46085/002	I/O card kit (4 outputs)			
12	667/1/46085/001	I/O card kit (16 outputs)	2		
13	667/1/46015/001	ST950 CPU I/O kit (4 outputs)			
14	667/1/45952/001	ST950 CPU I/O kit (4 outputs) cableform			
15					
16					
17					
18	667/1/32910/950	Intelligent detector backplane kit	1		
19	667/1/33002/000	ELV detector 6U rack expansion kit			
20	667/1/33074/000	ST900 ELV 24 V detector supply Kit (6A)			
21	667/1/20690/001	19" Detector Rack			
22					
23	667/1/32980/040	ELV 20A to 40A upgrade kit			
24					
25					
26	667/1/33070/000	ELV Regulatory Sign expansion kit			
27	667/1/32955/000	ELV Audible supply kit			
28	667/1/27117/000	ST900 300mA RCD kit			
29					
30	667/1/32900/001	Expansion cabinet kit - Black			
31	667/1/32900/000	Expansion cabinet kit - Grey			
32	667/1/33072/000	Cabinet mounted cut-out connection kit			
33	667/1/33007/000	LSLS Expansion cabinet kit			
34					
35					
36	667/1/27056/001	Manual Panel Full kit			
37	667/1/27110/000	Manual Panel RS232 kit			
38					
39					
40					

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Last Modified 28/08/2015, Issue 2.0.4 Form Ref: 6 (2)

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/45990/000	ST950ELV CUCKOO KIT - T400L			
43	667/1/45991/000	ST950ELV CUCKOO KIT - ST800			
44	667/1/45992/000	ST950ELV CUCKOO KIT - MICROSENSE MTC			
45	667/1/45993/000	ST950ELV CUCKOO KIT - MICROSENSE SENTNL			
46	667/1/45994/000	ST950ELV CUCKOO KIT - PEEK TSC3			
47	667/1/45995/000	ST950ELV CUCKOO KIT - PEEK TRX			
48					
49					
50					
51					
52	667/1/33073/000	ST900 Isolator locking kit			
53	667/2/20234/000	Screw Lock Key			
54					
55					
56	667/1/27104/000	ST800 / ST900 DFM Lens Kit			
57	667/7/46690/000	NAL CONTROLLER CABINET BASE GREY			
58	667/7/46690/001	NAL CONTROLLER CABINET BASE BLACK			
59	667/2/27096/000	ST800 / ST900 Mounting Stool			
60					
61					
62	667/1/26271/000	Telephone Kit (Lightning protection)			
63	667/1/27118/000	Surge Arrester (Lightning protection)			
64					
65	667/1/45950/120	ST950 ELV Cabinet Export 20A 1 LSLS - Grey			
66	667/1/45950/140	ST950 ELV Cabinet Export 40A 1 LSLS - Grey			
67	667/1/45950/951	ST950 ELV RACK 19" 1LSLS			
68	667/1/32945/000	ST900 ELV additional LSLS rack wiring kit			
69					
70	667/1/45980/000	ST900 ELV to ST950 ELV conversion kit			
71	667/1/27056/300	Manual Panel Signals off only			
72	667/1/45966/001	Temporary USB Wi-Fi Dongle			
73	667/1/45970/000	ST950 RTC backup battery			
74	667/1/33080/100	Mains kit (ST950ELV) - No maint sockets			
75	667/1/31625/019	2U 19" UTMC communications tray			
76	667/6/46680/000	Anti graffiti coating			
77	667/1/33080/000	Mains kit (ST950ELV)			
78	667/1/33075/000	ELV 24V detector supply kit (2A)			
79	667/1/27018/950	GPS Clock Kit			
80					

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Instructions

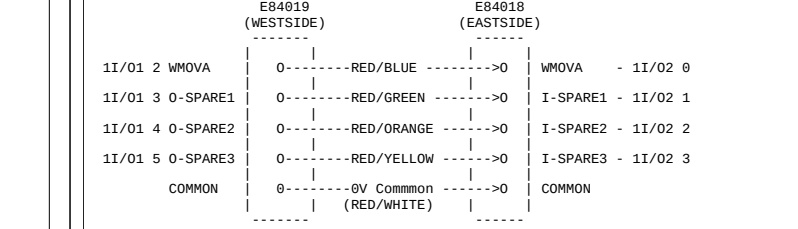
LINKING REQUIREMENTS (SHOWING SIGNAL REQUIREMENTS)

The following wiring connections are required to send and receive the relevant contoller inputs and outputs on to the link.

CONNECTIONS ARE AS FOLLOWS

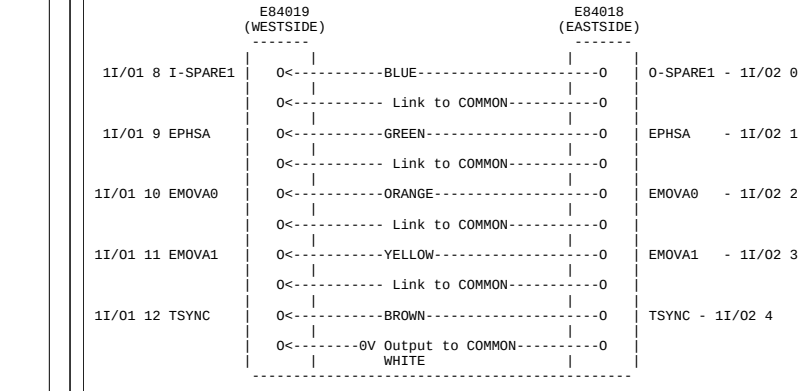
Requirement is for a single 16-Core cable between each Controller.

INPUTS TO EASTSIDE CONTROLLER



Link Cables Common to be connected to 0V Common in WESTSIDE Controller.

OUTPUTS TO WESTSIDE CONTROLLER



Link Cable Common to be connected to 0V Common in Eastside Controller.

Last Modified 28/08/2015, Issue 2.0.4 Form Ref: 6 (4)

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Special Instructions

```
; Lamp Supply Output for use with a serially connected OMU (168:LAMPSUP)
; ======================================================================
;
; This Output goes open circuit when there is no Lamp Supply or there is a Second Red Lamp failure.
; It is used to indicate that the Lamp Supply is Present on an ELV controller which is connected
; serially to an OMU. If the serial link to the OMU is lost, the LAMPSUP output indicates the Lamp
; Supply status to the OMU via an external relay. Assign the LAMPSUP output to an available I/O card
; output using IOA (IOA168=xx, where xx is the DET No. of the output used). Using the Kit
; 667/1/32612/000, connect the external relay to this output and to the OMU (in accordance with the
; instructions on drawing 667/GA/32612/000).
;
; ================================================================================================
;
; LAMPS OFF REPLY TO THE OMU (LAMPS OFF RELAY MUST BE FITTED TO ENABLE THIS TO WORK)
; ================================================================================
;
; LAMPS SUPPLY OUTPUT WIRING DETAILS FOR "LAMPSUP"
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; LAMP SUPPLY LAMPSON ON I/O PORT 11, DET95, BIT 7, 1I/O2, LINE 15
; ===============================================================
; IF LAMPS ARE SWITCHED OFF OR FAIL SEND REPLY BY USING AN I/O OUTPUT CALLED "LAMPSON"
```


Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Call Cancel

Call Cancel

Unit No.	Input Name	Call Delay	Cancel Delay	Phase Demanded (Unlatched Demand)
0	SQ14	30	4	
1	CQ33	6	0	
2	DQ42	10	0	
3	BX10	15	0	
4	BX11	15	0	
5	BX12	15	0	
6	BIN13	5	0	
7		0	0	

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 0

Inputs Outputs Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	AIN1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A1
○	1	1	I	AIN2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A2
○	2	2	I	AIN3	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A3
○	3	3	I	SPARE1-4	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A4
○	4	4	I	AX4	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B1
○	5	5	I	AX5	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B2
○	6	6	I	AX6	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B3
○	7	7	I	SPARE2-4	☑	☑	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B4

Add Delete Move Clear Used By Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 1

Inputs Outputs Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	8	0	I	ASL7	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C1
○	9	1	I	ASL8	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C2
○	10	2	I	ASL9	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C3
○	11	3	I	SQ14	☑	☑	☐	☐	☐	I	0	0.0	☐	☐	☐	☐	☐	☑	☑	☐	☐	2 LT1	C4
○	12	4	I	BIN13	☑	☑	☐	☐	☐	A	0	3.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT1	D1
○	13	5	I	BX10	☑	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT1	D2
○	14	6	I	BX11	☑	☑	☐	☐	☐	A	0	1.8	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT1	D3
○	15	7	I	BX12	☑	☑	☐		☐	A	0	1.4	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT1	D4

Add Delete Move Clear Used By Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 2

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	16	0	I	CQ33	☑	☐	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	1I/O1	I-0
○	17	1	I	CIN34	☑	☐	☐	☐	☐	A	0	6.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-1
○	18	2	I	CIN35	☑	☐	☐	☐	☐	A	0	6.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-2
○	19	3	I	SPARE5-4	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-3
○	20	4	I	CX36	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-4
○	21	5	I	CX37	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-5
○	22	6	I	CX38	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-6
○	23	7	I	SPARE6-4	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 3

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	24	0	I	CSL39	☑	☐	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-8
○	25	1	I	CSL40	☑	☐	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-9
○	26	2	I	CSL41	☑	☐	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-10
○	27	3	I	DQ42	☑	☐	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	1I/O1	I-11
○	28	4	I	DIN43	☑	☐	☐	☐	☐	A	0	5.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-12
○	29	5	I	DIN44	☑	☐	☐	☐	☐	A	0	5.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-13
○	30	6	I	DIN45	☑	☐	☐	☐	☐	A	0	5.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-14
○	31	7	I	SPARE8-4	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 4

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	32	0	I	DX46	☑	☐	☐	☐	☐	A	0	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-16
○	33	1	I	DX47	☑	☐	☐	☐	☐	A	0	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-17
○	34	2	I	DX48	☑	☐	☐	☐	☐	A	0	3.8	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-18
○	35	3	I	SPARE9-4	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-19
○	36	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-20
○	37	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-21
○	38	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-22
○	39	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-23

Add Delete Move Clear Used By Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 7

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	56	0	I	WMOVA	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-0
○	57	1	I	I-SPARE1	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-1
○	58	2	I	I-SPARE2	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-2
○	59	3	I	I-SPARE3	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-3
○	60	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-4
○	61	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-5
○	62	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-6
○	63	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	I-7

Add Delete Move Clear Used By Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 10

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	80	0	O	O-SPARE1	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-0
○	81	1	O	EPHSA	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-1
○	82	2	O	EMOVA0	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-2
○	83	3	O	EMOVA1	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-3
○	84	4	O	TSYNC	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-4
○	85	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-5
○	86	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-6
○	87	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 11

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	88	0	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-8
○	89	1	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-9
○	90	2	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-10
○	91	3	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-11
○	92	4	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-12
○	93	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-13
○	94	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-14
○	95	7	O	LAMPSUP	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	O-15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection: 1

Aspect Drive Configuration for LSLS 1 of 1 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	C	Green	Phase
31	A	Red	Phase	15	C	Green	Phase
30	A	Amber	Phase	14	D	Red	Phase
29	A	Amber	Phase	13	D	Amber	Phase
28	A	Green	Phase	12	D	Green	Phase
27	A	Green	Phase	11	N/A	N/A	N/A
26	B	Red	Phase	10	N/A	N/A	N/A
25	B	Red	Phase	9	N/A	N/A	N/A
24	B	Amber	Phase	8	N/A	N/A	N/A
23	B	Amber	Phase	7	N/A	N/A	N/A
22	B	Green	Phase	6	N/A	N/A	N/A
21	B	Green	Phase	5	N/A	N/A	N/A
20	C	Red	Phase	4	N/A	N/A	N/A
19	C	Red	Phase	3	N/A	N/A	N/A
18	C	Amber	Phase	2	N/A	N/A	N/A
17	C	Amber	Phase	1	N/A	N/A	N/A

Works Order :
EM Number : 84018
Engineer : P M ROUSE
Intersection : M1 J15 East Side Northampton

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)				
	InActive (Hrs)				
Group 2	Active (Mins)				
	InActive (Hrs)				
Group 3	Active (Mins)				
	InActive (Hrs)				
Group 4	Active (Mins)				
	InActive (Hrs)				
Group 5	Active (Mins)				
	InActive (Hrs)				
Group 6	Active (Mins)				
	InActive (Hrs)				
Group 7	Active (Mins)				
	InActive (Hrs)				

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays (No configuration data to print)
- 3.4 Intergreen Delays (No configuration data to print)

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 UTC and MOVA
  - 4.3.1 MOVA Stages
  - 4.3.2 UTC and MOVA Detectors
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral LMU Onboard Sensors
  - 4.5.3 Integral LMU External Sensors for Regulatory Signs
  - 4.5.4 LMU Sensor Load Types
- 4.6 Hurry Call
- 4.7 Manual
  - 4.7.1 Manual Panel
  - 4.7.2 Manual Mode - Optional Phases Appearance (No configuration data to print)
- 4.8 Extend All Red
  - 4.8.1 Extend All Red - General
  - 4.8.2 Extend All Red - Stage To Stage Moves
  - 4.8.3 Extend All Red - Independent Intergreens
- 4.9 Reserve State

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives (ELV Controllers)
- 7.4 I/O - DFM Group Timings

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Administration

General Specifications

Customer Name: A - One +

Intersection/ General Description: M1 J15 Westside Northampton

Controller: (•) New ( ) Modification

Area Specifications/ Customer Drawings: 854832241 / D / 001

Specification Section:

Contract/Tender Ref:

Quotation No.:

Works Order No.:

Customer Order No.: 855072037

Controller/ Serial Number: 7064218

S.T.S. /EM Number: 84019 Issue: 3

Equipment Installation by: Siemens Mobility Traffic Solutions

Slot Cutting by: Siemens Mobility Traffic Solutions

Civil Works by: Civils Contractor

Customer's Engineer: STUART MINCHIN

Telephone Number: 07941 500897

Signal Company Use Only

Signal Engineer: P M ROUSE

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: 65 B0 1D E6

Controller Options

Hardware: ST950 ELV

Firmware Type and Issue: 46059 ISS 5

Other Options:

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet

Kit Type Options: (•) UK-Std ( ) Non-UK ( ) ( )

Cabinet/Rack Variant: Grey

Cuckoo Options: None

Gemini Unit Fitted: ☑

Mains Supply: 230 Volts 50 Hz

Peak Lamp Current: 6 Amps

Average Lamp Power: 200 Watts

Total Average Power: 300 Watts

Dimming Voltage: None

Low Inrush Transformer: ☐

Answer Issue: 0

Edit Issue: 6

Date Created: 09/06/2014

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams: 2

Phases

( ) Current Total Number of Phases: 6

(•) Number of Real Phases: 4

( ) Number of Dummy Phases: 2

Stages

( ) Current Number of stages (inc. ALL-RED stages): 6

Switched Signs

( ) Number of Switched Signs: 0

Action

Add At | Delete At

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- [ ] Serial/Internal UTMC OTU
- [x] Free-standing OTU
- [ ]
- [ ]

- [x] Master Time Clock
- [ ] Holiday Clock
- [x] FT To Current MAX
- [ ] Linked Fixed Time

- [x] Lamp Monitoring
- [x] RED Lamp Monitoring
- [x] Pelican/Puffin/Toucan
- [ ] Standalone Manual

- [x] Extend All Red
- [ ] Speed Measurement
- [ ] Ripple Change
- [ ]

- [ ] Non-UK
- [ ] Fail to Part Time
- [ ] Fail To Hardware Flashing
- [ ]
- [ ] Download To Level 3

9 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
[ ] Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Hurry Call	○	○	○	◉	○	○	○	○	○	○	○	○	○
[ ] LRT	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
[x] UTC	○	○	○	○	○	○	○	◉	○	○	○	○	○
[x] MOVA Mode	○	○	◉	○	○	○	○	○	○	○	○	○	○
[ ] CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] CLF (Base Time)	○	○	○	○	◉	○	○	○	○	○	○	○	○
[x] Vehicle Actuated	○	○	○	○	○	◉	○	○	○	○	○	○	○
[x] Fixed Time	○	○	○	○	○	○	◉	○	○	○	○	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standard46059.8df
Default PROM data file

Correspondence Monitoring to inc.

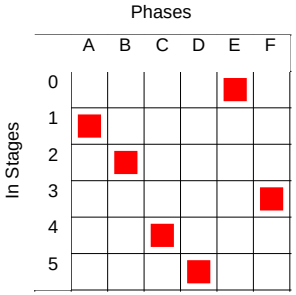
- [x] Reds
- [ ] Switched Signs
- [x] Ambers
- [ ] Ignore Reds and Ambers durin

Flash Rate (ms)

400 Off 400 On

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phases in Stages



Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	1	4						
Startup Stage	1	4						
Switch Off Stage	0	3						
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream	0	1	2	3	4	5
0	■	■	■			
1				■	■	■

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phase Type and Conditions

Phase Type and Conditions

◉ Phases A to P ○ Manual Output Allocation ☑ Improved GA Appearance ☐

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	South Circulatory	0 - UK Traffic	0	0 - I		1	1	1
B	M1 Northbound Off - Slip	0 - UK Traffic	0	0 - I		2	2	2
C	Toucan Approach	0 - UK Traffic	0	0 - I		1	1	1
D	Pedestrian Toucan across M1 Northbound Off - Slip	3 - UK Near Side Pedestrian	0	0 - I		1	1	3
E	Dummy All Red Stage 0 Stream 0	0 - UK Traffic	0	0 - I				
F	Dummy All Red Stage 3 Stream 1	0 - UK Traffic	0	0 - I				

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○ Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase	A	B	C	D	E	F
A	■	Co			o	
B	Co	■			o	
C			■	Co		o
D			Co	■		o
E	o	o			■	
F			o	o		■

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phase Minimums. Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

◉ Phases A to P ○

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	20	20	20	20	20	20	20	20	☐
B	7	0	0.0	25	25	25	25	25	25	25	25	☐
C	7	0	0.0	0	0	0	0	0	0	0	0	☐
D	6	0	0.0	0	0	0	0	0	0	0	0	☐
E	2	0	0.0	0	0	0	0	0	0	0	0	☐
F	2	0	0.0	0	0	0	0	0	0	0	0	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F
A		5			3	
B	7				3	
C				5		3
D			0			3
E	2	2				
F			2	2		

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Intergreen Handset Limits

HIGH 12 Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E	F
A		5			3	
B	5				3	
C				5		3
D						3
E	2	2				
F			2	2		

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.
A	7	30
B	7	30
C	7	30
D	6	30
E	0	30
F	0	30
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		

Phase	Min. Green Min.	Min. Green Max.
Q		
R		
S		
T		
U		
V		
W		
X		
Y		
Z		
A2		
B2		
C2		
D2		
E2		
F2		

Max. Green: Min. 0 Max. 255

Vehicle Extension: Min. 0.0 Max. 10.0

Phase Delay: Min. 0 Max. 16

Starting I/G: Min. 8 Max. 10

Min Pedestrian Clearance (PBT): Min. 0 Max. 12

Traffic Phase Leaving: Min. 3.0 Max. 3.0

Traffic Phase Red/Amber: Min. 2 Max. 2

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(•) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AX5	AX6	AX7	
B	BX11	BX12	BX13	
C				
D	DPBP1	DPBP2	DPBP3	DPBP4
E				
F				

Extensions

AX5	AX6	AX7	
BX11	BX12	BX13	

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F										
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F										
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F										
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C													

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phase - On Crossing and Kerbside Detector Definitions

On Crossing and Kerbside Input Definitions

◉ Phases A to P ○

Phase	On Crossing				Kerbside			
A								
B								
C								
D	DONXP1	DONXP4			DKBSDP1	DKBSDP4		
E								
F								

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Stream - Pelican/Puffin/Toucan Times

Stream - Pelican/Puffin/Toucan Times

Pedestrian Enable VA Mode (PEV)

Streams

0 1 2 3 4 5 6 7

Pedestrian All Red Times (Vehicle to Pedestrian)

Streams	0	1	2	3	4	5	6	7
(PAR n 0) VA Gap Change								
(PAR n 1) VA Max Change								
(PAR n 2) FVP Change								
(PAR n 3) UTC Change								
(PAR n 4) Local Link Change								

Handset Range Limits

	Min	Max
(PAR n 2) FVP Change	0	0

Pelican Intergreen times

	Min	Max
(PIT n 0) Veh Red/Ped Flash Green	0	0
(PIT n 1) Veh Flash Amber/Ped Flash Green	0	0
(PIT n 2) Veh Flash Amber/Ped red	0	0
(PIT n 3) Veh Flash Amber/Ped Red Quiescent	0	0

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Phase - Pelican, Puffin and Toucan Times

Phase - Pelican, Puffin and Toucan Times

Phases A to P ○

Phase	PDD Ped Demand Delay	PDX Ped Demand Hold	CMX Clearance Maximum	CDY 0 Clearance Delay Gap Change	CDY 1 Clearance Delay Max Change	CRD Clearance Minimum Red	
A	0	0.0	0	0	0	0	
B	0	0.0	0	0	0	0	☐
C	0	0.0	0	0	0	0	
D	1	1.0	6	0	0	0	☐
E	0	0.0	0	0	0	0	
F	0	0.0	0	0	0	0	

Pedestrian Handset Range Limits

	MIN	MAX
Demand Delay PDD	0	5
Demand Hold PDX	0.0	5.0
Clearance Maximum CMX	0	10
Clearance Delays CDY 0 and CDY1	0	3
Clearance Minimum Red CRD	0	0

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

IO and Link - Pelican/Puffin/Toucan Times

I/O and Link - Pelican/Puffin/Toucan Times

Streams 0 1 2 3 4 5 6 7

Computer Control

PV

Window Time
UIE

Local Link

PV1

Link Delay Time
LKD

Link Window Time
LKW

Link Override Time
LKO

Kerbside Mat Test Output

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Pelican, Puffin, Toucan Pushbutton/Kerbside Associations

Pelican, Puffin, Toucan Pushbutton/Kerbside Associations

	Phase	Demand	KBS
0	D	DPBP1	DKBSDP1
1	D	DPBP2	DKBSDP1
2	D	DPBP3	DKBSDP4
3	D	DPBP4	DKBSDP4
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

	Phase	Demand	KBS
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

	Phase	Demand	KBS
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			

	Phase	Demand	KBS
48			
49			
50			
51			
52			
53			
54			
55			
56			
57			
58			
59			
60			
61			
62			
63			

Note: Any association pushed off the screen will have any previous association blanked.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5													
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5													
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5													
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0										

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

0	1	2	3	4	5													
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage	1	2	1	4	5	4		
Time	10	10	10	10	6	10		

Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								

Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								

Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Note:
Fixed Time mode may be used by the Reserve State, therefore, the Stage Moves and Times section should always be configured (unless Linked Fixed Time is selected instead).

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Plan(s)

CLF - Plan(s)

Plan No. 0

Copy From

Plan Specifics

Influence Set 0

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	8	1	1	16			
1	45	1	2	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Plan(s)

CLF - Plan(s)

Plan No. 1

Copy From

Plan Specifics

Influence Set 1

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 80

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	8	1	1	16			
1	55	1	2	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Plan(s)

CLF - Plan(s)

2 Plan No.

Copy From

Plan Specifics

2 Influence Set

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	60

Slow

Fast

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	8	1	1	16			
1	45	1	2	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Plan(s)

CLF - Plan(s)

3 Plan No.

Copy From

Plan Specifics

3 Influence Set

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	80

Slow

Fast

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	16	1	1	16			
1	60	1	2	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Plan(s)

CLF - Plan(s)

4 Plan No.

Copy From

Plan Specifics

4 Influence Set

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	60

Slow

Fast

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	8	1	1	16			
1	45	1	2	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Plan(s)

CLF - Plan(s)

5 Plan No.

Copy From

Plan Specifics

5 Influence Set

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	60

Slow

Fast

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	8	1	1	16			
1	45	1	2	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Plan(s)

CLF - Plan(s)

6 Plan No.

Copy From

Plan Specifics

6 Influence Set

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 60

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	8	1	1	16			
1	45	1	2	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

CLF - Base Time

CLF - Base Time

Controller Base Date XX/XX/XX

Controller Base Time 02:00:00

Plan Offset

	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Handset Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

0 Number of Control Words

0 Number of Reply Words

[ ] Controller to respond to TC bit.

[ ] Introduction of UTC to be disabled by Priority and LR

TSYNC Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	02:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	02:00:00

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

UTC Control and Reply Data Format

UTC Control and Reply Data Format

Control Words	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1								
Word 2								
Word 3								
Word 4								

Reply Words	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1								
Word 2								
Word 3								
Word 4								
Word 5								
Word 6								
Word 7								
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

UTC Stage and Mode Data Definitions

UTC Stage and Mode Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0				16			
1				17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☐ RR ☐

Manual Mode Selected:
☐ G1/G2 ☐ RR ☐

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☐ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☐ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

MOVA Stages

MOVA Stages

Stage	Force Bit	Green Confirm Bit	Stage	Force Bit	Green Confirm Bit
0			16		
1	MOVA0F1	MOVA0CON1	17		
2	MOVA0F2	MOVA0CON2	18		
3			19		
4			20		
5			21		
6			22		
7			23		
8			24		
9			25		
10			26		
11			27		
12			28		
13			29		
14			30		
15			31		

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☑ RR/CRB

Manual Mode Selected:
☐ G1/G2 ☑ RR/CRB

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☑ RR/CRB

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☑ RR/CRB

RR Button Selected:
☐ G1/G2 ☐ RR/CRB

Report as UTC Mode ☐

MOVA Control Timer (x10) 24

MOVA Deactivate Timer 2.0

MOVA Release Timer 1

NOTE: If a MOVA Kernel does not map to the same numbered stream (0-3), refer to the help.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☑ Combined

Set Selection

○ ○ ○ ○ ○

1		2	AIN2	3	AIN3	4	AIN4	5	AX5	6	AX6	7	AX7	8	
9	BIN9	10	BIN10	11	BX11	12	BX12	13	BX13	14	BSL14	15	BSL15	16	BSL16
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33		34		35		36		37		38		39		40	
41		42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

MTC - Time Switch Parameters

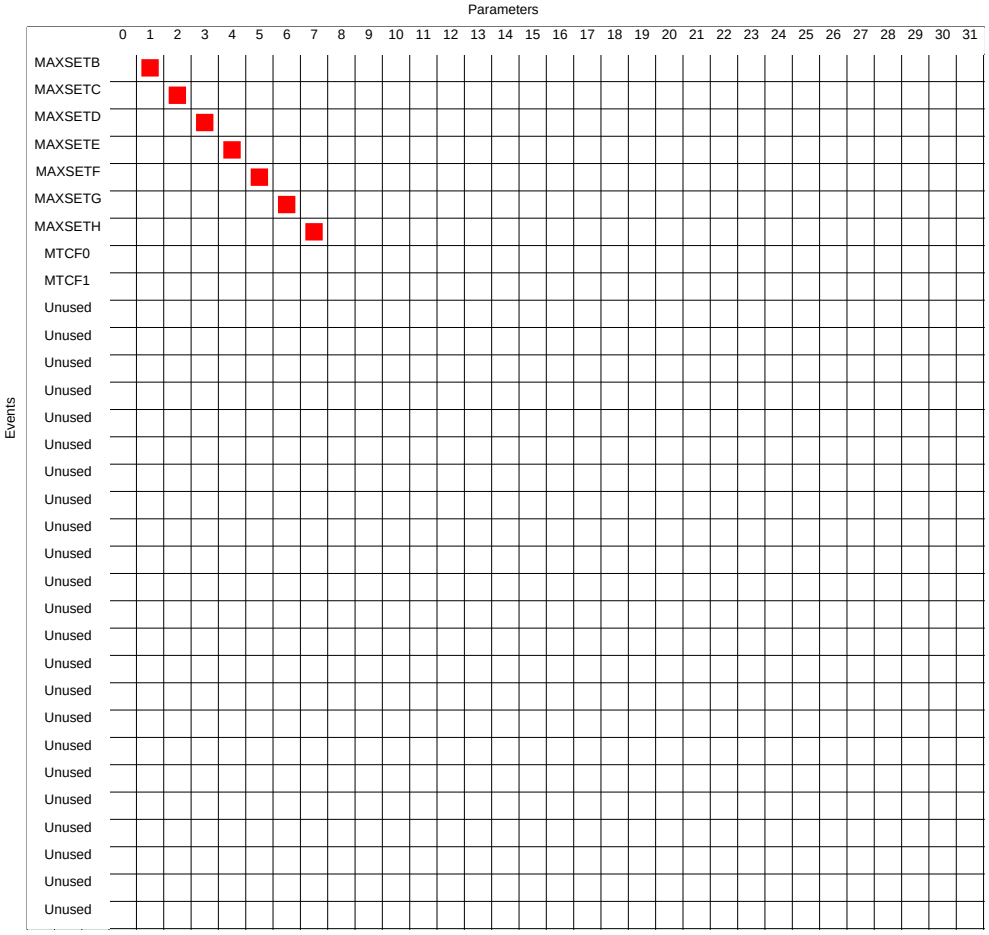
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	Alternate Max	MAXSETE
4	Alternate Max	MAXSETF
5	Alternate Max	MAXSETG
6	Alternate Max	MAXSETH
7	Conditioning	MTCF0
8	Conditioning	MTCF1
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

MTC - Time Switch Parameters Array



Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

MTC - Timetable

MTC - Timetable

View Timetable Settings: (•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	07:00:00	MAXSET A	2	0
1	9	09:30:00	MAXSET B	2	1
2	9	15:30:00	MAXSET C	2	2
3	9	19:00:00	MAXSET D	2	3
4	0	09:00:00	MAXSET E	2	4
5	0	20:00:00	MAXSET F	2	5
6	1	09:00:00	MAXSET G	2	6
7	1	20:00:00	MAXSET H	2	7
8	9	06:30:00	CLF PLAN 4	1	4
9	9	07:30:00	CLF PLAN 1	1	1
10	9	09:30:00	CLF PLAN 2	1	2
11	9	15:30:00	CLF PLAN 3	1	3
12	9	19:00:00	CLF PLAN 0	1	0
13	0	08:00:00	CLF PLAN 5	1	5
14	0	20:00:00	CLF PLAN 0	1	0
15	1	09:00:00	CLF PLAN 6	1	6

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

MTC - Timetable

MTC - Timetable

View Timetable Settings: ( ) 0 - 15 (•) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
16	1	20:00:00	CLF PLAN 0	1	0
17	7		DISABLE CRB	3	7
18	7		ENABLE CRB	4	7
19	9	06:00:00	ENABLE SQ17	3	8
20	9	19:00:00	DISABLE SQ17	4	8
21	0			0	0
22	0			0	0
23	0			0	0
24	0			0	0
25	0			0	0
26	0			0	0
27	0			0	0
28	0			0	0
29	0			0	0
30	0			0	0
31	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

○ ◉ 48
○ ○

Red Lamp Monitoring

Max Red Bulb Wattage

First Red Lamp Fault Speed: 0

☐ RLF2 Cancels RLM additional Intergreens

☑ RLF2 Only Cleared by RFL = 1

☐ RLF1 Only Cleared by RFL = 1

RLM Additional Intergreen Handset Limits

Minimum	Maximum
0	10

Streams with Phase BlackOut on RLF2

☐ 0 ☐ 1 ☐ ☐ ☐ ☐ ☐ ☐ ☐

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted: 1

HPU Connection: 1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Phase	Aspect	Sensor #	Sensor Type
A	Red	1	As Seq.	D	Green	N/A	
A	Amber	1	As Seq.	N/A	N/A		
A	Green	1	As Seq.	N/A	N/A		
B	Red	2	As Seq.	N/A	N/A		
B	Red	2	As Seq.	N/A	N/A		
B	Amber	2	As Seq.	N/A	N/A		
B	Amber	2	As Seq.	N/A	N/A		
B	Green	2	As Seq.	N/A	N/A		
B	Green	2	As Seq.	N/A	N/A		
C	Red	3	As Seq.	N/A	N/A		
C	Amber	3	As Seq.	N/A	N/A		
C	Green	3	As Seq.	N/A	N/A		
D	Red	4	R,G	N/A	N/A		
D	Amber	5	Wait	N/A	N/A		
D	Green	4	R,G	N/A	N/A		
D	Green	N/A		N/A	N/A		

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Last Modified 28/08/2015, Issue 3.0.6

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Integral LMU External Sensors for Regulatory Signs

Integral LMU External Sensors for Regulatory Signs

External Sensors (1)

Sensor	Sensor Type
96	Regulatory Sign
95	Regulatory Sign
94	Regulatory Sign
93	Regulatory Sign

External Sensors (2)

Sensor	Sensor Type

External Sensors (3)

Sensor	Sensor Type

External Sensors (4)

Sensor	Sensor Type

External Sensors (5)

Sensor	Sensor Type

External Sensors (6)

Sensor	Sensor Type

Note: Sensors which have been used as Onboard sensors will not be available here.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

LMU Sensor Load Types

LMU Sensor Load Types

Screen Select: 1 of 1

Sensor	Phase	Sensor Type	LED R+W	Load Type	LLF Profile
1	A	As Seq.		1: Siemens Helios ELV	
2	B	As Seq.		1: Siemens Helios ELV	
3	C	As Seq.		1: Siemens Helios ELV	
4	D	R,G		3: Siemens LED Near Side Indicator	
5	D	Wait		2: Siemens LED Demand Indicator	
93	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	
94	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	
95	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	
96	N/A	Regulatory Sign		4: Siemens ELV Regulatory Sign	

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

RLM Additional Intergreens

Phases Delayed

Phases with RLF1	A	B	C	D	E	F
A						
B						
C				2		
D						
E						
F						

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

RLM Phase Inhibits

Phases Inhibited/Blacked-Out

Phases with RLF2	A	B	C	D	E	F
A						
B						
C						
D						
E						
F						

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Hurry Call

Hurry Call

Hurry Call	Stage Called	Call Input Name	Cancel Input Name	Confirm Output Name	Delay Time	Hold Time	Prevent Time
0	1	*SCRT1			0	2	60
1	2	*SCRT2			0	2	60
2					0	0	0
3					0	0	0
4					0	0	0
5					0	0	0
6					0	0	0
7					0	0	0

Hurry Call Limit Values

	Min.	Max.
Call Delay	0	255
Call Hold	0	255
Call Prevent	0	255

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red Stages 0 and 3	0	3						
1	South Circulatory / Toucan Approach	1	4						
2	M1 Northbound Off - Slip / Toucan Approach	2	4						
3	M1 Northbound Off - Slip / Ped Toucan across M1 Northbound Off - Slip	2	5						
4									
5									
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

Manual Mode Enable

- (•) Always
- ( ) When Handset Plugged in (Note 1)
- ( ) When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

General Buttons

	None	SW1	SW2	SW3
Momentary		☑	☑	☑
Dim Override	(•)	( )	( )	( )
RR	(•)	( )	( )	( )

Manual Signals On

- ( ) Immediate Signals On
- (•) As Start-Up

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Extend All Red - General

Extend All Red - General

Auto Extend to Max

Part Time	☐
Emergency Vehicle	☐
Hurry Call	☐
LRT	☐
Priority	☐
Manual	☐
Manual Step On	☐
UTC	☐
MOVA	☐
CLF	☐
VA*	☐
Fixed Time	☐

* Selecting Extend to Max on VA mode will also cause Extend to Max on CLF, UTC and Priority modes.

All Red Timings

Stream	0	1	2	3	4	5	6	7
Extension Time	1.0	0.0						
Max Time	10	0						

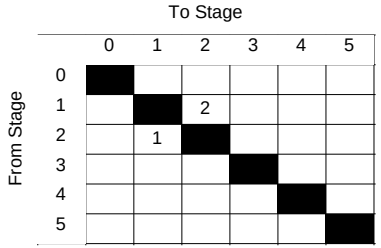
Detectors Associated with All Red Extension Units

Unit	Associated Detectors							
1	SQ17							
2	SQ17							
3								
4								
5								
6								
7								

The association between detectors and extension units must be performed in special conditioning.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Extend All Red - Stage To Stage Moves



Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Extend All Red - Independent Intergreens

Phase Not Affected by Hold

Phase Terminating

	A	B	C	D	E	F
A	■					
B		■				
C			■			
D				■		
E					■	
F						■

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Reserve State

Reserve State

	Stream	0	1	2	3	4	5	6	7
Entry									
	Go to Switch Off Stage	☐	☐	☐	☐	☐	☐	☐	☐
Timeout (seconds)	Part Time on App Failure or Timeout	☐	☐	☐	☐	☐	☐	☐	☐
Limited Time									
Timeout (seconds)	Fixed Time	◉	◉	◉	◉	◉	◉	◉	◉
	Part Time	○	○	○	○	○	○	○	○
	Hold Stage	○	○	○	○	○	○	○	○
After Timeout									
	Fixed Time	◉	◉	◉	◉	◉	◉	◉	◉
	Part Time	○	○	○	○	○	○	○	○
	Hold Stage	○	○	○	○	○	○	○	○

Global Settings

☑ Use Defaults

☐

Timeouts

0 = Use Firmware default

Special Conditioning

```
; AUX LED'S
; ~~~~~~~~
EMOVA0=MIL22                            ;AUX 1 LED LIT WHEN EMOVA0 IS ACTIVE
EMOVA1=MIL23                            ;AUX 2 LED LIT WHEN EMOVA1 IS ACTIVE
(MODE0 EQL<16>)=MIL05                   ;AUX 3 LED LIT WHEN STREAM 0 IS RUNNING MOVA
(MODE0 EQL<5>)=MIL07                    ;AUX 4 ( HURRY CALL ) LED ACTIVE HURRY CALL ACTIVE

IFT (MODE0 EQL<8>) THN                  ;H/P LED LIT WHEN ALL STREAMS ARE RUNNUNG MOVA
    RUN<90>
END
IFT CNDTER90 THN                        ;H/P WILL BE FLASHED IF ANY STREAM IS RUNNING MOVA
    RUN<91>
END
IFT CNDTER91 THN
    RUN<90>
END

IFT (MODE0 EQL<16>).EMOVA0.EMOVA1 THN
    TRUE=MIL17
ELS
    FALSE=MIL17
    IFT ((MODE0 EQL<16>)+EMOVA0+EMOVA1) THN
        CNDTMA91=MIL17
    END
END


; DISABLE CLF MODE
; ================

((MODE0 EQL<16>)+EMOVA0+EMOVA1)=DISCLF0  ; DISABLE CLF IF ANY STREAM ON EITHER CONTROLLER IS UNDER MOVA CONTROL


; DEMANDS AND EXTENDS
; ~~~~~~~~~~~~~~~~~~~
(BSL14+BSL15+BSL16)=+LCPHB
(BSL14_ext+BSL15_ext+BSL16_ext):=+EXOB
                                *=+EXCB

(AIN2_ext+AIN3_ext+AIN4_ext):=+EXOA
                             *=+EXCA

(BIN9_ext+BIN10_ext):=+EXOB
                     *=+EXCB


; POSITIVE REVERT
; ===============

TRUE=+LCPHA                         ;ENSURE REVERT IS STAGE 1


; HURRY CALLS V/A
; ~~~~~~~~~~~~~~~
(MODE0 EQL<2>).CNDTMA0=SCRT1        ;AQ1A/B ACTIVE AFTER THE CALL DELAY HURRY CALL STAGE 1
(MODE0 EQL<2>).CNDTMA1=SCRT2        ;BQ8A/B ACTIVE AFTER THE CALL DELAY HURRY CALL STAGE 2


; EXTRA INTERGREENS CONTROLLED BY ALL RED LOOP SQ17 - TIME TABLED ENABLED / DISABLED
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
MTCF1.NOT(CFF0).CCTO4:=IGEO2        ;VA AND MOVA MODE EXTEND ALL RED INTERGREEN TO STAGE 2 BY QUEUES
```


Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Conditioning

```
                      *=IGEC2           ;DETECTED ON CALL CANCEL UNIT 4,QUEUES DETECTED ON SQ17 LOOP
                                        ;DISABLED BY SETTING CFF0=1

MTCF1.CFF1.CCTO4:=IGEO1                 ;VA AND MOVA MODE EXTEND ALL RED INTERGREEN TO STAGE 1 BY QUEUES
                 *=IGEC1                ;DETECTED ON CALL CANCEL UNIT 4,QUEUES DETECTED ON SQ17 LOOP
                                        ;ENABLED BY SETTING CFF1=1



; PEDESTRIAN CONFIRM TO MOVA TO ENSURE PED RUNS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
PRSLMPAD.NOT(LMUINHD):=+MOVADET18       ;DEMAND FOR PHASE D SETS MOVADET18 UNLESS INHIBITED BY RLM
                      *=+UCST2          ;DEMAND STAGE 2 TO ALLOW PED


; TACTILE INTERLOCK PHASE D
; =========================

LMPON.PHASED.NOT(LMP2RED1)=TACTD        ; TACTILE INTERLOCK UNLESS LOCKED OUT BY RLM
```

Special Conditioning

```
; MOVA CRB TOGGLE 2 MINUTES STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (PRSLMPRA+PRSLMPAA+PRSLMPGA) THN                  ;TIMER TO STOP MOVACRB BEING TOGGLED BY THE LAMP TEST
    RUN<95>
END
IFT NOT(MODE0 EQL<16>).NOT(CNDTMA94).SSNRM+SSCLF THN  ;NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<94>
END
IFT CNDTER94+((PRVMOD0 EQL<16>).NOT(MODE0 EQL<16>)) THN
    LOD<10> 1SCRTCH0
    TRUE=2SCRT9
END                                                   ;START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST0 EQL<0>)=.2SCRT9
IFT (1SCRTST0 GRT<0>) THN
    DEC 1SCRTCH0
END
SSNRM.(NOT(2SCRT9)+(MODE0 EQL<16>)).CNDTMA95.NOT(MTCF0)=MOVA0CRB ;WHEN TIMER TERMINATES TOGGLE CRB



; LAMPS OFF REPLY TO THE OMU (LAMPS OFF RELAY MUST BE FITTED TO ENABLE THIS TO WORK)
; ================================================================================

LMPON.SWLMPS.NOT(FLF17)=LAMPSUP                       ; IF LAMPS ARE SWITCHED OFF OR FAIL SEND REPLY BY
                                                      ; USING AN I/O OUTPUT CALLED "LAMPSUP"
```


Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Conditioning

```
; DETECTION
; ~~~~~~~~~
; STREAM 0
; ========
; AQ1A/B LOOPS
; ~~~~~~~~~~~~
IFT (CCTO0+CCTO1).NOT(CNDTMA0).NOT(2SCRT0) THN        ;AQ1A/B ACTIVE AFTER THE CALL CANCEL DELAYS SETS
    RUN<0>                                            ;SCRT1 AND STARTS TIMER 0
END
CNDTMA0=+MOVADET1                                     ;TIMER 0 ACTIVE SETS MOVADET 1
(CCTO0+CCTO1)=2SCRT0                                  ;AQ1A/B CLEAR RESETS SCRT1


; STREAM 0
; ========
; BQ8A/B LOOP
; ~~~~~~~~~~~
IFT (CCTO2+CCTO3).NOT(CNDTMA1).NOT(2SCRT1) THN        ;BQ8A/B ACTIVE AFTER THE CALL CANCEL DELAY SETS
    RUN<1>                                            ;SCRT2 AND STARTS TIMER 1
END
CNDTMA1=+MOVADET8                                     ;TIMER 1 ACTIVE SETS MOVADET 8
(CCTO2+CCTO3)=2SCRT1                                  ;BQ8A/B CLEAR RESETS SCRT2
```

Special Conditioning

```
; USE OF CONDITIONING SWITCHES FOR ENABLING / DISABLING PURPOSES
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;CFF0    =  DISABLE EXTRA ALL RED INTERGREEN TO STAGE 2
;CFF1    =  ENABLE EXTRA ALL RED INTERGREEN TO STAGE 1



; MOVA LINKING
; ~~~~~~~~~~~~

(MODE0 EQL<16>)=WMOVA                              ; SET OUTPUT WHEN MOVA IS RUNNING


IFT EPHSA.NOT(2SCRT6).NOT(CNDTMA16) THN            ; INPUT ACTIVE STARTS DELAY TIMER
    RUN<16>
END
IFT EPHSA.CNDTER16 THN                             ; DELAY TIMER EXPIRED SETS FLAG
    TRUE=2SCRT7
END
IFT NOT(EPHSA).2SCRT7.NOT(CNDPRV17) THN            ; INPUT INACTIVE STARTS HOLD TIMER
    RUN<17>
END
EPHSA=2SCRT6                                       ; BIT SET TO STOP TIMER RESTARTING
IFT (CNDTER17+CNDTER18) THN                        ; HOLD TIMER OR OVERRIDE TIMER EXPIRED
    FALSE=2SCRT7                                   ; CLEAR THE OUTPUT BY LIFTING THE FLAG
END
IFT NOT(2SCRT7) THN                                ; FLAG ACTIVE STARTS OVERRIDE TIMER
    RUN<18>
END
2SCRT7=MOVADET32                                   ; MOVADET32

(MODE0 EQL<2>).MOVADET32::=PRVST2                  ; IN V/A PREVET STAGE 2 WHILST DET32 IS ACTIVE
                          *=+EXOA
                          *=+EXCA



; LINK FROM WESTSIDE STREAM 0 TO TOUCAN CROSSING STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; WHEN PHASE A TERMINATES, A 10 SECOND DELAY TIMER IS STARTED.
; WHEN THIS TIMER TERMINATES THE LIFT INHIBIT TIMER IS RUN FOR
; 2 SECONDS, ALSO IF RIGHT OF WAY RESTS ON PHASE A THEN AN
; OVERRIDE TIMER IS RUN FOR 90 SECONDS WHICH WHEN TERMINATED LIFTS
; THE INHIBIT.

IFT TERMA THN                                              ; PHASE A TERMINATING
    RUN<2>                                                 ; RUN DELAY TIMER
    TRUE=2SCRT3                                            ; SET DELAY TIMER ACTIVE FLAG
ELS
    IFT NOT(CNDTMA2).2SCRT3 THN                            ; DELAY TIMER FINISHED
        RUN<3>                                             ; START INHIBIT RELEASE TIMER
        FALSE=2SCRT3                                       ; RESET TIMER ACTIVE FLAG
    ELS
IFT (PHASEA.NOT(2SCRT4))+(NOT(PHASEA).NOT(2SCRT5)) THN     ; PHASE A STARTING OR PHASE A NOT ACTIVE
           RUN<4>                                          ; START OVERRIDE TIMER
           TRUE:=2SCRT4                                    ; SET TIMER ACTIVE FLAGS
               *=2SCRT5
        ELS
IFT ((PHASEA.2SCRT4)+(NOT(PHASEA).2SCRT5)).NOT(CNDTMA4) THN ; OVERRIDE TIMER TERMINATING
               RUN<4>                                      ; RUN OVERRIDE TIMER AGAIN
               RUN<3>                                      ; RUN INHIBIT RELEASE TIMER
```


Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Conditioning

```
           END
        END
    END
END

   NOT(CNDTMA3)=PRVST5                                 ; OUTPUT STATE OF INHIBIT RELEASE TIMER
   PHASEA=.2SCRT4                                      ; RESET PHASE B STARTING FLAG
   NOT(PHASEA)=.2SCRT5                                 ; RESET PHASE B NOT ACTIVE FLAG
```

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Conditioning Timers

Special Conditioning Timers

Timers: 0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	2	1	10	☐	O/P MOVADET1 FROM AQ1	16	0	0	255	☐	ON TIMER DET32
1	2	1	10	☐	O/P MOVADET8 FROM BQ8	17	0	0	255	☐	OFF TIMER DET32
2	10	0	255	☐	PED LINK DELAY TIMER	18	90	0	255	☐	OVERRIDE TIMER DET32
3	2	0	255	☐	PED LINK RELEASE TIMER	19		0	255	☐	
4	90	0	255	☐	PED LINK OVERRIDE TIMER	20		0	255	☐	
5		0	255	☐		21		0	255	☐	
6		0	255	☐		22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8		0	255	☐		24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Conditioning Timers

Special Conditioning Timers

Timers: 64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
64		0	255	☐		80		0	255	☐	
65		0	255	☐		81		0	255	☐	
66		0	255	☐		82		0	255	☐	
67		0	255	☐		83		0	255	☐	
68		0	255	☐		84		0	255	☐	
69		0	255	☐		85		0	255	☐	
70		0	255	☐		86		0	255	☐	
71		0	255	☐		87		0	255	☐	
72		0	255	☐		88		0	255	☐	
73		0	255	☐		89		0	255	☐	
74		0	255	☐		90	1	1	1	☐	FLASH TIMER ON STREAM
75		0	255	☐		91	1	1	1	☐	FLASH TIMER OFF STREAM
76		0	255	☐		92		0	255	☐	
77		0	255	☐		93		0	255	☐	
78		0	255	☐		94	120	0	255	☐	MOVA CRB TOGGLE BIT
79		0	255	☐		95	1	1	5	☐	MIN LAMPS OFF TIMER

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Instructions

84019

Card Type	Rack Posn	Addr.	Port	Type	Line	Term Posn
Intelligent Backplane 16/0	Rack	01	0	I	000 - 007	2 LT1
Intelligent Backplane 16/0	Rack	01	1	I	008 - 015	2 LT1
Intelligent Backplane 16/0	Rack	02	2	I	016 - 023	2 LT2
Intelligent Backplane 16/0	Rack	02	3	I	024 - 031	2 LT2
Serial IO 24/16	1 I/O1	03	4	I	032 - 039	1 I/O1
Serial IO 24/16	1 I/O1	03	5	I	040 - 047	1 I/O1
Serial IO 24/16	1 I/O1	03	6	I	048 - 055	1 I/O1
Serial IO 24/16	1 I/O1	03	7	O	056 - 063	1 I/O1
Serial IO 24/16	1 I/O1	03	8	O	064 - 071	1 I/O1
CPU	A					

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/45950/020	ST950ELV CAB UK 20A 1LSLS GRY	1		
3	667/1/45950/040	ST950ELV CAB UK 40A 1LSLS GRY			
4	667/1/45950/021	ST950ELV CAB UK 20A 1LSLS BLK			
5	667/1/45950/041	ST950ELV CAB UK 40A 1LSLS BLK			
6	667/1/45950/520	ST950ELV CAB UK 20A 1LSLS LOW INRUSH GRY			
7	667/1/45950/521	ST950ELV CAB UK 20A 1LSLS LOW INRUSH BLK			
8					
9	667/1/32943/001	ELV Lamp switch (LSLS) kit			
10	667/1/32960/001	ELV Lamp switch (LSLS) backplane kit			
11	667/1/46085/002	I/O card kit (4 outputs)			
12	667/1/46085/001	I/O card kit (16 outputs)	1		
13	667/1/46015/001	ST950 CPU I/O kit (4 outputs)			
14	667/1/45952/001	ST950 CPU I/O kit (4 outputs) cableform			
15					
16					
17					
18	667/1/32910/950	Intelligent detector backplane kit	2		
19	667/1/33002/000	ELV detector 6U rack expansion kit			
20	667/1/33074/000	ST900 ELV 24 V detector supply Kit (6A)			
21	667/1/20690/001	19" Detector Rack			
22					
23	667/1/32980/040	ELV 20A to 40A upgrade kit			
24					
25					
26	667/1/33070/000	ELV Regulatory Sign expansion kit			
27	667/1/32955/000	ELV Audible supply kit			
28	667/1/27117/000	ST900 300mA RCD kit			
29					
30	667/1/32900/001	Expansion cabinet kit - Black			
31	667/1/32900/000	Expansion cabinet kit - Grey			
32	667/1/33072/000	Cabinet mounted cut-out connection kit			
33	667/1/33007/000	LSLS Expansion cabinet kit			
34					
35					
36	667/1/27056/001	Manual Panel Full kit			
37	667/1/27110/000	Manual Panel RS232 kit			
38					
39					
40					

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Last Modified 28/08/2015, Issue 3.0.6 Form Ref: 6 (2)

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/45990/000	ST950ELV CUCKOO KIT - T400L			
43	667/1/45991/000	ST950ELV CUCKOO KIT - ST800			
44	667/1/45992/000	ST950ELV CUCKOO KIT - MICROSENSE MTC			
45	667/1/45993/000	ST950ELV CUCKOO KIT - MICROSENSE SENTNL			
46	667/1/45994/000	ST950ELV CUCKOO KIT - PEEK TSC3			
47	667/1/45995/000	ST950ELV CUCKOO KIT - PEEK TRX			
48					
49					
50					
51					
52	667/1/33073/000	ST900 Isolator locking kit			
53	667/2/20234/000	Screw Lock Key			
54					
55					
56	667/1/27104/000	ST800 / ST900 DFM Lens Kit			
57	667/7/46690/000	NAL CONTROLLER CABINET BASE GREY			
58	667/7/46690/001	NAL CONTROLLER CABINET BASE BLACK			
59	667/2/27096/000	ST800 / ST900 Mounting Stool			
60					
61					
62	667/1/26271/000	Telephone Kit (Lightning protection)			
63	667/1/27118/000	Surge Arrester (Lightning protection)			
64					
65	667/1/45950/120	ST950 ELV Cabinet Export 20A 1 LSLS - Grey			
66	667/1/45950/140	ST950 ELV Cabinet Export 40A 1 LSLS - Grey			
67	667/1/45950/951	ST950 ELV RACK 19" 1LSLS			
68	667/1/32945/000	ST900 ELV additional LSLS rack wiring kit			
69					
70	667/1/45980/000	ST900 ELV to ST950 ELV conversion kit			
71	667/1/27056/300	Manual Panel Signals off only			
72	667/1/45966/001	Temporary USB Wi-Fi Dongle			
73	667/1/45970/000	ST950 RTC backup battery			
74	667/1/33080/100	Mains kit (ST950ELV) - No maint sockets			
75	667/1/31625/019	2U 19" UTMC communications tray			
76	667/6/46680/000	Anti graffiti coating			
77	667/1/33080/000	Mains kit (ST950ELV)			
78	667/1/33075/000	ELV 24V detector supply kit (2A)			
79	667/1/27018/950	GPS Clock Kit			
80					

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Instructions

LINKING REQUIREMENTS (SHOWING SIGNAL REQUIREMENTS)

The following wiring connections are required to send and receive the relevant contoller inputs and outputs on to the link.

CONNECTIONS ARE AS FOLLOWS

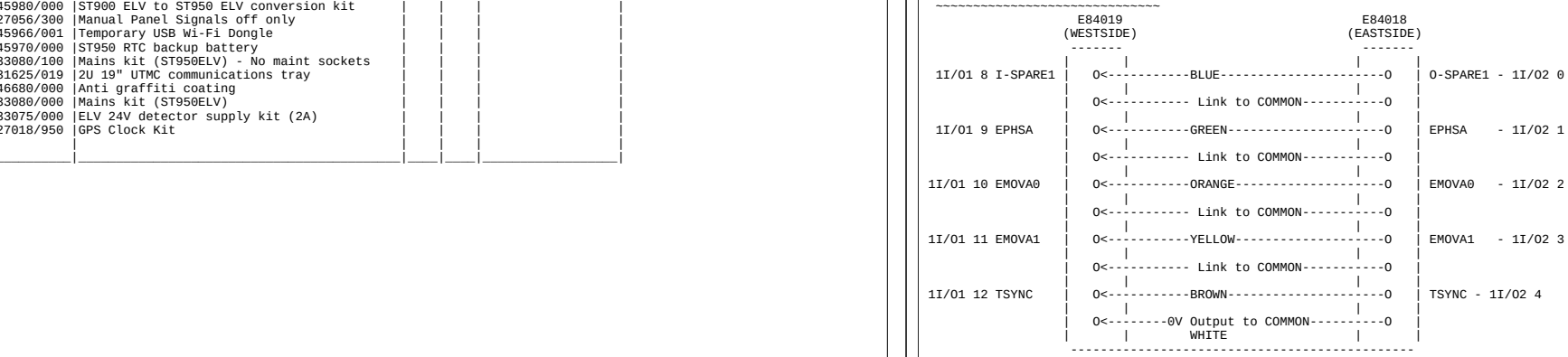
Requirement is for a single 16-Core cable between each Controller.

INPUTS TO EASTSIDE CONTROLLER



Link Cables Common to be connected to 0V Common in WESTSIDE Controller.

OUTPUTS TO WESTSIDE CONTROLLER



Link Cable Common to be connected to 0V Common in Eastside Controller.

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Special Instructions

```
; Lamp Supply Output for use with a serially connected OMU (168:LAMPSUP)
; ======================================================================
;
; This Output goes open circuit when there is no Lamp Supply or there is a Second Red Lamp failure.
; It is used to indicate that the Lamp Supply is Present on an ELV controller which is connected
; serially to an OMU. If the serial link to the OMU is lost, the LAMPSUP output indicates the Lamp
; Supply status to the OMU via an external relay. Assign the LAMPSUP output to an available I/O card
; output using IOA (IOA168=xx, where xx is the DET No. of the output used). Using the Kit
; 667/1/32612/000, connect the external relay to this output and to the OMU (in accordance with the
; instructions on drawing 667/GA/32612/000).
;
; ================================================================================================
;
; LAMPS OFF REPLY TO THE OMU (LAMPS OFF RELAY MUST BE FITTED TO ENABLE THIS TO WORK)
; ================================================================================
;
; LAMPS SUPPLY OUTPUT WIRING DETAILS FOR "LAMPSUP"
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; LAMP SUPPLY LAMPSON ON I/O PORT 8, DET71, BIT 7, 1I/O2, LINE 15
; ==============================================================
; IF LAMPS ARE SWITCHED OFF OR FAIL SEND REPLY BY USING AN I/O OUTPUT CALLED "LAMPSON"
```


Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Call Cancel

Call Cancel

Unit No.	Input Name	Call Delay	Cancel Delay	Phase Demanded (Unlatched Demand)
0	AQ1A	5	0	
1	AQ1B	5	0	
2	BQ8A	10	0	
3	BQ8B	10	0	
4	SQ17	8	4	
5		0	0	
6		0	0	
7		0	0	

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 0

Inputs Outputs Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	SQ17	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☑	☐	☐	2 LT1	A1
○	1	1	I	AIN2	☑	☑	☐	☐	☐	A	0	3.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A2
○	2	2	I	AIN3	☑	☑	☐	☐	☐	A	0	3.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A3
○	3	3	I	AIN4	☑	☑	☐	☐	☐	A	0	3.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A4
○	4	4	I	AX5	☑	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B1
○	5	5	I	AX6	☑	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B2
○	6	6	I	AX7	☑	☑	☐	☐	☐	A	0	2.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B3
○	7	7	I	SPARE2-4	☑	☑	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B4

Add Delete Move Clear Used By Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 1

Inputs Outputs Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	8	0	I	BIN9	☑	☑	☐	☐	☐	A	0	5.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C1
○	9	1	I	BIN10	☑	☑	☐	☐	☐	A	0	5.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C2
○	10	2	I	BX11	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C3
○	11	3	I	BX12	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C4
○	12	4	I	BX13	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D1
○	13	5	I	BSL14	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D2
○	14	6	I	BSL15	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D3
○	15	7	I	BSL16	☑	☑	☐		☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D4

Add Delete Move Clear Used By Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 2

Inputs Outputs Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	16	0	I	AQ1A	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	A1
○	17	1	I	AQ1B	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	A2
○	18	2	I	BQ8A	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	A3
○	19	3	I	BQ8B	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT2	A4
○	20	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B1
○	21	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B2
○	22	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B3
○	23	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 4

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	32	0	I	DPBP1	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-0
○	33	1	I	DPBP2	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-1
○	34	2	I	DPBP3	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-2
○	35	3	I	DPBP4	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-3
○	36	4	I	DKBSDP1	☑	☐	☑	☐	☐	A	2	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-4
○	37	5	I	DKBSDP4	☑	☐	☑	☐	☐	A	2	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-5
○	38	6	I	DONXP1	☑	☐	☑	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-6
○	39	7	I	DONXP4	☑	☐	☑		☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 5

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	40	0	I	I-SPARE1	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-8
○	41	1	I	EPHSA	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-9
○	42	2	I	EMOVA0	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-10
○	43	3	I	EMOVA1	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-11
○	44	4	I	TSYNC	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-12
○	45	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-13
○	46	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-14
○	47	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 7

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	56	0	O	TACTD	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-0
○	57	1	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-1
○	58	2	O	WMOVA	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-2
○	59	3	O	O-SPARE1	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-3
○	60	4	O	O-SPARE2	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-4
○	61	5	O	O-SPARE3	☑	☐	☐	☐	☑	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-5
○	62	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-6
○	63	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Manual Allocation

Port Number & Type

Port: 8

Inputs Outputs Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	64	0	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-8
○	65	1	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-9
○	66	2	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-10
○	67	3	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-11
○	68	4	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-12
○	69	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-13
○	70	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-14
○	71	7	O	LAMPSUP	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 1 of 1 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	D	Green	Phase
31	A	Amber	Phase	15	N/A	N/A	N/A
30	A	Green	Phase	14	N/A	N/A	N/A
29	B	Red	Phase	13	N/A	N/A	N/A
28	B	Red	Phase	12	N/A	N/A	N/A
27	B	Amber	Phase	11	N/A	N/A	N/A
26	B	Amber	Phase	10	N/A	N/A	N/A
25	B	Green	Phase	9	N/A	N/A	N/A
24	B	Green	Phase	8	N/A	N/A	N/A
23	C	Red	Phase	7	N/A	N/A	N/A
22	C	Amber	Phase	6	N/A	N/A	N/A
21	C	Green	Phase	5	N/A	N/A	N/A
20	D	Red	Phase	4	N/A	N/A	N/A
19	D	Amber	Phase	3	N/A	N/A	N/A
18	D	Green	Phase	2	N/A	N/A	N/A
17	D	Green	Phase	1	N/A	N/A	N/A

Works Order :
EM Number : 84019
Engineer : P M ROUSE
Intersection : M1 J15 Westside Northampton

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)	10	10	10	10
	InActive (Hrs)				
Group 2	Active (Mins)	60	60	60	60
	InActive (Hrs)	96	96	96	96
Group 3	Active (Mins)				
	InActive (Hrs)				
Group 4	Active (Mins)				
	InActive (Hrs)				
Group 5	Active (Mins)				
	InActive (Hrs)				
Group 6	Active (Mins)				
	InActive (Hrs)				
Group 7	Active (Mins)				
	InActive (Hrs)				

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands
- 2.6 Pelicans, Puffins and Toucans
  - 2.6.1 Phase - On Crossing and Kerbside Detector Definitions
  - 2.6.2 Stream - Pelican/Puffin/Toucan Times
  - 2.6.3 Phase - Pelican, Puffin and Toucan Times
  - 2.6.4 IO and Link - Pelican/Puffin/Toucan Times
  - 2.6.5 Pelican, Puffin, Toucan Pushbutton/Kerbside Associations

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays (No configuration data to print)
- 3.4 Intergreen Delays (No configuration data to print)

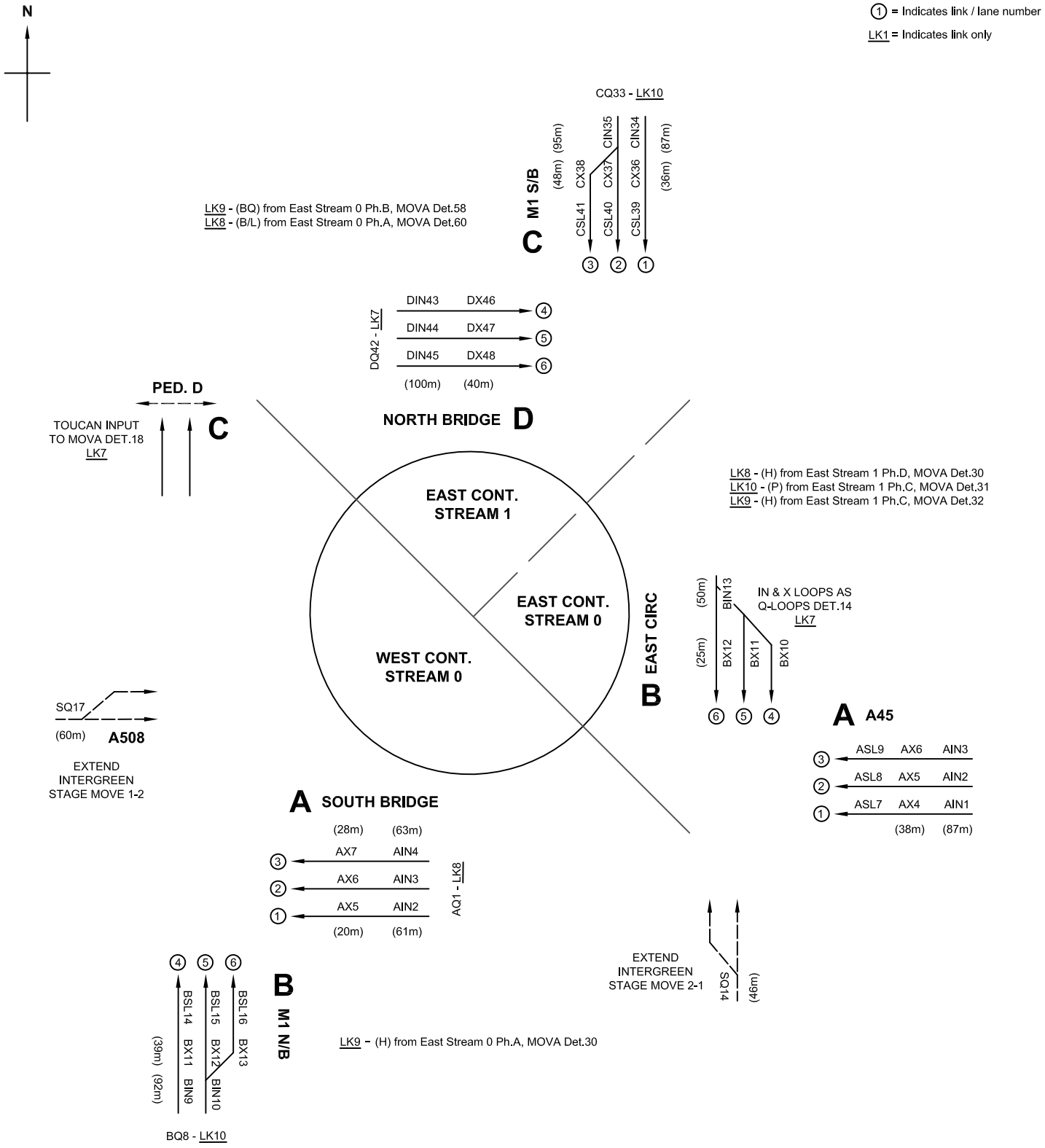
4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 UTC and MOVA
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions (No configuration data to print)
    - 4.3.3.2 UTC Stage and Mode Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces (No configuration data to print)
  - 4.3.4 MOVA Stages
  - 4.3.5 UTC and MOVA Detectors
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral LMU Onboard Sensors
  - 4.5.3 Integral LMU External Sensors for Regulatory Signs
  - 4.5.4 LMU Sensor Load Types
  - 4.5.5 RLM Additional Intergreens
  - 4.5.6 RLM Phase Inhibits
- 4.6 Hurry Call
- 4.7 Manual
  - 4.7.1 Manual Panel
  - 4.7.2 Manual Mode - Optional Phases Appearance (No configuration data to print)
- 4.8 Extend All Red
  - 4.8.1 Extend All Red - General
  - 4.8.2 Extend All Red - Stage To Stage Moves
  - 4.8.3 Extend All Red - Independent Intergreens
- 4.9 Reserve State

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

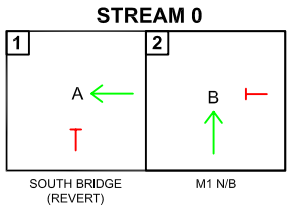
6 Special Instructions
7 I/O
7.1 Call Cancel
7.2 Inputs and Outputs
7.3 Aspect Drives (ELV Controllers)
7.4 I/O - DFM Group Timings

M1J15 GYRATORY, NORTHAMPTON

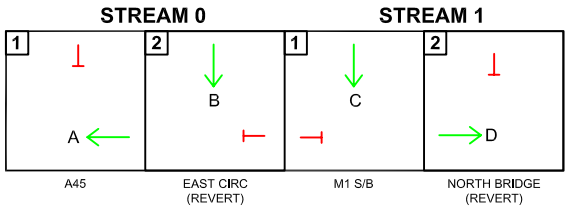
Method of Control, Detector Location, and Mova Lane / Link configuration



EAST CONTROLLER METHOD OF CONTROL



EAST CONTROLLER METHOD OF CONTROL



© JSTSM LTD

APPENDIX C

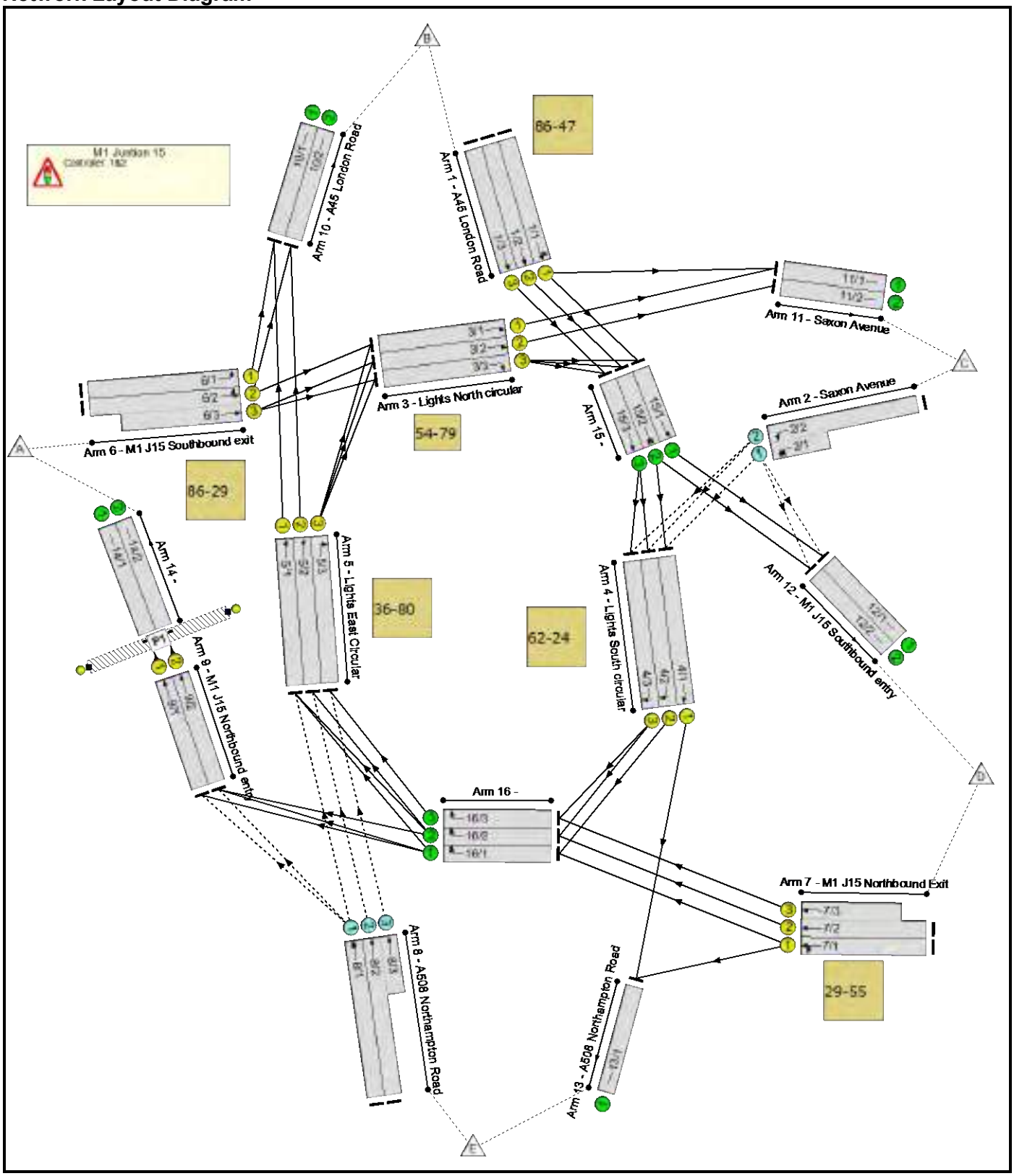
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 12
Location:	M1 Junction 15 / A45 (north to Northampton and Wellingborough) / Saxon Avenue/ A508, Northampton Road (south to Milton Keynes)
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

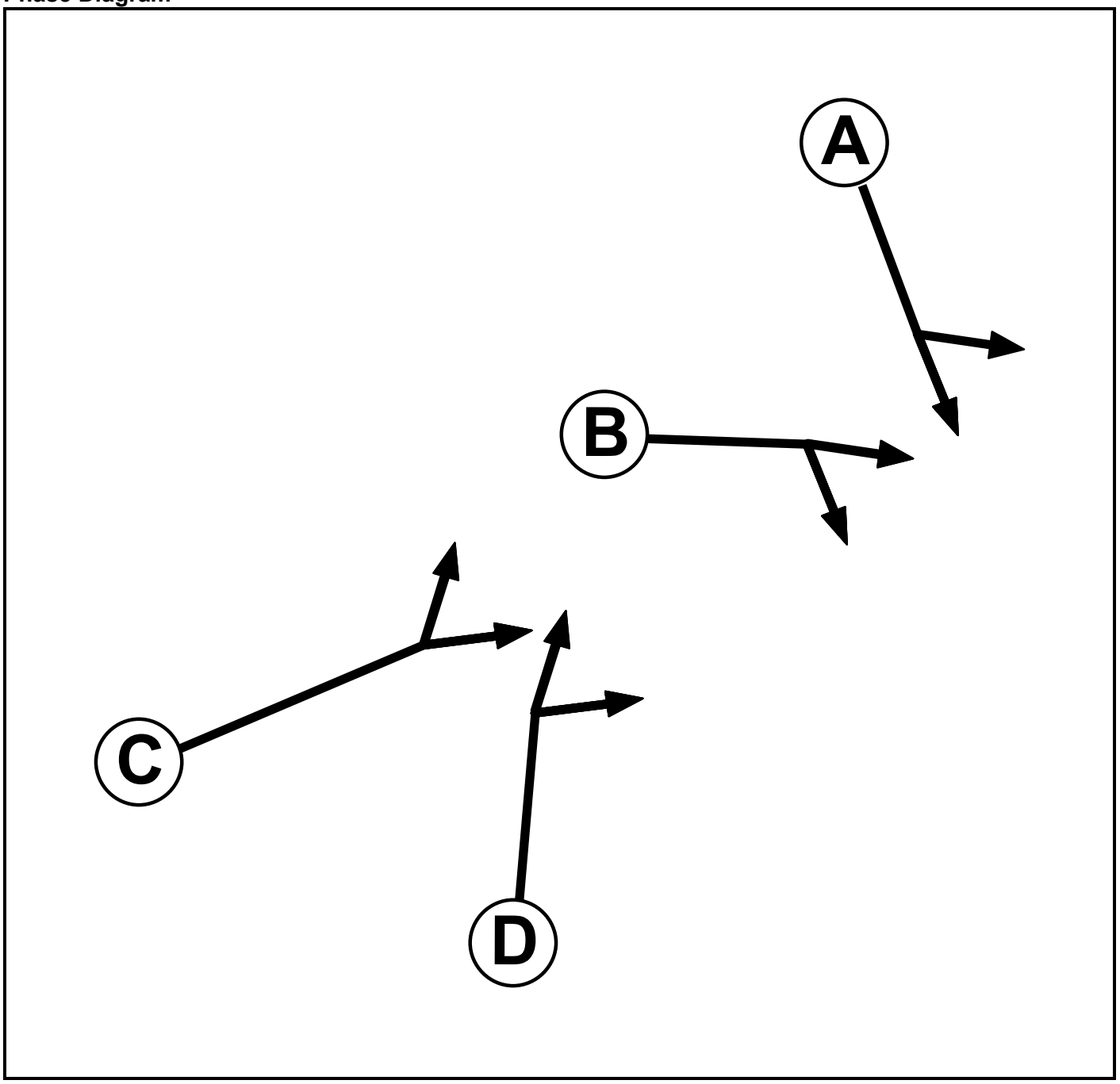
Full Input Data And Results

Network Layout Diagram



C1

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Full Input Data And Results

Phase Intergreens Matrix

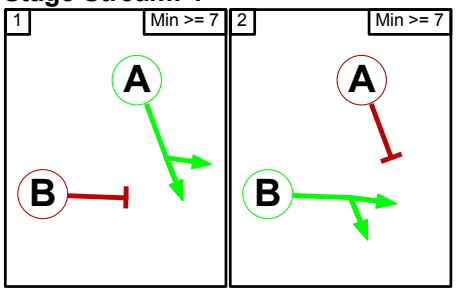
Terminating Phase	Starting Phase A	B	C	D
A		7	-	-
B	7		-	-
C	-	-		7
D	-	-	6	

Phases in Stage

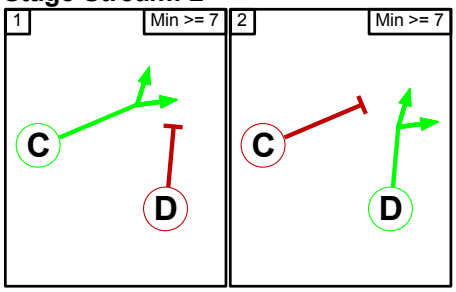
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

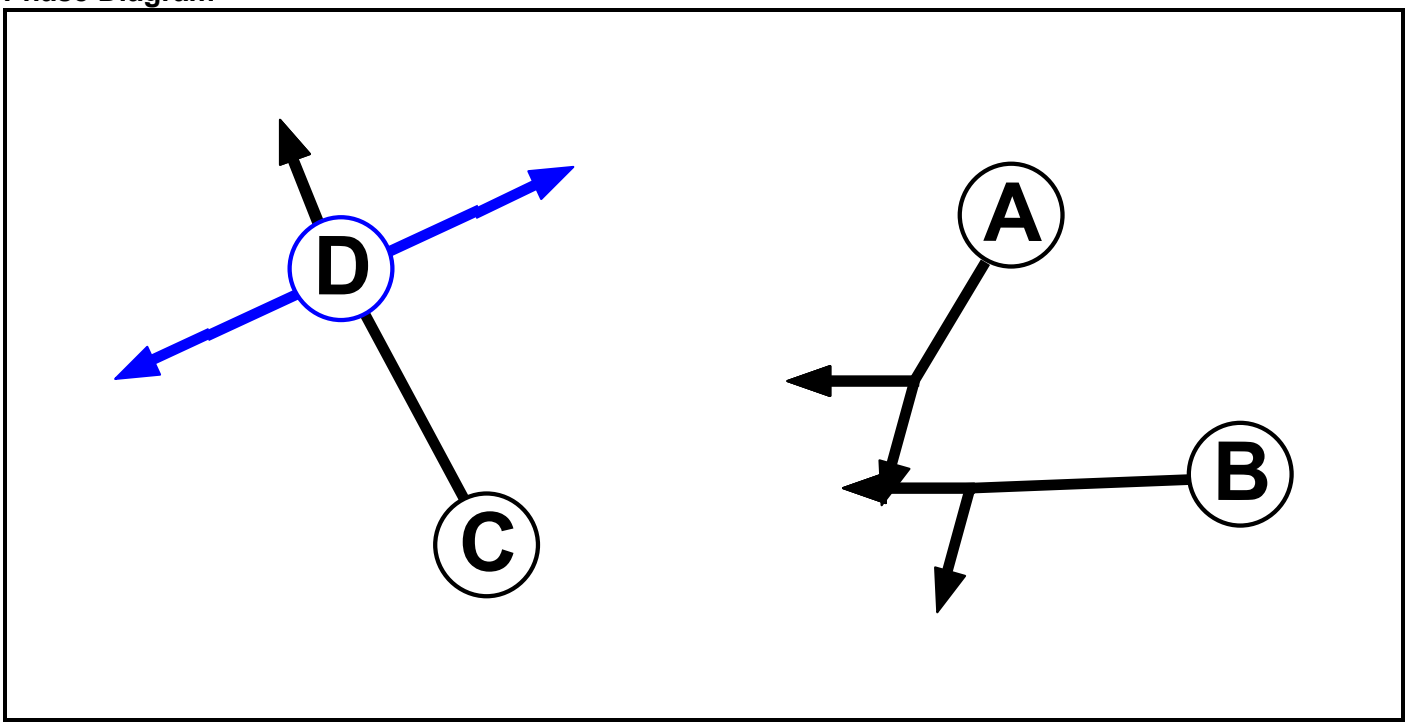
	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		7
	2	6	

C2

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Pedestrian	2		6	6

Full Input Data And Results

Phase Intergreens Matrix

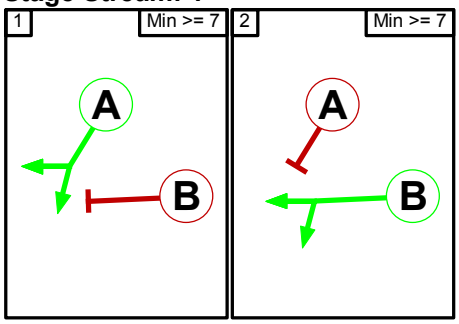
Terminating Phase	Starting Phase A	B	C	D
A		5	-	-
B	7		-	-
C	-	-		5
D	-	-	7	

Phases in Stage

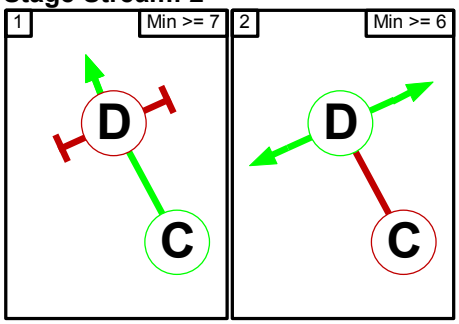
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: M1 Juntion 15											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
2/1 (Saxon Avenue)	4/1 (Left)	1000	0	15/1	0.33	All	-	-	-	-	-
				15/2	0.33	All					
				15/3	0.33	All					
	12/1 (Left)	1000	0	15/1	0.33	All					
				15/2	0.33	All					
				15/3	0.33	All					
	12/2 (Left)	1000	0	15/1	0.33	All					
				15/2	0.33	All					
				15/3	0.33	All					
2/2 (Saxon Avenue)	4/2 (Left)	1000	0	15/1	0.33	All	-	-	-	-	-
				15/2	0.33	All					
				15/3	0.33	All					
	4/3 (Left)	1000	0	15/1	0.33	All					
				15/2	0.33	All					
				15/3	0.33	All					
8/1 (A508 Northampton Road)	5/1 (Ahead)	1000	0	16/1	0.33	All	-	-	-	-	-
				16/2	0.33	All					
				16/3	0.33	All					
	9/1 (Ahead)	1000	0	16/1	0.33	All					
	9/2 (Ahead)	1000	0	16/1	0.33	All					
8/2 (A508 Northampton Road)	5/2 (Ahead)	1000	0	16/1	0.33	All	-	-	-	-	-
				16/2	0.33	All					
				16/3	0.33	All					

Full Input Data And Results

8/3 (A508 Northampton Road)	5/3 (Ahead)	1000	0	16/1	0.33	All	-	-	-	-	-
				16/2	0.33	All					
				16/3	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: M1 Juntion 15												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A45 London Road)	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A45 London Road)	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A45 London Road)	U	A	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Saxon Avenue)	O		2	3	5.0	User	1600	-	-	-	-	-
2/2 (Saxon Avenue)	O		2	3	60.0	User	1600	-	-	-	-	-
3/1 (Lights North circular)	U	B	2	3	5.0	User	1900	-	-	-	-	-
3/2 (Lights North circular)	U	B	2	3	5.0	User	1900	-	-	-	-	-
3/3 (Lights North circular)	U	B	2	3	6.0	User	1900	-	-	-	-	-
4/1 (Lights South circular)	U	A	2	3	36.5	User	1900	-	-	-	-	-
4/2 (Lights South circular)	U	A	2	3	36.5	User	1900	-	-	-	-	-
4/3 (Lights South circular)	U	A	2	3	20.9	User	1900	-	-	-	-	-
5/1 (Lights East Circular)	U	D	2	3	28.7	User	1900	-	-	-	-	-
5/2 (Lights East Circular)	U	D	2	3	28.7	User	1900	-	-	-	-	-
5/3 (Lights East Circular)	U	D	2	3	28.7	User	1900	-	-	-	-	-
6/1 (M1 J15 Southbound exit)	U	C	2	3	60.0	User	1800	-	-	-	-	-
6/2 (M1 J15 Southbound exit)	U	C	2	3	60.0	User	1800	-	-	-	-	-
6/3 (M1 J15 Southbound exit)	U	C	2	3	17.4	User	1800	-	-	-	-	-

Full Input Data And Results

7/1 (M1 J15 Northbound Exit)	U	B	2	3	60.0	User	1800	-	-	-	-	-
7/2 (M1 J15 Northbound Exit)	U	B	2	3	60.0	User	1800	-	-	-	-	-
7/3 (M1 J15 Northbound Exit)	U	B	2	3	18.3	User	1800	-	-	-	-	-
8/1 (A508 Northampton Road)	O		2	3	60.0	User	1800	-	-	-	-	-
8/2 (A508 Northampton Road)	O		2	3	22.6	User	1800	-	-	-	-	-
8/3 (A508 Northampton Road)	O		2	3	5.0	User	1800	-	-	-	-	-
9/1 (M1 J15 Northbound entry)	U	C	2	3	60.0	User	1600	-	-	-	-	-
9/2 (M1 J15 Northbound entry)	U	C	2	3	60.0	User	1600	-	-	-	-	-
10/1 (A45 London Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (A45 London Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (Saxon Avenue)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (Saxon Avenue)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (M1 J15 Southbound entry)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2 (M1 J15 Southbound entry)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (A508 Northampton Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1	U		2	3	60.0	Inf	-	-	-	-	-	-
14/2	U		2	3	60.0	Inf	-	-	-	-	-	-
15/1	U		2	3	60.0	Inf	-	-	-	-	-	-
15/2	U		2	3	60.0	Inf	-	-	-	-	-	-
15/3	U		2	3	60.0	Inf	-	-	-	-	-	-
16/1	U		2	3	60.0	Inf	-	-	-	-	-	-

16/2	U		2	3	60.0	Inf	-	-	-	-	-	-
16/3	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2015 AM Base Flow'	08:00	09:00	01:00	
2: '2015 PM Base Flow'	17:00	18:00	01:00	
3: '2021 DM AM'	08:00	09:00	01:00	
4: '2021 DM PM'	17:00	18:00	01:00	
5: '2021 DS AM'	08:00	09:00	01:00	
6: '2021 DS PM'	17:00	18:00	01:00	
7: '2031 DM AM'	08:00	09:00	01:00	
8: '2031 DM PM'	17:00	18:00	01:00	
9: '2031 DS AM'	08:00	09:00	01:00	
10: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2015 AM Base Flow OPT' (FG1: '2015 AM Base Flow', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1210	144	0	258	1612
	B	766	0	82	1017	581	2446
	C	35	163	0	81	27	306
	D	0	928	67	0	31	1026
	E	113	363	28	62	0	566
	Tot.	914	2664	321	1160	897	5956

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2015 AM Base Flow OPT
Junction: M1 Juntion 15	
1/1	841
1/2	839
1/3	766
2/1 (short)	108
2/2 (with short)	306(In) 198(Out)
3/1	91
3/2	148
3/3	320
4/1	866
4/2	460
4/3	504
5/1	729
5/2	725
5/3	157
6/1	594
6/2 (with short)	1018(In) 616(Out)
6/3 (short)	402
7/1	465
7/2 (with short)	561(In) 494(Out)
7/3 (short)	67
8/1	373
8/2 (with short)	193(In) 103(Out)
8/3 (short)	90
9/1	462
9/2	452
10/1	1323
10/2	1341
11/1	173
11/2	148
12/1	830
12/2	330
13/1	897
14/1	462
14/2	452
15/1	790

Full Input Data And Results

15/2	1128
15/3	766
16/1	894
16/2	998
16/3	67

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2015 PM Base Flow OPT' (FG2: '2015 PM Base Flow', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	962	102	0	181	1245
	B	882	0	149	1061	846	2938
	C	30	246	0	66	20	362
	D	0	1020	54	0	55	1129
	E	204	559	37	36	0	836
	Tot.	1116	2787	342	1163	1102	6510

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2015 PM Base Flow OPT
Junction: M1 Juntion 15	
1/1	1028
1/2	1028
1/3	882
2/1 (short)	86
2/2 (with short)	362(In) 276(Out)
3/1	67
3/2	126
3/3	217
4/1	1047
4/2	610
4/3	548
5/1	965
5/2	860
5/3	127
6/1	463
6/2 (with short)	782(In) 499(Out)
6/3 (short)	283
7/1	536
7/2 (with short)	593(In) 539(Out)
7/3 (short)	54
8/1	554
8/2 (with short)	282(In) 209(Out)
8/3 (short)	73
9/1	613
9/2	503
10/1	1428
10/2	1359
11/1	216
11/2	126
12/1	930
12/2	233
13/1	1102
14/1	613
14/2	503
15/1	897

Full Input Data And Results

15/2	1227
15/3	882
16/1	1091
16/2	1087
16/3	54

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1517	106	0	247	1870
	B	1412	37	93	1264	749	3555
	C	22	0	0	85	20	127
	D	0	1189	116	0	101	1406
	E	169	341	37	59	0	606
	Tot.	1603	3084	352	1408	1117	7564

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: M1 Juntion 15	
1/1	1053
1/2	1053
1/3	1449
2/1 (short)	105
2/2 (with short)	127(In) 22(Out)
3/1	119
3/2	140
3/3	306
4/1	1016
4/2	735
4/3	736
5/1	722
5/2	845
5/3	212
6/1	763
6/2 (with short)	1107(In) 754(Out)
6/3 (short)	353
7/1	661
7/2 (with short)	745(In) 629(Out)
7/3 (short)	116
8/1	295
8/2 (with short)	311(In) 215(Out)
8/3 (short)	96
9/1	802
9/2	801
10/1	1485
10/2	1599
11/1	212
11/2	140
12/1	1031
12/2	377
13/1	1117
14/1	802
14/2	801
15/1	989
15/2	1330

Full Input Data And Results

15/3	1449
16/1	1295
16/2	1365
16/3	116

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1174	92	0	166	1432
	B	1343	25	160	1282	814	3624
	C	38	139	0	66	19	262
	D	0	1422	58	0	143	1623
	E	360	687	45	92	0	1184
	Tot.	1741	3447	355	1440	1142	8125

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: M1 Juntion 15	
1/1	1128
1/2	1128
1/3	1368
2/1 (short)	85
2/2 (with short)	262(In) 177(Out)
3/1	97
3/2	98
3/3	258
4/1	999
4/2	726
4/3	819
5/1	1004
5/2	1269
5/3	195
6/1	600
6/2 (with short)	832(In) 620(Out)
6/3 (short)	212
7/1	787
7/2 (with short)	836(In) 778(Out)
7/3 (short)	58
8/1	556
8/2 (with short)	628(In) 491(Out)
8/3 (short)	137
9/1	848
9/2	893
10/1	1604
10/2	1843
11/1	257
11/2	98
12/1	1047
12/2	393
13/1	1142
14/1	848
14/2	893
15/1	1014
15/2	1340

Full Input Data And Results

15/3	1368
16/1	1370
16/2	1597
16/3	58

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 5: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1541	95	0	230	1866
	B	1530	36	95	1279	718	3658
	C	29	4	0	86	12	131
	D	0	1199	132	0	91	1422
	E	177	334	37	59	0	607
	Tot.	1736	3114	359	1424	1051	7684

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS AM
Junction: M1 Juntion 15	
1/1	1046
1/2	1046
1/3	1566
2/1 (short)	98
2/2 (with short)	131(In) 33(Out)
3/1	123
3/2	141
3/3	289
4/1	960
4/2	802
4/3	797
5/1	724
5/2	849
5/3	228
6/1	768
6/2 (with short)	1098(In) 773(Out)
6/3 (short)	325
7/1	666
7/2 (with short)	756(In) 624(Out)
7/3 (short)	132
8/1	288
8/2 (with short)	319(In) 223(Out)
8/3 (short)	96
9/1	871
9/2	865
10/1	1492
10/2	1622
11/1	218
11/2	141
12/1	1023
12/2	401
13/1	1051
14/1	871
14/2	865
15/1	980
15/2	1306

Full Input Data And Results

15/3	1566
16/1	1377
16/2	1421
16/3	132

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 6: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1315	96	0	207	1618
	B	1714	3	160	1220	925	4022
	C	25	127	0	66	16	234
	D	0	1289	57	0	100	1446
	E	379	682	43	75	0	1179
	Tot.	2118	3416	356	1361	1248	8499

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS PM
Junction: M1 Juntion 15	
1/1	1139
1/2	1166
1/3	1717
2/1 (short)	82
2/2 (with short)	234(In) 152(Out)
3/1	97
3/2	99
3/3	282
4/1	1148
4/2	931
4/3	938
5/1	925
5/2	1176
5/3	175
6/1	674
6/2 (with short)	944(In) 684(Out)
6/3 (short)	260
7/1	704
7/2 (with short)	742(In) 685(Out)
7/3 (short)	57
8/1	570
8/2 (with short)	609(In) 491(Out)
8/3 (short)	118
9/1	1058
9/2	1060
10/1	1599
10/2	1817
11/1	257
11/2	99
12/1	1049
12/2	312
13/1	1248
14/1	1058
14/2	1060
15/1	1016
15/2	1411

Full Input Data And Results

15/3	1717
16/1	1535
16/2	1623
16/3	57

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	3	1662	158	0	325	2148
	B	1640	39	88	997	799	3563
	C	17	7	0	90	12	126
	D	0	1024	114	0	74	1212
	E	200	536	54	92	0	882
	Tot.	1860	3268	414	1179	1210	7931

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DM AM
Junction: M1 Juntion 15	
1/1	942
1/2	942
1/3	1679
2/1 (short)	102
2/2 (with short)	126(In) 24(Out)
3/1	119
3/2	207
3/3	420
4/1	1136
4/2	842
4/3	864
5/1	707
5/2	899
5/3	260
6/1	830
6/2 (with short)	1318(In) 832(Out)
6/3 (short)	486
7/1	553
7/2 (with short)	659(In) 545(Out)
7/3 (short)	114
8/1	386
8/2 (with short)	496(In) 350(Out)
8/3 (short)	146
9/1	922
9/2	938
10/1	1537
10/2	1731
11/1	207
11/2	207
12/1	945
12/2	234
13/1	1210
14/1	922
14/2	938
15/1	900
15/2	1313

Full Input Data And Results

15/3	1682
16/1	1321
16/2	1409
16/3	114

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1309	79	0	138	1526
	B	1418	52	165	1217	769	3621
	C	41	152	0	67	19	279
	D	0	1573	112	0	219	1904
	E	380	614	44	83	0	1121
	Tot.	1839	3700	400	1367	1145	8451

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DM PM
Junction: M1 Juntion 15	
1/1	1077
1/2	1074
1/3	1470
2/1 (short)	86
2/2 (with short)	279(In) 193(Out)
3/1	100
3/2	135
3/3	221
4/1	926
4/2	839
4/3	824
5/1	1055
5/2	1336
5/3	239
6/1	654
6/2 (with short)	872(In) 659(Out)
6/3 (short)	213
7/1	903
7/2 (with short)	1001(In) 889(Out)
7/3 (short)	112
8/1	547
8/2 (with short)	574(In) 447(Out)
8/3 (short)	127
9/1	926
9/2	913
10/1	1709
10/2	1991
11/1	265
11/2	135
12/1	986
12/2	381
13/1	1145
14/1	926
14/2	913
15/1	953
15/2	1254

Full Input Data And Results

15/3	1470
16/1	1523
16/2	1713
16/3	112

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 9: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1613	158	0	338	2109
	B	1874	45	87	1063	716	3785
	C	22	3	0	92	8	125
	D	0	1092	108	0	89	1289
	E	210	528	45	97	0	880
	Tot.	2106	3281	398	1252	1151	8188

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DS AM
Junction: M1 Juntion 15	
1/1	933
1/2	933
1/3	1919
2/1 (short)	100
2/2 (with short)	125(In) 25(Out)
3/1	110
3/2	201
3/3	435
4/1	1062
4/2	968
4/3	976
5/1	743
5/2	925
5/3	250
6/1	805
6/2 (with short)	1304(In) 808(Out)
6/3 (short)	496
7/1	598
7/2 (with short)	691(In) 583(Out)
7/3 (short)	108
8/1	405
8/2 (with short)	475(In) 333(Out)
8/3 (short)	142
9/1	1051
9/2	1055
10/1	1548
10/2	1733
11/1	197
11/2	201
12/1	940
12/2	312
13/1	1151
14/1	1051
14/2	1055
15/1	894
15/2	1320

Full Input Data And Results

15/3	1919
16/1	1477
16/2	1559
16/3	108

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 10: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1312	120	0	181	1613
	B	1623	23	157	1155	845	3803
	C	36	129	0	67	18	250
	D	0	1473	67	0	120	1660
	E	343	654	43	83	0	1123
	Tot.	2002	3591	387	1305	1164	8449

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DS PM
Junction: M1 Juntion 15	
1/1	1083
1/2	1074
1/3	1646
2/1 (short)	85
2/2 (with short)	250(In) 165(Out)
3/1	66
3/2	164
3/3	264
4/1	1044
4/2	873
4/3	938
5/1	1029
5/2	1250
5/3	193
6/1	644
6/2 (with short)	969(In) 668(Out)
6/3 (short)	301
7/1	801
7/2 (with short)	859(In) 792(Out)
7/3 (short)	67
8/1	539
8/2 (with short)	584(In) 458(Out)
8/3 (short)	126
9/1	997
9/2	1005
10/1	1673
10/2	1918
11/1	223
11/2	164
12/1	1000
12/2	305
13/1	1164
14/1	997
14/2	1005
15/1	967
15/2	1297

Full Input Data And Results

15/3	1646
16/1	1554
16/2	1730
16/3	67

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800

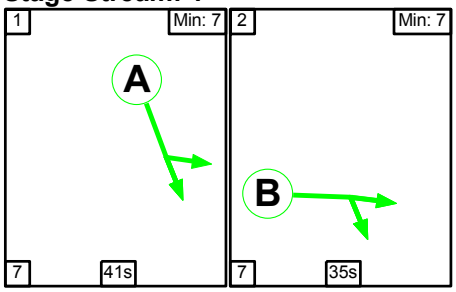
Full Input Data And Results

9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

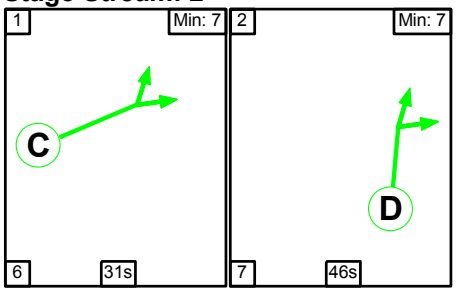
Scenario 1: '2015 AM Base Flow OPT' (FG1: '2015 AM Base Flow', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

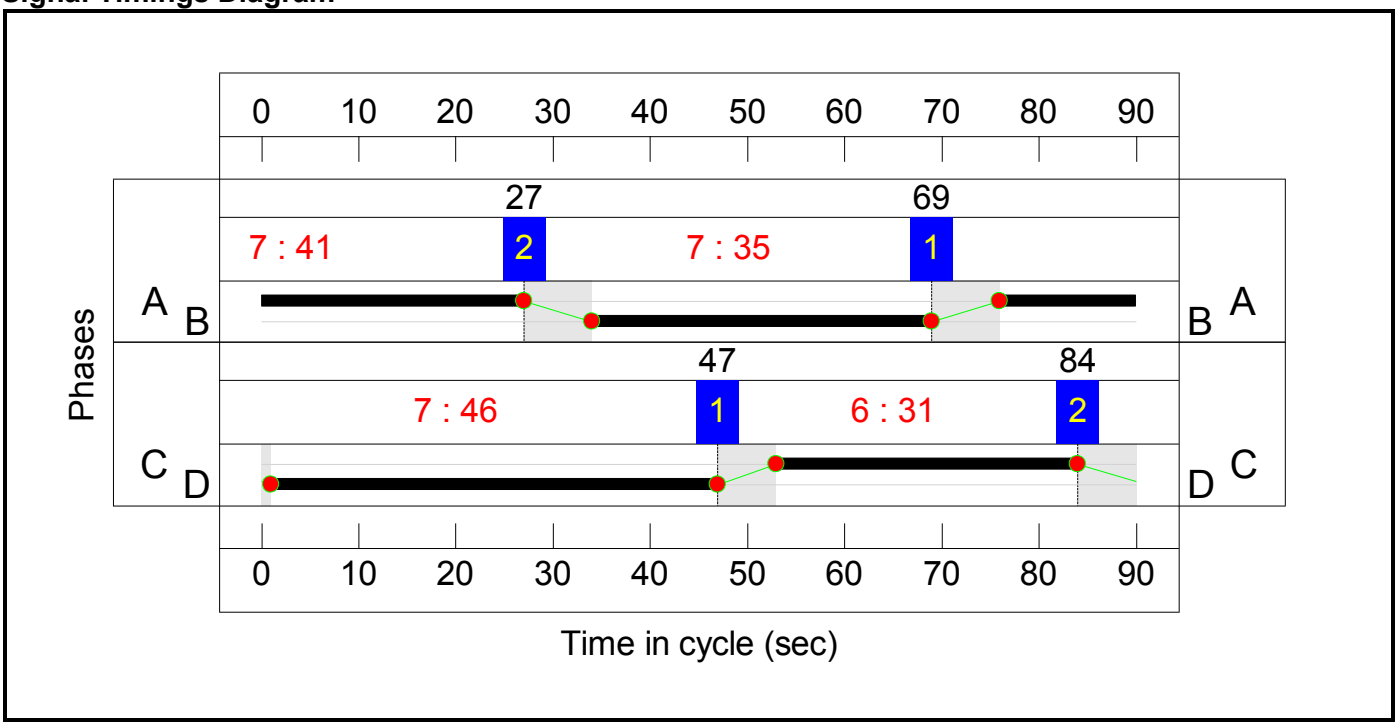
Stage Stream: 1

Stage	1	2
Duration	41	35
Change Point	69	27

Stage Stream: 2

Stage	1	2
Duration	31	46
Change Point	47	84

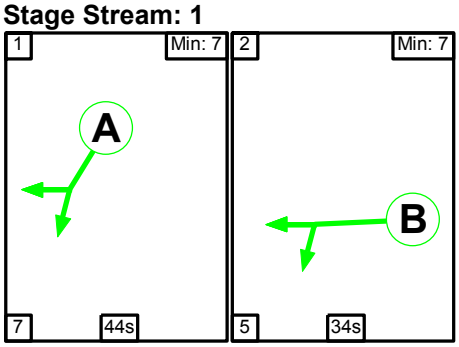
Signal Timings Diagram



C2

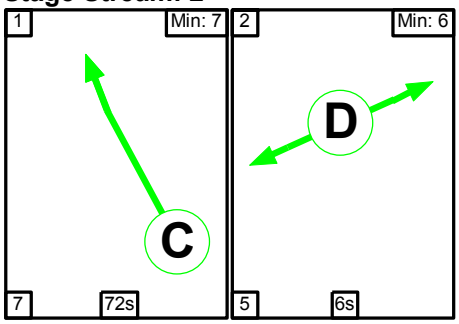
Stage Sequence Diagram

Stage Stream: 1



Full Input Data And Results

Stage Stream: 2



Stage Timings

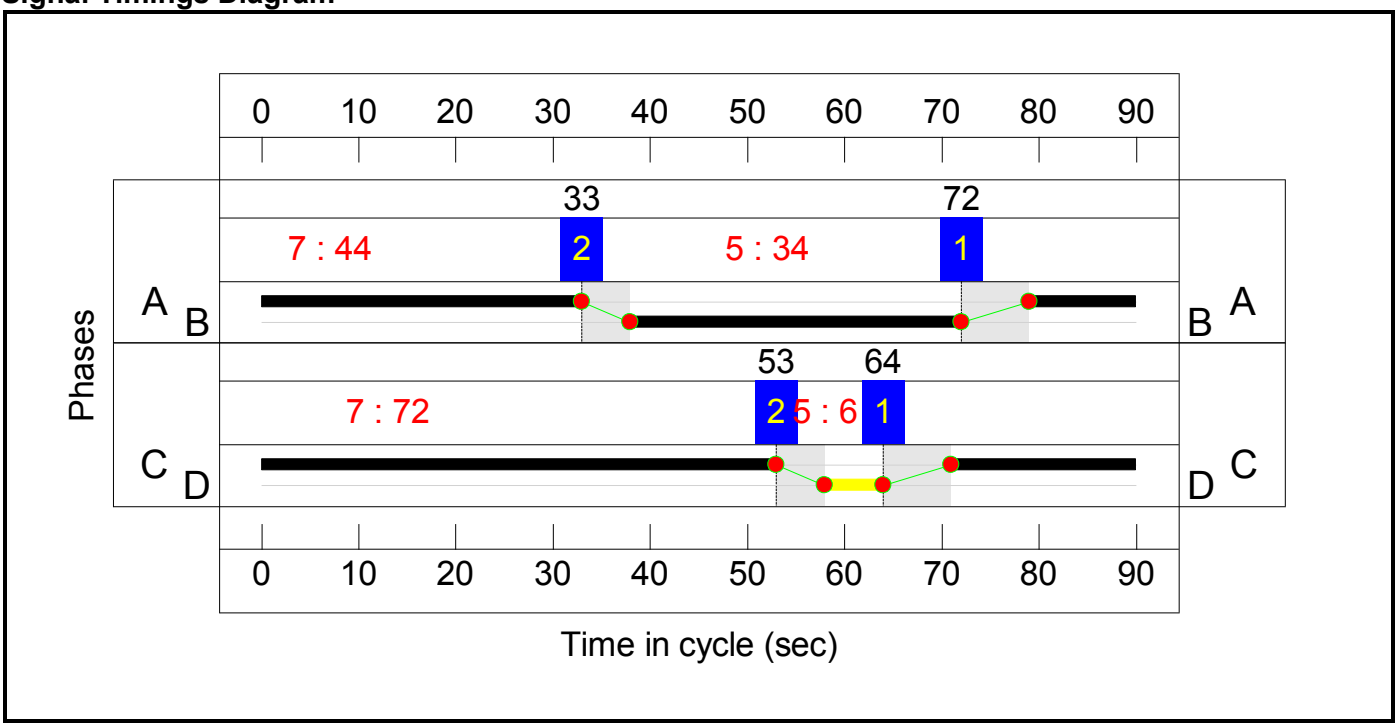
Stage Stream: 1

Stage	1	2
Duration	44	34
Change Point	72	33

Stage Stream: 2

Stage	1	2
Duration	72	6
Change Point	64	53

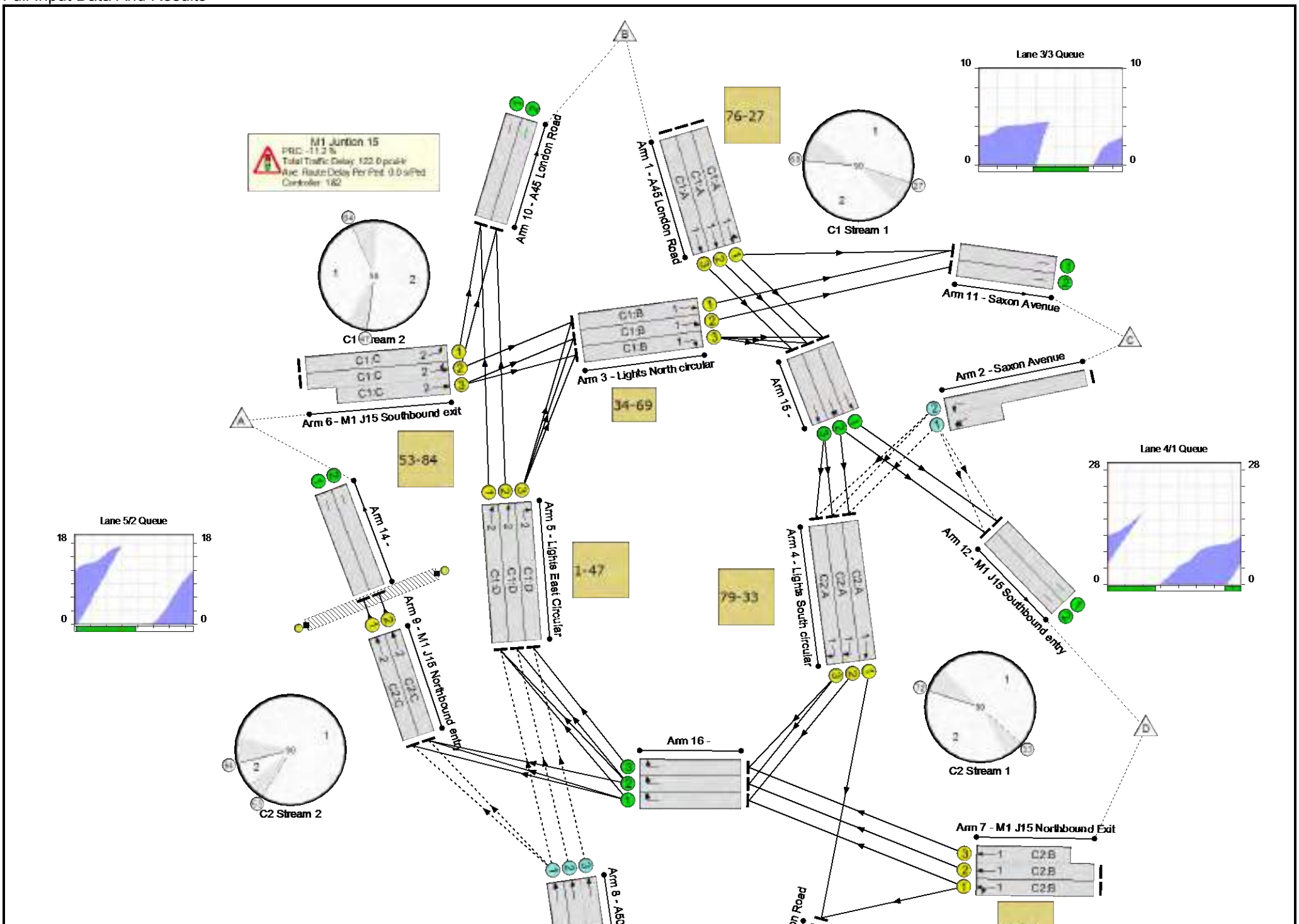
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.1%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.1%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	41	-	841	1800	840	100.1%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	41	-	839	1800	840	99.9%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	41	-	766	1800	840	91.2%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	306	1600:1600	413+225	47.9 : 47.9%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	35	-	91	1900	760	12.0%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	35	-	148	1900	760	19.5%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	35	-	320	1900	760	42.1%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	44	-	866	1900	950	91.2%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	44	-	460	1900	950	48.4%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	44	-	504	1900	950	53.1%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	46	-	729	1900	992	73.5%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	46	-	725	1900	992	73.1%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	46	-	157	1900	992	15.8%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	31	-	594	1800	640	92.8%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	31	-	1018	1800:1800	640+418	96.3 : 96.3%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	34	-	465	1800	700	66.4%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	34	-	561	1800:1800	700+95	70.6 : 70.6%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	373	1800	439	85.0%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	193	1800:1800	407+377	25.3 : 23.9%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	462	1600	1298	35.6%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	452	1600	1298	34.8%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1323	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1341	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	173	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	148	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	830	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	330	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	897	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	462	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	452	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	790	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1128	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	894	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	998	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	67	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1371**	**0**	**0**	**59.3**	**62.7**	**0.0**	**122.0**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1371**	**0**	**0**	**59.3**	**62.7**	**0.0**	**122.0**	**-**	**-**	**-**	**-**
1/1	841	840	-	-	-	5.7	14.8	-	20.4	87.4	21.0	14.8	35.8
1/2	839	839	-	-	-	5.6	14.2	-	19.8	85.1	20.7	14.2	35.0
1/3	766	766	-	-	-	4.7	4.6	-	9.3	43.9	17.7	4.6	22.3
2/2+2/1	306	306	612	0	0	1.1	0.5	-	1.5	18.2	3.3	0.5	3.8
3/1	91	91	-	-	-	0.6	0.1	-	0.7	26.8	2.2	0.1	2.2
3/2	148	148	-	-	-	1.0	0.1	-	1.1	26.7	1.9	0.1	2.0
3/3	320	320	-	-	-	2.1	0.4	-	2.5	27.9	4.5	0.4	4.9
4/1	866	866	-	-	-	4.8	4.6	-	9.5	39.4	17.6	4.6	22.2
4/2	460	460	-	-	-	2.0	0.5	-	2.4	19.0	4.7	0.5	5.2
4/3	504	504	-	-	-	2.2	0.6	-	2.8	19.9	6.8	0.6	7.4
5/1	729	729	-	-	-	4.7	1.4	-	6.1	30.2	16.7	1.4	18.1
5/2	725	725	-	-	-	4.7	1.3	-	6.0	30.0	17.4	1.3	18.8
5/3	157	157	-	-	-	0.7	0.1	-	0.8	17.7	2.8	0.1	2.9
6/1	594	594	-	-	-	4.6	5.3	-	9.9	59.7	14.2	5.3	19.4
6/2+6/3	1018	1018	-	-	-	7.5	8.9	-	16.4	58.1	15.1	8.9	23.9
7/1	465	465	-	-	-	2.9	1.0	-	3.9	30.3	9.6	1.0	10.5
7/2+7/3	561	561	-	-	-	3.5	1.2	-	4.7	30.1	10.3	1.2	11.5
8/1	373	373	373	0	0	0.6	2.6	-	3.2	31.2	4.1	2.6	6.8
8/2+8/3	193	193	386	0	0	0.2	0.2	-	0.3	6.3	0.7	0.2	0.8
9/1	462	462	-	-	-	0.0	0.3	-	0.3	2.2	3.2	0.3	3.4
9/2	452	452	-	-	-	0.0	0.3	-	0.3	2.2	1.4	0.3	1.6
10/1	1323	1323	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1341	1341	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

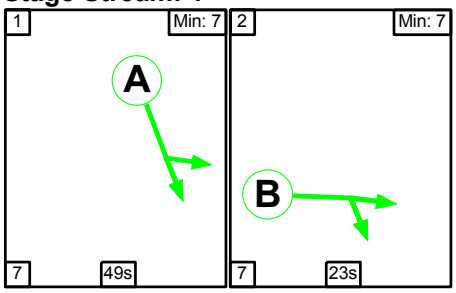
11/2	148	148	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	829	829	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	330	330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	897	897	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	462	462	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	452	452	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	789	789	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1128	1128	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	894	894	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	998	998	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	67	67	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-11.2	Total Delay for Signalled Lanes (pcuHr):	53.83	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-6.9	Total Delay for Signalled Lanes (pcuHr):	39.21	Cycle Time (s):	90		
C2	Stream: 1 PRC for Signalled Lanes (%):	-1.3	Total Delay for Signalled Lanes (pcuHr):	23.29	Cycle Time (s):	90		
C2	Stream: 2 PRC for Signalled Lanes (%):	152.8	Total Delay for Signalled Lanes (pcuHr):	0.56	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-11.2	Total Delay Over All Lanes(pcuHr):	122.00				

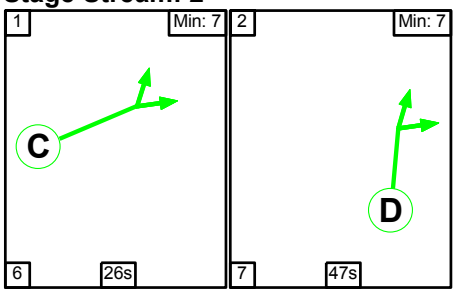
Full Input Data And Results
Scenario 2: '2015 PM Base Flow OPT' (FG2: '2015 PM Base Flow', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

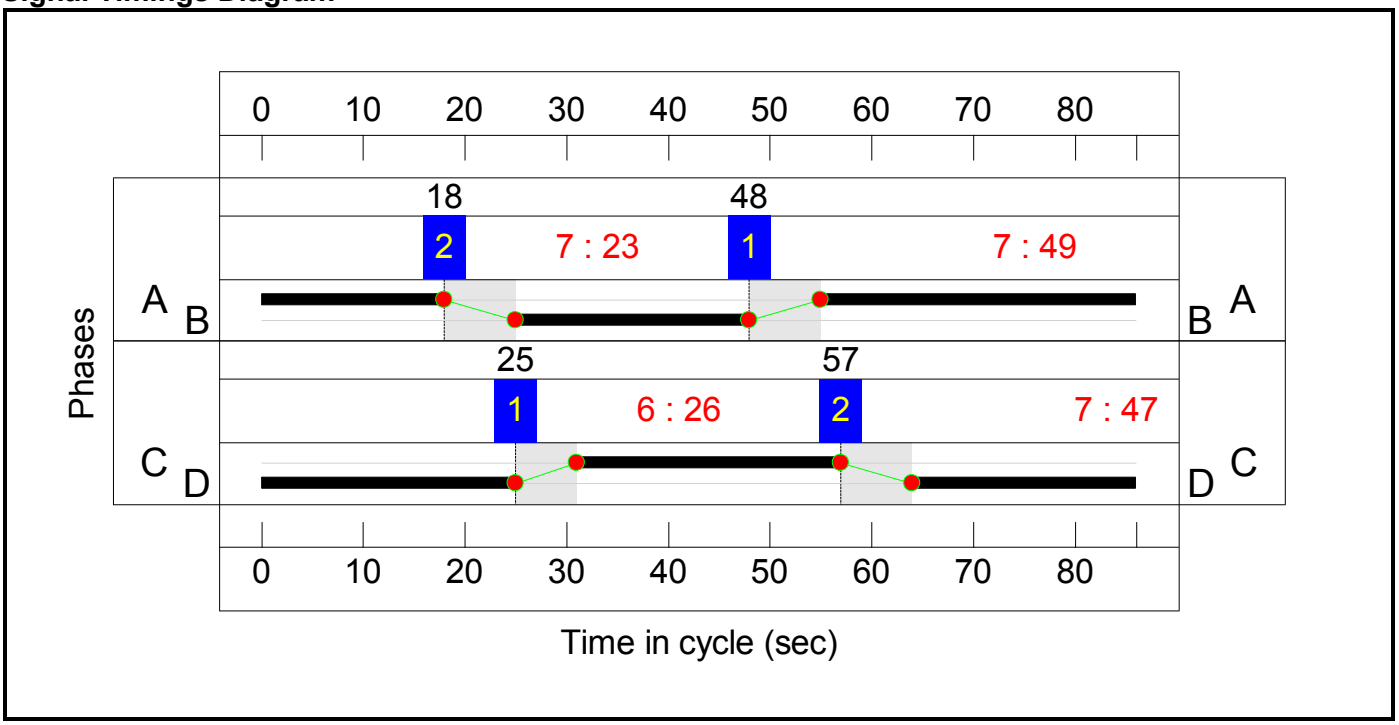
Stage Stream: 1

Stage	1	2
Duration	49	23
Change Point	48	18

Stage Stream: 2

Stage	1	2
Duration	26	47
Change Point	25	57

Signal Timings Diagram

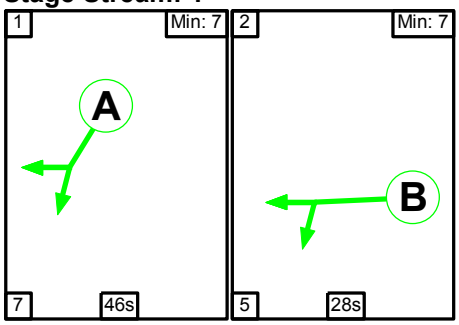


Full Input Data And Results

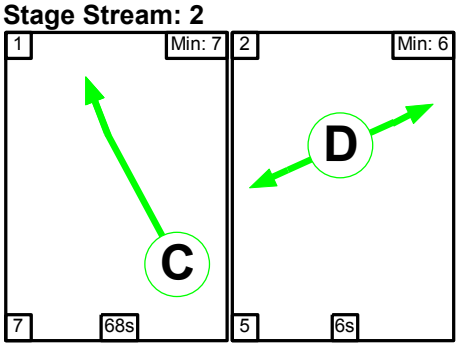
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

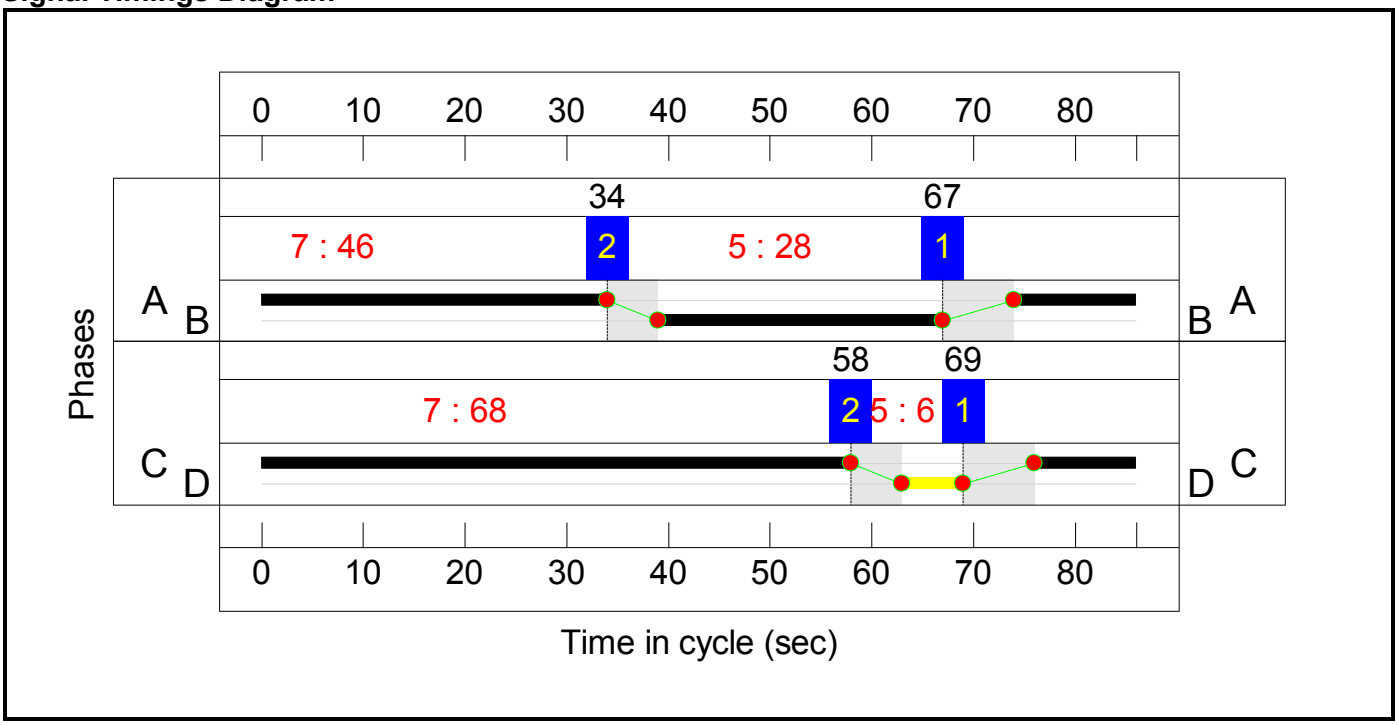
Stage	1	2
Duration	46	28
Change Point	67	34

Stage Stream: 2

Stage	1	2
Duration	68	6
Change Point	69	58

Full Input Data And Results

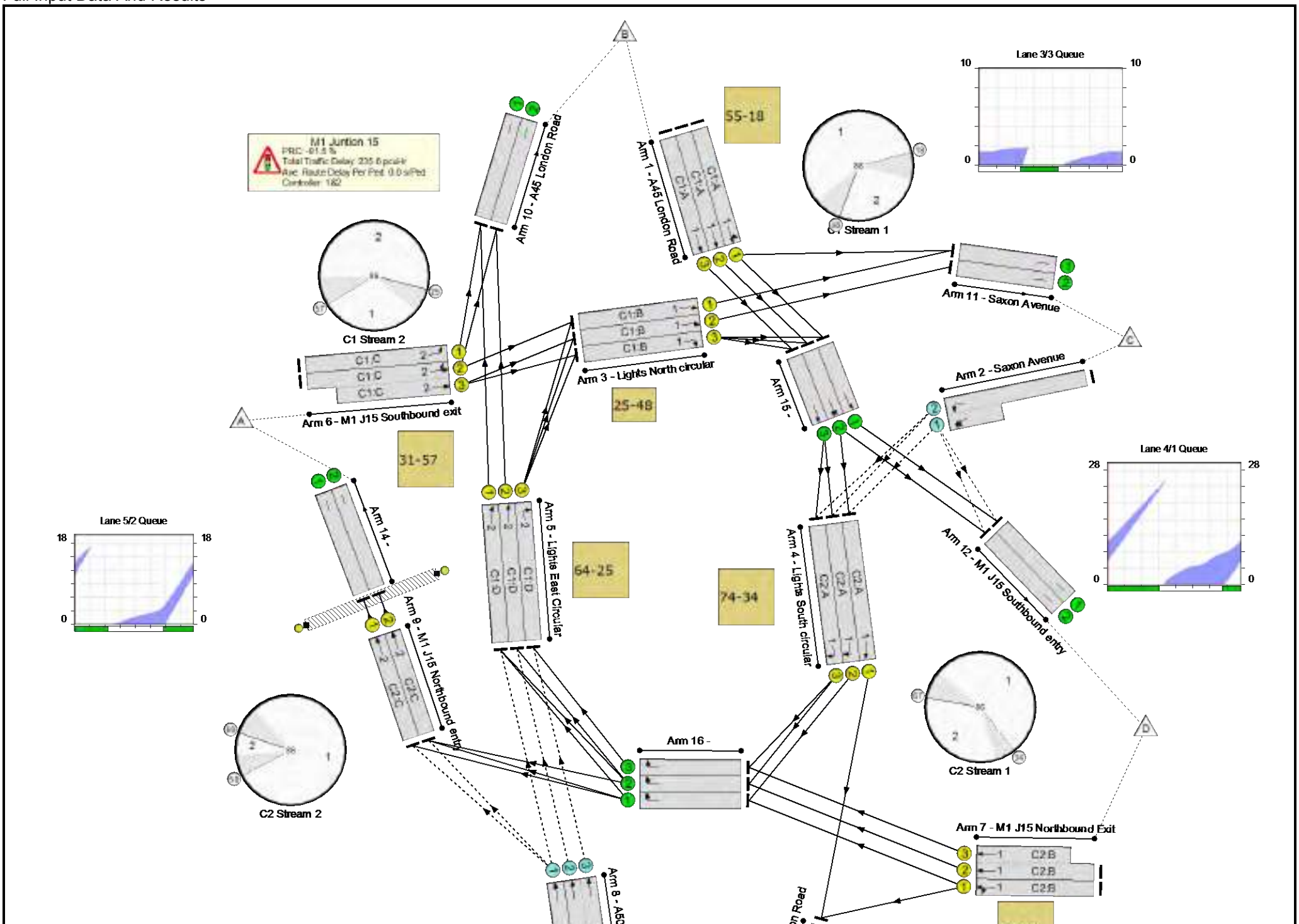
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**163.3%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**163.3%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	49	-	1028	1800	1047	98.2%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	49	-	1028	1800	1047	98.2%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	49	-	882	1800	1047	84.3%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	362	1600:1600	336+105	82.1 : 82.1%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	23	-	67	1900	530	12.6%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	23	-	126	1900	530	23.8%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	23	-	217	1900	530	40.9%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	46	-	1047	1900	1038	100.8%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	46	-	610	1900	1038	58.7%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	46	-	548	1900	1038	52.8%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	47	-	965	1900	1060	78.2%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	47	-	860	1900	1060	81.1%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	47	-	127	1900	1060	12.0%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	26	-	463	1800	565	81.9%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	26	-	782	1800:1800	565+320	88.3 : 88.3%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	28	-	536	1800	607	88.3%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	28	-	593	1800:1800	607+61	88.8 : 88.8%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	554	1800	339	163.3%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	282	1800:1800	311+109	67.3 : 67.3%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	68	-	613	1600	1284	47.7%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	68	-	503	1600	1284	33.1%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1428	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1359	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	216	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	126	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	930	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1102	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	613	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	503	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	897	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1227	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	882	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1091	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1087	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	54	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1627**	**0**	**0**	**59.3**	**176.3**	**0.0**	**235.6**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1627**	**0**	**0**	**59.3**	**176.3**	**0.0**	**235.6**	**-**	**-**	**-**	**-**
1/1	1028	1028	-	-	-	5.0	12.1	-	17.1	59.8	23.7	12.1	35.8
1/2	1028	1028	-	-	-	5.0	12.1	-	17.1	59.8	23.7	12.1	35.8
1/3	882	882	-	-	-	3.6	2.6	-	6.2	25.4	17.1	2.6	19.7
2/2+2/1	362	362	724	0	0	2.1	2.2	-	4.2	42.1	5.9	2.2	8.1
3/1	67	67	-	-	-	0.6	0.1	-	0.7	35.3	1.5	0.1	1.6
3/2	126	126	-	-	-	0.6	0.2	-	0.7	21.1	1.1	0.2	1.3
3/3	217	217	-	-	-	0.9	0.3	-	1.3	20.9	1.8	0.3	2.1
4/1	1047	1038	-	-	-	3.9	18.5	-	22.4	76.9	25.2	18.5	43.7
4/2	610	610	-	-	-	0.7	0.7	-	1.4	8.5	2.8	0.7	3.5
4/3	548	548	-	-	-	1.8	0.6	-	2.3	15.3	8.5	0.6	9.0
5/1	829	829	-	-	-	1.8	1.8	-	3.6	15.6	15.5	1.8	17.3
5/2	860	860	-	-	-	1.9	2.1	-	4.0	16.8	17.5	2.1	19.6
5/3	127	127	-	-	-	0.2	0.1	-	0.3	8.3	1.5	0.1	1.5
6/1	463	463	-	-	-	3.5	2.2	-	5.7	44.2	10.2	2.2	12.3
6/2+6/3	782	782	-	-	-	5.8	3.5	-	9.3	42.8	11.2	3.5	14.8
7/1	536	536	-	-	-	4.0	3.4	-	7.4	50.0	12.1	3.4	15.5
7/2+7/3	593	593	-	-	-	4.3	3.6	-	7.9	48.2	12.1	3.6	15.7
8/1	554	339	339	0	0	13.0	108.7	-	121.7	790.6	39.7	108.7	148.4
8/2+8/3	282	282	564	0	0	0.5	1.0	-	1.5	19.8	2.0	1.0	3.0
9/1	612	612	-	-	-	0.0	0.5	-	0.5	2.7	0.9	0.5	1.4
9/2	425	425	-	-	-	0.0	0.2	-	0.3	2.1	0.2	0.2	0.4
10/1	1292	1292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1359	1359	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	216	216	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

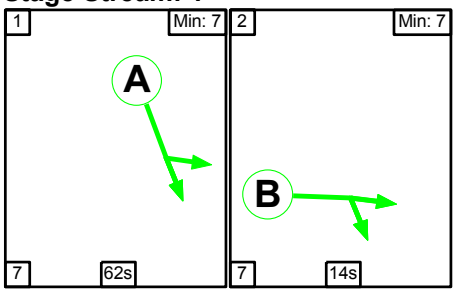
11/2	126	126	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	930	930	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	233	233	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1093	1093	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	612	612	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	425	425	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	897	897	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1227	1227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	882	882	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1091	1091	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1087	1087	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	54	54	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-9.1	Total Delay for Signalled Lanes (pcuHr):	43.02	Cycle Time (s):	86		
C1	Stream: 2 PRC for Signalled Lanes (%):	1.9	Total Delay for Signalled Lanes (pcuHr):	22.90	Cycle Time (s):	86		
C2	Stream: 1 PRC for Signalled Lanes (%):	-12.0	Total Delay for Signalled Lanes (pcuHr):	41.52	Cycle Time (s):	86		
C2	Stream: 2 PRC for Signalled Lanes (%):	88.8	Total Delay for Signalled Lanes (pcuHr):	0.71	Cycle Time (s):	86		
	PRC Over All Lanes (%):	-81.5	Total Delay Over All Lanes(pcuHr):	235.60				

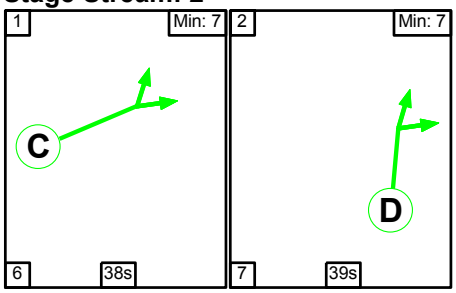
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

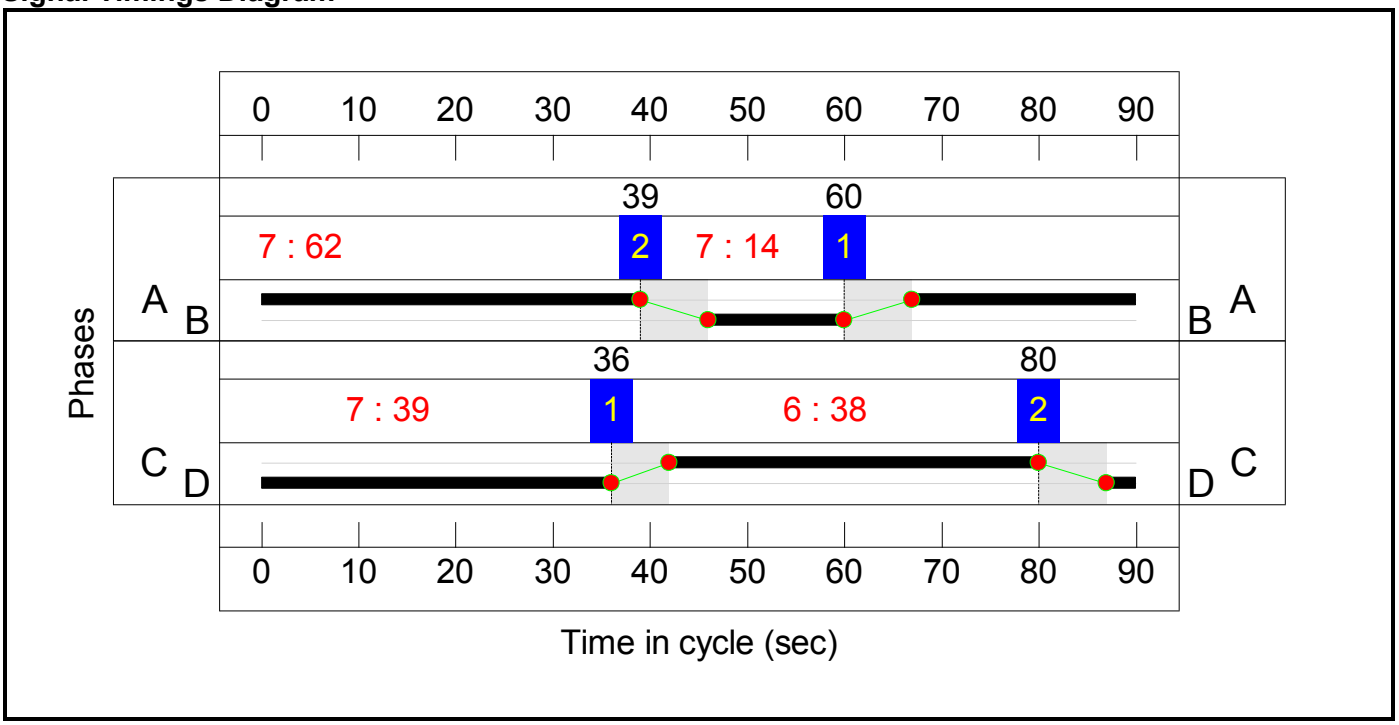
Stage Stream: 1

Stage	1	2
Duration	62	14
Change Point	60	39

Stage Stream: 2

Stage	1	2
Duration	38	39
Change Point	36	80

Signal Timings Diagram

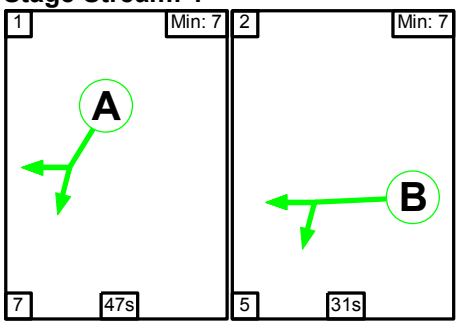


Full Input Data And Results

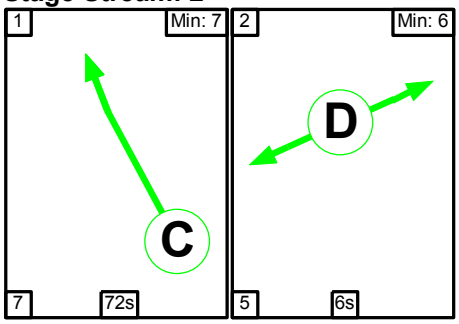
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

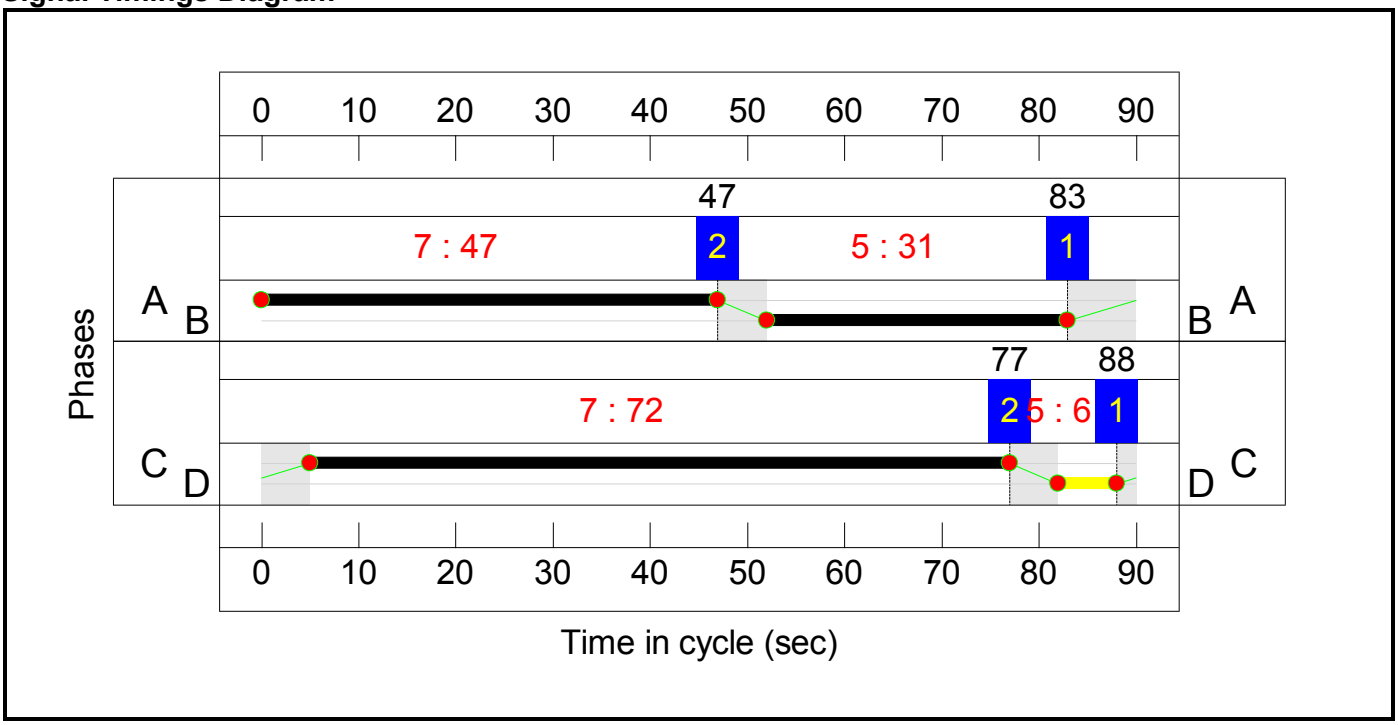
Stage	1	2
Duration	47	31
Change Point	83	47

Stage Stream: 2

Stage	1	2
Duration	72	6
Change Point	88	77

Full Input Data And Results

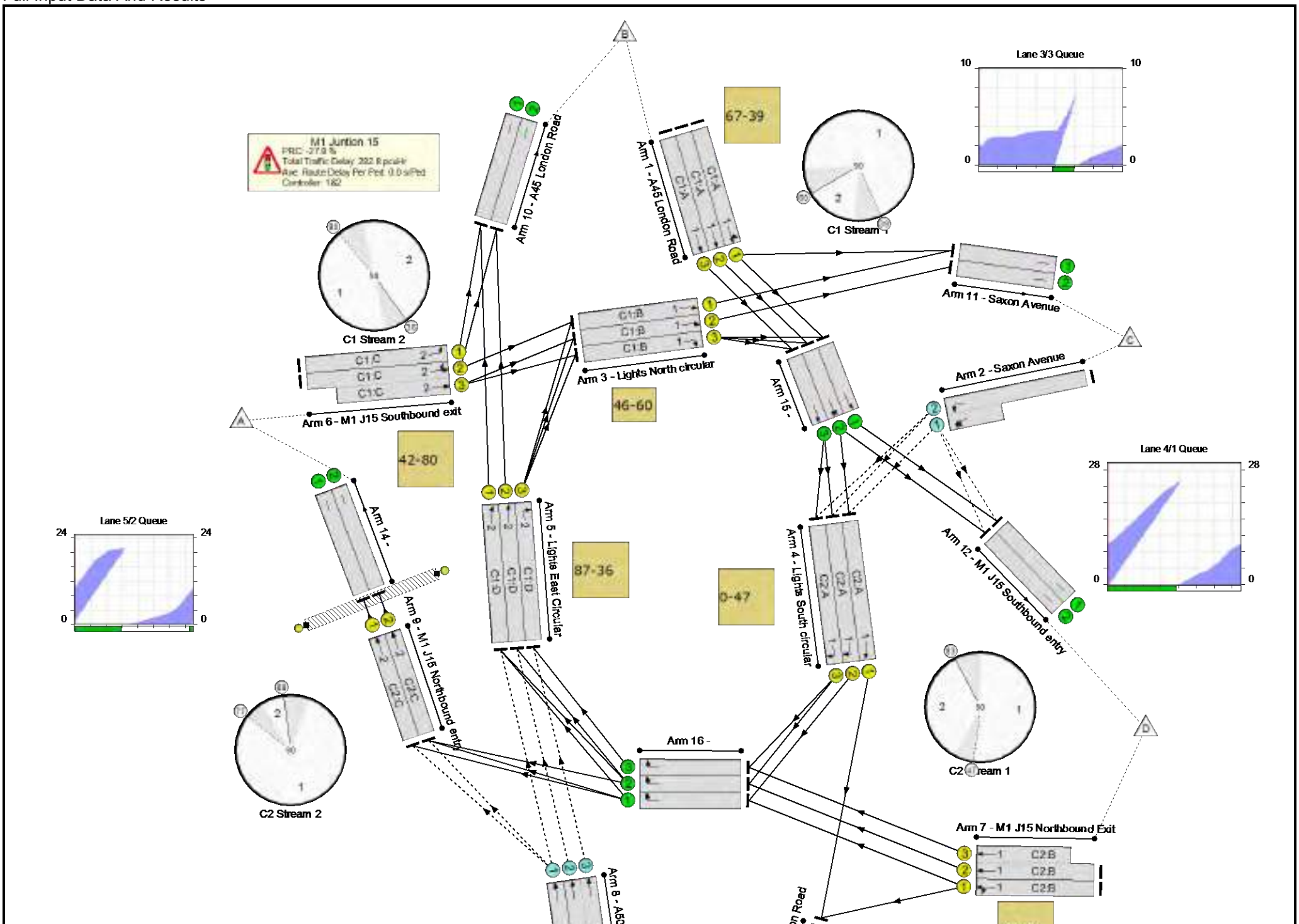
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.0%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.0%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	62	-	1053	1800	1260	83.6%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	62	-	1053	1800	1260	83.6%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	62	-	1449	1800	1260	115.0%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	127	1600:1600	39+186	56.4 : 56.4%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	14	-	119	1900	317	37.6%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	14	-	140	1900	317	44.2%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	14	-	306	1900	317	96.6%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	47	-	1016	1900	1013	100.3%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	47	-	735	1900	1013	63.2%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	47	-	736	1900	1013	63.4%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	39	-	722	1900	844	82.8%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	39	-	845	1900	844	100.1%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	39	-	212	1900	844	25.1%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	38	-	763	1800	780	97.8%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	38	-	1107	1800:1800	760+356	99.2 : 99.2%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	31	-	661	1800	640	103.3%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	31	-	745	1800:1800	640+118	98.3 : 98.3%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	295	1800	300	98.4%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	311	1800:1800	244+109	88.1 : 88.1%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	802	1600	1298	54.5%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	801	1600	1298	54.8%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1485	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1599	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	212	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	1031	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	377	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1117	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	801	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	989	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1330	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1449	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1295	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1365	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	116	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1171**	**0**	**0**	**69.7**	**213.1**	**0.0**	**282.8**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1171**	**0**	**0**	**69.7**	**213.1**	**0.0**	**282.8**	**-**	**-**	**-**	**-**
1/1	1053	1053	-	-	-	2.9	2.5	-	5.3	18.3	19.0	2.5	21.5
1/2	1053	1053	-	-	-	2.9	2.5	-	5.3	18.3	19.0	2.5	21.5
1/3	1449	1260	-	-	-	14.4	98.2	-	112.5	279.6	41.0	98.2	139.1
2/2+2/1	127	127	254	0	0	0.9	0.6	-	1.5	42.8	2.2	0.6	2.8
3/1	119	119	-	-	-	1.3	0.3	-	1.6	47.7	3.0	0.3	3.3
3/2	140	140	-	-	-	1.0	0.4	-	1.4	35.8	1.9	0.4	2.3
3/3	306	306	-	-	-	2.2	6.5	-	8.7	102.2	7.4	6.5	13.9
4/1	1016	1013	-	-	-	5.2	16.6	-	21.8	77.4	25.5	16.6	42.1
4/2	640	640	-	-	-	1.9	0.9	-	2.7	15.4	7.5	0.9	8.4
4/3	642	642	-	-	-	1.9	0.9	-	2.8	15.7	7.6	0.9	8.5
5/1	700	700	-	-	-	3.0	2.3	-	5.4	27.7	17.1	2.3	19.5
5/2	845	844	-	-	-	4.6	14.6	-	19.3	82.2	21.1	14.6	35.8
5/3	212	212	-	-	-	0.8	0.2	-	1.0	17.1	3.8	0.2	4.0
6/1	763	763	-	-	-	5.3	10.2	-	15.5	73.2	18.7	10.2	28.9
6/2+6/3	1107	1107	-	-	-	7.0	14.6	-	21.6	70.3	19.2	14.6	33.9
7/1	661	640	-	-	-	6.0	19.1	-	25.1	136.7	17.0	19.1	36.2
7/2+7/3	745	745	-	-	-	5.7	10.8	-	16.4	79.4	15.6	10.8	26.3
8/1	295	295	295	0	0	1.5	7.5	-	9.0	110.1	7.3	7.5	14.8
8/2+8/3	311	311	622	0	0	1.1	3.2	-	4.3	50.3	5.1	3.2	8.3
9/1	707	707	-	-	-	0.1	0.6	-	0.7	3.4	8.1	0.6	8.7
9/2	712	712	-	-	-	0.1	0.6	-	0.7	3.3	7.1	0.6	7.8
10/1	1463	1463	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1598	1598	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	212	212	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

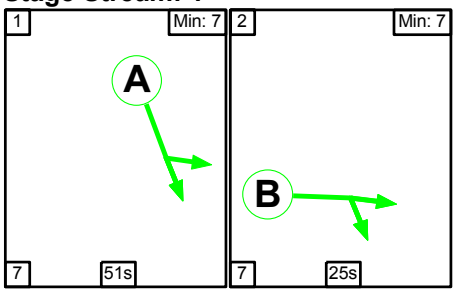
11/2	140	140	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1031	1031	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	377	377	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1111	1111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	707	707	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	712	712	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	989	989	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1330	1330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1260	1260	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1182	1182	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1271	1271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	116	116	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-27.8	Total Delay for Signalled Lanes (pcuHr):	134.88	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-11.2	Total Delay for Signalled Lanes (pcuHr):	62.78	Cycle Time (s):	90
C2	Stream: 1 PRC for Signalled Lanes (%):	-14.8	Total Delay for Signalled Lanes (pcuHr):	68.91	Cycle Time (s):	90
C2	Stream: 2 PRC for Signalled Lanes (%):	64.1	Total Delay for Signalled Lanes (pcuHr):	1.34	Cycle Time (s):	90
	PRC Over All Lanes (%):	-27.8	Total Delay Over All Lanes(pcuHr):	282.78		

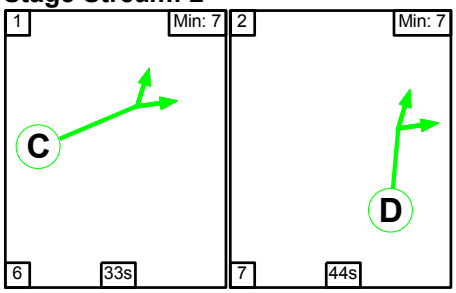
Full Input Data And Results
Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

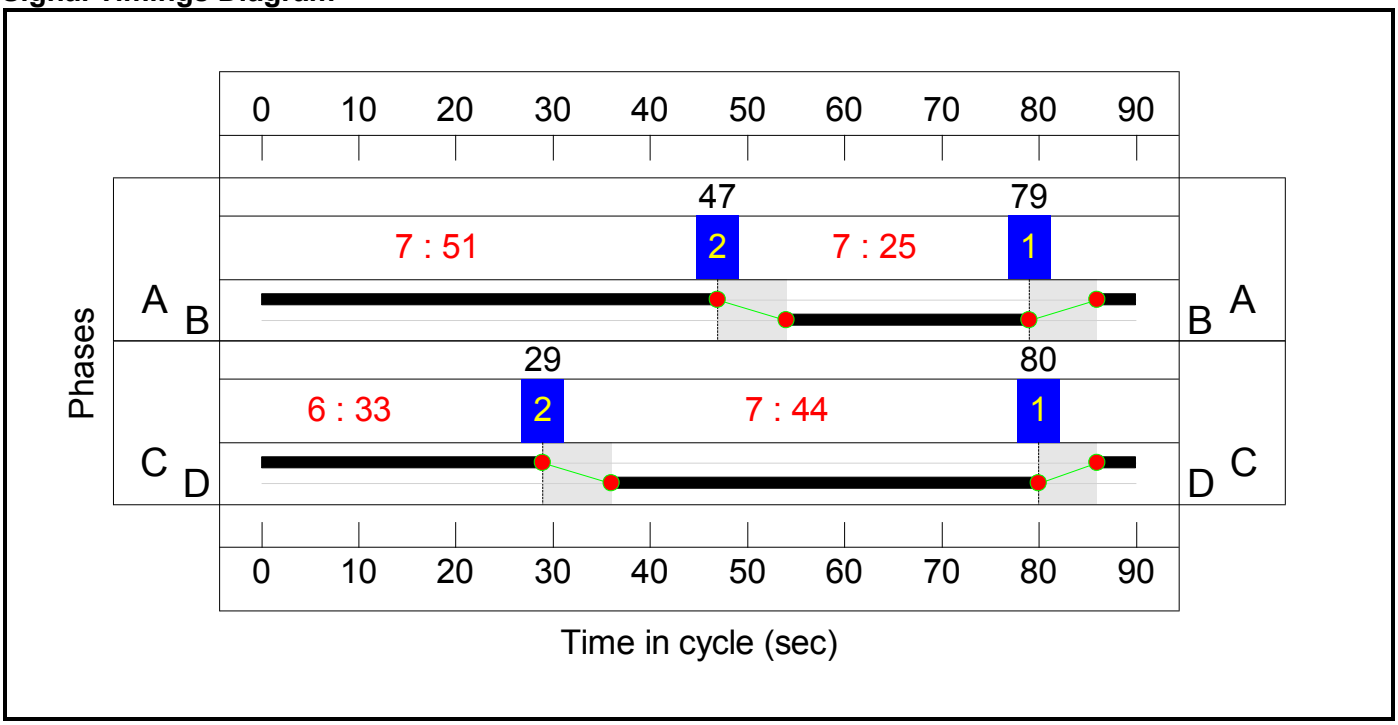
Stage Stream: 1

Stage	1	2
Duration	51	25
Change Point	79	47

Stage Stream: 2

Stage	1	2
Duration	33	44
Change Point	80	29

Signal Timings Diagram

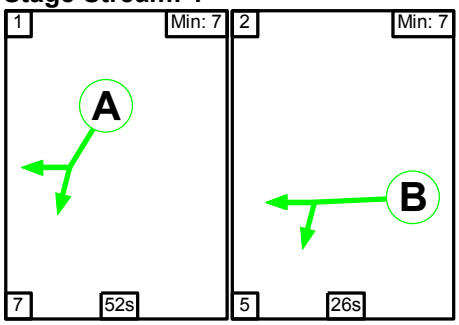


Full Input Data And Results

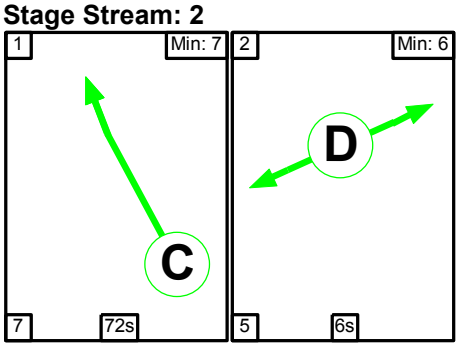
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

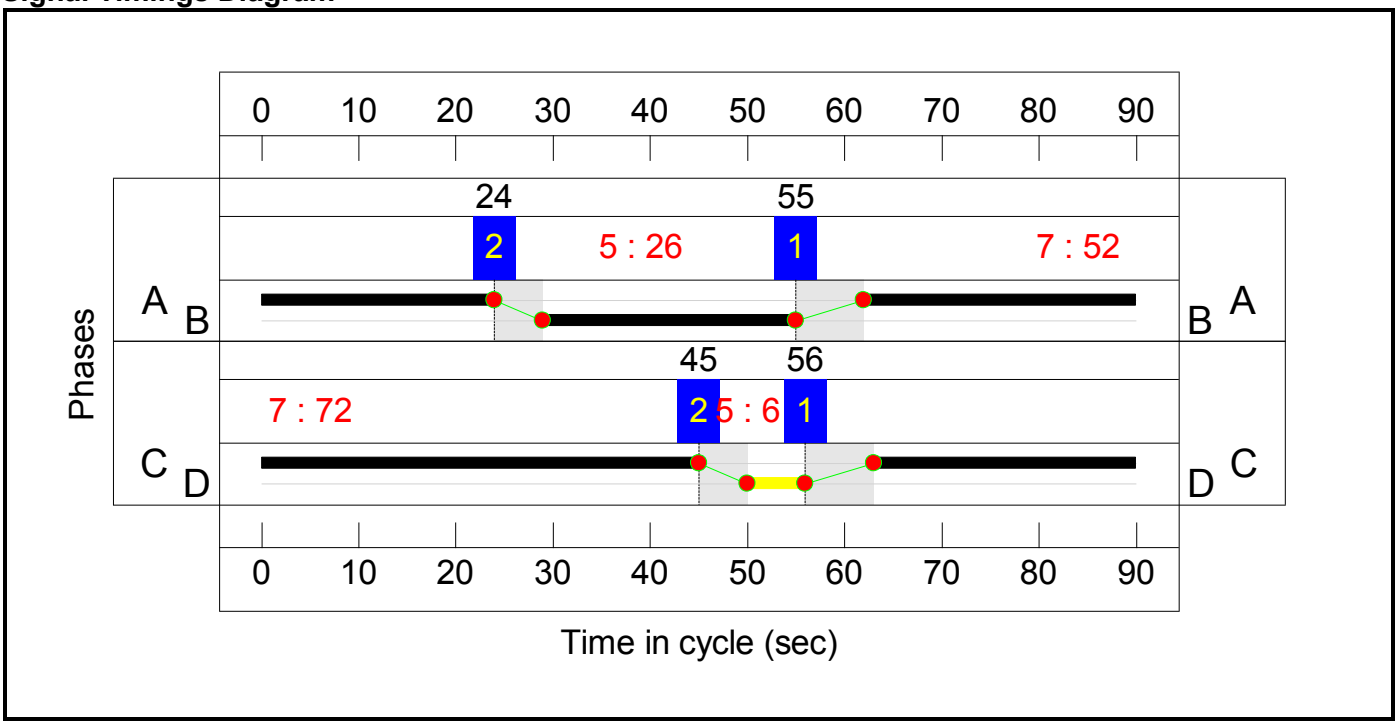
Stage	1	2
Duration	52	26
Change Point	55	24

Stage Stream: 2

Stage	1	2
Duration	72	6
Change Point	56	45

Full Input Data And Results

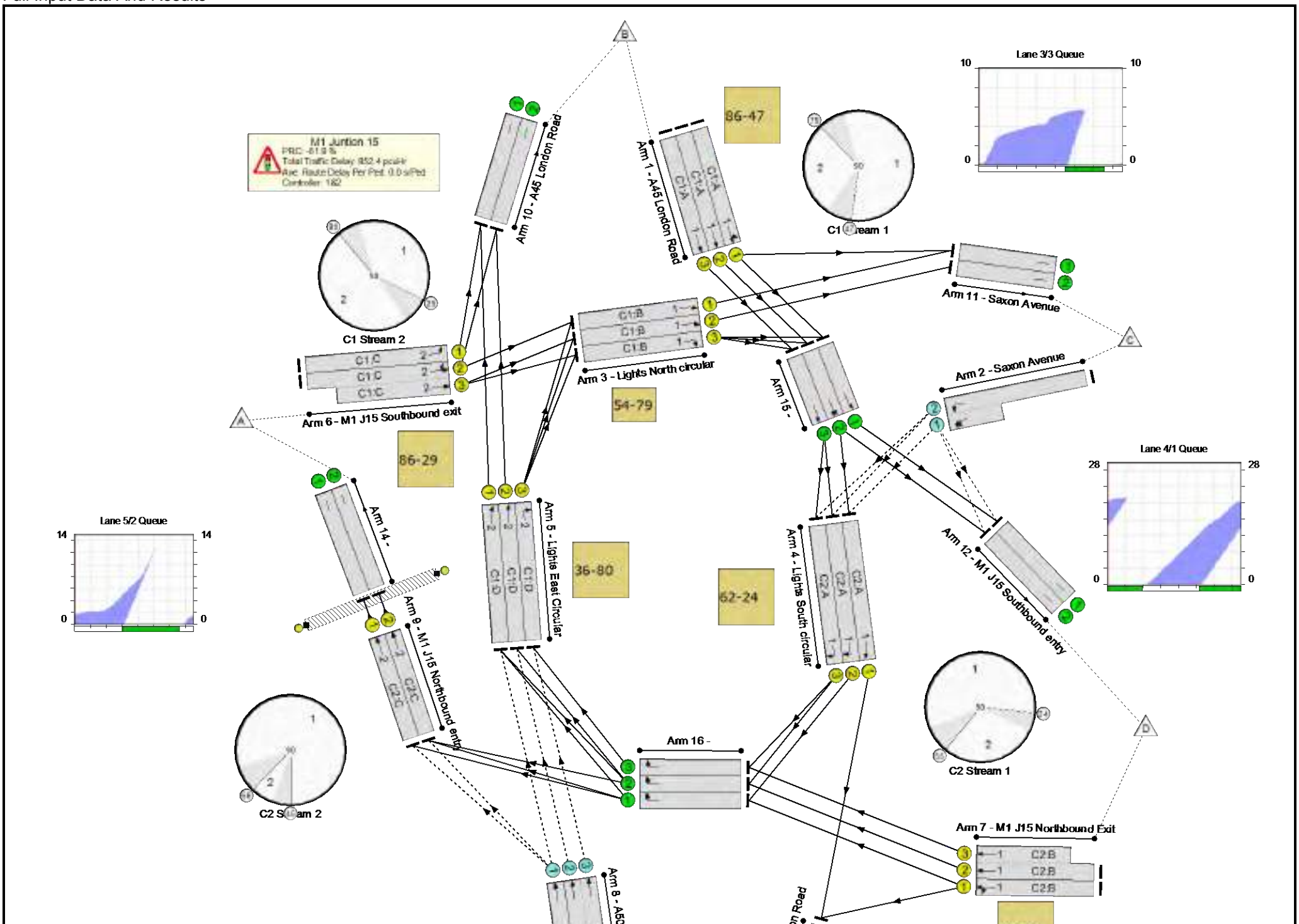
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.7%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**145.7%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	51	-	1128	1800	1040	108.5%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	51	-	1128	1800	1040	108.5%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	51	-	1368	1800	1040	131.5%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	262	1600:1600	328+158	53.9 : 53.9%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	25	-	97	1900	549	14.8%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	25	-	98	1900	549	15.0%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	25	-	258	1900	549	42.0%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	52	-	999	1900	1119	83.6%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	52	-	726	1900	1119	49.9%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	52	-	819	1900	1119	58.9%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	44	-	1004	1900	950	77.4%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	44	-	1269	1900	950	92.9%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	44	-	195	1900	950	14.3%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	33	-	600	1800	680	88.2%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	33	-	832	1800:1800	680+233	91.2 : 91.2%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	26	-	787	1800	540	145.7%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	26	-	836	1800:1800	540+40	144.1 : 144.1%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	556	1800	385	144.4%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	628	1800:1800	343+96	143.2 : 143.2%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	848	1600	1298	49.5%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	893	1600	1298	51.3%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1604	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1843	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	98	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	1047	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	393	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1142	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	848	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	893	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	1014	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1340	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1368	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1370	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1597	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	58	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1786**	**0**	**0**	**127.7**	**724.6**	**0.0**	**852.4**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1786**	**0**	**0**	**127.7**	**724.6**	**0.0**	**852.4**	**-**	**-**	**-**	**-**
1/1	1128	1040	-	-	-	9.8	49.7	-	59.5	189.8	30.4	49.7	80.1
1/2	1128	1040	-	-	-	9.8	49.7	-	59.5	189.8	30.4	49.7	80.1
1/3	1368	1040	-	-	-	21.5	166.1	-	187.5	493.5	42.4	166.1	208.5
2/2+2/1	262	262	524	0	0	1.4	0.6	-	2.0	27.5	3.6	0.6	4.2
3/1	81	81	-	-	-	0.5	0.1	-	0.6	27.4	1.7	0.1	1.8
3/2	82	82	-	-	-	0.6	0.1	-	0.7	31.1	1.7	0.1	1.8
3/3	230	230	-	-	-	2.5	0.4	-	2.8	44.4	5.7	0.4	6.1
4/1	935	935	-	-	-	6.1	2.5	-	8.6	33.0	21.2	2.5	23.7
4/2	558	558	-	-	-	3.2	0.5	-	3.7	23.7	12.0	0.5	12.5
4/3	659	659	-	-	-	3.1	0.7	-	3.8	20.8	12.9	0.7	13.6
5/1	736	736	-	-	-	1.7	1.7	-	3.4	16.7	7.9	1.7	9.6
5/2	883	883	-	-	-	1.7	5.6	-	7.3	29.9	13.2	5.6	18.9
5/3	136	136	-	-	-	0.2	0.1	-	0.2	6.5	1.2	0.1	1.2
6/1	600	600	-	-	-	4.4	3.5	-	7.8	46.8	14.0	3.5	17.5
6/2+6/3	832	832	-	-	-	5.7	4.6	-	10.4	44.9	14.6	4.6	19.3
7/1	787	540	-	-	-	16.2	125.1	-	141.3	646.3	25.8	125.1	150.9
7/2+7/3	836	580	-	-	-	16.5	129.5	-	146.0	628.6	30.1	129.5	159.6
8/1	556	385	385	0	0	11.2	87.0	-	98.2	635.9	36.1	87.0	123.2
8/2+8/3	628	439	877	0	0	11.4	96.3	-	107.8	617.7	28.6	96.3	124.9
9/1	642	642	-	-	-	0.2	0.5	-	0.7	3.9	11.4	0.5	11.9
9/2	666	666	-	-	-	0.1	0.5	-	0.6	3.5	10.2	0.5	10.8
10/1	1336	1336	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1457	1457	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	229	229	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

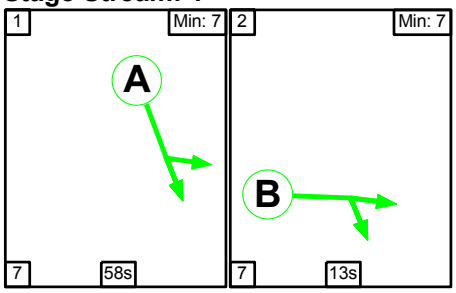
11/2	82	82	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	958	958	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1034	1034	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	642	642	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	666	666	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	925	925	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1238	1238	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1040	1040	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1000	1000	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1199	1199	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	40	40	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-46.2	Total Delay for Signalled Lanes (pcuHr):	310.62	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-3.3	Total Delay for Signalled Lanes (pcuHr):	29.17	Cycle Time (s):	90		
C2	Stream: 1 PRC for Signalled Lanes (%):	-61.9	Total Delay for Signalled Lanes (pcuHr):	303.31	Cycle Time (s):	90		
C2	Stream: 2 PRC for Signalled Lanes (%):	75.4	Total Delay for Signalled Lanes (pcuHr):	1.34	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-61.9	Total Delay Over All Lanes(pcuHr):	852.39				

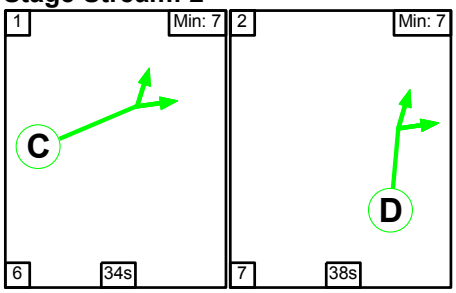
Full Input Data And Results
Scenario 5: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

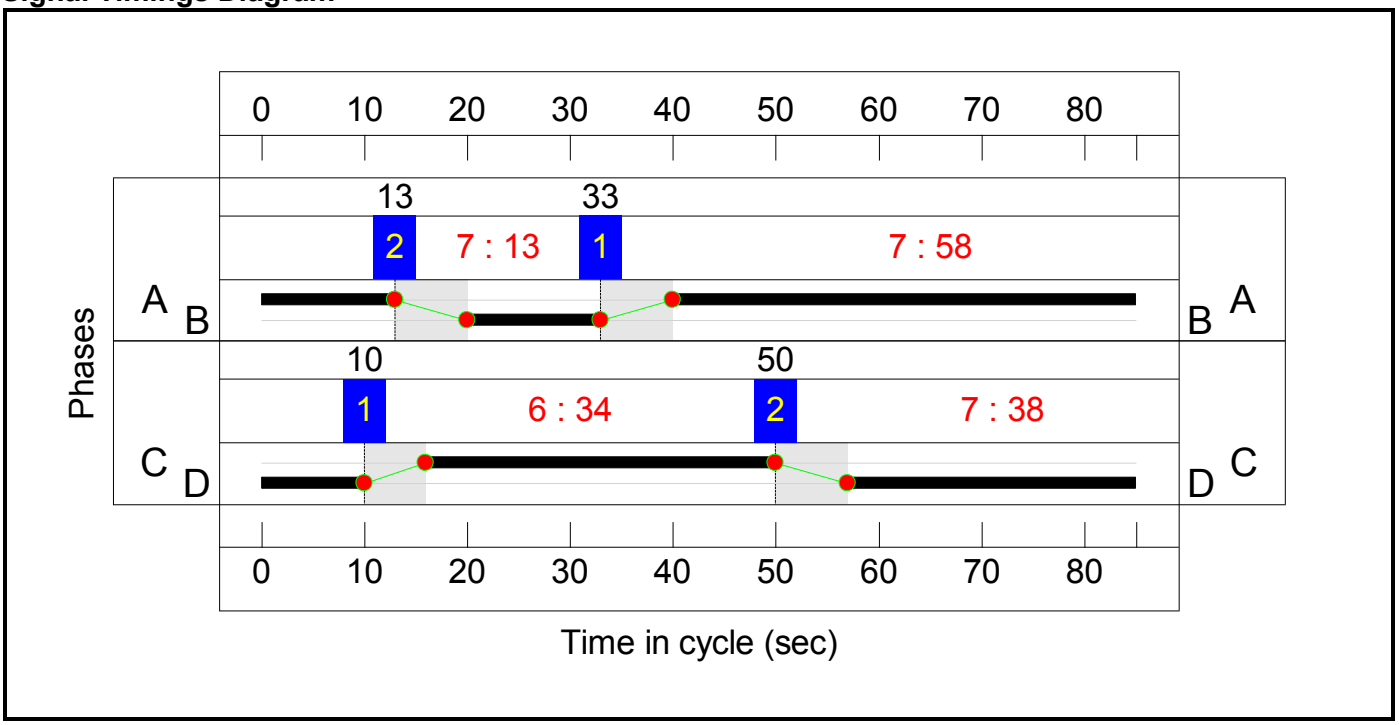
Stage Stream: 1

Stage	1	2
Duration	58	13
Change Point	33	13

Stage Stream: 2

Stage	1	2
Duration	34	38
Change Point	10	50

Signal Timings Diagram

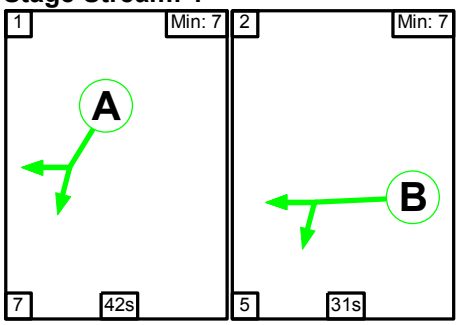


Full Input Data And Results

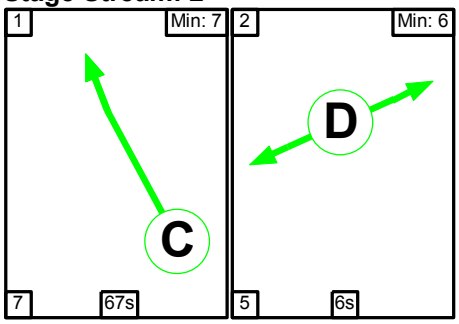
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

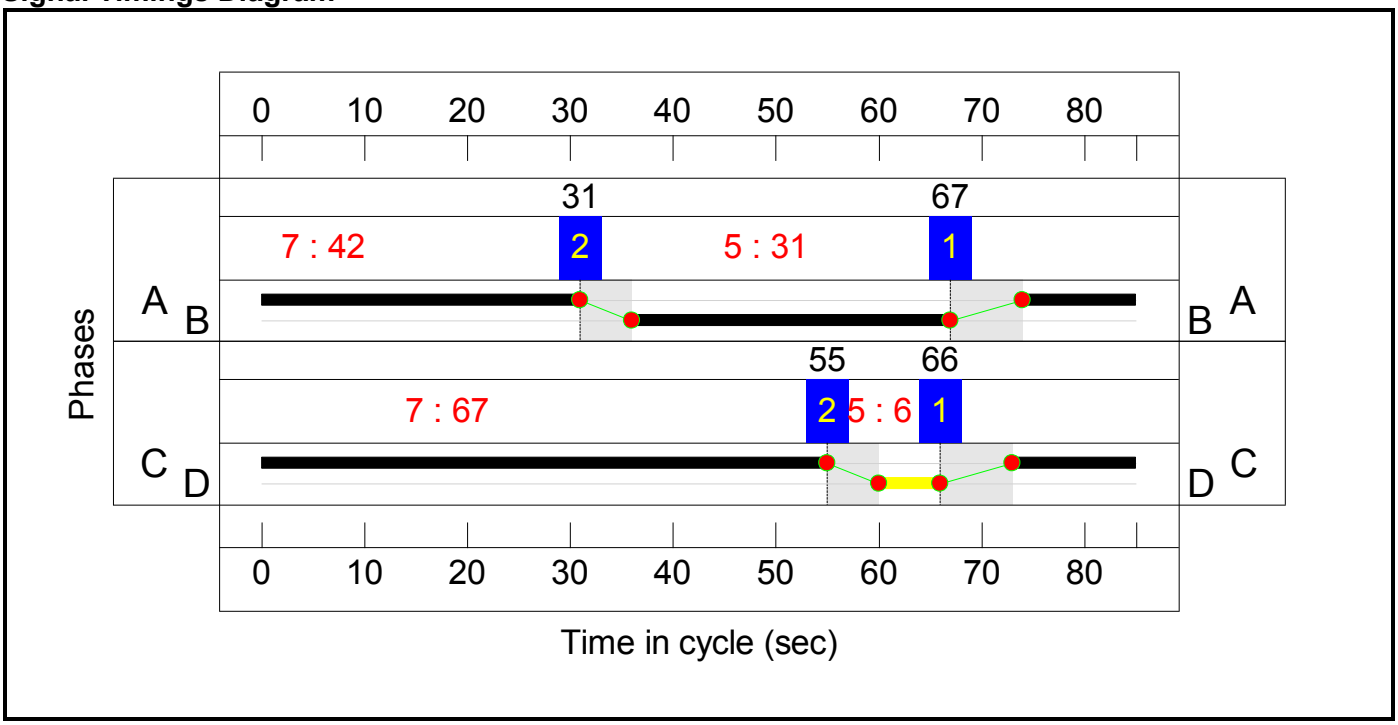
Stage	1	2
Duration	42	31
Change Point	67	31

Stage Stream: 2

Stage	1	2
Duration	67	6
Change Point	66	55

Full Input Data And Results

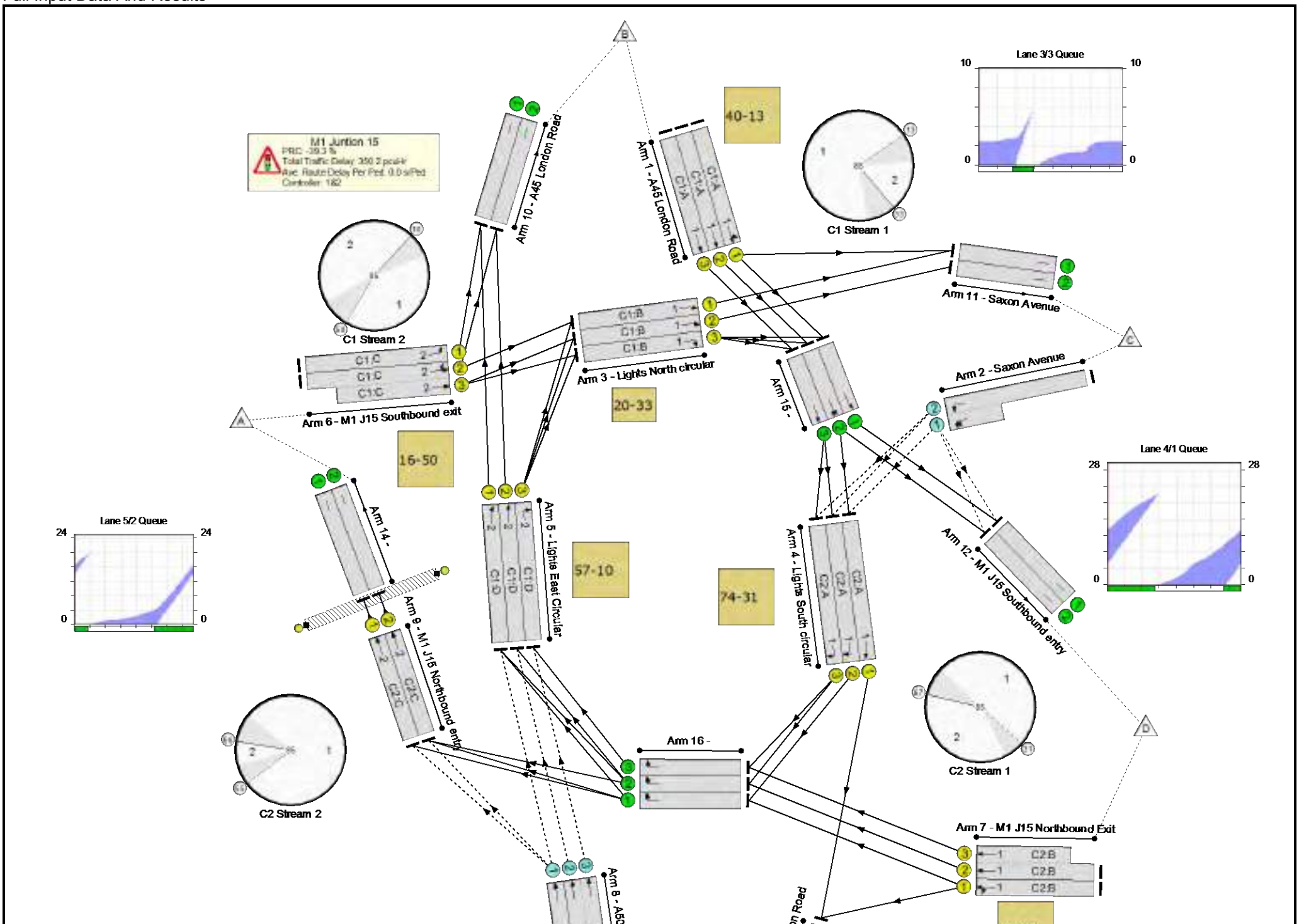
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**125.3%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**125.3%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	58	-	1046	1800	1249	83.7%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	58	-	1046	1800	1249	83.7%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	58	-	1566	1800	1249	125.3%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	131	1600:1600	67+200	49.0 : 49.0%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	13	-	123	1900	313	39.3%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	13	-	141	1900	313	43.8%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	13	-	289	1900	313	89.3%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	42	-	960	1900	961	98.9%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	42	-	802	1900	961	66.8%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	42	-	797	1900	961	66.7%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	38	-	724	1900	872	82.3%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	38	-	849	1900	872	97.3%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	38	-	228	1900	872	26.2%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	34	-	768	1800	741	103.6%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	34	-	1098	1800:1800	741+312	104.3 : 104.3%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	31	-	666	1800	678	98.3%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	31	-	756	1800:1800	678+143	92.1 : 92.1%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	288	1800	296	97.2%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	319	1800:1800	239+103	93.2 : 93.2%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	67	-	871	1600	1280	55.5%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	67	-	865	1600	1280	55.9%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1492	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1622	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	141	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	1023	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	401	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1051	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	871	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	865	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	980	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1306	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1566	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1377	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1421	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	132	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1188**	**0**	**0**	**71.0**	**279.2**	**0.0**	**350.2**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1188**	**0**	**0**	**71.0**	**279.2**	**0.0**	**350.2**	**-**	**-**	**-**	**-**
1/1	1046	1046	-	-	-	2.8	2.5	-	5.3	18.1	18.0	2.5	20.5
1/2	1046	1046	-	-	-	2.8	2.5	-	5.3	18.1	18.0	2.5	20.5
1/3	1566	1249	-	-	-	21.8	160.7	-	182.6	419.7	45.0	160.7	205.7
2/2+2/1	131	131	262	0	0	0.8	0.5	-	1.3	35.6	1.8	0.5	2.3
3/1	123	123	-	-	-	1.2	0.3	-	1.5	43.8	2.9	0.3	3.2
3/2	137	137	-	-	-	0.9	0.4	-	1.3	32.9	1.8	0.4	2.2
3/3	279	279	-	-	-	1.7	3.4	-	5.1	66.2	5.4	3.4	8.8
4/1	950	950	-	-	-	5.1	12.9	-	18.1	68.4	22.2	12.9	35.2
4/2	642	642	-	-	-	1.3	1.0	-	2.3	13.0	8.1	1.0	9.1
4/3	641	641	-	-	-	1.5	1.0	-	2.5	13.8	8.5	1.0	9.5
5/1	717	717	-	-	-	1.2	2.3	-	3.4	17.1	10.6	2.3	12.9
5/2	849	849	-	-	-	2.1	9.9	-	12.0	51.0	19.5	9.9	29.4
5/3	228	228	-	-	-	0.5	0.2	-	0.7	10.5	2.9	0.2	3.1
6/1	768	741	-	-	-	6.3	22.1	-	28.4	133.3	18.8	22.1	40.9
6/2+6/3	1098	1053	-	-	-	8.5	31.4	-	39.9	130.7	22.6	31.4	53.9
7/1	666	666	-	-	-	4.9	10.3	-	15.2	82.0	15.5	10.3	25.9
7/2+7/3	756	756	-	-	-	5.0	5.0	-	10.1	48.0	14.0	5.0	19.1
8/1	288	288	288	0	0	1.3	6.6	-	8.0	99.8	6.6	6.6	13.2
8/2+8/3	319	319	638	0	0	1.2	4.9	-	6.0	68.0	5.1	4.9	10.0
9/1	711	711	-	-	-	0.1	0.6	-	0.7	3.7	9.0	0.6	9.6
9/2	716	716	-	-	-	0.1	0.6	-	0.7	3.5	7.7	0.6	8.3
10/1	1458	1458	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1590	1590	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	218	218	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

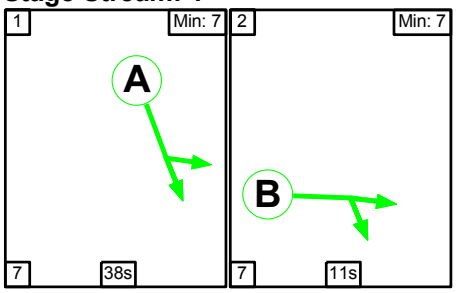
11/2	137	137	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1023	1023	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	401	401	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1041	1041	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	980	980	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1296	1296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1249	1249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1217	1217	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1265	1265	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	132	132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-39.3	Total Delay for Signalled Lanes (pcuHr):	200.98	Cycle Time (s):	85		
C1	Stream: 2 PRC for Signalled Lanes (%):	-15.9	Total Delay for Signalled Lanes (pcuHr):	84.42	Cycle Time (s):	85		
C2	Stream: 1 PRC for Signalled Lanes (%):	-9.9	Total Delay for Signalled Lanes (pcuHr):	48.07	Cycle Time (s):	85		
C2	Stream: 2 PRC for Signalled Lanes (%):	60.9	Total Delay for Signalled Lanes (pcuHr):	1.42	Cycle Time (s):	85		
	PRC Over All Lanes (%):	-39.3	Total Delay Over All Lanes(pcuHr):	350.20				

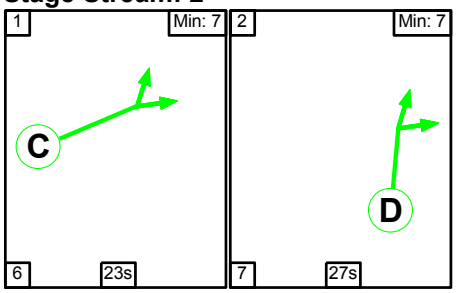
Full Input Data And Results
Scenario 6: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

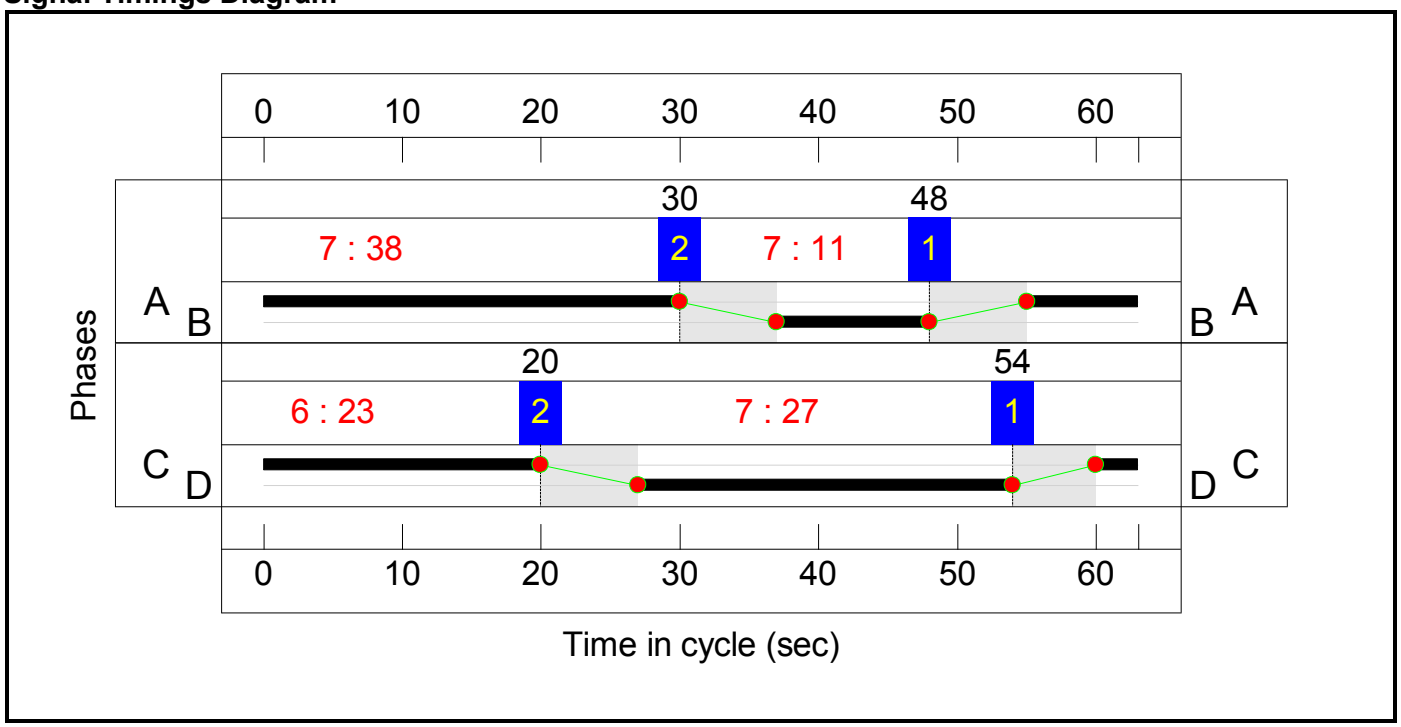
Stage Stream: 1

Stage	1	2
Duration	38	11
Change Point	48	30

Stage Stream: 2

Stage	1	2
Duration	23	27
Change Point	54	20

Signal Timings Diagram

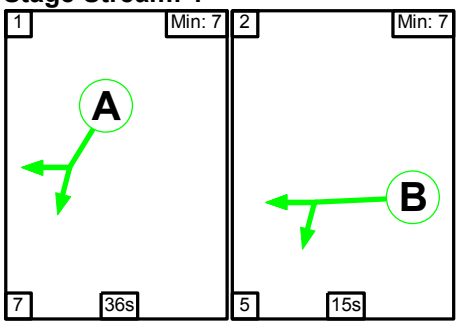


Full Input Data And Results

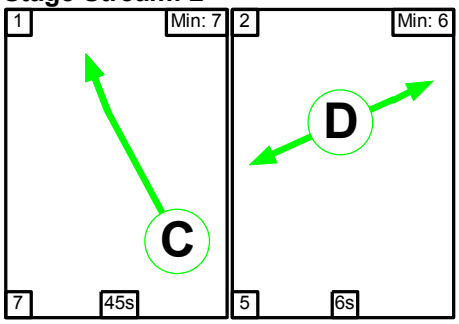
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

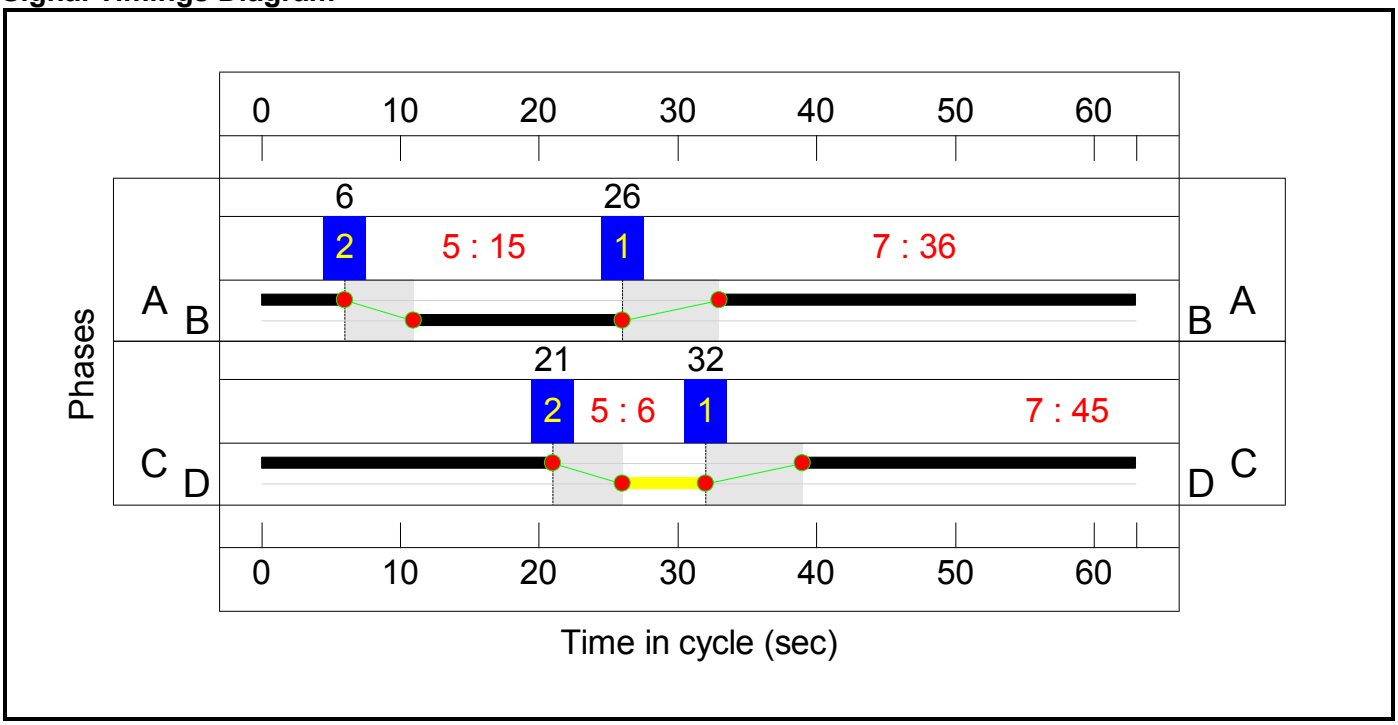
Stage	1	2
Duration	36	15
Change Point	26	6

Stage Stream: 2

Stage	1	2
Duration	45	6
Change Point	32	21

Full Input Data And Results

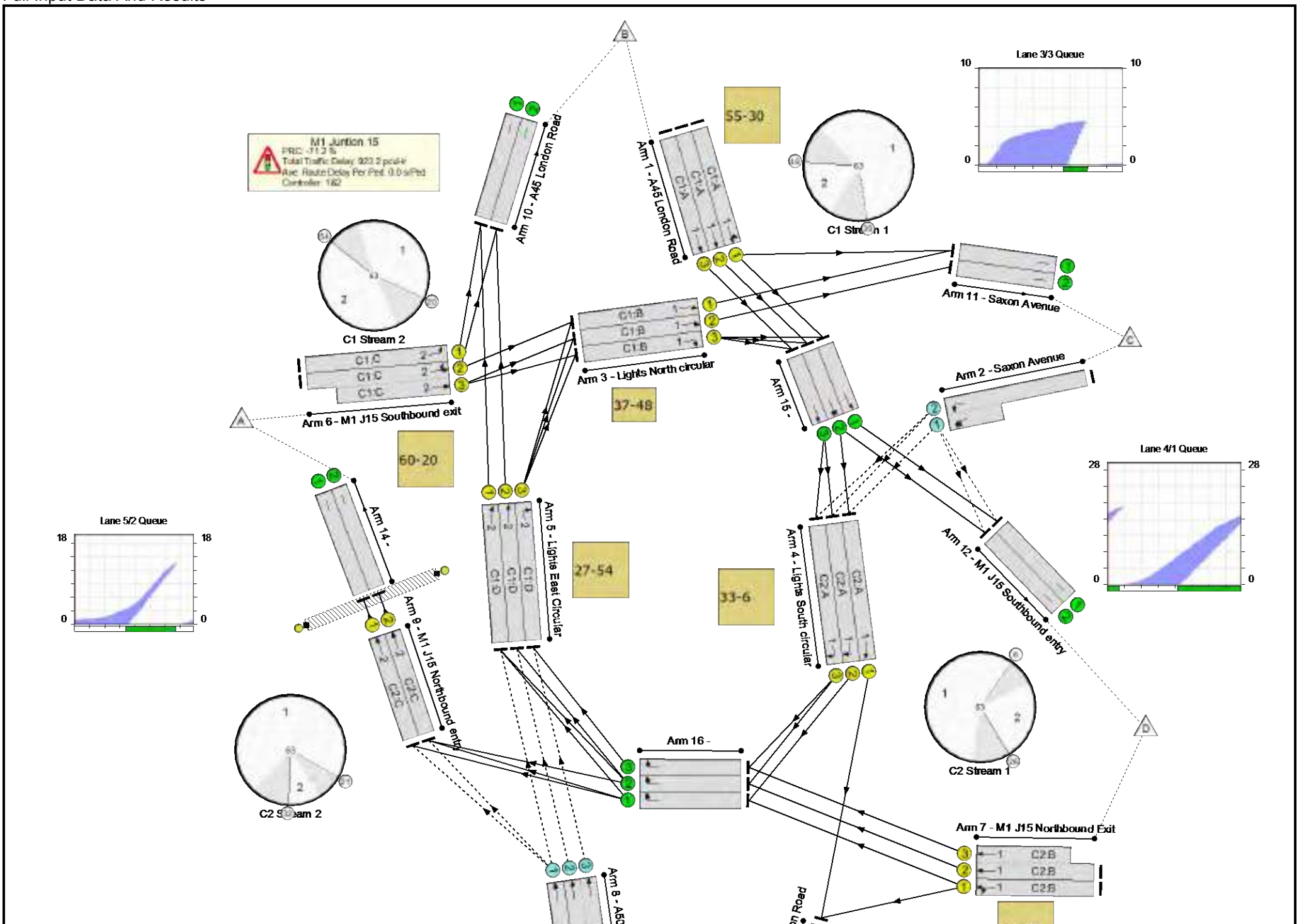
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**154.1%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**154.1%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	38	-	1139	1800	1114	102.2%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	38	-	1166	1800	1114	104.6%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	38	-	1717	1800	1114	154.1%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	234	1600:1600	268+145	56.6 : 56.6%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	11	-	97	1900	362	25.2%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	11	-	99	1900	362	26.1%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	11	-	282	1900	362	72.8%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	36	-	1148	1900	1116	99.2%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	36	-	931	1900	1116	54.8%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	36	-	938	1900	1116	58.7%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	27	-	925	1900	844	78.1%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	27	-	1176	1900	844	97.2%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	27	-	175	1900	844	17.3%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	23	-	674	1800	686	98.3%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	23	-	944	1800:1800	686+261	99.8 : 99.8%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	15	-	704	1800	457	154.0%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	15	-	742	1800:1800	457+38	149.8 : 149.8%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	570	1800	412	138.3%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	609	1800:1800	364+87	135.1 : 135.1%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	45	-	1058	1600	1168	60.2%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	45	-	1060	1600	1168	60.6%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1599	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1817	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	99	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	1049	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1248	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1058	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1060	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	1016	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1411	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1717	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1535	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1623	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	57	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1782**	**0**	**0**	**94.3**	**828.9**	**0.0**	**923.2**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1782**	**0**	**0**	**94.3**	**828.9**	**0.0**	**923.2**	**-**	**-**	**-**	**-**
1/1	1139	1114	-	-	-	4.6	24.1	-	28.7	90.8	20.4	24.1	44.5
1/2	1166	1114	-	-	-	5.5	34.3	-	39.9	123.1	21.3	34.3	55.7
1/3	1717	1114	-	-	-	24.6	302.8	-	327.4	686.5	40.6	302.8	343.4
2/2+2/1	234	234	468	0	0	0.9	0.6	-	1.6	24.6	2.2	0.6	2.8
3/1	91	91	-	-	-	0.4	0.2	-	0.6	22.2	1.3	0.2	1.5
3/2	94	94	-	-	-	0.5	0.2	-	0.7	26.5	1.4	0.2	1.6
3/3	263	263	-	-	-	2.0	1.3	-	3.3	44.9	4.6	1.3	5.9
4/1	1107	1107	-	-	-	3.7	14.6	-	18.3	59.5	19.2	14.6	33.8
4/2	611	611	-	-	-	1.3	0.6	-	1.9	11.4	9.1	0.6	9.7
4/3	655	655	-	-	-	1.4	0.7	-	2.1	11.5	8.2	0.7	8.9
5/1	659	659	-	-	-	1.1	1.7	-	2.9	15.7	7.0	1.7	8.7
5/2	821	821	-	-	-	1.7	9.6	-	11.2	49.3	13.8	9.6	23.4
5/3	146	146	-	-	-	0.1	0.1	-	0.3	6.2	0.8	0.1	0.9
6/1	674	674	-	-	-	3.6	10.4	-	14.0	74.7	11.6	10.4	22.0
6/2+6/3	944	944	-	-	-	4.7	14.8	-	19.5	74.4	11.8	14.8	26.6
7/1	704	457	-	-	-	11.8	124.8	-	136.7	698.9	16.6	124.8	141.5
7/2+7/3	742	514	-	-	-	11.4	124.9	-	136.3	661.4	19.5	124.9	144.4
8/1	570	412	412	0	0	7.6	80.7	-	88.2	557.3	27.1	80.7	107.7
8/2+8/3	609	451	902	0	0	6.9	80.9	-	87.8	519.2	19.2	80.9	100.2
9/1	703	703	-	-	-	0.2	0.8	-	0.9	4.7	9.1	0.8	9.9
9/2	708	708	-	-	-	0.1	0.8	-	0.9	4.4	7.1	0.8	7.9
10/1	1333	1333	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1462	1462	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	248	248	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

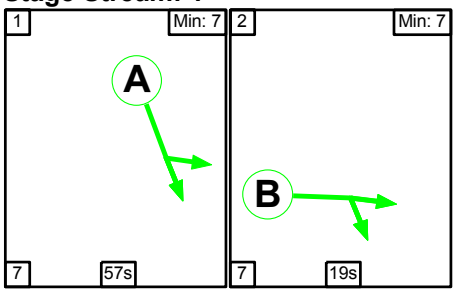
11/2	94	94	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	292	292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1172	1172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	703	703	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	708	708	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	986	986	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1350	1350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1114	1114	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1003	1003	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1112	1112	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-71.2	Total Delay for Signalled Lanes (pcuHr):	400.53	Cycle Time (s):	63		
C1	Stream: 2 PRC for Signalled Lanes (%):	-10.8	Total Delay for Signalled Lanes (pcuHr):	47.86	Cycle Time (s):	63		
C2	Stream: 1 PRC for Signalled Lanes (%):	-71.1	Total Delay for Signalled Lanes (pcuHr):	295.31	Cycle Time (s):	63		
C2	Stream: 2 PRC for Signalled Lanes (%):	48.4	Total Delay for Signalled Lanes (pcuHr):	1.79	Cycle Time (s):	63		
	PRC Over All Lanes (%):	-71.2	Total Delay Over All Lanes(pcuHr):	923.16				

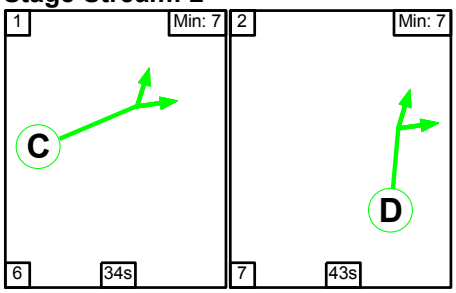
Full Input Data And Results
Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

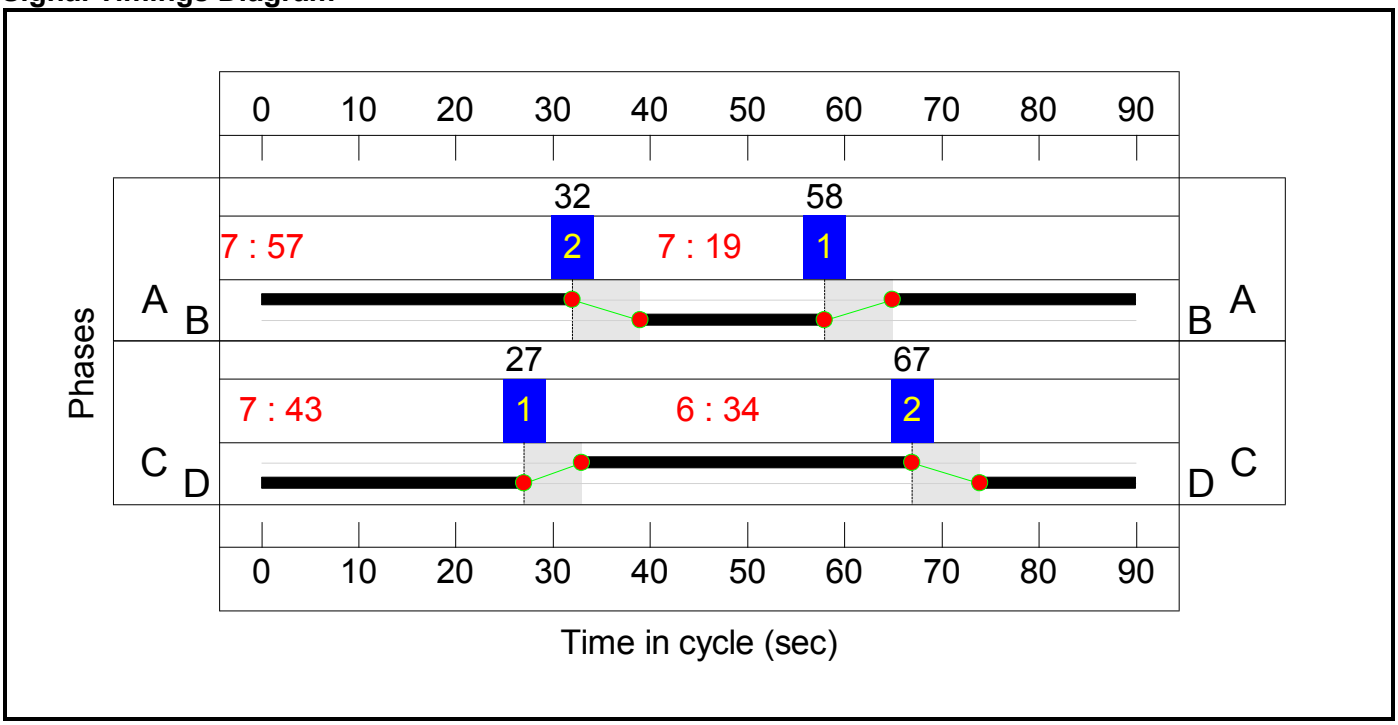
Stage Stream: 1

Stage	1	2
Duration	57	19
Change Point	58	32

Stage Stream: 2

Stage	1	2
Duration	34	43
Change Point	27	67

Signal Timings Diagram

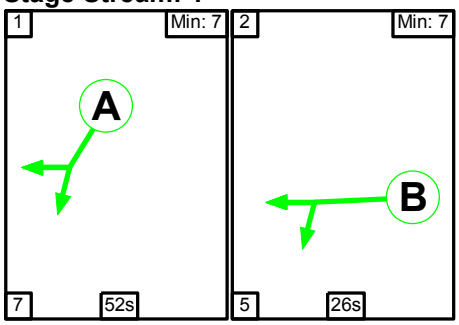


Full Input Data And Results

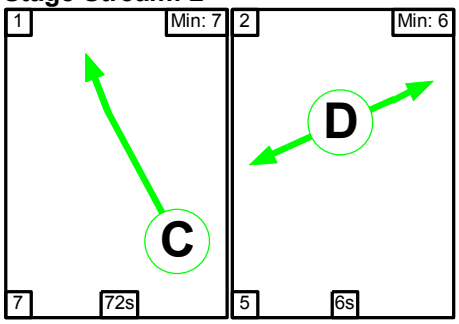
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

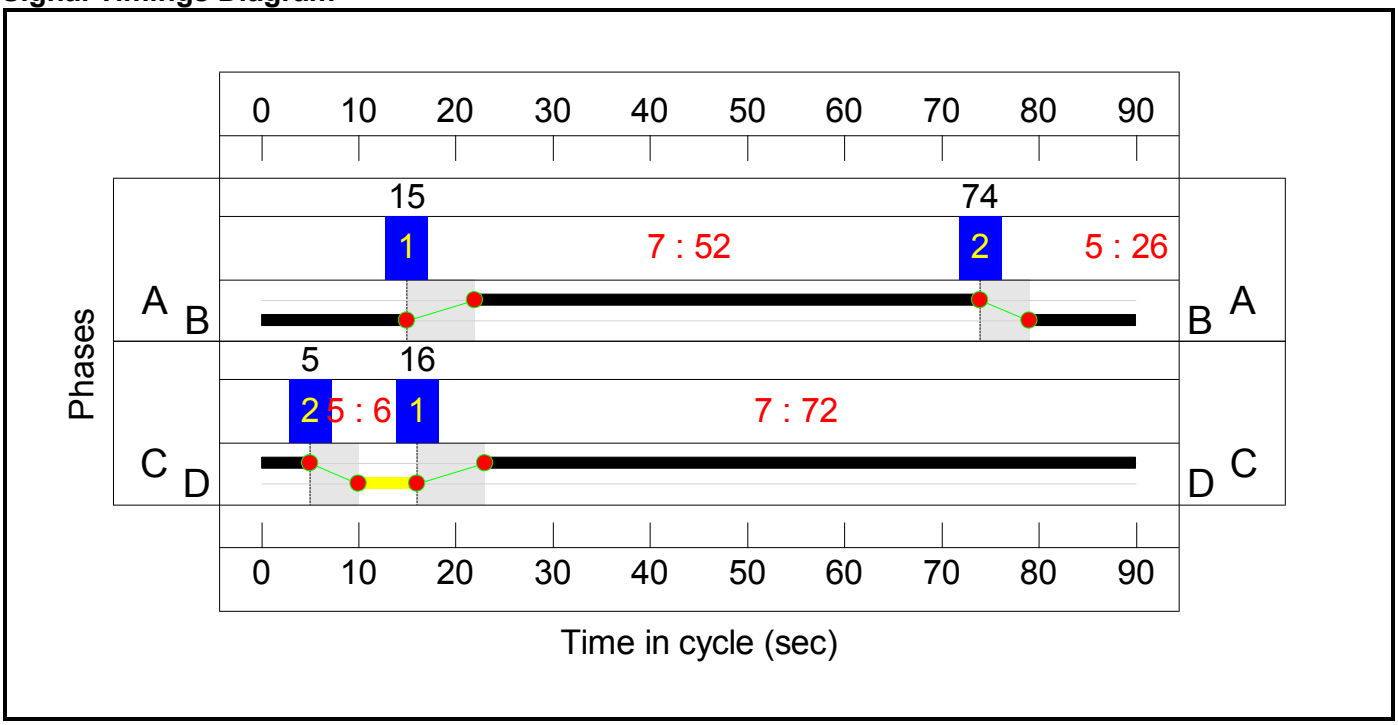
Stage	1	2
Duration	52	26
Change Point	15	74

Stage Stream: 2

Stage	1	2
Duration	72	6
Change Point	16	5

Full Input Data And Results

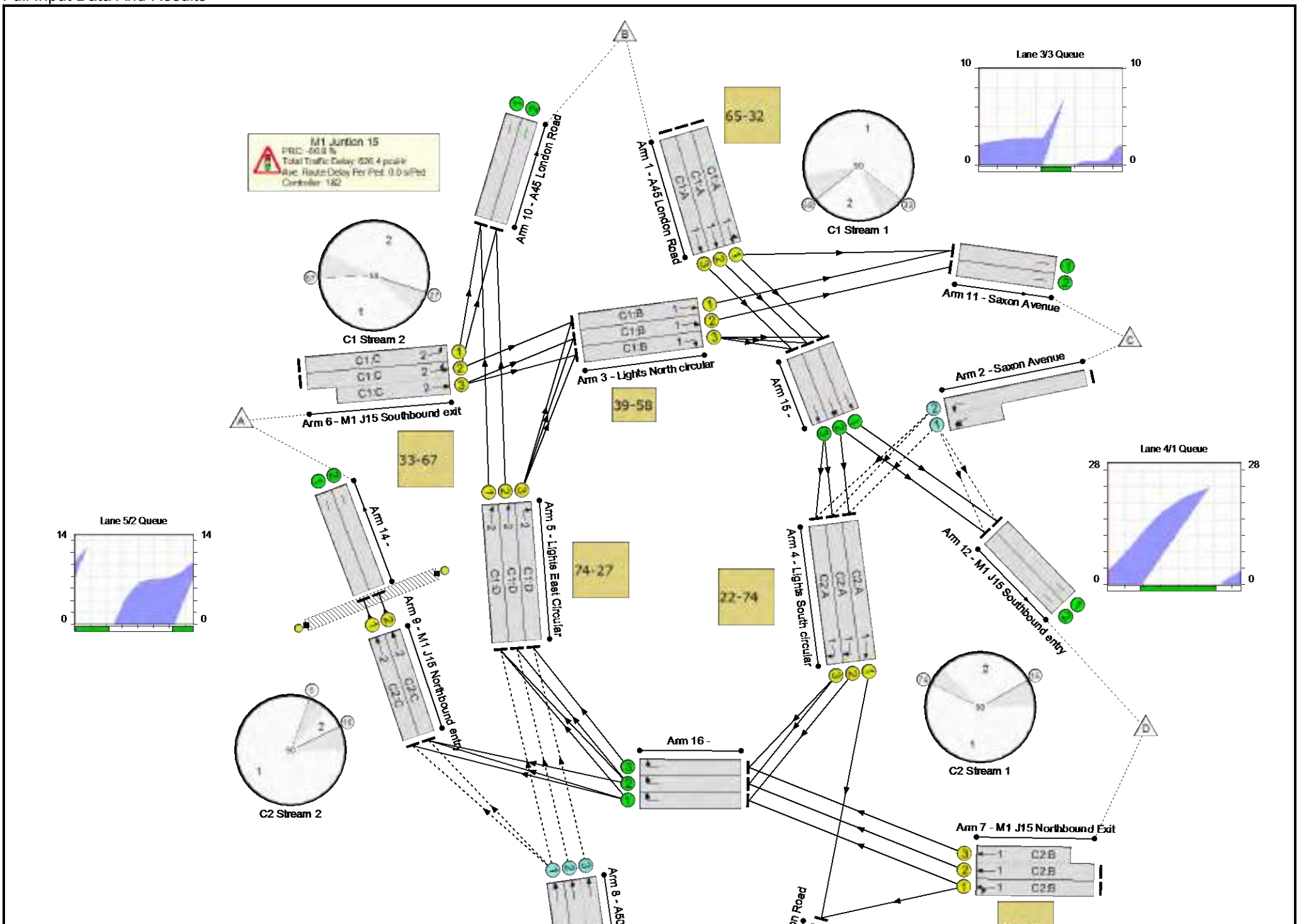
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**144.7%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**144.7%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	57	-	942	1800	1160	81.2%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	57	-	942	1800	1160	81.2%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	57	-	1679	1800	1160	144.7%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	126	1600:1600	52+222	45.9 : 45.9%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	19	-	119	1900	422	28.2%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	19	-	207	1900	422	43.1%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	19	-	420	1900	422	87.1%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	52	-	1136	1900	1119	96.9%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	52	-	842	1900	1119	52.0%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	52	-	864	1900	1119	54.0%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	43	-	707	1900	929	73.2%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	43	-	899	1900	929	95.7%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	43	-	260	1900	929	28.0%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	34	-	830	1800	700	118.6%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	34	-	1318	1800:1800	700+409	118.9 : 118.9%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	26	-	553	1800	540	102.4%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	26	-	659	1800:1800	540+113	100.9 : 100.9%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	386	1800	376	102.7%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	496	1800:1800	346+144	101.2 : 101.2%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	922	1600	1298	50.8%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	938	1600	1298	53.0%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1537	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1731	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	207	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	207	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	945	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	234	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1210	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	922	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	938	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	900	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1313	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1682	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1321	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1409	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	114	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1612**	**0**	**0**	**104.4**	**521.9**	**0.0**	**626.4**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1612**	**0**	**0**	**104.4**	**521.9**	**0.0**	**626.4**	**-**	**-**	**-**	**-**
1/1	942	942	-	-	-	3.1	2.1	-	5.2	20.0	17.5	2.1	19.7
1/2	942	942	-	-	-	3.1	2.1	-	5.2	20.0	17.5	2.1	19.7
1/3	1679	1160	-	-	-	32.6	261.1	-	293.7	629.8	55.0	261.1	316.1
2/2+2/1	126	126	252	0	0	0.7	0.4	-	1.1	32.7	1.9	0.4	2.3
3/1	119	119	-	-	-	1.1	0.2	-	1.3	38.2	3.0	0.2	3.2
3/2	182	182	-	-	-	0.6	0.4	-	1.0	19.0	1.9	0.4	2.3
3/3	368	368	-	-	-	1.6	3.0	-	4.7	45.6	6.9	3.0	10.0
4/1	1084	1084	-	-	-	6.1	10.0	-	16.1	53.4	24.4	10.0	34.4
4/2	582	582	-	-	-	1.4	0.5	-	2.0	12.2	10.7	0.5	11.3
4/3	605	605	-	-	-	1.5	0.6	-	2.1	12.4	10.8	0.6	11.4
5/1	680	680	-	-	-	3.2	1.4	-	4.6	24.2	8.6	1.4	9.9
5/2	889	889	-	-	-	4.1	7.9	-	12.1	48.8	13.2	7.9	21.1
5/3	260	260	-	-	-	0.7	0.2	-	0.9	12.6	2.7	0.2	2.9
6/1	830	700	-	-	-	11.0	68.0	-	79.0	342.7	24.0	68.0	92.0
6/2+6/3	1318	1109	-	-	-	16.6	107.6	-	124.2	339.4	34.2	107.6	141.9
7/1	553	540	-	-	-	5.5	15.4	-	20.9	136.2	14.1	15.4	29.6
7/2+7/3	659	654	-	-	-	5.8	14.4	-	20.2	110.3	13.8	14.4	28.2
8/1	386	376	376	0	0	2.7	12.7	-	15.4	143.2	19.7	12.7	32.4
8/2+8/3	496	492	984	0	0	2.7	12.7	-	15.3	111.2	17.9	12.7	30.5
9/1	660	660	-	-	-	0.2	0.5	-	0.7	3.9	12.2	0.5	12.7
9/2	688	688	-	-	-	0.1	0.6	-	0.7	3.6	10.8	0.6	11.3
10/1	1380	1380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1589	1589	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	207	207	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

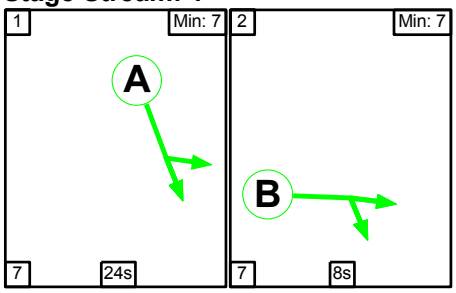
11/2	182	182	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	945	945	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	234	234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1157	1157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	660	660	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	688	688	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	900	900	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1261	1261	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1163	1163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1050	1050	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1145	1145	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	114	114	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-60.8	Total Delay for Signalled Lanes (pcuHr):	311.10	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-32.1	Total Delay for Signalled Lanes (pcuHr):	220.79	Cycle Time (s):	90		
C2	Stream: 1 PRC for Signalled Lanes (%):	-13.8	Total Delay for Signalled Lanes (pcuHr):	61.25	Cycle Time (s):	90		
C2	Stream: 2 PRC for Signalled Lanes (%):	69.9	Total Delay for Signalled Lanes (pcuHr):	1.40	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-60.8	Total Delay Over All Lanes(pcuHr):	626.36				

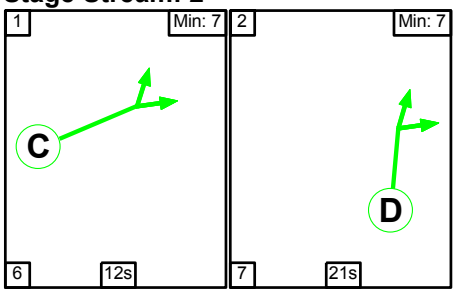
Full Input Data And Results
Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

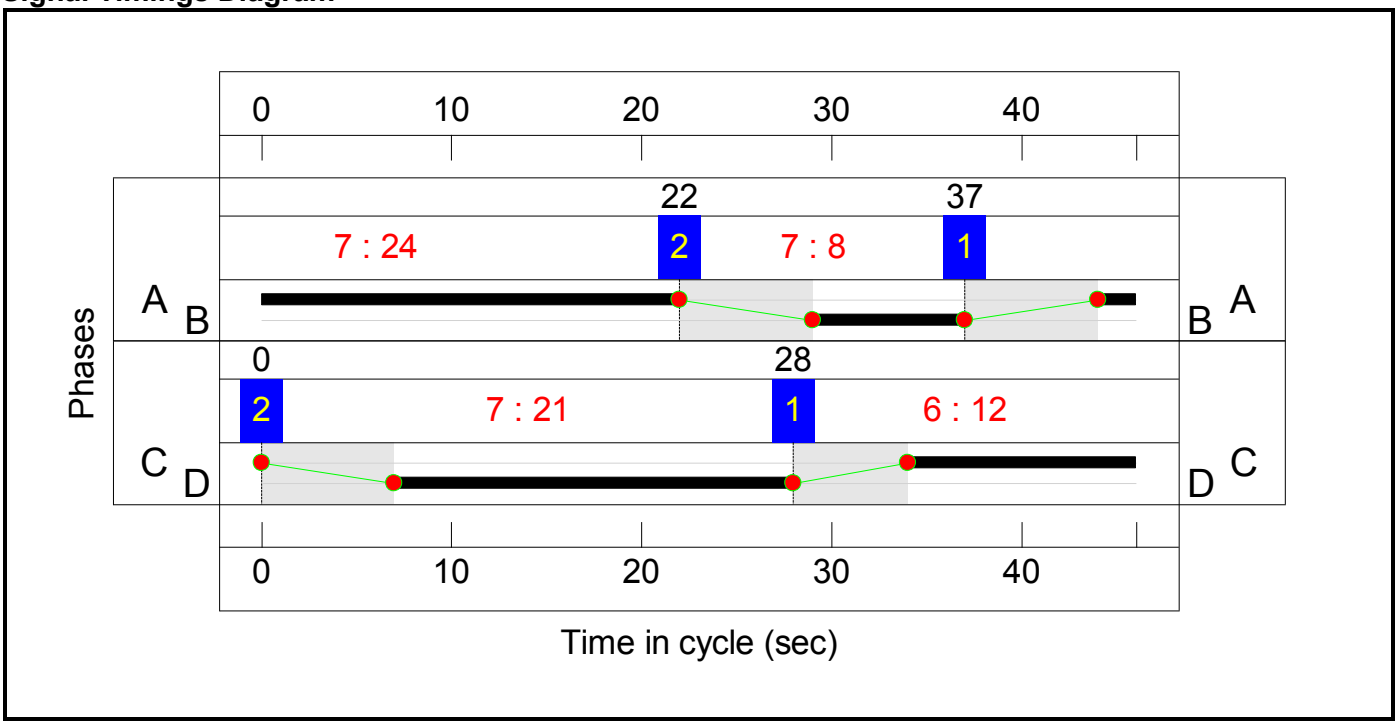
Stage Stream: 1

Stage	1	2
Duration	24	8
Change Point	37	22

Stage Stream: 2

Stage	1	2
Duration	12	21
Change Point	28	0

Signal Timings Diagram

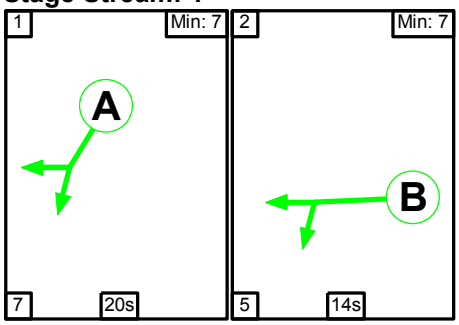


Full Input Data And Results

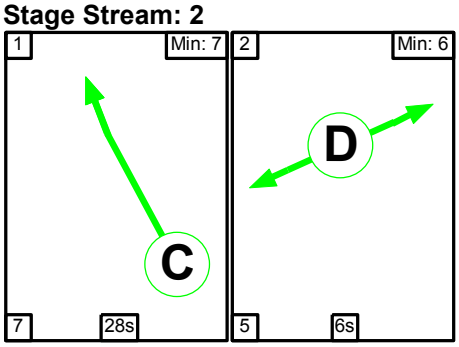
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

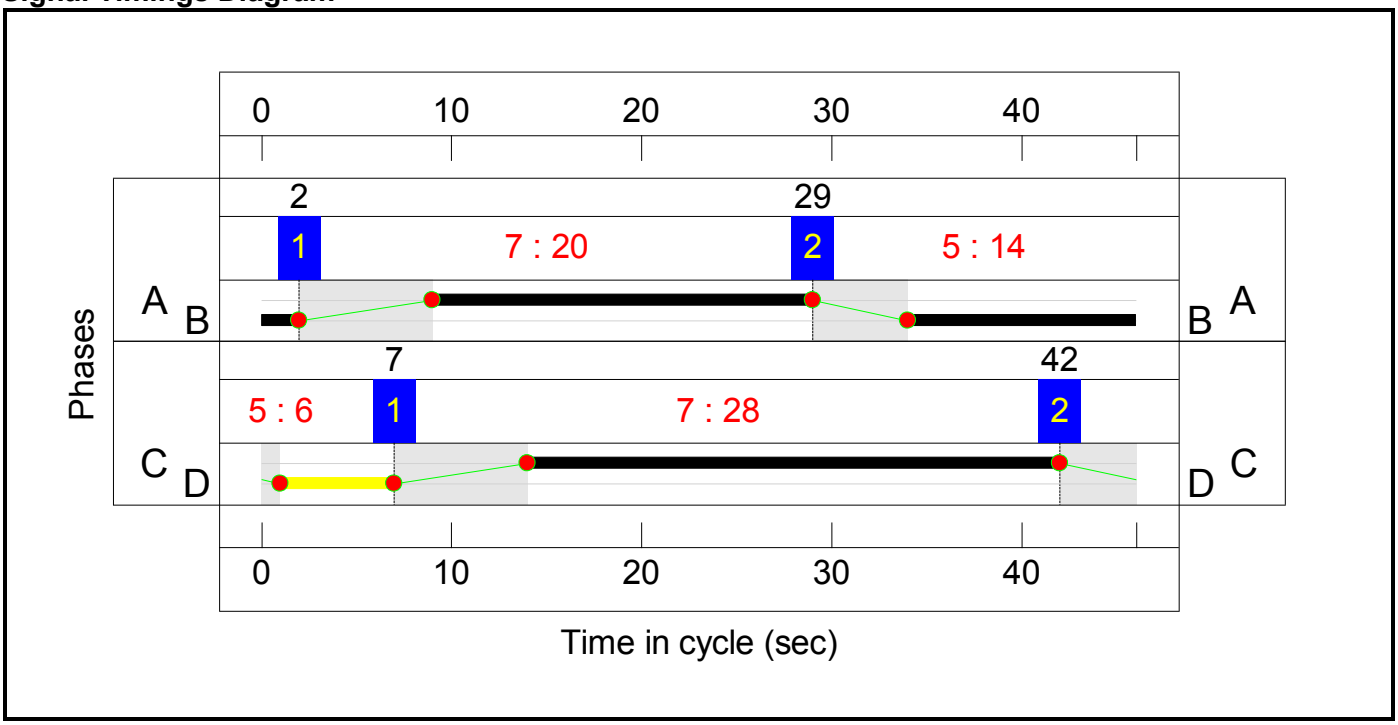
Stage	1	2
Duration	20	14
Change Point	2	29

Stage Stream: 2

Stage	1	2
Duration	28	6
Change Point	7	42

Full Input Data And Results

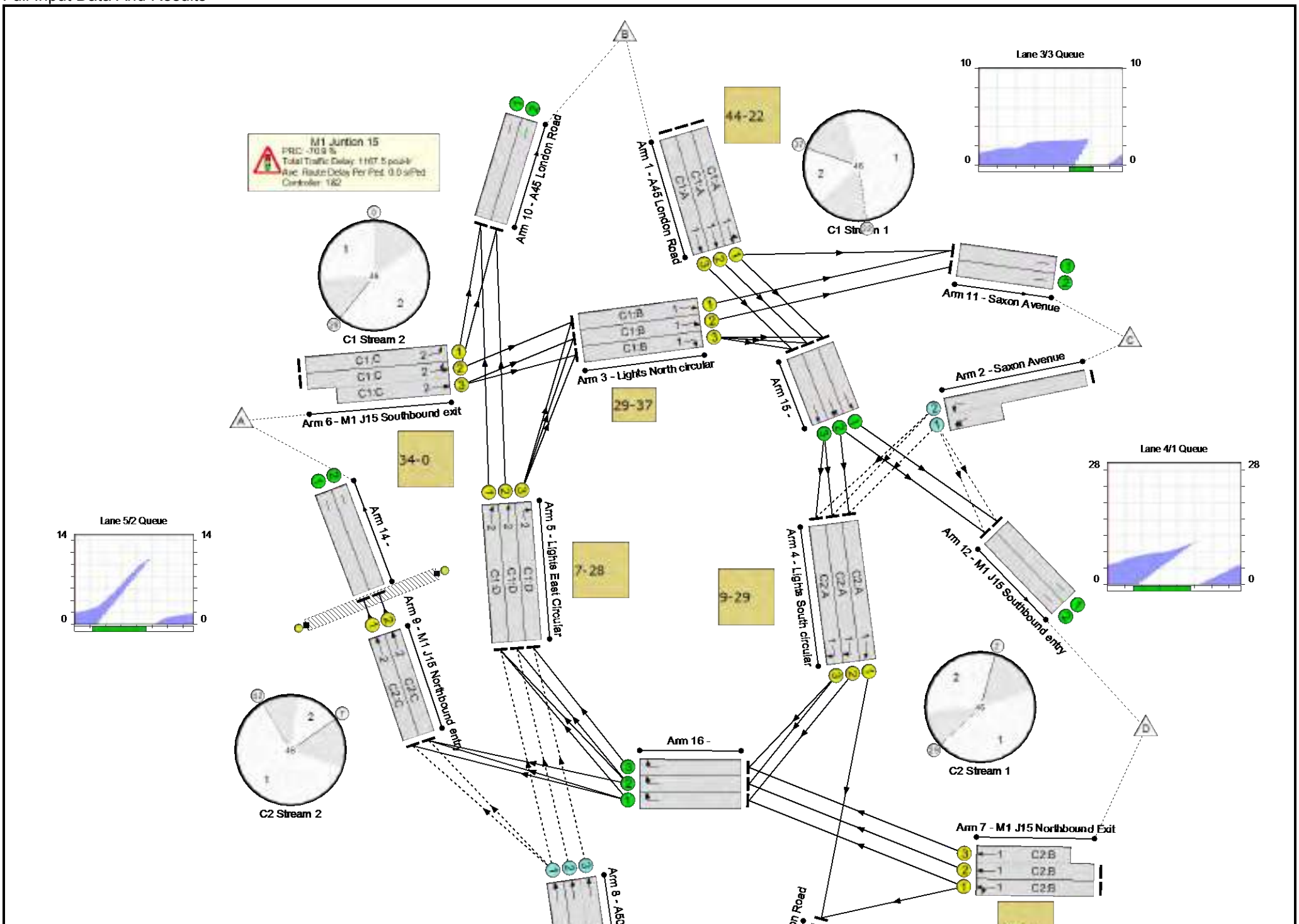
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**153.8%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**153.8%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	24	-	1077	1800	978	110.1%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	24	-	1074	1800	978	109.8%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	24	-	1470	1800	978	150.3%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	279	1600:1600	351+156	55.0 : 55.0%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	8	-	100	1900	372	26.1%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	8	-	135	1900	372	35.9%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	8	-	221	1900	372	57.6%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	20	-	926	1900	867	98.9%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	20	-	839	1900	867	65.5%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	20	-	824	1900	867	69.5%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	21	-	1055	1900	909	81.6%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	21	-	1336	1900	909	97.8%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	21	-	239	1900	909	25.1%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	12	-	654	1800	509	128.6%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	12	-	872	1800:1800	509+164	129.5 : 129.5%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	14	-	903	1800	587	153.8%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	14	-	1001	1800:1800	587+74	151.5 : 151.5%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	547	1800	360	151.8%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	574	1800:1800	301+86	148.3 : 148.3%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	28	-	926	1600	1009	62.0%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	28	-	913	1600	1009	60.4%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1709	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1991	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	265	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	135	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	986	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	381	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1145	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	926	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	913	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	953	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1254	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1470	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1523	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1713	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	112	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1753**	**0**	**0**	**85.0**	**1082.5**	**0.0**	**1167.5**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1753**	**0**	**0**	**85.0**	**1082.5**	**0.0**	**1167.5**	**-**	**-**	**-**	**-**
1/1	1077	978	-	-	-	5.3	54.3	-	59.7	199.4	15.0	54.3	69.3
1/2	1074	978	-	-	-	5.3	52.9	-	58.2	195.1	14.9	52.9	67.9
1/3	1470	978	-	-	-	15.2	247.4	-	262.6	643.0	25.1	247.4	272.4
2/2+2/1	279	279	558	0	0	0.7	0.6	-	1.3	16.5	1.9	0.6	2.5
3/1	97	97	-	-	-	0.3	0.2	-	0.5	18.2	1.2	0.2	1.3
3/2	134	134	-	-	-	0.9	0.3	-	1.1	30.8	1.7	0.3	2.0
3/3	214	214	-	-	-	1.6	0.7	-	2.2	37.7	2.7	0.7	3.4
4/1	857	857	-	-	-	3.5	12.4	-	15.8	66.5	10.6	12.4	23.0
4/2	568	568	-	-	-	2.0	0.9	-	3.0	18.9	5.0	0.9	5.9
4/3	603	603	-	-	-	1.9	1.1	-	3.1	18.2	5.6	1.1	6.8
5/1	741	741	-	-	-	1.5	2.2	-	3.7	17.8	8.0	2.2	10.1
5/2	888	888	-	-	-	1.5	10.7	-	12.2	49.5	10.8	10.7	21.5
5/3	228	228	-	-	-	0.3	0.2	-	0.4	6.9	1.2	0.2	1.4
6/1	654	509	-	-	-	6.9	74.8	-	81.7	449.8	11.5	74.8	86.4
6/2+6/3	872	722	-	-	-	5.9	101.6	-	107.5	443.8	9.8	101.6	111.4
7/1	903	587	-	-	-	12.2	159.4	-	171.7	684.4	18.4	159.4	177.8
7/2+7/3	1001	699	-	-	-	8.9	171.5	-	180.4	648.9	14.6	171.5	186.1
8/1	547	360	360	0	0	6.4	94.8	-	101.2	665.9	21.0	94.8	115.7
8/2+8/3	574	418	835	0	0	4.6	95.0	-	99.6	624.5	16.5	95.0	111.4
9/1	626	626	-	-	-	0.0	0.8	-	0.9	5.0	3.7	0.8	4.5
9/2	609	609	-	-	-	0.1	0.8	-	0.8	4.8	1.8	0.8	2.6
10/1	1250	1250	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1394	1394	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	247	247	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

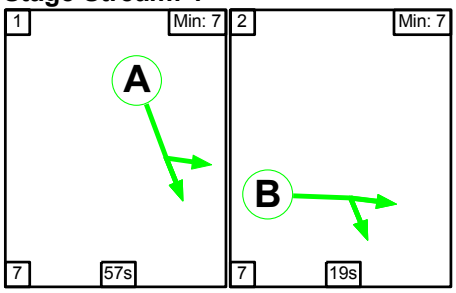
11/2	134	134	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	899	899	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1000	1000	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	626	626	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	609	609	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1155	1155	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	978	978	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1013	1013	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1190	1190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	112	112	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-67.0	Total Delay for Signalled Lanes (pcuHr):	384.31	Cycle Time (s):	46		
C1	Stream: 2 PRC for Signalled Lanes (%):	-43.9	Total Delay for Signalled Lanes (pcuHr):	205.52	Cycle Time (s):	46		
C2	Stream: 1 PRC for Signalled Lanes (%):	-70.9	Total Delay for Signalled Lanes (pcuHr):	373.97	Cycle Time (s):	46		
C2	Stream: 2 PRC for Signalled Lanes (%):	45.1	Total Delay for Signalled Lanes (pcuHr):	1.67	Cycle Time (s):	46		
	PRC Over All Lanes (%):	-70.9	Total Delay Over All Lanes(pcuHr):	1167.50				

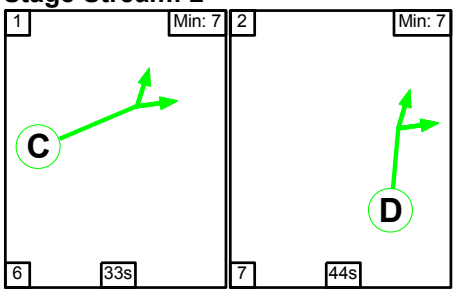
Full Input Data And Results
Scenario 9: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

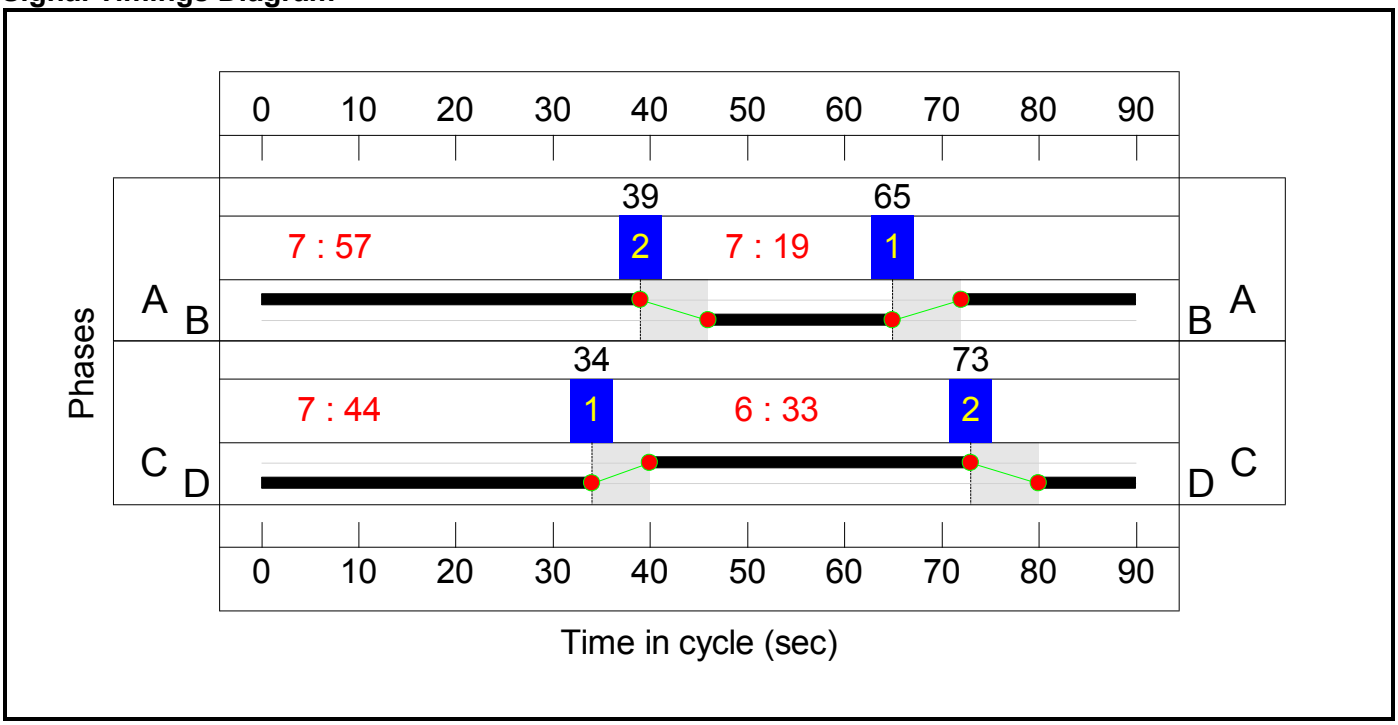
Stage Stream: 1

Stage	1	2
Duration	57	19
Change Point	65	39

Stage Stream: 2

Stage	1	2
Duration	33	44
Change Point	34	73

Signal Timings Diagram

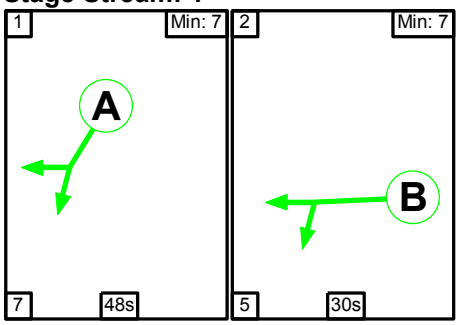


Full Input Data And Results

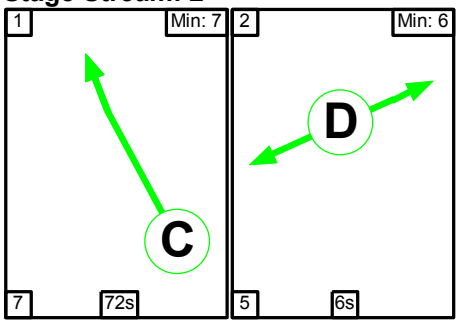
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

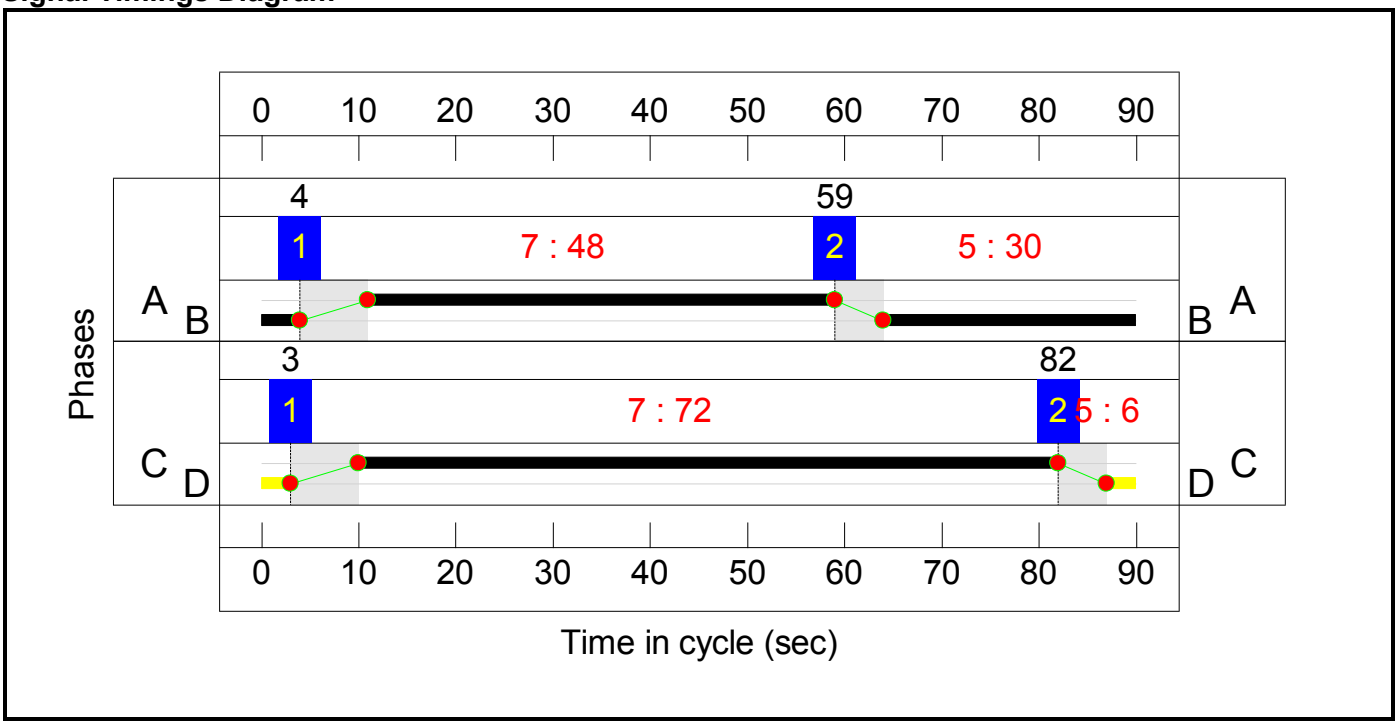
Stage	1	2
Duration	48	30
Change Point	4	59

Stage Stream: 2

Stage	1	2
Duration	72	6
Change Point	3	82

Full Input Data And Results

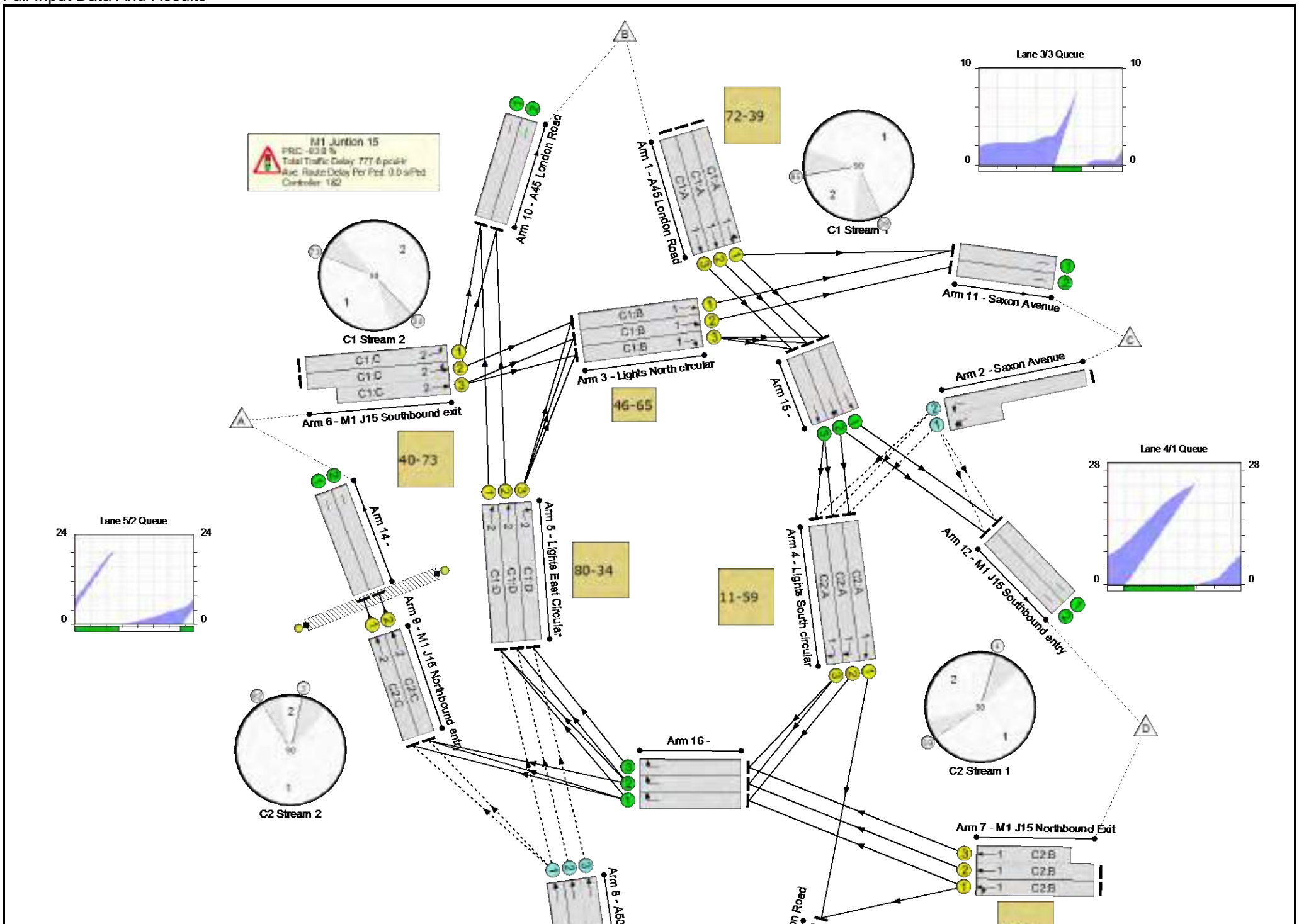
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**165.4%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**165.4%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	57	-	933	1800	1160	80.4%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	57	-	933	1800	1160	80.4%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	57	-	1919	1800	1160	165.4%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	125	1600:1600	54+218	46.0 : 46.0%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	19	-	110	1900	422	26.1%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	19	-	201	1900	422	41.7%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	19	-	435	1900	422	90.3%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	48	-	1062	1900	1034	97.5%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	48	-	968	1900	1034	57.1%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	48	-	976	1900	1034	57.4%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	44	-	743	1900	950	73.5%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	44	-	925	1900	950	91.9%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	44	-	250	1900	950	26.3%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	33	-	805	1800	680	118.4%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	33	-	1304	1800:1800	680+417	118.8 : 118.8%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	30	-	598	1800	620	96.5%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	30	-	691	1800:1800	620+115	94.0 : 94.0%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	405	1800	343	118.2%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	475	1800:1800	285+121	117.0 : 117.0%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	1051	1600	1298	51.0%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	72	-	1055	1600	1298	51.7%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1548	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1733	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	201	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	940	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1151	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1051	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1055	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	894	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1320	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1919	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1477	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1559	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	108	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1446**	**0**	**0**	**110.4**	**667.2**	**0.0**	**777.6**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1446**	**0**	**0**	**110.4**	**667.2**	**0.0**	**777.6**	**-**	**-**	**-**	**-**
1/1	933	933	-	-	-	3.1	2.0	-	5.1	19.6	17.1	2.0	19.1
1/2	933	933	-	-	-	3.1	2.0	-	5.1	19.6	17.1	2.0	19.1
1/3	1919	1160	-	-	-	45.2	380.8	-	426.0	799.2	68.3	380.8	449.1
2/2+2/1	125	125	250	0	0	0.7	0.4	-	1.1	32.7	1.8	0.4	2.3
3/1	110	110	-	-	-	1.2	0.2	-	1.4	44.7	2.7	0.2	2.9
3/2	176	176	-	-	-	0.7	0.4	-	1.0	20.8	1.7	0.4	2.1
3/3	381	381	-	-	-	1.7	3.9	-	5.6	52.7	7.5	3.9	11.4
4/1	1008	1008	-	-	-	5.2	10.7	-	15.9	56.7	24.9	10.7	35.5
4/2	591	591	-	-	-	0.8	0.7	-	1.4	8.8	5.0	0.7	5.6
4/3	594	594	-	-	-	0.7	0.7	-	1.4	8.5	4.9	0.7	5.6
5/1	699	699	-	-	-	1.0	1.4	-	2.4	12.2	5.9	1.4	7.2
5/2	873	873	-	-	-	1.9	5.0	-	6.9	28.6	20.1	5.0	25.1
5/3	250	250	-	-	-	0.6	0.2	-	0.8	11.5	2.4	0.2	2.6
6/1	805	680	-	-	-	10.5	65.6	-	76.0	340.1	23.2	65.6	88.8
6/2+6/3	1304	1097	-	-	-	16.1	106.4	-	122.5	338.1	32.2	106.4	138.5
7/1	598	598	-	-	-	4.8	7.9	-	12.7	76.6	14.6	7.9	22.5
7/2+7/3	691	691	-	-	-	5.3	6.2	-	11.4	59.4	14.1	6.2	20.2
8/1	405	343	343	0	0	4.2	34.2	-	38.4	341.7	22.4	34.2	56.6
8/2+8/3	475	427	853	0	0	3.6	37.7	-	41.3	313.4	18.4	37.7	56.1
9/1	661	661	-	-	-	0.0	0.5	-	0.5	2.9	4.9	0.5	5.4
9/2	671	671	-	-	-	0.0	0.5	-	0.5	2.9	3.6	0.5	4.1
10/1	1379	1379	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1553	1553	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	197	197	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

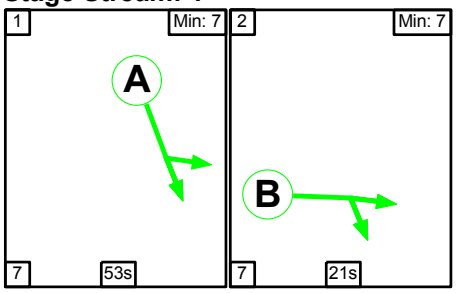
11/2	176	176	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	940	940	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	312	312	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1097	1097	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	661	661	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	671	671	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	894	894	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1266	1266	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1160	1160	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1100	1100	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1177	1177	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	108	108	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-83.8	Total Delay for Signalled Lanes (pcuHr):	444.12	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-32.0	Total Delay for Signalled Lanes (pcuHr):	208.59	Cycle Time (s):	90		
C2	Stream: 1 PRC for Signalled Lanes (%):	-8.3	Total Delay for Signalled Lanes (pcuHr):	42.84	Cycle Time (s):	90		
C2	Stream: 2 PRC for Signalled Lanes (%):	74.0	Total Delay for Signalled Lanes (pcuHr):	1.08	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-83.8	Total Delay Over All Lanes(pcuHr):	777.56				

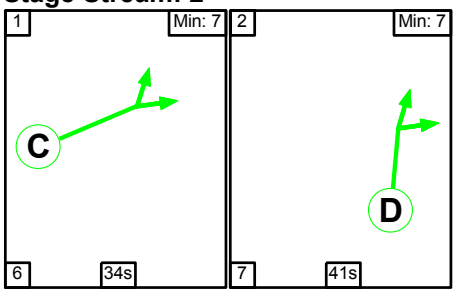
Full Input Data And Results
Scenario 10: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

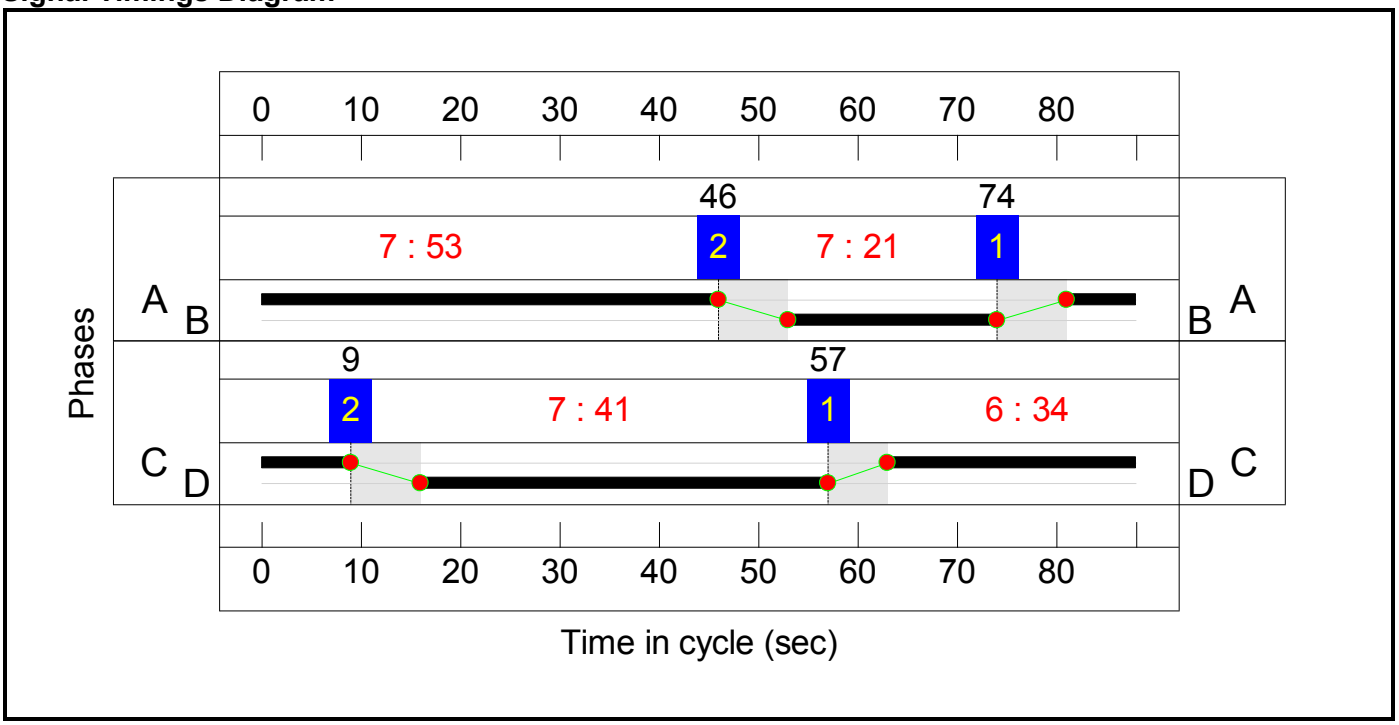
Stage Stream: 1

Stage	1	2
Duration	53	21
Change Point	74	46

Stage Stream: 2

Stage	1	2
Duration	34	41
Change Point	57	9

Signal Timings Diagram

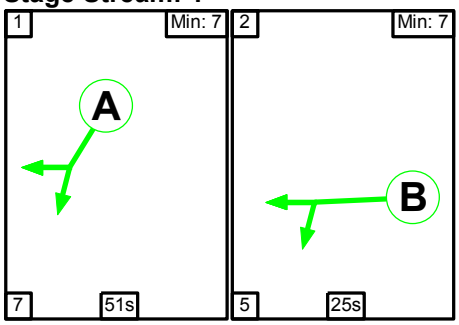


Full Input Data And Results

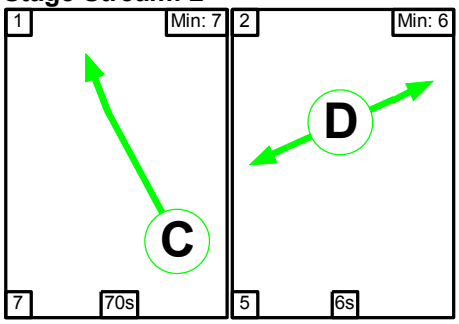
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

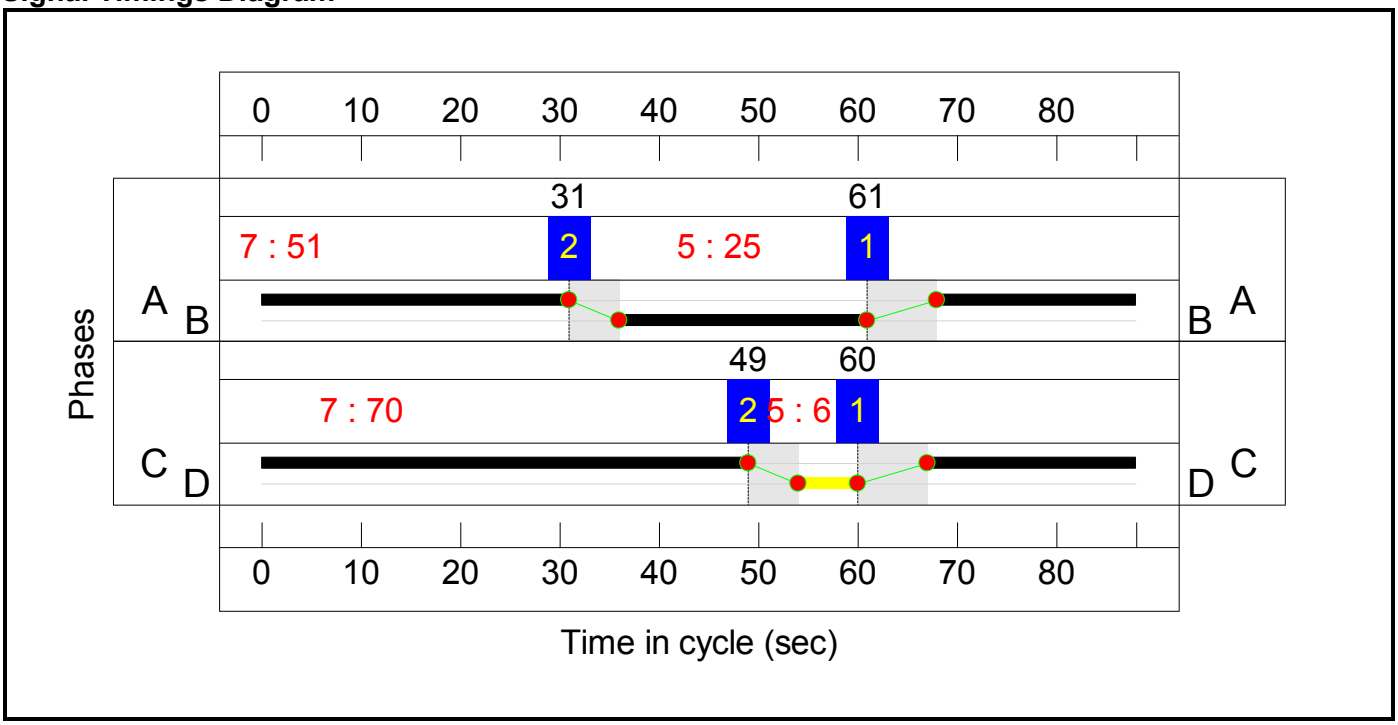
Stage	1	2
Duration	51	25
Change Point	61	31

Stage Stream: 2

Stage	1	2
Duration	70	6
Change Point	60	49

Full Input Data And Results

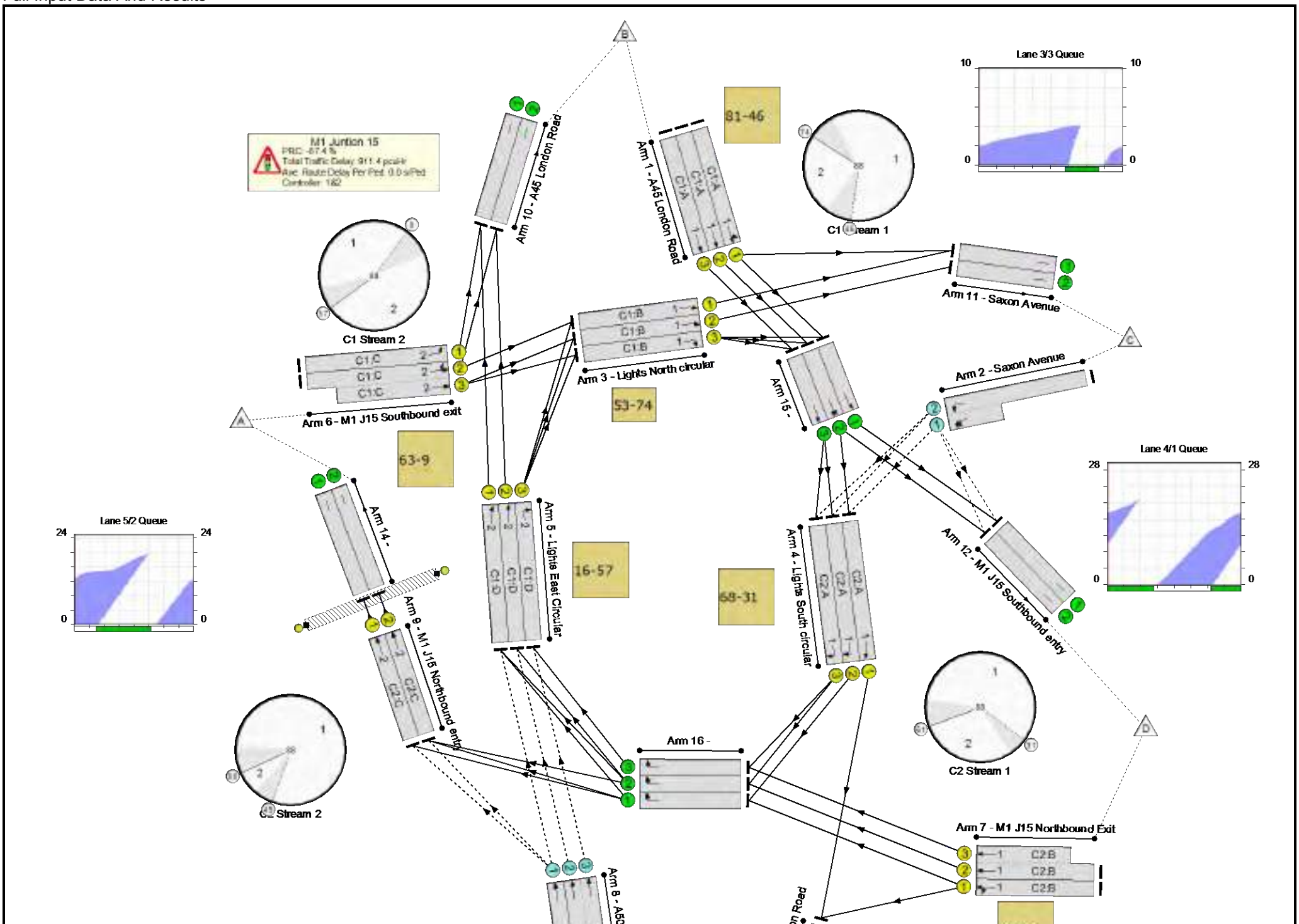
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**150.6%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**150.6%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	53	-	1083	1800	1105	98.0%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	53	-	1074	1800	1105	97.2%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	53	-	1646	1800	1105	149.0%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	250	1600:1600	294+151	56.2 : 56.2%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	21	-	66	1900	475	9.5%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	21	-	164	1900	475	31.6%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	21	-	264	1900	475	50.4%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	51	-	1044	1900	1123	93.0%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	51	-	873	1900	1123	53.0%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	51	-	938	1900	1123	60.1%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	41	-	1029	1900	907	80.8%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	41	-	1250	1900	907	94.1%
5/3	Lights East Circular Right	U	1:2	N/A	C1:D		1	41	-	193	1900	907	14.7%
6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	34	-	644	1800	716	90.0%

Full Input Data And Results

6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	34	-	969	1800:1800	716+323	93.3 : 93.3%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	25	-	801	1800	532	150.6%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	25	-	859	1800:1800	532+45	148.9 : 148.9%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	539	1800	373	144.3%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	584	1800:1800	322+89	142.3 : 142.3%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	70	-	997	1600	1291	52.7%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	70	-	1005	1600	1291	52.8%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1673	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1918	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	1000	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1164	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	997	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%
15/1	Ahead	U	N/A	N/A	-		-	-	-	967	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1297	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	1646	Inf	Inf	0.0%

Full Input Data And Results

16/1	Right Right2	U	N/A	N/A	-		-	-	-	1554	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1730	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	67	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1694**	**0**	**0**	**137.1**	**774.3**	**0.0**	**911.4**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1694**	**0**	**0**	**137.1**	**774.3**	**0.0**	**911.4**	**-**	**-**	**-**	**-**
1/1	1083	1083	-	-	-	5.0	11.9	-	16.9	56.1	25.6	11.9	37.5
1/2	1074	1074	-	-	-	4.9	10.4	-	15.3	51.3	25.1	10.4	35.5
1/3	1646	1105	-	-	-	31.0	272.2	-	303.2	663.2	53.5	272.2	325.7
2/2+2/1	250	250	500	0	0	1.4	0.6	-	2.1	29.5	3.3	0.6	3.9
3/1	45	45	-	-	-	0.2	0.1	-	0.3	22.3	0.8	0.1	0.9
3/2	150	150	-	-	-	1.4	0.2	-	1.6	39.5	2.4	0.2	2.7
3/3	239	239	-	-	-	2.2	0.5	-	2.7	40.8	4.2	0.5	4.7
4/1	1044	1044	-	-	-	6.0	5.8	-	11.8	40.7	21.2	5.8	27.0
4/2	595	595	-	-	-	2.9	0.6	-	3.5	21.2	10.4	0.6	11.0
4/3	675	675	-	-	-	2.9	0.8	-	3.7	19.5	11.8	0.8	12.5
5/1	732	732	-	-	-	6.1	2.1	-	8.2	40.3	16.6	2.1	18.7
5/2	854	854	-	-	-	7.8	6.5	-	14.3	60.2	19.6	6.5	26.0
5/3	134	134	-	-	-	0.5	0.1	-	0.6	15.4	1.2	0.1	1.3
6/1	644	644	-	-	-	4.4	4.0	-	8.5	47.4	14.7	4.0	18.7
6/2+6/3	969	969	-	-	-	6.3	6.0	-	12.3	45.6	15.6	6.0	21.5
7/1	801	532	-	-	-	17.5	136.1	-	153.6	690.3	27.4	136.1	163.5
7/2+7/3	859	577	-	-	-	16.6	142.6	-	159.2	667.4	30.6	142.6	173.2
8/1	539	373	373	0	0	10.0	84.4	-	94.4	630.6	33.1	84.4	117.5
8/2+8/3	584	410	821	0	0	9.5	88.4	-	97.9	603.7	24.5	88.4	112.9
9/1	681	681	-	-	-	0.1	0.6	-	0.7	3.7	9.8	0.6	10.4
9/2	682	682	-	-	-	0.1	0.6	-	0.6	3.4	8.5	0.6	9.0
10/1	1376	1376	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1522	1522	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/2	150	150	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	988	988	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	293	293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1124	1124	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	681	681	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	682	682	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	955	955	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1285	1285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1105	1105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1047	1047	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1207	1207	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	45	45	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-65.6	Total Delay for Signalled Lanes (pcuHr):	340.07	Cycle Time (s):	88		
C1	Stream: 2 PRC for Signalled Lanes (%):	-4.6	Total Delay for Signalled Lanes (pcuHr):	43.79	Cycle Time (s):	88		
C2	Stream: 1 PRC for Signalled Lanes (%):	-67.4	Total Delay for Signalled Lanes (pcuHr):	331.79	Cycle Time (s):	88		
C2	Stream: 2 PRC for Signalled Lanes (%):	70.3	Total Delay for Signalled Lanes (pcuHr):	1.35	Cycle Time (s):	88		
	PRC Over All Lanes (%):	-67.4	Total Delay Over All Lanes(pcuHr):	911.41				

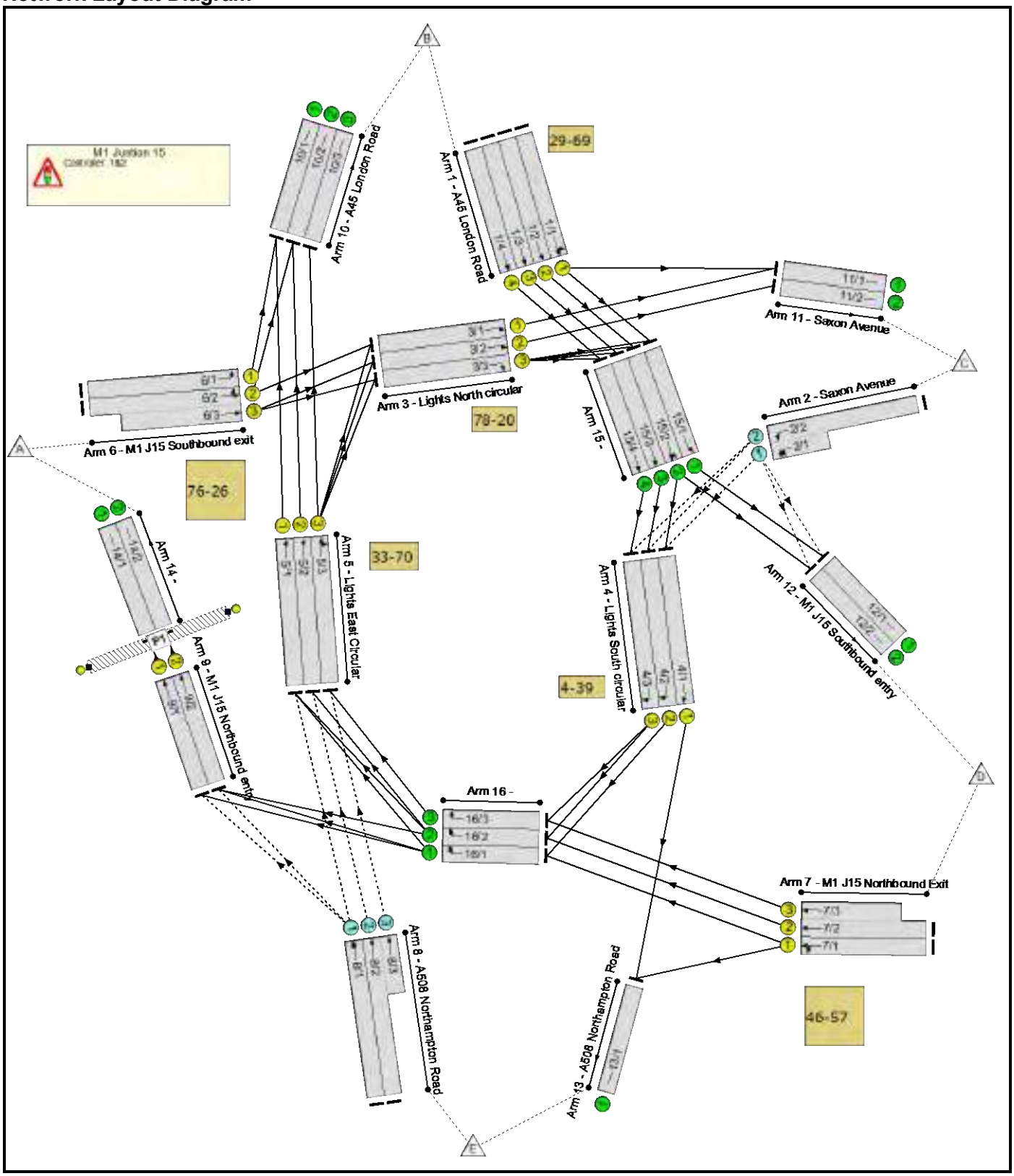
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 12
Location:	M1 Junction 15 / A45 (north to Northampton and Wellingborough) / Saxon Avenue/ A508, Northampton Road (south to Milton Keynes)
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

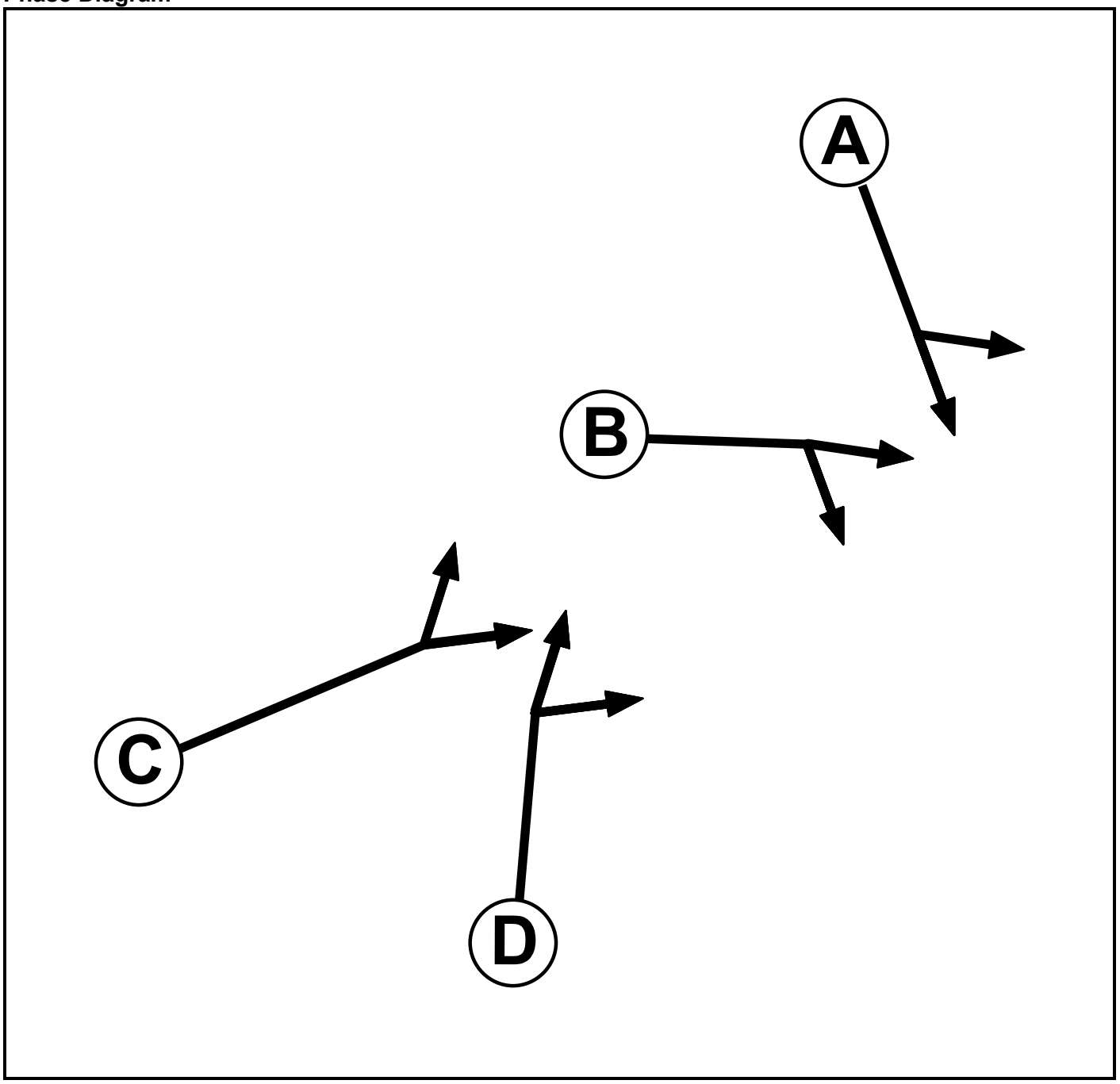
Full Input Data And Results

Network Layout Diagram



C1

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Full Input Data And Results

Phase Intergreens Matrix

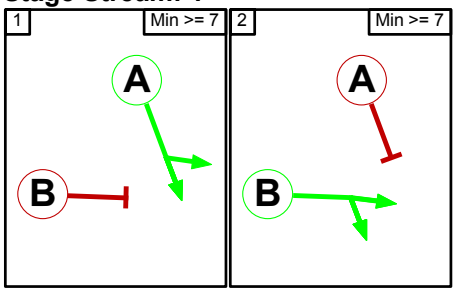
Terminating Phase	Starting Phase A	B	C	D
A		9	-	-
B	9		-	-
C	-	-		7
D	-	-	6	

Phases in Stage

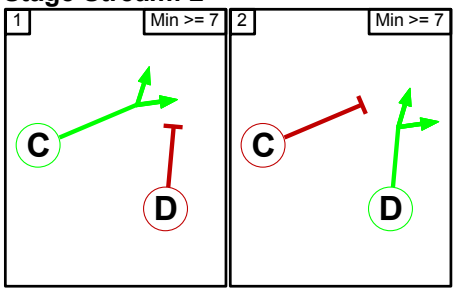
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

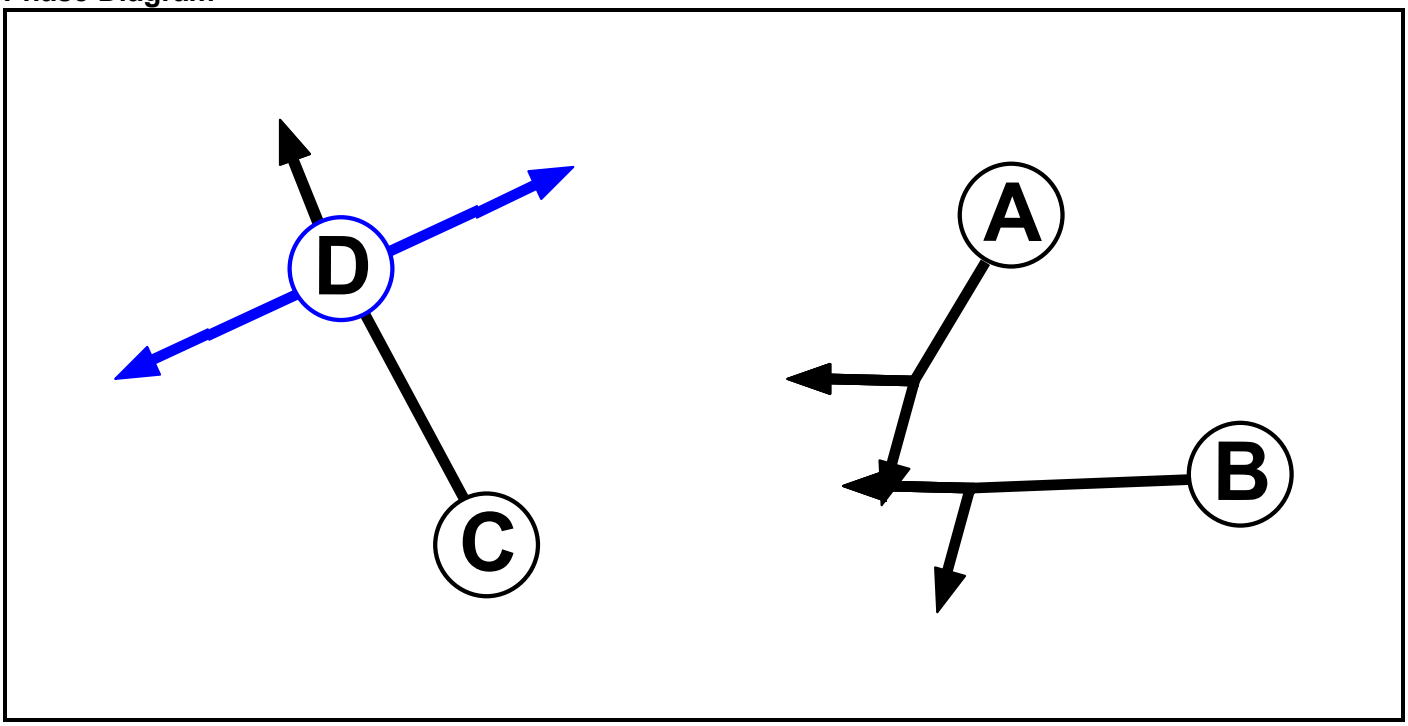
	To Stage		
From Stage		1	2
	1		9
	2	9	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		7
	2	6	

C2

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Pedestrian	2		6	6

Full Input Data And Results

Phase Intergreens Matrix

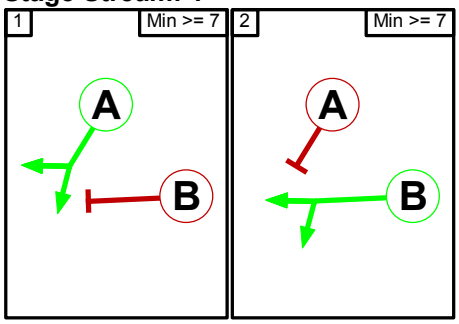
Terminating Phase	Starting Phase A	B	C	D
A		7	-	-
B	7		-	-
C	-	-		5
D	-	-	7	

Phases in Stage

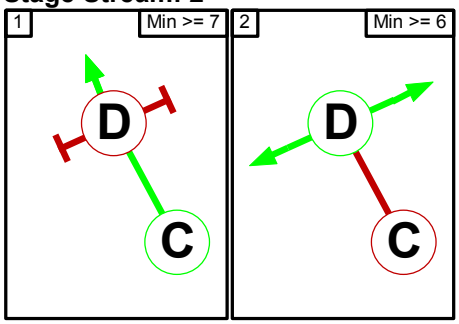
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: M1 Juntion 15

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (Saxon Avenue)	4/1 (Left)	1000	0	15/2	0.33	All	-	-	-	-	-
				15/3	0.33	All					
				15/4	0.33	All					
				15/1	0.33	All					
	12/1 (Left)	1000	0	15/2	0.33	All					
				15/3	0.33	All					
				15/4	0.33	All					
				15/1	0.33	All					
	12/2 (Left)	1000	0	15/2	0.33	All					
				15/3	0.33	All					
				15/4	0.33	All					
				15/1	0.33	All					
2/2 (Saxon Avenue)	4/2 (Left)	1000	0	15/2	0.33	All	-	-	-	-	-
				15/3	0.33	All					
				15/4	0.33	All					
				15/1	0.33	All					
	4/3 (Left)	1000	0	15/2	0.33	All					
				15/3	0.33	All					
				15/4	0.33	All					
				15/1	0.33	All					
8/1 (A508 Northampton Road)	5/1 (Ahead)	1000	0	16/1	0.33	All	-	-	-	-	-
				16/2	0.33	All					
				16/3	0.33	All					

	9/1 (Ahead)	1000	0	16/1	0.33	All					
	9/2 (Ahead)	1000	0	16/1	0.33	All					
8/2 (A508 Northampton Road)	5/2 (Ahead)	1000	0	16/1	0.33	All	-	-	-	-	-
				16/2	0.33	All					
				16/3	0.33	All					
8/3 (A508 Northampton Road)	5/3 (Ahead)	1000	0	16/1	0.33	All	-	-	-	-	-
				16/2	0.33	All					
				16/3	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: M1 Juntion 15												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A45 London Road)	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A45 London Road)	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A45 London Road)	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/4 (A45 London Road)	U	A	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Saxon Avenue)	O		2	3	5.0	User	1600	-	-	-	-	-
2/2 (Saxon Avenue)	O		2	3	60.0	User	1600	-	-	-	-	-
3/1 (Lights North circular)	U	B	2	3	3.0	User	1900	-	-	-	-	-
3/2 (Lights North circular)	U	B	2	3	3.0	User	1900	-	-	-	-	-
3/3 (Lights North circular)	U	B	2	3	3.0	User	1900	-	-	-	-	-
4/1 (Lights South circular)	U	A	2	3	36.5	User	1900	-	-	-	-	-
4/2 (Lights South circular)	U	A	2	3	36.5	User	1900	-	-	-	-	-
4/3 (Lights South circular)	U	A	2	3	20.9	User	1900	-	-	-	-	-
5/1 (Lights East Circular)	U	D	2	3	28.7	User	1900	-	-	-	-	-
5/2 (Lights East Circular)	U	D	2	3	28.7	User	1900	-	-	-	-	-
5/3 (Lights East Circular)	U	D	2	3	28.7	User	1900	-	-	-	-	-
6/1 (M1 J15 Southbound exit)	U	C	2	3	60.0	User	1800	-	-	-	-	-
6/2 (M1 J15 Southbound exit)	U	C	2	3	60.0	User	1800	-	-	-	-	-

6/3 (M1 J15 Southbound exit)	U	C	2	3	17.4	User	1800	-	-	-	-	-
7/1 (M1 J15 Northbound Exit)	U	B	2	3	60.0	User	1800	-	-	-	-	-
7/2 (M1 J15 Northbound Exit)	U	B	2	3	60.0	User	1800	-	-	-	-	-
7/3 (M1 J15 Northbound Exit)	U	B	2	3	18.3	User	1800	-	-	-	-	-
8/1 (A508 Northampton Road)	O		2	3	60.0	User	1800	-	-	-	-	-
8/2 (A508 Northampton Road)	O		2	3	22.6	User	1800	-	-	-	-	-
8/3 (A508 Northampton Road)	O		2	3	5.0	User	1800	-	-	-	-	-
9/1 (M1 J15 Northbound entry)	U	C	2	3	60.0	User	1600	-	-	-	-	-
9/2 (M1 J15 Northbound entry)	U	C	2	3	60.0	User	1600	-	-	-	-	-
10/1 (A45 London Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (A45 London Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/3 (A45 London Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (Saxon Avenue)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (Saxon Avenue)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (M1 J15 Southbound entry)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2 (M1 J15 Southbound entry)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (A508 Northampton Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1	U		2	3	60.0	Inf	-	-	-	-	-	-
14/2	U		2	3	60.0	Inf	-	-	-	-	-	-

15/1	U		2	3	60.0	Inf	-	-	-	-	-	-
15/2	U		2	3	60.0	Inf	-	-	-	-	-	-
15/3	U		2	3	60.0	Inf	-	-	-	-	-	-
15/4	U		2	3	60.0	Inf	-	-	-	-	-	-
16/1	U		2	3	60.0	Inf	-	-	-	-	-	-
16/2	U		2	3	60.0	Inf	-	-	-	-	-	-
16/3	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DS AM'	08:00	09:00	01:00	
2: '2021 DS PM'	17:00	18:00	01:00	
3: '2031 DS AM'	08:00	09:00	01:00	
4: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1541	95	0	230	1866
	B	1530	36	95	1279	718	3658
	C	29	4	0	86	12	131
	D	0	1199	132	0	91	1422
	E	177	334	37	59	0	607
	Tot.	1736	3114	359	1424	1051	7684

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DS AM
Junction: M1 Juntion 15	
1/1	1046
1/2	1046
1/3	783
1/4	783
2/1 (short)	98
2/2 (with short)	131(In) 33(Out)
3/1	105
3/2	159
3/3	289
4/1	960
4/2	798
4/3	801
5/1	494
5/2	654
5/3	653
6/1	777
6/2 (with short)	1089(In) 764(Out)
6/3 (short)	325
7/1	499
7/2 (with short)	923(In) 467(Out)
7/3 (short)	456
8/1	228
8/2 (with short)	379(In) 184(Out)
8/3 (short)	195
9/1	872
9/2	864
10/1	1271
10/2	1418
10/3	425
11/1	200
11/2	159
12/1	1024
12/2	400
13/1	1051
14/1	872
14/2	864

Full Input Data And Results

15/1	981
15/2	1305
15/3	783
15/4	783
16/1	1206
16/2	1266
16/3	458

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 London Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800

8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
10/3 (A45 London Road Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
15/4	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1315	96	0	207	1618
	B	1714	3	160	1220	925	4022
	C	25	127	0	66	16	234
	D	0	1289	57	0	100	1446
	E	379	682	43	75	0	1179
	Tot.	2118	3416	356	1361	1248	8499

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DS PM
Junction: M1 Juntion 15	
1/1	1152
1/2	1153
1/3	859
1/4	858
2/1 (short)	82
2/2 (with short)	234(In) 152(Out)
3/1	57
3/2	139
3/3	282
4/1	1148
4/2	881
4/3	988
5/1	608
5/2	832
5/3	836
6/1	649
6/2 (with short)	969(In) 666(Out)
6/3 (short)	303
7/1	482
7/2 (with short)	964(In) 482(Out)
7/3 (short)	482
8/1	475
8/2 (with short)	704(In) 350(Out)
8/3 (short)	354
9/1	1059
9/2	1059
10/1	1257
10/2	1498
10/3	661
11/1	217
11/2	139
12/1	1063
12/2	298
13/1	1248
14/1	1059
14/2	1059

Full Input Data And Results

15/1	1030
15/2	1397
15/3	859
15/4	858
16/1	1263
16/2	1470
16/3	482

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 London Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800

8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
10/3 (A45 London Road Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
15/4	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1613	158	0	338	2109
	B	1874	45	87	1063	716	3785
	C	22	3	0	92	8	125
	D	0	1092	108	0	89	1289
	E	210	528	45	97	0	880
	Tot.	2106	3281	398	1252	1151	8188

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2031 DS AM
Junction: M1 Juntion 15	
1/1	933
1/2	933
1/3	959
1/4	960
2/1 (short)	100
2/2 (with short)	125(In) 25(Out)
3/1	89
3/2	222
3/3	435
4/1	1062
4/2	968
4/3	976
5/1	552
5/2	684
5/3	682
6/1	823
6/2 (with short)	1286(In) 793(Out)
6/3 (short)	493
7/1	512
7/2 (with short)	777(In) 398(Out)
7/3 (short)	379
8/1	314
8/2 (with short)	566(In) 277(Out)
8/3 (short)	289
9/1	1049
9/2	1057
10/1	1375
10/2	1474
10/3	432
11/1	176
11/2	222
12/1	941
12/2	311
13/1	1151
14/1	1049
14/2	1057

Full Input Data And Results

15/1	895
15/2	1319
15/3	959
15/4	960
16/1	1391
16/2	1360
16/3	393

Full Input Data And Results

Lane Saturation Flows

Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 London Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800

8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
10/3 (A45 London Road Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
15/4	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	1312	120	0	181	1613
	B	1623	23	157	1155	845	3803
	C	36	129	0	67	18	250
	D	0	1473	67	0	120	1660
	E	343	654	43	83	0	1123
	Tot.	2002	3591	387	1305	1164	8449

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2031 DS PM
Junction: M1 Juntion 15	
1/1	1078
1/2	1079
1/3	823
1/4	823
2/1 (short)	85
2/2 (with short)	250(In) 165(Out)
3/1	73
3/2	157
3/3	264
4/1	1044
4/2	859
4/3	952
5/1	681
5/2	896
5/3	895
6/1	641
6/2 (with short)	972(In) 671(Out)
6/3 (short)	301
7/1	558
7/2 (with short)	1102(In) 551(Out)
7/3 (short)	551
8/1	436
8/2 (with short)	687(In) 344(Out)
8/3 (short)	343
9/1	1004
9/2	998
10/1	1322
10/2	1567
10/3	702
11/1	230
11/2	157
12/1	996
12/2	309
13/1	1164
14/1	1004
14/2	998

Full Input Data And Results

15/1	963
15/2	1301
15/3	823
15/4	823
16/1	1297
16/2	1502
16/3	552

Full Input Data And Results

Lane Saturation Flows

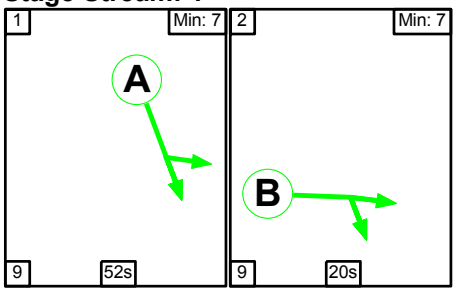
Junction: M1 Juntion 15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 London Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 London Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 London Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 London Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Saxon Avenue Lane 1)	This lane uses a directly entered Saturation Flow						1600	1600
2/2 (Saxon Avenue Lane 2)	This lane uses a directly entered Saturation Flow						1600	1600
3/1 (Lights North circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
3/2 (Lights North circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
3/3 (Lights North circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
4/1 (Lights South circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
4/2 (Lights South circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
4/3 (Lights South circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
5/1 (Lights East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Lights East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
5/3 (Lights East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (M1 J15 Southbound exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
6/2 (M1 J15 Southbound exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
6/3 (M1 J15 Southbound exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
7/1 (M1 J15 Northbound Exit Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 J15 Northbound Exit Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 J15 Northbound Exit Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (A508 Northampton Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
8/2 (A508 Northampton Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800

8/3 (A508 Northampton Road Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
9/1 (M1 J15 Northbound entry Lane 1)	This lane uses a directly entered Saturation Flow	1600	1600
9/2 (M1 J15 Northbound entry Lane 2)	This lane uses a directly entered Saturation Flow	1600	1600
10/1 (A45 London Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (A45 London Road Lane 2)	Infinite Saturation Flow	Inf	Inf
10/3 (A45 London Road Lane 3)	Infinite Saturation Flow	Inf	Inf
11/1 (Saxon Avenue Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (Saxon Avenue Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (M1 J15 Southbound entry Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (M1 J15 Southbound entry Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (A508 Northampton Road Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1	Infinite Saturation Flow	Inf	Inf
14/2	Infinite Saturation Flow	Inf	Inf
15/1	Infinite Saturation Flow	Inf	Inf
15/2	Infinite Saturation Flow	Inf	Inf
15/3	Infinite Saturation Flow	Inf	Inf
15/4	Infinite Saturation Flow	Inf	Inf
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')
C1

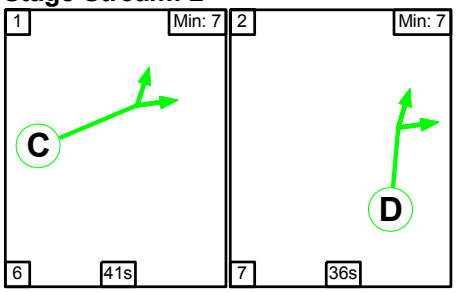
Stage Sequence Diagram

Stage Stream: 1



Full Input Data And Results

Stage Stream: 2



Stage Timings

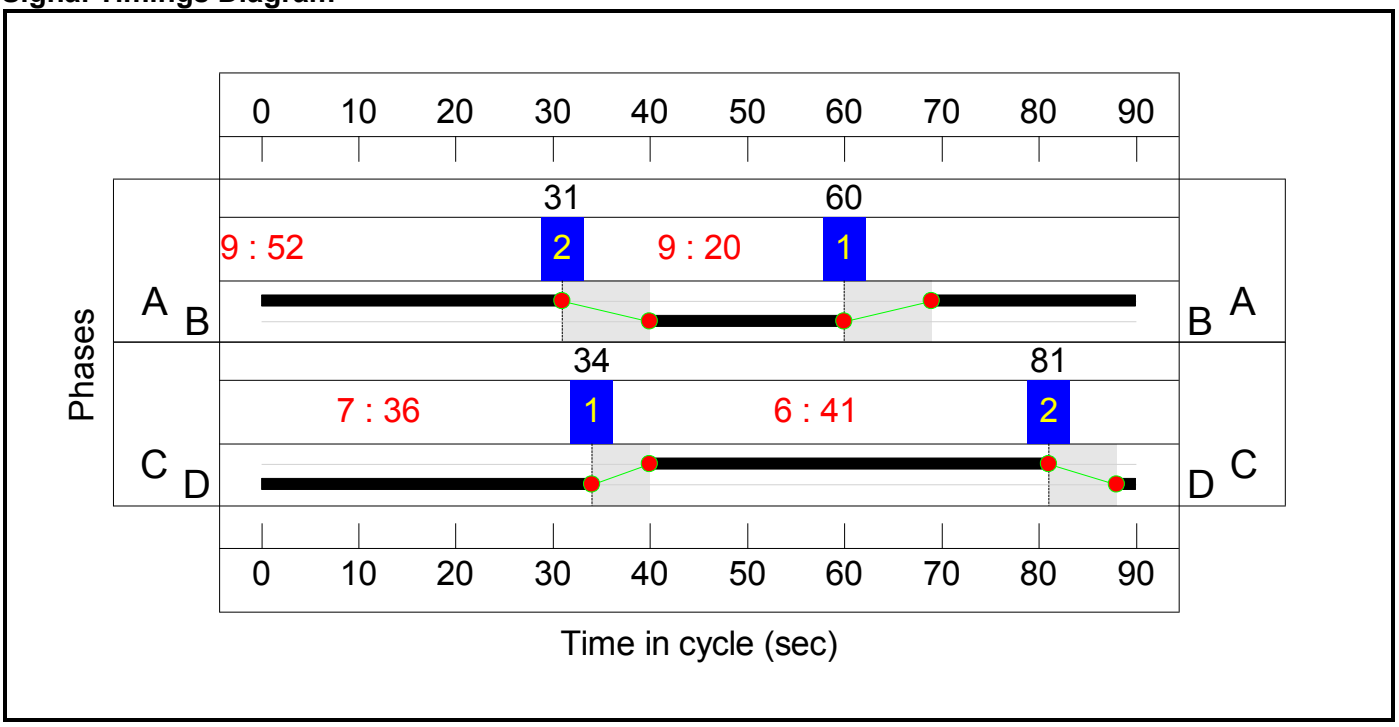
Stage Stream: 1

Stage	1	2
Duration	52	20
Change Point	60	31

Stage Stream: 2

Stage	1	2
Duration	41	36
Change Point	34	81

Signal Timings Diagram

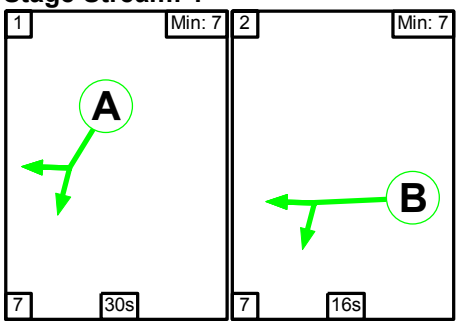


Full Input Data And Results

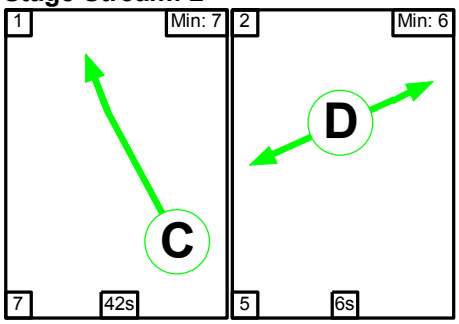
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

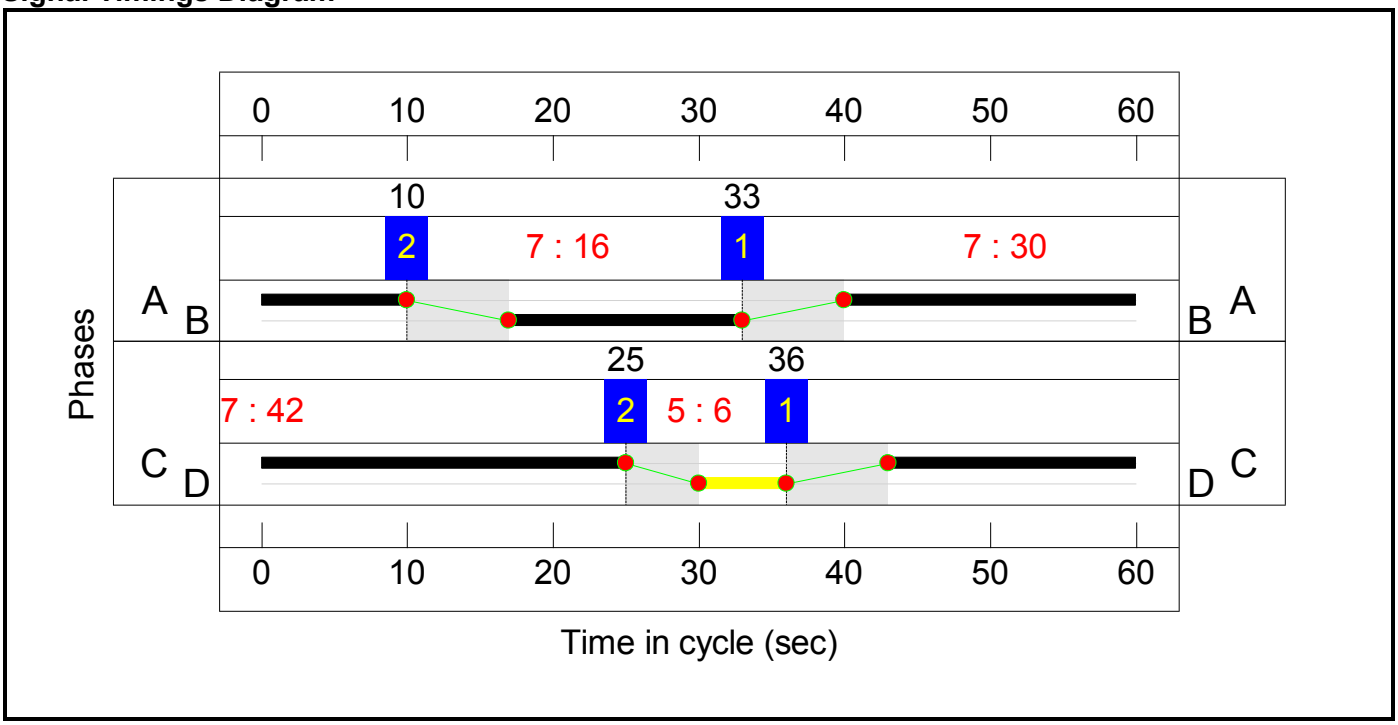
Stage	1	2
Duration	30	16
Change Point	33	10

Stage Stream: 2

Stage	1	2
Duration	42	6
Change Point	36	25

Full Input Data And Results

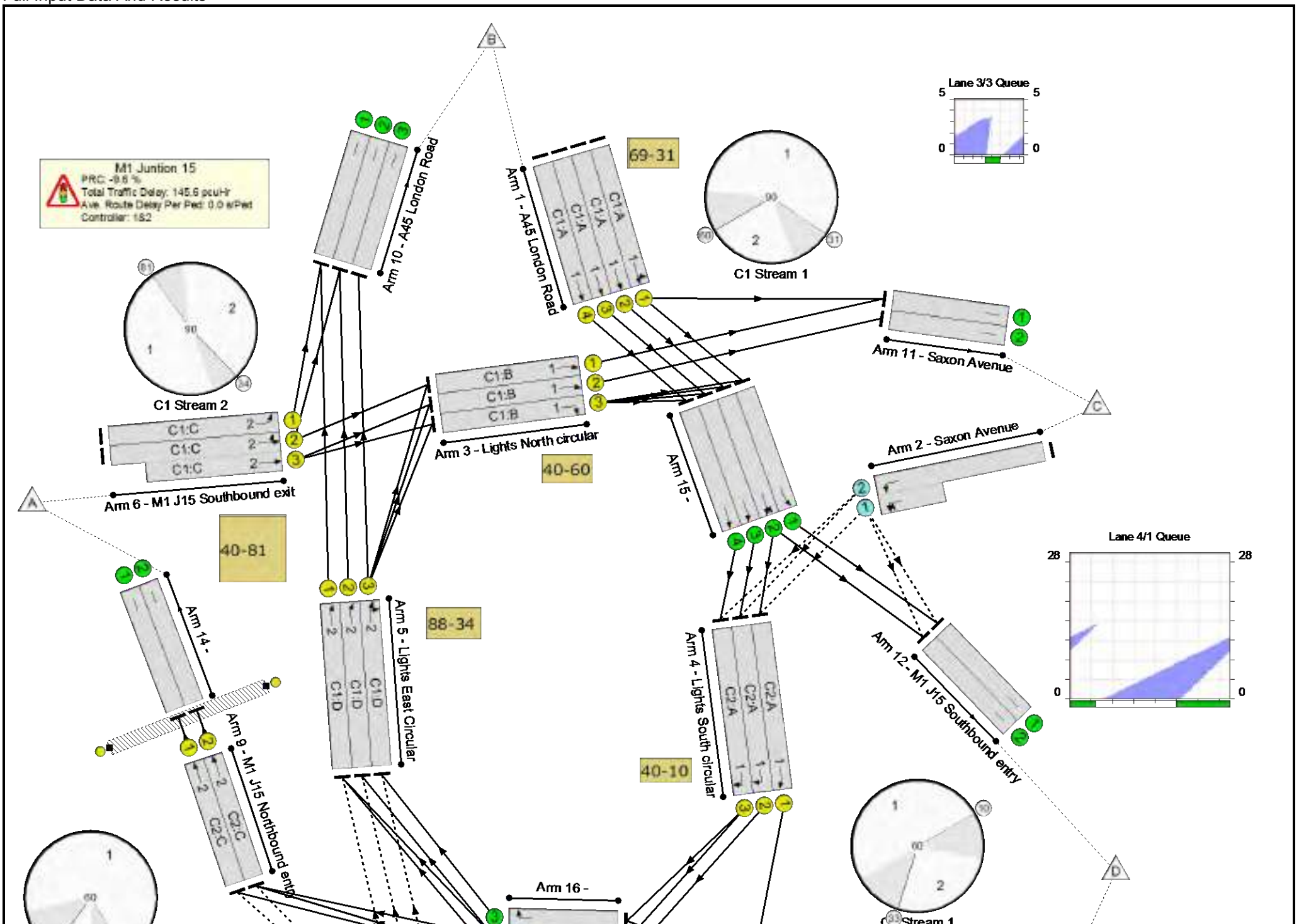
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.7%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.7%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	52	-	1046	1800	1060	98.7%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	52	-	1046	1800	1060	98.7%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	52	-	783	1800	1060	73.9%
1/4	A45 London Road Ahead	U	1:1	N/A	C1:A		1	52	-	783	1800	1060	73.9%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	131	1600:1600	101+300	32.7 : 32.7%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	20	-	105	1900	443	23.7%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	20	-	159	1900	443	35.9%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	20	-	289	1900	443	65.2%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	30	-	960	1900	982	97.8%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	30	-	798	1900	982	81.3%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	30	-	801	1900	982	81.6%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	36	-	494	1900	781	63.2%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	36	-	654	1900	781	83.7%
5/3	Lights East Circular Right Ahead	U	1:2	N/A	C1:D		1	36	-	653	1900	781	83.6%

Full Input Data And Results

6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	41	-	777	1800	840	92.5%
6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	41	-	1089	1800:1800	804+342	95.1 : 95.1%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	16	-	499	1800	510	97.8%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	16	-	923	1800:1800	510+510	91.6 : 89.4%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	228	1800	306	74.4%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	379	1800:1800	252+252	73.0 : 77.4%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	872	1600	1147	76.0%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	864	1600	1147	75.3%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1271	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1418	Inf	Inf	0.0%
10/3	A45 London Road	U	N/A	N/A	-		-	-	-	425	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	200	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	159	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1051	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	872	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	864	Inf	Inf	0.0%

Full Input Data And Results

15/1	Ahead	U	N/A	N/A	-		-	-	-	981	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1305	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%
15/4	Ahead	U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%
16/1	Right Right2	U	N/A	N/A	-		-	-	-	1206	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1266	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	458	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1248**	**0**	**0**	**62.1**	**83.5**	**0.0**	**145.6**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1248**	**0**	**0**	**62.1**	**83.5**	**0.0**	**145.6**	**-**	**-**	**-**	**-**
1/1	1046	1046	-	-	-	5.3	13.0	-	18.3	63.1	25.6	13.0	38.6
1/2	1046	1046	-	-	-	5.3	13.0	-	18.3	63.1	25.6	13.0	38.6
1/3	783	783	-	-	-	2.9	1.4	-	4.3	19.9	14.1	1.4	15.5
1/4	783	783	-	-	-	2.9	1.4	-	4.3	19.9	14.1	1.4	15.5
2/2+2/1	131	131	262	0	0	0.6	0.2	-	0.9	24.4	1.6	0.2	1.9
3/1	105	105	-	-	-	0.7	0.2	-	0.8	28.6	2.6	0.2	2.8
3/2	159	159	-	-	-	0.9	0.3	-	1.2	26.5	2.3	0.3	2.6
3/3	289	289	-	-	-	1.6	0.9	-	2.5	31.1	3.4	0.9	4.3
4/1	960	960	-	-	-	3.8	11.0	-	14.8	55.4	15.5	11.0	26.5
4/2	798	798	-	-	-	2.7	2.1	-	4.8	21.7	11.1	2.1	13.2
4/3	801	801	-	-	-	2.7	2.2	-	4.9	21.8	11.1	2.2	13.3
5/1	494	494	-	-	-	2.9	0.9	-	3.7	27.3	9.7	0.9	10.6
5/2	654	654	-	-	-	4.3	2.5	-	6.8	37.4	14.5	2.5	17.0
5/3	653	653	-	-	-	4.3	2.5	-	6.8	37.3	14.5	2.5	17.0
6/1	777	777	-	-	-	4.9	5.3	-	10.1	47.0	18.1	5.3	23.4
6/2+6/3	1089	1089	-	-	-	6.1	7.6	-	13.7	45.3	17.7	7.6	25.3
7/1	499	499	-	-	-	3.0	8.8	-	11.7	84.5	8.2	8.8	16.9
7/2+7/3	923	923	-	-	-	5.3	4.4	-	9.7	37.8	7.5	4.4	11.9
8/1	228	228	228	0	0	0.5	1.4	-	1.9	30.1	2.0	1.4	3.4
8/2+8/3	379	379	758	0	0	0.9	1.5	-	2.4	23.0	1.7	1.5	3.2
9/1	872	872	-	-	-	0.3	1.6	-	1.9	7.8	12.5	1.6	14.1
9/2	864	864	-	-	-	0.2	1.5	-	1.7	7.1	10.8	1.5	12.3
10/1	1271	1271	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1418	1418	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

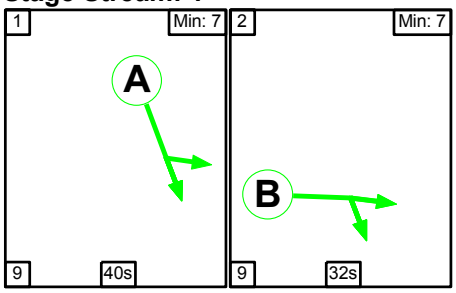
10/3	425	425	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	159	159	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1051	1051	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	981	981	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1305	1305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/4	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1206	1206	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1266	1266	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	458	458	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-9.6	Total Delay for Signalled Lanes (pcuHr):	49.80	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-5.6	Total Delay for Signalled Lanes (pcuHr):	41.17	Cycle Time (s):	90		
C2	Stream: 1 PRC for Signalled Lanes (%):	-8.7	Total Delay for Signalled Lanes (pcuHr):	45.82	Cycle Time (s):	60		
C2	Stream: 2 PRC for Signalled Lanes (%):	18.3	Total Delay for Signalled Lanes (pcuHr):	3.59	Cycle Time (s):	60		
	PRC Over All Lanes (%):	-9.6	Total Delay Over All Lanes(pcuHr):	145.60				

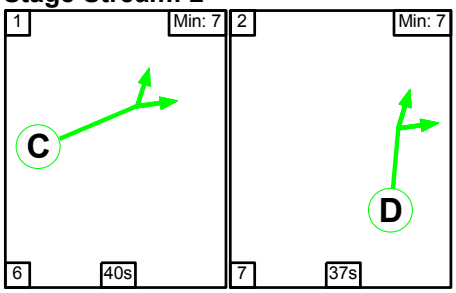
Full Input Data And Results
Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

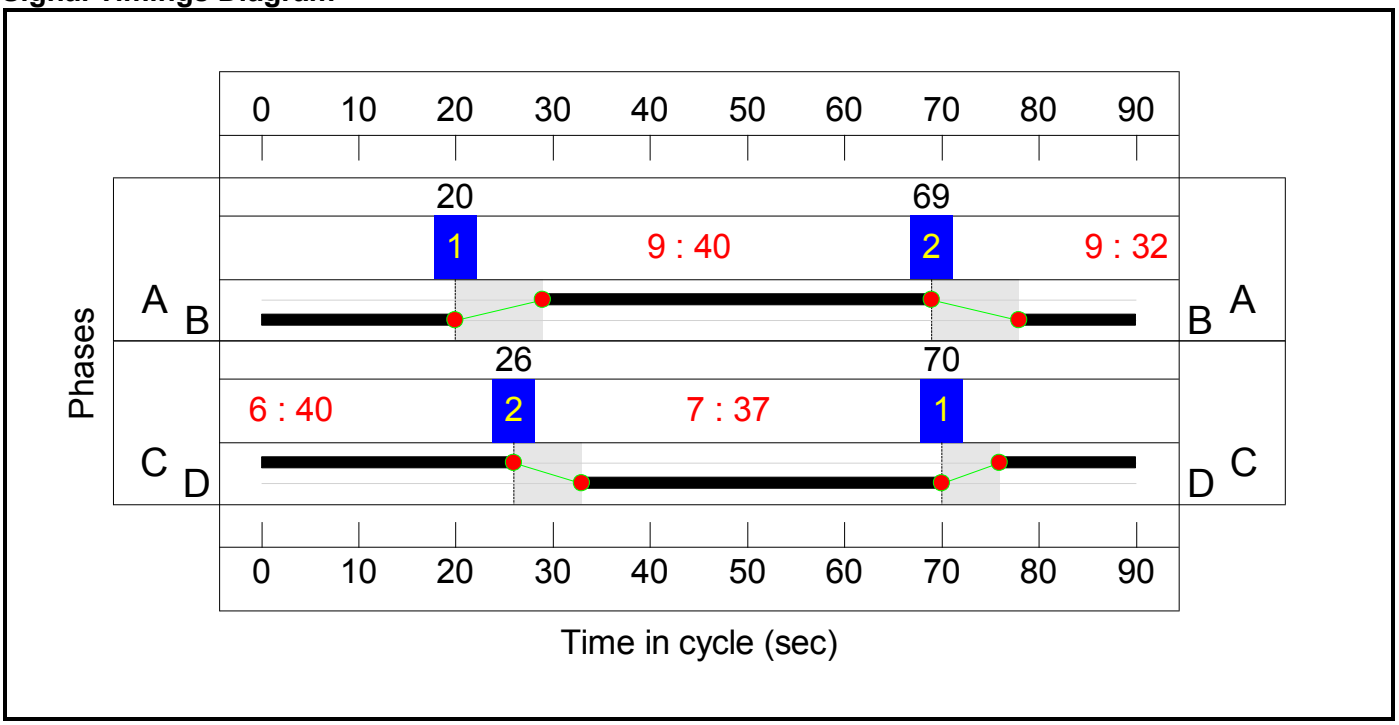
Stage Stream: 1

Stage	1	2
Duration	40	32
Change Point	20	69

Stage Stream: 2

Stage	1	2
Duration	40	37
Change Point	70	26

Signal Timings Diagram

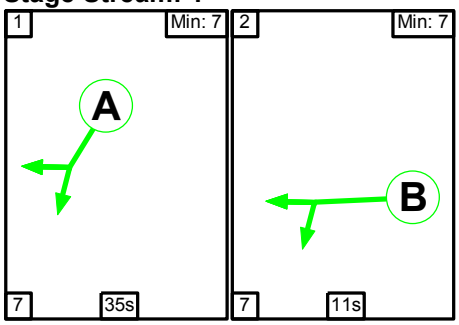


Full Input Data And Results

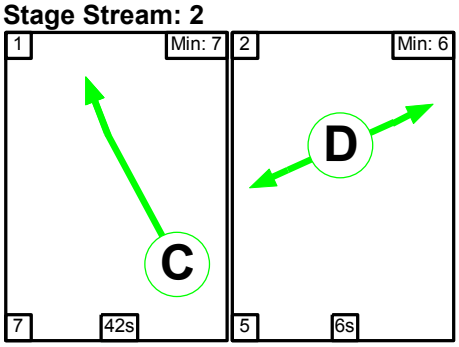
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

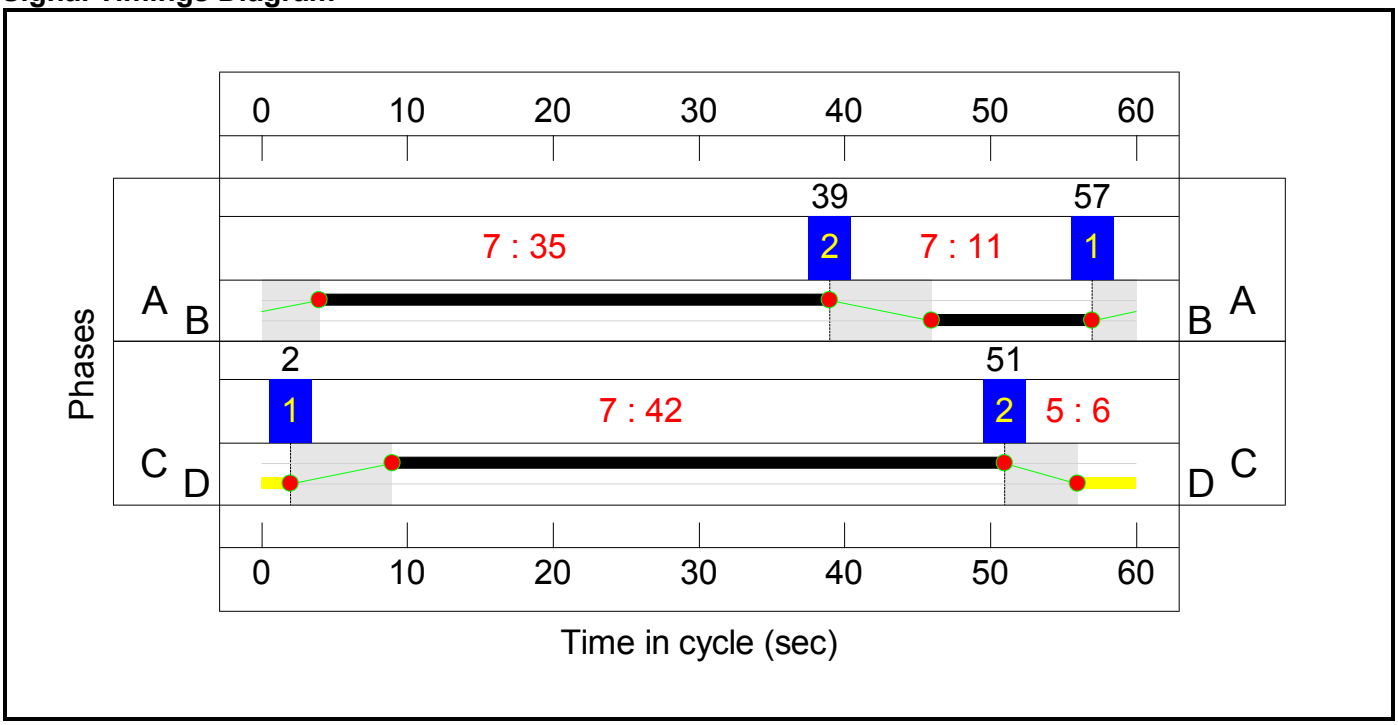
Stage	1	2
Duration	35	11
Change Point	57	39

Stage Stream: 2

Stage	1	2
Duration	42	6
Change Point	2	51

Full Input Data And Results

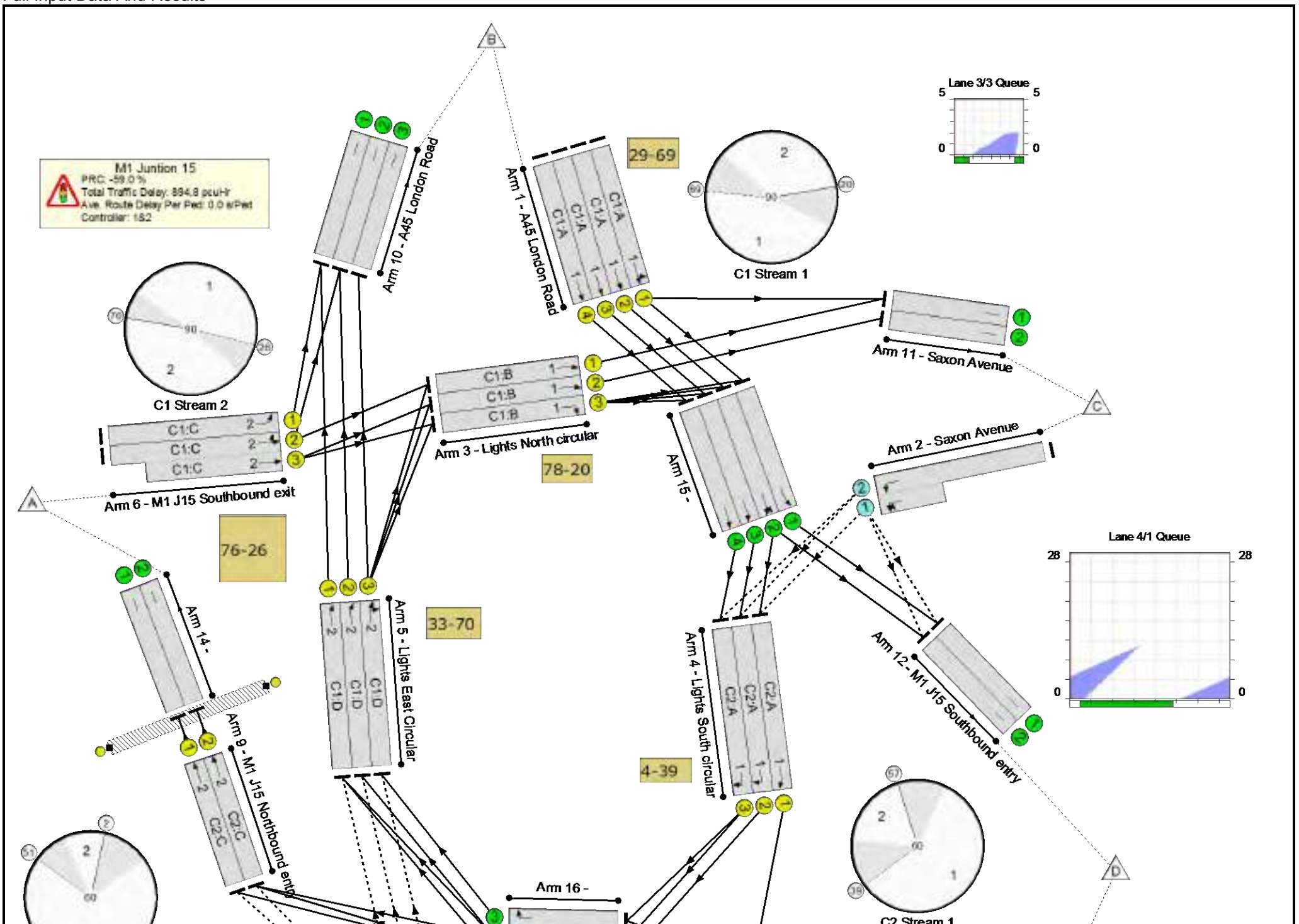
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**143.1%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**143.1%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	40	-	1152	1800	820	140.5%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	40	-	1153	1800	820	140.6%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	40	-	859	1800	820	104.8%
1/4	A45 London Road Ahead	U	1:1	N/A	C1:A		1	40	-	858	1800	820	104.6%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	234	1600:1600	434+234	35.1 : 35.1%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	32	-	57	1900	697	6.0%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	32	-	139	1900	697	18.3%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	32	-	282	1900	697	37.3%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	35	-	1148	1900	1140	77.3%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	35	-	881	1900	1140	73.9%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	35	-	988	1900	1140	83.3%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	37	-	608	1900	802	60.1%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	37	-	832	1900	802	76.1%
5/3	Lights East Circular Right Ahead	U	1:2	N/A	C1:D		1	37	-	836	1900	802	76.1%

Full Input Data And Results

6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	40	-	649	1800	820	79.1%
6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	40	-	969	1800:1800	788+358	84.5 : 84.5%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	11	-	482	1800	360	133.9%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	11	-	964	1800:1800	360+360	133.9 : 133.9%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	475	1800	332	143.1%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	704	1800:1800	251+251	139.5 : 141.1%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	1059	1600	1147	84.3%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	1059	1600	1147	83.8%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1257	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1498	Inf	Inf	0.0%
10/3	A45 London Road	U	N/A	N/A	-		-	-	-	661	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	217	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	139	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	1063	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	298	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1248	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1059	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1059	Inf	Inf	0.0%

Full Input Data And Results

15/1	Ahead	U	N/A	N/A	-		-	-	-	1030	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1397	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	859	Inf	Inf	0.0%
15/4	Ahead	U	N/A	N/A	-		-	-	-	858	Inf	Inf	0.0%
16/1	Right Right2	U	N/A	N/A	-		-	-	-	1263	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1470	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	482	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1803**	**0**	**0**	**122.0**	**772.8**	**0.0**	**894.8**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1803**	**0**	**0**	**122.0**	**772.8**	**0.0**	**894.8**	**-**	**-**	**-**	**-**
1/1	1152	820	-	-	-	22.3	167.7	-	190.0	593.7	39.6	167.7	207.4
1/2	1153	820	-	-	-	22.3	168.2	-	190.6	595.0	39.7	168.2	207.9
1/3	859	820	-	-	-	7.2	27.4	-	34.6	145.0	22.4	27.4	49.8
1/4	858	820	-	-	-	7.2	27.0	-	34.2	143.3	22.4	27.0	49.4
2/2+2/1	234	234	468	0	0	0.8	0.3	-	1.0	16.0	2.2	0.3	2.5
3/1	42	42	-	-	-	0.3	0.0	-	0.3	28.2	1.0	0.0	1.1
3/2	127	127	-	-	-	0.4	0.1	-	0.5	15.0	1.1	0.1	1.2
3/3	260	260	-	-	-	0.8	0.3	-	1.1	15.4	2.2	0.3	2.5
4/1	881	881	-	-	-	2.2	1.7	-	3.9	15.8	10.8	1.7	12.4
4/2	842	842	-	-	-	2.0	1.4	-	3.4	14.6	10.1	1.4	11.5
4/3	950	950	-	-	-	2.5	2.4	-	5.0	18.8	12.7	2.4	15.1
5/1	482	482	-	-	-	2.7	0.8	-	3.4	25.7	9.2	0.8	10.0
5/2	611	611	-	-	-	3.8	1.6	-	5.3	31.4	12.9	1.6	14.5
5/3	611	611	-	-	-	3.8	1.6	-	5.3	31.4	12.9	1.6	14.5
6/1	649	649	-	-	-	3.8	1.9	-	5.6	31.2	13.7	1.9	15.6
6/2+6/3	969	969	-	-	-	5.3	2.7	-	7.9	29.4	14.2	2.7	16.9
7/1	482	360	-	-	-	7.5	62.9	-	70.4	525.9	12.1	62.9	75.0
7/2+7/3	964	720	-	-	-	10.9	123.9	-	134.9	503.7	10.1	123.9	134.0
8/1	475	332	332	0	0	6.4	73.2	-	79.5	602.8	23.7	73.2	96.9
8/2+8/3	704	502	1003	0	0	9.3	102.8	-	112.1	573.5	16.2	102.8	119.1
9/1	966	966	-	-	-	0.4	2.6	-	3.0	11.0	11.2	2.6	13.8
9/2	961	961	-	-	-	0.1	2.5	-	2.7	10.0	9.0	2.5	11.5
10/1	1131	1131	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1277	1277	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

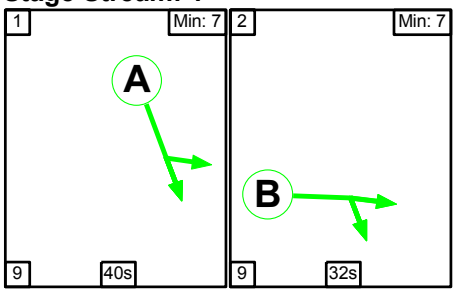
10/3	485	485	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	155	155	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	127	127	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	221	221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	956	956	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	966	966	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	961	961	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	733	733	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1053	1053	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	820	820	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/4	820	820	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1127	1127	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1310	1310	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	360	360	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-56.2	Total Delay for Signalled Lanes (pcuHr):	451.27	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	6.5	Total Delay for Signalled Lanes (pcuHr):	27.64	Cycle Time (s):	90
C2	Stream: 1 PRC for Signalled Lanes (%):	-48.8	Total Delay for Signalled Lanes (pcuHr):	217.55	Cycle Time (s):	60
C2	Stream: 2 PRC for Signalled Lanes (%):	6.8	Total Delay for Signalled Lanes (pcuHr):	5.63	Cycle Time (s):	60
	PRC Over All Lanes (%):	-59.0	Total Delay Over All Lanes(pcuHr):	894.81		

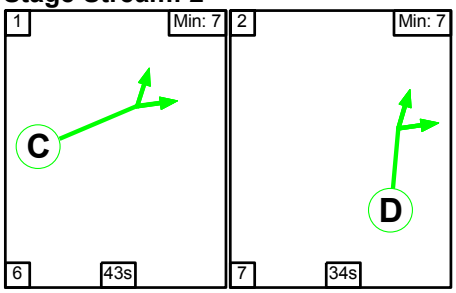
Full Input Data And Results
Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

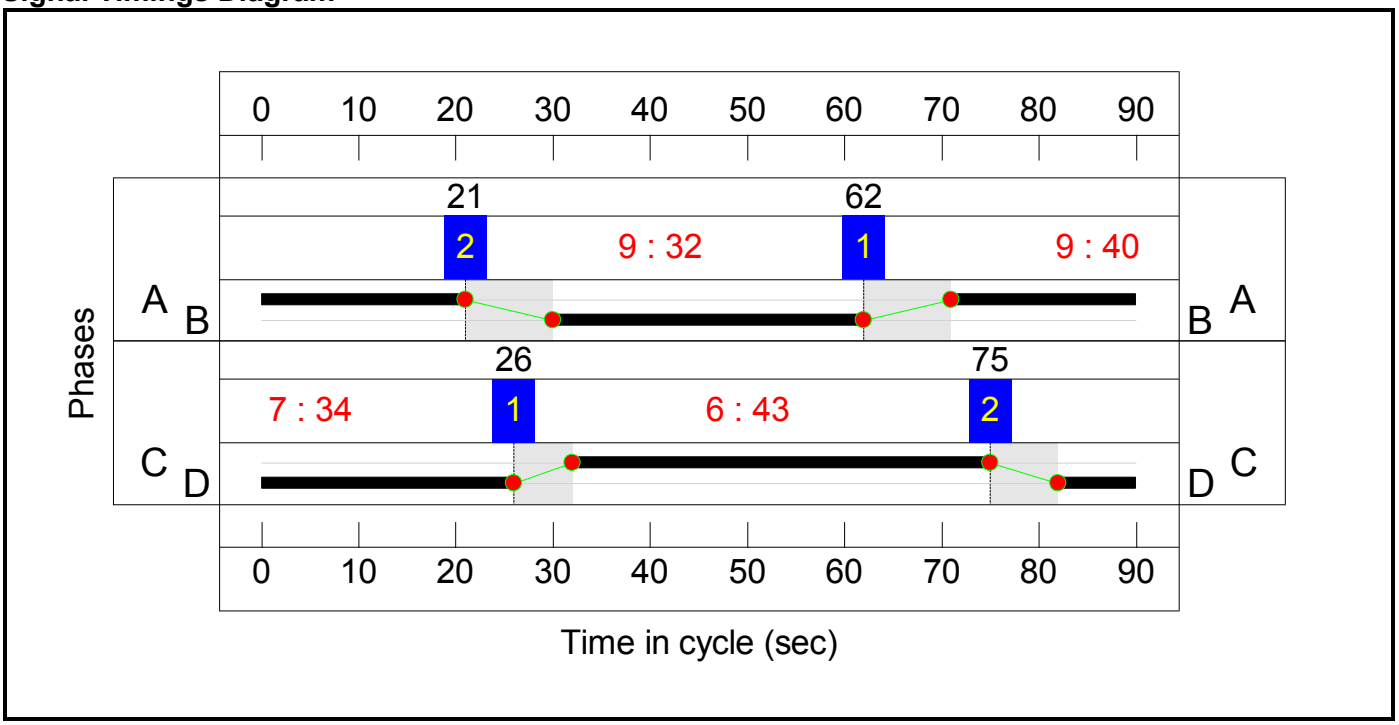
Stage Stream: 1

Stage	1	2
Duration	40	32
Change Point	62	21

Stage Stream: 2

Stage	1	2
Duration	43	34
Change Point	26	75

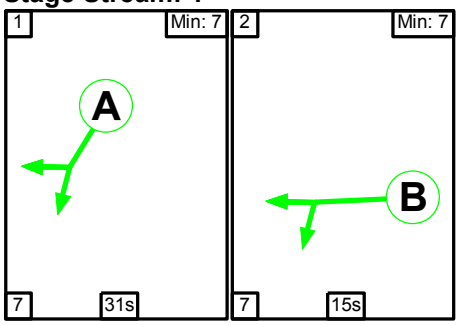
Signal Timings Diagram



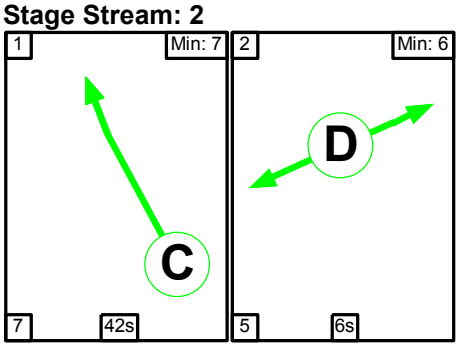
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

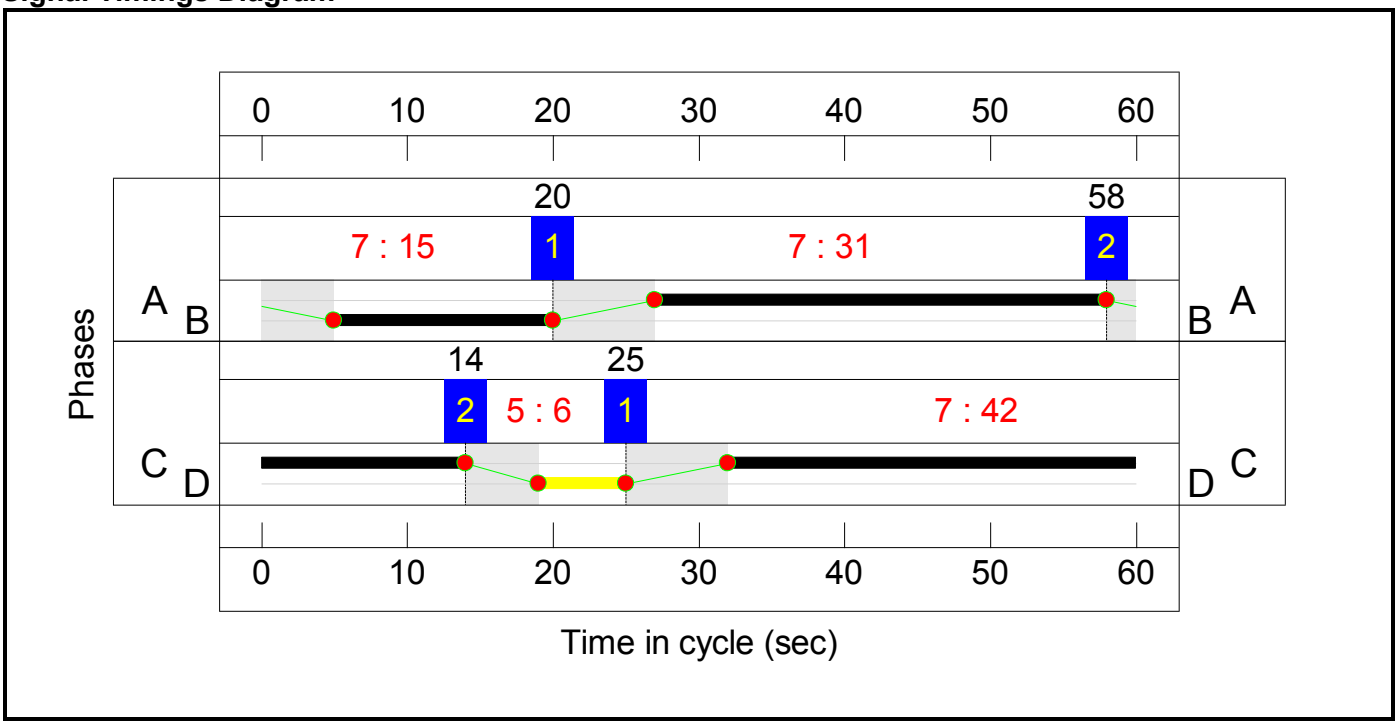
Stage	1	2
Duration	31	15
Change Point	20	58

Stage Stream: 2

Stage	1	2
Duration	42	6
Change Point	25	14

Full Input Data And Results

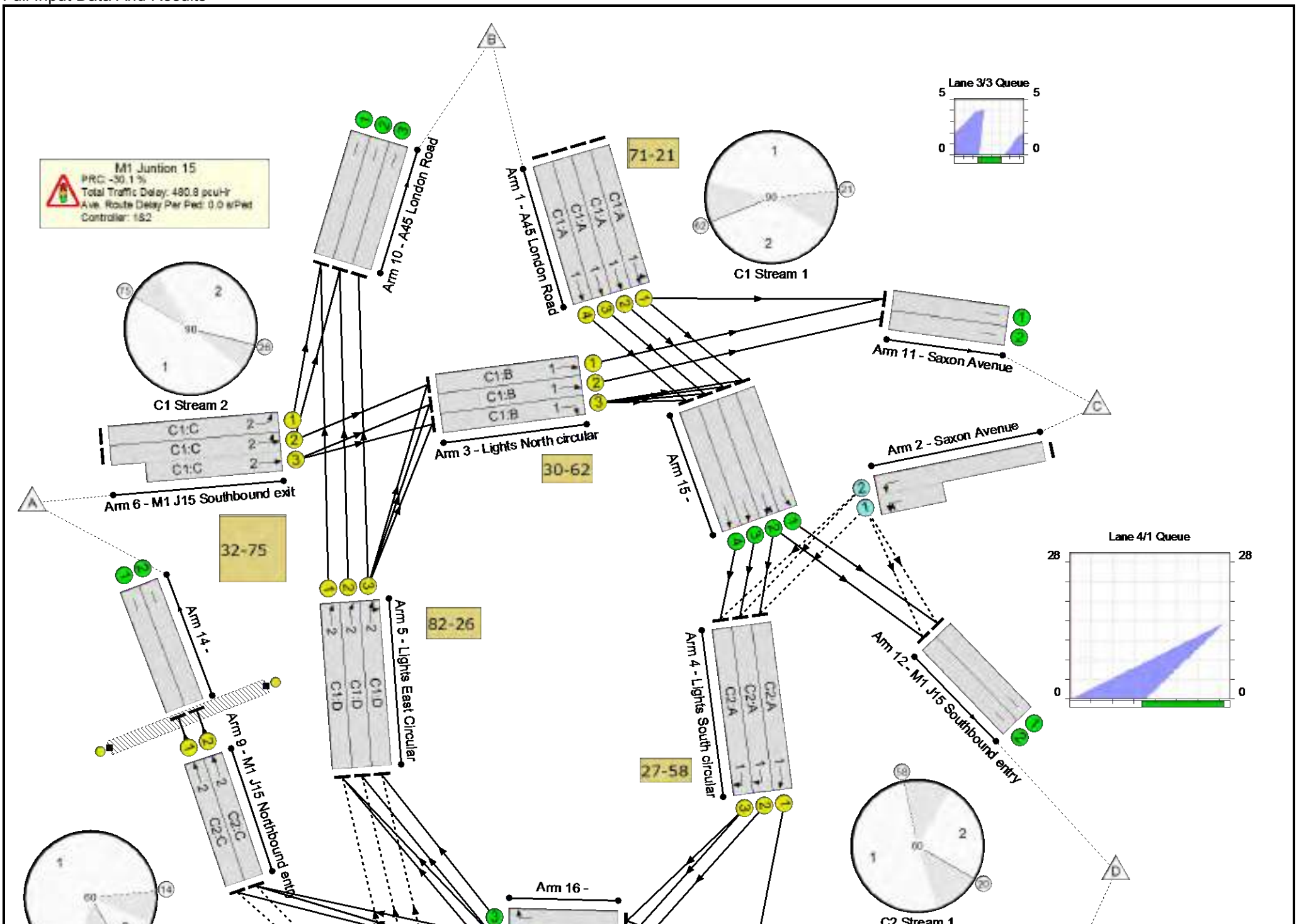
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.1%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.1%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	40	-	933	1800	820	113.8%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	40	-	933	1800	820	113.8%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	40	-	959	1800	820	117.0%
1/4	A45 London Road Ahead	U	1:1	N/A	C1:A		1	40	-	960	1800	820	117.1%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	125	1600:1600	95+380	26.3 : 26.3%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	32	-	89	1900	697	12.4%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	32	-	222	1900	697	31.5%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	32	-	435	1900	697	60.8%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	31	-	1062	1900	1013	96.2%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	31	-	968	1900	1013	81.8%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	31	-	976	1900	1013	82.5%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	34	-	552	1900	739	70.1%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	34	-	684	1900	739	89.5%
5/3	Lights East Circular Right Ahead	U	1:2	N/A	C1:D		1	34	-	682	1900	739	87.5%

Full Input Data And Results

6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	43	-	823	1800	880	93.5%
6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	43	-	1286	1800:1800	816+507	97.2 : 97.2%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	15	-	512	1800	480	106.7%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	15	-	777	1800:1800	480+480	82.9 : 79.0%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	314	1800	300	104.8%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	566	1800:1800	255+255	108.5 : 113.2%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	1049	1600	1147	79.0%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	1057	1600	1147	80.0%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1375	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1474	Inf	Inf	0.0%
10/3	A45 London Road	U	N/A	N/A	-		-	-	-	432	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	176	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	222	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	941	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	311	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1151	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1049	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1057	Inf	Inf	0.0%

Full Input Data And Results

15/1	Ahead	U	N/A	N/A	-		-	-	-	895	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1319	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	959	Inf	Inf	0.0%
15/4	Ahead	U	N/A	N/A	-		-	-	-	960	Inf	Inf	0.0%
16/1	Right Right2	U	N/A	N/A	-		-	-	-	1391	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1360	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	393	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1571**	**0**	**0**	**101.3**	**379.5**	**0.0**	**480.8**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1571**	**0**	**0**	**101.3**	**379.5**	**0.0**	**480.8**	**-**	**-**	**-**	**-**
1/1	933	820	-	-	-	11.9	60.4	-	72.3	278.9	26.2	60.4	86.5
1/2	933	820	-	-	-	11.9	60.4	-	72.3	278.9	26.2	60.4	86.5
1/3	959	820	-	-	-	13.4	72.8	-	86.2	323.4	27.5	72.8	100.2
1/4	960	820	-	-	-	13.4	73.3	-	86.7	325.1	27.5	73.3	100.8
2/2+2/1	125	125	250	0	0	0.4	0.2	-	0.6	16.4	1.3	0.2	1.5
3/1	86	86	-	-	-	0.5	0.1	-	0.5	22.1	2.1	0.1	2.2
3/2	220	220	-	-	-	0.8	0.2	-	1.0	17.2	2.5	0.2	2.7
3/3	424	424	-	-	-	1.5	0.8	-	2.3	19.7	4.0	0.8	4.8
4/1	975	975	-	-	-	3.6	8.8	-	12.4	45.8	15.4	8.8	24.2
4/2	829	829	-	-	-	2.7	2.2	-	4.9	21.1	11.3	2.2	13.5
4/3	836	836	-	-	-	2.7	2.3	-	5.0	21.6	11.6	2.3	13.9
5/1	518	518	-	-	-	3.3	1.2	-	4.5	31.2	10.8	1.2	11.9
5/2	661	661	-	-	-	4.7	3.9	-	8.6	46.8	15.4	3.9	19.3
5/3	646	646	-	-	-	4.6	3.3	-	7.8	43.6	14.9	3.3	18.2
6/1	823	823	-	-	-	5.0	6.0	-	10.9	47.8	19.2	6.0	25.2
6/2+6/3	1286	1286	-	-	-	6.9	10.9	-	17.8	49.8	19.2	10.9	30.1
7/1	512	480	-	-	-	4.1	21.9	-	25.9	182.3	9.1	21.9	30.9
7/2+7/3	777	777	-	-	-	4.4	2.1	-	6.5	30.2	6.2	2.1	8.3
8/1	314	300	300	0	0	1.4	13.1	-	14.5	166.4	14.6	13.1	27.7
8/2+8/3	566	511	1021	0	0	3.6	32.1	-	35.7	227.1	13.5	32.1	45.6
9/1	906	906	-	-	-	0.3	1.9	-	2.2	8.8	12.9	1.9	14.8
9/2	918	918	-	-	-	0.2	2.0	-	2.2	8.6	12.0	2.0	14.0
10/1	1341	1341	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1451	1451	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

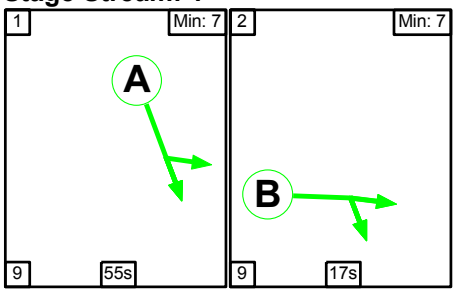
10/3	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	163	163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	833	833	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	279	279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1059	1059	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	918	918	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	787	787	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1200	1200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	820	820	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/4	820	820	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1226	1226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1222	1222	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-30.1	Total Delay for Signalled Lanes (pcuHr):	321.28	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	49.62	Cycle Time (s):	90		
C2	Stream: 1 PRC for Signalled Lanes (%):	-18.5	Total Delay for Signalled Lanes (pcuHr):	54.72	Cycle Time (s):	60		
C2	Stream: 2 PRC for Signalled Lanes (%):	12.5	Total Delay for Signalled Lanes (pcuHr):	4.40	Cycle Time (s):	60		
	PRC Over All Lanes (%):	-30.1	Total Delay Over All Lanes(pcuHr):	480.81				

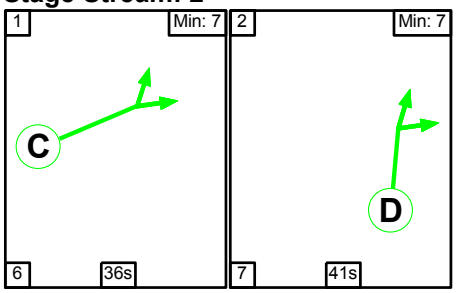
Full Input Data And Results
Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

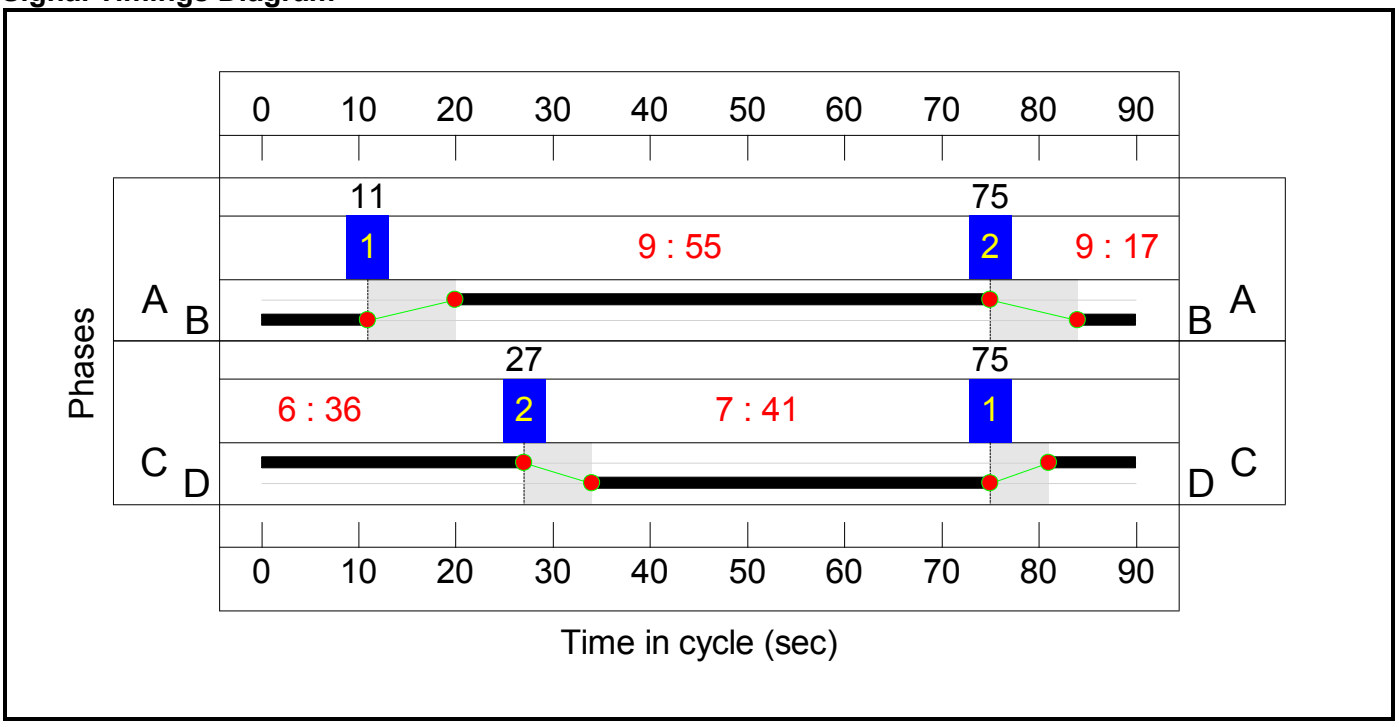
Stage Stream: 1

Stage	1	2
Duration	55	17
Change Point	11	75

Stage Stream: 2

Stage	1	2
Duration	36	41
Change Point	75	27

Signal Timings Diagram

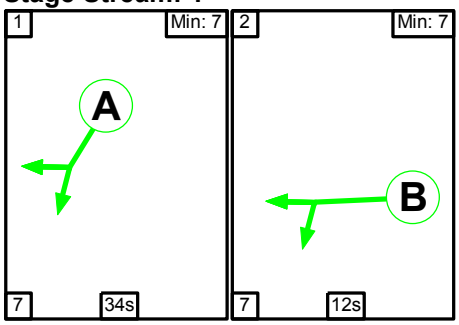


Full Input Data And Results

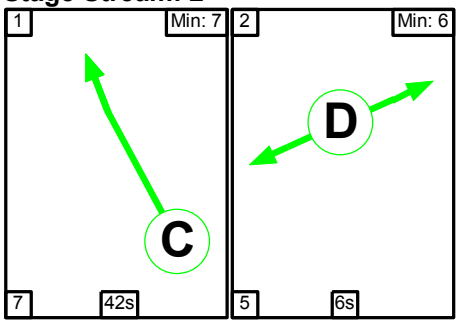
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

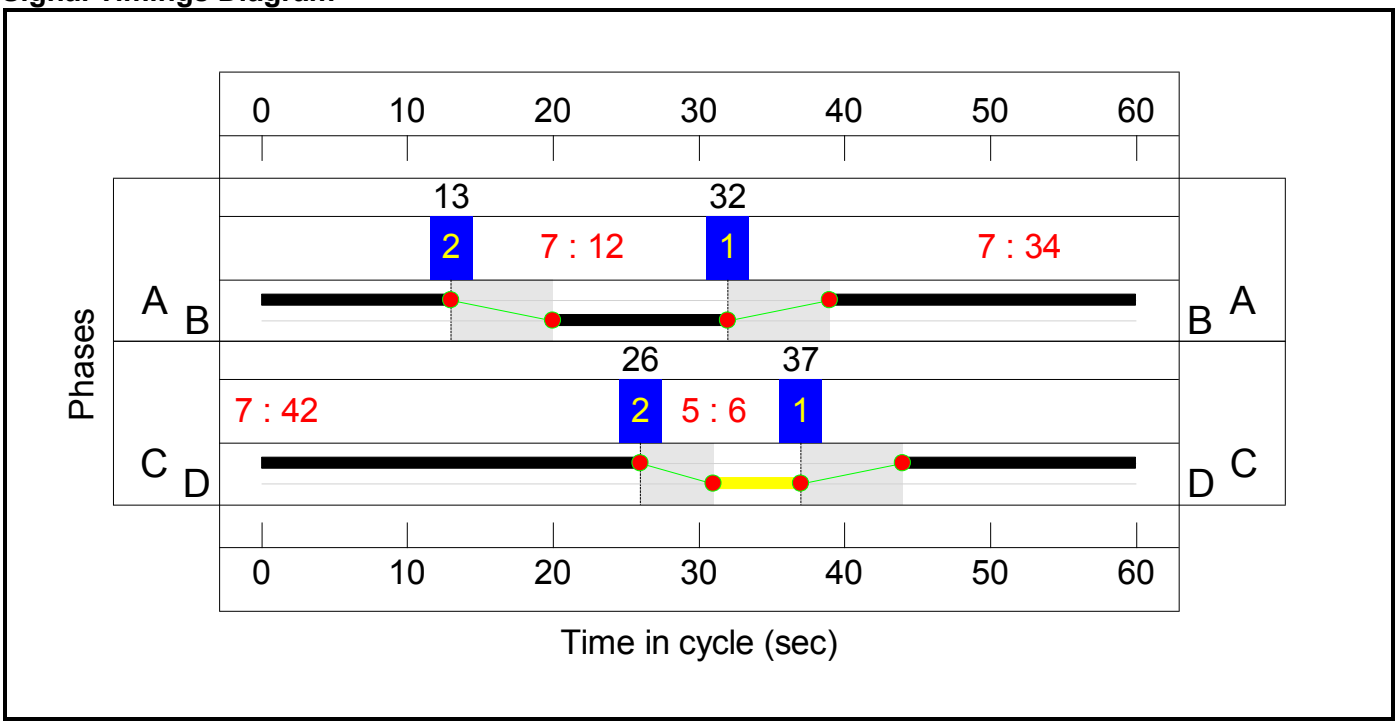
Stage	1	2
Duration	34	12
Change Point	32	13

Stage Stream: 2

Stage	1	2
Duration	42	6
Change Point	37	26

Full Input Data And Results

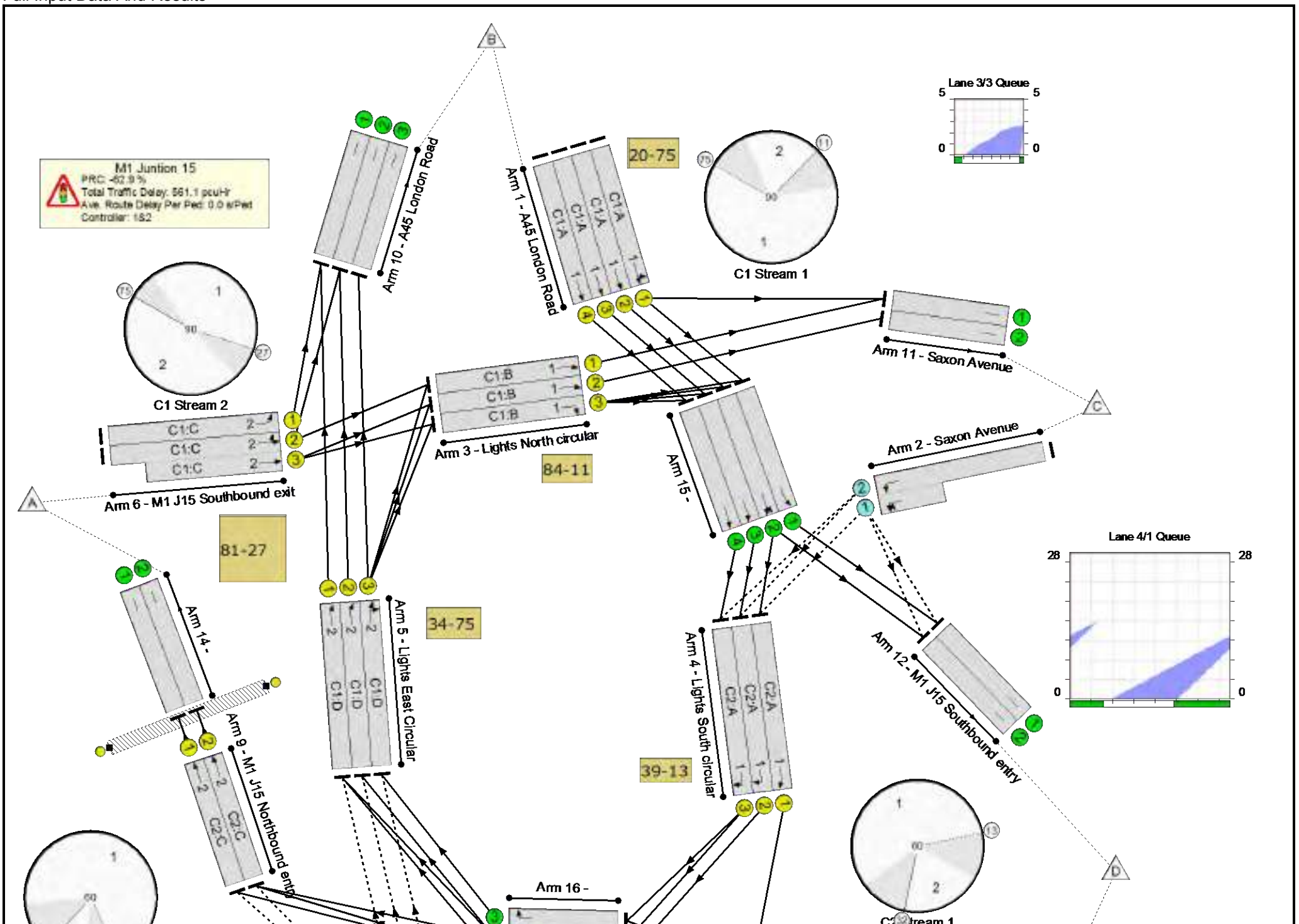
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**146.6%**
M1 Juntion 15	-	-	**N/A**	-	-		-	-	-	-	-	-	**146.6%**
1/1	A45 London Road Left Ahead	U	1:1	N/A	C1:A		1	55	-	1078	1800	1120	96.3%
1/2	A45 London Road Ahead	U	1:1	N/A	C1:A		1	55	-	1079	1800	1120	96.3%
1/3	A45 London Road Ahead	U	1:1	N/A	C1:A		1	55	-	823	1800	1120	73.5%
1/4	A45 London Road Ahead	U	1:1	N/A	C1:A		1	55	-	823	1800	1120	73.5%
2/2+2/1	Saxon Avenue Left Left2	O	N/A	N/A	-		-	-	-	250	1600:1600	285+147	57.9 : 57.9%
3/1	Lights North circular Ahead	U	1:1	N/A	C1:B		1	17	-	73	1900	380	13.4%
3/2	Lights North circular Ahead	U	1:1	N/A	C1:B		1	17	-	157	1900	380	38.4%
3/3	Lights North circular Right	U	1:1	N/A	C1:B		1	17	-	264	1900	380	62.6%
4/1	Lights South circular Ahead	U	2:1	N/A	C2:A		1	34	-	1044	1900	1108	94.2%
4/2	Lights South circular Right	U	2:1	N/A	C2:A		1	34	-	859	1900	1108	77.5%
4/3	Lights South circular Right	U	2:1	N/A	C2:A		1	34	-	952	1900	1108	85.9%
5/1	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	41	-	681	1900	887	58.8%
5/2	Lights East Circular Ahead	U	1:2	N/A	C1:D		1	41	-	896	1900	887	70.6%
5/3	Lights East Circular Right Ahead	U	1:2	N/A	C1:D		1	41	-	895	1900	887	70.6%

Full Input Data And Results

6/1	M1 J15 Southbound exit Left	U	1:2	N/A	C1:C		1	36	-	641	1800	740	86.6%
6/2+6/3	M1 J15 Southbound exit Ahead Left	U	1:2	N/A	C1:C		1	36	-	972	1800:1800	733+329	91.5 : 91.5%
7/1	M1 J15 Northbound Exit Left Ahead	U	2:1	N/A	C2:B		1	12	-	558	1800	390	143.1%
7/2+7/3	M1 J15 Northbound Exit Ahead	U	2:1	N/A	C2:B		1	12	-	1102	1800:1800	390+390	141.3 : 141.3%
8/1	A508 Northampton Road Ahead Ahead2	O	N/A	N/A	-		-	-	-	436	1800	305	143.1%
8/2+8/3	A508 Northampton Road Ahead	O	N/A	N/A	-		-	-	-	687	1800:1800	235+235	146.6 : 146.2%
9/1	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	1004	1600	1147	83.7%
9/2	M1 J15 Northbound entry Ahead	U	2:2	N/A	C2:C		1	42	-	998	1600	1147	81.8%
10/1	A45 London Road	U	N/A	N/A	-		-	-	-	1322	Inf	Inf	0.0%
10/2	A45 London Road	U	N/A	N/A	-		-	-	-	1567	Inf	Inf	0.0%
10/3	A45 London Road	U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
11/1	Saxon Avenue	U	N/A	N/A	-		-	-	-	230	Inf	Inf	0.0%
11/2	Saxon Avenue	U	N/A	N/A	-		-	-	-	157	Inf	Inf	0.0%
12/1	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	996	Inf	Inf	0.0%
12/2	M1 J15 Southbound entry	U	N/A	N/A	-		-	-	-	309	Inf	Inf	0.0%
13/1	A508 Northampton Road	U	N/A	N/A	-		-	-	-	1164	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1004	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	998	Inf	Inf	0.0%

Full Input Data And Results

15/1	Ahead	U	N/A	N/A	-		-	-	-	963	Inf	Inf	0.0%
15/2	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1301	Inf	Inf	0.0%
15/3	Ahead	U	N/A	N/A	-		-	-	-	823	Inf	Inf	0.0%
15/4	Ahead	U	N/A	N/A	-		-	-	-	823	Inf	Inf	0.0%
16/1	Right Right2	U	N/A	N/A	-		-	-	-	1297	Inf	Inf	0.0%
16/2	Right Right2	U	N/A	N/A	-		-	-	-	1502	Inf	Inf	0.0%
16/3	Right	U	N/A	N/A	-		-	-	-	552	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	2:2	-	C2:D		1	6	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1743**	**0**	**0**	**85.2**	**475.9**	**0.0**	**561.1**	**-**	**-**	**-**	**-**
M1 Juntion 15	**-**	**-**	**1743**	**0**	**0**	**85.2**	**475.9**	**0.0**	**561.1**	**-**	**-**	**-**	**-**
1/1	1078	1078	-	-	-	4.8	9.0	-	13.8	46.0	25.2	9.0	34.1
1/2	1079	1079	-	-	-	4.8	9.1	-	13.9	46.4	25.2	9.1	34.3
1/3	823	823	-	-	-	2.7	1.4	-	4.1	17.8	14.2	1.4	15.5
1/4	823	823	-	-	-	2.7	1.4	-	4.1	17.8	14.2	1.4	15.5
2/2+2/1	250	250	500	0	0	1.5	0.7	-	2.2	31.5	3.4	0.7	4.1
3/1	51	51	-	-	-	0.4	0.1	-	0.5	35.2	1.3	0.1	1.3
3/2	146	146	-	-	-	0.8	0.3	-	1.1	26.4	1.4	0.3	1.7
3/3	238	238	-	-	-	1.3	0.8	-	2.2	32.7	3.4	0.8	4.2
4/1	1044	1044	-	-	-	3.4	6.7	-	10.1	34.7	16.0	6.7	22.7
4/2	859	859	-	-	-	2.3	1.7	-	4.0	16.6	10.7	1.7	12.4
4/3	952	952	-	-	-	2.8	2.9	-	5.7	21.5	13.2	2.9	16.2
5/1	521	521	-	-	-	2.6	0.7	-	3.3	22.5	9.6	0.7	10.3
5/2	626	626	-	-	-	3.3	1.2	-	4.5	25.9	12.3	1.2	13.5
5/3	626	626	-	-	-	3.3	1.2	-	4.5	25.9	12.3	1.2	13.5
6/1	641	641	-	-	-	4.3	3.0	-	7.4	41.4	14.6	3.0	17.7
6/2+6/3	972	972	-	-	-	6.2	4.9	-	11.1	41.0	15.7	4.9	20.5
7/1	558	390	-	-	-	7.9	85.6	-	93.6	603.6	12.1	85.6	97.7
7/2+7/3	1102	780	-	-	-	15.4	162.7	-	178.1	581.9	11.9	162.7	174.6
8/1	436	305	305	0	0	5.4	67.3	-	72.7	600.2	18.4	67.3	85.7
8/2+8/3	687	469	939	0	0	8.9	110.4	-	119.3	625.1	14.2	110.4	124.6
9/1	960	960	-	-	-	0.4	2.5	-	2.9	10.8	12.1	2.5	14.6
9/2	938	938	-	-	-	0.1	2.2	-	2.3	8.8	0.6	2.2	2.8
10/1	1162	1162	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1297	1297	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/3	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	208	208	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	146	146	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	983	983	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1128	1128	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	960	960	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	938	938	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	950	950	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	1288	1288	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	823	823	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/4	823	823	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	1165	1165	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1341	1341	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-7.0	Total Delay for Signalled Lanes (pcuHr):	39.58	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-1.7	Total Delay for Signalled Lanes (pcuHr):	30.72	Cycle Time (s):	90		
C2	Stream: 1 PRC for Signalled Lanes (%):	-59.0	Total Delay for Signalled Lanes (pcuHr):	291.41	Cycle Time (s):	60		
C2	Stream: 2 PRC for Signalled Lanes (%):	7.5	Total Delay for Signalled Lanes (pcuHr):	5.18	Cycle Time (s):	60		
	PRC Over All Lanes (%):	-62.9	Total Delay Over All Lanes(pcuHr):	561.05				

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

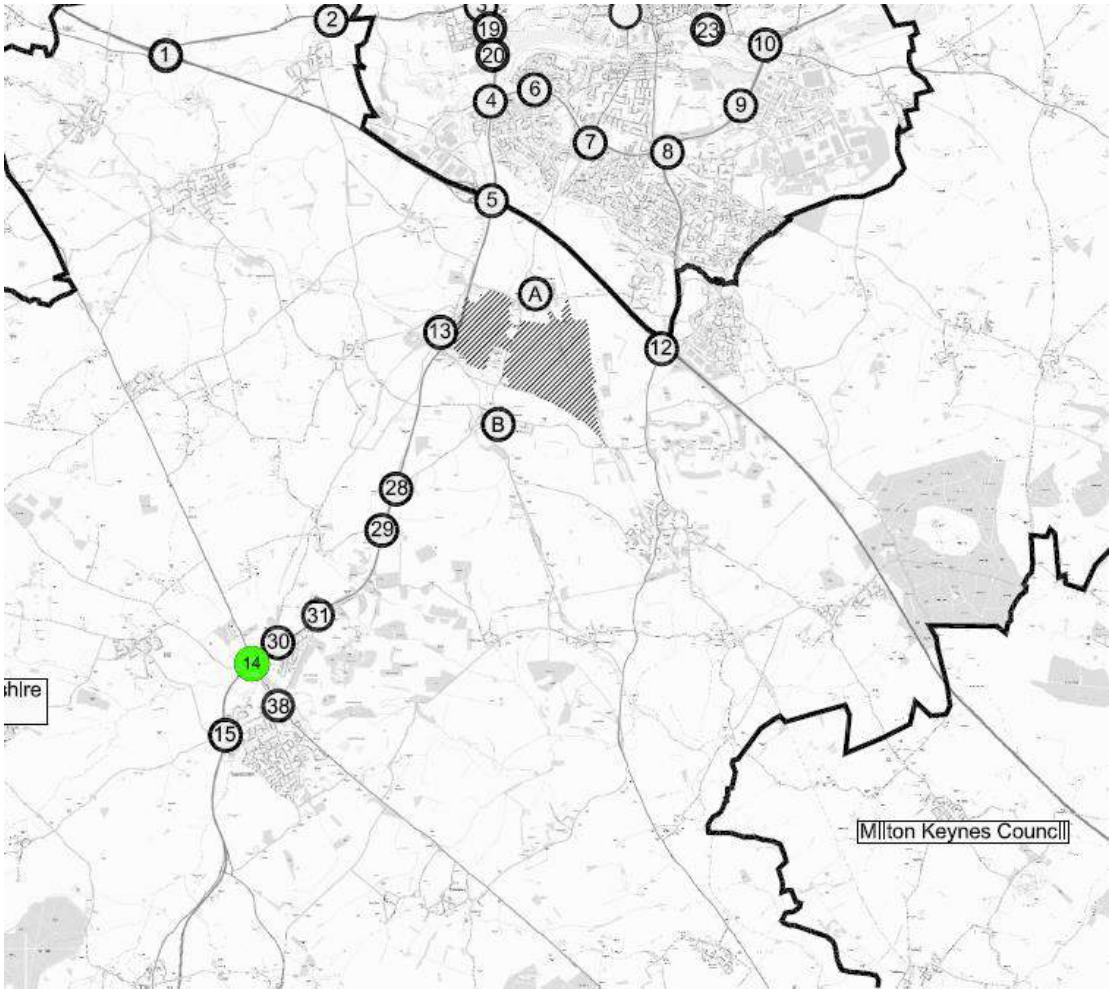
Technical Note No. 14

1 JUNCTION FOURTEEN – A43 / A5 TOVE ROUNDABOUT

Site Description of the Base Junction

1.1 Junction Fourteen is a four arm signalised roundabout to the north of the Towcester Town. It connects the A43 Towcester Bypass to the A5 and Towcester Road. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Fourteen Location Plan



Base Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Thursday 18th June 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

1.6 The junction has been set up based on the guidance provided within the LinSig 3 handbook and industry standard guidance. Default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied, further to comments received from NCC and in accordance with guidance contained in LTN 1/09.

1.7 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays included in **Appendix B**.

1.8 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.9 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015 Base		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A5 NW	12	7-20	74
	Arm 2 – A43 NE	93	10-220	119
	Arm 3 – A5 SE	13	8-18	41
	Arm 4 – A43 SW	15	10-22	20
	Arm 5 – Towcester Road	4	1-6	3
PM Peak Hour (1700-1800)	Arm 1 – A5 NW	7	1-11	15
	Arm 2 – A43 NE	15	10-23	18
	Arm 3 – A5 SE	23	20-25	71
	Arm 4 – A43 SW	175	40-210	20
	Arm 5 – Towcester Road	3	2-5	2

1.10 It is considered that the modelled queues are generally in line with the surveyed queue, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (76 seconds).

Results of the Base Modelling

The results of the modelling for the existing junction layout, Shown in **Figure EL14** are summarised in **Table 2** and junction analysis results are included at **Appendix C**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2015	120.2%	134.1%	108.0%	93.4%	48.0%	90.8%	87.3%	113.9%	91.2%	45.5%
	2021 DM	128.2%	126.8%	62.6%	99.1%	68.8%	112.6%	94.3%	98.5%	117.0%	83.3%
	2021 DS	123.3%	122.0%	65.0%	97.0%	77.4%	106.4%	83.3%	188.2%	115.0%	86.6%
	2031 DM	174.0%	126.4%	106.7%	106.8%	56.9%	126.9%	108.6%	121.7%	112.6%	90.1%

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
	2031 DS	223.4%	172.0%	209.6%	83.9%	52.9%	123.5%	122.4%	132.2%	116.1%	81.6%
Queue – MMQ (PCU)	2015	74	119	43	20	3	15	18	72	20	2
	2021 DM	117	104	4	34	7	31	20	13	191	5
	2021 DS	98	91	3	24	6	46	23	53	253	7
	2031 DM	270	128	26	92	4	75	67	81	167	7
	2031 DS	334	246	203	12	3	61	136	98	200	7
Average Delay (sec/pcu)	2015	316.4	520.7	195.2	49.0	14.4	48.0	32.8	272.7	36.3	16.9
	2021 DM	459.1	448.9	44.7	66.0	28.0	348.7	25.5	356.4	417.2	45.3
	2021 DS	393.3	372	32.7	50.8	31.4	348.7	25.5	356.4	417.2	45.3
	2031 DM	862.8	447.4	202.7	165.0	25.8	443.3	191.6	375.6	242.9	82.1
	2031 DS	1117.6	859.1	1063.2	12.7	13.9	352.0	383.4	519.9	293.5	58.1

1.11 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2021 AM and PM scenarios, with Arm 3 in the PM peak further exceeding theoretical capacity by 89.7% as a result. There is also a significant increase in queueing on all arms in the PM peak of a total of 122 PCU. Therefore mitigation is considered necessary to address the development's impact.

1.12 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2031 AM and PM scenarios, with Arms 1, 2 and 3 in the AM peak and 2 and in the PM peak further exceeding theoretical capacity by 49.4%, 45.6%, 102.9% and 13.8% as a result. There is also a significant increase in queueing on Arms 2 and 3 during the AM peak of 118 and 177 PCU respectively. There is also a significant increase in queueing on Arms 2, 3 and 4 of 69, 17 and 33 respectively in the PM peak. Therefore mitigation is considered necessary to address the development's impact.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (DoS)	-49.0	-42.4	-37.0	-93.3	-148.2	-26.6	-30.0	-109.1	-41.0	-49.6
Overall Junction Delay (PCUhr)	356	449	382	762	1250	115	352	420	545	792

1.13 There is a significant effect on overall junction capacity between the DM and DS M scenario for both 2021 PM by 79.1%. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 488 PCUhrs for 2031 AM respectively. There is an increase in overall junction delay between the DM PM and DS PM scenarios by 68 and 247 PCUhrs for 2021 PM and 2031 PM respectively. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.14 The proposed mitigation is shown in **Appendix J.11** in the TA and summarised is as follows:

- Reconfiguring of the roundabout location and an increase in size of the central island.
- Lengthening of an existing lane and provision of an additional lane on A43 south approach;
- Reconfiguration and widening of the Towcester Road approach to accommodate an additional giveway lane;
- Lengthening of an existing lane and provision of an additional lane on A5 (north) approach);
- Widening of circulatory carriageway between A5 (north) and A5 (south) to provide an additional lanes; and
- Provision of a merge lane on the A5 north exit.

1.15 The results of the mitigated junction model is shown in **Table 4** and included as **Appendix C**.

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2021 DS	134.7%	116.5%	82.8%	77.3%	54.0%	95.0%	90.8%	100.0%	113.2%	51.0%
	Comparison to 2021 DM	6.5%	-10.3%	20.2%	-21.8%	-14.8%	-17.6%	-3.5%	1.5%	-3.8%	-32.3%
	2031 DS	175.0%	119.5%	97.7%	70.6%	43.1%	137.4%	101.8%	124.4%	100.3%	50.7%
	Comparison to 2031 DM	1.0%	-6.9%	-9.0%	-36.2%	-13.8%	10.5%	-6.8%	2.7%	-12.3%	-39.4%
Queue – MMQ (PCU)	2021 DS	84	82	5	11	4	9	23	18	131	4
	Comparison to 2021 DM	-33	-21	1	-23	-3	-22	2	5	-59	-1
	2031 DS	166	106	16	9	2	59	48	80	48	3
	Comparison to 2031 DM	-104	-22	-10	-83	-2	-16	-19	-1	-119	-4
Average Delay (sec/pcu)	2021 DS	547.3	321.2	56.6	18.3	11.6	128.7	30.5	111.1	250.3	17.5
	Comparison to 2021 DM	88.2	-127.7	11.9	-47.7	-16.4	-220.0	5.0	-245.3	-166.9	-27.8
	2031 DS	864.6	344.3	79.8	14.9	8.9	586.5	89.2	420.3	65.3	20.7
	Comparison to 2031 DM	1.8	-103.1	-122.9	-150.1	-16.9	143.2	-102.4	44.7	-177.6	-61.4

1.16 As shown in **Table 4,** the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2021 DM scenarios. Whilst Arms 1 and 3 shows to provide less capacity than in the AM DM scenario by 6.5% and 20.2%, the other three arm work better in the AM peak period and therefore the junction operates 46.9% better in 2021 DS AM peak than AM peak 2021 DM scenario. There is also an improvement for queues across the whole junction with a reduction of 79 and 76 PCU in the AM and PM peak period. Furthermore there is a reduction in delay across the whole junction of over one minute in the AM peak scenario and almost 11 minutes in the PM peak scenario.

1.17 As shown in **Table 4,** the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst Arm 1 shows to provide less capacity than in the AM DM scenario by 1% the other four arm work better in the AM peak period and therefore the junction operates 65.9% better in 2031 DS AM peak scenario. Whilst Arm 1 shows to provide less capacity than in the AM DM scenario by 10.5% the other four arm work better in the AM peak period and therefore the junction operates 45.3% better in 2031 PM peak scenario. There is also an improvement for queues across the whole junction with a reduction of 221 and 160 PCU in the AM and PM peak period. Furthermore there is a reduction in delay across the whole junction of over six minutes in the AM peak scenario and almost three minutes in the PM peak scenario.

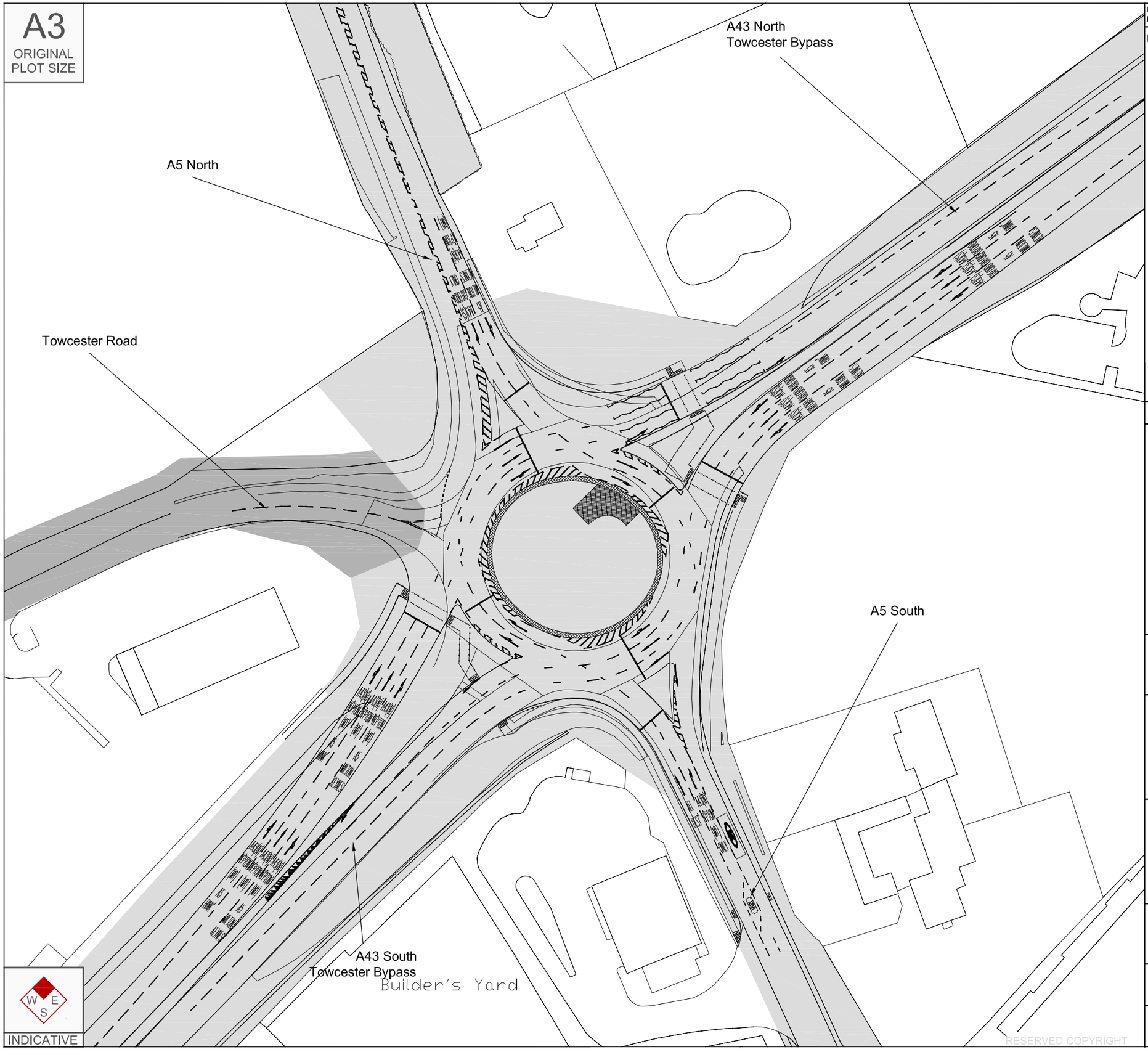
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	**AM**				**PM**			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	-49.7	-7.3	-94.4	-1.1	-25.8	4.2	-52.6	-11.6
Overall Junction Delay (PCUhr)	377	-73	575	-187	299	-53	298	-247

1.18 As shown in **Table** 5 above, the junction operates 4.2% better in 2021 DS scenario AM peak than AM peak 2021. However, the as shown in **Table 4** above, the junction has less queueing and less delay across the whole junction. Please note that the Overall junction capacity is the worse arm DoS and therefore is not showing a true reflection of the mitigation improvements. Finally, the overall junction delay is 187 and 247 PCUhrs better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A43 / A5 Tove Roundabout Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	26.05.17	JD	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL14	

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	4	0	176	1,477	0	1,657
B - Towcester Road	0	0	0	5	121	125
C - A5 N	320	0	0	17	646	982
D - A43 E	1,495	16	2	0	438	1,951
E - A5 S	96	138	386	105	46	772
Total	1,915	154	564	1,604	1,251	5,487

Modelled Flows
2021 DM
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	3	0	430	1,837	3	2,273
B - Towcester Road	43	0	0	20	162	225
C - A5 N	550	0	0	33	433	1,016
D - A43 E	2,171	13	12	0	8	2,203
E - A5 S	0	61	96	70	0	227
Total	2,767	74	539	1,960	605	5,944

Modelled Flows
2021 DS2
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	5	0	415	1,918	18	2,357
B - Towcester Road	29	0	0	20	177	226
C - A5 N	565	0	0	21	427	1,013
D - A43 E	2,301	14	14	0	2	2,330
E - A5 S	0	61	100	84	0	245
Total	2,901	75	529	2,042	624	6,172

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	0	0	0	0	0
B - Towcester Road	0	0	0	0	0	0
C - A5 N	0	0	0	0	0	0
D - A43 E	0	0	0	0	0	0
E - A5 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	-1	0	255	360	3	616
B - Towcester Road	43	0	0	16	41	100
C - A5 N	230	0	0	17	-213	33
D - A43 E	675	-3	11	0	-430	253
E - A5 S	-96	-77	-290	-36	-46	-545
Total	851	-81	-25	356	-646	457

2021 DS2 minus 2015 Base
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	1	0	240	441	18	700
B - Towcester Road	29	0	0	15	56	101
C - A5 N	246	0	0	4	-219	31
D - A43 E	805	-2	12	0	-436	379
E - A5 S	-96	-77	-286	-21	-46	-526
Total	985	-79	-34	439	-626	685

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	156	285	983	195	1,619
B - Towcester Road	46	0	17	122	25	210
C - A5 N	378	5	0	52	376	811
D - A43 E	1,513	20	67	0	200	1,800
E - A5 S	92	9	442	130	0	673
Total	2,029	190	811	1,287	796	5,113

2021 DM adjusted to count
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	-1	156	540	1,343	198	2,235
B - Towcester Road	89	0	17	138	66	310
C - A5 N	608	5	0	69	163	844
D - A43 E	2,188	17	78	0	-230	2,053
E - A5 S	-4	-68	152	94	-46	128
Total	2,880	109	786	1,643	150	5,570

2021 DS2 adjusted to count
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	1	156	525	1,424	213	2,319
B - Towcester Road	75	0	17	137	81	311
C - A5 N	624	5	0	56	157	842
D - A43 E	2,318	18	79	0	-236	2,179
E - A5 S	-4	-68	156	109	-46	147
Total	3,014	111	777	1,726	170	5,798

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	4	0	731	1,298	0	2,033
B - Towcester Road	6	0	0	11	12	18
C - A5 N	200	0	0	101	391	301
D - A43 E	1,288	10	6	0	2	1,305
E - A5 S	111	182	419	317	0	1,029
Total	1,609	193	1,156	1,728	405	5,090

Modelled Flows
2021 DM
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	7	3	1,031	2,228	6	3,275
B - Towcester Road	63	0	0	29	18	110
C - A5 N	367	0	0	38	114	519
D - A43 E	1,996	45	11	0	66	2,118
E - A5 S	1	58	200	372	0	630
Total	2,434	105	1,242	2,667	204	6,652

Modelled Flows
2021 DS2
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	9	3	1,016	2,263	4	3,296
B - Towcester Road	57	0	0	28	17	103
C - A5 N	346	0	0	35	116	496
D - A43 E	2,237	62	10	0	80	2,388
E - A5 S	1	65	192	336	0	595
Total	2,650	129	1,218	2,662	218	6,878

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	0	0	0	0	0
B - Towcester Road	0	0	0	0	0	0
C - A5 N	0	0	0	0	0	0
D - A43 E	0	0	0	0	0	0
E - A5 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	3	3	300	931	6	1,242
B - Towcester Road	56	0	0	18	6	80
C - A5 N	167	0	0	-63	-278	-174
D - A43 E	709	34	5	0	65	812
E - A5 S	-109	-125	-219	55	0	-398
Total	826	-88	86	939	-201	1,562

2021 DS2 minus 2015 Base
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	5	3	286	965	4	1,263
B - Towcester Road	51	0	0	17	5	73
C - A5 N	146	0	0	-67	-275	-196
D - A43 E	949	51	3	0	79	1,082
E - A5 S	-109	-117	-227	19	0	-434
Total	1,041	-63	62	934	-187	1,788

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	147	427	1,264	98	1,936
B - Towcester Road	8	0	11	139	9	167
C - A5 N	129	8	0	48	455	640
D - A43 E	1,574	6	87	0	147	1,814
E - A5 S	94	3	535	178	0	810
Total	1,805	164	1,060	1,629	709	5,367

2021 DM adjusted to count
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	3	150	727	2,195	104	3,178
B - Towcester Road	64	0	11	157	15	247
C - A5 N	296	8	0	-15	177	466
D - A43 E	2,283	40	92	0	212	2,626
E - A5 S	-15	-122	316	233	0	412
Total	2,631	76	1,146	2,568	508	6,929

2021 DS2 adjusted to count
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	5	150	713	2,229	102	3,199
B - Towcester Road	59	0	11	156	14	240
C - A5 N	275	8	0	-19	180	444
D - A43 E	2,523	57	90	0	226	2,896
E - A5 S	-15	-114	308	197	0	376
Total	2,846	101	1,122	2,563	522	7,155

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	4	0	176	1,477	0	1,657
B - Towcester Road	0	0	0	5	121	125
C - A5 N	320	0	0	17	646	982
D - A43 E	1,495	16	2	0	438	1,951
E - A5 S	96	138	386	105	46	772
Total	1,915	154	564	1,604	1,251	5,487

Modelled Flows
2031 DM
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	9	8	601	1,956	39	2,614
B - Towcester Road	19	0	2	10	83	115
C - A5 N	678	0	0	58	525	1,261
D - A43 E	2,684	21	9	0	19	2,734
E - A5 S	6	69	199	156	0	430
Total	3,397	98	811	2,181	667	7,154

Modelled Flows
2031 DS2
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	8	0	499	1,828	19	2,354
B - Towcester Road	31	0	1	12	93	137
C - A5 N	668	0	0	40	508	1,216
D - A43 E	2,844	21	2	0	12	2,880
E - A5 S	8	62	252	347	0	669
Total	3,560	83	754	2,226	633	7,257

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	0	0	0	0	0
B - Towcester Road	0	0	0	0	0	0
C - A5 N	0	0	0	0	0	0
D - A43 E	0	0	0	0	0	0
E - A5 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	5	8	426	479	39	957
B - Towcester Road	19	0	2	5	-37	-11
C - A5 N	358	-0	0	41	-121	278
D - A43 E	1,189	5	8	0	-418	783
E - A5 S	-90	-69	-188	51	-46	-341
Total	1,482	-56	248	577	-583	1,667

2031 DS2 minus 2015 Base
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	4	0	323	351	18	696
B - Towcester Road	31	0	1	7	-27	12
C - A5 N	348	-0	0	23	-138	234
D - A43 E	1,349	5	1	0	-425	929
E - A5 S	-88	-76	-134	242	-46	-102
Total	1,645	-71	191	623	-618	1,769

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	156	285	983	195	1,619
B - Towcester Road	46	0	17	122	25	210
C - A5 N	378	5	0	52	376	811
D - A43 E	1,513	20	67	0	200	1,800
E - A5 S	92	9	442	130	0	673
Total	2,029	190	811	1,287	796	5,113

2031 DM adjusted to count
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	5	164	711	1,462	234	2,576
B - Towcester Road	65	0	19	127	-12	199
C - A5 N	736	5	0	93	255	1,089
D - A43 E	2,702	25	75	0	-218	2,583
E - A5 S	2	-60	254	181	-46	332
Total	3,511	134	1,059	1,864	213	6,780

2031 DS2 adjusted to count
AM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	4	156	608	1,334	213	2,315
B - Towcester Road	77	0	18	129	-2	222
C - A5 N	726	5	0	75	238	1,045
D - A43 E	2,862	25	68	0	-225	2,729
E - A5 S	4	-67	308	372	-46	571
Total	3,674	119	1,002	1,910	178	6,882

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	4	0	731	1,298	0	2,033
B - Towcester Road	6	0	0	11	12	30
C - A5 N	200	0	0	101	391	693
D - A43 E	1,288	10	6	0	2	1,307
E - A5 S	111	182	419	317	0	1,029
Total	1,609	193	1,156	1,728	405	5,090

Modelled Flows
2031 DM
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	1	29	1,124	2,152	8	3,314
B - Towcester Road	13	0	0	14	35	62
C - A5 N	376	0	0	50	247	673
D - A43 E	2,304	35	6	1	113	2,460
E - A5 S	95	95	224	453	0	868
Total	2,791	159	1,354	2,671	403	7,378

Modelled Flows
2031 DS2
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	1	45	1,099	2,203	9	3,358
B - Towcester Road	13	0	0	12	42	68
C - A5 N	331	0	0	33	276	639
D - A43 E	2,574	61	7	1	189	2,832
E - A5 S	81	65	211	405	0	762
Total	3,000	171	1,318	2,655	515	7,659

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	0	0	0	0	0
B - Towcester Road	0	0	0	0	0	0
C - A5 N	0	0	0	0	0	0
D - A43 E	0	0	0	0	0	0
E - A5 S	0	0	0	0	0	0
Total	0	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	-3	29	393	854	8	1,281
B - Towcester Road	7	0	0	3	23	33
C - A5 N	176	-0	0	-51	-144	-19
D - A43 E	1,017	24	-0	1	112	1,153
E - A5 S	-15	-87	-194	136	0	-161
Total	1,182	-34	199	943	-2	2,287

2031 DS2 minus 2015 Base
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	-3	45	368	906	9	1,325
B - Towcester Road	7	0	0	1	30	38
C - A5 N	131	-0	0	-69	-115	-53
D - A43 E	1,286	51	1	1	187	1,526
E - A5 S	-30	-118	-207	88	0	-266
Total	1,392	-22	162	927	110	2,569

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	0	147	427	1,264	98	1,936
B - Towcester Road	8	0	11	139	9	167
C - A5 N	129	8	0	48	455	640
D - A43 E	1,574	6	87	0	147	1,814
E - A5 S	94	3	535	178	0	810
Total	1,805	164	1,060	1,629	709	5,367

2031 DM adjusted to count
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	-3	176	820	2,118	106	3,217
B - Towcester Road	15	0	11	142	32	200
C - A5 N	305	8	0	-3	311	621
D - A43 E	2,591	30	87	1	259	2,967
E - A5 S	79	-84	341	314	0	649
Total	2,987	130	1,259	2,572	707	7,654

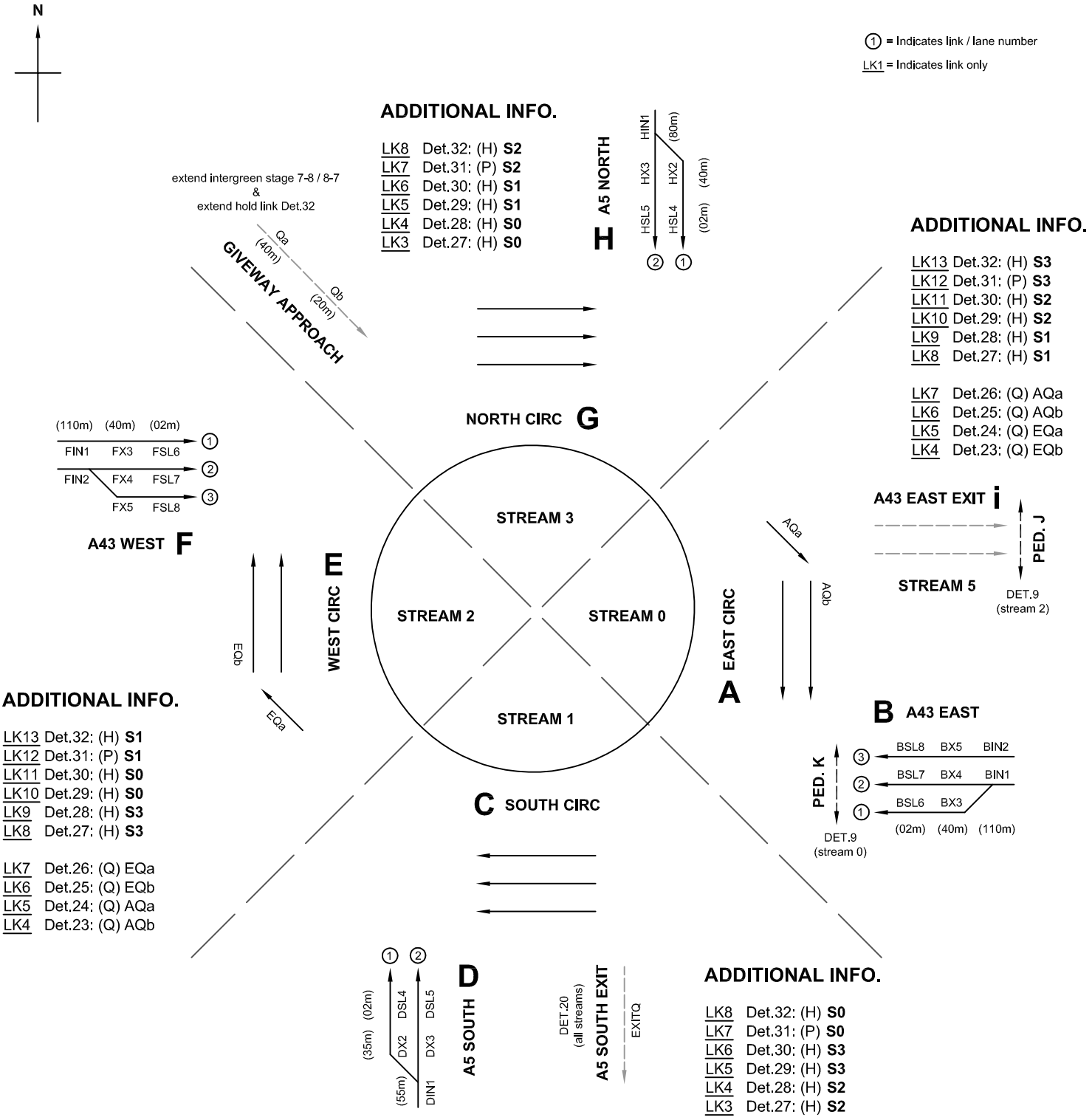
2031 DS2 adjusted to count
PM Peak

	A - A43 S	B - Towcester Road	C - A5 N	D - A43 E	E - A5 S	Total
A - A43 S	-3	192	795	2,170	107	3,261
B - Towcester Road	15	0	11	140	39	205
C - A5 N	260	8	0	-21	340	587
D - A43 E	2,860	57	88	1	334	3,340
E - A5 S	64	-115	328	266	0	544
Total	3,197	142	1,222	2,556	819	7,936

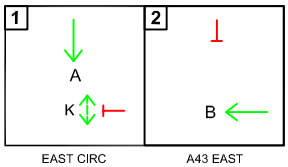
APPENDIX B

A43/A5 SIGNALISED ROUNDABOUT, TOVE

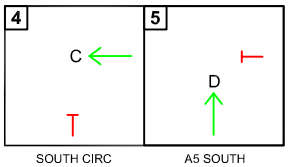
Method of Control, Detector Location, and Mova Lane / Link configuration



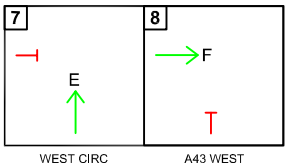
STREAM 0



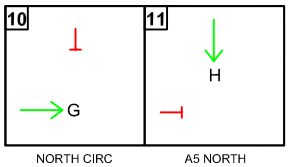
STREAM 1



STREAM 2



STREAM 3



© JSTSM LTD

Project data

Project	A43/A5 Tove Roundabout
Program date	03-02-2015
Version	1
Programmer	Neil Bell
Country	UK
City	Towester
Street1	A43
Street2	A5
Controller type	1
12NC	0
Serial number	0
Report created at	3/3/2015 2:54 PM
Database file	A43-A5 Tove Roundabout.cpf
Tool version	8.0.22.20312

Detailed description: * This is memofield DESCRIPTION

FACILITIES MODES AND PRIORITIES

FACILITIES

Facility	Enabled
Manual Control	1
Manual Step On Mode	0
CLF	1
UTC Facility	1
Hurry Call Mode	1
Priority	0

MODES AND PRIORITY

Mode	PRIO	Dem. set leave	Dem. set enter
Hurry call (high priority)	1	-	-
Urban Traffic Control (UTC)	4	-	-
Hurry call (std priority)	-1	-	-
Manual control	2	Start-up demand set	-
Cableless linking facility (CLF)	5	-	-
Vehicle actuated (VA)	6	-	-
Simple fix time (FT)	7	-	-
Public service vehicle priority	-1	-	-
Selected cableless linking	3	-	-
Selected vehicle actuated	3	-	-
Selected fix time	3	-	-

```
Use hurry call (high priority) mode for all red moves: 1
```

STREAMS AND STAGES

STREAM

ID	Name	Type	Stu	Art	swoff	All Red
1	STREAM1	Junction	***	***	***	***
2	STREAM2	Junction				
3	STREAM3	Junction				
4	STREAM4	Junction				
5	STREAM5	Junction				

STAGE

ID	Description	Stream	Set move before stage	Set move in stage	Ripple Change
1	STAGE1	1	0	1	0
2	STAGE2	1	0	1	0
3	ALLRED	1	0	1	0
4	STAGE4	2	0	1	0
5	STAGE5	2	0	1	0
6	ALLRED	2	0	1	0
7	STAGE7	3	0	1	0
8	STAGE8	3	0	1	0
9	ALLRED	3	0	1	0
10	STAGE10	4	0	1	0
11	STAGE11	4	0	1	0
12	ALLRED	4	0	1	0
13	STAGE13	5	0	1	0
14	STAGE14	5	0	1	0
15	ALLRED	5	0	1	0

Phases in stages

	A	B	C	D	E	F	G	H	I	J	K
1	X	-	-	-	-	-	-	-	-	-	X
2	-	X	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-
4	-	-	X	-	-	-	-	-	-	-	-
5	-	-	-	X	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	X	-	-	-	-	-	-
8	-	-	-	-	-	X	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	X	-	-	-	-
11	-	-	-	-	-	-	-	X	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	X	-	-
14	-	-	-	-	-	-	-	-	-	X	-
15	-	-	-	-	-	-	-	-	-	-	-

PHASES

Types

ID	Phase	Site Phase	Description	Type	APH	Demand	NCH	WL	TAC	NODEMAND
1	A	A	East Circ	T	-	Start of Green	1	0	0	0
2	B	B	A43 East	T	-	Start of Green	1	0	0	0
3	C	C	South Circ	T	-	Start of Green	1	0	0	0
4	D	D	A5 South	T	-	Start of Green	1	0	0	0
5	E	E	West Circ	T	-	Start of Green	1	0	0	0
6	F	F	A43 West	T	-	Start of Green	1	0	0	0
7	G	G	North Circ	T	-	Start of Green	1	0	0	0
8	H	H	A5 North	T	-	Start of Green	1	0	0	0
9	I	I	A43 East Exit	T	-	Start of Green	1	0	0	0
10	J	J	Ped X A43 East Exit	PU	-	Start of Green	1	2	0	0
11	K	K	Ped X A43 East Approach	PU	-	Start of Green	1	2	0	0

CONDITIONS

ID	Phase	Type	Appearance type	Termination type
1	A	T	Always	At end of stage
2	B	T	Always	At end of stage
3	C	T	Always	At end of stage
4	D	T	Always	At end of stage
5	E	T	Always	At end of stage
6	F	T	Always	At end of stage
7	G	T	Always	At end of stage
8	H	T	Always	At end of stage
9	I	T	Always	At end of stage
10	J	PU	Always	At end of stage
11	K	PU	Always	When minimum timer expires

TIMINGS

ID	Phase	Type	Min green	Min red	Red/amber	Amber	Pre-timed
1	A	T	7	1	2	3	0
2	B	T	7	1	2	3	0
3	C	T	7	1	2	3	0
4	D	T	7	1	2	3	0
5	E	T	7	1	2	3	0
6	F	T	7	1	2	3	0
7	G	T	7	1	2	3	0
8	H	T	7	1	2	3	0
9	I	T	7	1	2	3	0
10	J	PU	5	1			0
11	K	PU	5	1			0

PEDESTRIAN TIMINGS

ID	Phase	Type	Period V	Period VI	Period VII	Period VIII
1	A	T				
2	B	T				
3	C	T				
4	D	T				
5	E	T				
6	F	T				
7	G	T				
8	H	T				
9	I	T				
10	J	PU	3	9		
11	K	PU	3	11		

Note: Use of zero second blackout is not current Department of Transport policy and should be discouraged

Revertive demands

ID	Phase	Type	RDC	Start-up	2	3	4	5	6	7	8
1	A	T	A	1	0	0	0	0	0	0	0
2	B	T	B	1	0	0	0	0	0	0	0
3	C	T	C	1	0	0	0	0	0	0	0
4	D	T	D	1	0	0	0	0	0	0	0
5	E	T	E	1	0	0	0	0	0	0	0
6	F	T	F	1	0	0	0	0	0	0	0
7	G	T	G	1	0	0	0	0	0	0	0
8	H	T	H	1	0	0	0	0	0	0	0
9	I	T	I	1	0	0	0	0	0	0	0
10	J	PU	-	1	0	0	0	0	0	0	0
11	K	PU	-	1	0	0	0	0	0	0	0

Switches

Lamp type: Halogen (70/30)

ID	Phase	Type	SWR	SWA	SWG	SWWL
1	A	T	R01	A01	G01	
2	B	T	R02	A02	G02	
3	C	T	R03	A03	G03	
4	D	T	R04	A04	G04	
5	E	T	R05	A05	G05	
6	F	T	R06	A06	G06	
7	G	T	R07	A07	G07	
8	H	T	R08	A08	G08	
9	I	T	R09	A09	G09	
10	J	PU	R10		G10	A10
11	K	PU	R11		G11	A11

MINIMUM GREEN

PHASE	MIN	MAX
A	7	30
B	7	30
C	7	30
D	7	30
E	7	30
F	7	30
G	7	30
H	7	30
I	7	30
J	4	99
K	4	99

MAXIMUM GREEN

PHASE	MIN	MAX
A	0	120
B	0	120
C	0	120
D	0	120
E	0	120
F	0	120
G	0	120
H	0	120
I	0	120
J	0	0
K	0	0

.	MIN	MAX

.	MIN	MAX
Minimum green	3	99
Maximum green	0	120
Starting intergreen	0	30

PHASE TIMING SETS

PHASE	TYPE
A	T
B	T
C	T
D	T
E	T
F	T
G	T
H	T
I	T
J	PU
K	PU

Regular maximus

	1	2	3	4	5	6	7	8
A	27	27	23	23	27	27	27	27
B	41	41	30	30	41	41	41	41
C	52	52	38	38	52	52	52	52
D	17	17	16	16	17	17	17	17
E	28	28	24	24	28	28	28	28
F	40	40	29	29	40	40	40	40
G	55	55	41	41	55	55	55	55
H	13	13	12	12	13	13	13	13
I								
J								
K								

Alternative maximums

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								

Variable blackout/red periods

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								

Minimum green

	1	2	3	4	5	6	7	8

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								

PSVP inhibition times

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								

PSVP maximum green times

	1	2	3	4	5	6	7	8
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								

PHASE MATRICES

Starting intergreen 9

Handset maximum 30

Opposing and conflicting

	A	B	C	D	E	F	G	H	I	J	K
A	-	C	-	-	-	-	-	-	-	-	-
B	C	-	-	-	-	-	-	-	-	-	C
C	-	-	-	C	-	-	-	-	-	-	-
D	-	-	C	-	-	-	-	-	-	-	-
E	-	-	-	-	-	C	-	-	-	-	-
F	-	-	-	-	C	-	-	-	-	-	-
G	-	-	-	-	-	-	-	C	-	-	-
H	-	-	-	-	-	-	C	-	-	-	-
I	-	-	-	-	-	-	-	-	-	C	-
J	-	-	-	-	-	-	-	-	C	-	-
K	-	C	-	-	-	-	-	-	-	-	-

Intergreen times

	A	B	C	D	E	F	G	H	I	J	K
A		5									
B	7										6
C				5							
D			6								
E						5					
F					7						
G								5			
H							7				
I										6	
J									4		
K		4									

Handset intergreen limits

	A	B	C	D	E	F	G	H	I	J	K
A		5									
B	5										5
C				5							
D			5								
E						5					
F					5						
G								5			
H							5				
I										5	
J									4		
K		4									

RLM additional intergreens

	A	B	C	D	E	F	G	H	I	J	K
A											
B											2
C											
D											
E											
F											
G											
H											
I										2	
J											

	A	B	C	D	E	F	G	H	I	J	K
K											

RLM phase inhibits

	A	B	C	D	E	F	G	H	I	J	K
A	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	X
C	-	-	-	-	-	-	-	-	-	-	-
D	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-	-	-	X	-
J	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-

PHASE DELAYS

ID	Phase	From	To	Delay Time	Associated Phase	Delay Type
1	A	0	1	4	-	Delay phase losing Right of Way
2	C	3	4	5	-	Delay phase losing Right of Way
3	E	6	7	5	-	Delay phase losing Right of Way
4	F	6	7	2	-	Delay phase gaining Right of way
5	E	7	6	2	-	Delay phase gaining Right of way
6	G	9	10	6	-	Delay phase losing Right of Way

FIXED TIME

FIXEDTIME TO CURRENT MAXIMUM

STREAM	Fixed
STREAM1	1
STREAM2	1
STREAM3	1
STREAM4	1
STREAM5	1

Phase	Demand	Extend
A	1	1
B	1	1
C	1	1
D	1	1
E	1	1
F	1	1
G	1	1
H	1	1
I	1	1
J	1	1
K	1	0

STAGE MOVES

Move sets

Mode	SET
Hurry call (high priority)	1
Urban Traffic Control (UTC)	1
Hurry call (std priority)	0
Manual control	1
Cableless linking facility (CLF)	1
Vehicle actuated (VA)	1
Simple fix time (FT)	1
Public service vehicle priority	0

Set 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	A	A	-	-	-	-	-	-	-	-	-	-	-	-
2	A	-	A	-	-	-	-	-	-	-	-	-	-	-	-
3	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	A	A	-	-	-	-	-	-	-	-	-
5	-	-	-	A	-	A	-	-	-	-	-	-	-	-	-
6	-	-	-	A	A	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	A	A	-	-	-	-	-	-
8	-	-	-	-	-	-	A	-	A	-	-	-	-	-	-
9	-	-	-	-	-	-	A	A	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-
11	-	-	-	-	-	-	-	-	-	A	-	A	-	-	-
12	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A
14	-	-	-	-	-	-	-	-	-	-	-	-	A	-	A
15	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-

Set 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Set 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Set 4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Set 5

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Set 6

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Set 7

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Set 8

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

STREAM 1

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	FT	1	2	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	1	2	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	1	2	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	1	2	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	1	2	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	1	2	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	1	3	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	1	3	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	1	3	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	1	3	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	1	3	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	1	3	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	2	3	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	2	3	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	2	3	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	2	3	1	0	0	0	0	0	0	0	0	D	D	D	D

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	UTC	2	3	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	2	3	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	2	1	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	2	1	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	2	1	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	2	1	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	2	1	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	2	1	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	2	1	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	2	1	0	0	0	0	0	1	0	0	0	D	D	D	D
1	FT	3	1	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	3	1	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	3	1	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	3	1	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	3	1	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	3	1	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	3	2	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	3	2	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	3	2	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	3	2	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	3	2	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	3	2	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	3	1	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	3	1	0	0	0	0	0	1	0	0	0	D	D	D	D

STREAM 2

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	FT	4	5	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	4	5	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	4	5	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	4	5	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	4	5	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	4	5	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	4	6	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	4	6	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	4	6	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	4	6	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	4	6	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	4	6	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	5	6	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	5	6	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	5	6	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	5	6	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	5	6	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	5	6	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	5	4	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	5	4	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	5	4	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	5	4	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	5	4	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	5	4	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	5	4	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	5	4	0	0	0	0	0	1	0	0	0	D	D	D	D
1	FT	6	4	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	6	4	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	6	4	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	6	4	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	6	4	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	6	4	0	0	0	0	0	0	0	0	0	D	D	D	D

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	FT	6	5	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	6	5	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	6	5	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	6	5	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	6	5	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	6	5	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	6	4	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	6	4	0	0	0	0	0	1	0	0	0	D	D	D	D

STREAM 3

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	FT	7	8	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	7	8	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	7	8	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	7	8	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	7	8	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	7	8	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	7	9	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	7	9	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	7	9	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	7	9	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	7	9	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	7	9	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	8	9	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	8	9	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	8	9	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	8	9	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	8	9	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	8	9	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	8	7	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	8	7	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	8	7	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	8	7	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	8	7	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	8	7	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	8	7	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	8	7	0	0	0	0	0	1	0	0	0	D	D	D	D
1	FT	9	7	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	9	7	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	9	7	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	9	7	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	9	7	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	9	7	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	9	8	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	9	8	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	9	8	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	9	8	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	9	8	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	9	8	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	9	7	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	9	7	0	0	0	0	0	1	0	0	0	D	D	D	D

STREAM 4

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	FT	10	11	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	10	11	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	10	11	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	10	11	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	10	11	1	1	0	0	0	0	0	0	0	D	D	D	D

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	HCH	10	11	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	10	12	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	10	12	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	10	12	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	10	12	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	10	12	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	10	12	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	11	12	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	11	12	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	11	12	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	11	12	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	11	12	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	11	12	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	11	10	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	11	10	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	11	10	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	11	10	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	11	10	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	11	10	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	11	10	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	11	10	0	0	0	0	0	1	0	0	0	D	D	D	D
1	FT	12	10	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	12	10	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	12	10	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	12	10	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	12	10	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	12	10	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	12	11	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	12	11	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	12	11	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	12	11	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	12	11	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	12	11	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	12	10	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	12	10	0	0	0	0	0	1	0	0	0	D	D	D	D

STREAM 5

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	FT	13	14	1	1	1	0	0	0	0	0	0	U	D	D	D
1	VA	13	14	1	1	1	0	0	0	0	0	0	U	D	D	D
1	CLF	13	14	1	1	0	0	0	0	0	0	0	U	D	D	D
1	MAN	13	14	1	0	0	0	0	0	0	0	0	U	D	D	D
1	UTC	13	14	1	1	0	0	0	0	0	0	0	U	D	D	D
1	HCH	13	14	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	13	15	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	13	15	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	13	15	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	13	15	1	0	0	0	0	0	0	0	0	U	D	D	D
1	UTC	13	15	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	13	15	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	14	15	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	14	15	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	14	15	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	14	15	1	0	0	0	0	0	0	0	0	U	D	D	D
1	UTC	14	15	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	14	15	1	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	14	13	1	1	1	0	0	0	0	0	0	U	D	D	D
1	VA	14	13	1	1	1	0	0	0	0	0	0	U	D	D	D
1	CLF	14	13	1	1	0	0	0	0	0	0	0	U	D	D	D

No	Mode	FromStage	ToStage	1	2	3	4	5	6	7	8	9	D	I	E	X
1	MAN	14	13	1	0	0	0	0	0	0	0	0	U	D	D	D
1	UTC	14	13	1	1	0	0	0	0	0	0	0	U	D	D	D
1	HCH	14	13	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	14	13	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	14	13	0	0	0	0	0	1	0	0	0	D	D	D	D
1	FT	15	13	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	15	13	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	15	13	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	15	13	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	15	13	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	15	13	0	0	0	0	0	0	0	0	0	D	D	D	D
1	FT	15	14	1	1	1	0	0	0	0	0	0	D	D	D	D
1	VA	15	14	1	1	1	0	0	0	0	0	0	D	D	D	D
1	CLF	15	14	1	1	0	0	0	0	0	0	0	D	D	D	D
1	MAN	15	14	1	0	0	0	0	0	0	0	0	D	D	D	D
1	UTC	15	14	1	1	0	0	0	0	0	0	0	D	D	D	D
1	HCH	15	14	0	0	0	0	0	0	0	0	0	D	D	D	D
7	VA	15	13	0	0	0	0	0	1	0	0	0	D	D	D	D
7	FT	15	13	0	0	0	0	0	1	0	0	0	D	D	D	D

MANUAL STAGE SELECTION

	1	2	3	4	5
But 1	1	4	7	10	-
But 2	2	4	8	10	-
But 3	1	5	7	11	-
But 4	2	4	7	10	-
But 5	1	4	8	10	-
But 6	1	5	7	10	-
But 7	1	4	7	11	-
But 8	-	-	-	-	-
But 9	-	-	-	-	-
But 10	-	-	-	-	-
But 11	-	-	-	-	-
But 12	-	-	-	-	-
But 13	-	-	-	-	-
But 14	-	-	-	-	-
But 15	-	-	-	-	-
But 16	-	-	-	-	-

Detectors

Application

ID	Detector	Type	Phase	DTO	DTC	DTG1	DTG2	DKS	DEM	CANCEL
1	AQa	Vehicle loop	-	5				-	0	0
2	AQb	Vehicle loop	-	5				-	0	0
3	BIN1	Vehicle loop	B					-	0	0
4	BIN2	Vehicle loop	B					-	0	0
5	BX3	Vehicle loop	B			4		-	1	0
6	BX4	Vehicle loop	B			4		-	1	0
7	BX5	Vehicle loop	B			4		-	1	0
8	BSL6	Vehicle loop	B			1		-	1	0
9	BSL7	Vehicle loop	B			1		-	1	0
10	BSL8	Vehicle loop	B			1		-	1	0
11	PBUK1	Push button	K					-	1	0
12	PBUK2	Push button	K					-	1	0
13	PBUK3	Push button	K					-	1	0
14	ONCK1	Pedestrian on-crossing detector	K			0.5		-	0	0
15	ONCK2	Pedestrian on-crossing detector	K			0.5		-	0	0
16	DIN1	Vehicle loop	D					-	0	0
17	DX2	Vehicle loop	D			4		-	1	0
18	DX3	Vehicle loop	D			4		-	1	0
19	DSL4	Vehicle loop	D			1		-	1	0
20	DSL5	Vehicle loop	D			1		-	1	0
21	EQa	Vehicle loop	-	5				-	0	0
22	EQb	Vehicle loop	-	5				-	0	0
23	FIN1	Vehicle loop	F					-	0	0
24	FIN2	Vehicle loop	F					-	0	1
25	FX3	Vehicle loop	F			4		-	1	0
26	FX4	Vehicle loop	F			4		-	1	0
27	FX5	Vehicle loop	F			4		-	1	0
28	FSL6	Vehicle loop	F			1		-	1	0
29	FSL7	Vehicle loop	F			1		-	1	0
30	FSL8	Vehicle loop	F			1		-	1	0
31	HIN1	Vehicle loop	H					-	0	0
32	HX2	Vehicle loop	H			4		-	1	0
33	HX3	Vehicle loop	H			4		-	1	0
34	HSL4	Vehicle loop	H			1		-	1	0
35	HSL5	Vehicle loop	H			1		-	1	0
36	PBUJ1	Push button (kerbside A)	J					KSDJ1	1	1
37	PBUJ2	Push button (kerbside A)	J					KSDJ2	1	1
38	PBUJ3	Push button (kerbside A)	J					KSDJ2	1	1
39	ONCJ1	Pedestrian on-crossing detector	J			0.5		-	0	0
40	ONCJ2	Pedestrian on-crossing detector	J			0.5		-	0	0
41	KSDJ1	Pedestrian kerbside detector	-		2			-	0	0
42	KSDJ2	Pedestrian kerbside detector	-		2			-	0	0
43	Qa	Vehicle loop	-	10	2			-	0	0
44	Qb	Vehicle loop	-	20	2			-	0	0
45	EXITQ	Vehicle loop	-	15	2			-	0	0

Hardware

ID	Detector	Type	Inv	Unit	Nr	Occ1	Noc1	Occ2	Noc2	Occ3	Noc3	Occ4	Noc4	ErrState	OkCount
1	AQa	Vehicle loop	0	MTS4E-1	1	30	1800							Occupied	32
2	AQb	Vehicle loop	0	MTS4E-1	2	30	1800							Occupied	32

ID	Detector	Type	Inv	Unit	Nr	Occ1	Noc1	Occ2	Noc2	Occ3	Noc3	Occ4	Noc4	ErrState	OkCount
3	BIN1	Vehicle loop	0	MTS4E-1	3	30	1800							Occupied	32
4	BIN2	Vehicle loop	0	MTS4E-1	4	30	1800							Occupied	32
5	BX3	Vehicle loop	0	MTS4E-2	1	30	1800							Occupied	32
6	BX4	Vehicle loop	0	MTS4E-2	2	30	1800							Occupied	32
7	BX5	Vehicle loop	0	MTS4E-2	3	30	1800							Occupied	32
8	BSL6	Vehicle loop	0	MTS4E-2	4	30	1800							Occupied	32
9	BSL7	Vehicle loop	0	MTS4E-3	1	30	1800							Occupied	32
10	BSL8	Vehicle loop	0	MTS4E-3	2	30	1800							Occupied	32
11	PBUK1	Push button	0	IO1616-2	1	5								Occupied	2
12	PBUK2	Push button	0	IO1616-2	2	5								Occupied	2
13	PBUK3	Push button	0	IO1616-2	3	5								Occupied	2
14	ONCK1	Pedestrian on-crossing detector	0	IO1616-2	4	30	1800							Occupied	
15	ONCK2	Pedestrian on-crossing detector	0	IO1616-2	5	30	1800							Occupied	
16	DIN1	Vehicle loop	0	MTS4E-3	3	30	1800							Occupied	32
17	DX2	Vehicle loop	0	MTS4E-3	4	30	1800							Occupied	32
18	DX3	Vehicle loop	0	MTS4E-4	1	30	1800							Occupied	32
19	DSL4	Vehicle loop	0	MTS4E-4	2	30	1800							Occupied	32
20	DSL5	Vehicle loop	0	MTS4E-4	3	30	1800							Occupied	32
21	EQa	Vehicle loop	0	MTS4E-4	4	30	1800							Occupied	32
22	EQb	Vehicle loop	0	MTS4E-5	1	30	1800							Occupied	32
23	FIN1	Vehicle loop	0	MTS4E-5	2	30	1800							Occupied	32
24	FIN2	Vehicle loop	0	MTS4E-5	3	30	1800							Occupied	32
25	FX3	Vehicle loop	0	MTS4E-5	4	30	1800							Occupied	32
26	FX4	Vehicle loop	0	MTS4E-6	1	30	1800							Occupied	32
27	FX5	Vehicle loop	0	MTS4E-6	2	30	1800							Occupied	32
28	FSL6	Vehicle loop	0	MTS4E-6	3	30	1800							Occupied	32
29	FSL7	Vehicle loop	0	MTS4E-6	4	30	1800							Occupied	32
30	FSL8	Vehicle loop	0	MTS4E-7	1	30	1800							Occupied	32
31	HIN1	Vehicle loop	0	MTS4E-7	2	30	1800							Occupied	32
32	HX2	Vehicle loop	0	MTS4E-7	3	30	1800							Occupied	32
33	HX3	Vehicle loop	0	MTS4E-7	4	30	1800							Occupied	32
34	HSL4	Vehicle loop	0	MTS4E-8	1	30	1800							Occupied	32
35	HSL5	Vehicle loop	0	MTS4E-8	2	30	1800							Occupied	32
36	PBUJ1	Push button (kerbside A)	0	IO1616-2	6	5								Occupied	2
37	PBUJ2	Push button (kerbside A)	0	IO1616-2	7	5								Occupied	2

ID	Detector	Type	Inv	Unit	Nr	Occ1	Noc1	Occ2	Noc2	Occ3	Noc3	Occ4	Noc4	ErrState	OkCount
38	PBUJ3	Push button (kerbside A)	0	IO1616-2	8	5								Occupied	2
39	ONCJ1	Pedestrian on-crossing detector	0	IO1616-2	9	30	1800							Occupied	
40	ONCJ2	Pedestrian on-crossing detector	0	IO1616-2	10	30	1800							Occupied	
41	KSDJ1	Pedestrian kerbside detector	0	IO1616-2	11									-	
42	KSDJ2	Pedestrian kerbside detector	0	IO1616-2	12									-	
43	Qa	Vehicle loop	0	MTS4E-8	3	30	1800							Occupied	32
44	Qb	Vehicle loop	0	MTS4E-8	4	30	1800							Occupied	32
45	EXITQ	Vehicle loop	0	MTS4E-9	1	30	1800							Occupied	32

Supervision time

Day	On time	Off time
Monday	00:00	24:00
Tuesday	00:00	24:00
Wednesday	00:00	24:00
Thursday	00:00	24:00
Friday	00:00	24:00
Saturday	00:00	24:00
Sunday	00:00	24:00

MASTER TIME CLOCK

MTC table

ID	Function	Arg1	Arg2	Start	End	M	N	W	T	F	S	S	1	2	3	4	5	6	7	8	Description
1	Timing set	1	0	07:00:00	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
2	CLF plan	1	0	07:00:01	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
3	CLF plan	2	0	09:00:00	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
4	Timing set	2	0	09:30:00	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
5	CLF plan	3	0	15:00:00	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
6	Timing set	3	0	16:00:00	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
7	CLF plan	4	0	18:00:00	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
8	Timing set	4	0	18:30:00	24:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
9	CLF plan	4	0	00:00:00	07:00:00	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
10	Timing set	5	0	09:00:00	24:00:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
11	CLF plan	2	0	09:00:01	24:00:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
12	Timing set	6	0	20:00:00	24:00:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
13	CLF plan	4	0	20:00:01	24:00:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
14	CLF plan	4	0	00:00:00	09:00:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
15	Timing set	7	0	09:00:00	24:00:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
16	CLF plan	2	0	09:00:01	24:00:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
17	Timing set	8	0	20:00:00	24:00:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
18	CLF plan	4	0	20:00:01	24:00:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
19	CLF plan	4	0	00:00:00	09:00:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	

CONFLICT EXTENSION RED

CABLELESS LINKING FACILITY

Plans

Global settings

Sync. Mode: Daily

Sync. Day: Monday

Ref. time: 06:00

No	Cycle	Offset	EntryTime	ExitTime
1	50	0		
2	50	0		
3	50	0		
4	50	0		

Functions and actions

PLAN 1

No	Time	Influence	Stage	Stream
1	25	IM: Immediate move	1	1
2	0	IM: Immediate move	2	1
3	46	IM: Immediate move	4	2
4	30	IM: Immediate move	5	2
5	23	IM: Immediate move	7	3
6	1	IM: Immediate move	8	3
7	46	IM: Immediate move	11	4
8	32	IM: Immediate move	10	4

PLAN 2

No	Time	Influence	Stage	Stream
1	25	IM: Immediate move	1	1
2	0	IM: Immediate move	2	1
3	46	IM: Immediate move	4	2
4	30	IM: Immediate move	5	2
5	23	IM: Immediate move	7	3
6	1	IM: Immediate move	8	3
7	46	IM: Immediate move	11	4
8	32	IM: Immediate move	10	4

PLAN 3

No	Time	Influence	Stage	Stream
1	25	IM: Immediate move	1	1
2	0	IM: Immediate move	2	1
3	46	IM: Immediate move	4	2
4	30	IM: Immediate move	5	2
5	23	IM: Immediate move	7	3
6	1	IM: Immediate move	8	3
7	46	IM: Immediate move	11	4
8	32	IM: Immediate move	10	4

PLAN 4

No	Time	Influence	Stage	Stream
1	25	IM: Immediate move	1	1
2	0	IM: Immediate move	2	1
3	46	IM: Immediate move	4	2
4	30	IM: Immediate move	5	2
5	23	IM: Immediate move	7	3
6	1	IM: Immediate move	8	3

No	Time	Influence	Stage	Stream
7	46	IM: Immediate move	11	4
8	32	IM: Immediate move	10	4

OTU

Units

GENERAL INTEGRAL OTU OPTIONS

Integral OTU: -

DISCRETE OTU

ID	Invert control bits	Invert reply bits
1	0	1

Control and reply bits

CONTROL BITS

ID	Function	Arg	Label
1	F	1	F1
2	F	2	F2
3	TO	0	TO
4	-	0	
5	F	4	F4
6	F	5	F5
7	-	0	
8	-	0	
9	F	7	F7
10	F	8	F8
11	-	0	
12	-	0	
13	F	10	F10
14	F	11	F11
15	-	0	
16	-	0	

REPLY BITS

ID	Function	Arg	Label
1	G	1	G1
2	G	2	G2
3	UF	1	CRB1
4	-	0	
5	G	4	G4
6	G	5	G5
7	UF	2	CRB2
8	-	0	
9	G	7	G7
10	G	8	G8
11	UF	3	CRB3
12	-	0	
13	G	10	G10
14	G	11	G11
15	UF	4	CRB4
16	-	0	

RTC

Synchronisation time (UTC TS input)	00:00
Confirm time (UTC RT output)	0:0:0

SPECIAL UTC REPLY BITS

.	G1/G2	RR
Manual mode operative	0	1
Manual mode selected	0	1
No lamp power (excluding RLM and PT)	1	.

Normal not selected on the manual panel	0	1

UG405 Bit Mapping

Settings

Enable UG405	0
OTU System Code Number(SCN)	

CONTROL BITS

ID	Function	Arg	Label	Controller SCN	UG405 Name	Bit Index
1	F	1	F1		-	
2	F	2	F2		-	
3	TO	0	TO		-	
4	-	0			-	
5	F	4	F4		-	
6	F	5	F5		-	
7	-	0			-	
8	-	0			-	
9	F	7	F7		-	
10	F	8	F8		-	
11	-	0			-	
12	-	0			-	
13	F	10	F10		-	
14	F	11	F11		-	
15	-	0			-	
16	-	0			-	

REPLY BITS

ID	Function	Arg	Label	Controller SCN	UG405 Name	Bit Index
1	G	1	G1		-	
2	G	2	G2		-	
3	UF	1	CRB1		-	
4	-	0			-	
5	G	4	G4		-	
6	G	5	G5		-	
7	UF	2	CRB2		-	
8	-	0			-	
9	G	7	G7		-	
10	G	8	G8		-	
11	UF	3	CRB3		-	
12	-	0			-	
13	G	10	G10		-	
14	G	11	G11		-	
15	UF	4	CRB4		-	
16	-	0			-	

UTC FAULT LOGGING REPLY BITS (FLOG)

General Faults and Events

Fault ID	Fault/Event Names	Flog1	Flog2	Flog3	Flog4
0	POWERFAIL	0	0	0	0
1	Mains Low	0	0	0	0
2	CPU-B CRC CODE (CRC check failed)	0	0	0	0
3	CPU-B CRC DATA (configuration error)	0	0	0	0
4	CPU-B LCM (error in current measuring)	0	0	0	0
6	CPU-B LCM DIAG (communication problem)	0	0	0	0
7	CPU-B LOT SLOW	0	0	0	0
8	CPU-A ALARM (CPU-A has switched the lights off.)	0	0	0	0
9	XP ALARM	0	0	0	0
10	USER ALARM	0	0	0	0
11	MAINS SYNC	0	0	0	0
13	LOC-LOC	0	0	0	0
14	CPU-B COM CPU-A	0	0	0	0
25	CPU-A COM CPU-B	0	0	0	0
28	CPU-A (EXT)	0	0	0	0
52	DEADLOCK SG	0	0	0	0
81	PHASE INH SG ON	0	0	0	0
100	CPU-A XLM name	0	0	0	0
101	CONFLICT	0	0	0	0
102	OMS ERROR	0	0	0	0
110	PARAM LOG 1	0	0	0	0
151	BATTERY ERROR	0	0	0	0
193	DIMMING FAIL	0	0	0	0
194	DIMMING OK	0	0	0	0
217	MIMIC MODE ON	0	0	0	0
218	CPU-A/B ID	0	0	0	0
243	WATCHDOG	0	0	0	0
250	MAINS OFF	0	0	0	0

Functional safety errors

Fault ID	Error Names	Flog1	Flog2	Flog3	Flog4
0	Switch off	0	0	0	0
1	Conflict between SG1 and SG2	0	0	0	0
2	Minimum timing violation of SG in state S	0	0	0	0
3	Maximum timing violation of SG in state S	0	0	0	0
4	Sequence error for SG in state S	0	0	0	0
5	Minimum timing violation of stream XP in state S	0	0	0	0
6	Maximum timing violation of stream XP in state S	0	0	0	0
7	Sequence error for stream XP in state S	0	0	0	0

Unit Errors

Fault ID	Error Names	Flog1	Flog2	Flog3	Flog4
1	LCM unit has failed or is missing	0	0	0	0
9	PAR-IO16 Error	0	0	0	0
10	Integral OTU has lost communication with the in-station or off-line due to F bit timeout.	0	0	0	0
11	MTS4E detector panel Error	0	0	0	0
13	Manual panel Error	0	0	0	0

Lamp switch errors

Fault ID	Error Names	Flog1	Flog2	Flog3	Flog4
0	All switches	0	0	0	0

Lamp errors

Fault ID	Error Names	Flog1 FIRST LAMP	Flog1 SECOND LAMP	Flog1 LAST LAMP	Flog2 FIRST LAMP	Flog2 SECOND LAMP	Flog2 LAST LAMP	Flog3 FIRST LAMP	Flog3 SECOND LAMP	Flog3 LAST LAMP	Flog4 FIRST LAMP	Flog4 SECOND LAMP	Flog4 LAST LAMP
0	All Lamps	0	0	0	0	0	0	0	0	0	0	0	0

Detector errors

ID	Detectors	Flog1 Fault	Flog1 Active alaram	Flog1 Inactive alaram	Flog1 Override	Flog2 Fault	Flog2 Active alaram	Flog2 Inactive alaram	Flog2 Override	Flog3 Fault	Flog3 Active alaram	Flog3 Inactive alaram	Flog3 Override	Flog4 Fault	Flog4 Active alaram	Flog4 Inactive alaram	Flog4 Override
1	AQa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	AQb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	BIN1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	BIN2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	BX3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	BX4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	BX5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	BSL6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	BSL7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	BSL8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	PBUK1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	PBUK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	PBUK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	ONCK1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	ONCK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	DIN1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	DX2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	DX3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	DSL4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	DSL5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	EQa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	EQb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	FIN1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	FIN2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	FX3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	FX4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	FX5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	FSL6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	FSL7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	FSL8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	HIN1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	HX2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	HX3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	HSL4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	HSL5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	PBUJ1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	PBUJ2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	PBUJ3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	ONCJ1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	ONCJ2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	KSDJ1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	KSDJ2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	Qa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Qb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	EXITQ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

HURRY CALLS

PUBLIC SERVICE VEHICLE PRIORITY

SPEED ASSESSMENT AND SPEED DISCRIMINATION

GENERAL PURPOSE I/O

Hardware

INPUTS

ID	Input	Invert	Toggle	Unit	Bit	Flag
1	UTC_I1	0	0	IO1616-1	1	
2	UTC_I2	0	0	IO1616-1	2	
3	UTC_I3	0	0	IO1616-1	3	
4	UTC_I4	0	0	IO1616-1	4	
5	UTC_I5	0	0	IO1616-1	5	
6	UTC_I6	0	0	IO1616-1	6	
7	UTC_I7	0	0	IO1616-1	7	
8	UTC_I8	0	0	IO1616-1	8	
9	UTC_I9	0	0	IO1616-1	9	
10	UTC_I10	0	0	IO1616-1	10	
11	UTC_I11	0	0	IO1616-1	11	
12	UTC_I12	0	0	IO1616-1	12	
13	UTC_I13	0	0	IO1616-1	13	
14	UTC_I14	0	0	IO1616-1	14	
15	UTC_I15	0	0	IO1616-1	15	
16	UTC_I16	0	0	IO1616-1	16	
17	DIM_IN	0	0	DIMMING	1	DIMR

OUTPUTS

ID	Output	Invert	Unit	Bit	Flag
1	DET9_0	0	IO1616-2	1	
2	DET9_2	0	IO1616-2	2	
3	DET20	0	IO1616-2	3	
4	DET21	0	IO1616-2	4	
5	DET22	0	IO1616-2	5	
6	DET23_0	0	IO1616-2	6	
7	DET24_0	0	IO1616-2	7	
8	DET25_0	0	IO1616-2	8	
9	DET26_0	0	IO1616-2	9	
10	DET23_2	0	IO1616-2	10	
11	DET24_2	0	IO1616-2	11	
12	DET25_2	0	IO1616-2	12	
13	DET26_2	0	IO1616-2	13	
14	DET27_0	0	IO1616-2	14	
15	DET28_0	0	IO1616-2	15	
16	DET29_0	0	IO1616-2	16	
17	DET30_0	0	IO1616-3	1	
18	DET31_0	0	IO1616-3	2	
19	DET32_0	0	IO1616-3	3	
20	DET27_1	0	IO1616-3	4	
21	DET28_1	0	IO1616-3	5	
22	DET29_1	0	IO1616-3	6	
23	DET30_1	0	IO1616-3	7	
24	DET31_1	0	IO1616-3	8	
25	DET32_1	0	IO1616-3	9	
26	DET27_2	0	IO1616-3	10	
27	DET28_2	0	IO1616-3	11	
28	DET29_2	0	IO1616-3	12	
29	DET30_2	0	IO1616-3	13	
30	DET31_2	0	IO1616-3	14	
31	DET32_2	0	IO1616-3	15	
32	DET27_3	0	IO1616-3	16	
33	DET28_3	0	IO1616-4	1	

ID	Output	Invert	Unit	Bit	Flag
34	DET29_3	0	IO1616-4	2	
35	DET30_3	0	IO1616-4	3	
36	DET31_3	0	IO1616-4	4	
37	DET32_3	0	IO1616-4	5	
38	UTC_O1	0	IO1616-1	1	
39	UTC_O2	0	IO1616-1	2	
40	UTC_O3	0	IO1616-1	3	
41	UTC_O4	0	IO1616-1	4	
42	UTC_O5	0	IO1616-1	5	
43	UTC_O6	0	IO1616-1	6	
44	UTC_O7	0	IO1616-1	7	
45	UTC_O8	0	IO1616-1	8	
46	UTC_O9	0	IO1616-1	9	
47	UTC_O10	0	IO1616-1	10	
48	UTC_O11	0	IO1616-1	11	
49	UTC_O12	0	IO1616-1	12	
50	UTC_O13	0	IO1616-1	13	
51	UTC_O14	0	IO1616-1	14	
52	UTC_O15	0	IO1616-1	15	
53	UTC_O16	0	IO1616-1	16	
54	DIM_OUT	0	DIMMING	1	DIMA
55	DET6_0	0	IO1616-4	6	

APPLICATION BUILDING BLOCKS

User Parameters

ID	Name	DEF	MIN	MAX
1	EXT7_8	0	0	1

Memory Elements

ID	Timer	Duration
1	Det28_0	0
2	Det30_0	0
3	Det32_0	0
4	Det28_1	0
5	Det30_1	0
6	Det32_1	0
7	Det28_2	0
8	Det30_2	0
9	Det32_2	0
10	Det28_3	0
11	Det30_3	0
12	Det32_3	0

Event Pulses

ID	Name	Type	R	InType	On	OFF
1	Det27_0Pulse	1	1	1	80	20
2	Det28_0Hold	1	0	1	80	20
3	Det28_0Off	1	0	2	100	0
4	Det28_0OR	2	0	0	900	0
5	Det29_0Pulse	1	1	1	80	20
6	Det30_0Hold	1	0	1	80	20
7	Det30_0Off	1	0	2	100	20
8	Det30_0OR	2	0	0	900	0
9	Det31_0Pulse	1	1	1	80	20
10	Det32_0Hold	1	0	1	80	20
11	Det32_0Off	1	0	2	100	20
12	Det32_0OR	2	0	0	900	0
13	Det27_1Pulse	1	1	1	80	20
14	Det28_1Hold	1	0	1	80	20
15	Det28_1Off	1	0	2	100	20
16	Det28_1OR	2	0	0	900	0
17	Det29_1Pulse	1	1	1	80	20
18	Det30_1Hold	1	0	1	80	20
19	Det30_1Off	1	0	2	100	20
20	Det30_1OR	2	0	0	900	0
21	Det31_1Pulse	1	1	1	80	20
22	Det32_1Hold	1	0	1	80	20
23	Det32_1Off	1	0	2	100	20
24	Det32_1OR	2	0	0	900	0
25	Det27_2Pulse	1	1	1	80	20
26	Det28_2Hold	1	0	1	80	20
27	Det28_2Off	1	0	2	100	20
28	Det28_2OR	2	0	0	900	0
29	Det29_2Pulse	1	1	1	80	20
30	Det30_2Hold	1	0	1	80	20
31	Det30_2Off	1	0	2	100	20
32	Det30_2OR	2	0	0	900	0
33	Det31_2Pulse	1	1	1	80	20
34	Det32_2Hold	1	0	1	80	20
35	Det32_2Off	1	0	2	100	20
36	Det32_2OR	2	0	0	900	0

ID	Name	Type	R	InType	On	OFF
37	Det27_3Pulse	1	1	1	80	20
38	Det28_3Hold	1	0	1	80	20
39	Det28_3Off	1	0	2	100	20
40	Det28_3OR	2	0	0	900	0
41	Det29_3Pulse	1	1	1	80	20
42	Det30_3Hold	1	0	1	80	20
43	Det30_3Off	1	0	2	100	20
44	Det30_3OR	2	0	0	900	0
45	Det31_3Pulse	1	1	1	80	20
46	Det32_3Hold	1	0	1	80	20
47	Det32_3Off	1	0	2	100	20
48	Det32_3OR	2	0	0	900	0
49	Pedlink	1	0	2	80	20
50	AQaPulse	1	0	1	0	20
51	AQbPulse	1	0	1	0	20
52	EQaPulse	1	0	1	0	20
53	EQbPulse	1	0	1	0	20
54	CrbPulse1	3	0	0	1200	20
55	CrbPulse2	3	0	0	1200	20
56	CrbPulse3	3	0	0	1200	20
57	CrbPulse4	3	0	0	1200	20

VM FUNCTIONS

OTU

rf_2(arg) = cfa;
urG1() = (stgc(0)==1) && (stgr(0,0,0));
urDR1() = dr(A) ||dr(K);
urG2() = (stgc(0)==2) && (stgr(0,0,0));
urDR2() = dr(B);
urG3() = (stgc(0)==3) && (stgr(0,0,0));
urG4() = (stgc(1)==4) && (stgr(1,0,0));
urDR4() = dr(C);
urG5() = (stgc(1)==5) && (stgr(1,0,0));
urDR5() = dr(D);
urG6() = (stgc(1)==6) && (stgr(1,0,0));
urG7() = (stgc(2)==7) && (stgr(2,0,0));
urDR7() = dr(E);
urG8() = (stgc(2)==8) && (stgr(2,0,0));
urDR8() = dr(F);
urG9() = (stgc(2)==9) && (stgr(2,0,0));
urG10() = (stgc(3)==10) && (stgr(3,0,0));
urDR10() = dr(G);
urG11() = (stgc(3)==11) && (stgr(3,0,0));
urDR11() = dr(H);
urG12() = (stgc(3)==12) && (stgr(3,0,0));
urG13() = (stgc(4)==13) && (stgr(4,0,0));
urDR13() = dr(I);
urG14() = (stgc(4)==14) && (stgr(4,0,0));
urDR14() = dr(J);
urG15() = (stgc(4)==15) && (stgr(4,0,0));

CLF

UTC

r_uf1() = mpauto(xp) && (evp(54)==0);
r_uf2() = mpauto(xp) && (evp(55)==0);
r_uf3() = mpauto(xp) && (evp(56)==0);
r_uf4() = mpauto(xp) && (evp(57)==0);

PSVP

Hurry call

Phase delays

```
phd1() = mMAN(xp);

phd2() = mMAN(xp);

phd3() = mMAN(xp);

phd4() = ddro(Qa) || ddro(Qb) && UP(0);

phd5() = ddro(Qa) || ddro(Qb) && UP(0);

phd6() = mMAN(xp);
```

Phase delays

```
phd1() = mMAN(xp);

phd2() = mMAN(xp);

phd3() = mMAN(xp);

phd4() = ddro(Qa) || ddro(Qb) && UP(0);

phd5() = ddro(Qa) || ddro(Qb) && UP(0);

phd6() = mMAN(xp);
```

Streams

```
roffsync() = okoff(0) && okoff(1) && okoff(2) && okoff(3) && okoff(4);

mac1_swon(t) = yellow_period(0,t);

macon1() = minon(xp)==0;

macoff1() = (macm(xp) <= 1) && (mact(xp) <= tson(7));

mac2_swon(t) = yellow_period(1,t);

macon2() = minon(xp)==0;

macoff2() = (macm(xp) <= 1) && (mact(xp) <= tson(7));

mac3_swon(t) = yellow_period(2,t);

macon3() = minon(xp)==0;

macoff3() = (macm(xp) <= 1) && (mact(xp) <= tson(7));

mac4_swon(t) = yellow_period(3,t);

macon4() = minon(xp)==0;

macoff4() = (macm(xp) <= 1) && (mact(xp) <= tson(7));

mac5_swon(t) = yellow_period(4,t);

macon5() = minon(xp)==0;

macoff5() = (macm(xp) <= 1) && (mact(xp) <= tson(7));
```

Detectors

```
dact_ONCK1() = fcg(K) || fcr(K) || (fcbo(K) >= 3);

dact_ONCK2() = fcg(K) || fcr(K) || (fcbo(K) >= 3);

dact_ONCJ1() = fcg(J) || fcr(J) || (fcbo(J) >= 3);

dact_ONCJ2() = fcg(J) || fcr(J) || (fcbo(J) >= 3);
```

Phases

```
pd_ALL(ph)

if ((xsf(XSF_PSET_ERR) != AUTOSET_STATE_DONE) && (xsf(XSF_PSET_ERR) != AUTOSET_STATE_ERROR)) then return (1); endif
end

pe_ALL(ph) = ngp1(ph);

wl_J() = dr(J) || fci(J);

pvbo_J() = ((dact(ONCJ1)==0) || dde(ONCJ1) || (ddg1(ONCJ1)==0)) || ((dact(ONCJ2)==0) || dde(ONCJ2) || (ddg1(ONCJ2)==0));

wl_K() = dr(K) || fci(K);

pt_K() = fcg(K);

pvbo_K() = ((dact(ONCK1)==0) || dde(ONCK1) || (ddg1(ONCK1)==0)) || ((dact(ONCK2)==0) || dde(ONCK2) || (ddg1(ONCK2)==0));
```

Timing sets

Dummy detectors

Modes

```
rHCH() = rar(xp);

rUTC() = ufav(xp)||ufpv(xp);

rMAN() = mpman(xp);

rCLF() = clfp && (clfi == 0);

rVA() = 1;

rFT() = 1;

rSCLF() = clfp && (mpclf(xp) || clfmp);

rSVA() = mpva(xp);

rSFT() = mpft(xp);
```

Integral OTU

```
otu_dstate(d) = get(h_xdet_sts, d) & DET_BEZET_MASK;

otu_dfault(d) = get(h_xdet_sts, d) & DET_FAULT_MASK;

otu_dcnt(d) = get(h_xdet_cnt, d);
```

Conflict extension red

Stage moves - HCH

```
mHCH1_3d() = rar(xp);

mHCH2_3d() = rar(xp);

mHCH4_6d() = rar(xp);

mHCH5_6d() = rar(xp);

mHCH7_9d() = rar(xp);

mHCH8_9d() = rar(xp);

mHCH10_12d() = rar(xp);
```

mHCH11_12d() = rar(xp);

mHCH13_15d() = rar(xp);

mHCH14_15d() = rar(xp);

Stage moves - HCL

Stage moves - VA

mVA1_2d() = dSTGd(1, 2);

mVA1_2e() = dSTGe(1, 2);

mVA1_2i() = FALSE;

mVA1_3d() = dSTGd(1, 3);

mVA1_3e() = dSTGe(1, 3);

mVA1_3i() = FALSE;

mVA2_3d() = dSTGd(2, 3);

mVA2_3e() = dSTGe(2, 3);

mVA2_3i() = FALSE;

mVA2_1d() = dSTGd(2, 1);

mVA2_1e() = dSTGe(2, 1);

mVA2_1i() = FALSE;

mVA2_1du4() = dn();

mVA2_1eu4() = dSTGe(2, 1);

mVA2_1iu4() = FALSE;

mVA3_1d() = dSTGd(3, 1);

mVA3_1e() = dSTGe(3, 1);

mVA3_1i() = FALSE;

mVA3_2d() = dSTGd(3, 2);

mVA3_2e() = dSTGe(3, 2);

mVA3_2i() = FALSE;

mVA3_1du4() = dn();

mVA3_1eu4() = dSTGe(3, 1);

mVA3_1iu4() = FALSE;

mVA4_5d() = dSTGd(4, 5);

mVA4_5e() = dSTGe(4, 5);

mVA4_5i() = FALSE;

mVA4_6d() = dSTGd(4, 6);

mVA4_6e() = dSTGe(4, 6);

mVA4_6i() = FALSE;

mVA5_6d() = dSTGd(5, 6);

mVA5_6e() = dSTGe(5, 6);

mVA5_6i() = FALSE;

mVA5_4d() = dSTGd(5, 4);

mVA5_4e() = dSTGe(5, 4);

mVA5_4i() = FALSE;

```
mVA5_4du4() = dn();
mVA5_4eu4() = dSTGe(5, 4);
mVA5_4iu4() = FALSE;
mVA6_4d() = dSTGd(6, 4);
mVA6_4e() = dSTGe(6, 4);
mVA6_4i() = FALSE;
mVA6_5d() = dSTGd(6, 5);
mVA6_5e() = dSTGe(6, 5);
mVA6_5i() = FALSE;
mVA6_4du4() = dn();
mVA6_4eu4() = dSTGe(6, 4);
mVA6_4iu4() = FALSE;
mVA7_8d() = dSTGd(7, 8);
mVA7_8e() = dSTGe(7, 8);
mVA7_8i() = FALSE;
mVA7_9d() = dSTGd(7, 9);
mVA7_9e() = dSTGe(7, 9);
mVA7_9i() = FALSE;
mVA8_9d() = dSTGd(8, 9);
mVA8_9e() = dSTGe(8, 9);
mVA8_9i() = FALSE;
mVA8_7d() = dSTGd(8, 7);
mVA8_7e() = dSTGe(8, 7);
mVA8_7i() = FALSE;
mVA8_7du4() = dn();
mVA8_7eu4() = dSTGe(8, 7);
mVA8_7iu4() = FALSE;
mVA9_7d() = dSTGd(9, 7);
mVA9_7e() = dSTGe(9, 7);
mVA9_7i() = FALSE;
mVA9_8d() = dSTGd(9, 8);
mVA9_8e() = dSTGe(9, 8);
mVA9_8i() = FALSE;
mVA9_7du4() = dn();
mVA9_7eu4() = dSTGe(9, 7);
mVA9_7iu4() = FALSE;
mVA10_11d() = dSTGd(10, 11);
mVA10_11e() = dSTGe(10, 11);
mVA10_11i() = FALSE;
mVA10_12d() = dSTGd(10, 12);
mVA10_12e() = dSTGe(10, 12);
mVA10_12i() = FALSE;
mVA11_12d() = dSTGd(11, 12);
mVA11_12e() = dSTGe(11, 12);
mVA11_12i() = FALSE;
```

mVA11_10d() = dSTGd(11, 10);

mVA11_10e() = dSTGe(11, 10);

mVA11_10i() = FALSE;

mVA11_10du4() = dn();

mVA11_10eu4() = dSTGe(11, 10);

mVA11_10iu4() = FALSE;

mVA12_10d() = dSTGd(12, 10);

mVA12_10e() = dSTGe(12, 10);

mVA12_10i() = FALSE;

mVA12_11d() = dSTGd(12, 11);

mVA12_11e() = dSTGe(12, 11);

mVA12_11i() = FALSE;

mVA12_10du4() = dn();

mVA12_10eu4() = dSTGe(12, 10);

mVA12_10iu4() = FALSE;

mVA13_14d() = dr(J) && evp(49);

mVA13_14e() = dSTGe(13, 14);

mVA13_14i() = FALSE;

mVA13_15d() = dSTGd(13, 15);

mVA13_15e() = dSTGe(13, 15);

mVA13_15i() = FALSE;

mVA14_15d() = dSTGd(14, 15);

mVA14_15e() = dSTGe(14, 15);

mVA14_15i() = FALSE;

mVA14_13d() = TRUE;

mVA14_13e() = dSTGe(14, 13);

mVA14_13i() = FALSE;

mVA14_13du4() = dn();

mVA14_13eu4() = dSTGe(14, 13);

mVA14_13iu4() = FALSE;

mVA15_13d() = dSTGd(15, 13);

mVA15_13e() = dSTGe(15, 13);

mVA15_13i() = FALSE;

mVA15_14d() = dSTGd(15, 14);

mVA15_14e() = dSTGe(15, 14);

mVA15_14i() = FALSE;

mVA15_13du4() = dn();

mVA15_13eu4() = dSTGe(15, 13);

mVA15_13iu4() = FALSE;

Stage moves - FT

mFT1_2d() = dSTGd(1, 2);

mFT1_2e() = dSTGe(1, 2);

mFT1_2i() = FALSE;

```
mFT1_3d() = dSTGd(1, 3);
mFT1_3e() = dSTGe(1, 3);
mFT1_3i() = FALSE;
mFT2_3d() = dSTGd(2, 3);
mFT2_3e() = dSTGe(2, 3);
mFT2_3i() = FALSE;
mFT2_1d() = dSTGd(2, 1);
mFT2_1e() = dSTGe(2, 1);
mFT2_1i() = FALSE;
mFT2_1du4() = dn();
mFT2_1eu4() = dSTGe(2, 1);
mFT2_1iu4() = FALSE;
mFT3_1d() = dSTGd(3, 1);
mFT3_1e() = dSTGe(3, 1);
mFT3_1i() = FALSE;
mFT3_2d() = dSTGd(3, 2);
mFT3_2e() = dSTGe(3, 2);
mFT3_2i() = FALSE;
mFT3_1du4() = dn();
mFT3_1eu4() = dSTGe(3, 1);
mFT3_1iu4() = FALSE;
mFT4_5d() = dSTGd(4, 5);
mFT4_5e() = dSTGe(4, 5);
mFT4_5i() = FALSE;
mFT4_6d() = dSTGd(4, 6);
mFT4_6e() = dSTGe(4, 6);
mFT4_6i() = FALSE;
mFT5_6d() = dSTGd(5, 6);
mFT5_6e() = dSTGe(5, 6);
mFT5_6i() = FALSE;
mFT5_4d() = dSTGd(5, 4);
mFT5_4e() = dSTGe(5, 4);
mFT5_4i() = FALSE;
mFT5_4du4() = dn();
mFT5_4eu4() = dSTGe(5, 4);
mFT5_4iu4() = FALSE;
mFT6_4d() = dSTGd(6, 4);
mFT6_4e() = dSTGe(6, 4);
mFT6_4i() = FALSE;
mFT6_5d() = dSTGd(6, 5);
mFT6_5e() = dSTGe(6, 5);
mFT6_5i() = FALSE;
mFT6_4du4() = dn();
mFT6_4eu4() = dSTGe(6, 4);
mFT6_4iu4() = FALSE;
```

```
mFT7_8d() = dSTGd(7, 8);
mFT7_8e() = dSTGe(7, 8);
mFT7_8i() = FALSE;
mFT7_9d() = dSTGd(7, 9);
mFT7_9e() = dSTGe(7, 9);
mFT7_9i() = FALSE;
mFT8_9d() = dSTGd(8, 9);
mFT8_9e() = dSTGe(8, 9);
mFT8_9i() = FALSE;
mFT8_7d() = dSTGd(8, 7);
mFT8_7e() = dSTGe(8, 7);
mFT8_7i() = FALSE;
mFT8_7du4() = dn();
mFT8_7eu4() = dSTGe(8, 7);
mFT8_7iu4() = FALSE;
mFT9_7d() = dSTGd(9, 7);
mFT9_7e() = dSTGe(9, 7);
mFT9_7i() = FALSE;
mFT9_8d() = dSTGd(9, 8);
mFT9_8e() = dSTGe(9, 8);
mFT9_8i() = FALSE;
mFT9_7du4() = dn();
mFT9_7eu4() = dSTGe(9, 7);
mFT9_7iu4() = FALSE;
mFT10_11d() = dSTGd(10, 11);
mFT10_11e() = dSTGe(10, 11);
mFT10_11i() = FALSE;
mFT10_12d() = dSTGd(10, 12);
mFT10_12e() = dSTGe(10, 12);
mFT10_12i() = FALSE;
mFT11_12d() = dSTGd(11, 12);
mFT11_12e() = dSTGe(11, 12);
mFT11_12i() = FALSE;
mFT11_10d() = dSTGd(11, 10);
mFT11_10e() = dSTGe(11, 10);
mFT11_10i() = FALSE;
mFT11_10du4() = dn();
mFT11_10eu4() = dSTGe(11, 10);
mFT11_10iu4() = FALSE;
mFT12_10d() = dSTGd(12, 10);
mFT12_10e() = dSTGe(12, 10);
mFT12_10i() = FALSE;
mFT12_11d() = dSTGd(12, 11);
mFT12_11e() = dSTGe(12, 11);
mFT12_11i() = FALSE;
```

mFT12_10du4() = dn();

mFT12_10eu4() = dSTGe(12, 10);

mFT12_10iu4() = FALSE;

mFT13_14d() = dr(J) && evp(49);

mFT13_14e() = dSTGe(13, 14);

mFT13_14i() = FALSE;

mFT13_15d() = dSTGd(13, 15);

mFT13_15e() = dSTGe(13, 15);

mFT13_15i() = FALSE;

mFT14_15d() = dSTGd(14, 15);

mFT14_15e() = dSTGe(14, 15);

mFT14_15i() = FALSE;

mFT14_13d() = TRUE;

mFT14_13e() = dSTGe(14, 13);

mFT14_13i() = FALSE;

mFT14_13du4() = dn();

mFT14_13eu4() = dSTGe(14, 13);

mFT14_13iu4() = FALSE;

mFT15_13d() = dSTGd(15, 13);

mFT15_13e() = dSTGe(15, 13);

mFT15_13i() = FALSE;

mFT15_14d() = dSTGd(15, 14);

mFT15_14e() = dSTGe(15, 14);

mFT15_14i() = FALSE;

mFT15_13du4() = dn();

mFT15_13eu4() = dSTGe(15, 13);

mFT15_13iu4() = FALSE;

Stage moves - CLF

mCLF1_2d() = dCLFd(1, 2);

mCLF1_2i() = dCLFi(1, 2);

mCLF1_3d() = dCLFd(1, 3);

mCLF1_3i() = dCLFi(1, 3);

mCLF2_3d() = dCLFd(2, 3);

mCLF2_3i() = dCLFi(2, 3);

mCLF2_1d() = dCLFd(2, 1);

mCLF2_1i() = dCLFi(2, 1);

mCLF3_1d() = dCLFd(3, 1);

mCLF3_1i() = dCLFi(3, 1);

mCLF3_2d() = dCLFd(3, 2);

mCLF3_2i() = dCLFi(3, 2);

mCLF4_5d() = dCLFd(4, 5);

mCLF4_5i() = dCLFi(4, 5);

mCLF4_6d() = dCLFd(4, 6);

```
mCLF4_6i() = dCLFi(4, 6);
mCLF5_6d() = dCLFd(5, 6);
mCLF5_6i() = dCLFi(5, 6);
mCLF5_4d() = dCLFd(5, 4);
mCLF5_4i() = dCLFi(5, 4);
mCLF6_4d() = dCLFd(6, 4);
mCLF6_4i() = dCLFi(6, 4);
mCLF6_5d() = dCLFd(6, 5);
mCLF6_5i() = dCLFi(6, 5);
mCLF7_8d() = dCLFd(7, 8);
mCLF7_8i() = dCLFi(7, 8);
mCLF7_9d() = dCLFd(7, 9);
mCLF7_9i() = dCLFi(7, 9);
mCLF8_9d() = dCLFd(8, 9);
mCLF8_9i() = dCLFi(8, 9);
mCLF8_7d() = dCLFd(8, 7);
mCLF8_7i() = dCLFi(8, 7);
mCLF9_7d() = dCLFd(9, 7);
mCLF9_7i() = dCLFi(9, 7);
mCLF9_8d() = dCLFd(9, 8);
mCLF9_8i() = dCLFi(9, 8);
mCLF10_11d() = dCLFd(10, 11);
mCLF10_11i() = dCLFi(10, 11);
mCLF10_12d() = dCLFd(10, 12);
mCLF10_12i() = dCLFi(10, 12);
mCLF11_12d() = dCLFd(11, 12);
mCLF11_12i() = dCLFi(11, 12);
mCLF11_10d() = dCLFd(11, 10);
mCLF11_10i() = dCLFi(11, 10);
mCLF12_10d() = dCLFd(12, 10);
mCLF12_10i() = dCLFi(12, 10);
mCLF12_11d() = dCLFd(12, 11);
mCLF12_11i() = dCLFi(12, 11);
mCLF13_14d() = dr(J) && evp(49);
mCLF13_14i() = dCLFi(13, 14);
mCLF13_15d() = dCLFd(13, 15);
mCLF13_15i() = dCLFi(13, 15);
mCLF14_15d() = dCLFd(14, 15);
mCLF14_15i() = dCLFi(14, 15);
mCLF14_13d() = TRUE;
mCLF14_13i() = dCLFi(14, 13);
mCLF15_13d() = dCLFd(15, 13);
mCLF15_13i() = dCLFi(15, 13);
mCLF15_14d() = dCLFd(15, 14);
mCLF15_14i() = dCLFi(15, 14);
```

Stage moves - UTC
mUTC1_2d() = dUTCd(1, 2);
mUTC1_2i() = dUTCi(1, 2);
mUTC1_3d() = dUTCd(1, 3);
mUTC1_3i() = dUTCi(1, 3);
mUTC2_3d() = dUTCd(2, 3);
mUTC2_3i() = dUTCi(2, 3);
mUTC2_1d() = dUTCd(2, 1);
mUTC2_1i() = dUTCi(2, 1);
mUTC3_1d() = dUTCd(3, 1);
mUTC3_1i() = dUTCi(3, 1);
mUTC3_2d() = dUTCd(3, 2);
mUTC3_2i() = dUTCi(3, 2);
mUTC4_5d() = dUTCd(4, 5);
mUTC4_5i() = dUTCi(4, 5);
mUTC4_6d() = dUTCd(4, 6);
mUTC4_6i() = dUTCi(4, 6);
mUTC5_6d() = dUTCd(5, 6);
mUTC5_6i() = dUTCi(5, 6);
mUTC5_4d() = dUTCd(5, 4);
mUTC5_4i() = dUTCi(5, 4);
mUTC6_4d() = dUTCd(6, 4);
mUTC6_4i() = dUTCi(6, 4);
mUTC6_5d() = dUTCd(6, 5);
mUTC6_5i() = dUTCi(6, 5);
mUTC7_8d() = dUTCd(7, 8);
mUTC7_8i() = dUTCi(7, 8);
mUTC7_9d() = dUTCd(7, 9);
mUTC7_9i() = dUTCi(7, 9);
mUTC8_9d() = dUTCd(8, 9);
mUTC8_9i() = dUTCi(8, 9);
mUTC8_7d() = dUTCd(8, 7);
mUTC8_7i() = dUTCi(8, 7);
mUTC9_7d() = dUTCd(9, 7);
mUTC9_7i() = dUTCi(9, 7);
mUTC9_8d() = dUTCd(9, 8);
mUTC9_8i() = dUTCi(9, 8);
mUTC10_11d() = dUTCd(10, 11);
mUTC10_11i() = dUTCi(10, 11);
mUTC10_12d() = dUTCd(10, 12);
mUTC10_12i() = dUTCi(10, 12);
mUTC11_12d() = dUTCd(11, 12);
mUTC11_12i() = dUTCi(11, 12);

```
mUTC11_10d() = dUTCd(11, 10);
mUTC11_10i() = dUTCi(11, 10);
mUTC12_10d() = dUTCd(12, 10);
mUTC12_10i() = dUTCi(12, 10);
mUTC12_11d() = dUTCd(12, 11);
mUTC12_11i() = dUTCi(12, 11);
mUTC13_14d() = dr(J) && evp(49);
mUTC13_14i() = dUTCi(13, 14);
mUTC13_15d() = dUTCd(13, 15);
mUTC13_15i() = dUTCi(13, 15);
mUTC14_15d() = dUTCd(14, 15);
mUTC14_15i() = dUTCi(14, 15);
mUTC14_13d() = TRUE;
mUTC14_13i() = dUTCi(14, 13);
mUTC15_13d() = dUTCd(15, 13);
mUTC15_13i() = dUTCi(15, 13);
mUTC15_14d() = dUTCd(15, 14);
mUTC15_14i() = dUTCi(15, 14);
```

Stage moves - PSVP

Stage moves - MAN

```
mMAN1_2d() = mstg(xp)==2;
mMAN1_3d() = mstg(xp)==3;
mMAN2_3d() = mstg(xp)==3;
mMAN2_1d() = mstg(xp)==1;
mMAN3_1d() = mstg(xp)==1;
mMAN3_2d() = mstg(xp)==2;
mMAN4_5d() = mstg(xp)==5;
mMAN4_6d() = mstg(xp)==6;
mMAN5_6d() = mstg(xp)==6;
mMAN5_4d() = mstg(xp)==4;
mMAN6_4d() = mstg(xp)==4;
mMAN6_5d() = mstg(xp)==5;
mMAN7_8d() = mstg(xp)==8;
mMAN7_9d() = mstg(xp)==9;
mMAN8_9d() = mstg(xp)==9;
mMAN8_7d() = mstg(xp)==7;
mMAN9_7d() = mstg(xp)==7;
mMAN9_8d() = mstg(xp)==8;
mMAN10_11d() = mstg(xp)==11;
mMAN10_12d() = mstg(xp)==12;
mMAN11_12d() = mstg(xp)==12;
```

```
mMAN11_10d() = mstg(xp)==10;
mMAN12_10d() = mstg(xp)==10;
mMAN12_11d() = mstg(xp)==11;
mMAN13_14d() = dr(J) && evp(49);
mMAN13_15d() = FALSE;
mMAN14_15d() = FALSE;
mMAN14_13d() = TRUE;
mMAN15_13d() = mstg(xp)==13;
mMAN15_14d() = mstg(xp)==14;
```

Stage moves - General

```
dSTGd(f,t) = drs(t);
dSTGe(f,t) = exm(t);
dUTCd(f,t) = uF(t) || (uFD(t) && (uD(t) || drs(t)));
dUTCi(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd(f,t) = cIM(t) || (cDD(t) && drs(t)) || (cPS(t) && drs(t));
dCLFi(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dPSVPd(f,t) = drs(t);
dPSVPe(f,t) = exm(t);
dSTGd1() = dr(A) ||dr(K);
dSTGe1() = er(A) ||er(K);
dPSVPd1() = pdp(A) ||pdp(K);
dPSVPe1() = pep(A) ||pep(K);
dUTCd1(t) = uF(t) || (uFD(t) && (uD(t) || dr(A) ||dr(K)));
dUTCi1(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd1(t) = cIM(t) || (cDD(t) && (dr(A) ||dr(K))) || (cPS(t) && (dr(A) ||dr(K)));
dCLFi1(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dSTGd2() = dr(B);
dSTGe2() = er(B);
dPSVPd2() = pdp(B);
dPSVPe2() = pep(B);
dUTCd2(t) = uF(t) || (uFD(t) && (uD(t) || dr(B)));
dUTCi2(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd2(t) = cIM(t) || (cDD(t) && (dr(B))) || (cPS(t) && (dr(B)));
dCLFi2(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dUTCd3(t) = uF(t) || (uFD(t) && (uD(t) || drs(t)));
dUTCi3(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd3(t) = cIM(t) || (cDD(t) && (drs(t))) || (cPS(t) && (drs(t)));
dCLFi3(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dSTGd4() = dr(C);
dSTGe4() = er(C);
dPSVPd4() = pdp(C);
dPSVPe4() = pep(C);
dUTCd4(t) = uF(t) || (uFD(t) && (uD(t) || dr(C)));
```

```
dUTCi4(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd4(t) = cIM(t) || (cDD(t) && (dr(C))) || (cPS(t) && (dr(C)));
dCLFi4(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dSTGd5() = dr(D);
dSTGe5() = er(D);
dPSVPd5() = pdp(D);
dPSVPe5() = pep(D);
dUTCd5(t) = uF(t) || (uFD(t) && (uD(t) || dr(D)));
dUTCi5(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd5(t) = cIM(t) || (cDD(t) && (dr(D))) || (cPS(t) && (dr(D)));
dCLFi5(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dUTCd6(t) = uF(t) || (uFD(t) && (uD(t) || drs(t)));
dUTCi6(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd6(t) = cIM(t) || (cDD(t) && (drs(t))) || (cPS(t) && (drs(t)));
dCLFi6(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dSTGd7() = dr(E);
dSTGe7() = er(E);
dPSVPd7() = pdp(E);
dPSVPe7() = pep(E);
dUTCd7(t) = uF(t) || (uFD(t) && (uD(t) || dr(E)));
dUTCi7(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd7(t) = cIM(t) || (cDD(t) && (dr(E))) || (cPS(t) && (dr(E)));
dCLFi7(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dSTGd8() = dr(F);
dSTGe8() = er(F);
dPSVPd8() = pdp(F);
dPSVPe8() = pep(F);
dUTCd8(t) = uF(t) || (uFD(t) && (uD(t) || dr(F)));
dUTCi8(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd8(t) = cIM(t) || (cDD(t) && (dr(F))) || (cPS(t) && (dr(F)));
dCLFi8(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dUTCd9(t) = uF(t) || (uFD(t) && (uD(t) || drs(t)));
dUTCi9(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd9(t) = cIM(t) || (cDD(t) && (drs(t))) || (cPS(t) && (drs(t)));
dCLFi9(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dSTGd10() = dr(G);
dSTGe10() = er(G);
dPSVPd10() = pdp(G);
dPSVPe10() = pep(G);
dUTCd10(t) = uF(t) || (uFD(t) && (uD(t) || dr(G)));
dUTCi10(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));
dCLFd10(t) = cIM(t) || (cDD(t) && (dr(G))) || (cPS(t) && (dr(G)));
dCLFi10(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
dSTGd11() = dr(H);
dSTGe11() = er(H);
```

```
dPSVPd11() = pdp(H);

dPSVPe11() = pep(H);

dUTCd11(t) = uF(t) || (uFD(t) && (uD(t) || dr(H)));

dUTCi11(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));

dCLFd11(t) = cIM(t) || (cDD(t) && (dr(H))) || (cPS(t) && (dr(H)));

dCLFi11(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));

dUTCd12(t) = uF(t) || (uFD(t) && (uD(t) || drs(t)));

dUTCi12(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));

dCLFd12(t) = cIM(t) || (cDD(t) && (drs(t))) || (cPS(t) && (drs(t)));

dCLFi12(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));

dSTGd13() = dr(I);

dSTGe13() = er(I);

dPSVPd13() = pdp(I);

dPSVPe13() = pep(I);

dUTCd13(t) = uF(t) || (uFD(t) && (uD(t) || dr(I)));

dUTCi13(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));

dCLFd13(t) = cIM(t) || (cDD(t) && (dr(I))) || (cPS(t) && (dr(I)));

dCLFi13(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));

dSTGd14() = dr(J);

dSTGe14() = er(J);

dPSVPd14() = pdp(J);

dPSVPe14() = pep(J);

dUTCd14(t) = uF(t) || (uFD(t) && (uD(t) || dr(J)));

dUTCi14(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));

dCLFd14(t) = cIM(t) || (cDD(t) && (dr(J))) || (cPS(t) && (dr(J)));

dCLFi14(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));

dUTCd15(t) = uF(t) || (uFD(t) && (uD(t) || drs(t)));

dUTCi15(f,t) = ((uF(f) || uFD(f)) && ((uGO(xp)==0) || ex(t)));

dCLFd15(t) = cIM(t) || (cDD(t) && (drs(t))) || (cPS(t) && (drs(t)));

dCLFi15(f,t) = cIM(f) || cDD(f) || cH(xp) || (cPS(t) && ex(t));
```

User functions

```
post_100ms() = Outputs || Mem || Leds;

Outputs()
cout(DET9_0,dr(K));
cout(DET9_2,dr(J));
cout(DET20,ddro(EXITQ));
cout(DET21,ddro(Qa));
cout(DET22,ddro(Qb));
cout(DET23_0,evp(53));
cout(DET24_0,evp(52));
cout(DET25_0,evp(51));
cout(DET26_0,evp(50));
cout(DET23_2,evp(51));
cout(DET24_2,evp(50));
cout(DET25_2,evp(53));
cout(DET26_2,evp(52));
cout(DET27_0,evp(1));
cout(DET28_0,mem(0));
cout(DET29_0,evp(5));
cout(DET30_0,mem(1));
cout(DET31_0,evp(9));
cout(DET32_0,mem(2));
cout(DET27_1,evp(13));
```

User functions

```
cout(DET28_1,mem(3));
cout(DET29_1,evp(17));
cout(DET30_1,mem(4));
cout(DET31_1,evp(21));
cout(DET32_1,mem(5));
cout(DET27_2,evp(25));
cout(DET28_2,mem(6));
cout(DET29_2,evp(29));
cout(DET30_2,mem(7));
cout(DET31_2,evp(33));
cout(DET32_2,mem(8));
cout(DET27_3,evp(37));
cout(DET28_3,mem(9));
cout(DET29_3,evp(41));
cout(DET30_3,mem(10));
cout(DET31_3,evp(45));
cout(DET32_3,mem(11));

if dr(K) && (stgc(0)==1) && (stgr(0,0,0)) then
cout(DET6_0,1);
else
if (stgc(0)==2) && (stgr(0,0,0)) then
cout(DET6_0,0);
else
cout(DET6_0,0);
endif
endif
end

Mem()
if evp(2) && (evp(4)==0) then
wmem(Det28_0,1);
else
if evp(3) || evp(4) then
wmem(Det28_0,0);
endif
endif

if evp(6) && (evp(8)==0) then
wmem(Det30_0,1);
else
if evp(7) || evp(8) then
wmem(Det30_0,0);
endif
endif

if evp(10) && (evp(12)==0) then
wmem(Det32_0,1);
else
if evp(11) || evp(12) then
wmem(Det32_0,0);
endif
endif

if evp(14) && (evp(16)==0) then
wmem(Det28_1,1);
else
if evp(15) || evp(16) then
wmem(Det28_1,0);
endif
endif

if evp(18) && (evp(20)==0) then
wmem(Det30_1,1);
else
if evp(19) || evp(20) then
wmem(Det30_1,0);
endif
endif

if evp(22) && (evp(24)==0) then
wmem(Det32_1,1);
else
if evp(23) || evp(24) then
wmem(Det32_1,0);
endif
endif

if evp(26) && (evp(28)==0) then
wmem(Det28_2,1);
else
if evp(27) || evp(28) then
wmem(Det28_2,0);
endif
endif

if evp(30) && (evp(32)==0) then
wmem(Det30_2,1);
else
```

User functions

```
if evp(31) || evp(32) then
wmem(Det30_2,0);
endif
endif

if evp(34) && (evp(36)==0) then
wmem(Det32_2,1);
else
if evp(35) || evp(36) then
wmem(Det32_2,0);
endif
endif

if evp(38) && (evp(40)==0) then
wmem(Det28_3,1);
else
if evp(39) || evp(40) then
wmem(Det28_3,0);
endif
endif

if evp(42) && (evp(44)==0) then
wmem(Det30_3,1);
else
if evp(43) || evp(44) then
wmem(Det30_3,0);
endif
endif

if evp(46) && (evp(48)==0) then
wmem(Det32_3,1);
else
if evp(47) || evp(48) then
wmem(Det32_3,0);
endif
endif
end

Leds()
if ddro(AQa) || ddro(AQb) then
cmled(0,1);
else
cmled(0,0);
endif

if ddro(EQa) || ddro(EQb) then
cmled(1,1);
else
cmled(1,0);
endif

if dr(J) then
cmled(2,1);
else
cmled(2,0);
endif

if mUTC(0) then
cmled(4,1);
else
cmled(4,0);
endif

if mUTC(1) then
cmled(5,1);
else
cmled(5,0);
endif

if mUTC(2) then
cmled(6,1);
else
cmled(6,0);
endif

if mUTC(3) then
cmled(7,1);
else
cmled(7,0);
endif
end
```

SYSTEM PARAMETERS

UK Parameters

Name	Description	Min	Max	Def	-
MAN_TIMEOUT	Manual control timeout	60	600	300	300
MAN_DEMAND_ERROR	Duration of the manual demand error indication	0	60	5	5
MAN_ENABLE	Manual control enabled.	0	1	1	1
DFM_FUNC	Bit mask specifying behavior of DFM indicator	0	999	1	1
CLF_TIMER_SYNC	Duration of the CLF group Timer Synchronisation Signal	0	0	0	0
UTC_TS	Time in HH:MM used for COTU_TS	0	2359	0	0
UTC_FORCE_TIMEOUT	The force bit watchdog timeout	120	300	200	200
UTC_FORCE_ACCEPT	The force accept timeout in system ticks.	1	10	4	4
UTC_LO_DELAY	Delay in seconds before COTU_LO changes is accepted.	0	99	10	10
UTC_RT_HOUR	Hours used for RT reply bit (-1 = any hour).	-1	23	0	0
UTC_RT_MIN	Minutes used for RT reply bit (-1 = any minute).	-1	59	0	0
UTC_RT_SEC	Seconds used for RT reply bit	-1	59	0	0
UTC_RT_DURATION	Duration of the RT reply bit in seconds	1	10	3	3
UTC_CG_DURATION	Duration of the CG reply bit in seconds	1	10	3	3
UTC_TSR_DURATION	Duration of the TSR reply bit in seconds	1	10	3	3
UTC_G1G2_FUNC	Bit mask specifying behavior of G1/G2 reply bits	0	255	1	1
UTC_RR_FUNC	Bit mask specifying behavior of RR reply bit	0	255	14	14
UTC_PV_ACCEPT	The PV accept time in system ticks	0	255	0	0
UTC_PV_HOLD	The PV hold time in system ticks	0	255	0	0
UKSTG_DIM_ALARM	The maximum time [in hours] for dimmed operation(-1 = solar cell disabled, 0 = enabled without timeout processing)	-1	100	24	24
UKSTG_DIM_FILTER	The call/cancel delay [in sec] for the DIM relais	0	255	0	0
UTC_CRB_PULSE_ON_TIME	CRB On Timer	0	1800	600	120
UTC_CRB_PULSE_OFF_TIME	CRB Off Timer	0	10	2	2

System Parameters

Name	Description	Min	Max	-
SYS_TSRC	System time source type; 0 = crystal, 1 = mains frequency (default)	1	1	1
MMI8408	XMMI: 8 x 40 MMI	0	1	1
XIN_L	XIN_L: Number of logging lines	1	999	10
XOUT_L	XOUT_L: Number of logging lines	1	999	10
XDET_L	XDET_L: Number of logging lines	1	999	100
XDET_F	XDET_F: Status in case of fault	0	2	0
XSG_L	XSG_L: Number of logging lines	0	999	10
XHTTP	XHTTP: Presence of web server	0	1	1
XHTTP_PORT	XHTTP_PORT: Webserver port	0	65535	80
XHTTP_SES	XHTTP_SES:	0	65535	200
XDLS	XDLS: Daylight saving	0	1	1
XLM_MAL	XLM_MAL: Go to major alarm if power reference(s) are not set	0	1	0
XLM_RLM	XLM_RLM: RLM callback interval in 0.1 [s]	0	100	10
XLM_T	XLM_T: Tracking off / on	0	20	5
XLM_TF	XLM_TF: Tracking filter	1	20	8
XLM_NV	XLM_NV: Nominal (bright) voltage	0	240	230
XLM_MON	XLM_MON: Monitoring type	0	10	3
XLM_AC	XLM_AC: Automatic calibration	0	1	1
XLM_DIM	XLM_DIM: Bright Din Calibration off / on	0	1	1
CLF_SYNC	CLF Synchronisation option.	0	3	0
CLF_SYNC_WDAY	CLF Weekly sync is done on..	1	7	1
CLF_TIMER_SYNC	Duration of the CLF group Timer Synchronisation Signal	0	2400	600
CLF_NON_BASE_TIME	Select base time or non base time (0 or 1)	0	1	0
XIOTU_RTS	RTS activated after # received characters (use 1, 2 or 3)	1	3	1
XIOTU_SCOOT	Default bit number used for scoot counted detectors (0 to 7)	0	7	0
XIOTU_CTS	CTS timeout per 10ms	4	10	6
UKMP_TYPE	UK Manual panel type (0=std, 1=ped, 2=multiple stages)	0	2	2
ENGTERM_SIM_PORT	Engterm simulation socket	0	99999	50001

Name	Description	Min	Max	-
ENGTERM_BAUD	Engterm baudrate	0	99999	9600
HCH_ALLRED	Use HCH for all red stage moves	0	1	1
HCH_SWOFF	Use HCH for switch off stage moves	0	1	0
PT_SYNC	Synchronize move to part time mode	0	1	1
CLF_MANUAL_STEP	Enable the Manual Step	0	1	0
CLF_DEFAULT_PLAN		-1	999	0
CLF_MANUAL_MEMOS	Memo for the manual step	0	1	0
COMPRESS_HARDWARE	Compress Hardware	0	1	0

MEMO FIELDS

HISTORY	
Description	Text in the History text block between: --CREDAT-- and --UPDATE--
Contents	* This is memofield HISTORY

B_HISTORY	
Description	Text in the History text block between: --CREDAT-- and --UPDATE-- (AMSEC1.CNF)
Contents	; This is memofield HISTORY_B

ABC_INC	
Description	Code at the end of the file before the end of file remark (AMSEC1.CNF)
Contents	; This is memofield AMSEC_INC

XP1_INC	
Description	Code at the begin of the file, juts below History, under the heading 'XP1_INC'.
Contents	**/* This is memofield XP1_INC** */

XP2_INC	
Description	Code under the heading 'XP2_INC', just before the 'XIN INPUTS' definitions.
Contents	**/* This is memofield XP2_INC** */

XP3_INC	
Description	Code under the heading 'XP3_INC', at the end of the file.

Contents	**/* This is memofield XP3_INC** */
	P("MPDISO.R1")
	{
	P(0);D(1);
	P(1);D(1);
	P(2);D(1);
	P(3);D(1);
	P(4);D(1);
	P(5);D(1);
	P(6);D(1);
	P(7);D(1);
	}

SADAT_INC	
Description	Code at end of the file. (SADAT.CNF)
Contents	**/* This is memofield SADAT_INC** */

DESCRIPTION	
Description	Detailed project description
Contents	* This is memofield DESCRIPTION

VMFUNC_INC1	
Description	VMFUNC process conditions
Contents	**/* This is memofield VMFUNC_INC1** */

VMFUNC_INC2	
Description	VMFUNC process conditions
Contents	**/* This is memofield VMFUNC_INC2** */

HARDWARE CONFIGURATION

Number of Devices	*	Optional Devices	*
LCM	3	Manual panel type	Multi stage
MTS4E	9	Dimming Operating	2
IO1616	4	Manual Panel Flashing	1
Dummy Detectors	0	Solar Cell Monitor	Disabled

Configuration

LCM	MTS4E	IO1616-IN	IO1616-OUT
DEVICE: LCM	DEVICE: MTS4E	DEVICE: IO1616-IN	DEVICE: IO1616-OUT
--- 01 ---	--- 01 ---	--- 01 ---	--- 01 ---
01: A (R)	01: AQa	01: UTC_I1	01: UTC_O1
02: A (A)	02: AQb	02: UTC_I2	02: UTC_O2
03: A (G)	03: BIN1	03: UTC_I3	03: UTC_O3
04: B (R)	04: BIN2	04: UTC_I4	04: UTC_O4
05: B (A)	--- 02 ---	05: UTC_I5	05: UTC_O5
06: B (G)	01: BX3	06: UTC_I6	06: UTC_O6
07: C (R)	02: BX4	07: UTC_I7	07: UTC_O7
08: C (A)	03: BX5	08: UTC_I8	08: UTC_O8
09: C (G)	04: BSL6	09: UTC_I9	09: UTC_O9
10: D (R)	--- 03 ---	10: UTC_I10	10: UTC_O10
11: D (A)	01: BSL7	11: UTC_I11	11: UTC_O11
12: D (G)	02: BSL8	12: UTC_I12	12: UTC_O12
--- 02 ---	03: DIN1	13: UTC_I13	13: UTC_O13
01: E (R)	04: DX2	14: UTC_I14	14: UTC_O14
02: E (A)	--- 04 ---	15: UTC_I15	15: UTC_O15
03: E (G)	01: DX3	16: UTC_I16	16: UTC_O16
04: F (R)	02: DSL4	--- 02 ---	--- 02 ---
05: F (A)	03: DSL5	01: PBUK1	01: DET9_0
06: F (G)	04: EQa	02: PBUK2	02: DET9_2
07: G (R)	--- 05 ---	03: PBUK3	03: DET20
08: G (A)	01: EQb	04: ONCK1	04: DET21
09: G (G)	02: FIN1	05: ONCK2	05: DET22
10: H (R)	03: FIN2	06: PBUJ1	06: DET23_0
11: H (A)	04: FX3	07: PBUJ2	07: DET24_0
12: H (G)	--- 06 ---	08: PBUJ3	08: DET25_0
--- 03 ---	01: FX4	09: ONCJ1	09: DET26_0
01: I (R)	02: FX5	10: ONCJ2	10: DET23_2
02: I (A)	03: FSL6	11: KSDJ1	11: DET24_2
03: I (G)	04: FSL7	12: KSDJ2	12: DET25_2
04: J (R)	--- 07 ---	13: -	13: DET26_2
05: J (A)	01: FSL8	14: -	14: DET27_0
06: J (G)	02: HIN1	15: -	15: DET28_0
07: K (R)	03: HX2	16: -	16: DET29_0
08: K (A)	04: HX3	--- 03 ---	--- 03 ---
09: K (G)	--- 08 ---	01: -	01: DET30_0
10: -	01: HSL4	02: -	02: DET31_0
11: -	02: HSL5	03: -	03: DET32_0
12: -	03: Qa	04: -	04: DET27_1
--- 04 ---	04: Qb	05: -	05: DET28_1
01: -	--- 09 ---	06: -	06: DET29_1
02: -	01: EXITQ	07: -	07: DET30_1
03: -	02: -	08: -	08: DET31_1
04: -	03: -	09: -	09: DET32_1
05: -	04: -	10: -	10: DET27_2
06: -	--- 10 ---	11: -	11: DET28_2
07: -	01: -	12: -	12: DET29_2
08: -	02: -	13: -	13: DET30_2
09: -	03: -	14: -	14: DET31_2
10: -	04: -	15: -	15: DET32_2
11: -	--- 11 ---	16: -	16: DET27_3
12: -	01: -	--- 04 ---	--- 04 ---
--- 05 ---	02: -	01: -	01: DET28_3
01: -	03: -	02: -	02: DET29_3
02: -	04: -	03: -	03: DET30_3
03: -	--- 12 ---	04: -	04: DET31_3
04: -	01: -	05: -	05: DET32_3
05: -	02: -	06: -	06: DET6_0
06: -	03: -	07: -	07: -
07: -	04: -	08: -	08: -
08: -	--- 13 ---	09: -	09: -
09: -	01: -	10: -	10: -
10: -	02: -	11: -	11: -
11: -	03: -	12: -	12: -
12: -	04: -	13: -	13: -
--- 06 ---	--- 14 ---	14: -	14: -
01: -	01: -	15: -	15: -
02: -	02: -	16: -	16: -
03: -	03: -	--- 05 ---	--- 05 ---
04: -	04: -	01: -	01: -
05: -	--- 15 ---	02: -	02: -
06: -	01: -	03: -	03: -
07: -	02: -	04: -	04: -

LCM	MTS4E	IO1616-IN	IO1616-OUT
09: - 10: - 11: - 12: - --- 07 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - --- 08 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - --- 09 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: -	03: - 04: - --- 16 --- 01: - 02: - 03: - 04: - --- 17 --- 01: - 02: - 03: - 04: - --- 18 --- 01: - 02: - 03: - 04: - --- 19 --- 01: - 02: - 03: - 04: - --- 20 --- 01: - 02: - 03: - 04: - --- 21 --- 01: - 02: - 03: - 04: - --- 22 --- 01: - 02: - 03: - 04: - --- 23 --- 01: - 02: - 03: - 04: - --- 24 --- 01: - 02: - 03: - 04: - --- 25 --- 01: - 02: - 03: - 04: - --- 26 --- 01: - 02: - 03: - 04: - --- 27 --- 01: - 02: - 03: - 04: - --- 28 --- 01: - 02: - 03: - 04: - --- 29 --- 01: - 02: - 03: - 04: - --- 30 --- 01: - 02: - 03: - 04: - --- 31 --- 01: - 02: - 03: - 04: - --- 32 --- 01: - 02: - 03: - 04: -	05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: - --- 06 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: - --- 07 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: - --- 08 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: -	05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: - --- 06 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: - --- 07 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: - --- 08 --- 01: - 02: - 03: - 04: - 05: - 06: - 07: - 08: - 09: - 10: - 11: - 12: - 13: - 14: - 15: - 16: -

IOT State

LCM

LCM

Unit Addr *

01	01	A (R)
01	02	A (A)
01	03	A (G)
01	04	B (R)
01	05	B (A)
01	06	B (G)
01	07	C (R)
01	08	C (A)
01	09	C (G)
01	10	D (R)
01	11	D (A)
01	12	D (G)
02	01	E (R)
02	02	E (A)
02	03	E (G)
02	04	F (R)
02	05	F (A)
02	06	F (G)
02	07	G (R)
02	08	G (A)
02	09	G (G)
02	10	H (R)
02	11	H (A)
02	12	H (G)
03	01	I (R)
03	02	I (A)
03	03	I (G)
03	04	J (R)
03	05	J (A)
03	06	J (G)
03	07	K (R)
03	08	K (A)
03	09	K (G)

MTS4E

MTS4E

Unit Addr *

01	01	AQa
01	02	AQb
01	03	BIN1
01	04	BIN2
02	01	BX3
02	02	BX4
02	03	BX5
02	04	BSL6
03	01	BSL7
03	02	BSL8
03	03	DIN1
03	04	DX2
04	01	DX3
04	02	DSL4
04	03	DSL5
04	04	EQa
05	01	EQb
05	02	FIN1
05	03	FIN2
05	04	FX3
06	01	FX4
06	02	FX5
06	03	FSL6
06	04	FSL7
07	01	FSL8
07	02	HIN1
07	03	HX2
07	04	HX3
08	01	HSL4
08	02	HSL5
08	03	Qa
08	04	Qb
09	01	EXITQ

IO1616-IN

IO1616-IN

Unit Addr *

01	01	UTC_I1
01	02	UTC_I2
01	03	UTC_I3
01	04	UTC_I4
01	05	UTC_I5
01	06	UTC_I6
01	07	UTC_I7
01	08	UTC_I8
01	09	UTC_I9
01	10	UTC_I10
01	11	UTC_I11
01	12	UTC_I12
01	13	UTC_I13
01	14	UTC_I14
01	15	UTC_I15
01	16	UTC_I16
02	01	PBUK1
02	02	PBUK2
02	03	PBUK3
02	04	ONCK1
02	05	ONCK2
02	06	PBUJ1
02	07	PBUJ2
02	08	PBUJ3
02	09	ONCJ1
02	10	ONCJ2
02	11	KSDJ1
02	12	KSDJ2

IO1616-OUT

IO1616-OUT

Unit Addr *

01	01	UTC_O1
01	02	UTC_O2
01	03	UTC_O3
01	04	UTC_O4
01	05	UTC_O5
01	06	UTC_O6
01	07	UTC_O7
01	08	UTC_O8
01	09	UTC_O9
01	10	UTC_O10
01	11	UTC_O11
01	12	UTC_O12
01	13	UTC_O13
01	14	UTC_O14
01	15	UTC_O15
01	16	UTC_O16
02	01	DET9_0
02	02	DET9_2
02	03	DET20
02	04	DET21
02	05	DET22
02	06	DET23_0
02	07	DET24_0
02	08	DET25_0
02	09	DET26_0
02	10	DET23_2
02	11	DET24_2
02	12	DET25_2
02	13	DET26_2
02	14	DET27_0
02	15	DET28_0
02	16	DET29_0
03	01	DET30_0
03	02	DET31_0
03	03	DET32_0
03	04	DET27_1
03	05	DET28_1
03	06	DET29_1
03	07	DET30_1
03	08	DET31_1
03	09	DET32_1
03	10	DET27_2
03	11	DET28_2
03	12	DET29_2
03	13	DET30_2
03	14	DET31_2
03	15	DET32_2
03	16	DET27_3
04	01	DET28_3
04	02	DET29_3
04	03	DET30_3
04	04	DET31_3
04	05	DET32_3
04	06	DET6_0

LAMP MONITORING

Phase Lamp Types

ID	Phase	Description	Type	Red	Amber	Green	Wait	MonR A	Action A	MonR B	Action B	MonA	MonG
1	A	East Circ	T	TEST 48	TEST 48	TEST 48	-	Maintenance	None	None	None	Maintenance	Maintenance
2	B	A43 East	T	TEST 48	TEST 48	TEST 48	-	Safety 1/2	None	None	None	Maintenance	Maintenance
3	C	South Circ	T	TEST 48	TEST 48	TEST 48	-	Maintenance	None	None	None	Maintenance	Maintenance
4	D	A5 South	T	TEST 48	TEST 48	TEST 48	-	Maintenance	None	None	None	Maintenance	Maintenance
5	E	West Circ	T	TEST 48	TEST 48	TEST 48	-	Maintenance	None	None	None	Maintenance	Maintenance
6	F	A43 West	T	TEST 48	TEST 48	TEST 48	-	Maintenance	None	None	None	Maintenance	Maintenance
7	G	North Circ	T	TEST 48	TEST 48	TEST 48	-	Maintenance	None	None	None	Maintenance	Maintenance
8	H	A5 North	T	TEST 48	TEST 48	TEST 48	-	Maintenance	None	None	None	Maintenance	Maintenance
9	I	A43 East Exit	T	TEST 48	TEST 48	TEST 48	-	Safety 1/2	None	None	None	Maintenance	Maintenance
10	J	Ped X A43 East Exit	PU	AGDPUF	-	AGDPUF	AGDPUF	Maintenance	None	None	None	None	Maintenance
11	K	Ped X A43 East Approach	PU	AGDPUF	-	AGDPUF	AGDPUF	Maintenance	None	None	None	None	Maintenance

Report executed at 3/3/2015 2:54 PM

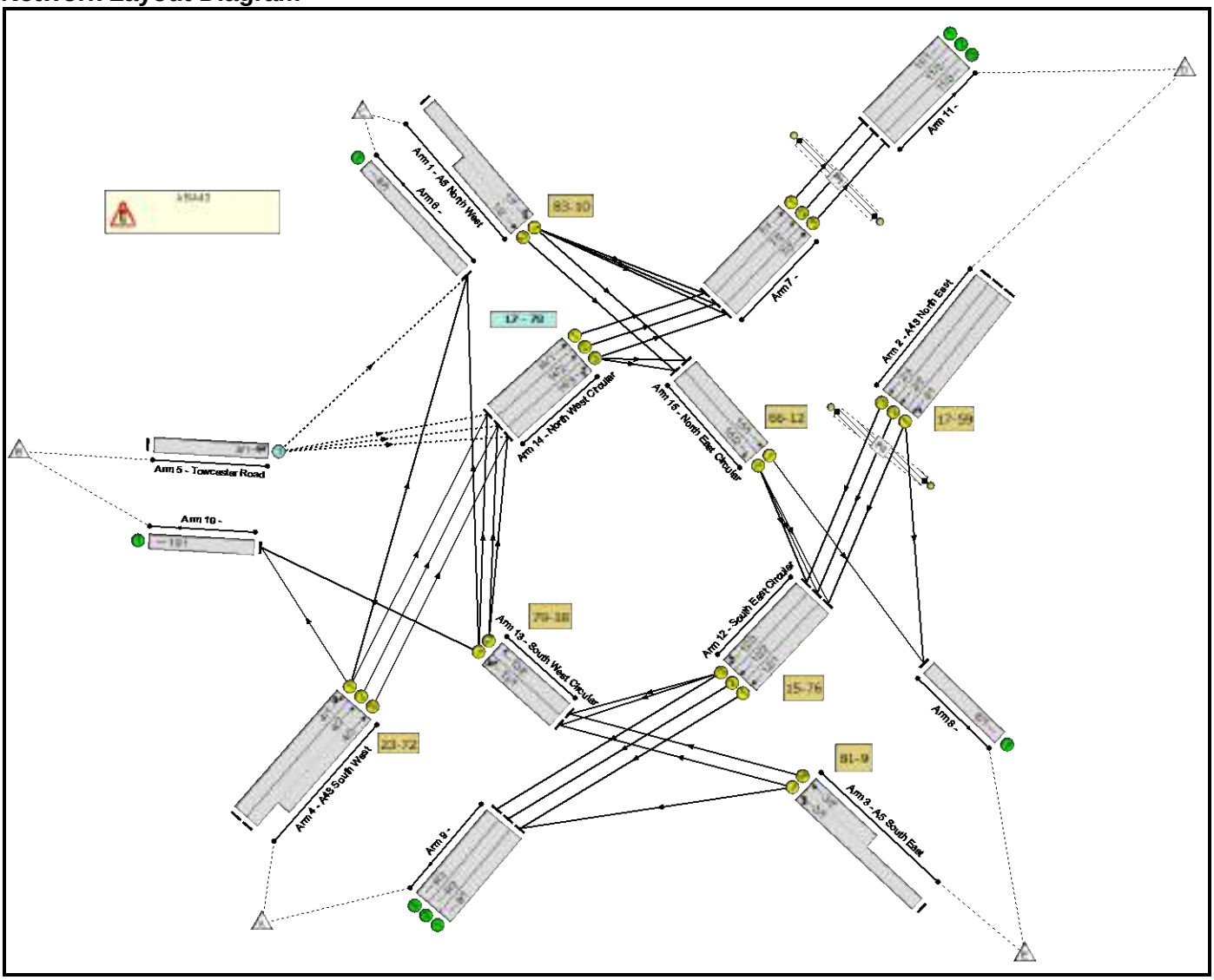
APPENDIX

Full Input Data And Results

User and Project Details

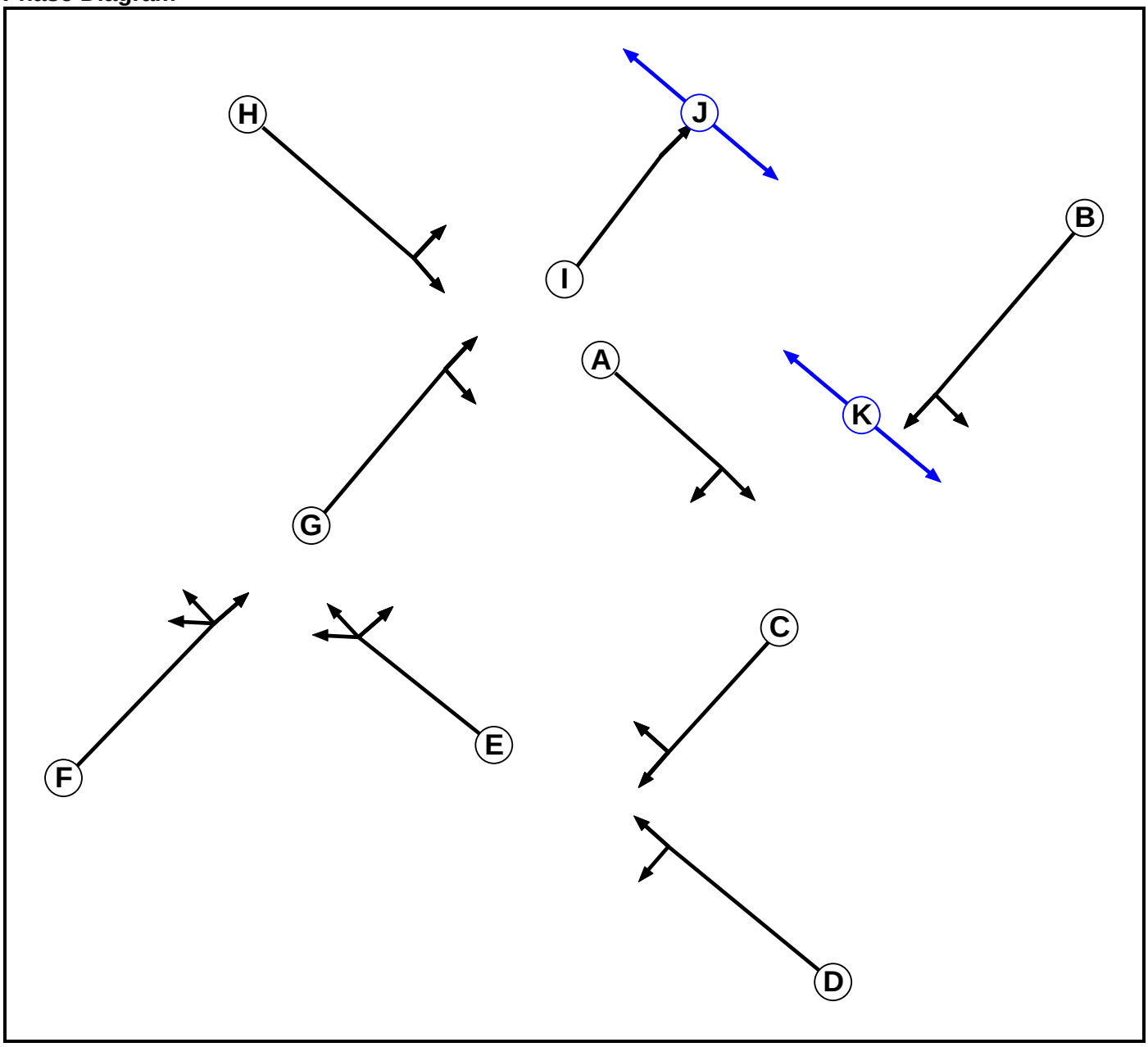
Project:	Rail Central
Title:	Junction 14
Location:	A43, Towcester Bypass (southwest)/ Towcester Road / A5, (north) / A43, (northeast) / A5, Watling Street (southeast)
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	3
B	Traffic	1		7	7
C	Traffic	2		7	2
D	Traffic	2		7	7
E	Traffic	3		7	2
F	Traffic	3		7	7
G	Traffic	4		7	1
H	Traffic	4		7	7
I	Traffic	5		7	7
J	Pedestrian	5		6	6
K	Pedestrian	1		6	6

Full Input Data And Results

Phase Intergreens Matrix

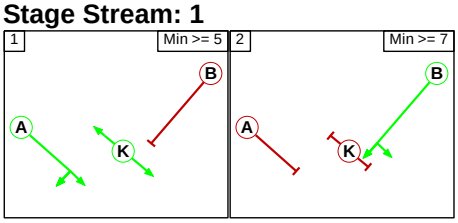
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K
A		5	-	-	-	-	-	-	-	-	-
B	7		-	-	-	-	-	-	-	-	6
C	-	-		5	-	-	-	-	-	-	-
D	-	-	6		-	-	-	-	-	-	-
E	-	-	-	-		5	-	-	-	-	-
F	-	-	-	-	7		-	-	-	-	-
G	-	-	-	-	-	-		5	-	-	-
H	-	-	-	-	-	-	7		-	-	-
I	-	-	-	-	-	-	-	-		6	-
J	-	-	-	-	-	-	-	-	4		-
K	-	4	-	-	-	-	-	-	-	-	

Phases in Stage

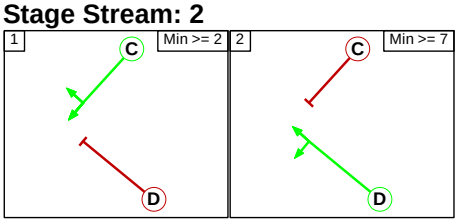
Stream	Stage No.	Phases in Stage
1	1	A K
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	G
4	2	H
5	1	I
5	2	J

Stage Diagram

Stage Stream: 1

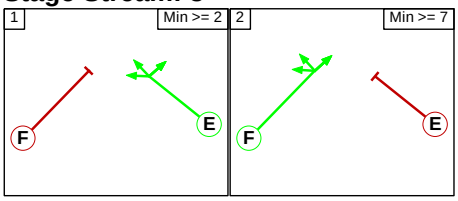


Stage Stream: 2

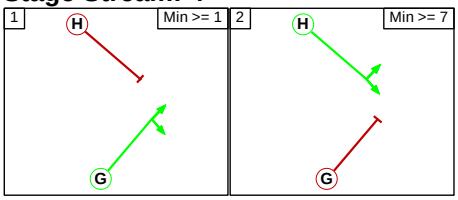


Full Input Data And Results

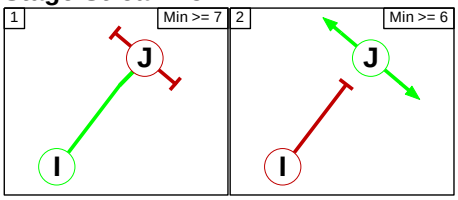
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	A	Losing	4	4

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	5	5

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	E	Losing	5	5
1	2	F	Gaining absolute	2	2
2	1	E	Gaining absolute	2	2

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	G	Losing	6	6

Stage Stream: 5

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		9
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		10
	2	6	

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		10
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		11
	2	7	

Stage Stream: 5

	To Stage		
		1	2
From Stage	1		6
	2	4	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A5/A43											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
5/1 (Towcester Road)	6/1 (U-Turn)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)	-	-	-	-	-
				4/1	0.33	To 6/1 (Left) To 14/1 (Ahead)					
	14/1 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				4/1	0.33	To 6/1 (Left) To 14/1 (Ahead)					
	14/2 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				4/1	0.33	To 6/1 (Left) To 14/1 (Ahead)					
				4/2	0.33	All					
				13/2	0.33	To 14/2 (Right)					
	14/3 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				13/2	0.33	All					
				4/1	0.33	To 6/1 (Left) To 14/1 (Ahead)					
				4/2	0.33	All					
				4/3	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A5/A43												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5 North West)	U	H	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A5 North West)	U	H	2	3	8.9	User	1800	-	-	-	-	-
2/1 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/2 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/3 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/1 (A5 South East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/2 (A5 South East)	U	D	2	3	8.3	User	1800	-	-	-	-	-
4/1 (A43 South West)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/2 (A43 South West)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/3 (A43 South West)	U	F	2	3	16.7	User	1800	-	-	-	-	-
5/1 (Towcester Road)	O		2	3	60.0	Geom	-	5.00	0.00	Y	Arm 6 U-Turn	17.50
											Arm 14 Left	Inf
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U	I	2	3	4.2	User	1900	-	-	-	-	-
7/2	U	I	2	3	3.7	User	1900	-	-	-	-	-
7/3	U	I	2	3	3.5	User	1900	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/3	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/3	U		2	3	60.0	Inf	-	-	-	-	-	-

12/1 (South East Circular)	U	C	2	3	2.1	User	1900	-	-	-	-	-
12/2 (South East Circular)	U	C	2	3	2.8	User	1900	-	-	-	-	-
12/3 (South East Circular)	U	C	2	3	7.5	User	1900	-	-	-	-	-
13/1 (South West Circular)	U	E	2	3	3.5	User	1900	-	-	-	-	-
13/2 (South West Circular)	U	E	2	3	3.8	User	1900	-	-	-	-	-
14/1 (North West Circular)	U	G	2	3	2.4	User	1900	-	-	-	-	-
14/2 (North West Circular)	U	G	2	3	4.5	User	1900	-	-	-	-	-
14/3 (North West Circular)	U	G	2	3	8.0	User	1900	-	-	-	-	-
15/1 (North East Circular)	U	A	2	3	3.5	User	1900	-	-	-	-	-
15/2 (North East Circular)	U	A	2	3	4.0	User	1900	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2015 AM Survey'	08:00	09:00	01:00	
2: '2015 PM Survey'	17:00	18:00	01:00	
3: '2021 DM AM'	08:00	09:00	01:00	
4: '2021 DM PM'	17:00	18:00	01:00	
5: '2021 DS AM'	08:00	09:00	01:00	
6: '2021 DS PM'	17:00	18:00	01:00	
7: '2031 DM AM'	08:00	09:00	01:00	
8: '2031 DM PM'	17:00	18:00	01:00	
9: '2031 DS AM'	08:00	09:00	01:00	
10: '2031 DS PM'	17:00	18:00	01:00	
11: '2021 DM + 2021 DS 20% AM'	08:00	09:00	01:00	F3 + F13
12: '2021 DM + 2021 DS 20% PM'	17:00	18:00	01:00	F4 + F14

Scenario 1: '2015 AM Survey' (FG1: '2015 AM Survey', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	155	285	983	195	1618
	B	46	0	17	122	25	210
	C	378	5	0	52	375	810
	D	1513	20	67	0	200	1800
	E	92	9	442	130	0	673
	Tot.	2029	189	811	1287	795	5111

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2015 AM Survey
Junction: A5/A43	
1/1 (with short)	810(In) 427(Out)
1/2 (short)	383
2/1	761
2/2	762
2/3	277
3/1 (with short)	673(In) 543(Out)
3/2 (short)	130
4/1	730
4/2 (with short)	888(In) 638(Out)
4/3 (short)	250
5/1	210
6/1	811
7/1	412
7/2	638
7/3	237
8/1	795
9/1	775
9/2	774
9/3	480
10/1	189
11/1	412
11/2	638
11/3	237
12/1	683
12/2	774
12/3	572
13/1	543
13/2	130
14/1	412
14/2	638
14/3	451
15/1	595
15/2	429

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	8.1 %	2100	2100
				Arm 14 Left	Inf	91.9 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 2: '2015 PM Survey' (FG2: '2015 PM Survey', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	147	427	1264	98	1936
	B	7	0	11	139	9	166
	C	129	8	0	48	455	640
	D	1574	6	87	0	147	1814
	E	94	3	535	178	0	810
	Tot.	1804	164	1060	1629	709	5366

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2015 PM Survey
Junction: A5/A43	
1/1 (with short)	640(In) 503(Out)
1/2 (short)	137
2/1	766
2/2	675
2/3	373
3/1 (with short)	810(In) 632(Out)
3/2 (short)	178
4/1	787
4/2 (with short)	1149(In) 786(Out)
4/3 (short)	363
5/1	166
6/1	1060
7/1	359
7/2	786
7/3	484
8/1	709
9/1	751
9/2	675
9/3	378
10/1	164
11/1	359
11/2	786
11/3	484
12/1	657
12/2	675
12/3	479
13/1	639
13/2	178
14/1	352
14/2	786
14/3	557
15/1	562
15/2	144

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	6.6 %	2103	2103
				Arm 14 Left	Inf	93.4 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	156	540	1343	198	2237
	B	89	0	17	138	66	310
	C	608	5	0	69	163	845
	D	2188	17	78	0	0	2283
	E	0	0	152	94	0	246
	Tot.	2885	178	787	1644	427	5921

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: A5/A43	
1/1 (with short)	845(In) 232(Out)
1/2 (short)	613
2/1	761
2/2	761
2/3	761
3/1 (with short)	246(In) 153(Out)
3/2 (short)	93
4/1	825
4/2 (with short)	1412(In) 804(Out)
4/3 (short)	608
5/1	310
6/1	787
7/1	278
7/2	828
7/3	538
8/1	427
9/1	967
9/2	967
9/3	951
10/1	178
11/1	278
11/2	828
11/3	538
12/1	967
12/2	967
12/3	1051
13/1	253
13/2	93
14/1	268
14/2	828
14/3	832
15/1	427
15/2	702

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.5 %	2105	2105
				Arm 14 Left	Inf	94.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	3	150	727	2195	104	3179
	B	64	0	11	157	15	247
	C	296	8	0	0	177	481
	D	2283	40	92	0	212	2627
	E	0	0	316	233	0	549
	Tot.	2646	198	1146	2585	508	7083

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: A5/A43	
1/1 (with short)	481(In) 177(Out)
1/2 (short)	304
2/1	877
2/2	873
2/3	877
3/1 (with short)	549(In) 325(Out)
3/2 (short)	224
4/1	1088
4/2 (with short)	2091(In) 1030(Out)
4/3 (short)	1061
5/1	247
6/1	1146
7/1	377
7/2	1173
7/3	1035
8/1	508
9/1	880
9/2	957
9/3	809
10/1	198
11/1	377
11/2	1173
11/3	1035
12/1	880
12/2	957
12/3	949
13/1	465
13/2	224
14/1	377
14/2	1173
14/3	1221
15/1	296
15/2	371

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	4.5 %	2107	2107
				Arm 14 Left	Inf	95.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 7: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	156	525	1424	213	2318
	B	75	0	17	137	81	310
	C	624	5	0	56	157	842
	D	2318	18	79	0	0	2415
	E	0	0	156	109	0	265
	Tot.	3017	179	777	1726	451	6150

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2021 DS AM
Junction: A5/A43	
1/1 (with short)	842(In) 213(Out)
1/2 (short)	629
2/1	805
2/2	805
2/3	805
3/1 (with short)	265(In) 156(Out)
3/2 (short)	109
4/1	931
4/2 (with short)	1387(In) 686(Out)
4/3 (short)	701
5/1	310
6/1	777
7/1	387
7/2	793
7/3	546
8/1	451
9/1	1009
9/2	1013
9/3	995
10/1	179
11/1	387
11/2	793
11/3	546
12/1	1009
12/2	1013
12/3	1097
13/1	258
13/2	109
14/1	387
14/2	793
14/3	859
15/1	451
15/2	704

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.5 %	2105	2105
				Arm 14 Left	Inf	94.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 8: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	5	150	713	2229	102	3199
	B	59	0	11	156	14	240
	C	275	8	0	0	180	463
	D	2523	57	90	0	226	2896
	E	0	0	308	197	0	505
	Tot.	2862	215	1122	2582	522	7303

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2021 DS PM
Junction: A5/A43	
1/1 (with short)	463(In) 180(Out)
1/2 (short)	283
2/1	971
2/2	960
2/3	965
3/1 (with short)	505(In) 308(Out)
3/2 (short)	197
4/1	1194
4/2 (with short)	2005(In) 971(Out)
4/3 (short)	1034
5/1	240
6/1	1122
7/1	487
7/2	1113
7/3	982
8/1	522
9/1	972
9/2	1027
9/3	863
10/1	215
11/1	487
11/2	1113
11/3	982
12/1	972
12/2	1027
12/3	1018
13/1	463
13/2	197
14/1	487
14/2	1113
14/3	1162
15/1	296
15/2	347

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	4.6 %	2107	2107
				Arm 14 Left	Inf	95.4 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 9: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	5	164	711	1462	234	2576
	B	65	0	19	127	0	211
	C	736	5	0	93	255	1089
	D	2702	25	75	0	0	2802
	E	2	0	254	181	0	437
	Tot.	3510	194	1059	1863	489	7115

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DM AM
Junction: A5/A43	
1/1 (with short)	1089(In) 348(Out)
1/2 (short)	741
2/1	933
2/2	935
2/3	934
3/1 (with short)	437(In) 256(Out)
3/2 (short)	181
4/1	934
4/2 (with short)	1642(In) 804(Out)
4/3 (short)	838
5/1	211
6/1	1059
7/1	187
7/2	921
7/3	755
8/1	489
9/1	1199
9/2	1201
9/3	1110
10/1	194
11/1	187
11/2	921
11/3	755
12/1	1197
12/2	1201
12/3	1215
13/1	359
13/2	181
14/1	186
14/2	921
14/3	967
15/1	489
15/2	811

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	9.0 %	2099	2099
				Arm 14 Left	Inf	91.0 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 10: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	176	820	2118	106	3220
	B	15	0	11	142	32	200
	C	305	8	0	0	311	624
	D	2591	30	87	1	259	2968
	E	79	0	341	314	0	734
	Tot.	2990	214	1259	2575	708	7746

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DM PM
Junction: A5/A43	
1/1 (with short)	624(In) 311(Out)
1/2 (short)	313
2/1	991
2/2	988
2/3	989
3/1 (with short)	734(In) 420(Out)
3/2 (short)	314
4/1	1193
4/2 (with short)	2027(In) 1002(Out)
4/3 (short)	1025
5/1	200
6/1	1259
7/1	339
7/2	1183
7/3	1053
8/1	708
9/1	994
9/2	1061
9/3	935
10/1	214
11/1	339
11/2	1183
11/3	1053
12/1	915
12/2	1061
12/3	1061
13/1	466
13/2	315
14/1	339
14/2	1183
14/3	1206
15/1	449
15/2	328

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.5 %	2105	2105
				Arm 14 Left	Inf	94.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 11: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	156	608	1334	213	2311
	B	77	0	18	129	0	224
	C	726	5	0	75	238	1044
	D	2862	25	68	0	0	2955
	E	4	0	308	372	0	684
	Tot.	3669	186	1002	1910	451	7218

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS AM
Junction: A5/A43	
1/1 (with short)	1044(In) 313(Out)
1/2 (short)	731
2/1	985
2/2	985
2/3	985
3/1 (with short)	684(In) 343(Out)
3/2 (short)	341
4/1	800
4/2 (with short)	1511(In) 736(Out)
4/3 (short)	775
5/1	224
6/1	1002
7/1	202
7/2	1001
7/3	707
8/1	451
9/1	1258
9/2	1254
9/3	1157
10/1	186
11/1	202
11/2	1001
11/3	707
12/1	1254
12/2	1254
12/3	1255
13/1	437
13/2	341
14/1	196
14/2	1001
14/3	928
15/1	451
15/2	808

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	8.0 %	2101	2101
				Arm 14 Left	Inf	92.0 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 12: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	192	795	2170	107	3264
	B	15	0	11	140	39	205
	C	260	8	0	0	340	608
	D	2860	57	88	1	334	3340
	E	64	0	328	266	0	658
	Tot.	3199	257	1222	2577	820	8075

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS PM
Junction: A5/A43	
1/1 (with short)	608(In) 340(Out)
1/2 (short)	268
2/1	1115
2/2	1112
2/3	1113
3/1 (with short)	658(In) 392(Out)
3/2 (short)	266
4/1	1227
4/2 (with short)	2037(In) 997(Out)
4/3 (short)	1040
5/1	205
6/1	1222
7/1	380
7/2	1168
7/3	1029
8/1	820
9/1	1018
9/2	1167
9/3	1014
10/1	257
11/1	380
11/2	1168
11/3	1029
12/1	954
12/2	1167
12/3	1168
13/1	481
13/2	267
14/1	380
14/2	1168
14/3	1190
15/1	486
15/2	283

Full Input Data And Results

Lane Saturation Flows

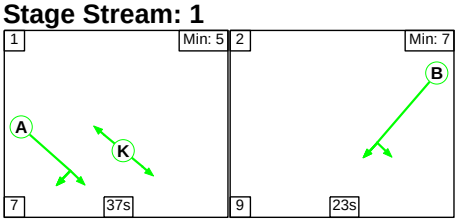
Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.4 %	2105	2105
				Arm 14 Left	Inf	94.6 %		
6/1	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
9/3	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900

13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900

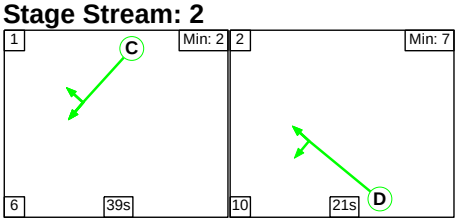
Scenario 1: '2015 AM Survey' (FG1: '2015 AM Survey', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

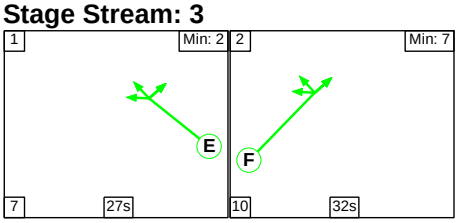
Stage Stream: 1



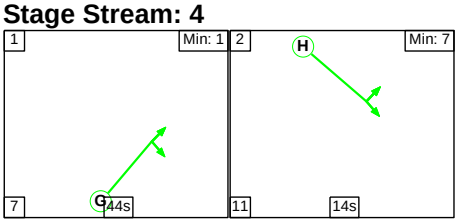
Stage Stream: 2



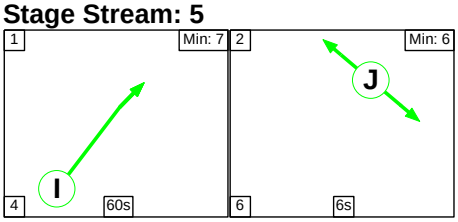
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	37	23
Change Point	50	18

Stage Stream: 2

Stage	1	2
Duration	39	21
Change Point	0	45

Stage Stream: 3

Stage	1	2
Duration	27	32
Change Point	46	4

Stage Stream: 4

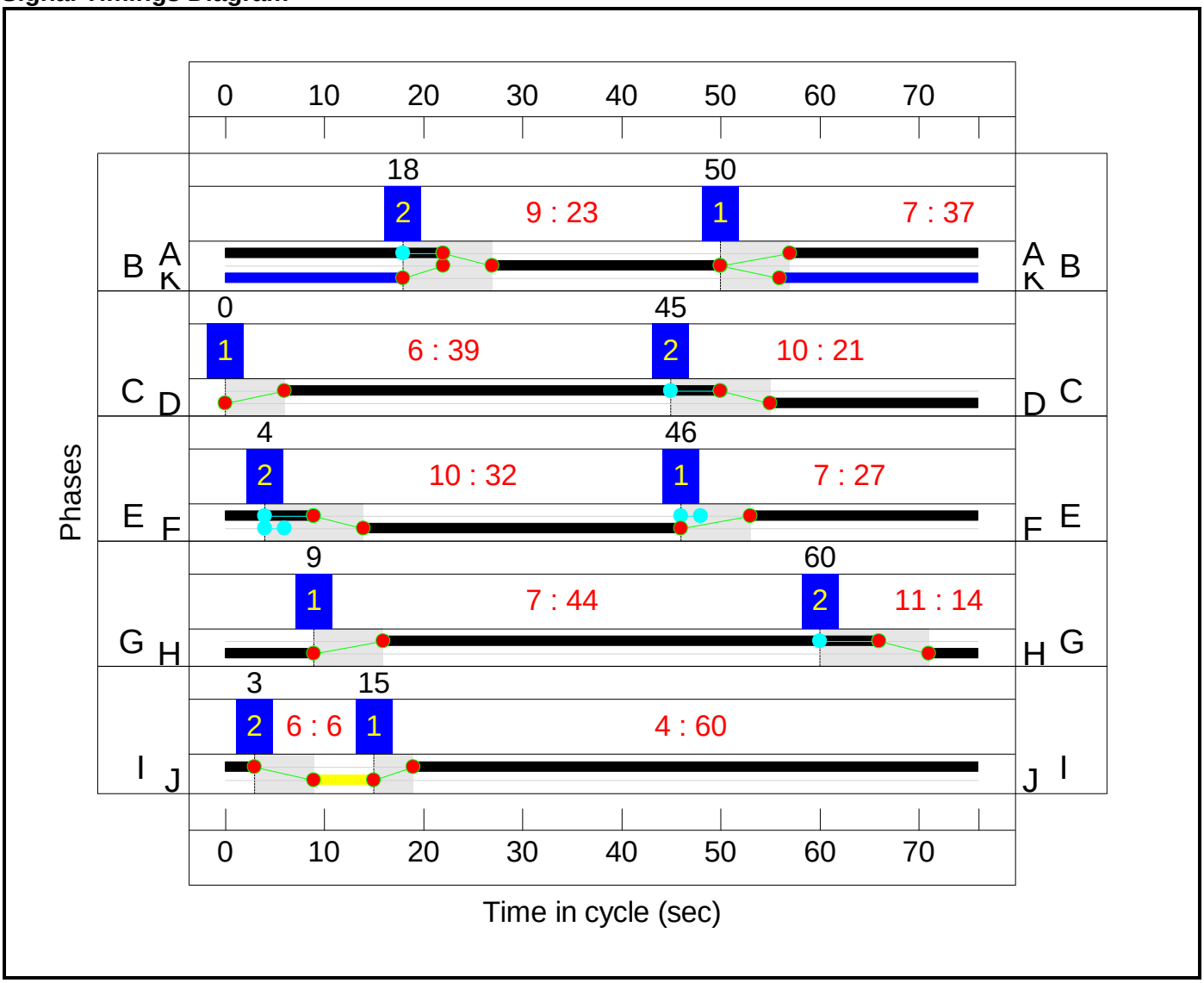
Stage	1	2
Duration	44	14
Change Point	9	60

Stage Stream: 5

Stage	1	2
Duration	60	6
Change Point	15	3

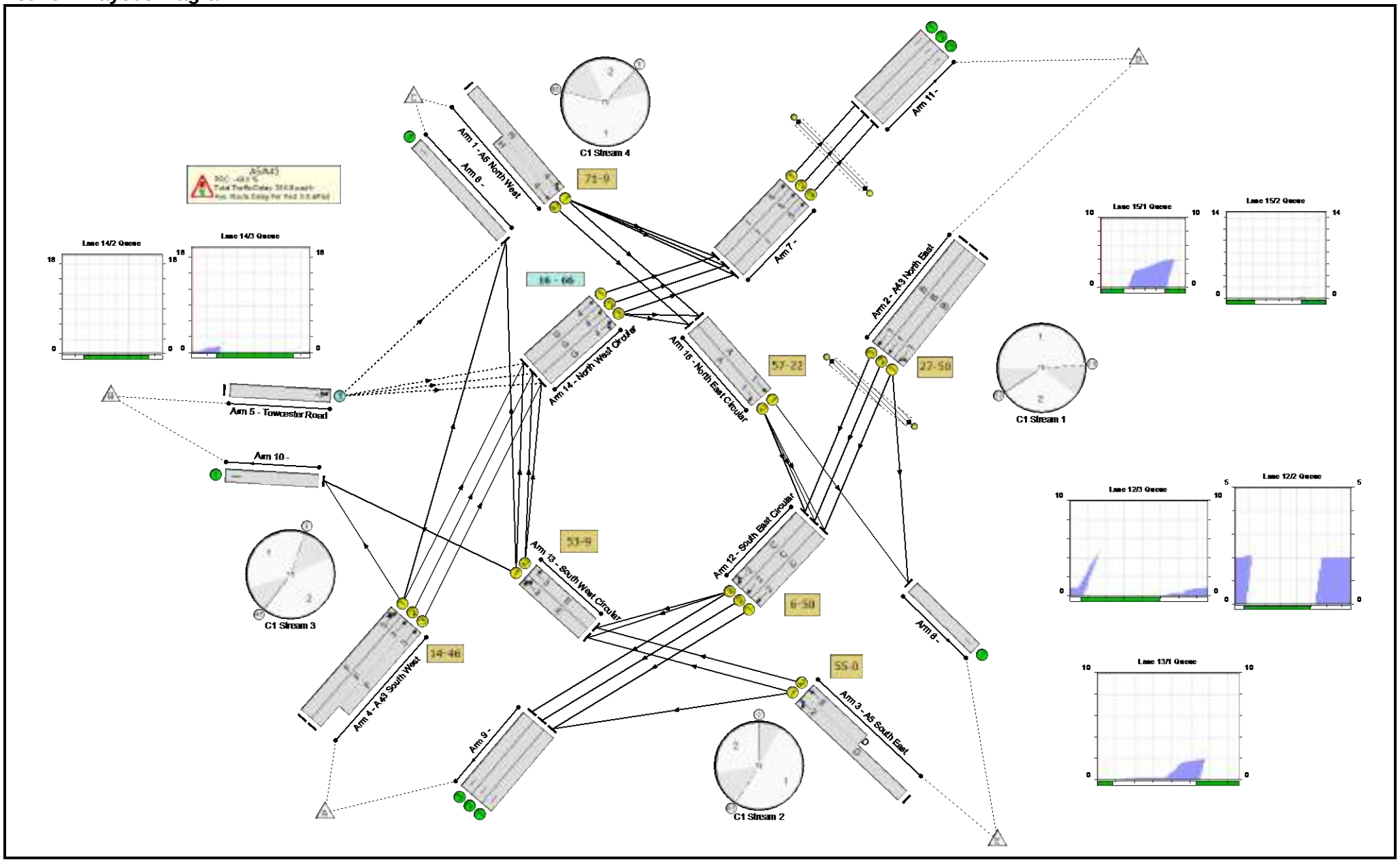
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**134.1%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**134.1%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	14	-	810	1800:1800	355+342	120.2 : 112.1%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	23	-	761	1800	568	133.9%
2/2	A43 North East Ahead	U	1	N/A	B		1	23	-	762	1800	568	134.1%
2/3	A43 North East Ahead	U	1	N/A	B		1	23	-	277	1800	568	48.7%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	21	-	673	1800:1800	503+120	108.0 : 108.0%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	32	-	730	1800	782	93.4%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	32	-	888	1800:1800	782+306	81.6 : 81.6%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	210	2100	437	48.0%
6/1		U	N/A	N/A	-		-	-	-	811	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	60	-	412	1900	1525	27.0%
7/2	Ahead	U	5	N/A	I		1	60	-	638	1900	1525	41.8%
7/3	Ahead	U	5	N/A	I		1	60	-	237	1900	1525	14.3%
8/1		U	N/A	N/A	-		-	-	-	795	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	775	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	774	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	480	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	189	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	638	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	237	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	44	-	683	1900	1125	47.0%
12/2	South East Circular Ahead	U	2	N/A	C		1	44	-	774	1900	1125	51.5%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	44	-	572	1900	1125	48.4%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	32	-	543	1900	825	61.7%
13/2	South West Circular Right	U	3	N/A	E		1	32	-	130	1900	825	14.6%
14/1	North West Circular Ahead	U	4	N/A	G		1	50	-	412	1900	1275	32.3%
14/2	North West Circular Ahead	U	4	N/A	G		1	50	-	638	1900	1275	50.0%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	50	-	451	1900	1275	34.6%
15/1	North East Circular Ahead	U	1	N/A	A		1	41	-	595	1900	1050	50.7%
15/2	North East Circular Right	U	1	N/A	A		1	41	-	429	1900	1050	36.9%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	38	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**151**	**59**	**0**	**54.9**	**301.0**	**0.0**	**355.9**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**151**	**59**	**0**	**54.9**	**301.0**	**0.0**	**355.9**	**-**	**-**	**-**	**-**
1/1+1/2	810	697	-	-	-	11.2	60.0	-	71.2	316.4	13.8	60.0	73.8
2/1	761	568	-	-	-	11.5	98.2	-	109.7	518.9	20.1	98.2	118.4
2/2	762	568	-	-	-	11.5	98.7	-	110.2	520.7	20.2	98.7	118.9
2/3	277	277	-	-	-	1.6	0.5	-	2.1	27.2	4.7	0.5	5.2
3/1+3/2	673	623	-	-	-	6.1	30.4	-	36.5	195.2	12.9	30.4	43.3
4/1	730	730	-	-	-	4.2	5.8	-	9.9	49.0	14.6	5.8	20.4
4/2+4/3	888	888	-	-	-	4.3	2.2	-	6.5	26.3	11.7	2.2	13.9
5/1	210	210	151	59	0	0.4	0.5	-	0.8	14.4	2.1	0.5	2.6
6/1	778	778	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	412	412	-	-	-	0.0	0.2	-	0.2	1.6	0.0	0.2	0.2
7/2	638	638	-	-	-	0.0	0.4	-	0.4	2.0	0.0	0.4	0.4
7/3	219	219	-	-	-	0.1	0.1	-	0.2	2.9	0.7	0.1	0.8
8/1	681	681	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	614	614	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	579	579	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	453	453	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	188	188	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	638	638	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	219	219	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	528	528	-	-	-	0.7	0.4	-	1.1	7.5	2.8	0.4	3.2
12/2	579	579	-	-	-	0.8	0.5	-	1.3	8.4	2.1	0.5	2.6
12/3	544	544	-	-	-	0.4	0.5	-	0.8	5.6	4.8	0.5	5.3
13/1	509	509	-	-	-	0.4	0.8	-	1.2	8.6	1.9	0.8	2.7
13/2	120	120	-	-	-	0.0	0.1	-	0.1	2.6	0.0	0.1	0.1

Full Input Data And Results

14/1	412	412	-	-	-	0.2	0.2	-	0.4	3.5	0.9	0.2	1.2
14/2	638	638	-	-	-	0.0	0.5	-	0.5	2.8	0.0	0.5	0.5
14/3	441	441	-	-	-	0.2	0.3	-	0.4	3.6	2.7	0.3	2.9
15/1	532	532	-	-	-	1.5	0.5	-	2.0	13.3	4.0	0.5	4.6
15/2	388	388	-	-	-	0.0	0.3	-	0.3	3.0	0.3	0.3	0.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

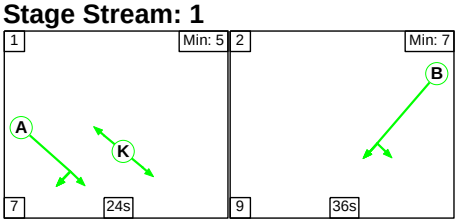
C1	Stream: 1	PRC for Signalled Lanes (%):	-49.0	Total Delay for Signalled Lanes (pcuHr):	224.28	Cycle Time (s):	76	
C1	Stream: 2	PRC for Signalled Lanes (%):	-20.0	Total Delay for Signalled Lanes (pcuHr):	39.79	Cycle Time (s):	76	
C1	Stream: 3	PRC for Signalled Lanes (%):	-3.8	Total Delay for Signalled Lanes (pcuHr):	17.73	Cycle Time (s):	76	
C1	Stream: 4	PRC for Signalled Lanes (%):	-33.5	Total Delay for Signalled Lanes (pcuHr):	72.51	Cycle Time (s):	76	
C1	Stream: 5	PRC for Signalled Lanes (%):	115.1	Total Delay for Signalled Lanes (pcuHr):	0.72	Cycle Time (s):	76	
		PRC Over All Lanes (%):	-49.0	Total Delay Over All Lanes(pcuHr):	355.86			

Full Input Data And Results

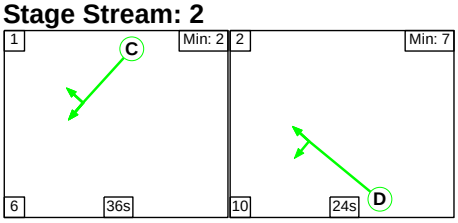
Scenario 2: '2015 PM Survey' (FG2: '2015 PM Survey', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

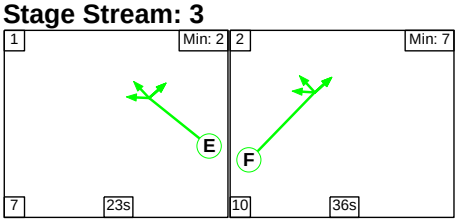
Stage Stream: 1



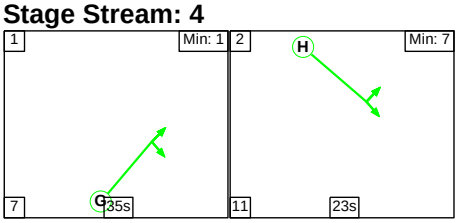
Stage Stream: 2



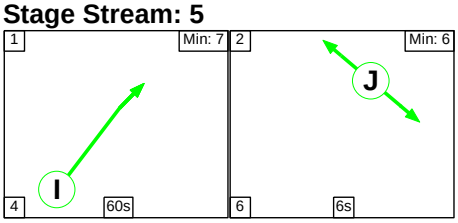
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	36
Change Point	32	63

Stage Stream: 2

Stage	1	2
Duration	36	24
Change Point	65	31

Stage Stream: 3

Stage	1	2
Duration	23	36
Change Point	34	64

Full Input Data And Results

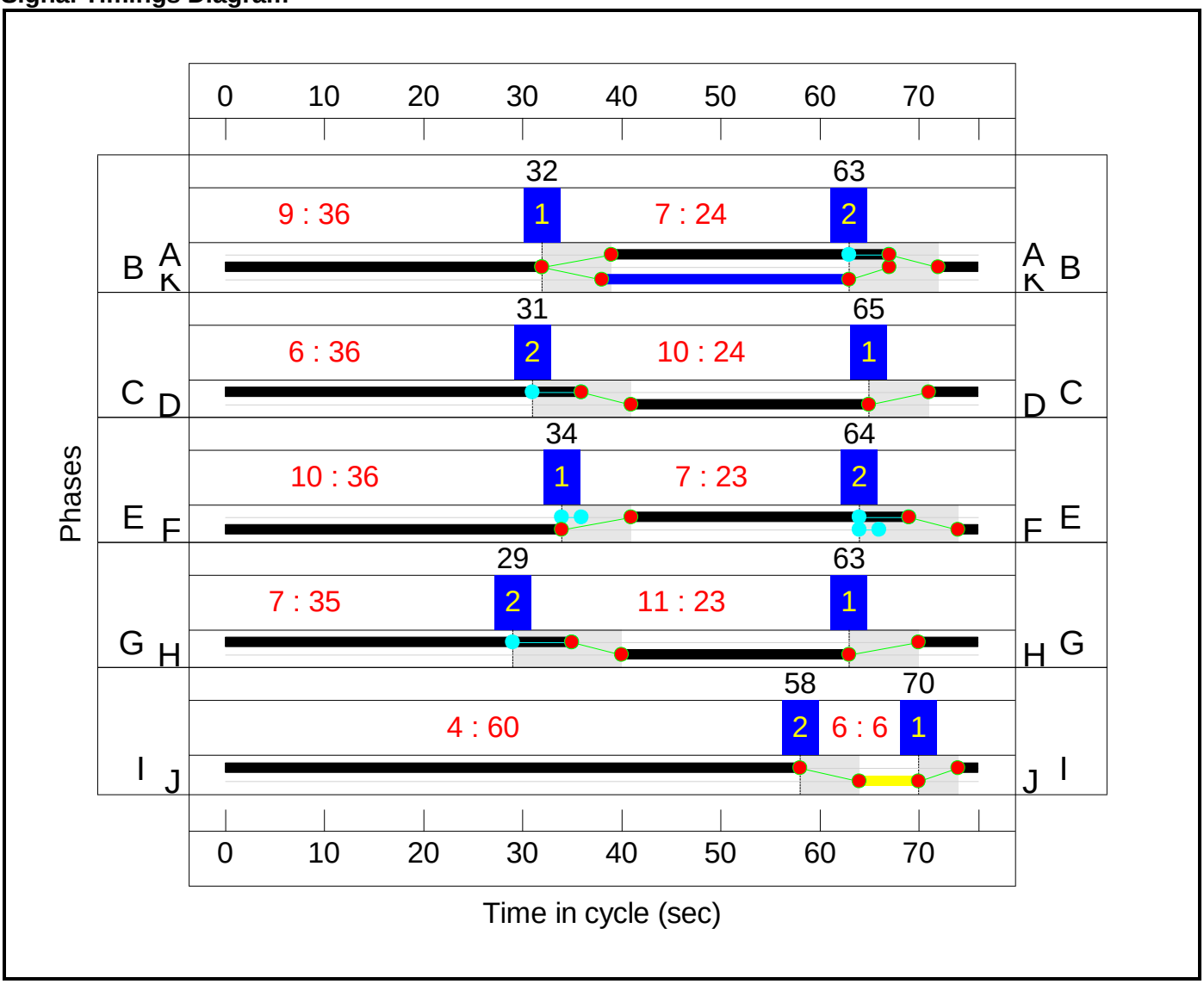
Stage Stream: 4

Stage	1	2
Duration	35	23
Change Point	63	29

Stage Stream: 5

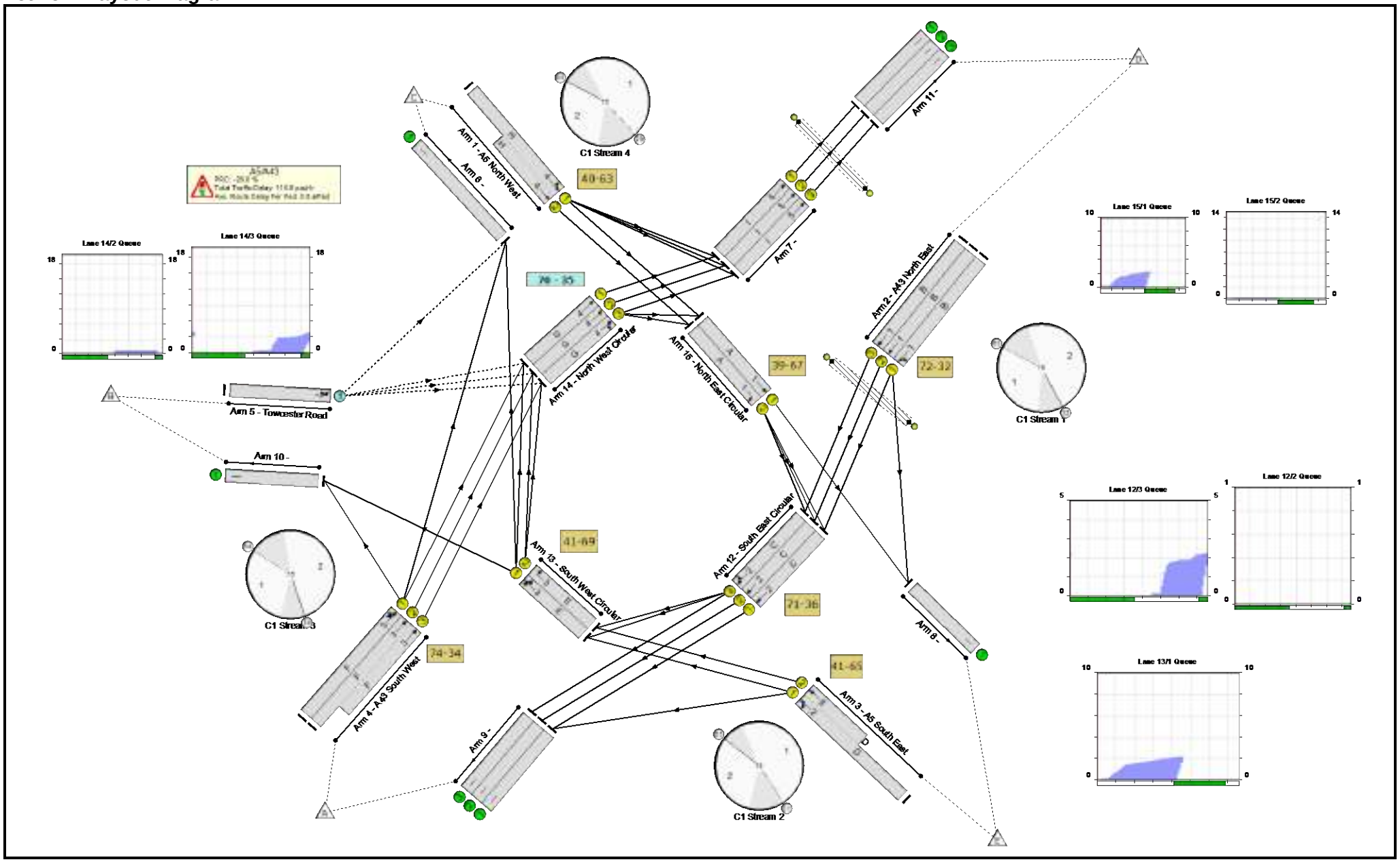
Stage	1	2
Duration	60	6
Change Point	70	58

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.9%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.9%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	23	-	640	1800:1800	554+151	90.8 : 90.8%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	36	-	766	1800	876	87.4%
2/2	A43 North East Ahead	U	1	N/A	B		1	36	-	675	1800	876	77.0%
2/3	A43 North East Ahead	U	1	N/A	B		1	36	-	373	1800	876	42.6%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	24	-	810	1800:1800	555+156	113.9 : 113.9%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	36	-	787	1800	876	89.8%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	36	-	1149	1800:1800	862+398	91.2 : 91.2%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	166	2103	365	45.5%
6/1		U	N/A	N/A	-		-	-	-	1060	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	60	-	359	1900	1525	23.5%
7/2	Ahead	U	5	N/A	I		1	60	-	786	1900	1525	51.5%
7/3	Ahead	U	5	N/A	I		1	60	-	484	1900	1525	30.3%
8/1		U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	751	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	675	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	378	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	359	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	786	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	484	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	41	-	657	1900	1050	62.6%
12/2	South East Circular Ahead	U	2	N/A	C		1	41	-	675	1900	1050	64.3%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	41	-	479	1900	1050	45.6%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	28	-	639	1900	725	79.1%
13/2	South West Circular Right	U	3	N/A	E		1	28	-	178	1900	725	21.6%
14/1	North West Circular Ahead	U	4	N/A	G		1	41	-	352	1900	1050	33.5%
14/2	North West Circular Ahead	U	4	N/A	G		1	41	-	786	1900	1050	74.9%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	41	-	557	1900	1050	51.0%
15/1	North East Circular Ahead	U	1	N/A	A		1	28	-	562	1900	725	77.5%
15/2	North East Circular Right	U	1	N/A	A		1	28	-	144	1900	725	19.9%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	25	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**128**	**38**	**0**	**34.3**	**81.2**	**0.0**	**115.5**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**128**	**38**	**0**	**34.3**	**81.2**	**0.0**	**115.5**	**-**	**-**	**-**	**-**
1/1+1/2	640	640	-	-	-	4.2	4.3	-	8.5	48.0	10.3	4.3	14.7
2/1	766	766	-	-	-	3.7	3.3	-	7.0	32.8	14.3	3.3	17.5
2/2	675	675	-	-	-	3.0	1.6	-	4.7	24.8	11.6	1.6	13.3
2/3	373	373	-	-	-	1.3	0.4	-	1.7	16.2	5.1	0.4	5.4
3/1+3/2	810	711	-	-	-	8.1	53.2	-	61.3	272.7	18.6	53.2	71.9
4/1	787	787	-	-	-	3.9	4.0	-	7.9	36.3	15.1	4.0	19.1
4/2+4/3	1149	1149	-	-	-	5.1	4.8	-	9.9	31.0	15.1	4.8	19.8
5/1	166	166	128	38	0	0.4	0.4	-	0.8	16.9	1.8	0.4	2.2
6/1	995	995	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	359	359	-	-	-	0.0	0.2	-	0.2	1.6	0.1	0.2	0.2
7/2	786	786	-	-	-	0.0	0.5	-	0.5	2.4	0.0	0.5	0.5
7/3	462	462	-	-	-	0.0	0.2	-	0.3	2.1	0.3	0.2	0.5
8/1	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	740	740	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	675	675	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	378	378	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	164	164	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	359	359	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	786	786	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	462	462	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	657	657	-	-	-	0.2	0.8	-	1.0	5.6	0.8	0.8	1.6
12/2	675	675	-	-	-	0.0	0.9	-	0.9	4.8	0.0	0.9	0.9
12/3	479	479	-	-	-	0.6	0.4	-	1.0	7.6	2.2	0.4	2.7
13/1	573	573	-	-	-	0.8	1.8	-	2.6	16.6	2.1	1.8	4.0
13/2	156	156	-	-	-	0.0	0.1	-	0.1	3.2	0.0	0.1	0.1

Full Input Data And Results

14/1	352	352	-	-	-	0.8	0.3	-	1.1	11.2	2.7	0.3	3.0
14/2	786	786	-	-	-	0.3	1.5	-	1.8	8.1	0.7	1.5	2.1
14/3	535	535	-	-	-	1.0	0.5	-	1.5	10.0	3.9	0.5	4.4
15/1	562	562	-	-	-	0.8	1.7	-	2.5	15.8	2.3	1.7	3.9
15/2	144	144	-	-	-	0.1	0.1	-	0.2	4.9	0.1	0.1	0.3
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

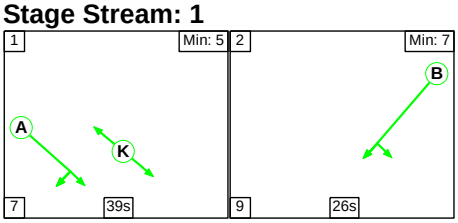
C1	Stream: 1	PRC for Signalled Lanes (%):	3.0	Total Delay for Signalled Lanes (pcuHr):	15.98	Cycle Time (s):	76
C1	Stream: 2	PRC for Signalled Lanes (%):	-26.6	Total Delay for Signalled Lanes (pcuHr):	64.28	Cycle Time (s):	76
C1	Stream: 3	PRC for Signalled Lanes (%):	-1.3	Total Delay for Signalled Lanes (pcuHr):	20.61	Cycle Time (s):	76
C1	Stream: 4	PRC for Signalled Lanes (%):	-0.8	Total Delay for Signalled Lanes (pcuHr):	12.88	Cycle Time (s):	76
C1	Stream: 5	PRC for Signalled Lanes (%):	74.6	Total Delay for Signalled Lanes (pcuHr):	0.96	Cycle Time (s):	76
		PRC Over All Lanes (%):	-26.6	Total Delay Over All Lanes(pcuHr):	115.49		

Full Input Data And Results

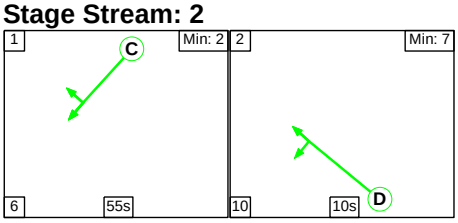
Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

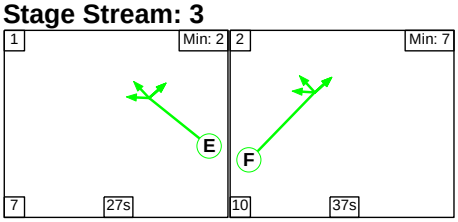
Stage Stream: 1



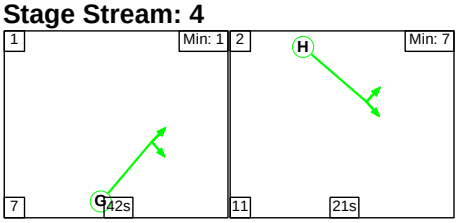
Stage Stream: 2



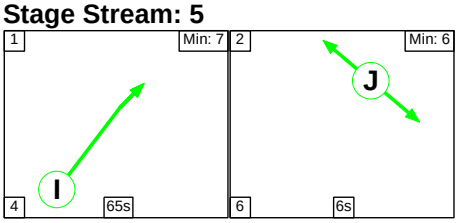
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	39	26
Change Point	30	76

Stage Stream: 2

Stage	1	2
Duration	55	10
Change Point	3	64

Stage Stream: 3

Stage	1	2
Duration	27	37
Change Point	11	45

Full Input Data And Results

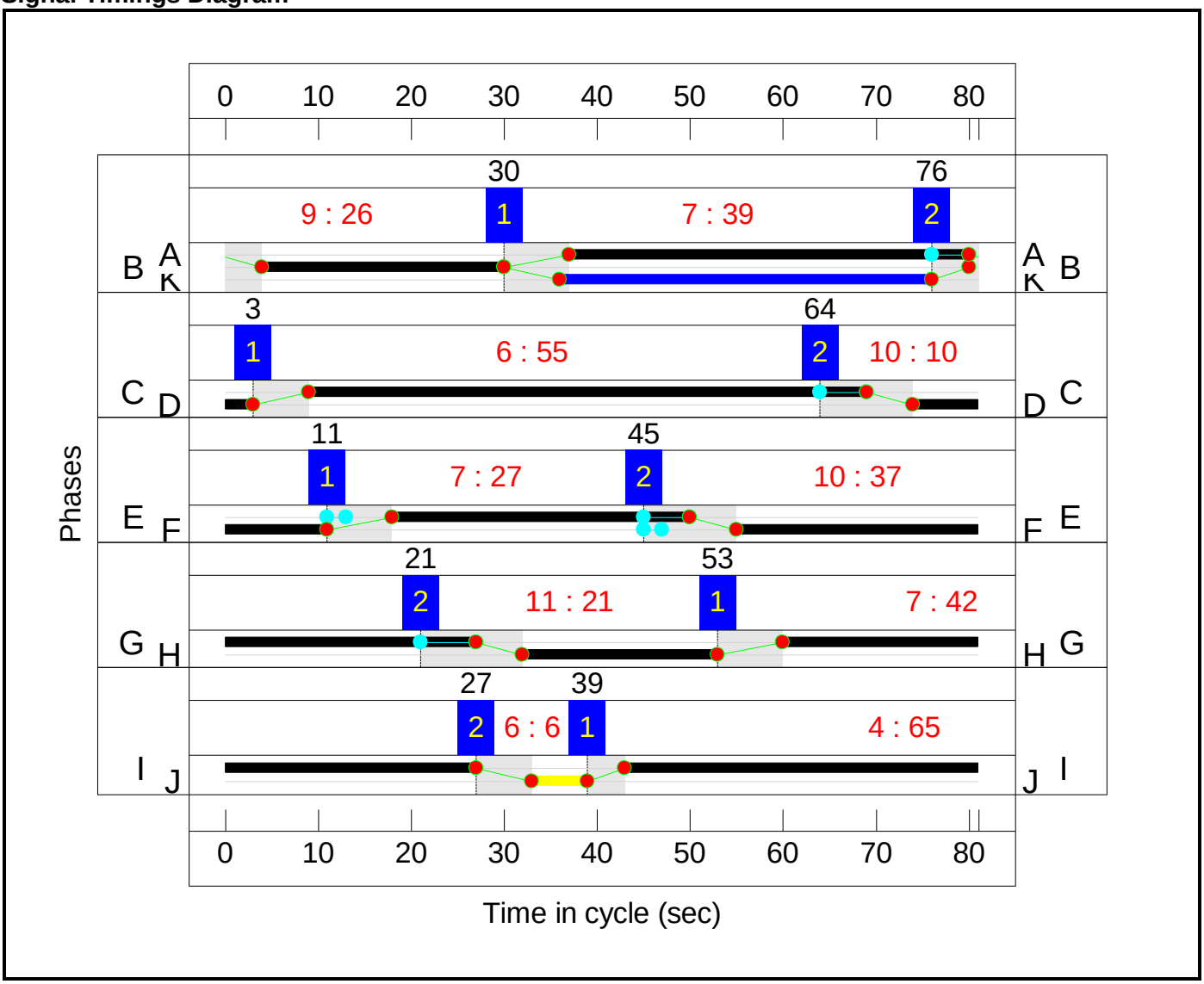
Stage Stream: 4

Stage	1	2
Duration	42	21
Change Point	53	21

Stage Stream: 5

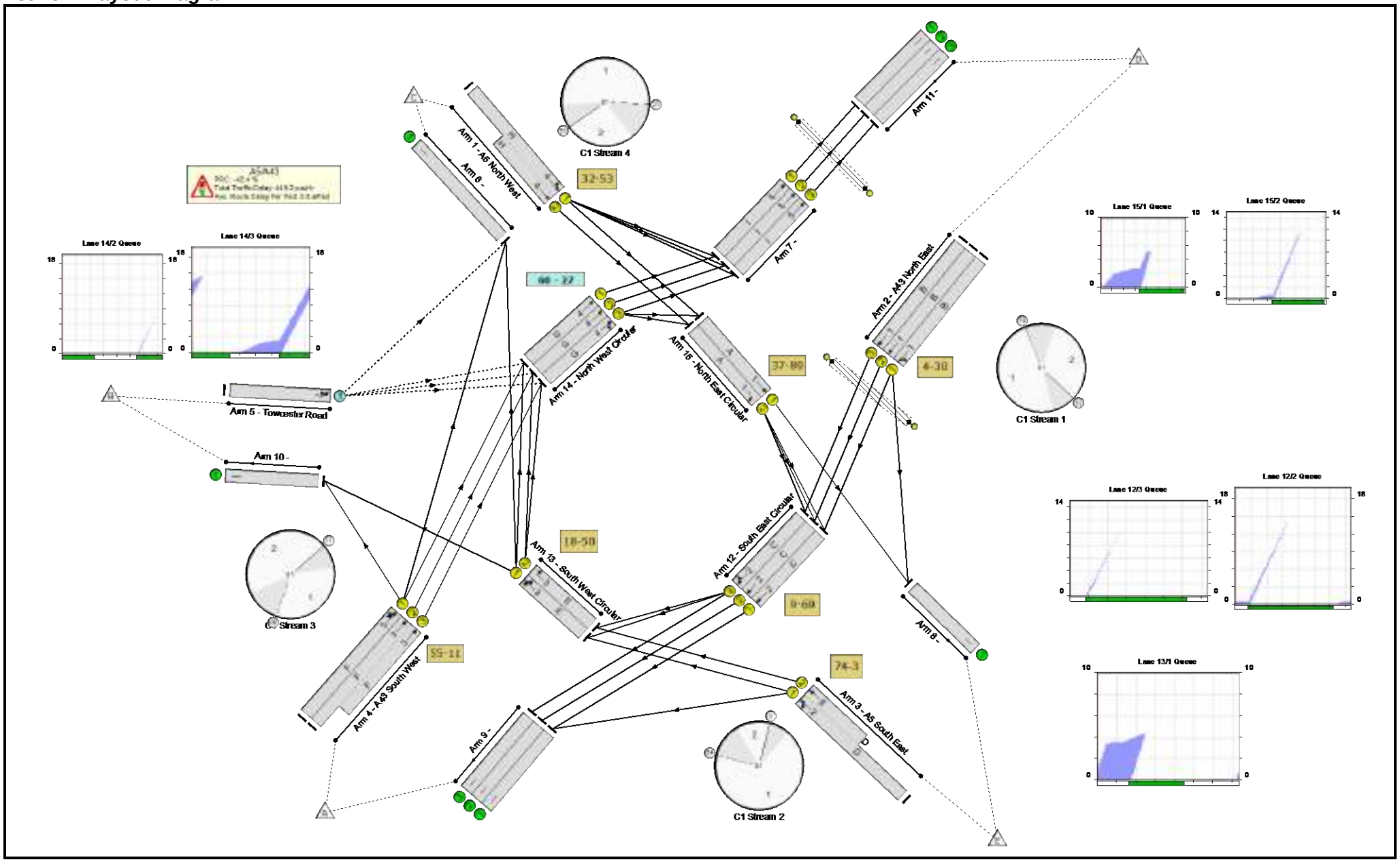
Stage	1	2
Duration	65	6
Change Point	39	27

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.2%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.2%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	21	-	845	1800:1800	181+478	128.2 : 128.2%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	26	-	761	1800	600	126.8%
2/2	A43 North East Ahead	U	1	N/A	B		1	26	-	761	1800	600	126.8%
2/3	A43 North East Ahead	U	1	N/A	B		1	26	-	761	1800	600	126.8%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	10	-	246	1800:1800	244+149	62.6 : 62.6%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	37	-	825	1800	844	97.7%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	37	-	1412	1800:1800	811+613	99.1 : 99.1%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	310	2105	450	68.8%
6/1		U	N/A	N/A	-		-	-	-	787	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	65	-	278	1900	1548	17.8%
7/2	Ahead	U	5	N/A	I		1	65	-	828	1900	1548	53.5%
7/3	Ahead	U	5	N/A	I		1	65	-	538	1900	1548	33.9%
8/1		U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	967	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	967	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	951	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	178	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	278	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	828	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	538	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	60	-	967	1900	1431	53.8%
12/2	South East Circular Ahead	U	2	N/A	C		1	60	-	967	1900	1431	53.8%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	60	-	1051	1900	1431	57.8%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	32	-	253	1900	774	29.9%
13/2	South West Circular Right	U	3	N/A	E		1	32	-	93	1900	774	12.0%
14/1	North West Circular Ahead	U	4	N/A	G		1	48	-	268	1900	1149	23.3%
14/2	North West Circular Ahead	U	4	N/A	G		1	48	-	828	1900	1149	72.0%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	48	-	832	1900	1149	72.4%
15/1	North East Circular Ahead	U	1	N/A	A		1	43	-	427	1900	1032	37.9%
15/2	North East Circular Right	U	1	N/A	A		1	43	-	702	1900	1032	55.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	40	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**221**	**89**	**0**	**70.8**	**378.4**	**0.0**	**449.2**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**221**	**89**	**0**	**70.8**	**378.4**	**0.0**	**449.2**	**-**	**-**	**-**	**-**
1/1+1/2	845	659	-	-	-	12.7	95.1	-	107.8	459.1	21.7	95.1	116.8
2/1	761	600	-	-	-	12.1	82.8	-	94.9	448.9	20.7	82.8	103.5
2/2	761	600	-	-	-	12.1	82.8	-	94.9	448.9	20.7	82.8	103.5
2/3	761	600	-	-	-	12.1	82.8	-	94.9	448.9	20.7	82.8	103.5
3/1+3/2	246	246	-	-	-	2.2	0.8	-	3.1	44.7	3.2	0.8	4.1
4/1	825	825	-	-	-	4.8	10.3	-	15.1	66.0	18.1	10.3	28.4
4/2+4/3	1412	1412	-	-	-	7.5	16.0	-	23.5	60.0	18.3	16.0	34.3
5/1	310	310	221	89	0	1.3	1.1	-	2.4	28.0	5.5	1.1	6.6
6/1	770	770	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	276	276	-	-	-	0.1	0.1	-	0.2	2.2	0.4	0.1	0.5
7/2	828	828	-	-	-	0.1	0.6	-	0.6	2.8	0.4	0.6	1.0
7/3	525	525	-	-	-	0.2	0.3	-	0.5	3.5	2.0	0.3	2.2
8/1	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	770	770	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	770	770	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	749	749	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	276	276	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	828	828	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	525	525	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	770	770	-	-	-	0.3	0.6	-	0.8	3.9	13.9	0.6	14.5
12/2	770	770	-	-	-	0.3	0.6	-	0.9	4.0	13.9	0.6	14.5
12/3	827	827	-	-	-	0.1	0.7	-	0.8	3.3	10.0	0.7	10.7
13/1	232	232	-	-	-	1.0	0.2	-	1.2	18.5	4.4	0.2	4.6
13/2	93	93	-	-	-	0.5	0.1	-	0.6	23.2	2.1	0.1	2.2

Full Input Data And Results

14/1	268	268	-	-	-	0.6	0.2	-	0.7	9.6	2.7	0.2	2.9
14/2	828	828	-	-	-	0.1	1.3	-	1.3	5.8	9.0	1.3	10.3
14/3	832	832	-	-	-	1.4	1.3	-	2.7	11.5	14.6	1.3	15.9
15/1	391	391	-	-	-	1.2	0.3	-	1.5	13.4	5.1	0.3	5.4
15/2	567	567	-	-	-	0.3	0.6	-	0.9	5.6	11.3	0.6	11.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

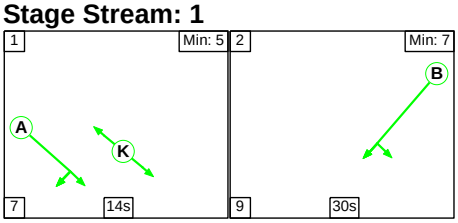
C1	Stream: 1	PRC for Signalled Lanes (%):	-40.9	Total Delay for Signalled Lanes (pcuHr):	287.03	Cycle Time (s):	81
C1	Stream: 2	PRC for Signalled Lanes (%):	43.8	Total Delay for Signalled Lanes (pcuHr):	5.53	Cycle Time (s):	81
C1	Stream: 3	PRC for Signalled Lanes (%):	-10.2	Total Delay for Signalled Lanes (pcuHr):	40.44	Cycle Time (s):	81
C1	Stream: 4	PRC for Signalled Lanes (%):	-42.4	Total Delay for Signalled Lanes (pcuHr):	112.49	Cycle Time (s):	81
C1	Stream: 5	PRC for Signalled Lanes (%):	68.3	Total Delay for Signalled Lanes (pcuHr):	1.31	Cycle Time (s):	81
		PRC Over All Lanes (%):	-42.4	Total Delay Over All Lanes(pcuHr):	449.22		

Full Input Data And Results

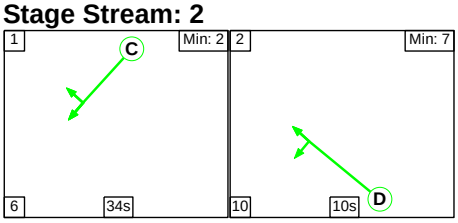
Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

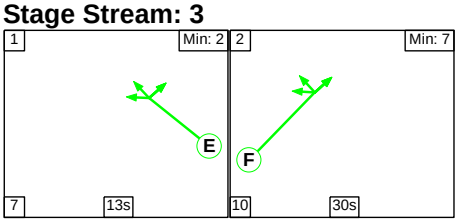
Stage Stream: 1



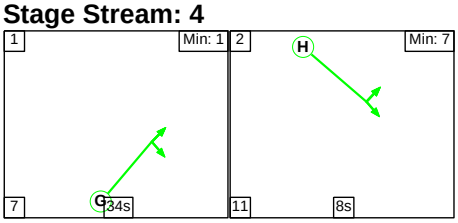
Stage Stream: 2



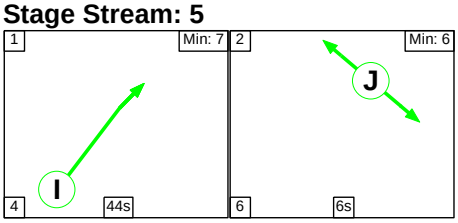
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	14	30
Change Point	53	14

Stage Stream: 2

Stage	1	2
Duration	34	10
Change Point	10	50

Stage Stream: 3

Stage	1	2
Duration	13	30
Change Point	49	9

Full Input Data And Results

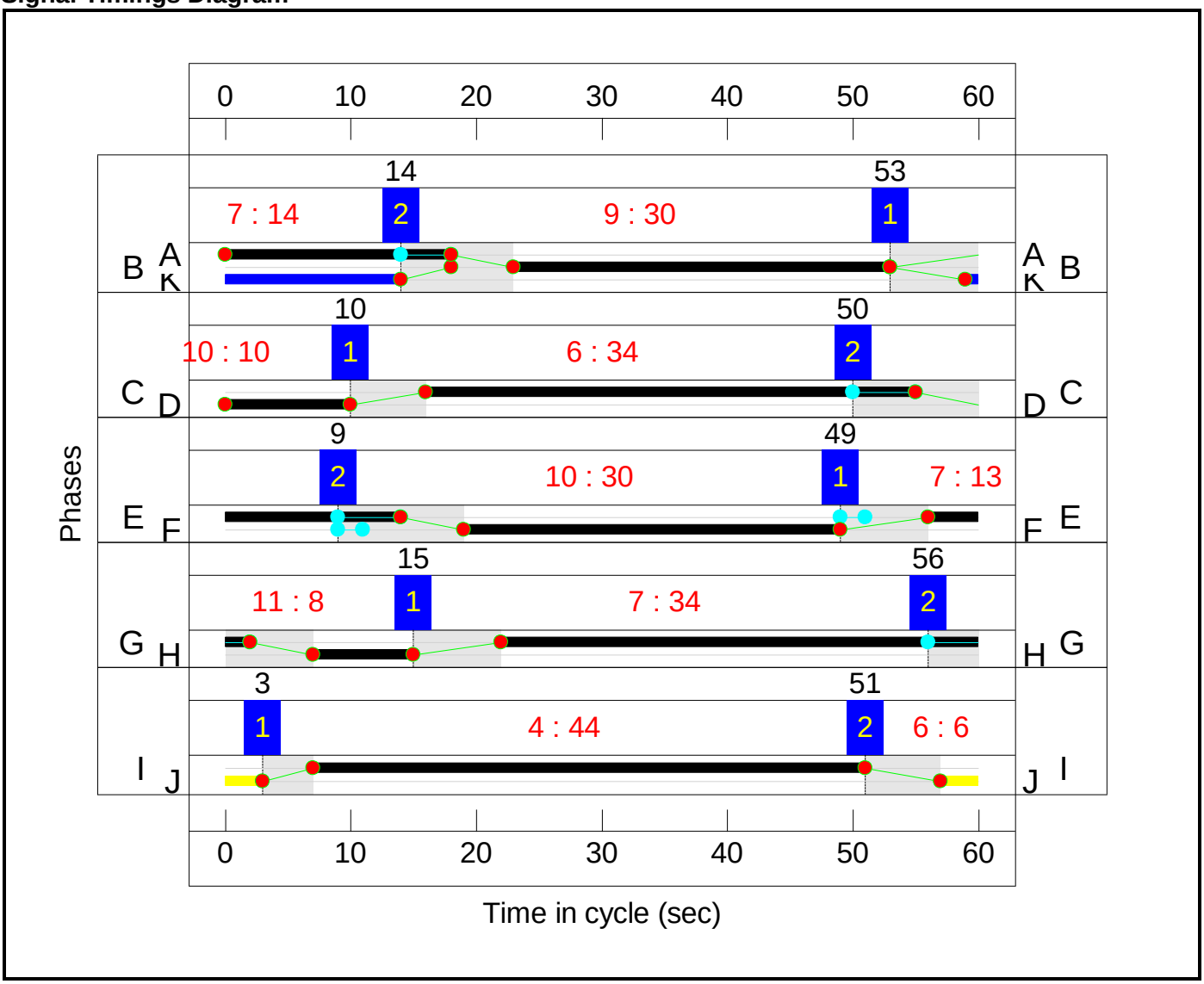
Stage Stream: 4

Stage	1	2
Duration	34	8
Change Point	15	56

Stage Stream: 5

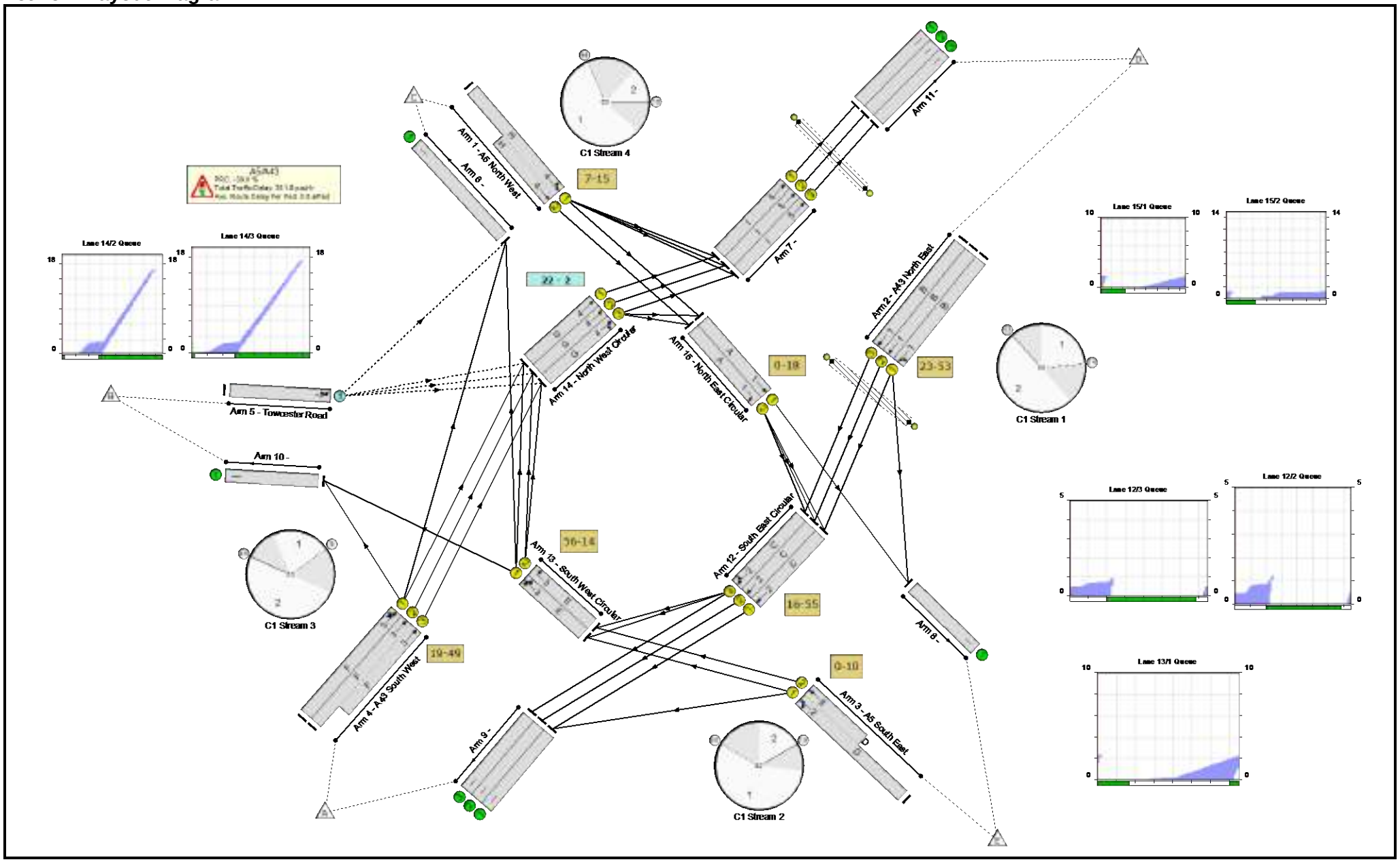
Stage	1	2
Duration	44	6
Change Point	3	51

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.0%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.0%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	8	-	481	1800:1800	198+270	89.3 : 112.6%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	30	-	877	1800	930	94.3%
2/2	A43 North East Ahead	U	1	N/A	B		1	30	-	873	1800	930	93.9%
2/3	A43 North East Ahead	U	1	N/A	B		1	30	-	877	1800	930	94.3%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	10	-	549	1800:1800	330+241	98.5 : 93.1%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	30	-	1088	1800	930	117.0%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	30	-	2091	1800:1800	887+913	116.2 : 116.2%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	247	2107	297	83.3%
6/1		U	N/A	N/A	-		-	-	-	1146	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	44	-	377	1900	1425	24.3%
7/2	Ahead	U	5	N/A	I		1	44	-	1173	1900	1425	72.3%
7/3	Ahead	U	5	N/A	I		1	44	-	1035	1900	1425	63.3%
8/1		U	N/A	N/A	-		-	-	-	508	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	880	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	957	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	809	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	198	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	377	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1173	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	1035	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	39	-	880	1900	1267	68.0%
12/2	South East Circular Ahead	U	2	N/A	C		1	39	-	957	1900	1267	74.9%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	39	-	949	1900	1267	74.3%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	18	-	465	1900	602	77.1%
13/2	South West Circular Right	U	3	N/A	E		1	18	-	224	1900	602	37.2%
14/1	North West Circular Ahead	U	4	N/A	G		1	40	-	377	1900	1298	26.7%
14/2	North West Circular Ahead	U	4	N/A	G		1	40	-	1173	1900	1298	79.3%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	40	-	1221	1900	1298	82.7%
15/1	North East Circular Ahead	U	1	N/A	A		1	18	-	296	1900	602	46.8%
15/2	North East Circular Right	U	1	N/A	A		1	18	-	371	1900	602	55.9%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	15	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**112**	**135**	**0**	**52.3**	**299.5**	**0.0**	**351.8**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**112**	**135**	**0**	**52.3**	**299.5**	**0.0**	**351.8**	**-**	**-**	**-**	**-**
1/1+1/2	481	447	-	-	-	4.3	25.2	-	29.6	221.2	5.6	25.2	30.8
2/1	877	877	-	-	-	3.3	6.6	-	9.9	40.8	13.6	6.6	20.3
2/2	873	873	-	-	-	3.3	6.3	-	9.6	39.5	13.6	6.3	19.9
2/3	877	877	-	-	-	3.3	6.6	-	9.9	40.8	13.6	6.6	20.3
3/1+3/2	549	549	-	-	-	3.6	7.5	-	11.1	72.9	5.3	7.5	12.8
4/1	1088	930	-	-	-	8.3	82.3	-	90.6	299.7	21.0	82.3	103.3
4/2+4/3	2091	1800	-	-	-	17.9	149.0	-	166.9	287.3	41.5	149.0	190.5
5/1	247	247	112	135	0	0.8	2.3	-	3.1	45.2	3.0	2.3	5.2
6/1	1040	1040	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	346	346	-	-	-	0.2	0.2	-	0.4	3.8	1.6	0.2	1.8
7/2	1030	1030	-	-	-	1.0	1.3	-	2.3	8.1	4.2	1.3	5.5
7/3	902	902	-	-	-	1.0	0.9	-	1.8	7.2	4.0	0.9	4.8
8/1	494	494	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	861	861	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	949	949	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	175	175	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	346	346	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1030	1030	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	902	902	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	861	861	-	-	-	0.4	1.1	-	1.4	6.0	3.4	1.1	4.4
12/2	949	949	-	-	-	0.2	1.5	-	1.7	6.5	1.2	1.5	2.7
12/3	942	942	-	-	-	0.2	1.4	-	1.6	6.3	0.9	1.4	2.4
13/1	464	464	-	-	-	0.6	1.6	-	2.2	17.3	2.3	1.6	4.0
13/2	224	224	-	-	-	0.0	0.3	-	0.3	4.8	0.0	0.3	0.3

Full Input Data And Results

14/1	346	346	-	-	-	0.3	0.2	-	0.5	5.2	1.9	0.2	2.1
14/2	1030	1030	-	-	-	1.2	1.9	-	3.0	10.7	17.2	1.9	19.1
14/3	1073	1073	-	-	-	1.0	2.3	-	3.4	11.2	17.4	2.3	19.7
15/1	282	282	-	-	-	0.5	0.4	-	1.0	12.6	1.7	0.4	2.2
15/2	337	337	-	-	-	0.7	0.6	-	1.4	14.6	1.3	0.6	1.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

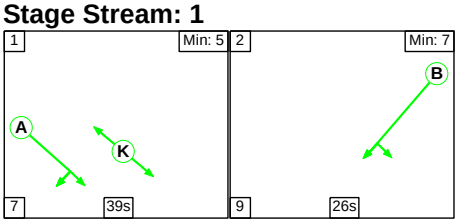
C1	Stream: 1	PRC for Signalled Lanes (%):	-4.8	Total Delay for Signalled Lanes (pcuHr):	31.82	Cycle Time (s):	60	
C1	Stream: 2	PRC for Signalled Lanes (%):	-9.4	Total Delay for Signalled Lanes (pcuHr):	15.91	Cycle Time (s):	60	
C1	Stream: 3	PRC for Signalled Lanes (%):	-30.0	Total Delay for Signalled Lanes (pcuHr):	260.00	Cycle Time (s):	60	
C1	Stream: 4	PRC for Signalled Lanes (%):	-25.1	Total Delay for Signalled Lanes (pcuHr):	36.46	Cycle Time (s):	60	
C1	Stream: 5	PRC for Signalled Lanes (%):	24.6	Total Delay for Signalled Lanes (pcuHr):	4.50	Cycle Time (s):	60	
		PRC Over All Lanes (%):	-30.0	Total Delay Over All Lanes(pcuHr):	351.80			

Full Input Data And Results

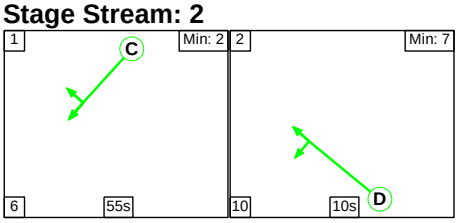
Scenario 5: '2021 DM + 20% Dev' (FG11: '2021 DM + 2021 DS 20% AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

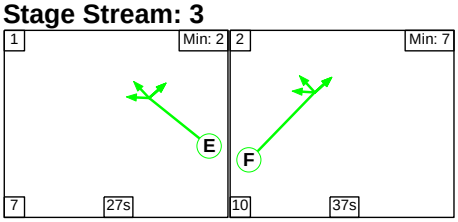
Stage Stream: 1



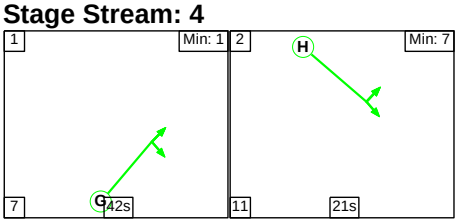
Stage Stream: 2



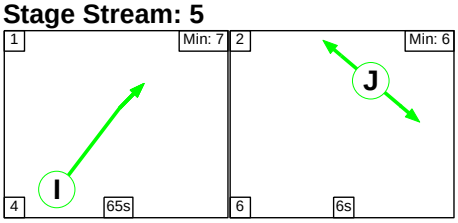
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	39	26
Change Point	30	76

Stage Stream: 2

Stage	1	2
Duration	55	10
Change Point	3	64

Stage Stream: 3

Stage	1	2
Duration	27	37
Change Point	11	45

Full Input Data And Results

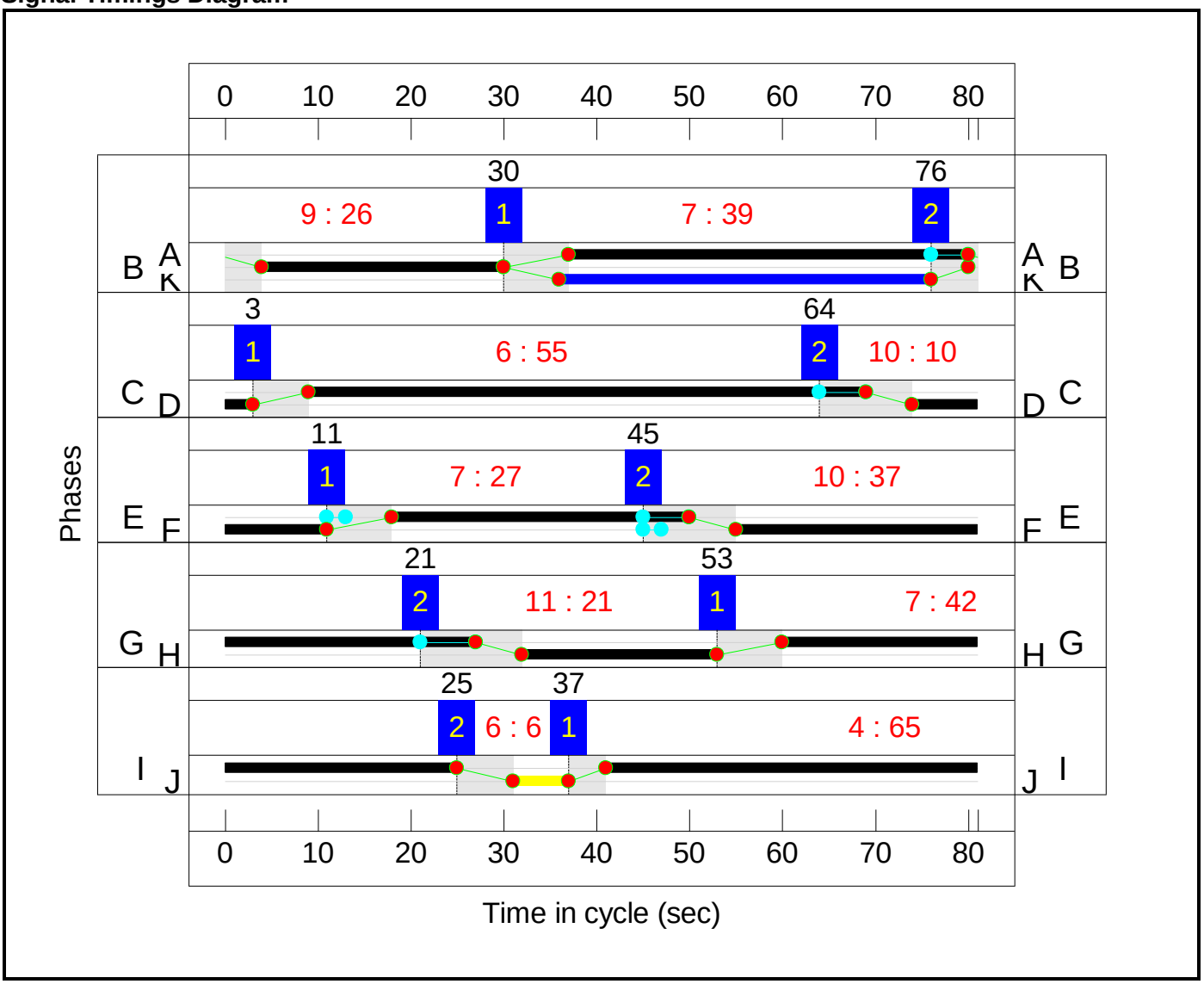
Stage Stream: 4

Stage	1	2
Duration	42	21
Change Point	53	21

Stage Stream: 5

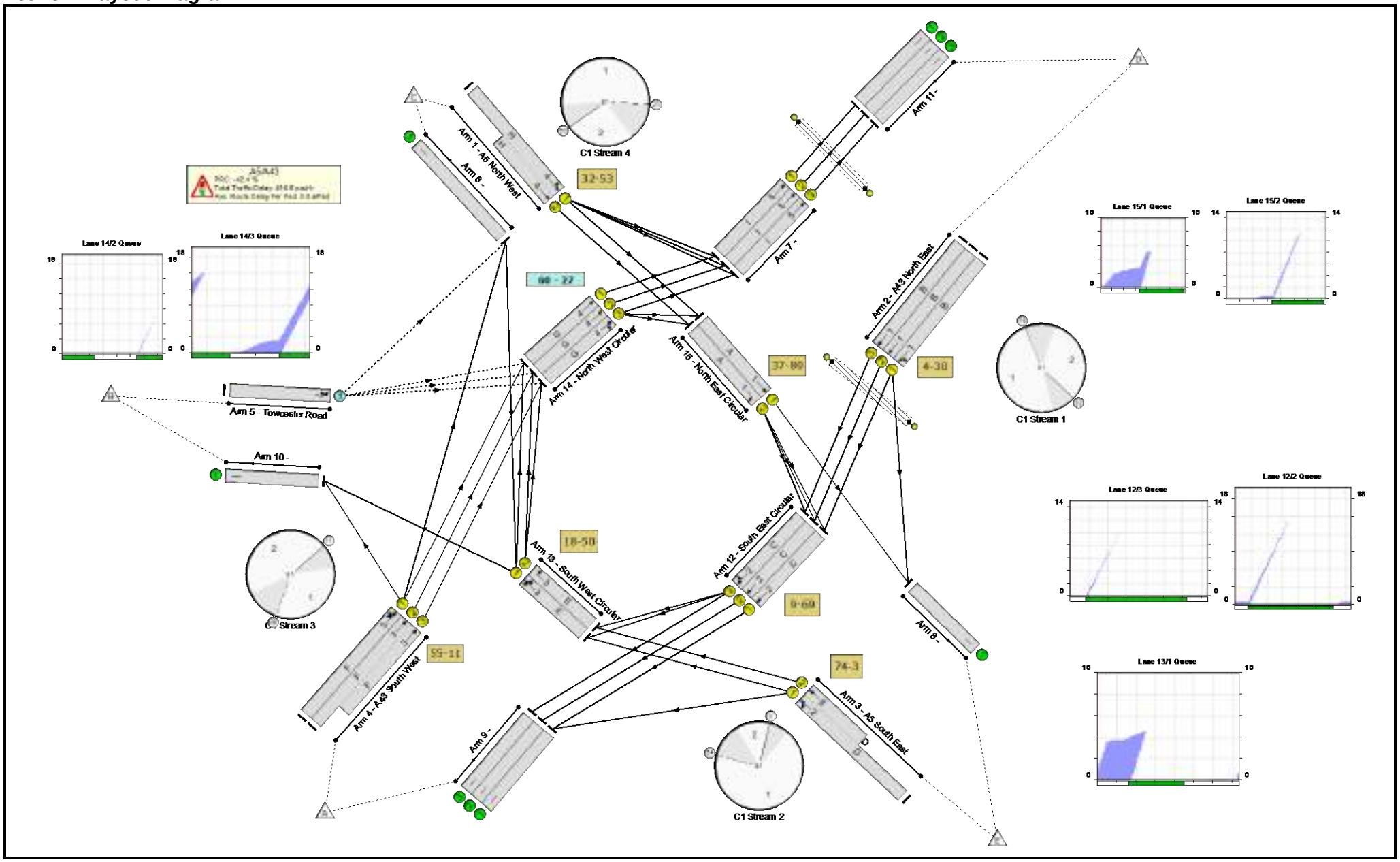
Stage	1	2
Duration	65	6
Change Point	37	25

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.2%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.2%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	21	-	846	1800:1800	182+478	128.2 : 128.2%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	26	-	763	1800	600	127.2%
2/2	A43 North East Ahead	U	1	N/A	B		1	26	-	763	1800	600	127.2%
2/3	A43 North East Ahead	U	1	N/A	B		1	26	-	764	1800	600	127.3%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	10	-	249	1800:1800	244+134	65.9 : 65.9%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	37	-	830	1800	844	98.3%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	37	-	1427	1800:1800	811+621	99.7 : 99.7%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	310	2105	443	69.9%
6/1		U	N/A	N/A	-		-	-	-	787	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	65	-	302	1900	1548	19.2%
7/2	Ahead	U	5	N/A	I		1	65	-	838	1900	1548	54.1%
7/3	Ahead	U	5	N/A	I		1	65	-	528	1900	1548	33.4%
8/1		U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	970	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	970	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	952	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	178	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	838	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	528	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	60	-	970	1900	1431	53.8%
12/2	South East Circular Ahead	U	2	N/A	C		1	60	-	970	1900	1431	53.9%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	60	-	1052	1900	1431	57.7%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	32	-	261	1900	774	30.9%
13/2	South West Circular Right	U	3	N/A	E		1	32	-	88	1900	774	11.4%
14/1	North West Circular Ahead	U	4	N/A	G		1	48	-	281	1900	1149	24.4%
14/2	North West Circular Ahead	U	4	N/A	G		1	48	-	838	1900	1149	72.9%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	48	-	832	1900	1149	72.4%
15/1	North East Circular Ahead	U	1	N/A	A		1	43	-	427	1900	1032	37.9%
15/2	North East Circular Right	U	1	N/A	A		1	43	-	702	1900	1032	55.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	40	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**221**	**89**	**0**	**71.6**	**385.0**	**0.0**	**456.6**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**221**	**89**	**0**	**71.6**	**385.0**	**0.0**	**456.6**	**-**	**-**	**-**	**-**
1/1+1/2	846	660	-	-	-	12.7	95.2	-	108.0	459.4	21.7	95.2	117.0
2/1	763	600	-	-	-	12.2	83.8	-	96.0	452.8	20.8	83.8	104.6
2/2	763	600	-	-	-	12.2	83.8	-	96.0	452.8	20.8	83.8	104.6
2/3	764	600	-	-	-	12.2	84.3	-	96.5	454.8	20.9	84.3	105.1
3/1+3/2	249	249	-	-	-	2.3	1.0	-	3.2	46.5	3.4	1.0	4.3
4/1	830	830	-	-	-	4.9	11.2	-	16.1	69.9	18.2	11.2	29.5
4/2+4/3	1427	1427	-	-	-	7.6	17.8	-	25.4	64.2	19.5	17.8	37.3
5/1	310	310	221	89	0	1.4	1.1	-	2.5	29.2	5.6	1.1	6.7
6/1	770	770	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	297	297	-	-	-	0.1	0.1	-	0.2	2.8	0.9	0.1	1.0
7/2	838	838	-	-	-	0.1	0.6	-	0.7	3.0	0.7	0.6	1.3
7/3	517	517	-	-	-	0.2	0.3	-	0.5	3.4	1.9	0.3	2.2
8/1	391	391	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	770	770	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	771	771	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	297	297	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	838	838	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	517	517	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	770	770	-	-	-	0.3	0.6	-	0.9	4.0	13.9	0.6	14.5
12/2	771	771	-	-	-	0.3	0.6	-	0.9	4.1	13.9	0.6	14.5
12/3	826	826	-	-	-	0.1	0.7	-	0.8	3.3	10.1	0.7	10.7
13/1	240	240	-	-	-	1.0	0.2	-	1.3	18.9	4.5	0.2	4.8
13/2	88	88	-	-	-	0.5	0.1	-	0.6	23.2	2.0	0.1	2.0

Full Input Data And Results

14/1	281	281	-	-	-	0.6	0.2	-	0.7	9.5	2.8	0.2	3.0
14/2	838	838	-	-	-	0.1	1.3	-	1.4	6.0	9.0	1.3	10.3
14/3	832	832	-	-	-	1.4	1.3	-	2.7	11.7	15.0	1.3	16.3
15/1	391	391	-	-	-	1.2	0.3	-	1.5	13.5	5.2	0.3	5.5
15/2	567	567	-	-	-	0.3	0.6	-	0.9	5.5	11.3	0.6	11.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

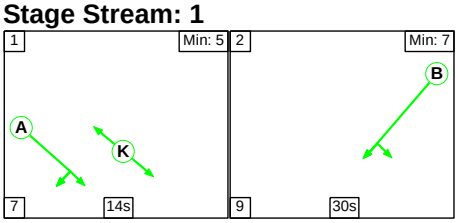
C1	Stream: 1	PRC for Signalled Lanes (%):	-41.5	Total Delay for Signalled Lanes (pcuHr):	290.79	Cycle Time (s):	81
C1	Stream: 2	PRC for Signalled Lanes (%):	36.6	Total Delay for Signalled Lanes (pcuHr):	5.70	Cycle Time (s):	81
C1	Stream: 3	PRC for Signalled Lanes (%):	-10.8	Total Delay for Signalled Lanes (pcuHr):	43.39	Cycle Time (s):	81
C1	Stream: 4	PRC for Signalled Lanes (%):	-42.4	Total Delay for Signalled Lanes (pcuHr):	112.81	Cycle Time (s):	81
C1	Stream: 5	PRC for Signalled Lanes (%):	66.3	Total Delay for Signalled Lanes (pcuHr):	1.42	Cycle Time (s):	81
		PRC Over All Lanes (%):	-42.4	Total Delay Over All Lanes(pcuHr):	456.62		

Full Input Data And Results

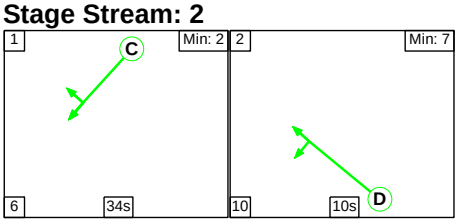
Scenario 6: '2021 DM + 20% Dev' (FG12: '2021 DM + 2021 DS 20% PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

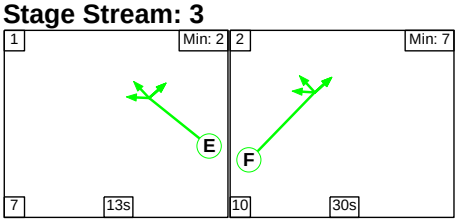
Stage Stream: 1



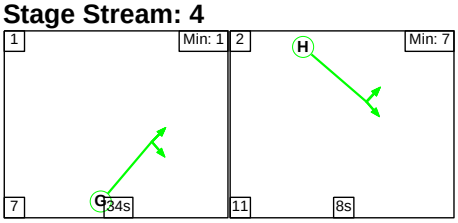
Stage Stream: 2



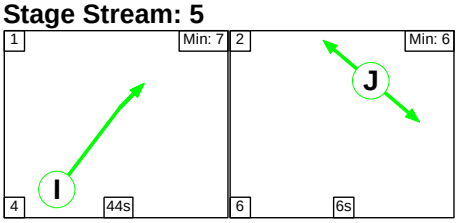
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	14	30
Change Point	53	14

Stage Stream: 2

Stage	1	2
Duration	34	10
Change Point	10	50

Stage Stream: 3

Stage	1	2
Duration	13	30
Change Point	49	9

Full Input Data And Results

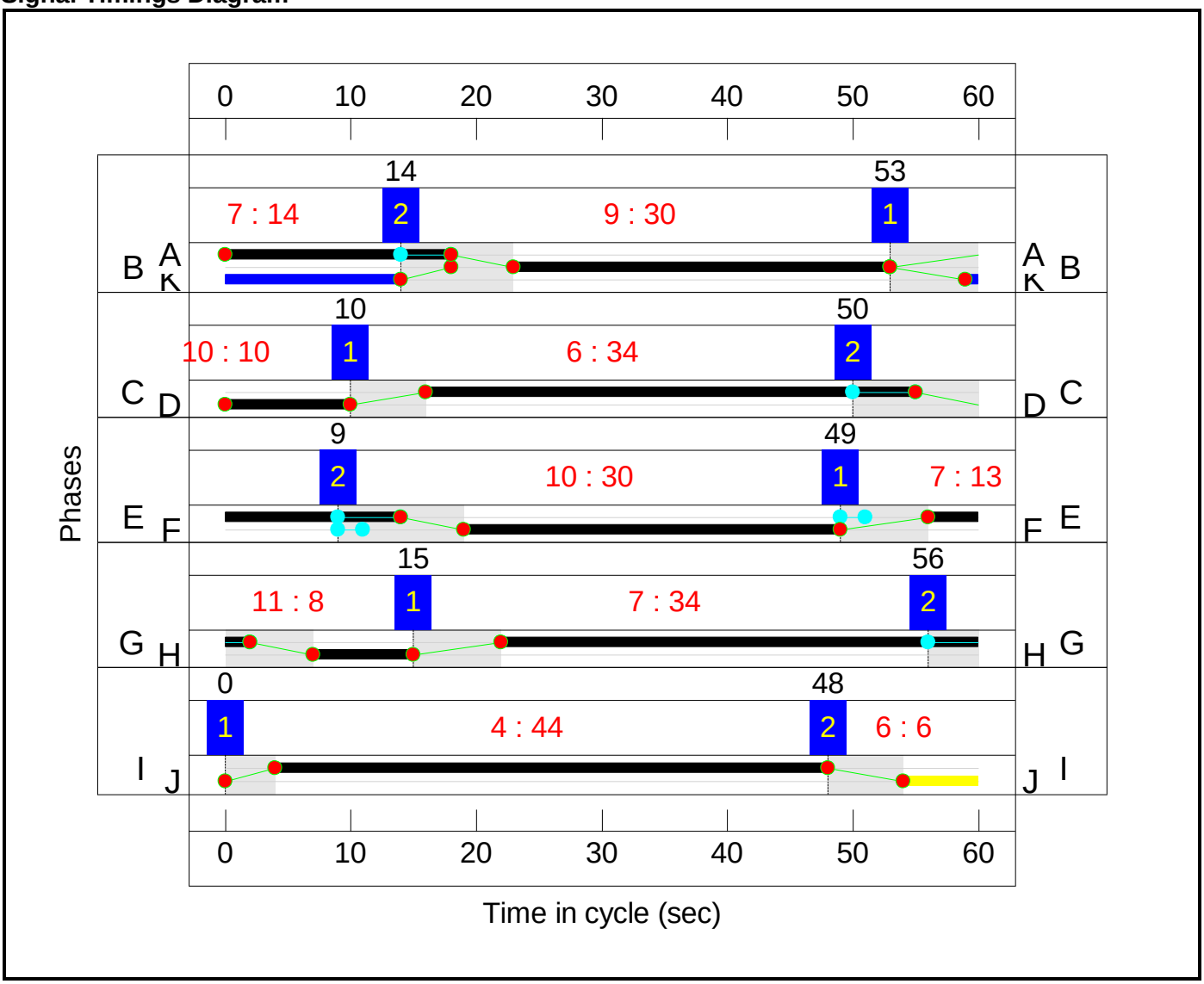
Stage Stream: 4

Stage	1	2
Duration	34	8
Change Point	15	56

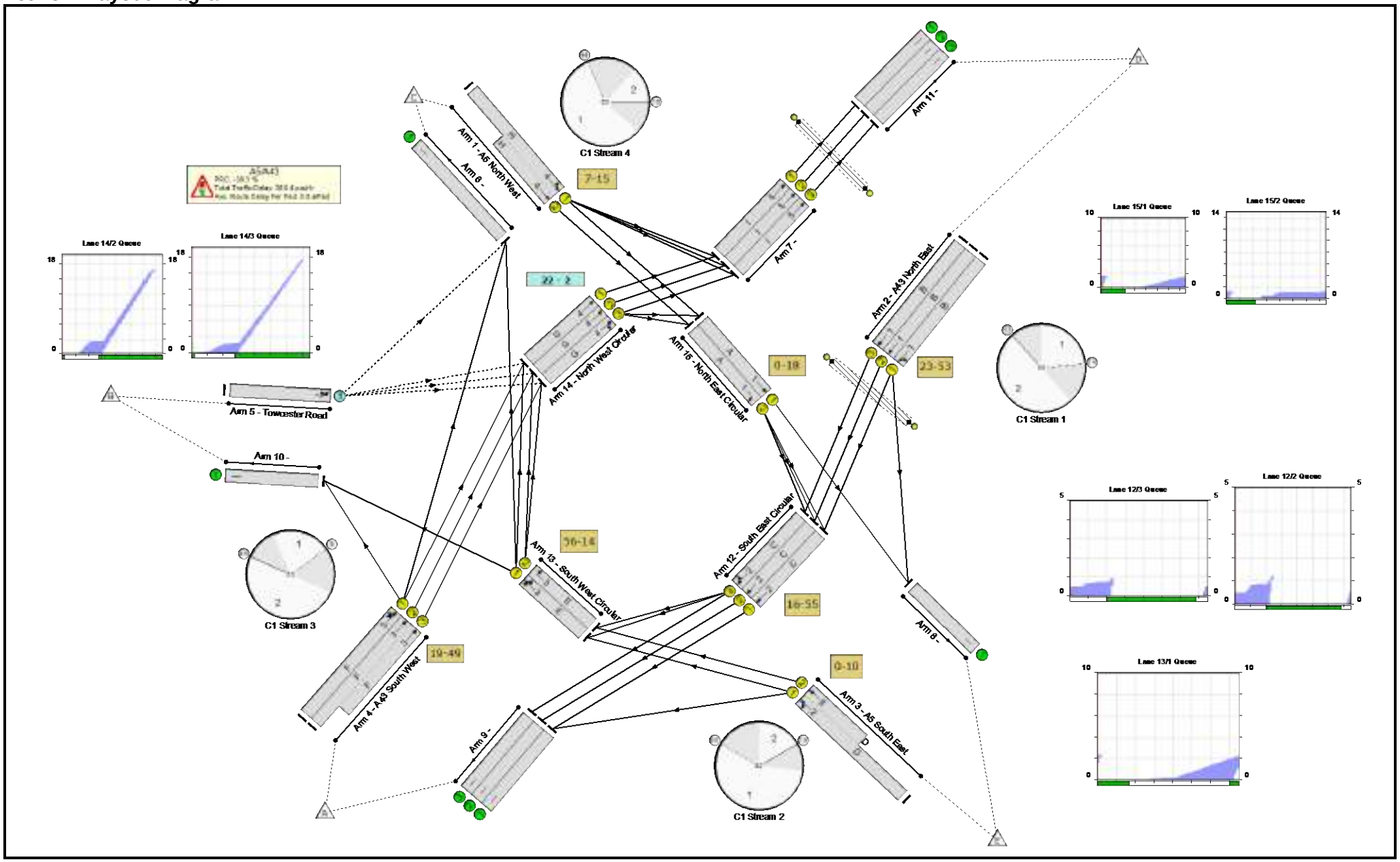
Stage Stream: 5

Stage	1	2
Duration	44	6
Change Point	0	48

Signal Timings Diagram



Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.3%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.3%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	8	-	481	1800:1800	198+270	89.3 : 112.6%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	30	-	886	1800	930	95.3%
2/2	A43 North East Ahead	U	1	N/A	B		1	30	-	882	1800	930	94.8%
2/3	A43 North East Ahead	U	1	N/A	B		1	30	-	887	1800	930	95.4%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	10	-	552	1800:1800	330+248	98.5 : 91.4%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	30	-	1091	1800	930	117.3%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	30	-	2098	1800:1800	870+930	116.6 : 116.6%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	247	2107	296	83.4%
6/1		U	N/A	N/A	-		-	-	-	1146	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	44	-	380	1900	1425	24.5%
7/2	Ahead	U	5	N/A	I		1	44	-	1170	1900	1425	72.0%
7/3	Ahead	U	5	N/A	I		1	44	-	1048	1900	1425	63.8%
8/1		U	N/A	N/A	-		-	-	-	510	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	884	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	968	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	819	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	199	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1170	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	1048	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	39	-	884	1900	1267	68.3%
12/2	South East Circular Ahead	U	2	N/A	C		1	39	-	968	1900	1267	75.8%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	39	-	960	1900	1267	75.2%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	18	-	466	1900	602	77.3%
13/2	South West Circular Right	U	3	N/A	E		1	18	-	227	1900	602	37.7%
14/1	North West Circular Ahead	U	4	N/A	G		1	40	-	380	1900	1298	26.8%
14/2	North West Circular Ahead	U	4	N/A	G		1	40	-	1170	1900	1298	79.0%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	40	-	1234	1900	1298	83.2%
15/1	North East Circular Ahead	U	1	N/A	A		1	18	-	296	1900	602	46.7%
15/2	North East Circular Right	U	1	N/A	A		1	18	-	371	1900	602	55.9%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	15	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**112**	**135**	**0**	**53.7**	**306.7**	**0.0**	**360.4**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**112**	**135**	**0**	**53.7**	**306.7**	**0.0**	**360.4**	**-**	**-**	**-**	**-**
1/1+1/2	481	447	-	-	-	4.3	25.2	-	29.6	221.2	5.6	25.2	30.8
2/1	886	886	-	-	-	3.4	7.5	-	10.9	44.3	14.0	7.5	21.5
2/2	882	882	-	-	-	3.4	7.1	-	10.5	42.7	13.7	7.1	20.8
2/3	887	887	-	-	-	3.4	7.6	-	11.0	44.7	14.0	7.6	21.7
3/1+3/2	552	552	-	-	-	3.6	6.9	-	10.5	68.7	5.3	6.9	12.2
4/1	1091	930	-	-	-	8.4	83.8	-	92.2	304.1	21.1	83.8	104.9
4/2+4/3	2098	1800	-	-	-	18.2	152.5	-	170.6	292.8	41.8	152.5	194.2
5/1	247	247	112	135	0	0.8	2.3	-	3.1	45.3	3.0	2.3	5.2
6/1	1039	1039	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	348	348	-	-	-	0.2	0.2	-	0.4	3.9	1.8	0.2	1.9
7/2	1026	1026	-	-	-	1.4	1.3	-	2.7	9.4	5.7	1.3	7.0
7/3	909	909	-	-	-	1.3	0.9	-	2.2	8.7	5.5	0.9	6.4
8/1	495	495	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	865	865	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	960	960	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	812	812	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	176	176	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	348	348	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1026	1026	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	909	909	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	865	865	-	-	-	0.4	1.1	-	1.5	6.0	3.3	1.1	4.4
12/2	960	960	-	-	-	0.2	1.5	-	1.8	6.7	1.2	1.5	2.8
12/3	952	952	-	-	-	0.2	1.5	-	1.7	6.5	0.9	1.5	2.4
13/1	465	465	-	-	-	0.6	1.7	-	2.2	17.3	2.3	1.7	4.0
13/2	227	227	-	-	-	0.0	0.3	-	0.3	4.8	0.0	0.3	0.3

Full Input Data And Results

14/1	348	348	-	-	-	0.3	0.2	-	0.5	5.2	1.9	0.2	2.1
14/2	1026	1026	-	-	-	1.3	1.9	-	3.2	11.1	17.1	1.9	19.0
14/3	1080	1080	-	-	-	0.9	2.4	-	3.3	11.1	17.5	2.4	19.9
15/1	281	281	-	-	-	0.5	0.4	-	1.0	12.6	1.7	0.4	2.2
15/2	337	337	-	-	-	0.7	0.6	-	1.4	14.6	1.3	0.6	1.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

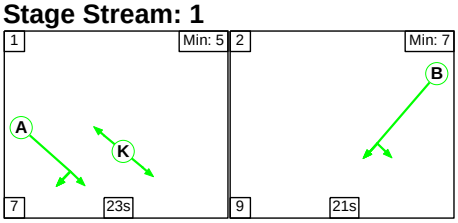
C1	Stream: 1	PRC for Signalled Lanes (%):	-6.0	Total Delay for Signalled Lanes (pcuHr):	34.73	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	-9.4	Total Delay for Signalled Lanes (pcuHr):	15.48	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-30.3	Total Delay for Signalled Lanes (pcuHr):	265.32	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	-25.1	Total Delay for Signalled Lanes (pcuHr):	36.53	Cycle Time (s):	60
C1	Stream: 5	PRC for Signalled Lanes (%):	25.0	Total Delay for Signalled Lanes (pcuHr):	5.25	Cycle Time (s):	60
		PRC Over All Lanes (%):	-30.3	Total Delay Over All Lanes(pcuHr):	360.43		

Full Input Data And Results

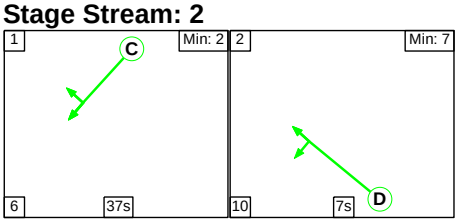
Scenario 7: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

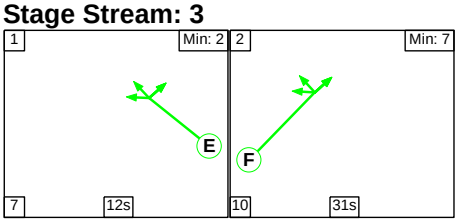
Stage Stream: 1



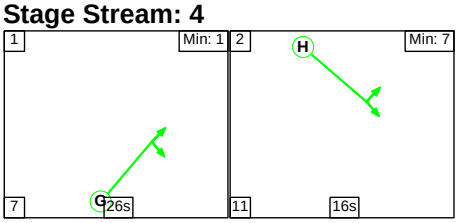
Stage Stream: 2



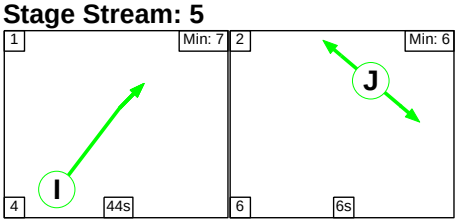
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	21
Change Point	35	5

Stage Stream: 2

Stage	1	2
Duration	37	7
Change Point	2	45

Stage Stream: 3

Stage	1	2
Duration	12	31
Change Point	49	8

Full Input Data And Results

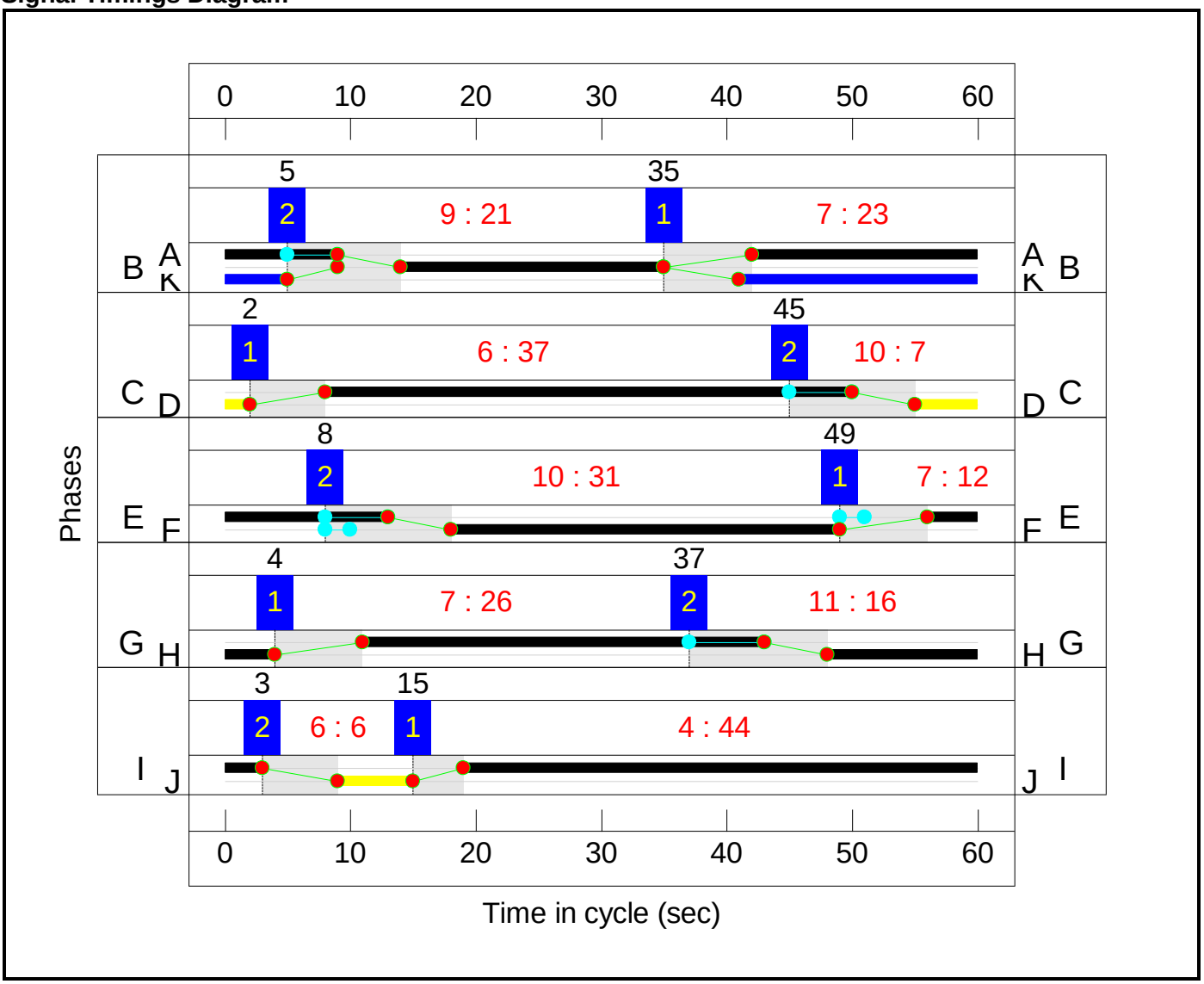
Stage Stream: 4

Stage	1	2
Duration	26	16
Change Point	4	37

Stage Stream: 5

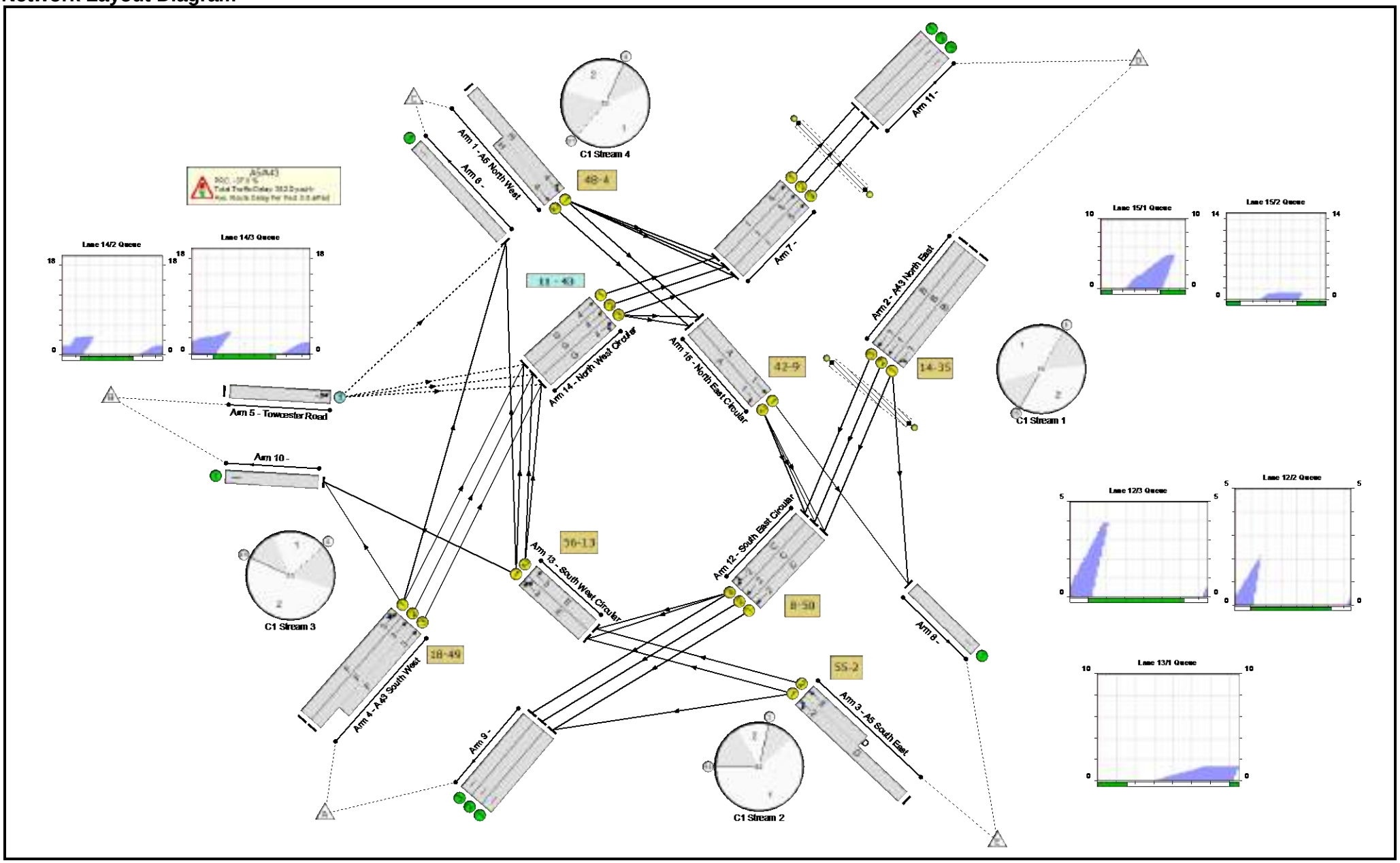
Stage	1	2
Duration	44	6
Change Point	15	3

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**123.3%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**123.3%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	16	-	842	1800:1800	173+510	123.3 : 123.3%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	21	-	805	1800	660	122.0%
2/2	A43 North East Ahead	U	1	N/A	B		1	21	-	805	1800	660	122.0%
2/3	A43 North East Ahead	U	1	N/A	B		1	21	-	805	1800	660	122.0%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	7	-	265	1800:1800	240+240	65.0 : 45.4%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	31	-	931	1800	960	97.0%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	31	-	1387	1800:1800	890+910	77.1 : 77.1%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	310	2105	401	77.4%
6/1		U	N/A	N/A	-		-	-	-	777	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	44	-	387	1900	1425	27.2%
7/2	Ahead	U	5	N/A	I		1	44	-	793	1900	1425	55.6%
7/3	Ahead	U	5	N/A	I		1	44	-	546	1900	1425	37.6%
8/1		U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	1009	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1013	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	995	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	387	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	793	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	546	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	42	-	1009	1900	1362	61.1%
12/2	South East Circular Ahead	U	2	N/A	C		1	42	-	1013	1900	1362	61.4%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	42	-	1097	1900	1362	65.9%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	17	-	258	1900	570	42.0%
13/2	South West Circular Right	U	3	N/A	E		1	17	-	109	1900	570	19.1%
14/1	North West Circular Ahead	U	4	N/A	G		1	32	-	387	1900	1045	37.0%
14/2	North West Circular Ahead	U	4	N/A	G		1	32	-	793	1900	1045	75.9%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	32	-	859	1900	1045	82.2%
15/1	North East Circular Ahead	U	1	N/A	A		1	27	-	451	1900	887	47.5%
15/2	North East Circular Right	U	1	N/A	A		1	27	-	704	1900	887	66.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	24	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**189**	**121**	**0**	**51.0**	**331.0**	**0.0**	**382.0**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**189**	**121**	**0**	**51.0**	**331.0**	**0.0**	**382.0**	**-**	**-**	**-**	**-**
1/1+1/2	842	683	-	-	-	9.8	82.2	-	92.0	393.3	15.3	82.2	97.5
2/1	805	660	-	-	-	8.0	75.2	-	83.2	372.0	15.8	75.2	91.0
2/2	805	660	-	-	-	8.0	75.2	-	83.2	372.0	15.8	75.2	91.0
2/3	805	660	-	-	-	8.0	75.2	-	83.2	372.0	15.8	75.2	91.0
3/1+3/2	265	265	-	-	-	1.8	0.6	-	2.4	32.7	2.4	0.6	3.0
4/1	931	931	-	-	-	3.5	9.6	-	13.1	50.8	14.7	9.6	24.4
4/2+4/3	1387	1387	-	-	-	4.1	1.7	-	5.8	15.0	8.8	1.7	10.4
5/1	310	310	189	121	0	1.1	1.7	-	2.7	31.4	4.5	1.7	6.1
6/1	763	763	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	387	387	-	-	-	0.1	0.2	-	0.3	3.0	3.2	0.2	3.4
7/2	793	793	-	-	-	0.2	0.6	-	0.8	3.6	3.5	0.6	4.2
7/3	535	535	-	-	-	0.1	0.3	-	0.4	2.4	1.2	0.3	1.5
8/1	421	421	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	836	836	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	175	175	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	387	387	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	793	793	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	832	832	-	-	-	0.2	0.8	-	1.0	4.3	2.2	0.8	3.0
12/2	836	836	-	-	-	0.2	0.8	-	1.0	4.4	2.2	0.8	3.0
12/3	898	898	-	-	-	0.5	1.0	-	1.4	5.7	3.9	1.0	4.9
13/1	240	240	-	-	-	0.6	0.4	-	0.9	14.0	1.4	0.4	1.7
13/2	109	109	-	-	-	0.0	0.1	-	0.1	3.9	0.0	0.1	0.1

Full Input Data And Results

14/1	387	387	-	-	-	0.8	0.3	-	1.1	10.1	3.0	0.3	3.3
14/2	793	793	-	-	-	1.1	1.6	-	2.6	12.0	3.7	1.6	5.2
14/3	859	859	-	-	-	1.2	2.3	-	3.5	14.5	4.3	2.3	6.5
15/1	421	421	-	-	-	1.4	0.5	-	1.8	15.7	4.9	0.5	5.4
15/2	585	585	-	-	-	0.5	1.0	-	1.4	8.7	1.2	1.0	2.2
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

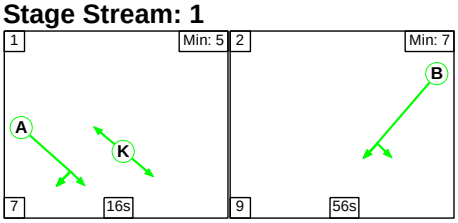
C1	Stream: 1	PRC for Signalled Lanes (%):	-35.5	Total Delay for Signalled Lanes (pcuHr):	252.83	Cycle Time (s):	60
C1	Stream: 2	PRC for Signalled Lanes (%):	36.5	Total Delay for Signalled Lanes (pcuHr):	5.85	Cycle Time (s):	60
C1	Stream: 3	PRC for Signalled Lanes (%):	-7.8	Total Delay for Signalled Lanes (pcuHr):	19.95	Cycle Time (s):	60
C1	Stream: 4	PRC for Signalled Lanes (%):	-37.0	Total Delay for Signalled Lanes (pcuHr):	99.17	Cycle Time (s):	60
C1	Stream: 5	PRC for Signalled Lanes (%):	61.7	Total Delay for Signalled Lanes (pcuHr):	1.47	Cycle Time (s):	60
		PRC Over All Lanes (%):	-37.0	Total Delay Over All Lanes(pcuHr):	381.99		

Full Input Data And Results

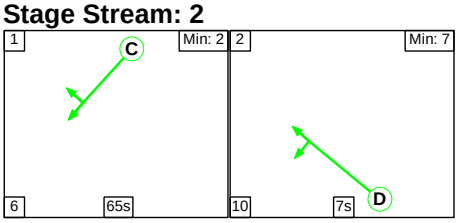
Scenario 8: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

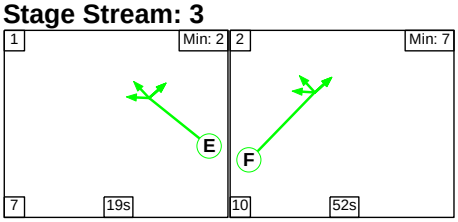
Stage Stream: 1



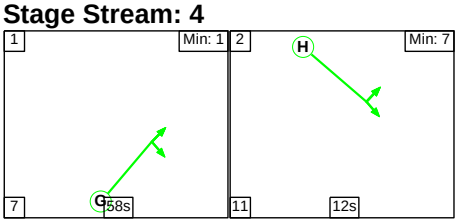
Stage Stream: 2



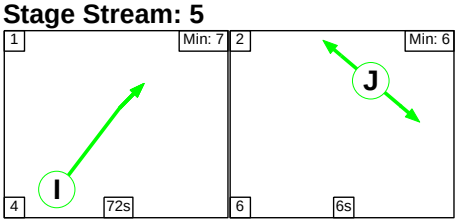
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	56
Change Point	10	33

Stage Stream: 2

Stage	1	2
Duration	65	7
Change Point	28	11

Stage Stream: 3

Stage	1	2
Duration	19	52
Change Point	1	27

Full Input Data And Results

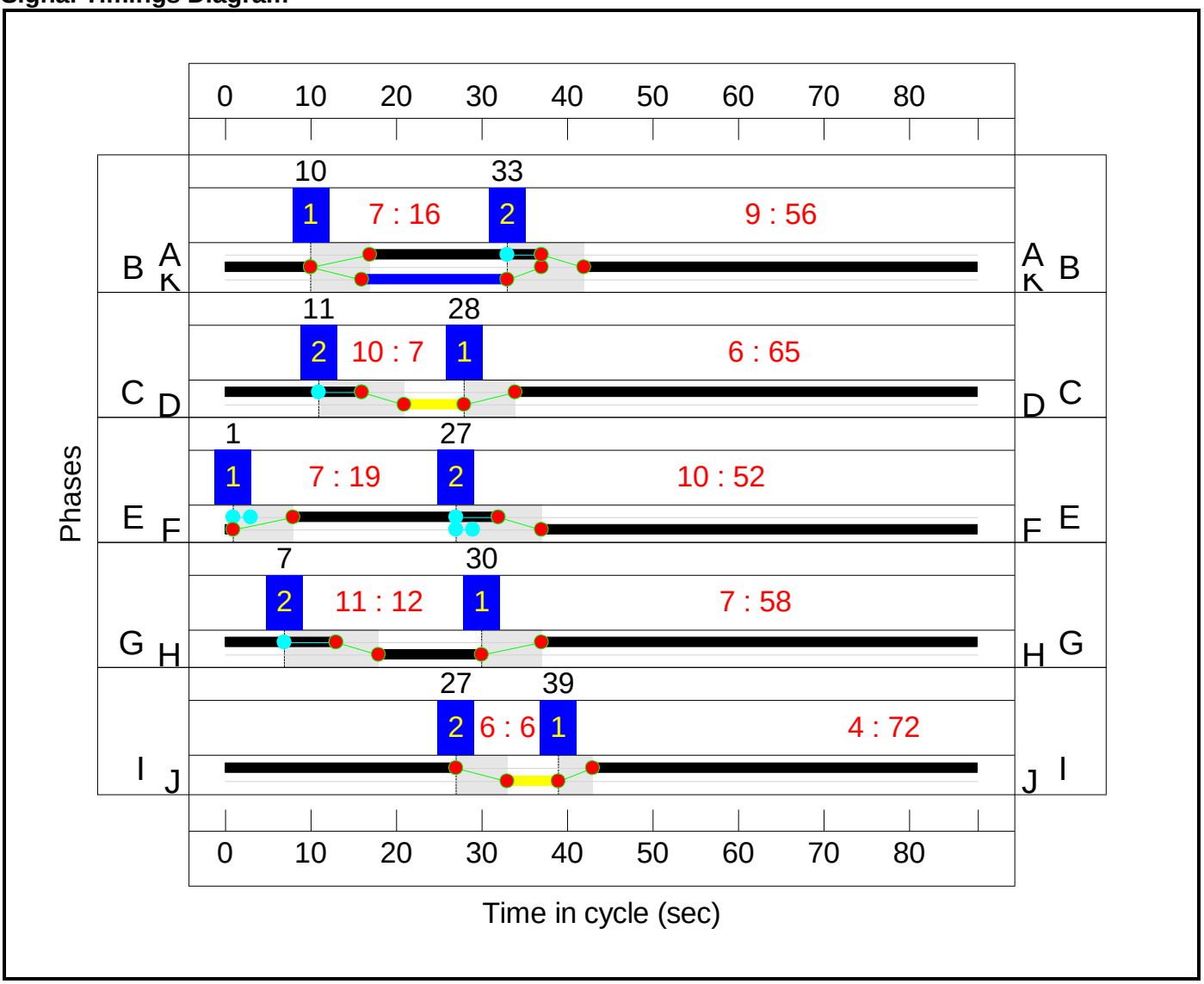
Stage Stream: 4

Stage	1	2
Duration	58	12
Change Point	30	7

Stage Stream: 5

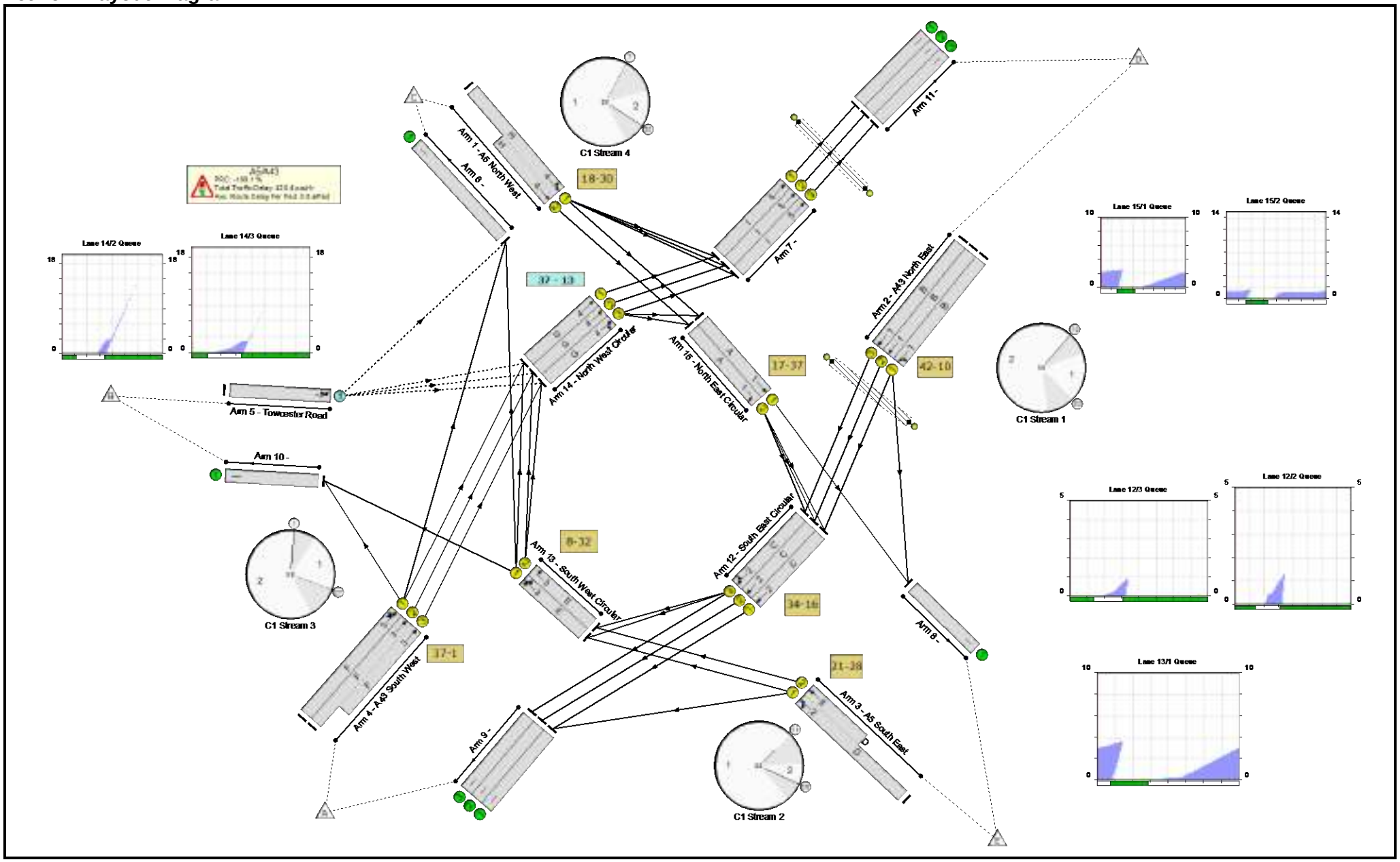
Stage	1	2
Duration	72	6
Change Point	39	27

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**188.2%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**188.2%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	12	-	463	1800:1800	169+266	106.4 : 106.4%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	56	-	971	1800	1166	83.3%
2/2	A43 North East Ahead	U	1	N/A	B		1	56	-	960	1800	1166	82.3%
2/3	A43 North East Ahead	U	1	N/A	B		1	56	-	965	1800	1166	82.8%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	7	-	505	1800:1800	164+105	188.2 : 188.2%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	52	-	1194	1800	1084	110.1%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	52	-	2005	1800:1800	844+899	115.0 : 115.0%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	240	2107	277	86.6%
6/1		U	N/A	N/A	-		-	-	-	1122	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	72	-	487	1900	1576	29.0%
7/2	Ahead	U	5	N/A	I		1	72	-	1113	1900	1576	60.8%
7/3	Ahead	U	5	N/A	I		1	72	-	982	1900	1576	53.9%
8/1		U	N/A	N/A	-		-	-	-	522	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	972	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1027	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	863	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	215	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	487	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1113	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	982	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	70	-	972	1900	1533	62.6%
12/2	South East Circular Ahead	U	2	N/A	C		1	70	-	1027	1900	1533	66.8%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	70	-	1018	1900	1533	66.2%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	24	-	463	1900	540	58.9%
13/2	South West Circular Right	U	3	N/A	E		1	24	-	197	1900	540	29.3%
14/1	North West Circular Ahead	U	4	N/A	G		1	64	-	487	1900	1403	32.5%
14/2	North West Circular Ahead	U	4	N/A	G		1	64	-	1113	1900	1403	68.3%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	64	-	1162	1900	1403	72.4%
15/1	North East Circular Ahead	U	1	N/A	A		1	20	-	296	1900	453	62.3%
15/2	North East Circular Right	U	1	N/A	A		1	20	-	347	1900	453	72.6%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	17	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**139**	**101**	**0**	**66.7**	**353.7**	**0.0**	**420.4**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**139**	**101**	**0**	**66.7**	**353.7**	**0.0**	**420.4**	**-**	**-**	**-**	**-**
1/1+1/2	463	446	-	-	-	5.4	19.8	-	25.3	196.4	7.3	19.8	27.2
2/1	971	971	-	-	-	3.2	2.4	-	5.6	20.9	18.1	2.4	20.5
2/2	960	960	-	-	-	3.1	2.3	-	5.4	20.3	17.6	2.3	19.9
2/3	965	965	-	-	-	3.2	2.3	-	5.5	20.5	17.7	2.3	20.0
3/1+3/2	505	322	-	-	-	13.1	119.4	-	132.5	944.5	14.3	119.4	133.7
4/1	1194	1084	-	-	-	11.9	59.9	-	71.8	216.5	33.2	59.9	93.2
4/2+4/3	2005	1743	-	-	-	20.3	134.7	-	154.9	278.2	53.4	134.7	188.1
5/1	240	240	139	101	0	1.5	2.8	-	4.3	64.7	4.9	2.8	7.7
6/1	912	912	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	457	457	-	-	-	0.0	0.2	-	0.2	1.8	2.8	0.2	3.0
7/2	958	958	-	-	-	0.1	0.8	-	0.9	3.4	18.0	0.8	18.7
7/3	850	850	-	-	-	0.0	0.6	-	0.6	2.5	0.0	0.6	0.6
8/1	509	509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	960	960	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	861	861	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	201	201	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	457	457	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	958	958	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	850	850	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	960	960	-	-	-	0.5	0.8	-	1.3	5.0	5.3	0.8	6.1
12/2	1024	1024	-	-	-	0.1	1.0	-	1.1	3.9	1.3	1.0	2.3
12/3	1015	1015	-	-	-	0.1	1.0	-	1.0	3.7	0.9	1.0	1.9
13/1	318	318	-	-	-	1.1	0.7	-	1.9	21.0	3.6	0.7	4.3
13/2	158	158	-	-	-	0.0	0.2	-	0.2	4.7	0.0	0.2	0.2

Full Input Data And Results

14/1	457	457	-	-	-	0.5	0.2	-	0.7	5.6	2.9	0.2	3.1
14/2	958	958	-	-	-	0.3	1.1	-	1.4	5.2	14.8	1.1	15.9
14/3	1016	1016	-	-	-	0.3	1.3	-	1.6	5.7	8.5	1.3	9.8
15/1	283	283	-	-	-	1.2	0.8	-	2.0	25.3	2.5	0.8	3.3
15/2	329	329	-	-	-	0.9	1.3	-	2.2	23.7	1.5	1.3	2.8
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

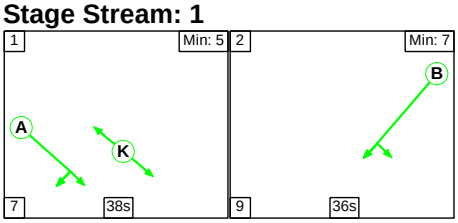
C1	Stream: 1	PRC for Signalled Lanes (%):	8.1	Total Delay for Signalled Lanes (pcuHr):	20.69	Cycle Time (s):	88	
C1	Stream: 2	PRC for Signalled Lanes (%):	-109.1	Total Delay for Signalled Lanes (pcuHr):	135.96	Cycle Time (s):	88	
C1	Stream: 3	PRC for Signalled Lanes (%):	-27.8	Total Delay for Signalled Lanes (pcuHr):	228.80	Cycle Time (s):	88	
C1	Stream: 4	PRC for Signalled Lanes (%):	-18.3	Total Delay for Signalled Lanes (pcuHr):	28.95	Cycle Time (s):	88	
C1	Stream: 5	PRC for Signalled Lanes (%):	48.0	Total Delay for Signalled Lanes (pcuHr):	1.72	Cycle Time (s):	88	
		PRC Over All Lanes (%):	-109.1	Total Delay Over All Lanes(pcuHr):	420.43			

Full Input Data And Results

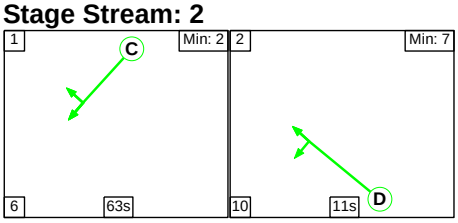
Scenario 9: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

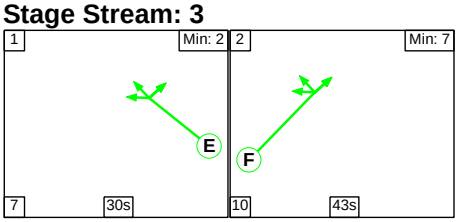
Stage Stream: 1



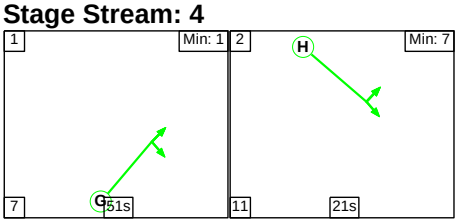
Stage Stream: 2



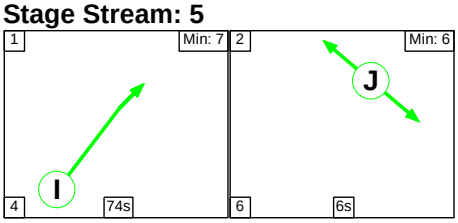
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	38	36
Change Point	21	66

Stage Stream: 2

Stage	1	2
Duration	63	11
Change Point	41	20

Stage Stream: 3

Stage	1	2
Duration	30	43
Change Point	3	40

Full Input Data And Results

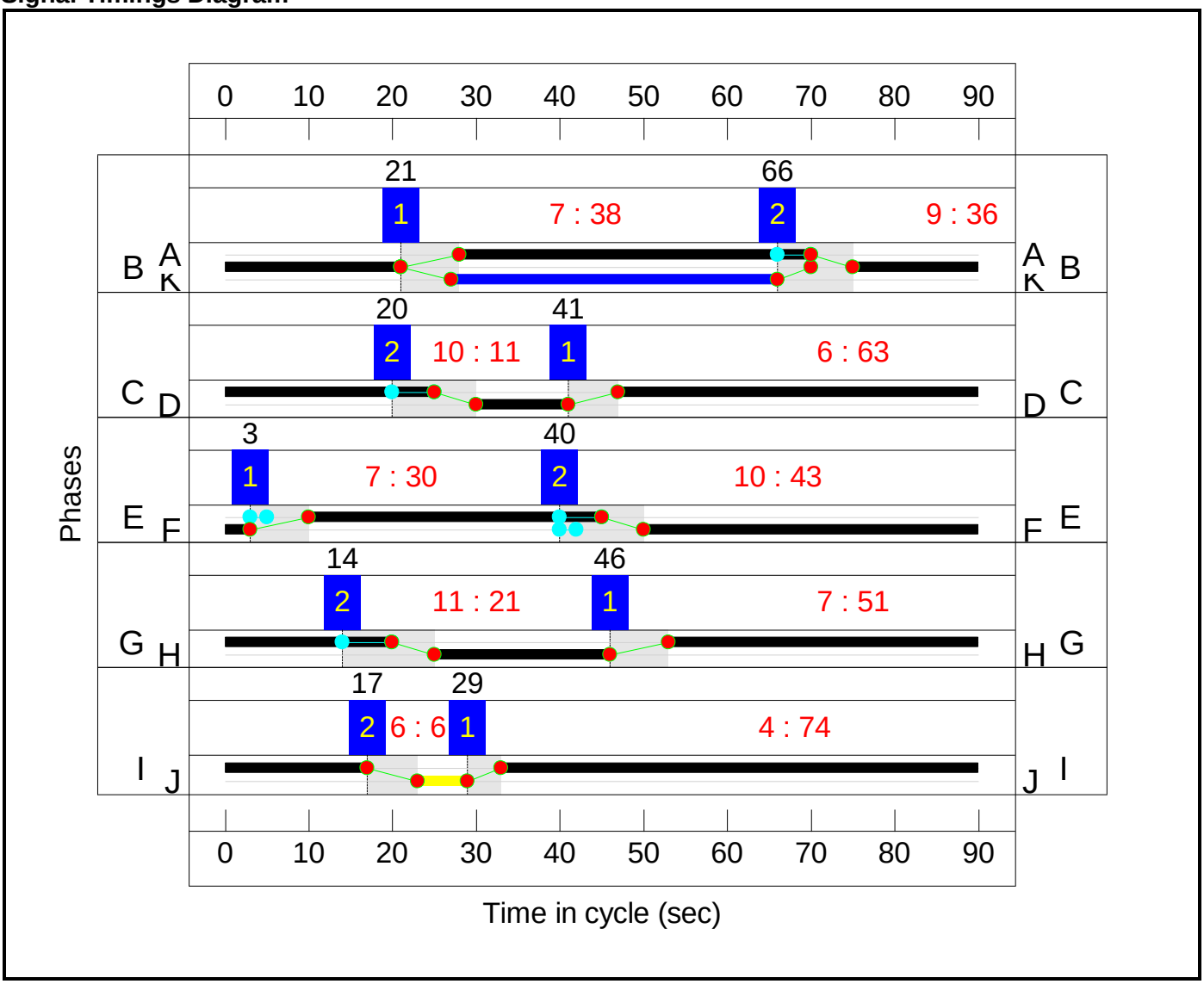
Stage Stream: 4

Stage	1	2
Duration	51	21
Change Point	46	14

Stage Stream: 5

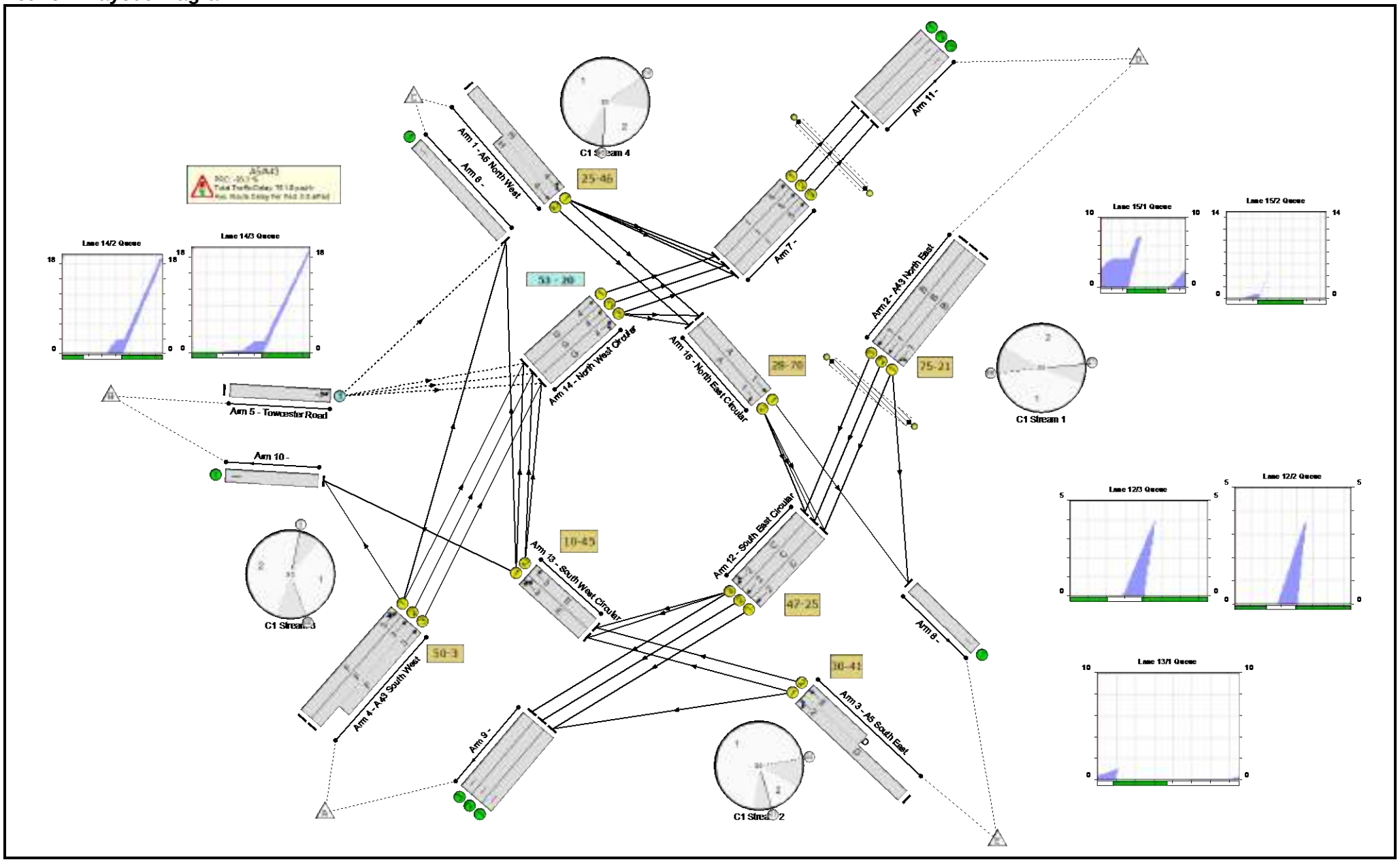
Stage	1	2
Duration	74	6
Change Point	29	17

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**174.0%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**174.0%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	21	-	1089	1800:1800	200+426	174.0 : 174.0%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	36	-	933	1800	740	126.1%
2/2	A43 North East Ahead	U	1	N/A	B		1	36	-	935	1800	740	126.4%
2/3	A43 North East Ahead	U	1	N/A	B		1	36	-	934	1800	740	126.2%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	11	-	437	1800:1800	240+170	106.7 : 106.7%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	43	-	934	1800	880	106.1%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	43	-	1642	1800:1800	753+785	106.8 : 106.8%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	211	2099	371	56.9%
6/1		U	N/A	N/A	-		-	-	-	1059	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	74	-	187	1900	1583	11.6%
7/2	Ahead	U	5	N/A	I		1	74	-	921	1900	1583	55.0%
7/3	Ahead	U	5	N/A	I		1	74	-	755	1900	1583	42.8%
8/1		U	N/A	N/A	-		-	-	-	489	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	1199	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1201	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	1110	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	187	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	921	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	755	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	68	-	1197	1900	1457	62.2%
12/2	South East Circular Ahead	U	2	N/A	C		1	68	-	1201	1900	1457	62.2%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	68	-	1215	1900	1457	62.1%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	35	-	359	1900	760	42.1%
13/2	South West Circular Right	U	3	N/A	E		1	35	-	181	1900	760	23.8%
14/1	North West Circular Ahead	U	4	N/A	G		1	57	-	186	1900	1224	14.9%
14/2	North West Circular Ahead	U	4	N/A	G		1	57	-	921	1900	1224	71.1%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	57	-	967	1900	1224	74.6%
15/1	North East Circular Ahead	U	1	N/A	A		1	42	-	489	1900	908	40.3%
15/2	North East Circular Right	U	1	N/A	A		1	42	-	811	1900	908	54.6%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	39	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**120**	**91**	**0**	**110.5**	**651.3**	**0.0**	**761.8**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**120**	**91**	**0**	**110.5**	**651.3**	**0.0**	**761.8**	**-**	**-**	**-**	**-**
1/1+1/2	1089	626	-	-	-	28.3	232.7	-	261.0	862.8	37.0	232.7	269.7
2/1	933	740	-	-	-	16.2	98.9	-	115.1	444.2	28.2	98.9	127.0
2/2	935	740	-	-	-	16.4	99.8	-	116.2	447.4	28.2	99.8	128.1
2/3	934	740	-	-	-	16.3	99.4	-	115.7	445.8	28.2	99.4	127.6
3/1+3/2	437	421	-	-	-	5.3	19.3	-	24.6	202.7	6.8	19.3	26.1
4/1	934	880	-	-	-	8.9	33.9	-	42.8	165.0	24.7	33.9	58.6
4/2+4/3	1642	1538	-	-	-	12.6	59.0	-	71.5	156.8	33.1	59.0	92.1
5/1	211	211	120	91	0	0.9	0.7	-	1.5	25.8	3.3	0.7	4.0
6/1	986	986	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	183	183	-	-	-	0.2	0.1	-	0.2	4.2	1.2	0.1	1.2
7/2	870	870	-	-	-	0.0	0.6	-	0.6	2.5	0.0	0.6	0.6
7/3	678	678	-	-	-	0.0	0.4	-	0.4	2.0	0.4	0.4	0.7
8/1	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	908	908	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	822	822	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	177	177	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	183	183	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	870	870	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	678	678	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	906	906	-	-	-	0.3	0.8	-	1.1	4.6	3.5	0.8	4.3
12/2	906	906	-	-	-	0.3	0.8	-	1.1	4.5	3.5	0.8	4.3
12/3	904	904	-	-	-	0.3	0.8	-	1.1	4.5	3.9	0.8	4.7
13/1	320	320	-	-	-	0.1	0.4	-	0.5	5.6	1.1	0.4	1.5
13/2	181	181	-	-	-	0.0	0.2	-	0.2	3.1	0.0	0.2	0.2

Full Input Data And Results

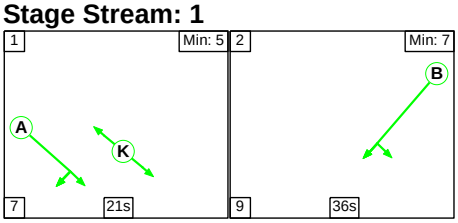
14/1	183	183	-	-	-	0.3	0.1	-	0.4	8.6	1.7	0.1	1.8
14/2	870	870	-	-	-	1.1	1.2	-	2.3	9.6	19.8	1.2	21.0
14/3	914	914	-	-	-	1.0	1.5	-	2.4	9.5	20.3	1.5	21.8
15/1	366	366	-	-	-	1.9	0.3	-	2.2	21.7	7.2	0.3	7.5
15/2	496	496	-	-	-	0.1	0.6	-	0.7	5.3	5.8	0.6	6.4
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-40.4	Total Delay for Signalled Lanes (pcuHr):	349.90	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-18.5	Total Delay for Signalled Lanes (pcuHr):	28.04	Cycle Time (s):	90		
C1	Stream: 3 PRC for Signalled Lanes (%):	-18.6	Total Delay for Signalled Lanes (pcuHr):	114.96	Cycle Time (s):	90		
C1	Stream: 4 PRC for Signalled Lanes (%):	-93.3	Total Delay for Signalled Lanes (pcuHr):	266.17	Cycle Time (s):	90		
C1	Stream: 5 PRC for Signalled Lanes (%):	63.8	Total Delay for Signalled Lanes (pcuHr):	1.21	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-93.3	Total Delay Over All Lanes(pcuHr):	761.80				

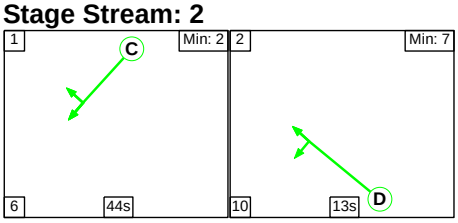
Full Input Data And Results
Scenario 10: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

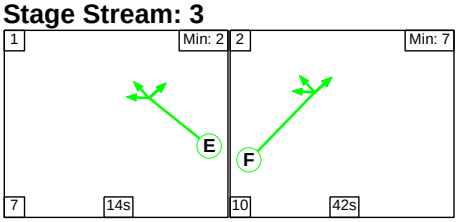
Stage Stream: 1



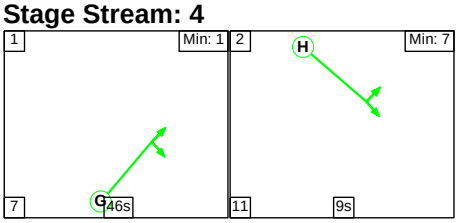
Stage Stream: 2



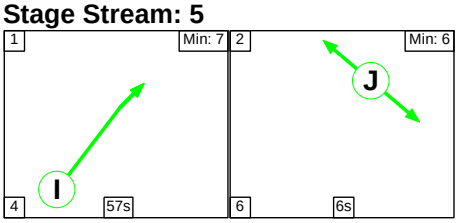
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	36
Change Point	28	56

Stage Stream: 2

Stage	1	2
Duration	44	13
Change Point	51	28

Stage Stream: 3

Stage	1	2
Duration	14	42
Change Point	31	52

Full Input Data And Results

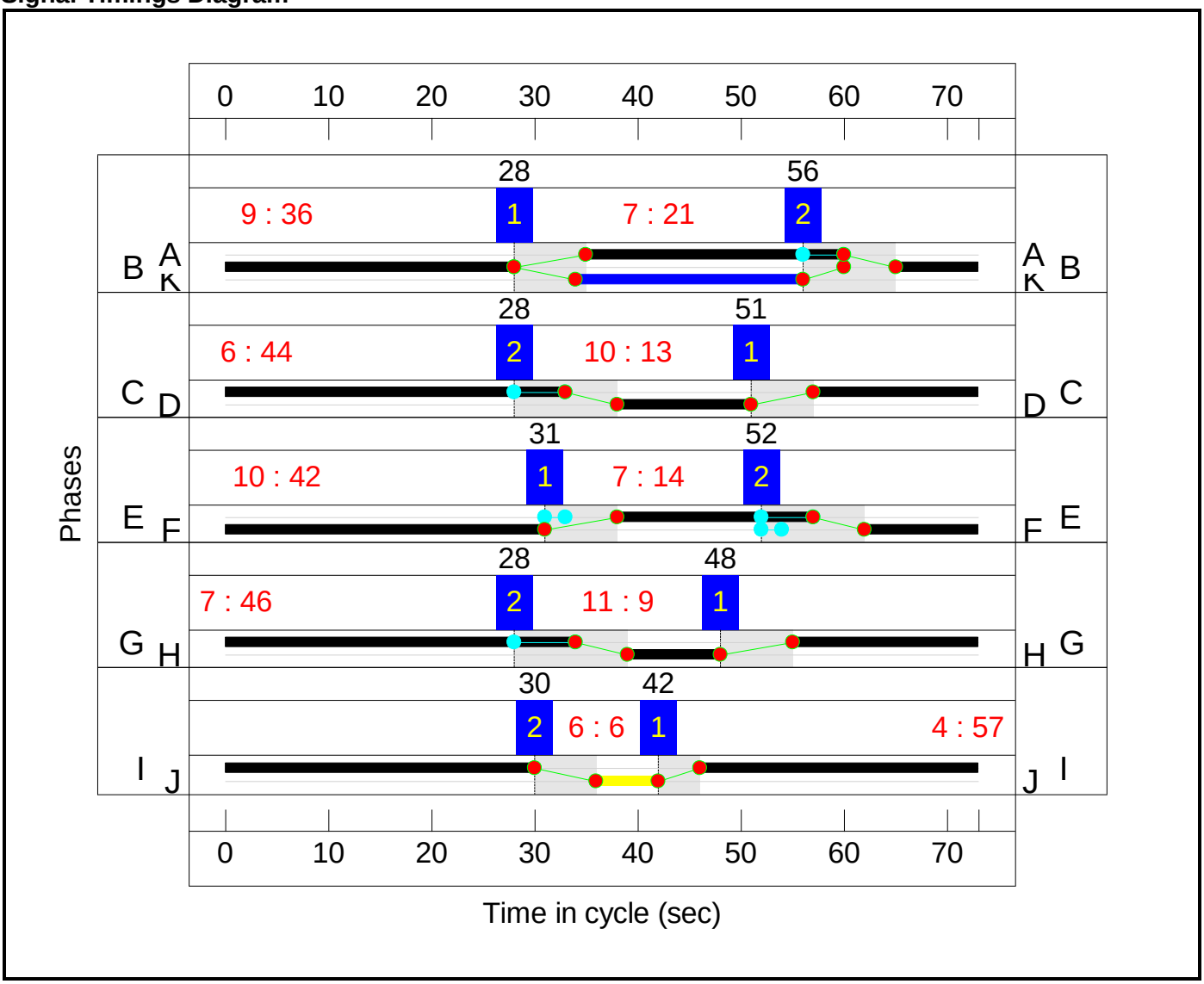
Stage Stream: 4

Stage	1	2
Duration	46	9
Change Point	48	28

Stage Stream: 5

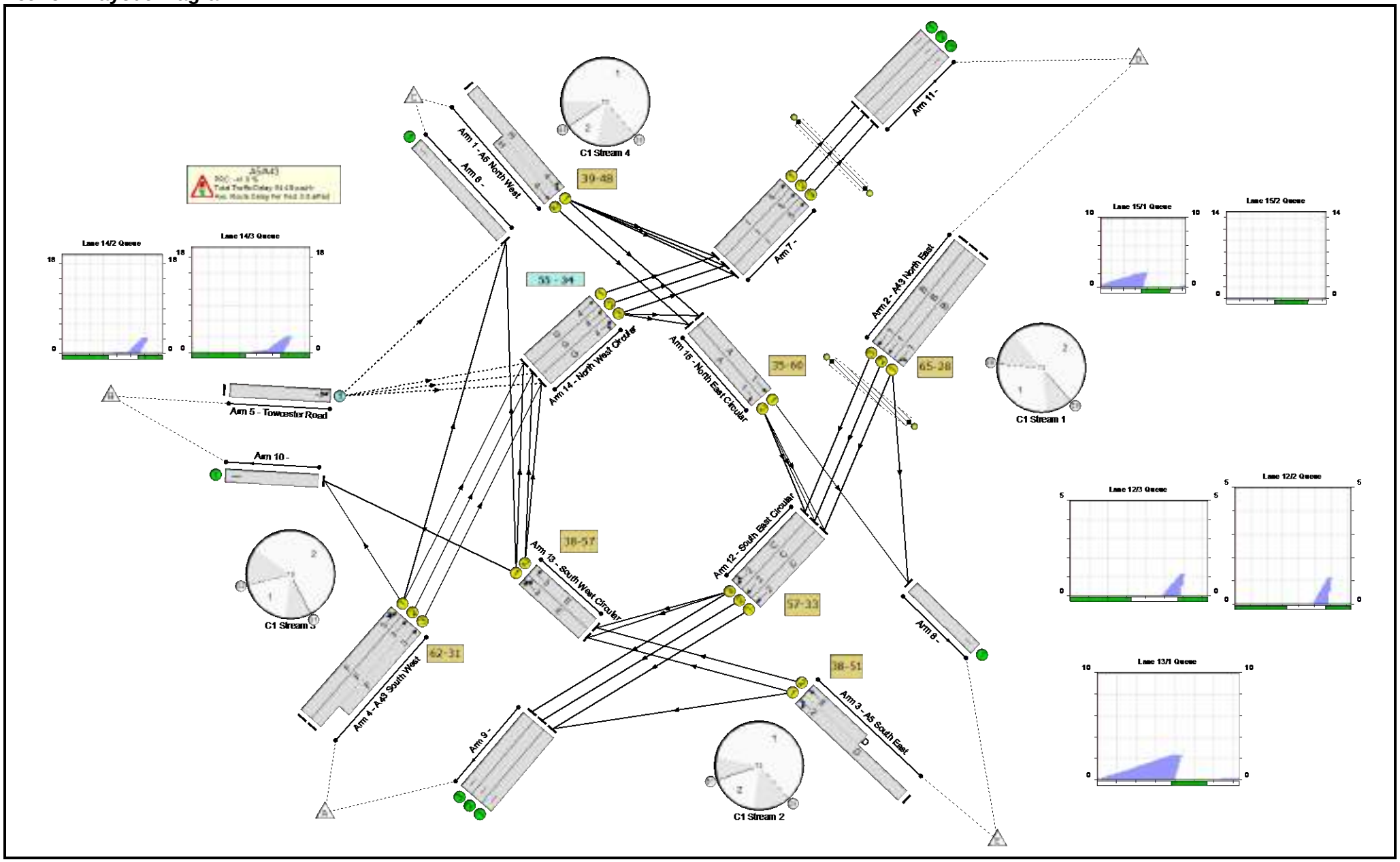
Stage	1	2
Duration	57	6
Change Point	42	30

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.9%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.9%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	9	-	624	1800:1800	247+247	126.1 : 126.9%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	36	-	991	1800	912	108.6%
2/2	A43 North East Ahead	U	1	N/A	B		1	36	-	988	1800	912	108.3%
2/3	A43 North East Ahead	U	1	N/A	B		1	36	-	989	1800	912	108.4%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	13	-	734	1800:1800	345+258	121.7 : 121.7%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	42	-	1193	1800	1060	112.5%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	42	-	2027	1800:1800	890+910	112.6 : 112.6%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	200	2105	222	90.1%
6/1		U	N/A	N/A	-		-	-	-	1259	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	57	-	339	1900	1510	21.0%
7/2	Ahead	U	5	N/A	I		1	57	-	1183	1900	1510	68.8%
7/3	Ahead	U	5	N/A	I		1	57	-	1053	1900	1510	61.4%
8/1		U	N/A	N/A	-		-	-	-	708	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	994	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1061	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	935	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	339	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1183	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	1053	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	49	-	915	1900	1301	63.1%
12/2	South East Circular Ahead	U	2	N/A	C		1	49	-	1061	1900	1301	74.5%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	49	-	1061	1900	1301	74.5%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	19	-	466	1900	521	75.8%
13/2	South West Circular Right	U	3	N/A	E		1	19	-	315	1900	521	49.7%
14/1	North West Circular Ahead	U	4	N/A	G		1	52	-	339	1900	1379	23.0%
14/2	North West Circular Ahead	U	4	N/A	G		1	52	-	1183	1900	1379	75.3%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	52	-	1206	1900	1379	77.4%
15/1	North East Circular Ahead	U	1	N/A	A		1	25	-	449	1900	677	55.1%
15/2	North East Circular Right	U	1	N/A	A		1	25	-	328	1900	677	38.7%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	22	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**85**	**115**	**0**	**72.8**	**472.0**	**0.0**	**544.9**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**85**	**115**	**0**	**72.8**	**472.0**	**0.0**	**544.9**	**-**	**-**	**-**	**-**
1/1+1/2	624	493	-	-	-	9.1	67.7	-	76.8	443.3	7.7	67.7	75.4
2/1	991	912	-	-	-	7.9	44.9	-	52.7	191.6	21.7	44.9	66.5
2/2	988	912	-	-	-	7.8	43.5	-	51.3	186.8	21.6	43.5	65.1
2/3	989	912	-	-	-	7.8	44.0	-	51.8	188.4	21.6	44.0	65.6
3/1+3/2	734	603	-	-	-	8.5	68.1	-	76.6	375.6	13.0	68.1	81.0
4/1	1193	1060	-	-	-	9.9	70.6	-	80.5	242.9	26.9	70.6	97.5
4/2+4/3	2027	1800	-	-	-	16.7	117.8	-	134.5	238.9	49.5	117.8	167.4
5/1	200	200	85	115	0	1.1	3.5	-	4.6	82.1	3.9	3.5	7.4
6/1	1100	1100	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	317	317	-	-	-	0.1	0.1	-	0.2	2.8	0.8	0.1	0.9
7/2	1038	1038	-	-	-	0.4	1.1	-	1.5	5.2	2.4	1.1	3.4
7/3	926	926	-	-	-	0.4	0.8	-	1.2	4.5	2.2	0.8	3.0
8/1	611	611	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	886	886	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	970	970	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	190	190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	317	317	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1038	1038	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	926	926	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	821	821	-	-	-	0.3	0.9	-	1.2	5.2	2.8	0.9	3.7
12/2	970	970	-	-	-	0.1	1.5	-	1.6	5.8	1.2	1.5	2.6
12/3	969	969	-	-	-	0.1	1.4	-	1.5	5.7	1.2	1.4	2.6
13/1	395	395	-	-	-	0.7	1.5	-	2.3	20.7	2.7	1.5	4.3
13/2	259	259	-	-	-	0.0	0.5	-	0.5	6.9	0.0	0.5	0.5

Full Input Data And Results

14/1	317	317	-	-	-	0.3	0.1	-	0.5	5.2	1.7	0.1	1.9
14/2	1038	1038	-	-	-	0.4	1.5	-	1.9	6.5	3.3	1.5	4.8
14/3	1067	1067	-	-	-	0.4	1.7	-	2.1	7.0	3.1	1.7	4.7
15/1	373	373	-	-	-	0.7	0.6	-	1.4	13.1	2.2	0.6	2.8
15/2	262	262	-	-	-	0.1	0.3	-	0.4	5.5	0.2	0.3	0.5
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

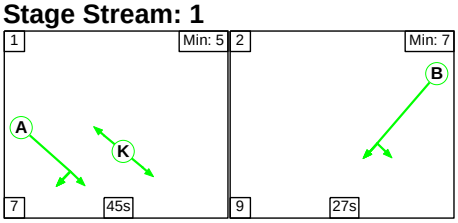
C1	Stream: 1 PRC for Signalled Lanes (%):	-20.7	Total Delay for Signalled Lanes (pcuHr):	157.53	Cycle Time (s):	73		
C1	Stream: 2 PRC for Signalled Lanes (%):	-35.2	Total Delay for Signalled Lanes (pcuHr):	80.85	Cycle Time (s):	73		
C1	Stream: 3 PRC for Signalled Lanes (%):	-25.1	Total Delay for Signalled Lanes (pcuHr):	217.77	Cycle Time (s):	73		
C1	Stream: 4 PRC for Signalled Lanes (%):	-41.0	Total Delay for Signalled Lanes (pcuHr):	81.25	Cycle Time (s):	73		
C1	Stream: 5 PRC for Signalled Lanes (%):	30.8	Total Delay for Signalled Lanes (pcuHr):	2.91	Cycle Time (s):	73		
	PRC Over All Lanes (%):	-41.0	Total Delay Over All Lanes(pcuHr):	544.87				

Full Input Data And Results

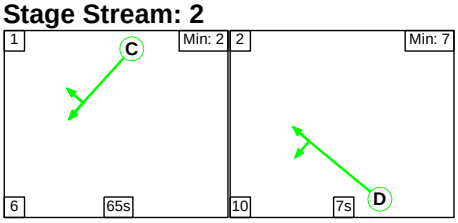
Scenario 11: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

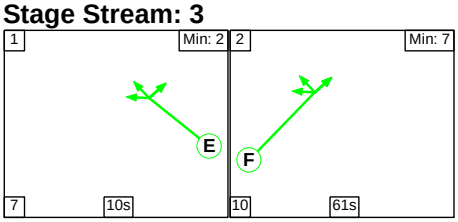
Stage Stream: 1



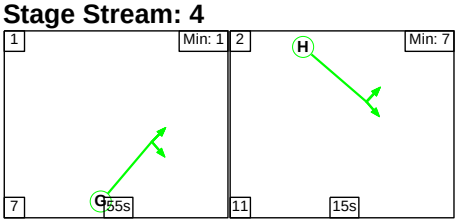
Stage Stream: 2



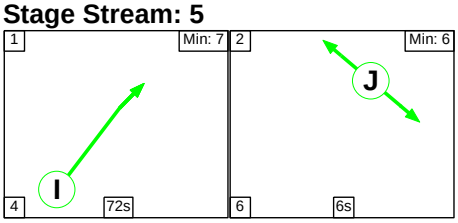
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	45	27
Change Point	17	69

Stage Stream: 2

Stage	1	2
Duration	65	7
Change Point	71	54

Stage Stream: 3

Stage	1	2
Duration	10	61
Change Point	54	71

Full Input Data And Results

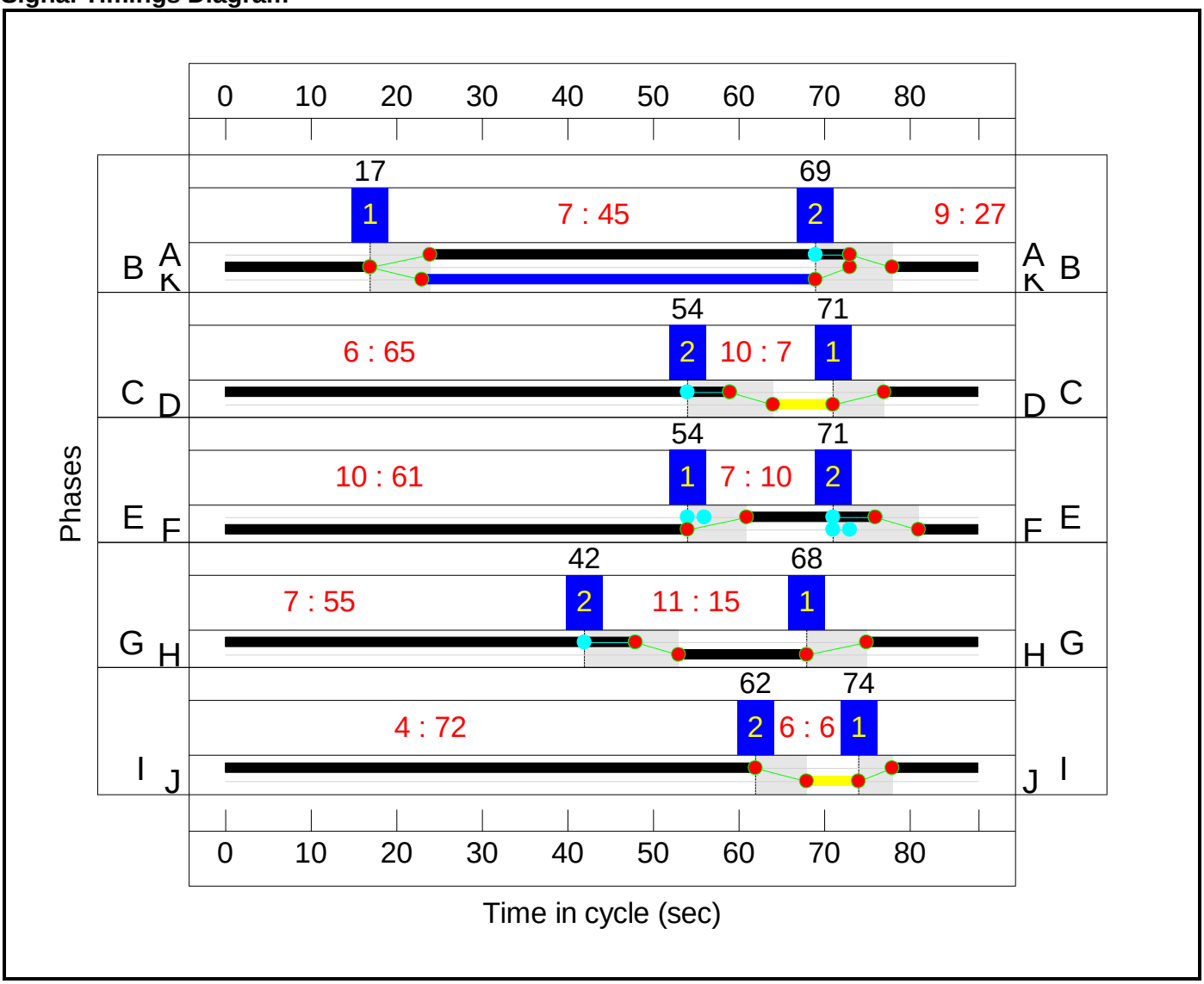
Stage Stream: 4

Stage	1	2
Duration	55	15
Change Point	68	42

Stage Stream: 5

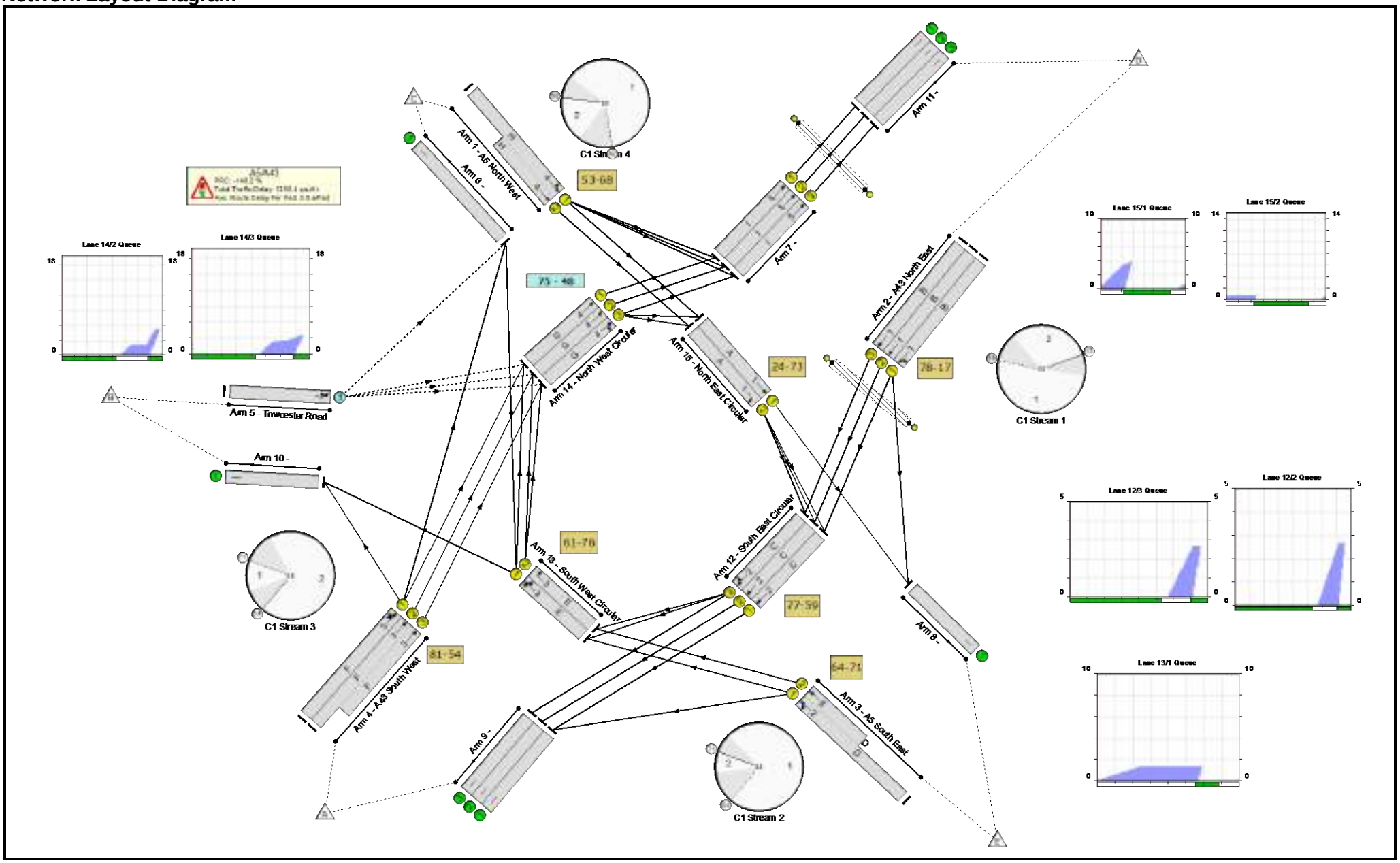
Stage	1	2
Duration	72	6
Change Point	74	62

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**223.4%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**223.4%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	15	-	1044	1800:1800	140+327	223.4 : 223.4%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	27	-	985	1800	573	172.0%
2/2	A43 North East Ahead	U	1	N/A	B		1	27	-	985	1800	573	172.0%
2/3	A43 North East Ahead	U	1	N/A	B		1	27	-	985	1800	573	172.0%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	7	-	684	1800:1800	164+164	209.6 : 208.4%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	61	-	800	1800	1268	63.1%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	61	-	1511	1800:1800	877+923	83.9 : 83.9%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	224	2101	424	52.9%
6/1		U	N/A	N/A	-		-	-	-	1002	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	72	-	202	1900	1576	11.6%
7/2	Ahead	U	5	N/A	I		1	72	-	1001	1900	1576	54.8%
7/3	Ahead	U	5	N/A	I		1	72	-	707	1900	1576	39.9%
8/1		U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	1258	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1254	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	1157	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	202	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1001	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	707	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	70	-	1254	1900	1533	46.2%
12/2	South East Circular Ahead	U	2	N/A	C		1	70	-	1254	1900	1533	46.1%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	70	-	1255	1900	1533	46.2%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	15	-	437	1900	345	63.1%
13/2	South West Circular Right	U	3	N/A	E		1	15	-	341	1900	345	47.4%
14/1	North West Circular Ahead	U	4	N/A	G		1	61	-	196	1900	1339	13.4%
14/2	North West Circular Ahead	U	4	N/A	G		1	61	-	1001	1900	1339	64.5%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	61	-	928	1900	1339	66.4%
15/1	North East Circular Ahead	U	1	N/A	A		1	49	-	451	1900	1080	29.6%
15/2	North East Circular Right	U	1	N/A	A		1	49	-	808	1900	1080	37.4%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	46	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**187**	**37**	**0**	**149.9**	**1100.5**	**0.0**	**1250.4**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**187**	**37**	**0**	**149.9**	**1100.5**	**0.0**	**1250.4**	**-**	**-**	**-**	**-**
1/1+1/2	1044	467	-	-	-	34.9	289.2	-	324.1	1117.6	45.0	289.2	334.2
2/1	985	573	-	-	-	27.7	207.3	-	235.1	859.1	38.8	207.3	246.1
2/2	985	573	-	-	-	27.7	207.3	-	235.1	859.1	38.8	207.3	246.1
2/3	985	573	-	-	-	27.7	207.3	-	235.1	859.1	38.8	207.3	246.1
3/1+3/2	684	327	-	-	-	22.7	179.3	-	202.0	1063.2	23.3	179.3	202.6
4/1	800	800	-	-	-	1.5	0.9	-	2.4	10.7	10.2	0.9	11.1
4/2+4/3	1511	1511	-	-	-	2.8	2.6	-	5.3	12.7	9.7	2.6	12.3
5/1	224	224	187	37	0	0.3	0.6	-	0.9	13.9	2.3	0.6	2.9
6/1	812	812	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	182	182	-	-	-	0.0	0.1	-	0.1	1.4	0.0	0.1	0.1
7/2	863	863	-	-	-	0.0	0.6	-	0.6	2.5	0.0	0.6	0.6
7/3	629	629	-	-	-	0.0	0.3	-	0.4	2.1	0.2	0.3	0.6
8/1	320	320	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	707	707	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	652	652	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	182	182	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	863	863	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	629	629	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	708	708	-	-	-	0.3	0.4	-	0.7	3.8	2.7	0.4	3.1
12/2	707	707	-	-	-	0.3	0.4	-	0.7	3.8	3.2	0.4	3.6
12/3	708	708	-	-	-	0.3	0.4	-	0.7	3.8	3.2	0.4	3.6
13/1	218	218	-	-	-	0.8	0.8	-	1.6	27.1	1.4	0.8	2.2
13/2	164	164	-	-	-	0.0	0.4	-	0.4	9.9	0.0	0.4	0.4

Full Input Data And Results

14/1	180	180	-	-	-	0.2	0.1	-	0.3	5.2	1.3	0.1	1.3
14/2	863	863	-	-	-	0.7	0.9	-	1.6	6.9	5.2	0.9	6.1
14/3	888	888	-	-	-	0.7	1.0	-	1.7	6.9	3.6	1.0	4.6
15/1	320	320	-	-	-	0.8	0.2	-	1.0	11.0	3.9	0.2	4.1
15/2	404	404	-	-	-	0.3	0.3	-	0.6	5.1	0.9	0.3	1.2
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

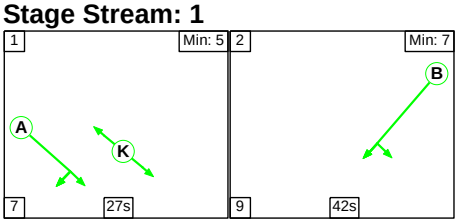
C1	Stream: 1	PRC for Signalled Lanes (%):	-91.1	Total Delay for Signalled Lanes (pcuHr):	706.71	Cycle Time (s):	88	
C1	Stream: 2	PRC for Signalled Lanes (%):	-132.9	Total Delay for Signalled Lanes (pcuHr):	204.25	Cycle Time (s):	88	
C1	Stream: 3	PRC for Signalled Lanes (%):	7.2	Total Delay for Signalled Lanes (pcuHr):	9.83	Cycle Time (s):	88	
C1	Stream: 4	PRC for Signalled Lanes (%):	-148.2	Total Delay for Signalled Lanes (pcuHr):	327.71	Cycle Time (s):	88	
C1	Stream: 5	PRC for Signalled Lanes (%):	64.3	Total Delay for Signalled Lanes (pcuHr):	1.04	Cycle Time (s):	88	
		PRC Over All Lanes (%):	-148.2	Total Delay Over All Lanes(pcuHr):	1250.41			

Full Input Data And Results

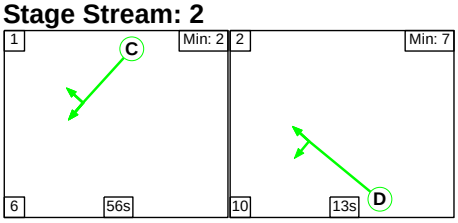
Scenario 12: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

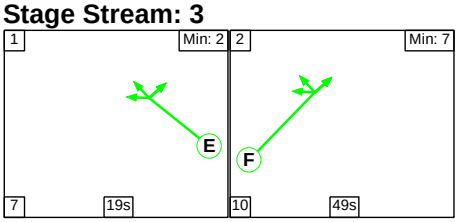
Stage Stream: 1



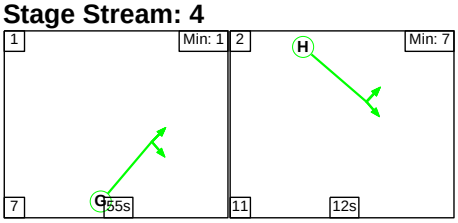
Stage Stream: 2



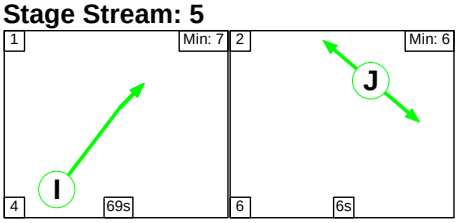
Stage Stream: 3



Stage Stream: 4



Stage Stream: 5



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	27	42
Change Point	59	8

Stage Stream: 2

Stage	1	2
Duration	56	13
Change Point	9	71

Stage Stream: 3

Stage	1	2
Duration	19	49
Change Point	72	13

Full Input Data And Results

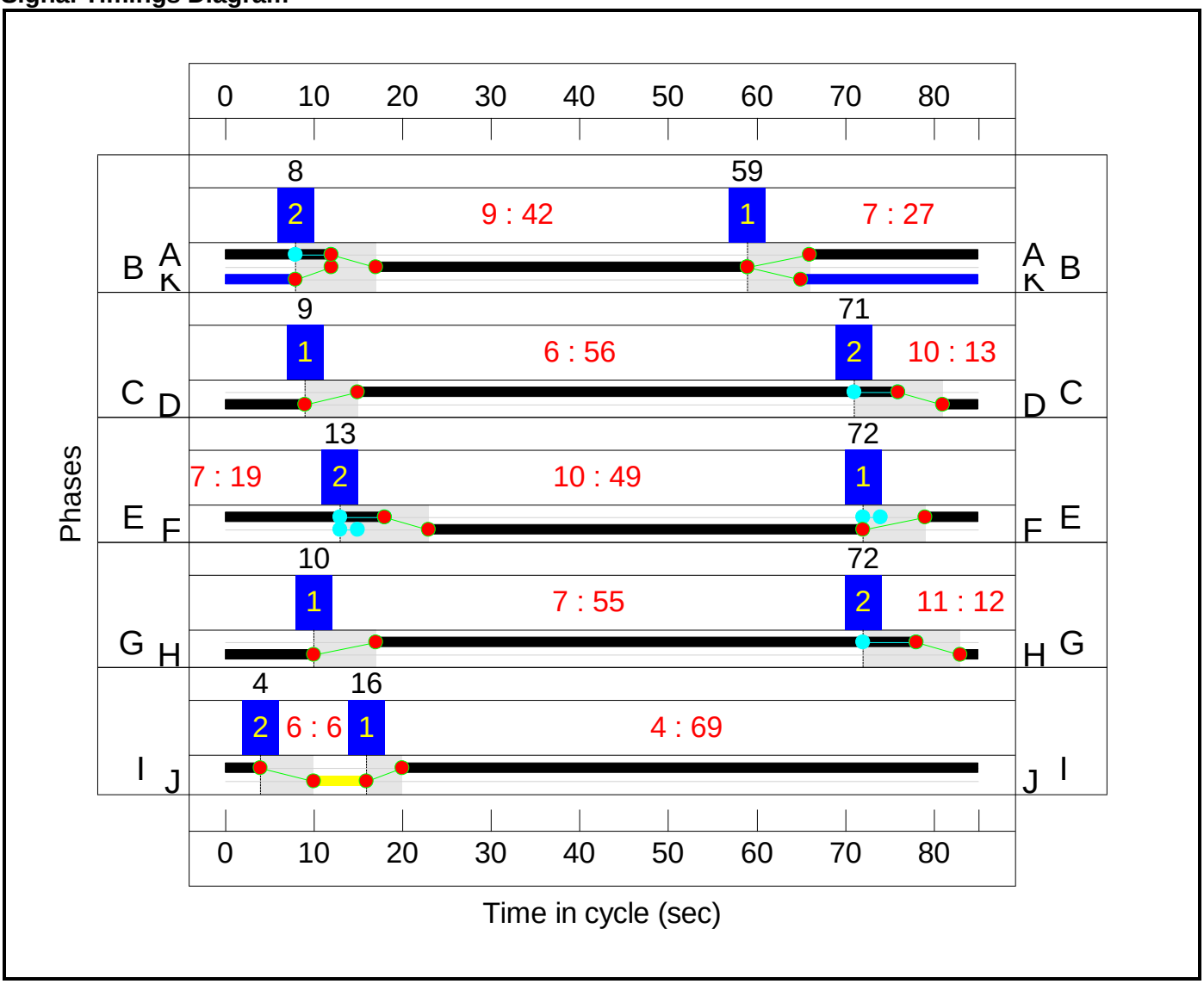
Stage Stream: 4

Stage	1	2
Duration	55	12
Change Point	10	72

Stage Stream: 5

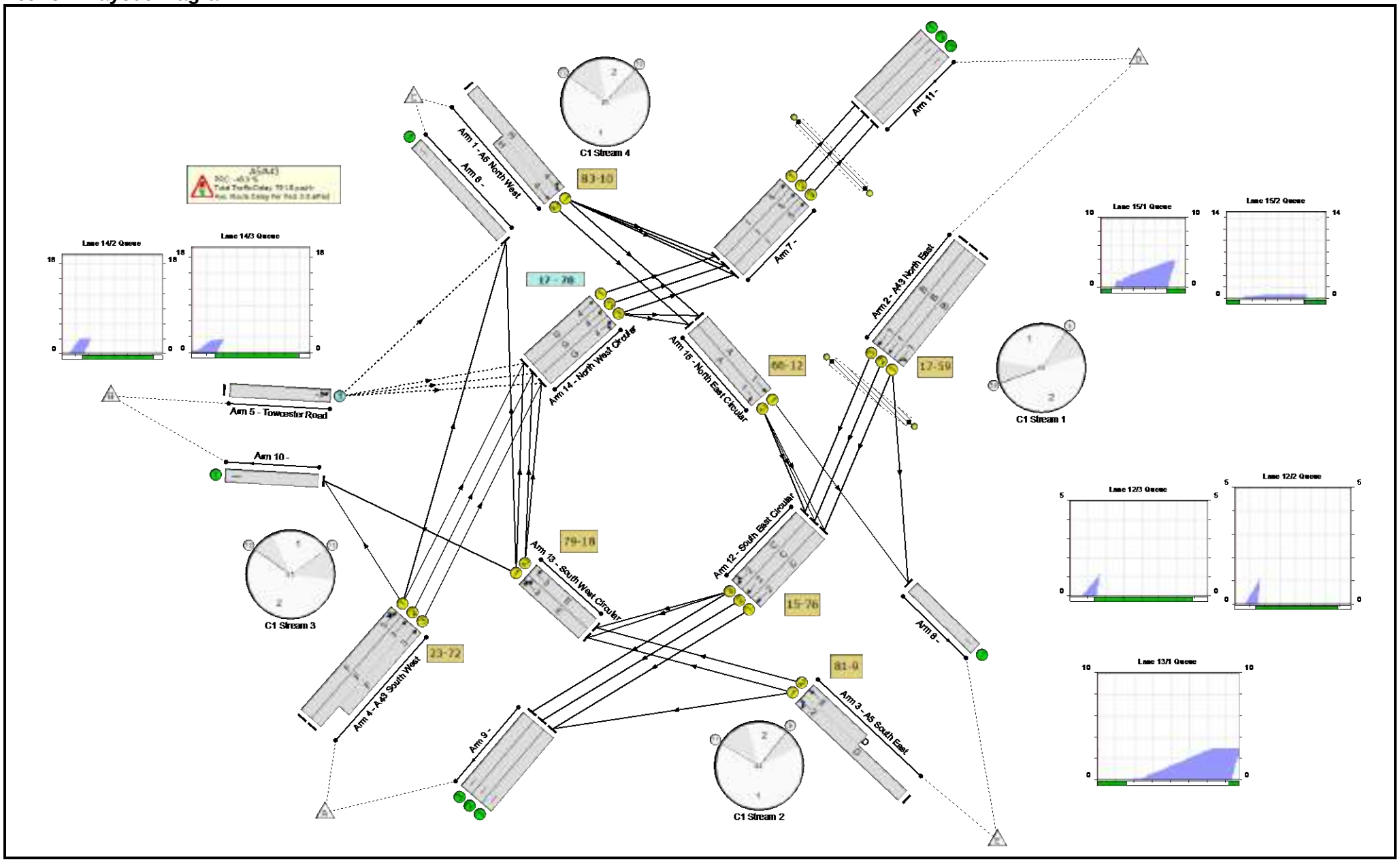
Stage	1	2
Duration	69	6
Change Point	16	4

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**132.2%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**132.2%**
1/1+1/2	A5 North West Left Ahead	U	4	N/A	H		1	12	-	608	1800:1800	275+239	123.5 : 112.2%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	42	-	1115	1800	911	122.4%
2/2	A43 North East Ahead	U	1	N/A	B		1	42	-	1112	1800	911	122.1%
2/3	A43 North East Ahead	U	1	N/A	B		1	42	-	1113	1800	911	122.2%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	13	-	658	1800:1800	296+201	132.2 : 132.2%
4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	49	-	1227	1800	1059	115.9%
4/2+4/3	A43 South West Ahead	U	3	N/A	F		1	49	-	2037	1800:1800	859+896	116.1 : 116.1%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	205	2105	251	81.6%
6/1		U	N/A	N/A	-		-	-	-	1222	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	69	-	380	1900	1565	22.2%
7/2	Ahead	U	5	N/A	I		1	69	-	1168	1900	1565	63.2%
7/3	Ahead	U	5	N/A	I		1	69	-	1029	1900	1565	56.0%
8/1		U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	1018	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1167	Inf	Inf	0.0%
9/3		U	N/A	N/A	-		-	-	-	1014	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	1168	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	1029	Inf	Inf	0.0%

Full Input Data And Results

12/1	South East Circular Ahead	U	2	N/A	C		1	61	-	954	1900	1386	57.6%
12/2	South East Circular Ahead	U	2	N/A	C		1	61	-	1167	1900	1386	69.3%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	61	-	1168	1900	1386	69.3%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	24	-	481	1900	559	66.9%
13/2	South West Circular Right	U	3	N/A	E		1	24	-	267	1900	559	36.1%
14/1	North West Circular Ahead	U	4	N/A	G		1	61	-	380	1900	1386	25.0%
14/2	North West Circular Ahead	U	4	N/A	G		1	61	-	1168	1900	1386	71.3%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	61	-	1190	1900	1386	73.8%
15/1	North East Circular Ahead	U	1	N/A	A		1	31	-	486	1900	715	56.8%
15/2	North East Circular Right	U	1	N/A	A		1	31	-	283	1900	715	36.5%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	28	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**125**	**80**	**0**	**103.6**	**688.1**	**0.0**	**791.6**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**125**	**80**	**0**	**103.6**	**688.1**	**0.0**	**791.6**	**-**	**-**	**-**	**-**
1/1+1/2	608	521	-	-	-	9.5	50.0	-	59.4	352.0	11.4	50.0	61.4
2/1	1115	911	-	-	-	13.9	104.9	-	118.7	383.4	31.2	104.9	136.0
2/2	1112	911	-	-	-	13.8	103.4	-	117.2	379.3	31.0	103.4	134.4
2/3	1113	911	-	-	-	13.8	103.9	-	117.7	380.7	31.1	103.9	134.9
3/1+3/2	658	498	-	-	-	12.9	82.2	-	95.0	519.9	15.3	82.2	97.5
4/1	1227	1059	-	-	-	12.2	87.6	-	99.7	292.7	33.5	87.6	121.1
4/2+4/3	2037	1755	-	-	-	21.6	144.5	-	166.1	293.5	55.5	144.5	200.0
5/1	205	205	125	80	0	1.3	2.0	-	3.3	58.1	4.6	2.0	6.6
6/1	1017	1017	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	347	347	-	-	-	0.0	0.1	-	0.1	1.5	0.0	0.1	0.1
7/2	988	988	-	-	-	0.0	0.9	-	0.9	3.1	0.0	0.9	0.9
7/3	877	877	-	-	-	0.0	0.6	-	0.6	2.6	0.0	0.6	0.6
8/1	679	679	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	846	846	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	961	961	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	834	834	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	347	347	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	988	988	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	877	877	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	798	798	-	-	-	0.3	0.7	-	0.9	4.2	3.2	0.7	3.9
12/2	961	961	-	-	-	0.1	1.1	-	1.2	4.4	1.1	1.1	2.3
12/3	961	961	-	-	-	0.1	1.1	-	1.2	4.4	1.1	1.1	2.3
13/1	374	374	-	-	-	1.3	1.0	-	2.3	22.0	3.0	1.0	4.0
13/2	202	202	-	-	-	0.0	0.3	-	0.3	5.2	0.0	0.3	0.3

Full Input Data And Results

14/1	347	347	-	-	-	0.4	0.2	-	0.6	6.0	2.3	0.2	2.5
14/2	988	988	-	-	-	0.4	1.2	-	1.6	6.0	3.1	1.2	4.3
14/3	1023	1023	-	-	-	0.4	1.4	-	1.8	6.3	2.7	1.4	4.1
15/1	406	406	-	-	-	1.6	0.7	-	2.3	19.9	3.9	0.7	4.5
15/2	261	261	-	-	-	0.4	0.3	-	0.7	9.1	0.7	0.3	1.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

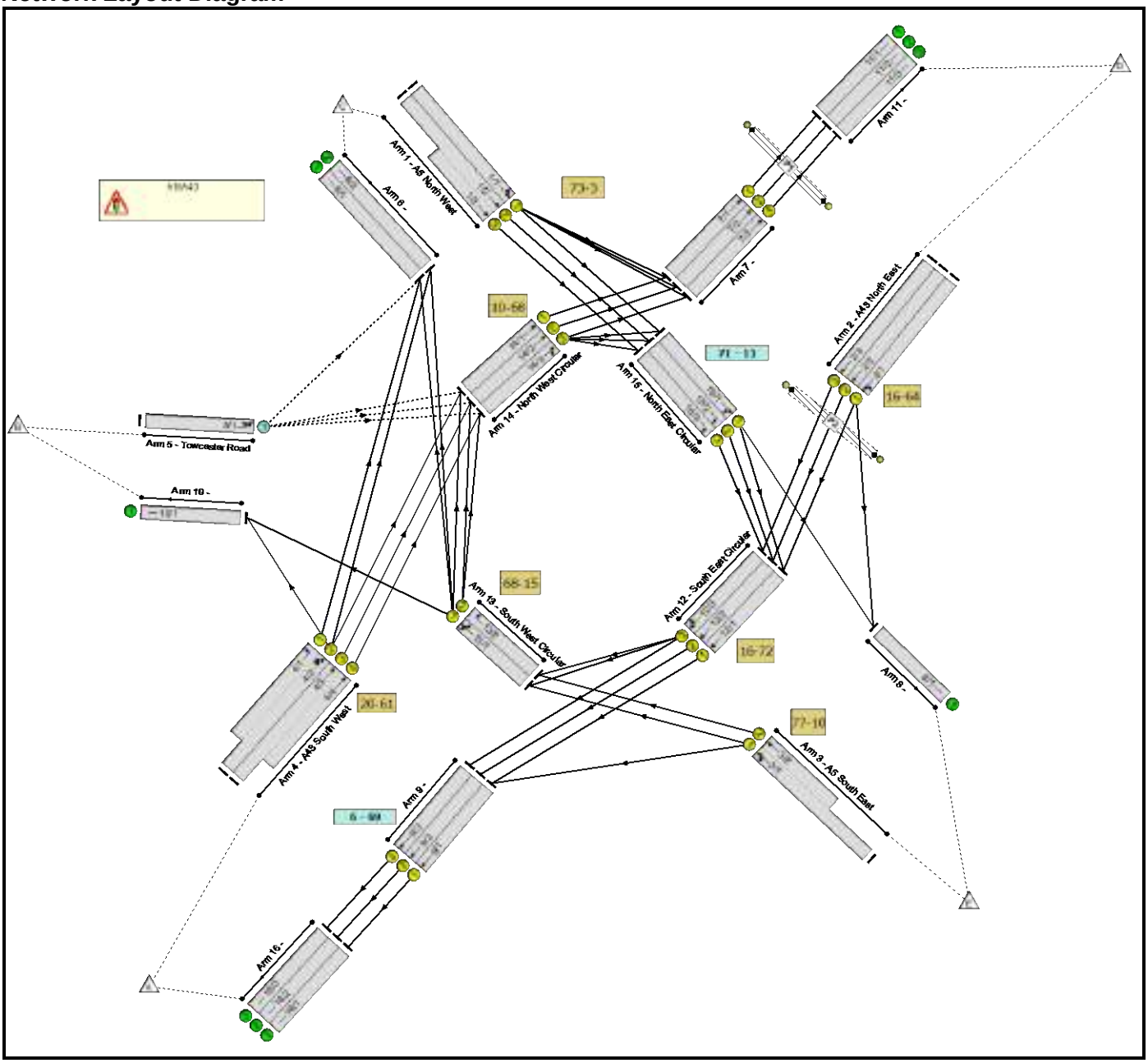
C1	Stream: 1	PRC for Signalled Lanes (%):	-36.1	Total Delay for Signalled Lanes (pcuHr):	356.50	Cycle Time (s):	85	
C1	Stream: 2	PRC for Signalled Lanes (%):	-46.9	Total Delay for Signalled Lanes (pcuHr):	98.33	Cycle Time (s):	85	
C1	Stream: 3	PRC for Signalled Lanes (%):	-29.0	Total Delay for Signalled Lanes (pcuHr):	268.42	Cycle Time (s):	85	
C1	Stream: 4	PRC for Signalled Lanes (%):	-37.2	Total Delay for Signalled Lanes (pcuHr):	63.44	Cycle Time (s):	85	
C1	Stream: 5	PRC for Signalled Lanes (%):	42.5	Total Delay for Signalled Lanes (pcuHr):	1.63	Cycle Time (s):	85	
		PRC Over All Lanes (%):	-46.9	Total Delay Over All Lanes(pcuHr):	791.64			

Full Input Data And Results

User and Project Details

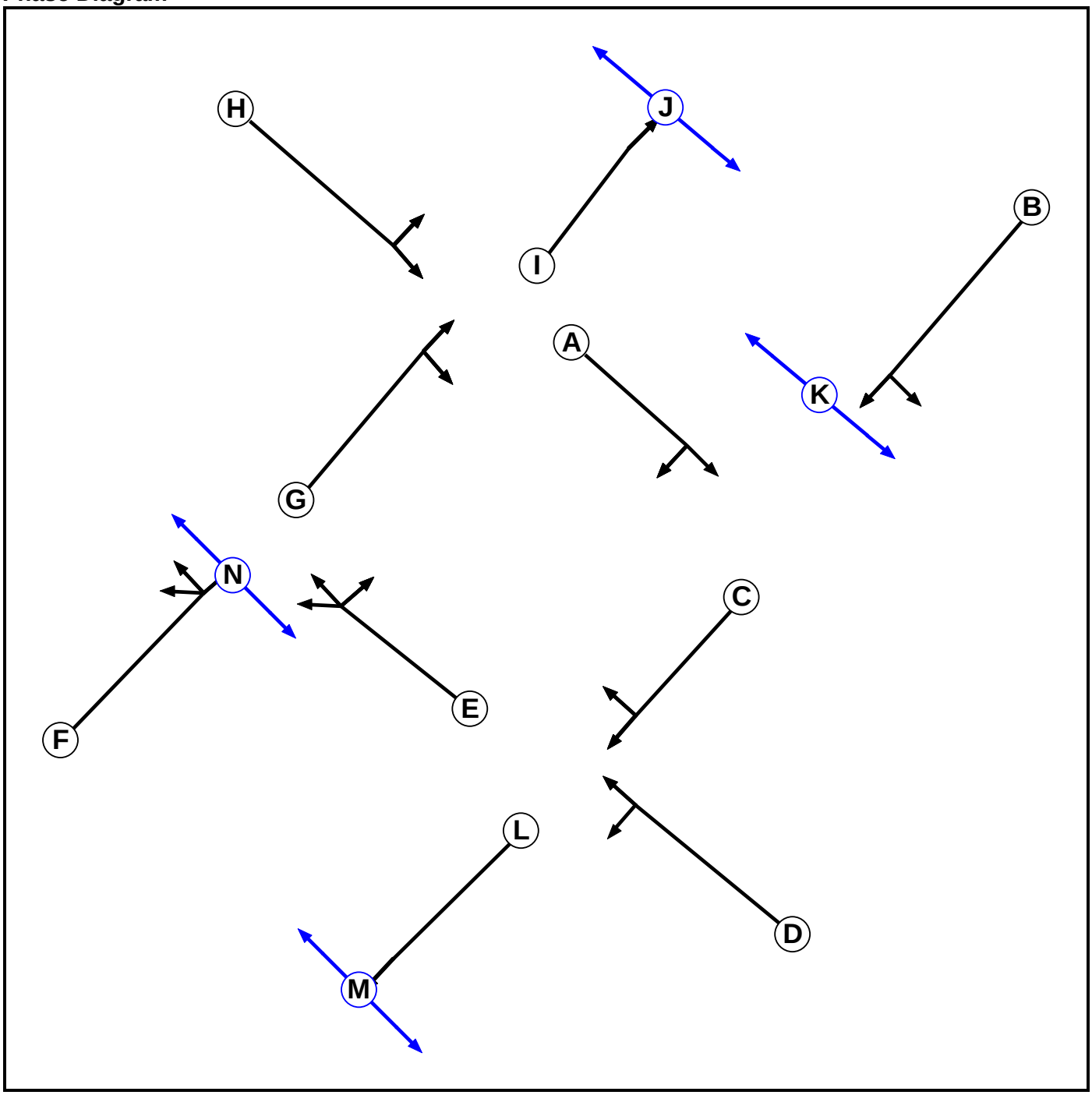
Project:	Rail Central
Title:	Junction 14
Location:	A43, Towcester Bypass (southwest)/ Towcester Road / A5, (north) / A43, (northeast) / A5, Watling Street (southeast)
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	3
B	Traffic	1		7	7
C	Traffic	2		7	2
D	Traffic	2		7	7
E	Traffic	3		7	2
F	Traffic	3		7	7
G	Traffic	4		7	1
H	Traffic	4		7	7
I	Traffic	5		7	7
J	Pedestrian	5		6	6
K	Pedestrian	1		6	6
L	Traffic	6		7	7
M	Pedestrian	6		6	6
N	Pedestrian	3		6	6

Full Input Data And Results

Phase Intergreens Matrix

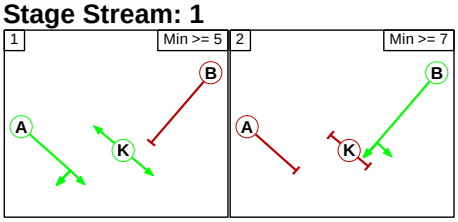
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A		5	-	-	-	-	-	-	-	-	-	-	-	-
B	7		-	-	-	-	-	-	-	-	6	-	-	-
C	-	-		5	-	-	-	-	-	-	-	-	-	-
D	-	-	6		-	-	-	-	-	-	-	-	-	-
E	-	-	-	-		5	-	-	-	-	-	-	-	-
F	-	-	-	-	7		-	-	-	-	-	-	-	6
G	-	-	-	-	-	-		5	-	-	-	-	-	-
H	-	-	-	-	-	-	7		-	-	-	-	-	-
I	-	-	-	-	-	-	-	-		6	-	-	-	-
J	-	-	-	-	-	-	-	-	4		-	-	-	-
K	-	4	-	-	-	-	-	-	-	-		-	-	-
L	-	-	-	-	-	-	-	-	-	-	-		4	-
M	-	-	-	-	-	-	-	-	-	-	-	6		-
N	-	-	-	-	-	4	-	-	-	-	-	-	-	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A K
1	2	B
2	1	C
2	2	D
3	1	E N
3	2	F
4	1	G
4	2	H
5	1	I
5	2	J
6	1	L
6	2	M

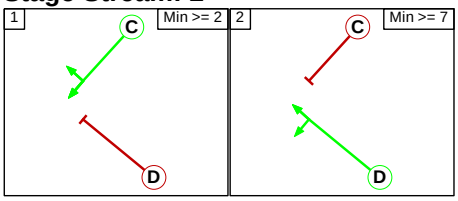
Stage Diagram

Stage Stream: 1

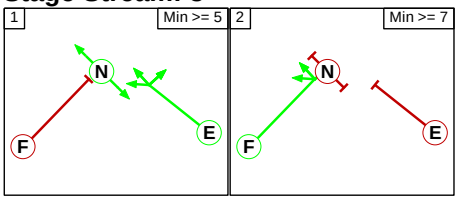


Full Input Data And Results

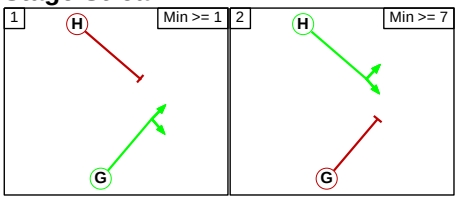
Stage Stream: 2



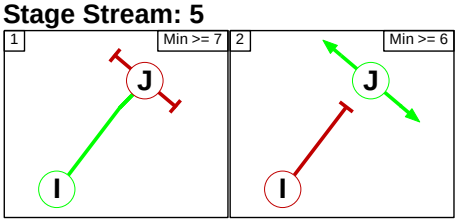
Stage Stream: 3



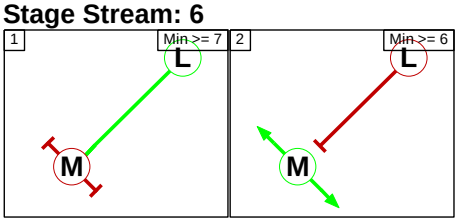
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	A	Losing	4	4

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	5	5

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	E	Losing	5	5
1	2	F	Gaining absolute	2	2
2	1	E	Gaining absolute	2	2

Full Input Data And Results

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	G	Losing	6	6

Stage Stream: 5

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 6

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2
1		9
2	7	

Stage Stream: 2

From Stage \ To Stage	1	2
1		10
2	6	

Stage Stream: 3

From Stage \ To Stage	1	2
1		10
2	7	

Stage Stream: 4

From Stage \ To Stage	1	2
1		11
2	7	

Stage Stream: 5

From Stage \ To Stage	1	2
1		6
2	4	

Full Input Data And Results

Stage Stream: 6

	To Stage		
		1	2
From Stage	1		4
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A5/A43

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
5/1 (Towcester Road)	6/1 (U-Turn)	1000	0	13/1	0.33	To 6/1 (Ahead)	-	-	-	-	-
				4/2	0.33	None					
	14/1 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				4/2	0.33	To 14/1 (Ahead)					
	14/2 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				4/2	0.33	To 14/1 (Ahead)					
				4/3	0.33	All					
				13/2	0.33	To 14/2 (Right) To 14/3 (Right)					
	14/3 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				13/2	0.33	All					
				4/2	0.33	To 14/1 (Ahead)					
				4/3	0.33	All					
				4/4	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A5/A43

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A5 North West)	U	H	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A5 North West)	U	H	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A5 North West)	U	H	2	3	8.9	User	1800	-	-	-	-	-
2/1 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/2 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/3 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/1 (A5 South East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/2 (A5 South East)	U	D	2	3	9.6	User	1800	-	-	-	-	-
4/1 (A43 South West)	U	F	2	3	13.0	User	1800	-	-	-	-	-
4/2 (A43 South West)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/3 (A43 South West)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/4 (A43 South West)	U	F	2	3	17.4	User	1800	-	-	-	-	-
5/1 (Towcester Road)	O		2	3	60.0	Geom	-	5.00	0.00	Y	Arm 6 U-Turn	17.50
											Arm 14 Left	Inf
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U	I	2	3	3.5	User	1900	-	-	-	-	-
7/2	U	I	2	3	3.1	User	1900	-	-	-	-	-
7/3	U	I	2	3	2.8	User	1900	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U	L	2	3	3.5	User	1900	-	-	-	-	-
9/2	U	L	2	3	3.5	User	1900	-	-	-	-	-

Full Input Data And Results

9/3	U	L	2	3	3.5	User	1900	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/3	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (South East Circular)	U	C	2	3	2.1	User	1900	-	-	-	-	-
12/2 (South East Circular)	U	C	2	3	2.8	User	1900	-	-	-	-	-
12/3 (South East Circular)	U	C	2	3	7.5	User	1900	-	-	-	-	-
13/1 (South West Circular)	U	E	2	3	3.1	User	1900	-	-	-	-	-
13/2 (South West Circular)	U	E	2	3	3.8	User	1900	-	-	-	-	-
14/1 (North West Circular)	U	G	2	3	3.1	User	1900	-	-	-	-	-
14/2 (North West Circular)	U	G	2	3	4.5	User	1900	-	-	-	-	-
14/3 (North West Circular)	U	G	2	3	6.1	User	1900	-	-	-	-	-
15/1 (North East Circular)	U	A	2	3	3.5	User	1900	-	-	-	-	-
15/2 (North East Circular)	U	A	2	3	4.0	User	1900	-	-	-	-	-
15/3 (North East Circular)	U	A	2	3	4.5	User	1900	-	-	-	-	-
16/1	U		2	3	60.0	Inf	-	-	-	-	-	-
16/2	U		2	3	60.0	Inf	-	-	-	-	-	-
16/3	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DS AM'	08:00	09:00	01:00	
2: '2021 DS PM'	17:00	18:00	01:00	
3: '2031 DS AM'	08:00	09:00	01:00	
4: '2031 DS PM'	17:00	18:00	01:00	

Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	156	525	1424	213	2318
	B	75	0	17	137	81	310
	C	624	5	0	56	157	842
	D	2318	18	79	0	0	2415
	E	0	0	156	109	0	265
	Tot.	3017	179	777	1726	451	6150

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DS AM
Junction: A5/A43	
1/1	279
1/2 (with short)	563(In) 281(Out)
1/3 (short)	282
2/1	805
2/2	805
2/3	805
3/1 (with short)	265(In) 156(Out)
3/2 (short)	109
4/1 (short)	525
4/2 (with short)	1127(In) 602(Out)
4/3 (with short)	1191(In) 603(Out)
4/4 (short)	588
5/1	310
6/1	660
6/2	117
7/1	584
7/2	672
7/3	470
8/1	451
9/1	871
9/2	1141
9/3	1005
10/1	179
11/1	584
11/2	672
11/3	470
12/1	871
12/2	1141
12/3	1107
13/1	258
13/2	109
14/1	583
14/2	672
14/3	784
15/1	517
15/2	336

Full Input Data And Results

15/3	302
16/1	871
16/2	1141
16/3	1005

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.5 %	2105	2105
				Arm 14 Left	Inf	94.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	150	713	2229	102	3194
	B	59	0	11	156	14	240
	C	275	8	0	0	180	463
	D	2523	57	90	0	226	2896
	E	0	0	308	197	0	505
	Tot.	2857	215	1122	2582	522	7298

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DS PM
Junction: A5/A43	
1/1	180
1/2 (with short)	283(In) 145(Out)
1/3 (short)	138
2/1	968
2/2	963
2/3	965
3/1 (with short)	505(In) 308(Out)
3/2 (short)	197
4/1 (short)	699
4/2 (with short)	1479(In) 780(Out)
4/3 (with short)	1715(In) 858(Out)
4/4 (short)	857
5/1	240
6/1	909
6/2	213
7/1	772
7/2	962
7/3	848
8/1	522
9/1	758
9/2	1129
9/3	970
10/1	215
11/1	772
11/2	962
11/3	848
12/1	758
12/2	1129
12/3	1125
13/1	463
13/2	197
14/1	772
14/2	962
14/3	1023
15/1	312
15/2	166

Full Input Data And Results

15/3	160
16/1	758
16/2	1129
16/3	970

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	4.6 %	2107	2107
				Arm 14 Left	Inf	95.4 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	156	608	1334	213	2311
	B	77	0	18	129	0	224
	C	726	5	0	75	238	1044
	D	2862	25	68	0	0	2955
	E	4	0	308	372	0	684
	Tot.	3669	186	1002	1910	451	7218

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2031 DS AM
Junction: A5/A43	
1/1	346
1/2 (with short)	698(In) 348(Out)
1/3 (short)	350
2/1	986
2/2	985
2/3	984
3/1 (with short)	684(In) 342(Out)
3/2 (short)	342
4/1 (short)	574
4/2 (with short)	1147(In) 573(Out)
4/3 (with short)	1164(In) 571(Out)
4/4 (short)	593
5/1	224
6/1	780
6/2	222
7/1	546
7/2	751
7/3	613
8/1	451
9/1	1076
9/2	1333
9/3	1260
10/1	186
11/1	546
11/2	751
11/3	613
12/1	1072
12/2	1333
12/3	1358
13/1	436
13/2	342
14/1	542
14/2	751
14/3	832
15/1	537
15/2	348

Full Input Data And Results

15/3	374
16/1	1076
16/2	1333
16/3	1260

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	8.0 %	2101	2101
				Arm 14 Left	Inf	92.0 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	192	795	2170	107	3264
	B	15	0	11	140	39	205
	C	260	8	0	0	340	608
	D	2860	57	88	1	334	3340
	E	64	0	328	266	0	658
	Tot.	3199	257	1222	2577	820	8075

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2031 DS PM
Junction: A5/A43	
1/1	340
1/2 (with short)	268(In) 133(Out)
1/3 (short)	135
2/1	1122
2/2	1109
2/3	1109
3/1 (with short)	658(In) 392(Out)
3/2 (short)	266
4/1 (short)	756
4/2 (with short)	1525(In) 769(Out)
4/3 (with short)	1739(In) 869(Out)
4/4 (short)	870
5/1	205
6/1	975
6/2	247
7/1	678
7/2	1007
7/3	892
8/1	820
9/1	862
9/2	1243
9/3	1094
10/1	257
11/1	678
11/2	1007
11/3	892
12/1	798
12/2	1243
12/3	1248
13/1	481
13/2	267
14/1	678
14/2	1007
14/3	1053
15/1	496
15/2	134

Full Input Data And Results

15/3	139
16/1	862
16/2	1243
16/3	1094

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.4 %	2105	2105
				Arm 14 Left	Inf	94.6 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

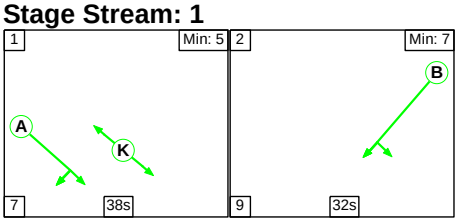
Full Input Data And Results

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

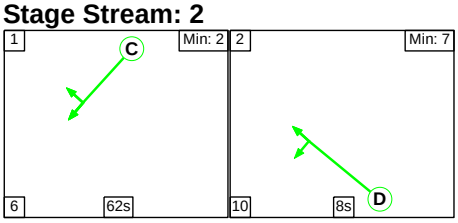
Scenario 1: '2021 DS AM' (FG1: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

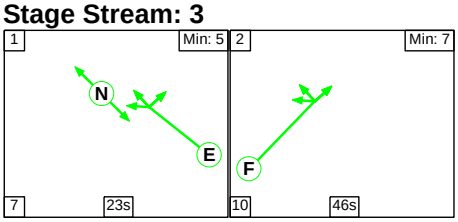
Stage Stream: 1



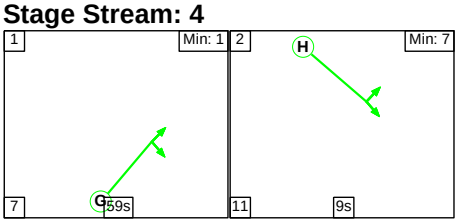
Stage Stream: 2



Stage Stream: 3

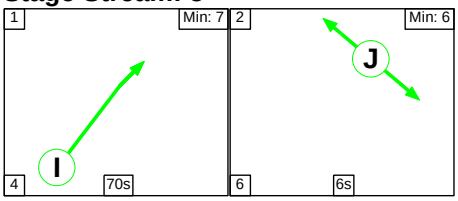


Stage Stream: 4

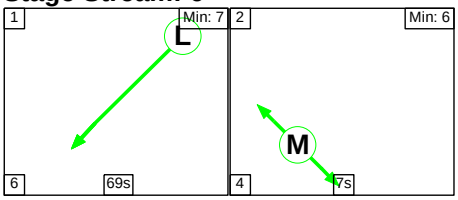


Full Input Data And Results

Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	38	32
Change Point	15	60

Stage Stream: 2

Stage	1	2
Duration	62	8
Change Point	67	49

Stage Stream: 3

Stage	1	2
Duration	23	46
Change Point	57	1

Stage Stream: 4

Stage	1	2
Duration	59	9
Change Point	36	16

Stage Stream: 5

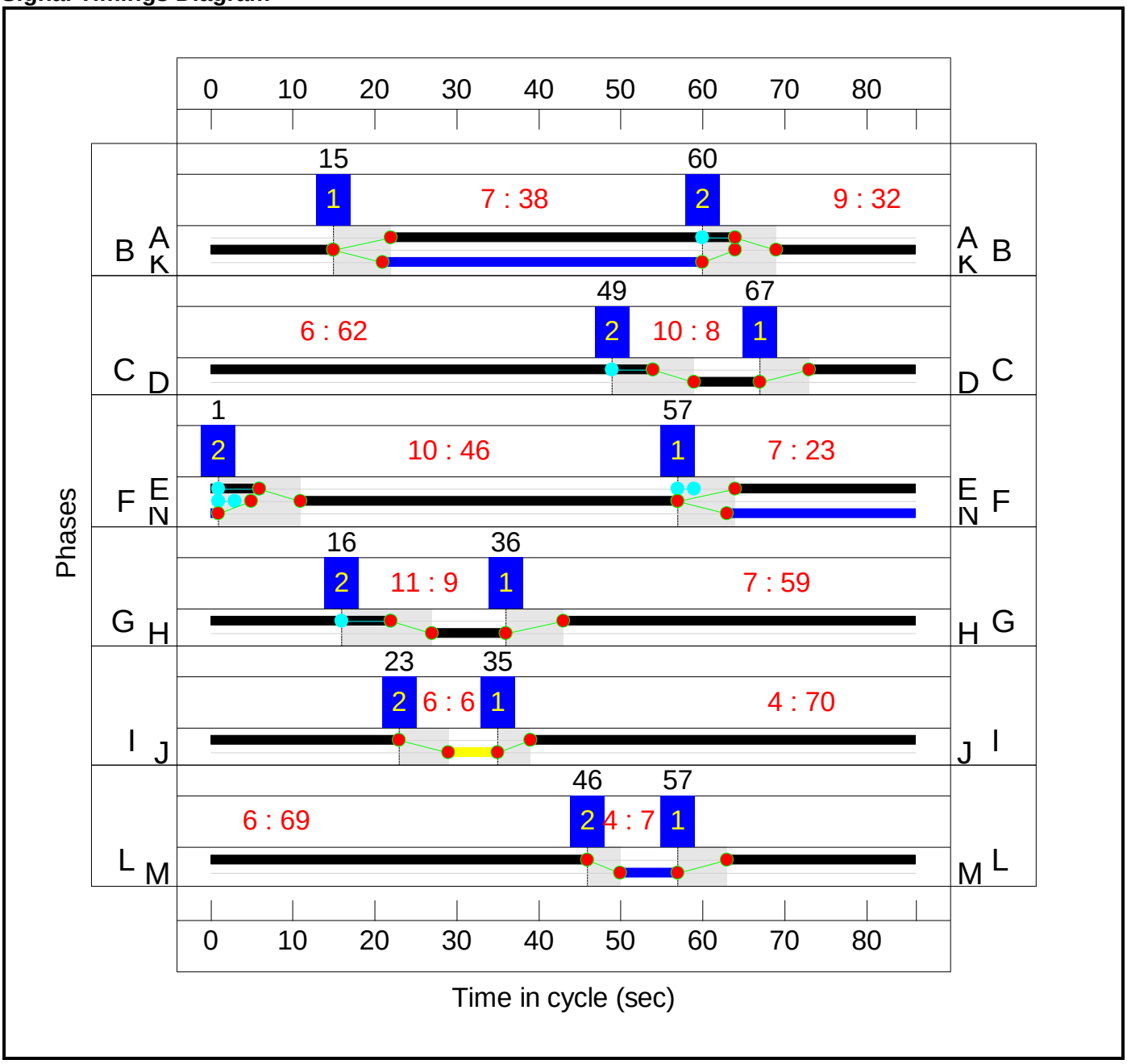
Stage	1	2
Duration	70	6
Change Point	35	23

Stage Stream: 6

Stage	1	2
Duration	69	7
Change Point	57	46

Full Input Data And Results

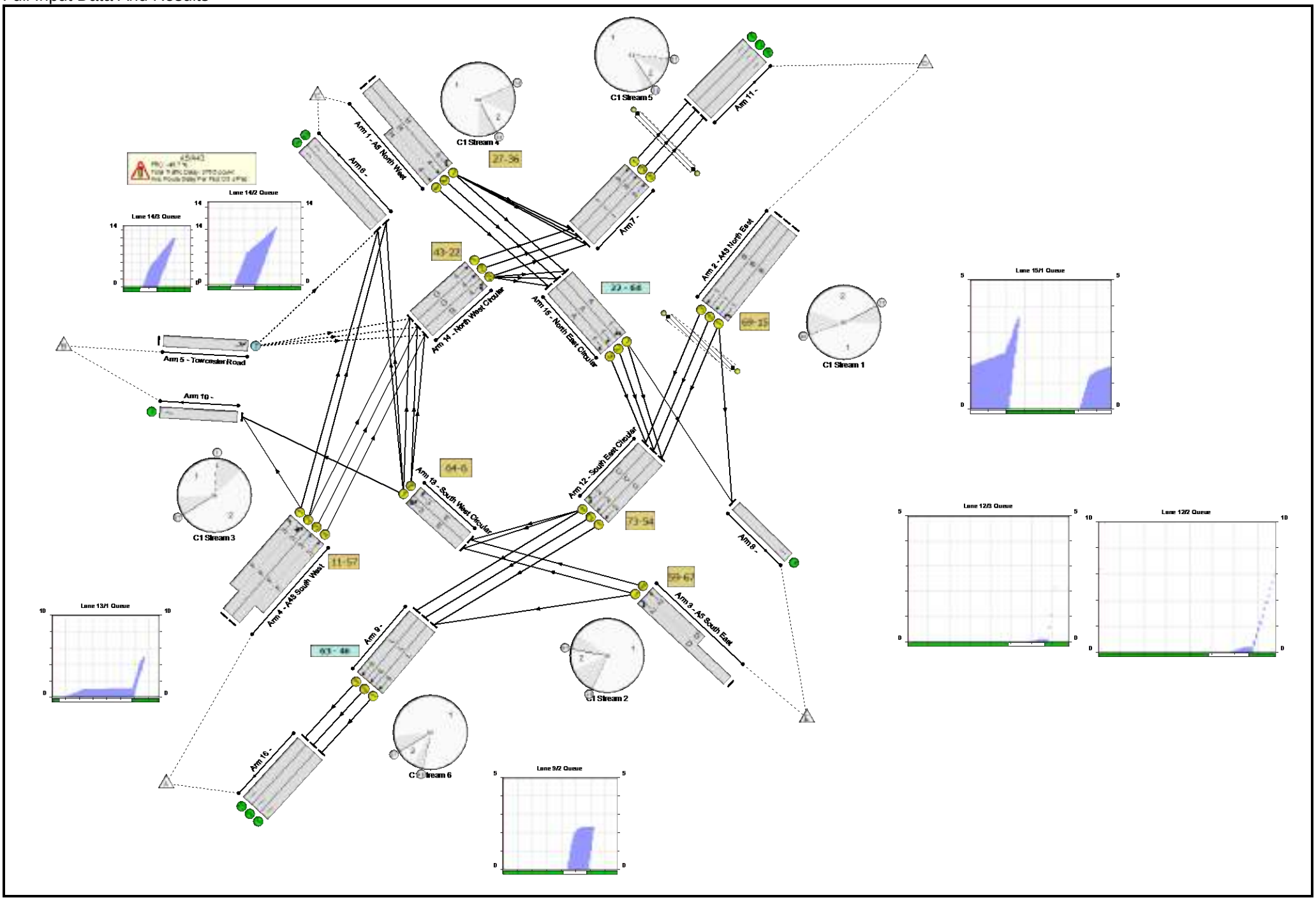
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**134.7%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**134.7%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	9	-	279	1800	209	133.3%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	9	-	563	1800:1800	209+209	134.3 : 134.7%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	32	-	805	1800	691	116.5%
2/2	A43 North East Ahead	U	1	N/A	B		1	32	-	805	1800	691	116.5%
2/3	A43 North East Ahead	U	1	N/A	B		1	32	-	805	1800	691	116.5%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	8	-	265	1800:1800	188+167	82.8 : 65.2%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	46	-	1127	1800:1800	779+679	77.3 : 77.3%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	46	-	1191	1800:1800	863+842	69.8 : 69.8%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	310	2105	574	54.0%
6/1		U	N/A	N/A	-		-	-	-	660	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	117	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	70	-	584	1900	1569	37.2%
7/2	Ahead	U	5	N/A	I		1	70	-	672	1900	1569	42.8%
7/3	Ahead	U	5	N/A	I		1	70	-	470	1900	1569	29.1%
8/1		U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	69	-	871	1900	1547	47.9%
9/2	Ahead	U	6	N/A	L		1	69	-	1141	1900	1547	61.8%
9/3	Ahead	U	6	N/A	L		1	69	-	1005	1900	1547	53.9%
10/1		U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	584	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	672	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	67	-	871	1900	1502	49.3%
12/2	South East Circular Ahead	U	2	N/A	C		1	67	-	1141	1900	1502	63.6%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	67	-	1107	1900	1502	61.2%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	28	-	258	1900	641	37.9%
13/2	South West Circular Right	U	3	N/A	E		1	28	-	109	1900	641	17.0%
14/1	North West Circular Ahead	U	4	N/A	G		1	65	-	583	1900	1458	40.0%
14/2	North West Circular Ahead	U	4	N/A	G		1	65	-	672	1900	1458	46.1%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	65	-	784	1900	1458	53.8%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	42	-	517	1900	950	48.6%
15/2	North East Circular Right	U	1	N/A	A		1	42	-	336	1900	950	27.8%
15/3	North East Circular Right	U	1	N/A	A		1	42	-	302	1900	950	24.1%
16/1		U	N/A	N/A	-		-	-	-	871	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1141	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	1005	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	39	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**265**	**45**	**0**	**72.0**	**304.6**	**0.0**	**376.5**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**265**	**45**	**0**	**72.0**	**304.6**	**0.0**	**376.5**	**-**	**-**	**-**	**-**
1/1	279	209	-	-	-	5.6	36.7	-	42.4	546.8	8.3	36.7	45.1
1/2+1/3	563	419	-	-	-	11.5	74.1	-	85.6	547.3	9.4	74.1	83.5
2/1	805	691	-	-	-	11.4	60.5	-	71.8	321.2	22.0	60.5	82.4
2/2	805	691	-	-	-	11.4	60.5	-	71.8	321.2	22.0	60.5	82.4
2/3	805	691	-	-	-	11.4	60.5	-	71.8	321.2	22.0	60.5	82.4
3/1+3/2	265	265	-	-	-	2.7	1.4	-	4.2	56.6	3.6	1.4	5.1
4/2+4/1	1127	1127	-	-	-	4.0	1.7	-	5.7	18.3	9.7	1.7	11.4
4/3+4/4	1191	1191	-	-	-	4.4	1.2	-	5.5	16.7	9.7	1.2	10.9
5/1	310	310	265	45	0	0.4	0.6	-	1.0	11.6	3.5	0.6	4.1
6/1	654	654	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	111	111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	584	584	-	-	-	0.3	0.3	-	0.6	3.5	1.6	0.3	1.9
7/2	672	672	-	-	-	0.4	0.4	-	0.7	3.9	2.2	0.4	2.5
7/3	456	456	-	-	-	0.3	0.2	-	0.5	3.8	2.3	0.2	2.5
8/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	740	740	-	-	-	0.1	0.5	-	0.5	2.7	0.6	0.5	1.0
9/2	955	955	-	-	-	0.4	0.8	-	1.2	4.6	2.3	0.8	3.2
9/3	833	833	-	-	-	0.3	0.6	-	0.9	3.8	1.7	0.6	2.2
10/1	175	175	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	584	584	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	672	672	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	456	456	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	740	740	-	-	-	0.0	0.5	-	0.5	2.4	0.0	0.5	0.5
12/2	955	955	-	-	-	0.1	0.9	-	0.9	3.5	7.4	0.9	8.3
12/3	920	920	-	-	-	0.0	0.8	-	0.8	3.1	2.1	0.8	2.9

Full Input Data And Results

13/1	243	243	-	-	-	0.7	0.3	-	1.0	15.4	4.8	0.3	5.1
13/2	109	109	-	-	-	0.0	0.1	-	0.1	4.2	2.5	0.1	2.6
14/1	583	583	-	-	-	1.3	0.3	-	1.7	10.3	9.0	0.3	9.3
14/2	672	672	-	-	-	1.9	0.4	-	2.3	12.3	10.4	0.4	10.8
14/3	784	784	-	-	-	2.1	0.6	-	2.7	12.3	12.1	0.6	12.6
15/1	461	461	-	-	-	0.9	0.5	-	1.4	10.9	3.6	0.5	4.0
15/2	264	264	-	-	-	0.3	0.2	-	0.5	6.6	0.9	0.2	1.1
15/3	229	229	-	-	-	0.1	0.2	-	0.3	4.3	0.4	0.2	0.5
16/1	740	740	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	955	955	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	833	833	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

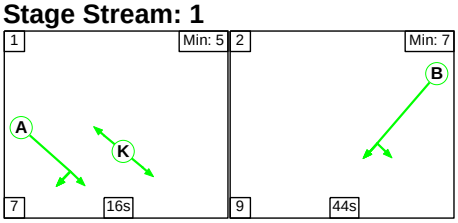
C1	Stream: 1 PRC for Signalled Lanes (%):	-29.5	Total Delay for Signalled Lanes (pcuHr):	217.66	Cycle Time (s):	86		
C1	Stream: 2 PRC for Signalled Lanes (%):	8.7	Total Delay for Signalled Lanes (pcuHr):	6.39	Cycle Time (s):	86		
C1	Stream: 3 PRC for Signalled Lanes (%):	16.5	Total Delay for Signalled Lanes (pcuHr):	12.42	Cycle Time (s):	86		
C1	Stream: 4 PRC for Signalled Lanes (%):	-49.7	Total Delay for Signalled Lanes (pcuHr):	134.61	Cycle Time (s):	86		
C1	Stream: 5 PRC for Signalled Lanes (%):	110.1	Total Delay for Signalled Lanes (pcuHr):	1.78	Cycle Time (s):	86		
C1	Stream: 6 PRC for Signalled Lanes (%):	45.7	Total Delay for Signalled Lanes (pcuHr):	2.64	Cycle Time (s):	86		
	PRC Over All Lanes (%):	-49.7	Total Delay Over All Lanes(pcuHr):	376.50				

Full Input Data And Results

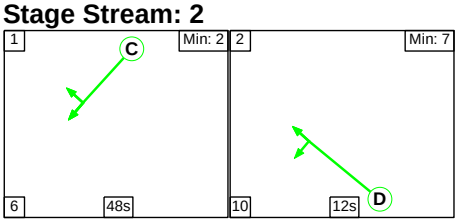
Scenario 2: '2021 DS PM' (FG2: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

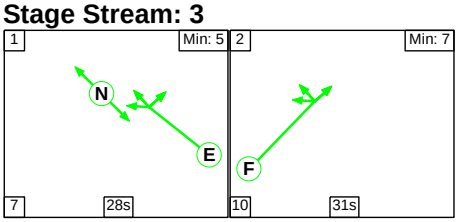
Stage Stream: 1



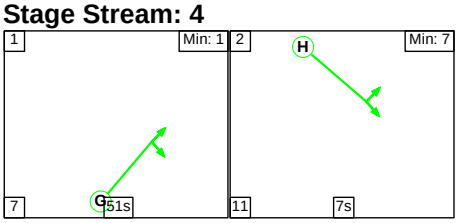
Stage Stream: 2



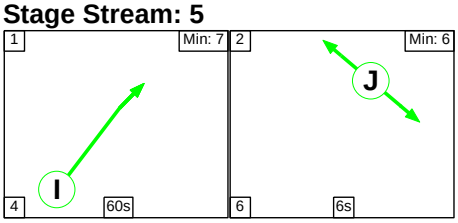
Stage Stream: 3



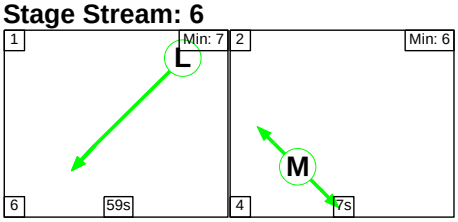
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	44
Change Point	67	14

Full Input Data And Results

Stage Stream: 2

Stage	1	2
Duration	48	12
Change Point	15	69

Stage Stream: 3

Stage	1	2
Duration	28	31
Change Point	75	34

Stage Stream: 4

Stage	1	2
Duration	51	7
Change Point	41	23

Stage Stream: 5

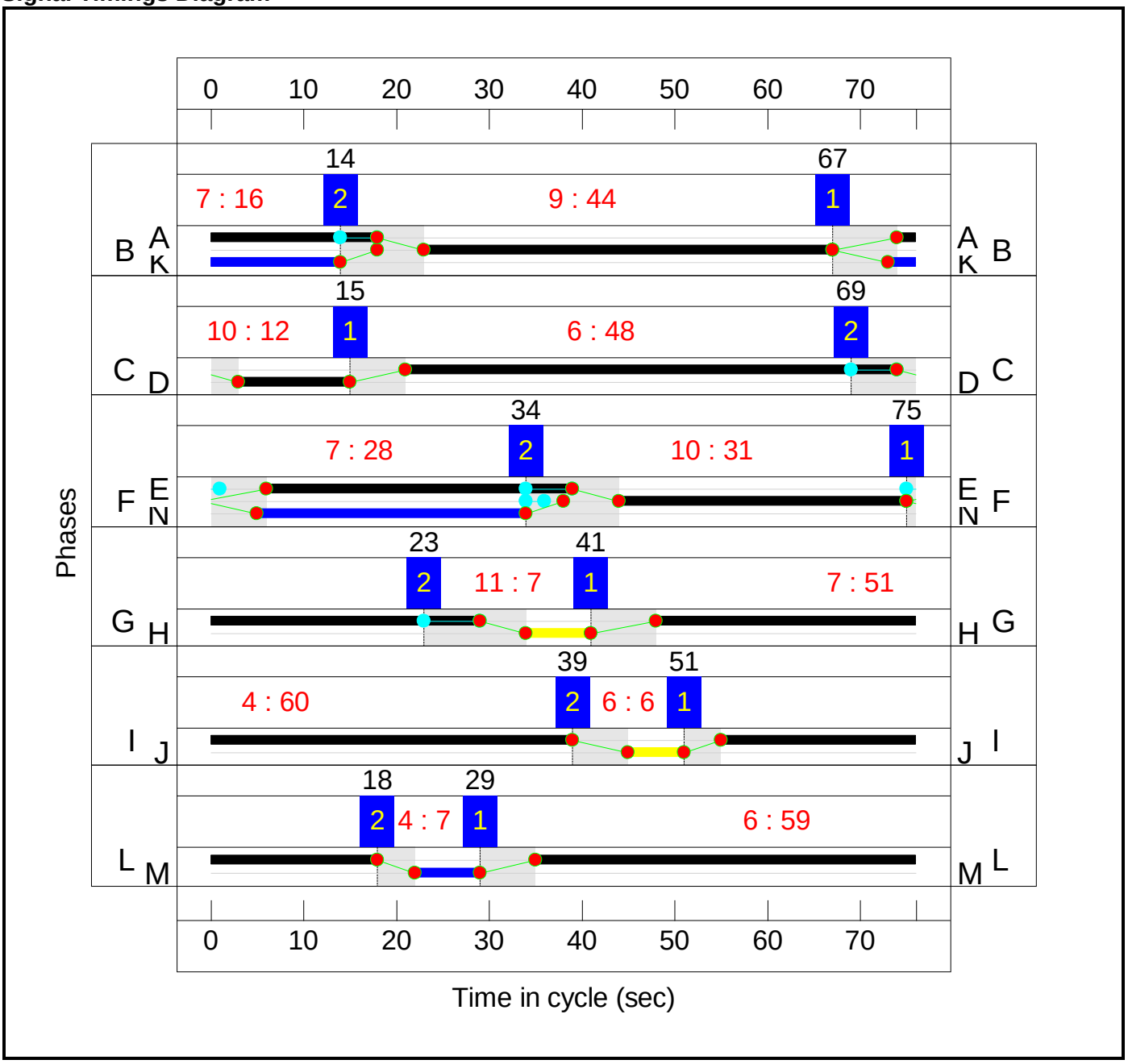
Stage	1	2
Duration	60	6
Change Point	51	39

Stage Stream: 6

Stage	1	2
Duration	59	7
Change Point	29	18

Full Input Data And Results

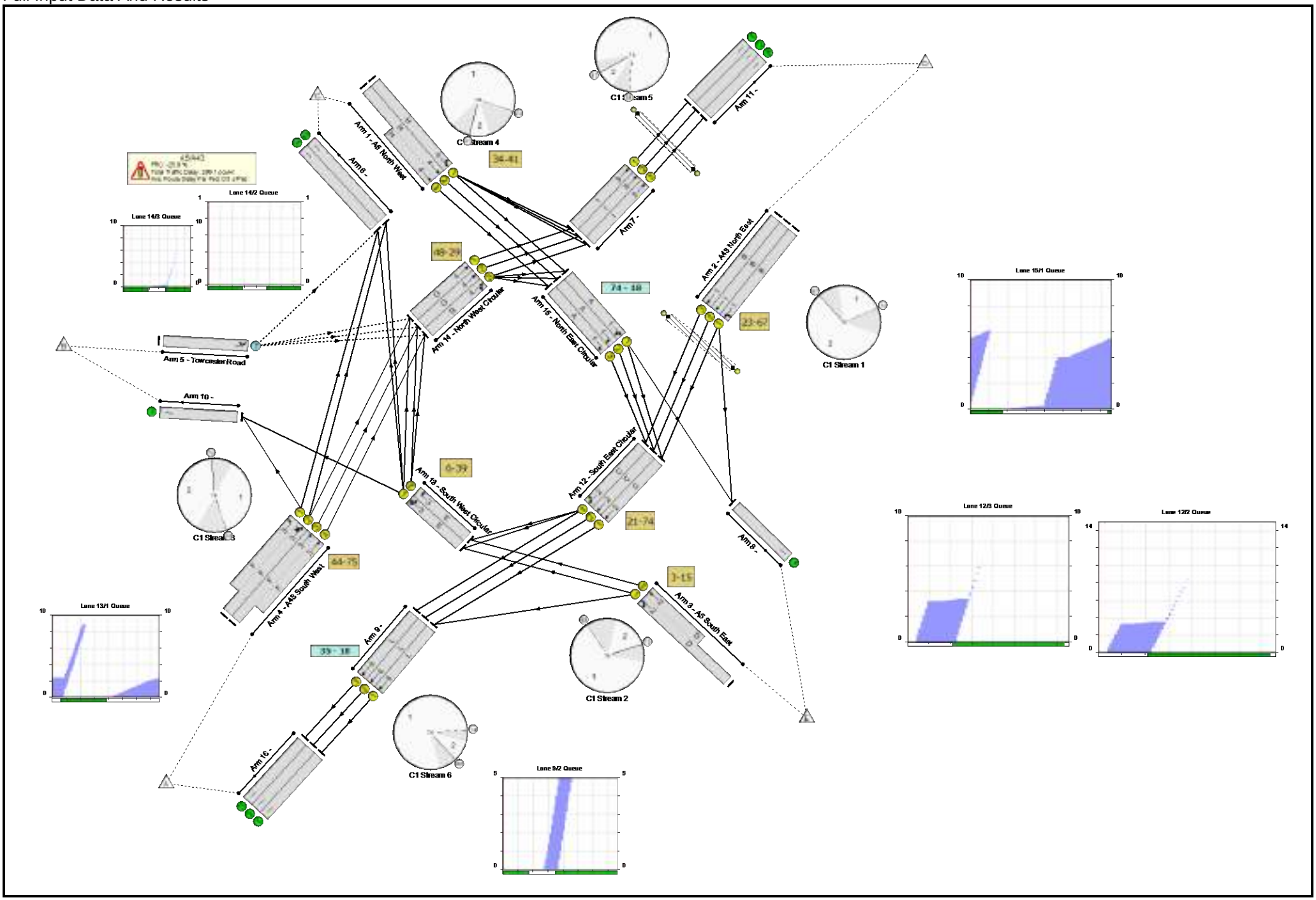
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.2%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**113.2%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	7	-	180	1800	189	95.0%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	7	-	283	1800:1800	189+189	76.5 : 72.8%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	44	-	968	1800	1066	90.8%
2/2	A43 North East Ahead	U	1	N/A	B		1	44	-	963	1800	1066	90.4%
2/3	A43 North East Ahead	U	1	N/A	B		1	44	-	965	1800	1066	90.5%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	12	-	505	1800:1800	308+197	100.0 : 100.0%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	31	-	1479	1800:1800	691+619	112.9 : 112.9%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	31	-	1715	1800:1800	758+758	113.2 : 113.1%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	240	2107	471	51.0%
6/1		U	N/A	N/A	-		-	-	-	909	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	213	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	60	-	772	1900	1525	46.0%
7/2	Ahead	U	5	N/A	I		1	60	-	962	1900	1525	56.5%
7/3	Ahead	U	5	N/A	I		1	60	-	848	1900	1525	49.9%
8/1		U	N/A	N/A	-		-	-	-	522	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	59	-	758	1900	1500	50.5%
9/2	Ahead	U	6	N/A	L		1	59	-	1129	1900	1500	75.3%
9/3	Ahead	U	6	N/A	L		1	59	-	970	1900	1500	64.7%
10/1		U	N/A	N/A	-		-	-	-	215	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	772	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	962	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	848	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	53	-	758	1900	1350	56.1%
12/2	South East Circular Ahead	U	2	N/A	C		1	53	-	1129	1900	1350	83.6%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	53	-	1125	1900	1350	83.3%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	33	-	463	1900	850	54.5%
13/2	South West Circular Right	U	3	N/A	E		1	33	-	197	1900	850	23.2%
14/1	North West Circular Ahead	U	4	N/A	G		1	57	-	772	1900	1450	48.4%
14/2	North West Circular Ahead	U	4	N/A	G		1	57	-	962	1900	1450	59.4%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	57	-	1023	1900	1450	63.7%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	20	-	312	1900	525	57.2%
15/2	North East Circular Right	U	1	N/A	A		1	20	-	166	1900	525	31.6%
15/3	North East Circular Right	U	1	N/A	A		1	20	-	160	1900	525	30.5%
16/1		U	N/A	N/A	-		-	-	-	758	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1129	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	970	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	17	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**148**	**92**	**0**	**61.3**	**237.8**	**0.0**	**299.1**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**148**	**92**	**0**	**61.3**	**237.8**	**0.0**	**299.1**	**-**	**-**	**-**	**-**
1/1	180	180	-	-	-	1.7	4.7	-	6.4	128.7	3.8	4.7	8.5
1/2+1/3	283	283	-	-	-	2.6	1.4	-	4.0	51.2	2.9	1.4	4.4
2/1	968	968	-	-	-	3.7	4.5	-	8.2	30.5	18.0	4.5	22.5
2/2	963	963	-	-	-	3.6	4.3	-	8.0	29.8	17.7	4.3	22.0
2/3	965	965	-	-	-	3.7	4.4	-	8.1	30.1	17.7	4.4	22.1
3/1+3/2	505	505	-	-	-	4.3	11.3	-	15.6	111.1	6.5	11.3	17.8
4/2+4/1	1479	1310	-	-	-	12.6	88.8	-	101.4	246.9	25.3	88.8	114.1
4/3+4/4	1715	1516	-	-	-	15.5	103.7	-	119.2	250.3	27.4	103.7	131.1
5/1	240	240	148	92	0	0.6	0.5	-	1.2	17.5	3.3	0.5	3.9
6/1	829	829	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	702	702	-	-	-	0.1	0.4	-	0.5	2.8	5.9	0.4	6.3
7/2	862	862	-	-	-	0.2	0.6	-	0.8	3.4	14.8	0.6	15.4
7/3	761	761	-	-	-	0.0	0.5	-	0.5	2.5	2.7	0.5	3.2
8/1	510	510	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	758	758	-	-	-	0.1	0.5	-	0.7	3.1	4.8	0.5	5.3
9/2	1129	1129	-	-	-	2.5	1.5	-	4.0	12.7	23.8	1.5	25.3
9/3	970	970	-	-	-	1.4	0.9	-	2.3	8.5	18.7	0.9	19.7
10/1	198	198	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	702	702	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	862	862	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	761	761	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	758	758	-	-	-	0.0	0.6	-	0.7	3.3	0.3	0.6	0.9
12/2	1129	1129	-	-	-	0.9	2.5	-	3.4	10.8	9.5	2.5	12.0
12/3	1125	1125	-	-	-	0.8	2.4	-	3.3	10.5	6.9	2.4	9.3

Full Input Data And Results

13/1	463	463	-	-	-	1.2	0.6	-	1.8	13.7	8.9	0.6	9.5
13/2	197	197	-	-	-	0.0	0.2	-	0.2	2.8	0.0	0.2	0.2
14/1	702	702	-	-	-	0.1	0.5	-	0.6	3.1	3.3	0.5	3.8
14/2	862	862	-	-	-	0.0	0.7	-	0.7	3.1	0.0	0.7	0.7
14/3	924	924	-	-	-	0.1	0.9	-	1.0	3.7	7.9	0.9	8.8
15/1	300	300	-	-	-	2.4	0.7	-	3.1	36.7	6.1	0.7	6.8
15/2	166	166	-	-	-	1.5	0.2	-	1.8	38.4	3.3	0.2	3.6
15/3	160	160	-	-	-	1.5	0.2	-	1.8	39.7	3.2	0.2	3.4
16/1	758	758	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1129	1129	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	970	970	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

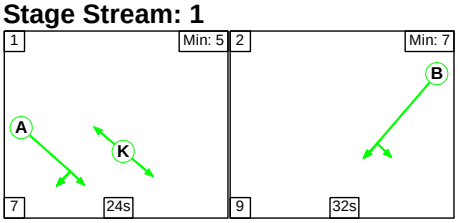
C1	Stream: 1 PRC for Signalled Lanes (%):	-0.9	Total Delay for Signalled Lanes (pcuHr):	30.81	Cycle Time (s):	76
C1	Stream: 2 PRC for Signalled Lanes (%):	-11.1	Total Delay for Signalled Lanes (pcuHr):	22.92	Cycle Time (s):	76
C1	Stream: 3 PRC for Signalled Lanes (%):	-25.8	Total Delay for Signalled Lanes (pcuHr):	222.57	Cycle Time (s):	76
C1	Stream: 4 PRC for Signalled Lanes (%):	-5.6	Total Delay for Signalled Lanes (pcuHr):	12.76	Cycle Time (s):	76
C1	Stream: 5 PRC for Signalled Lanes (%):	59.2	Total Delay for Signalled Lanes (pcuHr):	1.88	Cycle Time (s):	76
C1	Stream: 6 PRC for Signalled Lanes (%):	19.6	Total Delay for Signalled Lanes (pcuHr):	6.95	Cycle Time (s):	76
	PRC Over All Lanes (%):	-25.8	Total Delay Over All Lanes(pcuHr):	299.06		

Full Input Data And Results

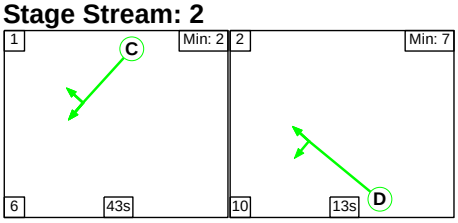
Scenario 3: '2031 DS AM' (FG3: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

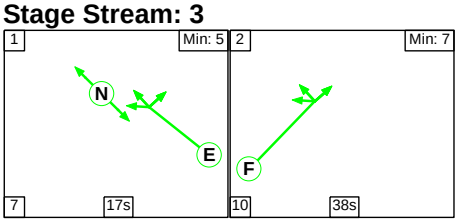
Stage Stream: 1



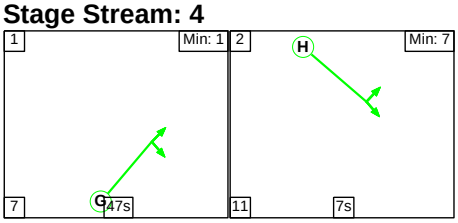
Stage Stream: 2



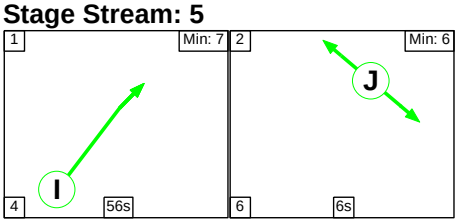
Stage Stream: 3



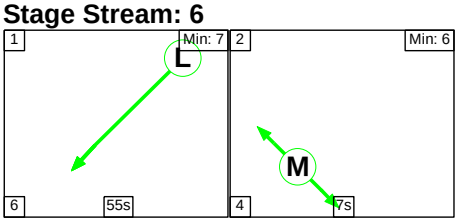
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	32
Change Point	35	66

Full Input Data And Results

Stage Stream: 2

Stage	1	2
Duration	43	13
Change Point	67	44

Stage Stream: 3

Stage	1	2
Duration	17	38
Change Point	48	0

Stage Stream: 4

Stage	1	2
Duration	47	7
Change Point	66	48

Stage Stream: 5

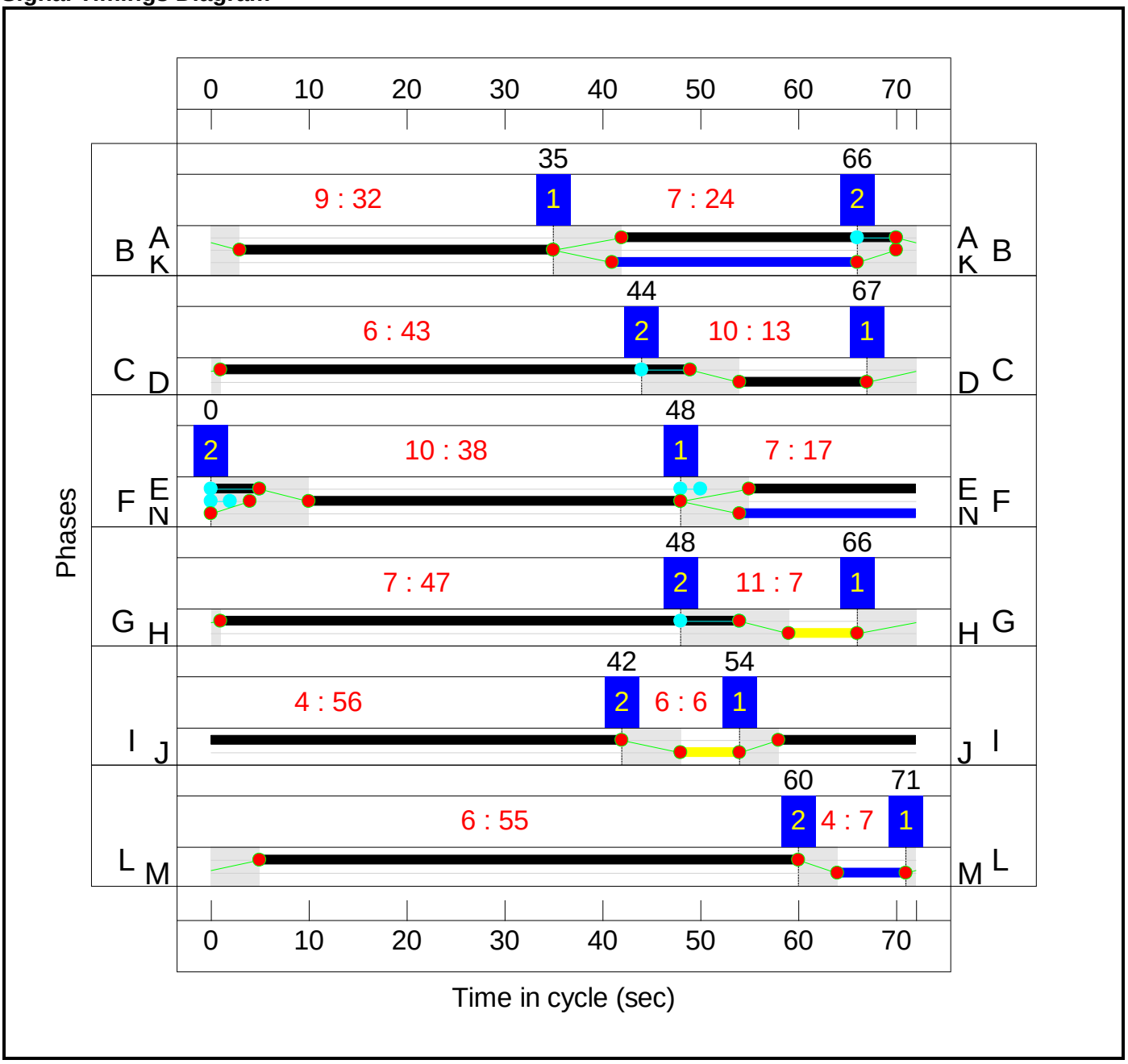
Stage	1	2
Duration	56	6
Change Point	54	42

Stage Stream: 6

Stage	1	2
Duration	55	7
Change Point	71	60

Full Input Data And Results

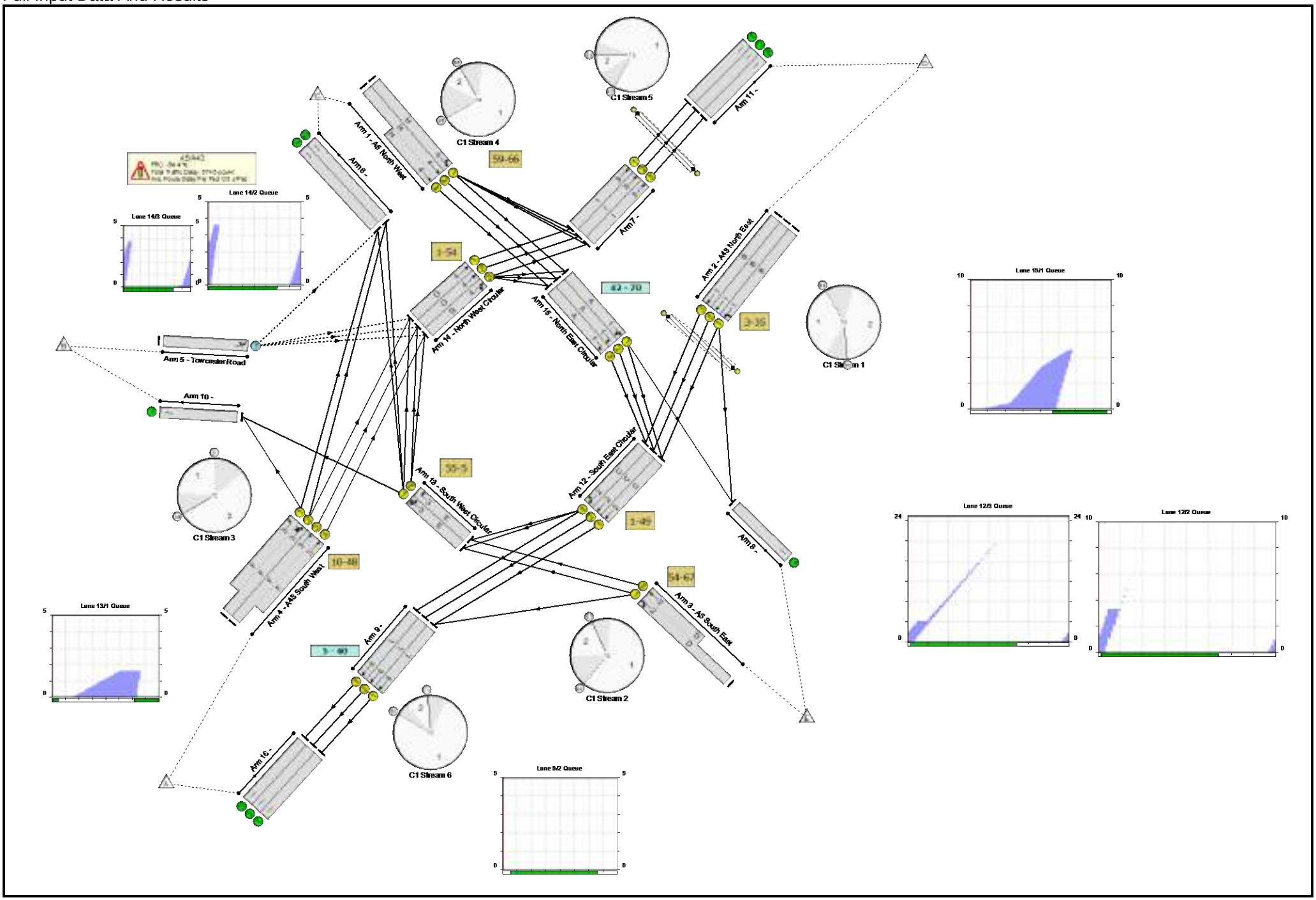
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**175.0%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**175.0%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	7	-	346	1800	200	173.0%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	7	-	698	1800:1800	200+200	174.0 : 175.0%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	32	-	986	1800	825	119.5%
2/2	A43 North East Ahead	U	1	N/A	B		1	32	-	985	1800	825	119.4%
2/3	A43 North East Ahead	U	1	N/A	B		1	32	-	984	1800	825	119.3%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	13	-	684	1800:1800	350+350	97.7 : 97.7%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	38	-	1147	1800:1800	811+813	70.6 : 70.6%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	38	-	1164	1800:1800	883+917	64.7 : 64.7%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	224	2101	519	43.1%
6/1		U	N/A	N/A	-		-	-	-	780	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	222	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	56	-	546	1900	1504	36.2%
7/2	Ahead	U	5	N/A	I		1	56	-	751	1900	1504	49.9%
7/3	Ahead	U	5	N/A	I		1	56	-	613	1900	1504	38.8%
8/1		U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	55	-	1076	1900	1478	61.0%
9/2	Ahead	U	6	N/A	L		1	55	-	1333	1900	1478	69.4%
9/3	Ahead	U	6	N/A	L		1	55	-	1260	1900	1478	65.5%
10/1		U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	546	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	751	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	613	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	48	-	1072	1900	1293	69.4%
12/2	South East Circular Ahead	U	2	N/A	C		1	48	-	1333	1900	1293	79.3%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	48	-	1358	1900	1293	81.1%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	22	-	436	1900	607	69.0%
13/2	South West Circular Right	U	3	N/A	E		1	22	-	342	1900	607	56.3%
14/1	North West Circular Ahead	U	4	N/A	G		1	53	-	542	1900	1425	38.0%
14/2	North West Circular Ahead	U	4	N/A	G		1	53	-	751	1900	1425	52.7%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	53	-	832	1900	1425	58.4%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	28	-	537	1900	765	55.2%
15/2	North East Circular Right	U	1	N/A	A		1	28	-	348	1900	765	26.1%
15/3	North East Circular Right	U	1	N/A	A		1	28	-	374	1900	765	29.3%
16/1		U	N/A	N/A	-		-	-	-	1076	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1333	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	1260	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	25	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**183**	**41**	**0**	**75.7**	**498.8**	**0.0**	**574.5**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**183**	**41**	**0**	**75.7**	**498.8**	**0.0**	**574.5**	**-**	**-**	**-**	**-**
1/1	346	200	-	-	-	8.9	74.2	-	83.1	864.6	12.5	74.2	86.6
1/2+1/3	698	400	-	-	-	16.6	150.2	-	166.8	860.2	15.5	150.2	165.7
2/1	986	825	-	-	-	10.8	83.5	-	94.3	344.3	22.9	83.5	106.4
2/2	985	825	-	-	-	10.8	83.0	-	93.8	342.7	22.9	83.0	105.9
2/3	984	825	-	-	-	10.8	82.5	-	93.2	341.1	22.9	82.5	105.3
3/1+3/2	684	684	-	-	-	5.5	9.7	-	15.2	79.8	6.7	9.7	16.4
4/2+4/1	1147	1147	-	-	-	3.5	1.2	-	4.7	14.9	7.7	1.2	8.8
4/3+4/4	1164	1164	-	-	-	3.6	0.9	-	4.5	14.0	8.1	0.9	9.0
5/1	224	224	183	41	0	0.2	0.4	-	0.6	8.9	1.4	0.4	1.8
6/1	775	775	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	217	217	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	544	544	-	-	-	0.3	0.3	-	0.6	4.2	2.5	0.3	2.8
7/2	751	751	-	-	-	0.3	0.5	-	0.8	3.9	2.4	0.5	2.9
7/3	583	583	-	-	-	0.2	0.3	-	0.5	3.2	1.6	0.3	1.9
8/1	351	351	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	901	901	-	-	-	0.0	0.8	-	0.8	3.2	0.1	0.8	0.9
9/2	1025	1025	-	-	-	0.0	1.1	-	1.1	4.0	0.0	1.1	1.1
9/3	968	968	-	-	-	0.0	0.9	-	0.9	3.5	0.0	0.9	0.9
10/1	180	180	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	544	544	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	751	751	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	583	583	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	897	897	-	-	-	0.2	1.1	-	1.3	5.2	0.9	1.1	2.0
12/2	1025	1025	-	-	-	0.2	1.9	-	2.1	7.4	5.8	1.9	7.7
12/3	1049	1049	-	-	-	0.6	2.1	-	2.7	9.2	20.6	2.1	22.7

Full Input Data And Results

13/1	419	419	-	-	-	0.6	1.1	-	1.7	15.0	1.6	1.1	2.7
13/2	342	342	-	-	-	0.0	0.6	-	0.6	6.8	0.0	0.6	0.6
14/1	542	542	-	-	-	0.1	0.3	-	0.4	2.9	1.2	0.3	1.6
14/2	751	751	-	-	-	0.4	0.6	-	0.9	4.5	3.6	0.6	4.2
14/3	832	832	-	-	-	0.4	0.7	-	1.1	4.8	3.8	0.7	4.5
15/1	423	423	-	-	-	1.1	0.6	-	1.7	14.3	4.7	0.6	5.3
15/2	200	200	-	-	-	0.4	0.2	-	0.6	10.4	0.7	0.2	0.9
15/3	224	224	-	-	-	0.1	0.2	-	0.3	4.9	0.3	0.2	0.5
16/1	901	901	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1025	1025	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	968	968	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

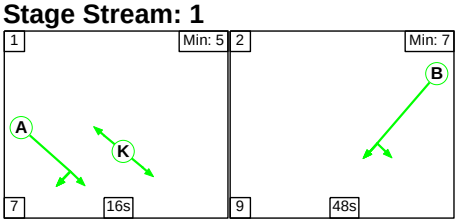
C1	Stream: 1 PRC for Signalled Lanes (%):	-32.8	Total Delay for Signalled Lanes (pcuHr):	283.88	Cycle Time (s):	72
C1	Stream: 2 PRC for Signalled Lanes (%):	-8.6	Total Delay for Signalled Lanes (pcuHr):	21.24	Cycle Time (s):	72
C1	Stream: 3 PRC for Signalled Lanes (%):	27.4	Total Delay for Signalled Lanes (pcuHr):	11.65	Cycle Time (s):	72
C1	Stream: 4 PRC for Signalled Lanes (%):	-94.4	Total Delay for Signalled Lanes (pcuHr):	252.36	Cycle Time (s):	72
C1	Stream: 5 PRC for Signalled Lanes (%):	80.3	Total Delay for Signalled Lanes (pcuHr):	1.96	Cycle Time (s):	72
C1	Stream: 6 PRC for Signalled Lanes (%):	29.8	Total Delay for Signalled Lanes (pcuHr):	2.86	Cycle Time (s):	72
	PRC Over All Lanes (%):	-94.4	Total Delay Over All Lanes(pcuHr):	574.50		

Full Input Data And Results

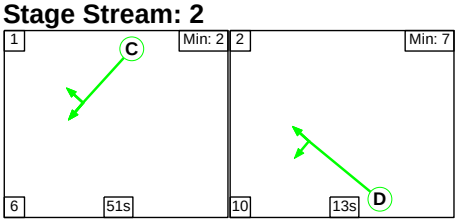
Scenario 4: '2031 DS PM' (FG4: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

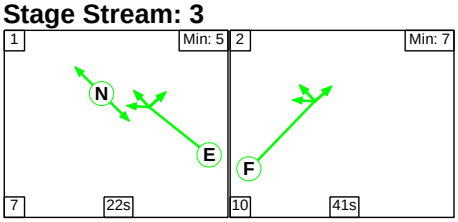
Stage Stream: 1



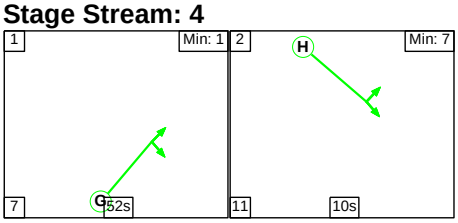
Stage Stream: 2



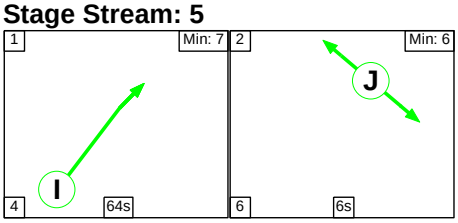
Stage Stream: 3



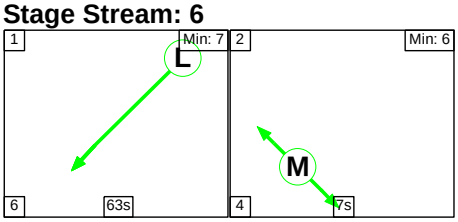
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	48
Change Point	64	7

Full Input Data And Results

Stage Stream: 2

Stage	1	2
Duration	51	13
Change Point	10	67

Stage Stream: 3

Stage	1	2
Duration	22	41
Change Point	61	10

Stage Stream: 4

Stage	1	2
Duration	52	10
Change Point	3	62

Stage Stream: 5

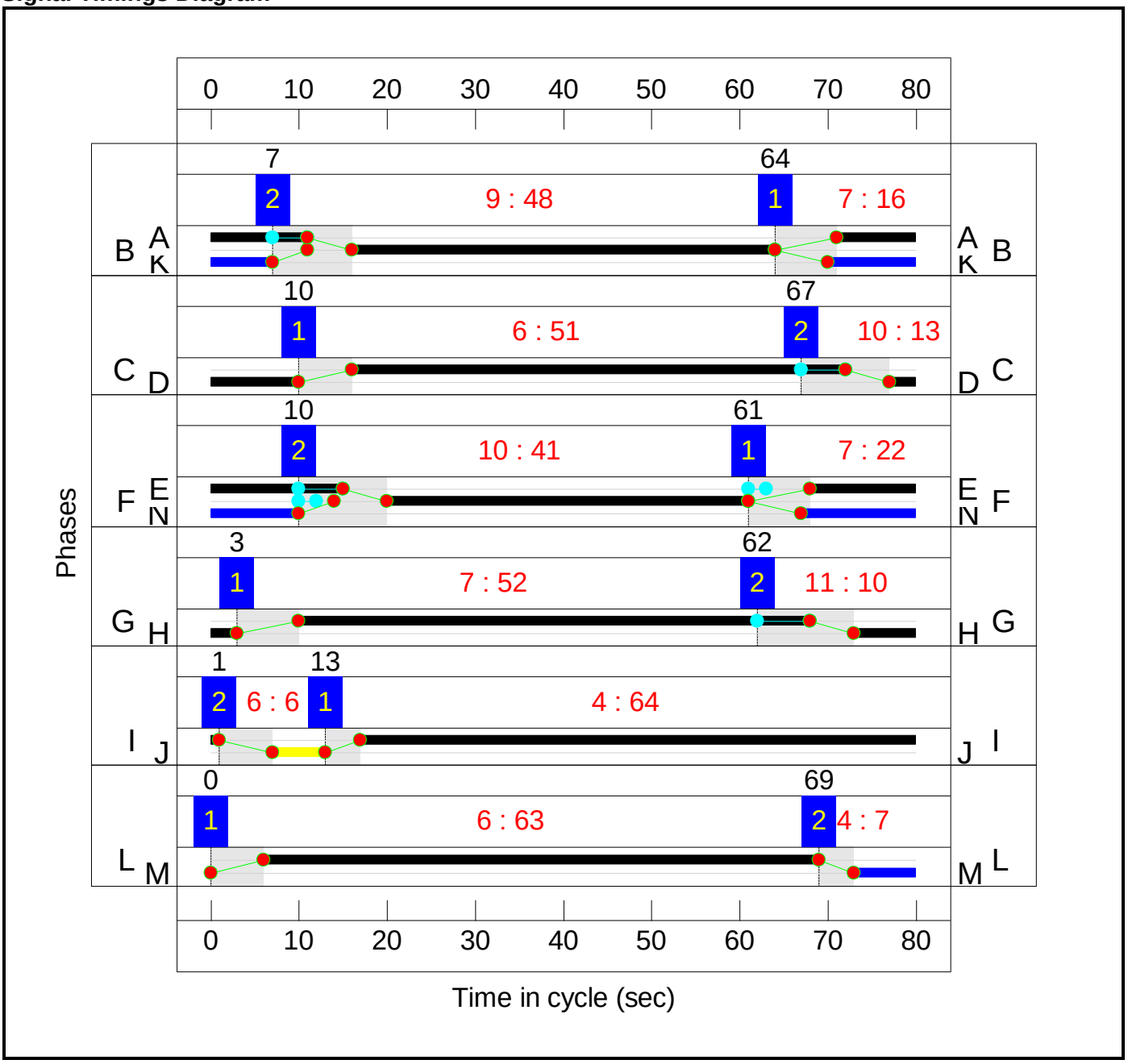
Stage	1	2
Duration	64	6
Change Point	13	1

Stage Stream: 6

Stage	1	2
Duration	63	7
Change Point	0	69

Full Input Data And Results

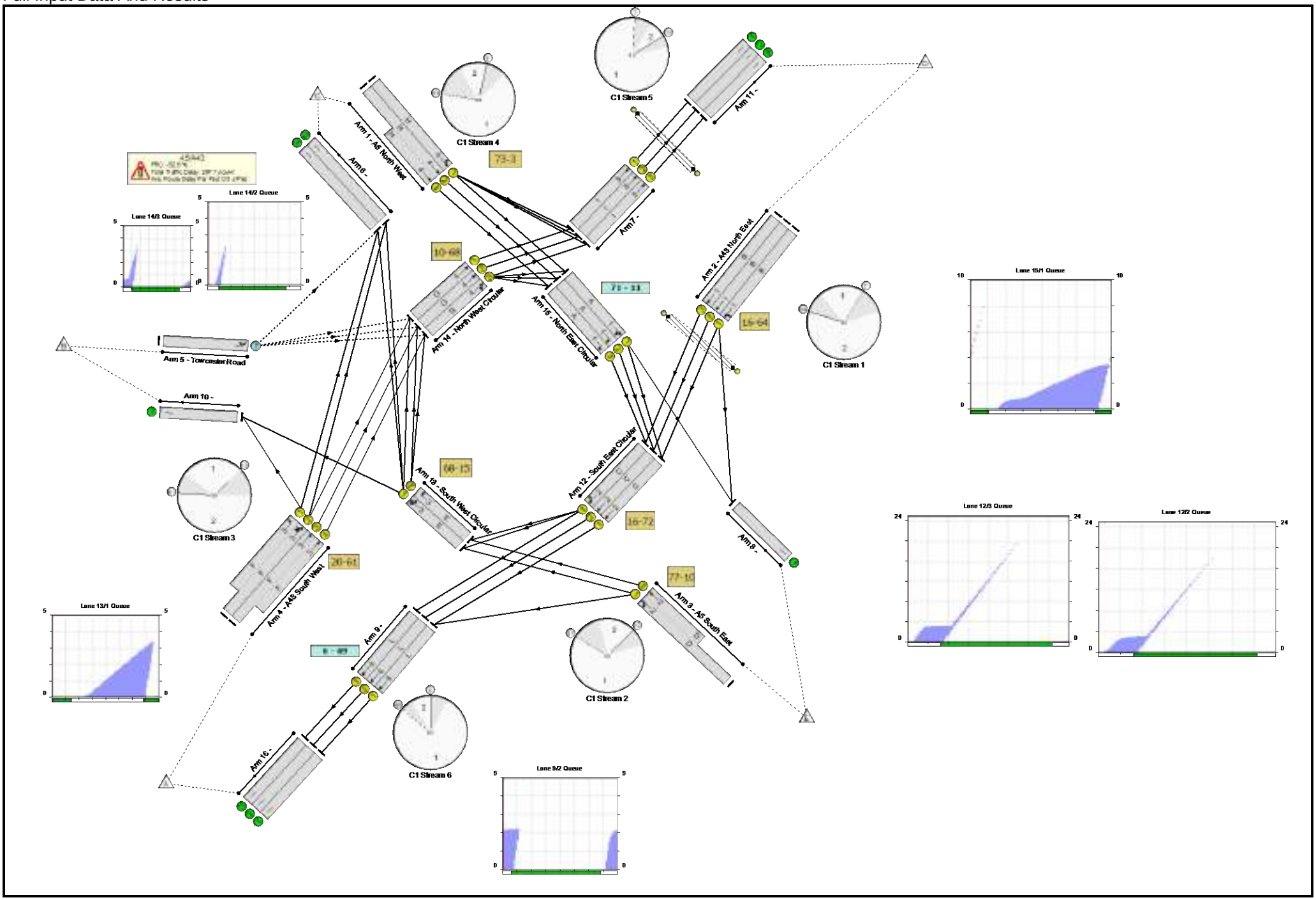
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**137.4%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**137.4%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	10	-	340	1800	248	137.4%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	10	-	268	1800:1800	248+248	53.7 : 54.5%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	48	-	1122	1800	1103	101.8%
2/2	A43 North East Ahead	U	1	N/A	B		1	48	-	1109	1800	1103	100.6%
2/3	A43 North East Ahead	U	1	N/A	B		1	48	-	1109	1800	1103	100.6%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	13	-	658	1800:1800	315+214	124.4 : 124.4%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	41	-	1525	1800:1800	767+754	100.3 : 100.3%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	41	-	1739	1800:1800	868+869	100.2 : 100.2%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	205	2105	404	50.7%
6/1		U	N/A	N/A	-		-	-	-	975	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	247	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	64	-	678	1900	1544	43.8%
7/2	Ahead	U	5	N/A	I		1	64	-	1007	1900	1544	64.3%
7/3	Ahead	U	5	N/A	I		1	64	-	892	1900	1544	56.9%
8/1		U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	63	-	862	1900	1520	55.0%
9/2	Ahead	U	6	N/A	L		1	63	-	1243	1900	1520	81.3%
9/3	Ahead	U	6	N/A	L		1	63	-	1094	1900	1520	71.6%
10/1		U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	678	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	1007	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	892	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	56	-	798	1900	1354	57.9%
12/2	South East Circular Ahead	U	2	N/A	C		1	56	-	1243	1900	1354	91.3%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	56	-	1248	1900	1354	91.7%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	27	-	481	1900	665	62.5%
13/2	South West Circular Right	U	3	N/A	E		1	27	-	267	1900	665	36.4%
14/1	North West Circular Ahead	U	4	N/A	G		1	58	-	678	1900	1401	48.3%
14/2	North West Circular Ahead	U	4	N/A	G		1	58	-	1007	1900	1401	70.8%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	58	-	1053	1900	1401	74.2%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	20	-	496	1900	499	80.9%
15/2	North East Circular Right	U	1	N/A	A		1	20	-	134	1900	499	26.9%
15/3	North East Circular Right	U	1	N/A	A		1	20	-	139	1900	499	27.9%
16/1		U	N/A	N/A	-		-	-	-	862	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1243	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	1094	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	17	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**118**	**87**	**0**	**57.0**	**240.7**	**0.0**	**297.7**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**118**	**87**	**0**	**57.0**	**240.7**	**0.0**	**297.7**	**-**	**-**	**-**	**-**
1/1	340	248	-	-	-	7.4	48.0	-	55.4	586.5	11.1	48.0	59.1
1/2+1/3	268	268	-	-	-	2.4	0.6	-	3.0	40.1	2.8	0.6	3.4
2/1	1122	1103	-	-	-	5.5	22.3	-	27.8	89.2	25.4	22.3	47.7
2/2	1109	1103	-	-	-	5.0	18.4	-	23.3	75.8	24.8	18.4	43.1
2/3	1109	1103	-	-	-	5.0	18.4	-	23.3	75.8	24.8	18.4	43.1
3/1+3/2	658	556	-	-	-	9.7	67.1	-	76.8	420.3	12.6	67.1	79.7
4/2+4/1	1525	1520	-	-	-	6.9	20.8	-	27.7	65.3	22.7	20.8	43.5
4/3+4/4	1739	1736	-	-	-	8.6	21.5	-	30.1	62.3	26.6	21.5	48.1
5/1	205	205	118	87	0	0.7	0.5	-	1.2	20.7	2.8	0.5	3.3
6/1	940	940	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	214	214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	676	676	-	-	-	0.0	0.4	-	0.4	2.3	1.9	0.4	2.2
7/2	993	993	-	-	-	0.1	0.9	-	1.0	3.5	2.5	0.9	3.4
7/3	879	879	-	-	-	0.0	0.7	-	0.7	2.8	1.7	0.7	2.4
8/1	722	722	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	836	836	-	-	-	0.3	0.6	-	0.9	4.0	2.2	0.6	2.8
9/2	1237	1237	-	-	-	0.4	2.1	-	2.6	7.5	2.2	2.1	4.3
9/3	1088	1088	-	-	-	0.4	1.3	-	1.6	5.4	1.9	1.3	3.2
10/1	256	256	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	676	676	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	993	993	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	879	879	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	784	784	-	-	-	0.1	0.7	-	0.7	3.4	0.2	0.7	0.9
12/2	1237	1237	-	-	-	0.7	4.9	-	5.5	16.1	18.5	4.9	23.3
12/3	1242	1242	-	-	-	0.8	5.1	-	5.9	17.0	20.6	5.1	25.7

Full Input Data And Results

13/1	416	416	-	-	-	1.0	0.8	-	1.8	15.7	3.4	0.8	4.2
13/2	242	242	-	-	-	0.0	0.3	-	0.3	4.3	0.0	0.3	0.3
14/1	676	676	-	-	-	0.4	0.5	-	0.8	4.5	2.0	0.5	2.4
14/2	993	993	-	-	-	0.1	1.2	-	1.3	4.7	2.3	1.2	3.5
14/3	1039	1039	-	-	-	0.3	1.4	-	1.7	5.8	3.4	1.4	4.8
15/1	403	403	-	-	-	1.4	2.0	-	3.4	30.6	8.5	2.0	10.5
15/2	134	134	-	-	-	0.0	0.2	-	0.2	5.5	0.0	0.2	0.2
15/3	139	139	-	-	-	0.0	0.2	-	0.2	6.2	0.1	0.2	0.3
16/1	836	836	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	1088	1088	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-13.1	Total Delay for Signalled Lanes (pcuHr):	78.35	Cycle Time (s):	80		
C1	Stream: 2 PRC for Signalled Lanes (%):	-38.3	Total Delay for Signalled Lanes (pcuHr):	88.94	Cycle Time (s):	80		
C1	Stream: 3 PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	59.87	Cycle Time (s):	80		
C1	Stream: 4 PRC for Signalled Lanes (%):	-52.6	Total Delay for Signalled Lanes (pcuHr):	62.18	Cycle Time (s):	80		
C1	Stream: 5 PRC for Signalled Lanes (%):	40.0	Total Delay for Signalled Lanes (pcuHr):	2.07	Cycle Time (s):	80		
C1	Stream: 6 PRC for Signalled Lanes (%):	10.6	Total Delay for Signalled Lanes (pcuHr):	5.12	Cycle Time (s):	80		
	PRC Over All Lanes (%):	-52.6	Total Delay Over All Lanes(pcuHr):	297.69				

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

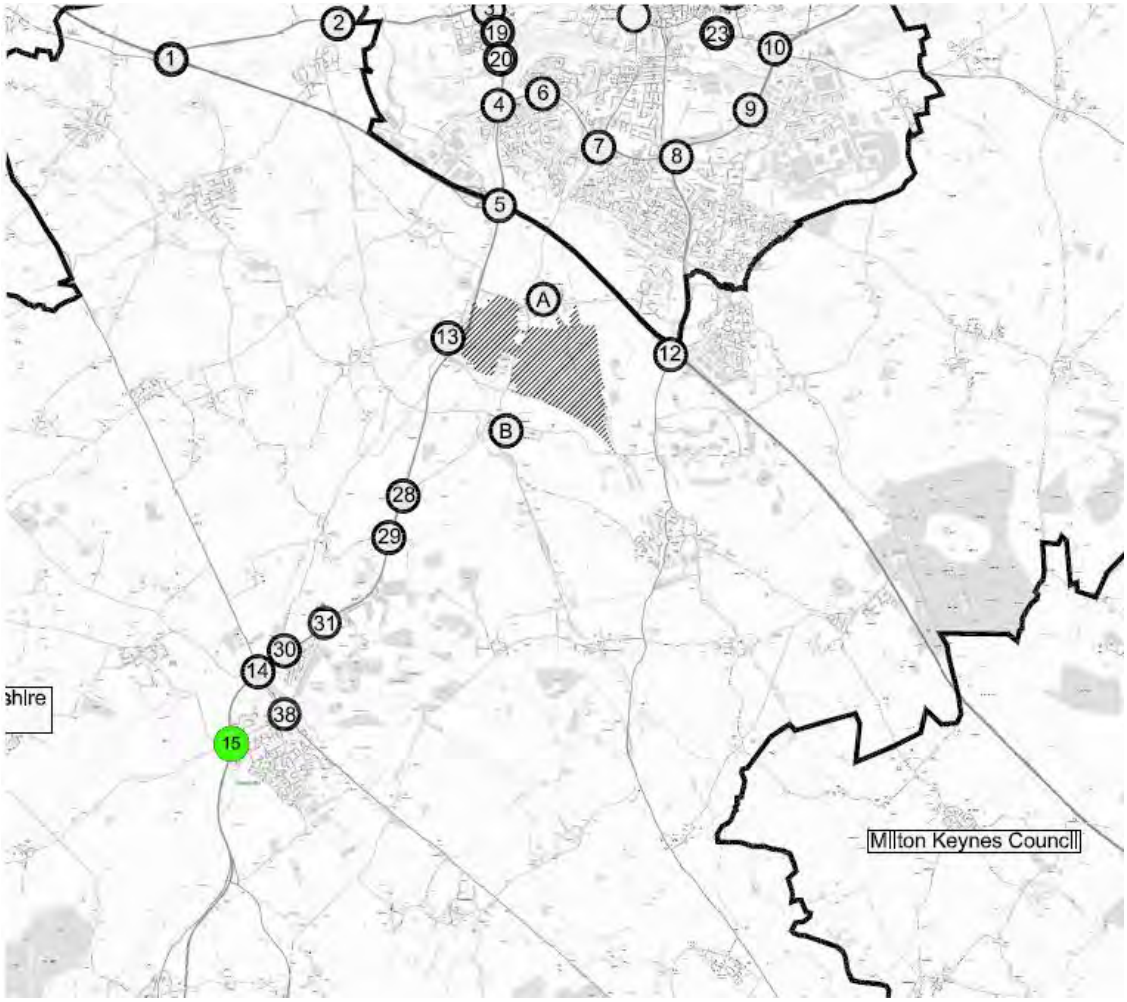
Technical Note No. 22

1 JUNCTION FIFTEEN – A43 ABTHORPE ROUNDABOUT

Site Description of the Base Junction

1.1 Junction Fifteen is a four arm signalised roundabout to the east of the Towcester Town. It connects the A43 Towcester Bypass to the Brackley Road and an unnamed road. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Fifteen Location Plan



Base Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Tuesday 6th June 2017 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the baseline flows along with queue length surveys recorded at five minute intervals. The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios. This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.3 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent. The Practical Reserve Capacity threshold is 90%.

1.4 The junction has been set up based on the guidance provided within the LinSig 3 handbook and industry standard guidance. Default saturation flows of 1900 PCUs per hour for circulatory lanes and 1800 PCUs per hour for the entries lanes have been applied, further to comments received from NCC and in accordance with guidance contained in LTN 1/09.

1.5 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays included in **Appendix B**.

1.6 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.7 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2017 Base

2017		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A43 North	13	9-19	17
	Arm 2 – Brackley Road	5	2-10	6
	Arm 3 – A43 South	8	5-11	9
	Arm 4 – Unnamed Road	6	3-10	4
PM Peak Hour (1700-1800)	Arm 1 – A43 North	11	6-20	7
	Arm 2 – Brackley Road	6	4-12	18
	Arm 3 – A43 South	9	5-12	11
	Arm 4 – Unnamed Road	4	1-6	4

1.8 It is considered that the modelled queues are generally in line with the surveyed queue, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (90 seconds).

Results of the Base Modelling

The results of the modelling for the existing junction layout, Shown in **Figure EL15** are summarised in **Table 2.**

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2017	80.3%	70.0%	57.3%	56.0%	58.5%	106.7%	70.5%	49.6%
	2021 DM	109.3%	98.0%	58.8%	68.8%	87.8%	88.0%	92.1%	33.3%
	2021 DS	114.8%	99.0%	61.3%	77.2%	94.3%	75.4%	92.7%	31.5%
	2031 DM	129.60%	97.10%	68.90%	64.00%	97.60%	89.60%	92.10%	30.60%
	2031 DS	131.7%	89.5%	63.5%	68.3%	106.6%	60.3%	92.6%	42.8%
Queue – MMQ (PCU)	2017	17	6	8	4	7	18	11	4
	2021 DM	152	10	9	6	16	7	28	2
	2021 DS	206	9	9	7	23	6	29	2
	2031 DM	354	11	12	5	30	9	28	2

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	2031 DS	376	7	10	6	128	5	29	3
Average Delay (sec/pcu)	2017	23.3	44.2	20.1	7.2	9.2	174.6	17.8	12.8
	2021 DM	194.7	92.6	10.5	13.8	16.3	99.6	22.6	33.1
	2021 DS	279.4	83.3	11.4	19.7	26.1	66.7	11.4	19.7
	2031 DM	471.1	78.6	13.1	17.0	37.1	95.1	23.7	30.7
	2031 DS	494.2	62.4	11.0	16.7	150.1	48.1	24.0	35.9

1.9 As shown in **Table 2**, Rail Central is shown to impact on the operation of the existing junction in 2031 AM and PM scenarios, with Arm 1 exceeding theoretical capacity as a result, both peak periods. There is also a significant increase in queueing on Arms 1, during the both peak periods. Therefore mitigation is considered necessary to address the development's impact.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2015	2021 DM	2021 DS	2031 DM	2031 DS	2015	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (DoS)	78	112	118	134	136	109	92	95	98	108
Overall Junction Delay (PCUhr)	40	201	285	521	557	46	55	64	75	170

1.10 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for both 2021 and 2031 by 6% and 2% for 2021 AM and 2031 AM respectively. There is also an increase of 3% for the 2021 PM. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 84 and 36 PCUhr for 2021 AM and 2031 AM respectively. There is an increase in overall junction delay between the DM PM and DS PM scenarios by 9 for 2021 PM. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.11 The proposed mitigation is shown in **Appendix J.12** of the TA and summarised is as follows:

- Provision of two additional offside lane on the A43 north approach;
- Realignment of existing lanes on the Brackley Road approach;
- Realignment of the A43 exit; and
- Reconfiguration of road markings on circulatory carriageway

1.12 The results of the mitigated junction model is shown in **Table 3** and included as **Appendix C.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2021 DS	97.6%	88.5%	59.9%	66.3%	81.4%	75.8%	91.6%	91.6%
	Comparison to 2021 DM	-11.7%	-9.5%	1.1%	-2.5%	-6.4%	-12.2%	-0.5%	58.3%
	2031 DS	115.8%	100.6%	95.8%	42.6%	86.2%	87.7%	92.5%	31.9%
	Comparison to 2031 DM	-13.8%	3.5%	26.9%	-21.4%	-11.4%	-1.9%	0.4%	1.3%
Queue – MMQ (PCU)	2021 DS	37	8	9	6	20	6	30	2
	Comparison to 2021 DM	-115	-2	0	0	4	-1	2	0
	2031 DS	133	11	25	4	22	8	29	2
	Comparison to 2031 DM	-221	0	13	-1	-8	-1	1	0
Average Delay (sec/pcu)	2021 DS	53	100	10	13	21	59	22	36
	Comparison to 2021 DM	-142	7	0	0	5	-41	0	3
	2031 DS	297	115.6	57	13	20	74	24	32
	Comparison to 2031 DM	-175	37	43	-5	-17	-21	0	1

1.13 As shown in **Table 3**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the DM scenarios. Whilst some arms are shown to provide less capacity than in the DM scenario, and there is also an improvement on other arms, and the overall junction PRC is improved.

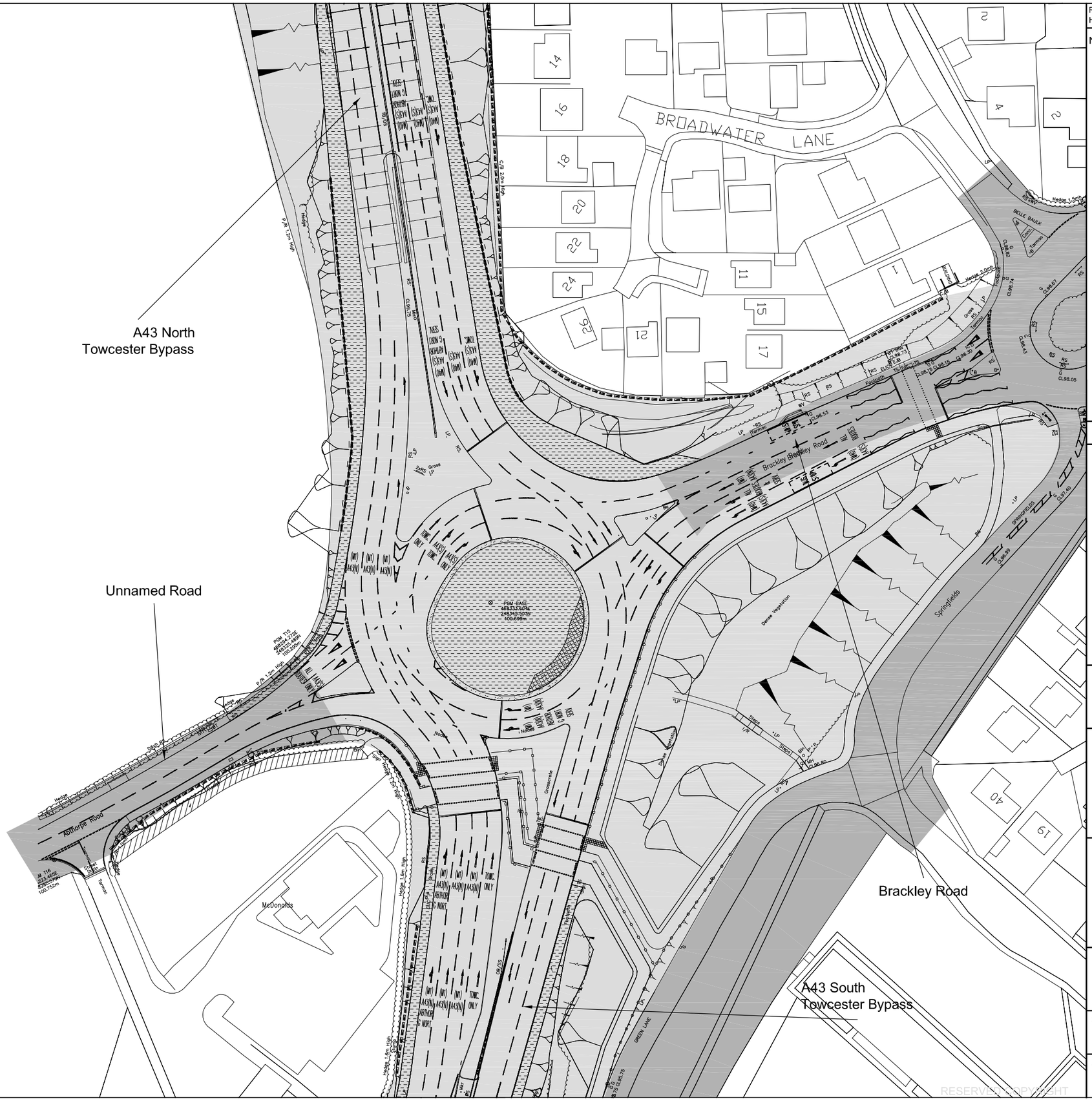
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	99	-13	119	-15	92	-1	93	-6
Overall Junction Delay (PCUhr)	86	-116	383	-139	58	3	64	-12

1.14 The junction operates 15% and 6% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario and the 2031 DS scenario PM peak than PM peak 2031 DM scenario. Finally, the overall junction delay is 139 and 12 PCUhr better in 2031 DS scenario AM and PM respectiveley.

FIGURES

A3
ORIGINAL
PLOT SIZE


A43 North
Towcester Bypass
Unnamed Road
Brackley Road
A43 South
Towcester Bypass
BROADWATER LANE
Abthorpe Road
McDonalds
Springfields
Brackley Road
Hedge 1.5m High
Hedge 2.0m High
Tarmac
Grass
Footpath
Kerbs
Trees
Dense Vegetation
Grassverge
Street Lighting
Signs
Gullies
Manholes
Fences
Buildings
Drainage
Ditch
Bollards
Barriers
Steps
Ramps
Walls
Gates
Posts
Lighting Columns
Traffic Signals
Traffic Signal Controller
Electricity Boxes
Telephone Boxes
Post Boxes
Bus Stops
Bus Shelters
Benches
Litter Bins
Dog Bins
Notice Boards
Information Boards
Flood Lights
Traffic Cones
Traffic Bollards
Traffic Barriers
Traffic Signs
Traffic Lights
Traffic Islands
Traffic Calming
Traffic Counters
Traffic Surveys
Traffic Data
Traffic Flow
Traffic Speed
Traffic Volume
Traffic Density
Traffic Capacity
Traffic Delay
Traffic Queue
Traffic Accident
Traffic Incident
Traffic Management
Traffic Control
Traffic Signal
Traffic Light
Traffic Island
Traffic Calming
Traffic Counter
Traffic Survey

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	79	394	176	649
B - Towcester Bypass N	117	0	39	1,604	1,759
C - Brackley Road E	127	89	0	200	416
D - A43 S	16	1,493	12	0	1,521
Total	260	1,661	444	1,980	4,345

Modelled Flows
2021 DM
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	83	40	323	446
B - Towcester Bypass N	110	0	27	2,630	2,767
C - Brackley Road E	104	130	0	59	293
D - A43 S	115	2,062	2	0	2,179
Total	329	2,275	69	3,012	5,685

Modelled Flows
2021 DS2
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	102	9	325	437
B - Towcester Bypass N	125	0	27	2,750	2,903
C - Brackley Road E	110	132	0	14	257
D - A43 S	112	2,125	2	0	2,239
Total	347	2,360	39	3,089	5,835

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	0	0	0	0
B - Towcester Bypass N	0	0	0	0	0
C - Brackley Road E	0	0	0	0	0
D - A43 S	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	4	-354	147	-203
B - Towcester Bypass N	-7	0	-12	1,026	1,007
C - Brackley Road E	-23	41	0	-141	-123
D - A43 S	99	569	-10	0	658
Total	69	614	-376	1,032	1,339

2021 DS2 minus 2015 Base
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	23	-385	149	-213
B - Towcester Bypass N	8	0	-12	1,146	1,142
C - Brackley Road E	-17	43	0	-186	-160
D - A43 S	96	632	-10	0	718
Total	87	698	-407	1,109	1,487

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	122	194	191	507
B - Towcester Bypass N	95	0	106	1,889	2,090
C - Brackley Road E	99	228	0	263	590
D - A43 S	34	1,218	182	6	1,440
Total	228	1,568	482	2,349	4,627

2021 DM adjusted to count
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	126	-160	338	304
B - Towcester Bypass N	88	0	94	2,915	3,097
C - Brackley Road E	76	269	0	122	467
D - A43 S	133	1,787	172	6	2,098
Total	297	2,182	106	3,381	5,966

2021 DS2 adjusted to count
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	145	-191	340	294
B - Towcester Bypass N	103	0	94	3,035	3,232
C - Brackley Road E	82	271	0	77	430
D - A43 S	130	1,850	172	6	2,158
Total	315	2,266	75	3,458	6,114

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	173	124	45	342
B - Towcester Bypass N	114	0	74	1,326	1,515
C - Brackley Road E	196	534	0	41	771
D - A43 S	31	1,740	16	0	1,786
Total	341	2,448	213	1,412	4,414

Modelled Flows
2021 DM
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	57	22	103	181
B - Towcester Bypass N	48	0	40	2,342	2,430
C - Brackley Road E	181	214	0	12	406
D - A43 S	306	3,110	4	0	3,420
Total	534	3,380	66	2,457	6,438

Modelled Flows
2021 DS2
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	58	23	107	187
B - Towcester Bypass N	58	0	42	2,545	2,647
C - Brackley Road E	186	225	0	14	426
D - A43 S	272	3,118	6	0	3,397
Total	517	3,401	72	2,667	6,656

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	0	0	0	0
B - Towcester Bypass N	0	0	0	0	0
C - Brackley Road E	0	0	0	0	0
D - A43 S	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	-116	-102	58	-160
B - Towcester Bypass N	-66	0	-34	1,016	916
C - Brackley Road E	-15	-320	0	-29	-364
D - A43 S	275	1,370	-12	0	1,633
Total	194	934	-148	1,045	2,025

2021 DS2 minus 2015 Base
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	-115	-101	62	-154
B - Towcester Bypass N	-56	0	-32	1,219	1,131
C - Brackley Road E	-10	-309	0	-27	-346
D - A43 S	241	1,378	-10	0	1,609
Total	175	954	-143	1,254	2,240

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	118	127	60	305
B - Towcester Bypass N	91	0	235	1,248	1,574
C - Brackley Road E	191	154	0	139	484
D - A43 S	36	1,825	258	6	2,125
Total	318	2,097	620	1,453	4,488

2021 DM adjusted to count
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	2	25	118	145
B - Towcester Bypass N	25	0	201	2,264	2,490
C - Brackley Road E	176	-166	0	110	120
D - A43 S	311	3,195	246	6	3,758
Total	512	3,031	472	2,498	6,513

2021 DS2 adjusted to count
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	3	26	122	151
B - Towcester Bypass N	35	0	203	2,467	2,705
C - Brackley Road E	181	-155	0	112	138
D - A43 S	277	3,203	248	6	3,734
Total	493	3,051	477	2,707	6,728

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	79	394	176	649
B - Towcester Bypass N	117	0	39	1,604	1,759
C - Brackley Road E	127	89	0	200	416
D - A43 S	16	1,493	12	0	1,521
Total	260	1,661	444	1,980	4,345

Modelled Flows
2031 DM
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	124	115	183	421
B - Towcester Bypass N	104	0	192	3,098	3,393
C - Brackley Road E	142	179	0	50	371
D - A43 S	100	2,316	62	0	2,479
Total	346	2,619	368	3,331	6,664

Modelled Flows
2031 DS2
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	104	132	223	458
B - Towcester Bypass N	120	0	286	3,100	3,505
C - Brackley Road E	132	101	0	97	330
D - A43 S	128	2,148	62	1	2,339
Total	380	2,354	479	3,420	6,632

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	0	0	0	0
B - Towcester Bypass N	0	0	0	0	0
C - Brackley Road E	0	0	0	0	0
D - A43 S	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	45	-279	7	-227
B - Towcester Bypass N	-13	0	153	1,494	1,634
C - Brackley Road E	15	90	0	-150	-45
D - A43 S	84	823	50	0	957
Total	86	958	-76	1,351	2,319

2031 DS2 minus 2015 Base
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	25	-262	47	-190
B - Towcester Bypass N	3	0	247	1,496	1,746
C - Brackley Road E	5	12	0	-103	-86
D - A43 S	112	655	50	1	818
Total	120	692	35	1,441	2,288

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	122	194	191	507
B - Towcester Bypass N	95	0	106	1,889	2,090
C - Brackley Road E	99	228	0	263	590
D - A43 S	34	1,218	182	6	1,440
Total	228	1,568	482	2,349	4,627

2031 DM adjusted to count
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	167	-85	198	280
B - Towcester Bypass N	82	0	259	3,383	3,724
C - Brackley Road E	114	318	0	113	545
D - A43 S	118	2,041	232	6	2,397
Total	314	2,526	406	3,700	6,946

2031 DS2 adjusted to count
AM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	147	-68	238	317
B - Towcester Bypass N	98	0	353	3,385	3,836
C - Brackley Road E	104	240	0	160	504
D - A43 S	146	1,873	232	7	2,258
Total	348	2,260	517	3,790	6,915

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	173	124	45	342
B - Towcester Bypass N	114	0	74	1,326	1,515
C - Brackley Road E	196	534	0	41	771
D - A43 S	31	1,740	16	0	1,786
Total	341	2,448	213	1,412	4,414

Modelled Flows
2031 DM
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	54	32	100	185
B - Towcester Bypass N	59	5	116	2,602	2,783
C - Brackley Road E	220	282	1	13	515
D - A43 S	217	3,084	11	0	3,311
Total	496	3,425	159	2,715	6,795

Modelled Flows
2031 DS2
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	59	41	84	183
B - Towcester Bypass N	54	0	132	2,812	2,998
C - Brackley Road E	198	280	0	20	499
D - A43 S	253	3,129	6	0	3,388
Total	505	3,468	178	2,916	7,067

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	0	0	0	0
B - Towcester Bypass N	0	0	0	0	0
C - Brackley Road E	0	0	0	0	0
D - A43 S	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	-119	-92	55	-156
B - Towcester Bypass N	-55	5	42	1,276	1,268
C - Brackley Road E	24	-252	1	-28	-255
D - A43 S	186	1,344	-5	0	1,525
Total	155	978	-54	1,303	2,382

2031 DS2 minus 2015 Base
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	-114	-83	39	-158
B - Towcester Bypass N	-60	0	58	1,486	1,484
C - Brackley Road E	2	-254	0	-21	-273
D - A43 S	222	1,389	-10	0	1,601
Total	164	1,021	-35	1,504	2,654

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	118	127	60	305
B - Towcester Bypass N	91	0	235	1,248	1,574
C - Brackley Road E	191	154	0	139	484
D - A43 S	36	1,825	258	6	2,125
Total	318	2,097	620	1,453	4,488

2031 DM adjusted to count
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	-1	35	115	149
B - Towcester Bypass N	36	5	277	2,524	2,842
C - Brackley Road E	215	-98	1	111	229
D - A43 S	222	3,169	253	6	3,650
Total	473	3,075	566	2,756	6,870

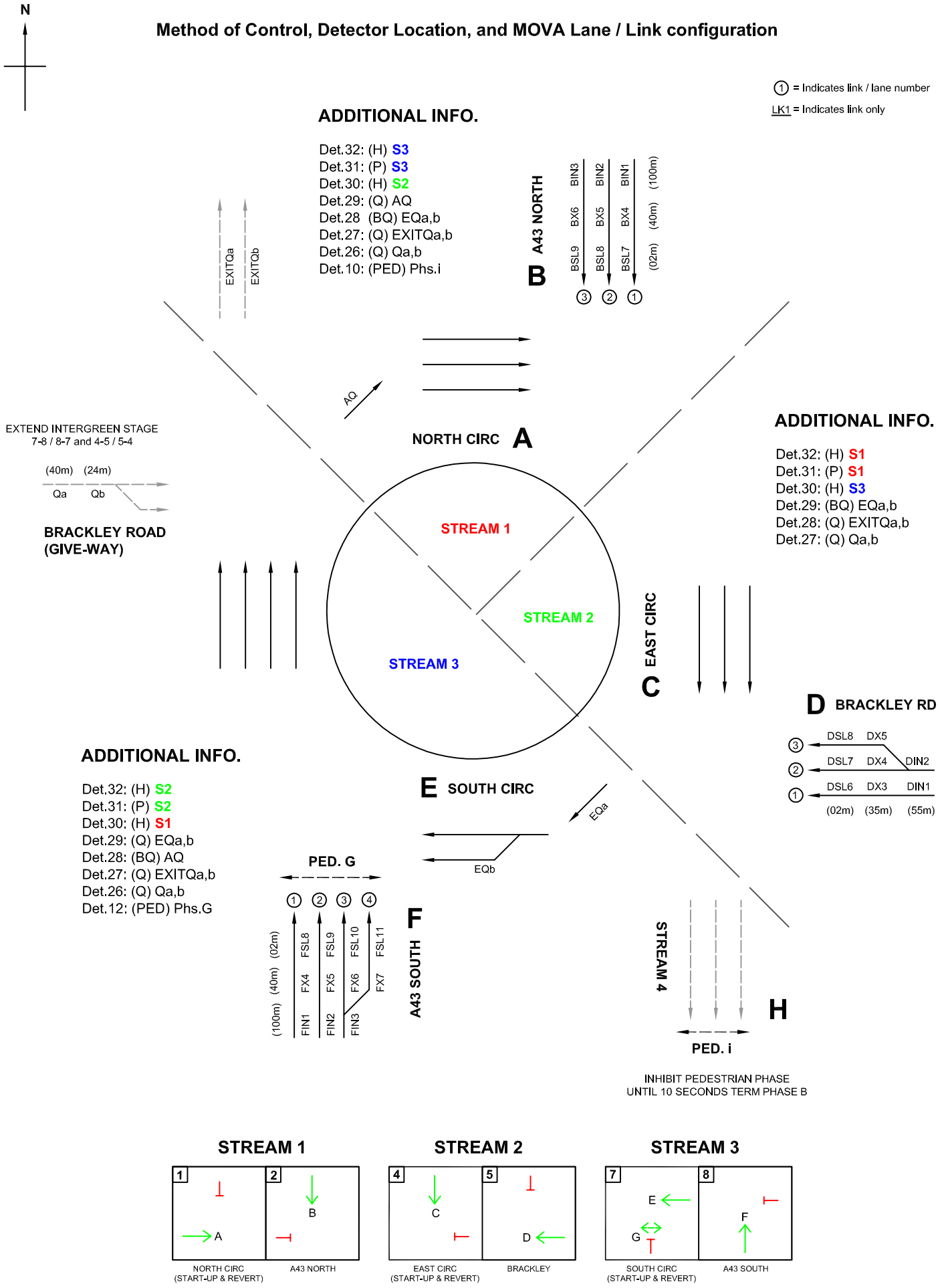
2031 DS2 adjusted to count
PM Peak

	A - Brackley Road W	B - Towcester Bypass N	C - Brackley Road E	D - A43 S	Total
A - Brackley Road W	0	4	44	99	147
B - Towcester Bypass N	31	0	293	2,734	3,058
C - Brackley Road E	193	-100	0	118	211
D - A43 S	258	3,214	248	6	3,726
Total	482	3,118	585	2,957	7,142

APPENDIX B

A43/BRACKLEY ROAD SIGNALISED ROUNDABOUT, ABTHORPE

Method of Control, Detector Location, and MOVA Lane / Link configuration



© JSTSM LTD

ISSUE A, SEPT 2015

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Administration

General Specifications

Customer Name	Aone+	Customer Order No.	856478503
Intersection/ General Description	A43 Brackley Road / Abthorpe Roundabout, Towcester	Controller/ Serial Number	
		S.T.S. /EM Number	NN0001 Issue 3
Controller	(•) New ( ) Modification	Equipment Installation by	
Area Specifications/ Customer Drawings	530017_1205_01 02 _03	Slot Cutting by	
Specification Section	A43/BRACKLEY ROAD SEP 15	Civil Works by	
Contract/Tender Ref:		Customer's Engineer	Stuart Minchin / Alan Solani
Quotation No.		Telephone Number	07941500897
Works Order No.			

Signal Company Use Only

Signal Engineer: Alex Moody / David Vernon

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: D2 88 1A 4A

Controller Options

Hardware: ST950 ELV | Firmware Type and Issue: 46059 ISS 11 | Other Options

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet | Kit Type Options: (•) UK-Std ( ) Non-UK ( ) ( )

Cabinet/Rack Variant: Grey | Cuckoo Options: None | Gemini Unit Fitted: ☑

Mains Supply	230 Volts	50 Hz					
Peak Lamp Current	1 Amps	Dimming Voltage	27.5	Answer Issue	0	Date Created	03/03/2017
Average Lamp Power	1 Watts						
Total Average Power	1 Watts	Low Inrush Transformer	☑	Edit Issue	5		

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams
- (•) Current Number of Streams: 4

Phases
- ( ) Current Total Number of Phases: 9
- (•) Number of Real Phases: 9
- ( ) Number of Dummy Phases: 0

Stages
- ( ) Current Number of stages (inc. ALL-RED stages): 12

Switched Signs
- ( ) Number of Switched Signs: 0

Action
- Add At
- Delete At

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- ☐ Serial/Internal UTMC OTU
- ☐ Free-standing OTU
- ☐
- ☐

- ☑ Master Time Clock
- ☐ Holiday Clock
- ☑ FT To Current MAX
- ☐ Linked Fixed Time

- ☑ Lamp Monitoring
- ☑ RED Lamp Monitoring
- ☑ Pelican/Puffin/Toucan
- ☐ Standalone Manual

- ☐ Extend All Red
- ☐ Speed Measurement
- ☐ Ripple Change
- ☐

- ☐ Non-UK
- ☐ Fail to Part Time
- ☐ Fail To Hardware Flashing
- ☐
- ☐ Download To Level 3

9 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
☐ Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Hurry Call	○	○	○	○	○	◉	○	○	○	○	○	○	○
☐ LRT	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Priority Vehide	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
☐ Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
☐ UTC	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ MOVA Mode	○	○	○	◉	○	○	○	○	○	○	○	○	○
☐ CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ CLF (Base Time)	○	○	○	○	◉	○	○	○	○	○	○	○	○
☑ Vehicle Actuated	○	○	○	○	○	○	◉	○	○	○	○	○	○
☑ Fixed Time	○	○	○	○	○	○	○	◉	○	○	○	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standard46059.8df
Default PROM data file

Correspondence Monitoring to inc.

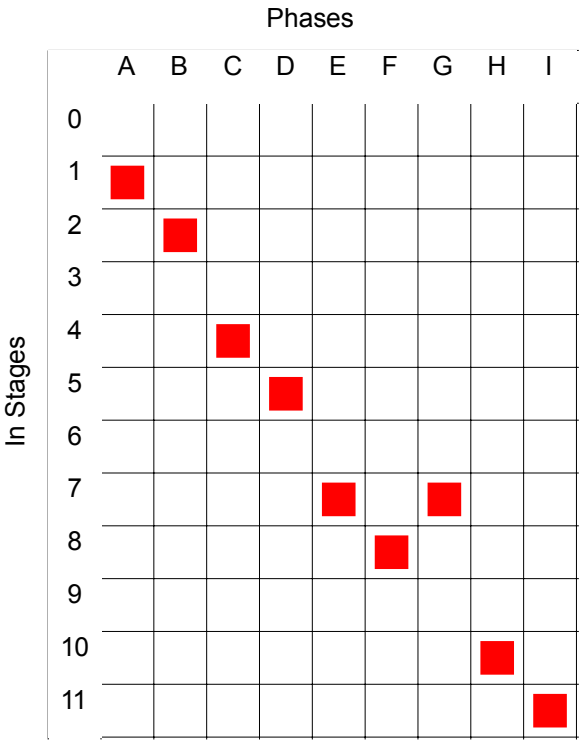
- ☑ Reds
- ☐ Switched Signs
- ☑ Ambers
- ☐ Ignore Reds and Ambers during

Flash Rate (ms)

400 Off 400 On

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phases in Stages



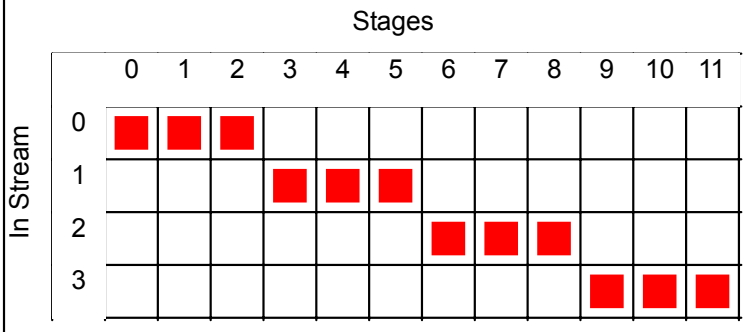
Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	1	4	7	10				
Startup Stage	1	4	7	10				
Switch Off Stage	1	4	7	10				
Standalone Pedestrian	☐	☐	☐	☑	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.



Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase Type and Conditions

Phase Type and Conditions

(•) Phases A to P ( ) Manual Output Allocation [☑] Improved GA Appearance [☐]

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	North Circ	0 - UK Traffic	0	0 - E		1	1	1
B	A43 North	0 - UK Traffic	0	0 - E		2	2	2
C	East Circ	0 - UK Traffic	0	0 - E		1	1	1
D	Brackley Road	0 - UK Traffic	0	0 - E		1	1	1
E	South Circ	0 - UK Traffic	0	0 - E		1	1	1
F	A43 South	0 - UK Traffic	0	0 - E		2	2	2
G	Toucan / Equestrian x A43 South	3 - UK Near Side Pedestrian	0	0 - E		2	3	3
H	A43 Southbound Exit	0 - UK Traffic	0	0 - E		1	1	1
I	Toucan / Equestrian x A43 Southbound Exit	3 - UK Near Side Pedestrian	0	0 - E		2	3	3

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ 2 ○ 3 ○ ○ ○ ○ ○

Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase

	A	B	C	D	E	F	G	H	I
A		Co							
B	Co								
C				Co					
D			Co						
E						Co	o		
F					Co		Co		
G					o	Co			
H									Co
I								Co	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

(●) Phases A to P ( )

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	15	15	15	15	15	15	15	15	☐
B	7	0	0.0	40	40	40	40	40	40	40	40	☐
C	7	0	0.0	15	15	15	15	15	15	15	15	☐
D	7	0	0.0	20	20	20	20	20	20	20	20	☐
E	7	0	0.0	15	15	15	15	15	15	15	15	☐
F	7	0	0.0	40	40	40	40	40	40	40	40	☐
G	7	3	0.0	0	0	0	0	0	0	0	0	☐
H	7	0	0.0	0	0	0	0	0	0	0	0	☐
I	7	3	0.0	0	0	0	0	0	0	0	0	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ 2 ○ 3 ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F	G	H	I
A		5							
B	7								
C				5					
D			6						
E						5			
F					7		7		
G						0			
H									7
I								0	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Intergreen Handset Limits

HIGH 199

Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E	F	G	H	I
A		5							
B	5								
C				5					
D			5						
E						5			
F					5		5		
G									
H									5
I									

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.	Phase	Min. Green Min.	Min. Green Max.
A	7	60	Q		
B	7	60	R		
C	7	60	S		
D	7	60	T		
E	7	60	U		
F	7	60	V		
G	7	60	W		
H	7	60	X		
I	7	60	Y		
J			Z		
K			A2		
L			B2		
M			C2		
N			D2		
O			E2		
P			F2		

Max. Green
Min. 0 Max. 255

Vehicle Extension
Min. 0.0 Max. 10.0

Phase Delay
Min. 0 Max. 30

Starting I/G
Min. 5 Max. 12

Min Pedestrian Clearance (PBT)
Min. 0 Max. 12

Traffic Phase Leaving
Min. 3.0 Max. 3.0

Traffic Phase Red/Amber
Min. 2 Max. 2

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

VA Demand and Extend Definitions

VA Demand and Extend Definitions

Phases A to P ○

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A				
B	BX4	BX5	BX6	BSL7
C				
D	DX3	DX4	DX5	DSL6
E				
F	FX4	FX5	FX6	FX7
G	PBUG18	PBUG19	PBUG20	PBUG21
H				
I	PBUI27	PBUI28	PBUI29	PBUI30

Extensions

BX4	BX5	BX6	BSL7
DX3	DX4	DX5	DSL6
FX4	FX5	FX6	FX7

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D	E	F		H								

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase - On Crossing and Kerbside Detector Definitions

On Crossing and Kerbside Input Definitions

(●) Phases A to P ( )

Phase	On Crossing				Kerbside			
A								
B								
C								
D								
E								
F								
G	ONCG18	ONCG21	ONCG22	ONCG24				
H								
I	ONCI27	ONCI28	ONCI30	ONCI33				

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Stream - Pelican/Puffin/Toucan Times

Stream - Pelican/Puffin/Toucan Times

Pedestrian Enable VA Mode (PEV)

Streams							
0	1	2	3	4	5	6	7
			0-Disabled				

Pedestrian All Red Times (Vehicle to Pedestrian)

Streams	0	1	2	3	4	5	6	7
(PAR n 0) VA Gap Change				0				
(PAR n 1) VA Max Change				0				
(PAR n 2) FVP Change				0				
(PAR n 3) UTC Change				0				
(PAR n 4) Local Link Change				0				

Handset Range Limits

	Min	Max
(PAR n 2) FVP Change	0	0

Pelican Intergreen times

(PIT n 0) Veh Red/Ped Flash Green				0				
(PIT n 1) Veh Flash Amber/Ped Flash Green				0				
(PIT n 2) Veh Flash Amber/Ped red				0				
(PIT n 3) Veh Flash Amber/Ped Red Quiescent				0				

	Min	Max
(PIT n 0) Veh Red/Ped Flash Green	0	0
(PIT n 1) Veh Flash Amber/Ped Flash Green	0	0
(PIT n 2) Veh Flash Amber/Ped red	0	0
(PIT n 3) Veh Flash Amber/Ped Red Quiescent	0	0

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase - Pelican, Puffin and Toucan Times

Phase - Pelican, Puffin and Toucan Times

Phase	PDD Ped Demand Delay	PDX Ped Demand Hold	CMX Clearance Maximum	CDY 0 Clearance Delay Gap Change	CDY 1 Clearance Delay Max Change	CRD Clearance Minimum Red
A	0	0.0	0	0	0	0
B	0	0.0	0	0	0	0
C	0	0.0	0	0	0	0
D	0	0.0	0	0	0	0
E	0	0.0	0	0	0	0
F	0	0.0	0	0	0	0
G	0	0.0	11	0	0	0
H	0	0.0	0	0	0	0
I	0	0.0	5	0	0	0

◉ Phases A to P ○

☐

☐

Pedestrian Handset Range Limits

	MIN	MAX
Demand Delay PDD	0	3
Demand Hold PDX	0.0	3.0
Clearance Maximum CMX	0	15
Clearance Delays CDY 0 and CDY1	0	3
Clearance Minimum Red CRD	0	3

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

IO and Link - Pelican/Puffin/Toucan Times

I/O and Link - Pelican/Puffin/Toucan Times

Streams 0 1 2 3 4 5 6 7

Computer Control

PV

Window Time
UIE 0

Local Link

PV1

Link Delay Time
LKD 0

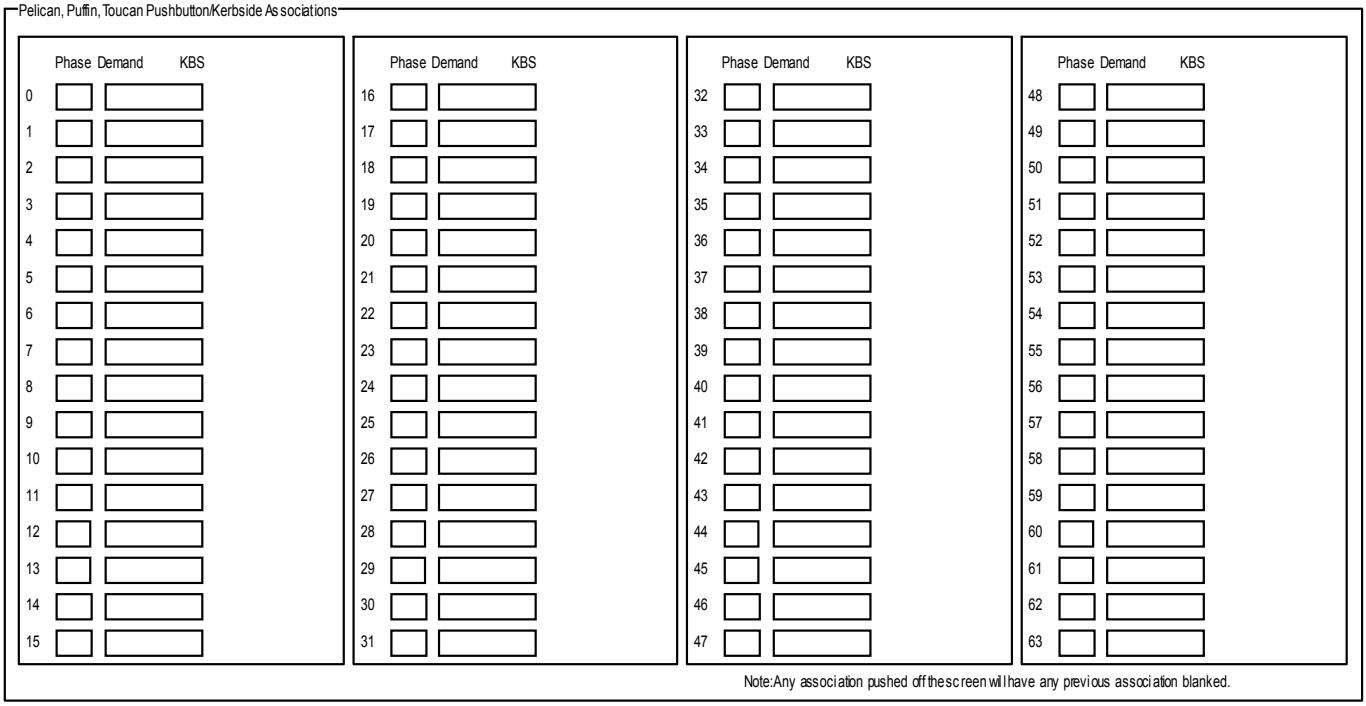
Link Window Time
LKW 0

Link Override Time
LKO 0

Kerbside Mat Test
Output

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Pelican, Puffin, Toucan Pushbutton/Kerbside Associations



Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5	6	7	8	9	10	11				
☐	☑	☑	☐	☑	☑	☐	☑	☑	☐	☑	☑	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5	6	7	8	9	10	11				
☐	☑	☑	☐	☑	☑	☐	☑	☑	☐	☑	☑	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5	6	7	8	9	10	11				
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0	0	0	0	0				

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

0	1	2	3	4	5	6	7	8	9	10	11				
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Phase Delays

Phase Delays

(•) Phase Delays 0-29 ( ) Phase Delays 30-59 ( ) Phase Delays 60-89 ( ) Phase Delays 90-119

No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds	No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds
0	C	4	5	3	15				0
1	E	7	8	5	16				0
2				0	17				0
3				0	18				0
4				0	19				0
5				0	20				0
6				0	21				0
7				0	22				0
8				0	23				0
9				0	24				0
10				0	25				0
11				0	26				0
12				0	27				0
13				0	28				0
14				0	29				0

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage	1	2	1	4	5	4	7	8
Time	20	20	0	20	20	0	20	20

Current Stage	8	9	10	11	12	13	14	15
Next Stage	7	10	11	10				
Time	0	10	7	0				

Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								

Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Note:
Fixed Time mode may be used by the Reserve State, therefore, the Stage Moves and Times section should always be configured (unless Linked Fixed Time is selected instead).

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☑	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

CLF - Plan(s)

CLF - Plan(s)

1 Plan No.

Copy From

Plan Specifics

1 Influence Set

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	70

Smooth CLF

Slow	0
Fast	0

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	24	1	2	17			
2	24	1	4	18			
3	5	1	5	19			
4	0	1	7	20			
5	31	1	8	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

CLF - Plan(s)

CLF - Plan(s)

Plan No.: 2

Copy From

Plan Specifics

Influence Set: 2

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	70

Smooth CLF

Slow	0
Fast	0

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	24	1	2	17			
2	24	1	4	18			
3	5	1	5	19			
4	0	1	7	20			
5	31	1	8	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

CLF - Plan(s)

CLF - Plan(s)

Plan No.: 3

Copy From

Plan Specifics

Influence Set: 3

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	70

Smooth CLF

Slow	0
Fast	0

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	29	1	2	17			
2	29	1	4	18			
3	7	1	5	19			
4	7	1	7	20			
5	36	1	8	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

CLF - Plan(s)

CLF - Plan(s)

4 Plan No.

Copy From

Plan Specifics

4 Influence Set

Copy From

Entry Point (secs)	255
Exit Point (secs)	255
Cycle Time (secs)	70

Smooth CLF

Slow	0
Fast	0

Group Offset Handset Range

Min.	0
Max.	255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	24	1	2	17			
2	24	1	4	18			
3	5	1	5	19			
4	0	1	7	20			
5	31	1	8	21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

CLF - Base Time

CLF - Base Time

Controller Base Date	XX/XX/XX
Controller Base Time	02:00:00

Plan Offset

	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Handset Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

MOVA Stages

MOVA Stages

Stage	Force Bit	Green Confirm Bit	Stage	Force Bit	Green Confirm Bit
0			16		
1	MOVA0F 1	MOVA0CON1	17		
2	MOVA0F 2	MOVA0CON2	18		
3			19		
4	MOVA1F 1	MOVA1CON1	20		
5	MOVA1F 2	MOVA1CON2	21		
6			22		
7	MOVA2F 1	MOVA2CON1	23		
8	MOVA2F 2	MOVA2CON2	24		
9			25		
10			26		
11			27		
12			28		
13			29		
14			30		
15			31		

NOTE: If a MOVA Kernel does not map to the same numbered stream (0-3), refer to the help.

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☐ RR/CRB

Manual Mode Selected:
☐ G1/G2 ☐ RR/CRB

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ RR/CRB

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☐ RR/CRB

RR Button Selected:
☐ G1/G2 ☐ RR/CRB

Report as UTC Mode ☐

MOVA Control Timer (x10): 12

MOVA Deactivate Timer: 2.0

MOVA Release Timer: 1

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☐ Combined

Set Selection

○ UTC ◉ MOVA 0 ○ MOVA 1 ○ MOVA 2 ○ MOVA 3

1	BIN1	2	BIN2	3	BIN3	4	BX4	5	BX5	6	BX6	7	BSL7	8	BSL8
9	BSL9	10		11		12		13		14		15		16	
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33		34		35		36		37		38		39		40	
41		42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☐ Combined

Set Selection

○ UTC ○ MOVA 0 ◉ MOVA 1 ○ MOVA 2 ○ MOVA 3

1	DIN1	2	DIN2	3	DX3	4	DX4	5	DX5	6	DSL6	7	DSL7	8	DSL8
9		10		11		12		13		14		15		16	
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33		34		35		36		37		38		39		40	
41		42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☐ Combined

Set Selection

○ UTC ○ MOVA 0 ○ MOVA 1 ◉ MOVA 2 ○ MOVA 3

1	FIN1	2	FIN2	3	FIN3	4	FX4	5	FX5	6	FX6	7	FX7	8	FSL8
9	FSL9	10	FSL10	11	FSL11	12		13		14		15		16	
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33		34		35		36		37		38		39		40	
41		42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

MTC - Time Switch Parameters

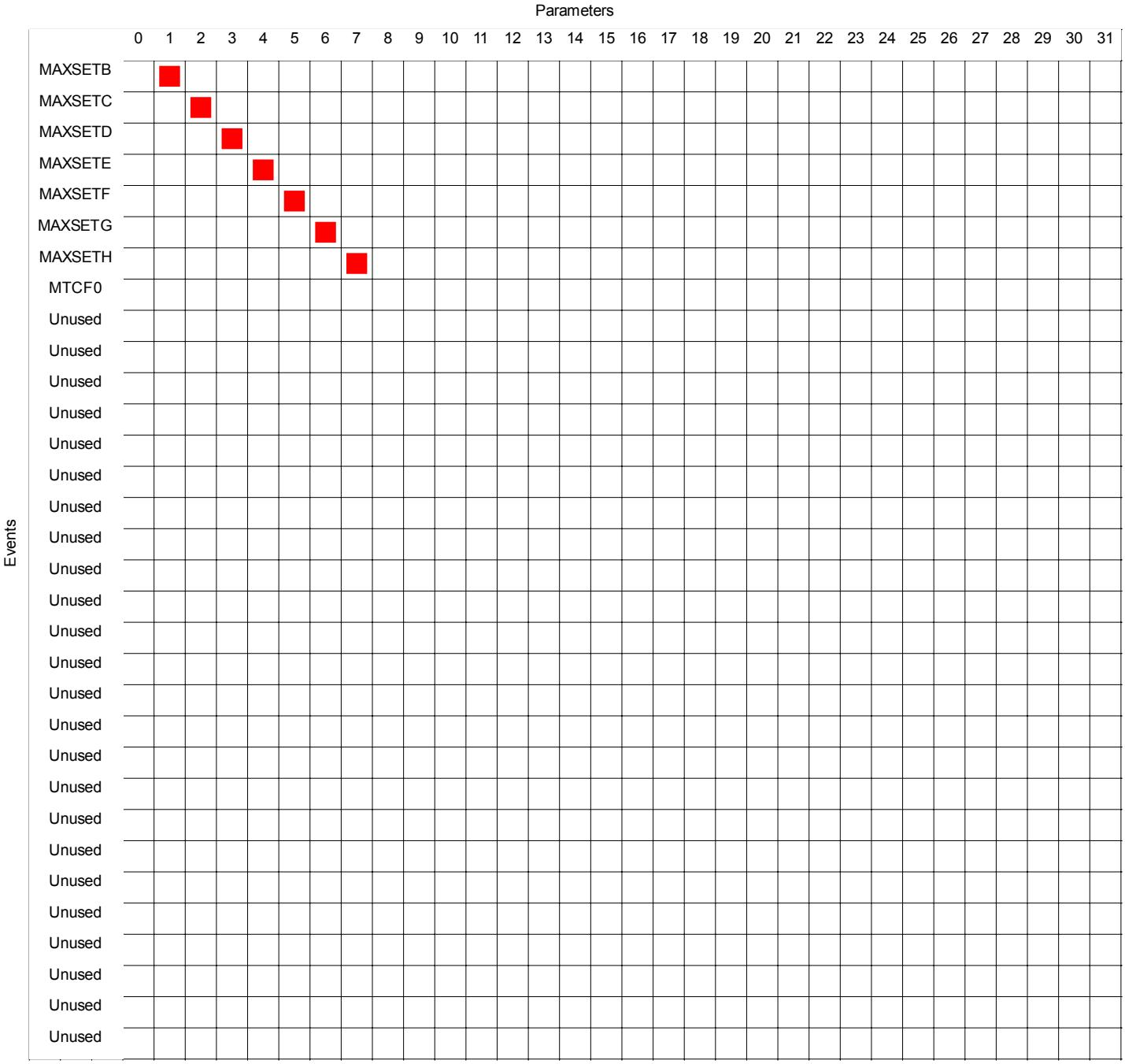
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	Alternate Max	MAXSETE
4	Alternate Max	MAXSETF
5	Alternate Max	MAXSETG
6	Alternate Max	MAXSETH
7	Conditioning	MTCF0
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

MTC - Time Switch Parameters Array



Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☑	☑
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

MTC - Timetable

MTC - Timetable

View Timetable Settings

(•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	06:30:00	Introduce MAXSET A	2	0
1	9	09:30:00	Introduce MAXSET B	2	2
2	9	15:30:00	Introduce MAXSET C	2	1
3	9	19:00:00	Introduce MAXSET D	2	3
4	0	09:00:00	Introduce MAXSET E	2	4
5	0	20:00:00	Introduce MAXSET F	2	5
6	1	09:00:00	Introduce MAXSET G	2	6
7	1	20:00:00	Introduce MAXSET H	2	7
8	7	06:30:00	Introduce CLF Plan 1 (AM)	1	1
9	7	09:30:00	Introduce CLF Plan 2 (INTERPEAK)	1	2
10	7	15:00:00	Introduce CLF Plan 3 (PM)	1	3
11	7	19:00:00	Introduce CLF Plan 4 (OVERNIGHT)	1	4
12	88		Disable CRB	3	7
13	88		Enable CRB	4	7
14	0			0	0
15	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

○ ◉ 48
○ ○

Red Lamp Monitoring

Max Red Bulb Wattage

First Red Lamp Fault Speed 0

☐ RLF2 Cancels RLM additional Intergreens

☑ RLF2 Only Cleared by RFL = 1

☐ RLF1 Only Cleared by RFL = 1

RLM Additional Intergreen Handset Limits

Minimum	Maximum
2	10

Streams with Phase BlackOut on RLF2

☐ 0 ☐ 1 ☐ 2 ☑ 3 ☐ ☐ ☐ ☐

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Phase	Aspect	Sensor #	Sensor Type
A	Red	1	As Seq.	E	Amber	5	As Seq.
A	Amber	1	As Seq.	E	Green	5	As Seq.
A	Green	1	As Seq.	F	Red	6	As Seq.
B	Red	2	As Seq.	F	Red	6	As Seq.
B	Red	2	As Seq.	F	Amber	6	As Seq.
B	Amber	2	As Seq.	F	Amber	6	As Seq.
B	Amber	2	As Seq.	F	Green	6	As Seq.
B	Green	2	As Seq.	F	Green	6	As Seq.
B	Green	2	As Seq.	G	Red	7	R,G
C	Red	3	As Seq.	G	Red	7	R,G
C	Amber	3	As Seq.	G	Amber	8	Wait
C	Green	3	As Seq.	G	Amber	8	Wait
D	Red	4	As Seq.	G	Amber	8	Wait
D	Amber	4	As Seq.	G	Green	7	R,G
D	Green	4	As Seq.	G	Green	7	R,G
E	Red	5	As Seq.	G	Green	N/A	

Note : A(*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 2 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Phase	Aspect	Sensor #	Sensor Type
H	Red	9	As Seq.	N/A	N/A		
H	Amber	9	As Seq.	N/A	N/A		
H	Green	9	As Seq.	N/A	N/A		
I	Red	10	R,G	N/A	N/A		
I	Red	10	R,G	N/A	N/A		
I	Amber	11	Wait	N/A	N/A		
I	Amber	11	Wait	N/A	N/A		
I	Amber	11	Wait	N/A	N/A		
I	Green	10	R,G	N/A	N/A		
I	Green	10	R,G	N/A	N/A		
I	Green	N/A		N/A	N/A		
N/A	N/A			N/A	N/A		
N/A	N/A			N/A	N/A		
N/A	N/A			N/A	N/A		
N/A	N/A			N/A	N/A		
N/A	N/A			N/A	N/A		

Note : A(*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Integral LMU External Sensors for Regulatory Signs

Integral LMU External Sensors for Regulatory Signs

External Sensors (1)

Sensor	Sensor Type
96	Regulatory Sign
95	Regulatory Sign
94	Regulatory Sign
93	Regulatory Sign

External Sensors (2)

Sensor	Sensor Type
92	Regulatory Sign
91	Regulatory Sign
90	Regulatory Sign
89	Regulatory Sign

External Sensors (3)

Sensor	Sensor Type

External Sensors (4)

Sensor	Sensor Type

External Sensors (5)

Sensor	Sensor Type

External Sensors (6)

Sensor	Sensor Type

Note: Sensors which have been used as Onboard sensors will not be available here.

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

LMU Sensor Load Types

LMU Sensor Load Types

Screen Select

1 of 2

Sensor	Phase	Sensor Type	LED R+W	Load Type	LLF Profile
1	A	As Seq.	Auto	1: Siemens Helios ELV	
2	B	As Seq.	Auto	1: Siemens Helios ELV	
3	C	As Seq.	Auto	1: Siemens Helios ELV	
4	D	As Seq.	Auto	1: Siemens Helios ELV	
5	E	As Seq.	Auto	1: Siemens Helios ELV	
6	F	As Seq.	Auto	1: Siemens Helios ELV	
7	G	R,G	Auto	3: Siemens LED Near Side Indicator	
8	G	Wait	Auto	5: Siemens LED Wait	
9	H	As Seq.	Auto	1: Siemens Helios ELV	
10	I	R,G	Auto	3: Siemens LED Near Side Indicator	
11	I	Wait	Auto	5: Siemens LED Wait	
89	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	
90	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	
91	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	
92	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	
93	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

LMU Sensor Load Types

LMU Sensor Load Types

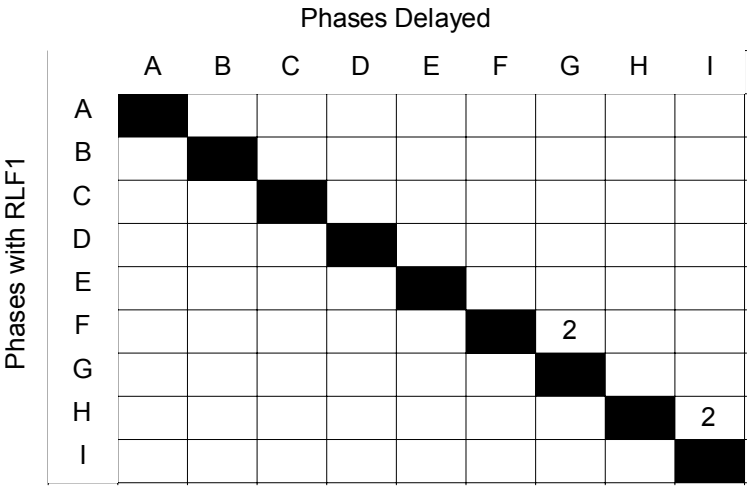
Screen Select

2 of 2

Sensor	Phase	Sensor Type	LED R+W	Load Type	LLF Profile
94	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	
95	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	
96	N/A	Regulatory Sign	Auto	7: AGD PED Demand Indicator	

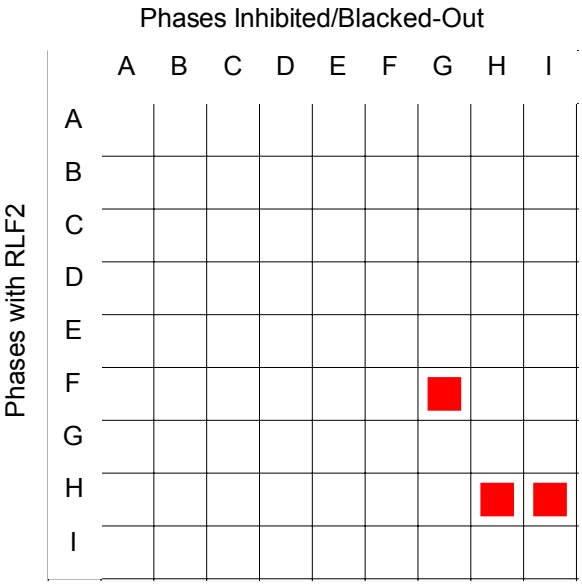
Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

RLM Additional Intergreens



Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

RLM Phase Inhibits



Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Hurry Call

Hurry Call

Hurry Call	Stage Called	Call Input Name	Cancel Input Name	Confirm Output Name	Delay Time	Hold Time	Prevent Time
0	1	*2SCRT1			0	1	1
1	4	*2SCRT4			0	1	1
2	7	*2SCRT7			0	1	1
3					0	0	0
4					0	0	0
5					0	0	0
6					0	0	0
7					0	0	0

Hurry Call Limit Values

	Min.	Max.
Call Delay	0	255
Call Hold	0	255
Call Prevent	0	255

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red	0	3	6	9				
1	All Circs	1	4	7	9				
2	A43 North and South	2	4	8	9				
3	Brackley Road	1	5	7	9				
4	A43 North	2	4	7	9				
5	A43 South	1	4	8	9				
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

Manual Mode Enable

- ◉ Always
- ○ When Handset Plugged in (Note 1)
- ○ When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

General Buttons

	None	SW1	SW2	SW3
Momentary		☑	☑	☑
Dim Override	◉	○	○	○
RR	◉	○	○	○

Manual Signals On

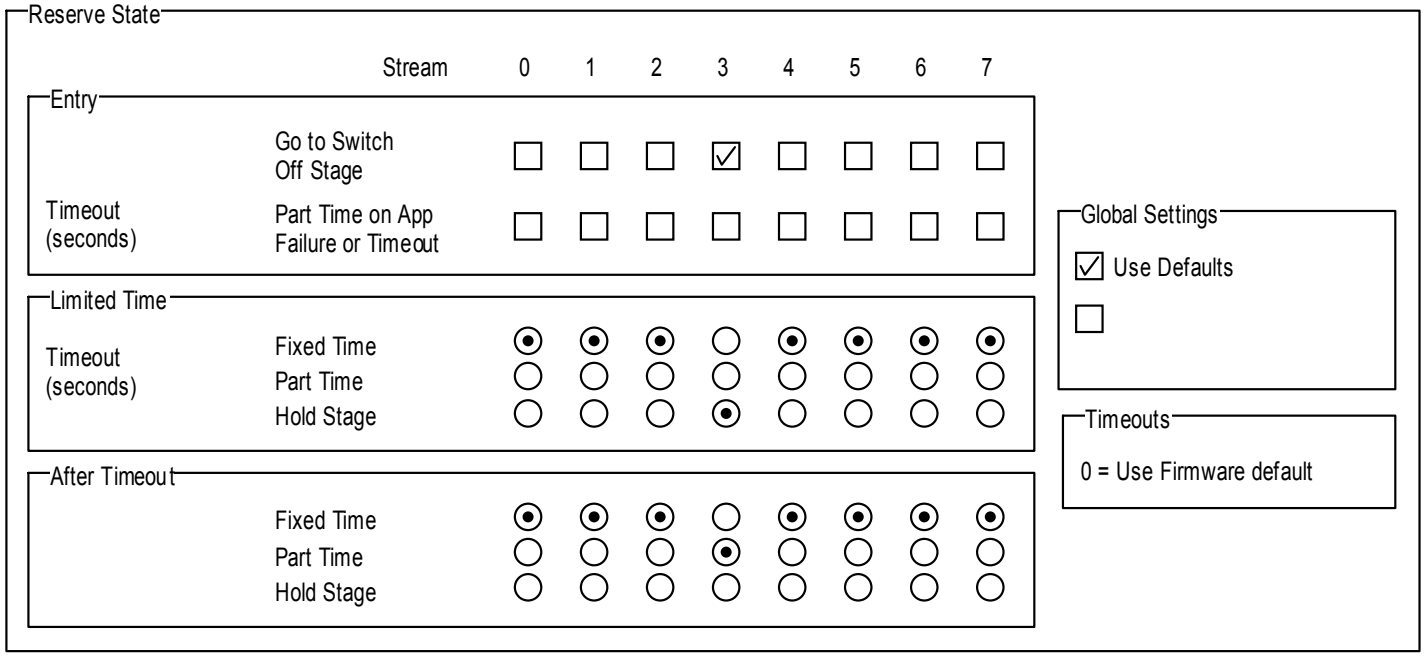
- ○ Immediate Signals On
- ◉ As Start-Up

Mode Select Switches Disabled

☑ VA ☑ Fixed Time ☐ CLF

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Reserve State



Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
; EXTRA DETECTORS
; ===============
BSL8 + BSL9 = +LCPHB                                        ; BSL IN PHASE B
BSL8_EXT + BSL9_EXT: = +EXOB
                     * = +EXCB

DSL7 + DSL8 = +LCPHD                                        ; DSL IN PHASE D
DSL7_EXT + DSL8_EXT: = +EXOD                                ; EXTENSION LOOP OCCUPIED
                     * = +EXCD                              ; EXTENSION LOOP CLEARED

FSL8 + FSL9 + FSL10 + FSL11 = +LCPHF                        ; FSL IN PHASE F
FSL8_EXT + FSL9_EXT + FSL10_EXT + FSL11_EXT: = +EXOF
                                         * = +EXCF

PBUG22 + PBUG23 + PBUG24 + PBUG25 = +LCPHG                  ; PBS IN PHASE G
PBUI31 + PBUI32 + PBUI33 + PBUI34 = +LCPHI                  ; PBS IN PHASE I


; MOVA LED CODE
; =============
IFT ((MODE0 EQL<16>).(MODE1 EQL<16>).(MODE2 EQL<16>)) THN    ; ALL MOVA KERNELS RUNNING
    TRUE = MIL17                                            ; ILLUMINATE HP LED
ELS                                                         ; OTHERWISE
    IFT ((MODE0 EQL<16>)+(MODE1 EQL<16>)+(MODE2 EQL<16>)) THN   ; SOME MOVA KERNELS RUNNING
        IFT NOT(CNDTMA0) THN
            RUN <0>                                         ; RESTART FLASHER TIMER
        END
        IFT CNDTER0 THN                                     ; FLASHER TIMER FINISHED
            NOT(MIL17) = MIL17                              ; INVERT HP LED
        END
    ELS                                                     ; OTHERWISE NO KERNELS RUNNING
        FALSE = MIL17                                       ; EXTINGUISH HP LED
    END
END


; MANUAL PANEL LEDS
; =================
(MODE0 EQL<16>) = MIL22                                     ; MOVA STREAM 0
(MODE1 EQL<16>) = MIL23                                     ; MOVA STREAM 1
(MODE2 EQL<16>) = MIL05                                     ; MOVA STREAM 2
(MODE0 EQL<5>)= MIL07                                       ; HURRY CALL


; PEDESTRIAN LINK
; ===============
IFT TERMB THN                                               ; PHASE JUST TERMINATED
    RUN <29>                                                ; RUN DELAY TIMER
END
IFT (CNDTER29) THN                                          ; DELAY TIMER JUST FINISHED
    RUN <30>                                                ; RUN INHIBIT RELEASE TIMER
END

NOT(CNDTMA30) = PRVST11                                     ; INTERNAL PED PREVENT
NOT(MODE0 EQL <4>) = .PRVST11                               ; MANUAL MODE DROPS PREVENT


; PREVENT CLF WHEN MOVA IS ACTIVE
; ===============================
((MODE0 EQL<16>)+(MODE1 EQL<16>)+(MODE2 EQL<16>)) = CLCONT  ; PREVENT CLF WHEN ANY STREAMS IN MOVA MODE
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
; MOVA PEDESTRAIN INPUTS
; ======================

VRDMNDG=MOVA2DET12                                    ; PED PHASE G TO SET MOVA DET 12 STREAM 2
VRDMNDI=MOVA0DET10                                    ; PED PHASE I TO SET MOVA DET 10 STREAM 0


; PHASE DELAYS ONLY TO OPERATE IN MANUAL MODE
; ===========================================


(MODE0 EQL<4>).PHASEB=SCRT14
NOT(SCRT14)=PHDLAY000

(MODE2 EQL<4>).PHASED=SCRT15
NOT(SCRT15)=PHDLAY001


; DISBALE MOVA CRBS BY TIME OF DAY
; ================================

NOT(MTCF0)::=.MOVA0CRB                                ; DISABLE STREAM 0 CRB BY TIMETABLE
            *=.MOVA1CRB                               ; DISABLE STREAM 1 CRB BY TIMETABLE
            *=.MOVA2CRB                               ; DISABLE STREAM 2 CRB BY TIMETABLE


; OMU LAMP SUPPLY OUTPUT BIT
; ==========================

IFT (PRSLMPRA+PRSLMPAA+PRSLMPGA) THN                  ; ENSURE LAMPS ARE ON TO PREVENT CRB BEING TOGGLED
    RUN<35>                                           ; BY LAMP RELAY TESTS
END

LMPON.SWLMPS.CNDTMA35.NOT(FLF17)=LAMPSUP
                                                      ; LAMP SUPPLY PRESENT OUTPUT ON ELV CONTROLLERS FOR
                                                      ; INDICATION TO SERIALLY CONNECTED OMU.
                                                      ; OUTPUT GOES OPEN CIRCUIT WHEN THERE IS NO LAMP SUPPLY


; VA PERMANENT DEMANDS
; ====================

(MODE0 EQL<2>)=LCPHA
(MODE1 EQL<2>)=LCPHC
(MODE2 EQL<2>)=LCPHE

; PHASE G TO TERMINATE AFTER MIN WHEN RUNNING CLF
; ===============================================
(MODE2 EQL<3>).PHASEG.NOT(MING)=1AUXCMDG4
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
; QUEUE LOOP PULSES
; -----------------
IFT CCTO0.NOT(1SCRT0) THN                    ; AQ JUST BECOME ACTIVE (CC)
   RUN<1>                                    ; RUN 2S PULSE TIMER
END
CNDTMA1 = +MOVA0DET29                        ; PULSE ACTIVE SET MOVADET
CCTO0 = 1SCRT0                               ; AQ STATE FOR NEXT CONTROLLER CYCLE


IFT CCTO1.NOT(1SCRT1) THN                    ; EQA JUST BECOME ACTIVE (CC)
   RUN<2>                                    ; RUN 2S PULSE TIMER
END
CNDTMA2 = +MOVA2DET29                        ; PULSE ACTIVE SET MOVADET
CCTO1 = 1SCRT1                               ; EQA STATE FOR NEXT CONTROLLER CYCLE


IFT CCTO2.NOT(1SCRT2) THN                    ; EQB JUST BECOME ACTIVE (CC)
   RUN<3>                                    ; RUN 2S PULSE TIMER
END
CNDTMA3 = +MOVA2DET29                        ; PULSE ACTIVE SET MOVADET
CCTO2 = 1SCRT2                               ; EQB STATE FOR NEXT CONTROLLER CYCLE



CCTO3+CCTO4:: = +MOVA0DET26                  ; QA OR QB CALL CANCELS TO HOLD
             * = +MOVA1DET27
             * = +MOVA2DET26

CCTO5+CCTO6:: = +MOVA0DET27                  ; EXITQA OR EXITQB CALL CANCELS TO HOLD
             * = +MOVA1DET28
             * = +MOVA2DET27

IFT CCTO7.NOT(2SCRT17) THN                   ; AQ CALL DELAY SETS FLAG
    TRUE=2SCRT18
END

IFT TERMA THN                                ; PHASE A TERMINATES RESETS FLAG
    FALSE=2SCRT18
END

CCTO7.2SCRT18 =+MOVA2DET28                   ; AX CALL DELAY AND PHASE A ACTIVE
                                             ; SETS MOVA DET 28 STREAM 2
CCTO7=2SCRT17


; EQA CALL 5 SECONDS, CANCEL 2 SECONDS
; ====================================
IFT EQA.NOT(1SCRT3) THN                      ; IF THE DETECTOR HAS JUST GONE LIVE
    RUN <7>                                  ; START THE CALL DELAY TIMER
END
IFT CNDTER7.EQA THN                          ; IF THE CALL DELAY FINISHED AND DET STILL ON
    TRUE = +1SCRT4                           ; CREATE THE SIGNAL
END
IFT 1SCRT3.NOT(EQA) THN                      ; THE DET HAS JUST GONE QUIET
    RUN <8>                                  ; RUN THE CANCEL TIMER
END
IFT CNDTER8.NOT(EQA) THN                     ; CANCEL EXPIRED AND DET STILL QUIET
    FALSE = .1SCRT4                          ; KILL THE SIGNAL
END
EQA = 1SCRT3                                 ; DET STATE FOR INTER-CYCLES
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
; EQB CALL 5 SECONDS, CANCEL 2 SECONDS
; ====================================
IFT EQB.NOT(1SCRT5) THN                          ; IF THE DETECTOR HAS JUST GONE LIVE
    RUN <9>                                      ; START THE CALL DELAY TIMER
END
IFT CNDTER9.EQB THN                              ; IF THE CALL DELAY FINISHED AND DET STILL ON
    TRUE = +1SCRT6                               ; CREATE THE SIGNAL
END
IFT 1SCRT5.NOT(EQB) THN                          ; THE DET HAS JUST GONE QUIET
    RUN <10>                                      ; RUN THE CANCEL TIMER
END
IFT CNDTER10.NOT(EQB) THN                        ; CANCEL EXPIRED AND DET STILL QUIET
    FALSE = .1SCRT6                              ; KILL THE SIGNAL
END
EQB = 1SCRT5                                     ; DET STATE FOR INTER-CYCLES


IFT 1SCRT4.NOT(2SCRT19) THN                      ; EQA CALL DELAY SETS FLAG
    TRUE=2SCRT20
END

IFT TERME THN                                    ; PHASE E TERMINATES RESETS FLAG
    FALSE=2SCRT20
END

1SCRT4=2SCRT19


IFT 1SCRT6.NOT(2SCRT21) THN                      ; EQB CALL DELAYS STES FLAG
    TRUE=2SCRT22
END

IFT TERME THN                                    ; PHASE E TERMINATES RESETS FLAG
    FALSE=2SCRT22
END

1SCRT6=2SCRT21

(1SCRT4.2SCRT20)+(1SCRT6.2SCRT22): =+MOVA0DET28  ; EQA AND PHASE E AT ROW OR
                                 * =+MOVA1DET29  ; EQB AND PHASE E AT ROW SETS
                                                 ; MOVA DET 28 ON STREAM 0 AND DET 29 ON STREAM 1


FALSE::=.PRVST2
       *=.PRVST5
       *=.PRVST8



; MOVA LINKING STREAM 1 TO STREAM 0
; ================================

IFT TERMD THN                                    ; RESET PHASE FLAG
    FALSE=1SCRT7
END


IFT TERMC THN                                    ; PHASE C TERMINATES SETS FLAG
    TRUE=1SCRT7                                  ; AND STARTS TIMER
    RUN<11>
END
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
CNDTMA11.1SCRT7=MOVA0DET30                  ; TIMER ACTIVE AND PHASE C SETS
                                            ; MOVA DETECTOR 30 ON STREAM 0

(MODE0 EQL<2>).MOVA0DET30=+PRVST2           ; PREVENT STAGE 2 IN VA WHILST
                                            ; MOVA0DET30 ACTIVE

; MOVA LINKING STREAM 2 TO STREAM 0
; ================================

IFT TERME THN                               ; PHASE E TERMINATES THEN
    RUN<12>                                 ; RUN DELAY TIMER
END

IFT CNDTER12 THN                            ; DELAY TIMER EXPIRED THEN
    RUN<13>                                 ; RUN PULSE TIMER
END
CNDTMA13:=MOVA0DET31                        ; PULSE TIMER ACTIVE SETS
        *.(MODE0 EQL<2>)=2SCRT1             ; MOVA DET 31 STREAM 0 AND
                                            ; HURRY CALLS STAGE 1 WHEN IN VA


IFT TERME THN                               ; PHASE E TERMINATES THN
    RUN<14>                                 ; RUN DELAY TIMER
END

IFT CNDTER14 THN                            ; DELAY TIMER EXPIRED
    TRUE=1SCRT8                             ; THEN SET FALG
END

1SCRT8.NOT(1SCRT10)=+1SCRT9                 ; FLAG SET AND OVERRIDE
                                            ; TIMER NOT EXPIRED SET
                                            ; SET MOVA DETECTOR FLAG

IFT TERMF.NOT(CNDTMA15) THN                 ; PHASE F TERMINATES THN
    RUN<15>                                 ; RUN CANCEL TIMER
END

NOT(CNDTER15+CNDTER16)=.1SCRT9              ; CANCEL OR OVERRIDE TIMER EXPIRED
                                            ; RESETS MOVA DETECTOR FLAG

CNDTER16=+1SCRT10                           ; OVERRIDE TIMER EXPIRED SETS FLAG

1SCRT9=MOVA0DET32                           ; FLAG SET ACTIVATES MOVA0 DET 32

IFT CNDTER14 THN                            ; DELAY TIMER EXPIRE THEN
    RUN<16>                                 ; RUN OVERRIDE TIMER
END                                         ; END

IFT TERMF THN                               ; PHASE F TERMINATES RESETS
    FALSE=1SCRT8                            ; PHASE FLAG
END

NOT(CNDTMA16)=.1SCRT10                      ; OVERRIDE TIMER ACTIVE RESETS FLAG

(MODE0 EQL<2>).1SCRT9=+PRVST2                ; PREVENT STAGE 2 IN VA MODE WHILST
                                            ; HOLD FLAG SET

; MOVA LINKING STREAM 2 TO STREAM 1
; ================================
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
IFT TERMF THN                              ; RESET PHASE FLAG
    FALSE=1SCRT11
END


IFT TERME THN                              ; PHASE E TERMINATES SETS FLAG
    TRUE=1SCRT11                           ; AND STARTS TIMER
    RUN<17>
END

CNDTMA17.1SCRT11=MOVA1DET30                ; TIMER ACTIVE AND PHASE E SETS
                                           ; MOVA DETECTOR 30 ON STREAM 1

(MODE1 EQL<2>).MOVA1DET30=+PRVST5          ; PREVENT STAGE 5 IN VA WHILST
                                           ; MOVA1DET30 ACTIVE



; MOVA LINKING STREAM 0 TO STREAM 1
; ================================

IFT TERMA THN                              ; PHASE A TERMINATES THEN
    RUN<18>                                ; RUN DELAY TIMER
END

IFT CNDTER18 THN                           ; DELAY TIMER EXPIRED THEN
    RUN<19>                                ; RUN PULSE TIMER
END
CNDTMA19:=MOVA1DET31                       ; PULSE TIMER ACTIVE SETS
        *.(MODE1 EQL<2>)=2SCRT4            ; MOVA DET 31 STREAM 1 AND
                                           ; HURRY CALLS STAGE 4 WHEN IN VA


IFT TERMA THN                              ; PHASE A TERMINATES THN
    RUN<20>                                ; RUN DELAY TIMER
END

IFT CNDTER20 THN                           ; DELAY TIMER EXPIRED
    TRUE=1SCRT12                           ; THEN SET FALG
END

1SCRT12.NOT(1SCRT14)=+1SCRT13              ; FLAG SET AND OVERRIDE
                                           ; TIMER NOT EXPIRED SET
                                           ; SET MOVA DETECTOR FLAG

IFT TERMB.NOT(CNDTMA21) THN                ; PHASE B TERMINATES THN
    RUN<21>                                ; RUN CANCEL TIMER
END

NOT(CNDTER21+CNDTER22)=.1SCRT13            ; CANCEL OR OVERRIDE TIMER EXPIRED
                                           ; RESETS MOVA DETECTOR FLAG

CNDTER22=+1SCRT14                          ; OVERRIDE TIMER EXPIRED SETS FLAG

1SCRT13=MOVA1DET32                         ; FLAG SET ACTIVATES MOVA1 DET 32

IFT CNDTER20 THN                           ; DELAY TIMER EXPIRE THEN
    RUN<22>                                ; RUN OVERRIDE TIMER
END                                        ; END

IFT TERMB THN                              ; PHASE B TERMINATES RESETS
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
    FALSE=1SCRT12                          ; PHASE FLAG
END

NOT(CNDTMA22)=.1SCRT14                     ; OVERRIDE TIMER ACTIVE RESETS FLAG

(MODE1 EQL<2>).1SCRT13=+PRVST5              ; PREVENT STAGE 5 IN VA MODE WHILST
                                           ; HOLD FLAG SET



; MOVA LINKING STREAM 0 TO STREAM 2
; ================================

IFT TERMB THN                              ; RESET PHASE FLAG
    FALSE=1SCRT15
END


IFT TERMA THN                              ; PHASE A TERMINATES SETS FLAG
    TRUE=1SCRT15                           ; AND STARTS TIMER
    RUN<23>
END

VRDMNDF.NOT(1SCRT15)=+1SCRT19              ; DEMAND FOR PHASE F SETS FLAG
NOT(PHASEF)=.1SCRT19                       ; PHASE F AT ROW RESETS FLAG

CNDTMA23.1SCRT15.(NOT(1SCRT19) $           ; TIMER ACTIVE AND PHASE B SETS
+PHASEF)=+MOVA2DET30                       ; MOVA DETECTOR 30 ON STREAM 2



(MODE2 EQL<2>).MOVA2DET30=+PRVST8          ; PREVENT STAGE 8 IN VA WHILST
                                           ; MOVA2DET30 ACTIVE


; MOVA LINKING STREAM 1 TO STREAM 2
; ================================

IFT TERMC THN                              ; PHASE C TERMINATES THEN
    RUN<24>                                ; RUN DELAY TIMER
END

IFT CNDTER24 THN                           ; DELAY TIMER EXPIRED THEN
    RUN<25>                                ; RUN PULSE TIMER
END
CNDTMA25:=MOVA2DET31                       ; PULSE TIMER ACTIVE SETS
        *.(MODE2 EQL<2>)=2SCRT7            ; MOVA DET 31 STREAM 2 AND
                                           ; HURRY CALLS STAGE 7 WHEN IN VA



IFT TERMC THN                              ; PHASE A TERMINATES THN
    RUN<26>                                ; RUN DELAY TIMER
END

IFT CNDTER26 THN                           ; DELAY TIMER EXPIRED
    TRUE=1SCRT16                           ; THEN SET FALG
END

1SCRT16.NOT(1SCRT18)=+1SCRT17              ; FLAG SET AND OVERRIDE
                                           ; TIMER NOT EXPIRED SET
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning

```
                                        ; SET MOVA DETECTOR FLAG

IFT TERMD.NOT(CNDTMA27) THN             ; PHASE B TERMINATES THN
    RUN<27>                             ; RUN CANCEL TIMER
END

NOT(CNDTER27+CNDTER28)=.1SCRT17         ; CANCEL OR OVERRIDE TIMER EXPIRED
                                        ; RESETS MOVA DETECTOR FLAG

CNDTER28=+1SCRT18                       ; OVERRIDE TIMER EXPIRED SETS FLAG

1SCRT17=MOVA2DET32                      ; FLAG SET ACTIVATES MOVA1 DET 32

IFT CNDTER26 THN                        ; DELAY TIMER EXPIRE THEN
    RUN<28>                             ; RUN OVERRIDE TIMER
END                                     ; END

IFT TERMD THN                           ; PHASE B TERMINATES RESETS
    FALSE=1SCRT16                       ; PHASE FLAG
END

NOT(CNDTMA28)=.1SCRT18                  ; OVERRIDE TIMER ACTIVE RESETS FLAG

(MODE2 EQL<2>).1SCRT17=+PRVST8           ; PREVENT STAGE 2 IN VA MODE WHILST
                                        ; HOLD FLAG SET
```

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning Timers

Special Conditioning Timers

Timers

0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	0.4	0	31.8	☑	LED Flash	16	60	0	255	☐	MOVA 0 DET 32 - Override
1	2	0	255	☐	AQ Pulse	17	30	0	255	☐	MOVA 1 DET 30 - Backward link
2	2	0	255	☐	EQA Pulse	18	1	0	255	☐	MOVA 1 DET 31 - Delay
3	2	0	255	☐	EQB Pulse	19	2	0	255	☐	MOVA 1 DET 31 - pulse
4	2	0	255	☐	AQ Pulse	20	1	0	255	☐	MOVA 1 DET 32 - Delay
5	2	0	255	☐	EQA Pulse	21	10	0	255	☐	MOVA 1 DET 32 - Cancel
6	2	0	255	☐	EQB Pulse	22	60	0	255	☐	MOVA 1 DET 32 - Override
7	5	0	255	☐	EQA CC Call	23	30	0	255	☐	MOVA 2 DET 30 - Backward link
8	2	0	255	☐	EQA CC Cancel	24	1	0	255	☐	MOVA 2 DET 31 - Delay
9	10	0	255	☐	EQB CC Call	25	2	0	255	☐	MOVA 2 DET 31 - pulse
10	2	0	255	☐	EQB CC Cancel	26	1	0	255	☐	MOVA 2 DET 32 - Delay
11	30	0	255	☐	MOVA 0 DET 30 - Backward link	27	10	0	255	☐	MOVA 2 DET 32 - Cancel
12	1	0	255	☐	MOVA 0 DET 31 - Delay	28	60	0	255	☐	MOVA 2 DET 32 - Override
13	2	0	255	☐	MOVA 0 DET 31 - pulse	29	10	0	255	☐	PED I Link Delay
14	1	0	255	☐	MOVA 0 DET 32 - Delay	30	2	0	255	☐	PED I Link Inhibit Release
15	10	0	255	☐	MOVA 0 DET 32 - Cancel	31		0	255	☐	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Conditioning Timers

Special Conditioning Timers

Timers

32-63

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
32		0	255	☐		48		0	255	☐	
33		0	255	☐		49		0	255	☐	
34		0	255	☐		50		0	255	☐	
35	1	1	5	☐	MIN LAMPS OFF TIMER	51		0	255	☐	
36		0	255	☐		52		0	255	☐	
37		0	255	☐		53		0	255	☐	
38		0	255	☐		54		0	255	☐	
39		0	255	☐		55		0	255	☐	
40		0	255	☐		56		0	255	☐	
41		0	255	☐		57		0	255	☐	
42		0	255	☐		58		0	255	☐	
43		0	255	☐		59		0	255	☐	
44		0	255	☐		60		0	255	☐	
45		0	255	☐		61		0	255	☐	
46		0	255	☐		62		0	255	☐	
47		0	255	☐		63		0	255	☐	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Special Instructions

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Call Cancel

Call Cancel

Unit No.	Input Name	Call Delay	Cancel Delay	Phase Demanded (Unlatched Demand)
0	AQ	5	0	
1	EQA	5	0	
2	EQB	5	0	
3	QA	10	2	
4	QB	10	2	
5	EXITQA	10	2	
6	EXITQB	10	2	
7	AQ	5	2	

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 0

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	BIN1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A1
○	1	1	I	BIN2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A2
○	2	2	I	BIN3	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A3
○	3	3	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A4
○	4	4	I	BX4	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B1
○	5	5	I	BX5	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B2
○	6	6	I	BX6	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B3
○	7	7	I	BSL7	☑	☑	☐		☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 1

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	8	0	I	BSL8	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C1
○	9	1	I	BSL9	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C2
○	10	2	I	DIN1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C3
○	11	3	I	DIN2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C4
○	12	4	I	DX3	☑	☑	☐	☐	☐	A	0	3.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D1
○	13	5	I	DX4	☑	☑	☐	☐	☐	A	0	3.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D2
○	14	6	I	DX5	☑	☑	☐	☐	☐	A	0	3.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D3
○	15	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 2

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	16	0	I	DSL6	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A1
○	17	1	I	DSL7	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A2
○	18	2	I	DSL8	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A3
○	19	3	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A4
○	20	4	I	FIN1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B1
○	21	5	I	FIN2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B2
○	22	6	I	FIN3	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B3
○	23	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 3

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	24	0	I	FX4	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C1
○	25	1	I	FX5	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C2
○	26	2	I	FX6	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C3
○	27	3	I	FX7	☑	☑	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C4
○	28	4	I	FSL8	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D1
○	29	5	I	FSL9	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D2
○	30	6	I	FSL10	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D3
○	31	7	I	FSL11	☑	☑	☐		☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 4

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	32	0	I	AQ	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT3	A1
○	33	1	I	EQA	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT3	A2
○	34	2	I	EQB	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT3	A3
○	35	3	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT3	A4
○	36	4	I	QA	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT3	B1
○	37	5	I	QB	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT3	B2
○	38	6	I	EXITQA	☑	☑	☐	☐	☐	I	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT3	B3
○	39	7	I	EXITQB	☑	☑	☐		☐	I	0	0.0	☐	☐	☐	☐	☐	☑	☐	☐	☐	2 LT3	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 6

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	48	0	I	PBUG18	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-0
○	49	1	I	PBUG19	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-1
○	50	2	I	PBUG20	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-2
○	51	3	I	PBUG21	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-3
○	52	4	I	PBUG22	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-4
○	53	5	I	PBUG23	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-5
○	54	6	I	PBUG24	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-6
○	55	7	I	PBUG25	☑	☐	☐		☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 7

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	56	0	I	ONCG18	☑	☐	☑	☐	☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-8
○	57	1	I	ONCG21	☑	☐	☑	☐	☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-9
○	58	2	I	ONCG22	☑	☐	☑	☐	☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-10
○	59	3	I	ONCG24	☑	☐	☑	☐	☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-11
○	60	4	I	PBUI27	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-12
○	61	5	I	PBUI28	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-13
○	62	6	I	PBUI29	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-14
○	63	7	I	PBUI30	☑	☐	☐		☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 8

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	64	0	I	PBUI31	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-16
○	65	1	I	PBUI32	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-17
○	66	2	I	PBUI33	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-18
○	67	3	I	PBUI34	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-19
○	68	4	I	ONCI27	☑	☐	☑	☐	☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-20
○	69	5	I	ONCI28	☑	☐	☑	☐	☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-21
○	70	6	I	ONCI30	☑	☐	☑	☐	☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-22
○	71	7	I	ONCI33	☑	☐	☑		☐	A	2	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	I-23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 9

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/4
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	72	0	O	LAMPSUP	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-0
○	73	1	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-1
○	74	2	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-2
○	75	3	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-3
○	76	4	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-4
○	77	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-5
○	78	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-6
○	79	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	O-7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 1 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	E	Amber	Phase
31	A	Amber	Phase	15	E	Green	Phase
30	A	Green	Phase	14	F	Red	Phase
29	B	Red	Phase	13	F	Red	Phase
28	B	Red	Phase	12	F	Amber	Phase
27	B	Amber	Phase	11	F	Amber	Phase
26	B	Amber	Phase	10	F	Green	Phase
25	B	Green	Phase	9	F	Green	Phase
24	B	Green	Phase	8	G	Red	Phase
23	C	Red	Phase	7	G	Red	Phase
22	C	Amber	Phase	6	G	Amber	Phase
21	C	Green	Phase	5	G	Amber	Phase
20	D	Red	Phase	4	G	Amber	Phase
19	D	Amber	Phase	3	G	Green	Phase
18	D	Green	Phase	2	G	Green	Phase
17	E	Red	Phase	1	G	Green	Phase

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 2 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	H	Red	Phase	16	N/A	N/A	N/A
31	H	Amber	Phase	15	N/A	N/A	N/A
30	H	Green	Phase	14	N/A	N/A	N/A
29	I	Red	Phase	13	N/A	N/A	N/A
28	I	Red	Phase	12	N/A	N/A	N/A
27	I	Amber	Phase	11	N/A	N/A	N/A
26	I	Amber	Phase	10	N/A	N/A	N/A
25	I	Amber	Phase	9	N/A	N/A	N/A
24	I	Green	Phase	8	N/A	N/A	N/A
23	I	Green	Phase	7	N/A	N/A	N/A
22	I	Green	Phase	6	N/A	N/A	N/A
21	N/A	N/A	N/A	5	N/A	N/A	N/A
20	N/A	N/A	N/A	4	N/A	N/A	N/A
19	N/A	N/A	N/A	3	N/A	N/A	N/A
18	N/A	N/A	N/A	2	N/A	N/A	N/A
17	N/A	N/A	N/A	1	N/A	N/A	N/A

Works Order :
EM Number : NN0001
Engineer : Alex Moody / David Vernon
Intersection : A43 Brackley Road / Abthorpe Roundabout, Towcester

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)	5	5	5	5
	InActive (Hrs)				
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	255
InActive (Hrs)	0	255

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands
- 2.6 Pelicans, Puffins and Toucans
  - 2.6.1 Phase - On Crossing and Kerbside Detector Definitions
  - 2.6.2 Stream - Pelican/Puffin/Toucan Times
  - 2.6.3 Phase - Pelican, Puffin and Toucan Times
  - 2.6.4 IO and Link - Pelican/Puffin/Toucan Times
  - 2.6.5 Pelican, Puffin, Toucan Pushbutton/Kerbside Associations

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays
- 3.4 Intergreen Delays (No configuration data to print)

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 UTC and MOVA
  - 4.3.1 MOVA Stages
  - 4.3.2 UTC and MOVA Detectors
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral LMU Onboard Sensors
  - 4.5.3 Integral LMU External Sensors for Regulatory Signs
  - 4.5.4 LMU Sensor Load Types
  - 4.5.5 RLM Additional Intergreens
  - 4.5.6 RLM Phase Inhibits
- 4.6 Hurry Call
- 4.7 Manual
  - 4.7.1 Manual Panel
  - 4.7.2 Manual Mode - Optional Phases Appearance (No configuration data to print)
- 4.8 Reserve State

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives (ELV Controllers)
- 7.4 I/O - DFM Group Timings

APPENDIX C

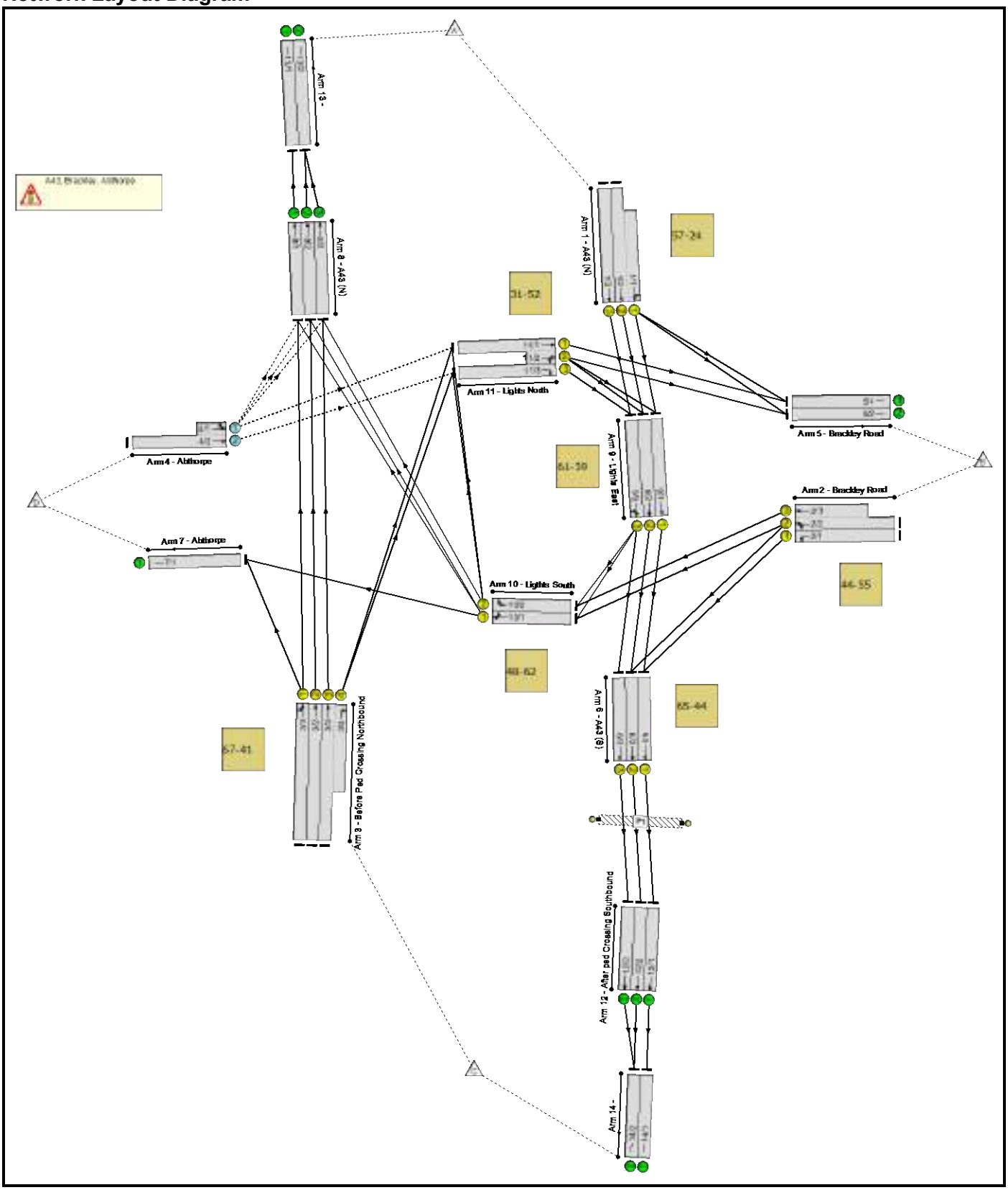
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 15
Location:	Abthorpe Road / A43, Towcester Bypass (north) / Brackley Road / A43, Towcester Bypass (south)
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

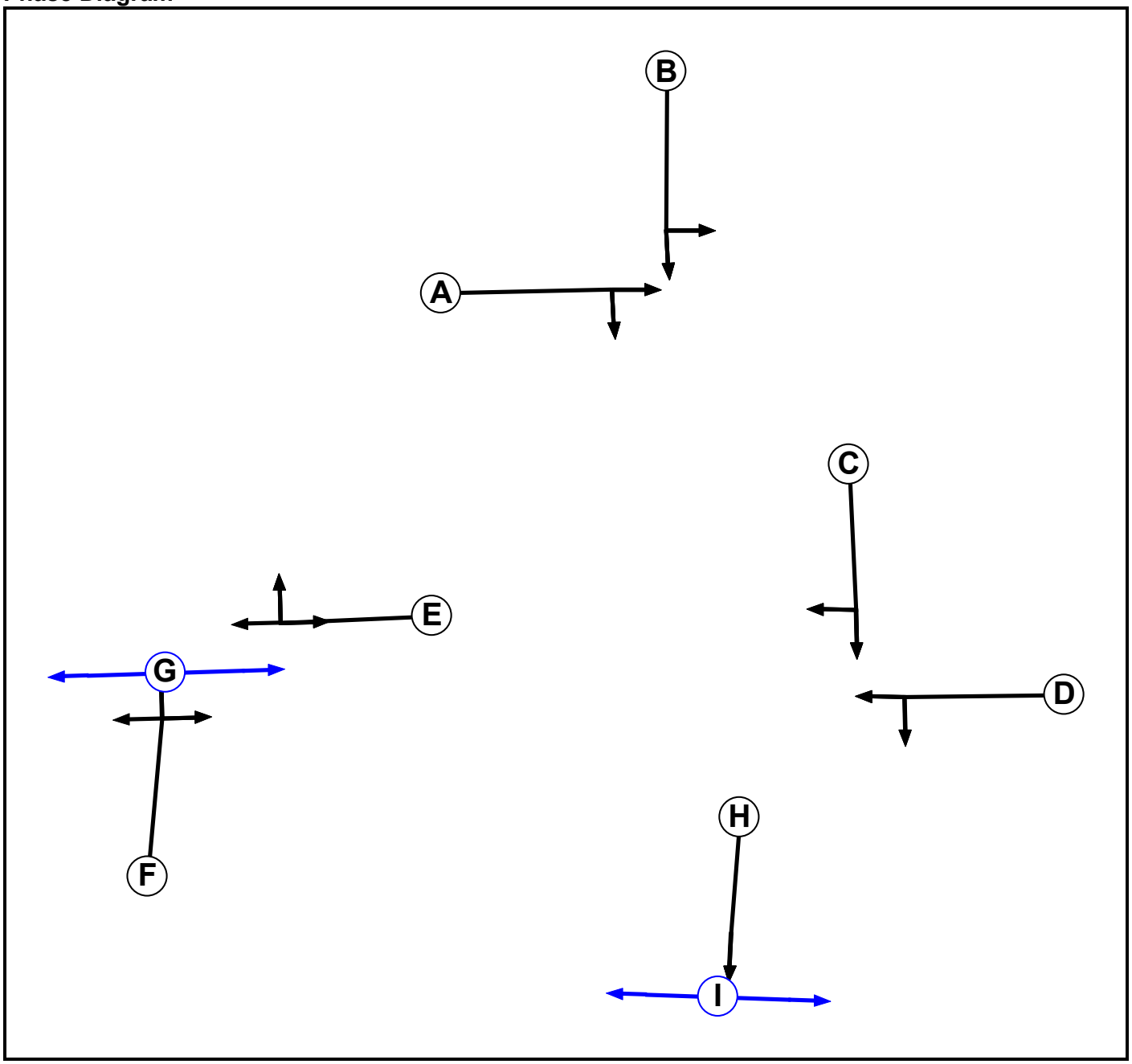
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	4
D	Traffic	2		7	7
E	Traffic	3		7	2
F	Traffic	3		7	7
G	Pedestrian	3		7	7
H	Traffic	4		7	7
I	Pedestrian	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

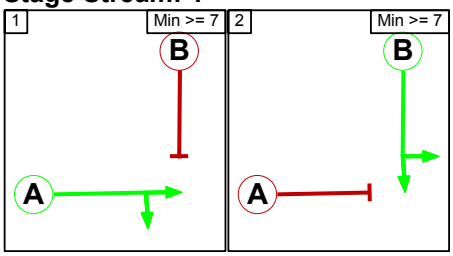
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I
A		5	-	-	-	-	-	-	-
B	7		-	-	-	-	-	-	-
C	-	-		5	-	-	-	-	-
D	-	-	6		-	-	-	-	-
E	-	-	-	-		5	-	-	-
F	-	-	-	-	7		7	-	-
G	-	-	-	-	-	7		-	-
H	-	-	-	-	-	-	-		7
I	-	-	-	-	-	-	-	7	

Phases in Stage

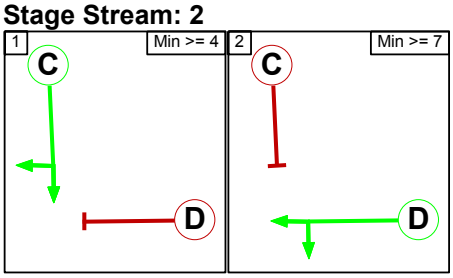
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E G
3	2	F
4	1	H
4	2	I

Stage Diagram

Stage Stream: 1

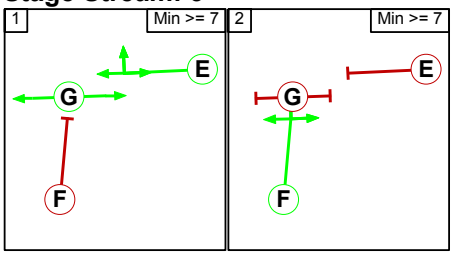


Stage Stream: 2

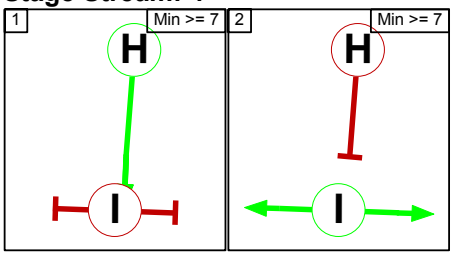


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	3	3

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	E	Losing	5	5

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		5
	2	7	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		8
	2	6	

Full Input Data And Results

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		10
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A43, Brackley, Abthorpe

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
4/1 (Abthorpe)	8/1 (Left)	1000	0	10/1	0.33	To 8/1 (Right) To 8/2 (Right)	-	-	-	-	-
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
				10/2	0.33	To 8/3 (Right)					
	8/2 (Left)	1000	0	10/1	0.33	To 8/1 (Right) To 8/2 (Right)					
				10/2	0.33	To 8/3 (Right)					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
	8/3 (Left)	1000	0	10/1	0.33	To 8/1 (Right) To 8/2 (Right)					
				10/2	0.33	To 8/3 (Right)					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
	11/1 (Ahead)	1000	0	10/1	0.33	To 8/1 (Right) To 8/2 (Right)					
				10/2	0.33	All					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
				3/4	0.33	All					
4/2 (Abthorpe)	11/3 (Ahead)	1000	0	10/1	0.33	To 8/1 (Right) To 8/2 (Right)	-	-	-	-	-
				10/2	0.33	All					

Full Input Data And Results

				3/1	0.33	To 8/1 (Ahead)						
				3/2	0.33	All						
				3/3	0.33	All						
				3/4	0.33	All						

Full Input Data And Results

Lane Input Data

Junction: A43, Brackley, Abthorpe												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A43 (N))	U	B	2	3	27.8	User	1800	-	-	-	-	-
1/2 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Brackley Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
2/2 (Brackley Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
2/3 (Brackley Road)	U	D	2	3	8.7	User	1800	-	-	-	-	-
3/1 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/2 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/3 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/4 (Before Ped Crossing Northbound)	U	F	2	3	10.4	User	1800	-	-	-	-	-
4/1 (Abthorpe)	O		2	3	3.5	Geom	-	3.75	0.00	Y	Arm 8 Left	28.00
											Arm 11 Ahead	78.00
4/2 (Abthorpe)	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 11 Ahead	78.00
5/1 (Brackley Road)	U		2	3	60.0	User	1900	-	-	-	-	-
5/2 (Brackley Road)	U		2	3	60.0	User	1900	-	-	-	-	-
6/1 (A43 (S))	U	H	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 12 Ahead	Inf
6/2 (A43 (S))	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	Inf
6/3 (A43 (S))	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	Inf
7/1 (Abthorpe)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

8/1 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
8/2 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
8/3 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
9/1 (Lights East)	U	C	2	3	1.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead	78.00
9/2 (Lights East)	U	C	2	3	1.0	User	1900	-	-	-	-	-
9/3 (Lights East)	U	C	2	3	1.0	Geom	-	5.00	0.00	Y	Arm 6 Ahead	78.00
											Arm 10 Right	28.00
10/1 (Ligthts South)	U	E	2	3	3.5	User	1900	-	-	-	-	-
10/2 (Ligthts South)	U	E	2	3	3.5	User	1900	-	-	-	-	-
11/1 (Lights North)	U	A	2	3	5.2	User	1900	-	-	-	-	-
11/2 (Lights North)	U	A	2	3	3.5	User	1900	-	-	-	-	-
11/3 (Lights North)	U	A	2	3	5.2	User	1900	-	-	-	-	-
12/1 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
12/2 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
12/3 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1	U		2	3	60.0	Inf	-	-	-	-	-	-
14/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Base 2017 AM'	08:00	09:00	01:00	
2: 'Base 2017 PM'	17:00	18:00	01:00	
3: '2021 DM AM'	08:00	09:00	01:00	
4: '2021 DM PM'	17:00	18:00	01:00	
5: '2021 DS AM'	08:00	09:00	01:00	
6: '2021 DS PM'	17:00	18:00	01:00	
7: '2031 DM AM'	08:00	09:00	01:00	
8: '2031 DM PM'	17:00	18:00	01:00	
9: '2031 DS AM'	08:00	09:00	01:00	
10: '2031 DS PM'	17:00	18:00	01:00	
11: '2021 DM + 2021 DS 20% AM'	08:00	09:00	01:00	F3 + F13
12: '2021 DM + 2021 DS 20% PM'	17:00	18:00	01:00	F4 + F14

Scenario 1: 'Base 2017 AM' (FG1: 'Base 2017 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	108	1890	95	2093
	B	230	0	268	99	597
	C	1220	186	6	34	1446
	D	122	197	191	0	510
	Tot.	1572	491	2355	228	4646

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: Base 2017 AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	736
1/2 (with short)	1446(In) 710(Out)
1/3	647
2/1	156
2/2 (with short)	441(In) 224(Out)
2/3 (short)	217
3/1	419
3/2	419
3/3 (with short)	608(In) 416(Out)
3/4 (short)	192
4/1 (short)	348
4/2 (with short)	510(In) 162(Out)
5/1	281
5/2	210
6/1	802
6/2	835
6/3	718
7/1	228
8/1	459
8/2	461
8/3	652
9/1	646
9/2	723
9/3	813
10/1	207
10/2	217
11/1 (with short)	414(In) 231(Out)
11/2 (short)	183
11/3	166
12/1	802
12/2	835
12/3	718
13/1	459
13/2	1113
14/1	802

Full Input Data And Results

14/2	1553

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	35.1 %	1930	1930
				Arm 11 Ahead	78.00	64.9 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

Full Input Data And Results

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	88.3 %	2067	2067
				Arm 10 Right	28.00	11.7 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'Base 2017 PM' (FG2: 'Base 2017 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	235	1250	91	1576
	B	155	0	140	192	487
	C	1829	260	6	36	2131
	D	118	127	60	0	305
	Tot.	2102	622	1456	319	4499

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: Base 2017 PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	537
1/2 (with short)	1053(In) 516(Out)
1/3	523
2/1	140
2/2 (with short)	347(In) 192(Out)
2/3 (short)	155
3/1	637
3/2	636
3/3 (with short)	858(In) 592(Out)
3/4 (short)	266
4/1 (short)	245
4/2 (with short)	305(In) 60(Out)
5/1	311
5/2	311
6/1	442
6/2	516
6/3	498
7/1	319
8/1	641
8/2	672
8/3	789
9/1	302
9/2	516
9/3	589
10/1	283
10/2	155
11/1 (with short)	387(In) 194(Out)
11/2 (short)	193
11/3	66
12/1	442
12/2	516
12/3	498
13/1	641
13/2	1461
14/1	442

Full Input Data And Results

14/2	1014

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	48.2 %	1921	1921
				Arm 11 Ahead	78.00	51.8 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

Full Input Data And Results

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	84.6 %	2064	2064
				Arm 10 Right	28.00	15.4 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	94	2915	88	3097
	B	269	0	122	76	467
	C	1787	172	6	133	2098
	D	126	0	338	0	464
	Tot.	2182	266	3381	297	6126

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	996
1/2 (with short)	1967(In) 971(Out)
1/3	1130
2/1	122
2/2 (with short)	345(In) 149(Out)
2/3 (short)	196
3/1	652
3/2	652
3/3 (with short)	794(In) 616(Out)
3/4 (short)	178
4/1 (short)	287
4/2 (with short)	464(In) 177(Out)
5/1	198
5/2	68
6/1	1082
6/2	1079
6/3	1220
7/1	297
8/1	681
8/2	681
8/3	820
9/1	960
9/2	1079
9/3	1308
10/1	237
10/2	196
11/1 (with short)	338(In) 155(Out)
11/2 (short)	183
11/3	178
12/1	1082
12/2	1079
12/3	1220
13/1	681
13/2	1501
14/1	1082

Full Input Data And Results

14/2	2299

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	43.9 %	1924	1924
				Arm 11 Ahead	78.00	56.1 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	93.3 %	2070	2070
				Arm 10 Right	28.00	6.7 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	201	2264	25	2490
	B	0	0	110	176	286
	C	3195	246	6	311	3758
	D	2	25	118	0	145
	Tot.	3197	472	2498	512	6679

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	830
1/2 (with short)	1581(In) 751(Out)
1/3	909
2/1	110
2/2 (with short)	176(In) 176(Out)
2/3 (short)	0
3/1	1216
3/2	1210
3/3 (with short)	1332(In) 1080(Out)
3/4 (short)	252
4/1 (short)	85
4/2 (with short)	145(In) 60(Out)
5/1	241
5/2	231
6/1	741
6/2	807
6/3	950
7/1	512
8/1	907
8/2	1210
8/3	1080
9/1	631
9/2	807
9/3	975
10/1	201
10/2	0
11/1 (with short)	329(In) 150(Out)
11/2 (short)	179
11/3	66
12/1	741
12/2	807
12/3	950
13/1	907
13/2	2290
14/1	741

Full Input Data And Results

14/2	1757

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left Arm 11 Ahead	28.00 78.00	2.4 % 97.6 %	1951	1951
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	97.4 %	2073	2073
				Arm 10 Right	28.00	2.6 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	94	3035	103	3232
	B	271	0	77	82	430
	C	1850	172	6	130	2158
	D	145	0	340	0	485
	Tot.	2266	266	3458	315	6305

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2021 DS AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	1041
1/2 (with short)	2067(In) 1026(Out)
1/3	1165
2/1	77
2/2 (with short)	353(In) 155(Out)
2/3 (short)	198
3/1	673
3/2	672
3/3 (with short)	813(In) 635(Out)
3/4 (short)	178
4/1 (short)	316
4/2 (with short)	485(In) 169(Out)
5/1	193
5/2	73
6/1	1111
6/2	1115
6/3	1232
7/1	315
8/1	711
8/2	714
8/3	841
9/1	1034
9/2	1115
9/3	1335
10/1	258
10/2	198
11/1 (with short)	348(In) 148(Out)
11/2 (short)	200
11/3	170
12/1	1111
12/2	1115
12/3	1232
13/1	711
13/2	1555
14/1	1111

Full Input Data And Results

14/2	2347

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	45.9 %	1923	1923
				Arm 11 Ahead	78.00	54.1 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

Full Input Data And Results

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	92.3 %	2070	2070
				Arm 10 Right	28.00	7.7 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	203	2467	35	2705
	B	0	0	112	181	293
	C	3203	248	6	277	3734
	D	3	26	122	0	151
	Tot.	3206	477	2707	493	6883

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2021 DS PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	882
1/2 (with short)	1697(In) 815(Out)
1/3	1008
2/1	112
2/2 (with short)	181(In) 181(Out)
2/3 (short)	0
3/1	1207
3/2	1203
3/3 (with short)	1324(In) 1070(Out)
3/4 (short)	254
4/1 (short)	84
4/2 (with short)	151(In) 67(Out)
5/1	254
5/2	223
6/1	802
6/2	859
6/3	1046
7/1	493
8/1	932
8/2	1203
8/3	1071
9/1	690
9/2	859
9/3	1081
10/1	216
10/2	0
11/1 (with short)	329(In) 172(Out)
11/2 (short)	157
11/3	73
12/1	802
12/2	859
12/3	1046
13/1	932
13/2	2274
14/1	802

Full Input Data And Results

14/2	1905

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	3.6 %	1950	1950
				Arm 11 Ahead	78.00	96.4 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

Full Input Data And Results

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	96.8 %	2073	2073
				Arm 10 Right	28.00	3.2 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 9: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	259	3383	82	3724
	B	318	0	113	114	545
	C	2041	232	6	118	2397
	D	167	0	198	0	365
	Tot.	2526	491	3700	314	7031

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DM AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	1198
1/2 (with short)	2333(In) 1135(Out)
1/3	1391
2/1	113
2/2 (with short)	432(In) 199(Out)
2/3 (short)	233
3/1	738
3/2	739
3/3 (with short)	920(In) 682(Out)
3/4 (short)	238
4/1 (short)	232
4/2 (with short)	365(In) 133(Out)
5/1	271
5/2	220
6/1	1097
6/2	1158
6/3	1445
7/1	314
8/1	794
8/2	796
8/3	936
9/1	984
9/2	1158
9/3	1527
10/1	281
10/2	233
11/1 (with short)	300(In) 142(Out)
11/2 (short)	158
11/3	136
12/1	1097
12/2	1158
12/3	1445
13/1	794
13/2	1732
14/1	1097

Full Input Data And Results

14/2	2603

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	72.0 %	1906	1906
				Arm 11 Ahead	78.00	28.0 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	94.6 %	2071	2071
				Arm 10 Right	28.00	5.4 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	277	2524	36	2837
	B	0	0	111	215	326
	C	3169	253	6	222	3650
	D	0	35	115	0	150
	Tot.	3169	565	2756	473	6963

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DM PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	921
1/2 (with short)	1756(In) 835(Out)
1/3	1081
2/1	111
2/2 (with short)	215(In) 215(Out)
2/3 (short)	0
3/1	1177
3/2	1172
3/3 (with short)	1301(In) 1042(Out)
3/4 (short)	259
4/1 (short)	85
4/2 (with short)	150(In) 65(Out)
5/1	304
5/2	261
6/1	773
6/2	867
6/3	1116
7/1	473
8/1	955
8/2	1172
8/3	1042
9/1	662
9/2	867
9/3	1152
10/1	251
10/2	0
11/1 (with short)	338(In) 176(Out)
11/2 (short)	162
11/3	71
12/1	773
12/2	867
12/3	1116
13/1	955
13/2	2214
14/1	773

Full Input Data And Results

14/2	1983

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	0.0 %	1952	1952
				Arm 11 Ahead	78.00	100.0 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	96.9 %	2073	2073
				Arm 10 Right	28.00	3.1 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 11: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	353	3385	98	3836
	B	240	0	160	104	504
	C	1873	232	7	146	2258
	D	147	0	238	0	385
	Tot.	2260	585	3790	348	6983

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	1233
1/2 (with short)	2371(In) 1138(Out)
1/3	1465
2/1	135
2/2 (with short)	369(In) 172(Out)
2/3 (short)	197
3/1	690
3/2	689
3/3 (with short)	879(In) 640(Out)
3/4 (short)	239
4/1 (short)	277
4/2 (with short)	385(In) 108(Out)
5/1	344
5/2	241
6/1	1097
6/2	1215
6/3	1478
7/1	348
8/1	705
8/2	708
8/3	847
9/1	962
9/2	1190
9/3	1576
10/1	245
10/2	197
11/1 (with short)	366(In) 169(Out)
11/2 (short)	197
11/3	111
12/1	1097
12/2	1215
12/3	1478
13/1	705
13/2	1555
14/1	1097

Full Input Data And Results

14/2	2693

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	53.1 %	1918	1918
				Arm 11 Ahead	78.00	46.9 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	93.8 %	2071	2071
				Arm 10 Right	28.00	6.2 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 12: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	293	2734	31	3058
	B	0	0	118	193	311
	C	3214	248	6	258	3726
	D	4	44	99	0	147
	Tot.	3218	585	2957	482	7242

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	995
1/2 (with short)	1918(In) 923(Out)
1/3	1140
2/1	118
2/2 (with short)	193(In) 193(Out)
2/3 (short)	0
3/1	1204
3/2	1200
3/3 (with short)	1322(In) 1068(Out)
3/4 (short)	254
4/1 (short)	114
4/2 (with short)	147(In) 33(Out)
5/1	303
5/2	282
6/1	876
6/2	933
6/3	1148
7/1	482
8/1	949
8/2	1200
8/3	1069
9/1	758
9/2	933
9/3	1179
10/1	224
10/2	0
11/1 (with short)	358(In) 159(Out)
11/2 (short)	199
11/3	39
12/1	876
12/2	933
12/3	1148
13/1	949
13/2	2269
14/1	876

Full Input Data And Results

14/2	2081

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	3.5 %	1950	1950
				Arm 11 Ahead	78.00	96.5 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
5/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

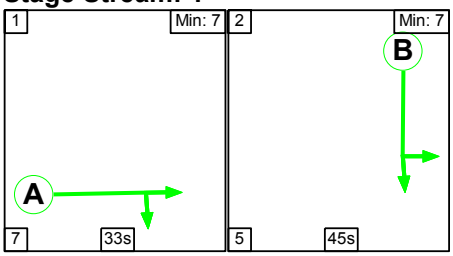
Full Input Data And Results

9/1 (Lights East)	4.00	0.00	Y	Arm 6 Ahead	78.00	100.0 %	1977	1977
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East)	5.00	0.00	Y	Arm 6 Ahead	78.00	97.4 %	2073	2073
				Arm 10 Right	28.00	2.6 %		
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

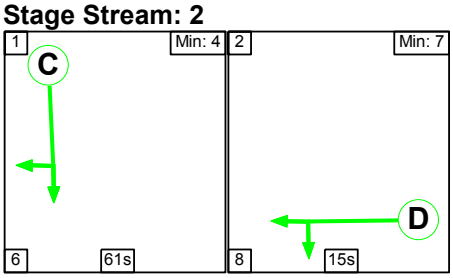
Scenario 1: 'Base 2017 AM' (FG1: 'Base 2017 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

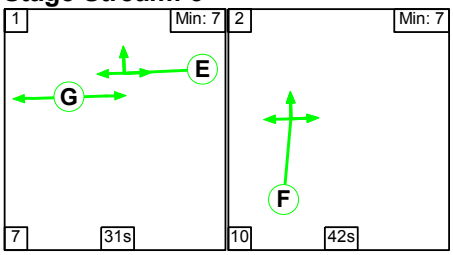


Stage Stream: 2

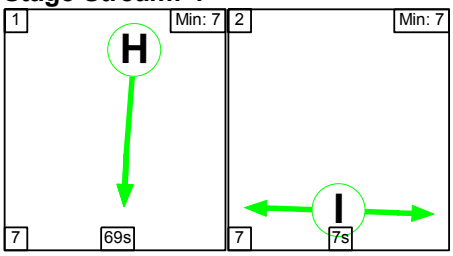


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	33	45
Change Point	0	40

Stage Stream: 2

Stage	1	2
Duration	61	15
Change Point	42	19

Stage Stream: 3

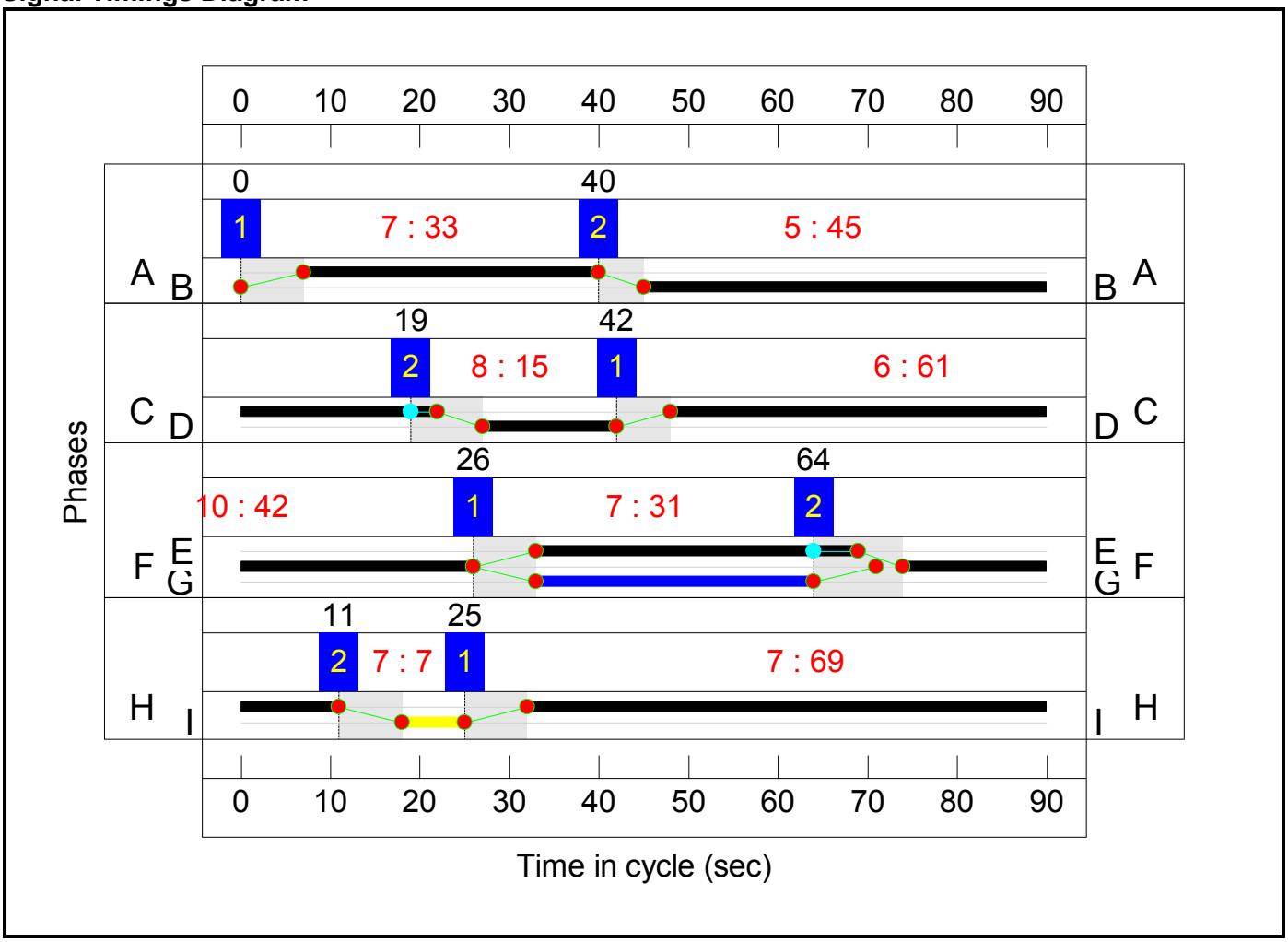
Stage	1	2
Duration	31	42
Change Point	26	64

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	25	11

Full Input Data And Results

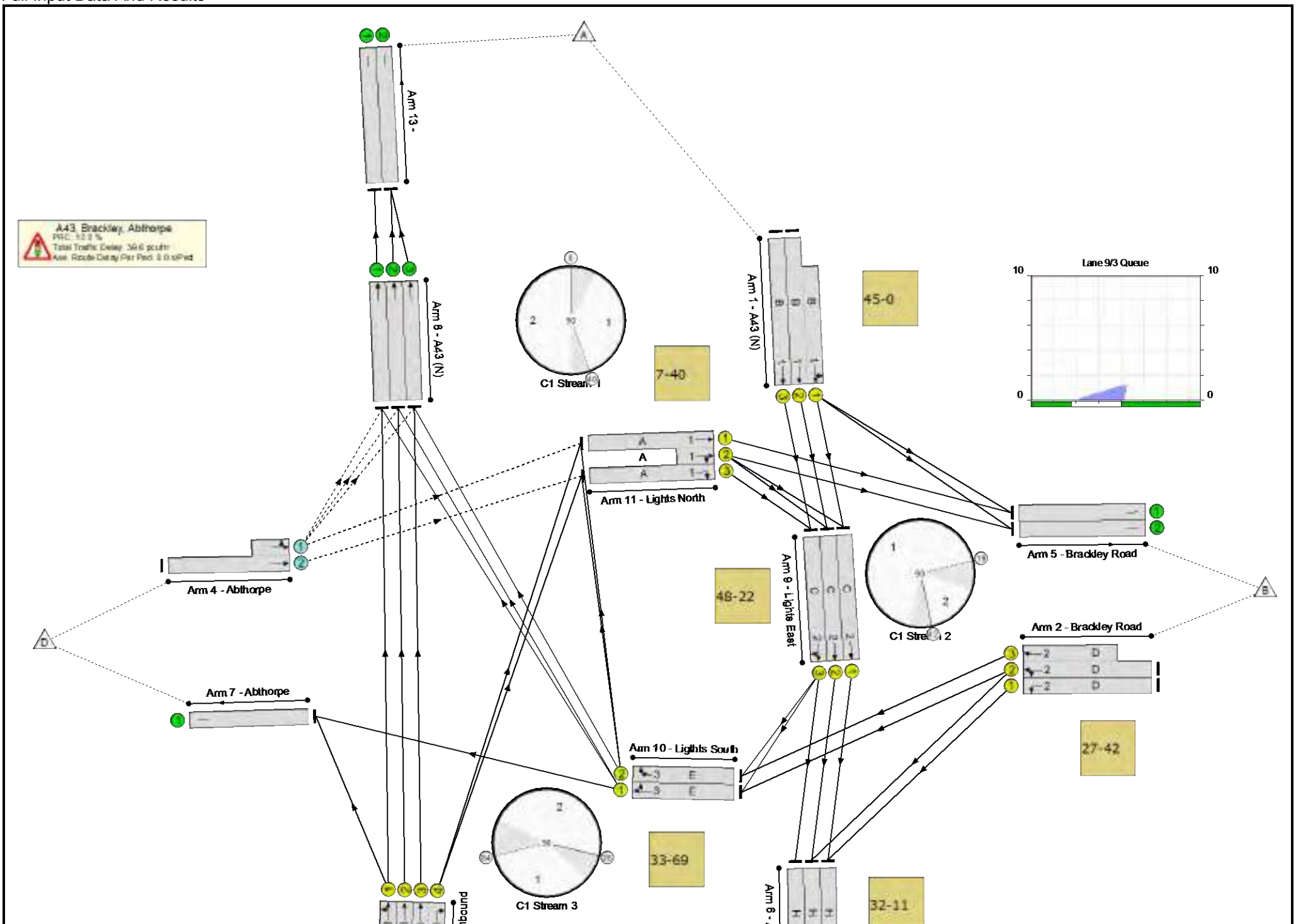
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.3%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.3%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	45	-	1446	1800:1800	884+916	80.3 : 80.3%
1/3	A43 (N) Ahead	U	1	N/A	B		1	45	-	647	1800	920	70.3%
2/1	Brackley Road Left	U	2	N/A	D		1	15	-	156	1800	320	48.8%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	15	-	441	1800:1800	320+317	70.0 : 68.4%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	42	-	419	1800	860	48.7%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	42	-	419	1800	860	48.7%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	42	-	608	1800:1800	726+335	57.3 : 57.3%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	510	1977:1930	289+622	56.0 : 56.0%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	281	1900	1900	14.8%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	210	1900	1900	11.1%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	802	1990	1548	51.8%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	835	2105	1637	51.0%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	718	2105	1637	43.9%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	228	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	459	1990	1990	23.1%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	461	1990	1990	23.2%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	652	1990	1990	32.8%
9/1	Lights East Ahead	U	2	N/A	C		1	64	-	646	1977	1428	45.2%
9/2	Lights East Ahead	U	2	N/A	C		1	64	-	723	1900	1372	52.7%
9/3	Lights East Ahead Right	U	2	N/A	C		1	64	-	813	2067	1493	54.5%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	36	-	207	1900	781	26.5%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	36	-	217	1900	781	27.8%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	33	-	414	1900:1900	466+369	49.6 : 49.6%
11/3	Lights North Right	U	1	N/A	A		1	33	-	166	1900	718	23.1%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	802	1965	1965	40.8%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	835	1965	1965	42.5%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	718	1965	1965	36.5%
13/1		U	N/A	N/A	-		-	-	-	459	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1113	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1553	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**907**	**113**	**0**	**26.8**	**12.7**	**0.0**	**39.6**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**907**	**113**	**0**	**26.8**	**12.7**	**0.0**	**39.6**	**-**	**-**	**-**	**-**
1/2+1/1	1446	1446	-	-	-	7.2	2.0	-	9.2	23.0	15.1	2.0	17.1
1/3	647	647	-	-	-	3.0	1.2	-	4.2	23.3	12.2	1.2	13.4
2/1	156	156	-	-	-	1.4	0.5	-	1.9	44.2	3.5	0.5	4.0
2/2+2/3	441	441	-	-	-	4.2	1.1	-	5.4	43.8	5.2	1.1	6.3
3/1	419	419	-	-	-	1.9	0.5	-	2.3	20.1	7.1	0.5	7.6
3/2	419	419	-	-	-	1.9	0.5	-	2.3	20.1	7.1	0.5	7.6
3/3+3/4	608	608	-	-	-	2.6	0.7	-	3.2	19.2	7.0	0.7	7.7
4/2+4/1	510	510	907	113	0	0.4	0.6	-	1.0	7.2	3.7	0.6	4.3
5/1	281	281	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	210	210	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	802	802	-	-	-	0.1	0.5	-	0.7	3.0	1.2	0.5	1.8
6/2	835	835	-	-	-	0.1	0.5	-	0.6	2.8	0.8	0.5	1.3
6/3	718	718	-	-	-	0.5	0.4	-	0.9	4.3	3.3	0.4	3.7
7/1	228	228	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	459	459	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
8/2	461	461	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
8/3	652	652	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
9/1	646	646	-	-	-	0.0	0.4	-	0.4	2.5	0.2	0.4	0.6
9/2	723	723	-	-	-	0.0	0.6	-	0.6	2.9	0.1	0.6	0.7
9/3	813	813	-	-	-	0.2	0.6	-	0.8	3.5	1.2	0.6	1.8
10/1	207	207	-	-	-	0.7	0.2	-	0.9	15.6	2.4	0.2	2.6
10/2	217	217	-	-	-	0.0	0.2	-	0.2	3.2	0.2	0.2	0.4
11/1+11/2	414	414	-	-	-	1.7	0.5	-	2.2	19.3	4.5	0.5	5.0

Full Input Data And Results

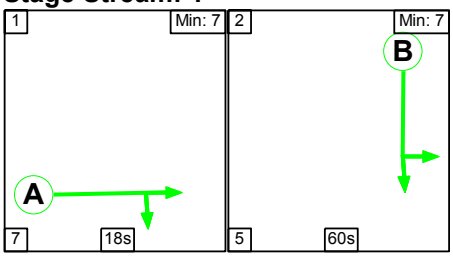
11/3	166	166	-	-	-	0.8	0.2	-	0.9	20.6	2.7	0.2	2.8
12/1	802	802	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
12/2	835	835	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
12/3	718	718	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
13/1	459	459	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1113	1113	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1553	1553	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	12.0	Total Delay for Signalled Lanes (pcuHr):	16.61	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	28.6	Total Delay for Signalled Lanes (pcuHr):	9.08	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	57.2	Total Delay for Signalled Lanes (pcuHr):	9.01	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	73.7	Total Delay for Signalled Lanes (pcuHr):	2.16	Cycle Time (s):	90
	PRC Over All Lanes (%):	12.0	Total Delay Over All Lanes(pcuHr):	39.57		

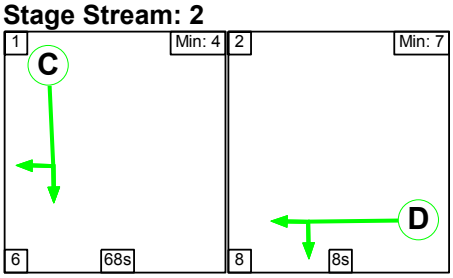
Full Input Data And Results
Scenario 2: 'Base 2017 PM' (FG2: 'Base 2017 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

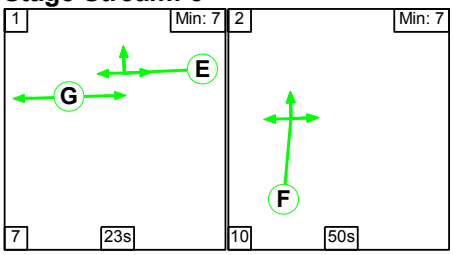
Stage Stream: 1



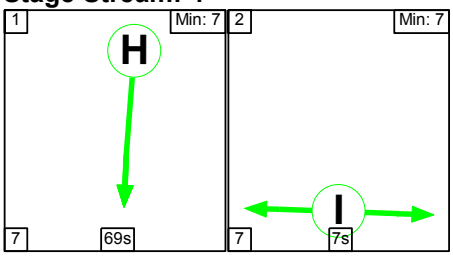
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	60
Change Point	0	25

Stage Stream: 2

Stage	1	2
Duration	68	8
Change Point	0	74

Stage Stream: 3

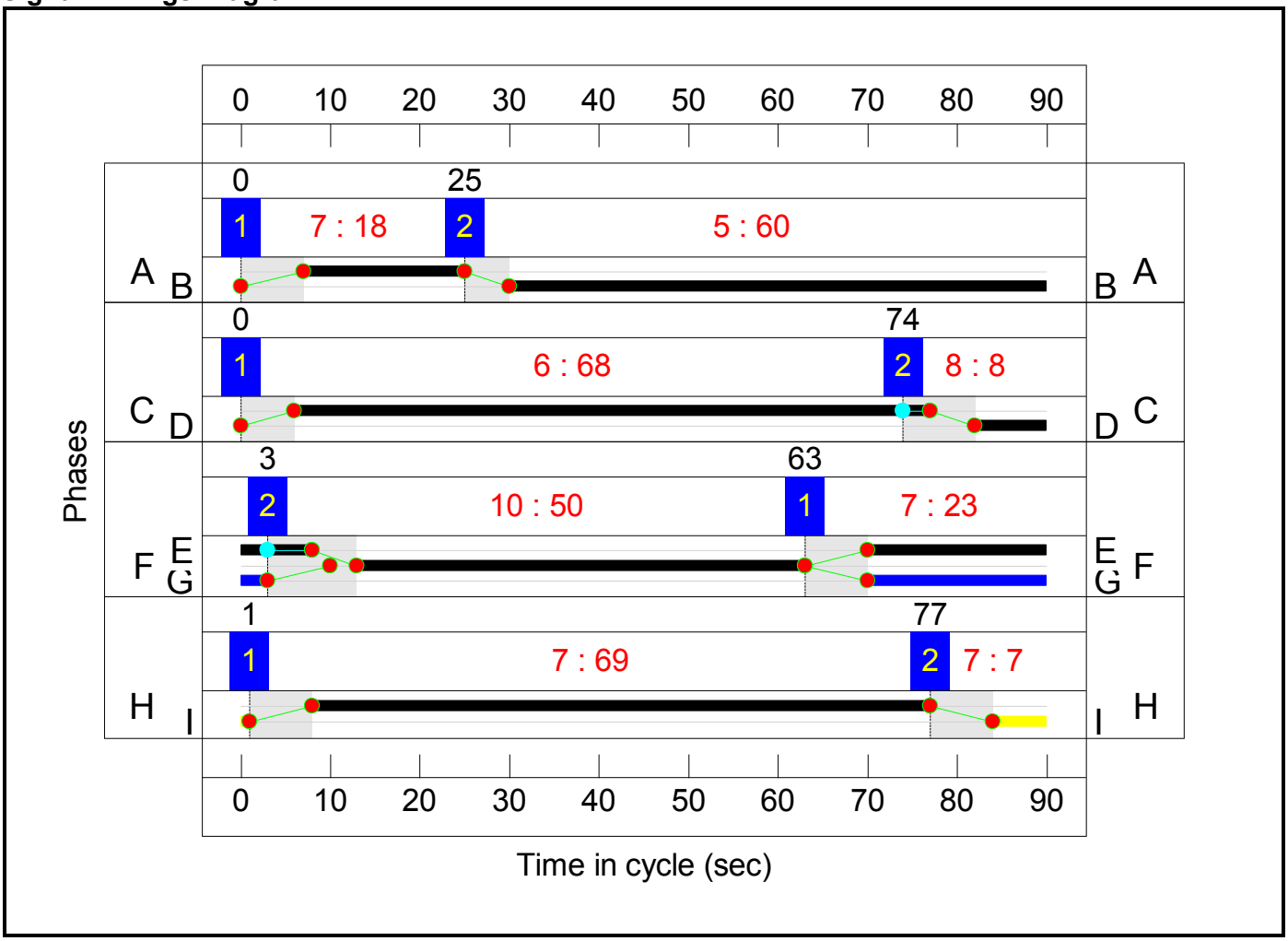
Stage	1	2
Duration	23	50
Change Point	63	3

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	1	77

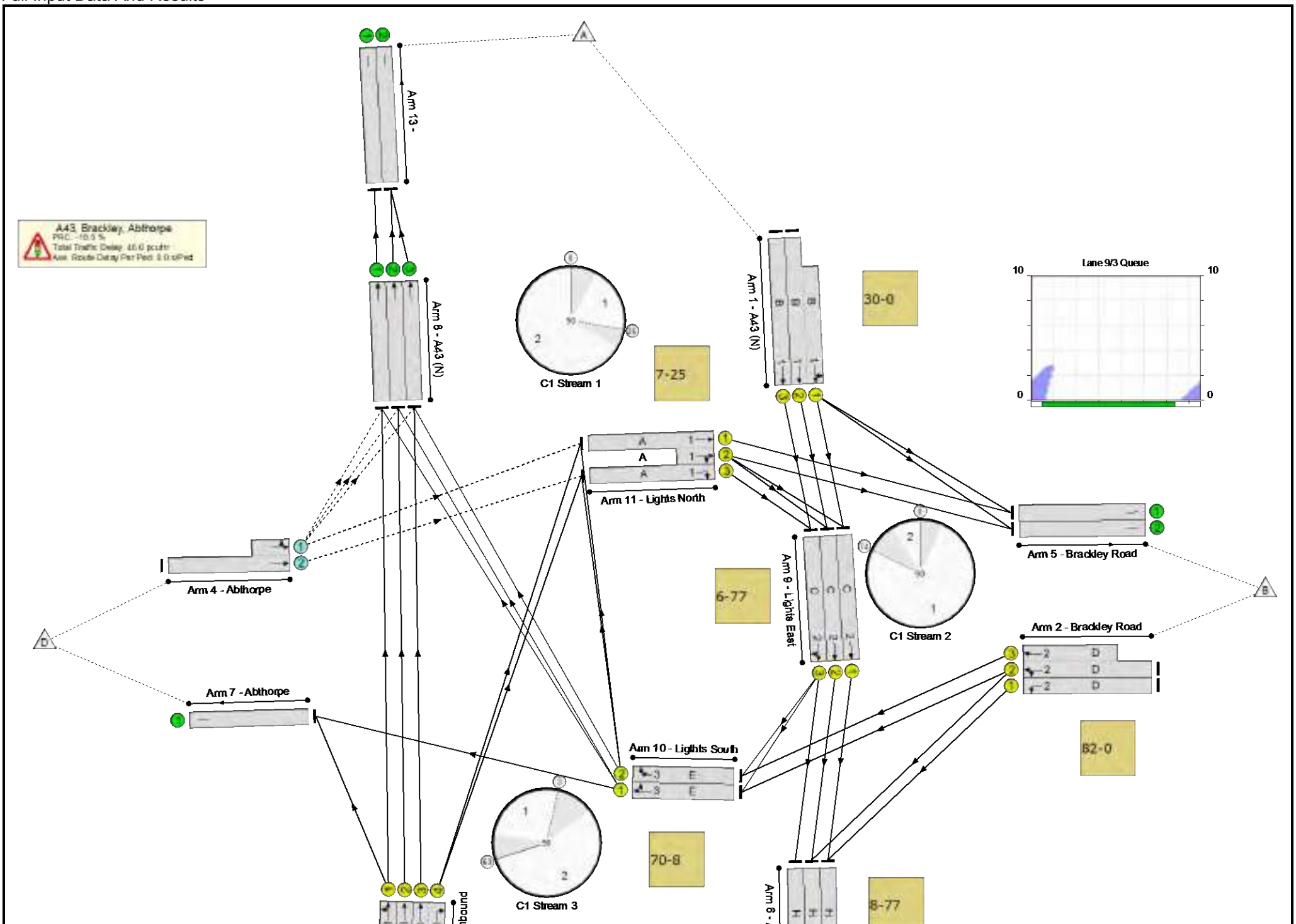
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.7%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.7%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	60	-	1053	1800:1800	882+918	58.5 : 58.5%
1/3	A43 (N) Ahead	U	1	N/A	B		1	60	-	523	1800	1220	42.9%
2/1	Brackley Road Left	U	2	N/A	D		1	8	-	140	1800	180	77.8%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	8	-	347	1800:1800	180+180	106.7 : 86.1%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	50	-	637	1800	1020	62.5%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	50	-	636	1800	1020	62.4%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	50	-	858	1800:1800	839+377	70.5 : 70.5%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	305	1977:1921	121+494	49.6 : 49.6%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	311	1900	1900	16.4%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	311	1900	1900	16.4%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	442	1990	1548	28.6%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	516	2105	1637	31.5%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	498	2105	1637	30.4%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	641	1990	1990	32.2%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	672	1990	1990	33.8%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	789	1990	1990	39.6%
9/1	Lights East Ahead	U	2	N/A	C		1	71	-	302	1977	1582	19.1%
9/2	Lights East Ahead	U	2	N/A	C		1	71	-	516	1900	1520	33.9%
9/3	Lights East Ahead Right	U	2	N/A	C		1	71	-	589	2064	1651	35.7%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	28	-	283	1900	612	44.3%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	28	-	155	1900	612	25.3%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	18	-	387	1900:1900	273+271	71.2 : 71.2%
11/3	Lights North Right	U	1	N/A	A		1	18	-	66	1900	401	16.5%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	442	1965	1965	22.5%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	516	1965	1965	26.3%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	498	1965	1965	25.3%
13/1		U	N/A	N/A	-		-	-	-	641	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1461	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1014	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**489**	**121**	**0**	**22.6**	**23.3**	**0.0**	**46.0**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**489**	**121**	**0**	**22.6**	**23.3**	**0.0**	**46.0**	**-**	**-**	**-**	**-**
1/2+1/1	1053	1053	-	-	-	1.9	0.7	-	2.6	9.0	6.1	0.7	6.8
1/3	523	523	-	-	-	1.0	0.4	-	1.3	9.2	5.8	0.4	6.2
2/1	140	140	-	-	-	1.5	1.6	-	3.2	81.2	3.4	1.6	5.0
2/2+2/3	347	335	-	-	-	4.2	12.6	-	16.8	174.6	5.0	12.6	17.6
3/1	637	637	-	-	-	2.3	0.8	-	3.1	17.8	10.6	0.8	11.4
3/2	636	636	-	-	-	2.3	0.8	-	3.1	17.7	10.6	0.8	11.4
3/3+3/4	858	858	-	-	-	2.8	1.2	-	4.0	16.8	9.5	1.2	10.7
4/2+4/1	305	305	489	121	0	0.6	0.5	-	1.1	12.8	3.7	0.5	4.2
5/1	311	311	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	311	311	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	442	442	-	-	-	0.5	0.2	-	0.7	6.0	5.6	0.2	5.8
6/2	516	516	-	-	-	0.2	0.2	-	0.4	2.9	1.0	0.2	1.2
6/3	498	498	-	-	-	0.2	0.2	-	0.4	2.7	0.8	0.2	1.0
7/1	307	307	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	641	641	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
8/2	672	672	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/3	789	789	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
9/1	302	302	-	-	-	0.2	0.1	-	0.3	3.5	1.6	0.1	1.7
9/2	516	516	-	-	-	0.3	0.3	-	0.6	4.1	2.8	0.3	3.1
9/3	589	589	-	-	-	0.3	0.3	-	0.6	3.7	2.8	0.3	3.1
10/1	271	271	-	-	-	0.8	0.4	-	1.2	15.4	2.2	0.4	2.6
10/2	155	155	-	-	-	0.1	0.2	-	0.3	5.9	0.1	0.2	0.3
11/1+11/2	387	387	-	-	-	2.9	1.2	-	4.1	37.9	3.1	1.2	4.3

Full Input Data And Results

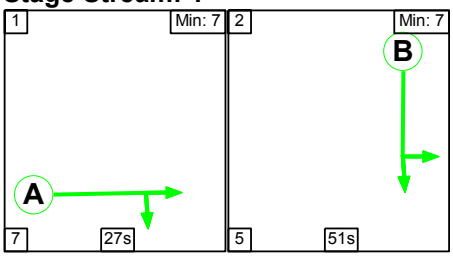
11/3	66	66	-	-	-	0.5	0.1	-	0.6	34.8	1.4	0.1	1.5
12/1	442	442	-	-	-	0.0	0.1	-	0.1	1.2	1.1	0.1	1.2
12/2	516	516	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
12/3	498	498	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
13/1	641	641	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1461	1461	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	442	442	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1014	1014	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	26.4	Total Delay for Signalled Lanes (pcuHr):	8.68	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-18.5	Total Delay for Signalled Lanes (pcuHr):	21.49	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	27.6	Total Delay for Signalled Lanes (pcuHr):	11.68	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	185.6	Total Delay for Signalled Lanes (pcuHr):	1.53	Cycle Time (s):	90
	PRC Over All Lanes (%):	-18.5	Total Delay Over All Lanes(pcuHr):	45.98		

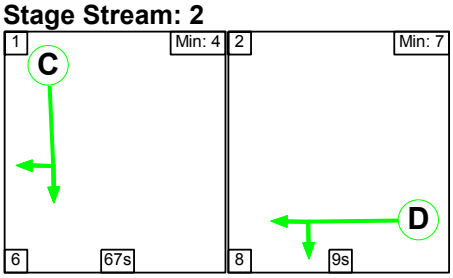
Full Input Data And Results
Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

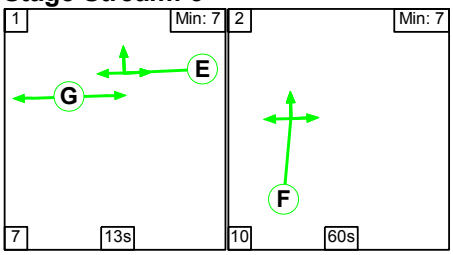
Stage Stream: 1



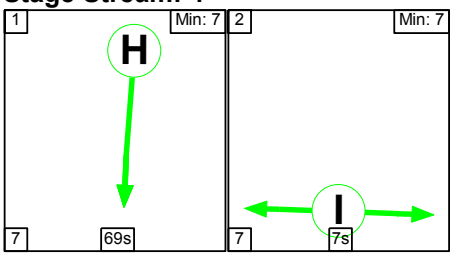
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	27	51
Change Point	21	55

Stage Stream: 2

Stage	1	2
Duration	67	9
Change Point	58	41

Stage Stream: 3

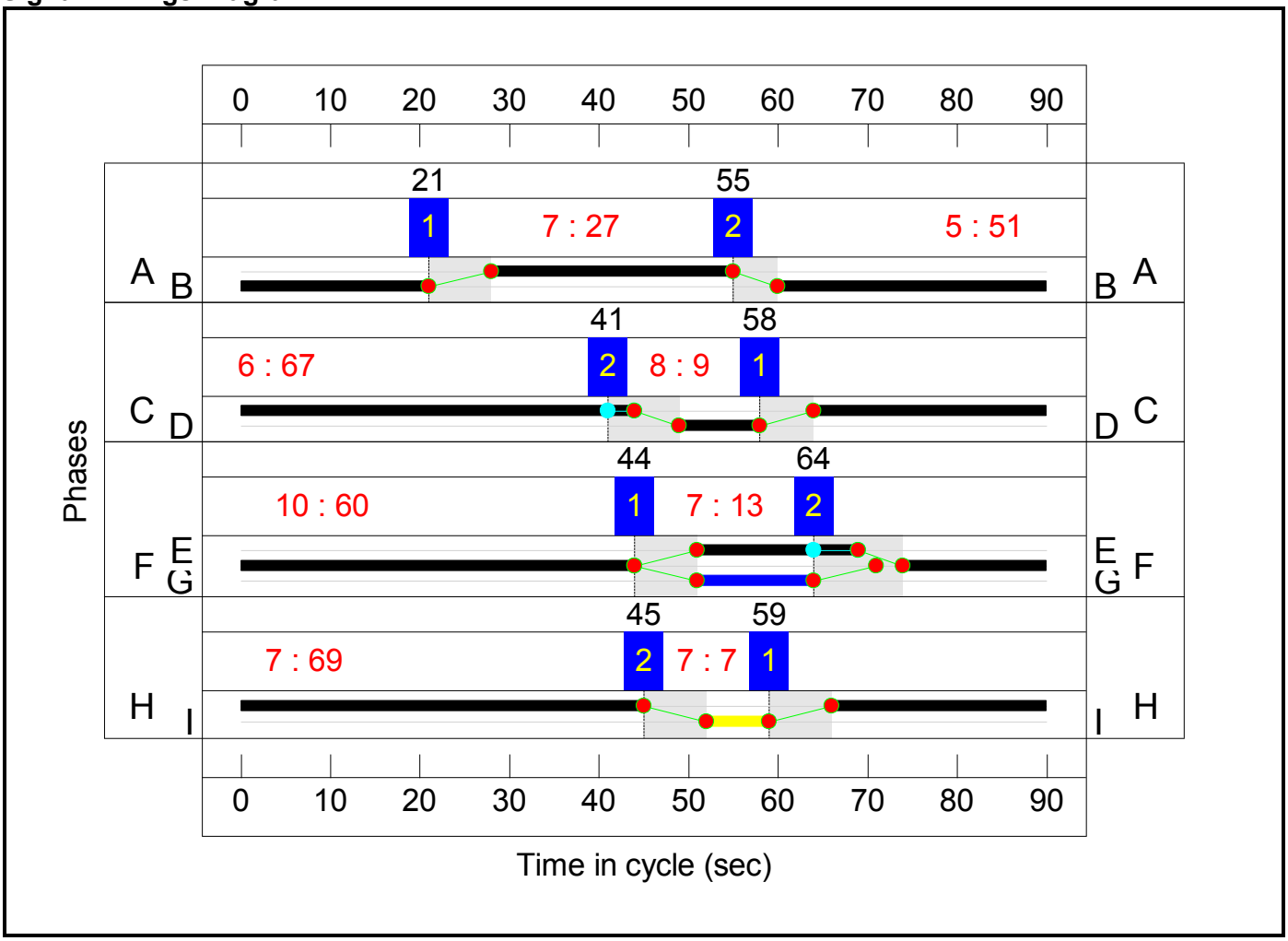
Stage	1	2
Duration	13	60
Change Point	44	64

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	59	45

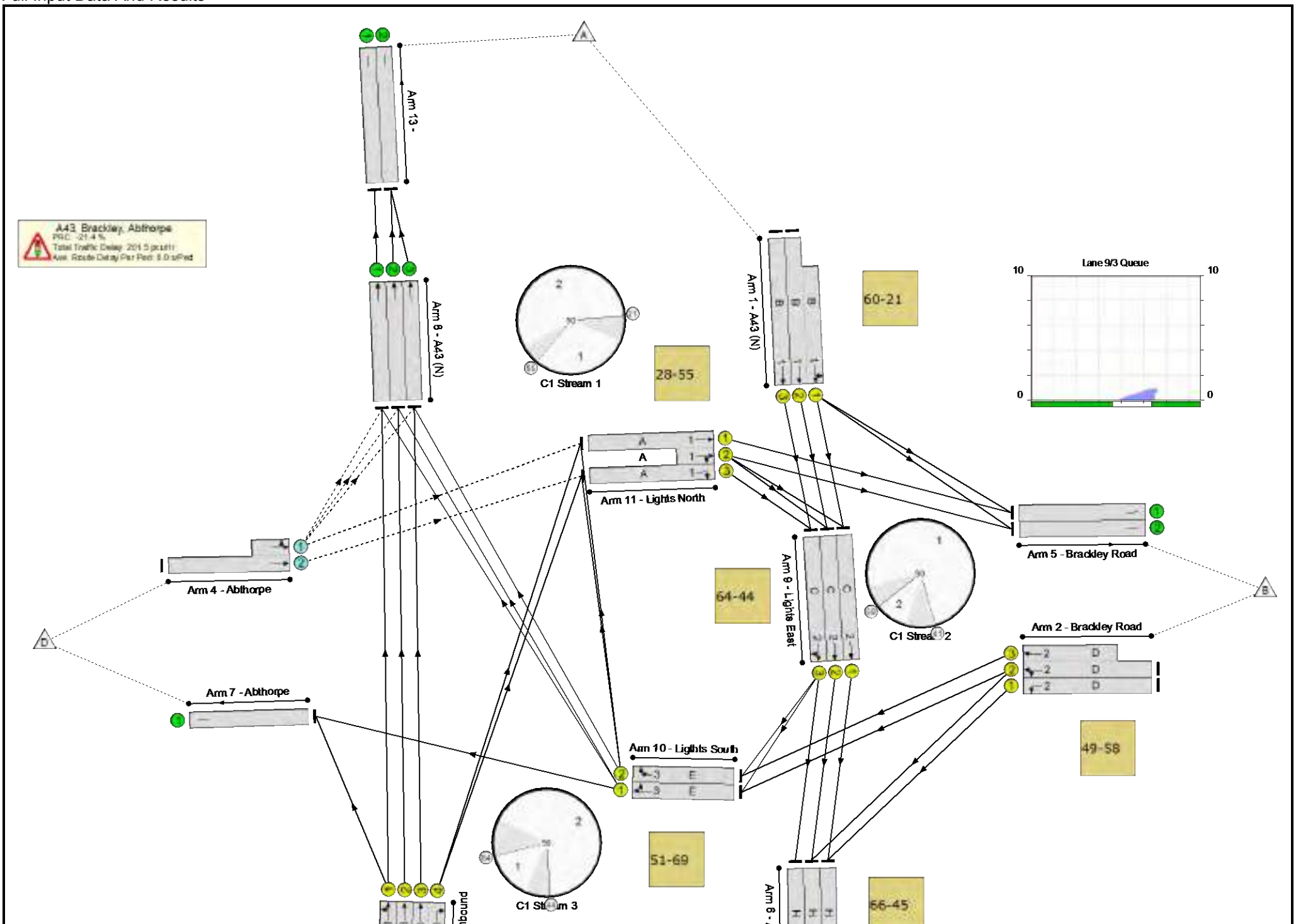
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**109.3%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**109.3%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	51	-	1967	1800:1800	889+911	109.3 : 109.3%
1/3	A43 (N) Ahead	U	1	N/A	B		1	51	-	1130	1800	1040	108.7%
2/1	Brackley Road Left	U	2	N/A	D		1	9	-	122	1800	200	61.0%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	9	-	345	1800:1800	169+200	88.4 : 98.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	60	-	652	1800	1220	53.4%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	60	-	652	1800	1220	53.4%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	60	-	794	1800:1800	1047+303	58.8 : 58.8%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	464	1977:1924	257+417	68.8 : 68.8%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	198	1900	1900	10.2%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	68	1900	1900	3.4%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1082	1990	1548	65.0%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1079	2105	1637	60.9%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1220	2105	1637	69.4%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	297	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	681	1990	1990	34.2%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	681	1990	1990	34.2%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	820	1990	1990	41.2%
9/1	Lights East Ahead	U	2	N/A	C		1	70	-	960	1977	1560	56.6%
9/2	Lights East Ahead	U	2	N/A	C		1	70	-	1079	1900	1499	66.5%
9/3	Lights East Ahead Right	U	2	N/A	C		1	70	-	1308	2070	1633	74.6%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	18	-	237	1900	401	57.3%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	18	-	196	1900	401	48.9%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	27	-	338	1900:1900	328+387	47.2 : 47.2%
11/3	Lights North Right	U	1	N/A	A		1	27	-	178	1900	591	30.1%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1082	1965	1965	51.2%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1079	1965	1965	50.7%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1220	1965	1965	57.9%
13/1		U	N/A	N/A	-		-	-	-	681	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1501	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1082	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2299	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**803**	**125**	**0**	**42.7**	**158.8**	**0.0**	**201.5**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**803**	**125**	**0**	**42.7**	**158.8**	**0.0**	**201.5**	**-**	**-**	**-**	**-**
1/2+1/1	1967	1800	-	-	-	17.2	89.0	-	106.3	194.5	63.3	89.0	152.3
1/3	1130	1040	-	-	-	10.5	50.6	-	61.1	194.7	30.5	50.6	81.1
2/1	122	122	-	-	-	1.3	0.8	-	2.1	60.8	2.9	0.8	3.6
2/2+2/3	345	345	-	-	-	3.8	5.1	-	8.9	92.6	4.8	5.1	9.9
3/1	652	652	-	-	-	1.3	0.6	-	1.9	10.5	8.1	0.6	8.7
3/2	652	652	-	-	-	1.3	0.6	-	1.9	10.5	8.1	0.6	8.7
3/3+3/4	794	794	-	-	-	1.5	0.7	-	2.2	9.9	7.5	0.7	8.2
4/2+4/1	464	464	803	125	0	0.7	1.1	-	1.8	13.8	4.9	1.1	6.0
5/1	194	194	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	64	64	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
6/1	1005	1005	-	-	-	0.4	0.9	-	1.4	4.9	4.4	0.9	5.4
6/2	997	997	-	-	-	0.1	0.8	-	0.9	3.2	0.6	0.8	1.4
6/3	1137	1137	-	-	-	0.2	1.1	-	1.4	4.3	1.2	1.1	2.3
7/1	290	290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	681	681	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	681	681	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/3	820	820	-	-	-	0.0	0.4	-	0.4	1.5	0.0	0.4	0.4
9/1	883	883	-	-	-	0.0	0.7	-	0.7	2.9	0.4	0.7	1.1
9/2	997	997	-	-	-	0.1	1.0	-	1.1	3.9	0.8	1.0	1.8
9/3	1218	1218	-	-	-	0.1	1.5	-	1.6	4.7	0.9	1.5	2.4
10/1	230	230	-	-	-	1.0	0.7	-	1.7	26.0	2.2	0.7	2.9
10/2	196	196	-	-	-	0.0	0.5	-	0.5	9.5	0.1	0.5	0.5
11/1+11/2	338	338	-	-	-	1.9	0.4	-	2.4	25.2	3.1	0.4	3.6

Full Input Data And Results

11/3	178	178	-	-	-	1.0	0.2	-	1.2	24.7	3.4	0.2	3.6
12/1	1005	1005	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
12/2	997	997	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
12/3	1137	1137	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
13/1	681	681	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1501	1501	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	1005	1005	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2134	2134	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

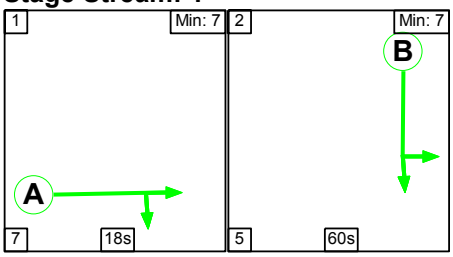
C1	Stream: 1 PRC for Signalled Lanes (%):	-21.4	Total Delay for Signalled Lanes (pcuHr):	170.95	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-8.9	Total Delay for Signalled Lanes (pcuHr):	14.29	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	53.0	Total Delay for Signalled Lanes (pcuHr):	8.16	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	29.6	Total Delay for Signalled Lanes (pcuHr):	3.62	Cycle Time (s):	90
	PRC Over All Lanes (%):	-21.4	Total Delay Over All Lanes(pcuHr):	201.48		

Full Input Data And Results

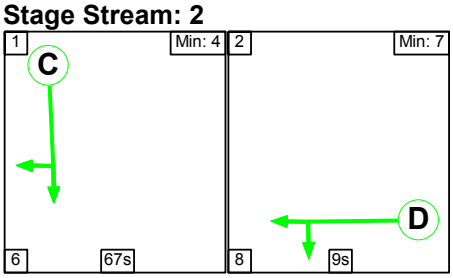
Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

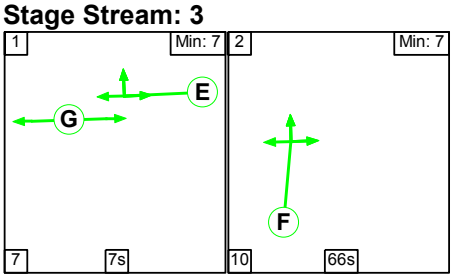
Stage Stream: 1



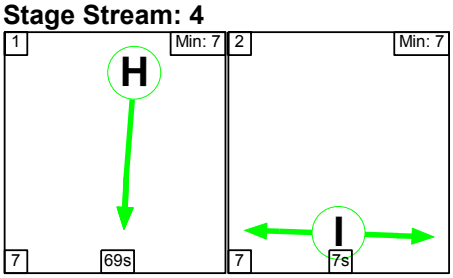
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	60
Change Point	24	49

Stage Stream: 2

Stage	1	2
Duration	67	9
Change Point	46	29

Stage Stream: 3

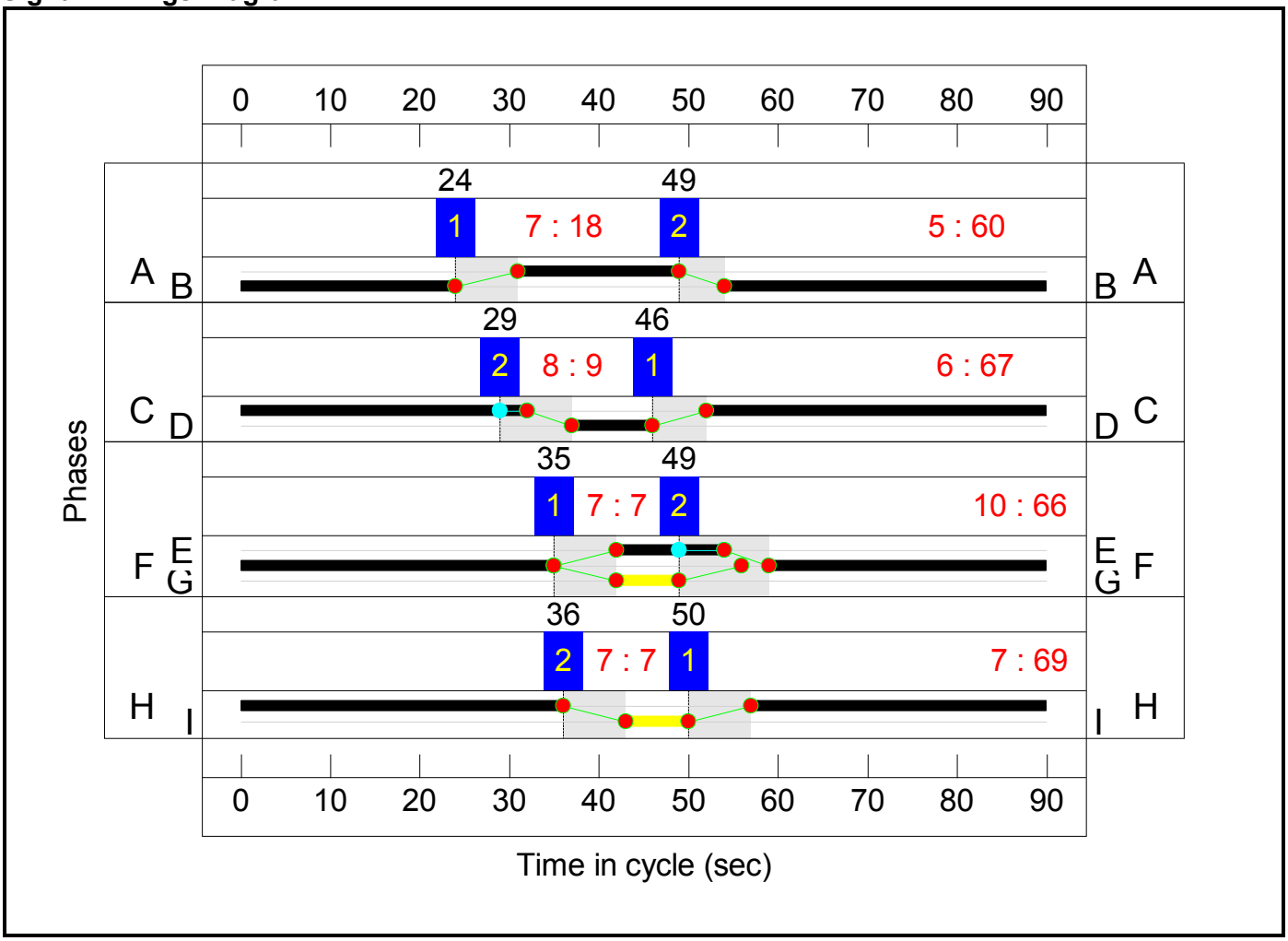
Stage	1	2
Duration	7	66
Change Point	35	49

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	50	36

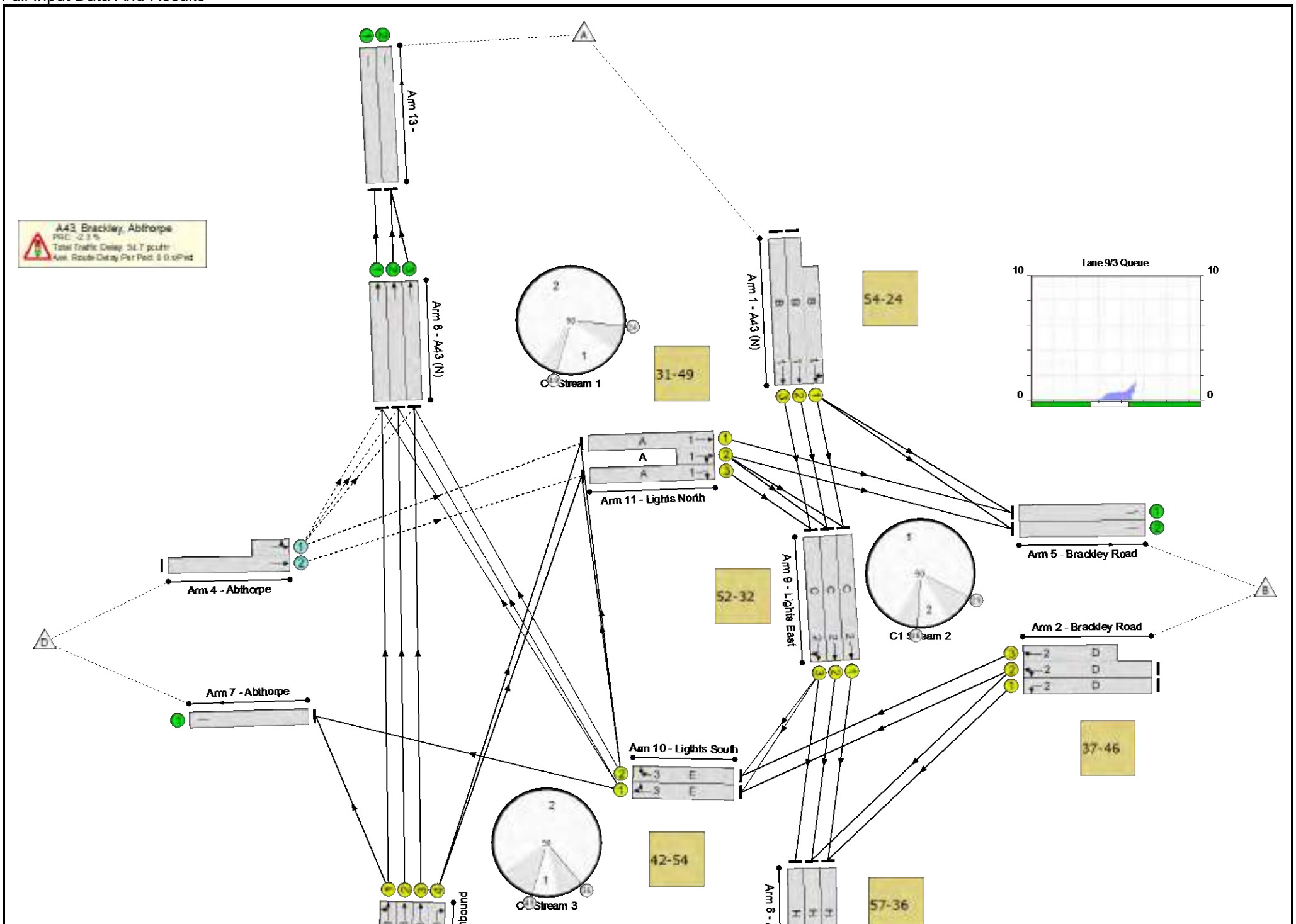
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.1%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.1%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	60	-	1581	1800:1800	855+945	87.8 : 87.8%
1/3	A43 (N) Ahead	U	1	N/A	B		1	60	-	909	1800	1220	74.5%
2/1	Brackley Road Left	U	2	N/A	D		1	9	-	110	1800	200	55.0%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	9	-	176	1800:1800	200+0	88.0 : 0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	66	-	1216	1800	1340	90.7%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	66	-	1210	1800	1340	90.3%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	66	-	1332	1800:1800	1172+274	92.1 : 92.1%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	145	1977:1951	180+256	33.3 : 33.3%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	241	1900	1900	12.7%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	231	1900	1900	12.2%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	741	1990	1548	47.9%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	807	2105	1637	49.3%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	950	2105	1637	58.0%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	512	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	907	1990	1990	45.6%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1210	1990	1990	60.8%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1080	1990	1990	54.3%
9/1	Lights East Ahead	U	2	N/A	C		1	70	-	631	1977	1560	40.5%
9/2	Lights East Ahead	U	2	N/A	C		1	70	-	807	1900	1499	53.8%
9/3	Lights East Ahead Right	U	2	N/A	C		1	70	-	975	2073	1635	59.6%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	12	-	201	1900	274	73.2%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	12	-	0	1900	274	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	18	-	329	1900:1900	239+285	62.7 : 62.7%
11/3	Lights North Right	U	1	N/A	A		1	18	-	66	1900	401	16.5%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	741	1965	1965	37.7%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	807	1965	1965	41.1%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	950	1965	1965	48.3%
13/1		U	N/A	N/A	-		-	-	-	907	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2290	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	741	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1757	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**46**	**244**	**0**	**23.1**	**31.6**	**0.0**	**54.7**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**46**	**244**	**0**	**23.1**	**31.6**	**0.0**	**54.7**	**-**	**-**	**-**	**-**
1/2+1/1	1581	1581	-	-	-	3.7	3.5	-	7.2	16.3	12.2	3.5	15.7
1/3	909	909	-	-	-	2.4	1.4	-	3.8	15.2	14.6	1.4	16.1
2/1	110	110	-	-	-	1.2	0.6	-	1.8	57.6	2.6	0.6	3.2
2/2+2/3	176	176	-	-	-	1.9	2.9	-	4.9	99.6	4.3	2.9	7.2
3/1	1216	1216	-	-	-	3.1	4.6	-	7.6	22.6	23.6	4.6	28.2
3/2	1210	1210	-	-	-	3.0	4.4	-	7.4	21.9	23.5	4.4	27.9
3/3+3/4	1332	1332	-	-	-	2.7	5.3	-	8.0	21.7	23.0	5.3	28.3
4/2+4/1	145	145	46	244	0	1.1	0.2	-	1.3	33.1	1.7	0.2	2.0
5/1	241	241	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	231	231	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	741	741	-	-	-	0.5	0.5	-	0.9	4.5	3.1	0.5	3.6
6/2	807	807	-	-	-	0.1	0.5	-	0.5	2.4	0.3	0.5	0.8
6/3	950	950	-	-	-	0.1	0.7	-	0.8	2.9	0.4	0.7	1.1
7/1	512	512	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	907	907	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
8/2	1210	1210	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
8/3	1080	1080	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
9/1	631	631	-	-	-	0.0	0.3	-	0.4	2.0	0.1	0.3	0.4
9/2	807	807	-	-	-	0.1	0.6	-	0.7	3.0	1.1	0.6	1.7
9/3	975	975	-	-	-	0.1	0.7	-	0.9	3.2	1.4	0.7	2.1
10/1	201	201	-	-	-	0.4	1.3	-	1.7	30.7	1.6	1.3	2.9
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1+11/2	329	329	-	-	-	2.6	0.8	-	3.4	37.4	3.3	0.8	4.2

Full Input Data And Results

11/3	66	66	-	-	-	0.3	0.1	-	0.4	24.1	0.5	0.1	0.6
12/1	741	741	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
12/2	807	807	-	-	-	0.0	0.3	-	0.3	1.6	0.0	0.3	0.3
12/3	950	950	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
13/1	907	907	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2290	2290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	741	741	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1757	1757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

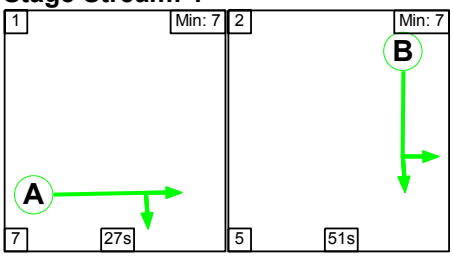
C1	Stream: 1 PRC for Signalled Lanes (%):	2.5	Total Delay for Signalled Lanes (pcuHr):	14.86	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	2.3	Total Delay for Signalled Lanes (pcuHr):	8.52	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-2.3	Total Delay for Signalled Lanes (pcuHr):	24.75	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	55.1	Total Delay for Signalled Lanes (pcuHr):	2.23	Cycle Time (s):	90
	PRC Over All Lanes (%):	-2.3	Total Delay Over All Lanes(pcuHr):	54.75		

Full Input Data And Results

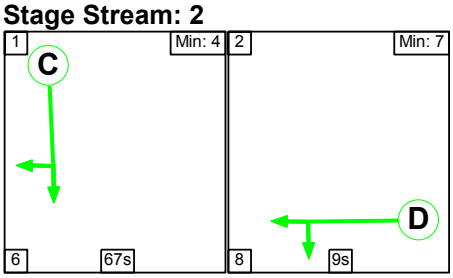
Scenario 5: '2021 DS 20% AM' (FG11: '2021 DM + 2021 DS 20% AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

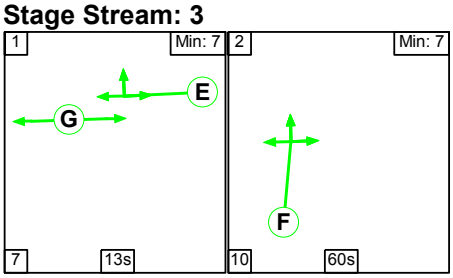
Stage Stream: 1



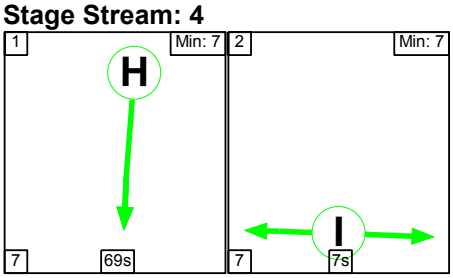
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	27	51
Change Point	21	55

Stage Stream: 2

Stage	1	2
Duration	67	9
Change Point	58	41

Stage Stream: 3

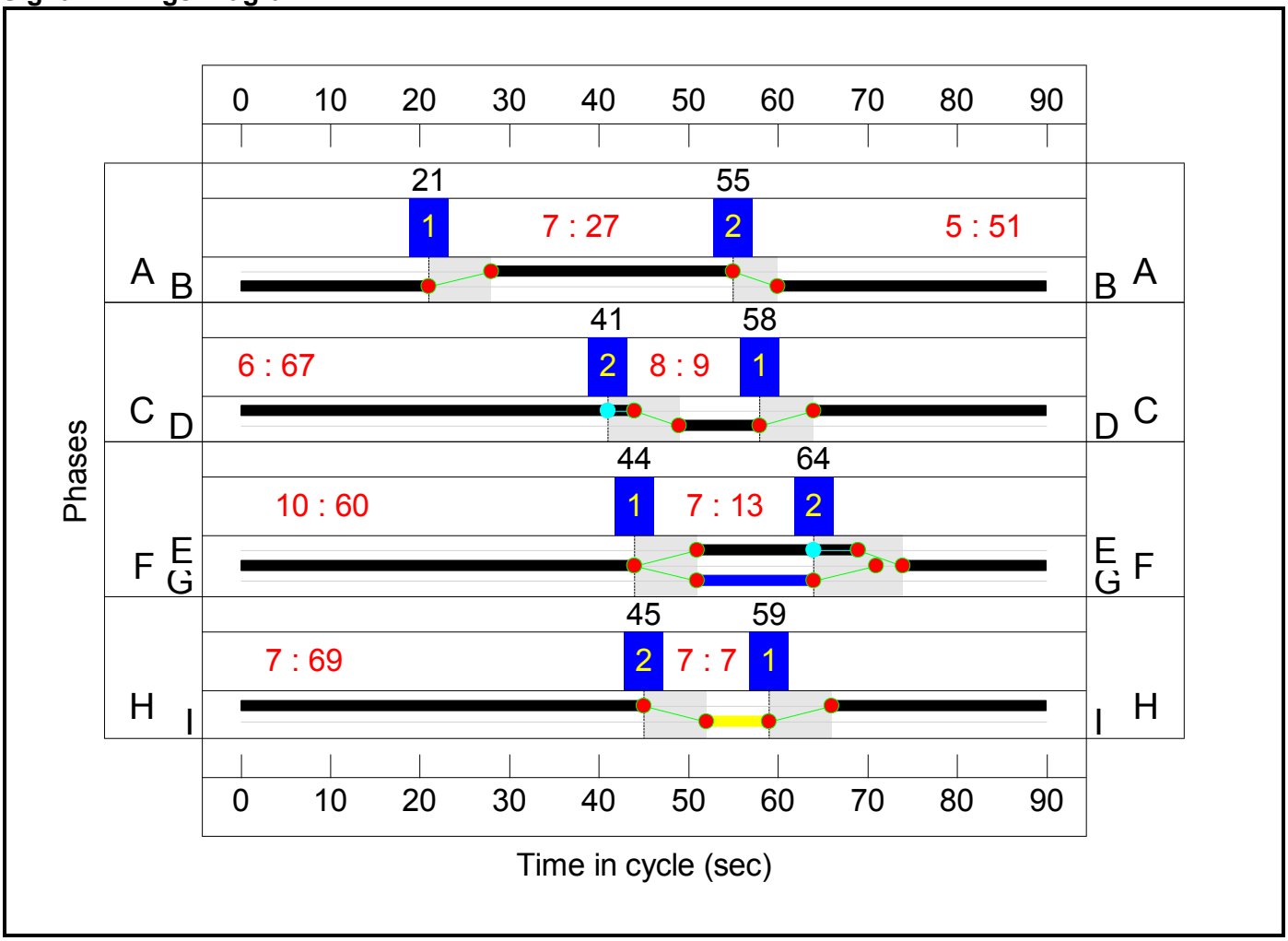
Stage	1	2
Duration	13	60
Change Point	44	64

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	59	45

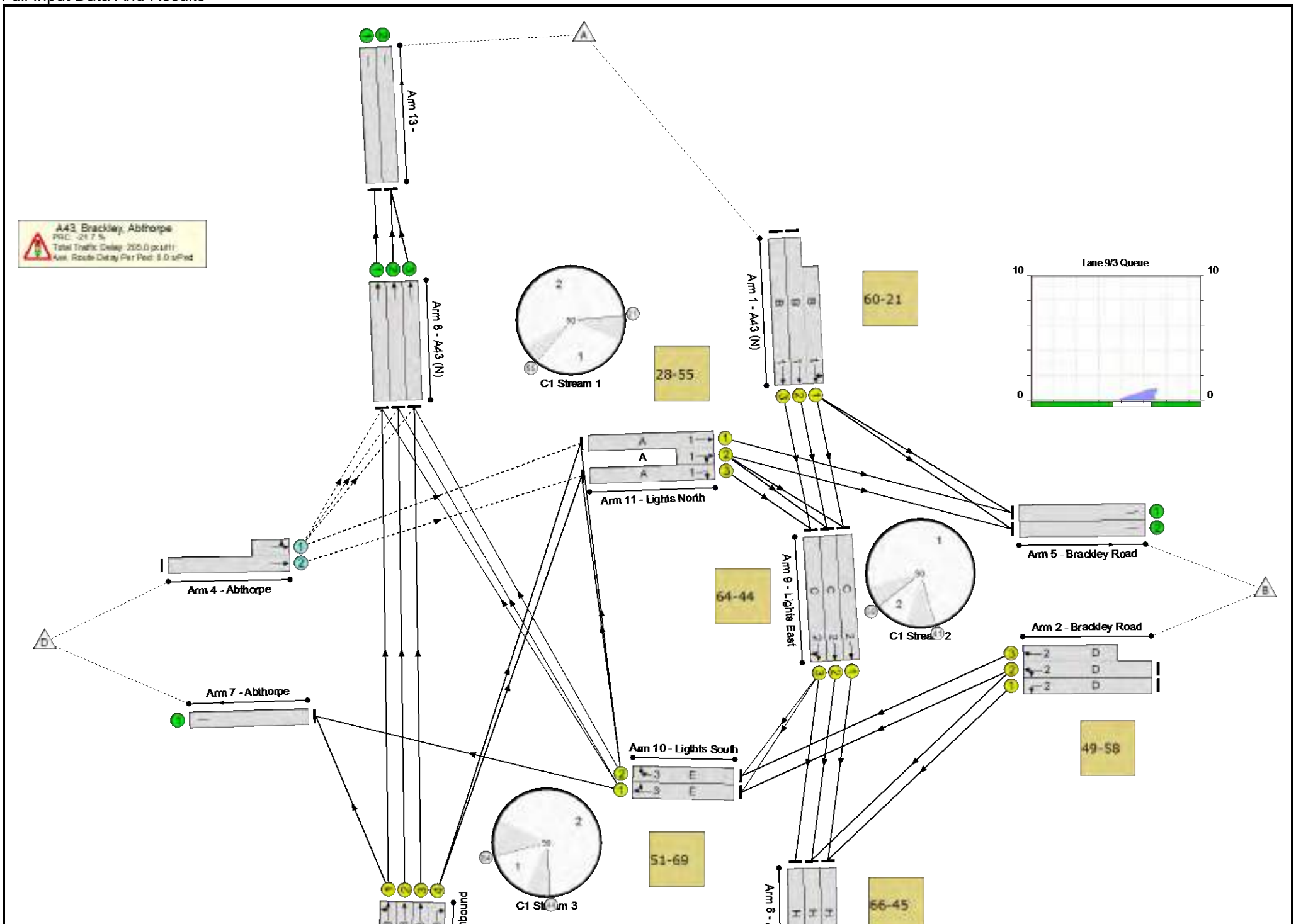
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**109.6%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**109.6%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	51	-	1972	1800:1800	889+911	109.6 : 109.6%
1/3	A43 (N) Ahead	U	1	N/A	B		1	51	-	1132	1800	1040	108.8%
2/1	Brackley Road Left	U	2	N/A	D		1	9	-	122	1800	200	61.0%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	9	-	346	1800:1800	172+200	87.0 : 98.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	60	-	659	1800	1220	54.0%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	60	-	658	1800	1220	53.9%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	60	-	800	1800:1800	1048+300	59.3 : 59.3%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	465	1977:1924	259+413	69.2 : 69.2%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	198	1900	1900	10.2%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	70	1900	1900	3.4%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1078	1990	1548	64.6%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1085	2105	1637	61.1%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1223	2105	1637	69.5%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	297	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	690	1990	1990	34.7%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	692	1990	1990	34.8%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	821	1990	1990	41.3%
9/1	Lights East Ahead	U	2	N/A	C		1	70	-	956	1977	1560	56.3%
9/2	Lights East Ahead	U	2	N/A	C		1	70	-	1085	1900	1499	66.7%
9/3	Lights East Ahead Right	U	2	N/A	C		1	70	-	1311	2070	1633	74.6%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	18	-	238	1900	401	57.6%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	18	-	196	1900	401	48.9%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	27	-	337	1900:1900	327+388	47.1 : 47.1%
11/3	Lights North Right	U	1	N/A	A		1	27	-	179	1900	591	30.3%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1078	1965	1965	50.9%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1085	1965	1965	50.9%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1223	1965	1965	57.9%
13/1		U	N/A	N/A	-		-	-	-	690	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1513	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1078	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2308	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**800**	**130**	**0**	**43.1**	**161.9**	**0.0**	**205.0**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**800**	**130**	**0**	**43.1**	**161.9**	**0.0**	**205.0**	**-**	**-**	**-**	**-**
1/2+1/1	1972	1800	-	-	-	17.5	91.4	-	108.9	198.8	63.5	91.4	154.9
1/3	1132	1040	-	-	-	10.6	51.5	-	62.1	197.6	30.6	51.5	82.1
2/1	122	122	-	-	-	1.3	0.8	-	2.1	60.8	2.9	0.8	3.6
2/2+2/3	346	346	-	-	-	3.8	4.8	-	8.6	89.4	4.8	4.8	9.6
3/1	659	659	-	-	-	1.3	0.6	-	1.9	10.6	8.2	0.6	8.8
3/2	658	658	-	-	-	1.3	0.6	-	1.9	10.6	8.2	0.6	8.8
3/3+3/4	800	800	-	-	-	1.5	0.7	-	2.2	10.0	7.6	0.7	8.3
4/2+4/1	465	465	800	130	0	0.7	1.1	-	1.8	14.1	4.9	1.1	6.0
5/1	194	194	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	65	65	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
6/1	999	999	-	-	-	0.4	0.9	-	1.3	4.8	4.1	0.9	5.0
6/2	1000	1000	-	-	-	0.1	0.8	-	0.9	3.3	0.6	0.8	1.4
6/3	1138	1138	-	-	-	0.2	1.1	-	1.4	4.3	1.2	1.1	2.3
7/1	290	290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	690	690	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	692	692	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/3	821	821	-	-	-	0.0	0.4	-	0.4	1.5	0.0	0.4	0.4
9/1	877	877	-	-	-	0.0	0.6	-	0.7	2.8	0.4	0.6	1.0
9/2	1000	1000	-	-	-	0.1	1.0	-	1.1	3.9	0.8	1.0	1.8
9/3	1219	1219	-	-	-	0.1	1.5	-	1.6	4.7	0.9	1.5	2.4
10/1	231	231	-	-	-	1.0	0.7	-	1.7	26.0	2.2	0.7	2.9
10/2	196	196	-	-	-	0.0	0.5	-	0.5	9.5	0.1	0.5	0.5
11/1+11/2	337	337	-	-	-	1.9	0.4	-	2.4	25.2	3.1	0.4	3.5

Full Input Data And Results

11/3	179	179	-	-	-	1.0	0.2	-	1.2	24.6	3.4	0.2	3.6
12/1	999	999	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
12/2	1000	1000	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
12/3	1138	1138	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
13/1	690	690	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1513	1513	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	999	999	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2138	2138	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

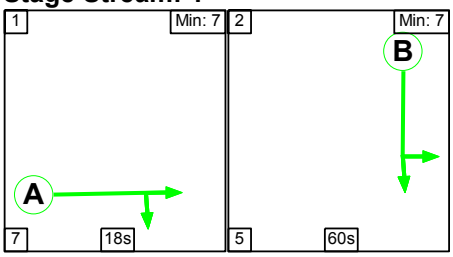
C1	Stream: 1 PRC for Signalled Lanes (%):	-21.7	Total Delay for Signalled Lanes (pcuHr):	174.62	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-8.9	Total Delay for Signalled Lanes (pcuHr):	14.01	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	51.7	Total Delay for Signalled Lanes (pcuHr):	8.27	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	29.5	Total Delay for Signalled Lanes (pcuHr):	3.62	Cycle Time (s):	90
	PRC Over All Lanes (%):	-21.7	Total Delay Over All Lanes(pcuHr):	205.01		

Full Input Data And Results

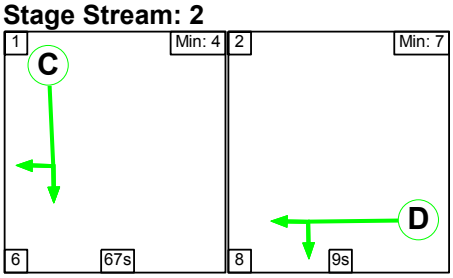
Scenario 6: '2021 DS 20% PM' (FG12: '2021 DM + 2021 DS 20% PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

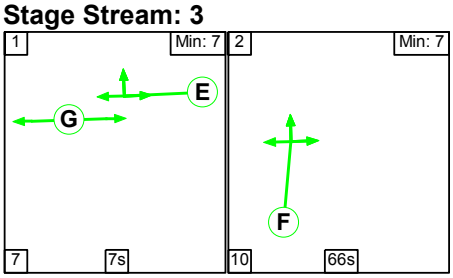
Stage Stream: 1



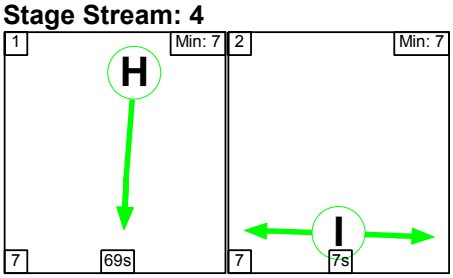
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	60
Change Point	24	49

Stage Stream: 2

Stage	1	2
Duration	67	9
Change Point	46	29

Stage Stream: 3

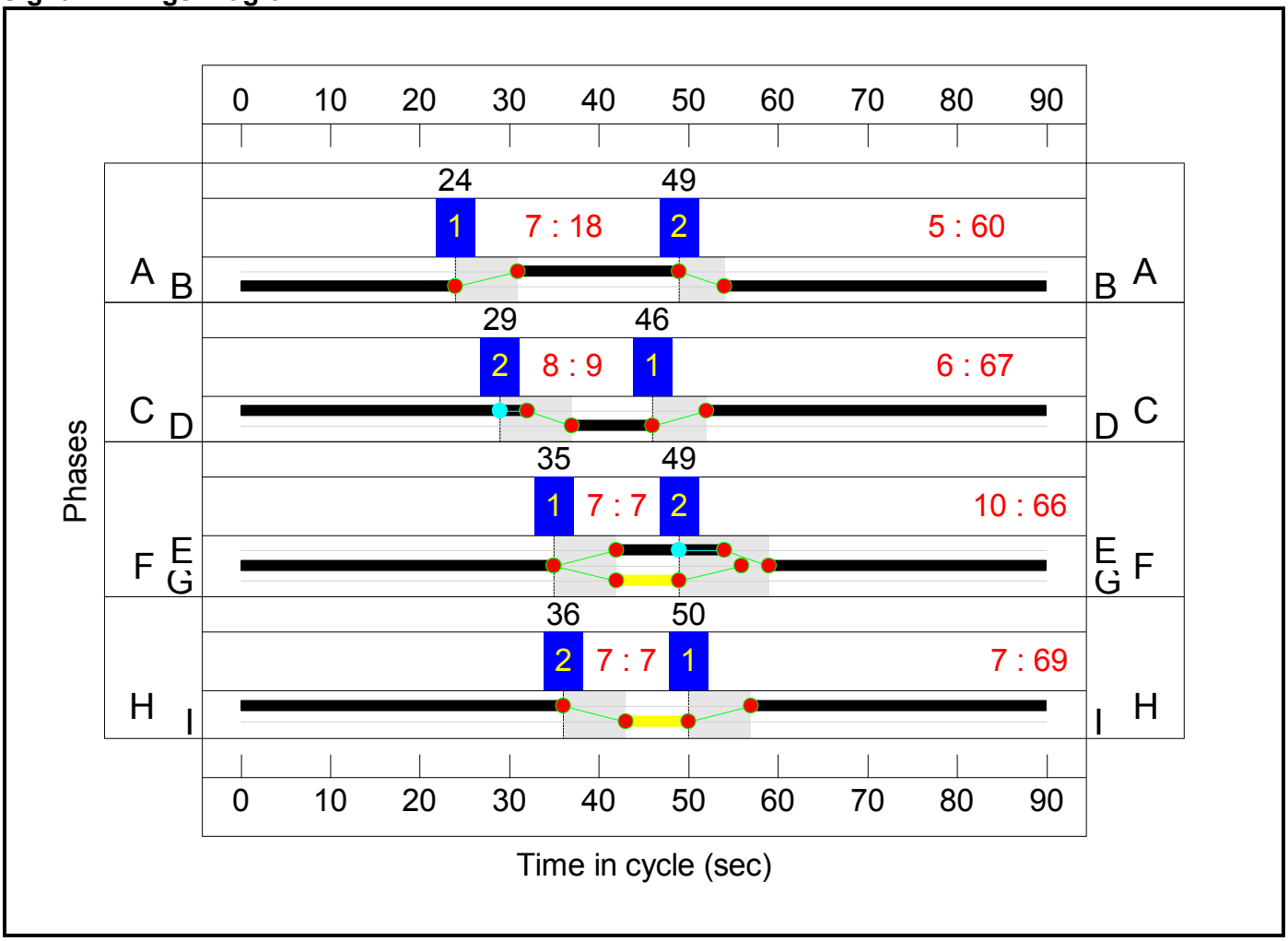
Stage	1	2
Duration	7	66
Change Point	35	49

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	50	36

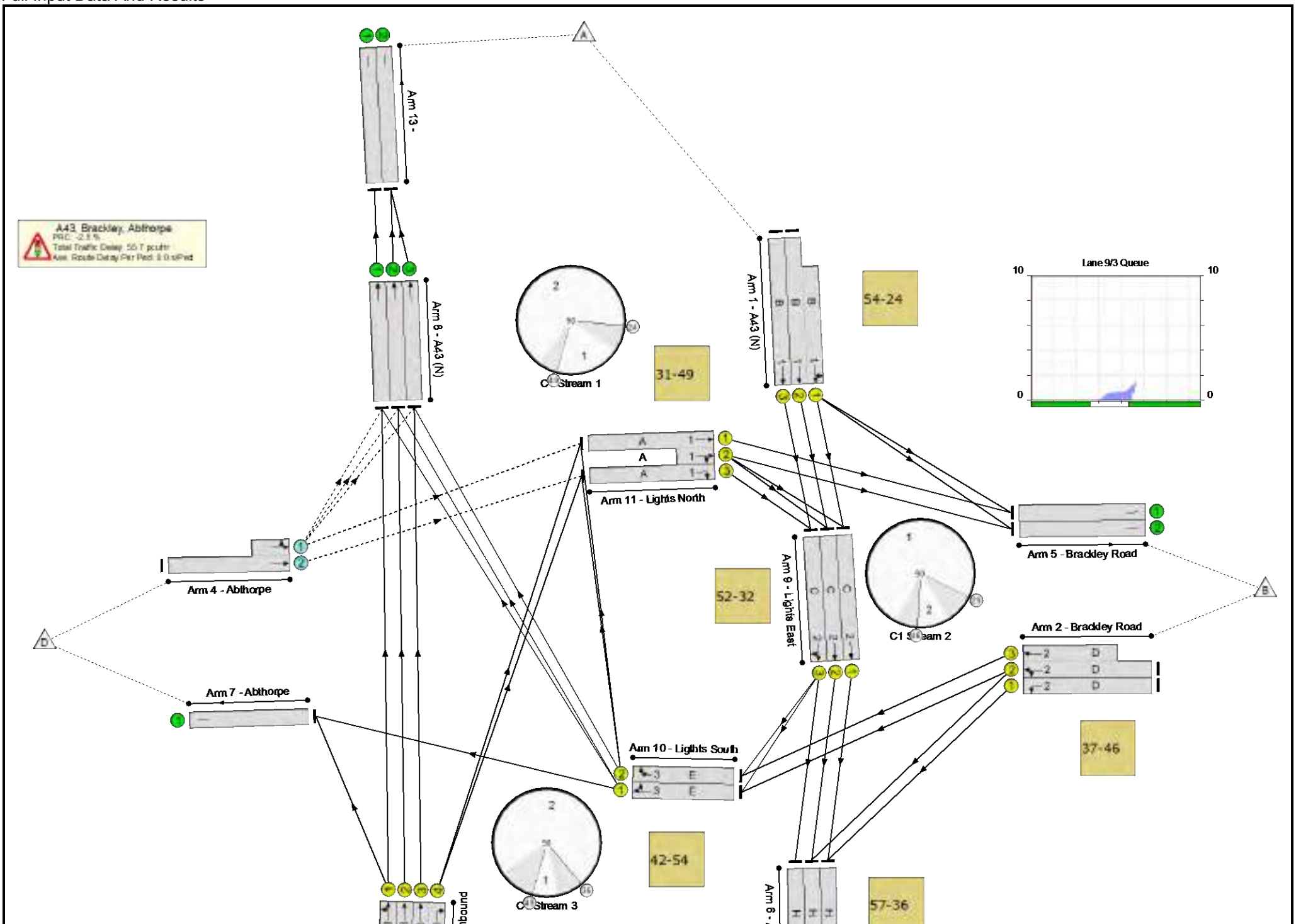
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.3%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.3%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	60	-	1593	1800:1800	855+945	88.5 : 88.5%
1/3	A43 (N) Ahead	U	1	N/A	B		1	60	-	922	1800	1220	75.6%
2/1	Brackley Road Left	U	2	N/A	D		1	9	-	110	1800	200	55.0%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	9	-	177	1800:1800	200+1	88.0 : 88.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	66	-	1219	1800	1340	91.0%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	66	-	1213	1800	1340	90.5%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	66	-	1334	1800:1800	1173+273	92.3 : 92.3%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	146	1977:1950	183+255	33.3 : 33.3%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	241	1900	1900	12.7%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	232	1900	1900	12.2%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	746	1990	1548	48.2%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	812	2105	1637	49.6%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	964	2105	1637	58.9%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	512	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	911	1990	1990	45.8%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1213	1990	1990	61.0%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1083	1990	1990	54.4%
9/1	Lights East Ahead	U	2	N/A	C		1	70	-	636	1977	1560	40.8%
9/2	Lights East Ahead	U	2	N/A	C		1	70	-	812	1900	1499	54.2%
9/3	Lights East Ahead Right	U	2	N/A	C		1	70	-	989	2073	1635	60.5%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	12	-	201	1900	274	73.2%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	12	-	1	1900	274	0.4%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	18	-	328	1900:1900	240+285	62.5 : 62.5%
11/3	Lights North Right	U	1	N/A	A		1	18	-	67	1900	401	16.7%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	746	1965	1965	38.0%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	812	1965	1965	41.3%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	964	1965	1965	49.1%
13/1		U	N/A	N/A	-		-	-	-	911	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2296	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	746	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1776	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**47**	**245**	**0**	**23.3**	**32.3**	**0.0**	**55.7**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**47**	**245**	**0**	**23.3**	**32.3**	**0.0**	**55.7**	**-**	**-**	**-**	**-**
1/2+1/1	1593	1593	-	-	-	3.7	3.7	-	7.4	16.8	12.5	3.7	16.3
1/3	922	922	-	-	-	2.5	1.5	-	4.0	15.6	15.1	1.5	16.6
2/1	110	110	-	-	-	1.2	0.6	-	1.8	57.6	2.6	0.6	3.2
2/2+2/3	177	177	-	-	-	1.9	2.9	-	4.9	99.3	4.3	2.9	7.2
3/1	1219	1219	-	-	-	3.1	4.7	-	7.8	22.9	24.0	4.7	28.7
3/2	1213	1213	-	-	-	3.0	4.5	-	7.5	22.3	23.6	4.5	28.0
3/3+3/4	1334	1334	-	-	-	2.7	5.4	-	8.1	22.0	23.0	5.4	28.4
4/2+4/1	146	146	47	245	0	1.1	0.2	-	1.3	33.1	1.7	0.2	2.0
5/1	241	241	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	232	232	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	746	746	-	-	-	0.5	0.5	-	0.9	4.5	3.1	0.5	3.6
6/2	812	812	-	-	-	0.1	0.5	-	0.6	2.5	0.3	0.5	0.8
6/3	964	964	-	-	-	0.1	0.7	-	0.8	2.9	0.4	0.7	1.1
7/1	512	512	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	911	911	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
8/2	1213	1213	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
8/3	1083	1083	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
9/1	636	636	-	-	-	0.0	0.3	-	0.4	2.0	0.1	0.3	0.4
9/2	812	812	-	-	-	0.1	0.6	-	0.7	3.0	1.1	0.6	1.7
9/3	989	989	-	-	-	0.1	0.8	-	0.9	3.3	1.4	0.8	2.2
10/1	201	201	-	-	-	0.4	1.3	-	1.7	30.7	1.6	1.3	2.9
10/2	1	1	-	-	-	0.0	0.0	-	0.0	7.2	0.0	0.0	0.0
11/1+11/2	328	328	-	-	-	2.6	0.8	-	3.4	37.3	3.3	0.8	4.1

Full Input Data And Results

11/3	67	67	-	-	-	0.4	0.1	-	0.5	24.2	0.6	0.1	0.7
12/1	746	746	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
12/2	812	812	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
12/3	964	964	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
13/1	911	911	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2296	2296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	746	746	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1776	1776	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

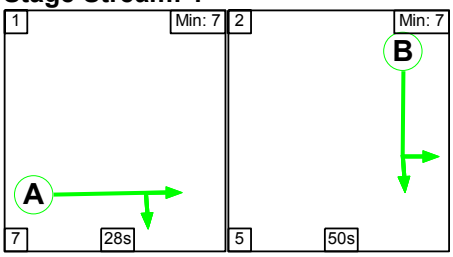
C1	Stream: 1 PRC for Signalled Lanes (%):	1.7	Total Delay for Signalled Lanes (pcuHr):	15.27	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	2.3	Total Delay for Signalled Lanes (pcuHr):	8.57	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-2.5	Total Delay for Signalled Lanes (pcuHr):	25.12	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	52.9	Total Delay for Signalled Lanes (pcuHr):	2.27	Cycle Time (s):	90
	PRC Over All Lanes (%):	-2.5	Total Delay Over All Lanes(pcuHr):	55.66		

Full Input Data And Results

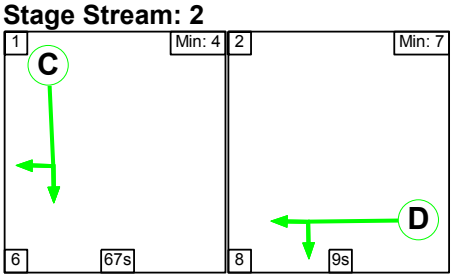
Scenario 7: '2021 DS AM' (FG5: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

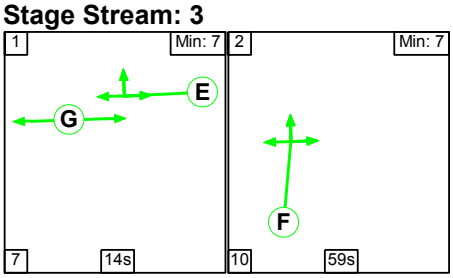
Stage Stream: 1



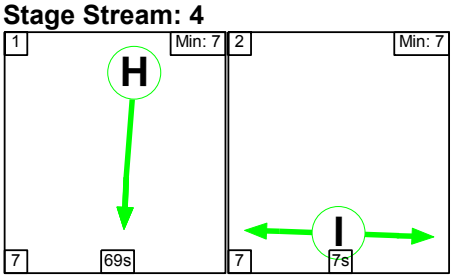
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	28	50
Change Point	21	56

Stage Stream: 2

Stage	1	2
Duration	67	9
Change Point	58	41

Stage Stream: 3

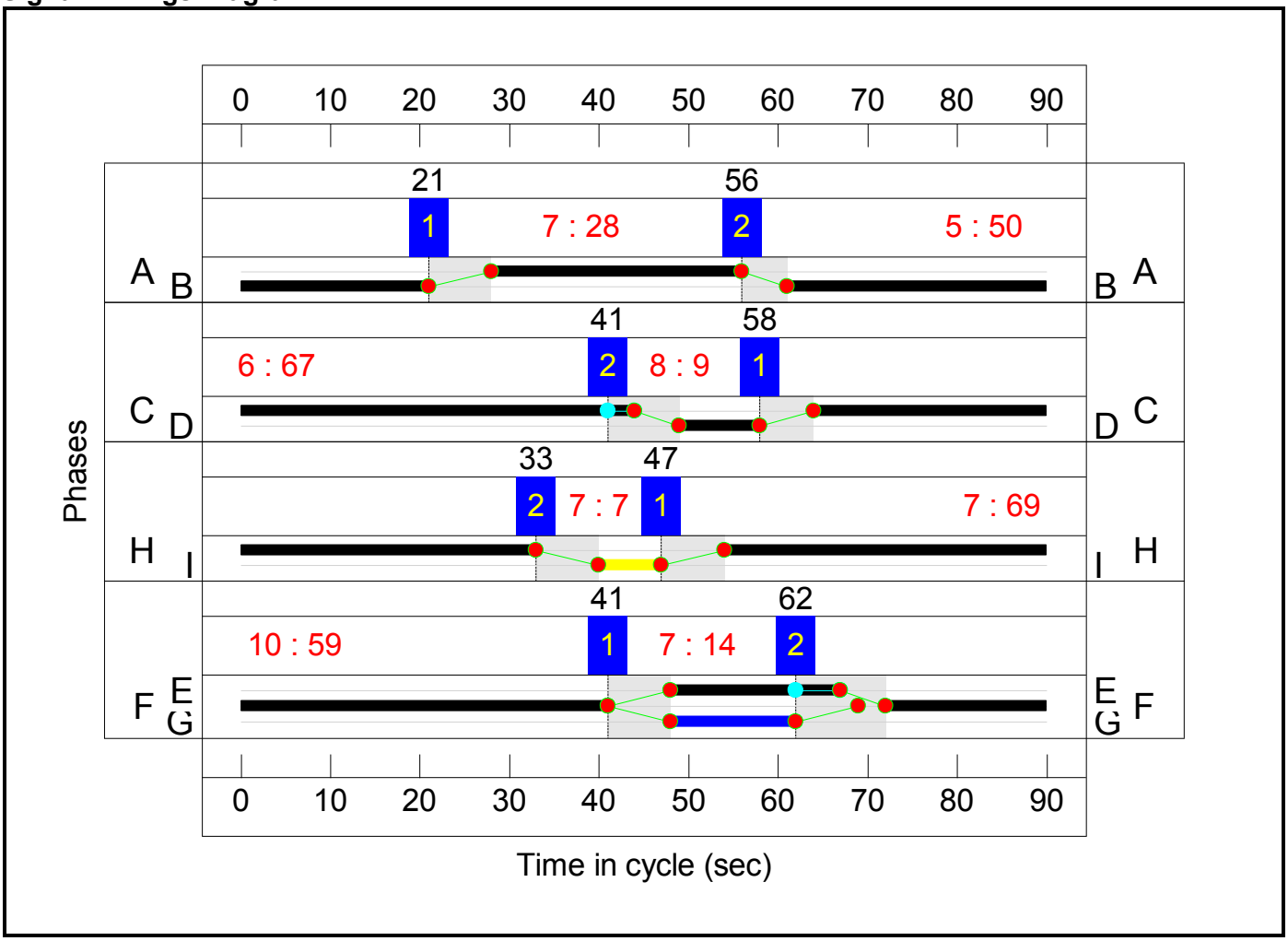
Stage	1	2
Duration	14	59
Change Point	41	62

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	47	33

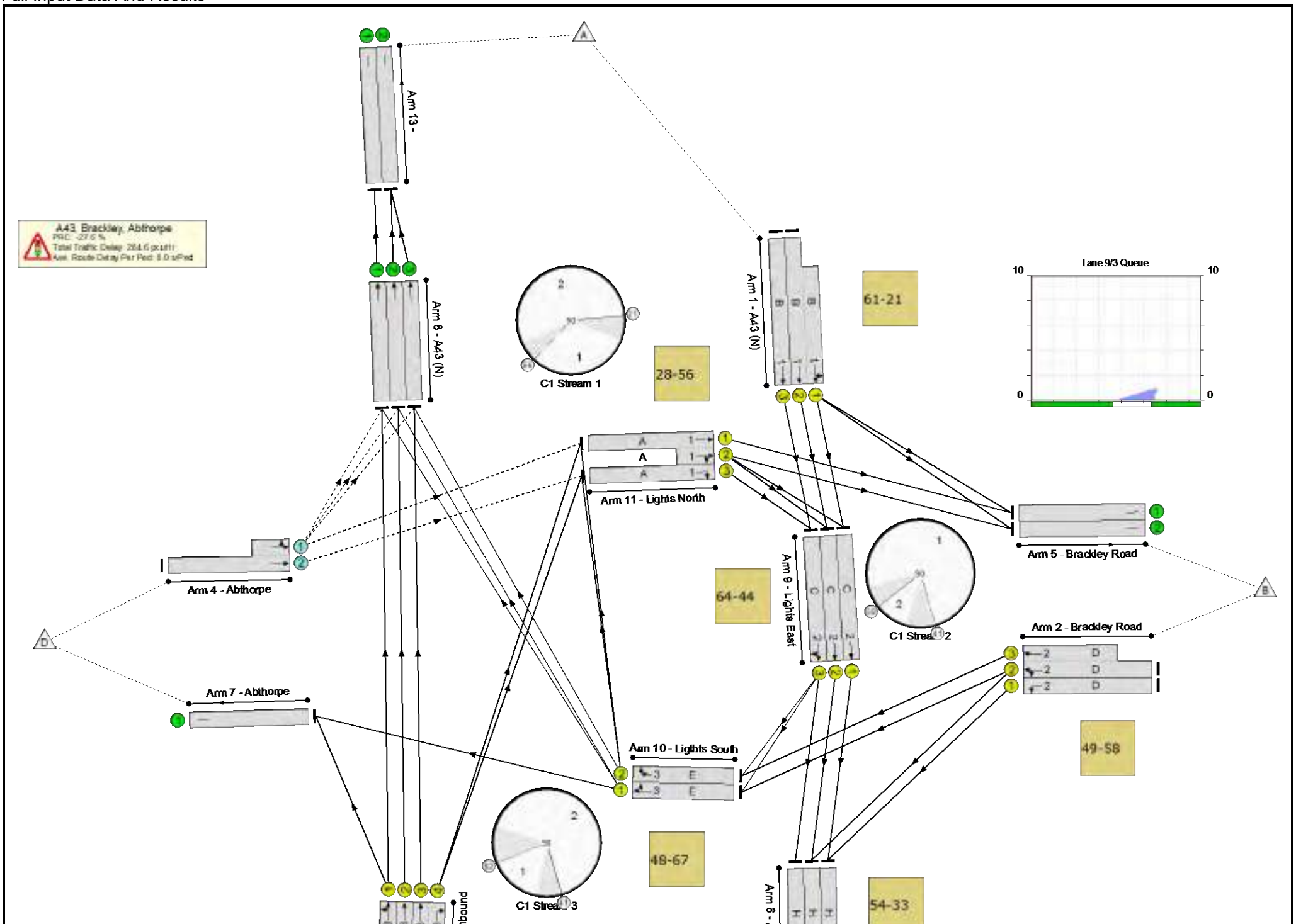
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.8%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.8%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	50	-	2067	1800:1800	893+907	114.8 : 114.8%
1/3	A43 (N) Ahead	U	1	N/A	B		1	50	-	1165	1800	1020	114.2%
2/1	Brackley Road Left	U	2	N/A	D		1	9	-	77	1800	200	38.5%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	9	-	353	1800:1800	186+200	83.5 : 99.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	59	-	673	1800	1200	56.1%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	59	-	672	1800	1200	56.0%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	59	-	813	1800:1800	1035+290	61.3 : 61.3%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	485	1977:1923	219+410	77.2 : 77.2%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	193	1900	1900	9.9%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	73	1900	1900	3.5%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1111	1990	1548	63.9%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1115	2105	1637	60.0%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1232	2105	1637	67.2%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	315	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	711	1990	1990	35.7%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	714	1990	1990	35.9%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	841	1990	1990	42.3%
9/1	Lights East Ahead	U	2	N/A	C		1	70	-	1034	1977	1560	58.5%
9/2	Lights East Ahead	U	2	N/A	C		1	70	-	1115	1900	1499	65.5%
9/3	Lights East Ahead Right	U	2	N/A	C		1	70	-	1335	2070	1633	72.9%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	19	-	258	1900	422	58.1%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	19	-	198	1900	422	46.9%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	28	-	348	1900:1900	307+415	48.2 : 48.2%
11/3	Lights North Right	U	1	N/A	A		1	28	-	170	1900	612	27.8%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1111	1965	1965	50.3%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1115	1965	1965	50.0%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1232	1965	1965	56.0%
13/1		U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1555	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1111	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2347	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**772**	**198**	**0**	**52.7**	**232.0**	**0.0**	**284.6**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**772**	**198**	**0**	**52.7**	**232.0**	**0.0**	**284.6**	**-**	**-**	**-**	**-**
1/2+1/1	2067	1800	-	-	-	23.2	137.3	-	160.4	279.4	68.4	137.3	205.7
1/3	1165	1020	-	-	-	13.6	76.3	-	90.0	278.0	32.7	76.3	109.1
2/1	77	77	-	-	-	0.8	0.3	-	1.1	51.7	1.8	0.3	2.1
2/2+2/3	353	353	-	-	-	3.9	4.3	-	8.2	83.3	4.9	4.3	9.2
3/1	673	673	-	-	-	1.5	0.6	-	2.1	11.4	8.8	0.6	9.4
3/2	672	672	-	-	-	1.5	0.6	-	2.1	11.4	8.8	0.6	9.4
3/3+3/4	813	813	-	-	-	1.6	0.8	-	2.4	10.8	8.1	0.8	8.9
4/2+4/1	485	485	772	198	0	1.0	1.7	-	2.7	19.7	5.7	1.7	7.4
5/1	187	187	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	67	67	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
6/1	989	989	-	-	-	0.3	0.9	-	1.2	4.3	3.4	0.9	4.3
6/2	982	982	-	-	-	0.3	0.7	-	1.0	3.7	1.9	0.7	2.6
6/3	1100	1100	-	-	-	0.7	1.0	-	1.7	5.6	4.2	1.0	5.2
7/1	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	711	711	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	714	714	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/3	841	841	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
9/1	912	912	-	-	-	0.1	0.7	-	0.8	3.1	0.8	0.7	1.5
9/2	982	982	-	-	-	0.1	0.9	-	1.0	3.8	0.8	0.9	1.7
9/3	1190	1190	-	-	-	0.1	1.3	-	1.4	4.4	0.9	1.3	2.2
10/1	245	245	-	-	-	1.1	0.7	-	1.7	25.5	2.3	0.7	3.0
10/2	198	198	-	-	-	0.1	0.4	-	0.5	9.9	0.1	0.4	0.6
11/1+11/2	348	348	-	-	-	2.0	0.5	-	2.4	25.3	3.1	0.5	3.6

Full Input Data And Results

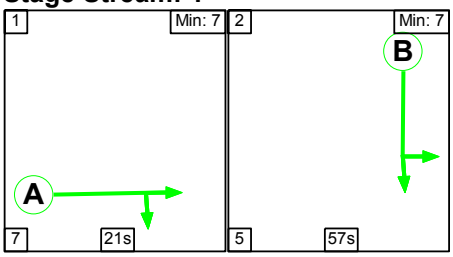
11/3	170	170	-	-	-	0.9	0.2	-	1.1	23.1	3.1	0.2	3.3
12/1	989	989	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
12/2	982	982	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
12/3	1100	1100	-	-	-	0.0	0.6	-	0.6	2.1	1.1	0.6	1.8
13/1	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1555	1555	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	989	989	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2082	2082	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-27.6	Total Delay for Signalled Lanes (pcuHr):	253.93	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	-10.0	Total Delay for Signalled Lanes (pcuHr):	12.53	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	46.8	Total Delay for Signalled Lanes (pcuHr):	8.96	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	34.0	Total Delay for Signalled Lanes (pcuHr):	3.90	Cycle Time (s): 90
	PRC Over All Lanes (%):	-27.6	Total Delay Over All Lanes(pcuHr):	284.62	

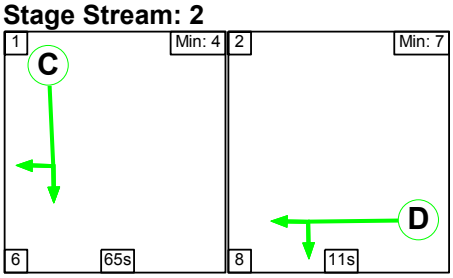
Full Input Data And Results
Scenario 8: '2021 DS PM' (FG6: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

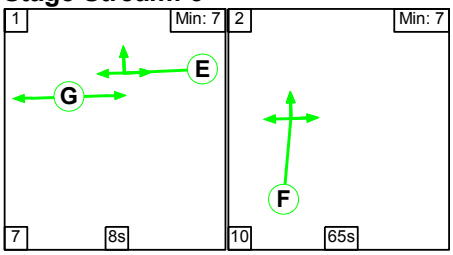
Stage Stream: 1



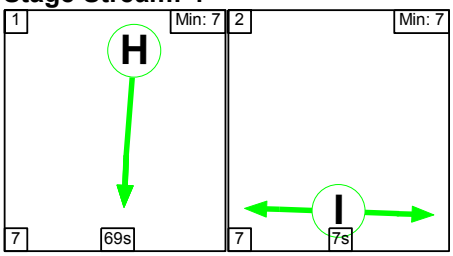
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	57
Change Point	24	52

Stage Stream: 2

Stage	1	2
Duration	65	11
Change Point	55	36

Stage Stream: 3

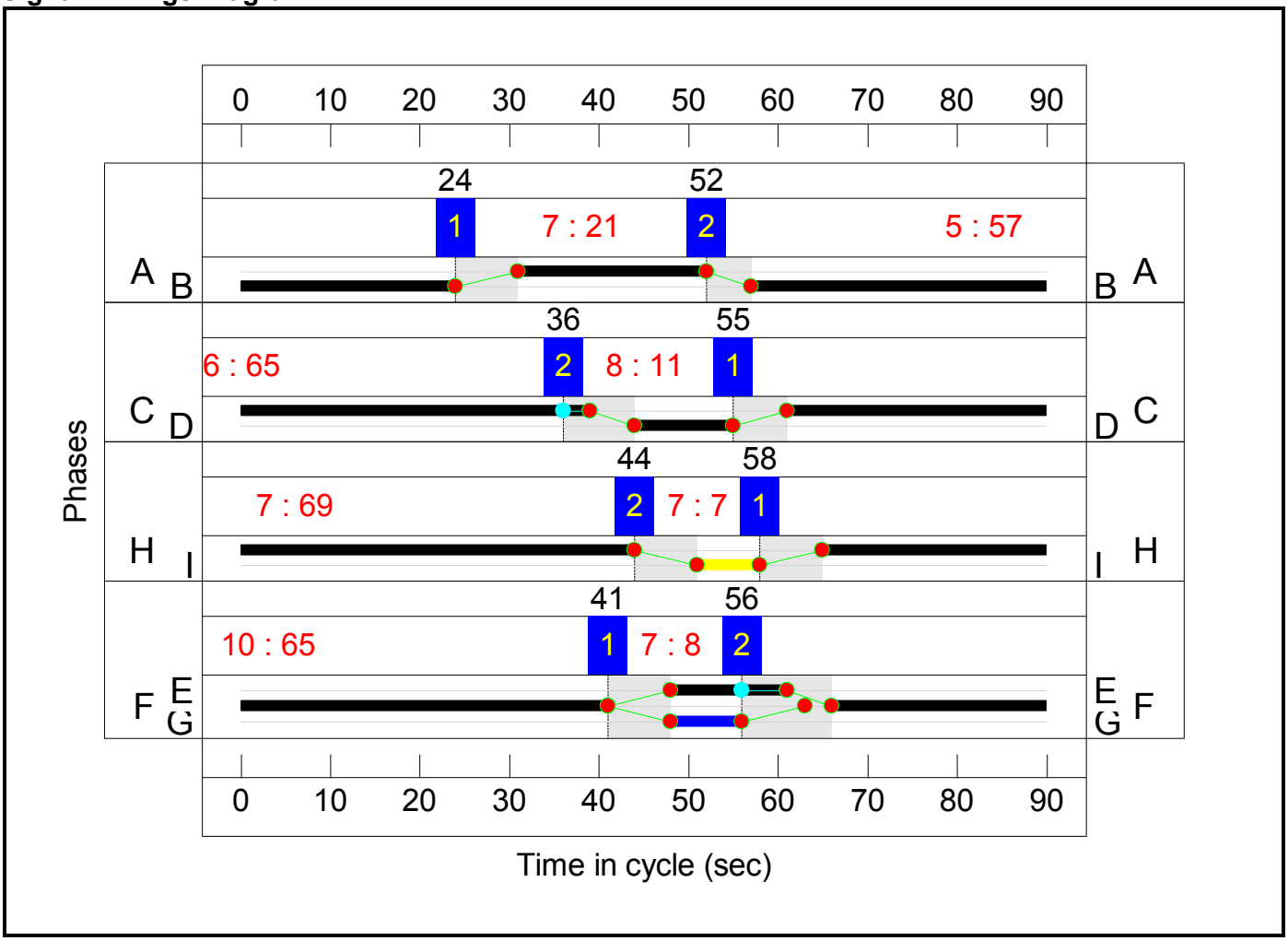
Stage	1	2
Duration	8	65
Change Point	41	56

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	58	44

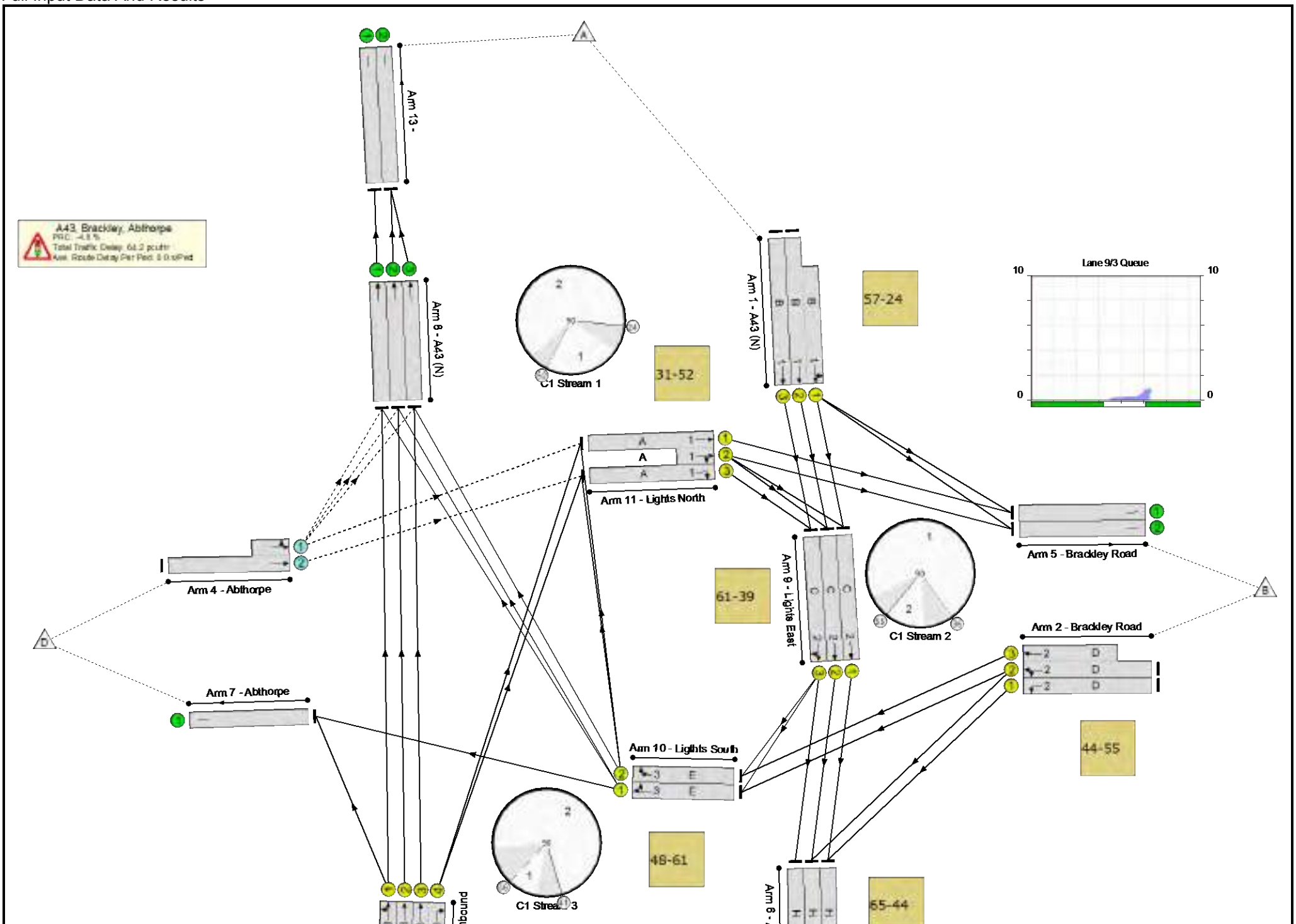
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.3%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.3%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	57	-	1697	1800:1800	864+936	94.3 : 94.3%
1/3	A43 (N) Ahead	U	1	N/A	B		1	57	-	1008	1800	1160	86.9%
2/1	Brackley Road Left	U	2	N/A	D		1	11	-	112	1800	240	46.7%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	11	-	181	1800:1800	240+0	75.4 : 0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	65	-	1207	1800	1320	91.4%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	65	-	1203	1800	1320	91.1%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	65	-	1324	1800:1800	1154+274	92.7 : 92.7%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	151	1977:1950	213+267	31.5 : 31.5%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	254	1900	1900	13.4%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	223	1900	1900	11.7%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	802	1990	1548	51.8%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	859	2105	1637	52.5%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1046	2105	1637	63.9%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	493	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	932	1990	1990	46.8%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1203	1990	1990	60.5%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1071	1990	1990	53.8%
9/1	Lights East Ahead	U	2	N/A	C		1	68	-	690	1977	1516	45.5%
9/2	Lights East Ahead	U	2	N/A	C		1	68	-	859	1900	1457	59.0%
9/3	Lights East Ahead Right	U	2	N/A	C		1	68	-	1081	2073	1589	68.0%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	13	-	216	1900	296	73.1%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	13	-	0	1900	296	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	21	-	329	1900:1900	313+286	55.0 : 55.0%
11/3	Lights North Right	U	1	N/A	A		1	21	-	73	1900	464	15.7%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	802	1965	1965	40.8%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	859	1965	1965	43.7%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1046	1965	1965	53.2%
13/1		U	N/A	N/A	-		-	-	-	932	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2274	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	802	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1905	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**48**	**254**	**0**	**26.9**	**37.4**	**0.0**	**64.2**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**48**	**254**	**0**	**26.9**	**37.4**	**0.0**	**64.2**	**-**	**-**	**-**	**-**
1/2+1/1	1697	1697	-	-	-	5.1	7.2	-	12.3	26.1	15.2	7.2	22.4
1/3	1008	1008	-	-	-	3.6	3.2	-	6.8	24.3	20.2	3.2	23.3
2/1	112	112	-	-	-	1.1	0.4	-	1.6	50.0	2.6	0.4	3.0
2/2+2/3	181	181	-	-	-	1.9	1.5	-	3.4	66.7	4.3	1.5	5.8
3/1	1207	1207	-	-	-	3.3	4.9	-	8.2	24.4	24.1	4.9	29.1
3/2	1203	1203	-	-	-	3.2	4.8	-	8.0	23.9	24.1	4.8	28.8
3/3+3/4	1324	1324	-	-	-	2.9	5.7	-	8.6	23.5	23.6	5.7	29.4
4/2+4/1	151	151	48	254	0	1.1	0.2	-	1.3	31.7	1.7	0.2	1.9
5/1	254	254	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	223	223	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	802	802	-	-	-	0.5	0.5	-	1.0	4.5	3.6	0.5	4.1
6/2	859	859	-	-	-	0.0	0.6	-	0.6	2.5	0.2	0.6	0.7
6/3	1046	1046	-	-	-	0.1	0.9	-	0.9	3.3	0.3	0.9	1.2
7/1	493	493	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	932	932	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
8/2	1203	1203	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
8/3	1071	1071	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
9/1	690	690	-	-	-	0.0	0.4	-	0.4	2.2	0.1	0.4	0.6
9/2	859	859	-	-	-	0.0	0.7	-	0.8	3.2	0.6	0.7	1.3
9/3	1081	1081	-	-	-	0.1	1.1	-	1.1	3.8	0.9	1.1	2.0
10/1	216	216	-	-	-	0.6	1.3	-	1.9	31.2	1.2	1.3	2.5
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1+11/2	329	329	-	-	-	2.7	0.6	-	3.3	36.0	3.7	0.6	4.3

Full Input Data And Results

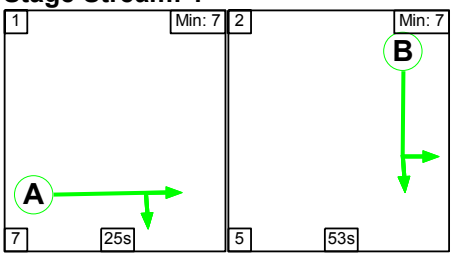
11/3	73	73	-	-	-	0.7	0.1	-	0.8	40.2	1.1	0.1	1.2
12/1	802	802	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
12/2	859	859	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
12/3	1046	1046	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
13/1	932	932	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2274	2274	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	802	802	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1905	1905	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-4.8	Total Delay for Signalled Lanes (pcuHr):	23.22	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	19.3	Total Delay for Signalled Lanes (pcuHr):	7.25	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-3.0	Total Delay for Signalled Lanes (pcuHr):	26.66	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	40.9	Total Delay for Signalled Lanes (pcuHr):	2.52	Cycle Time (s): 90
	PRC Over All Lanes (%):	-4.8	Total Delay Over All Lanes(pcuHr):	64.22	

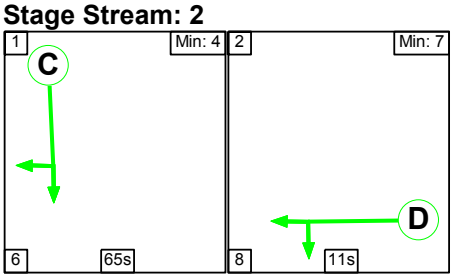
Full Input Data And Results
Scenario 9: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

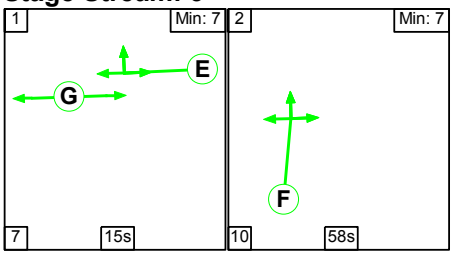
Stage Stream: 1



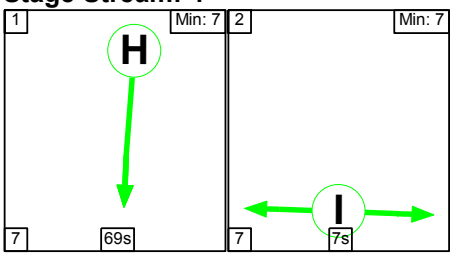
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	53
Change Point	21	53

Stage Stream: 2

Stage	1	2
Duration	65	11
Change Point	57	38

Stage Stream: 3

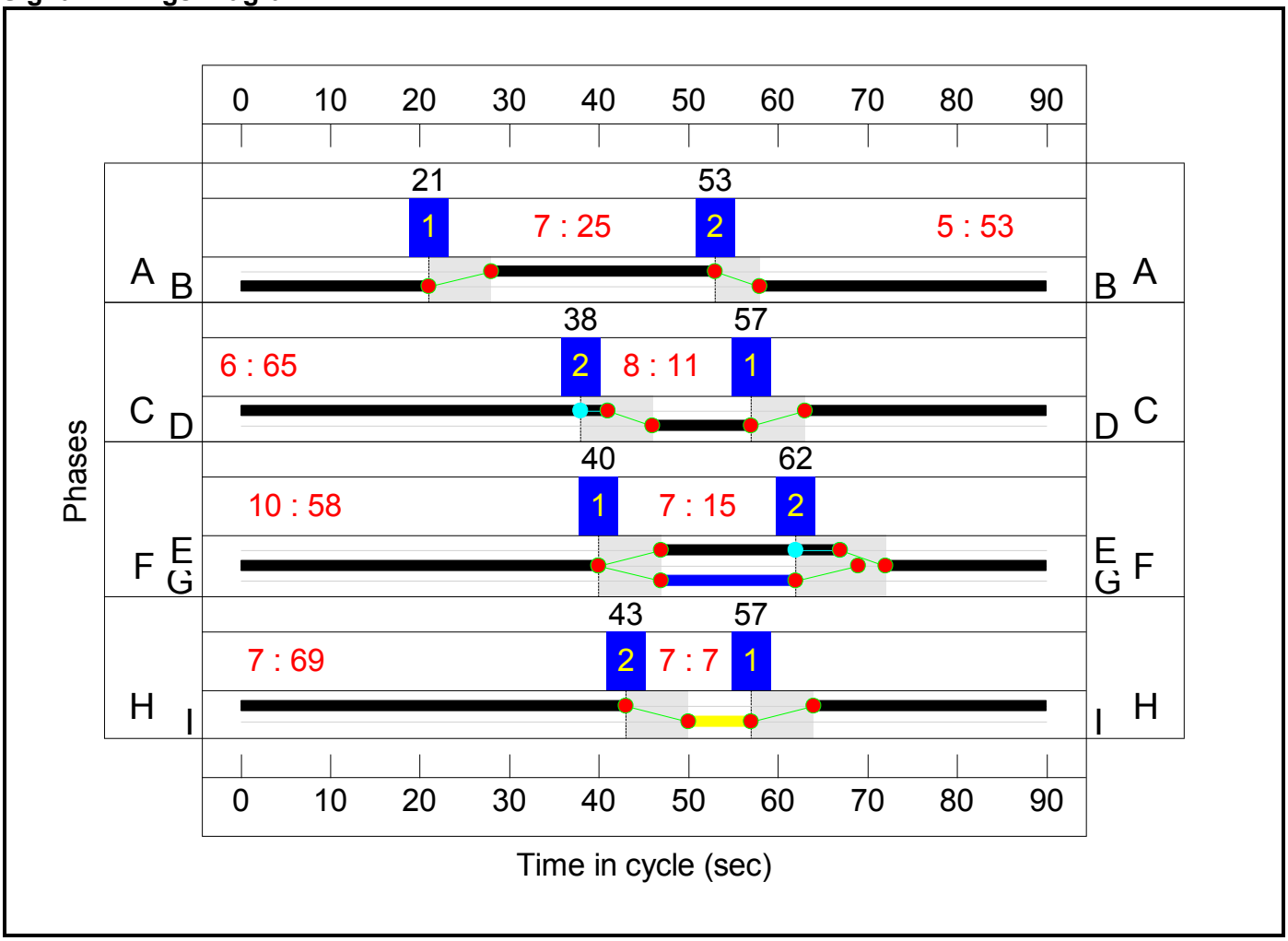
Stage	1	2
Duration	15	58
Change Point	40	62

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	57	43

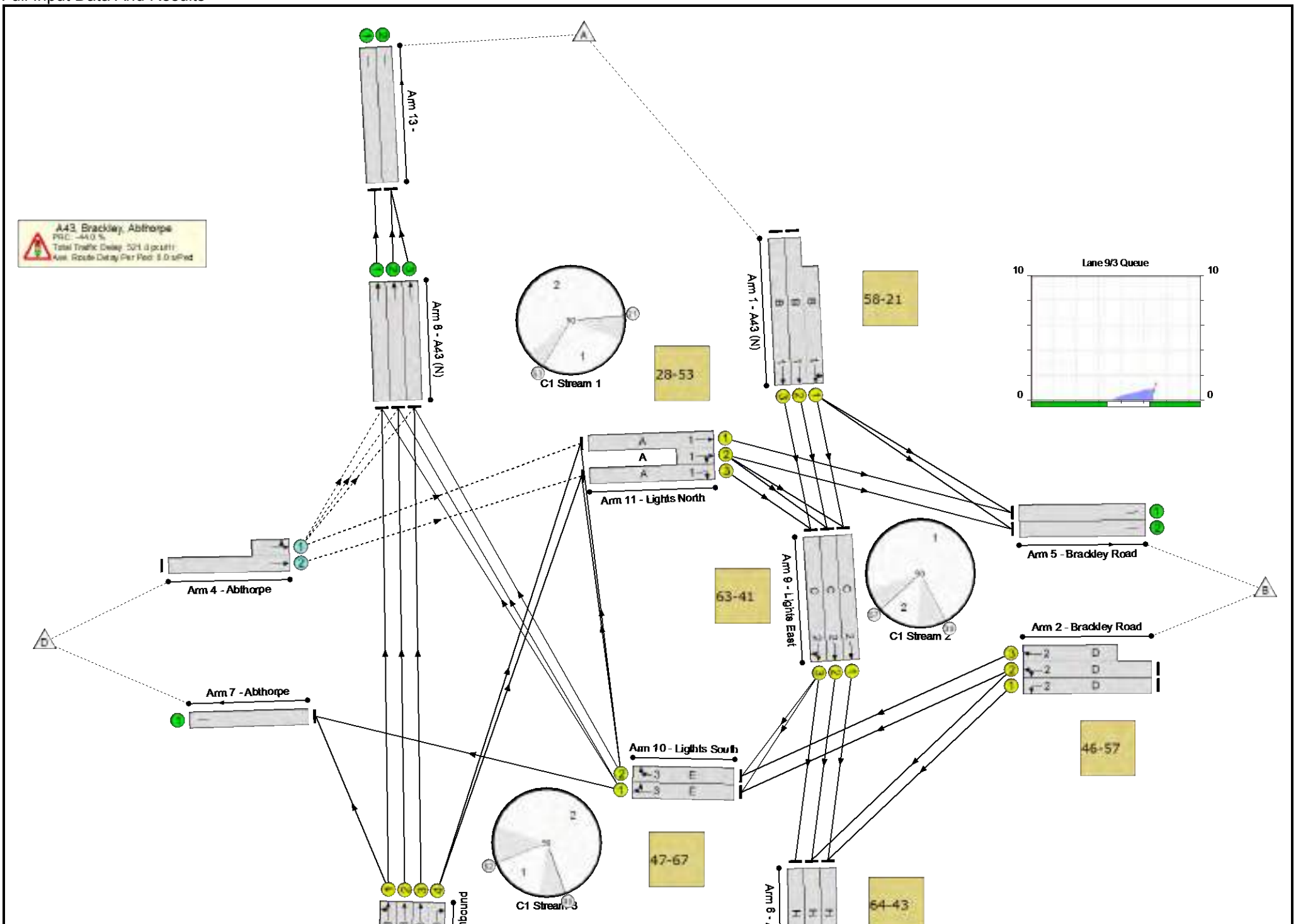
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**129.6%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**129.6%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	53	-	2333	1800:1800	876+924	129.6 : 129.6%
1/3	A43 (N) Ahead	U	1	N/A	B		1	53	-	1391	1800	1080	128.8%
2/1	Brackley Road Left	U	2	N/A	D		1	11	-	113	1800	240	47.1%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	11	-	432	1800:1800	227+240	87.6 : 97.1%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	58	-	738	1800	1180	62.5%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	58	-	739	1800	1180	62.6%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	58	-	920	1800:1800	989+345	68.9 : 68.9%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	365	1977:1906	208+363	64.0 : 64.0%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	271	1900	1900	12.7%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	220	1900	1900	10.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1097	1990	1548	57.0%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1158	2105	1637	54.9%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1445	2105	1637	70.4%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	314	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	794	1990	1990	39.9%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	796	1990	1990	40.0%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	936	1990	1990	47.0%
9/1	Lights East Ahead	U	2	N/A	C		1	68	-	984	1977	1516	50.8%
9/2	Lights East Ahead	U	2	N/A	C		1	68	-	1158	1900	1457	61.7%
9/3	Lights East Ahead Right	U	2	N/A	C		1	68	-	1527	2071	1588	76.6%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	20	-	281	1900	443	59.2%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	20	-	233	1900	443	52.6%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	25	-	300	1900:1900	322+359	44.1 : 44.1%
11/3	Lights North Right	U	1	N/A	A		1	25	-	136	1900	549	24.8%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1097	1965	1965	44.9%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1158	1965	1965	45.7%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1445	1965	1965	58.6%
13/1		U	N/A	N/A	-		-	-	-	794	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1732	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1097	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2603	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**591**	**139**	**0**	**76.1**	**445.3**	**0.0**	**521.4**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**591**	**139**	**0**	**76.1**	**445.3**	**0.0**	**521.4**	**-**	**-**	**-**	**-**
1/2+1/1	2333	1800	-	-	-	36.6	268.7	-	305.3	471.1	85.0	268.7	353.7
1/3	1391	1080	-	-	-	22.8	157.7	-	180.5	467.2	42.6	157.7	200.3
2/1	113	113	-	-	-	1.1	0.4	-	1.6	50.2	2.6	0.4	3.0
2/2+2/3	432	432	-	-	-	4.6	4.8	-	9.4	78.6	5.8	4.8	10.6
3/1	738	738	-	-	-	1.9	0.8	-	2.7	13.1	10.7	0.8	11.5
3/2	739	739	-	-	-	1.9	0.8	-	2.7	13.1	10.7	0.8	11.5
3/3+3/4	920	920	-	-	-	2.0	1.1	-	3.1	12.3	9.3	1.1	10.4
4/2+4/1	365	365	591	139	0	0.8	0.9	-	1.7	17.0	4.0	0.9	4.9
5/1	242	242	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	190	190	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	882	882	-	-	-	0.4	0.7	-	1.1	4.4	3.6	0.7	4.2
6/2	899	899	-	-	-	0.0	0.6	-	0.6	2.6	0.2	0.6	0.8
6/3	1152	1152	-	-	-	0.2	1.2	-	1.4	4.4	1.1	1.2	2.3
7/1	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	794	794	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
8/2	796	796	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
8/3	936	936	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
9/1	769	769	-	-	-	0.1	0.5	-	0.6	2.7	0.6	0.5	1.1
9/2	899	899	-	-	-	0.0	0.8	-	0.8	3.3	0.2	0.8	1.0
9/3	1216	1216	-	-	-	0.1	1.6	-	1.8	5.2	1.7	1.6	3.4
10/1	263	263	-	-	-	0.7	0.7	-	1.5	20.0	1.6	0.7	2.4
10/2	233	233	-	-	-	0.1	0.6	-	0.6	9.4	0.1	0.6	0.6
11/1+11/2	300	300	-	-	-	1.9	0.4	-	2.3	27.7	3.0	0.4	3.4

Full Input Data And Results

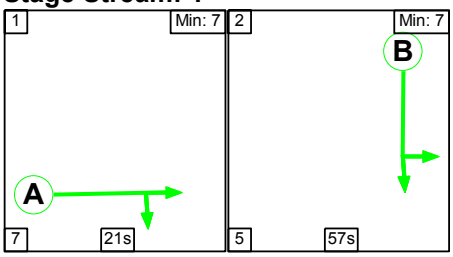
11/3	136	136	-	-	-	0.7	0.2	-	0.9	23.3	2.4	0.2	2.5
12/1	882	882	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/2	899	899	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/3	1152	1152	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
13/1	794	794	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1732	1732	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	882	882	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2051	2051	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-44.0	Total Delay for Signalled Lanes (pcuHr):	488.98	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	-7.9	Total Delay for Signalled Lanes (pcuHr):	14.18	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	30.6	Total Delay for Signalled Lanes (pcuHr):	10.59	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	27.9	Total Delay for Signalled Lanes (pcuHr):	3.13	Cycle Time (s): 90
	PRC Over All Lanes (%):	-44.0	Total Delay Over All Lanes(pcuHr):	521.37	

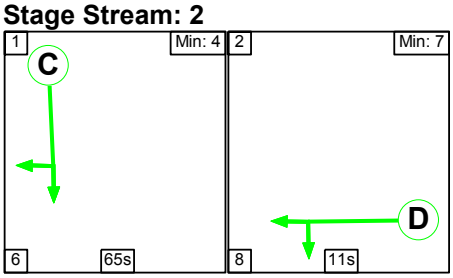
Full Input Data And Results
Scenario 10: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

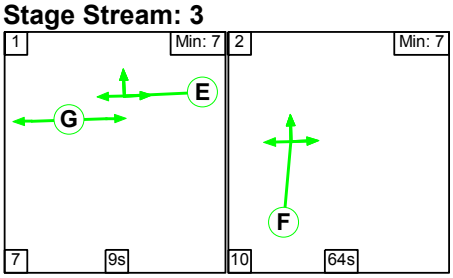
Stage Stream: 1



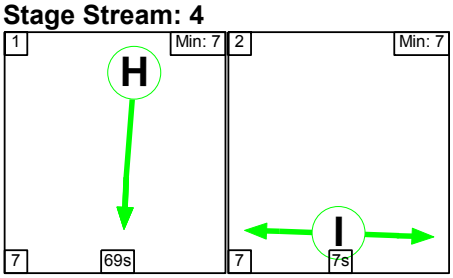
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	21	57
Change Point	24	52

Stage Stream: 2

Stage	1	2
Duration	65	11
Change Point	55	36

Stage Stream: 3

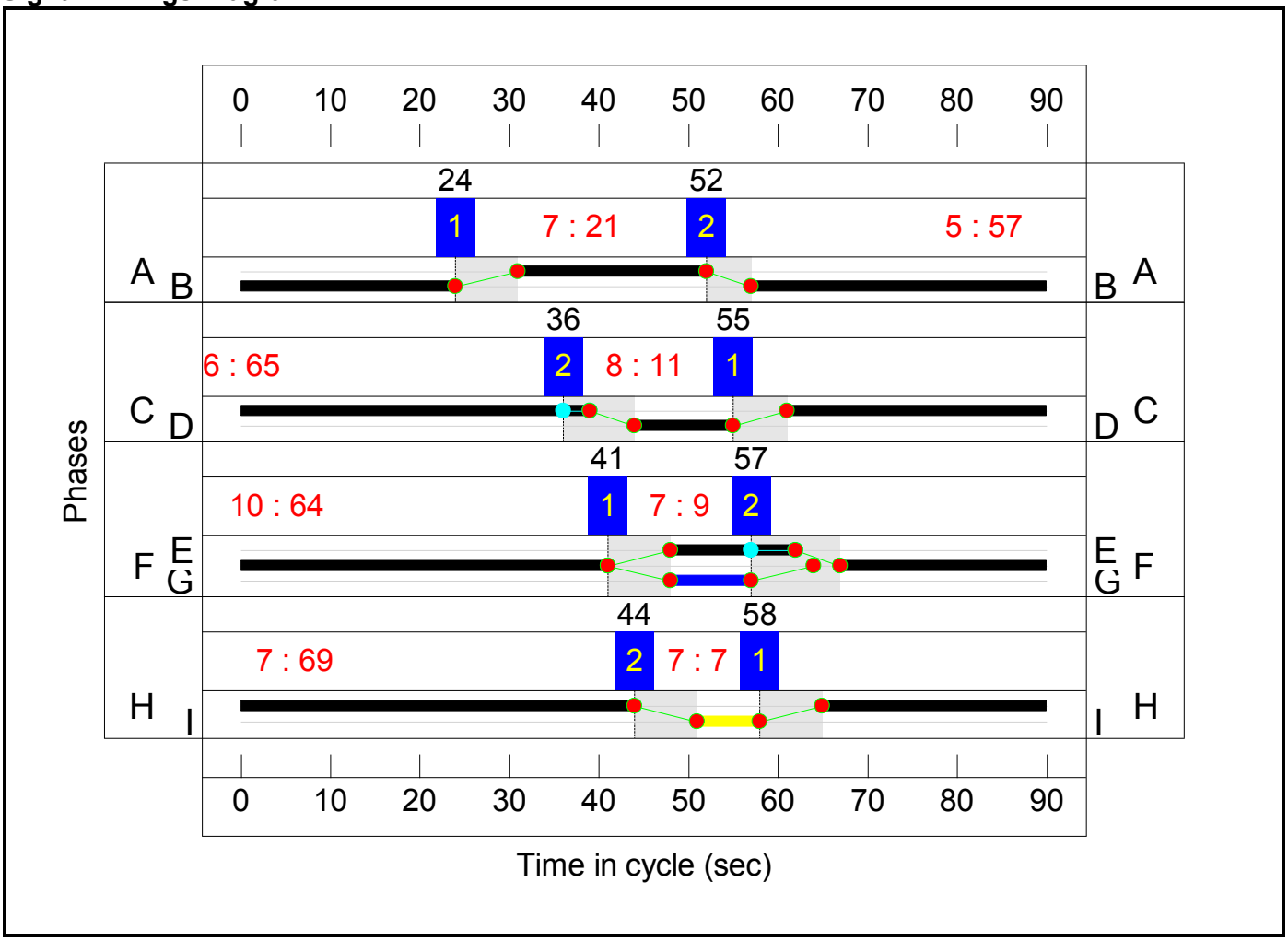
Stage	1	2
Duration	9	64
Change Point	41	57

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	58	44

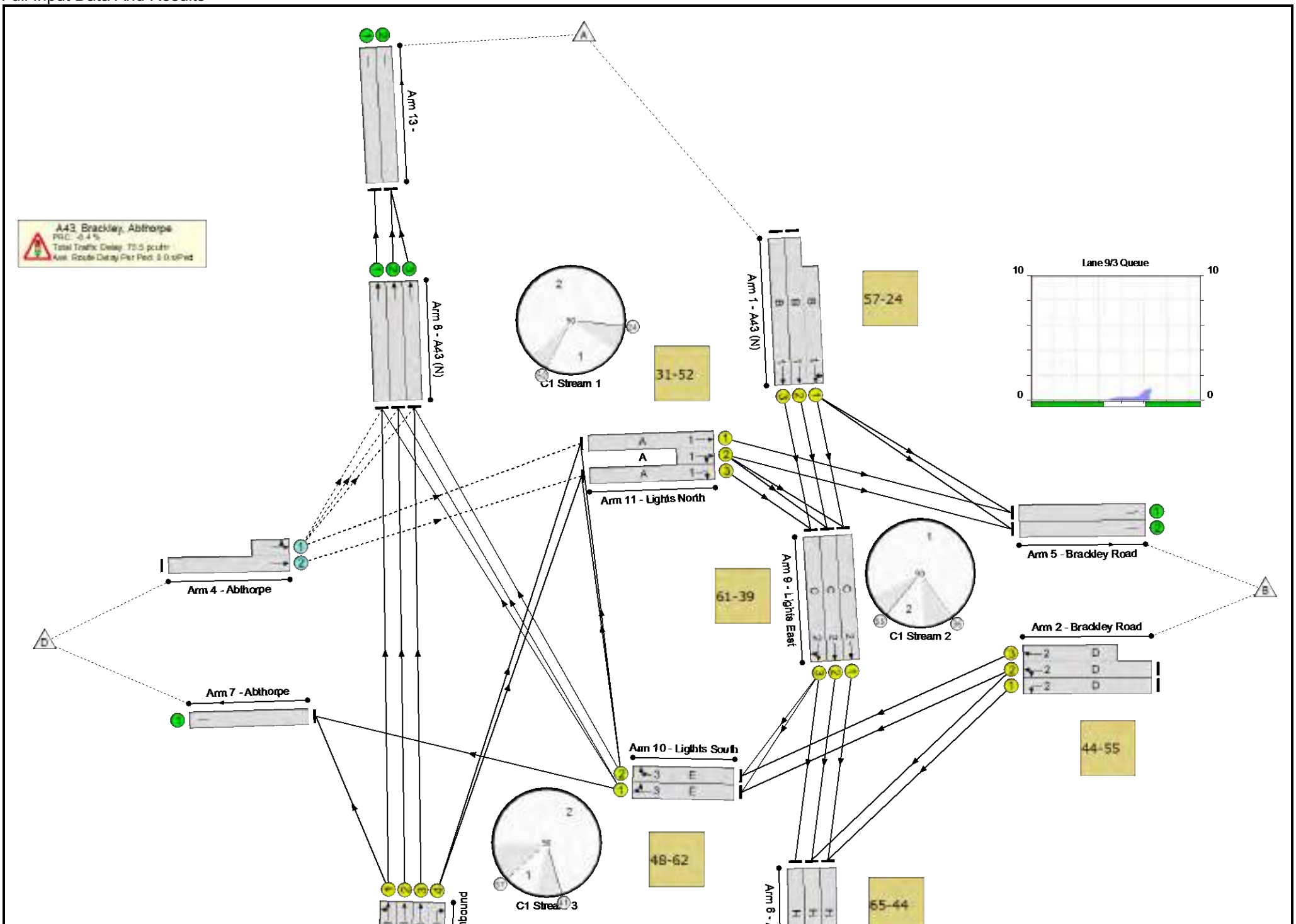
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.6%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.6%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	57	-	1756	1800:1800	856+944	97.6 : 97.6%
1/3	A43 (N) Ahead	U	1	N/A	B		1	57	-	1081	1800	1160	93.2%
2/1	Brackley Road Left	U	2	N/A	D		1	11	-	111	1800	240	46.3%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	11	-	215	1800:1800	240+0	89.6 : 0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	64	-	1177	1800	1300	90.5%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	64	-	1172	1800	1300	90.2%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	64	-	1301	1800:1800	1131+281	92.1 : 92.1%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	150	1977:1952	212+278	30.6 : 30.6%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	304	1900	1900	16.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	261	1900	1900	13.7%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	773	1990	1548	49.9%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	867	2105	1637	53.0%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1116	2105	1637	68.2%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	473	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	955	1990	1990	48.0%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1172	1990	1990	58.9%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1042	1990	1990	52.4%
9/1	Lights East Ahead	U	2	N/A	C		1	68	-	662	1977	1516	43.7%
9/2	Lights East Ahead	U	2	N/A	C		1	68	-	867	1900	1457	59.5%
9/3	Lights East Ahead Right	U	2	N/A	C		1	68	-	1152	2073	1589	72.5%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	14	-	251	1900	317	79.3%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	14	-	0	1900	317	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	21	-	338	1900:1900	312+287	56.4 : 56.4%
11/3	Lights North Right	U	1	N/A	A		1	21	-	71	1900	464	15.3%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	773	1965	1965	39.3%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	867	1965	1965	44.1%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1116	1965	1965	56.8%
13/1		U	N/A	N/A	-		-	-	-	955	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2214	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	773	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1983	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**51**	**249**	**0**	**28.4**	**47.1**	**0.0**	**75.5**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**51**	**249**	**0**	**28.4**	**47.1**	**0.0**	**75.5**	**-**	**-**	**-**	**-**
1/2+1/1	1756	1756	-	-	-	5.4	12.7	-	18.1	37.1	16.6	12.7	29.3
1/3	1081	1081	-	-	-	4.3	5.9	-	10.2	34.0	24.0	5.9	30.0
2/1	111	111	-	-	-	1.1	0.4	-	1.5	49.9	2.6	0.4	3.0
2/2+2/3	215	215	-	-	-	2.3	3.4	-	5.7	95.1	5.3	3.4	8.6
3/1	1177	1177	-	-	-	3.3	4.5	-	7.7	23.7	23.5	4.5	28.0
3/2	1172	1172	-	-	-	3.2	4.3	-	7.5	23.1	23.1	4.3	27.4
3/3+3/4	1301	1301	-	-	-	3.0	5.3	-	8.3	22.9	22.7	5.3	28.0
4/2+4/1	150	150	51	249	0	1.1	0.2	-	1.3	30.7	1.7	0.2	1.9
5/1	304	304	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	261	261	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	773	773	-	-	-	0.5	0.5	-	1.0	4.5	3.6	0.5	4.1
6/2	867	867	-	-	-	0.0	0.6	-	0.6	2.4	0.1	0.6	0.7
6/3	1116	1116	-	-	-	0.1	1.1	-	1.1	3.6	0.3	1.1	1.4
7/1	473	473	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	955	955	-	-	-	0.0	0.5	-	0.5	1.7	0.0	0.5	0.5
8/2	1172	1172	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
8/3	1042	1042	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
9/1	662	662	-	-	-	0.0	0.4	-	0.4	2.2	0.2	0.4	0.6
9/2	867	867	-	-	-	0.0	0.7	-	0.8	3.2	0.4	0.7	1.1
9/3	1152	1152	-	-	-	0.1	1.3	-	1.4	4.4	0.9	1.3	2.2
10/1	251	251	-	-	-	0.6	1.8	-	2.4	34.4	1.6	1.8	3.4
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1+11/2	338	338	-	-	-	2.8	0.6	-	3.4	36.2	3.9	0.6	4.5

Full Input Data And Results

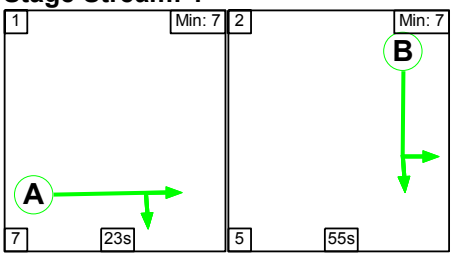
11/3	71	71	-	-	-	0.7	0.1	-	0.8	39.1	1.0	0.1	1.1
12/1	773	773	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
12/2	867	867	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
12/3	1116	1116	-	-	-	0.0	0.7	-	0.7	2.1	0.0	0.7	0.7
13/1	955	955	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2214	2214	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	773	773	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1983	1983	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-8.4	Total Delay for Signalled Lanes (pcuHr):	32.50	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	0.5	Total Delay for Signalled Lanes (pcuHr):	9.78	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-2.3	Total Delay for Signalled Lanes (pcuHr):	25.95	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	32.0	Total Delay for Signalled Lanes (pcuHr):	2.67	Cycle Time (s): 90
	PRC Over All Lanes (%):	-8.4	Total Delay Over All Lanes(pcuHr):	75.46	

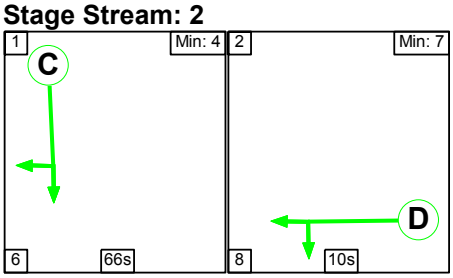
Full Input Data And Results
Scenario 11: '2031 DS AM' (FG9: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

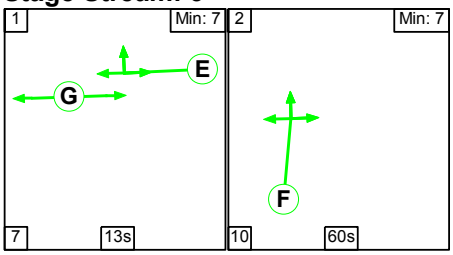
Stage Stream: 1



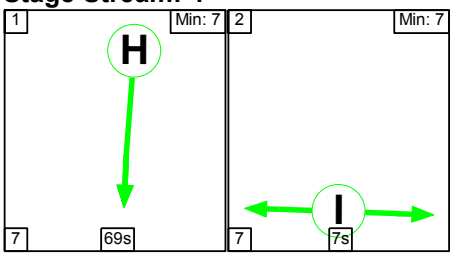
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	55
Change Point	21	51

Stage Stream: 2

Stage	1	2
Duration	66	10
Change Point	55	37

Stage Stream: 3

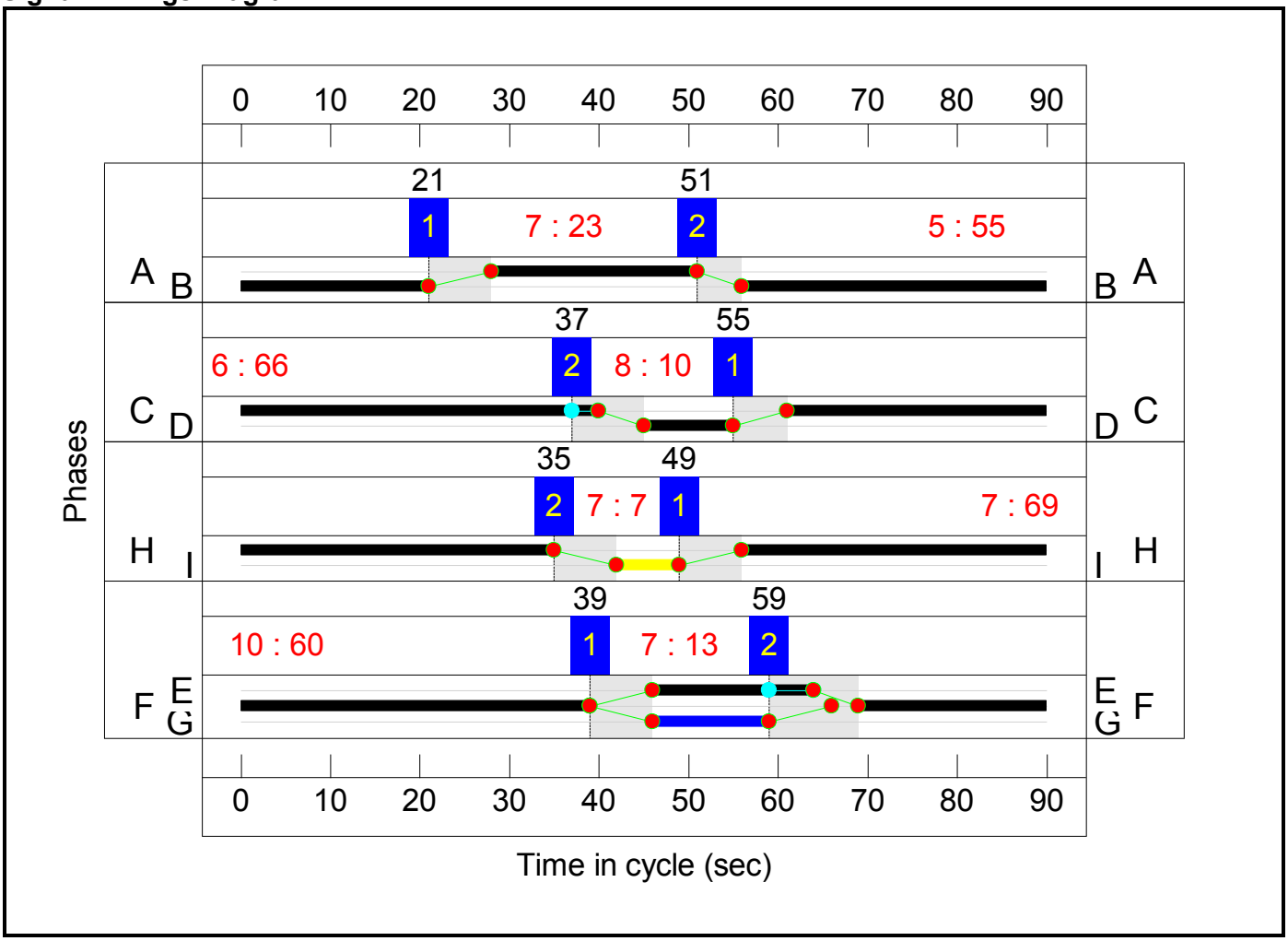
Stage	1	2
Duration	13	60
Change Point	39	59

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	49	35

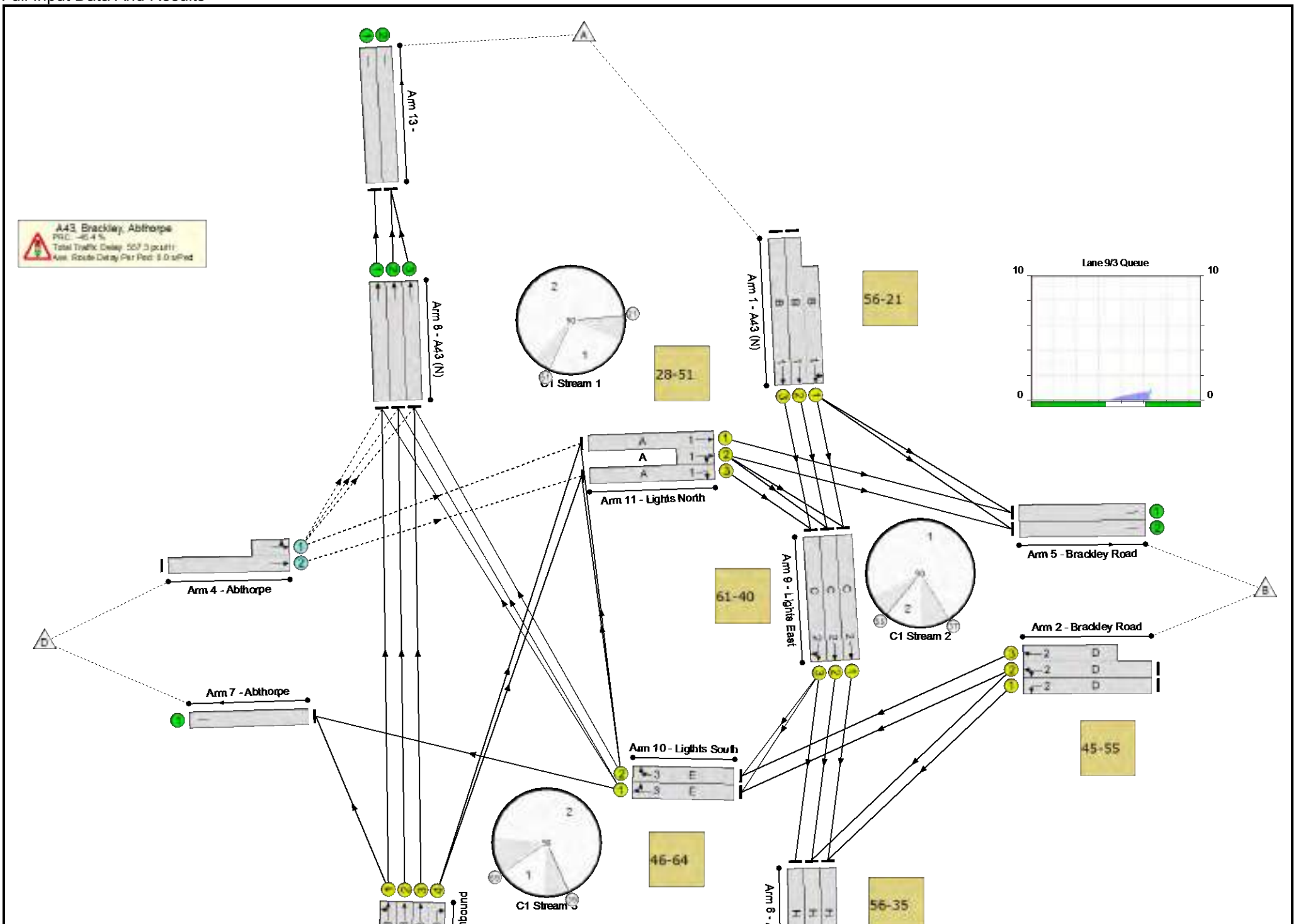
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**131.7%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**131.7%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	55	-	2371	1800:1800	864+936	131.7 : 131.7%
1/3	A43 (N) Ahead	U	1	N/A	B		1	55	-	1465	1800	1120	130.8%
2/1	Brackley Road Left	U	2	N/A	D		1	10	-	135	1800	220	61.4%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	10	-	369	1800:1800	220+220	78.2 : 89.5%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	60	-	690	1800	1220	56.6%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	60	-	689	1800	1220	56.5%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	60	-	879	1800:1800	1008+377	63.5 : 63.5%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	385	1977:1918	158+405	68.3 : 68.3%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	344	1900	1900	15.9%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	241	1900	1900	10.4%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1097	1990	1548	57.2%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1215	2105	1637	57.5%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1478	2105	1637	70.6%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	348	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	705	1990	1990	35.4%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	708	1990	1990	35.6%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	847	1990	1990	42.6%
9/1	Lights East Ahead	U	2	N/A	C		1	69	-	962	1977	1538	48.8%
9/2	Lights East Ahead	U	2	N/A	C		1	69	-	1190	1900	1478	62.0%
9/3	Lights East Ahead Right	U	2	N/A	C		1	69	-	1576	2071	1611	76.4%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	18	-	245	1900	401	55.3%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	18	-	197	1900	401	49.1%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	23	-	366	1900:1900	292+341	57.8 : 57.8%
11/3	Lights North Right	U	1	N/A	A		1	23	-	111	1900	507	21.9%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1097	1965	1965	45.0%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1215	1965	1965	47.9%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1478	1965	1965	58.8%
13/1		U	N/A	N/A	-		-	-	-	705	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1555	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1097	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2693	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**634**	**136**	**0**	**78.7**	**478.6**	**0.0**	**557.3**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**634**	**136**	**0**	**78.7**	**478.6**	**0.0**	**557.3**	**-**	**-**	**-**	**-**
1/2+1/1	2371	1800	-	-	-	37.9	287.6	-	325.5	494.2	88.2	287.6	375.7
1/3	1465	1120	-	-	-	24.6	174.6	-	199.2	489.5	45.2	174.6	219.8
2/1	135	135	-	-	-	1.4	0.8	-	2.2	58.3	3.2	0.8	4.0
2/2+2/3	369	369	-	-	-	4.0	2.4	-	6.4	62.4	4.8	2.4	7.2
3/1	690	690	-	-	-	1.5	0.6	-	2.1	11.0	9.0	0.6	9.7
3/2	689	689	-	-	-	1.4	0.6	-	2.1	11.0	8.8	0.6	9.5
3/3+3/4	879	879	-	-	-	1.6	0.9	-	2.5	10.3	8.0	0.9	8.9
4/2+4/1	385	385	634	136	0	0.7	1.1	-	1.8	16.7	4.9	1.1	6.0
5/1	302	302	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	198	198	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	885	885	-	-	-	0.5	0.7	-	1.1	4.5	4.7	0.7	5.4
6/2	941	941	-	-	-	0.2	0.7	-	0.8	3.2	1.4	0.7	2.1
6/3	1156	1156	-	-	-	0.5	1.2	-	1.6	5.1	2.6	1.2	3.8
7/1	325	325	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	705	705	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	708	708	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/3	847	847	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
9/1	750	750	-	-	-	0.1	0.5	-	0.6	2.9	1.2	0.5	1.7
9/2	916	916	-	-	-	0.1	0.8	-	0.9	3.5	0.7	0.8	1.5
9/3	1231	1231	-	-	-	0.1	1.6	-	1.7	5.0	0.8	1.6	2.5
10/1	222	222	-	-	-	0.9	0.6	-	1.5	24.2	1.9	0.6	2.5
10/2	197	197	-	-	-	0.1	0.5	-	0.5	10.0	0.1	0.5	0.6
11/1+11/2	366	366	-	-	-	2.5	0.7	-	3.2	31.2	4.0	0.7	4.7

Full Input Data And Results

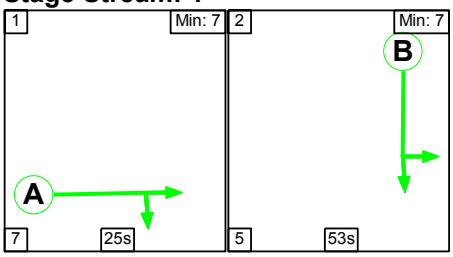
11/3	111	111	-	-	-	0.7	0.1	-	0.8	27.5	2.2	0.1	2.3
12/1	885	885	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/2	941	941	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
12/3	1156	1156	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
13/1	705	705	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1555	1555	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	885	885	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2097	2097	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-46.4	Total Delay for Signalled Lanes (pcuHr):	528.71	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	0.5	Total Delay for Signalled Lanes (pcuHr):	11.77	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	41.8	Total Delay for Signalled Lanes (pcuHr):	8.75	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	27.5	Total Delay for Signalled Lanes (pcuHr):	3.61	Cycle Time (s): 90
	PRC Over All Lanes (%):	-46.4	Total Delay Over All Lanes(pcuHr):	557.28	

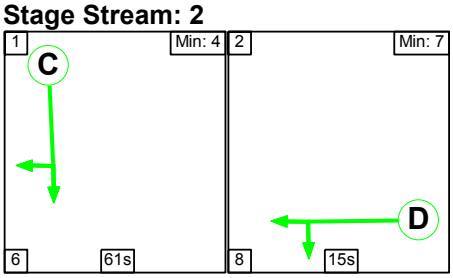
Full Input Data And Results
Scenario 12: '2031 DS PM' (FG10: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

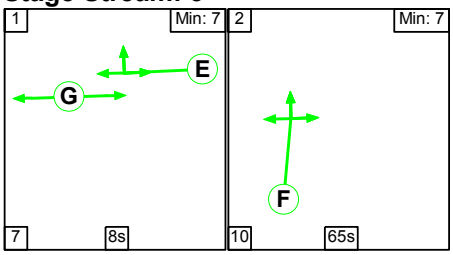
Stage Stream: 1



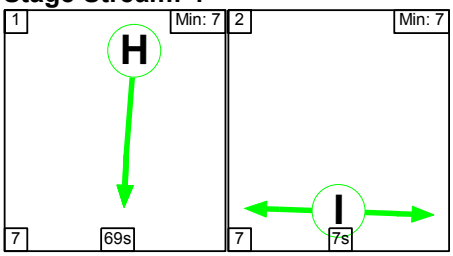
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	53
Change Point	24	56

Stage Stream: 2

Stage	1	2
Duration	61	15
Change Point	58	35

Stage Stream: 3

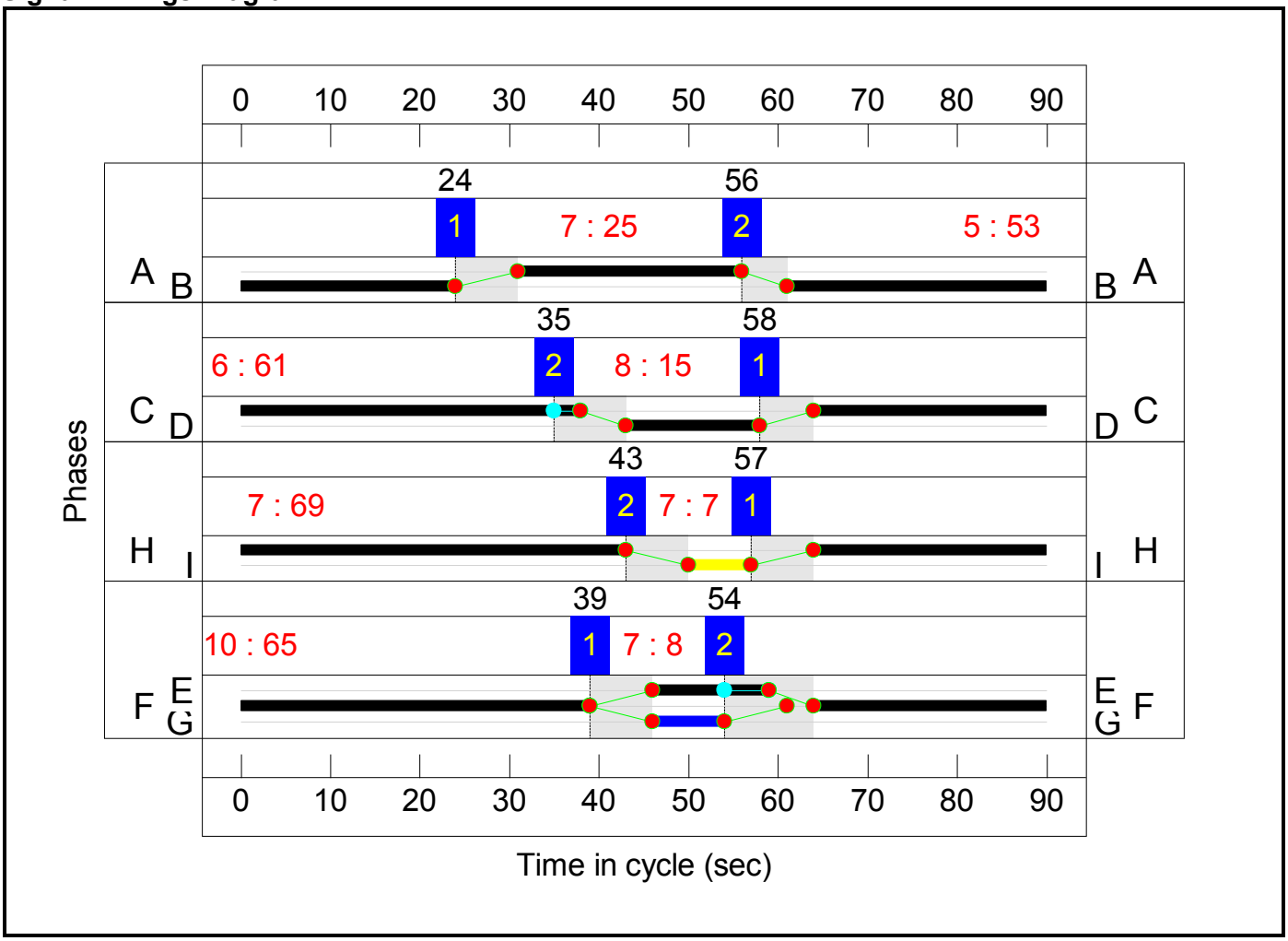
Stage	1	2
Duration	8	65
Change Point	39	54

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	57	43

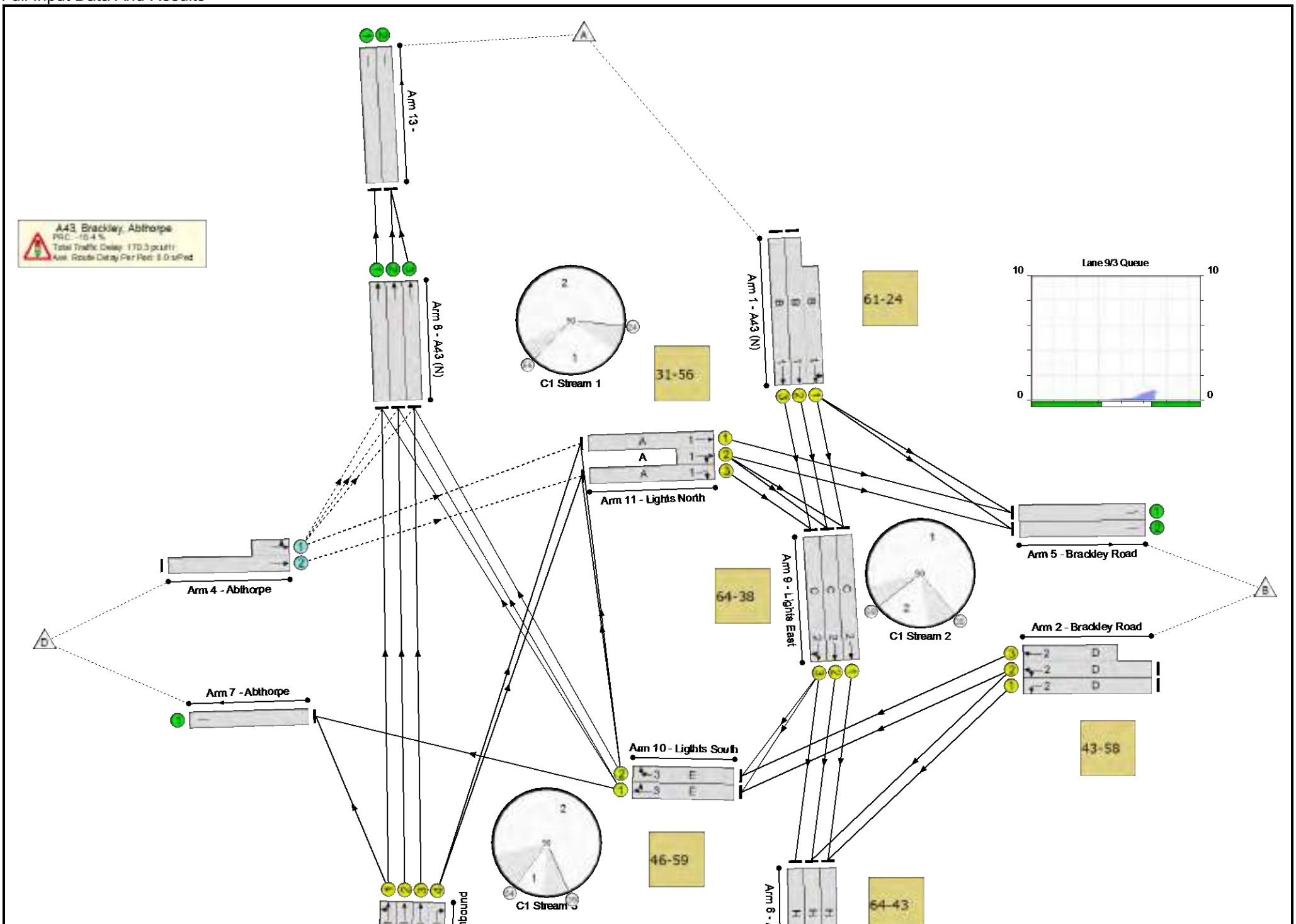
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.6%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**106.6%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	53	-	1918	1800:1800	866+934	106.6 : 106.6%
1/3	A43 (N) Ahead	U	1	N/A	B		1	53	-	1140	1800	1080	105.6%
2/1	Brackley Road Left	U	2	N/A	D		1	15	-	118	1800	320	36.9%
2/2+2/3	Brackley Road Left Ahead	U	2	N/A	D		1	15	-	193	1800:1800	320+0	60.3 : 0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	65	-	1204	1800	1320	91.2%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	65	-	1200	1800	1320	90.9%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	65	-	1322	1800:1800	1154+274	92.6 : 92.6%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	147	1977:1950	77+267	42.8 : 42.8%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	303	1900	1900	15.5%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	282	1900	1900	14.4%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	876	1990	1548	53.8%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	933	2105	1637	53.5%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1148	2105	1637	66.6%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	482	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	949	1990	1990	47.7%
8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1200	1990	1990	60.3%

Full Input Data And Results

8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1069	1990	1990	53.7%
9/1	Lights East Ahead	U	2	N/A	C		1	64	-	758	1977	1428	50.1%
9/2	Lights East Ahead	U	2	N/A	C		1	64	-	933	1900	1372	63.9%
9/3	Lights East Ahead Right	U	2	N/A	C		1	64	-	1179	2073	1497	74.7%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	13	-	224	1900	296	75.2%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	13	-	0	1900	296	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	25	-	358	1900:1900	296+371	53.7 : 53.7%
11/3	Lights North Right	U	1	N/A	A		1	25	-	39	1900	549	7.1%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	876	1965	1965	42.4%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	933	1965	1965	44.6%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1148	1965	1965	55.5%
13/1		U	N/A	N/A	-		-	-	-	949	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2269	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	876	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2081	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**95**	**199**	**0**	**39.6**	**130.7**	**0.0**	**170.3**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**95**	**199**	**0**	**39.6**	**130.7**	**0.0**	**170.3**	**-**	**-**	**-**	**-**
1/2+1/1	1918	1800	-	-	-	13.7	66.2	-	80.0	150.1	61.6	66.2	127.8
1/3	1140	1080	-	-	-	8.7	37.6	-	46.3	146.2	30.0	37.6	67.6
2/1	118	118	-	-	-	1.1	0.3	-	1.4	41.5	2.6	0.3	2.9
2/2+2/3	193	193	-	-	-	1.8	0.8	-	2.6	48.1	4.4	0.8	5.1
3/1	1204	1204	-	-	-	3.2	4.8	-	8.0	24.0	24.1	4.8	28.9
3/2	1200	1200	-	-	-	3.2	4.6	-	7.8	23.5	23.7	4.6	28.3
3/3+3/4	1322	1322	-	-	-	2.9	5.6	-	8.5	23.2	23.3	5.6	28.9
4/2+4/1	147	147	95	199	0	1.1	0.4	-	1.5	35.9	2.3	0.4	2.7
5/1	294	294	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/2	273	273	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
6/1	833	833	-	-	-	0.5	0.6	-	1.0	4.5	3.0	0.6	3.6
6/2	876	876	-	-	-	0.0	0.6	-	0.6	2.4	0.0	0.6	0.6
6/3	1090	1090	-	-	-	0.0	1.0	-	1.0	3.4	0.1	1.0	1.1
7/1	480	480	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	949	949	-	-	-	0.0	0.5	-	0.5	1.7	0.0	0.5	0.5
8/2	1200	1200	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
8/3	1069	1069	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
9/1	715	715	-	-	-	0.1	0.5	-	0.6	3.0	1.2	0.5	1.7
9/2	876	876	-	-	-	0.0	0.9	-	0.9	3.7	0.2	0.9	1.1
9/3	1119	1119	-	-	-	0.1	1.5	-	1.6	5.0	0.8	1.5	2.2
10/1	222	222	-	-	-	0.7	1.5	-	2.2	35.0	1.2	1.5	2.7
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1+11/2	358	358	-	-	-	2.3	0.6	-	2.9	28.8	3.2	0.6	3.8

Full Input Data And Results

11/3	39	39	-	-	-	0.1	0.0	-	0.2	16.4	0.3	0.0	0.3
12/1	833	833	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
12/2	876	876	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/3	1090	1090	-	-	-	0.0	0.6	-	0.6	2.1	0.0	0.6	0.6
13/1	949	949	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2269	2269	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	833	833	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1966	1966	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-18.4	Total Delay for Signalled Lanes (pcuHr):	129.30	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	20.4	Total Delay for Signalled Lanes (pcuHr):	6.99	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-2.9	Total Delay for Signalled Lanes (pcuHr):	26.54	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	35.2	Total Delay for Signalled Lanes (pcuHr):	2.65	Cycle Time (s):	90
	PRC Over All Lanes (%):	-18.4	Total Delay Over All Lanes(pcuHr):	170.32		

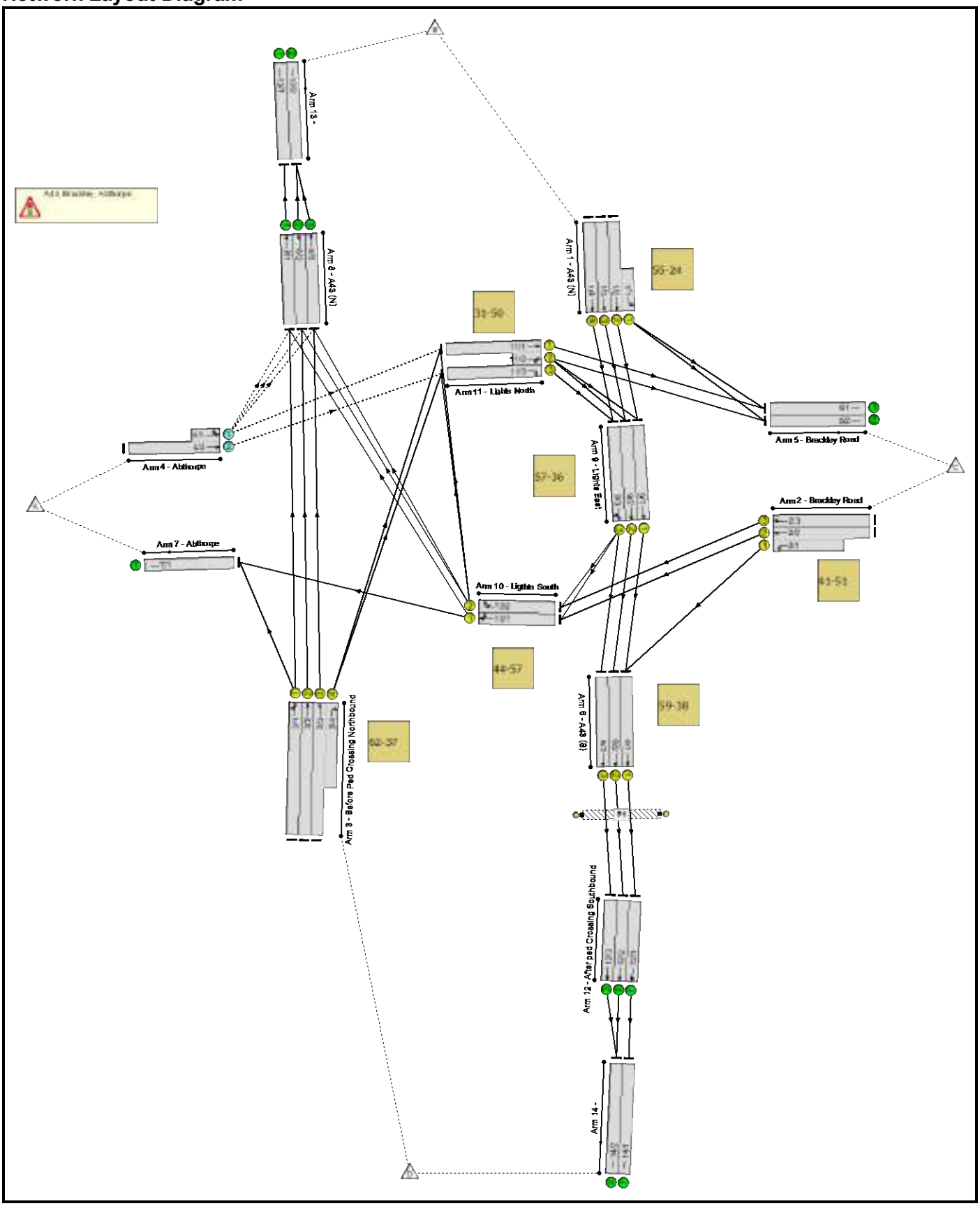
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 15
Location:	Abthorpe Road / A43, Towcester Bypass (north) / Brackley Road / A43, Towcester Bypass (south)
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

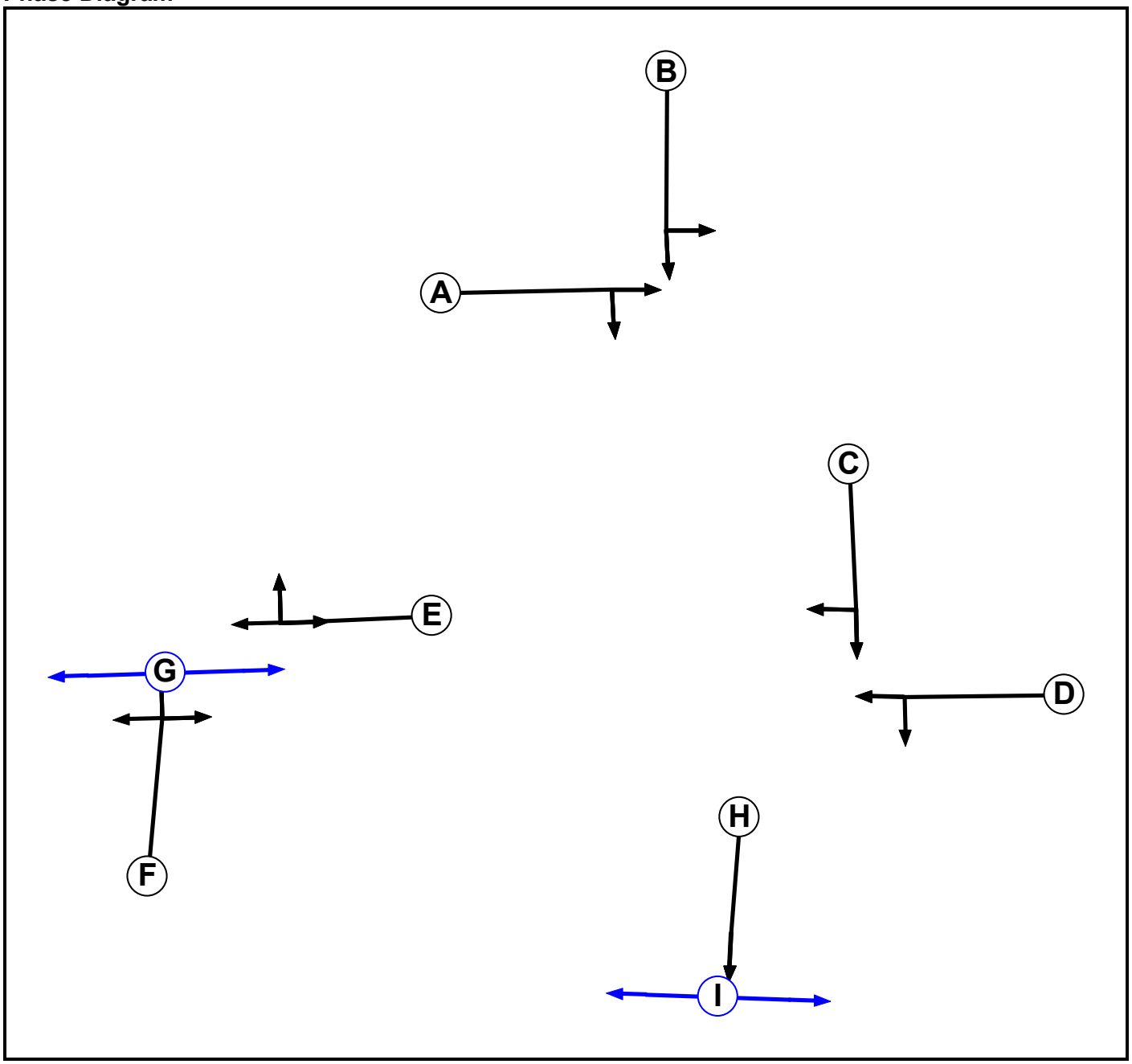
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	4
D	Traffic	2		7	7
E	Traffic	3		7	2
F	Traffic	3		7	7
G	Pedestrian	3		7	7
H	Traffic	4		7	7
I	Pedestrian	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

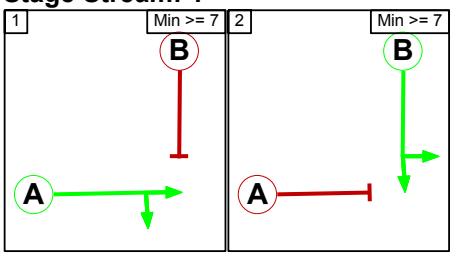
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I
A		5	-	-	-	-	-	-	-
B	7		-	-	-	-	-	-	-
C	-	-		5	-	-	-	-	-
D	-	-	6		-	-	-	-	-
E	-	-	-	-		5	-	-	-
F	-	-	-	-	7		7	-	-
G	-	-	-	-	-	7		-	-
H	-	-	-	-	-	-	-		7
I	-	-	-	-	-	-	-	7	

Phases in Stage

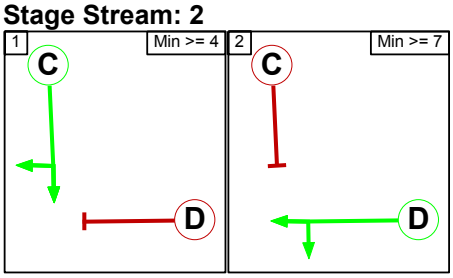
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E G
3	2	F
4	1	H
4	2	I

Stage Diagram

Stage Stream: 1

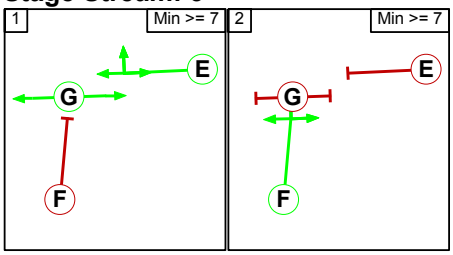


Stage Stream: 2

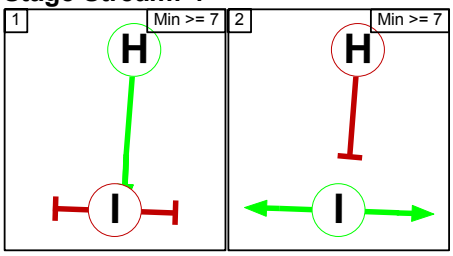


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	3	3

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	E	Losing	5	5

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		5
	2	7	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		8
	2	6	

Full Input Data And Results

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		10
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A43, Brackley, Abthorpe

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
4/1 (Abthorpe)	8/1 (Left)	1000	0	3/1	0.33	To 8/1 (Ahead)	-	-	-	-	-
				3/2	0.33	All					
				3/3	0.33	All					
				10/2	0.33	To 8/3 (Right)					
	8/2 (Left)	1000	0	10/2	0.33	To 8/3 (Right)					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
	8/3 (Left)	1000	0	10/2	0.33	To 8/3 (Right)					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
	11/1 (Ahead)	1000	0	10/2	0.33	All					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
				3/4	0.33	All					
4/2 (Abthorpe)	11/3 (Ahead)	1000	0	10/2	0.33	All	-	-	-	-	-
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
				3/4	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A43, Brackley, Abthorpe												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A43 (N))	U	B	2	3	5.2	User	1800	-	-	-	-	-
1/2 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/4 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Brackley Road)	U	D	2	3	8.7	User	1800	-	-	-	-	-
2/2 (Brackley Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
2/3 (Brackley Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/1 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/2 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/3 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/4 (Before Ped Crossing Northbound)	U	F	2	3	10.4	User	1800	-	-	-	-	-
4/1 (Abthorpe)	O		2	3	3.5	Geom	-	3.75	0.00	Y	Arm 8 Left Arm 11 Ahead	28.00 78.00
4/2 (Abthorpe)	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 11 Ahead	78.00
5/1 (Brackley Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Brackley Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (A43 (S))	U	H	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 12 Ahead	Inf
6/2 (A43 (S))	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	Inf
6/3 (A43 (S))	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	Inf

Full Input Data And Results

7/1 (Abthorpe)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
8/2 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
8/3 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
9/1 (Lights East)	U	C	2	3	1.0	User	1900	-	-	-	-	-
9/2 (Lights East)	U	C	2	3	1.0	User	1900	-	-	-	-	-
9/3 (Lights East)	U	C	2	3	1.0	User	1900	-	-	-	-	-
10/1 (Ligthts South)	U	E	2	3	3.5	User	1800	-	-	-	-	-
10/2 (Ligthts South)	U	E	2	3	3.5	User	1900	-	-	-	-	-
11/1 (Lights North)	U	A	2	3	5.2	User	1900	-	-	-	-	-
11/2 (Lights North)	U	A	2	3	3.5	User	1900	-	-	-	-	-
11/3 (Lights North)	U	A	2	3	5.2	User	1900	-	-	-	-	-
12/1 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
12/2 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
12/3 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1	U		2	3	60.0	Inf	-	-	-	-	-	-
14/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 3: '2021 DS AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	145	0	340	485
	B	103	0	94	3035	3232
	C	82	271	0	77	430
	D	130	1850	172	6	2158
	Tot.	315	2266	266	3458	6305

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	94
1/2 (with short)	1097(In) 1003(Out)
1/3	1069
1/4	1066
2/1 (short)	77
2/2 (with short)	254(In) 177(Out)
2/3	176
3/1	670
3/2	667
3/3 (with short)	815(In) 643(Out)
3/4 (short)	172
4/1 (short)	294
4/2 (with short)	485(In) 191(Out)
5/1	200
5/2	66
6/1	1129
6/2	1169
6/3	1154
7/1	315
8/1	745
8/2	761
8/3	760
9/1	1052
9/2	1169
9/3	1257
10/1	280
10/2	176
11/1 (with short)	321(In) 153(Out)
11/2 (short)	168
11/3	191
12/1	1129
12/2	1169
12/3	1154
13/1	745
13/2	1521

Full Input Data And Results

14/1	1129
14/2	2323

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	49.3 %	1921	1921
				Arm 11 Ahead	78.00	50.7 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DS PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	3	26	122	151
	B	35	0	203	2467	2705
	C	181	0	0	112	293
	D	277	3203	248	6	3734
	Tot.	493	3206	477	2707	6883

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	203
1/2 (with short)	957(In) 754(Out)
1/3	877
1/4	871
2/1 (short)	112
2/2 (with short)	293(In) 181(Out)
2/3	0
3/1	1208
3/2	1203
3/3 (with short)	1317(In) 1069(Out)
3/4 (short)	248
4/1 (short)	87
4/2 (with short)	151(In) 64(Out)
5/1	257
5/2	220
6/1	905
6/2	896
6/3	900
7/1	493
8/1	933
8/2	1203
8/3	1070
9/1	793
9/2	896
9/3	935
10/1	216
10/2	0
11/1 (with short)	332(In) 155(Out)
11/2 (short)	177
11/3	64
12/1	905
12/2	896
12/3	900
13/1	933
13/2	2273

Full Input Data And Results

14/1	905
14/2	1796

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	3.4 %	1950	1950
				Arm 11 Ahead	78.00	96.6 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2031 DS AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	147	0	238	385
	B	98	0	353	3385	3836
	C	104	240	0	160	504
	D	146	1873	232	7	2258
	Tot.	348	2260	585	3790	6983

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	353
1/2 (with short)	1342(In) 989(Out)
1/3	1248
1/4	1246
2/1 (short)	160
2/2 (with short)	341(In) 181(Out)
2/3	163
3/1	693
3/2	694
3/3 (with short)	864(In) 632(Out)
3/4 (short)	232
4/1 (short)	236
4/2 (with short)	385(In) 149(Out)
5/1	388
5/2	197
6/1	1216
6/2	1270
6/3	1297
7/1	348
8/1	717
8/2	751
8/3	792
9/1	1056
9/2	1270
9/3	1395
10/1	279
10/2	163
11/1 (with short)	321(In) 211(Out)
11/2 (short)	110
11/3	149
12/1	1216
12/2	1270
12/3	1297
13/1	717
13/2	1543

Full Input Data And Results

14/1	1216
14/2	2567

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	62.3 %	1912	1912
				Arm 11 Ahead	78.00	37.7 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2031 DS PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	4	44	99	147
	B	31	0	293	2734	3058
	C	193	0	0	118	311
	D	258	3214	248	6	3726
	Tot.	482	3218	585	2957	7242

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	293
1/2 (with short)	1103(In) 810(Out)
1/3	980
1/4	975
2/1 (short)	118
2/2 (with short)	311(In) 193(Out)
2/3	0
3/1	1203
3/2	1199
3/3 (with short)	1318(In) 1070(Out)
3/4 (short)	248
4/1 (short)	85
4/2 (with short)	147(In) 62(Out)
5/1	306
5/2	279
6/1	941
6/2	1004
6/3	1006
7/1	482
8/1	948
8/2	1199
8/3	1071
9/1	823
9/2	1004
9/3	1037
10/1	224
10/2	0
11/1 (with short)	329(In) 159(Out)
11/2 (short)	170
11/3	62
12/1	941
12/2	1004
12/3	1006
13/1	948
13/2	2270

Full Input Data And Results

14/1	941
14/2	2010

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	4.7 %	1949	1949
				Arm 11 Ahead	78.00	95.3 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

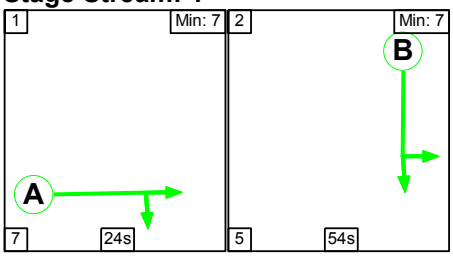
Full Input Data And Results

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

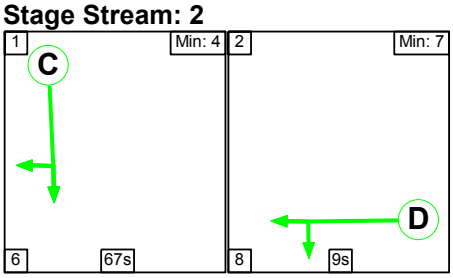
Scenario 3: '2021 DS AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

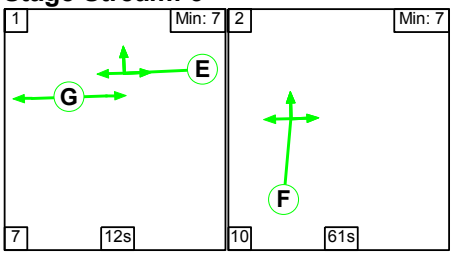


Stage Stream: 2

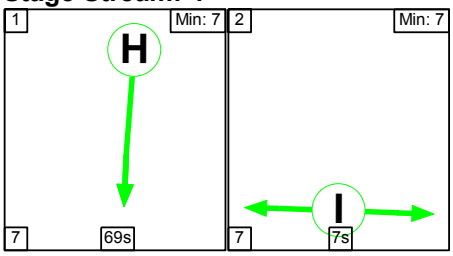


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	54
Change Point	15	46

Stage Stream: 2

Stage	1	2
Duration	67	9
Change Point	48	31

Stage Stream: 3

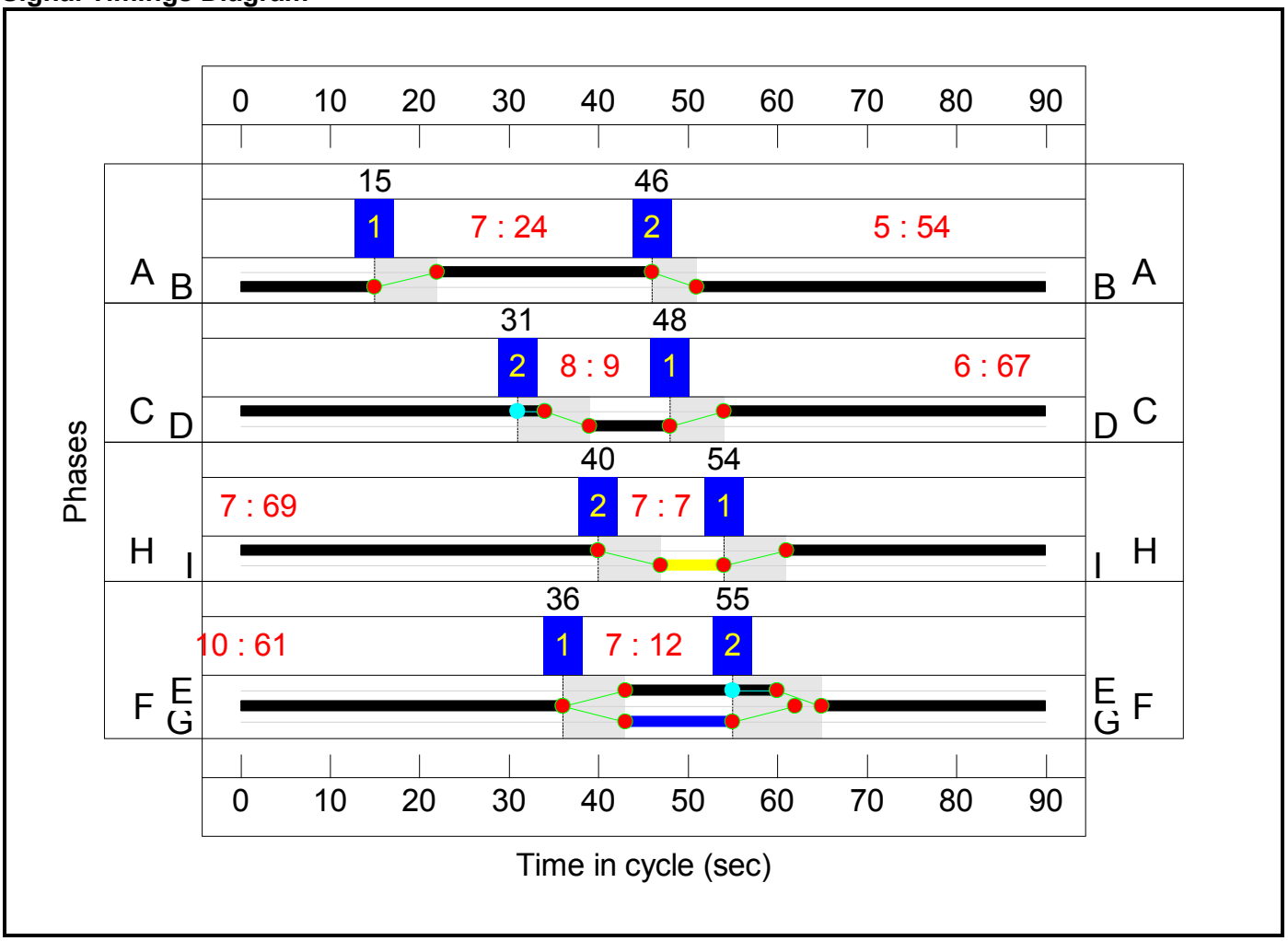
Stage	1	2
Duration	12	61
Change Point	36	55

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	54	40

Full Input Data And Results

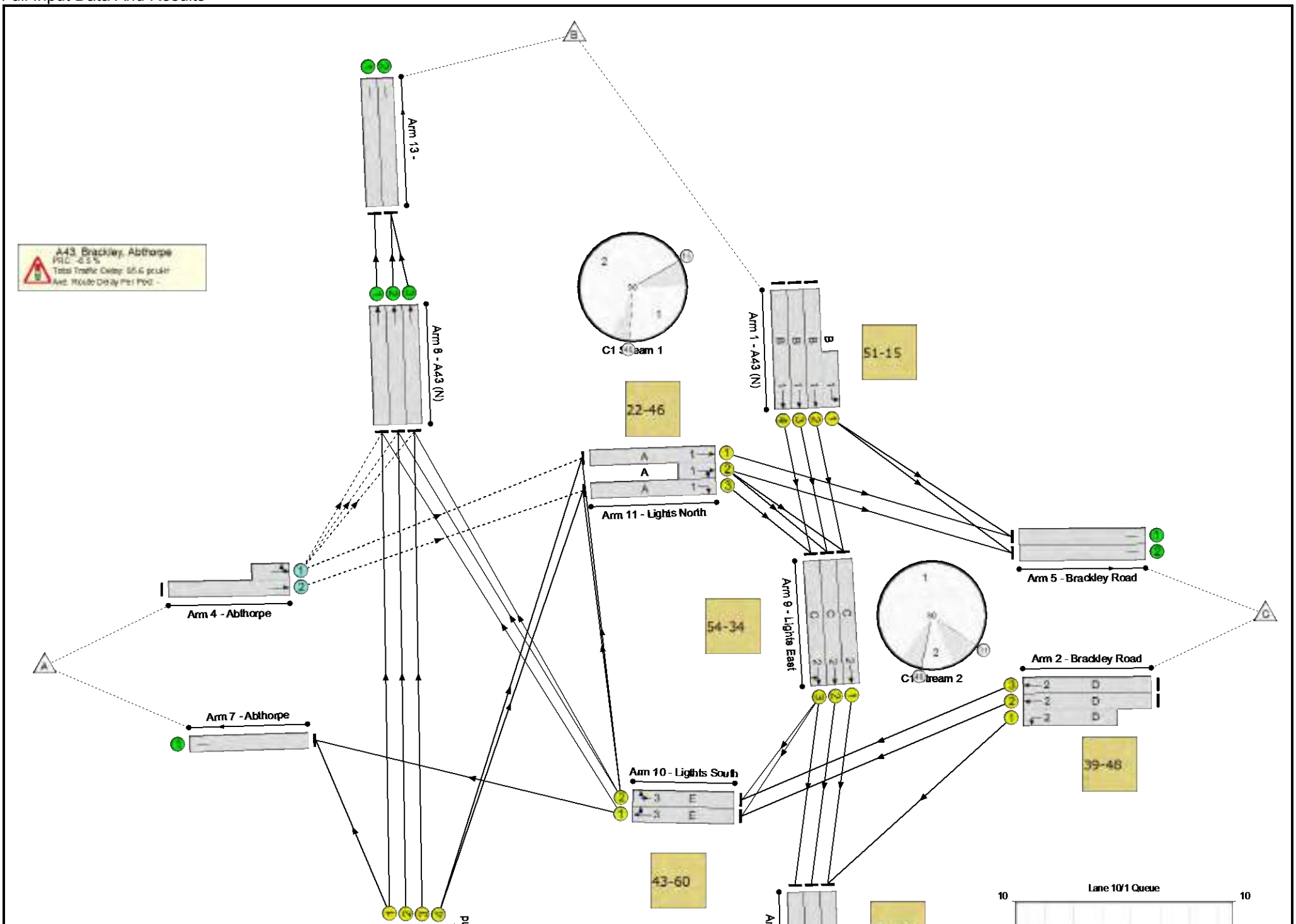
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.6%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.6%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	54	-	1097	1800:1800	1027+96	97.6 : 97.6%
1/3	A43 (N) Ahead	U	1	N/A	B		1	54	-	1069	1800	1100	97.2%
1/4	A43 (N) Ahead	U	1	N/A	B		1	54	-	1066	1800	1100	96.9%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	9	-	254	1800:1800	200+87	88.5 : 88.5%
2/3	Brackley Road Ahead	U	2	N/A	D		1	9	-	176	1800	200	88.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	61	-	670	1800	1240	54.0%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	61	-	667	1800	1240	53.8%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	61	-	815	1800:1800	1073+287	59.9 : 59.9%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	485	1977:1921	288+443	66.3 : 66.3%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	200	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	66	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1129	1990	1548	72.9%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1169	2105	1637	71.4%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1154	2105	1637	70.5%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	315	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	745	1990	1990	37.4%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	761	1990	1990	38.2%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	760	1990	1990	38.2%
9/1	Lights East Ahead	U	2	N/A	C		1	70	-	1052	1900	1499	70.2%
9/2	Lights East Ahead	U	2	N/A	C		1	70	-	1169	1900	1499	78.0%
9/3	Lights East Ahead Right	U	2	N/A	C		1	70	-	1257	1900	1499	83.9%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	17	-	280	1800	360	77.8%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	17	-	176	1900	380	46.3%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	24	-	321	1900:1900	315+346	48.5 : 48.5%
11/3	Lights North Right	U	1	N/A	A		1	24	-	191	1900	528	36.2%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1129	1965	1965	57.5%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1169	1965	1965	59.5%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1154	1965	1965	58.7%
13/1		U	N/A	N/A	-		-	-	-	745	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1521	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1129	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2323	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**815**	**155**	**0**	**30.0**	**55.6**	**0.0**	**85.6**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**815**	**155**	**0**	**30.0**	**55.6**	**0.0**	**85.6**	**-**	**-**	**-**	**-**
1/2+1/1	1097	1097	-	-	-	5.0	11.2	-	16.1	53.0	25.7	11.2	36.9
1/3	1069	1069	-	-	-	5.0	10.3	-	15.3	51.6	25.5	10.3	35.9
1/4	1066	1066	-	-	-	4.9	9.9	-	14.8	50.1	25.2	9.9	35.1
2/2+2/1	254	254	-	-	-	2.7	3.2	-	6.0	84.4	4.3	3.2	7.5
2/3	176	176	-	-	-	1.9	2.9	-	4.9	99.6	4.3	2.9	7.2
3/1	670	670	-	-	-	1.3	0.6	-	1.9	10.1	8.2	0.6	8.8
3/2	667	667	-	-	-	1.3	0.6	-	1.9	10.1	8.2	0.6	8.7
3/3+3/4	815	815	-	-	-	1.4	0.7	-	2.2	9.7	7.7	0.7	8.4
4/2+4/1	485	485	815	155	0	0.8	1.0	-	1.8	13.4	5.2	1.0	6.2
5/1	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1129	1129	-	-	-	0.4	1.3	-	1.8	5.6	7.2	1.3	8.6
6/2	1169	1169	-	-	-	0.1	1.2	-	1.3	4.0	0.9	1.2	2.1
6/3	1154	1154	-	-	-	0.1	1.2	-	1.3	4.1	2.9	1.2	4.1
7/1	315	315	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	745	745	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	761	761	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
8/3	760	760	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
9/1	1052	1052	-	-	-	0.1	1.2	-	1.2	4.2	0.4	1.2	1.6
9/2	1169	1169	-	-	-	0.1	1.8	-	1.9	5.7	0.9	1.8	2.6
9/3	1257	1257	-	-	-	0.2	2.5	-	2.8	8.0	1.8	2.5	4.3
10/1	280	280	-	-	-	1.4	1.7	-	3.1	39.7	6.8	1.7	8.5
10/2	176	176	-	-	-	0.0	0.4	-	0.4	9.1	0.0	0.4	0.5

Full Input Data And Results

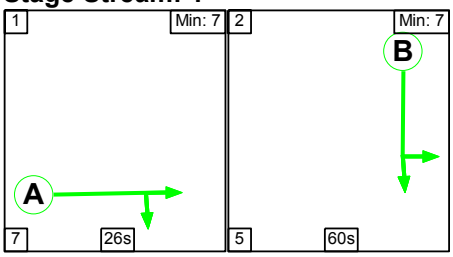
11/1+11/2	321	321	-	-	-	2.0	0.5	-	2.5	28.0	3.2	0.5	3.7
11/3	191	191	-	-	-	1.2	0.3	-	1.5	27.7	3.8	0.3	4.1
12/1	1129	1129	-	-	-	0.0	0.7	-	0.7	2.2	3.8	0.7	4.5
12/2	1169	1169	-	-	-	0.0	0.7	-	0.7	2.3	0.0	0.7	0.7
12/3	1154	1154	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
13/1	745	745	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1521	1521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	1129	1129	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2323	2323	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-8.5	Total Delay for Signalled Lanes (pcuHr):	50.28	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	1.7	Total Delay for Signalled Lanes (pcuHr):	16.69	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	15.7	Total Delay for Signalled Lanes (pcuHr):	9.47	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	23.4	Total Delay for Signalled Lanes (pcuHr):	4.36	Cycle Time (s):	90
	PRC Over All Lanes (%):	-8.5	Total Delay Over All Lanes(pcuHr):	85.64		

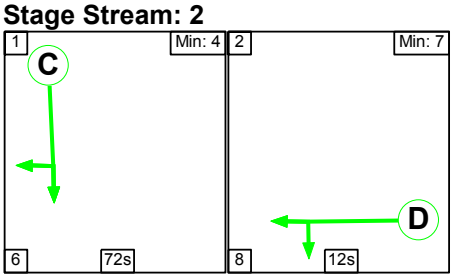
Full Input Data And Results
Scenario 4: '2021 DS PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

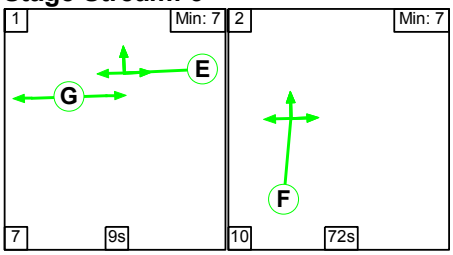
Stage Stream: 1



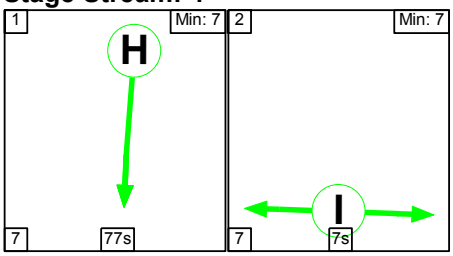
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	60
Change Point	13	46

Stage Stream: 2

Stage	1	2
Duration	72	12
Change Point	48	28

Stage Stream: 3

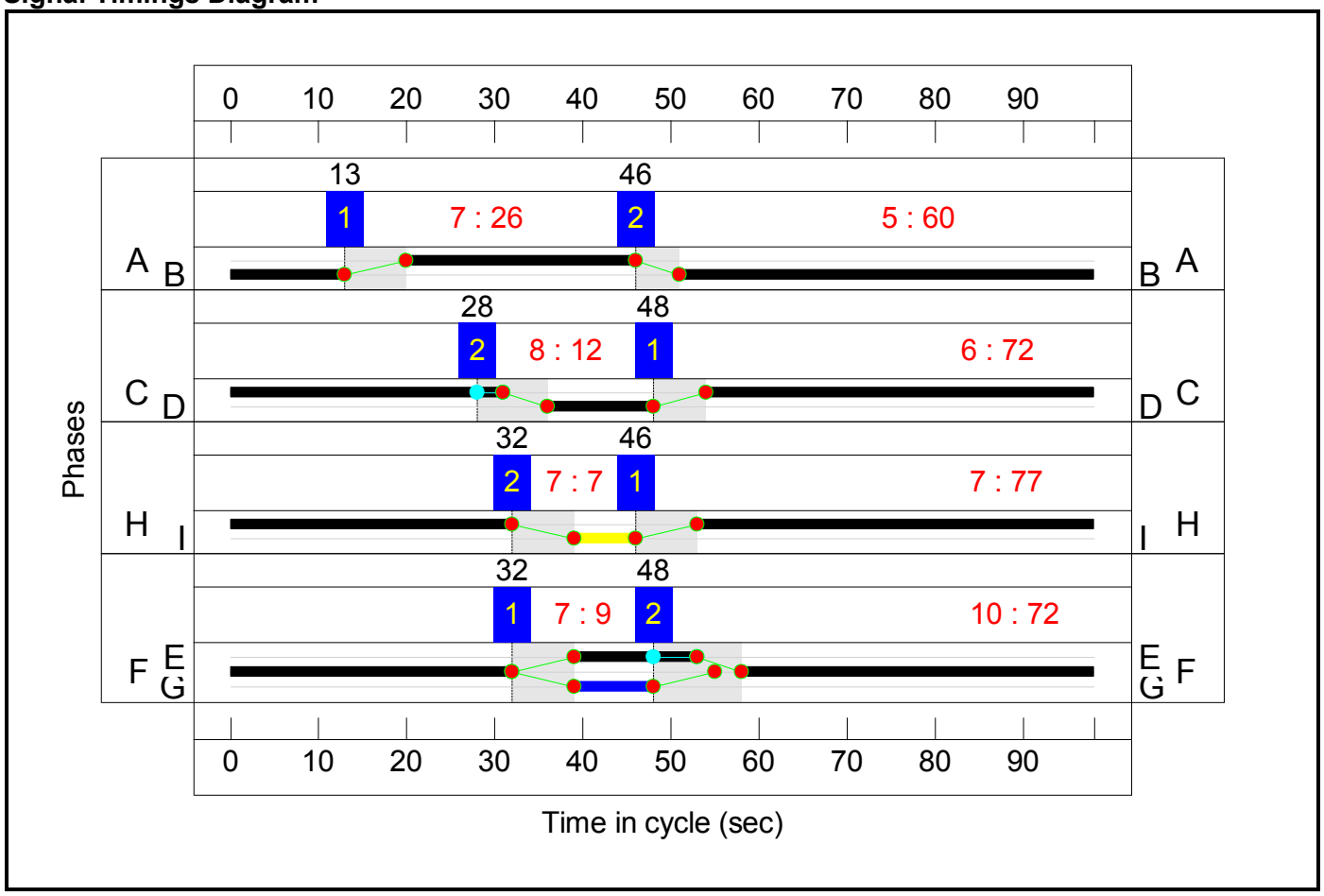
Stage	1	2
Duration	9	72
Change Point	32	48

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	77	7
Change Point	46	32

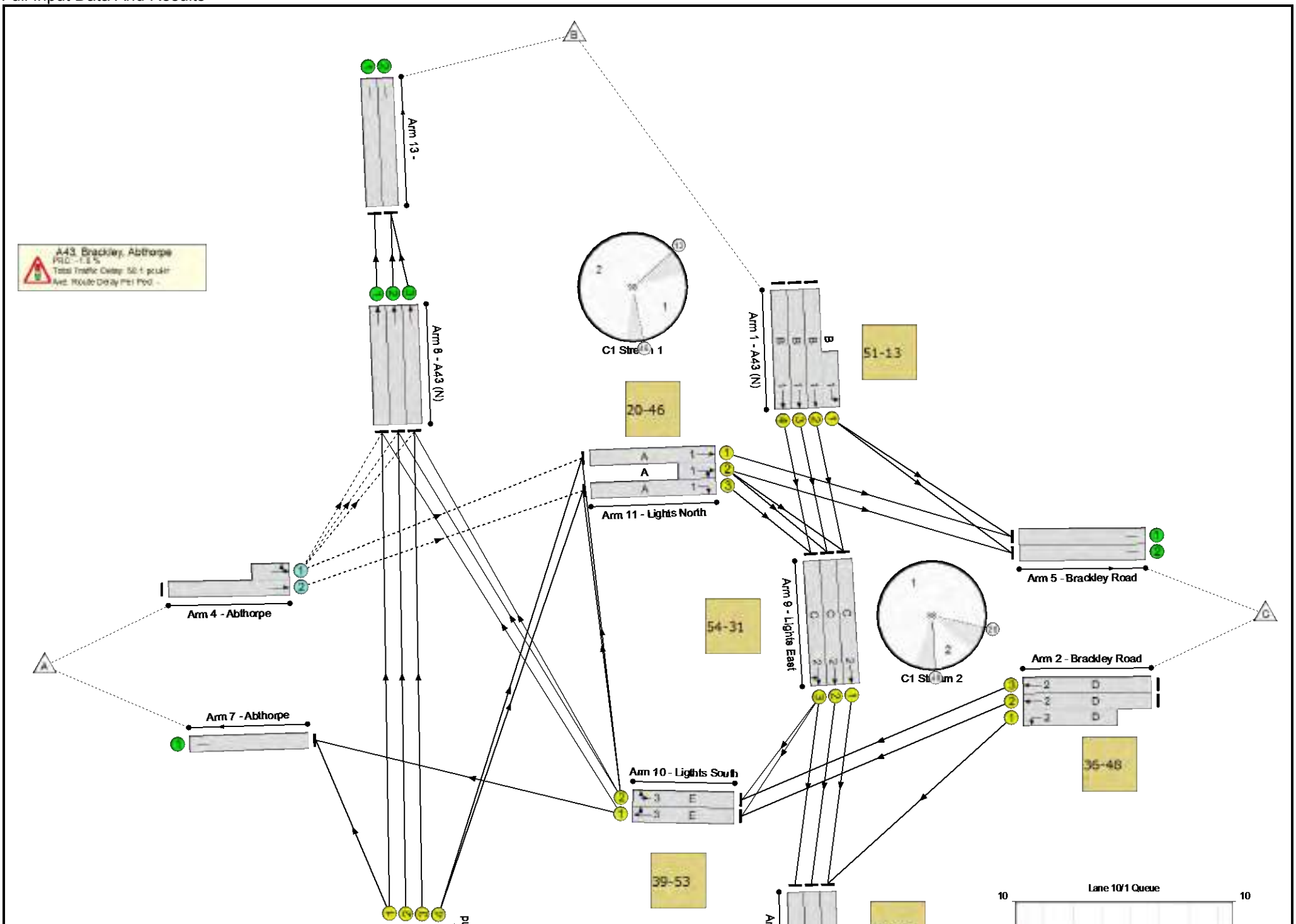
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.6%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.6%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	60	-	957	1800:1800	927+249	81.4 : 81.4%
1/3	A43 (N) Ahead	U	1	N/A	B		1	60	-	877	1800	1120	78.3%
1/4	A43 (N) Ahead	U	1	N/A	B		1	60	-	871	1800	1120	77.7%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	12	-	293	1800:1800	239+148	75.8 : 75.8%
2/3	Brackley Road Ahead	U	2	N/A	D		1	12	-	0	1800	239	0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	72	-	1208	1800	1341	90.1%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	72	-	1203	1800	1341	89.7%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	72	-	1317	1800:1800	1167+271	91.6 : 91.6%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	151	1977:1950	188+255	34.1 : 34.1%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	77	-	905	1990	1584	57.1%
6/2	A43 (S) Ahead	U	4	N/A	H		1	77	-	896	2105	1675	53.5%
6/3	A43 (S) Ahead	U	4	N/A	H		1	77	-	900	2105	1675	53.7%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	493	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	933	1990	1990	46.9%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1203	1990	1990	60.5%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1070	1990	1990	53.8%
9/1	Lights East Ahead	U	2	N/A	C		1	75	-	793	1900	1473	53.8%
9/2	Lights East Ahead	U	2	N/A	C		1	75	-	896	1900	1473	60.8%
9/3	Lights East Ahead Right	U	2	N/A	C		1	75	-	935	1900	1473	63.5%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	14	-	216	1800	276	78.4%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	14	-	0	1900	291	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	26	-	332	1900:1900	300+342	51.7 : 51.7%
11/3	Lights North Right	U	1	N/A	A		1	26	-	64	1900	523	12.2%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	905	1965	1965	46.1%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	896	1965	1965	45.6%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	900	1965	1965	45.8%
13/1		U	N/A	N/A	-		-	-	-	933	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2273	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	905	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1796	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**64**	**238**	**0**	**27.8**	**30.3**	**0.0**	**58.1**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**64**	**238**	**0**	**27.8**	**30.3**	**0.0**	**58.1**	**-**	**-**	**-**	**-**
1/2+1/1	957	957	-	-	-	3.4	2.1	-	5.5	20.8	17.7	2.1	19.9
1/3	877	877	-	-	-	3.3	1.8	-	5.1	20.9	17.5	1.8	19.3
1/4	871	871	-	-	-	3.3	1.7	-	5.0	20.7	17.2	1.7	18.9
2/2+2/1	293	293	-	-	-	3.3	1.5	-	4.8	59.0	4.7	1.5	6.2
2/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	1208	1208	-	-	-	3.3	4.3	-	7.5	22.4	25.5	4.3	29.8
3/2	1203	1203	-	-	-	3.2	4.1	-	7.3	21.9	25.1	4.1	29.2
3/3+3/4	1317	1317	-	-	-	2.9	5.0	-	7.9	21.7	24.3	5.0	29.4
4/2+4/1	151	151	64	238	0	1.2	0.3	-	1.5	35.6	1.9	0.3	2.2
5/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	905	905	-	-	-	0.3	0.7	-	1.0	4.0	3.2	0.7	3.9
6/2	896	896	-	-	-	0.0	0.6	-	0.6	2.4	0.1	0.6	0.7
6/3	900	900	-	-	-	0.1	0.6	-	0.6	2.5	0.3	0.6	0.9
7/1	493	493	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	933	933	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
8/2	1203	1203	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
8/3	1070	1070	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
9/1	793	793	-	-	-	0.0	0.6	-	0.6	2.8	0.7	0.6	1.3
9/2	896	896	-	-	-	0.0	0.8	-	0.8	3.2	0.3	0.8	1.1
9/3	935	935	-	-	-	0.1	0.9	-	0.9	3.6	1.2	0.9	2.1
10/1	216	216	-	-	-	0.7	1.7	-	2.4	39.9	1.2	1.7	2.9
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

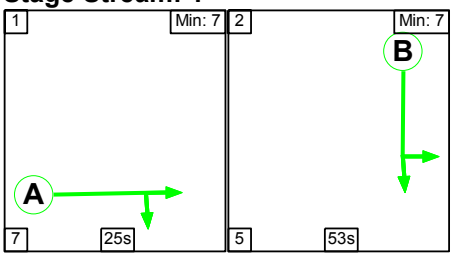
11/1+11/2	332	332	-	-	-	2.4	0.5	-	2.9	31.9	3.4	0.5	4.0
11/3	64	64	-	-	-	0.3	0.1	-	0.4	22.8	0.5	0.1	0.6
12/1	905	905	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/2	896	896	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/3	900	900	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
13/1	933	933	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2273	2273	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	905	905	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1796	1796	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	10.6	Total Delay for Signalled Lanes (pcuHr):	18.97	Cycle Time (s):	98
C1	Stream: 2 PRC for Signalled Lanes (%):	18.7	Total Delay for Signalled Lanes (pcuHr):	7.15	Cycle Time (s):	98
C1	Stream: 3 PRC for Signalled Lanes (%):	-1.8	Total Delay for Signalled Lanes (pcuHr):	25.18	Cycle Time (s):	98
C1	Stream: 4 PRC for Signalled Lanes (%):	57.5	Total Delay for Signalled Lanes (pcuHr):	2.23	Cycle Time (s):	98
	PRC Over All Lanes (%):	-1.8	Total Delay Over All Lanes(pcuHr):	58.08		

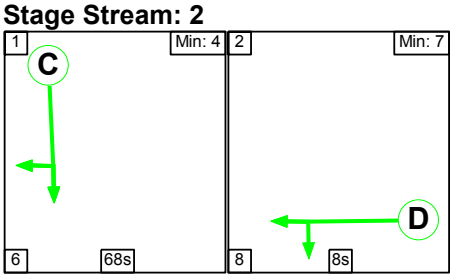
Full Input Data And Results
Scenario 7: '2031 DS AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

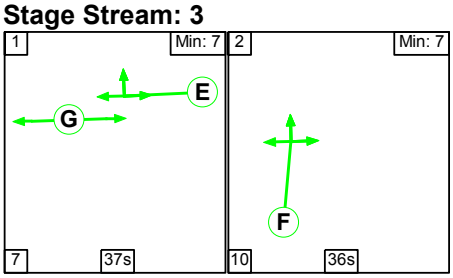
Stage Stream: 1



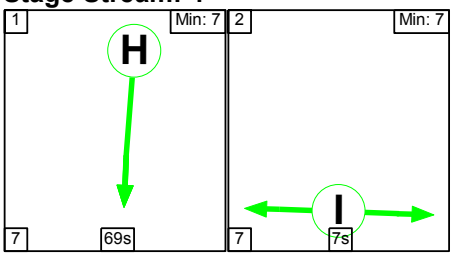
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	53
Change Point	19	51

Stage Stream: 2

Stage	1	2
Duration	68	8
Change Point	52	36

Stage Stream: 3

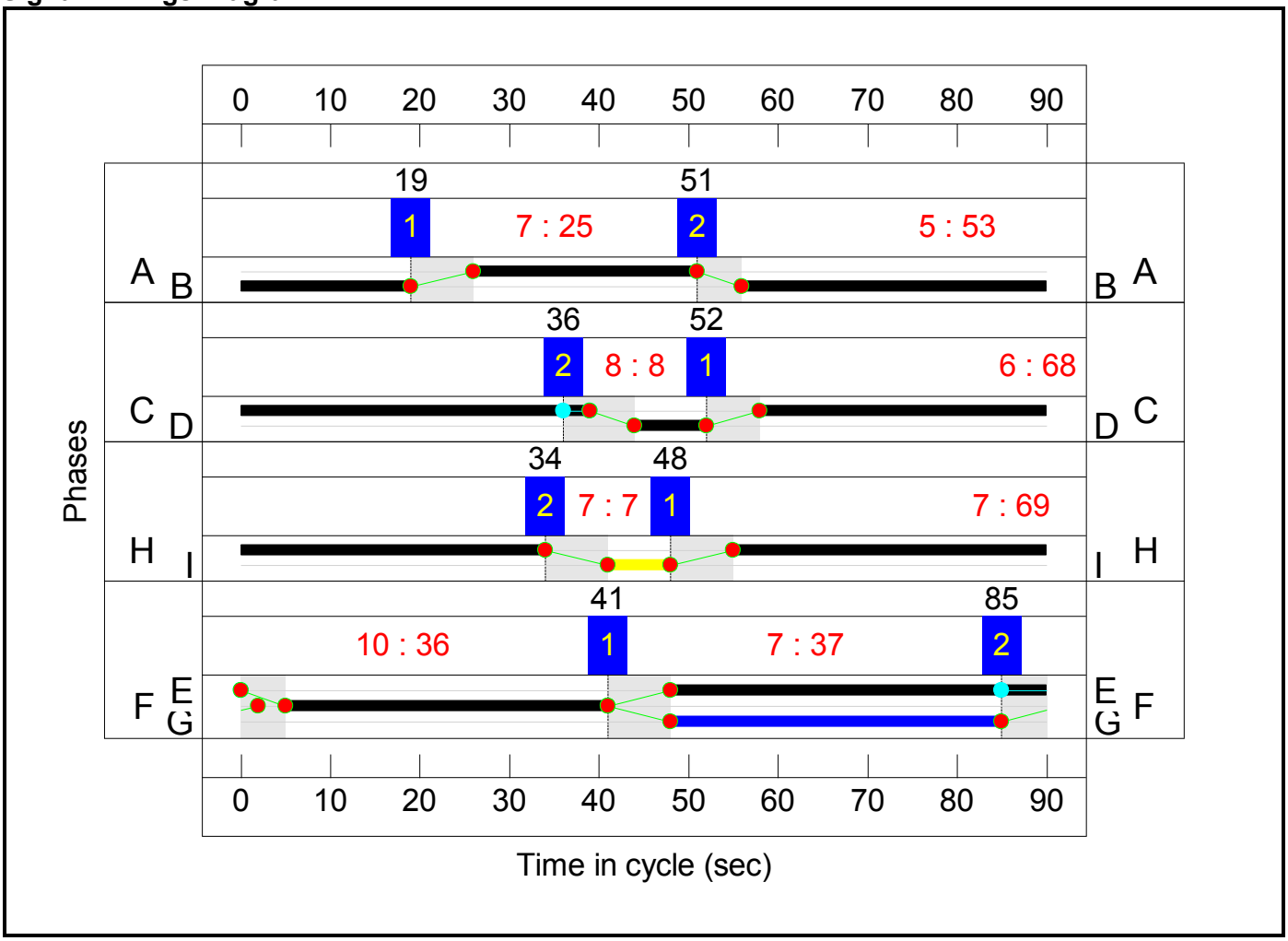
Stage	1	2
Duration	37	36
Change Point	41	85

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	48	34

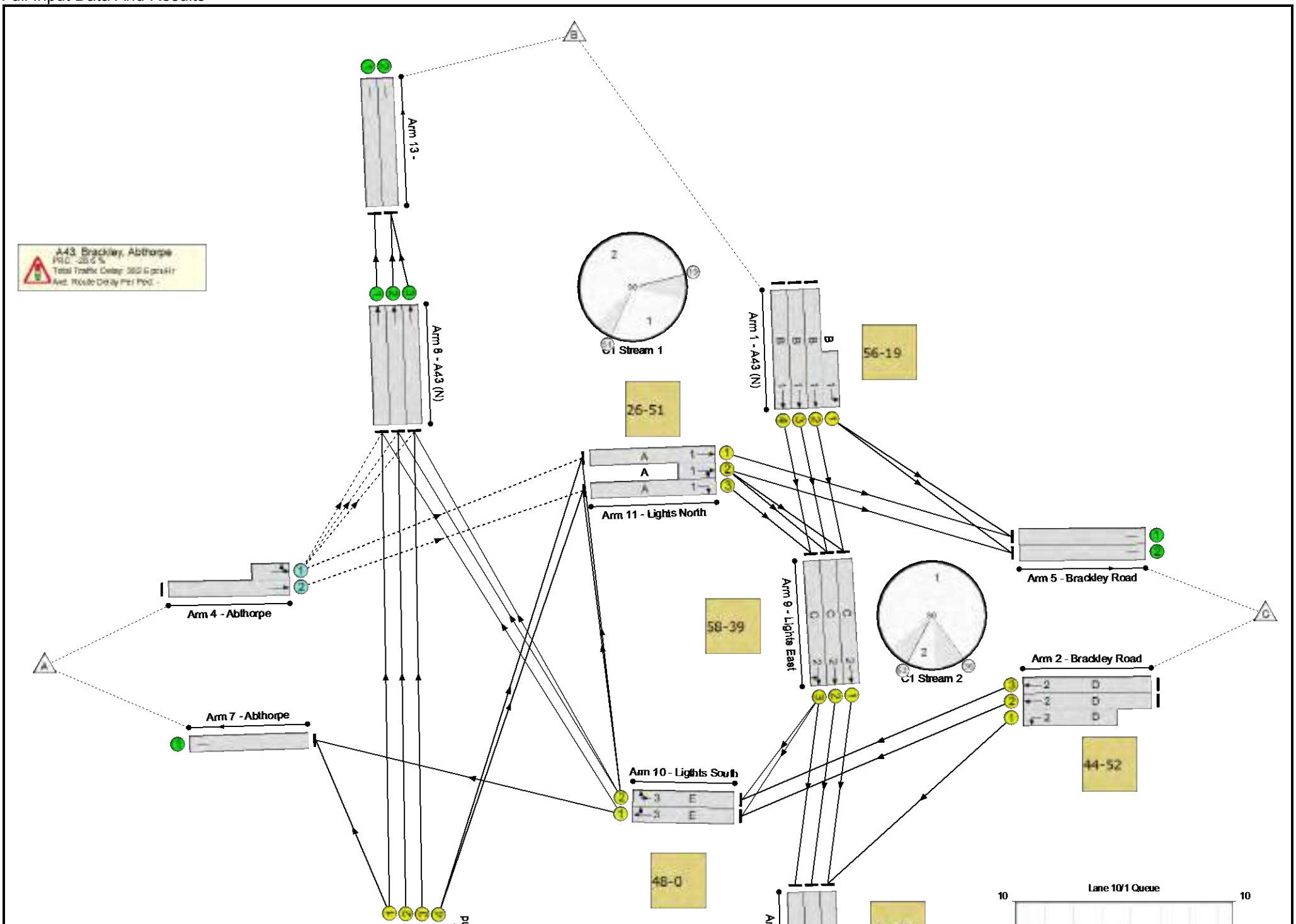
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.8%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.8%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	53	-	1342	1800:1800	854+305	115.8 : 115.8%
1/3	A43 (N) Ahead	U	1	N/A	B		1	53	-	1248	1800	1080	115.6%
1/4	A43 (N) Ahead	U	1	N/A	B		1	53	-	1246	1800	1080	115.4%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	8	-	341	1800:1800	180+180	100.6 : 88.9%
2/3	Brackley Road Ahead	U	2	N/A	D		1	8	-	163	1800	180	90.6%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	36	-	693	1800	740	93.6%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	36	-	694	1800	740	93.8%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	36	-	864	1800:1800	660+242	95.8 : 95.8%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	385	1977:1912	350+555	42.6 : 42.6%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1216	1990	1548	69.9%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1270	2105	1637	67.3%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1297	2105	1637	69.9%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	348	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	717	1990	1990	36.0%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	751	1990	1990	37.7%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	792	1990	1990	39.8%
9/1	Lights East Ahead	U	2	N/A	C		1	71	-	1056	1900	1520	60.6%
9/2	Lights East Ahead	U	2	N/A	C		1	71	-	1270	1900	1520	72.5%
9/3	Lights East Ahead Right	U	2	N/A	C		1	71	-	1395	1900	1520	80.9%
10/1	Ligths South Ahead Right	U	3	N/A	E		1	42	-	279	1800	860	30.8%
10/2	Ligths South Right U-Turn	U	3	N/A	E		1	42	-	163	1900	908	18.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	25	-	321	1900:1900	412+215	51.2 : 51.2%
11/3	Lights North Right	U	1	N/A	A		1	25	-	149	1900	549	27.1%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1216	1965	1965	55.0%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1270	1965	1965	56.1%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1297	1965	1965	58.2%
13/1		U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1543	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1216	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2567	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**482**	**288**	**0**	**72.3**	**310.3**	**0.0**	**382.6**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**482**	**288**	**0**	**72.3**	**310.3**	**0.0**	**382.6**	**-**	**-**	**-**	**-**
1/2+1/1	1342	1159	-	-	-	15.6	95.0	-	110.6	296.6	38.1	95.0	133.1
1/3	1248	1080	-	-	-	14.9	87.6	-	102.5	295.6	35.4	87.6	123.0
1/4	1246	1080	-	-	-	14.8	86.6	-	101.4	292.9	35.3	86.6	121.9
2/2+2/1	341	340	-	-	-	3.9	6.1	-	10.0	105.4	4.6	6.1	10.7
2/3	163	163	-	-	-	1.8	3.4	-	5.2	115.6	4.0	3.4	7.4
3/1	693	693	-	-	-	4.9	5.9	-	10.8	56.0	16.6	5.9	22.4
3/2	694	694	-	-	-	4.9	6.0	-	10.9	56.4	16.6	6.0	22.6
3/3+3/4	864	864	-	-	-	5.6	8.0	-	13.6	56.5	16.8	8.0	24.8
4/2+4/1	385	385	482	288	0	1.0	0.4	-	1.3	12.5	3.2	0.4	3.6
5/1	364	364	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1081	1081	-	-	-	0.6	1.2	-	1.7	5.8	5.8	1.2	6.9
6/2	1102	1102	-	-	-	0.1	1.0	-	1.2	3.8	0.8	1.0	1.8
6/3	1144	1144	-	-	-	0.6	1.2	-	1.7	5.4	3.1	1.2	4.3
7/1	334	334	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	717	717	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	751	751	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
8/3	792	792	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
9/1	921	921	-	-	-	0.0	0.8	-	0.8	3.1	0.3	0.8	1.0
9/2	1102	1102	-	-	-	0.0	1.3	-	1.3	4.3	0.1	1.3	1.4
9/3	1229	1229	-	-	-	0.1	2.1	-	2.1	6.3	0.8	2.1	2.9
10/1	265	265	-	-	-	0.5	0.2	-	0.7	9.3	2.5	0.2	2.8
10/2	163	163	-	-	-	0.0	0.1	-	0.1	2.4	0.0	0.1	0.1

Full Input Data And Results

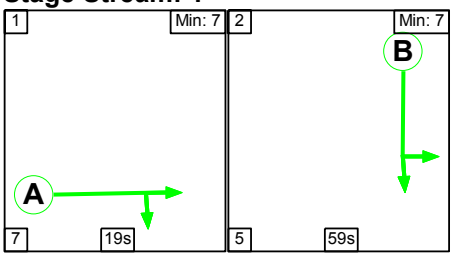
11/1+11/2	321	321	-	-	-	1.6	0.5	-	2.1	23.9	3.7	0.5	4.2
11/3	149	149	-	-	-	1.6	0.2	-	1.8	43.0	3.0	0.2	3.2
12/1	1081	1081	-	-	-	0.0	0.6	-	0.6	2.0	1.1	0.6	1.7
12/2	1102	1102	-	-	-	0.0	0.6	-	0.6	2.1	0.0	0.6	0.6
12/3	1144	1144	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
13/1	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1543	1543	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	1081	1081	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2246	2246	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-28.6	Total Delay for Signalled Lanes (pcuHr):	318.31	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-11.7	Total Delay for Signalled Lanes (pcuHr):	19.45	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-6.4	Total Delay for Signalled Lanes (pcuHr):	36.00	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	28.8	Total Delay for Signalled Lanes (pcuHr):	4.63	Cycle Time (s):	90
	PRC Over All Lanes (%):	-28.6	Total Delay Over All Lanes(pcuHr):	382.60		

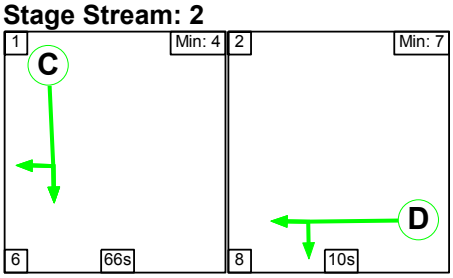
Full Input Data And Results
Scenario 8: '2031 DS PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

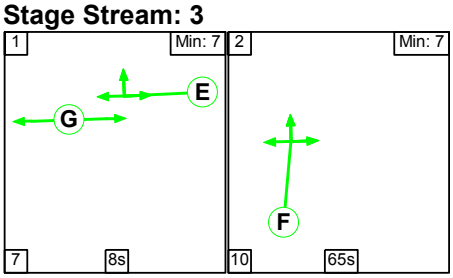
Stage Stream: 1



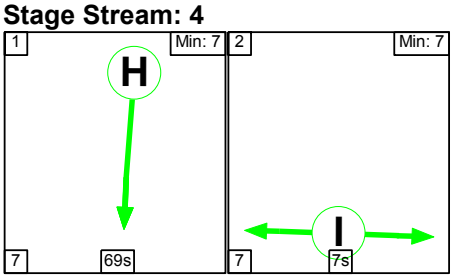
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	59
Change Point	24	50

Stage Stream: 2

Stage	1	2
Duration	66	10
Change Point	51	33

Stage Stream: 3

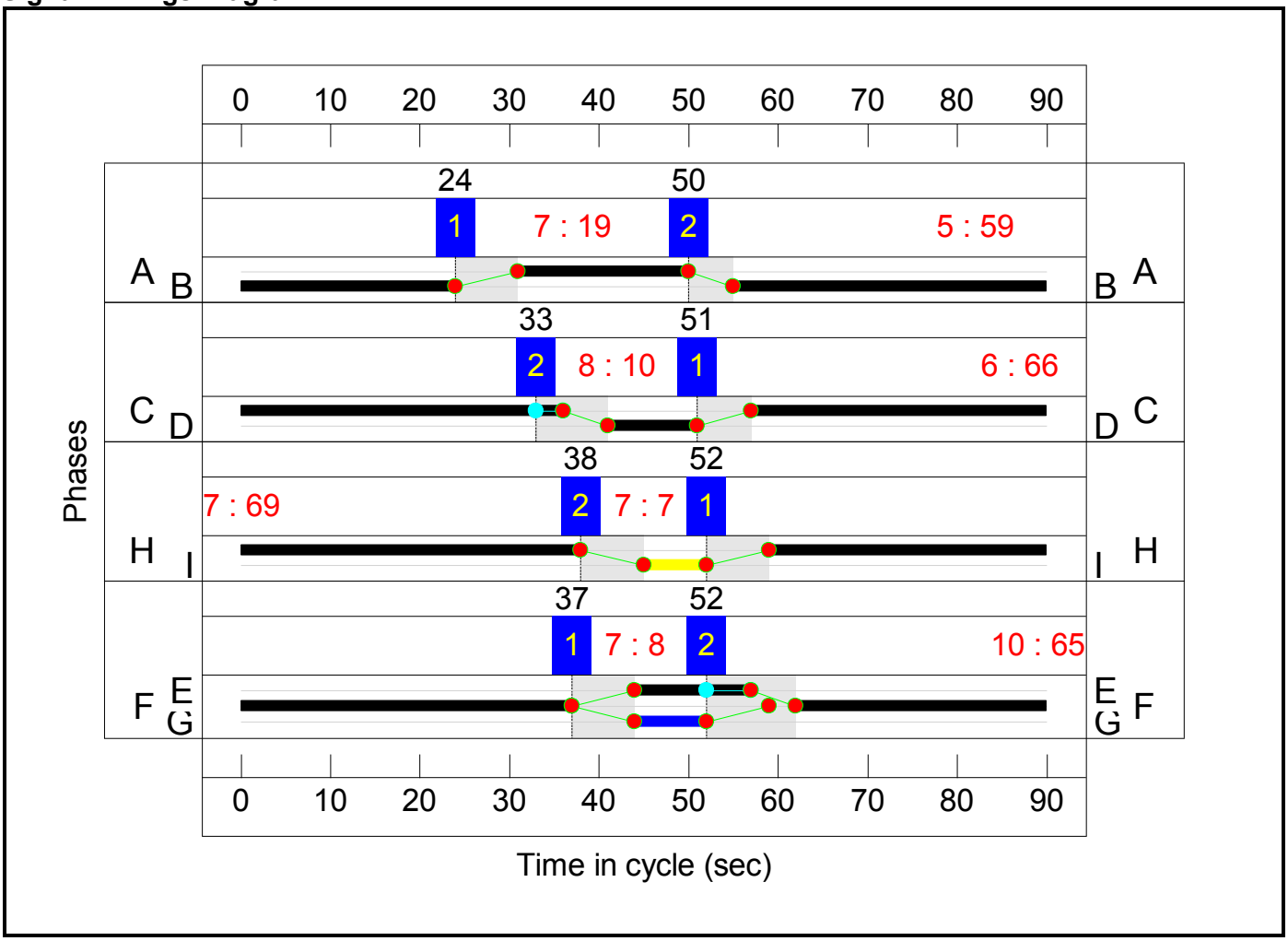
Stage	1	2
Duration	8	65
Change Point	37	52

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	52	38

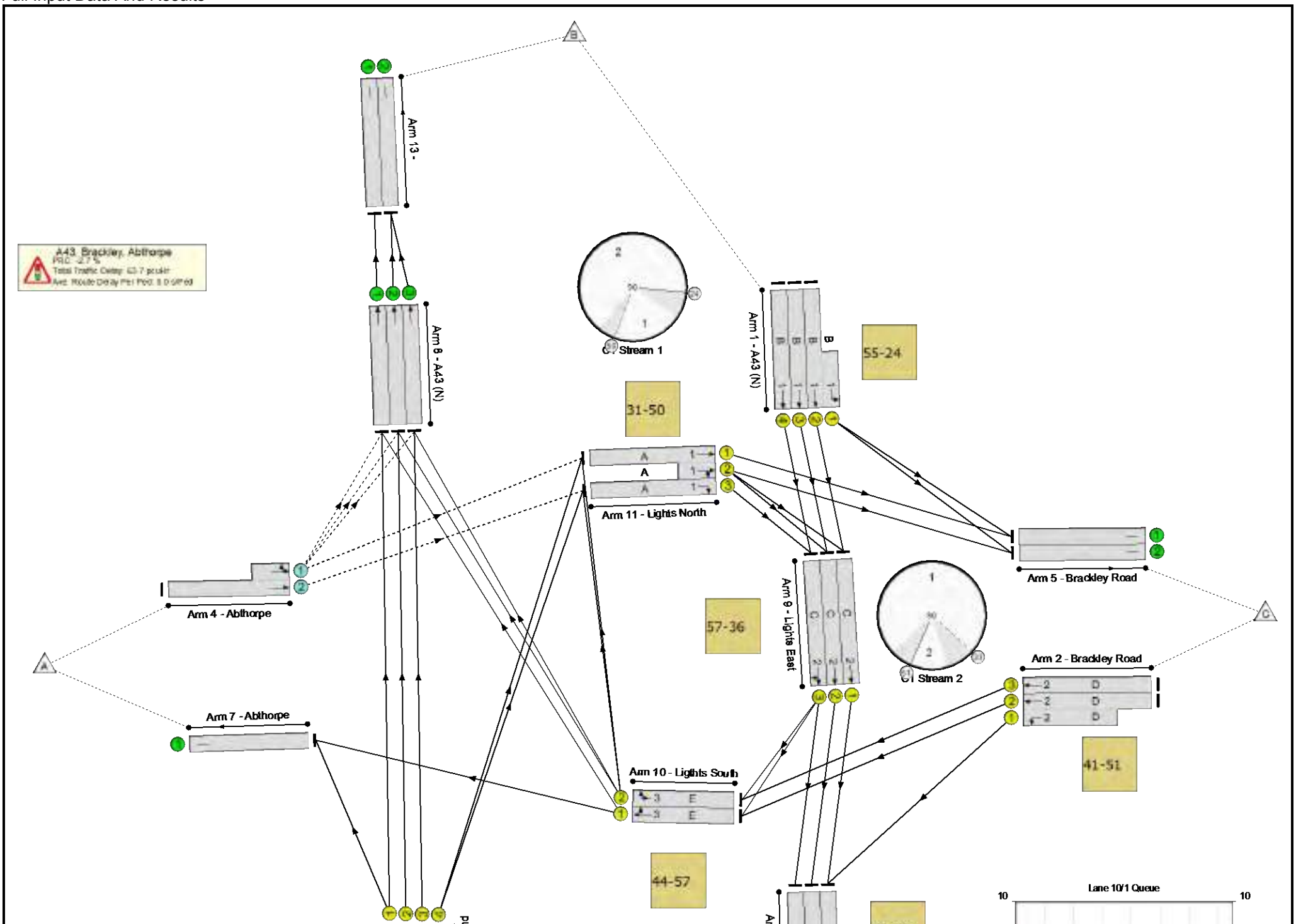
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.5%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**92.5%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	59	-	1103	1800:1800	940+340	86.2 : 86.2%
1/3	A43 (N) Ahead	U	1	N/A	B		1	59	-	980	1800	1200	81.7%
1/4	A43 (N) Ahead	U	1	N/A	B		1	59	-	975	1800	1200	81.3%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	10	-	311	1800:1800	220+135	87.7 : 87.7%
2/3	Brackley Road Ahead	U	2	N/A	D		1	10	-	0	1800	220	0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	65	-	1203	1800	1320	91.1%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	65	-	1199	1800	1320	90.8%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	65	-	1318	1800:1800	1157+268	92.5 : 92.5%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	147	1977:1949	194+267	31.9 : 31.9%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	306	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	279	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	941	1990	1548	60.8%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1004	2105	1637	61.3%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1006	2105	1637	61.4%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	482	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	948	1990	1990	47.6%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1199	1990	1990	60.3%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1071	1990	1990	53.8%
9/1	Lights East Ahead	U	2	N/A	C		1	69	-	823	1900	1478	55.7%
9/2	Lights East Ahead	U	2	N/A	C		1	69	-	1004	1900	1478	67.9%
9/3	Lights East Ahead Right	U	2	N/A	C		1	69	-	1037	1900	1478	70.2%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	13	-	224	1800	280	80.0%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	13	-	0	1900	296	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	19	-	329	1900:1900	270+289	58.8 : 58.8%
11/3	Lights North Right	U	1	N/A	A		1	19	-	62	1900	422	14.7%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	941	1965	1965	47.9%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1004	1965	1965	51.1%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1006	1965	1965	51.2%
13/1		U	N/A	N/A	-		-	-	-	948	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2270	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	941	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2010	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**48**	**246**	**0**	**26.9**	**36.8**	**0.0**	**63.7**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**48**	**246**	**0**	**26.9**	**36.8**	**0.0**	**63.7**	**-**	**-**	**-**	**-**
1/2+1/1	1103	1103	-	-	-	3.1	3.0	-	6.1	19.8	18.6	3.0	21.7
1/3	980	980	-	-	-	3.0	2.2	-	5.2	19.0	17.7	2.2	19.9
1/4	975	975	-	-	-	3.0	2.1	-	5.1	18.8	17.6	2.1	19.7
2/2+2/1	311	311	-	-	-	3.3	3.1	-	6.4	74.4	4.7	3.1	7.8
2/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	1203	1203	-	-	-	3.2	4.8	-	8.0	23.9	24.1	4.8	28.8
3/2	1199	1199	-	-	-	3.2	4.6	-	7.8	23.4	23.6	4.6	28.3
3/3+3/4	1318	1318	-	-	-	2.9	5.6	-	8.4	23.0	23.2	5.6	28.8
4/2+4/1	147	147	48	246	0	1.1	0.2	-	1.3	31.9	1.7	0.2	1.9
5/1	306	306	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	279	279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	941	941	-	-	-	0.4	0.8	-	1.2	4.6	3.4	0.8	4.2
6/2	1004	1004	-	-	-	0.1	0.8	-	0.9	3.1	0.3	0.8	1.1
6/3	1006	1006	-	-	-	0.1	0.8	-	0.9	3.1	0.4	0.8	1.2
7/1	482	482	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	948	948	-	-	-	0.0	0.5	-	0.5	1.7	0.0	0.5	0.5
8/2	1199	1199	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
8/3	1071	1071	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
9/1	823	823	-	-	-	0.0	0.6	-	0.7	2.8	0.3	0.6	0.9
9/2	1004	1004	-	-	-	0.0	1.1	-	1.1	3.9	0.5	1.1	1.5
9/3	1037	1037	-	-	-	0.1	1.2	-	1.3	4.5	1.3	1.2	2.5
10/1	224	224	-	-	-	0.6	1.9	-	2.5	40.0	1.1	1.9	3.0
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1+11/2	329	329	-	-	-	2.5	0.7	-	3.3	35.6	3.3	0.7	4.0
11/3	62	62	-	-	-	0.4	0.1	-	0.5	26.7	0.5	0.1	0.6
12/1	941	941	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
12/2	1004	1004	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
12/3	1006	1006	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
13/1	948	948	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2270	2270	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	941	941	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2010	2010	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	4.5	Total Delay for Signalled Lanes (pcuHr):	20.05	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	2.6	Total Delay for Signalled Lanes (pcuHr):	9.46	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-2.7	Total Delay for Signalled Lanes (pcuHr):	26.70	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	46.5	Total Delay for Signalled Lanes (pcuHr):	2.92	Cycle Time (s): 90
	PRC Over All Lanes (%):	-2.7	Total Delay Over All Lanes(pcuHr):	63.73	

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

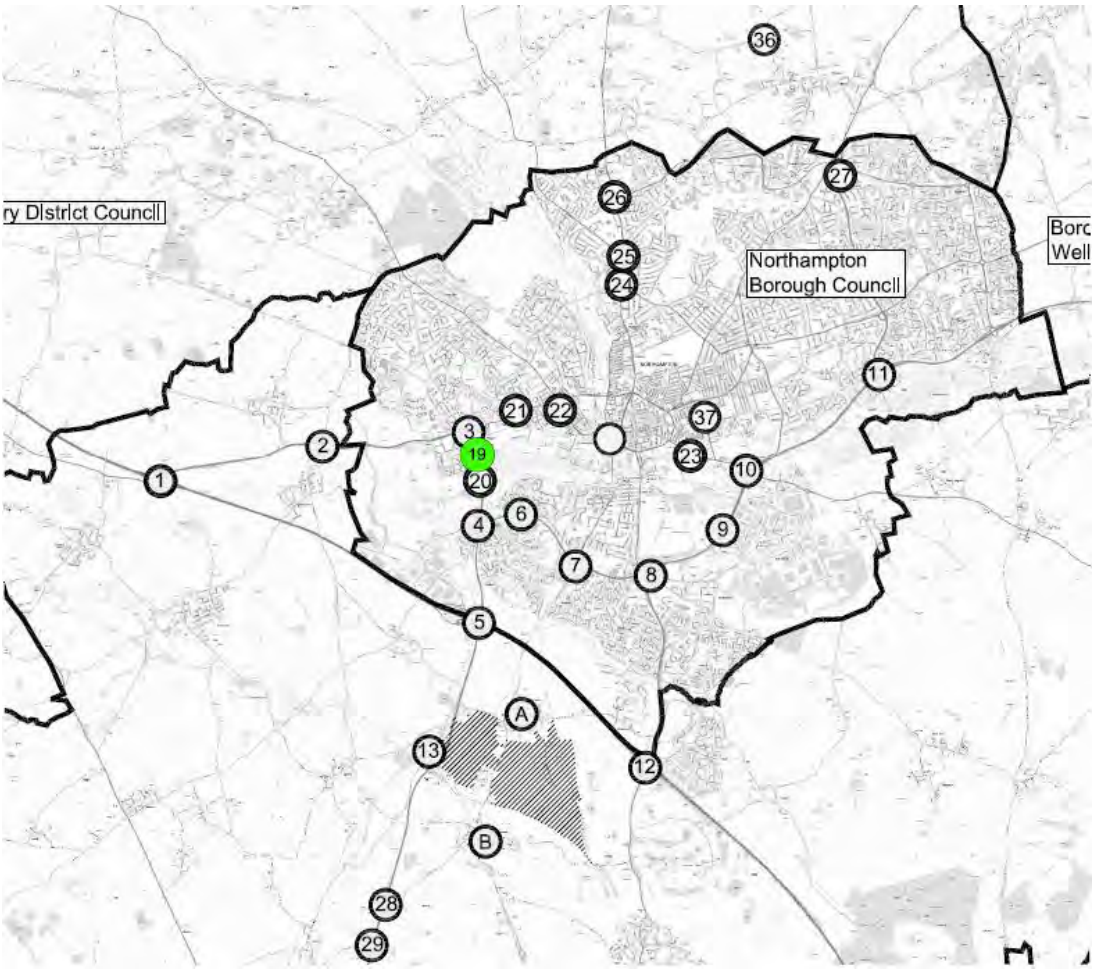
Technical Note No. 23

1 JUNCTION NINETEEN – A5076 UPTON WAY / TELFORD WAY / DUSTON MILL LANE / ROUNDABOUT

Existing Junction Description

1.1 Junction Nineteen is a five arm roundabout on the A5076 Upton Way to east of Sixfields Stadium. It connects the A5076 to Telford Way, Duston Mill Lane and Edgar Mobbs Way. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Nineteen Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Thursday 15th November 2012 for the hours of 07:00 to 19:00 to establish the existing flow.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with NCC and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 As agreed with the NCC and HE, the junction has been modelled using the industry standard computer modelling software Junctions9. The outputs from Junctions9 relate to Max RFC (Ratio of Flow to Capacity), Max Queue (PCUs) and Delay (Seconds). RFC gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be exceeding theoretical capacity when the RFC greater than one.

1.6 The junction has been set up based on the guidance provided within the Junction9 handbook and industry standard guidance. The geometry of the junction has been measured in CAD, to provide the most appropriate measures for the junction.

Results of the Base Modelling

1.7 The results of the modelling for the existing junction layout, Shown in **Figure EL19** are summarised in **Table 1** and junction analysis results are included at **Appendix B**.

Table 1 – Existing Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2012	38.0%	0.0%	90.0%	28.0%	91.0%	58.0%	0.0%	93.0%	12.0%	74.0%
	2021 DM	39.0%	0.0%	84.0%	35.0%	86.0%	58.0%	0.0%	90.0%	15.0%	69.0%
	2021 DS	43.0%	0.0%	84.0%	34.0%	95.0%	58.0%	0.0%	96.0%	15.0%	68.0%
	2031 DM	45.0%	0.0%	86.0%	39.0%	98.0%	63.0%	0.0%	97.0%	21.0%	78.0%

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
	2031 DS	43.0%	0.0%	87.0%	44.0%	101.0%	66.0%	0.0%	108.0%	40.0%	81.0%
Queue – MMQ (PCU)	2012	1	0	9	0	10	1	0	11	0	3
	2021 DM	1	0	5	1	6	1	0	9	0	2
	2021 DS	1	0	5	1	15	1	0	17	0	2
	2031 DM	1	0	6	1	25	2	0	21	0	4
	2031 DS	1	0	7	1	36	2	0	92	1	4
Average Delay (sec/pcu)	2012	5.3	0.0	17.1	7.9	19.7	6.5	0.0	22.4	6.6	6.7
	2021 DM	5.2	0.0	11.2	8.1	12.7	6.3	0.0	17.7	6.4	5.7
	2021 DS	6.1	0.0	0.0	7.9	30.4	6.2	0.0	33.8	7.1	5.6
	2031 DM	6.4	0.0	12.7	8.6	45.3	7.7	0.0	40.8	7.6	8.1
	2031 DS	6.0	0.0	13.7	9.6	61.5	8.9	0.0	140.0	10.1	9.5

1.8 As shown in **Table 1**, Rail Central is forecast to impact on the operation of the existing junction in the 2031 AM and PM peak scenarios, with Arm 5 in the Am 2031 Scenario and Arm 3 in the PM peak exceeding capacity, by 3% and 11% as a result. Furthermore, queueing significantly increases on Arm 3 in 2031 PM Scenario by 71 PCU.

Table 2 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (PRC)	5.0%	10.0%	1.0%	-2.0%	-4.0%	3.0%	0.0%	0.0%	-1.0%	-10.0%
Overall Junction Delay (PCUhr)	18	9	13	17	22	15	10	15	18	59

1.9 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for 2031 by 2% and 9% for 2031 AM and 2031 PM respectively. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 4 and 5 PCUhrs for 2031 AM and 2031 PM respectively. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.10 The proposed mitigation is shown in **Figure J.13** in the TA and summarised is as follows:

- Provision of an additional nearside lane on the A5076 Upton Way north approach;
- Realignment of the Edgar Mobbs Way approach;
- Provision of a merge lane on the A5076 Upton Way south exit;
- Provision of an additional nearside lane on the A5076 Upton Way south approach;
- Realignment of the Telford Lane approach and exit;
- Provision of a merge lane on the A5076 Upton Way north arm; and
- Widening of the circulatory carriageway to accommodate three lanes on the east and west sections of the circulatory and two lanes on the north and south sections of the circulatory.

1.11 The results of the mitigated junction model is shown in **Table 3** and **Table 4** and included as **Appendix B.**

Table 3 - Mitigated Junction Modelling Results per Arm

Peak Period		AM					PM				
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5
DoS (%)	2021 DS	43.0%	0.0%	64.0%	34.0%	77.0%	58.0%	0.0%	73.0%	15.0%	56.0%
	Comparison to 2021 DM	4.0%	0.0%	-20.0%	-1.0%	-9.0%	0.0%	0.0%	-17.0%	0.0%	-13.0%
	2031 DS	43.0%	0.0%	66.0%	44.0%	81.0%	66.0%	0.0%	82.0%	47.0%	66.0%
	Comparison to 2031 DM	-2.0%	0.0%	-20.0%	5.0%	-17.0%	3.0%	0.0%	-15.0%	26.0%	-12.0%
Queue – MMQ (PCU)	2021 DS	1	0	2	1	3	1	0	3	0	1
	Comparison to 2021 DM	0	0	-4	0	-3	0	0	-6	0	-1
	2031 DS	1	0	2	1	5	2	0	5	1	2
	Comparison to 2031 DM	0	0	-4	0	-20	0	0	-17	1	-2
Average Delay (sec/pcu)	2021 DS	6	0	4	8	6	6	0	5	7	3
	Comparison to 2021 DM	1	0	-7	0	-6	0	0	-13	1	-2
	2031 DS	6	0	4	10	8	9	0	8	13	4
	Comparison to 2031 DM	0	0	-9	1	-37	1	0	-33	5	-4

1.12 As shown in **Table 3**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst the Arms 4 shows to provide less capacity by 5% than in the DM scenario, the other four arms shows an improvement and therefore the junction operates 34% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario.

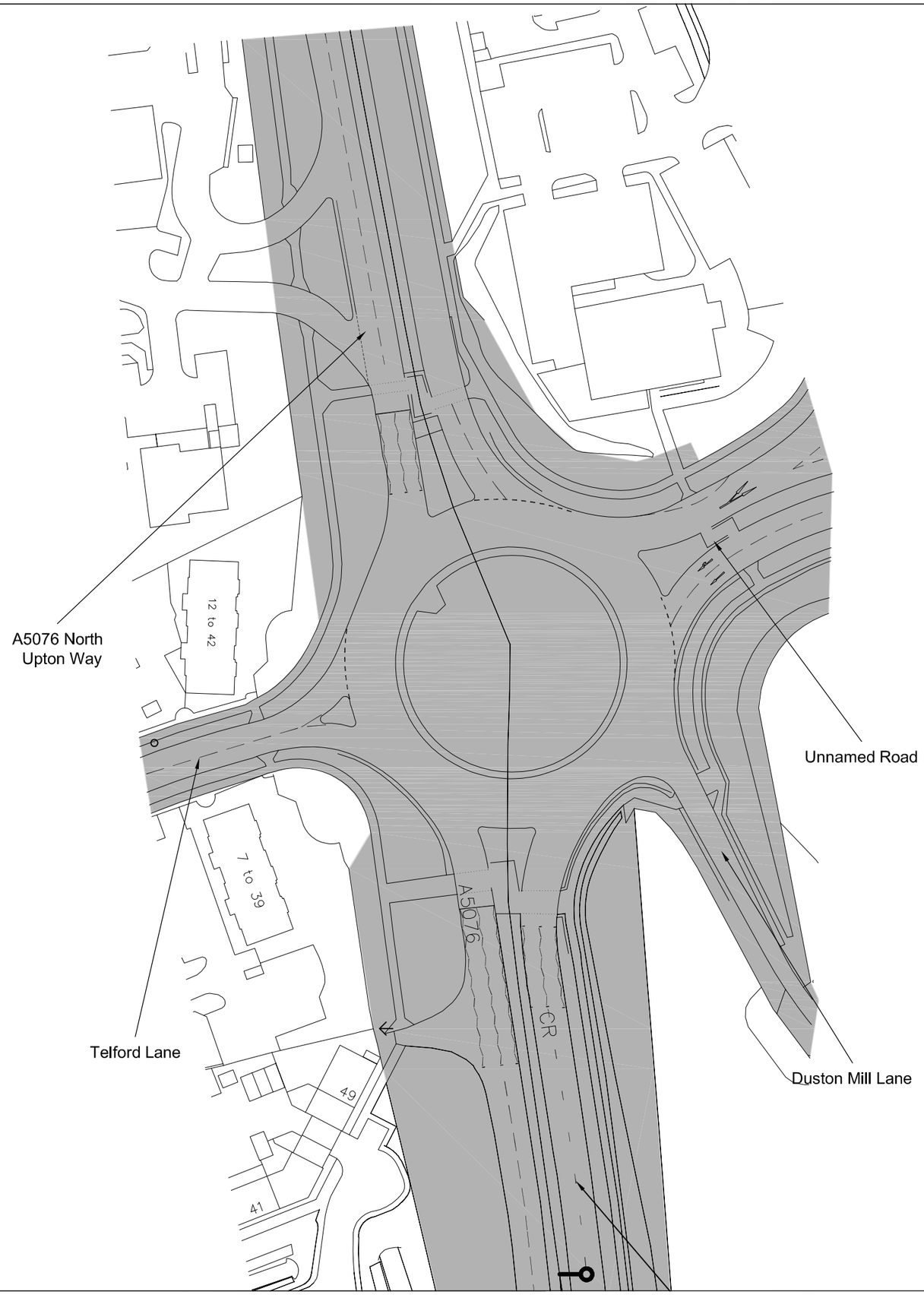
Table 4 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	22%	12%	16%	20%	29%	29%	13%	23%
Overall Junction Delay (PCUhr)	5.1	-3.5	6.1	-15.6	4.7	-4.8	7.7	-51.6

1.13 The junction operates 20% and 23% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario and 2031 DS scenario PM peak than PM peak 2031 DM scenario. Finally, the overall junction delay is 15.6 and 51.6 PCUhrs better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
UPTON WAY / TELFORD WAY ROUNDABOUT
Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	26.05.17	SL	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL19	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	28	1	30	59
B - A5076 (North)	18	4	0	1,663	1,685
C - Edgar Mobbs Way	1	123	0	142	266
D - A5076 (South)	3	1,665	337	0	2,005
Total	22	1,820	338	1,835	4,015

Modelled Flows
2021 DM
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	74	0	48	122
B - A5076 (North)	18	4	0	1,553	1,575
C - Edgar Mobbs Way	0	143	0	157	300
D - A5076 (South)	3	1,548	332	0	1,883
Total	21	1,769	332	1,758	3,880

Modelled Flows
2021 DS2
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	58	13	43	114
B - A5076 (North)	17	0	0	1,740	1,757
C - Edgar Mobbs Way	7	143	0	150	301
D - A5076 (South)	3	1,561	312	0	1,877
Total	28	1,762	325	1,933	4,048

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	0	0	0	0
B - A5076 (North)	0	0	0	0	0
C - Edgar Mobbs Way	0	0	0	0	0
D - A5076 (South)	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	46	-1	18	63
B - A5076 (North)	0	0	0	-110	-110
C - Edgar Mobbs Way	-1	20	0	15	34
D - A5076 (South)	0	-117	-5	0	-122
Total	-1	-51	-6	-77	-135

2021 DS2 minus 2015 Base
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	30	12	13	55
B - A5076 (North)	-1	-4	0	77	72
C - Edgar Mobbs Way	6	20	0	8	35
D - A5076 (South)	0	-104	-25	0	-128
Total	6	-58	-13	98	33

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way		74	35	51	
B - A5076 (North)	146	2	217	1,322	
C - Edgar Mobbs Way	17	82		329	
D - A5076 (South)	16	1,253	433		
Total					

2021 DM adjusted to count
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	120	34	69	63
B - A5076 (North)	146	2	217	1,212	-110
C - Edgar Mobbs Way	16	102	0	344	34
D - A5076 (South)	16	1,136	428	0	-122
Total	-1	-51	-6	-77	-135

2021 DS2 adjusted to count
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	104	47	64	55
B - A5076 (North)	145	-2	217	1,399	72
C - Edgar Mobbs Way	23	102	0	337	35
D - A5076 (South)	16	1,149	408	0	-128
Total	6	-58	-13	98	33

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	33	0	26	59
B - A5076 (North)	66	4	0	1,618	1,688
C - Edgar Mobbs Way	1	26	0	122	149
D - A5076 (South)	145	1,351	191	0	1,687
Total	212	1,414	191	1,766	3,583

Modelled Flows
2021 DM
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	39	0	39	78
B - A5076 (North)	75	4	0	1,531	1,610
C - Edgar Mobbs Way	0	26	0	144	170
D - A5076 (South)	167	1,317	153	0	1,637
Total	242	1,386	153	1,714	3,495

Modelled Flows
2021 DS2
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	33	4	32	70
B - A5076 (North)	85	0	0	1,518	1,603
C - Edgar Mobbs Way	4	25	0	138	167
D - A5076 (South)	148	1,447	145	0	1,740
Total	236	1,505	150	1,688	3,579

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	0	0	0	0
B - A5076 (North)	0	0	0	0	0
C - Edgar Mobbs Way	0	0	0	0	0
D - A5076 (South)	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	6	0	13	19
B - A5076 (North)	9	0	0	-87	-78
C - Edgar Mobbs Way	-1	0	0	22	21
D - A5076 (South)	22	-34	-38	0	-50
Total	30	-28	-38	-52	-88

2021 DS2 minus 2015 Base
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	0	4	6	11
B - A5076 (North)	19	-4	0	-100	-85
C - Edgar Mobbs Way	3	-1	0	16	18
D - A5076 (South)	3	96	-46	0	53
Total	24	91	-41	-78	-4

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way		39	14	17	
B - A5076 (North)	160		79	1,154	
C - Edgar Mobbs Way	27	119		569	
D - A5076 (South)	38	1,267	418		
Total					

2021 DM adjusted to count
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	45	14	30	19
B - A5076 (North)	169	0	79	1,067	-78
C - Edgar Mobbs Way	26	119	0	591	21
D - A5076 (South)	60	1,233	380	0	-50
Total	30	-28	-38	-52	-88

2021 DS2 adjusted to count
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	39	18	23	11
B - A5076 (North)	179	-4	79	1,054	-85
C - Edgar Mobbs Way	30	118	0	585	18
D - A5076 (South)	41	1,363	372	0	53
Total	24	91	-41	-78	-4

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	28	1	30	59
B - A5076 (North)	18	4	0	1,663	1,685
C - Edgar Mobbs Way	1	123	0	142	266
D - A5076 (South)	3	1,665	337	0	2,005
Total	22	1,820	338	1,835	4,015

Modelled Flows
2031 DM
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	95	2	46	143
B - A5076 (North)	73	4	22	1,719	1,818
C - Edgar Mobbs Way	1	147	0	168	316
D - A5076 (South)	4	1,563	319	0	1,886
Total	78	1,809	343	1,933	4,163

Modelled Flows
2031 DS2
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	65	19	83	167
B - A5076 (North)	48	1	91	1,706	1,846
C - Edgar Mobbs Way	11	131	0	151	293
D - A5076 (South)	3	1,636	288	0	1,927
Total	63	1,833	398	1,939	4,233

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	0	0	0	0
B - A5076 (North)	0	0	0	0	0
C - Edgar Mobbs Way	0	0	0	0	0
D - A5076 (South)	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	67	1	16	84
B - A5076 (North)	55	0	22	56	133
C - Edgar Mobbs Way	0	24	0	26	50
D - A5076 (South)	1	-102	-18	0	-119
Total	56	-11	5	98	148

2031 DS2 minus 2015 Base
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	37	18	53	108
B - A5076 (North)	30	-3	91	43	161
C - Edgar Mobbs Way	10	8	0	9	27
D - A5076 (South)	0	-29	-49	0	-78
Total	41	13	60	104	218

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way		74	35	51	
B - A5076 (North)	146	2	217	1,322	
C - Edgar Mobbs Way	17	82		329	
D - A5076 (South)	16	1,253	433		
Total					

2031 DM adjusted to count
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	141	36	67	84
B - A5076 (North)	201	2	239	1,378	133
C - Edgar Mobbs Way	17	106	0	355	50
D - A5076 (South)	17	1,151	415	0	-119
Total	56	-11	5	98	148

2031 DS2 adjusted to count
AM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	111	53	104	108
B - A5076 (North)	176	-1	308	1,365	161
C - Edgar Mobbs Way	27	90	0	338	27
D - A5076 (South)	16	1,224	384	0	-78
Total	41	13	60	104	218

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	33	0	26	59
B - A5076 (North)	66	4	0	1,618	1,688
C - Edgar Mobbs Way	1	26	0	122	149
D - A5076 (South)	145	1,351	191	0	1,687
Total	212	1,414	191	1,766	3,583

Modelled Flows
2031 DM
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	73	1	32	106
B - A5076 (North)	128	4	0	1,665	1,797
C - Edgar Mobbs Way	0	31	0	133	164
D - A5076 (South)	155	1,433	152	0	1,740
Total	283	1,541	153	1,830	3,807

Modelled Flows
2031 DS2
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	62	9	138	209
B - A5076 (North)	241	1	0	1,554	1,796
C - Edgar Mobbs Way	17	28	0	118	164
D - A5076 (South)	139	1,558	158	0	1,855
Total	397	1,649	167	1,811	4,024

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	0	0	0	0
B - A5076 (North)	0	0	0	0	0
C - Edgar Mobbs Way	0	0	0	0	0
D - A5076 (South)	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	40	1	6	47
B - A5076 (North)	62	0	0	47	109
C - Edgar Mobbs Way	-1	5	0	11	15
D - A5076 (South)	10	82	-39	0	53
Total	71	127	-38	64	224

2031 DS2 minus 2015 Base
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	29	9	112	150
B - A5076 (North)	175	-3	0	-64	108
C - Edgar Mobbs Way	16	2	0	-4	15
D - A5076 (South)	-6	207	-33	0	168
Total	185	235	-24	45	441

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way		39	14	17	
B - A5076 (North)	160		79	1,154	
C - Edgar Mobbs Way	27	119		569	
D - A5076 (South)	38	1,267	418		
Total					

2031 DM adjusted to count
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	79	15	23	47
B - A5076 (North)	222	0	79	1,201	109
C - Edgar Mobbs Way	26	124	0	580	15
D - A5076 (South)	48	1,349	379	0	53
Total	71	127	-38	64	224

2031 DS2 adjusted to count
PM Peak

	A - Telford Way	B - A5076 (North)	C - Edgar Mobbs Way	D - A5076 (South)	Total
A - Telford Way	0	68	23	129	150
B - A5076 (North)	335	-3	79	1,090	108
C - Edgar Mobbs Way	43	121	0	565	15
D - A5076 (South)	32	1,474	385	0	168
Total	185	235	-24	45	441

APPENDIX B

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 19 - Upton Way Telford Way Existing.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J19 - Upton Way - Telford Way
Report generation date: 29/01/2018 09:57:45

»2012 Base, AM
»2012 Base, PM
»2021 DM, AM
»2021 DM, PM
»2021 DS2, AM
»2021 DS2, PM
»2031 DM, AM
»2031 DM, PM
»2031 DS2, AM
»2031 DS2, PM

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
2012 Base										
1 - Edgare Mobbs Way	0.7	5.34	0.38	A	5 % [5 - A5076 North]	1.4	6.46	0.58	A	3 % [3 - A5076 Upton Way South]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	8.5	17.09	0.90	C		11.1	22.43	0.93	C	
4 - Telford Way	0.4	7.90	0.28	A		0.1	6.63	0.12	A	
5 - A5076 North	9.6	19.66	0.91	C		2.8	6.71	0.74	A	
2021 DM										
1 - Edgare Mobbs Way	0.7	5.22	0.39	A	10 % [5 - A5076 North]	1.4	6.26	0.58	A	6 % [3 - A5076 Upton Way South]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	5.3	11.20	0.84	B		8.6	17.70	0.90	C	
4 - Telford Way	0.5	8.12	0.35	A		0.2	6.42	0.15	A	
5 - A5076 North	5.9	12.66	0.86	B		2.3	5.66	0.69	A	
2021 DS2										
1 - Edgare Mobbs Way	0.8	6.06	0.43	A	1 % [5 - A5076 North]	1.4	6.16	0.58	A	0 % [3 - A5076 Upton Way South]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	5.1	11.02	0.84	B		17.3	33.82	0.96	D	
4 - Telford Way	0.5	7.89	0.34	A		0.2	7.08	0.15	A	
5 - A5076 North	15.4	30.39	0.95	D		2.2	5.56	0.68	A	

	2031 DM									
1 - Edgare Mobbs Way	0.9	6.41	0.45	A	-2 % [5 - A5076 North]	1.7	7.66	0.63	A	-1 % [3 - A5076 Upton Way South]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	5.9	12.68	0.86	B		21.2	40.81	0.97	E	
4 - Telford Way	0.6	8.62	0.39	A		0.3	7.64	0.21	A	
5 - A5076 North	24.5	45.32	0.98	E		3.7	8.12	0.78	A	
	2031 DS2									
1 - Edgare Mobbs Way	0.8	6.04	0.43	A	-4 % [5 - A5076 North]	2.0	8.91	0.66	A	-10 % [3 - A5076 Upton Way South]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	6.5	13.68	0.87	B		91.5	140.04	1.08	F	
4 - Telford Way	0.8	9.55	0.44	A		0.7	10.05	0.40	B	
5 - A5076 North	35.6	61.53	1.01	F		4.2	9.46	0.81	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Upton Way / Telford Wat
Location	
Site number	
Date	01/06/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\sam.maloney
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2012 Base	AM	ONE HOUR	08:00	09:30	15	✓
D2	2012 Base	PM	ONE HOUR	17:00	18:30	15	✓
D3	2021 DM	AM	ONE HOUR	08:00	09:30	15	✓
D4	2021 DM	PM	ONE HOUR	17:00	18:30	15	✓
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓
D7	2031 DM	AM	ONE HOUR	08:00	09:30	15	✓
D8	2031 DM	PM	ONE HOUR	17:00	18:30	15	✓

D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2012 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	16.55	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	5	5 - A5076 North

Arms

Arms

Arm	Name	Description
1	Edgare Mobbs Way	
2	Duston Mill Lane	
3	A5076 Upton Way South	
4	Telford Way	
5	A5076 North	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Edgare Mobbs Way	7.50	7.50	0.0	34.0	70.0	45.0	
2 - Duston Mill Lane	2.00	5.00	10.0	7.0	70.0	52.0	
3 - A5076 Upton Way South	7.50	7.50	0.0	39.0	70.0	40.0	
4 - Telford Way	3.75	6.50	8.5	38.0	70.0	23.0	
5 - A5076 North	7.50	8.00	7.0	31.0	70.0	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Edgare Mobbs Way	0.577	2200
2 - Duston Mill Lane	0.339	891
3 - A5076 Upton Way South	0.589	2248
4 - Telford Way	0.504	1619
5 - A5076 North	0.613	2388

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2012 Base	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	428	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1702	100.000
4 - Telford Way		ONE HOUR	✓	160	100.000
5 - A5076 North		ONE HOUR	✓	1687	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	329	17	82
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	433	0	0	16	1253
	4 - Telford Way	35	0	51	0	74
	5 - A5076 North	217	0	1322	146	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)

1 - Edgare Mobbs Way	0.38	5.34	0.7	A	393	589
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.90	17.09	8.5	C	1562	2343
4 - Telford Way	0.28	7.90	0.4	A	147	220
5 - A5076 North	0.91	19.66	9.6	C	1548	2322

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	322	81	1140	1543	0.209	321	513	0.0	0.3	3.342	A
2 - Duston Mill Lane	0	0	1461	396	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1281	320	185	2139	0.599	1275	1276	0.0	1.6	4.354	A
4 - Telford Way	120	30	1326	950	0.127	120	134	0.0	0.1	4.387	A
5 - A5076 North	1270	318	389	2149	0.591	1264	1057	0.0	1.5	4.215	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	385	96	1363	1414	0.272	384	614	0.3	0.4	3.967	A
2 - Duston Mill Lane	0	0	1748	299	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1530	383	222	2117	0.723	1526	1526	1.6	2.7	6.353	A
4 - Telford Way	144	36	1587	819	0.176	144	160	0.1	0.2	5.394	A
5 - A5076 North	1517	379	465	2102	0.721	1512	1265	1.5	2.6	6.311	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	471	118	1653	1247	0.378	470	746	0.4	0.7	5.256	A
2 - Duston Mill Lane	0	0	2123	172	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1874	468	270	2089	0.897	1853	1854	2.7	7.9	14.890	B
4 - Telford Way	176	44	1928	647	0.272	176	195	0.2	0.4	7.723	A
5 - A5076 North	1857	464	566	2041	0.910	1833	1538	2.6	8.7	16.436	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	471	118	1672	1236	0.381	471	753	0.7	0.7	5.343	A
2 - Duston Mill Lane	0	0	2143	166	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1874	468	272	2088	0.898	1872	1871	7.9	8.5	17.093	C
4 - Telford Way	176	44	1947	638	0.276	176	197	0.4	0.4	7.898	A
5 - A5076 North	1857	464	571	2038	0.912	1854	1552	8.7	9.6	19.662	C

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	385	96	1391	1398	0.275	386	625	0.7	0.4	4.042	A
2 - Duston Mill Lane	0	0	1777	289	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1530	383	225	2115	0.723	1553	1552	8.5	2.8	6.985	A
4 - Telford Way	144	36	1614	805	0.179	144	164	0.4	0.2	5.523	A
5 - A5076 North	1517	379	473	2098	0.723	1544	1286	9.6	2.8	7.095	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	322	81	1150	1537	0.210	323	518	0.4	0.3	3.366	A
2 - Duston Mill Lane	0	0	1472	393	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1281	320	187	2138	0.599	1286	1286	2.8	1.6	4.472	A
4 - Telford Way	120	30	1338	945	0.128	121	135	0.2	0.1	4.427	A
5 - A5076 North	1270	318	392	2147	0.592	1275	1066	2.8	1.5	4.331	A

2012 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	13.60	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	3	3 - A5076 Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2012 Base	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	715	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1723	100.000
4 - Telford Way		ONE HOUR	✓	70	100.000
5 - A5076 North		ONE HOUR	✓	1393	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	569	27	119
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	418	0	0	38	1267
	4 - Telford Way	14	0	17	0	39
	5 - A5076 North	79	0	1154	160	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.58	6.46	1.4	A	656	984
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.93	22.43	11.1	C	1581	2372
4 - Telford Way	0.12	6.63	0.1	A	64	96
5 - A5076 North	0.74	6.71	2.8	A	1278	1917

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	538	135	998	1624	0.331	536	383	0.0	0.5	3.367	A
2 - Duston Mill Lane	0	0	1535	371	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1297	324	230	2113	0.614	1291	1305	0.0	1.6	4.495	A
4 - Telford Way	53	13	1351	938	0.056	52	169	0.0	0.1	4.066	A
5 - A5076 North	1049	262	336	2181	0.481	1045	1068	0.0	0.9	3.248	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	643	161	1195	1511	0.425	642	458	0.5	0.7	4.216	A
2 - Duston Mill Lane	0	0	1836	269	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1549	387	275	2086	0.743	1544	1562	1.6	2.9	6.801	A
4 - Telford Way	63	16	1617	804	0.078	63	202	0.1	0.1	4.857	A
5 - A5076 North	1252	313	402	2141	0.585	1250	1277	0.9	1.4	4.149	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	787	197	1460	1358	0.580	785	555	0.7	1.4	6.373	A
2 - Duston Mill Lane	0	0	2245	131	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1897	474	336	2050	0.925	1869	1909	2.9	10.0	18.213	C
4 - Telford Way	77	19	1958	632	0.122	77	246	0.1	0.1	6.486	A

5 - A5076 North	1534	383	487	2089	0.734	1528	1547	1.4	2.8	6.546	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	787	197	1465	1355	0.581	787	562	1.4	1.4	6.457	A
2 - Duston Mill Lane	0	0	2252	128	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1897	474	337	2049	0.926	1893	1916	10.0	11.1	22.428	C
4 - Telford Way	77	19	1982	620	0.124	77	248	0.1	0.1	6.631	A
5 - A5076 North	1534	383	493	2085	0.736	1534	1566	2.8	2.8	6.707	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	643	161	1202	1507	0.426	645	468	1.4	0.8	4.271	A
2 - Duston Mill Lane	0	0	1847	266	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1549	387	276	2085	0.743	1581	1571	11.1	3.1	7.835	A
4 - Telford Way	63	16	1654	785	0.080	63	204	0.1	0.1	4.985	A
5 - A5076 North	1252	313	412	2135	0.586	1258	1305	2.8	1.5	4.245	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	538	135	1004	1621	0.332	539	386	0.8	0.5	3.394	A
2 - Duston Mill Lane	0	0	1543	369	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1297	324	231	2112	0.614	1303	1313	3.1	1.7	4.634	A
4 - Telford Way	53	13	1364	931	0.057	53	170	0.1	0.1	4.097	A
5 - A5076 North	1049	262	339	2179	0.481	1051	1077	1.5	1.0	3.286	A

2021 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	10.90	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	10	5 - A5076 North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2021 DM	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	462	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1580	100.000
4 - Telford Way		ONE HOUR	✓	223	100.000
5 - A5076 North		ONE HOUR	✓	1577	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	344	16	102
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	428	0	0	16	1136
	4 - Telford Way	34	0	69	0	120
	5 - A5076 North	217	0	1212	146	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.39	5.22	0.7	A	424	636
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.84	11.20	5.3	B	1450	2175
4 - Telford Way	0.35	8.12	0.5	A	205	307
5 - A5076 North	0.86	12.66	5.9	B	1447	2171

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1071	1582	0.220	347	509	0.0	0.3	3.313	A
2 - Duston Mill Lane	0	0	1418	411	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1190	297	199	2130	0.558	1184	1218	0.0	1.3	3.981	A
4 - Telford Way	168	42	1250	989	0.170	167	133	0.0	0.2	4.423	A
5 - A5076 North	1187	297	398	2144	0.554	1182	1019	0.0	1.3	3.886	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1282	1461	0.284	415	609	0.3	0.4	3.915	A
2 - Duston Mill Lane	0	0	1696	317	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1420	355	239	2107	0.674	1417	1458	1.3	2.1	5.462	A
4 - Telford Way	200	50	1496	865	0.232	200	160	0.2	0.3	5.470	A
5 - A5076 North	1418	354	476	2096	0.677	1414	1220	1.3	2.1	5.484	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1561	1300	0.391	508	742	0.4	0.7	5.164	A
2 - Duston Mill Lane	0	0	2069	191	0.000	0	0	0.0	0.0	0.000	A

3 - A5076 Upton Way South	1740	435	291	2076	0.838	1728	1777	2.1	5.1	10.532	B
4 - Telford Way	246	61	1825	699	0.351	245	195	0.3	0.5	7.987	A
5 - A5076 North	1736	434	581	2031	0.855	1722	1488	2.1	5.6	11.653	B

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1572	1293	0.393	509	747	0.7	0.7	5.222	A
2 - Duston Mill Lane	0	0	2081	186	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1740	435	293	2075	0.838	1739	1788	5.1	5.3	11.196	B
4 - Telford Way	246	61	1836	693	0.354	245	196	0.5	0.5	8.119	A
5 - A5076 North	1736	434	584	2029	0.856	1735	1497	5.6	5.9	12.659	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1298	1452	0.286	416	616	0.7	0.5	3.963	A
2 - Duston Mill Lane	0	0	1714	311	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1420	355	241	2106	0.674	1433	1473	5.3	2.2	5.724	A
4 - Telford Way	200	50	1512	857	0.234	201	162	0.5	0.3	5.560	A
5 - A5076 North	1418	354	481	2093	0.677	1432	1232	5.9	2.2	5.808	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1079	1578	0.220	348	513	0.5	0.3	3.334	A
2 - Duston Mill Lane	0	0	1427	408	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1190	297	201	2130	0.559	1193	1227	2.2	1.3	4.059	A
4 - Telford Way	168	42	1259	984	0.171	168	134	0.3	0.2	4.463	A
5 - A5076 North	1187	297	401	2142	0.554	1191	1027	2.2	1.3	3.965	A

2021 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	11.07	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	6	3 - A5076 Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2021 DM	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	736	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1673	100.000
4 - Telford Way		ONE HOUR	✓	89	100.000
5 - A5076 North		ONE HOUR	✓	1315	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	591	26	119
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	380	0	0	60	1233
	4 - Telford Way	14	0	30	0	45
	5 - A5076 North	79	0	1067	169	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.58	6.26	1.4	A	675	1013
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.90	17.70	8.6	C	1535	2303
4 - Telford Way	0.15	6.42	0.2	A	82	123
5 - A5076 North	0.69	5.66	2.3	A	1207	1810

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	554	139	950	1652	0.335	552	354	0.0	0.5	3.330	A
2 - Duston Mill Lane	0	0	1502	383	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1260	315	236	2109	0.597	1253	1266	0.0	1.5	4.318	A
4 - Telford Way	67	17	1298	965	0.069	67	191	0.0	0.1	4.008	A
5 - A5076 North	990	248	318	2193	0.451	987	1047	0.0	0.8	3.061	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	662	165	1137	1545	0.428	661	424	0.5	0.8	4.147	A
2 - Duston Mill Lane	0	0	1797	283	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1504	376	282	2082	0.722	1500	1515	1.5	2.6	6.340	A
4 - Telford Way	80	20	1553	836	0.096	80	229	0.1	0.1	4.759	A

5 - A5076 North	1182	296	380	2155	0.549	1181	1252	0.8	1.2	3.795	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	810	203	1390	1398	0.579	808	516	0.8	1.4	6.187	A
2 - Duston Mill Lane	0	0	2198	147	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1842	461	345	2045	0.901	1820	1853	2.6	8.0	15.309	C
4 - Telford Way	98	24	1886	668	0.147	98	279	0.1	0.2	6.306	A
5 - A5076 North	1448	362	462	2104	0.688	1444	1522	1.2	2.2	5.573	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	810	203	1394	1396	0.580	810	520	1.4	1.4	6.261	A
2 - Duston Mill Lane	0	0	2204	145	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1842	461	346	2044	0.901	1840	1858	8.0	8.6	17.696	C
4 - Telford Way	98	24	1905	659	0.149	98	281	0.2	0.2	6.418	A
5 - A5076 North	1448	362	466	2102	0.689	1448	1536	2.2	2.3	5.660	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	662	165	1142	1542	0.429	664	431	1.4	0.8	4.195	A
2 - Duston Mill Lane	0	0	1806	280	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1504	376	283	2081	0.723	1527	1523	8.6	2.8	6.989	A
4 - Telford Way	80	20	1580	822	0.097	80	231	0.2	0.1	4.853	A
5 - A5076 North	1182	296	387	2151	0.550	1186	1274	2.3	1.3	3.855	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	554	139	955	1649	0.336	555	357	0.8	0.5	3.355	A
2 - Duston Mill Lane	0	0	1510	380	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1260	315	237	2108	0.597	1264	1273	2.8	1.6	4.434	A

4 - Telford Way	67	17	1309	959	0.070	67	192	0.1	0.1	4.035	A
5 - A5076 North	990	248	320	2191	0.452	992	1056	1.3	0.9	3.093	A

2021 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	18.78	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	1	5 - A5076 North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	462	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1573	100.000
4 - Telford Way		ONE HOUR	✓	215	100.000
5 - A5076 North		ONE HOUR	✓	1761	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	**2 - Duston Mill Lane**	**3 - A5076 Upton Way South**	**4 - Telford Way**	**5 - A5076 North**
From	**1 - Edgare Mobbs Way**	0	0	337	23	102
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	408	0	0	16	1149
	4 - Telford Way	47	0	64	0	104
	5 - A5076 North	217	0	1399	145	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.43	6.06	0.8	A	424	636
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.84	11.02	5.1	B	1443	2165
4 - Telford Way	0.34	7.89	0.5	A	197	296
5 - A5076 North	0.95	30.39	15.4	D	1616	2424

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1205	1505	0.231	346	504	0.0	0.3	3.530	A
2 - Duston Mill Lane	0	0	1551	366	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1184	296	202	2129	0.556	1179	1349	0.0	1.3	3.968	A
4 - Telford Way	162	40	1244	992	0.163	161	138	0.0	0.2	4.382	A
5 - A5076 North	1326	331	389	2149	0.617	1319	1016	0.0	1.7	4.488	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1440	1369	0.303	415	602	0.3	0.5	4.286	A
2 - Duston Mill Lane	0	0	1855	263	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1414	354	242	2105	0.672	1411	1613	1.3	2.1	5.430	A

4 - Telford Way	193	48	1488	869	0.222	193	165	0.2	0.3	5.390	A
5 - A5076 North	1583	396	466	2102	0.753	1577	1215	1.7	3.1	7.076	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1735	1199	0.424	507	732	0.5	0.8	5.907	A
2 - Duston Mill Lane	0	0	2243	132	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1732	433	294	2075	0.835	1720	1949	2.1	5.0	10.367	B
4 - Telford Way	237	59	1815	704	0.336	236	199	0.3	0.5	7.770	A
5 - A5076 North	1939	485	568	2039	0.951	1899	1483	3.1	13.0	22.284	C

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1762	1184	0.430	509	739	0.8	0.8	6.063	A
2 - Duston Mill Lane	0	0	2271	122	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1732	433	296	2073	0.835	1731	1974	5.0	5.1	11.016	B
4 - Telford Way	237	59	1826	698	0.339	237	202	0.5	0.5	7.890	A
5 - A5076 North	1939	485	571	2037	0.952	1930	1491	13.0	15.4	30.392	D

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1488	1342	0.310	417	613	0.8	0.5	4.433	A
2 - Duston Mill Lane	0	0	1905	246	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1414	354	247	2102	0.673	1426	1658	5.1	2.2	5.693	A
4 - Telford Way	193	48	1503	861	0.224	194	170	0.5	0.3	5.471	A
5 - A5076 North	1583	396	470	2099	0.754	1631	1227	15.4	3.3	8.813	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1216	1499	0.232	348	508	0.5	0.3	3.561	A
2 - Duston Mill Lane	0	0	1565	361	0.000	0	0	0.0	0.0	0.000	A

3 - A5076 Upton Way South	1184	296	204	2128	0.557	1188	1361	2.2	1.3	4.043	A
4 - Telford Way	162	40	1253	988	0.164	162	139	0.3	0.2	4.419	A
5 - A5076 North	1326	331	392	2147	0.617	1332	1023	3.3	1.7	4.642	A

2021 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	18.57	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	0	3 - A5076 Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	733	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1776	100.000
4 - Telford Way		ONE HOUR	✓	80	100.000
5 - A5076 North		ONE HOUR	✓	1312	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	585	30	118
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	372	0	0	41	1363
	4 - Telford Way	18	0	23	0	39
	5 - A5076 North	79	0	1054	179	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.58	6.16	1.4	A	673	1009
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.96	33.82	17.3	D	1630	2445
4 - Telford Way	0.15	7.08	0.2	A	73	110
5 - A5076 North	0.68	5.56	2.2	A	1204	1806

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	552	138	942	1657	0.333	550	351	0.0	0.5	3.309	A
2 - Duston Mill Lane	0	0	1492	386	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1337	334	245	2103	0.636	1330	1247	0.0	1.8	4.770	A
4 - Telford Way	60	15	1388	919	0.066	60	188	0.0	0.1	4.188	A

5 - A5076 North	988	247	309	2198	0.449	984	1138	0.0	0.8	3.044	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	659	165	1128	1550	0.425	658	420	0.5	0.7	4.110	A
2 - Duston Mill Lane	0	0	1786	286	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1597	399	294	2075	0.770	1590	1492	1.8	3.3	7.581	A
4 - Telford Way	72	18	1660	782	0.092	72	224	0.1	0.1	5.066	A
5 - A5076 North	1179	295	370	2161	0.546	1178	1361	0.8	1.2	3.760	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	807	202	1379	1405	0.575	805	507	0.7	1.4	6.090	A
2 - Duston Mill Lane	0	0	2184	152	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1955	489	359	2036	0.960	1911	1825	3.3	14.4	24.043	C
4 - Telford Way	88	22	1997	612	0.144	88	274	0.1	0.2	6.859	A
5 - A5076 North	1445	361	445	2115	0.683	1441	1639	1.2	2.2	5.465	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	807	202	1383	1403	0.575	807	514	1.4	1.4	6.159	A
2 - Duston Mill Lane	0	0	2190	150	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1955	489	360	2036	0.961	1944	1830	14.4	17.3	33.823	D
4 - Telford Way	88	22	2029	596	0.148	88	275	0.2	0.2	7.083	A
5 - A5076 North	1445	361	452	2110	0.685	1444	1664	2.2	2.2	5.558	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	659	165	1133	1547	0.426	661	433	1.4	0.8	4.154	A
2 - Duston Mill Lane	0	0	1794	284	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1597	399	295	2074	0.770	1652	1499	17.3	3.6	9.893	A

4 - Telford Way	72	18	1720	752	0.096	72	227	0.2	0.1	5.299	A
5 - A5076 North	1179	295	383	2153	0.548	1183	1409	2.2	1.3	3.833	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	552	138	947	1654	0.334	553	355	0.8	0.5	3.334	A
2 - Duston Mill Lane	0	0	1500	383	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1337	334	247	2103	0.636	1344	1253	3.6	1.8	4.949	A
4 - Telford Way	60	15	1402	912	0.066	60	189	0.1	0.1	4.226	A
5 - A5076 North	988	247	312	2196	0.450	989	1150	1.3	0.8	3.074	A

2031 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	26.12	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-2	5 - A5076 North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2031 DM	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	478	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1583	100.000
4 - Telford Way		ONE HOUR	✓	244	100.000
5 - A5076 North		ONE HOUR	✓	1820	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	355	17	106
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	415	0	0	17	1151
	4 - Telford Way	36	0	67	0	141
	5 - A5076 North	239	0	1378	201	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.45	6.41	0.9	A	439	658
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.86	12.68	5.9	B	1453	2179
4 - Telford Way	0.39	8.62	0.6	A	224	336
5 - A5076 North	0.98	45.32	24.5	E	1670	2505

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	360	90	1234	1488	0.242	358	517	0.0	0.4	3.622	A
2 - Duston Mill Lane	0	0	1593	352	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1192	298	244	2104	0.566	1186	1348	0.0	1.4	4.104	A

4 - Telford Way	184	46	1255	987	0.186	183	176	0.0	0.2	4.518	A
5 - A5076 North	1370	343	388	2150	0.637	1363	1049	0.0	1.8	4.735	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	430	107	1475	1349	0.318	429	618	0.4	0.5	4.451	A
2 - Duston Mill Lane	0	0	1904	246	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1423	356	292	2076	0.686	1420	1612	1.4	2.2	5.741	A
4 - Telford Way	219	55	1501	862	0.254	219	210	0.2	0.3	5.647	A
5 - A5076 North	1636	409	465	2103	0.778	1629	1256	1.8	3.5	7.819	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	526	132	1762	1184	0.444	525	748	0.5	0.9	6.202	A
2 - Duston Mill Lane	0	0	2287	117	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1743	436	352	2041	0.854	1729	1935	2.2	5.7	11.684	B
4 - Telford Way	269	67	1829	697	0.386	268	252	0.3	0.6	8.446	A
5 - A5076 North	2004	501	566	2040	0.982	1944	1530	3.5	18.6	28.775	D

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	526	132	1794	1166	0.452	526	756	0.9	0.9	6.406	A
2 - Duston Mill Lane	0	0	2320	106	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1743	436	356	2038	0.855	1742	1964	5.7	5.9	12.680	B
4 - Telford Way	269	67	1842	690	0.389	269	256	0.6	0.6	8.618	A
5 - A5076 North	2004	501	570	2038	0.983	1980	1541	18.6	24.5	45.324	E

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	430	107	1554	1304	0.329	431	635	0.9	0.6	4.703	A
2 - Duston Mill Lane	0	0	1985	219	0.000	0	0	0.0	0.0	0.000	A

3 - A5076 Upton Way South	1423	356	303	2069	0.688	1437	1682	5.9	2.4	6.122	A
4 - Telford Way	219	55	1519	853	0.257	220	221	0.6	0.4	5.756	A
5 - A5076 North	1636	409	470	2100	0.779	1719	1270	24.5	3.9	11.937	B

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	360	90	1248	1481	0.243	361	522	0.6	0.4	3.663	A
2 - Duston Mill Lane	0	0	1608	346	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1192	298	247	2103	0.567	1196	1362	2.4	1.4	4.195	A
4 - Telford Way	184	46	1264	982	0.187	184	178	0.4	0.2	4.562	A
5 - A5076 North	1370	343	391	2148	0.638	1378	1057	3.9	1.9	4.931	A

2031 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	22.10	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-1	3 - A5076 Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2031 DM	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	730	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1776	100.000

4 - Telford Way		ONE HOUR	✓	117	100.000
5 - A5076 North		ONE HOUR	✓	1502	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	580	26	124
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	379	0	0	48	1349
	4 - Telford Way	15	0	23	0	79
	5 - A5076 North	79	0	1201	222	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.63	7.66	1.7	A	670	1005
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.97	40.81	21.2	E	1630	2445
4 - Telford Way	0.21	7.64	0.3	A	107	161
5 - A5076 North	0.78	8.12	3.7	A	1378	2067

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	550	137	1084	1575	0.349	547	354	0.0	0.5	3.564	A

2 - Duston Mill Lane	0	0	1632	339	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1337	334	279	2083	0.642	1330	1353	0.0	1.8	4.890	A
4 - Telford Way	88	22	1387	920	0.096	88	222	0.0	0.1	4.324	A
5 - A5076 North	1131	283	312	2196	0.515	1126	1162	0.0	1.1	3.447	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	656	164	1298	1452	0.452	655	424	0.5	0.8	4.599	A
2 - Duston Mill Lane	0	0	1953	230	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1597	399	334	2051	0.778	1590	1619	1.8	3.5	7.950	A
4 - Telford Way	105	26	1658	783	0.134	105	266	0.1	0.2	5.308	A
5 - A5076 North	1350	338	373	2159	0.626	1348	1390	1.1	1.7	4.552	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	804	201	1585	1286	0.625	800	509	0.8	1.7	7.504	A
2 - Duston Mill Lane	0	0	2385	83	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1955	489	408	2008	0.974	1902	1978	3.5	16.7	27.148	D
4 - Telford Way	129	32	1987	617	0.209	128	323	0.2	0.3	7.358	A
5 - A5076 North	1654	413	448	2113	0.783	1646	1668	1.7	3.6	7.807	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	804	201	1592	1282	0.627	804	517	1.7	1.7	7.662	A
2 - Duston Mill Lane	0	0	2395	80	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1955	489	410	2007	0.975	1937	1986	16.7	21.2	40.812	E
4 - Telford Way	129	32	2022	600	0.215	129	325	0.3	0.3	7.641	A
5 - A5076 North	1654	413	455	2108	0.784	1653	1695	3.6	3.7	8.119	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

1 - Edgare Mobbs Way	656	164	1307	1446	0.454	660	441	1.7	0.9	4.683	A
2 - Duston Mill Lane	0	0	1967	225	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1597	399	336	2050	0.779	1666	1631	21.2	3.8	11.381	B
4 - Telford Way	105	26	1733	745	0.141	106	269	0.3	0.2	5.631	A
5 - A5076 North	1350	338	390	2149	0.628	1358	1449	3.7	1.8	4.727	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	550	137	1091	1571	0.350	551	358	0.9	0.6	3.603	A
2 - Duston Mill Lane	0	0	1642	335	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1337	334	281	2082	0.642	1345	1361	3.8	1.9	5.096	A
4 - Telford Way	88	22	1402	912	0.097	88	223	0.2	0.1	4.370	A
5 - A5076 North	1131	283	316	2194	0.515	1133	1175	1.8	1.1	3.498	A

2031 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	33.68	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-4	5 - A5076 North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)

1 - Edgare Mobbs Way		ONE HOUR	✓	455	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1624	100.000
4 - Telford Way		ONE HOUR	✓	268	100.000
5 - A5076 North		ONE HOUR	✓	1849	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	338	27	90
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	384	0	0	16	1224
	4 - Telford Way	53	0	104	0	111
	5 - A5076 North	308	0	1365	176	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.43	6.04	0.8	A	418	626
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.87	13.68	6.5	B	1490	2235
4 - Telford Way	0.44	9.55	0.8	A	246	369
5 - A5076 North	1.01	61.53	35.6	F	1697	2545

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand	Junction	Circulating flow (PCU/hr)	Capacity	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queu	End queu	Delay (s)	LOS

	(PCU/hr)	Arrivals (PCU)		(PCU/hr)				e (PCU)	e (PCU)		
1 - Edgare Mobbs Way	343	86	1232	1490	0.230	341	558	0.0	0.3	3.553	A
2 - Duston Mill Lane	0	0	1573	359	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1223	306	220	2118	0.577	1217	1353	0.0	1.4	4.175	A
4 - Telford Way	202	50	1272	978	0.206	201	164	0.0	0.3	4.692	A
5 - A5076 North	1392	348	405	2139	0.651	1384	1068	0.0	1.9	4.929	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	409	102	1472	1351	0.303	408	667	0.3	0.5	4.329	A
2 - Duston Mill Lane	0	0	1880	254	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1460	365	262	2093	0.697	1456	1618	1.4	2.4	5.909	A
4 - Telford Way	241	60	1523	851	0.283	240	196	0.3	0.4	5.966	A
5 - A5076 North	1662	416	485	2090	0.795	1654	1278	1.9	3.9	8.468	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	501	125	1743	1195	0.419	500	803	0.5	0.8	5.861	A
2 - Duston Mill Lane	0	0	2242	132	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1788	447	314	2063	0.867	1773	1928	2.4	6.2	12.451	B
4 - Telford Way	295	74	1854	684	0.431	294	233	0.4	0.8	9.306	A
5 - A5076 North	2036	509	591	2025	1.005	1954	1557	3.9	24.3	34.974	D

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	501	125	1774	1177	0.426	501	812	0.8	0.8	6.038	A
2 - Duston Mill Lane	0	0	2275	121	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1788	447	318	2060	0.868	1787	1956	6.2	6.5	13.684	B
4 - Telford Way	295	74	1868	677	0.436	295	237	0.8	0.8	9.545	A
5 - A5076 North	2036	509	595	2023	1.006	1991	1568	24.3	35.6	61.532	F

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	409	102	1583	1287	0.318	410	695	0.8	0.5	4.664	A
2 - Duston Mill Lane	0	0	1994	216	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1460	365	276	2085	0.700	1476	1718	6.5	2.5	6.373	A
4 - Telford Way	241	60	1543	841	0.286	242	209	0.8	0.4	6.106	A
5 - A5076 North	1662	416	491	2087	0.797	1787	1294	35.6	4.3	17.616	C

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	343	86	1247	1481	0.231	343	564	0.5	0.3	3.593	A
2 - Duston Mill Lane	0	0	1590	353	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1223	306	222	2117	0.577	1227	1368	2.5	1.5	4.272	A
4 - Telford Way	202	50	1283	972	0.208	202	166	0.4	0.3	4.741	A
5 - A5076 North	1392	348	409	2137	0.651	1401	1076	4.3	2.0	5.170	A

2031 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	66.24	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-10	3 - A5076 Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	729	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1891	100.000
4 - Telford Way		ONE HOUR	✓	220	100.000
5 - A5076 North		ONE HOUR	✓	1504	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	565	43	121
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	385	0	0	32	1474
	4 - Telford Way	23	0	129	0	68
	5 - A5076 North	79	0	1090	335	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.66	8.91	2.0	A	669	1003
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	1.08	140.04	91.5	F	1735	2603
4 - Telford Way	0.40	10.05	0.7	B	202	303
5 - A5076 North	0.81	9.46	4.2	A	1380	2070

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	549	137	1165	1528	0.359	547	364	0.0	0.6	3.729	A
2 - Duston Mill Lane	0	0	1712	312	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1424	356	374	2027	0.702	1414	1337	0.0	2.4	5.979	A
4 - Telford Way	166	41	1481	872	0.190	165	307	0.0	0.2	5.081	A
5 - A5076 North	1132	283	402	2141	0.529	1128	1244	0.0	1.1	3.634	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	655	164	1394	1396	0.469	654	435	0.6	0.9	4.932	A
2 - Duston Mill Lane	0	0	2048	198	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1700	425	448	1984	0.857	1687	1600	2.4	5.7	12.014	B
4 - Telford Way	198	49	1767	728	0.272	197	368	0.2	0.4	6.772	A
5 - A5076 North	1352	338	480	2094	0.646	1349	1484	1.1	1.8	4.952	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	803	201	1702	1219	0.659	799	499	0.9	1.9	8.644	A
2 - Duston Mill Lane	0	0	2500	45	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	2082	521	546	1926	1.081	1901	1954	5.7	51.0	62.852	F
4 - Telford Way	242	61	2001	610	0.397	241	446	0.4	0.6	9.724	A
5 - A5076 North	1656	414	554	2048	0.808	1647	1689	1.8	4.1	9.015	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	803	201	1710	1214	0.661	802	503	1.9	2.0	8.909	A
2 - Duston Mill Lane	0	0	2513	40	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	2082	521	549	1924	1.082	1920	1964	51.0	91.5	140.035	F
4 - Telford Way	242	61	2021	600	0.404	242	449	0.6	0.7	10.049	B
5 - A5076 North	1656	414	558	2045	0.810	1655	1705	4.1	4.2	9.457	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	655	164	1406	1389	0.472	660	491	2.0	0.9	5.052	A
2 - Duston Mill Lane	0	0	2065	192	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1700	425	452	1982	0.858	1960	1614	91.5	26.6	111.646	F
4 - Telford Way	198	49	2036	593	0.334	198	375	0.7	0.5	9.147	A
5 - A5076 North	1352	338	536	2059	0.657	1361	1698	4.2	2.0	5.367	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	549	137	1174	1523	0.360	550	387	0.9	0.6	3.773	A
2 - Duston Mill Lane	0	0	1724	307	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1424	356	377	2026	0.703	1520	1347	26.6	2.5	8.838	A
4 - Telford Way	166	41	1586	820	0.202	167	311	0.5	0.3	5.520	A
5 - A5076 North	1132	283	425	2127	0.532	1136	1328	2.0	1.2	3.744	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 19 - Upton Way - Telford Way Mitigation.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J19 - Upton Way - Telford Way
Report generation date: 29/01/2018 10:01:15

»2021 DS2, AM
»2021 DS2, PM
»2031 DS2, AM
»2031 DS2, PM

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
	2021 DS2									
1 - Edgare Mobbs Way	0.9	6.10	0.43	A	22 % [5 - A5076 North]	1.4	6.16	0.58	A	29 % [3 - A5076 Upton Way South]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	1.8	3.86	0.64	A		2.8	5.20	0.73	A	
4 - Telford Way	0.5	7.90	0.34	A		0.2	7.16	0.15	A	
5 - A5076 North	3.4	6.47	0.77	A		1.3	3.20	0.56	A	
	2031 DS2									
1 - Edgare Mobbs Way	0.9	6.24	0.43	A	16 % [5 - A5076 North]	2.0	8.92	0.66	A	13 % [4 - Telford Way]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	2.1	4.17	0.66	A		4.6	8.12	0.82	A	
4 - Telford Way	0.8	9.56	0.44	A		0.9	12.94	0.47	B	
5 - A5076 North	4.5	8.04	0.81	A		2.0	4.36	0.66	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Upton Way / Telford Wat
Location	
Site number	
Date	01/06/2017

Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\sam.maloney
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	5.48	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	22	5 - A5076 North

Arms

Arms

Arm	Name	Description

1	Edgare Mobbs Way	
2	Duston Mill Lane	
3	A5076 Upton Way South	
4	Telford Way	
5	A5076 North	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Edgare Mobbs Way	7.50	7.50	0.0	34.0	70.0	45.0	
2 - Duston Mill Lane	2.00	5.00	10.0	7.0	70.0	52.0	
3 - A5076 Upton Way South	7.50	11.00	20.0	39.0	70.0	40.0	
4 - Telford Way	3.75	6.50	8.5	38.0	70.0	23.0	
5 - A5076 North	7.50	11.00	18.0	31.0	70.0	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Edgare Mobbs Way	0.577	2200
2 - Duston Mill Lane	0.339	891
3 - A5076 Upton Way South	0.695	2920
4 - Telford Way	0.504	1619
5 - A5076 North	0.696	2916

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	462	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1573	100.000
4 - Telford Way		ONE HOUR	✓	215	100.000
5 - A5076 North		ONE HOUR	✓	1761	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	337	23	102
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	408	0	0	16	1149
	4 - Telford Way	47	0	64	0	104
	5 - A5076 North	217	0	1399	145	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.43	6.10	0.9	A	424	636
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.64	3.86	1.8	A	1443	2165
4 - Telford Way	0.34	7.90	0.5	A	197	296
5 - A5076 North	0.77	6.47	3.4	A	1616	2424

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1207	1504	0.231	346	504	0.0	0.3	3.534	A
2 - Duston Mill Lane	0	0	1553	365	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1184	296	203	2779	0.426	1181	1351	0.0	0.8	2.366	A
4 - Telford Way	162	40	1246	991	0.163	161	138	0.0	0.2	4.388	A

5 - A5076 North	1326	331	390	2645	0.501	1322	1017	0.0	1.0	2.829	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1443	1368	0.304	415	603	0.3	0.5	4.293	A
2 - Duston Mill Lane	0	0	1858	262	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1414	354	242	2752	0.514	1413	1616	0.8	1.1	2.826	A
4 - Telford Way	193	48	1490	868	0.223	193	165	0.2	0.3	5.397	A
5 - A5076 North	1583	396	466	2592	0.611	1581	1217	1.0	1.6	3.706	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1764	1183	0.430	507	738	0.5	0.8	6.048	A
2 - Duston Mill Lane	0	0	2271	122	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1732	433	296	2714	0.638	1729	1975	1.1	1.8	3.832	A
4 - Telford Way	237	59	1823	700	0.338	236	202	0.3	0.5	7.841	A
5 - A5076 North	1939	485	570	2519	0.770	1932	1489	1.6	3.4	6.316	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1770	1179	0.431	509	740	0.8	0.9	6.105	A
2 - Duston Mill Lane	0	0	2279	120	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1732	433	297	2714	0.638	1732	1982	1.8	1.8	3.857	A
4 - Telford Way	237	59	1827	698	0.339	237	203	0.5	0.5	7.897	A
5 - A5076 North	1939	485	571	2518	0.770	1939	1492	3.4	3.4	6.470	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1452	1363	0.305	417	606	0.9	0.5	4.336	A
2 - Duston Mill Lane	0	0	1869	258	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1414	354	244	2751	0.514	1417	1625	1.8	1.1	2.844	A

4 - Telford Way	193	48	1495	866	0.223	194	166	0.5	0.3	5.435	A
5 - A5076 North	1583	396	468	2591	0.611	1590	1221	3.4	1.7	3.781	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1213	1501	0.232	348	507	0.5	0.3	3.554	A
2 - Duston Mill Lane	0	0	1561	362	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1184	296	204	2779	0.426	1186	1358	1.1	0.8	2.378	A
4 - Telford Way	162	40	1250	989	0.164	162	139	0.3	0.2	4.413	A
5 - A5076 North	1326	331	391	2644	0.501	1328	1021	1.7	1.1	2.858	A

2021 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	4.75	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	29	3 - A5076 Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	733	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1776	100.000
4 - Telford Way		ONE HOUR	✓	80	100.000
5 - A5076 North		ONE HOUR	✓	1312	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	585	30	118
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	372	0	0	41	1363
	4 - Telford Way	18	0	23	0	39
	5 - A5076 North	79	0	1054	179	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.58	6.16	1.4	A	673	1009
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.73	5.20	2.8	A	1630	2445
4 - Telford Way	0.15	7.16	0.2	A	73	110
5 - A5076 North	0.56	3.20	1.3	A	1204	1806

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	552	138	943	1656	0.333	550	352	0.0	0.5	3.311	A
2 - Duston Mill Lane	0	0	1493	386	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1337	334	245	2750	0.486	1333	1248	0.0	1.0	2.620	A

4 - Telford Way	60	15	1391	918	0.066	60	188	0.0	0.1	4.196	A
5 - A5076 North	988	247	310	2700	0.366	985	1141	0.0	0.6	2.156	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	659	165	1128	1549	0.425	658	421	0.5	0.7	4.111	A
2 - Duston Mill Lane	0	0	1786	286	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1597	399	294	2716	0.588	1595	1493	1.0	1.5	3.311	A
4 - Telford Way	72	18	1664	780	0.092	72	225	0.1	0.1	5.081	A
5 - A5076 North	1179	295	371	2658	0.444	1179	1365	0.6	0.8	2.502	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	807	202	1381	1404	0.575	805	515	0.7	1.4	6.100	A
2 - Duston Mill Lane	0	0	2186	151	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1955	489	359	2671	0.732	1950	1826	1.5	2.8	5.128	A
4 - Telford Way	88	22	2035	593	0.148	88	275	0.1	0.2	7.120	A
5 - A5076 North	1445	361	453	2600	0.555	1443	1669	0.8	1.3	3.192	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	807	202	1383	1403	0.575	807	516	1.4	1.4	6.159	A
2 - Duston Mill Lane	0	0	2190	150	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1955	489	360	2670	0.732	1955	1830	2.8	2.8	5.203	A
4 - Telford Way	88	22	2040	591	0.149	88	275	0.2	0.2	7.164	A
5 - A5076 North	1445	361	455	2600	0.556	1445	1673	1.3	1.3	3.205	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	659	165	1131	1548	0.426	661	423	1.4	0.8	4.149	A
2 - Duston Mill Lane	0	0	1792	284	0.000	0	0	0.0	0.0	0.000	A

3 - A5076 Upton Way South	1597	399	295	2715	0.588	1602	1498	2.8	1.5	3.358	A
4 - Telford Way	72	18	1671	776	0.093	72	225	0.2	0.1	5.113	A
5 - A5076 North	1179	295	373	2657	0.444	1181	1371	1.3	0.8	2.514	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	552	138	946	1654	0.334	553	354	0.8	0.5	3.336	A
2 - Duston Mill Lane	0	0	1499	383	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1337	334	247	2749	0.486	1339	1253	1.5	1.0	2.644	A
4 - Telford Way	60	15	1397	915	0.066	60	188	0.1	0.1	4.216	A
5 - A5076 North	988	247	311	2699	0.366	989	1146	0.8	0.6	2.167	A

2031 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	6.44	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	16	5 - A5076 North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	455	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1624	100.000

4 - Telford Way		ONE HOUR	✓	268	100.000
5 - A5076 North		ONE HOUR	✓	1849	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	338	27	90
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	384	0	0	16	1224
	4 - Telford Way	53	0	104	0	111
	5 - A5076 North	308	0	1365	176	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.43	6.24	0.9	A	418	626
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.66	4.17	2.1	A	1490	2235
4 - Telford Way	0.44	9.56	0.8	A	246	369
5 - A5076 North	0.81	8.04	4.5	A	1697	2545

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	343	86	1234	1488	0.230	341	559	0.0	0.3	3.558	A

2 - Duston Mill Lane	0	0	1575	358	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1223	306	220	2767	0.442	1219	1356	0.0	0.8	2.441	A
4 - Telford Way	202	50	1275	976	0.207	201	164	0.0	0.3	4.699	A
5 - A5076 North	1392	348	406	2634	0.529	1387	1070	0.0	1.2	3.003	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	409	102	1476	1349	0.303	408	669	0.3	0.5	4.340	A
2 - Duston Mill Lane	0	0	1885	253	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1460	365	263	2737	0.533	1458	1622	0.8	1.2	2.958	A
4 - Telford Way	241	60	1525	850	0.283	240	197	0.3	0.4	5.978	A
5 - A5076 North	1662	416	486	2578	0.645	1659	1280	1.2	1.9	4.077	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	501	125	1802	1161	0.432	500	818	0.5	0.9	6.163	A
2 - Duston Mill Lane	0	0	2302	112	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1788	447	321	2697	0.663	1785	1981	1.2	2.0	4.134	A
4 - Telford Way	295	74	1866	678	0.435	294	240	0.4	0.8	9.447	A
5 - A5076 North	2036	509	594	2503	0.813	2026	1566	1.9	4.4	7.722	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	501	125	1811	1156	0.433	501	820	0.9	0.9	6.236	A
2 - Duston Mill Lane	0	0	2312	108	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1788	447	323	2696	0.663	1788	1989	2.0	2.1	4.169	A
4 - Telford Way	295	74	1869	677	0.436	295	241	0.8	0.8	9.563	A
5 - A5076 North	2036	509	596	2502	0.814	2035	1569	4.4	4.5	8.040	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

1 - Edgare Mobbs Way	409	102	1488	1342	0.305	410	673	0.9	0.5	4.390	A
2 - Duston Mill Lane	0	0	1898	248	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1460	365	265	2736	0.534	1463	1634	2.1	1.2	2.981	A
4 - Telford Way	241	60	1530	848	0.284	242	198	0.8	0.4	6.042	A
5 - A5076 North	1662	416	488	2576	0.645	1672	1284	4.5	1.9	4.200	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	343	86	1241	1484	0.231	343	562	0.5	0.3	3.580	A
2 - Duston Mill Lane	0	0	1584	355	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1223	306	221	2767	0.442	1224	1363	1.2	0.8	2.458	A
4 - Telford Way	202	50	1280	974	0.207	202	165	0.4	0.3	4.733	A
5 - A5076 North	1392	348	408	2632	0.529	1395	1074	1.9	1.2	3.045	A

2031 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	7.20	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	13	4 - Telford Way

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)

1 - Edgare Mobbs Way		ONE HOUR	✓	729	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1891	100.000
4 - Telford Way		ONE HOUR	✓	220	100.000
5 - A5076 North		ONE HOUR	✓	1504	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	565	43	121
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	385	0	0	32	1474
	4 - Telford Way	23	0	129	0	68
	5 - A5076 North	79	0	1090	335	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.66	8.92	2.0	A	669	1003
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.82	8.12	4.6	A	1735	2603
4 - Telford Way	0.47	12.94	0.9	B	202	303
5 - A5076 North	0.66	4.36	2.0	A	1380	2070

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand	Junction	Circulating flow (PCU/hr)	Capacity	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queu	End queu	Delay (s)	LOS

	(PCU/hr)	Arrivals (PCU)		(PCU/hr)				e (PCU)	e (PCU)		
1 - Edgare Mobbs Way	549	137	1166	1527	0.359	547	365	0.0	0.6	3.732	A
2 - Duston Mill Lane	0	0	1713	311	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1424	356	374	2660	0.535	1419	1339	0.0	1.2	2.987	A
4 - Telford Way	166	41	1486	870	0.190	165	308	0.0	0.2	5.098	A
5 - A5076 North	1132	283	403	2636	0.430	1129	1248	0.0	0.8	2.450	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	655	164	1395	1395	0.470	654	437	0.6	0.9	4.937	A
2 - Duston Mill Lane	0	0	2049	197	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1700	425	448	2609	0.652	1697	1601	1.2	1.9	4.067	A
4 - Telford Way	198	49	1777	723	0.273	197	368	0.2	0.4	6.837	A
5 - A5076 North	1352	338	482	2581	0.524	1351	1492	0.8	1.1	3.005	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	803	201	1707	1216	0.660	799	534	0.9	1.9	8.702	A
2 - Duston Mill Lane	0	0	2505	43	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	2082	521	548	2540	0.820	2072	1957	1.9	4.5	7.784	A
4 - Telford Way	242	61	2169	525	0.461	240	450	0.4	0.8	12.549	B
5 - A5076 North	1656	414	588	2507	0.661	1653	1822	1.1	2.0	4.313	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	803	201	1711	1214	0.661	803	536	1.9	2.0	8.915	A
2 - Duston Mill Lane	0	0	2513	40	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	2082	521	549	2538	0.820	2082	1964	4.5	4.6	8.122	A
4 - Telford Way	242	61	2180	520	0.466	242	451	0.8	0.9	12.937	B
5 - A5076 North	1656	414	591	2505	0.661	1656	1831	2.0	2.0	4.358	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	655	164	1401	1392	0.471	660	440	2.0	0.9	5.036	A
2 - Duston Mill Lane	0	0	2061	193	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1700	425	450	2607	0.652	1711	1611	4.6	2.0	4.196	A
4 - Telford Way	198	49	1791	716	0.276	200	370	0.9	0.4	6.998	A
5 - A5076 North	1352	338	486	2578	0.525	1355	1505	2.0	1.1	3.034	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	549	137	1172	1524	0.360	550	367	0.9	0.6	3.771	A
2 - Duston Mill Lane	0	0	1722	308	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1424	356	376	2659	0.535	1427	1346	2.0	1.2	3.028	A
4 - Telford Way	166	41	1494	866	0.191	166	309	0.4	0.2	5.149	A
5 - A5076 North	1132	283	405	2634	0.430	1134	1255	1.1	0.8	2.470	A

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

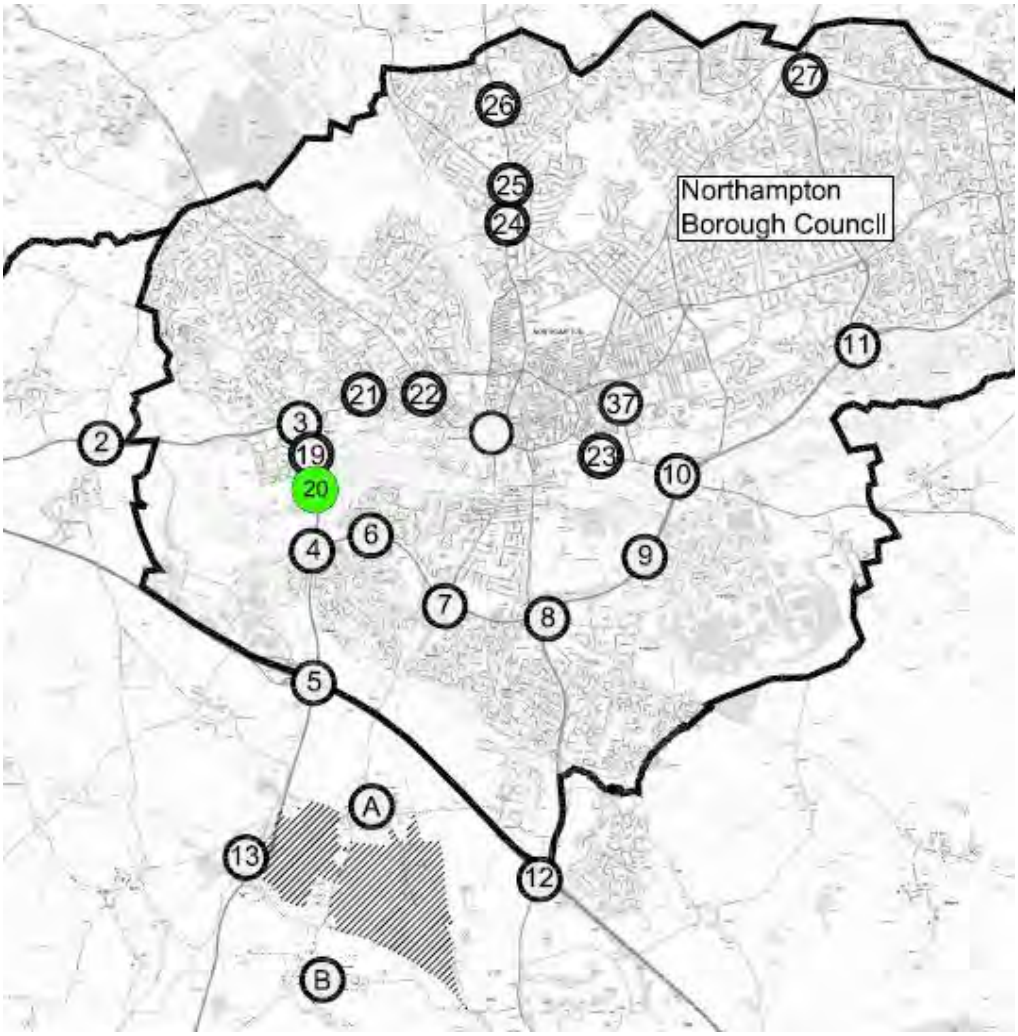
Technical Note No. 24

1 JUNCTION TWENTY – A5076 UPTON WAY / HIGH STREET ROUNDABOUT

Existing Junction Description

1.1 Junction Twenty is a three arm roundabout on the A5076 Upton Way to west of Upton Country Park. It connects the A5076 to High Street. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Twenty Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Tuesday 6th June 2017 for the hours of 07:00 to 10 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the existing surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 As agreed with the NCC and HE, the junction has been modelled using the industry standard computer modelling software Junctions9. The outputs from Junctions9 relate to Max RFC (Ratio of Flow to Capacity), Max Queue (PCUs) and Delay (Seconds). RFC gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be exceeding theoretical capacity when the RFC greater than one.

1.6 The junction has been set up based on the guidance provided within the Junction9 handbook and industry standard guidance. The geometry of the junction has been measured in CAD, to provide the most appropriate measures for the junction.

Base Model Validation

1.7 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2017 Base

2015		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A5076 North	5	1-11	12
	Arm 2 – High Street	1	0-3	3
	Arm 3 – A5076 South	5	3-9	1
PM Peak Hour (1700-1800)	Arm 1 – A5076 North	2	0-4	6
	Arm 2 – High Street	3	0-9	8
	Arm 3 – A5076 South	3	1-5	0

1.8 It is considered that the modelled queues are generally in line with the surveyed queue, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle.

Results of the Base Modelling

1.9 The results of the modelling for the existing junction layout, Shown in **Figure EL20** are summarised in **Table 2**

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, shown in **Figure EL20** are summarised in **Table 2** and junction analysis results are included at **Appendix B**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM			PM		
Arm		Arm 1	Arm 2	Arm 3	Arm 1	Arm 2	Arm 3
DoS (%)	2017	94%	73%	39%	87%	91%	20%
	2021 DM	96%	67%	56%	86%	91%	27%
	2021 DS	107%	67%	61%	86%	99%	17%
	2031 DM	107%	74%	61%	88%	91%	17%
	2031 DS	108%	76%	63%	90%	104%	26%
Queue – MMQ (PCU)	2017	14	3	1	7	11	0
	2021 DM	19	2	1	6	11	0
	2021 DS	81	2	2	7	30	0
	2031 DM	77	3	2	7	11	0
	2031 DS	92	4	2	10	73	0
Average Delay (sec/pcu)	2017	27.8	5.8	6.0	13.5	17.5	5.6
	2021 DM	37.8	4.8	7.7	12.6	17.5	5.9
	2021 DS	126.2	4.8	8.7	13.0	44.4	5.6
	2031 DM	122.0	6.1	8.7	14.0	17.5	5.6
	2031 DS	141.2	6.7	9.5	18.1	91.6	7.4

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**	**2015**	**2021 DM**	**2021 DS**	**2031 DM**	**2031 DS**
Overall Junction capacity (PRC)	2.0	1.0	-9.0	-9.0	-10.0	6.0	6.0	-2.0	6.0	-7.0
Overall Junction Delay (PCUhr)	14	14	50	50	57	18	18	17	18	42

1.11 There is a significant effect on overall junction capacity between the DM AM and DS AM scenarios for 2031 by 1% and 1% for 2031 AM and 2031 PM scenario. Furthermore, there is an increase in overall junction delay between the DM AM and DS AM scenarios by 7 and 24 PCUhrs 2031 AM and PM respectively. Therefore mitigation is considered necessary to address the development's impact.

Results of the Mitigation Modelling

1.12 The proposed mitigation is shown in **Figure J.14** in the TA and summarised is as follows:

- Provision of an additional nearside lane on the A5076 Upton Way north approach;
- Provision of a merge lane on the A5076 Upton Way south exit;
- Provision of an additional nearside lane on the A5076 Upton Way south approach;
- Provision of a merge lane on the A5076 Upton Way north exit; and
- Widening of the circulatory carriageway to accommodate three lanes on the east and west sections of the circulatory and two lanes on the north and south sections of the circulatory.

1.13 The results of the mitigated junction model is shown in **Table 4** and **Table 5** and included as **Appendix B.**

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM			PM		
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 1**	**Arm 2**	**Arm 3**
DoS (%)	**2021 DS**	82.0%	52.0%	57.0%	67.0%	77.0%	34.0%
	Comparison to 2021 DM	-14.0%	-15.0%	1.0%	-19.0%	-14.0%	7.0%
	2031 DS	83.0%	60.0%	63.0%	71.0%	81.0%	28.0%

Peak Period		AM			PM		
Arm		Arm 1	Arm 2	Arm 3	Arm 1	Arm 2	Arm 3
	Comparison to 2031 DM	-24.0%	-14.0%	2.0%	-17.0%	-10.0%	11.0%
Queue – MMQ (PCU)	2021 DS	5	1	2	2	4	1
	Comparison to 2021 DM	-14	-1	0	-4	-7	0
	2031 DS	5	2	2	3	5	0
	Comparison to 2031 DM	-72	-2	0	-5	-6	0
Average Delay (sec/pcu)	2021 DS	8.9	2.6	7.9	4.3	5.5	7.8
	Comparison to 2021 DM	-28.9	-2.2	0.2	-8.2	-12.0	1.9
	2031 DS	9.5	3.1	9.5	4.8	6.7	8.3
	Comparison to 2031 DM	-112.5	-3.0	0.8	-9.2	-10.8	2.7

1.14 As shown in **Table 3**, the proposed junction mitigation is considered appropriate to ensure that there is nil determent as a result of Rail Central in comparison to the 2031 DM scenarios. Whilst the Arms 4 shows to provide less capacity than in the DM scenario, the other four arms shows an improvement and therefore the junction operates 34% better in 2031 DS scenario AM peak than AM peak 2031 DM scenario.

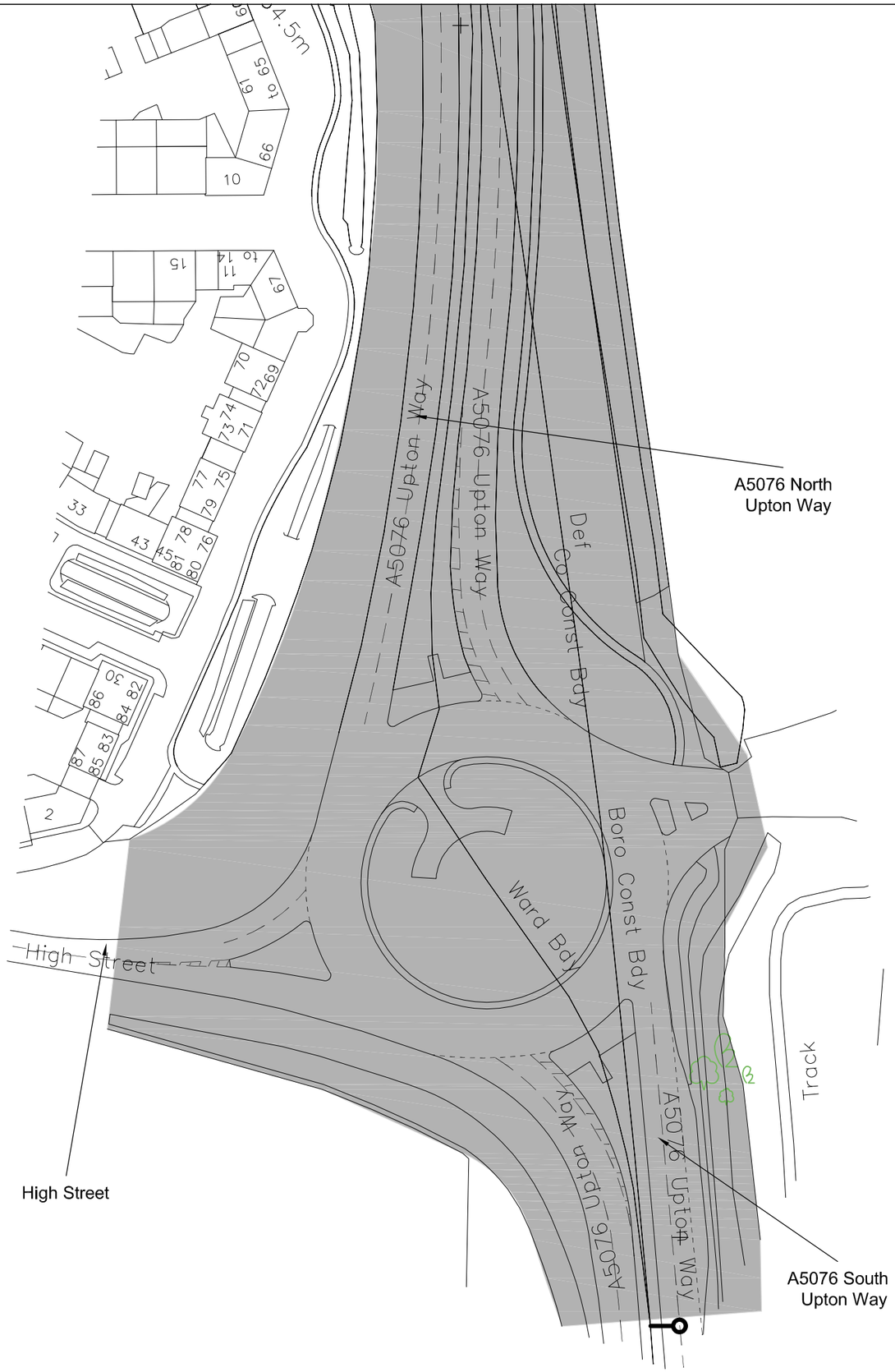
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	AM				PM			
Scenarios	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM	2021 DS	Comparison to 2021 DM	2031 DS	Comparison to 2031 DM
Overall Junction capacity (DoS)	0.2	0.9	0.1	9.1	0.3	5.7	0.2	5.8
Overall Junction Delay (PCUhr)	7	-7	12	-38	12	-6	15	-3

1.15 The junction operates 9.1% and 5.8 better in 2031 AM and PM peak. Finally, the overall junction delay is 38 and 3 PCUhr better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Upton Way / High Street Roundabout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	26.05.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL20	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,820	6	1,826
C - A5076 (South)	2,005	0	160	2,165
A - High Street	0	77	0	77
Total	2,005	1,897	166	4,068

Modelled Flows
2021 DM
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,739	19	1,758
C - A5076 (South)	1,867	0	153	2,020
A - High Street	16	266	0	282
Total	1,883	2,005	172	4,060

Modelled Flows
2021 DS2
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,920	13	1,934
C - A5076 (South)	1,863	0	162	2,025
A - High Street	14	284	0	298
Total	1,877	2,205	175	4,257

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	0	0	0
C - A5076 (South)	0	0	0	0
A - High Street	0	0	0	0
Total	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	-81	13	-68
C - A5076 (South)	-138	0	-7	-145
A - High Street	16	189	0	205
Total	-122	108	6	-8

2021 DS2 minus 2015 Base
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	100	7	108
C - A5076 (South)	-142	0	2	-140
A - High Street	14	207	0	221
Total	-128	308	9	189

3 Adjusted Flows by adding the Change in Flows (2) to the

Observed 2015 Count
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	1	1,736	33	1,737
C - A5076 (South)	1,424	3	228	1,427
A - High Street	70	317	0	387
Total	1,425	1,739	261	3,164

2021 DM adjusted to count
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	1	1,655	46	1,669
C - A5076 (South)	1,286	3	221	1,282
A - High Street	86	506	0	592
Total	1,303	1,847	267	3,156

2021 DS2 adjusted to count
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	1	1,836	40	1,845
C - A5076 (South)	1,282	3	230	1,287
A - High Street	84	524	0	608
Total	1,297	2,047	270	3,353

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,737	6	1,743
C - A5076 (South)	1,687	0	508	2,195
A - High Street	0	494	0	494
Total	1,687	2,231	514	4,432

Modelled Flows
2021 DM
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,674	10	1,684
C - A5076 (South)	1,637	0	555	2,192
A - High Street	0	557	0	557
Total	1,637	2,231	565	4,433

Modelled Flows
2021 DS2
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,665	22	1,688
C - A5076 (South)	1,872	0	480	2,352
A - High Street	4	569	0	574
Total	1,876	2,235	502	4,613

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	0	0	0
C - A5076 (South)	0	0	0	0
A - High Street	0	0	0	0
Total	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	-63	4	-59
C - A5076 (South)	-50	0	47	-3
A - High Street	0	63	0	63
Total	-50	0	51	1

2021 DS2 minus 2015 Base
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	-72	16	-55
C - A5076 (South)	185	0	-28	157
A - High Street	4	75	0	80
Total	189	4	-12	181

3 Adjusted Flows by adding the Change in Flows (2) to the

2015 Count
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,688	51	1,730
C - A5076 (South)	1,760	2	303	2,063
A - High Street	45	118	0	159
Total	1,799	1,803	350	3,952

2021 DM adjusted to count
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,625	55	1,671
C - A5076 (South)	1,710	2	350	2,060
A - High Street	45	181	0	222
Total	1,749	1,803	401	3,953

2021 DS2 adjusted to count
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,616	67	1,675
C - A5076 (South)	1,945	2	275	2,220
A - High Street	49	193	0	239
Total	1,988	1,807	338	4,133

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,820	6	1,826
C - A5076 (South)	2,005	0	160	2,165
A - High Street	0	77	0	77
Total	2,005	1,897	166	4,068

Modelled Flows
2031 DM
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,893	7	1,900
C - A5076 (South)	1,877	0	317	2,194
A - High Street	10	325	0	335
Total	1,887	2,218	324	4,429

Modelled Flows
2031 DS2
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,922	16	1,938
C - A5076 (South)	1,946	0	297	2,243
A - High Street	20	311	0	331
Total	1,966	2,233	313	4,512

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	0	0	0
C - A5076 (South)	0	0	0	0
A - High Street	0	0	0	0
Total	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	73	1	74
C - A5076 (South)	-128	0	157	29
A - High Street	10	248	0	258
Total	-118	321	158	361

2031 DS2 minus 2015 Base
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	102	10	112
C - A5076 (South)	-59	0	137	78
A - High Street	20	234	0	254
Total	-39	336	147	444

3 Adjusted Flows by adding the Change in Flows (2) to the

Observed 2015 Count
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	1	1,736	33	1,737
C - A5076 (South)	1,424	3	228	1,427
A - High Street	70	317	0	387
Total	1,425	1,739	261	3,164

2031 DM adjusted to count
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	1	1,809	34	1,811
C - A5076 (South)	1,296	3	385	1,456
A - High Street	80	565	0	645
Total	1,307	2,060	419	3,525

2031 DS2 adjusted to count
AM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	1	1,838	43	1,849
C - A5076 (South)	1,365	3	365	1,505
A - High Street	90	551	0	641
Total	1,386	2,075	408	3,608

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,737	6	1,743
C - A5076 (South)	1,687	0	508	2,195
A - High Street	0	494	0	494
Total	1,687	2,231	514	4,432

Modelled Flows
2031 DM
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,767	5	1,772
C - A5076 (South)	1,740	0	455	2,195
A - High Street	0	462	0	462
Total	1,740	2,229	460	4,429

Modelled Flows
2031 DS2
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,796	19	1,815
C - A5076 (South)	2,049	0	429	2,478
A - High Street	8	493	0	501
Total	2,056	2,289	448	4,794

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	0	0	0
C - A5076 (South)	0	0	0	0
A - High Street	0	0	0	0
Total	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	30	-1	29
C - A5076 (South)	53	0	-53	0
A - High Street	0	-32	0	-32
Total	53	-2	-54	-3

2031 DS2 minus 2015 Base
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	59	13	72
C - A5076 (South)	362	0	-79	283
A - High Street	8	-1	0	7
Total	369	58	-66	362

3 Adjusted Flows by adding the Change in Flows (2) to the

2015 Count
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,688	51	1,730
C - A5076 (South)	1,760	2	303	2,063
A - High Street	45	118	0	159
Total	1,799	1,803	350	3,952

2031 DM adjusted to count
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,718	50	1,759
C - A5076 (South)	1,813	2	250	2,063
A - High Street	45	86	0	127
Total	1,852	1,801	296	3,949

2031 DS2 adjusted to count
PM Peak

	B - A5076 (North)	C - A5076 (South)	A - High Street	Total
B - A5076 (North)	0	1,747	64	1,802
C - A5076 (South)	2,122	2	224	2,346
A - High Street	53	117	0	166
Total	2,168	1,861	284	4,314

APPENDIX B

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 20 - Upton Way - High Street Existing.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J20 - Upton Way - High Street
Report generation date: 29/01/2018 10:06:37

»2017 Base, AM
»2017 Base, PM
»2021 DM, AM
»2021 DM, PM
»2021 DS2, AM
»2021 DS2, PM
»2031 DM, AM
»2031 DM, PM
»2031 DS2, AM
»2031 DS2, PM

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
2017 Base										
1 - Upton Way North	14.1	27.79	0.94	D	2 % [1 - Upton Way North]	6.9	13.52	0.87	B	6 % [2 - Upton Way South]
2 - Upton Way South	2.9	5.83	0.73	A		10.5	17.52	0.91	C	
3 - High Street	0.7	6.00	0.39	A		0.3	5.61	0.20	A	
2021 DM										
1 - Upton Way North	18.6	37.83	0.96	E	-1 % [1 - Upton Way North]	6.2	12.56	0.86	B	6 % [2 - Upton Way South]
2 - Upton Way South	2.2	4.77	0.67	A		10.5	17.49	0.91	C	
3 - High Street	1.4	7.65	0.56	A		0.4	5.94	0.27	A	
2021 DS2										
1 - Upton Way North	81.1	126.17	1.07	F	-9 % [1 - Upton Way North]	6.5	13.01	0.86	B	-2 % [2 - Upton Way South]
2 - Upton Way South	2.2	4.77	0.67	A		29.5	44.36	0.99	E	
3 - High Street	1.5	7.88	0.57	A		0.6	7.61	0.34	A	
2031 DM										
1 - Upton Way North	76.9	121.98	1.07	F	-9 % [1 - Upton Way North]	7.3	14.00	0.88	B	6 % [2 - Upton Way South]
2 - Upton Way South	3.1	6.10	0.74	A		10.5	17.47	0.91	C	
3 - High Street	1.7	8.74	0.61	A		0.2	5.58	0.17	A	
2031 DS2										
1 - Upton Way North	91.5	141.16	1.08	F		9.5	18.07	0.90	C	

2 - Upton Way South	3.5	6.72	0.76	A	-10 %	72.7	91.58	1.04	F	-7 %
3 - High Street	1.8	9.51	0.63	A	[1 - Upton Way North]	0.4	7.38	0.26	A	[2 - Upton Way South]

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	01/06/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\simon.moody
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2017 Base	AM	ONE HOUR	08:00	09:30	15	✓
D2	2017 Base	PM	ONE HOUR	17:00	18:30	15	✓
D3	2021 DM	AM	ONE HOUR	08:00	09:30	15	✓
D4	2021 DM	PM	ONE HOUR	17:00	18:30	15	✓
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓
D7	2031 DM	AM	ONE HOUR	08:00	09:30	15	✓
D8	2031 DM	PM	ONE HOUR	17:00	18:30	15	✓
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2017 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	16.04	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	2	1 - Upton Way North

Arms

Arms

Arm	Name	Description
1	Upton Way North	
2	Upton Way South	
3	High Street	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Upton Way North	7.00	8.00	2.0	25.0	70.0	27.0	
2 - Upton Way South	7.50	8.00	2.0	33.5	70.0	15.0	
3 - High Street	3.00	9.00	24.0	19.0	70.0	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Upton Way North	0.602	2283
2 - Upton Way South	0.653	2526
3 - High Street	0.548	1947

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2017 Base	AM	ONE HOUR	08:00	09:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1770	100.000
2 - Upton Way South		ONE HOUR	✓	1655	100.000
3 - High Street		ONE HOUR	✓	387	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1736	33
	2 - Upton Way South	1424	3	228
	3 - High Street	70	317	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	0.94	27.79	14.1	D	1624	2436
2 - Upton Way South	0.73	5.83	2.9	A	1519	2278
3 - High Street	0.39	6.00	0.7	A	355	533

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1333	333	240	2138	0.623	1325	1122	0.0	1.8	4.829	A
2 - Upton Way South	1246	311	25	2509	0.497	1242	1540	0.0	1.1	3.114	A
3 - High Street	291	73	1071	1360	0.214	290	196	0.0	0.3	3.697	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1591	398	287	2110	0.754	1585	1342	1.8	3.3	7.465	A

2 - Upton Way South	1488	372	30	2506	0.594	1486	1842	1.1	1.6	3.874	A
3 - High Street	348	87	1282	1245	0.279	347	234	0.3	0.4	4.411	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1949	487	351	2071	0.941	1913	1641	3.3	12.3	21.335	C
2 - Upton Way South	1822	456	37	2502	0.728	1817	2227	1.6	2.9	5.739	A
3 - High Street	426	107	1568	1088	0.392	425	286	0.4	0.7	5.961	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1949	487	352	2071	0.941	1942	1646	12.3	14.1	27.792	D
2 - Upton Way South	1822	456	37	2501	0.728	1822	2257	2.9	2.9	5.827	A
3 - High Street	426	107	1572	1086	0.392	426	287	0.7	0.7	6.001	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1591	398	289	2109	0.754	1634	1349	14.1	3.5	9.033	A
2 - Upton Way South	1488	372	31	2505	0.594	1493	1891	2.9	1.6	3.931	A
3 - High Street	348	87	1288	1241	0.280	349	236	0.7	0.4	4.444	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1333	333	241	2137	0.623	1339	1127	3.5	1.8	5.000	A
2 - Upton Way South	1246	311	26	2509	0.497	1248	1555	1.6	1.1	3.145	A
3 - High Street	291	73	1077	1357	0.215	292	197	0.4	0.3	3.717	A

2017 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	15.27	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	6	2 - Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2017 Base	PM	ONE HOUR	17:00	18:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1739	100.000
2 - Upton Way South		ONE HOUR	✓	2065	100.000
3 - High Street		ONE HOUR	✓	163	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1688	51
	2 - Upton Way South	1760	2	303
	3 - High Street	45	118	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	0.87	13.52	6.9	B	1596	2394
2 - Upton Way South	0.91	17.52	10.5	C	1895	2842
3 - High Street	0.20	5.61	0.3	A	150	224

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

1 - Upton Way North	1309	327	90	2229	0.587	1303	1353	0.0	1.5	4.251	A
2 - Upton Way South	1555	389	38	2501	0.622	1547	1355	0.0	1.8	4.124	A
3 - High Street	123	31	1320	1224	0.100	122	265	0.0	0.1	3.592	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1563	391	108	2218	0.705	1559	1618	1.5	2.6	5.976	A
2 - Upton Way South	1856	464	46	2496	0.744	1851	1621	1.8	3.1	6.089	A
3 - High Street	147	37	1579	1082	0.135	146	317	0.1	0.2	4.232	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1915	479	132	2203	0.869	1899	1965	2.6	6.6	12.379	B
2 - Upton Way South	2274	568	56	2489	0.913	2247	1975	3.1	9.7	14.951	B
3 - High Street	179	45	1918	897	0.200	179	385	0.2	0.3	5.517	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1915	479	132	2203	0.869	1913	1985	6.6	6.9	13.515	B
2 - Upton Way South	2274	568	56	2489	0.913	2270	1989	9.7	10.5	17.519	C
3 - High Street	179	45	1937	886	0.203	179	389	0.3	0.3	5.606	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1563	391	108	2218	0.705	1580	1647	6.9	2.7	6.370	A
2 - Upton Way South	1856	464	46	2496	0.744	1885	1642	10.5	3.3	6.782	A
3 - High Street	147	37	1609	1066	0.137	147	323	0.3	0.2	4.312	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1309	327	90	2228	0.588	1314	1364	2.7	1.6	4.350	A
2 - Upton Way South	1555	389	39	2501	0.622	1560	1366	3.3	1.8	4.237	A
3 - High Street	123	31	1331	1218	0.101	123	267	0.2	0.1	3.616	A

2021 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	20.01	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-1	1 - Upton Way North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2021 DM	AM	ONE HOUR	08:00	09:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1702	100.000
2 - Upton Way South		ONE HOUR	✓	1510	100.000
3 - High Street		ONE HOUR	✓	592	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1655	46
	2 - Upton Way South	1286	3	221
	3 - High Street	86	506	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	0.96	37.83	18.6	E	1562	2343
2 - Upton Way South	0.67	4.77	2.2	A	1386	2078
3 - High Street	0.56	7.65	1.4	A	543	815

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1281	320	381	2053	0.624	1274	1030	0.0	1.8	5.038	A
2 - Upton Way South	1137	284	35	2503	0.454	1133	1620	0.0	0.9	2.884	A
3 - High Street	446	111	968	1417	0.315	444	200	0.0	0.5	4.061	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1530	383	457	2008	0.762	1524	1233	1.8	3.4	8.074	A
2 - Upton Way South	1357	339	42	2498	0.543	1356	1938	0.9	1.3	3.462	A
3 - High Street	532	133	1158	1313	0.405	531	240	0.5	0.7	5.061	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1874	468	558	1947	0.963	1827	1508	3.4	15.2	26.313	D
2 - Upton Way South	1663	416	50	2493	0.667	1659	2335	1.3	2.2	4.729	A
3 - High Street	652	163	1417	1171	0.557	649	292	0.7	1.4	7.559	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1874	468	560	1945	0.963	1860	1512	15.2	18.6	37.834	E
2 - Upton Way South	1663	416	51	2492	0.667	1662	2369	2.2	2.2	4.772	A
3 - High Street	652	163	1420	1169	0.558	652	294	1.4	1.4	7.651	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1530	383	460	2006	0.763	1590	1238	18.6	3.7	10.811	B
2 - Upton Way South	1357	339	44	2497	0.544	1361	2006	2.2	1.3	3.494	A
3 - High Street	532	133	1163	1310	0.406	535	242	1.4	0.8	5.121	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1281	320	384	2052	0.625	1289	1035	3.7	1.9	5.239	A
2 - Upton Way South	1137	284	36	2503	0.454	1138	1637	1.3	0.9	2.907	A
3 - High Street	446	111	973	1414	0.315	447	201	0.8	0.5	4.096	A

2021 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	14.74	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	6	2 - Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2021 DM	PM	ONE HOUR	17:00	18:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1680	100.000
2 - Upton Way South		ONE HOUR	✓	2062	100.000
3 - High Street		ONE HOUR	✓	226	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1625	55
	2 - Upton Way South	1710	2	350
	3 - High Street	45	181	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	0.86	12.56	6.2	B	1542	2312
2 - Upton Way South	0.91	17.49	10.5	C	1892	2838
3 - High Street	0.27	5.94	0.4	A	207	311

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1265	316	137	2200	0.575	1259	1315	0.0	1.5	4.182	A
2 - Upton Way South	1552	388	41	2499	0.621	1545	1355	0.0	1.8	4.123	A
3 - High Street	170	43	1283	1244	0.137	169	304	0.0	0.2	3.682	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1510	378	164	2184	0.692	1507	1573	1.5	2.4	5.814	A
2 - Upton Way South	1854	463	49	2494	0.743	1848	1621	1.8	3.1	6.089	A
3 - High Street	203	51	1535	1106	0.184	203	363	0.2	0.2	4.382	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1850	462	201	2162	0.856	1835	1910	2.4	6.0	11.652	B
2 - Upton Way South	2270	568	60	2487	0.913	2244	1976	3.1	9.7	14.936	B
3 - High Street	249	62	1863	926	0.269	248	441	0.2	0.4	5.834	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1850	462	201	2161	0.856	1849	1930	6.0	6.2	12.559	B
2 - Upton Way South	2270	568	61	2486	0.913	2267	1990	9.7	10.5	17.489	C
3 - High Street	249	62	1882	916	0.272	249	445	0.4	0.4	5.936	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1510	378	165	2183	0.692	1525	1602	6.2	2.5	6.146	A
2 - Upton Way South	1854	463	50	2493	0.744	1882	1640	10.5	3.3	6.775	A
3 - High Street	203	51	1563	1091	0.186	204	369	0.4	0.3	4.468	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1265	316	138	2200	0.575	1269	1326	2.5	1.5	4.274	A
2 - Upton Way South	1552	388	42	2499	0.621	1558	1365	3.3	1.8	4.237	A
3 - High Street	170	43	1294	1238	0.137	170	306	0.3	0.2	3.710	A

2021 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	62.21	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-9	1 - Upton Way North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1877	100.000
2 - Upton Way South		ONE HOUR	✓	1515	100.000
3 - High Street		ONE HOUR	✓	608	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1836	40
	2 - Upton Way South	1282	3	230
	3 - High Street	84	524	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	1.07	126.17	81.1	F	1722	2584
2 - Upton Way South	0.67	4.77	2.2	A	1390	2085
3 - High Street	0.57	7.88	1.5	A	558	837

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1413	353	395	2045	0.691	1403	1026	0.0	2.4	6.085	A
2 - Upton Way South	1141	285	31	2506	0.455	1137	1768	0.0	0.9	2.886	A
3 - High Street	458	114	965	1419	0.323	456	203	0.0	0.5	4.105	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1687	422	473	1998	0.845	1675	1227	2.4	5.5	11.818	B
2 - Upton Way South	1362	340	37	2502	0.544	1360	2111	0.9	1.3	3.464	A
3 - High Street	547	137	1155	1315	0.416	546	242	0.5	0.8	5.143	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2067	517	578	1935	1.068	1903	1502	5.5	46.3	58.680	F
2 - Upton Way South	1668	417	42	2499	0.668	1665	2440	1.3	2.2	4.728	A
3 - High Street	669	167	1413	1173	0.571	667	293	0.8	1.4	7.780	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2067	517	580	1933	1.069	1927	1505	46.3	81.1	126.174	F
2 - Upton Way South	1668	417	42	2498	0.668	1668	2465	2.2	2.2	4.769	A
3 - High Street	669	167	1416	1172	0.571	669	294	1.4	1.5	7.883	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1687	422	476	1996	0.845	1972	1232	81.1	10.0	88.770	F
2 - Upton Way South	1362	340	43	2498	0.545	1365	2405	2.2	1.3	3.509	A
3 - High Street	547	137	1159	1312	0.417	549	249	1.5	0.8	5.209	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1413	353	398	2043	0.692	1443	1031	10.0	2.5	6.916	A
2 - Upton Way South	1141	285	32	2505	0.455	1142	1809	1.3	0.9	2.910	A
3 - High Street	458	114	970	1416	0.323	459	204	0.8	0.5	4.142	A

2021 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	29.49	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-2	2 - Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1683	100.000
2 - Upton Way South		ONE HOUR	✓	2222	100.000
3 - High Street		ONE HOUR	✓	242	100.000

Origin-Destination Data

Demand (PCU/hr)

From	To			
		1 - Upton Way North	2 - Upton Way South	3 - High Street
	1 - Upton Way North	0	1616	67
	2 - Upton Way South	1945	2	275
	3 - High Street	49	193	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	0.86	13.01	6.5	B	1544	2317
2 - Upton Way South	0.99	44.36	29.5	E	2039	3058
3 - High Street	0.34	7.61	0.6	A	222	333

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1267	317	146	2195	0.577	1261	1493	0.0	1.5	4.214	A
2 - Upton Way South	1673	418	50	2493	0.671	1664	1357	0.0	2.2	4.727	A
3 - High Street	182	46	1458	1148	0.159	181	256	0.0	0.2	4.091	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1513	378	175	2177	0.695	1509	1785	1.5	2.5	5.892	A
2 - Upton Way South	1998	499	60	2487	0.803	1989	1624	2.2	4.3	7.827	A
3 - High Street	218	54	1743	992	0.219	217	306	0.2	0.3	5.107	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1853	463	214	2154	0.860	1838	2133	2.5	6.2	12.002	B
2 - Upton Way South	2446	612	73	2478	0.987	2375	1979	4.3	22.2	27.900	D
3 - High Street	266	67	2081	807	0.330	266	367	0.3	0.5	7.302	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1853	463	215	2154	0.860	1852	2170	6.2	6.5	13.007	B
2 - Upton Way South	2446	612	74	2478	0.987	2417	1993	22.2	29.5	44.358	E
3 - High Street	266	67	2118	787	0.339	266	373	0.5	0.6	7.608	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1513	378	176	2177	0.695	1529	1879	6.5	2.6	6.250	A
2 - Upton Way South	1998	499	61	2486	0.803	2096	1644	29.5	4.7	12.619	B
3 - High Street	218	54	1837	941	0.231	218	320	0.6	0.3	5.488	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1267	317	147	2194	0.577	1271	1510	2.6	1.5	4.309	A
2 - Upton Way South	1673	418	51	2493	0.671	1683	1368	4.7	2.3	4.945	A
3 - High Street	182	46	1474	1139	0.160	183	259	0.3	0.2	4.140	A

2031 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	57.71	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-9	1 - Upton Way North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2031 DM	AM	ONE HOUR	08:00	09:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1844	100.000
2 - Upton Way South		ONE HOUR	✓	1684	100.000
3 - High Street		ONE HOUR	✓	645	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1809	34
	2 - Upton Way South	1296	3	385
	3 - High Street	80	565	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	1.07	121.98	76.9	F	1692	2538
2 - Upton Way South	0.74	6.10	3.1	A	1545	2318
3 - High Street	0.61	8.74	1.7	A	592	888

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1388	347	426	2026	0.685	1379	1033	0.0	2.3	6.031	A
2 - Upton Way South	1268	317	26	2509	0.505	1263	1778	0.0	1.1	3.168	A
3 - High Street	486	121	975	1413	0.344	483	314	0.0	0.6	4.249	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1658	414	510	1976	0.839	1646	1236	2.3	5.3	11.592	B
2 - Upton Way South	1514	378	31	2505	0.604	1512	2124	1.1	1.7	3.976	A
3 - High Street	580	145	1167	1308	0.443	579	376	0.6	0.9	5.421	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2030	508	623	1908	1.064	1875	1511	5.3	44.2	57.271	F

2 - Upton Way South	1854	464	36	2503	0.741	1848	2462	1.7	3.1	6.003	A
3 - High Street	710	178	1427	1165	0.609	707	457	0.9	1.7	8.577	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2030	508	625	1906	1.065	1900	1516	44.2	76.9	121.980	F
2 - Upton Way South	1854	464	36	2502	0.741	1854	2489	3.1	3.1	6.104	A
3 - High Street	710	178	1431	1163	0.611	710	459	1.7	1.7	8.735	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1658	414	513	1974	0.840	1933	1243	76.9	8.0	81.284	F
2 - Upton Way South	1514	378	37	2502	0.605	1519	2410	3.1	1.7	4.055	A
3 - High Street	580	145	1173	1304	0.445	583	383	1.7	0.9	5.513	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1388	347	429	2025	0.686	1410	1039	8.0	2.5	6.671	A
2 - Upton Way South	1268	317	27	2508	0.505	1270	1812	1.7	1.1	3.203	A
3 - High Street	486	121	980	1410	0.344	487	316	0.9	0.6	4.296	A

2031 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	15.53	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	6	2 - Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2031 DM	PM	ONE HOUR	17:00	18:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)

✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1768	100.000
2 - Upton Way South		ONE HOUR	✓	2065	100.000
3 - High Street		ONE HOUR	✓	131	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1718	50
	2 - Upton Way South	1813	2	250
	3 - High Street	45	86	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	0.88	14.00	7.3	B	1622	2434
2 - Upton Way South	0.91	17.47	10.5	C	1895	2842
3 - High Street	0.17	5.58	0.2	A	120	180

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1331	333	66	2243	0.593	1325	1392	0.0	1.6	4.284	A
2 - Upton Way South	1555	389	37	2501	0.622	1548	1353	0.0	1.8	4.122	A
3 - High Street	99	25	1360	1202	0.082	98	225	0.0	0.1	3.588	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1589	397	79	2235	0.711	1585	1666	1.6	2.6	6.052	A
2 - Upton Way South	1856	464	45	2497	0.744	1851	1619	1.8	3.1	6.082	A
3 - High Street	118	29	1627	1056	0.112	118	269	0.1	0.1	4.221	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1947	487	97	2225	0.875	1929	2023	2.6	6.9	12.736	B
2 - Upton Way South	2274	568	55	2490	0.913	2247	1972	3.1	9.7	14.919	B
3 - High Street	144	36	1975	865	0.167	144	327	0.1	0.2	5.489	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1947	487	97	2224	0.875	1945	2043	6.9	7.3	14.003	B
2 - Upton Way South	2274	568	55	2490	0.913	2270	1987	9.7	10.5	17.468	C
3 - High Street	144	36	1996	854	0.169	144	330	0.2	0.2	5.580	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1589	397	79	2235	0.711	1607	1696	7.3	2.8	6.485	A
2 - Upton Way South	1856	464	45	2496	0.744	1885	1641	10.5	3.3	6.773	A
3 - High Street	118	29	1657	1039	0.113	118	274	0.2	0.1	4.299	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1331	333	66	2243	0.593	1336	1404	2.8	1.6	4.386	A
2 - Upton Way South	1555	389	38	2501	0.622	1560	1364	3.3	1.8	4.234	A
3 - High Street	99	25	1372	1196	0.082	99	227	0.1	0.1	3.609	A

2031 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	66.59	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-10	1 - Upton Way North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1882	100.000
2 - Upton Way South		ONE HOUR	✓	1733	100.000
3 - High Street		ONE HOUR	✓	641	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1838	43
	2 - Upton Way South	1365	3	365
	3 - High Street	90	551	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	1.08	141.16	91.5	F	1727	2590
2 - Upton Way South	0.76	6.72	3.5	A	1590	2385
3 - High Street	0.63	9.51	1.8	A	588	882

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1417	354	415	2033	0.697	1407	1092	0.0	2.5	6.235	A
2 - Upton Way South	1305	326	33	2504	0.521	1300	1789	0.0	1.2	3.277	A
3 - High Street	483	121	1027	1385	0.349	480	306	0.0	0.6	4.367	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1692	423	497	1984	0.853	1678	1307	2.5	5.8	12.454	B
2 - Upton Way South	1558	389	39	2500	0.623	1555	2136	1.2	1.8	4.181	A
3 - High Street	576	144	1229	1274	0.452	575	366	0.6	0.9	5.654	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2072	518	607	1917	1.081	1891	1597	5.8	51.2	63.898	F
2 - Upton Way South	1908	477	44	2497	0.764	1901	2453	1.8	3.5	6.576	A
3 - High Street	706	176	1502	1124	0.628	702	444	0.9	1.8	9.300	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2072	518	610	1916	1.082	1911	1603	51.2	91.5	141.156	F
2 - Upton Way South	1908	477	45	2497	0.764	1908	2476	3.5	3.5	6.719	A
3 - High Street	706	176	1507	1122	0.629	706	445	1.8	1.8	9.515	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1692	423	501	1981	0.854	1957	1315	91.5	25.1	110.698	F
2 - Upton Way South	1558	389	46	2496	0.624	1565	2413	3.5	1.8	4.283	A
3 - High Street	576	144	1236	1270	0.454	580	374	1.8	0.9	5.767	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1417	354	418	2031	0.698	1507	1098	25.1	2.6	8.906	A
2 - Upton Way South	1305	326	35	2503	0.521	1307	1890	1.8	1.2	3.321	A
3 - High Street	483	121	1033	1381	0.349	484	310	0.9	0.6	4.418	A

2031 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	57.52	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-7	2 - Upton Way South

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		ONE HOUR	✓	1811	100.000
2 - Upton Way South		ONE HOUR	✓	2348	100.000
3 - High Street		ONE HOUR	✓	170	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1747	64
	2 - Upton Way South	2122	2	224
	3 - High Street	53	117	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Upton Way North	0.90	18.07	9.5	C	1662	2493
2 - Upton Way South	1.04	91.58	72.7	F	2155	3232
3 - High Street	0.26	7.38	0.4	A	156	234

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1363	341	89	2229	0.612	1357	1628	0.0	1.7	4.504	A
2 - Upton Way South	1768	442	48	2494	0.709	1757	1398	0.0	2.6	5.299	A
3 - High Street	128	32	1590	1076	0.119	127	216	0.0	0.1	4.170	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1628	407	107	2218	0.734	1623	1944	1.7	3.0	6.596	A
2 - Upton Way South	2111	528	57	2488	0.848	2098	1672	2.6	5.7	9.845	A
3 - High Street	153	38	1898	907	0.168	153	258	0.1	0.2	5.243	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1994	498	130	2204	0.905	1970	2258	3.0	8.8	15.583	C
2 - Upton Way South	2585	646	70	2480	1.042	2434	2031	5.7	43.4	44.947	E
3 - High Street	187	47	2202	741	0.253	187	302	0.2	0.4	7.140	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1994	498	131	2204	0.905	1991	2289	8.8	9.5	18.072	C
2 - Upton Way South	2585	646	70	2480	1.042	2468	2052	43.4	72.7	91.582	F
3 - High Street	187	47	2233	724	0.259	187	306	0.4	0.4	7.377	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1628	407	107	2218	0.734	1654	2192	9.5	3.1	7.318	A
2 - Upton Way South	2111	528	58	2488	0.849	2372	1703	72.7	7.3	52.300	F
3 - High Street	153	38	2146	771	0.198	153	285	0.4	0.3	6.412	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1363	341	90	2229	0.612	1369	1654	3.1	1.8	4.634	A
2 - Upton Way South	1768	442	48	2494	0.709	1786	1410	7.3	2.7	5.731	A
3 - High Street	128	32	1616	1062	0.121	128	219	0.3	0.2	4.245	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 20 - Upton Way High Street Mitigation.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J20 - Upton Way - High Street
Report generation date: 29/01/2018 10:09:22

»2021 DS2, AM
»2021 DS2, PM
»2031 DS2, AM
»2031 DS2, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2021 DS2							
1 - Upton Way North	5.0	8.90	0.82	A	2.2	4.34	0.67	A
2 - Upton Way South	1.2	2.60	0.52	A	3.7	5.46	0.77	A
3 - High Street	1.5	7.88	0.57	A	0.6	7.82	0.34	A
	2031 DS2							
1 - Upton Way North	5.3	9.45	0.83	A	2.6	4.76	0.71	A
2 - Upton Way South	1.6	3.09	0.60	A	4.7	6.71	0.81	A
3 - High Street	1.8	9.52	0.63	A	0.4	8.27	0.28	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	01/06/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\simon.moody
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2021 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	6.36	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Upton Way North	
2	Upton Way South	
3	High Street	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Upton Way North	7.00	11.50	17.0	25.0	70.0	27.0	
2 - Upton Way South	7.50	11.50	20.0	33.5	70.0	15.0	
3 - High Street	3.00	9.00	24.0	19.0	70.0	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Upton Way North	0.702	2917
2 - Upton Way South	0.763	3228
3 - High Street	0.548	1947

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2021 DS2	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1877	100.000
2 - Upton Way South		✓	1515	100.000
3 - High Street		✓	608	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1836	40
	2 - Upton Way South	1282	3	230
	3 - High Street	84	524	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.82	8.90	5.0	A

2 - Upton Way South	0.52	2.60	1.2	A
3 - High Street	0.57	7.88	1.5	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1413	395	2640	0.535	1408	1.3	3.202	A
2 - Upton Way South	1141	31	3204	0.356	1138	0.6	1.914	A
3 - High Street	458	966	1418	0.323	456	0.5	4.107	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1687	473	2585	0.653	1684	2.0	4.381	A
2 - Upton Way South	1362	37	3200	0.426	1361	0.8	2.152	A
3 - High Street	547	1155	1314	0.416	546	0.8	5.146	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2067	578	2511	0.823	2055	4.9	8.481	A
2 - Upton Way South	1668	45	3193	0.522	1667	1.2	2.591	A
3 - High Street	669	1415	1172	0.571	667	1.4	7.794	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2067	580	2510	0.823	2066	5.0	8.896	A
2 - Upton Way South	1668	45	3193	0.522	1668	1.2	2.595	A
3 - High Street	669	1416	1171	0.571	669	1.5	7.884	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1687	476	2583	0.653	1699	2.1	4.536	A
2 - Upton Way South	1362	37	3199	0.426	1363	0.8	2.158	A
3 - High Street	547	1157	1313	0.416	549	0.8	5.203	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1413	398	2638	0.536	1416	1.3	3.249	A
2 - Upton Way South	1141	31	3204	0.356	1141	0.6	1.921	A
3 - High Street	458	969	1416	0.323	459	0.5	4.139	A

2021 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	5.14	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2021 DS2	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1683	100.000
2 - Upton Way South		✓	2222	100.000
3 - High Street		✓	242	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1616	67
	2 - Upton Way South	1945	2	275
	3 - High Street	49	193	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.67	4.34	2.2	A
2 - Upton Way South	0.77	5.46	3.7	A
3 - High Street	0.34	7.82	0.6	A

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1267	146	2814	0.450	1263	0.9	2.548	A
2 - Upton Way South	1673	50	3189	0.525	1668	1.2	2.594	A
3 - High Street	182	1462	1146	0.159	181	0.2	4.100	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1513	175	2794	0.541	1511	1.3	3.083	A
2 - Upton Way South	1998	60	3182	0.628	1995	1.8	3.330	A
3 - High Street	218	1748	989	0.220	217	0.3	5.125	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1853	214	2767	0.670	1849	2.2	4.299	A
2 - Upton Way South	2446	74	3171	0.771	2439	3.6	5.357	A
3 - High Street	266	2137	776	0.343	265	0.6	7.740	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1853	215	2766	0.670	1853	2.2	4.335	A
2 - Upton Way South	2446	74	3171	0.771	2446	3.7	5.458	A
3 - High Street	266	2144	773	0.345	266	0.6	7.821	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1513	176	2793	0.542	1517	1.3	3.112	A
2 - Upton Way South	1998	60	3182	0.628	2005	1.9	3.386	A
3 - High Street	218	1757	985	0.221	219	0.3	5.177	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS

1 - Upton Way North	1267	147	2814	0.450	1269	0.9	2.565	A
2 - Upton Way South	1673	51	3189	0.525	1675	1.2	2.620	A
3 - High Street	182	1468	1143	0.159	183	0.2	4.125	A

2031 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	6.87	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D9	2031 DS2	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1882	100.000
2 - Upton Way South		✓	1733	100.000
3 - High Street		✓	641	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1838	43
	2 - Upton Way South	1365	3	365
	3 - High Street	90	551	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.83	9.45	5.3	A
2 - Upton Way South	0.60	3.09	1.6	A
3 - High Street	0.63	9.52	1.8	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1417	415	2626	0.540	1412	1.3	3.249	A
2 - Upton Way South	1305	33	3202	0.407	1302	0.8	2.079	A
3 - High Street	483	1028	1384	0.349	480	0.6	4.371	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1692	497	2568	0.659	1689	2.1	4.485	A
2 - Upton Way South	1558	39	3198	0.487	1557	1.0	2.412	A
3 - High Street	576	1230	1273	0.453	575	0.9	5.659	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2072	607	2491	0.832	2060	5.1	8.941	A
2 - Upton Way South	1908	48	3191	0.598	1906	1.6	3.076	A
3 - High Street	706	1505	1122	0.629	702	1.8	9.341	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2072	610	2489	0.833	2071	5.3	9.447	A
2 - Upton Way South	1908	48	3191	0.598	1908	1.6	3.086	A
3 - High Street	706	1507	1121	0.629	706	1.8	9.517	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1692	501	2565	0.660	1704	2.2	4.665	A
2 - Upton Way South	1558	40	3197	0.487	1560	1.1	2.422	A
3 - High Street	576	1233	1272	0.453	580	0.9	5.753	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1417	418	2623	0.540	1420	1.3	3.302	A
2 - Upton Way South	1305	33	3202	0.407	1306	0.8	2.090	A
3 - High Street	483	1032	1382	0.349	484	0.6	4.414	A

2031 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	5.96	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D10	2031 DS2	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1811	100.000
2 - Upton Way South		✓	2348	100.000
3 - High Street		✓	170	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1747	64
	2 - Upton Way South	2122	2	224
	3 - High Street	53	117	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.71	4.76	2.6	A
2 - Upton Way South	0.81	6.71	4.7	A
3 - High Street	0.28	8.27	0.4	A

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1363	89	2854	0.478	1359	1.0	2.643	A
2 - Upton Way South	1768	48	3191	0.554	1762	1.4	2.762	A
3 - High Street	128	1594	1074	0.119	127	0.1	4.181	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1628	107	2842	0.573	1626	1.5	3.253	A
2 - Upton Way South	2111	57	3184	0.663	2108	2.1	3.669	A
3 - High Street	153	1907	903	0.169	153	0.2	5.277	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1994	130	2825	0.706	1989	2.6	4.712	A
2 - Upton Way South	2585	70	3174	0.815	2575	4.7	6.510	A

3 - High Street	187	2329	671	0.279	186	0.4	8.161	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1994	131	2825	0.706	1994	2.6	4.762	A
2 - Upton Way South	2585	70	3174	0.815	2585	4.7	6.713	A
3 - High Street	187	2338	666	0.281	187	0.4	8.269	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1628	108	2841	0.573	1633	1.5	3.287	A
2 - Upton Way South	2111	58	3184	0.663	2121	2.2	3.760	A
3 - High Street	153	1919	896	0.171	154	0.2	5.341	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1363	90	2854	0.478	1365	1.0	2.665	A
2 - Upton Way South	1768	48	3191	0.554	1771	1.4	2.796	A
3 - High Street	128	1602	1069	0.120	128	0.2	4.210	A

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

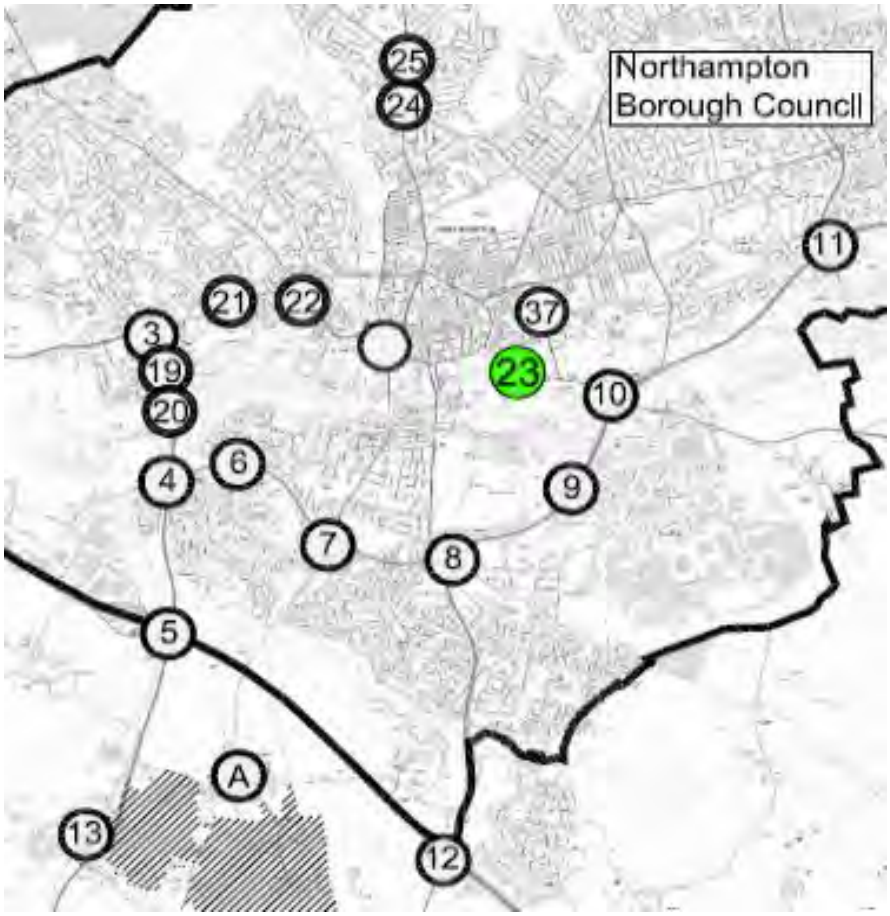
Technical Note No. 25

1 JUNCTION TWENTY THREE – A508, A5095, MILL LANE

Existing Junction Description

1.1 Junction Twenty Three is a four arm staggered junction, which is next to Midsummer Meadow Car Park to the east and the River Nene and Northampton Marina to the south west. It connects Nunn Mills Road, A428 and Beckets View. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Twenty Three Location Plan



Existing Survey Flows and Forecast Flows

1.2 No base flows were provided by NCC, however based on previous NCC comments on other junctions, the standard set up of the model is considered appropriate and the validation of the model is deemed appropriate.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The junctions have been modelled using the industry standard computer modelling package Junctions9. The outputs from Junctions9 relate to Max RFC (Ratio to Flow Capacity), Max Queue (PCUs) and Delay (Seconds). The RFC gives the main indicator of the junction's performance and where an RFC is one the junction is considered to be operating at capacity. RFC gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the RFC is 1 or greater.

1.6 The junction has been set up based on the guidance provided within the Junction9 handbook and industry standard guidance. The geometry of the junction has been measured in CAD, to provide the most appropriate measures for the junction.

Results of the Base Modelling

1.7 The results of the modelling for the existing junction layout, Shown in **Figure EL23** are summarised in **Table 1** and **Table 2** and junction analysis results are included at **Appendix B.**

Table 1 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2017	NA				NA			
	2021 DM	8%	15%	7%	38%	13%	25%	1%	66%
	2021 DS	2%	4%	27%	12%	6%	50%	10%	0%

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	2031 DM	8%	22%	6%	45%	12%	42%	2%	77%
	2031 DS	1%	9%	29%	18%	5%	54%	0%	18%
Queue – MMQ (PCU)	2017	NA				NA			
	2021 DM	0	0	0	1	0	0	0	2
	2021 DS	0	0	0	0	0	1	0	0
	2031 DM	0	0	0	1	0	1	0	4
	2031 DS	0	0	1	0	0	1	0	0
Average Delay (sec/pcu)	2017	NA				NA			
	2021 DM	10.4	16.0	9.3	11.2	10.5	15.4	8.3	19.7
	2021 DS	10.6	13.5	10.4	8.6	11.4	25.7	0.0	8.7
	2031 DM	11.2	20.6	9.9	13.7	11.2	25.9	9.4	30.7
	2031 DS	11.4	22.7	11.3	10.0	12.0	27.5	0.0	10.0

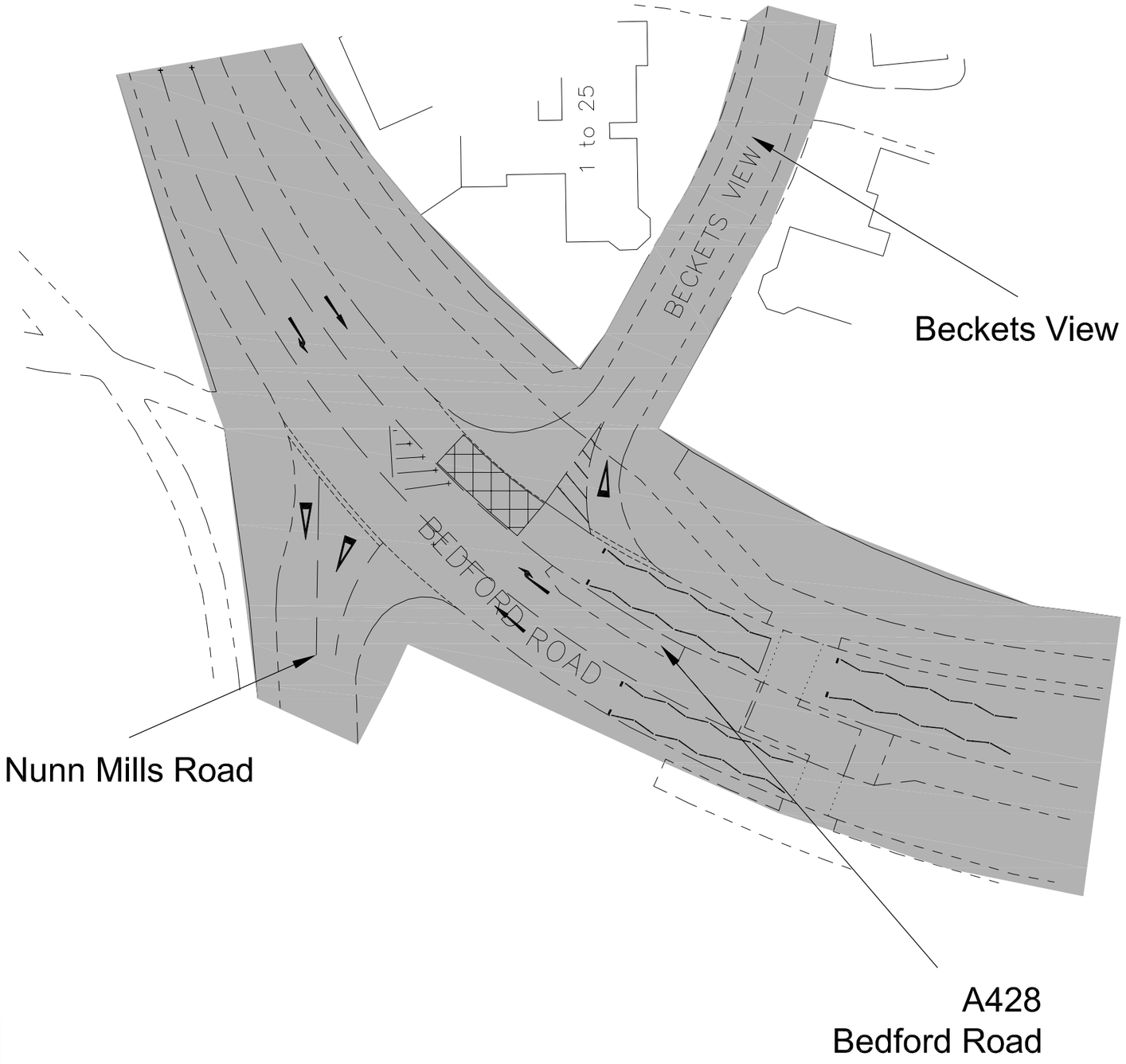
Table 2 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2017	2021 DM	2021 DS	2031 DM	2031 DS	2017	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (DoS)	NA	28	33	14	11	NA	15	7	3	6
Overall Junction Delay (PCUhr)		3	3	8	9		10	11	14	12

1.8 As shown in **Table 2** and **Table 3**, Rail Central is shown to have minimal impact on the operation of the existing junction and that the junction remains within theoretical capacity in the 2031 AM and PM scenarios. Therefore mitigation is not considered necessary at this location.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A428/Beckets View
Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	20.06.17	DR	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL23	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	177	177
B - Bedford Rd N	9	0	43	452	504
C - Nunns Mill Rd	0	14	0	31	45
D - Bedford Rd E	27	980	186	0	1,193
Total	35	994	230	659	1,919

Modelled Flows
2021 DS2
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	198	198
B - Bedford Rd N	10	0	9	838	858
C - Nunns Mill Rd	0	13	0	29	42
D - Bedford Rd E	28	975	33	0	1,036
Total	38	987	42	1,066	2,134

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	0	0
B - Bedford Rd N	0	0	0	0	0
C - Nunns Mill Rd	0	0	0	0	0
D - Bedford Rd E	0	0	0	0	0
Total	0	0	0	0	0

2021 DS2 minus 2015 Base
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	22	22
B - Bedford Rd N	1	0	-34	386	354
C - Nunns Mill Rd	0	-2	0	-2	-4
D - Bedford Rd E	2	-5	-154	0	-157
Total	3	-7	-187	407	215

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	35	35
B - Bedford Rd N	2	0	152	606	760
C - Nunns Mill Rd	0	7	0	8	15
D - Bedford Rd E	5	879	207	0	1,091
Total	7	886	359	649	1,901

2021 DS2 adjusted to count
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	57	57
B - Bedford Rd N	3	0	118	992	1,114
C - Nunns Mill Rd	0	5	0	6	11
D - Bedford Rd E	7	874	53	0	934
Total	10	879	172	1,056	2,116

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows

2015 BASE
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	331	331
B - Bedford Rd N	34	0	57	618	709
C - Nunns Mill Rd	0	48	0	79	127
D - Bedford Rd E	40	780	74	0	894
Total	74	828	131	1,028	2,061

Modelled Flows

2021 DS2
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	359	359
B - Bedford Rd N	26	0	9	728	763
C - Nunns Mill Rd	0	24	0	62	86
D - Bedford Rd E	49	985	21	0	1,055
Total	75	1,009	30	1,148	2,262

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	0	0
B - Bedford Rd N	0	0	0	0	0
C - Nunns Mill Rd	0	0	0	0	0
D - Bedford Rd E	0	0	0	0	0
Total	0	0	0	0	0

2021 DS2 minus 2015 Base
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	28	28
B - Bedford Rd N	-8	0	-49	109	53
C - Nunns Mill Rd	0	-24	0	-17	-41
D - Bedford Rd E	9	205	-53	0	160
Total	1	181	-102	121	201

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	19	19
B - Bedford Rd N	16	0	8	830	854
C - Nunns Mill Rd	0	60	0	119	179
D - Bedford Rd E	12	727	16	0	755
Total	28	787	24	968	1,807

2021 DS2 adjusted to count
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	47	47
B - Bedford Rd N	8	0	-41	939	907
C - Nunns Mill Rd	0	36	0	102	138
D - Bedford Rd E	21	932	-37	0	915
Total	29	968	-78	1,089	2,008

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	177	177
B - Bedford Rd N	9	0	43	452	504
C - Nunns Mill Rd	0	14	0	31	45
D - Bedford Rd E	27	980	186	0	1,193
Total	35	994	230	659	1,919

Modelled Flows
2031 DS2
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	219	219
B - Bedford Rd N	13	0	11	977	1,000
C - Nunns Mill Rd	0	11	0	35	45
D - Bedford Rd E	26	1,112	37	0	1,175
Total	38	1,123	48	1,230	2,439

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	0	0
B - Bedford Rd N	0	0	0	0	0
C - Nunns Mill Rd	0	0	0	0	0
D - Bedford Rd E	0	0	0	0	0
Total	0	0	0	0	0

2031 DS2 minus 2015 Base
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	42	42
B - Bedford Rd N	4	0	-33	525	496
C - Nunns Mill Rd	0	-4	0	4	0
D - Bedford Rd E	-1	133	-149	0	-17
Total	3	129	-181	570	521

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	35	35
B - Bedford Rd N	2	0	152	606	760
C - Nunns Mill Rd	0	7	0	8	15
D - Bedford Rd E	5	879	207	0	1,091
Total	7	886	359	649	1,901

2031 DS2 adjusted to count
AM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	77	77
B - Bedford Rd N	6	0	119	1,131	1,256
C - Nunns Mill Rd	0	3	0	12	15
D - Bedford Rd E	4	1,012	58	0	1,074
Total	10	1,015	178	1,219	2,422

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	331	331
B - Bedford Rd N	34	0	57	618	709
C - Nunns Mill Rd	0	48	0	79	127
D - Bedford Rd E	40	780	74	0	894
Total	74	828	131	1,028	2,061

Modelled Flows
2031 DS2
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	387	387
B - Bedford Rd N	29	0	7	831	867
C - Nunns Mill Rd	0	33	0	71	104
D - Bedford Rd E	44	911	20	0	974
Total	73	944	27	1,289	2,333

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	0	0
B - Bedford Rd N	0	0	0	0	0
C - Nunns Mill Rd	0	0	0	0	0
D - Bedford Rd E	0	0	0	0	0
Total	0	0	0	0	0

2031 DS2 minus 2015 Base
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	57	57
B - Bedford Rd N	-5	0	-50	213	158
C - Nunns Mill Rd	0	-15	0	-9	-23
D - Bedford Rd E	4	131	-55	0	80
Total	-1	116	-105	261	272

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	19	19
B - Bedford Rd N	16	0	8	830	854
C - Nunns Mill Rd	0	60	0	119	179
D - Bedford Rd E	12	727	16	0	755
Total	28	787	24	968	1,807

2031 DS2 adjusted to count
PM Peak

	A - Beckets View/ Canterbury Court	B - Bedford Rd N	C - Nunns Mill Rd	D - Bedford Rd E	Total
A - Beckets View/ Canterbury Court	0	0	0	76	76
B - Bedford Rd N	11	0	-42	1,043	1,012
C - Nunns Mill Rd	0	45	0	110	156
D - Bedford Rd E	16	858	-39	0	835
Total	27	903	-81	1,229	2,079

APPENDIX B

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 23 - A428 - Becketts View Existing.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Picady\J23 - A428 - Becketts View
Report generation date: 29/01/2018 10:13:50

»2021 DM, AM
»2021 DM, PM
»2021 DS2, AM
»2021 DS2, PM
»2031 DM, AM
»2031 DM, PM
»2031 DS2, AM
»2031 DS2, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2021 DM							
Stream B-ACD	0.2	16.00	0.15	C	0.4	15.42	0.25	C
Stream A-BCD	0.1	10.38	0.08	B	0.2	10.54	0.13	B
Stream D-ABC	0.7	11.22	0.38	B	2.1	19.72	0.66	C
Stream C-ABD	0.1	9.32	0.07	A	0.0	8.30	0.01	A
	2021 DS2							
Stream B-ACD	0.0	13.49	0.04	B	1.1	25.72	0.50	D
Stream A-BCD	0.0	10.62	0.02	B	0.1	11.40	0.06	B
Stream D-ABC	0.1	8.62	0.12	A	0.1	8.66	0.10	A
Stream C-ABD	0.4	10.43	0.27	B	0.0	0.00	0.00	A
	2031 DM							
Stream B-ACD	0.3	20.64	0.22	C	0.8	25.88	0.42	D
Stream A-BCD	0.1	11.23	0.08	B	0.1	11.23	0.12	B
Stream D-ABC	0.9	13.71	0.45	B	3.5	30.70	0.77	D
Stream C-ABD	0.1	9.89	0.06	A	0.0	9.42	0.02	A
	2031 DS2							
Stream B-ACD	0.1	22.70	0.09	C	1.3	27.45	0.54	D
Stream A-BCD	0.0	11.42	0.01	B	0.1	12.00	0.05	B
Stream D-ABC	0.2	9.97	0.18	A	0.2	10.04	0.18	B
Stream C-ABD	0.5	11.26	0.29	B	0.0	0.00	0.00	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	01/06/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\simon.moody
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2021 DM	AM	ONE HOUR	08:00	09:30	15
D2	2021 DM	PM	ONE HOUR	17:00	18:30	15
D3	2021 DS2	AM	ONE HOUR	08:00	09:30	15
D4	2021 DS2	PM	ONE HOUR	17:00	18:30	15
D5	2031 DM	AM	ONE HOUR	08:00	09:30	15
D6	2031 DM	PM	ONE HOUR	17:00	18:30	15
D7	2031 DS2	AM	ONE HOUR	08:00	09:30	15
D8	2031 DS2	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2021 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	1.58	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A428 Bedford Road East		Major
B	Nun Mills Road		Minor
C	A428 Bedford Road West		Major
D	Beckets View		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - A428 Bedford Road East	10.50					10.0	✓	5.00
C - A428 Bedford Road West	10.50	✓	2.20	✓	3.00	145.0	✓	3.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Nun Mills Road	One lane	5.00	50	50
D - Beckets View	One lane	5.00	200	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	580	-	-	-	0.181	0.181	0.181	-	0.181	-	-
1	B-AD	653	0.091	0.230	-	-	-	0.145	0.329	0.145	0.091	0.230
1	B-C	787	0.097	0.245	-	-	-	-	-	-	0.097	0.245
1	C-B	715	0.223	0.223	-	-	-	-	-	-	0.223	0.223
1	D-A	794	-	-	-	0.247	0.098	0.247	-	0.098	-	-
1	D-BC	688	0.160	0.160	0.364	0.255	0.101	0.255	-	0.101	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2021 DM	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)

A - A428 Bedford Road East		✓	1095	100.000
B - Nun Mills Road		✓	40	100.000
C - A428 Bedford Road West		✓	829	100.000
D - Beckets View		✓	197	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A428 Bedford Road East	**B - Nun Mills Road**	**C - A428 Bedford Road West**	**D - Beckets View**
From	**A - A428 Bedford Road East**	0	41	1024	30
	B - Nun Mills Road	29	0	11	0
	C - A428 Bedford Road West	790	27	0	12
	D - Beckets View	197	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	**B - Nun Mills Road**	**C - A428 Bedford Road West**	**D - Beckets View**
From	**A - A428 Bedford Road East**	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

2021 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	4.13	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2021 DM	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A428 Bedford Road East		✓	996	100.000
B - Nun Mills Road		✓	77	100.000
C - A428 Bedford Road West		✓	702	100.000
D - Beckets View		✓	358	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	0	23	924	49
	B - Nun Mills Road	57	0	20	0
	C - A428 Bedford Road West	663	5	0	34
	D - Beckets View	358	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

2021 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	0.94	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2021 DS2	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A428 Bedford Road East		✓	934	100.000
B - Nun Mills Road		✓	11	100.000
C - A428 Bedford Road West		✓	1113	100.000
D - Beckets View		✓	57	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	0	53	874	7
	B - Nun Mills Road	6	0	5	0
	C - A428 Bedford Road West	992	118	0	3
	D - Beckets View	57	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

2021 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS

1	untitled	Right-Left Stagger	Two-way	2.01	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2021 DS2	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A428 Bedford Road East		✓	953	100.000
B - Nun Mills Road		✓	138	100.000
C - A428 Bedford Road West		✓	947	100.000
D - Beckets View		✓	47	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	0	0	932	21
	B - Nun Mills Road	102	0	36	0
	C - A428 Bedford Road West	939	0	0	8
	D - Beckets View	47	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

2031 DM, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	1.86	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2031 DM	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A428 Bedford Road East		✓	1205	100.000
B - Nun Mills Road		✓	50	100.000
C - A428 Bedford Road West		✓	975	100.000
D - Beckets View		✓	217	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	0	69	1108	28
	B - Nun Mills Road	35	0	15	0
	C - A428 Bedford Road West	937	24	0	14
	D - Beckets View	217	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

2031 DM, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	5.90	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2031 DM	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A428 Bedford Road East		✓	1217	100.000
B - Nun Mills Road		✓	101	100.000
C - A428 Bedford Road West		✓	843	100.000
D - Beckets View		✓	387	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
From		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
	A - A428 Bedford Road East	0	22	1153	42
	B - Nun Mills Road	71	0	30	0
	C - A428 Bedford Road West	800	6	0	37
	D - Beckets View	387	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

2031 DS2, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	1.06	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2031 DS2	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A428 Bedford Road East		✓	1074	100.000
B - Nun Mills Road		✓	15	100.000
C - A428 Bedford Road West		✓	1256	100.000
D - Beckets View		✓	77	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	0	58	1012	4
	B - Nun Mills Road	12	0	3	0
	C - A428 Bedford Road West	1131	119	0	6
	D - Beckets View	77	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	B - Nun Mills Road	C - A428 Bedford Road West	D - Beckets View
From	A - A428 Bedford Road East	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

2031 DS2, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	2.41	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2031 DS2	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A428 Bedford Road East		✓	874	100.000

B - Nun Mills Road		✓	155	100.000
C - A428 Bedford Road West		✓	1054	100.000
D - Beckets View		✓	76	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - A428 Bedford Road East	**B - Nun Mills Road**	**C - A428 Bedford Road West**	**D - Beckets View**
From	**A - A428 Bedford Road East**	0	0	858	16
	B - Nun Mills Road	110	0	45	0
	C - A428 Bedford Road West	1043	0	0	11
	D - Beckets View	76	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - A428 Bedford Road East	**B - Nun Mills Road**	**C - A428 Bedford Road West**	**D - Beckets View**
From	**A - A428 Bedford Road East**	10	10	10	10
	B - Nun Mills Road	10	10	10	10
	C - A428 Bedford Road West	10	10	10	10
	D - Beckets View	10	10	10	10

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

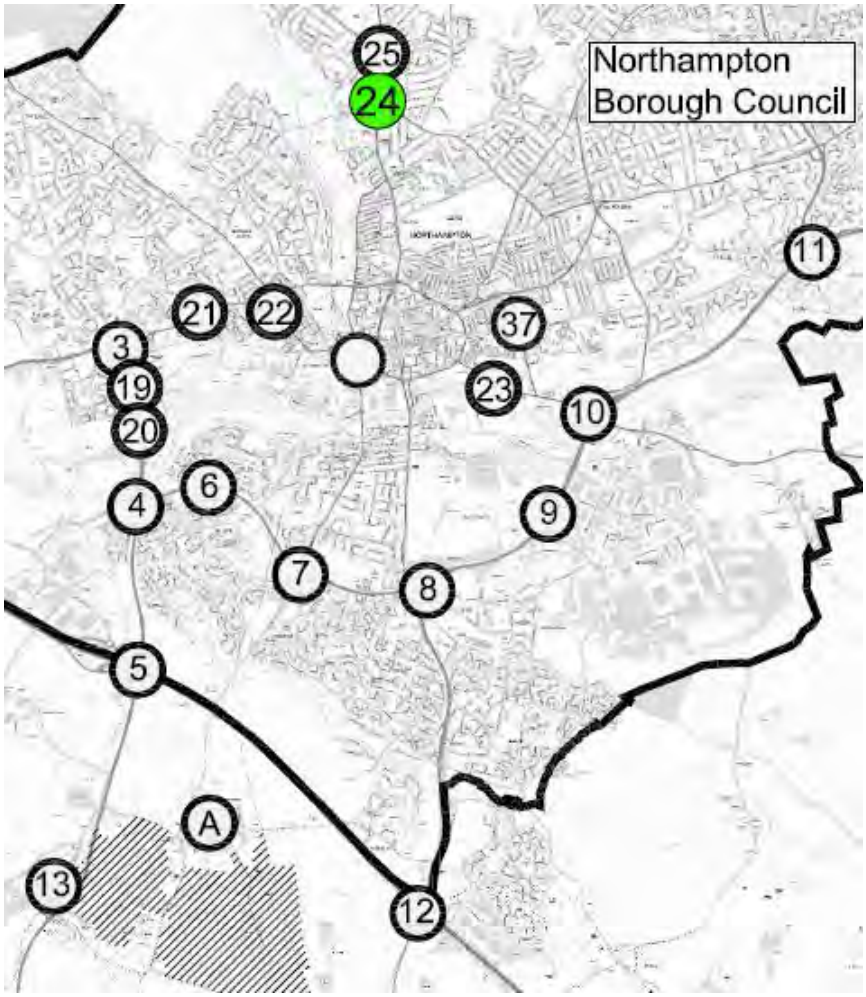
Technical Note No. 26

1 JUNCTION TWENTY FOUR – A508, A5095, MILL LANE

Existing Junction Description

1.1 Junction Twenty Four is a four arm complex signalised junction with the Cock public house and Cock hotel to the east of both crossroads respectively. It connects Mill Lane, Washington Street, A508 Harborough Road and A5095. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Twenty four Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction four were conducted on Tuesday 6th June 2017 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The existing surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

1.6 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays included at **Appendix B**.

1.7 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.8 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2017 Base

2017		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 Mill Lane	28	19 - 33	8
	Arm 2 – A508 Harborough Road North	18	2 - 29	20
	Arm 3 – A5095 South	10	8 - 13	6
	Arm 4 – A508 Harborough Road South	21	11 - 30	10
PM Peak Hour (1700-1800)	Arm 1 Mill Lane	22	13 - 33	10
	Arm 2 – A508 Harborough Road North	13	7 - 21	7
	Arm 3 – A5095 South	12	8 -14	9
	Arm 4 – A508 Harborough Road South	41	26 - 45	132

1.9 It is considered that the modelled queues are generally in line with the surveyed queues, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being lower than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (90 seconds).

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, Shown in **Figure EL24** are summarised in **Table 2** and **Table 3** and junction analysis results are included at **Appendix C.**

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2017	51.0%	91.5%	39.2%	82.5%	62.2%	38.5%	52.5%	126.1%
	2021 DM	58.2%	80.5%	43.9%	88.6%	69.9%	43.5%	36.9%	155.8%
	2021 DS	58.9%	63.0%	44.2%	97.8%	70.2%	44.6%	41.4%	169.8%
	2031 DM	86.60%	117.30%	45.10%	105.9%	86.40%	70.80%	45.80%	174.1%
	2031 DS	87.6%	106.2%	43.8%	105.5%	88.1%	52.8%	48.2%	172.0%
Queue – MMQ (PCU)	2017	8	20	6	10	10	5	9	134
	2021 DM	9	17	7	14	10	3	5	350

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	2021 DS	8	9	7	20	10	3	5	390
	2031 DM	17	104	8	43	15	10	6	412
	2031 DS	17	65	7	42	16	6	6	405
Average Delay (sec/pcu)	2017	28.7	38.7	18.9	46.5	27.4	7.6	23.2	451.9
	2021 DM	28.6	19.4	21.7	48.6	27.1	6.1	18.9	721.3
	2021 DS	29.4	8.9	21.0	83.7	26.3	6.3	19.4	820.3
	2031 DM	45.7	321.4	18.9	171.7	37.5	21.3	19.3	852.1
	2031 DS	47.9	156.7	18.0	168.1	39.8	12.2	19.7	833.2

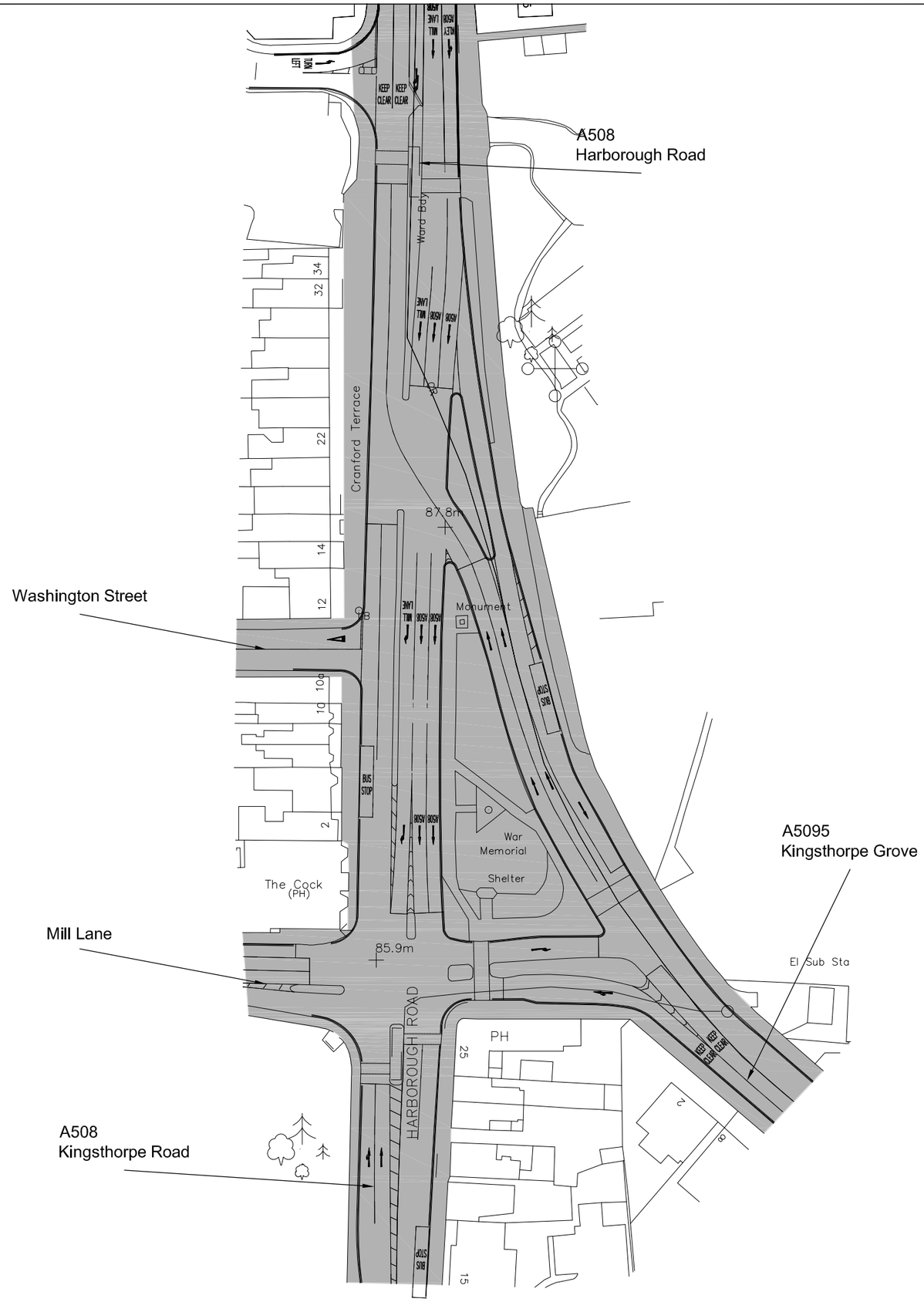
Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2017	2021 DM	2021 DS	2031 DM	2031 DS	2017	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (DoS)	-9.7	-6.6	-8.7	-30.6	-24.6	-40.2	-73.1	-88.6	-93.4	-91.2
Overall Junction Delay (PCUhr)	69	76	76	351	222	174	377	421	509	514

1.11 As shown in **Table 2** and **Table 3**, Rail Central is shown to have minimal impact on the operation of the existing junction in the 2031 AM and PM scenarios. Therefore mitigation is not considered necessary at this location.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A508 Kingsthorpe Road / A5095 Kingsthorpe Road Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	26.05.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	SL24	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	518	250	74	842
B - A508 N	386	0	230	988	1,604
C - Kingsthorpe Grove	454	171	0	0	625
D - A508 S	100	443	0	0	543
Total	940	1,132	480	1,062	3,614

Modelled Flows
2021 DM
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	530	328	89	947
B - A508 N	248	0	254	1,070	1,572
C - Kingsthorpe Grove	550	185	0	5	740
D - A508 S	97	613	0	0	710
Total	895	1,328	582	1,164	3,969

Modelled Flows
2021 DS2
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	530	328	85	944
B - A508 N	306	0	257	1,092	1,654
C - Kingsthorpe Grove	552	197	0	4	752
D - A508 S	95	586	0	0	681
Total	952	1,313	585	1,181	4,031

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	0	0	0	0
B - A508 N	0	0	0	0	0
C - Kingsthorpe Grove	0	0	0	0	0
D - A508 S	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	12	78	15	105
B - A508 N	-138	0	24	82	-32
C - Kingsthorpe Grove	96	14	0	5	115
D - A508 S	-3	170	0	0	167
Total	-45	196	102	102	355

2021 DS2 minus 2015 Base
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	12	78	11	102
B - A508 N	-80	0	27	104	50
C - Kingsthorpe Grove	98	26	0	4	127
D - A508 S	-5	143	0	0	138
Total	12	181	105	119	417

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	575	266	136	977
B - A508 N	504	0	367	963	1,834
C - Kingsthorpe Grove	409	355	0	13	777
D - A508 S	94	491	0	0	585
Total	1,007	1,421	633	1,112	4,173

2021 DM adjusted to count
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	587	344	151	1,082
B - A508 N	366	0	391	1,045	1,802
C - Kingsthorpe Grove	505	369	0	18	892
D - A508 S	91	661	0	0	752
Total	962	1,617	735	1,214	4,528

2021 DS2 adjusted to count
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	587	344	147	1,079
B - A508 N	424	0	394	1,067	1,884
C - Kingsthorpe Grove	507	381	0	17	904
D - A508 S	89	634	0	0	723
Total	1,019	1,602	738	1,231	4,590

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	659	244	51	954
B - A508 N	371	0	238	515	1,124
C - Kingsthorpe Grove	439	503	0	1	943
D - A508 S	23	642	0	0	664
Total	833	1,804	482	567	3,685

Modelled Flows
2021 DM
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	508	298	46	851
B - A508 N	213	0	194	726	1,133
C - Kingsthorpe Grove	369	365	0	0	734
D - A508 S	184	1,140	0	0	1,323
Total	766	2,012	492	772	4,042

Modelled Flows
2021 DS2
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	535	306	45	886
B - A508 N	248	0	213	718	1,180
C - Kingsthorpe Grove	394	394	0	0	788
D - A508 S	177	1,125	0	0	1,301
Total	819	2,054	519	763	4,155

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	0	0	0	0
B - A508 N	0	0	0	0	0
C - Kingsthorpe Grove	0	0	0	0	0
D - A508 S	0	0	0	0	0
Total	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	-151	54	-5	-103
B - A508 N	-158	0	-44	211	9
C - Kingsthorpe Grove	-70	-138	0	-1	-209
D - A508 S	161	498	0	0	659
Total	-67	208	10	205	357

2021 DS2 minus 2015 Base
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	-124	62	-6	-68
B - A508 N	-123	0	-25	203	56
C - Kingsthorpe Grove	-45	-109	0	-1	-155
D - A508 S	154	483	0	0	637
Total	-14	250	37	196	470

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	555	451	81	1,085
B - A508 N	427	0	310	568	1,283
C - Kingsthorpe Grove	439	441	0	15	936
D - A508 S	171	876	0	0	137
Total	868	1,036	754	783	3,441

2021 DM adjusted to count
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	404	505	76	982
B - A508 N	269	0	266	779	1,292
C - Kingsthorpe Grove	369	303	0	14	727
D - A508 S	332	1,374	0	0	796
Total	801	1,244	764	988	3,798

2021 DS2 adjusted to count
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	431	513	75	1,017
B - A508 N	304	0	285	771	1,339
C - Kingsthorpe Grove	394	332	0	14	781
D - A508 S	325	1,359	0	0	774
Total	854	1,286	791	979	3,911

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	518	250	74	843
B - A508 N	386	0	230	988	1,604
C - Kingsthorpe Grove	454	171	0	0	626
D - A508 S	100	443	0	0	543
Total	940	1,132	481	1,063	3,616

Modelled Flows
2031 DM
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	476	532	49	1,057
B - A508 N	540	0	283	1,195	2,017
C - Kingsthorpe Grove	608	244	0	0	853
D - A508 S	132	687	0	0	819
Total	1,280	1,407	814	1,245	4,746

Modelled Flows
2031 DS2
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	494	526	42	1,063
B - A508 N	535	0	289	1,223	2,046
C - Kingsthorpe Grove	623	241	0	0	864
D - A508 S	133	684	0	0	817
Total	1,290	1,420	815	1,265	4,790

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	0	0	0	0
B - A508 N	0	0	0	0	0
C - Kingsthorpe Grove	0	0	0	0	0
D - A508 S	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	-42	282	-25	214
B - A508 N	154	0	53	207	413
C - Kingsthorpe Grove	154	73	0	0	227
D - A508 S	32	244	0	0	276
Total	340	275	333	182	1,130

2031 DS2 minus 2015 Base
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	-24	276	-32	220
B - A508 N	149	0	59	235	442
C - Kingsthorpe Grove	169	70	0	0	238
D - A508 S	33	241	0	0	274
Total	350	288	334	202	1,174

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	575	266	136	977
B - A508 N	504	0	367	963	1,834
C - Kingsthorpe Grove	409	355	0	13	777
D - A508 S	94	491	0	0	585
Total	1,007	1,421	633	1,112	4,173

2031 DM adjusted to count
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	533	548	111	1,191
B - A508 N	658	0	420	1,170	2,247
C - Kingsthorpe Grove	563	428	0	13	1,004
D - A508 S	126	735	0	0	861
Total	1,347	1,696	966	1,294	5,303

2031 DS2 adjusted to count
AM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	551	542	104	1,197
B - A508 N	653	0	426	1,198	2,276
C - Kingsthorpe Grove	578	425	0	13	1,015
D - A508 S	127	732	0	0	859
Total	1,357	1,709	967	1,314	5,347

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	659	244	51	954
B - A508 N	371	0	238	515	1,124
C - Kingsthorpe Grove	439	503	0	1	943
D - A508 S	23	642	0	0	664
Total	833	1,804	482	567	3,685

Modelled Flows
2031 DM
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	612	422	26	1,060
B - A508 N	352	0	168	775	1,294
C - Kingsthorpe Grove	576	441	0	0	1,017
D - A508 S	212	1,129	0	0	1,341
Total	1,139	2,182	590	800	4,712

Modelled Flows
2031 DS2
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	632	435	27	1,095
B - A508 N	374	0	171	744	1,289
C - Kingsthorpe Grove	603	461	0	0	1,064
D - A508 S	215	1,104	0	0	1,320
Total	1,192	2,198	606	771	4,767

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	0	0	0	0
B - A508 N	0	0	0	0	0
C - Kingsthorpe Grove	0	0	0	0	0
D - A508 S	0	0	0	0	0
Total	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	-47	178	-25	106
B - A508 N	-19	0	-70	260	170
C - Kingsthorpe Grove	137	-62	0	-1	74
D - A508 S	189	487	0	0	677
Total	306	378	108	233	1,027

2031 DS2 minus 2015 Base
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	-27	191	-24	141
B - A508 N	3	0	-67	229	165
C - Kingsthorpe Grove	164	-42	0	-1	121
D - A508 S	192	462	0	0	656
Total	359	394	124	204	1,082

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	555	451	81	1,085
B - A508 N	427	0	310	568	1,283
C - Kingsthorpe Grove	439	441	0	15	936
D - A508 S	171	876	0	0	137
Total	868	1,036	754	783	3,441

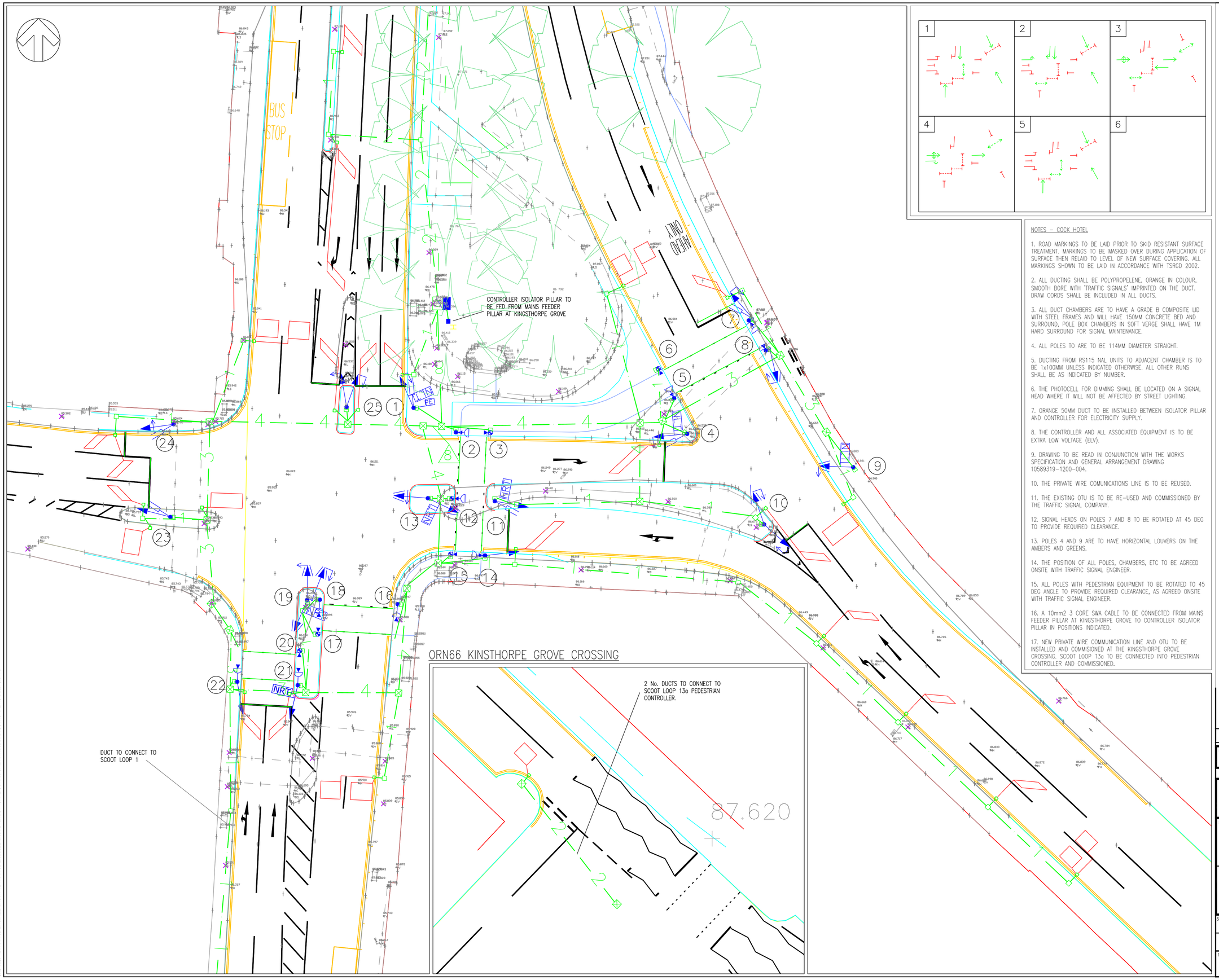
2031 DM adjusted to count
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	508	629	56	1,191
B - A508 N	408	0	240	828	1,453
C - Kingsthorpe Grove	576	379	0	14	1,010
D - A508 S	360	1,363	0	0	814
Total	1,174	1,414	862	1,016	4,468

2031 DS2 adjusted to count
PM Peak

	A - Mill Lane	B - A508 N	C - Kingsthorpe Grove	D - A508 S	Total
A - Mill Lane	0	528	642	57	1,226
B - A508 N	430	0	243	797	1,448
C - Kingsthorpe Grove	603	399	0	14	1,057
D - A508 S	363	1,338	0	0	793
Total	1,227	1,430	878	987	4,523

APPENDIX B



NOTES – COCK HOTEL

1. ROAD MARKINGS TO BE LAID PRIOR TO SKID RESISTANT SURFACE TREATMENT. MARKINGS TO BE MASKED OVER DURING APPLICATION OF SURFACE THEN RELAID TO LEVEL OF NEW SURFACE COVERING. ALL MARKINGS SHOWN TO BE LAID IN ACCORDANCE WITH TSRGD 2002.

2. ALL DUCTING SHALL BE POLYPROPELENE, ORANGE IN COLOUR, SMOOTH BORE WITH 'TRAFFIC SIGNALS' IMPRINTED ON THE DUCT. DRAW CORDS SHALL BE INCLUDED IN ALL DUCTS.

3. ALL DUCT CHAMBERS ARE TO HAVE A GRADE B COMPOSITE LID WITH STEEL FRAMES AND WILL HAVE 150MM CONCRETE BED AND SURROUND, POLE BOX CHAMBERS IN SOFT VERGE SHALL HAVE 1M HARD SURROUND FOR SIGNAL MAINTENANCE.

4. ALL POLES TO ARE TO BE 114MM DIAMETER STRAIGHT.

5. DUCTING FROM RS115 NAL UNITS TO ADJACENT CHAMBER IS TO BE 1x100MM UNLESS INDICATED OTHERWISE. ALL OTHER RUNS SHALL BE AS INDICATED BY NUMBER.

6. THE PHOTOCELL FOR DIMMING SHALL BE LOCATED ON A SIGNAL HEAD WHERE IT WILL NOT BE AFFECTED BY STREET LIGHTING.

7. ORANGE 50MM DUCT TO BE INSTALLED BETWEEN ISOLATOR PILLAR AND CONTROLLER FOR ELECTRICITY SUPPLY.

8. THE CONTROLLER AND ALL ASSOCIATED EQUIPMENT IS TO BE EXTRA LOW VOLTAGE (ELV).

9. DRAWING TO BE READ IN CONJUNCTION WITH THE WORKS SPECIFICATION AND GENERAL ARRANGEMENT DRAWING 10589319–1200–004.

10. THE PRIVATE WIRE COMUNICATIONS LINE IS TO BE REUSED.

11. THE EXISTING OTU IS TO BE RE–USED AND COMMISSIONED BY THE TRAFFIC SIGNAL COMPANY.

12. SIGNAL HEADS ON POLES 7 AND 8 TO BE ROTATED AT 45 DEG TO PROVIDE REQUIRED CLEARANCE.

13. POLES 4 AND 9 ARE TO HAVE HORIZONTAL LOUVERS ON THE AMBERS AND GREENS.

14. THE POSITION OF ALL POLES, CHAMBERS, ETC TO BE AGREED ONSITE WITH TRAFFIC SIGNAL ENGINEER.

15. ALL POLES WITH PEDESTRIAN EQUIPMENT TO BE ROTATED TO 45 DEG ANGLE TO PROVIDE REQUIRED CLEARANCE, AS AGREED ONSITE WITH TRAFFIC SIGNAL ENGINEER.

16. A 10mm2 3 CORE SWA CABLE TO BE CONNECTED FROM MAINS FEEDER PILLAR AT KINGSTHORPE GROVE TO CONTROLLER ISOLATOR PILLAR IN POSITIONS INDICATED.

17. NEW PRIVATE WIRE COMMUNICATION LINE AND OTU TO BE INSTALLED AND COMMISIONED AT THE KINGSTHORPE GROVE CROSSING. SCOOT LOOP 13a TO BE CONNECTED INTO PEDESTRIAN CONTROLLER AND COMMISSIONED.

This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.

Northamptonshire County Council: Licence No. 100019331. Published 2012.

KEY:

- RAG PRIMARY
- RAG SECONDARY
- RAGA PRIMARY (RIGHT TURN)
- RAGA SECONDARY (RIGHT TURN)
- RAGA PRIMARY (AHEAD ONLY)
- RAGA SECONDARY (AHEAD ONLY)
- RAGA SECONDARY (AHEAD ONLY WITH SIDE COWL)
- RAG PRIMARY + LEFT TURN INDICATIVE GA
- RAG SECONDARY + RIGHT TURN INDICATIVE GA
- NLT — BOX SIGN
- NEARSIDED TOUCAN INDICATOR
- NEARSIDED PUFFIN INDICATOR
- PEDESTRIAN DEMAND UNIT AND TACTILE MOTOR
- MICROWAVE VEHICLE DETECTOR
- STRAIGHT SIGNAL POLE & POLE NO.
- STUB POLE
- PE — SOLAR CELL
- ELV TRAFFIC SIGNAL CONTROLLER AND INSPECTION CHAMBER (CIC)
- CONTROLLER ISOLATOR PILLAR
- 100MM DUCT (No. AS INDICATED)
- NAL RS115DF POLE HOUSING (750mm DEPTH)
- DUCT BOX (300mm x 300mm)
- LARGE DUCT BOX (600mm X 600mm)
- CARRIAGEWAY LOOP BOX
- DETECTOR LOOPS

REV	DATE	BY	DESCRIPTION	CHK	APD
Ø	17/09/2012	BG	AS Built	-	-

DRAWING STATUS: As Built

MGWSP — Northamptonshire County Council

Delivering transport and highways services together

PROJECT: Kingsthorpe Corridor Bus Improvements

TITLE: Traffic Signals layout Cock Hotel Sheet 2

SCALE @ A1:	CHECKED:	APPROVED:
1:200		
KINGSTHORPE AS BUILTS.DWG	DESIGN-DRAWN: BG	DATE: 14/09/2012
PROJECT No: 10589319	DRAWING No: 10589319-1200-005/AB	REV: Ø

CAD File: N:\TRAFFIC ENGINEERING\11-12 TRAFFIC ENGINEERING\KIN_KINGSTHORPE CORRIDOR\DRAWINGS\KINGSTHORPE AS BUILTS.DWG

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Administration

General Specifications

Customer Name	Northamptonshire County Council	Customer Order No.	853620320
Intersection/ General Description	Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016	Controller/ Serial Number	7051873
		S.T.S. /EM Number	37328 Issue 1
Controller	(•) New ( ) Modification	Equipment Installation by	Siemens Mobility Traffic Solutions
Area Specifications/ Customer Drawings	10589319 - 1200 - 005	Slot Cutting by	Siemens Mobility Traffic Solutions
Specification Section	Rev E	Civil Works by	Siemens Mobility Traffic Solutions
Contract/Tender Ref:		Customer's Engineer	B.Gray
Quotation No.		Telephone Number	01604-364526
Works Order No.	460599127		

Signal Company Use Only

Signal Engineer: Kevin L Roberts

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: 6B D5 19 2F

Controller Options

Hardware: ST900 ELV | Firmware Type and Issue: PB801 ISS 8 | Other Options:

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet | Kit Type Options: (•) UK-Std ( ) Non-UK ( ) ( )

Cabinet/Rack Variant: Black | Cuckoo Options: None | Gemini Unit Fitted: ☐

Mains Supply	230 Volts	50 Hz					
Peak Lamp Current	8 Amps	Dimming Voltage	27.5	Answer Issue	0	Date Created	03/08/11
Average Lamp Power	800 Watts						
Total Average Power	1000 Watts	Low Inrush Transformer	☐	Edit Issue	3		

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams [1]

Phases

( ) Current Total Number of Phases [15]

(•) Number of Real Phases [14]

( ) Number of Dummy Phases [1]

Stages

( ) Current Number of stages (inc. ALL-RED stages) [6]

Switched Signs

( ) Number of Switched Signs [0]

Action

[Add At] [Delete At]

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- ☐ Serial/Internal UTMC OTU
- ☑ Free-standing OTU
- ☐
- ☐ Serial MOVA

- ☑ Master Time Clock
- ☐ Holiday Clock
- ☑ FT To Current MAX
- ☐ Linked Fixed Time
- ☑ Lamp Monitoring
- ☑ RED Lamp Monitoring
- ☐ Pelican/Puffin/Toucan
- ☐ Standalone Manual
- ☑ Extend All Red
- ☐ Speed Measurement
- ☑ Ripple Change
- ☐ London IMU
- ☐ Non-UK
- ☐ Fail to Part Time
- ☐ Fail To Hardware Flashing
- ☐
- ☐ Download To Level 3

13 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
☐ Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Hurry Call	○	○	○	○	○	○	○	○	○	○	○	○	○
☐	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
☐ Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
☑ UTC	○	○	◉	○	○	○	○	○	○	○	○	○	○
☐	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ CLF (Base Time)	○	○	○	◉	○	○	○	○	○	○	○	○	○
☑ Vehicle Actuated	○	○	○	○	◉	○	○	○	○	○	○	○	○
☑ Fixed Time	○	○	○	○	○	○	○	○	○	○	◉	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standardPB801.8df
Default PROM data file

Correspondence Monitoring to inc.

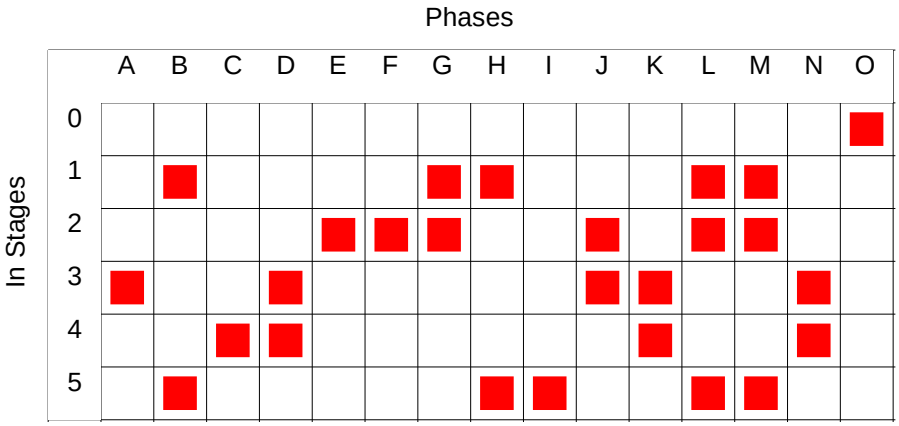
- ☑ Reds
- ☐ Switched Signs
- ☑ Ambers
- ☐ Ignore Reds and Ambers durin

Flash Rate (ms)

400 Off 400 On

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phases in Stages



Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	☐							
Startup Stage	1							
Switch Off Stage								
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream	0	1	2	3	4	5
0	■	■	■	■	■	■

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phase Type and Conditions

Phase Type and Conditions

(●) Phases A to P ( ) Manual Output Allocation ☑

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	Mill Lane Westbound	0 - UK Traffic	0	0 - I		1	1	1
B	Harborough Road Northbound	0 - UK Traffic	0	0 - I		1	1	1
C	Mill Lane Eastbound Right Turn into Harborough Road	2 - UK GreenArrow	0	2 - I	D	0	0	1
D	Mill Lane Eastbound	0 - UK Traffic	0	0 - I		1	1	1
E	Mill Lane Eastbound Left Turn	2 - UK GreenArrow	0	1 - I	D	0	0	1
F	Harborough Road Southbound Right Turn	0 - UK Traffic	0	0 - I		1	1	1
G	Harborough Road Southbound	0 - UK Traffic	0	0 - I		1	1	1
H	Pedestrians across Mill Lane - Middle	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
I	Pedestrians across Harborough Road Southbound	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
J	Pedestrians across Harborough Road Northbound	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
K	Mill Lane Eastbound Right Turn into Kingsthorpe Grove	0 - UK Traffic	0	0 - I		1	1	1
L	Kingsthorpe Grove Southbound	0 - UK Traffic	0	0 - I		1	1	1
M	Kingsthorpe Grove Northbound	0 - UK Traffic	0	0 - I		1	1	1
N	Pedestrians across Kingsthorpe Grove	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
O	Dummy All Red Stage 0	2 - UK GreenArrow	0	0 - I				

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A		Co	Co	o	o	Co	Co	Co	Co	o	o	o	o	o	o
B	Co		Co	Co	Co	Co	o	o	o	Co	o	o	o	o	o
C	Co	Co		o	o	Co	Co	o	Co	o	o	o	o	o	o
D	o	Co	o		o	Co	Co	Co	Co	o	o	o	o	o	o
E	o	Co	o	o		o	o	o	o	o	o	o	o	o	o
F	Co	Co	Co	Co	o		o	o	o	o	o	o	o	o	o
G	Co	o	Co	Co	o	o		o	Co	o	o	o	o	o	o
H	Co	o	o	Co	o	o	o		o	o	o	o	o	o	o
I	Co	o	Co	Co	o	o	Co	o		o	o	o	o	o	o
J	o	Co	o	o	o	o	o	o	o		o	o	o	o	o
K	o	o	o	o	o	o	o	o	o	o		Co	Co	o	o
L	o	o	o	o	o	o	o	o	o	o	Co		o	Co	o
M	o	o	o	o	o	o	o	o	o	o	Co	o		Co	o
N	o	o	o	o	o	o	o	o	o	o	o	Co	Co		o
O	o	o	o	o	o	o	o	o	o	o	o	o	o	o	

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

(●) Phases A to P ( )

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	20	30	30	20	0	0	0	0	☐
B	7	0	0.0	25	30	40	30	0	0	0	0	☐
C	4	0	0.0	10	10	10	10	0	0	0	0	☐
D	7	0	0.0	30	40	35	30	0	0	0	0	☐
E	1	0	0.0	0	0	0	0	0	0	0	0	☐
F	7	0	0.0	25	40	30	20	0	0	0	0	☐
G	7	0	0.0	40	50	55	25	0	0	0	0	☐
H	9	0	0.0	0	0	0	0	0	0	0	0	☐
I	7	0	0.0	0	0	0	0	0	0	0	0	☐
J	6	0	0.0	0	0	0	0	0	0	0	0	☐
K	7	0	0.0	20	30	30	20	0	0	0	0	☐
L	7	0	0.0	20	45	45	20	0	0	0	0	☐
M	7	0	0.0	20	45	45	20	0	0	0	0	☐
N	8	0	0.0	0	0	0	0	0	0	0	0	☐
O	3	0	0.0	0	0	0	0	0	0	0	0	☐
												☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A		6	5			5	5	5	7						3
B	5		6	6	6	5				5					3
C	6	5				5	5		8						3
D		5				5	6	9	8						3
E		5													3
F	5	5	5	5											3
G	5		5	5					8						3
H	13			13											3
I	9		9	9			9								3
J		7													3
K												5	5		3
L											5			5	3
M											5			7	3
N												11	11		3
O	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Intergreen Handset Limits

HIGH 30

Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A		5	5			5	5	5	6						3
B	5		5	5	5	5				5					3
C	5	5				5	5		7						3
D		5				5	5	8	7						3
E		5													3
F	5	5	5	5											3
G	5		5	5					7						3
H	12			12											3
I	8		8	8			8								3
J		6													3
K												5	5		3
L											5			5	3
M											5			6	3
N												10	10		3
O	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.	Phase	Min. Green Min.	Min. Green Max.
A	7	30	Q		
B	7	30	R		
C	4	30	S		
D	7	30	T		
E	1	30	U		
F	7	30	V		
G	7	30	W		
H	8	30	X		
I	7	30	Y		
J	5	30	Z		
K	7	30	A2		
L	7	30	B2		
M	7	30	C2		
N	7	30	D2		
O	0	30	E2		
P			F2		

Max. Green — Min. 0 — Max. 255

Vehicle Extension — Min. 0.0 — Max. 10.0

Phase Delay — Min. 0 — Max. 10

Starting I/G — Min. 10 — Max. 20

Min Pedestrian Clearance (PBT) — Min. 0 — Max. 12

Traffic Phase Leaving — Min. 3.0 — Max. 3.0

Traffic Phase Red/Amber — Min. 2 — Max. 2

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Extensions

Phase	Demands				Extensions			
A	ASL1			AMVDP6				AMVDP6
B	BSL1	BSL2		BMVDP16				BMVDP16
C						CSL		
D	DSL1	DSL2	DMVDP18	DMVDP19	DSL1	DSL2	DMVDP18	DMVDP19
E								
F	FSL	FX	FY	FZ		FX	FY	FZ
G	GSL1	GSL2		GMVDP1				GMVDP1
H	HPBP2	HPBP3	HPBP5	HPBP7				
I	IPBP9	IPBP10	IPBP11	IPBP12				
J	JPB14	JPBP15	JPBP16	JPBP17				
K	KSL			KMVDP21				KMVDP21
L	LSL			LMVDP21				LMVDP21
M	MSL	MX	MY	MZ		MX	MY	MZ
N	NPBP22	NPBP23	NPBP24	NPBP25				
O								

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	D	D		F	G				K	L	M			

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Stages - Prohibited, Alternative, Ignored Moves

Stages - Prohibited, Alternative, Ignored Moves

Sets
- (•) 1
- ( ) 2
- ( ) 3
- ( ) 4

Modes	Restrictions Apply To:	No Restrictions
	(•)	( )
Cableless Linking	(•)	( )
Vehicle Actuated	(•)	( )
	( )	( )
Fixed Time	(•)	( )
	( )	( )

Modes	Restrictions Apply To:	No Restrictions
Manual	(•)	( )
	( )	( )
	( )	( )
	( )	( )
	( )	( )

To Stage / From Stage

From \ To	0	1	2	3	4	5
0	■				P	
1		■			P	
2	P	P	■		P	P
3				■		
4				P	■	
5					P	■

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Stages - Prohibited, Alternative, Ignored Moves

Stages - Prohibited, Alternative, Ignored Moves

Sets
- ○ 1
- ◉ 2
- ○ 3
- ○ 4

Modes	Restrictions Apply To:	No Restrictions
Urban Traffic Control	◉	○
	◉	○
	◉	○
	○	○
	◉	○
	○	○

Modes	Restrictions Apply To:	No Restrictions
	◉	○
	○	○
	○	○
	○	○
	○	○

To Stage

From Stage	0	1	2	3	4	5
0					3	
1					3	
2	3	3			3	3
3						
4				1		
5					3	

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5												
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5												
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5												
☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0										

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Phase Delays

Phase Delays

(•) Phase Delays 0-29 ( ) Phase Delays 30-59 ( ) Phase Delays 60-89 ( ) Phase Delays 90-119

No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds	No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds
0	H	1	2	5	15	B	5	3	7
1	B	1	3	7	16	L	5	3	8
2	G	1	3	8	17	M	5	3	8
3	L	1	3	8	18				0
4	M	1	3	8	19				0
5	K	3	1	6	20				0
6	K	3	2	6	21				0
7	A	3	5	1	22				0
8	D	3	5	1	23				0
9	K	3	5	6	24				0
10	K	4	1	6	25				0
11	F	4	2	6	26				0
12	K	4	2	6	27				0
13	K	4	5	6	28				0
14	H	5	2	8	29				0

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☑	☑	☑	☐	☐	☐
Extend	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☑	☑	☑	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

CLF - Plan(s)

CLF - Plan(s)

Plan No. 1

Copy From

Plan Specifics

Influence Set 1

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 75

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	15	1	2	17			
2	40	1	3	18			
3	60	2	4	19			
4	62	2	5	20			
5	68	3		21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

CLF - Plan(s)

CLF - Plan(s)

Plan No. 2

Copy From

Plan Specifics

Influence Set 2

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 120

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	17	1	2	17			
2	62	1	3	18			
3	96	2	4	19			
4	98	2	5	20			
5	105	3		21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

CLF - Plan(s)

CLF - Plan(s)

Plan No. 3

Copy From

Plan Specifics

Influence Set 3

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 120

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	27	1	2	17			
2	62	1	3	18			
3	94	2	4	19			
4	98	2	5	20			
5	103	3		21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

CLF - Plan(s)

CLF - Plan(s)

Plan No. 4

Copy From

Plan Specifics

Influence Set 4

Copy From

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 75

Slow

Fast

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	0	1	1	16			
1	18	1	2	17			
2	40	1	3	18			
3	60	2	4	19			
4	62	2	5	20			
5	68	3		21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences

0 - Go To VA

1 - Immediate Move

2 - Demand Dependent Move

3 - Hold

4 - Prevent Except To

5 - Add Immediate Move

6 - Add Demand Dependent Move

7 - Ignore

8 - Stand Alone Inhibited

9 - Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

CLF - Base Time

CLF - Base Time

Controller Base Date: XX/XX/XX

Controller Base Time: 00:00:00

Plan Offset

	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Handset Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

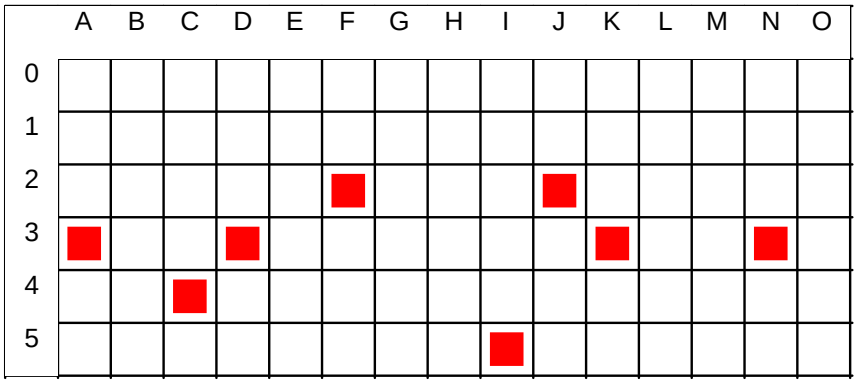
CLF - Demand Dependent Moves

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered. The data specified on this screen will also change the screen CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages



Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

3 Number of Control Words

7 Number of Reply Words

[ ] Controller to respond to TC bit.

[ ] Introduction of UTC to be disabled by Priority and LR'

[ ] Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	04:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	04:00:00

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

UTC Control and Reply Data Format

UTC Control and Reply Data Format

Control Words

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	F1	#F2	#F3	#F4	#F5	F6	D2	D3
Word 2	D4	D5				SO	TS	
Word 3	BD1	BD2	BD3	BD4				
Word 4								

Reply Words

Word 1	G1	G2	G3	G4	G5	G6		
Word 2			CF	DF	LF1	RF2	CC	RR
Word 3	SCOOT1				SCOOT2			
Word 4	SCOOT5				SCOOT6			
Word 5	SCOOT10				SCOOT11			
Word 6	SCOOT12				SCOOT13			
Word 7	SCOOT14							
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

UTC Phase Demand and Extend Definitions

UTC Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands, preceed the name with a #.
Conditioning MUST be used to specify unlatched demands.

Extensions

Phase	Demands				Extensions			
A								
B								
C			D4				D4	
D		D3				D3		
E								
F	D2				D2			
G								
H								
I				D5				
J								
K								
L								
M								
N								
O								

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

UTC Stage and Mode Data Definitions

UTC Stage and Mode Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0	F6	G6		16			
1	F1	G1		17			
2	#F2	G2		18			
3	#F3	G3		19			
4	#F4	G4		20			
5	#F5	G5		21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☑ RR ☐

Manual Mode Selected:
☐ G1/G2 ☑ RR ☐

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☑ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☑ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

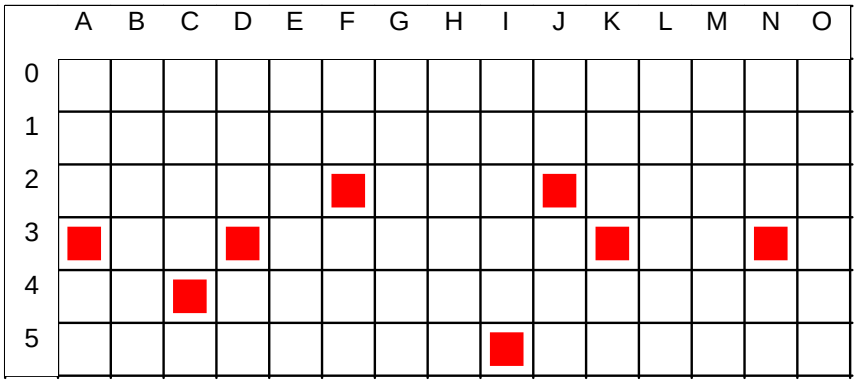
UTC Demand Dependent Forces

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered. The data specified on this screen will also change the screen CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages



Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

MTC - Time Switch Parameters

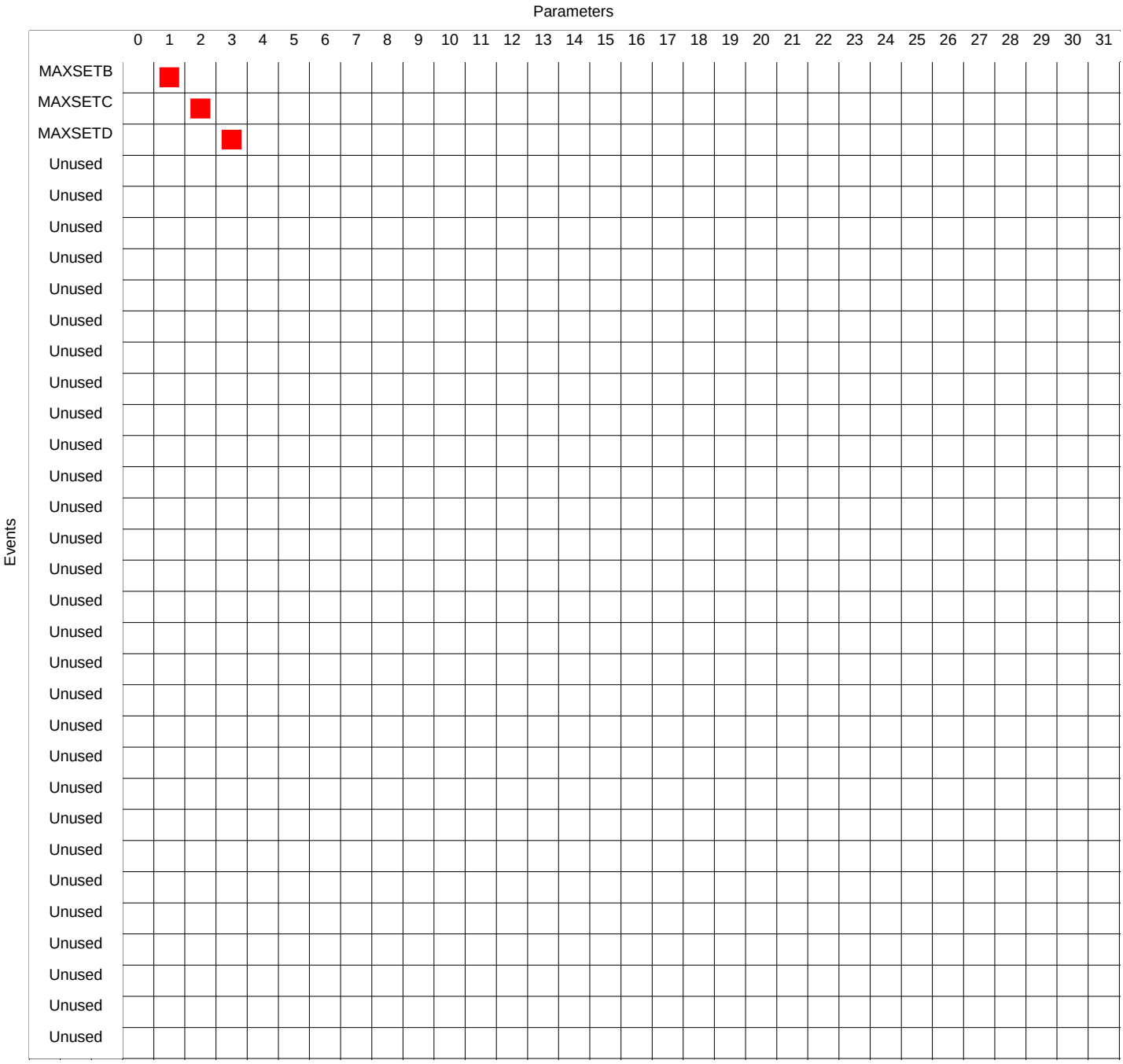
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	No Action	
4	No Action	
5	No Action	
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

MTC - Time Switch Parameters Array



Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

MTC - Timetable

MTC - Timetable

View Timetable Settings

(•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	07:30:00	MAXSET B	2	1
1	9	09:30:00	MAXSET A	2	0
2	9	15:30:00	MAXSET C	2	2
3	9	18:00:00	MAXSET D	2	3
4	0	08:00:00	MAXSET B	2	1
5	0	13:00:00	MAXSET C	2	2
6	0	18:00:00	MAXSET D	2	3
7	1	08:00:00	MAXSET A	2	0
8	9	06:30:00	CLF PLAN 1	1	1
9	9	07:30:00	CLF PLAN 2	1	2
10	9	16:00:00	CLF PLAN 3	1	3
11	9	18:15:00	CLF PLAN 1	1	1
12	9	23:00:00	CLF PLAN 4	1	4
13	0	06:30:00	CLF PLAN 1	1	1
14	0	23:00:00	CLF PLAN 4	1	4
15	1	09:15:00	CLF PLAN 1	1	1

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

MTC - Timetable

MTC - Timetable

View Timetable Settings

○ 0 - 15 ◉ 16 - 31 ○ 32 - 47 ○ 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
16	1	23:00:00	CLF PLAN 4	1	4
17	7	01:00:00	ISOLATE TO V.A	0	0
18	0			0	0
19	0			0	0
20	0			0	0
21	0			0	0
22	0			0	0
23	0			0	0
24	0			0	0
25	0			0	0
26	0			0	0
27	0			0	0
28	0			0	0
29	0			0	0
30	0			0	0
31	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

○ ◉ 48
○ ○

Red Lamp Monitoring

Max Red Bulb Wattage

First Red Lamp Fault Speed 0

☐ RLF2 Cancels RLM additional Intergreens

☑ RLF2 Only Cleared by RFL = 1

☐ RLF1 Only Cleared by RFL = 1

RLM Additional Intergreen Handset Limits

Minimum	Maximum
0	10

Streams with Phase BlackOut on RLF2

☐ 0 ☐ ☐ ☐ ☐ ☐ ☐ ☐

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
A	Red	1	As Seq.	1: Siemens Helios ELV	○	G	Green	7	As Seq.	1: Siemens Helios ELV	○
A	Amber	1	As Seq.	1: Siemens Helios ELV	○	H	Red	8	R,G	3: Siemens LED Nearside Indicator	○
A	Green	1	As Seq.	1: Siemens Helios ELV	○	H	Amber	9	Wait	2: Siemens LED Demand Indicator	○
B	Red	2	As Seq.	1: Siemens Helios ELV	○	H	Green	8	R,G	3: Siemens LED Nearside Indicator	○
B	Amber	2	As Seq.	1: Siemens Helios ELV	○	H	Green	N/A	N/A	N/A	○
B	Green	2	As Seq.	1: Siemens Helios ELV	○	I	Red	10	R,G	3: Siemens LED Nearside Indicator	○
C	Green	3	G	1: Siemens Helios ELV	○	I	Amber	11	Wait	2: Siemens LED Demand Indicator	○
D	Red	4	As Seq.	1: Siemens Helios ELV	○	I	Green	10	R,G	3: Siemens LED Nearside Indicator	○
D	Amber	4	As Seq.	1: Siemens Helios ELV	○	I	Green	N/A	N/A	N/A	○
D	Green	4	As Seq.	1: Siemens Helios ELV	○	J	Red	12	R,G	3: Siemens LED Nearside Indicator	○
E	Green	5	G	1: Siemens Helios ELV	○	J	Amber	13	Wait	2: Siemens LED Demand Indicator	○
F	Red	6	As Seq.	1: Siemens Helios ELV	○	J	Green	12	R,G	3: Siemens LED Nearside Indicator	○
F	Amber	6	As Seq.	1: Siemens Helios ELV	○	J	Green	N/A	N/A	N/A	○
F	Green	6	As Seq.	1: Siemens Helios ELV	○	K	Red	14	As Seq.	1: Siemens Helios ELV	○
G	Red	7	As Seq.	1: Siemens Helios ELV	○	K	Amber	14	As Seq.	1: Siemens Helios ELV	○
G	Amber	7	As Seq.	1: Siemens Helios ELV	○	K	Green	14	As Seq.	1: Siemens Helios ELV	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 2 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
L	Red	15	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
L	Amber	15	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
L	Green	15	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
M	Red	16	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
M	Amber	16	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
M	Green	16	As Seq.	1: Siemens Helios ELV	○	N/A	N/A		N/A	N/A	○
N	Red	17	R,G	3: Siemens LED Nearside Indicator	○	N/A	N/A		N/A	N/A	○
N	Amber	18	Wait	2: Siemens LED Demand Indicator	○	N/A	N/A		N/A	N/A	○
N	Green	17	R,G	3: Siemens LED Nearside Indicator	○	N/A	N/A		N/A	N/A	○
N	Green	N/A	N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Integral LMU External Sensors for Regulatory Signs

Integral LMU External Sensors for Regulatory Signs

External Sensors (1)

Sensor	Load Type
48	4: Siemens ELV Regulatory S
47	4: Siemens ELV Regulatory S
46	4: Siemens ELV Regulatory S
45	4: Siemens ELV Regulatory S

External Sensors (2)

Sensor	Load Type
44	4: Siemens ELV Regulatory S
43	4: Siemens ELV Regulatory S
42	4: Siemens ELV Regulatory S
41	4: Siemens ELV Regulatory S

External Sensors (3)

Sensor	Load Type

External Sensors (4)

Sensor	Load Type

External Sensors (5)

Sensor	Load Type

External Sensors (6)

Sensor	Load Type

Note: Sensors which have been used as Onboard sensors will not be available here.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

RLM Additional Intergreens

Phases Delayed

Phases with RLF1

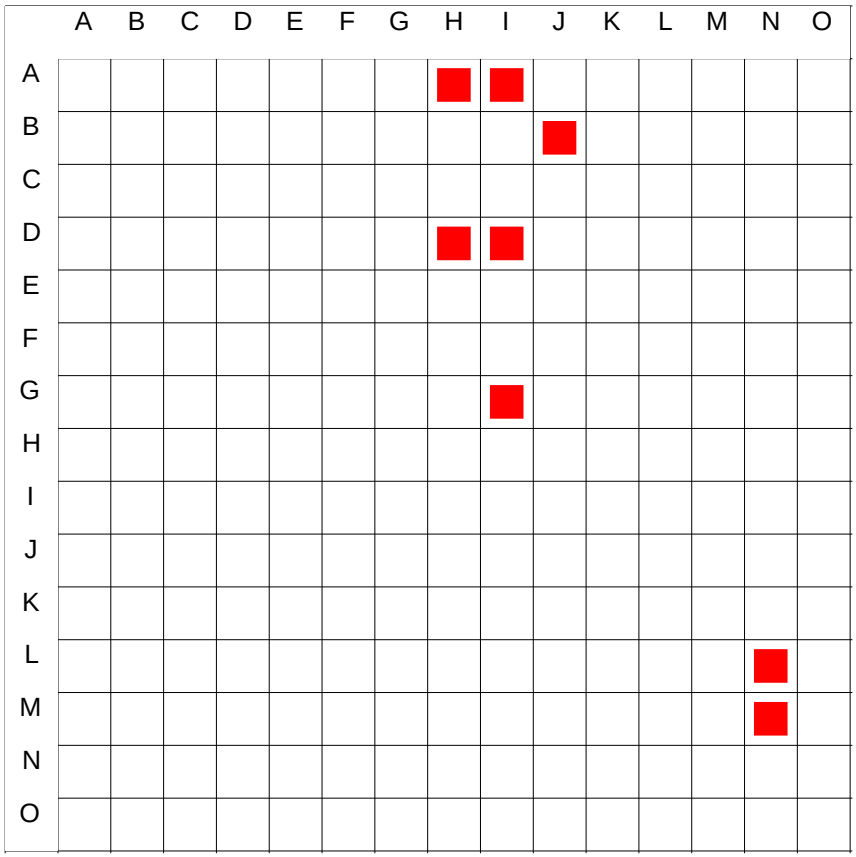
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A								2	2						
B										2					
C															
D								2	2						
E															
F															
G									2						
H															
I															
J															
K															
L														2	
M														2	
N															
O															

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

RLM Phase Inhibits

Phases Inhibited/Blacked-Out

Phases with RLF2



Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red Stage 0	0							
1	Harborough Road Northbound Southbound _Kingsthorpe Grove	1							
2	Harborough Road Southbound Right Turn _Kingsthorpe Grove	2							
3	Mill Lane	3							
4	Mill Lane Eastbound	4							
5	Harborough Road Southbound Peds X Kingsthorpe Grove Nth _S-Bnd	5							
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	○	◉	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Manual Mode Enable

- ◉ Always
- ○ When Handset Plugged in (Note 1)
- ○ When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Extend All Red - General

Extend All Red - General

Auto Extend to Max

Part Time	☐
Emergency Vehicle	☐
Hurry Call	☐
LRT	☐
Priority	☐
Manual	☐
Manual Step On	☐
UTC	☐
MOVA	☐
CLF	☐
VA*	☐
Fixed Time	☑

* Selecting Extend to Max on VA mode will also cause Extend to Max on CLF, UTC and Priority modes.

All Red Timings

Stream	0	1	2	3	4	5	6	7
Extension Time	2.0							
Max Time	4							

Detectors Associated with All Red Extension Units

Unit	Associated Detectors							
1	CCC							
2								
3								
4								
5								
6								
7								

The association between detectors and extension units must be performed in special conditioning.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Extend All Red - Stage To Stage Moves

To Stage

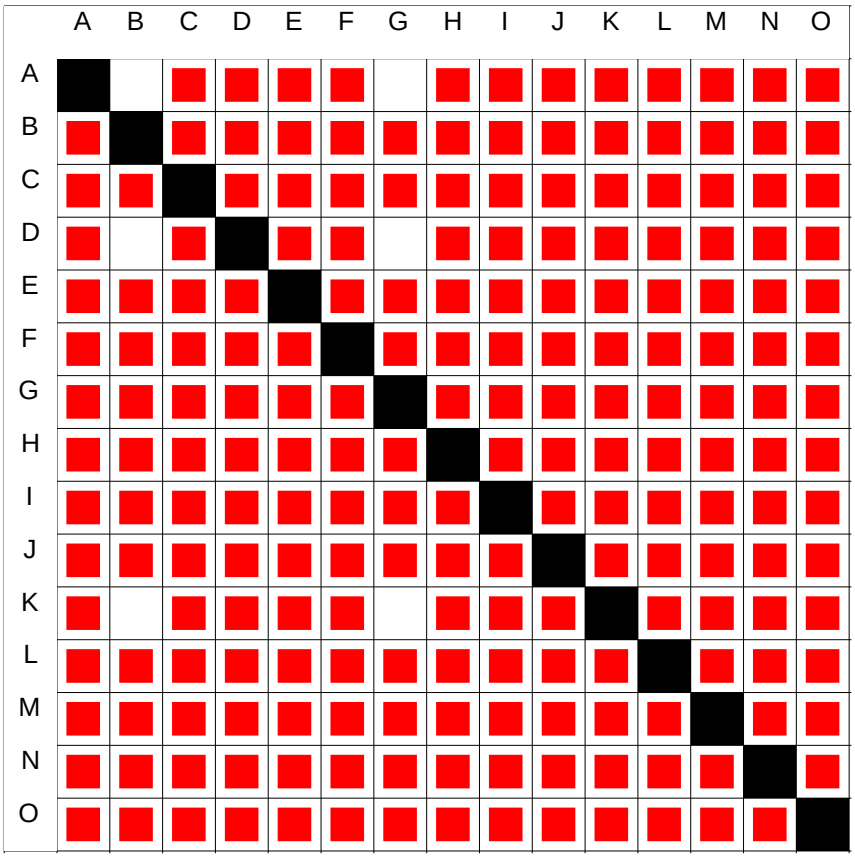
From Stage	0	1	2	3	4	5
0						
1						
2						
3		1				1
4						
5						

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Extend All Red - Independent Intergreens

Phase Not Affected by Hold

Phase Terminating



Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; AUX LED's
; ~~~~~~~~~
MAUXSW1=MIL22                                   ; AUX 1 LED LIT WHEN AUX1 SWITCH ACTIVE ( dimming override ).
                                                ; AUX 2 LED LIT WHEN BD1 UTC INPUT ACTIVE.
                                                ; AUX 3 LED LIT WHEN BD2 UTC INPUT ACTIVE.
                                                ; AUX 4 ( HURRY CALL ) LED LIT WHEN BD3 OR BD4 UTC INPUT ACTIVE
(MODE0 EQL<6>)=MIL17                            ; AUX 5 ( HIGHER PRIORITY ) LED LIT WHEN UTC MODE ACTIVE.

; UTC REPLY BITS
; ~~~~~~~~~~~~~~
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(STAGE1)=G1   ; LAMPS OFF AND STAGE CONFIRMS FOR UTC G1 _G2 BITS
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(STAGE2)=G2
NOT(LMPANY0+FFH55)=LF1                          ; ANY LAMP FAULT REPLIES UTC LF1 BIT
NOT(LMP2RED0)=RF2                               ; 2ND RED LAMP FAULT REPLIES UTC RF2 BIT
NOT(FLFCOM)=CF                                  ; CONTROLLER FAULT BIT

; ALL RED UNITS
; ~~~~~~~~~~~~~
CCC+CCC_EXT+SSFIX=IGEO1                         ; ALL RED UNIT 1 ACTIVE
CCC'+SSFIX=IGEC1                                ; ALL RED UNIT 1 CLEARED

; EXTRA PUSH BUTTON DEMANDS
; ~~~~~~~~~~~~~~~~~~~~~~~~
HPBP8=+LCPHH                                    ; HPBP8 INSERTS A LATCHED DEMAND FOR PHASE H

; T900 SPECIAL FACILITIES
; ~~~~~~~~~~~~~~~~~~~~~~
MAXSETB=ESPTX1                                  ; MAXSET INFORMATION ALSO SENT ALONG SERIAL LINK
MAXSETC=ESPTX2
MAXSETD=ESPTX3
TRUE=ESPTX4                                     ; FLAG TO DETECT SERIAL LINK DISCONNECTION

; DOOR SWITCH OMU SERIAL LINK
; ~~~~~~~~~~~~~~~~~~~~~~~~~~
NOT(DOORSW)=ESPTX0                              ; DOOR OPEN SEND SIGNAL TO OMU VIA SERIAL LINK

; DOOR CLOSED DISABLES MANUAL PANEL
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
DOORSW:=MNCONT                                  ; DOOR CLOSED DISABLES MANUAL MODE CONTROL
       *=MSCONT
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; NORTHAMPTONSHIRE VA MOVES
; ~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<2>) THN
        IFT (NXTSTG0 EQL<0>)+STAGE0 THN        ; STAGE 0
        (LCPHB+UCPHB+LCPHG+UCPHG+LCPHH+UCPHH+LCPHL+UCPHL+LCPHM+UCPHM)=+UCST1
        (LCPHF+UCPHF)=+UCST2
        (LCPHA+UCPHA+LCPHD+UCPHD+LCPHJ+UCPHJ+LCPHK+UCPHK+LCPHN+UCPHN)=+UCST3
        (LCPHI+UCPHI)=+UCST5
    END
        IFT (NXTSTG0 EQL<1>)+STAGE1 THN        ; STAGE 1
        (LCPHF+UCPHF)=+UCST2
        (LCPHA+UCPHA+LCPHD+UCPHD+LCPHJ+UCPHJ+LCPHK+UCPHK+LCPHN+UCPHN)=+UCST3
        (LCPHI+UCPHI)=+UCST5
    END
        IFT (NXTSTG0 EQL<2>)+STAGE2 THN        ; STAGE 2
        TRUE=+UCST3
        END
        IFT (NXTSTG0 EQL<3>)+STAGE3 THN        ; STAGE 3
        (LCPHC+UCPHC.(LCPHB+UCPHB+LCPHF+UCPHF+LCPHG+UCPHG+LCPHH+UCPHH+LCPHI $
        +UCPHI+LCPHL+UCPHL+LCPHM+UCPHM))=+UCST4
        (LCPHI+UCPHI)=+UCST5
        (LCPHB+UCPHB+LCPHG+UCPHG+LCPHH+UCPHH+LCPHL+UCPHL+LCPHM+UCPHM)=+UCST1
        (LCPHF+UCPHF)=+UCST2
    END
        IFT (NXTSTG0 EQL<4>)+STAGE4 THN        ; STAGE 4
        (LCPHI+UCPHI)=+UCST5
        (LCPHB+UCPHB+LCPHG+UCPHG+LCPHH+UCPHH+LCPHL+UCPHL+LCPHM+UCPHM)=+UCST1
        (LCPHA+UCPHA+LCPHF+UCPHF+LCPHJ+UCPHJ)=+UCST2
    END
        IFT (NXTSTG0 EQL<5>)+STAGE5 THN        ; STAGE 5
        (LCPHG+UCPHG)=+UCST1
        (LCPHF+UCPHF)=+UCST2
        (LCPHA+UCPHA+LCPHD+UCPHD+LCPHJ+UCPHJ+LCPHK+UCPHK+LCPHN+UCPHN)=+UCST3
    END
END

; STAGE PREVENTS FOR VA
; =====================
IFT (MODE0 EQL<2>) THN
    NOT(UCST1)=PRVST1                          ; PREVENT ALL STAGES UNLESS AN UNLATCHED CALL
    NOT(UCST2)=PRVST2                          ; IS PRESENT
    NOT(UCST3)=PRVST3
    NOT(UCST4)=PRVST4
    NOT(UCST5)=PRVST5
ELS
     FALSE::::=PRVST1                          ; REMOVE PREVENTS FOR ALL OTHER MODES
              *=PRVST2
              *=PRVST3
              *=PRVST4
              *=PRVST5
END
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; NORTHAMPTONSHIRE UTC MOVES
; ~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<6>).(F1+F2+F3+F4+F5) THN
        IFT (NXTSTG0 EQL<0>)+STAGE0 THN        ; STAGE 0
        F1=+UCST1
        F2.(LCPHF+UCPHF+LCPHJ+UCPHJ)=+UCST2
        F3.(LCPHA+UCPHA+LCPHD+UCPHD+LCPHK+UCPHK+LCPHN+UCPHN)=+UCST3
        F4.(LCPHC+UCPHC)=+UCST4
        F5.(LCPHI+UCPHI)=+UCST5
    END
        IFT (NXTSTG0 EQL<1>)+STAGE1 THN        ; STAGE 1
        F2.(LCPHF+UCPHF+LCPHJ+UCPHJ)=+UCST2
        F3.(LCPHA+UCPHA+LCPHD+UCPHD+LCPHK+UCPHK+LCPHN+UCPHN)=+UCST3
        F4.(LCPHC+UCPHC)=+UCST4
        F5.(LCPHI+UCPHI)=+UCST5
    END
        IFT (NXTSTG0 EQL<2>)+STAGE2 THN        ; STAGE 2
        F4.(LCPHC+UCPHC)=+UCST4
        F5.(LCPHI+UCPHI)=+UCST5
        F1=+UCST1
        F3.(LCPHA+UCPHA+LCPHD+UCPHD+LCPHK+UCPHK+LCPHN+UCPHN)=+UCST3
    END
        IFT (NXTSTG0 EQL<3>)+STAGE3 THN        ; STAGE 3
        F4.(LCPHC+UCPHC)=+UCST4
        F5.(LCPHI+UCPHI)=+UCST5
        F1=+UCST1
        F2.(LCPHF+UCPHF)=+UCST2
    END
        IFT (NXTSTG0 EQL<4>)+STAGE4 THN        ; STAGE 4
        F5.(LCPHI+UCPHI)=+UCST5
        F1=+UCST1
        F2.(LCPHF+UCPHF+LCPHJ+UCPHJ)=+UCST2
        F3.(LCPHA+UCPHA)=+UCST3
    END
        IFT (NXTSTG0 EQL<5>)+STAGE5 THN        ; STAGE 5
        F1=+UCST1
        F2.(LCPHF+UCPHF+LCPHJ+UCPHJ)=+UCST2
        F3.(LCPHA+UCPHA+LCPHD+UCPHD+LCPHK+UCPHK+LCPHN+UCPHN)=+UCST3
        F4.(LCPHC+UCPHC)=+UCST4
    END
END

; STAGE PREVENTS FOR UTC _V.A MODES
; ================================
IFT (MODE0 EQL<6>+(MODE0 EQL<2>)) THN
    NOT(UCST1)=PRVST1                          ; PREVENT ALL STAGES UNLESS AN UNLATCHED CALL
    NOT(UCST2)=PRVST2                          ; IS PRESENT
    NOT(UCST3)=PRVST3
    NOT(UCST4)=PRVST4
    NOT(UCST5)=PRVST5
ELS
     FALSE::::=PRVST1                          ; REMOVE PREVENTS FOR ALL OTHER MODES
              *=PRVST2
              *=PRVST3
              *=PRVST4
              *=PRVST5
END
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; SPECIAL REVERSION TO ALL RED
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
; TRAFFIC PHASE STAGE DEMANDS AND EXTENSIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<2>)+(MODE0 EQL<6>) $            ; IF VA, UTC, HURRY CALL OR PRIORITY MODES ARE ACTIVE
+(MODE0 EQL<13>) THN                           ; THEN IF THE FOLLOING CONDITIONS ARE MET SET A FLAG.
LCPHA+UCPHA+EXTAA+LCPHB+UCPHB+EXTAB $
+LCPHC+UCPHC+EXTAC+LCPHD+UCPHD+EXTAD $
+LCPHE+UCPHE+EXTAE+LCPHF+UCPHF+EXTAF $
+LCPHG+UCPHG+EXTAG+LCPHK+UCPHK+EXTAK $
+LCPHL+UCPHL+EXTAL+LCPHM+UCPHM+EXTAM $
+LCST1+UCST1+LCST2+UCST2+UCST3+UCST5+UCST5=2SCRT12
END

; PED DEMANDS
; ~~~~~~~~~~~
IFT (MODE0 EQL<2>)+(MODE0 EQL<6>) $            ; IF VA, UTC, HURRY CALL OR PRIORITY MODES ARE ACTIVE
+(MODE0 EQL<13>) THN                           ; THEN IF THE FOLLOING CONDITIONS ARE MET SET A FLAG.
((LCPHH+(PEDBUTH.NOT(PHASEH))).NOT(FDH83B1+FDH83B7)) $
+((LCPHI+(PEDBUTI.NOT(PHASEI))).NOT(FDH83B1+FDH83B7+FDH84B5)) $
+((LCPHJ+(PEDBUTJ.NOT(PHASEJ))).NOT(FDH83B3)) $
+((LCPHN+(PEDBUTN.NOT(PHASEN))).NOT(FDH85B7+FDH86B1))=2SCRT14
END

IFT 2SCRT12+2SCRT14 THN                        ; IF ANY FLAG SET RUN A  DELAY TIMER
    RUN<0>
END
(MODE0 EQL<2>).CNDTMA0=PRVST0                  ; DELAYED REVERT TO ALL RED TIMER 0
IFT CNDTER0 THN
    RUN<1>
END
NOT(CNDTMA0).CNDTMA1+CNDTMA2=+LCST0            ; AFTER DELAY TIMER INSERT A LATCHED DCEMAND FOR STAGE 0

IFT (MODE0 EQL<2>).NOT(CNDTMA0) THN
    RUN<2>                                     ; RUNS PULSE WINDOW TIMER
END
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; IF THE UTC BD BITS INPUT GOES ACTIVE THEN MINIMUM TIMER OF 5 SECONDS, IF BUS INPUT STILL ACTIVE THEN AUX LED STAYS ; C
; ============================
; UTC FORCE BITS BD OR BD2 LIGHT MANUAL PANEL AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; BD1 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD1.NOT(SCRT2) THN                          ; BD1 SETS A FLAG
    RUN<4>                                      ; RUN TIMER 4
    TRUE=SCRT2                                  ; SETS SCRATCH BIT
END
IFT NOT(BD1) THN                                ; BD1 NOT SET
    FALSE=SCRT2                                 ; RESETS SCRATCH BIT
END

; BD2 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD2.NOT(SCRT3) THN                           ; BD2 SETS A FLAG
    RUN<5>                                      ; RUN TIMER 5
    TRUE=SCRT3                                  ; SETS SCRATCH BIT
END
IFT NOT(BD2) THN                                ; BD2 NOT SET
    FALSE=SCRT3                                 ; RESETS SCRATCH BIT
END

; BD3 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD3.NOT(SCRT4) THN                           ; BD3 SETS A FLAG
    RUN<6>                                      ; RUN TIMER 6
    TRUE=SCRT4                                  ; SETS SCRATCH BIT
END
IFT NOT(BD3) THN                                ; BD3 NOT SET
    FALSE=SCRT4                                 ; RESETS SCRATCH BIT
END

; BD4 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD4.NOT(SCRT5) THN                          ; BD4 SETS A FLAG
    RUN<7>                                      ; RUN TIMER 7
    TRUE=SCRT5                                  ; SETS SCRATCH BIT
END
IFT NOT(BD4) THN                                ; BD4 NOT SET
    FALSE=SCRT5                                 ; RESETS SCRATCH BIT
END

; BD1 ACTIVE LIGHTS AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
(CNDTMA4+BD1)=MIL23                             ; BD1 ACTIVE LIGHTS AUX 2 LED

; BD2 ACTIVE LIGHTS AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
(CNDTMA5+BD2)=MIL05                             ; BD2 ACTIVE LIGHTS AUX 3 LED

; BD3 / BD4 ACTIVE LIGHTS AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
(CNDTMA6+CNDTMA7+BD3+BD4)=MIL07                 ; BD3 OR BD4 ACTIVE LIGHTS AUX 4 LED
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; PHASE TACTILE OUTPUTS STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LMPON.PHASEH.NOT(LMP2RED0)=TACTH              ; TACTILE OUTPUTS TACTC UNLESS 2 RED LAMPS FAULT STREAM 0
LMPON.PHASEI.NOT(LMP2RED0)=TACTI              ; TACTILE OUTPUTS TACTC UNLESS 2 RED LAMPS FAULT STREAM 0
LMPON.PHASEJ.NOT(LMP2RED0)=TACTJ              ; TACTILE OUTPUTS TACTC UNLESS 2 RED LAMPS FAULT STREAM 0
LMPON.PHASEN.NOT(LMP2RED0)=TACTN              ; TACTILE OUTPUTS TACTC UNLESS 2 RED LAMPS FAULT STREAM 0
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; FREE STANDING OTU SCOOT INPUT - SEE SPECIAL INTRUCTIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
SCOOT1=SCOOT10
SCOOT2=SCOOT20
SCOOT5=SCOOT50
SCOOT6=SCOOT60
SCOOT10=SCOOT100
SCOOT11=SCOOT110
SCOOT12=SCOOT120
SCOOT13=SCOOT130
SCOOT14=SCOOT140
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning

```
; ST900ELV LAMP SUPPLY FOR GEMINI II
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;
; LAMPS OFF REPLY TO THE OMU (LAMPS OFF RELAY MUST BE FITTED TO ENABLE THIS TO WORK)
; ================================================================================
LMPON.SWLMPS.NOT(FLF17)=LAMPSON                ; IF LAMPS ARE SWITCHED OFF OR FAIL SEND REPLY BY
                                               ; USING AN I/O OUTPUT CALLED "LAMPSON"
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Conditioning Timers

Special Conditioning Timers

Timers

0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	30	0	255	☐	DELAYED REVERT TO ALL RED	16		0	255	☐	
1	2	0	255	☐	REVERT TO STAGE 0	17		0	255	☐	
2	1	0	255	☐	PULSE WINDOW	18		0	255	☐	
3		0	255	☐		19		0	255	☐	
4	5	0	255	☐	BD1 FORCE BIT MIN TIMER	20		0	255	☐	
5	5	0	255	☐	BD2 FORCE BIT MIN TIMER	21		0	255	☐	
6	5	0	255	☐	BD3 FORCE BIT MIN TIMER	22		0	255	☐	
7	5	0	255	☐	BD4 FORCE BIT MIN TIMER	23		0	255	☐	
8	0	0	0.6	☑	REPEATEDLY START TIMER 8	24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Instructions

37328

Card Type	Rack Posn	Addr.	Port	Type	Line	Term Posn
Intelligent Backplane 16/0	Rack	01	0	I	000 - 007	2 LT1
Intelligent Backplane 16/0	Rack	01	1	I	008 - 015	2 LT1
Intelligent Backplane 16/0	Rack	02	2	I	016 - 023	2 LT2
Intelligent Backplane 16/0	Rack	02	3	I	024 - 031	2 LT2
Serial IO 24/16	1 I/O1	03	4	I	032 - 039	1 I/O1
Serial IO 24/16	1 I/O1	03	5	I	040 - 047	1 I/O1
Serial IO 24/16	1 I/O1	03	6	I	048 - 055	1 I/O1
Serial IO 24/16	1 I/O1	03	7	O	056 - 063	1 I/O1
Serial IO 24/16	1 I/O1	03	8	O	064 - 071	1 I/O1
Serial IO 24/16 (UTC)	1 I/O2	04	9	I	072 - 079	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	10	I	080 - 087	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	11	I	088 - 095	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	12	O	096 - 103	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	13	O	104 - 111	1 I/O2
CPU	A					

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/32900/020	ST900 ELV Cabinet UK 20A 1 LSLS - Grey			
3	667/1/32900/040	ST900 ELV Cabinet UK 40A 1 LSLS - Grey			
4	667/1/32900/021	ST900 ELV Cabinet UK 20A 1 LSLS - Black	1		
5	667/1/32900/041	ST900 ELV Cabinet UK 40A 1 LSLS - Black			
6					
7					
8					
9	667/1/32943/001	ELV Lamp switch (LSLS) kit	1		
10	667/1/32960/001	ELV Lamp switch (LSLS) backplane kit	1		
11	667/1/32995/002	ST900 I/O card kit (4 outputs)			
12	667/1/32995/001	ST900 I/O card kit (16 outputs)	2		
13					
14					
15					
16	667/1/27004/000	Integral TC12 OTU kit			
17	667/1/27005/000	SDE Facility kit			
18	667/1/32910/000	ST900 Intelligent detector backplane kit	2		
19	667/1/33002/000	ELV detector 6U rack expansion kit			
20	667/1/33074/000	ST900 ELV 24 V detector supply Kit (6A)			
21	667/1/20690/001	19" Detector Rack			
22					
23	667/1/32985/000	ELV 20A to 40A upgrade kit			
24					
25					
26	667/1/33070/000	ELV Regulatory Sign expansion kit			
27	667/1/32950/000	ELV Audible supply kit			
28	667/1/33009/000	ST900 300mA RCD kit			
29					
30	667/1/32900/001	Expansion cabinet kit - Black			
31	667/1/32900/000	Expansion cabinet kit - Grey			
32	667/1/33072/000	Cabinet mounted cut-out connection kit			
33					
34					
35					
36	667/1/27056/001	Manual Panel Full kit			
37	667/1/27110/000	Manual Panel RS232 kit			
38					
39					
40	667/1/16260/000	Configuration Eprom (Issue 1. 0)	1		

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/32900/920	ST900 ELV cuckoo Kit - T200			
43	667/1/32900/921	ST900 ELV cuckoo Kit - T400			
44	667/1/32900/922	ST900 ELV cuckoo Kit - T800			
45	667/1/32900/923	ST900 ELV cuckoo Kit - Microsense			
46	667/1/32900/925	ST900 ELV cuckoo Kit - Peek			
47					
48					
49					
50					
51					
52	667/1/33073/000	ST900 Isolator locking kit			
53	667/2/20234/000	Screw Lock Key			
54					
55					
56	667/1/27104/000	ST800 / ST900 DFM Lens Kit			
57	667/1/21150/002	ST800 / ST900 Gas Plinth			
58	667/2/27096/000	ST800 / ST900 Mounting Stool			
59					
60					
61					
62	667/1/26271/000	Telephone Kit (Lightning protection)			
63	667/1/27118/000	Surge Arrester (Lightning protection)			
64					
65					
66					
67	667/1/32900/120	ST900 ELV Cabinet Export 20A 1 LSLS - Grey			
68	667/1/32900/140	ST900 ELV Cabinet Export 40A 1 LSLS - Grey			
69	667/1/32900/121	ST900 ELV Cabinet Export 20A 1 LSLS - Black			
70	667/1/32900/141	ST900 ELV Cabinet Export 40A 1 LSLS - Black			
71					
72					
73	667/1/32900/900	ST900 ELV export rack Kit			
74	667/1/32945/000	ST900 ELV additional LSLS rack wiring kit			
75					
76	667/1/27007/000	IRM Facility			
77					
78					
79					
80					

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Instructions

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Special Instructions

```
; FREE STANDING OTU SCOOT INPUT                OUTPUT WIRED OUTPUT TO BELOW
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~              - ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; SCOOT I/P - 2LT2 DET20 BIT 4 B1 - SCOOT 1  - OUTPUTS TO SCOOT1O  - 1I/O1 LINE 0 DET 56 BIT 0
; SCOOT I/P - 2LT2 DET21 BIT 5 B2 - SCOOT 2  - OUTPUTS TO SCOOT2O  - 1I/O1 LINE 1 DET 57 BIT 1
; SCOOT I/P - 2LT2 DET22 BIT 6 B3 - SCOOT 5  - OUTPUTS TO SCOOT5O  - 1I/O1 LINE 2 DET 58 BIT 2
; SCOOT I/P - 2LT2 DET23 BIT 7 B4 - SCOOT 6  - OUTPUTS TO SCOOT6O  - 1I/O1 LINE 3 DET 59 BIT 3
; SCOOT I/P - 2LT2 DET24 BIT 0 C1 - SCOOT 10 - OUTPUTS TO SCOOT10O - 1I/O1 LINE 4 DET 60 BIT 4
; SCOOT I/P - 2LT2 DET25 BIT 1 C2 - SCOOT 11 - OUTPUTS TO SCOOT11O - 1I/O1 LINE 5 DET 61 BIT 5
; SCOOT I/P - 2LT2 DET26 BIT 2 C3 - SCOOT 12 - OUTPUTS TO SCOOT12O - 1I/O1 LINE 6 DET 62 BIT 6
; SCOOT I/P - 2LT2 DET27 BIT 3 C4 - SCOOT 13 - OUTPUTS TO SCOOT13O - 1I/O1 LINE 7 DET 63 BIT 7
; SCOOT I/P - 2LT2 DET28 BIT 4 D1 - SCOOT 14 - OUTPUTS TO SCOOT14O - 1I/O1 LINE 8 DET 64 BIT 8
; ================================================================================================
```

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Call Cancel

Call Cancel

Unit No.	Input Name	Call Delay	Cancel Delay	Phase Demanded (Unlatched Demand)
0	CSL	3	2	C
1		0	0	
2		0	0	
3		0	0	
4		0	0	
5		0	0	
6		0	0	
7		0	0	

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 0

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	ASL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A1
○	1	1	I	BSL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A2
○	2	2	I	BSL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A3
○	3	3	I	SCOOT1	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A4
○	4	4	I	CCC	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☑	☐	☐	2 LT1	B1
○	5	5	I	SCOOT2	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B2
○	6	6	I	SPARE2-3	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B3
○	7	7	I	SPARE2-4	☑	☑	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 1

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	8	0	I	DSL1	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C1
○	9	1	I	DSL2	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C2
○	10	2	I	CSL	☑	☑	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☑	☐	☐	☐	2 LT1	C3
○	11	3	I	SPARE3-4	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C4
○	12	4	I	FX	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D1
○	13	5	I	FY	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D2
○	14	6	I	FZ	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D3
○	15	7	I	FSL	☑	☑	☐		☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 2

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	16	0	I	GSL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A1
○	17	1	I	GSL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A2
○	18	2	I	SCOOT5	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A3
○	19	3	I	SCOOT6	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A4
○	20	4	I	KSL	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B1
○	21	5	I	LSL	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B2
○	22	6	I	SCOOT10	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B3
○	23	7	I	SCOOT11	☑	☑	☐		☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 3

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	24	0	I	MX	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C1
○	25	1	I	MY	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C2
○	26	2	I	MZ	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C3
○	27	3	I	MSL	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	C4
○	28	4	I	SCOOT12	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D1
○	29	5	I	SCOOT13	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D2
○	30	6	I	SCOOT14	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D3
○	31	7	I	SPARE8-4	☑	☑	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 4

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	32	0	I	AMVDP6	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	33	1	I	BMVDP16	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	34	2	I	DMVDP18	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	35	3	I	DMVDP19	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	36	4	I	GMVDP1	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	37	5	I	KMVDP21	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	38	6	I	LMVDP21	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	39	7	I	HPBP2	☑	☐	☐		☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 5

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	40	0	I	HPBP3	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	8
○	41	1	I	HPBP5	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	9
○	42	2	I	HPBP7	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	10
○	43	3	I	HPBP8	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	11
○	44	4	I	IPBP9	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	12
○	45	5	I	IPBP10	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	13
○	46	6	I	IPBP11	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	14
○	47	7	I	IPBP12	☑	☐	☐		☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 6

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	48	0	I	JPB14	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	16
○	49	1	I	JPBP15	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	17
○	50	2	I	JPBP16	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	18
○	51	3	I	JPBP17	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	19
○	52	4	I	NPBP22	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	20
○	53	5	I	NPBP23	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	21
○	54	6	I	NPBP24	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	22
○	55	7	I	NPBP25	☑	☐	☐		☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 7

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	56	0	O	SCOOT1O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	57	1	O	SCOOT2O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	58	2	O	SCOOT5O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	59	3	O	SCOOT6O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	60	4	O	SCOOT10O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	61	5	O	SCOOT11O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	62	6	O	SCOOT12O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	63	7	O	SCOOT13O	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 8

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	64	0	O	SCOOT14O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	8
○	65	1	O	TACTH	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	9
○	66	2	O	TACTI	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	10
○	67	3	O	TACTJ	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	11
○	68	4	O	TACTN	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	12
○	69	5	O	LAMPSON	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	13
○	70	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	14
○	71	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 9

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	72	0	I	F1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	0
○	73	1	I	#F2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	1
○	74	2	I	#F3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	2
○	75	3	I	#F4	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	3
○	76	4	I	#F5	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	4
○	77	5	I	F6	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	5
○	78	6	I	D2	☑	☐	☐	☐	☐	N		0.0	☑	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	6
○	79	7	I	D3	☑	☐	☐		☐	N		0.0	☑	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 10

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	80	0	I	D4	☑	☐	☐	☐	☐	N		0.0	☑	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	8
○	81	1	I	D5	☑	☐	☐	☐	☐	N		0.0	☑	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	9
○	82	2	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	10
○	83	3	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	11
○	84	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	12
○	85	5	I	SO	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	13
○	86	6	I	TS	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	14
○	87	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 11

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	88	0	I	BD1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	16
○	89	1	I	BD2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	17
○	90	2	I	BD3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	18
○	91	3	I	BD4	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	19
○	92	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	20
○	93	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	21
○	94	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	22
○	95	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 12

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	96	0	O	G1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	0
○	97	1	O	G2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	1
○	98	2	O	G3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	2
○	99	3	O	G4	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	3
○	100	4	O	G5	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	4
○	101	5	O	G6	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	5
○	102	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	6
○	103	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 13

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	104	0	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	8
○	105	1	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	9
○	106	2	O	CF	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	10
○	107	3	O	DF	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	11
○	108	4	O	LF1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	12
○	109	5	O	RF2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	13
○	110	6	O	CC	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	14
○	111	7	O	RR	☑	☐	☐		☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 1 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	G	Green	Phase
31	A	Amber	Phase	15	H	Red	Phase
30	A	Green	Phase	14	H	Amber	Phase
29	B	Red	Phase	13	H	Green	Phase
28	B	Amber	Phase	12	H	Green	Phase
27	B	Green	Phase	11	I	Red	Phase
26	C	Green	Phase	10	I	Amber	Phase
25	D	Red	Phase	9	I	Green	Phase
24	D	Amber	Phase	8	I	Green	Phase
23	D	Green	Phase	7	J	Red	Phase
22	E	Green	Phase	6	J	Amber	Phase
21	F	Red	Phase	5	J	Green	Phase
20	F	Amber	Phase	4	J	Green	Phase
19	F	Green	Phase	3	K	Red	Phase
18	G	Red	Phase	2	K	Amber	Phase
17	G	Amber	Phase	1	K	Green	Phase

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 2 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	L	Red	Phase	16	N/A	N/A	N/A
31	L	Amber	Phase	15	N/A	N/A	N/A
30	L	Green	Phase	14	N/A	N/A	N/A
29	M	Red	Phase	13	N/A	N/A	N/A
28	M	Amber	Phase	12	N/A	N/A	N/A
27	M	Green	Phase	11	N/A	N/A	N/A
26	N	Red	Phase	10	N/A	N/A	N/A
25	N	Amber	Phase	9	N/A	N/A	N/A
24	N	Green	Phase	8	N/A	N/A	N/A
23	N	Green	Phase	7	N/A	N/A	N/A
22	N/A	N/A	N/A	6	N/A	N/A	N/A
21	N/A	N/A	N/A	5	N/A	N/A	N/A
20	N/A	N/A	N/A	4	N/A	N/A	N/A
19	N/A	N/A	N/A	3	N/A	N/A	N/A
18	N/A	N/A	N/A	2	N/A	N/A	N/A
17	N/A	N/A	N/A	1	N/A	N/A	N/A

Works Order : 460599127
EM Number : 37328
Engineer : Kevin L Roberts
Intersection : Harborough Road / Mill Lane (Cock Hotel) - Northampton ORN016

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	9	9	9	9
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)				
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves
- 4.3 UTC and MOVA
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions
    - 4.3.3.2 UTC Stage and Mode Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral LMU Onboard Sensors
  - 4.5.3 Integral LMU External Sensors for Regulatory Signs
  - 4.5.4 RLM Additional Intergreens
  - 4.5.5 RLM Phase Inhibits
- 4.6 Manual
  - 4.6.1 Manual Panel
  - 4.6.2 Manual Mode - Optional Phases Appearance (No configuration data to print)
- 4.7 Extend All Red
  - 4.7.1 Extend All Red - General
  - 4.7.2 Extend All Red - Stage To Stage Moves
  - 4.7.3 Extend All Red - Independent Intergreens

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives (ELV Controllers)
- 7.4 I/O - DFM Group Timings

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Administration

General Specifications

Customer Name	Northamptonshire County Council	Customer Order No.	853620320
Intersection/ General Description	Harborough Rd / Kingsthorpe Grove - Northampton ORN038	Controller/ Serial Number	7051889
		S.T.S. /EM Number	37327 Issue 1
Controller	(●) New ( ) Modification	Equipment Installation by	Siemens Mobility Traffic Solutions
Area Specifications/ Customer Drawings	10589319 - 1200 - 006	Slot Cutting by	Siemens Mobility Traffic Solutions
Specification Section	Rev C	Civil Works by	Siemens Mobility Traffic Solutions
Contract/Tender Ref:		Customer's Engineer	B.Gray
Quotation No.		Telephone Number	01604-364526
Works Order No.	460599127		

Signal Company Use Only

Signal Engineer: Kevin L Roberts

(IF Prom Label as >) Prom Number: 16260 Prom Variant: 0

Configuration Check Value: D4 FB 91 B9

Controller Options

Hardware: ST900 ELV | Firmware Type and Issue: PB801 ISS 8 | Other Options

ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet | Kit Type Options: (●) UK-Std ( ) Non-UK ( ) Small Non-UK ( )

Cabinet/Rack Variant: Black | Cuckoo Options: None | Gemini Fitted: ☐

Mains Supply	230 Volts	50 Hz					
Peak Lamp Current	8 Amps	Dimming Voltage	27.5	Answer Issue	0	Date Created	03/08/11
Average Lamp Power	800 Watts						
Total Average Power	1000 Watts			Edit Issue	2		

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Streams, Stages, Phases Control

Select Object to Add/Delete/Insert

Streams
- Current Number of Streams: 1

Phases
- Current Total Number of Phases: 4
- (•) Number of Real Phases: 3
- ( ) Number of Dummy Phases: 1

Stages
- Current Number of stages (inc. ALL-RED stages): 3

Switched Signs
- Number of Switched Signs: 0

Action
- Add At
- Delete At

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Facilities/Modes Enabled and Mode Priority Levels

Facilities

- [x] Manual Control
- [ ] Manual Step On Mode
- [x] CLF (Base Time)
- [ ] CLF (non-Base Time)
- [x] UTC Facility
- [ ] Hurry Call Mode
- [ ] Priority
- [ ] Emergency Vehicles

8 Starting Intergreen

- [ ] Part Time
- [x] Master Time Clock
- [x] RED Lamp Monitoring
- [x] Lamp Monitoring
- [ ] Linked Fixed Time
- [x] FT To Current MAX
- [ ] Speed Measurement
- [ ] Download To Level 3

- [ ] London IMU
- [ ] Extend All Red
- [ ]
- [x] Ripple Change
- [ ] Non-UK

- [ ] Pelican/Puffin/Toucan Facilities
- [ ] Standalone Manual
- [ ] Holiday Clock
- [ ] Fail to Part Time
- [ ] Serial MOVA
- [ ] Serial UTC
- [x] Free-Standing OTU
- [ ]

Mode Priority

PRIORITY	1	2	3	4	5	6	7	8	9	10	11
Part Time	○	○	○	○	○	○	○	○	○	○	○
Emergency Vehicle	○	○	○	○	○	○	○	○	○	○	○
Hurry Call	○	○	○	○	○	○	○	○	○	○	○
Selected Man Cntrl	◉	○	○	○	○	○	○	○	○	○	○
UTC	○	○	◉	○	○	○	○	○	○	○	○
Manual Step On	○	○	○	○	○	○	○	○	○	○	○
Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○
Cableless Link (CLF)	○	○	○	◉	○	○	○	○	○	○	○
Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○
Vehicle Actuated	○	○	○	○	◉	○	○	○	○	○	○
Fixed Time	○	○	○	○	○	○	○	○	○	○	◉

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standardPB801.8df
Default PROM data file

Correspondence Monitoring to inc.

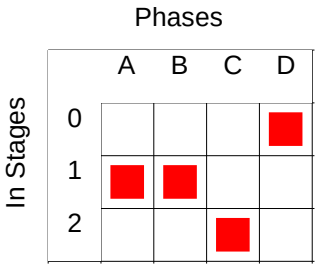
- [x] Reds
- [x] Ambers
- [ ] Switched Signs
- [ ] Ignore Reds and Ambers during Fail to Part Time

Flash Rate (ms)

400 Off 400 On

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Phases in Stages



Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Stages in Streams

Stream Data

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	☐							
Startup Stage	1							
Part-Time switch off stage								
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

NB : For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream	0	1	2
0	■	■	■

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Phase Type and Conditions

Phase Type and Conditions

(•) Phases A to P ( ) Manual Output Allocation [☑]

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	Harborough Road Northbound	0 - UK Traffic	0	0 - I		1	1	1
B	Harborough Road Southbound	0 - UK Traffic	0	0 - I		1	1	1
C	Kingsthorpe Grove Northbound	0 - UK Traffic	0	0 - I		1	1	1
D	Dummy All Red Stage 0	2 - UK GreenArrow	0	0 - I				

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase

	A	B	C	D
A		o	Co	o
B	o		Co	o
C	Co	Co		o
D	o	o	o	

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

Phase Minimums, Maximums, Extensions, Ped. Leaving periods

(●) Phases A to P ( )

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	65	90	85	30	0	0	0	0	☐
B	7	0	0.0	65	85	90	30	0	0	0	0	☐
C	7	0	0.0	20	25	20	20	0	0	0	0	☐
D	3	0	0.0	0	0	0	0	0	0	0	0	☐
												☐
												☐
												☐
												☐
												☐
												☐
												☐
												☐
												☐
												☐
												☐

NB: For Standalone Streams see Help for use of Max. Sets.

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

NB: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below

To Phase

From Phase	A	B	C	D
A			5	3
B			6	3
C	7	6		3
D	2	2	2	

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Handset Intergreen Limits

HIGH 30

Copy Intergreen Values

To Phase

From Phase	A	B	C	D
A			5	3
B			5	3
C	6	5		3
D	2	2	2	

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Max.
A	7	30
B	7	30
C	7	30
D	0	30
E		
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		

Phase	Min. Green Min.	Max.
Q		
R		
S		
T		
U		
V		
W		
X		
Y		
Z		
A2		
B2		
C2		
D2		
E2		
F2		

Max. Green Min. 0 Max. 255

Vehicle Extension Min. 0.0 Max. 10.0

Phase Delay Min. 0 Max. 10

Starting I/G Min. 8 Max. 15

Min Ped Clr (PBT) Min. 0 Max. 12

Traffic Phase Leaving Min. 3.0 Max. 3.0

Traffic Phase Red/Amber Min. 2 Max. 2

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Phase - VA Demand and Extend Definitions

VA Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands preceed the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	ASL1	ASL2		AMVDP3
B	BSL1	BSL2	BSL3	BMVDP4
C	CSL1	CSL2		CMVDP7
D				

Extensions

			AMVDP3
			BMVDP4
			CMVDP7

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D													
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D													
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D													
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C													

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Stage Internal Demands / Ped. Window Times

Stage Internal Demands / Ped. Window Times

Start-up Vehicle Responsive Demands

0	1	2															
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2															
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2															
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0													
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

CLF - Plan(s)

CLF - Plan(s)

Plan No. 1

Copy from

Plan Specifics

Influence Set 1

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 75

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	40	2	2	16			
1	42	3		17			
2	60	1	1	18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependen
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

CLF - Plan(s)

CLF - Plan(s)

Plan No. 2

Copy from

Plan Specifics

Influence Set 2

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 120

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	54	1	2	16			
1	76	1	1	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependen
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

CLF - Plan(s)

CLF - Plan(s)

3 Plan No.

Copy from

Plan Specifics

3 Influence Set

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 120

Group Offset Handset Range

Min. 0

Max. 255

Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	56	1	2	16			
1	85	1	1	17			
2				18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependen
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

CLF - Plan(s)

CLF - Plan(s)

4 Plan No.

Copy from

Plan Specifics

4 Influence Set

Copy from

Entry Point (secs) 255

Exit Point (secs) 255

Cycle Time (secs) 75

Group Offset Handset Range

Min. 0

Max. 255

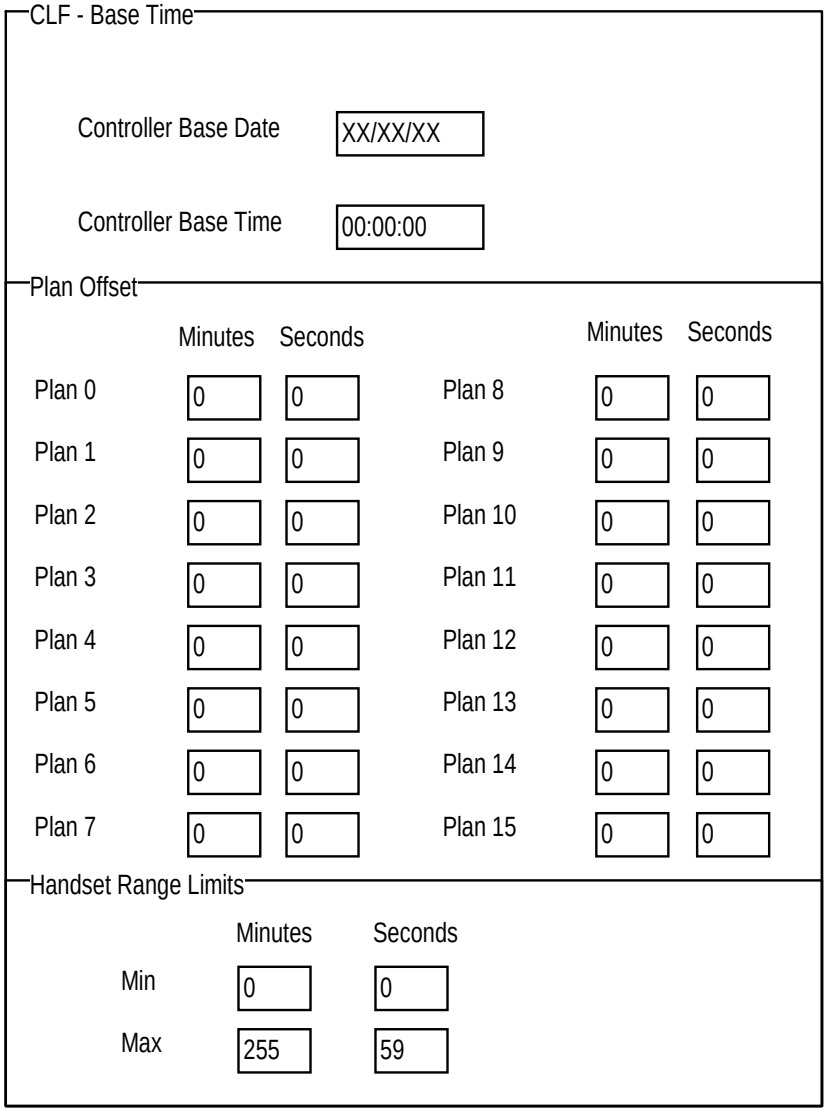
Group/Influence

Group No.	Group Offset	Group Influence	Related Stage	Group No.	Group Offset	Group Influence	Related Stage
0	40	2	2	16			
1	42	3		17			
2	60	1	1	18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

CLF Influences
0 = Go To VA
1 = Immediate move
2 = Demand dependen
3 = Hold
4 = Prevent Except To
5 = Add Immediate move
6 = Add Demand Dependent Move
7 = Ignore
8 = Stand Alone Inhibited
9 = Stand Alone Ped Allowed

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

CLF - Base Time



Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

CLF - Demand Dependent Moves

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered.
The data specified on this screen will also change the screen
CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages	A	B	C	D
0				
1				
2			■	

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

3 Number of Control Words

5 Number of Reply Words

[ ] Controller to respond to TC bit.

[ ] Introduction of UTC to be disabled by Priority Mode

[ ] Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	04:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	04:00:00

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

UTC Control and Reply Data Format

UTC Control and Reply Data Format

Control Words

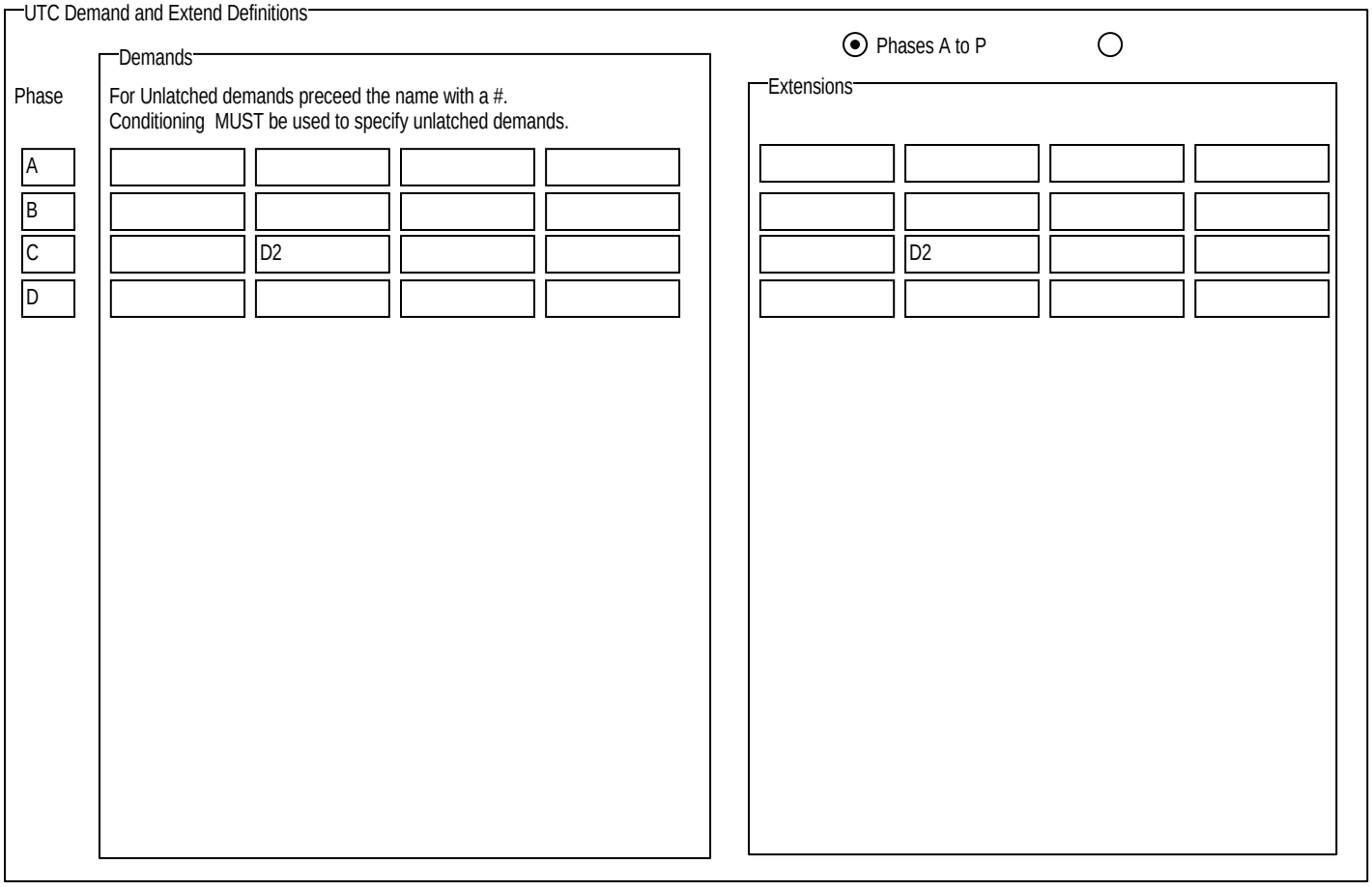
	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	F1	#F2	F3	D2				
Word 2						SO	TS	
Word 3	BD1	BD2	BD3					
Word 4								

Reply Words

Word 1	G1	G2	G3					
Word 2			CF	DF	LF1	RF2	CC	RR
Word 3	SCOOT7				SCOOT8			
Word 4	SCOOT9				SCOOT17			
Word 5	SCOOT18				SCOOT19			
Word 6								
Word 7								
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

UTC Phase Demand and Extend Definitions



Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

UTC Stage and Modes Data Definitions

UTC Stage and Modes Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0	F3	G3		16			
1	F1	G1		17			
2	#F2	G2		18			
3				19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☑ RR ☐

Manual Mode Selected:
☐ G1/G2 ☑ RR ☐

No Lamp Power, or Lamps Off due to RLM (
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☑ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☑ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

UTC Demand Dependent Forces

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered.
The data specified on this screen will also change the screen
CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages

	A	B	C	D
0				
1				
2			■	

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

MTC - Time Switch Parameters

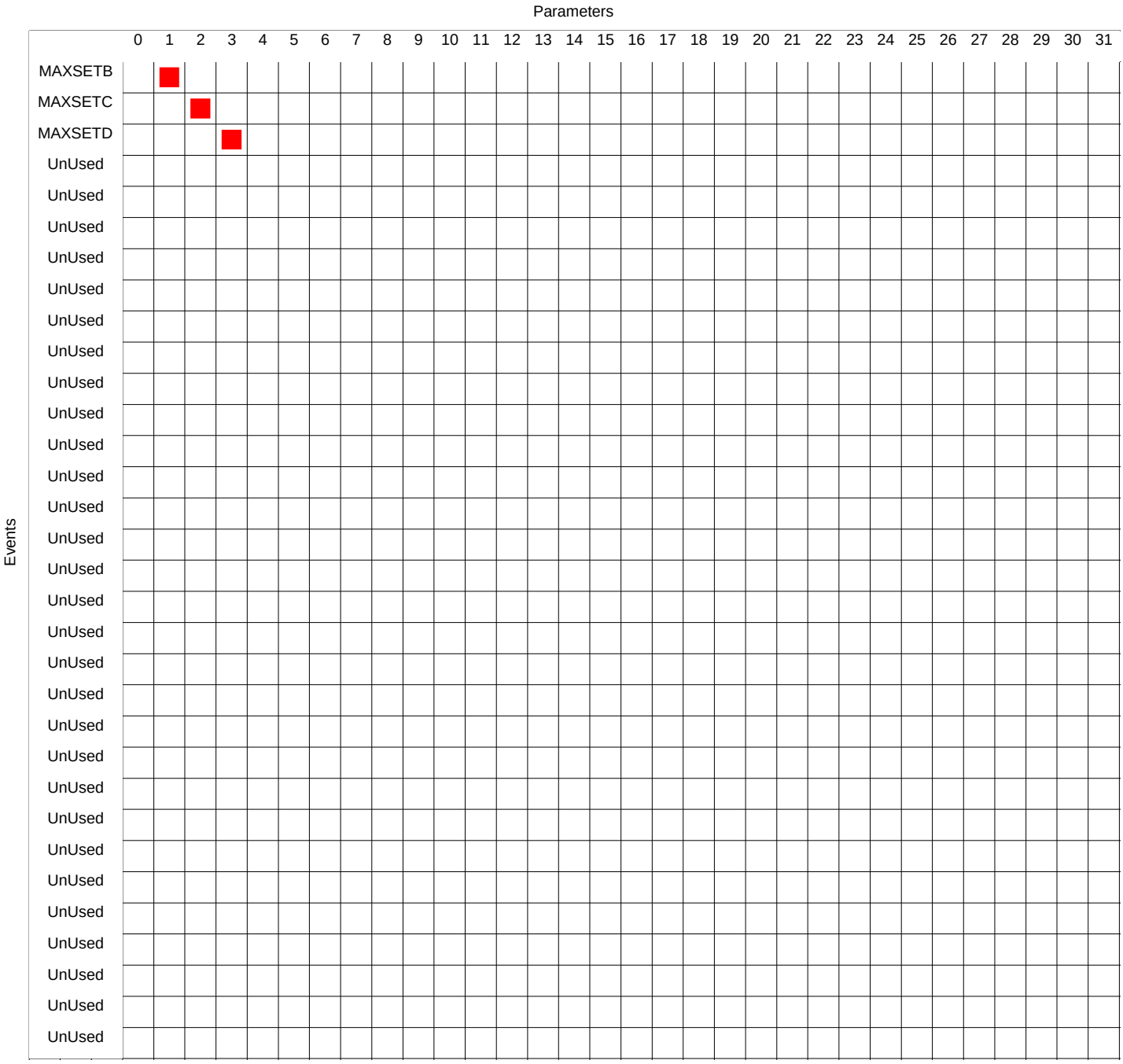
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	No Action	
4	No Action	
5	No Action	
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

MTC - Time Switch Parameters Array



Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Master Time Clock - Day Type

Master Time Clock - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Master Time Clock - Time Table

Master Time Clock - Time Table

View Time Table settings

(•) 0-15 ( ) 16-31 ( ) 32-47 ( ) 48-63

Number	Day Type	Time	Introduce Function Required	Function Number	Plan/ Parameter
0	9	07:30:00	MAXSET B	2	1
1	9	09:30:00	MAXSET A	2	0
2	9	15:30:00	MAXSET C	2	2
3	9	18:00:00	MAXSET D	2	3
4	0	08:00:00	MAXSET B	2	1
5	0	13:00:00	MAXSET C	2	2
6	0	18:00:00	MAXSET D	2	3
7	1	08:00:00	MAXSET A	2	0
8	9	06:30:00	CLF PLAN 1	1	1
9	9	07:30:00	CLF PLAN 2	1	2
10	9	16:00:00	CLF PLAN 3	1	3
11	9	18:15:00	CLF PLAN 1	1	1
12	9	23:00:00	CLF PLAN 4	1	4
13	0	06:30:00	CLF PLAN 1	1	1
14	0	23:00:00	CLF PLAN 4	1	4
15	1	09:15:00	CLF PLAN 1	1	1

Function Numbers:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Master Time Clock - Time Table

Master Time Clock - Time Table

View Time Table settings

○ 0-15 ◉ 16-31 ○ 32-47 ○ 48-63

Number	Day Type	Time	Introduce Function Required	Function Number	Plan/ Parameter
16	1	23:00:00	CLF PLAN 4	1	4
17	7	01:00:00	ISOLATE TO V.A	0	0
18	0			0	0
19	0			0	0
20	0			0	0
21	0			0	0
22	0			0	0
23	0			0	0
24	0			0	0
25	0			0	0
26	0			0	0
27	0			0	0
28	0			0	0
29	0			0	0
30	0			0	0
31	0			0	0

Function Numbers:

0 = Isolate From CLF

1 = Introduce a CLF Plan

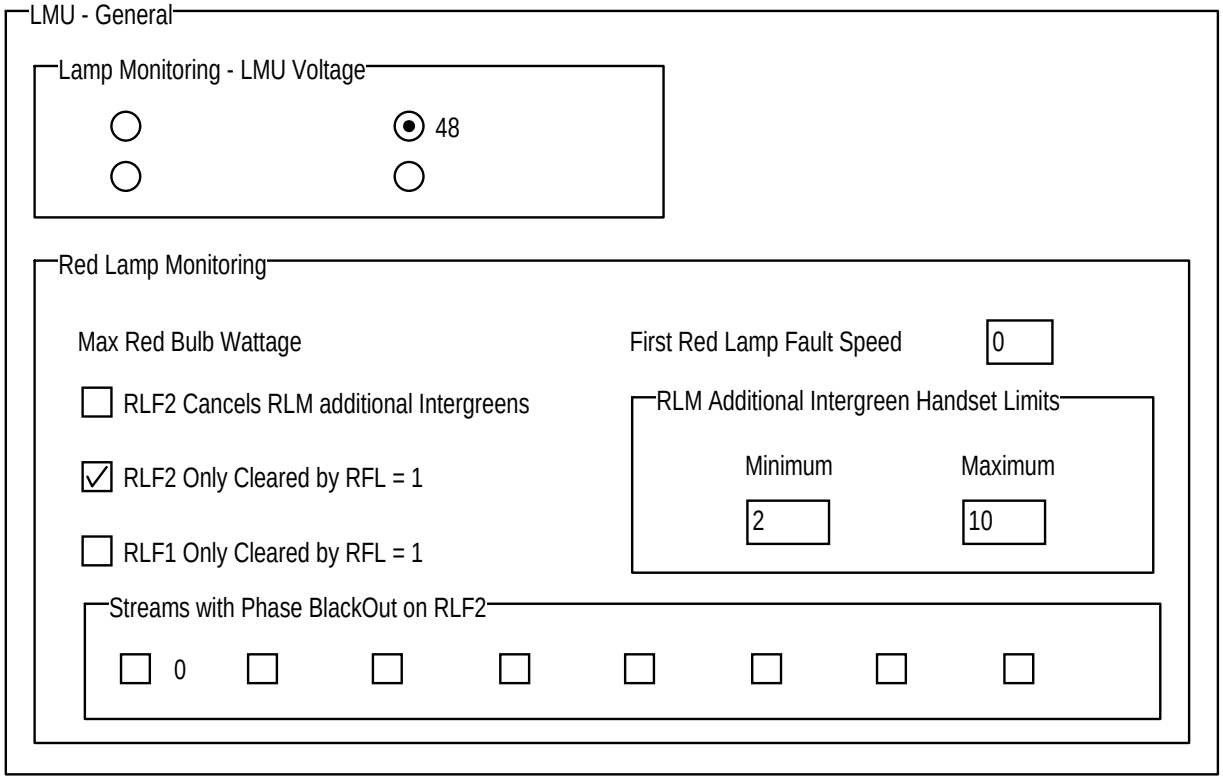
2 = Introduce a Parameter (Combination of event switches

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

LMU - General



Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Integral Onboard LMU Sensors

Integral LMU On-board Sensors for ELV Controllers

Number of LS cards fitted	HPU Connection
1	1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
A	Red	1	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
A	Amber	1	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
A	Green	1	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Red	2	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Amber	2	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
B	Green	2	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Red	3	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Amber	3	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
C	Green	3	As Seq.	1: STC Helios ELV	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Integral External LMU Sensors

Integral LMU External Sensors for Reg Signs (ELV Controllers)

External Sensors (1)

Sensor	Load Type
48	4: STC ELV Regulatory Sign
47	4: STC ELV Regulatory Sign
46	4: STC ELV Regulatory Sign
45	4: STC ELV Regulatory Sign

External Sensors (4)

Sensor	Load Type

External Sensors (2)

Sensor	Load Type

External Sensors (5)

Sensor	Load Type

External Sensors (3)

Sensor	Load Type

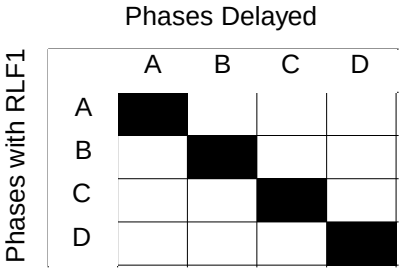
External Sensors (6)

Sensor	Load Type

Note: Sensors which have been used as Onboard sensors will not be available h

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

RLM Additional Intergreens



Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

RLM Phase Inhibits

Phases Inhibited/Blacked-out

Phases with RLF2

	A	B	C	D
A				
B				
C				
D				

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red Stage 0	0							
1	Harborough Road Nortbound / Harborough Road Southbound	1							
2	Kingsthorpe Grove Northbound	2							
3									
4									
5									
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	○	◉	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Manual Mode Enable

- ◉ Always
- ○ When Handset Plugged in (Note 1)
- ○ When 'MND' Command Entered

Note 1:
For this to operate Special Conditioning is required.

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning

```
; AUX LED's
; ~~~~~~~~~
MAUXSW1=MIL22                                ; AUX 1 LED LIT WHEN AUX1 SWITCH ACTIVE ( dimming override ).
                                             ; AUX 2 LED LIT WHEN BD1 UTC INPUT ACTIVE.
                                             ; AUX 3 LED LIT WHEN BD2 UTC INPUT ACTIVE.
                                             ; AUX 4 ( HURRY CALL ) LED LIT WHEN BD3 UTC INPUT ACTIVE

(MODE0 EQL<6>)=MIL17                         ; AUX 5 ( HIGHER PRIORITY ) LED LIT WHEN UTC MODE ACTIVE.

; UTC REPLY BITS
; ~~~~~~~~~~~~~~
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(STAGE1)=G1  ; LAMPS OFF AND STAGE CONFIRMS FOR UTC G1 _G2 BITS
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(STAGE2)=G2
NOT(LMPANY0+FFH55)=LF1                       ; ANY LAMP FAULT REPLIES UTC LF1 BIT
NOT(LMP2RED0)=RF2                            ; 2ND RED LAMP FAULT REPLIES UTC RF2 BIT
NOT(FLFCOM)=CF                               ; CONTROLLER FAULT BIT

; EXTRA DEMANDS AND EXTENSIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
     BMVDP5=+LCPHB                           ; BMVDP5 INSERTS A LATCHED DEMAND FOR PHASE B
BMVDP5_EXT:=+EXOB                            ; BMVDP5 EXTENDS PHASE B
          *=+EXCB

; T900 SPECIAL FACILITIES
; ~~~~~~~~~~~~~~~~~~~~~~
MAXSETB=ESPTX1                               ; MAXSET INFORMATION ALSO SENT ALONG SERIAL LINK
MAXSETC=ESPTX2
MAXSETD=ESPTX3
TRUE=ESPTX4                                  ; FLAG TO DETECT SERIAL LINK DISCONNECTION

; DOOR SWITCH OMU SERIAL LINK
; ~~~~~~~~~~~~~~~~~~~~~~~~~~
NOT(DOORSW)=ESPTX0                           ; DOOR OPEN SEND SIGNAL TO OMU VIA SERIAL LINK

; DOOR CLOSED DISABLES MANUAL PANEL
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
DOORSW:=MNCONT                               ; DOOR CLOSED DISABLES MANUAL MODE CONTROL
      *=MSCONT
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning

```
; NORTHAMPTONSHIRE VA MOVES STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<2>) THN
        IFT (NXTSTG0 EQL<0>)+STAGE0 THN        ; STAGE 0
        (LCPHA+UCPHA+LCPHB+UCPHB)=+UCST1
        (LCPHC+UCPHC)=+UCST2
    END
        IFT (NXTSTG0 EQL<1>)+STAGE1 THN        ; STAGE 1
        (LCPHC+UCPHC)=+UCST2
    END
        IFT (NXTSTG0 EQL<2>)+STAGE2 THN        ; STAGE 2
        (LCPHA+UCPHA+LCPHB+UCPHB)=+UCST1
    END
END

; STAGE PREVENTS FOR VA IN STREAM 0
; ================================
IFT (MODE0 EQL<2>) THN
    NOT(UCST1)=PRVST1                          ; PREVENT ALL STAGES UNLESS AN UNLATCHED CALL
    NOT(UCST2)=PRVST2                          ; IS PRESENT
ELS
        FALSE:=PRVST1                          ; REMOVE PREVENTS FOR ALL OTHER MODES
             *=PRVST2
END
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning

```
; NORTHAMPTONSHIRE UTC MOVES
; ~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<6>.F1+F2) THN
        F1=+UCST1                               ; F1
        F2.(LCPHC+UCPHC)=+UCST2                 ; F2
END

; STAGE PREVENTS FOR UTC _V.A MODES
; ================================
IFT (MODE0 EQL<6>+(MODE0 EQL<2>)) THN
    NOT(UCST1)=PRVST1                           ; PREVENT ALL STAGES UNLESS AN UNLATCHED CALL
    NOT(UCST2)=PRVST2                           ; IS PRESENT
ELS
        FALSE:=PRVST1                           ; REMOVE PREVENTS FOR ALL OTHER MODES
             *=PRVST2
END
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning

```
; SPECIAL REVERSION TO ALL RED STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; TRAFFIC PHASE STAGE DEMANDS AND EXTENSIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<2>)+(MODE0 EQL<6>) $            ; IF VA, UTC, HURRY CALL OR PRIORITY MODES ARE ACTIVE
+(MODE0 EQL<13>) THN                           ; THEN IF THE FOLLOING CONDITIONS ARE MET SET A FLAG.
LCPHA+UCPHA+EXTAA+LCPHB+UCPHB+EXTAB $
+UCPHC+EXTAC $
+LCST1+UCST1+LCST2+UCST2=2SCRT12
END

IFT 2SCRT12 THN                                ; IF ANY FLAG SET RUN A  DELAY TIMER
    RUN<0>
END
(MODE0 EQL<2>).CNDTMA0=PRVST0                  ; DELAYED REVERT TO ALL RED TIMER 0
IFT CNDTER0 THN
    RUN<1>
END
NOT(CNDTMA0).CNDTMA1+CNDTMA2=+LCST0            ; AFTER DELAY TIMER INSERT A LATCHED DCEMAND FOR STAGE 0

IFT (MODE0 EQL<2>).NOT(CNDTMA0) THN
    RUN<2>                                     ; RUNS PULSE WINDOW TIMER
END
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning

```
; UTC FORCE BITS BD OR BD2 LIGHT MANUAL PANEL AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; BD1 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD1.NOT(SCRT2) THN                          ; BD1 SETS A FLAG
    RUN<4>                                     ; RUN TIMER 4
    TRUE=SCRT2                                 ; SETS SCRATCH BIT
END
IFT NOT(BD1) THN                                ; BD1 NOT SET
    FALSE=SCRT2                                ; RESETS SCRATCH BIT
END

; BD2 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD2.NOT(SCRT3) THN                          ; BD2 SETS A FLAG
    RUN<5>                                     ; RUN TIMER 5
    TRUE=SCRT3                                 ; SETS SCRATCH BIT
END
IFT NOT(BD2) THN                                ; BD2 NOT SET
    FALSE=SCRT3                                ; RESETS SCRATCH BIT
END

; BD3 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD3.NOT(SCRT4) THN                          ; BD3 SETS A FLAG
    RUN<6>                                     ; RUN TIMER 6
    TRUE=SCRT4                                 ; SETS SCRATCH BIT
END
IFT NOT(BD3) THN                                ; BD3 NOT SET
    FALSE=SCRT4                                ; RESETS SCRATCH BIT
END

; BD1 ACTIVE LIGHTS AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
(CNDTMA4+BD1)=MIL23                             ; BD1 ACTIVE LIGHTS AUX 2 LED

; BD2 ACTIVE LIGHTS AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
(CNDTMA5+BD2)=MIL05                             ; BD2 ACTIVE LIGHTS AUX 3 LED

; BD3 ACTIVE LIGHTS AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
(CNDTMA6+BD3)=MIL07                             ; BD3 ACTIVE LIGHTS AUX 4 LED
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning

```
; FREE STANDING OTU SCOOT INPUT - SEE SPECIAL INTRUCTIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
SCOOT7=SCOOT7O
SCOOT8=SCOOT8O
SCOOT9=SCOOT9O
SCOOT17=SCOOT17O
SCOOT18=SCOOT18O
SCOOT19=SCOOT19O
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning

```
; ST900ELV LAMP SUPPLY FOR GEMINI II
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;
; LAMPS OFF REPLY TO THE OMU (LAMPS OFF RELAY MUST BE FITTED TO ENABLE THIS TO WORK)
; ================================================================================
LMPON.SWLMPS.NOT(FLF17)=LAMPSON                ; IF LAMPS ARE SWITCHED OFF OR FAIL SEND REPLY BY
                                               ; USING AN I/O OUTPUT CALLED "LAMPSON"
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Conditioning Timers

Special Conditioning Timers

Timers: (•) 0-31 ( ) 32-63 ( ) 64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	30	0	255	☐	DELAYED REVERT TO ALL RED	16		0	255	☐	
1	2	0	255	☐	REVERT TO STAGE 0	17		0	255	☐	
2	1	0	255	☐	PULSE WINDOW	18		0	255	☐	
3		0	255	☐		19		0	255	☐	
4	5	0	255	☐	BD1 FORCE BIT MIN TIMER	20		0	255	☐	
5	5	0	255	☐	BD2 FORCE BIT MIN TIMER	21		0	255	☐	
6	5	0	255	☐	BD3 FORCE BIT MIN TIMER	22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8	0	0	0.6	☑	REPEATEDLY START TIMER 8	24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Instructions

37327

Card Type	Rack Posn	Addr.	Port	Type	Line	Term Posn
Intelligent Backplane 16/0	Rack	01	0	I	000 - 007	2 LT1
Intelligent Backplane 16/0	Rack	01	1	I	008 - 015	2 LT1
Intelligent Backplane 16/0	Rack	02	2	I	016 - 023	2 LT2
Intelligent Backplane 16/0	Rack	02	3	I	024 - 031	2 LT2
Serial IO 24/16	1 I/O1	03	4	I	032 - 039	1 I/O1
Serial IO 24/16	1 I/O1	03	5	I	040 - 047	1 I/O1
Serial IO 24/16	1 I/O1	03	6	I	048 - 055	1 I/O1
Serial IO 24/16	1 I/O1	03	7	O	056 - 063	1 I/O1
Serial IO 24/16	1 I/O1	03	8	O	064 - 071	1 I/O1
Serial IO 24/16 (UTC)	1 I/O2	04	9	I	072 - 079	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	10	I	080 - 087	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	11	I	088 - 095	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	12	O	096 - 103	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	04	13	O	104 - 111	1 I/O2
CPU	A					

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/32900/020	ST900 ELV Cabinet UK 20A 1 LSLS - Grey			
3	667/1/32900/040	ST900 ELV Cabinet UK 40A 1 LSLS - Grey			
4	667/1/32900/021	ST900 ELV Cabinet UK 20A 1 LSLS - Black	1		
5	667/1/32900/041	ST900 ELV Cabinet UK 40A 1 LSLS - Black			
6					
7					
8					
9	667/1/32943/001	ELV Lamp switch (LSLS) kit			
10	667/1/32960/001	ELV Lamp switch (LSLS) backplane kit			
11	667/1/32995/002	ST900 I/O card kit (4 outputs)			
12	667/1/32995/001	ST900 I/O card kit (16 outputs)	2		
13					
14					
15					
16	667/1/27004/000	Integral TC12 OTU kit			
17	667/1/27005/000	SDE Facility kit			
18	667/1/32910/000	ST900 Intelligent detector backplane kit	2		
19	667/1/33002/000	ELV detector 6U rack expansion kit			
20	667/1/33074/000	ST900 ELV 24 V detector supply Kit (6A)			
21	667/1/20690/001	19" Detector Rack			
22					
23	667/1/32985/000	ELV 20A to 40A upgrade kit			
24					
25					
26	667/1/33070/000	ELV Regulatory Sign expansion kit			
27	667/1/32950/000	ELV Audible supply kit			
28	667/1/33009/000	ST900 300mA RCD kit			
29					
30	667/1/32900/001	Expansion cabinet kit - Black			
31	667/1/32900/000	Expansion cabinet kit - Grey			
32	667/1/33072/000	Cabinet mounted cut-out connection kit			
33					
34					
35					
36	667/1/27056/001	Manual Panel Full kit			
37	667/1/27110/000	Manual Panel RS232 kit			
38					
39					
40	667/1/16260/000	Configuration Eprom (Issue 1. 0)	1		

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/32900/920	ST900 ELV cuckoo Kit - T200			
43	667/1/32900/921	ST900 ELV cuckoo Kit - T400			
44	667/1/32900/922	ST900 ELV cuckoo Kit - T800			
45	667/1/32900/923	ST900 ELV cuckoo Kit - Microsense			
46	667/1/32900/925	ST900 ELV cuckoo Kit - Peek			
47					
48					
49					
50					
51					
52	667/1/33073/000	ST900 Isolator locking kit			
53	667/2/20234/000	Screw Lock Key			
54					
55					
56	667/1/27104/000	ST800 / ST900 DFM Lens Kit			
57	667/1/21150/002	ST800 / ST900 Gas Plinth			
58	667/2/27096/000	ST800 / ST900 Mounting Stool			
59					
60					
61					
62	667/1/26271/000	Telephone Kit (Lightning protection)			
63	667/1/27118/000	Surge Arrester (Lightning protection)			
64					
65					
66					
67	667/1/32900/120	ST900 ELV Cabinet Export 20A 1 LSLS - Grey			
68	667/1/32900/140	ST900 ELV Cabinet Export 40A 1 LSLS - Grey			
69	667/1/32900/121	ST900 ELV Cabinet Export 20A 1 LSLS - Black			
70	667/1/32900/141	ST900 ELV Cabinet Export 40A 1 LSLS - Black			
71					
72					
73	667/1/32900/900	ST900 ELV export rack Kit			
74	667/1/32945/000	ST900 ELV additional LSLS rack wiring kit			
75					
76	667/1/27007/000	IRM Facility			
77					
78					
79					
80					

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Instructions

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Special Instructions

```
; FREE STANDING OTU SCOOT INPUT                OUTPUT WIRED OUTPUT TO BELOW
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~               - ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; SCOOT I/P - 2LT1 DET12 BIT 4 D1 - SCOOT 7  - OUTPUTS TO SCOOT7O  - 1I/O1 LINE 0 DET 56 BIT 0
; SCOOT I/P - 2LT1 DET13 BIT 5 D2 - SCOOT 8  - OUTPUTS TO SCOOT8O  - 1I/O1 LINE 1 DET 57 BIT 1
; SCOOT I/P - 2LT1 DET14 BIT 6 D3 ; SCOOT 9  - OUTPUTS TO SCOOT9O  - 1I/O1 LINE 2 DET 58 BIT 2
; SCOOT I/P - 2LT1 DET15 BIT 7 D4 - SCOOT 17 - OUTPUTS TO SCOOT17O - 1I/O1 LINE 3 DET 59 BIT 3
; SCOOT I/P - 2LT2 DET16 BIT 0 A1 - SCOOT 18 - OUTPUTS TO SCOOT18O - 1I/O1 LINE 4 DET 60 BIT 4
; SCOOT I/P - 2LT2 DET17 BIT 1 A2 - SCOOT 19 - OUTPUTS TO SCOOT19O - 1I/O1 LINE 5 DET 61 BIT 5
; ================================================================================================
```

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 0

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	0	0	I	ASL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	2 LT1	A1
○	1	1	I	ASL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	2 LT1	A2
○	2	2	I	SPARE1-3	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A3
○	3	3	I	SPARE1-4	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A4
○	4	4	I	BSL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	2 LT1	B1
○	5	5	I	BSL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	2 LT1	B2
○	6	6	I	BSL3	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	2 LT1	B3
○	7	7	I	SPARE2-4	☑	☑	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 1

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	8	0	I	CSL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	2 LT1	C1
○	9	1	I	CSL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	2 LT1	C2
○	10	2	I	SPARE3-3	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C3
○	11	3	I	SPARE3-4	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C4
○	12	4	I	SCOOT7	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D1
○	13	5	I	SCOOT8	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D2
○	14	6	I	SCOOT9	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D3
○	15	7	I	SCOOT17	☑	☑	☐		☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 2

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Term No
○	16	0	I	SCOOT18	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A1
○	17	1	I	SCOOT19	☑	☑	☐	☐	☐	A	0	0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A2
○	18	2	I	SPARE5-3	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A3
○	19	3	I	SPARE5-4	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	A4
○	20	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B1
○	21	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B2
○	22	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B3
○	23	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	2 LT2	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 4

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Line No
○	32	0	I	AMVDP3	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	33	1	I	BMVDP4	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	34	2	I	BMVDP5	☑	☐	☐	☐	☐	A	0	0.6	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	35	3	I	CMVDP7	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	36	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	37	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	38	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	39	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 7

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Line No
○	56	0	O	SCOOT7O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	57	1	O	SCOOT8O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	58	2	O	SCOOT9O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	59	3	O	SCOOT17O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	60	4	O	SCOOT18O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	61	5	O	SCOOT19O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	62	6	O	LAMPSON	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	63	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 9

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Line No
○	72	0	I	F1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	0
○	73	1	I	#F2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	1
○	74	2	I	F3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	2
○	75	3	I	D2	☑	☐	☐	☐	☐	N		0.0	☑	☑	☐	☐	☐	☐	☐	☐	1I/O2	3
○	76	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	4
○	77	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	5
○	78	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	6
○	79	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 10

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Line No
○	80	0	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	8
○	81	1	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	9
○	82	2	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	10
○	83	3	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	11
○	84	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	12
○	85	5	I	SO	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	13
○	86	6	I	TS	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	14
○	87	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 11

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Line No
○	88	0	I	BD1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	16
○	89	1	I	BD2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	17
○	90	2	I	BD3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	18
○	91	3	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	19
○	92	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	20
○	93	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	21
○	94	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	22
○	95	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 12

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Line No
○	96	0	O	G1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	0
○	97	1	O	G2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	1
○	98	2	O	G3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	2
○	99	3	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	3
○	100	4	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	4
○	101	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	5
○	102	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	6
○	103	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Input/Output

Input/Output

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 13

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 4

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	AR	UD	Term Block	Line No
○	104	0	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	8
○	105	1	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	9
○	106	2	O	CF	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	10
○	107	3	O	DF	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	11
○	108	4	O	LF1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	12
○	109	5	O	RF2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	13
○	110	6	O	CC	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	14
○	111	7	O	RR	☑	☐	☐		☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	1I/O2	15

[Add] [Delete] [Move] [Clear Used By] [Move to/from backplane]

[Manual Map Optimisation]

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

Aspect Drives - ELV Controllers

Aspect Drives for ELV Controllers

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration For LSLS 1 of 1 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	N/A	N/A	N/A
31	A	Amber	Phase	15	N/A	N/A	N/A
30	A	Green	Phase	14	N/A	N/A	N/A
29	B	Red	Phase	13	N/A	N/A	N/A
28	B	Amber	Phase	12	N/A	N/A	N/A
27	B	Green	Phase	11	N/A	N/A	N/A
26	C	Red	Phase	10	N/A	N/A	N/A
25	C	Amber	Phase	9	N/A	N/A	N/A
24	C	Green	Phase	8	N/A	N/A	N/A
23	N/A	N/A	N/A	7	N/A	N/A	N/A
22	N/A	N/A	N/A	6	N/A	N/A	N/A
21	N/A	N/A	N/A	5	N/A	N/A	N/A
20	N/A	N/A	N/A	4	N/A	N/A	N/A
19	N/A	N/A	N/A	3	N/A	N/A	N/A
18	N/A	N/A	N/A	2	N/A	N/A	N/A
17	N/A	N/A	N/A	1	N/A	N/A	N/A

Works Order : 460599127
EM Number : 37327
Engineer : Kevin L Roberts
Intersection : Harborough Rd / Kingsthorpe Grove - Northampton ORN038

I/O - Group DFM Timings

I/O - Group DFM Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	9	9	9	9
Group 1	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Streams, Stages, Phases Control
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped. Leaving periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Handset Intergreen Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 Phase - VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Streams and Stages
- 3.1 Stage - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands / Ped. Window Times
- 3.3 Phase delays (No configuration data to print)

4 Modes and Facilites - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves
- 4.3 Urban Traffic Control
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions
    - 4.3.3.2 UTC Stage and Modes Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 Master Time Clock - Day Type
  - 4.4.4 Master Time Clock - Time Table
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral Onboard LMU Sensors
  - 4.5.3 Integral External LMU Sensors
  - 4.5.4 RLM Additional Intergreens
  - 4.5.5 RLM Phase Inhibits
- 4.6 Manual
  - 4.6.1 Manual Panel
  - 4.6.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel (No configuration data to print)
- 7.2 Input/Output
- 7.3 Aspect Drives - ELV Controllers
- 7.4 I/O - Group DFM Timings

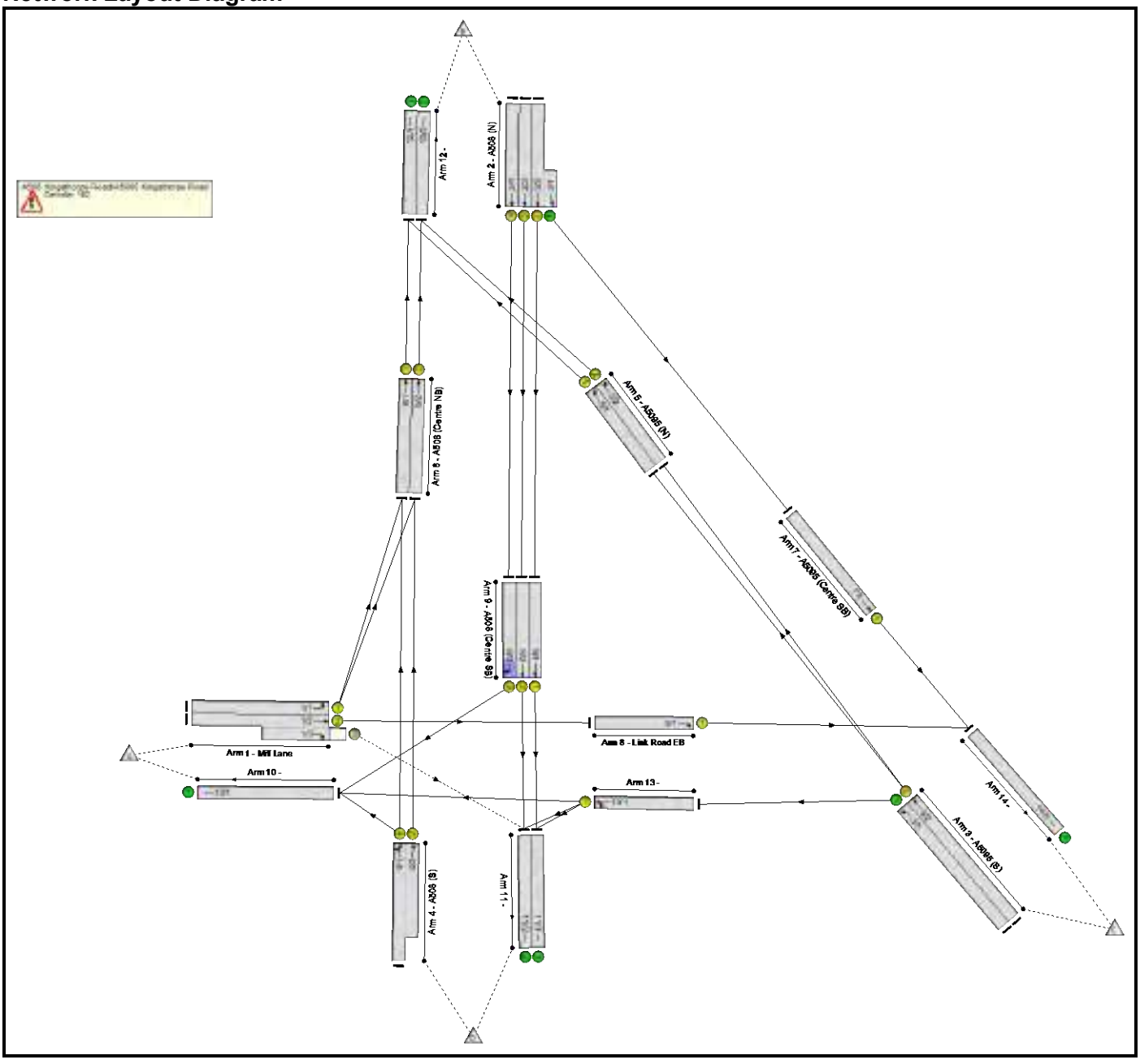
APPENDIX C

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 24
Location:	A508, Kingsthorpe Road/ Mill Lane/ Washington Street/ A508, Harborough Road/ A5095, Kingsthorpe Grove
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

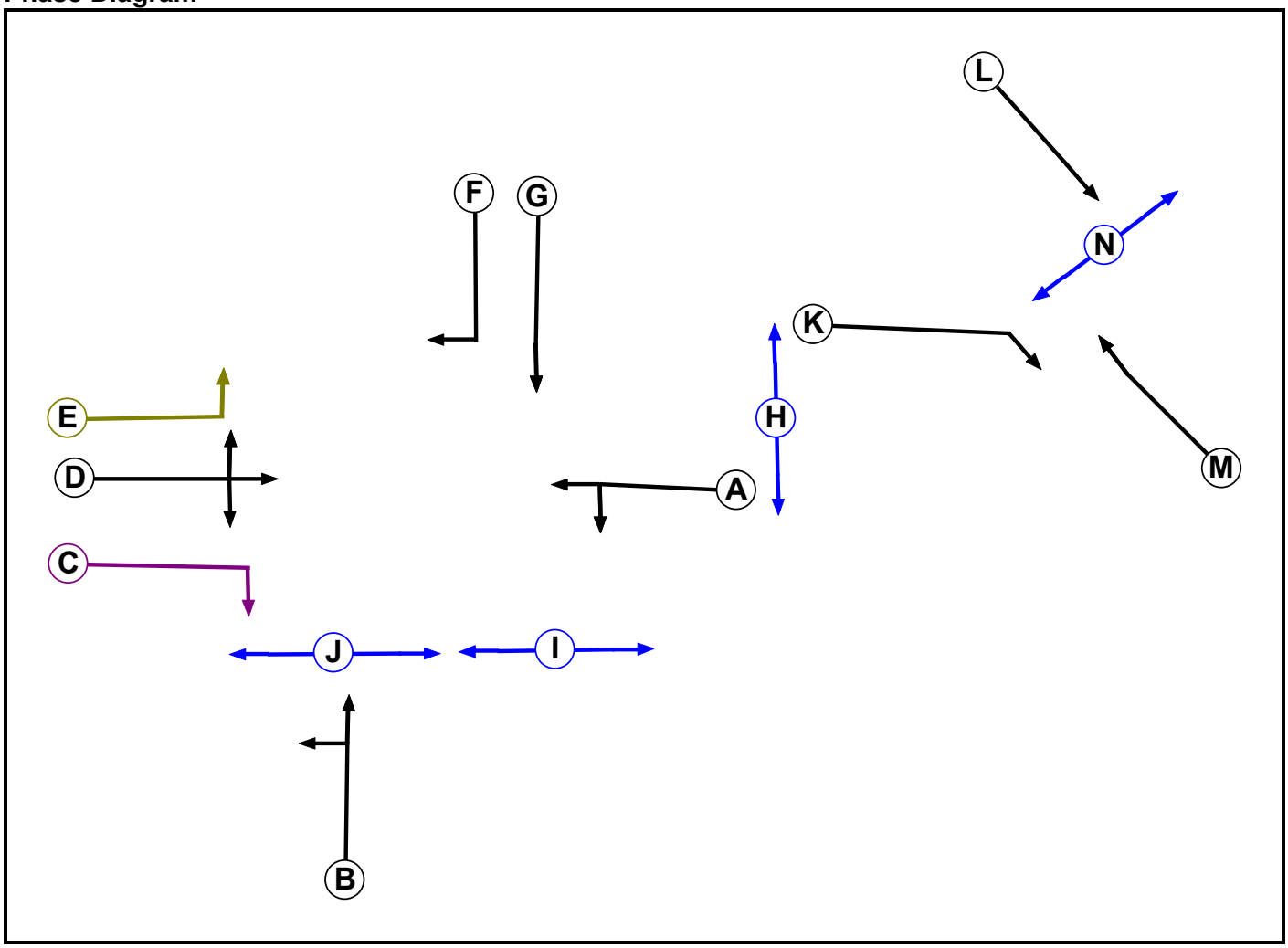
Network Layout Diagram



Full Input Data And Results

C1 - ORN016

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Ind. Arrow	D	4	4
D	Traffic		7	7
E	Filter	D	4	0
F	Traffic		7	7
G	Traffic		7	7
H	Pedestrian		7	7
I	Pedestrian		7	7
J	Pedestrian		7	7
K	Traffic		7	7
L	Traffic		7	7
M	Traffic		7	7
N	Pedestrian		7	7

Full Input Data And Results

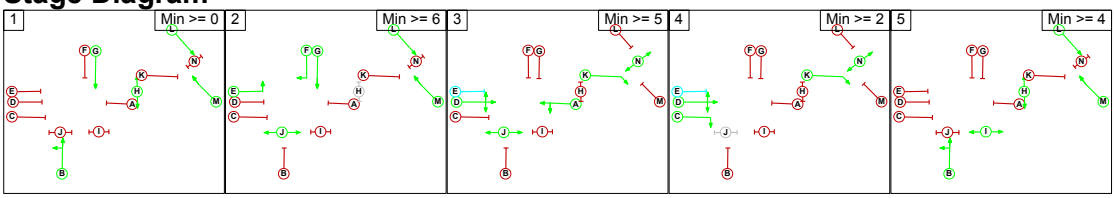
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A		6	5	-	-	5	5	5	7	-	-	-	-	-
B	5		6	6	6	5	-	-	-	5	-	-	-	-
C	6	5		-	-	5	5	-	8	-	-	-	-	-
D	-	5	-		-	5	6	9	8	-	-	-	-	-
E	-	5	-	-		-	-	-	-	-	-	-	-	-
F	5	5	5	5	-		-	-	-	-	-	-	-	-
G	5	-	5	5	-	-		-	8	-	-	-	-	-
H	13	-	-	13	-	-	-		-	-	-	-	-	-
I	9	-	9	9	-	-	9	-		-	-	-	-	-
J	-	7	-	-	-	-	-	-	-		-	-	-	-
K	-	-	-	-	-	-	-	-	-	-		5	5	-
L	-	-	-	-	-	-	-	-	-	-	5		-	5
M	-	-	-	-	-	-	-	-	-	-	5	-		7
N	-	-	-	-	-	-	-	-	-	-	-	11	11	

Phases in Stage

Stage No.	Phases in Stage
1	B G H L M
2	E F G J L M
3	A D J K N
4	C D K N
5	B H I L M

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

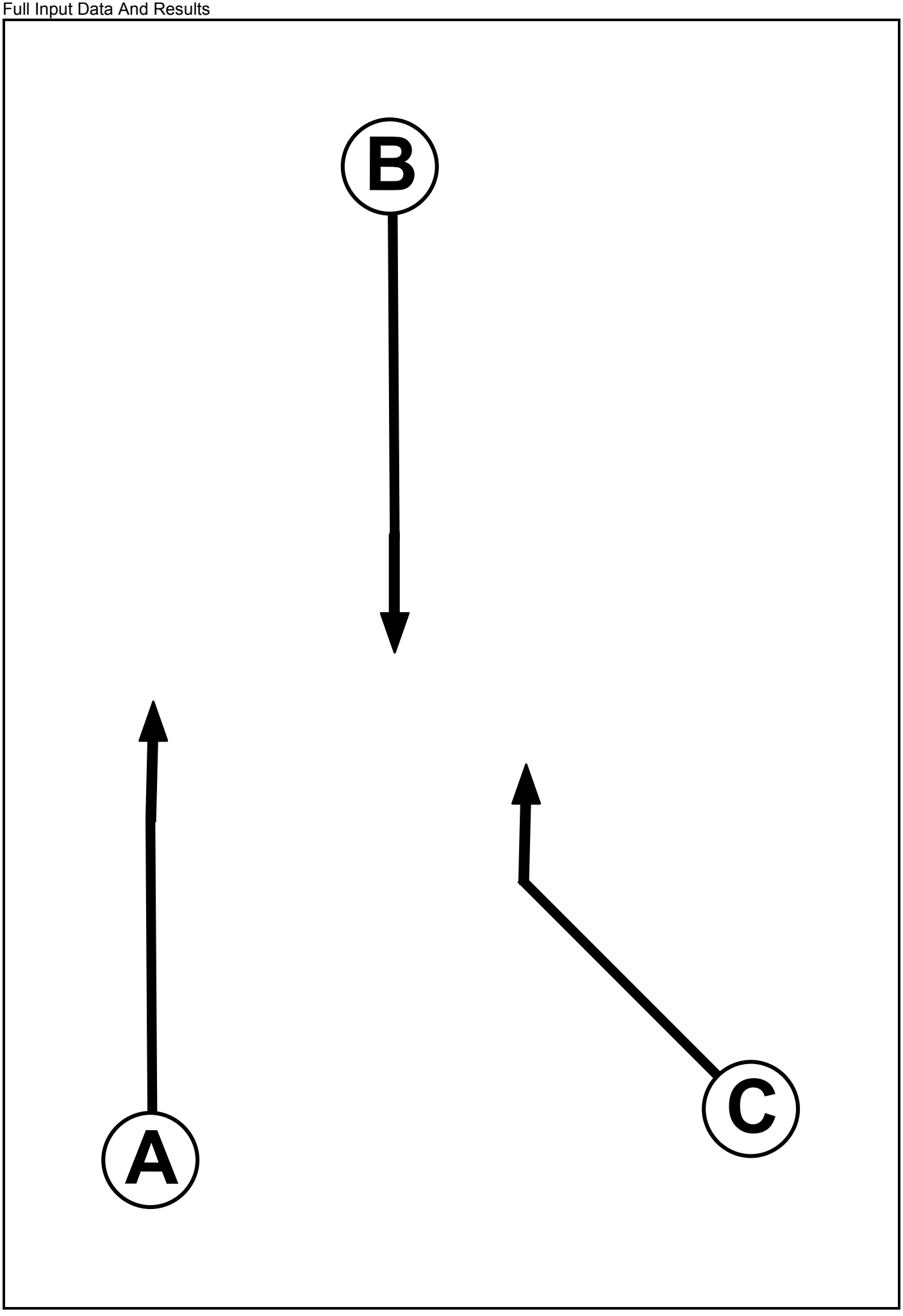
Prohibited Stage Change

From Stage	To Stage					
	1	2	3	4	5
1		6	13	X	8
2	X		7	7	X
3	11	11		5	11
4	11	11	6		11
5	9	9	13	X	

Full Input Data And Results

C2 - ORN038

Phase Diagram


B
A
C

Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7

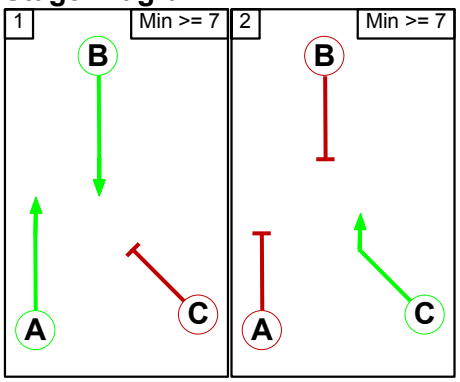
Phase Intergreens Matrix

		Starting Phase		
		A	B	C
Terminating Phase	A		-	5
	B	-		6
	C	7	6	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage	
		1	2
From Stage	1		6
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/3 (Mill Lane)	11/2 (Right)	1439	0	13/1	1.09	All	2.00	-	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Mill Lane)	U	D E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Left	10.00
1/2 (Mill Lane)	U	D	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 8 Ahead	Inf
1/3 (Mill Lane)	O	D C	2	3	7.8	Geom	-	3.00	0.00	Y	Arm 11 Right	15.00
2/1 (A508 (N))	U		2	3	4.3	Geom	-	4.00	0.00	Y	Arm 7 Ahead	Inf
2/2 (A508 (N))	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 9 Ahead	Inf
2/3 (A508 (N))	U	B	2	3	8.3	Geom	-	3.00	0.00	Y	Arm 9 Ahead	Inf
2/4 (A508 (N))	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 9 Ahead	Inf
3/1 (A5095 (S))	U		2	3	60.0	Geom	-	2.90	0.00	Y	Arm 13 Left	20.00
3/2 (A5095 (S))	U	M	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Ahead	Inf
4/1 (A508 (S))	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
											Arm 10 Left	10.00
4/2 (A508 (S))	U	B	2	3	12.2	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
5/1 (A5095 (N))	U	C	2	3	15.7	Geom	-	3.50	0.00	Y	Arm 12 Ahead	100.00
5/2 (A5095 (N))	U	C	2	3	15.7	Geom	-	3.50	0.00	Y	Arm 12 Ahead	100.00
6/1 (A508 (Centre NB))	U	A	2	3	11.3	Geom	-	3.25	0.00	Y	Arm 12 Ahead	Inf
6/2 (A508 (Centre NB))	U	A	2	3	11.3	Geom	-	3.25	0.00	Y	Arm 12 Ahead	Inf
7/1 (A5095 (Centre SB))	U	L	2	3	20.0	Geom	-	3.00	0.00	Y	Arm 14 Ahead	Inf
8/1 (Link Road EB)	U	K	2	3	5.2	Geom	-	4.50	0.00	Y	Arm 14 Right	25.00
9/1 (A508 (Centre SB))	U	G	2	3	11.3	Geom	-	3.00	0.00	Y	Arm 11 Ahead	Inf

Full Input Data And Results

9/2 (A508 (Centre SB))	U	G	2	3	11.3	Geom	-	3.00	0.00	Y	Arm 11 Ahead	Inf
9/3 (A508 (Centre SB))	U	F	2	3	11.3	Geom	-	3.00	0.00	Y	Arm 10 Right	Inf
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1	U	A	2	3	7.0	Geom	-	5.00	0.00	Y	Arm 10 Ahead	Inf
											Arm 11 Left	10.00
14/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2017 Base AM'	08:00	09:00	01:00	
2: '2017 Base PM'	17:00	18:00	01:00	
3: '2021 DM AM'	08:00	09:00	01:00	
4: '2021 DM PM'	17:00	18:00	01:00	
5: '2021 DS2 AM'	08:00	09:00	01:00	
6: '2021 DS2 PM'	17:00	18:00	01:00	
7: '2031 DM AM'	08:00	09:00	01:00	
8: '2031 DM PM'	17:00	18:00	01:00	
9: '2031 DS2 AM'	08:00	09:00	01:00	
10: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2017 Base AM' (FG1: '2017 Base AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	575	266	136	977
	B	504	0	367	963	1834
	C	409	355	0	13	777
	D	94	491	0	0	585
	Tot.	1007	1421	633	1112	4173

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2017 Base AM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	575
1/2 (with short)	402(In) 266(Out)
1/3 (short)	136
2/1 (short)	367
2/2 (with short)	789(In) 422(Out)
2/3	541
2/4	504
3/1	422
3/2	355
4/1 (with short)	585(In) 337(Out)
4/2 (short)	248
5/1	177
5/2	178
6/1	533
6/2	533
7/1	367
8/1	266
9/1	422
9/2	541
9/3	504
10/1	1007
11/1	429
11/2	683
12/1	710
12/2	711
13/1	422
14/1	633

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	72.1 %	1838	1838
				Arm 10 Left	10.00	27.9 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	96.9 %	2105	2105
				Arm 11 Left	10.00	3.1 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2017 Base PM' (FG2: '2017 Base PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	555	451	81	1087
	B	427	0	310	568	1305
	C	439	441	0	15	895
	D	171	876	0	0	1047
	Tot.	1037	1872	761	664	4334

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2017 Base PM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	555
1/2 (with short)	532(In) 451(Out)
1/3 (short)	81
2/1 (short)	310
2/2 (with short)	592(In) 282(Out)
2/3	286
2/4	427
3/1	454
3/2	441
4/1 (with short)	1047(In) 511(Out)
4/2 (short)	536
5/1	220
5/2	221
6/1	676
6/2	755
7/1	310
8/1	451
9/1	282
9/2	286
9/3	427
10/1	1037
11/1	290
11/2	374
12/1	896
12/2	976
13/1	454
14/1	761

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	66.5 %	1823	1823
				Arm 10 Left	10.00	33.5 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	96.7 %	2105	2105
				Arm 11 Left	10.00	3.3 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	587	344	151	1082
	B	366	0	391	1045	1802
	C	505	369	0	18	892
	D	91	661	0	0	752
	Tot.	962	1617	735	1214	4528

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	587
1/2 (with short)	495(In) 344(Out)
1/3 (short)	151
2/1 (short)	391
2/2 (with short)	905(In) 514(Out)
2/3	531
2/4	366
3/1	523
3/2	369
4/1 (with short)	752(In) 420(Out)
4/2 (short)	332
5/1	184
5/2	185
6/1	625
6/2	623
7/1	391
8/1	344
9/1	514
9/2	531
9/3	366
10/1	962
11/1	523
11/2	691
12/1	809
12/2	808
13/1	523
14/1	735

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	78.3 %	1855	1855
				Arm 10 Left	10.00	21.7 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	96.6 %	2104	2104
				Arm 11 Left	10.00	3.4 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	404	505	76	985
	B	269	0	266	779	1314
	C	369	303	0	14	686
	D	332	1374	0	0	1706
	Tot.	970	2081	771	869	4691

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	404
1/2 (with short)	581(In) 505(Out)
1/3 (short)	76
2/1 (short)	266
2/2 (with short)	655(In) 389(Out)
2/3	390
2/4	269
3/1	383
3/2	303
4/1 (with short)	1706(In) 830(Out)
4/2 (short)	876
5/1	151
5/2	152
6/1	764
6/2	1014
7/1	266
8/1	505
9/1	389
9/2	390
9/3	269
10/1	970
11/1	396
11/2	473
12/1	915
12/2	1166
13/1	383
14/1	771

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	60.0 %	1807	1807
				Arm 10 Left	10.00	40.0 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	96.3 %	2103	2103
				Arm 11 Left	10.00	3.7 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2021 DS2 AM' (FG5: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	587	344	147	1078
	B	424	0	394	1067	1885
	C	507	381	0	17	905
	D	89	634	0	0	723
	Tot.	1020	1602	738	1231	4591

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS2 AM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	587
1/2 (with short)	491(In) 344(Out)
1/3 (short)	147
2/1 (short)	394
2/2 (with short)	914(In) 520(Out)
2/3	547
2/4	424
3/1	524
3/2	381
4/1 (with short)	723(In) 403(Out)
4/2 (short)	320
5/1	190
5/2	191
6/1	611
6/2	610
7/1	394
8/1	344
9/1	520
9/2	547
9/3	424
10/1	1020
11/1	529
11/2	702
12/1	801
12/2	801
13/1	524
14/1	738

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	77.9 %	1854	1854
				Arm 10 Left	10.00	22.1 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	96.8 %	2105	2105
				Arm 11 Left	10.00	3.2 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2021 DS2 PM' (FG6: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	431	513	75	1019
	B	304	0	285	771	1360
	C	394	332	0	14	740
	D	325	1359	0	0	1684
	Tot.	1023	2122	798	860	4803

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS2 PM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	431
1/2 (with short)	588(In) 513(Out)
1/3 (short)	75
2/1 (short)	285
2/2 (with short)	670(In) 385(Out)
2/3	386
2/4	304
3/1	408
3/2	332
4/1 (with short)	1684(In) 818(Out)
4/2 (short)	866
5/1	166
5/2	166
6/1	765
6/2	1025
7/1	285
8/1	513
9/1	385
9/2	386
9/3	304
10/1	1023
11/1	392
11/2	468
12/1	931
12/2	1191
13/1	408
14/1	798

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	60.3 %	1807	1807
				Arm 10 Left	10.00	39.7 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	96.6 %	2104	2104
				Arm 11 Left	10.00	3.4 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	533	548	111	1192
	B	658	0	420	1170	2248
	C	563	428	0	13	1004
	D	126	735	0	0	861
	Tot.	1347	1696	968	1294	5305

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DM AM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	533
1/2 (with short)	659(In) 548(Out)
1/3 (short)	111
2/1 (short)	420
2/2 (with short)	893(In) 473(Out)
2/3	697
2/4	658
3/1	576
3/2	428
4/1 (with short)	861(In) 422(Out)
4/2 (short)	439
5/1	214
5/2	214
6/1	630
6/2	638
7/1	420
8/1	548
9/1	473
9/2	697
9/3	658
10/1	1347
11/1	480
11/2	814
12/1	844
12/2	852
13/1	576
14/1	968

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	70.1 %	1833	1833
				Arm 10 Left	10.00	29.9 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	97.7 %	2108	2108
				Arm 11 Left	10.00	2.3 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	508	629	56	1193
	B	408	0	240	828	1476
	C	576	379	0	14	969
	D	360	1363	0	0	1723
	Tot.	1344	2250	869	898	5361

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DM PM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	508
1/2 (with short)	685(In) 629(Out)
1/3 (short)	56
2/1 (short)	240
2/2 (with short)	651(In) 411(Out)
2/3	417
2/4	408
3/1	590
3/2	379
4/1 (with short)	1723(In) 835(Out)
4/2 (short)	888
5/1	189
5/2	190
6/1	831
6/2	1040
7/1	240
8/1	629
9/1	411
9/2	417
9/3	408
10/1	1344
11/1	418
11/2	480
12/1	1020
12/2	1230
13/1	590
14/1	869

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	56.9 %	1799	1799
				Arm 10 Left	10.00	43.1 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	97.6 %	2107	2107
				Arm 11 Left	10.00	2.4 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 9: '2031 DS2 AM' (FG9: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	551	542	104	1197
	B	653	0	426	1198	2277
	C	578	425	0	13	1016
	D	127	732	0	0	859
	Tot.	1358	1708	968	1315	5349

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DS2 AM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	551
1/2 (with short)	646(In) 542(Out)
1/3 (short)	104
2/1 (short)	426
2/2 (with short)	1024(In) 598(Out)
2/3	600
2/4	653
3/1	591
3/2	425
4/1 (with short)	859(In) 420(Out)
4/2 (short)	439
5/1	212
5/2	213
6/1	595
6/2	688
7/1	426
8/1	542
9/1	598
9/2	600
9/3	653
10/1	1358
11/1	605
11/2	710
12/1	807
12/2	901
13/1	591
14/1	968

Full Input Data And Results

Lane Saturation Flows

Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	69.8 %	1832	1832
				Arm 10 Left	10.00	30.2 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	97.8 %	2108	2108
				Arm 11 Left	10.00	2.2 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2031 DS2 PM' (FG10: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	528	642	57	1227
	B	430	0	243	797	1470
	C	603	399	0	14	1016
	D	363	1338	0	0	1701
	Tot.	1396	2265	885	868	5414

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DS2 PM
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road	
1/1	528
1/2 (with short)	699(In) 642(Out)
1/3 (short)	57
2/1 (short)	243
2/2 (with short)	640(In) 397(Out)
2/3	400
2/4	430
3/1	617
3/2	399
4/1 (with short)	1701(In) 824(Out)
4/2 (short)	877
5/1	199
5/2	200
6/1	794
6/2	1072
7/1	243
8/1	642
9/1	397
9/2	400
9/3	430
10/1	1396
11/1	404
11/2	464
12/1	993
12/2	1272
13/1	617
14/1	885

Full Input Data And Results

Lane Saturation Flows

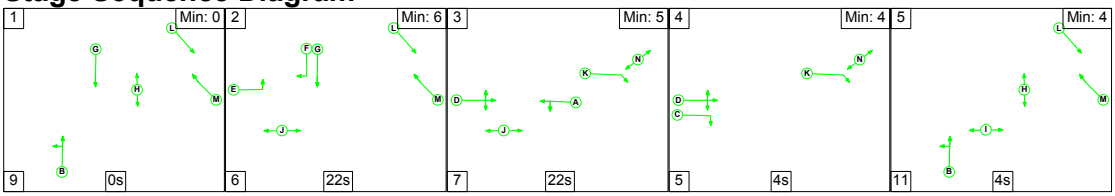
Junction: A508 Kingsthorpe Road/A5095 Kingsthorpe Road								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Mill Lane)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (Mill Lane)	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
1/3 (Mill Lane)	3.00	0.00	Y	Arm 11 Right	15.00	100.0 %	1741	1741
2/1 (A508 (N))	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
2/2 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/3 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
2/4 (A508 (N))	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
3/1 (A5095 (S))	2.90	0.00	Y	Arm 13 Left	20.00	100.0 %	1772	1772
3/2 (A5095 (S))	3.25	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1940	1940
4/1 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	55.9 %	1796	1796
				Arm 10 Left	10.00	44.1 %		
4/2 (A508 (S))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
5/1 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
5/2 (A5095 (N))	3.50	0.00	Y	Arm 12 Ahead	100.00	100.0 %	1936	1936
6/1 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
6/2 (A508 (Centre NB))	3.25	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1940	1940
7/1 (A5095 (Centre SB))	3.00	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1915	1915
8/1 (Link Road EB)	4.50	0.00	Y	Arm 14 Right	25.00	100.0 %	1948	1948
9/1 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/2 (A508 (Centre SB))	3.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	1915	1915
9/3 (A508 (Centre SB))	3.00	0.00	Y	Arm 10 Right	Inf	100.0 %	1915	1915
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

13/1	5.00	0.00	Y	Arm 10 Ahead	Inf	97.7 %	2108	2108
				Arm 11 Left	10.00	2.3 %		
14/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2017 Base AM' (FG1: '2017 Base AM', Plan 1: 'Network Control Plan 1')
C1 - ORN016

Stage Sequence Diagram

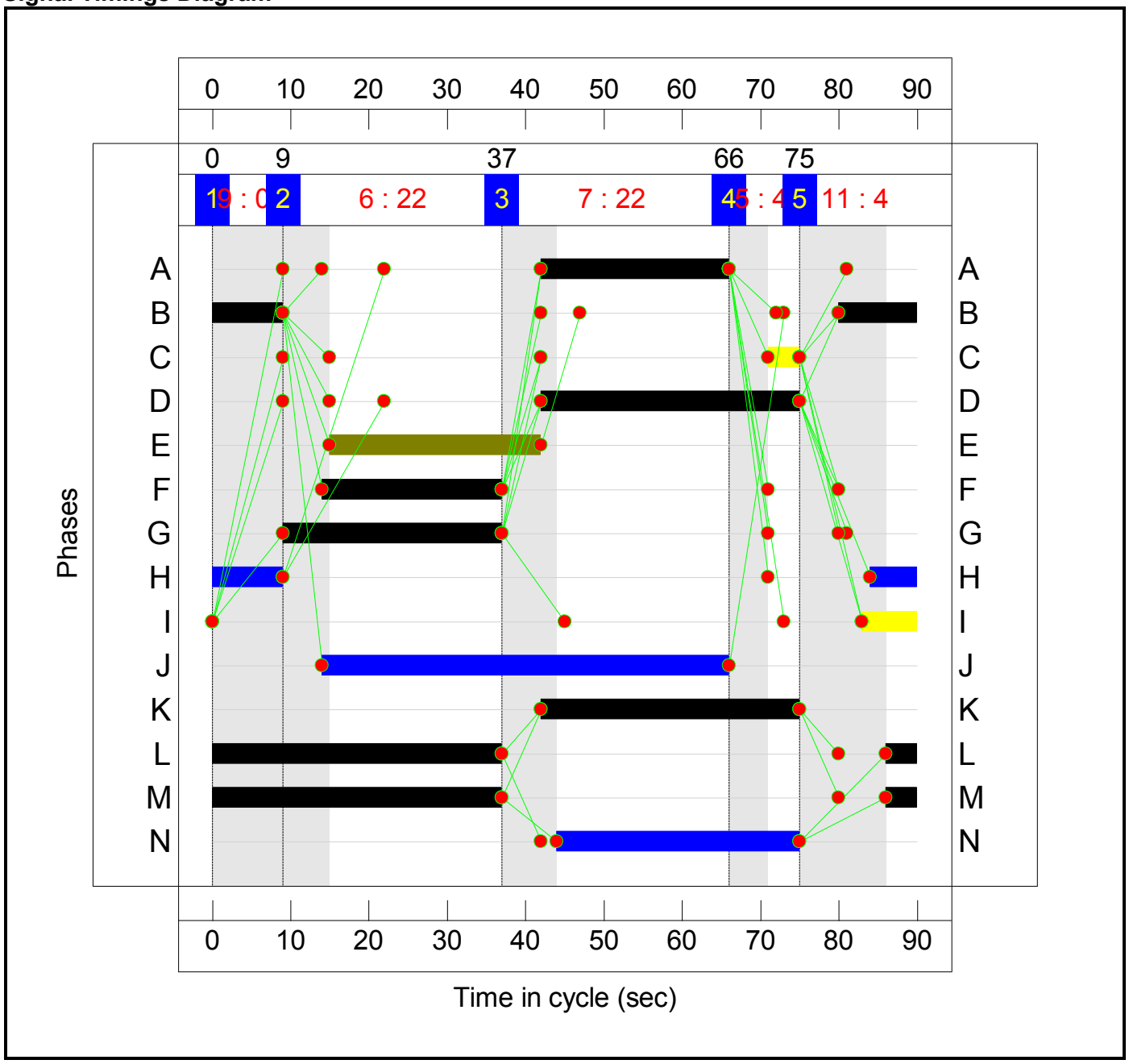


Stage Timings

Stage	1	2	3	4	5
Duration	0	22	22	4	4
Change Point	0	9	37	66	75

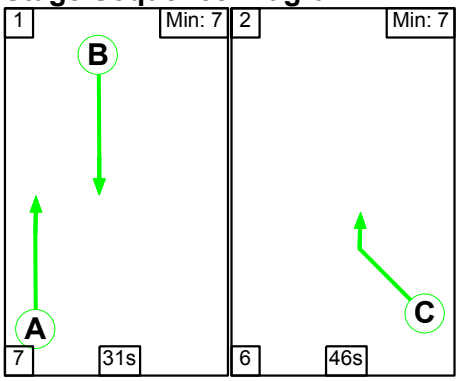
Full Input Data And Results

Signal Timings Diagram



C2 - ORN038

Stage Sequence Diagram

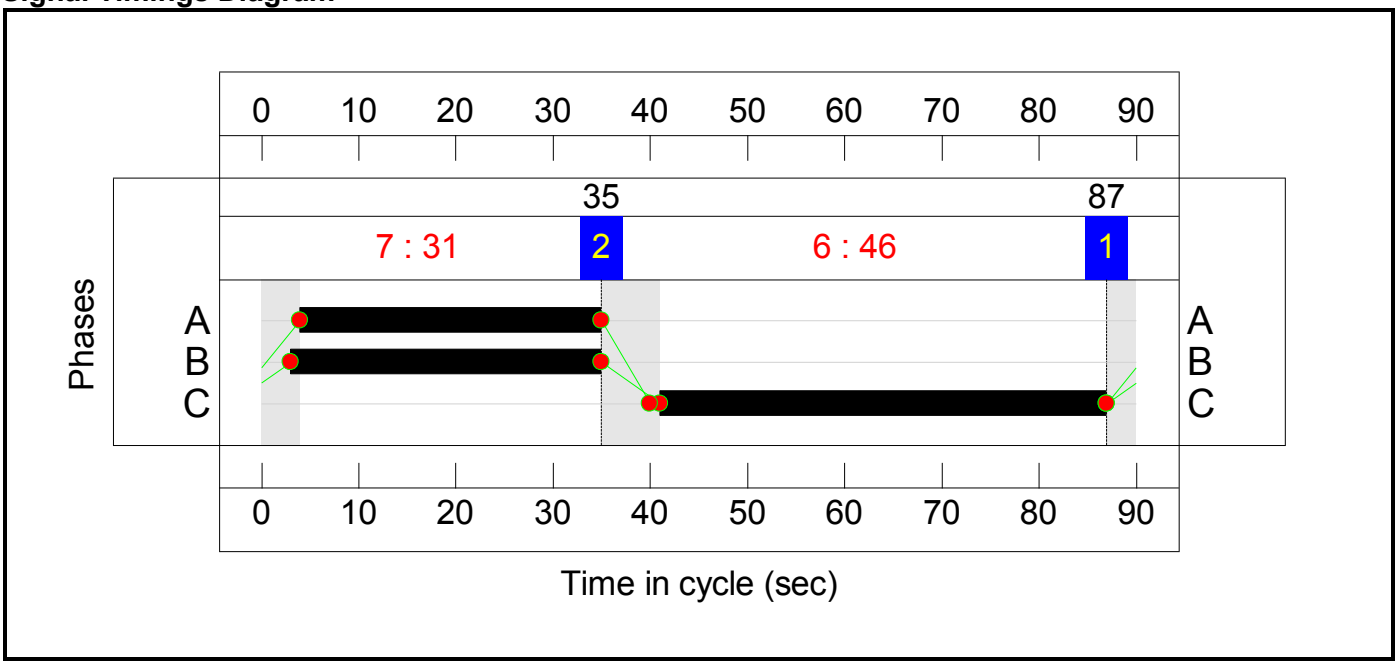


Full Input Data And Results

Stage Timings

Stage	1	2
Duration	31	46
Change Point	87	35

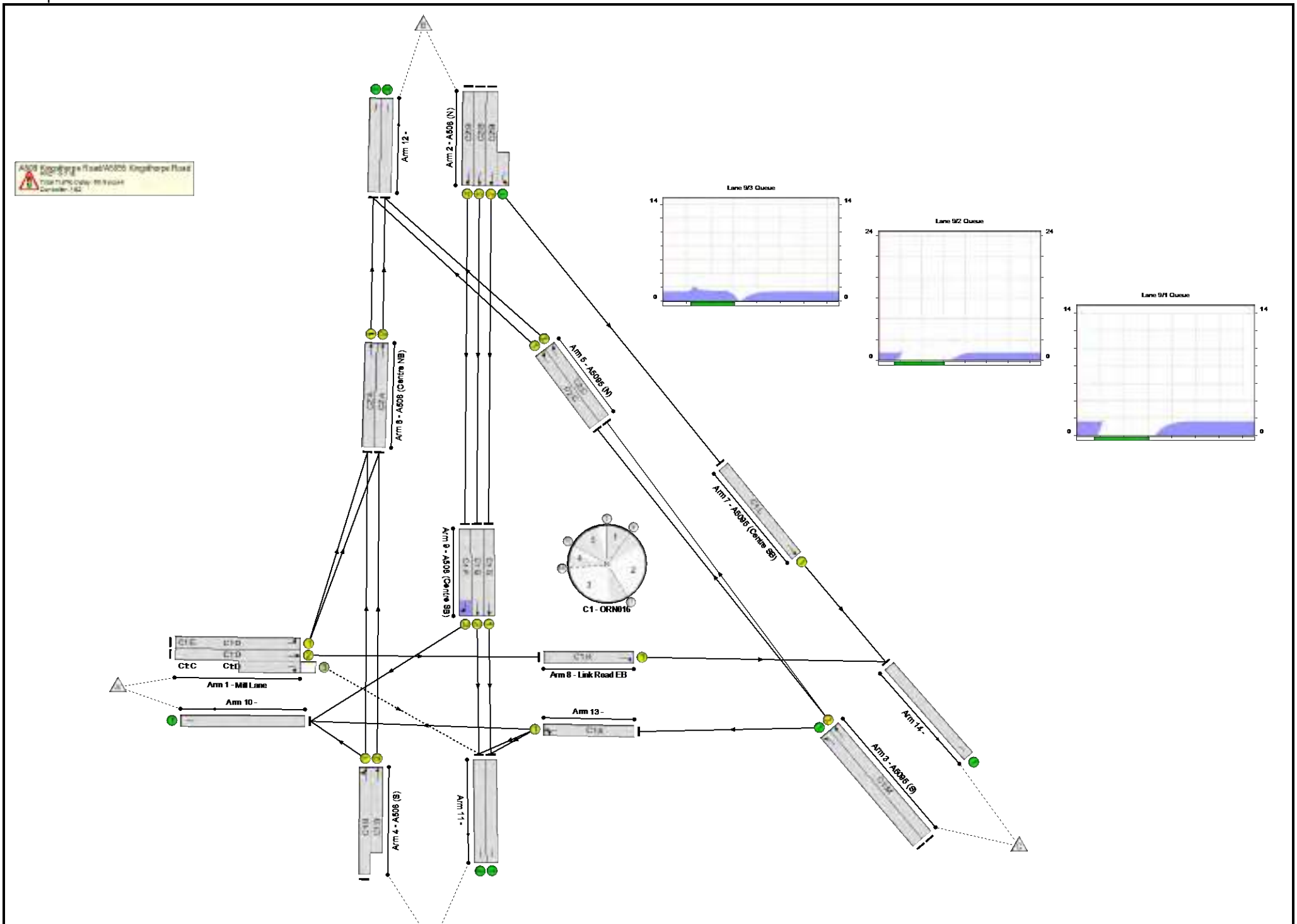
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.7%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.7%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	60	27	575	1665	1128	51.0%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	33	4	402	1915:1741	588+284	45.2 : 47.9%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	32	-	789	1915:2015	461+401	91.5 : 91.5%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	32	-	541	1915	702	77.0%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	32	-	504	1915	702	71.8%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	422	1772	1772	23.8%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	41	-	355	1940	905	39.2%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	585	1838:1915	408+301	82.5 : 82.5%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	46	-	177	1936	1011	17.5%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	46	-	178	1936	1011	17.6%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	31	-	533	1940	690	77.3%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	31	-	533	1940	690	77.3%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	41	-	367	1915	894	41.1%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	33	-	266	1948	736	36.1%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	28	-	422	1915	617	68.4%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	28	-	541	1915	617	87.7%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	23	-	504	1915	511	98.7%
10/1		U	N/A	N/A	-		-	-	-	1007	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	429	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	683	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	710	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	24	-	422	2105	585	72.2%
14/1		U	N/A	N/A	-		-	-	-	633	Inf	Inf	0.0%

Full Input Data And Results

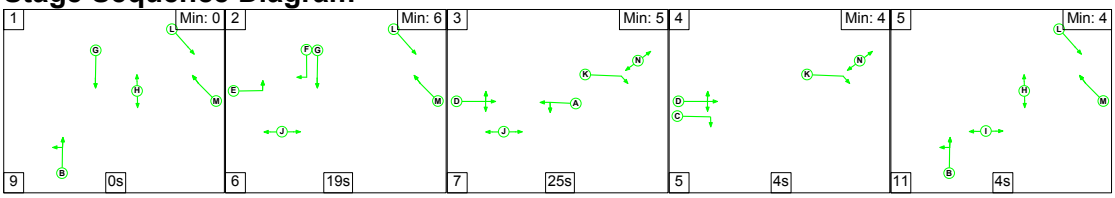
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**92**	**41**	**3**	**37.6**	**30.9**	**0.5**	**68.9**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**92**	**41**	**3**	**37.6**	**30.9**	**0.5**	**68.9**	**-**	**-**	**-**	**-**
1/1	575	575	-	-	-	1.1	0.5	-	1.7	10.4	7.0	0.5	7.5
1/2+1/3	402	402	92	41	3	2.3	0.4	0.5	3.2	28.7	4.8	0.4	5.2
2/2+2/1	789	789	-	-	-	3.7	4.8	-	8.5	38.7	14.8	4.8	19.6
2/3	541	541	-	-	-	3.8	1.6	-	5.4	36.1	11.9	1.6	13.5
2/4	504	504	-	-	-	3.4	1.3	-	4.7	33.5	10.8	1.3	12.0
3/1	422	422	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
3/2	355	355	-	-	-	1.5	0.3	-	1.9	18.9	5.7	0.3	6.0
4/1+4/2	585	585	-	-	-	5.3	2.3	-	7.6	46.5	8.0	2.3	10.2
5/1	177	177	-	-	-	1.3	0.1	-	1.4	27.8	4.4	0.1	4.5
5/2	178	178	-	-	-	1.3	0.1	-	1.4	27.9	4.4	0.1	4.5
6/1	533	533	-	-	-	2.4	1.7	-	4.1	27.7	10.4	1.7	12.1
6/2	533	533	-	-	-	2.6	1.7	-	4.2	28.5	10.5	1.7	12.2
7/1	367	367	-	-	-	1.8	0.3	-	2.2	21.5	5.2	0.3	5.5
8/1	266	266	-	-	-	0.2	0.3	-	0.5	7.0	0.4	0.3	0.7
9/1	422	422	-	-	-	1.0	1.1	-	2.1	17.9	1.7	1.1	2.8
9/2	541	541	-	-	-	1.0	3.3	-	4.3	28.6	1.7	3.3	5.0
9/3	504	504	-	-	-	1.3	9.7	-	11.0	78.5	2.1	9.7	11.8
10/1	1007	1007	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	429	429	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	683	683	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	710	710	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	422	422	-	-	-	3.4	1.3	-	4.7	40.3	9.5	1.3	10.8
14/1	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1 - ORN016	PRC for Signalled Lanes (%):	-9.7	Total Delay for Signalled Lanes (pcuHr):	39.09	Cycle Time (s):	90
C2 - ORN038	PRC for Signalled Lanes (%):	-1.7	Total Delay for Signalled Lanes (pcuHr):	29.66	Cycle Time (s):	90
	PRC Over All Lanes (%):	-9.7	Total Delay Over All Lanes(pcuHr):	68.91		

Full Input Data And Results
Scenario 2: '2017 Base PM' (FG2: '2017 Base PM', Plan 1: 'Network Control Plan 1')
C1 - ORN016

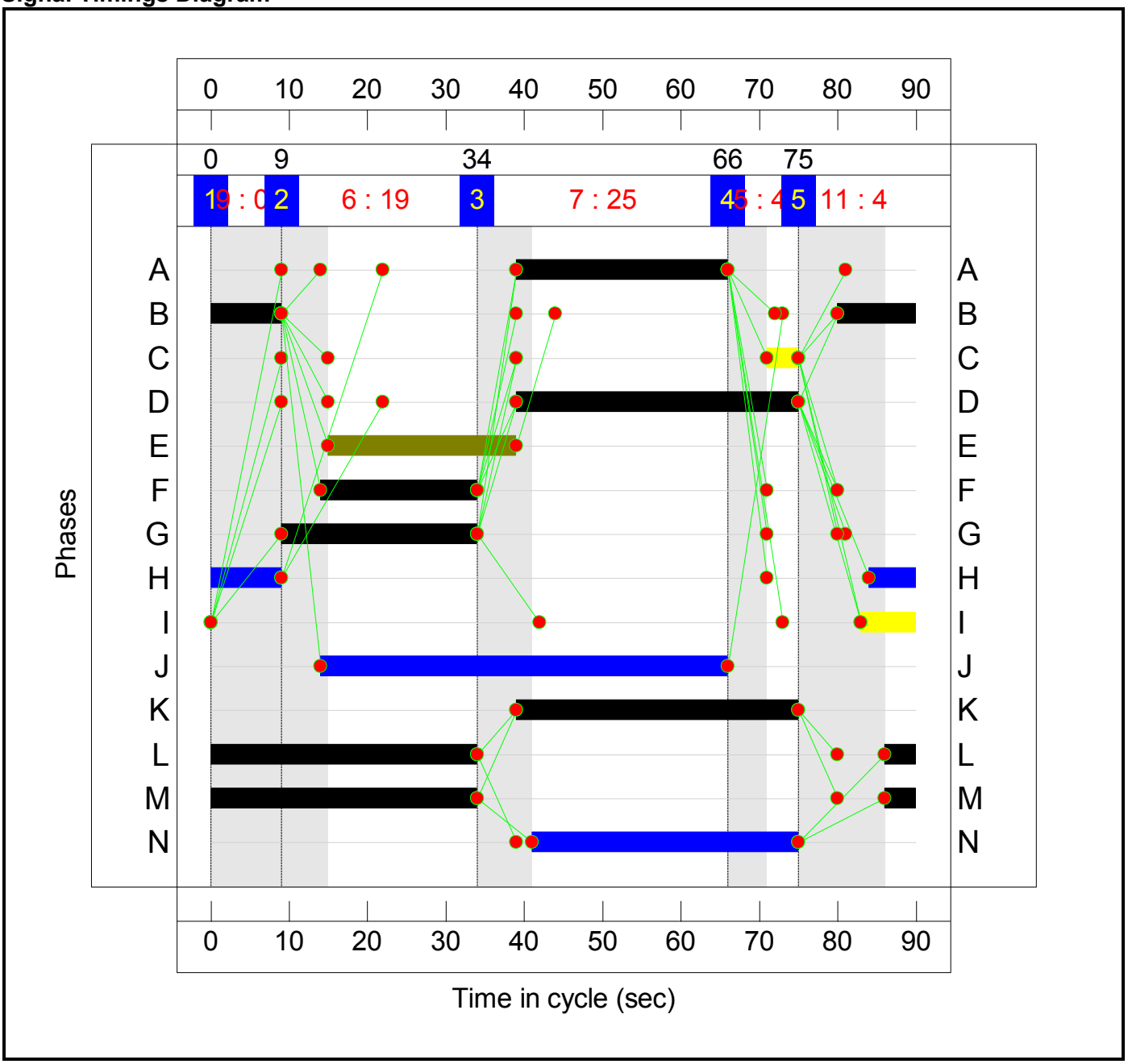
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	19	25	4	4
Change Point	0	9	34	66	75

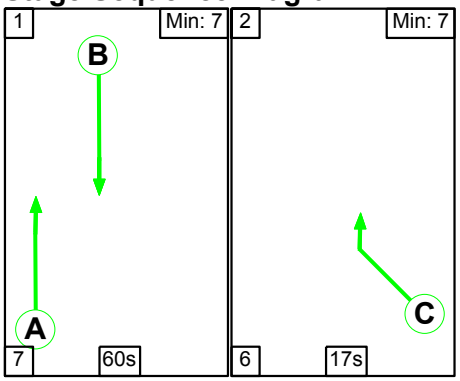
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

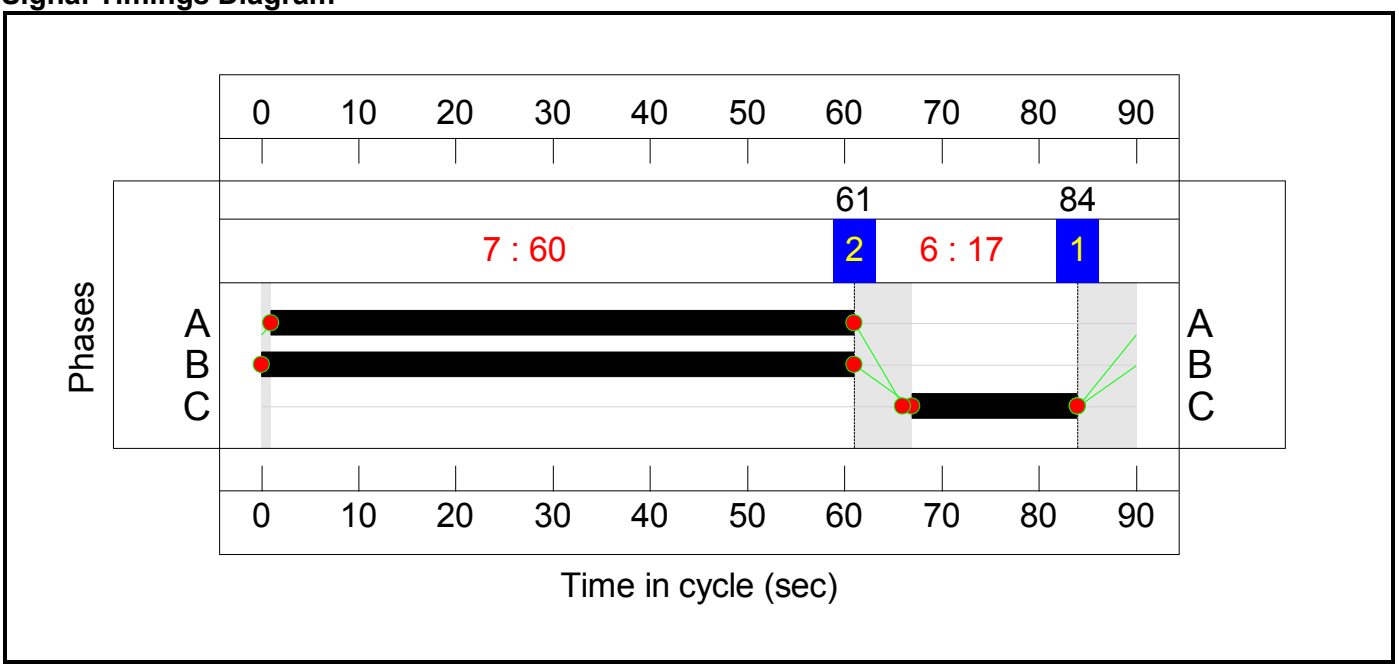
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	60	17
Change Point	84	61

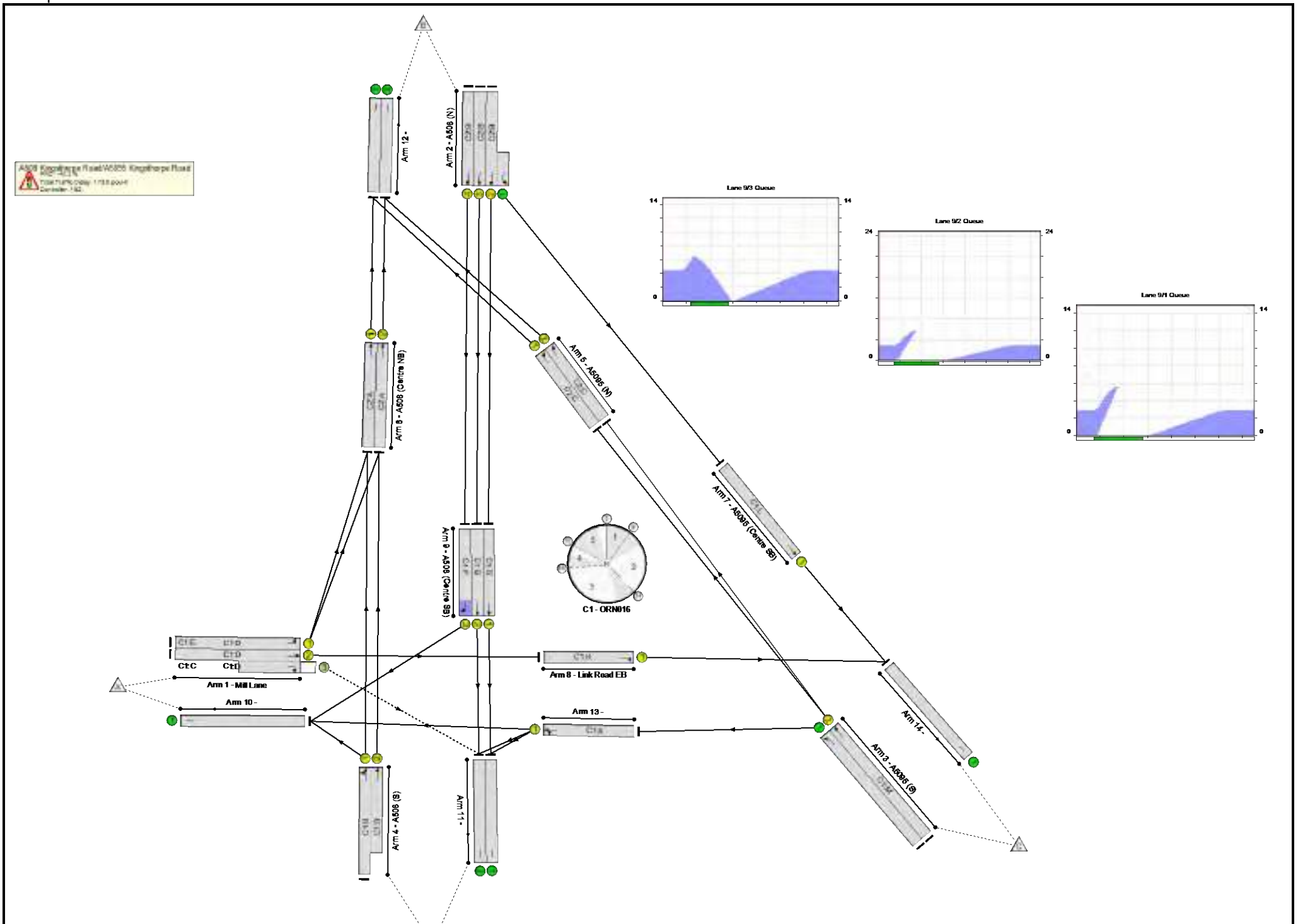
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.1%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.1%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	60	24	555	1665	1128	49.2%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	36	4	532	1915:1741	725+130	62.2 : 62.2%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	61	-	592	1915:2015	732+805	38.5 : 38.5%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	61	-	286	1915	1319	21.7%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	61	-	427	1915	1319	32.4%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	454	1772	1772	25.6%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	38	-	441	1940	841	52.5%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	1047	1823:1915	405+426	126.1 : 126.0%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	17	-	220	1936	387	56.8%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	17	-	221	1936	387	57.1%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	60	-	676	1940	1315	46.1%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	60	-	755	1940	1315	49.0%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	38	-	310	1915	830	37.4%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	36	-	451	1948	801	56.3%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	25	-	282	1915	553	51.0%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	25	-	286	1915	553	51.7%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	20	-	427	1915	447	95.6%
10/1		U	N/A	N/A	-		-	-	-	1037	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	290	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	374	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	896	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	976	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	27	-	454	2105	655	69.3%
14/1		U	N/A	N/A	-		-	-	-	761	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**73**	**6**	**2**	**48.4**	**125.1**	**0.3**	**173.8**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**73**	**6**	**2**	**48.4**	**125.1**	**0.3**	**173.8**	**-**	**-**	**-**	**-**
1/1	555	555	-	-	-	1.1	0.5	-	1.6	10.1	6.6	0.5	7.1
1/2+1/3	532	532	73	6	2	2.9	0.8	0.3	4.0	27.4	8.7	0.8	9.5
2/2+2/1	592	592	-	-	-	0.4	0.3	-	0.7	4.3	2.5	0.3	2.8
2/3	286	286	-	-	-	0.4	0.1	-	0.5	6.9	2.5	0.1	2.7
2/4	427	427	-	-	-	0.7	0.2	-	0.9	7.6	4.3	0.2	4.5
3/1	454	454	-	-	-	0.0	0.2	-	0.2	1.4	0.0	0.2	0.2
3/2	441	441	-	-	-	2.3	0.6	-	2.8	23.2	8.1	0.6	8.6
4/1+4/2	1047	831	-	-	-	20.9	110.5	-	131.4	451.9	23.1	110.5	133.7
5/1	220	220	-	-	-	3.2	0.7	-	3.9	63.3	5.5	0.7	6.2
5/2	221	221	-	-	-	3.2	0.7	-	3.9	63.4	5.5	0.7	6.2
6/1	606	606	-	-	-	0.6	0.4	-	1.0	5.8	5.5	0.4	5.9
6/2	645	645	-	-	-	0.6	0.5	-	1.1	6.0	11.6	0.5	12.1
7/1	310	310	-	-	-	1.5	0.3	-	1.8	20.7	5.2	0.3	5.5
8/1	451	451	-	-	-	0.4	0.6	-	1.0	8.2	0.7	0.6	1.3
9/1	282	282	-	-	-	1.7	0.5	-	2.2	28.3	5.7	0.5	6.2
9/2	286	286	-	-	-	1.7	0.5	-	2.3	28.4	5.9	0.5	6.4
9/3	427	427	-	-	-	3.4	6.5	-	9.9	83.3	6.4	6.5	12.9
10/1	1002	1002	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	290	290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	374	374	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	826	826	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	454	454	-	-	-	3.4	1.1	-	4.6	36.1	10.0	1.1	11.1

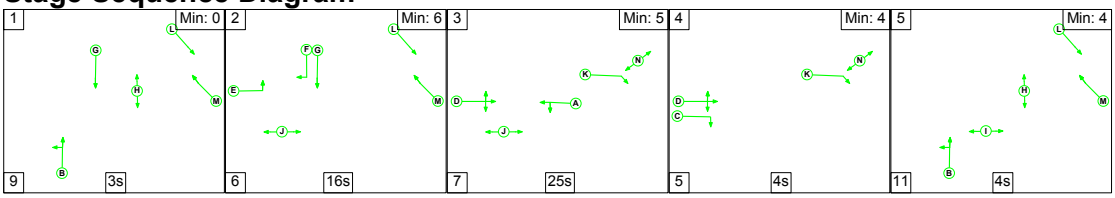
Full Input Data And Results

14/1	761	761	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN016	PRC for Signalled Lanes (%):	-40.2	Total Delay for Signalled Lanes (pcuHr):	161.60	Cycle Time (s):	90
C2 - ORN038	PRC for Signalled Lanes (%):	57.7	Total Delay for Signalled Lanes (pcuHr):	11.98	Cycle Time (s):	90
	PRC Over All Lanes (%):	-40.2	Total Delay Over All Lanes(pcuHr):	173.75		

Full Input Data And Results
Scenario 3: '2021 DM AM' (FG3: '2021 DM AM', Plan 1: 'Network Control Plan 1')
C1 - ORN016

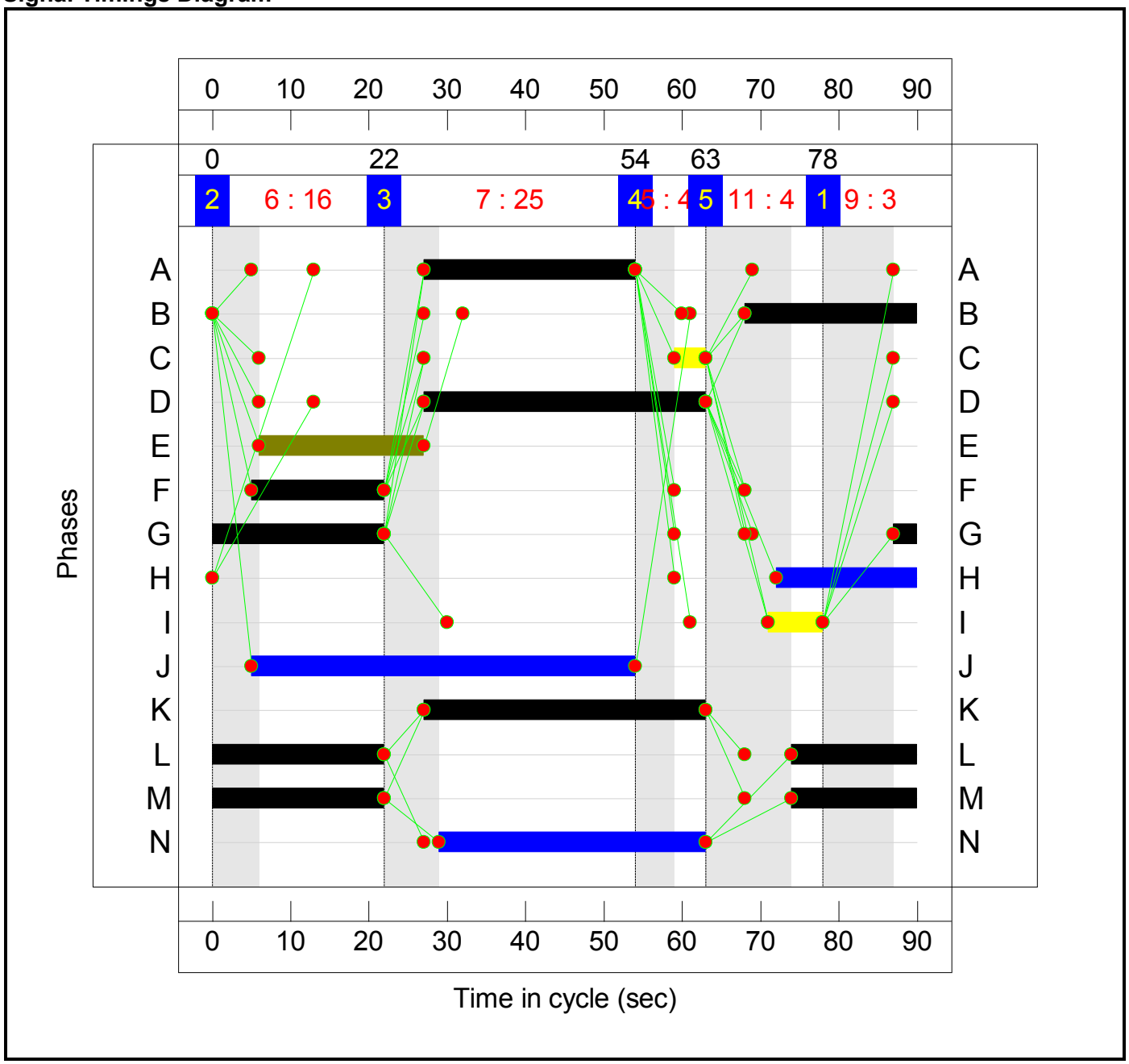
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	3	16	25	4	4
Change Point	78	0	22	54	63

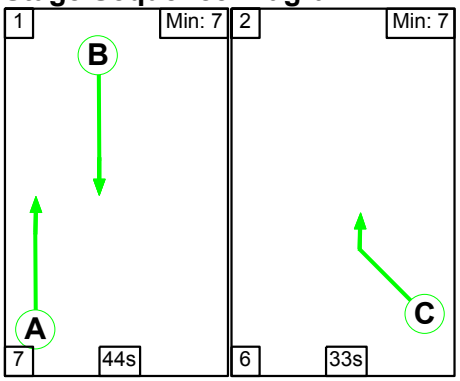
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

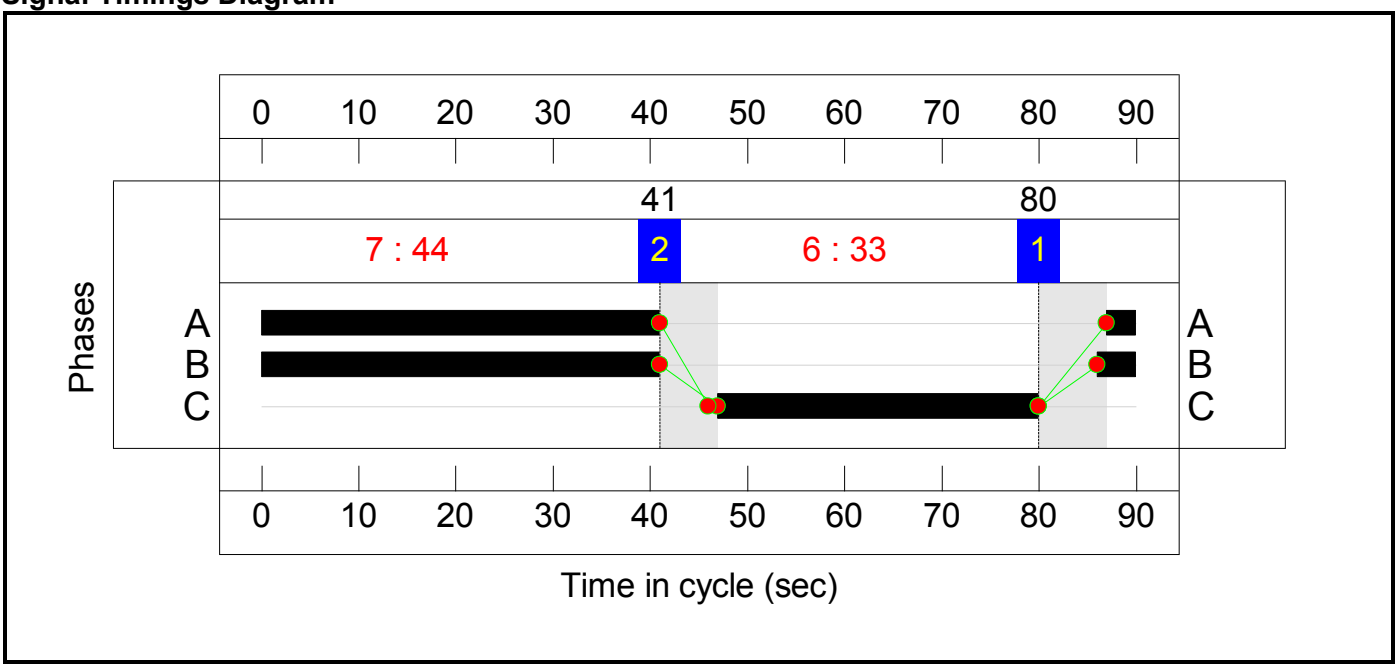
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	44	33
Change Point	80	41

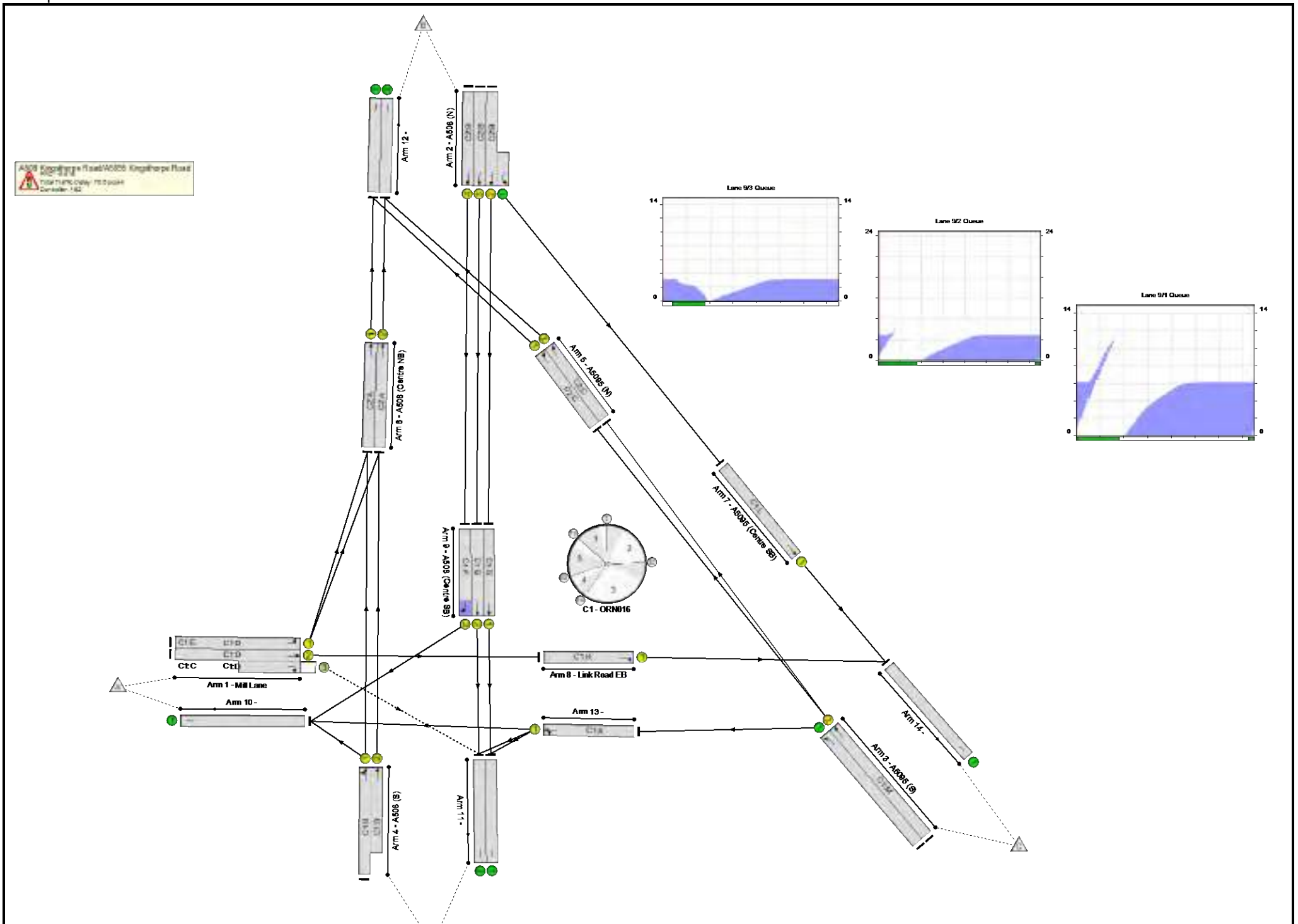
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.0%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.0%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	57	21	587	1665	1073	54.7%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	36	4	495	1915:1741	646+259	53.3 : 58.2%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	45	-	905	1915:2015	639+486	80.5 : 80.5%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	45	-	531	1915	979	54.3%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	45	-	366	1915	979	37.4%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	523	1772	1772	29.5%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	38	-	369	1940	841	43.9%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	22	-	752	1855:1915	474+375	88.6 : 88.6%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	33	-	184	1936	731	25.2%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	33	-	185	1936	731	25.3%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	44	-	625	1940	970	64.4%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	44	-	623	1940	970	64.2%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	38	-	391	1915	830	47.1%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	36	-	344	1948	801	43.0%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	25	-	514	1915	553	92.9%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	25	-	531	1915	553	96.0%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	17	-	366	1915	383	95.6%
10/1		U	N/A	N/A	-		-	-	-	962	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	523	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	691	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	809	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	808	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	27	-	523	2104	655	79.9%
14/1		U	N/A	N/A	-		-	-	-	735	Inf	Inf	0.0%

Full Input Data And Results

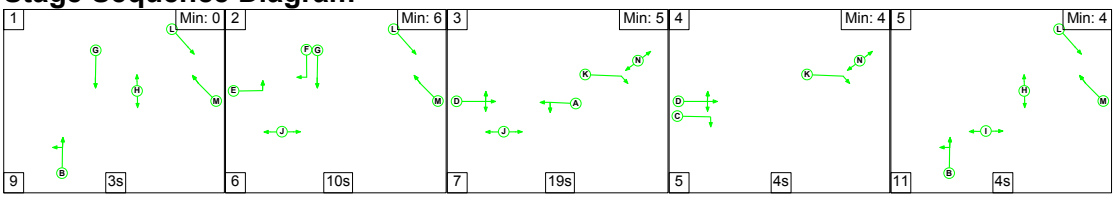
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**68**	**80**	**3**	**44.1**	**31.8**	**0.6**	**76.5**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**68**	**80**	**3**	**44.1**	**31.8**	**0.6**	**76.5**	**-**	**-**	**-**	**-**
1/1	587	587	-	-	-	1.4	0.6	-	2.0	12.5	8.0	0.6	8.6
1/2+1/3	495	495	68	80	3	2.7	0.6	0.6	3.9	28.6	6.1	0.6	6.7
2/2+2/1	905	905	-	-	-	2.8	2.0	-	4.9	19.4	14.9	2.0	16.9
2/3	531	531	-	-	-	2.2	0.6	-	2.8	18.9	8.9	0.6	9.4
2/4	366	366	-	-	-	1.4	0.3	-	1.7	16.2	5.5	0.3	5.8
3/1	523	523	-	-	-	0.0	0.2	-	0.2	1.4	0.0	0.2	0.2
3/2	369	369	-	-	-	1.8	0.4	-	2.2	21.7	6.4	0.4	6.7
4/1+4/2	752	752	-	-	-	6.5	3.6	-	10.2	48.6	10.0	3.6	13.6
5/1	184	184	-	-	-	2.3	0.2	-	2.4	47.9	4.6	0.2	4.8
5/2	185	185	-	-	-	2.3	0.2	-	2.5	48.0	4.6	0.2	4.8
6/1	625	625	-	-	-	1.8	0.9	-	2.7	15.8	11.6	0.9	12.5
6/2	623	623	-	-	-	2.0	0.9	-	2.9	16.9	11.9	0.9	12.8
7/1	391	391	-	-	-	2.9	0.4	-	3.3	30.4	7.9	0.4	8.3
8/1	344	344	-	-	-	0.3	0.4	-	0.7	7.0	0.5	0.4	0.9
9/1	514	514	-	-	-	4.0	5.2	-	9.2	64.3	11.2	5.2	16.4
9/2	531	531	-	-	-	3.0	7.2	-	10.3	69.7	6.5	7.2	13.7
9/3	366	366	-	-	-	2.4	6.2	-	8.6	84.3	3.3	6.2	9.5
10/1	962	962	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	523	523	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	691	691	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	809	809	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	808	808	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	523	523	-	-	-	4.1	1.9	-	6.1	41.7	11.9	1.9	13.8
14/1	735	735	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1 - ORN016	PRC for Signalled Lanes (%):	-6.6	Total Delay for Signalled Lanes (pcuHr):	56.40	Cycle Time (s):	90
C2 - ORN038	PRC for Signalled Lanes (%):	11.9	Total Delay for Signalled Lanes (pcuHr):	19.88	Cycle Time (s):	90
	PRC Over All Lanes (%):	-6.6	Total Delay Over All Lanes(pcuHr):	76.48		

Full Input Data And Results
Scenario 4: '2021 DM PM' (FG4: '2021 DM PM', Plan 1: 'Network Control Plan 1')
C1 - ORN016

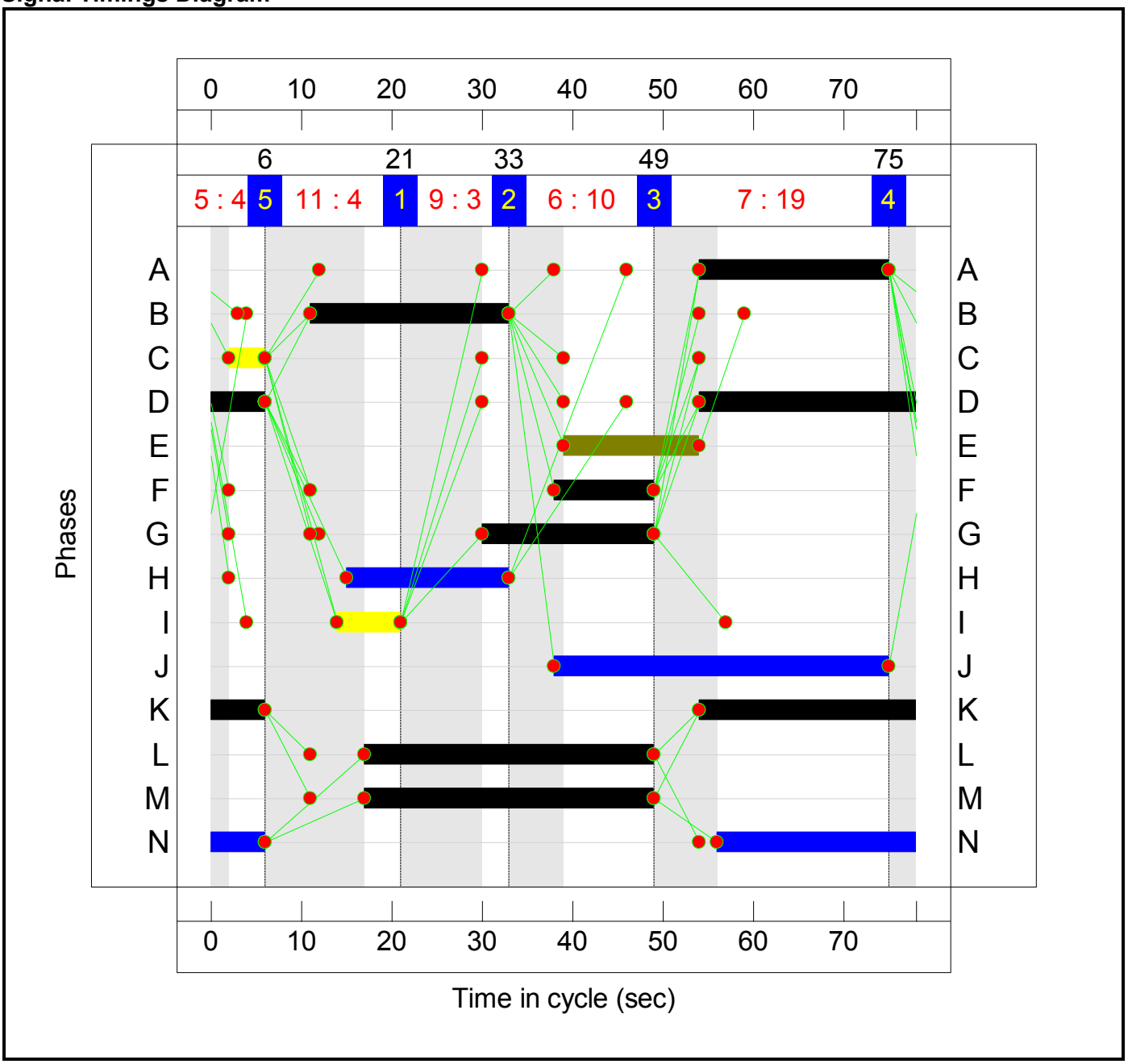
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	3	10	19	4	4
Change Point	21	33	49	75	6

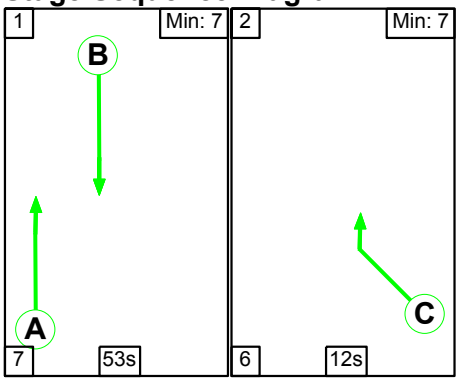
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

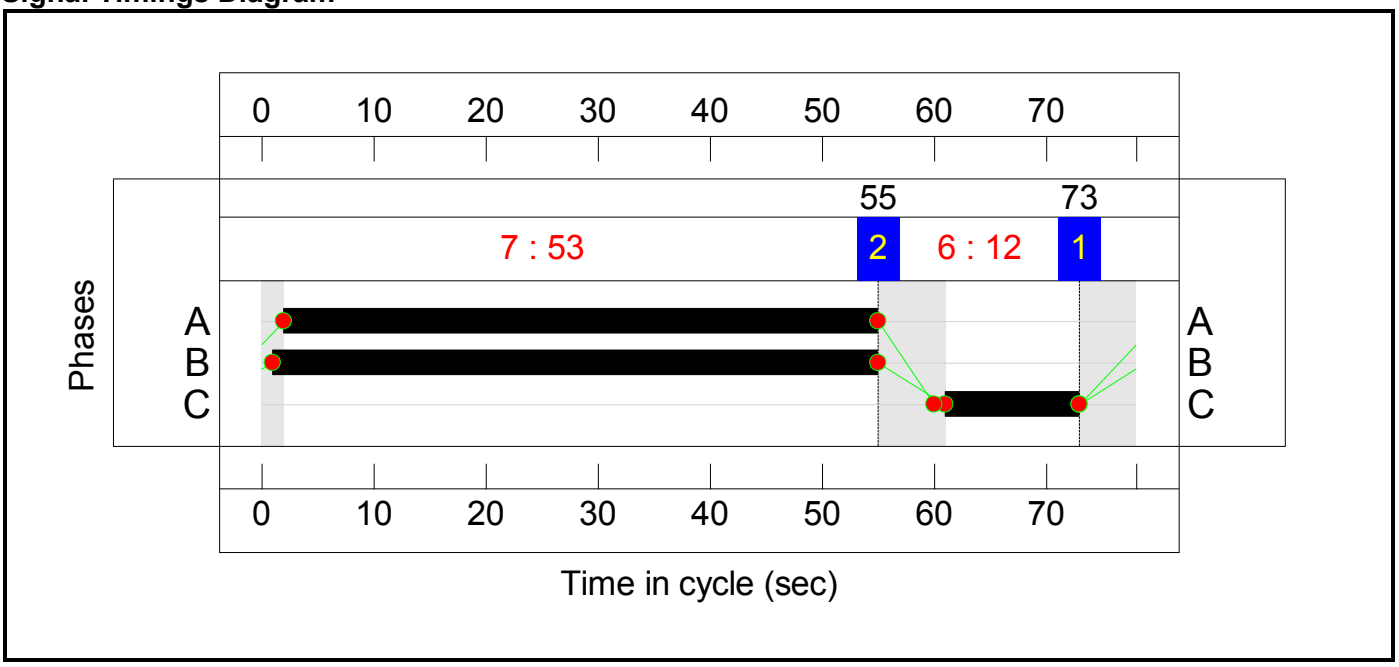
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	53	12
Change Point	73	55

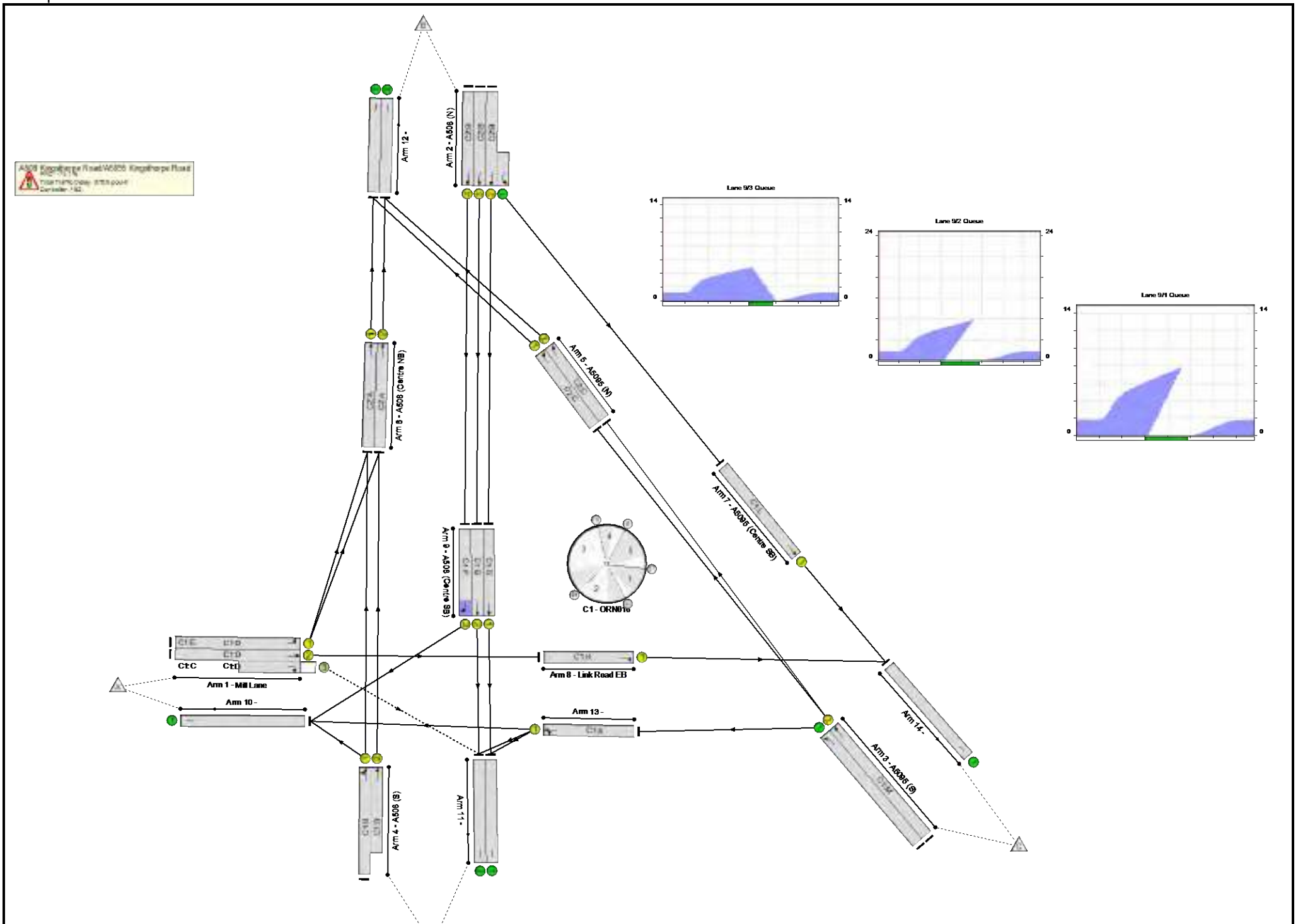
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**155.8%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**155.8%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	45	15	404	1665	982	41.1%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	30	4	581	1915:1741	723+109	69.9 : 69.9%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	54	-	655	1915:2015	895+612	43.5 : 43.5%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	54	-	390	1915	1350	28.9%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	54	-	269	1915	1350	19.9%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	383	1772	1772	21.6%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	32	-	303	1940	821	36.9%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	22	-	1706	1807:1915	533+563	155.8 : 155.6%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	12	-	151	1936	323	46.8%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	12	-	152	1936	323	47.1%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	53	-	764	1940	1343	43.6%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	53	-	1014	1940	1343	52.2%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	32	-	266	1915	810	32.8%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	30	-	505	1948	774	65.2%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	19	-	389	1915	491	79.2%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	19	-	390	1915	491	79.4%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	11	-	269	1915	295	91.3%
10/1		U	N/A	N/A	-		-	-	-	970	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	396	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	473	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	915	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1166	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	21	-	383	2103	593	64.6%
14/1		U	N/A	N/A	-		-	-	-	771	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**67**	**7**	**2**	**56.1**	**320.7**	**0.2**	**376.9**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**67**	**7**	**2**	**56.1**	**320.7**	**0.2**	**376.9**	**-**	**-**	**-**	**-**
1/1	404	404	-	-	-	1.0	0.3	-	1.3	11.8	4.7	0.3	5.1
1/2+1/3	581	581	67	7	2	3.0	1.1	0.2	4.4	27.1	9.1	1.1	10.2
2/2+2/1	655	655	-	-	-	0.5	0.4	-	0.8	4.6	3.0	0.4	3.4
2/3	390	390	-	-	-	0.5	0.2	-	0.7	6.1	3.0	0.2	3.2
2/4	269	269	-	-	-	0.3	0.1	-	0.4	5.6	1.9	0.1	2.1
3/1	383	383	-	-	-	0.0	0.1	-	0.1	1.3	0.0	0.1	0.1
3/2	303	303	-	-	-	1.3	0.3	-	1.6	18.9	4.5	0.3	4.8
4/1+4/2	1706	1096	-	-	-	35.4	306.4	-	341.8	721.3	43.8	306.4	350.3
5/1	151	151	-	-	-	1.1	0.4	-	1.6	37.3	3.3	0.4	3.7
5/2	152	152	-	-	-	1.1	0.4	-	1.6	37.4	3.3	0.4	3.7
6/1	586	586	-	-	-	0.4	0.4	-	0.8	5.1	2.4	0.4	2.8
6/2	701	701	-	-	-	0.2	0.5	-	0.8	3.9	1.2	0.5	1.7
7/1	266	266	-	-	-	1.1	0.2	-	1.4	18.4	3.8	0.2	4.1
8/1	505	505	-	-	-	0.4	0.9	-	1.4	9.8	0.8	0.9	1.7
9/1	389	389	-	-	-	2.5	1.8	-	4.3	39.8	7.8	1.8	9.6
9/2	390	390	-	-	-	2.5	1.9	-	4.3	40.0	7.8	1.9	9.7
9/3	269	269	-	-	-	2.1	4.0	-	6.1	82.1	4.9	4.0	8.9
10/1	851	851	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	396	396	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	473	473	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	737	737	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	853	853	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	383	383	-	-	-	2.6	0.9	-	3.5	33.1	7.2	0.9	8.1

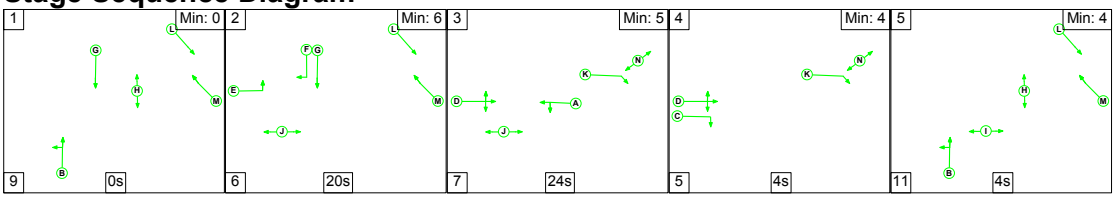
Full Input Data And Results

14/1	771	771	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN016	PRC for Signalled Lanes (%):	-73.1	Total Delay for Signalled Lanes (pcuHr):	370.13	Cycle Time (s):	78
C2 - ORN038	PRC for Signalled Lanes (%):	72.4	Total Delay for Signalled Lanes (pcuHr):	6.66	Cycle Time (s):	78
	PRC Over All Lanes (%):	-73.1	Total Delay Over All Lanes(pcuHr):	376.93		

Full Input Data And Results
Scenario 5: '2021 DS2 AM' (FG5: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')
C1 - ORN016

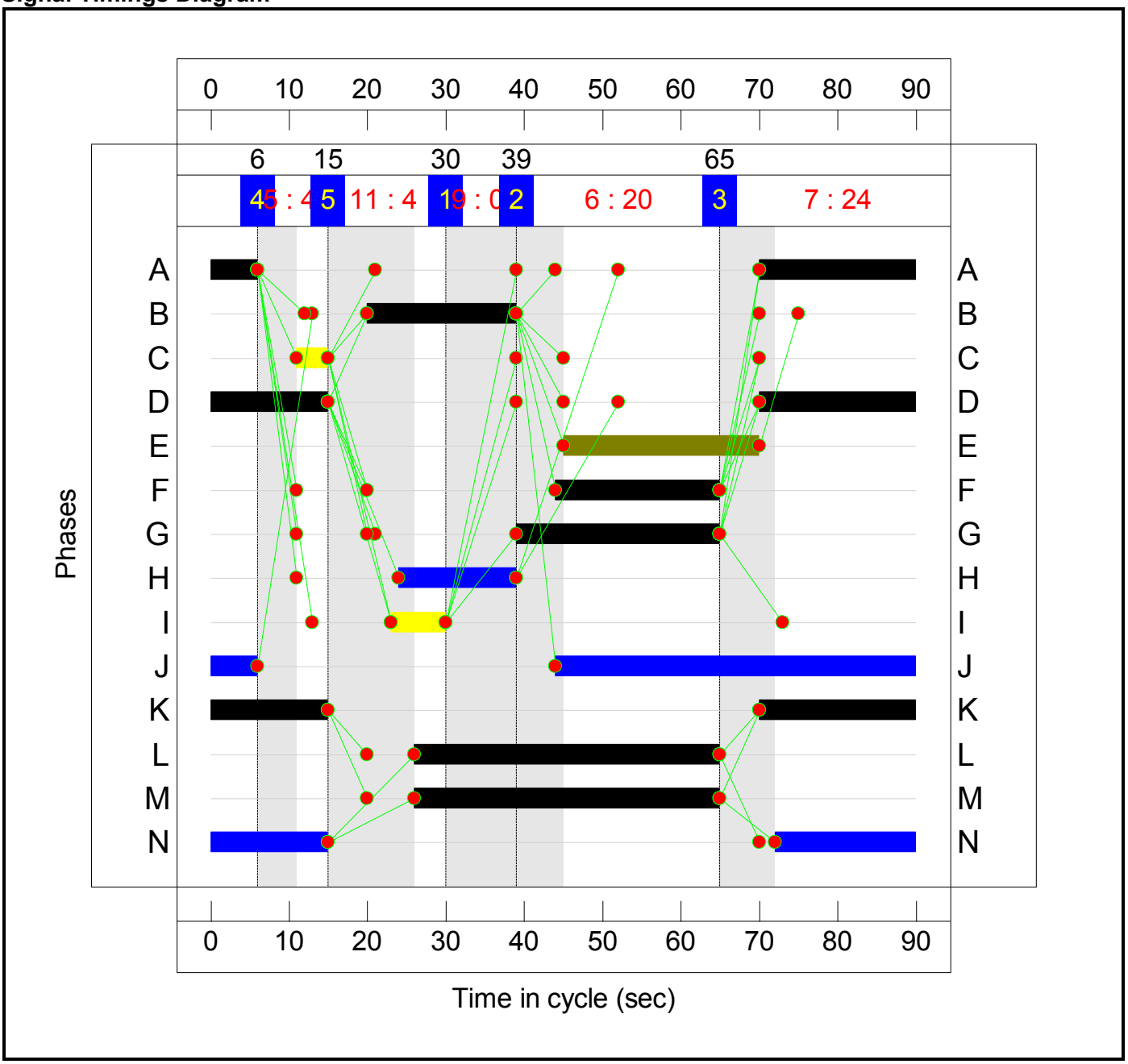
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	20	24	4	4
Change Point	30	39	65	6	15

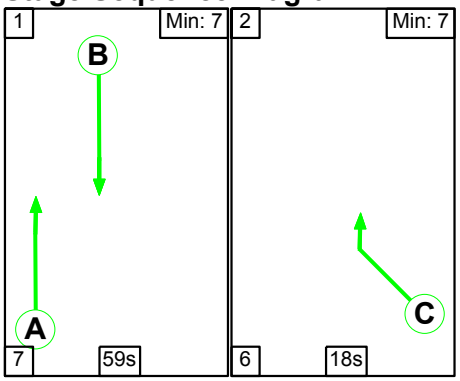
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

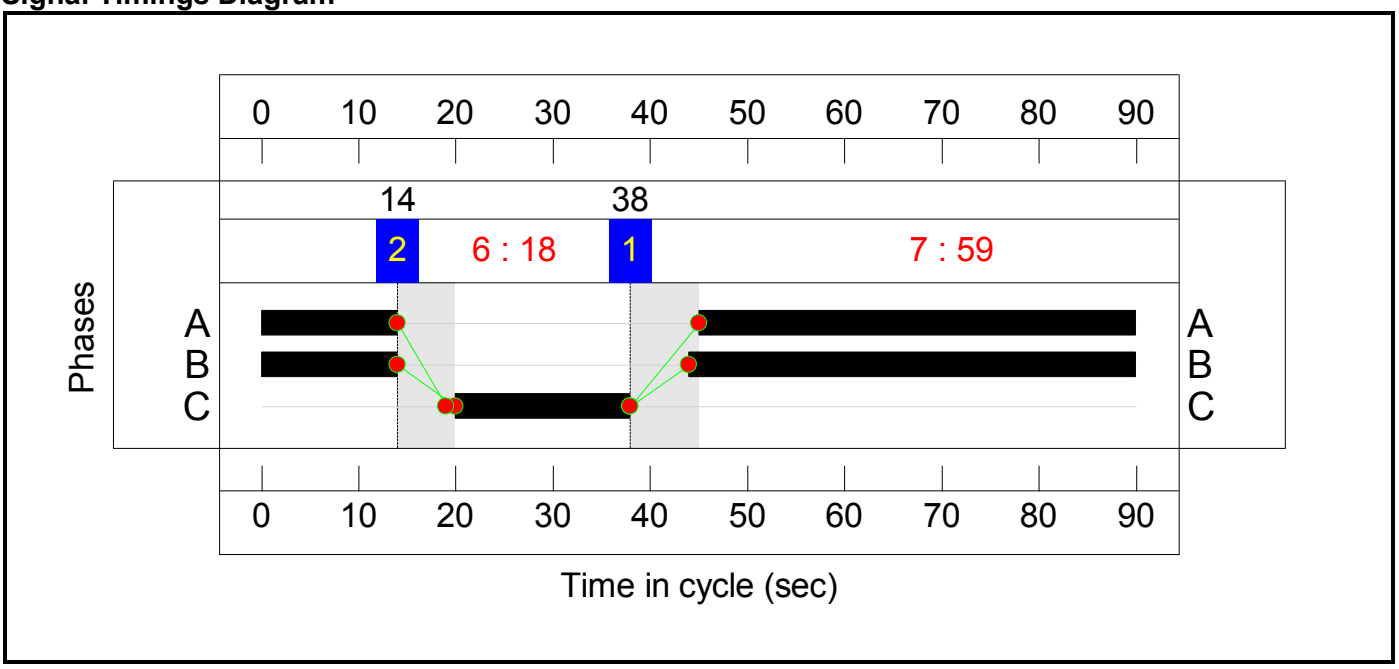
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	59	18
Change Point	38	14

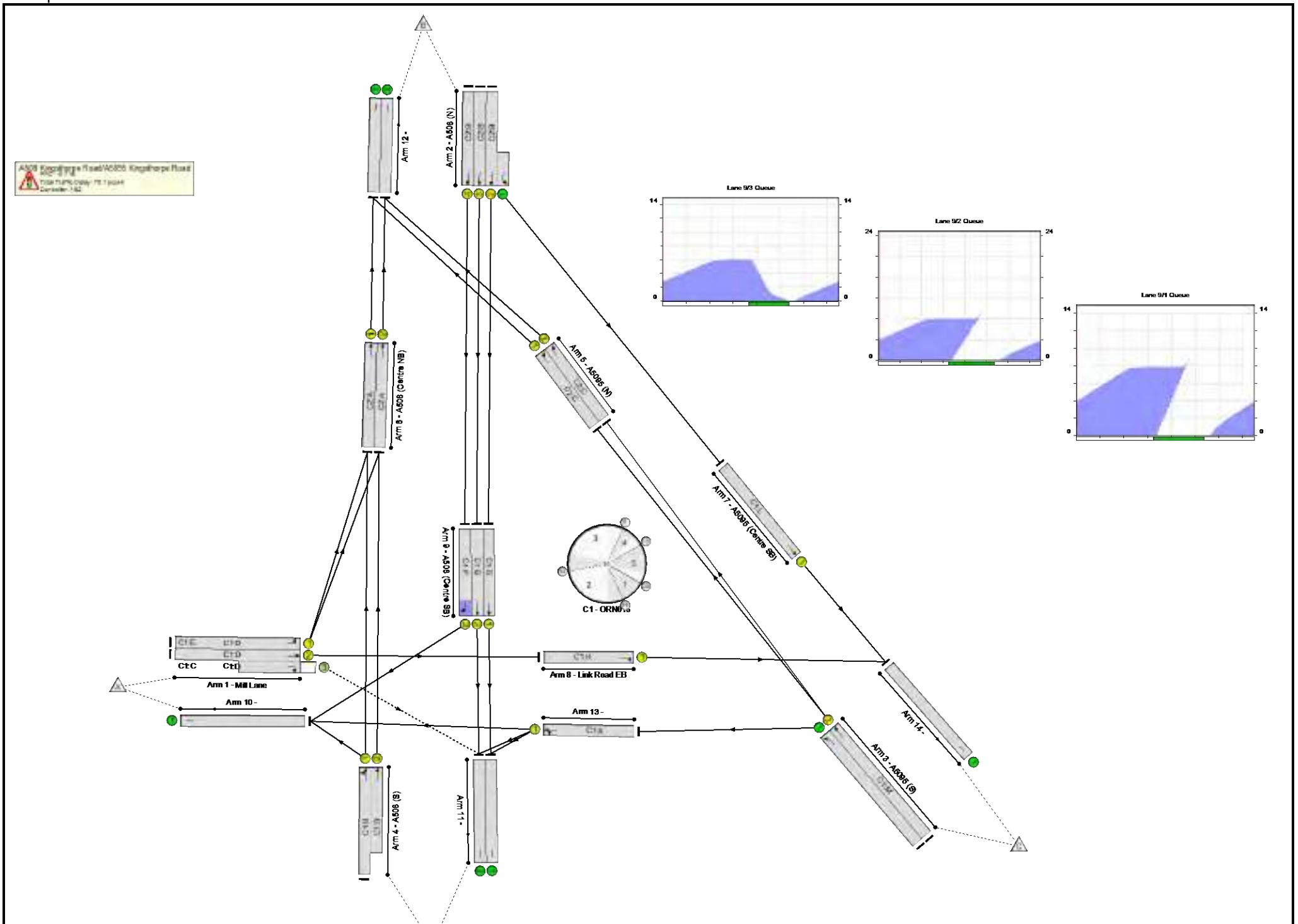
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.8%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.8%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	60	25	587	1665	1128	52.0%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	35	4	491	1915:1741	634+250	54.2 : 58.9%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	60	-	914	1915:2015	825+625	63.0 : 63.0%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	60	-	547	1915	1298	42.1%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	60	-	424	1915	1298	32.7%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	524	1772	1772	29.6%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	39	-	381	1940	862	44.2%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	723	1854:1915	412+327	97.8 : 97.8%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	18	-	190	1936	409	46.5%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	18	-	191	1936	409	46.7%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	59	-	611	1940	1293	47.2%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	59	-	610	1940	1293	47.2%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	39	-	394	1915	851	46.3%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	35	-	344	1948	779	44.1%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	26	-	520	1915	574	90.5%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	26	-	547	1915	574	95.2%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	21	-	424	1915	468	90.6%
10/1		U	N/A	N/A	-		-	-	-	1020	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	529	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	801	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	801	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	26	-	524	2105	632	83.0%
14/1		U	N/A	N/A	-		-	-	-	738	Inf	Inf	0.0%

Full Input Data And Results

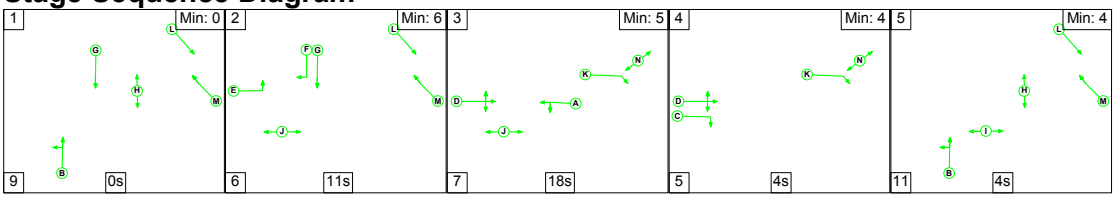
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**58**	**86**	**3**	**42.5**	**33.0**	**0.6**	**76.1**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**58**	**86**	**3**	**42.5**	**33.0**	**0.6**	**76.1**	**-**	**-**	**-**	**-**
1/1	587	587	-	-	-	1.2	0.5	-	1.7	10.5	7.2	0.5	7.7
1/2+1/3	491	491	58	86	3	2.8	0.6	0.6	4.0	29.4	6.2	0.6	6.8
2/2+2/1	914	914	-	-	-	1.0	0.8	-	1.9	7.3	7.9	0.8	8.7
2/3	547	547	-	-	-	1.0	0.4	-	1.4	8.9	6.1	0.4	6.4
2/4	424	424	-	-	-	0.7	0.2	-	0.9	8.1	4.4	0.2	4.6
3/1	524	524	-	-	-	0.0	0.2	-	0.2	1.4	0.0	0.2	0.2
3/2	381	381	-	-	-	1.8	0.4	-	2.2	21.0	6.6	0.4	7.0
4/1+4/2	723	723	-	-	-	6.8	10.0	-	16.8	83.7	10.0	10.0	20.0
5/1	190	190	-	-	-	2.8	0.4	-	3.2	60.6	4.0	0.4	4.4
5/2	191	191	-	-	-	2.8	0.4	-	3.2	60.7	4.0	0.4	4.5
6/1	611	611	-	-	-	1.5	0.4	-	2.0	11.5	11.6	0.4	12.1
6/2	610	610	-	-	-	1.7	0.4	-	2.2	12.8	11.9	0.4	12.3
7/1	394	394	-	-	-	2.1	0.4	-	2.6	23.5	7.2	0.4	7.7
8/1	344	344	-	-	-	0.3	0.4	-	0.7	7.2	0.5	0.4	0.9
9/1	520	520	-	-	-	4.1	4.1	-	8.3	57.2	8.6	4.1	12.7
9/2	547	547	-	-	-	4.2	6.7	-	10.9	71.8	9.1	6.7	15.8
9/3	424	424	-	-	-	3.4	4.1	-	7.4	63.0	6.0	4.1	10.1
10/1	1020	1020	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	529	529	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	702	702	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	801	801	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	801	801	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	524	524	-	-	-	4.3	2.3	-	6.6	45.4	12.1	2.3	14.4
14/1	738	738	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1 - ORN016	PRC for Signalled Lanes (%):	-8.7	Total Delay for Signalled Lanes (pcuHr):	61.20	Cycle Time (s):	90
C2 - ORN038	PRC for Signalled Lanes (%):	42.8	Total Delay for Signalled Lanes (pcuHr):	14.72	Cycle Time (s):	90
	PRC Over All Lanes (%):	-8.7	Total Delay Over All Lanes(pcuHr):	76.13		

Full Input Data And Results
Scenario 6: '2021 DS2 PM' (FG6: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')
C1 - ORN016

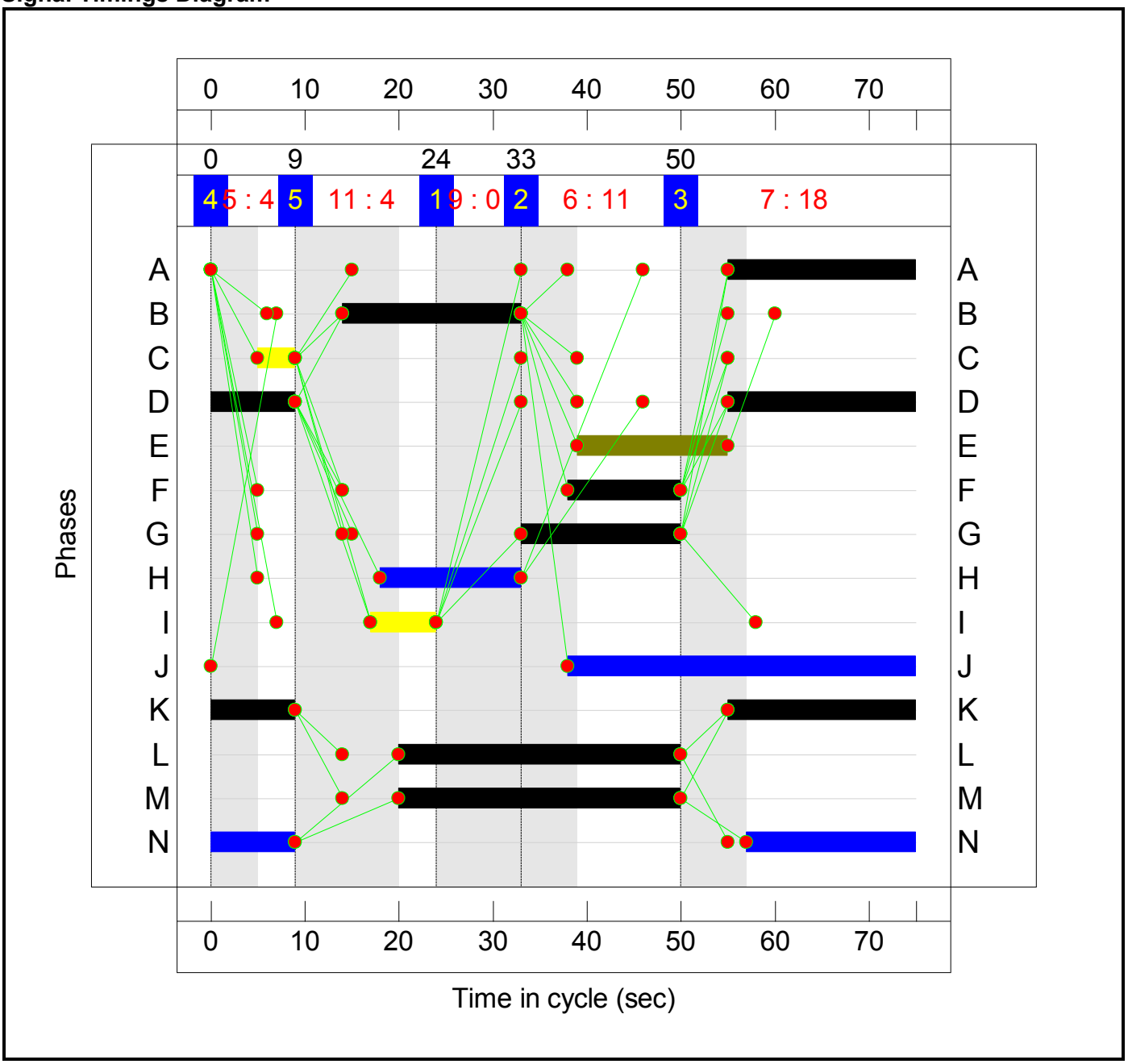
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	11	18	4	4
Change Point	24	33	50	0	9

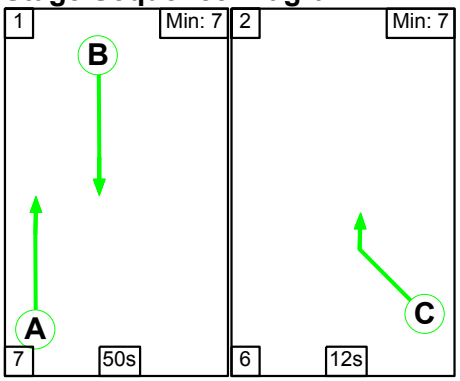
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

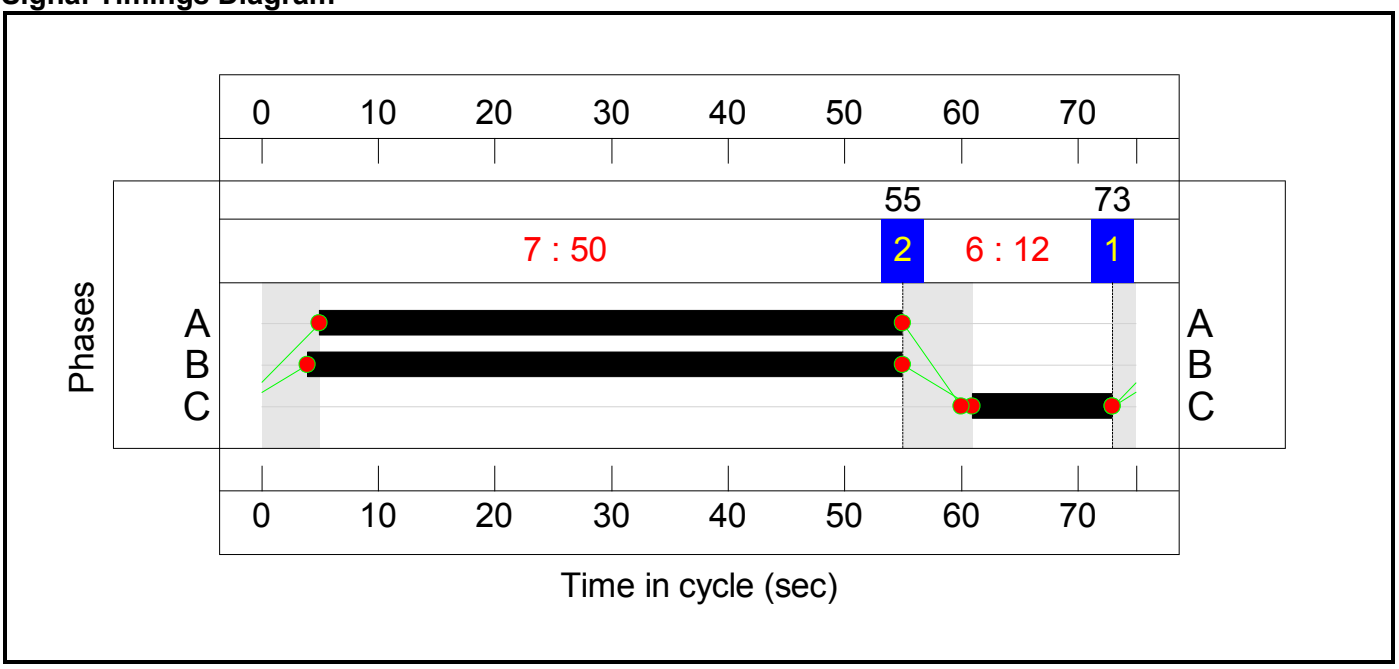
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	50	12
Change Point	73	55

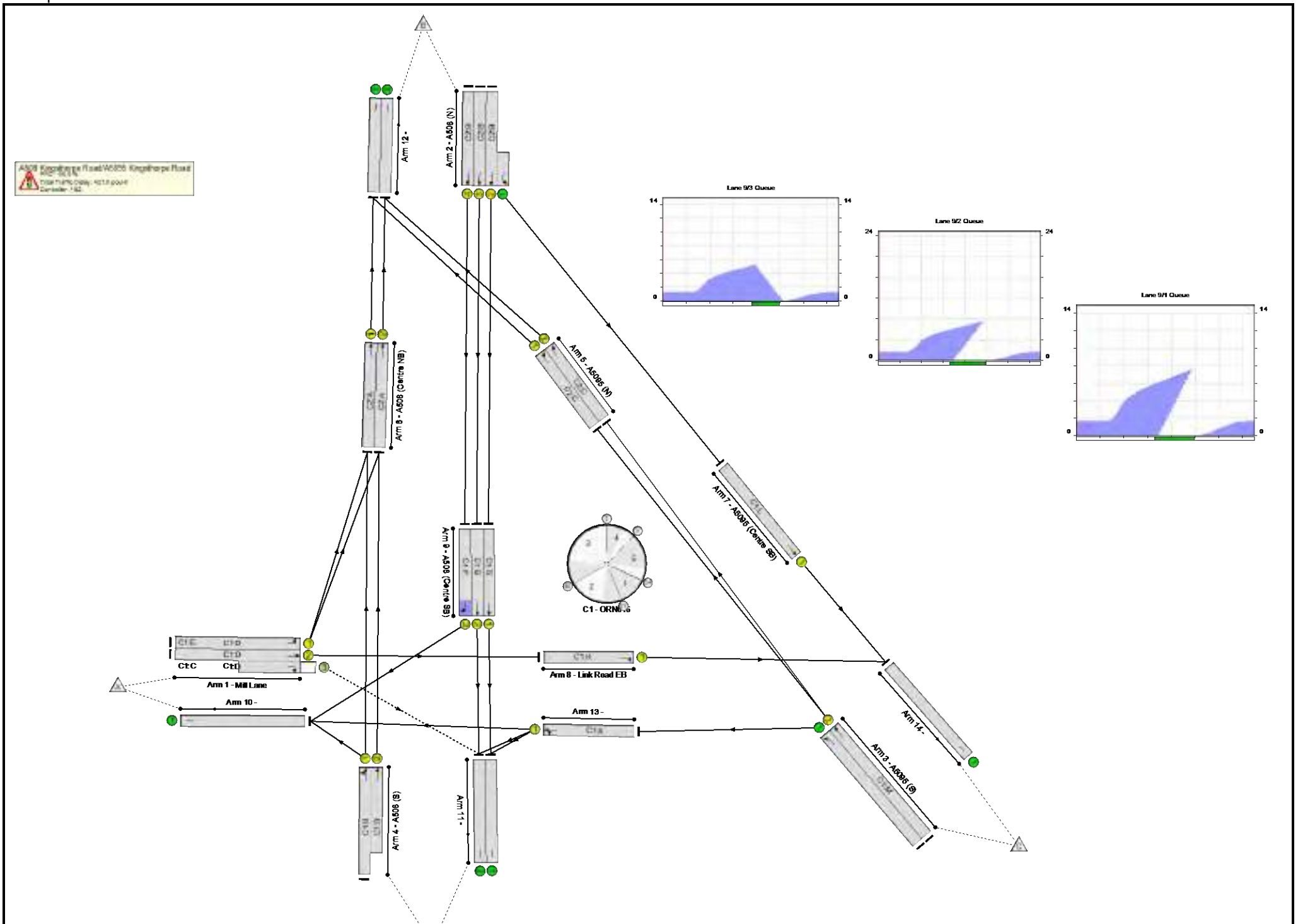
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**169.8%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**169.8%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	45	16	431	1665	1021	42.2%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	29	4	588	1915:1741	731+107	70.2 : 70.2%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	51	-	670	1915:2015	863+639	44.6 : 44.6%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	51	-	386	1915	1328	29.1%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	51	-	304	1915	1328	22.9%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	408	1772	1772	23.0%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	30	-	332	1940	802	41.4%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	1684	1807:1915	482+511	169.8 : 169.6%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	12	-	166	1936	336	49.5%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	12	-	166	1936	336	49.5%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	50	-	765	1940	1319	42.6%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	50	-	1025	1940	1319	50.8%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	30	-	285	1915	792	36.0%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	29	-	513	1948	779	65.8%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	17	-	385	1915	460	83.8%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	17	-	386	1915	460	84.0%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	12	-	304	1915	332	91.6%
10/1		U	N/A	N/A	-		-	-	-	1023	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	468	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	931	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1191	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	20	-	408	2104	589	69.3%
14/1		U	N/A	N/A	-		-	-	-	798	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**66**	**7**	**2**	**57.8**	**363.0**	**0.2**	**421.0**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**66**	**7**	**2**	**57.8**	**363.0**	**0.2**	**421.0**	**-**	**-**	**-**	**-**
1/1	431	431	-	-	-	0.9	0.4	-	1.3	10.6	4.7	0.4	5.0
1/2+1/3	588	588	66	7	2	2.9	1.2	0.2	4.3	26.3	8.8	1.2	9.9
2/2+2/1	670	670	-	-	-	0.5	0.4	-	0.9	4.7	3.0	0.4	3.4
2/3	386	386	-	-	-	0.5	0.2	-	0.7	6.3	3.0	0.2	3.2
2/4	304	304	-	-	-	0.4	0.1	-	0.5	6.0	2.3	0.1	2.4
3/1	408	408	-	-	-	0.0	0.1	-	0.1	1.3	0.0	0.1	0.1
3/2	332	332	-	-	-	1.4	0.4	-	1.8	19.4	4.9	0.4	5.2
4/1+4/2	1684	993	-	-	-	36.8	346.9	-	383.7	820.3	43.1	346.9	390.0
5/1	166	166	-	-	-	1.1	0.5	-	1.6	34.9	3.4	0.5	3.9
5/2	166	166	-	-	-	1.1	0.5	-	1.6	34.9	3.4	0.5	3.9
6/1	562	562	-	-	-	0.5	0.4	-	0.8	5.3	2.4	0.4	2.8
6/2	670	670	-	-	-	0.3	0.5	-	0.8	4.1	1.4	0.5	1.9
7/1	285	285	-	-	-	1.2	0.3	-	1.5	18.7	4.0	0.3	4.3
8/1	513	513	-	-	-	0.4	1.0	-	1.4	9.8	0.8	1.0	1.7
9/1	385	385	-	-	-	2.4	2.4	-	4.9	45.4	7.6	2.4	10.0
9/2	386	386	-	-	-	2.4	2.5	-	4.9	45.6	7.6	2.5	10.1
9/3	304	304	-	-	-	2.2	4.2	-	6.4	75.8	5.2	4.2	9.4
10/1	889	889	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	392	392	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	468	468	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	728	728	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	836	836	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	408	408	-	-	-	2.7	1.1	-	3.8	33.9	7.5	1.1	8.6

Full Input Data And Results

14/1	798	798	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

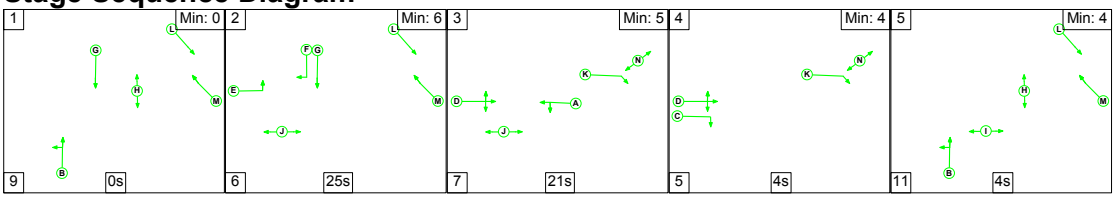
C1 - ORN016	PRC for Signalled Lanes (%):	-88.6	Total Delay for Signalled Lanes (pcuHr):	413.96	Cycle Time (s):	75
C2 - ORN038	PRC for Signalled Lanes (%):	77.3	Total Delay for Signalled Lanes (pcuHr):	6.87	Cycle Time (s):	75
	PRC Over All Lanes (%):	-88.6	Total Delay Over All Lanes(pcuHr):	420.97		

Full Input Data And Results

Scenario 7: '2031 DM AM' (FG7: '2031 DM AM', Plan 1: 'Network Control Plan 1')

C1 - ORN016

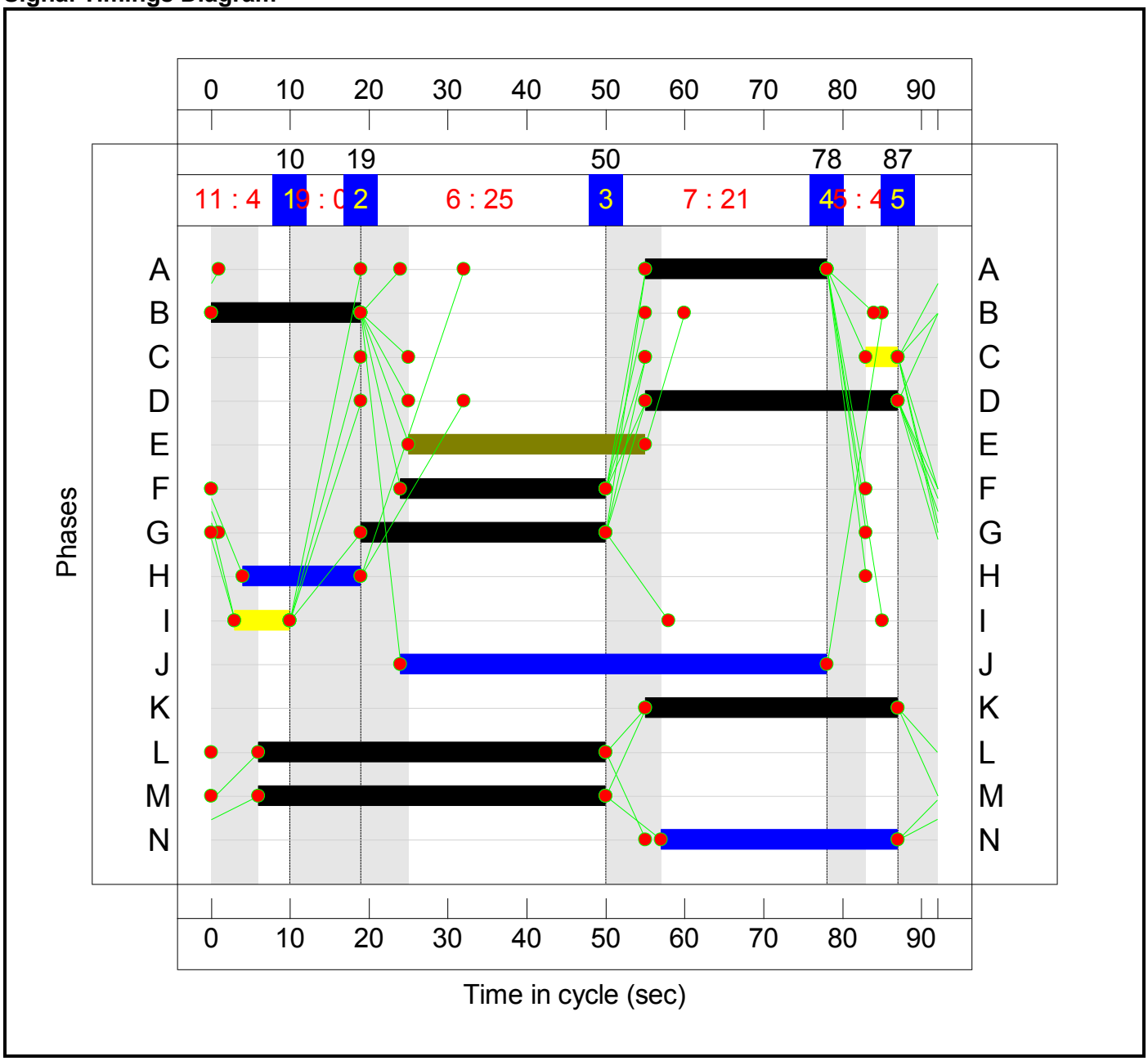
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	25	21	4	4
Change Point	10	19	50	78	87

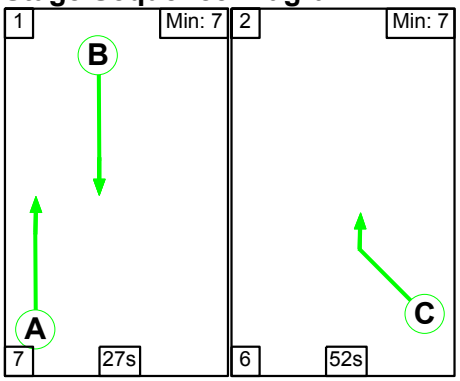
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

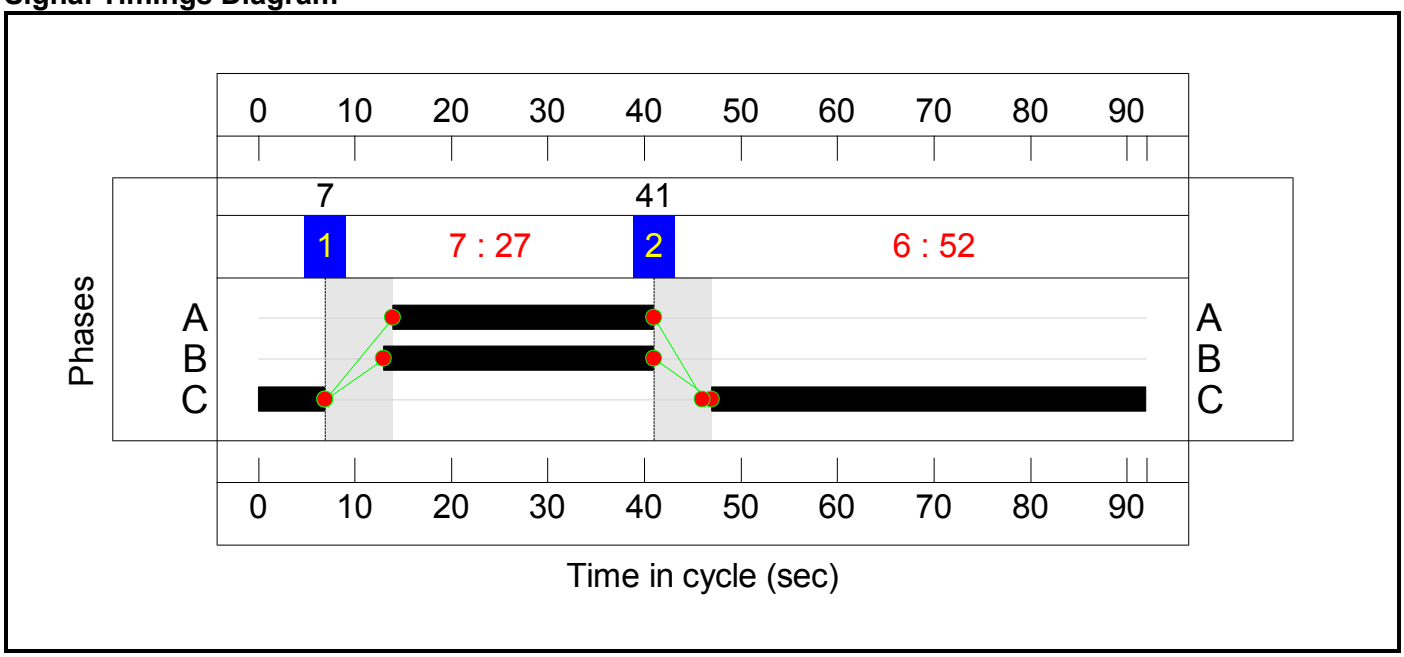
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	27	52
Change Point	7	41

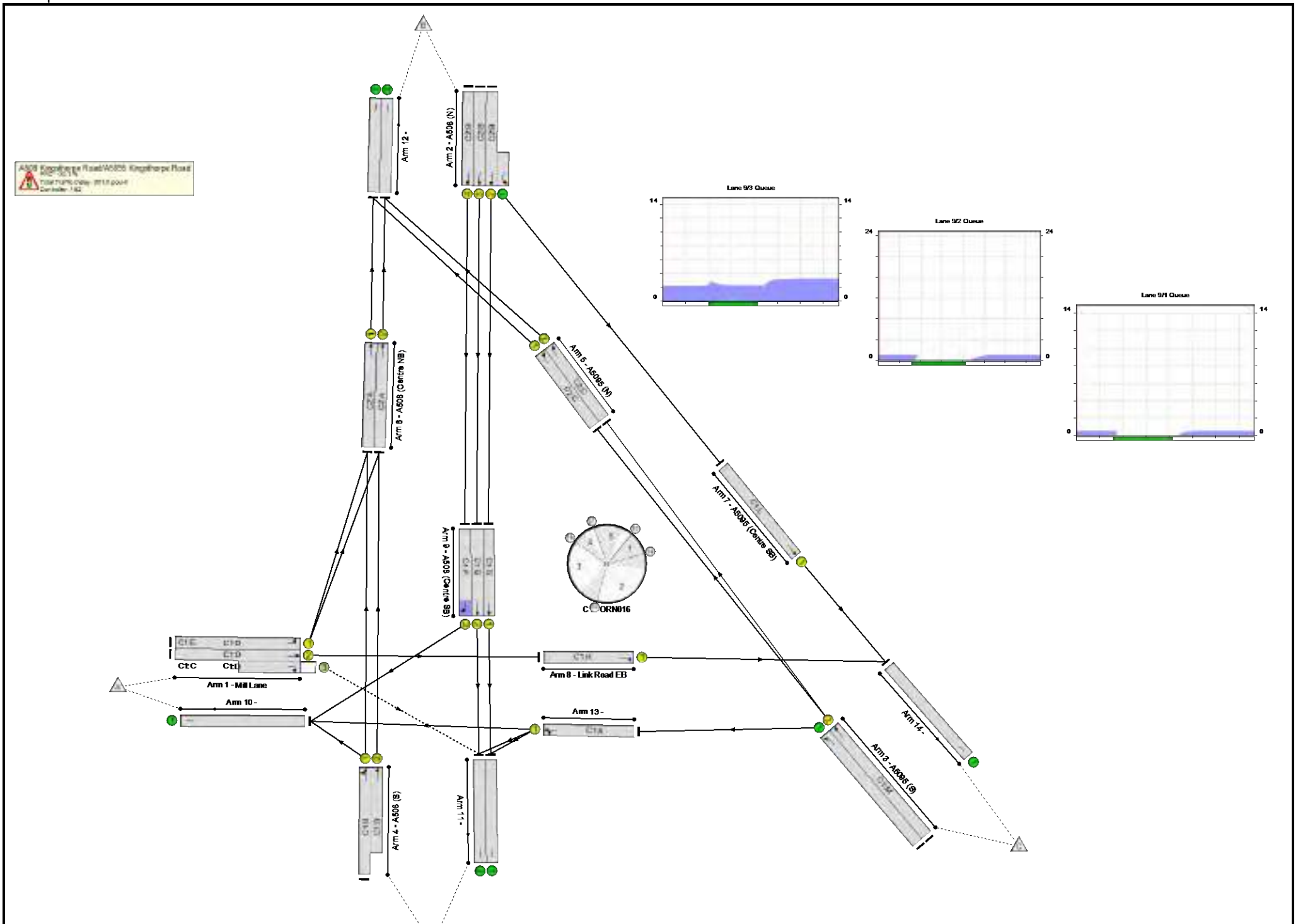
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.3%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.3%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	62	30	533	1665	1140	46.7%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	32	4	659	1915:1741	633+128	86.6 : 86.6%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	28	-	893	1915:2015	403+358	117.3 : 117.3%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	28	-	697	1915	604	115.5%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	28	-	658	1915	604	109.0%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	576	1772	1772	32.5%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	44	-	428	1940	949	45.1%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	861	1833:1915	398+416	105.9 : 105.5%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	52	-	214	1936	1115	19.2%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	52	-	214	1936	1115	19.2%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	27	-	630	1940	590	103.9%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	27	-	638	1940	590	104.2%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	44	-	420	1915	937	38.2%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	32	-	548	1948	699	78.4%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	31	-	473	1915	666	60.5%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	31	-	697	1915	666	90.6%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	26	-	658	1915	562	107.4%
10/1		U	N/A	N/A	-		-	-	-	1347	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	480	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	814	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	844	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	852	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	23	-	576	2108	550	104.7%
14/1		U	N/A	N/A	-		-	-	-	968	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**109**	**2**	**71.0**	**279.5**	**0.5**	**351.0**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**0**	**109**	**2**	**71.0**	**279.5**	**0.5**	**351.0**	**-**	**-**	**-**	**-**
1/1	533	533	-	-	-	1.0	0.4	-	1.4	9.7	6.2	0.4	6.7
1/2+1/3	659	659	0	109	2	4.8	3.1	0.5	8.4	45.7	13.8	3.1	16.9
2/2+2/1	893	761	-	-	-	10.6	69.1	-	79.7	321.4	34.6	69.1	103.7
2/3	697	604	-	-	-	10.1	50.2	-	60.3	311.3	20.2	50.2	70.4
2/4	658	604	-	-	-	8.1	32.3	-	40.4	220.9	18.2	32.3	50.5
3/1	576	576	-	-	-	0.0	0.2	-	0.2	1.5	0.0	0.2	0.2
3/2	428	428	-	-	-	1.8	0.4	-	2.2	18.9	7.1	0.4	7.5
4/1+4/2	861	815	-	-	-	10.8	30.2	-	41.1	171.7	12.4	30.2	42.7
5/1	214	214	-	-	-	1.3	0.1	-	1.4	23.1	5.1	0.1	5.2
5/2	214	214	-	-	-	1.3	0.1	-	1.4	23.1	5.1	0.1	5.2
6/1	614	590	-	-	-	4.8	19.4	-	24.3	142.4	16.3	19.4	35.7
6/2	615	590	-	-	-	3.9	20.1	-	24.0	140.2	16.4	20.1	36.5
7/1	358	358	-	-	-	2.0	0.3	-	2.3	23.2	4.4	0.3	4.7
8/1	548	548	-	-	-	0.5	1.8	-	2.3	15.2	0.9	1.8	2.7
9/1	403	403	-	-	-	0.4	0.8	-	1.1	10.1	0.6	0.8	1.4
9/2	604	604	-	-	-	0.7	4.3	-	4.9	29.5	1.1	4.3	5.4
9/3	604	562	-	-	-	2.6	26.5	-	29.1	173.8	3.2	26.5	29.7
10/1	1218	1218	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	410	410	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	720	720	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	804	804	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	804	804	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	576	550	-	-	-	6.3	20.2	-	26.5	165.4	15.4	20.2	35.6

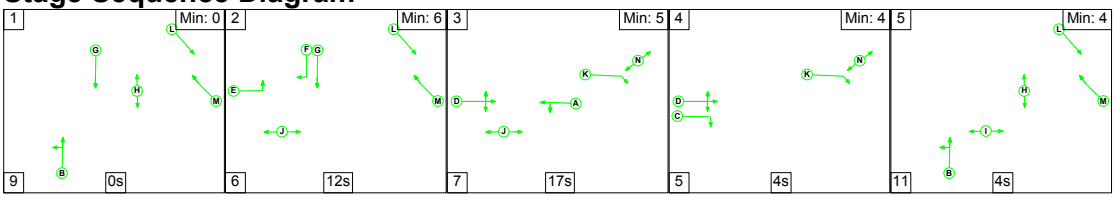
Full Input Data And Results

14/1	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN016	PRC for Signalled Lanes (%):	-19.3	Total Delay for Signalled Lanes (pcuHr):	119.40	Cycle Time (s):	92
C2 - ORN038	PRC for Signalled Lanes (%):	-30.3	Total Delay for Signalled Lanes (pcuHr):	231.35	Cycle Time (s):	92
	PRC Over All Lanes (%):	-30.3	Total Delay Over All Lanes(pcuHr):	350.99		

Full Input Data And Results
Scenario 8: '2031 DM PM' (FG8: '2031 DM PM', Plan 1: 'Network Control Plan 1')
C1 - ORN016

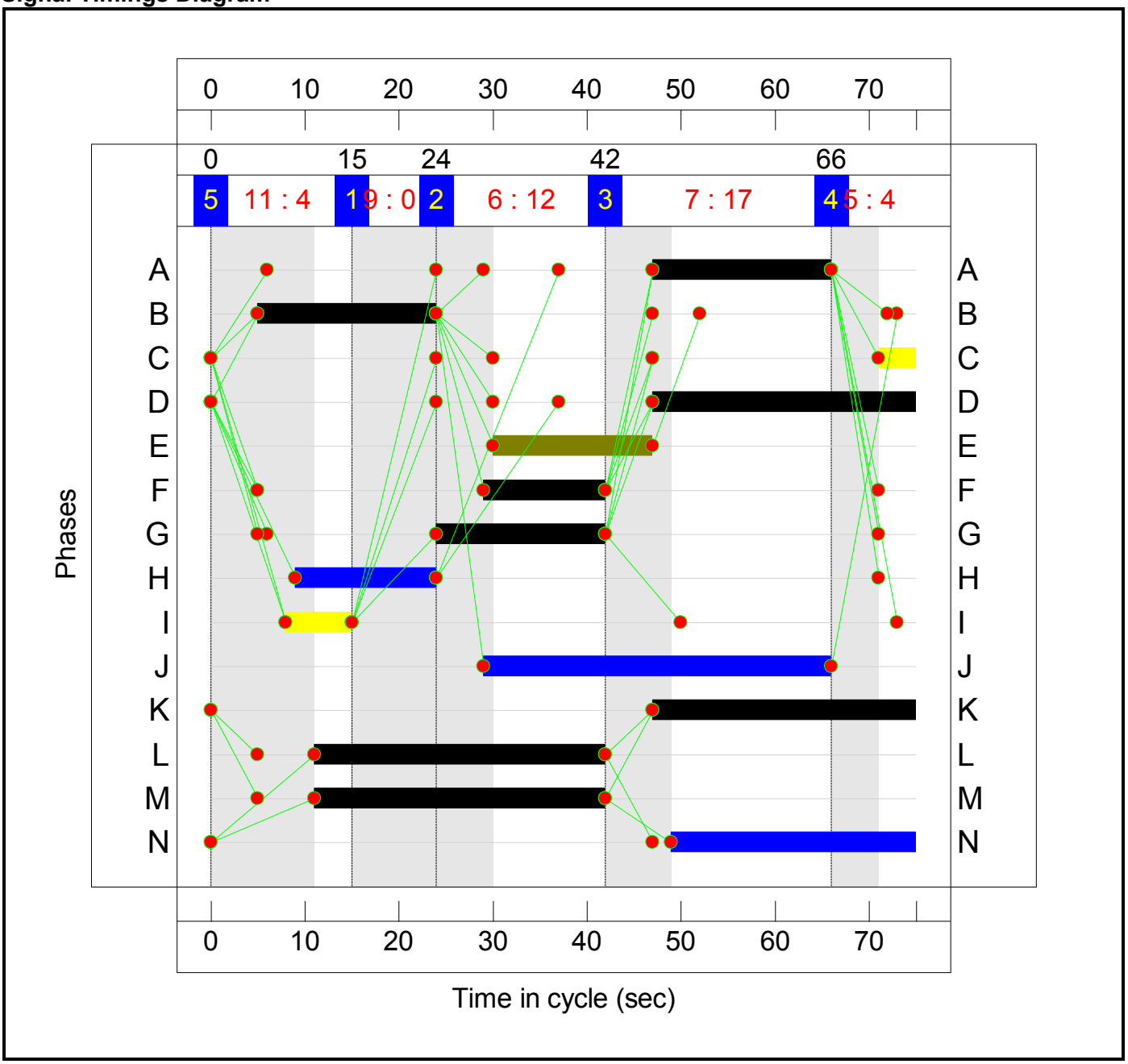
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	12	17	4	4
Change Point	15	24	42	66	0

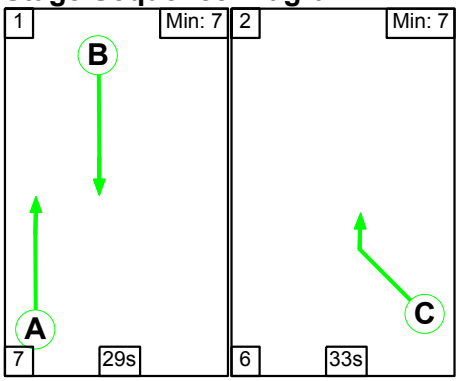
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

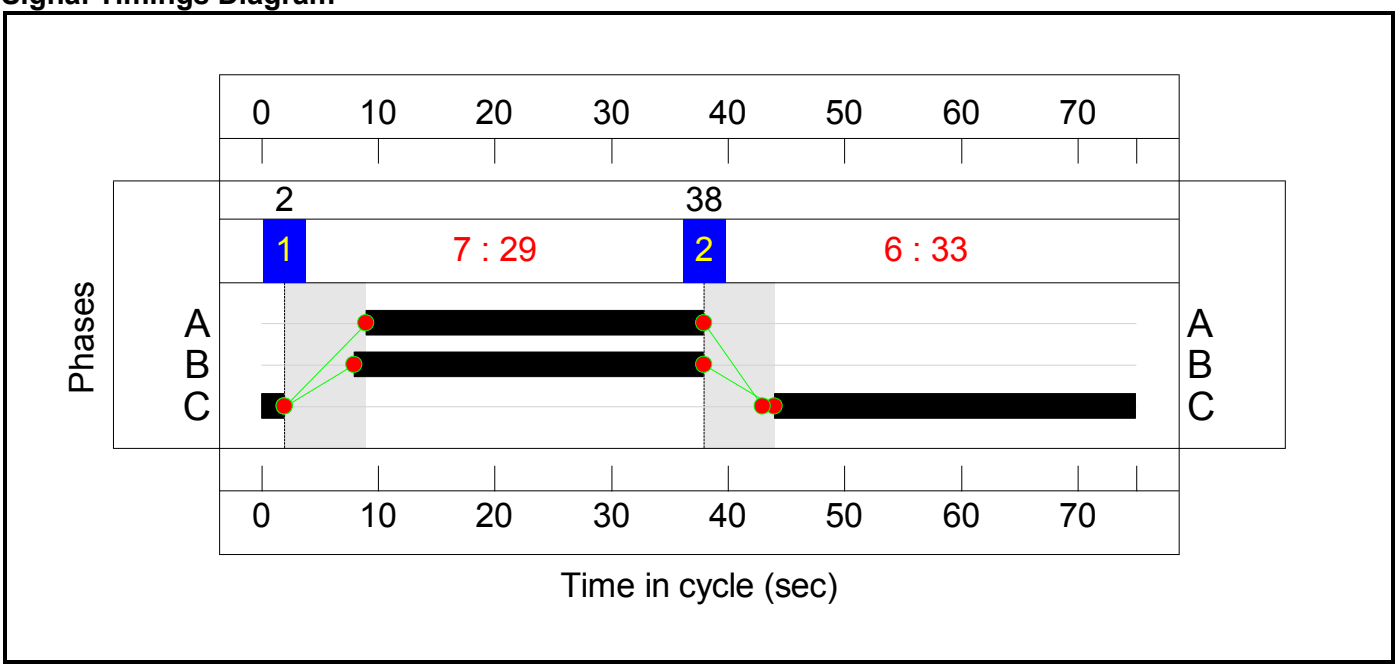
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	29	33
Change Point	2	38

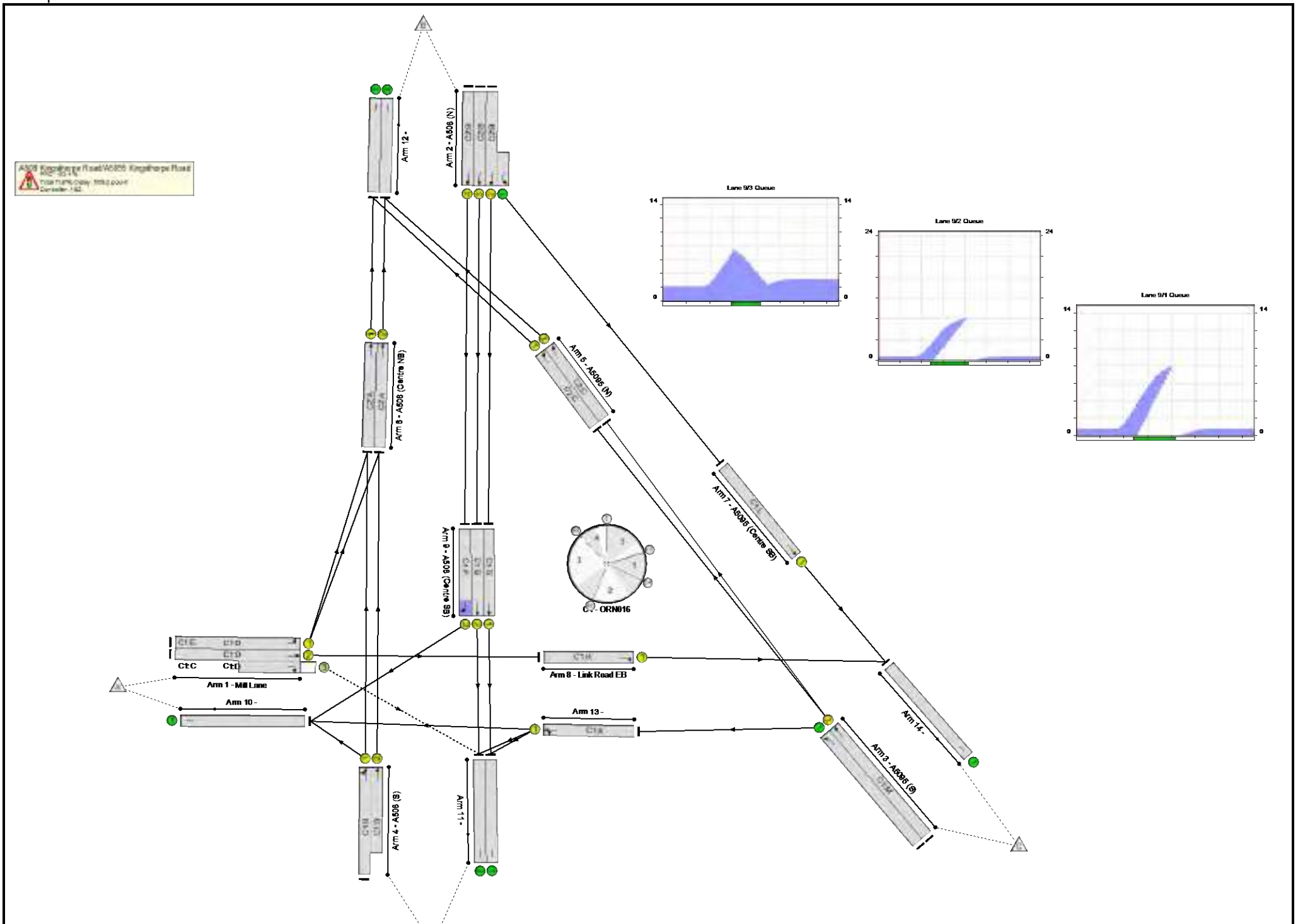
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**174.1%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**174.1%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	45	17	508	1665	1021	49.7%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	28	4	685	1915:1741	728+65	86.4 : 86.4%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	30	-	651	1915:2015	581+339	70.8 : 70.8%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	30	-	417	1915	792	52.7%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	30	-	408	1915	792	51.5%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	590	1772	1772	33.3%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	31	-	379	1940	828	45.8%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	1723	1799:1915	480+511	174.1 : 173.9%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	33	-	189	1936	878	21.5%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	33	-	190	1936	878	21.6%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	29	-	831	1940	776	81.0%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	29	-	1040	1940	776	85.4%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	31	-	240	1915	817	29.4%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	28	-	629	1948	753	83.5%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	18	-	411	1915	485	84.7%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	18	-	417	1915	485	86.0%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	13	-	408	1915	357	114.1%
10/1		U	N/A	N/A	-		-	-	-	1344	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	418	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	480	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1020	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1230	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	19	-	590	2107	562	105.0%
14/1		U	N/A	N/A	-		-	-	-	869	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**55**	**1**	**72.0**	**437.0**	**0.2**	**509.2**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**0**	**55**	**1**	**72.0**	**437.0**	**0.2**	**509.2**	**-**	**-**	**-**	**-**
1/1	508	508	-	-	-	1.1	0.5	-	1.6	11.6	5.8	0.5	6.3
1/2+1/3	685	685	0	55	1	3.9	3.0	0.2	7.1	37.5	12.2	3.0	15.2
2/2+2/1	651	651	-	-	-	2.1	1.2	-	3.3	18.0	8.3	1.2	9.5
2/3	417	417	-	-	-	1.9	0.6	-	2.5	21.3	6.5	0.6	7.0
2/4	408	408	-	-	-	1.9	0.5	-	2.4	21.1	6.2	0.5	6.8
3/1	590	590	-	-	-	0.0	0.2	-	0.2	1.5	0.0	0.2	0.2
3/2	379	379	-	-	-	1.6	0.4	-	2.0	19.3	5.6	0.4	6.0
4/1+4/2	1723	990	-	-	-	40.3	367.5	-	407.8	852.1	44.9	367.5	412.4
5/1	189	189	-	-	-	0.8	0.1	-	1.0	18.8	3.8	0.1	3.9
5/2	190	190	-	-	-	0.9	0.1	-	1.0	18.8	3.8	0.1	3.9
6/1	629	629	-	-	-	3.5	2.1	-	5.5	31.7	10.8	2.1	12.9
6/2	663	663	-	-	-	1.4	2.8	-	4.2	22.6	3.9	2.8	6.7
7/1	240	240	-	-	-	0.9	0.2	-	1.1	17.2	3.0	0.2	3.2
8/1	629	629	-	-	-	0.6	2.4	-	3.1	17.6	1.1	2.4	3.5
9/1	411	411	-	-	-	1.1	2.6	-	3.7	32.7	8.1	2.6	10.6
9/2	417	417	-	-	-	1.2	2.8	-	4.0	34.7	8.2	2.8	11.0
9/3	408	357	-	-	-	3.5	28.8	-	32.3	284.7	7.4	28.8	36.2
10/1	1113	1113	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	418	418	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	480	480	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	853	853	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	590	562	-	-	-	5.2	21.1	-	26.3	160.4	12.9	21.1	33.9

Full Input Data And Results

14/1	869	869	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

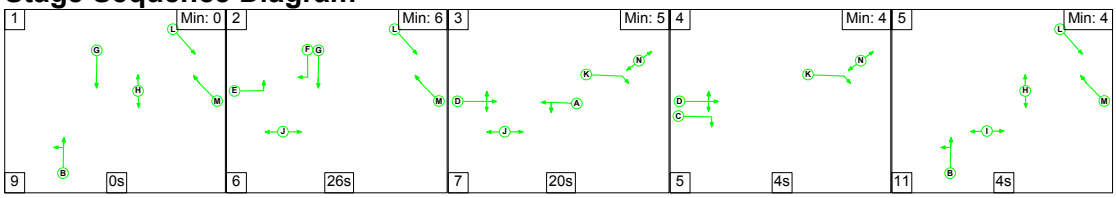
C1 - ORN016	PRC for Signalled Lanes (%):	-93.4	Total Delay for Signalled Lanes (pcuHr):	489.14	Cycle Time (s):	75
C2 - ORN038	PRC for Signalled Lanes (%):	5.4	Total Delay for Signalled Lanes (pcuHr):	19.78	Cycle Time (s):	75
	PRC Over All Lanes (%):	-93.4	Total Delay Over All Lanes(pcuHr):	509.17		

Full Input Data And Results

Scenario 9: '2031 DS2 AM' (FG9: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

C1 - ORN016

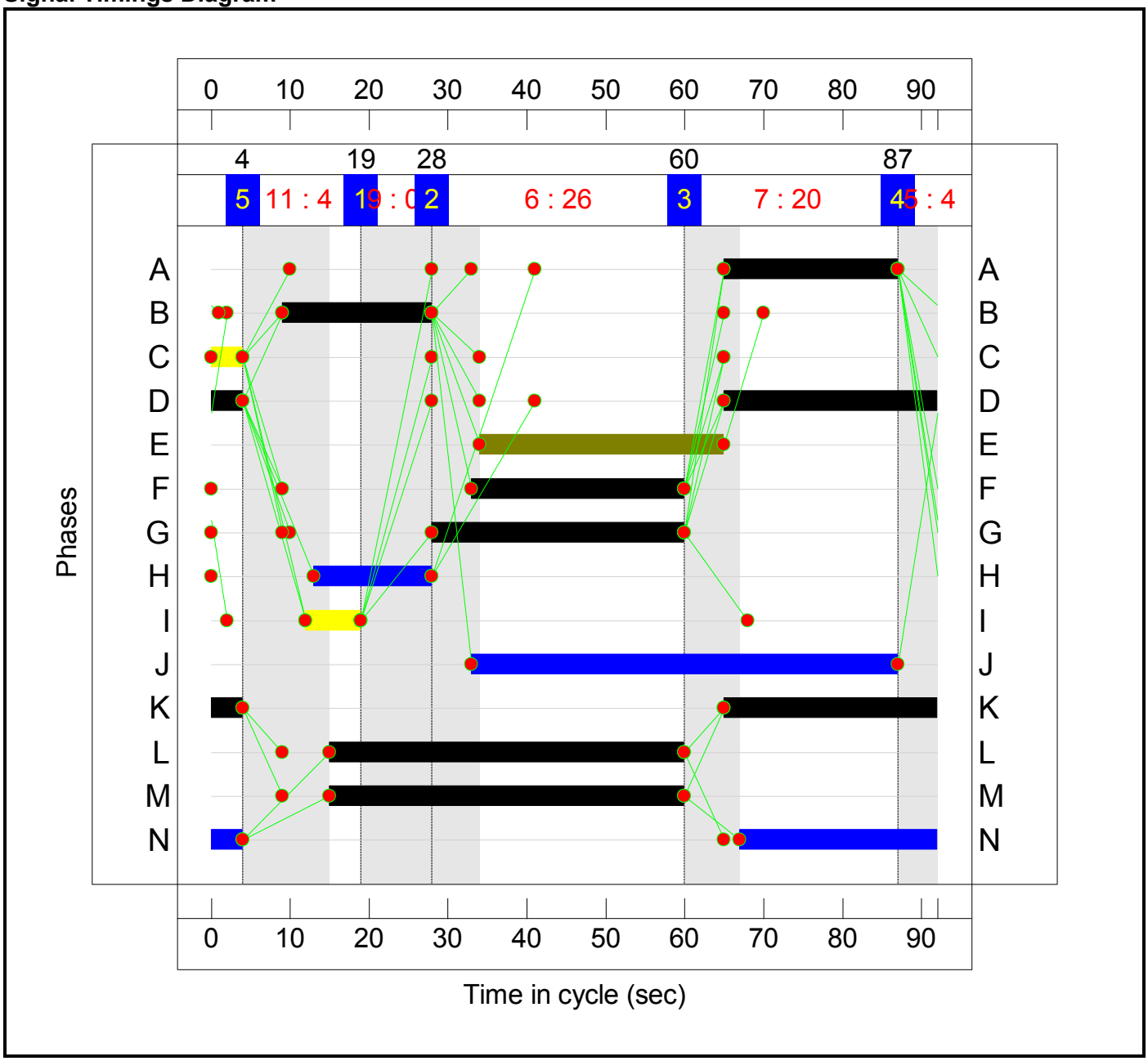
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	26	20	4	4
Change Point	19	28	60	87	4

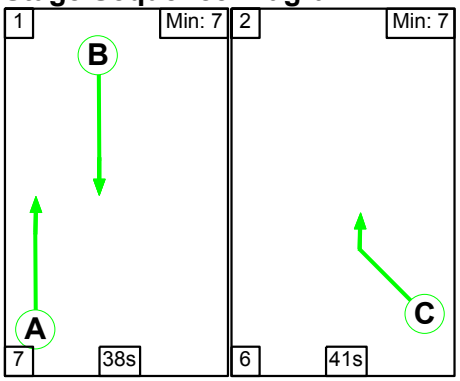
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

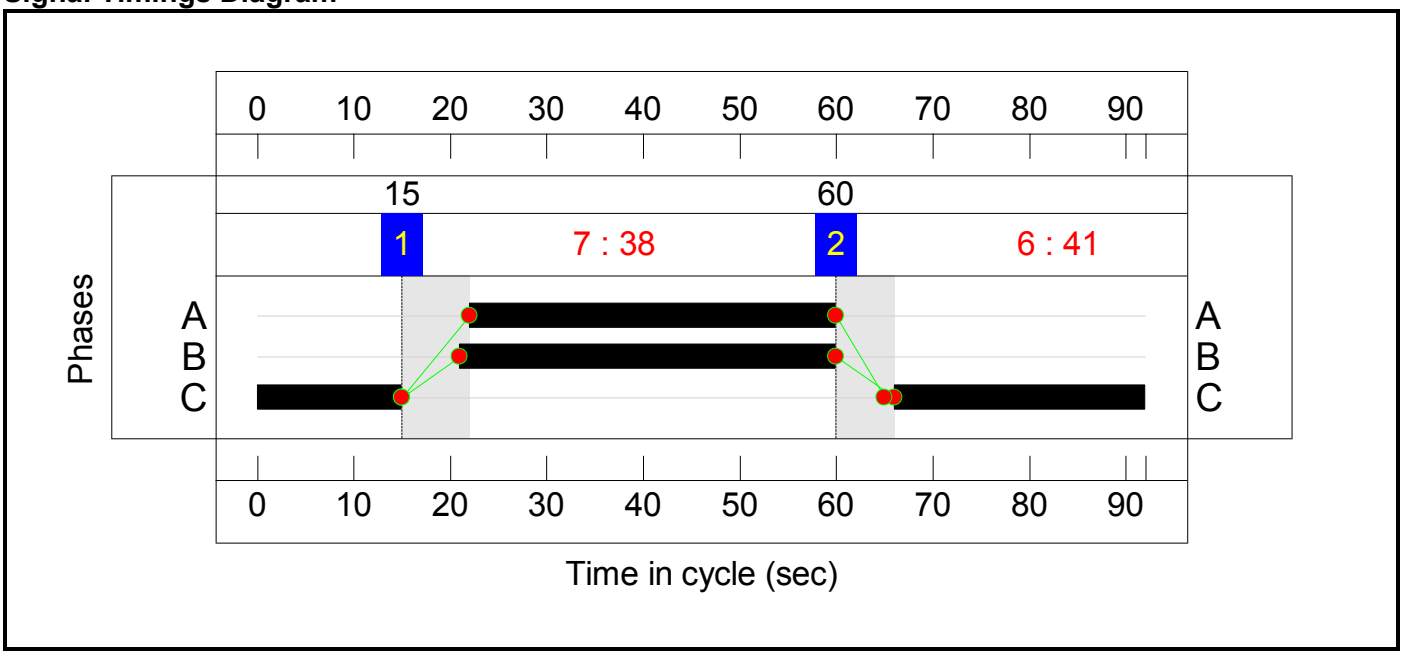
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	38	41
Change Point	15	60

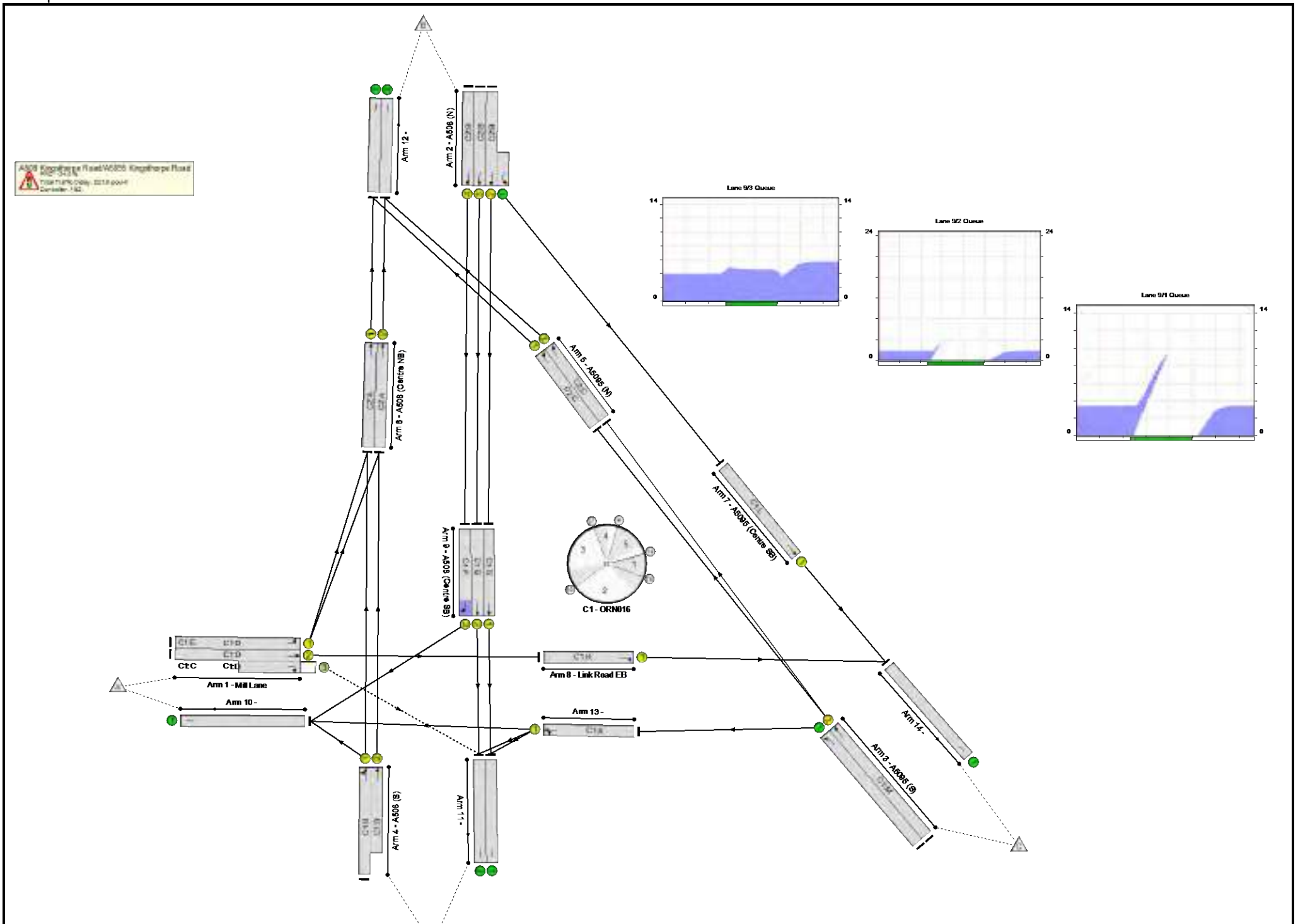
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.1%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.1%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	62	31	551	1665	1140	48.3%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	31	4	646	1915:1741	619+119	87.6 : 87.6%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	39	-	1024	1915:2015	563+401	106.2 : 106.2%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	39	-	600	1915	833	72.1%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	39	-	653	1915	833	78.4%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	591	1772	1772	33.4%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	45	-	425	1940	970	43.8%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	859	1832:1915	398+416	105.5 : 105.5%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	41	-	212	1936	884	24.0%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	41	-	213	1936	884	24.1%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	38	-	595	1940	822	70.5%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	38	-	688	1940	822	80.9%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	45	-	426	1915	957	41.9%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	31	-	542	1948	678	80.0%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	32	-	598	1915	687	82.0%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	32	-	600	1915	687	87.3%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	27	-	653	1915	583	112.0%
10/1		U	N/A	N/A	-		-	-	-	1358	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	605	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	710	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	807	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	901	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	22	-	591	2108	527	112.1%
14/1		U	N/A	N/A	-		-	-	-	968	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**102**	**2**	**60.8**	**160.5**	**0.4**	**221.8**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**0**	**102**	**2**	**60.8**	**160.5**	**0.4**	**221.8**	**-**	**-**	**-**	**-**
1/1	551	551	-	-	-	1.0	0.5	-	1.5	9.9	6.6	0.5	7.0
1/2+1/3	646	646	0	102	2	4.8	3.3	0.4	8.6	47.9	13.8	3.3	17.1
2/2+2/1	1024	964	-	-	-	7.6	37.0	-	44.6	156.7	27.9	37.0	64.9
2/3	600	600	-	-	-	3.6	1.3	-	4.8	29.1	12.5	1.3	13.8
2/4	653	653	-	-	-	4.0	1.8	-	5.8	32.1	14.1	1.8	15.9
3/1	591	591	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
3/2	425	425	-	-	-	1.7	0.4	-	2.1	18.0	6.8	0.4	7.2
4/1+4/2	859	815	-	-	-	10.6	29.5	-	40.1	168.1	12.4	29.5	41.9
5/1	212	212	-	-	-	1.8	0.2	-	2.0	33.2	5.4	0.2	5.6
5/2	213	213	-	-	-	1.8	0.2	-	2.0	33.2	5.4	0.2	5.6
6/1	580	580	-	-	-	1.8	1.2	-	3.0	18.8	10.8	1.2	12.0
6/2	665	665	-	-	-	2.1	2.1	-	4.2	22.5	15.3	2.1	17.4
7/1	401	401	-	-	-	2.3	0.4	-	2.7	24.2	5.6	0.4	5.9
8/1	542	542	-	-	-	0.6	1.9	-	2.5	16.7	0.9	1.9	2.9
9/1	563	563	-	-	-	2.3	2.2	-	4.5	28.5	9.6	2.2	11.8
9/2	600	600	-	-	-	1.1	3.2	-	4.4	26.1	4.3	3.2	7.5
9/3	653	583	-	-	-	4.6	39.2	-	43.9	241.8	5.8	39.2	45.0
10/1	1219	1219	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	569	569	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	792	792	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	878	878	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	591	527	-	-	-	8.9	36.1	-	44.9	273.8	18.0	36.1	54.1

Full Input Data And Results

14/1	943	943	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

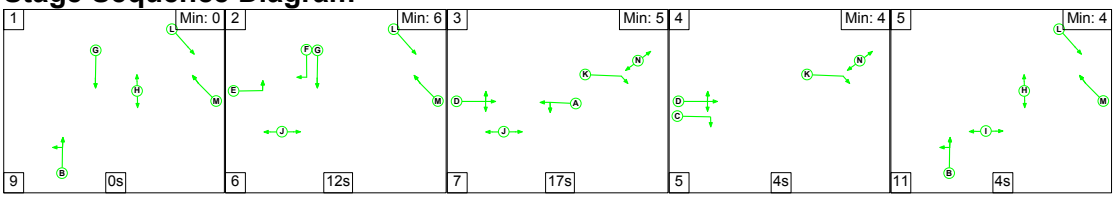
C1 - ORN016	PRC for Signalled Lanes (%):	-24.6	Total Delay for Signalled Lanes (pcuHr):	155.17	Cycle Time (s):	92
C2 - ORN038	PRC for Signalled Lanes (%):	-18.0	Total Delay for Signalled Lanes (pcuHr):	66.36	Cycle Time (s):	92
	PRC Over All Lanes (%):	-24.6	Total Delay Over All Lanes(pcuHr):	221.78		

Full Input Data And Results

Scenario 10: '2031 DS2 PM' (FG10: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

C1 - ORN016

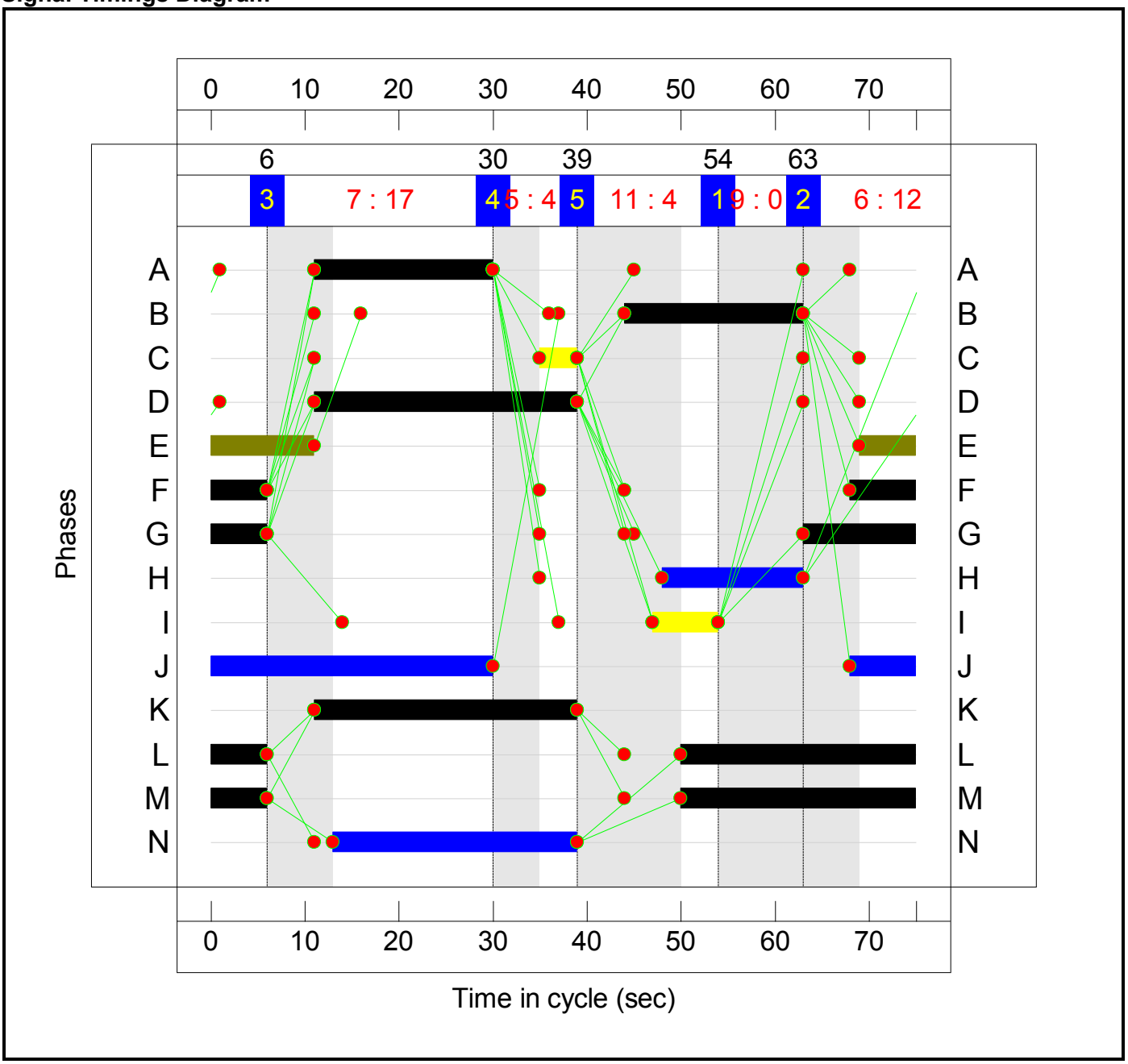
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	0	12	17	4	4
Change Point	54	63	6	30	39

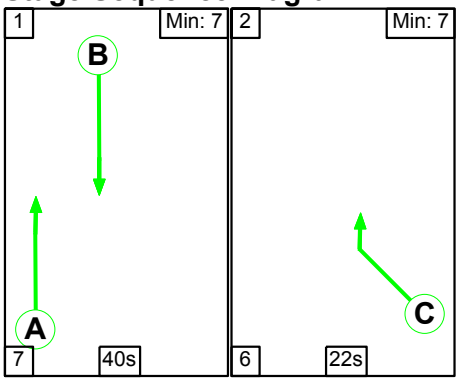
Signal Timings Diagram



Full Input Data And Results

C2 - ORN038

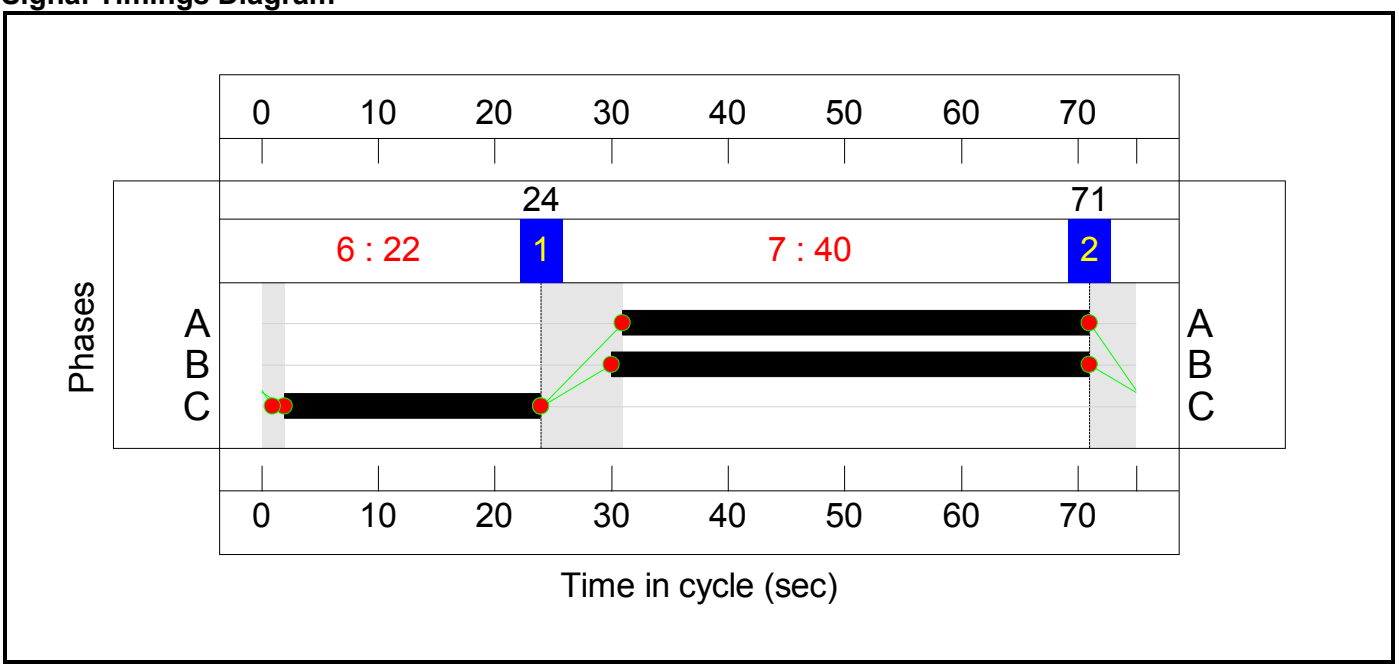
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	40	22
Change Point	24	71

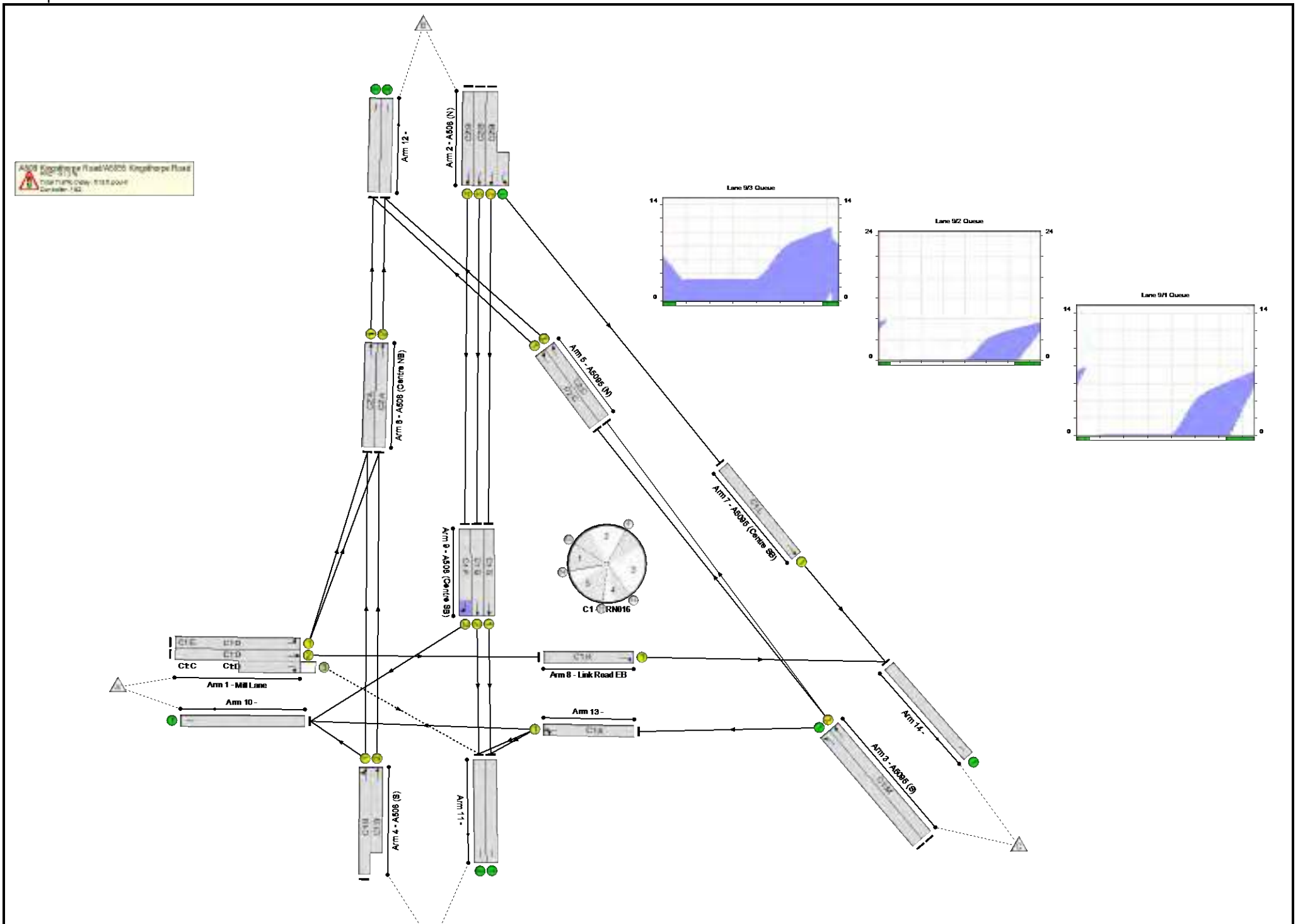
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**172.0%**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	-	-	**N/A**	-	-		-	-	-	-	-	-	**172.0%**
1/1	Mill Lane Left	U	N/A	N/A	C1:D	C1:E	1	45	17	528	1665	1021	51.7%
1/2+1/3	Mill Lane Ahead Right	U+O	N/A	N/A	C1:D	C1:C	1	28	4	699	1915:1741	728+65	88.1 : 88.1%
2/2+2/1	A508 (N) Ahead Ahead2	U	N/A	N/A	C2:B -		1	41	-	640	1915:2015	752+460	52.8 : 52.8%
2/3	A508 (N) Ahead	U	N/A	N/A	C2:B		1	41	-	400	1915	1072	37.3%
2/4	A508 (N) Ahead	U	N/A	N/A	C2:B		1	41	-	430	1915	1072	40.1%
3/1	A5095 (S) Left	U	N/A	N/A	-		-	-	-	617	1772	1772	34.8%
3/2	A5095 (S) Ahead	U	N/A	N/A	C1:M		1	31	-	399	1940	828	48.2%
4/1+4/2	A508 (S) Ahead Left	U	N/A	N/A	C1:B		1	19	-	1701	1796:1915	479+511	172.0 : 171.7%
5/1	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	22	-	199	1936	594	33.5%
5/2	A5095 (N) Ahead	U	N/A	N/A	C2:C		1	22	-	200	1936	594	33.7%
6/1	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	40	-	794	1940	1061	56.7%
6/2	A508 (Centre NB) Ahead	U	N/A	N/A	C2:A		1	40	-	1072	1940	1061	66.5%
7/1	A5095 (Centre SB) Ahead	U	N/A	N/A	C1:L		1	31	-	243	1915	817	29.7%
8/1	Link Road EB Right	U	N/A	N/A	C1:K		1	28	-	642	1948	753	85.2%
9/1	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	18	-	397	1915	485	81.8%

Full Input Data And Results

9/2	A508 (Centre SB) Ahead	U	N/A	N/A	C1:G		1	18	-	400	1915	485	82.5%
9/3	A508 (Centre SB) Right	U	N/A	N/A	C1:F		1	13	-	430	1915	357	120.3%
10/1		U	N/A	N/A	-		-	-	-	1396	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	404	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	464	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	993	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1272	Inf	Inf	0.0%
13/1	Ahead Left	U	N/A	N/A	C1:A		1	19	-	617	2108	562	109.8%
14/1		U	N/A	N/A	-		-	-	-	885	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**55**	**2**	**69.9**	**443.5**	**0.2**	**513.6**	**-**	**-**	**-**	**-**
A508 Kingsthorpe Road/A5095 Kingsthorpe Road	**-**	**-**	**0**	**55**	**2**	**69.9**	**443.5**	**0.2**	**513.6**	**-**	**-**	**-**	**-**
1/1	528	528	-	-	-	1.2	0.5	-	1.7	11.9	6.2	0.5	6.7
1/2+1/3	699	699	0	55	2	4.1	3.5	0.2	7.7	39.8	12.7	3.5	16.2
2/2+2/1	640	640	-	-	-	1.0	0.6	-	1.6	8.8	5.0	0.6	5.6
2/3	400	400	-	-	-	1.0	0.3	-	1.3	11.9	4.6	0.3	4.9
2/4	430	430	-	-	-	1.1	0.3	-	1.5	12.2	5.0	0.3	5.4
3/1	617	617	-	-	-	0.0	0.3	-	0.3	1.6	0.0	0.3	0.3
3/2	399	399	-	-	-	1.7	0.5	-	2.2	19.7	6.0	0.5	6.4
4/1+4/2	1701	990	-	-	-	36.8	356.9	-	393.7	833.2	47.9	356.9	404.8
5/1	199	199	-	-	-	0.6	0.3	-	0.8	15.3	3.6	0.3	3.9
5/2	200	200	-	-	-	0.6	0.3	-	0.8	15.3	3.6	0.3	3.9
6/1	601	601	-	-	-	2.2	0.7	-	2.8	17.0	7.3	0.7	8.0
6/2	706	706	-	-	-	1.7	1.0	-	2.7	13.6	5.1	1.0	6.1
7/1	243	243	-	-	-	1.0	0.2	-	1.2	17.2	3.3	0.2	3.5
8/1	642	642	-	-	-	0.7	2.8	-	3.4	19.2	1.2	2.8	3.9
9/1	397	397	-	-	-	2.0	2.1	-	4.1	37.4	7.8	2.1	9.9
9/2	400	400	-	-	-	2.0	2.2	-	4.2	38.0	7.9	2.2	10.1
9/3	430	357	-	-	-	5.6	39.0	-	44.6	373.6	10.6	39.0	49.7
10/1	1118	1118	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	403	403	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	463	463	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	800	800	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	617	562	-	-	-	6.7	32.2	-	38.9	226.8	14.0	32.2	46.2

Full Input Data And Results

14/1	885	885	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - ORN016	PRC for Signalled Lanes (%):	-91.2	Total Delay for Signalled Lanes (pcuHr):	501.79	Cycle Time (s):	75
C2 - ORN038	PRC for Signalled Lanes (%):	35.3	Total Delay for Signalled Lanes (pcuHr):	11.54	Cycle Time (s):	75
	PRC Over All Lanes (%):	-91.2	Total Delay Over All Lanes(pcuHr):	513.60		

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

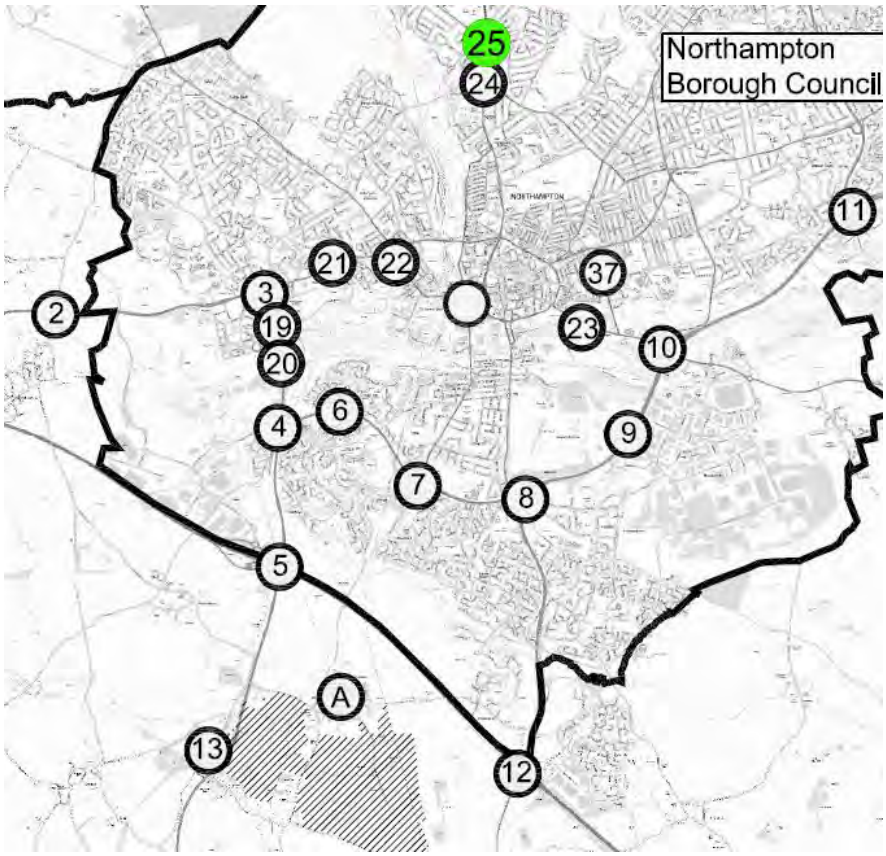
Technical Note No. 27

1 JUNCTION TWENTY FIVE – CRANFORD ROAD, A508 HARBOUROUGH ROAD, A5199 WELFORD ROAD

Existing Junction Description

1.1 Junction Four is a four arm signalised stagger to the north of Waitrose and Asda Kingsthorpe stores. It connects Cranford Road, Welford Road and the A508 Harborough Road. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Twenty Five Location Plan



Existing Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction four were conducted on Tuesday 6th June 2017 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

1.6 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays is included at **Appendix B**.

1.7 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Base Model Validation

1.8 A summary of the junction validation is shown in **Table 1**.

Table 1- Queue comparison for 2015 Base

2015		Average Surveyed Queues	Range of Surveyed Queues	Modelled MMQ
AM Peak Hour (0800-0900)	Arm 1 – A508 Harborough Road North	25	15-38	30
	Arm 2 – A508 Harborough Road South	10	7-16	11
	Arm 3 – Welford Road	21	16-27	41
	Arm 4 – Cranford Road	-	-	-
PM Peak Hour (1700-1800)	Arm 1 – A508 Harborough Road North	11	6-14	9
	Arm 2 – A508 Harborough Road South	16	16	9
	Arm 3 – Welford Road	9	6-12	10
	Arm 4 – Cranford Road	-	-	-

1.9 It is considered that the modelled queues are generally in line with the surveyed queues, and that the model is therefore appropriately validated. Whilst there are instances of the modelled queues being higher than the surveyed queues, it should be noted that the surveyed queues are an average taken at five minute intervals, compared to the model which records the average maximum queues recorded every cycle (90 seconds).

Results of the Base Modelling

1.10 The results of the modelling for the existing junction layout, Shown in **Figure EL25** are summarised in **Table 2** and **Table 3** and junction analysis results are included at **Appendix C.**

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2017	101.9%	83.8%	103.4%	0.0%	68.4%	81.0%	85.7%	0.0%
	2021 DM	101.3%	83.9%	101.9%	0.0%	74.5%	82.5%	94.1%	0.0%
	2021 DS	101.7%	84.3%	102.5%	0.0%	72.8%	81.9%	84.9%	0.0%
	2031 DM	124.70%	85.60%	126.40%	0.0%	89.90%	96.80%	70.80%	0.0%
	2031 DS	125.2%	85.1%	124.6%	0.0%	85.2%	96.0%	73.6%	0.0%
Queue – MMQ (PCU)	2017	32	11	41	0	9	9	10	0
	2021 DM	43	15	41	0	13	12	17	0

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	2021 DS	44	15	44	0	12	12	12	0
	2031 DM	165	15	10	0	22	28	10	0
	2031 DS	162	14	138	0	18	26	11	0
Average Delay (sec/pcu)	2017	116.9	27.9	129.3	0.0	8.7	16.9	52.4	0.0
	2021 DM	109.0	29.2	121.8	0.0	28.1	16.5	88.5	0.0
	2021 DS	115.4	29.8	129.4	0.0	27.6	16.0	65.5	0.0
	2031 DM	434.3	29.1	468.6	0.0	45.7	41.5	43.8	0.0
	2031 DS	444.1	28.9	446.0	0.0	40.4	39.3	45.1	0.0

1.11 As shown in **Table 2**, Rail Central is forecast to impact on the operation of the existing junction in the 2031 AM and PM peak scenarios, with Arms 1 and 2 in the AM peak exceeding capacity further by 0.5% and 0.2% as a result. There is also a significant increase in queueing on Arm 3 during the AM peak of 128 PCU.

Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2017	2021 DM	2021 DS	2031 DM	2031 DS	2017	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (DoS)	-14.9	-13.2	-13.9	-40.5	-39.1	5.1	-4.6	6.0	-39.1	-6.7
Overall Junction Delay (PCUhr)	72	69	73	288	283	22	28	24	43	39

1.12 There is minimal impact of Rail Central on this junction, however the junction is operating over capacity.

Results of the Mitigation Modelling

1.13 The proposed mitigation is shown in **Appendix J.14** of the TA and summarised is as follows:

- Provision of an additional nearside lane on the A5076 Upton Way north approach;
- Provision of a merge lane on the A5076 Upton Way south exit;
- Provision of an additional nearside lane on the A5076 Upton Way south approach;
- Provision of a merge lane on the A5076 Upton Way north exit; and
- Widening of the circulatory carriageway to accommodate three lanes on the east and west sections of the circulatory and two lanes on the north and south sections of the circulatory.

1.14 The results of the mitigated junction model is shown in **Table 4** and **Table 5**.

Table 4 - Mitigated Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2021 DS	91.4%	76.6%	90.0%	0%	66.7%	79.4%	80.7%	0%
	Comparison to 2021 DM	-9.9%	-7.3%	-11.9%	0%	-7.8%	-3.1%	-13.4%	0%
	2031 DS	110.7%	77.3%	111.7%	0%	72.3%	82.9%	83.4%	0%
	Comparison to 2031 DM	-14.0%	-8.3%	-14.7%	0%	-17.6%	-13.9%	12.6%	0%
Queue – MMQ (PCU)	2021 DS	24	12	17	0	10	10	9	0
	Comparison to 2021 DM	-19	-3	-24	0	-3	-2	-8	0
	2031 DS	98	11	85	0	12	12	11	0
	Comparison to 2031 DM	-67	-4	74	0	-11	-16	0	0
Average Delay (sec/pcu)	2021 DS	48	22	57	0	22	13	64	0
	Comparison to 2021 DM	-61	-8	-65	0	-7	-4	-24	0
	2031 DS	239	20.4	270	0	25	15	64	0
	Comparison to 2031 DM	-196	-9	-199	0	-20	-27	20	0

1.15 As shown in **Table 4,** the proposed junction mitigation is considered appropriate to ensure that there is nil detriment as a result of Rail Central in comparison to the 2031 DM scenarios. All arms show a decrease in saturation by 37% in the 2031 AM peak however in the PM peak, Arm 3 increases by 12.6 however the scenario decrease by 18.9%. Furthermore, there is a reduction in queues AM peak by 26 PCU, and a reduction in overall delay of over 11 and half minutes in the AM peak and over 26 minutes in the PM peak.

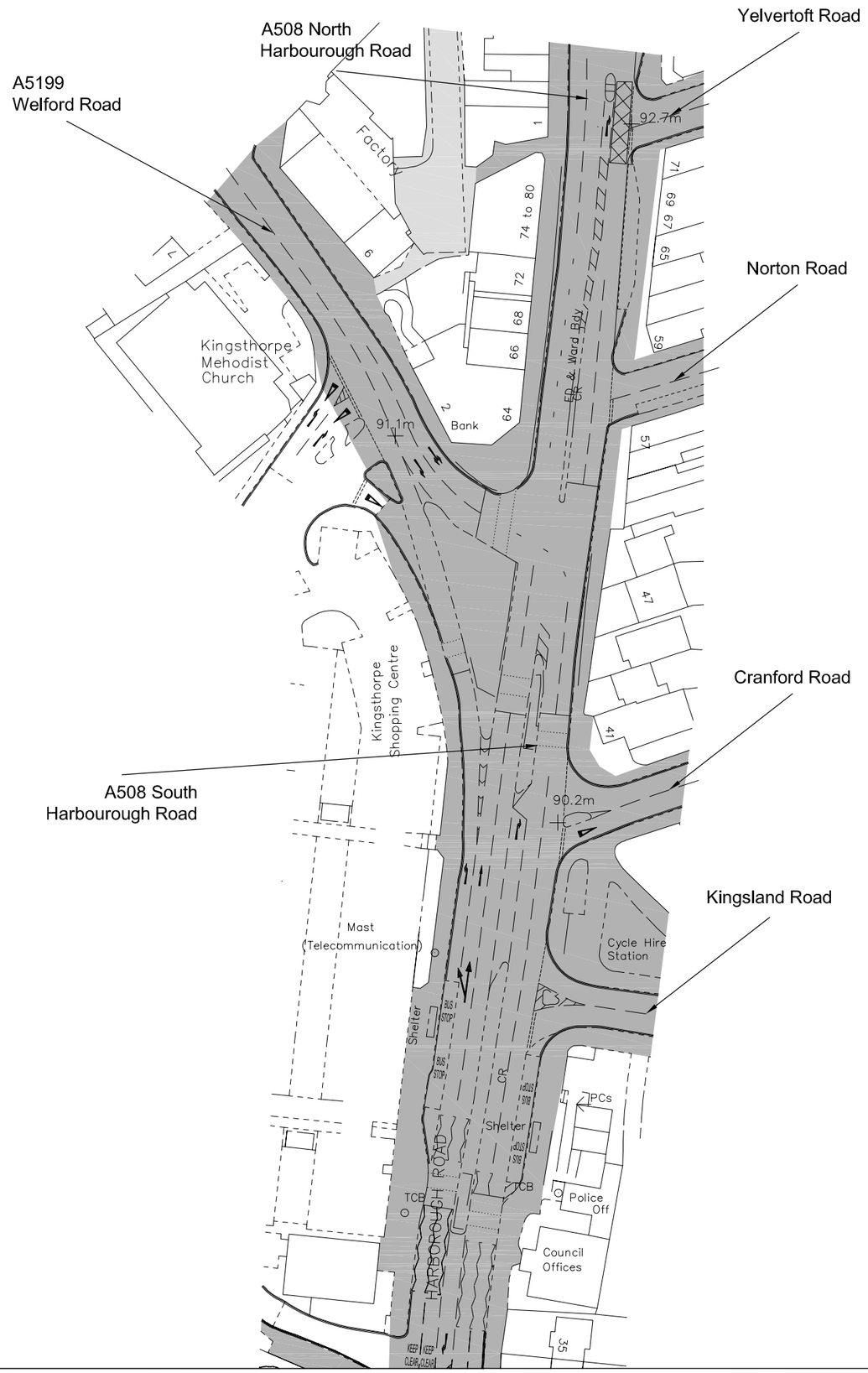
Table 5 – Mitigated Overall Junction Modelling Results

Peak Period	**AM**				**PM**			
Scenarios	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**	**2021 DS**	**Comparison to 2021 DM**	**2031 DS**	**Comparison to 2031 DM**
Overall Junction capacity (DoS)	-1.5	11.7	-24.1	16.4	11.6	16.2	7.9	47.0
Overall Junction Delay (PCUhr)	36	-34	164	-124	21	-7	25	-18

1.16 The junction operates 16.4% better in 2031 AM peak. Finally, the overall junction delay is 124 and 18 PCUhr better in 2031 DS scenario AM and PM peak respectively.

FIGURES

A3
ORIGINAL
PLOT SIZE



INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central Northamptonshire

TITLE:
A508 Harborough Road / A5199 Welford Road Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	26.05.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL25	

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	818	0	0	818
B - A508 S	894	0	237	0	1,131
C - Welford Rd	2	819	0	0	821
D - Cranford Road	0	0	0	0	0
Total	896	1,637	237	0	

Modelled Flows
2021 DM
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	915	0	0	915
B - A508 S	1,073	0	247	0	1,320
C - Welford Rd	0	756	0	0	756
D - Cranford Road	0	0	0	0	0
Total	1,073	1,671	247	0	

Modelled Flows
2021 DS2
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	903	0	0	903
B - A508 S	1,050	0	263	0	1,313
C - Welford Rd	2	775	0	0	777
D - Cranford Road	0	0	0	0	0
Total	1,052	1,678	263	0	

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	0	0	0	0
B - A508 S	0	0	0	0	0
C - Welford Rd	0	0	0	0	0
D - Cranford Road	0	0	0	0	0
Total	0	0	0	0	

2021 DM minus 2015 Base
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	97	0	0	97
B - A508 S	179	0	10	0	189
C - Welford Rd	-2	-63	0	0	-65
D - Cranford Road	0	0	0	0	0
Total	177	34	10	0	

2021 DS2 minus 2015 Base
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	85	0	0	85
B - A508 S	156	0	26	0	182
C - Welford Rd	0	-44	0	0	-44
D - Cranford Road	0	0	0	0	0
Total	156	41	26	0	

3 Adjusted Flows by adding the Change in Flows (2) to the

Observed 2015 Count
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	882	0	0	882
B - A508 S	942	0	334	0	1,276
C - Welford Rd	41	825	0	0	866
D - Cranford Road	0	0	0	0	0
Total	983	1,707	334	0	

2021 DM adjusted to count
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	979	0	0	979
B - A508 S	1,121	0	344	0	1,465
C - Welford Rd	39	762	0	0	801
D - Cranford Road	0	0	0	0	0
Total	1,160	1,741	344	0	

2021 DS2 adjusted to count
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	967	0	0	967
B - A508 S	1,098	0	360	0	1,458
C - Welford Rd	41	781	0	0	822
D - Cranford Road	0	0	0	0	0
Total	1,139	1,748	360	0	

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd		Total
A - A508 N	0	716	0	0	716
B - A508 S	1,230	0	574	0	1,804
C - Welford Rd	10	463	0	0	473
D - Cranford Road	0	0	0	0	0
Total	1,240	1,179	574	0	

Modelled Flows
2021 DM
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	843	0	0	843
B - A508 S	1,380	0	656	0	2,036
C - Welford Rd	0	442	0	0	442
D - Cranford Road	0	0	0	0	0
Total	1,380	1,285	656	0	

Modelled Flows
2021 DS2
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	830	0	0	830
B - A508 S	1,354	0	700	0	2,054
C - Welford Rd	28	379	0	0	407
	0	0	0	0	0
Total	1,382	1,209	700	0	

PM Peak

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd		Total
A - A508 N	0	0	0	0	0
B - A508 S	0	0	0	0	0
C - Welford Rd	0	0	0	0	0
D - Cranford Road	0	0	0	0	0
Total	0	0	0	0	

2021 DM minus 2015 Base
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	127	0	0	127
B - A508 S	150	0	82	0	232
C - Welford Rd	-10	-21	0	0	-31
D - Cranford Road	0	0	0	0	0
Total	140	106	82	0	

2021 DS2 minus 2015 Base
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	114	0	0	114
B - A508 S	124	0	126	0	250
C - Welford Rd	18	-84	0	0	-66
	0	0	0	0	0
Total	142	30	126	0	

3 Adjusted Flows by adding the Change in Flows (2) to the

2015 Count
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd		Total
A - A508 N	0	761	0	0	761
B - A508 S	1,141	0	658	0	1,799
C - Welford Rd	51	458	0	0	509
D - Cranford Road	0	0	0	0	0
Total	1,192	1,219	658	0	

2021 DM adjusted to count
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	888	0	0	888
B - A508 S	1,291	0	740	0	2,031
C - Welford Rd	41	437	0	0	478
D - Cranford Road	0	0	0	0	0
Total	1,332	1,325	740	0	0

2021 DS2 adjusted to count
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	875	0	0	875
B - A508 S	1,265	0	784	0	2,049
C - Welford Rd	69	374	0	0	443
D - Cranford Road	0	0	0	0	0
Total	1,334	1,249	784	0	

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	818	0	0	818
B - A508 S	894	0	237	0	1,131
C - Welford Rd	2	819	0	0	821
D - Cranford Road	0	0	0	0	0
Total	896	1,637	237	0	

Modelled Flows
2031 DM
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	1,157	0	0	1,157
B - A508 S	1,096	0	315	0	1,411
C - Welford Rd	0	933	0	0	933
D - Cranford Road	0	0	0	0	0
Total	1,096	2,090	315	0	

Modelled Flows
2031 DS2
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	1,128	0	0	1,128
B - A508 S	1,025	0	396	0	1,421
C - Welford Rd	16	947	0	0	963
	0	0	0	0	0
Total	1,041	2,075	396	0	

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	0	0	0	0
B - A508 S	0	0	0	0	0
C - Welford Rd	0	0	0	0	0
D - Cranford Road	0	0	0	0	0
Total	0	0	0	0	

2031 DM minus 2015 Base
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	339	0	0	339
B - A508 S	202	0	78	0	280
C - Welford Rd	-2	114	0	0	112
D - Cranford Road	0	0	0	0	0
Total	200	453	78	0	

2031 DS2 minus 2015 Base
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	310	0	0	310
B - A508 S	131	0	159	0	290
C - Welford Rd	14	128	0	0	142
	0	0	0	0	0
Total	145	438	159	0	

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	882	0	0	882
B - A508 S	942	0	334	0	1,276
C - Welford Rd	41	825	0	0	866
D - Cranford Road	0	0	0	0	0
Total	983	1,707	334	0	

2031 DM adjusted to count
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	1,221	0	0	1,221
B - A508 S	1,144	0	412	0	1,556
C - Welford Rd	39	939	0	0	978
D - Cranford Road	0	0	0	0	0
Total	1,183	2,160	412	0	

2031 DS2 adjusted to count
AM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	1,185	0	0	1,185
B - A508 S	1,067	0	490	0	1,557
C - Welford Rd	55	945	0	0	1,000
	0	0	0	0	0
Total	1,122	2,130	490	0	

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd		Total
A - A508 N	0	716	0	0	716
B - A508 S	1,230	0	574	0	1,804
C - Welford Rd	10	463	0	0	473
D - Cranford Road	0	0	0	0	0
Total	1,240	1,179	574	0	

Modelled Flows
2031 DM
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	910	0	0	910
B - A508 S	1,454	0	784	0	2,238
C - Welford Rd	0	456	0	0	456
D - Cranford Road	0	0	0	0	0
Total	1,454	1,366	784	0	

Modelled Flows
2031 DS2
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	858	0	0	858
B - A508 S	1,441	0	757	0	2,198
C - Welford Rd	23	450	0	0	473
	0	0	0	0	0
Total	1,464	1,308	757	0	

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	0	0	0	0
B - A508 S	0	0	0	0	0
C - Welford Rd	0	0	0	0	0
D - Cranford Road	0	0	0	0	0
Total	0	0	0	0	

2031 DM minus 2015 Base
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	194	0	0	194
B - A508 S	224	0	210	0	434
C - Welford Rd	-10	-7	0	0	-17
D - Cranford Road	0	0	0	0	0
Total	214	187	210	0	

2031 DS2 minus 2015 Base
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	142	0	0	142
B - A508 S	211	0	183	0	394
C - Welford Rd	13	-13	0	0	0
	0	0	0	0	0
Total	224	129	183	0	

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd		Total
A - A508 N	0	761	0	0	761
B - A508 S	1,141	0	658	0	1,799
C - Welford Rd	51	458	0	0	509
D - Cranford Road	0	0	0	0	0
Total	1,192	1,219	658	0	

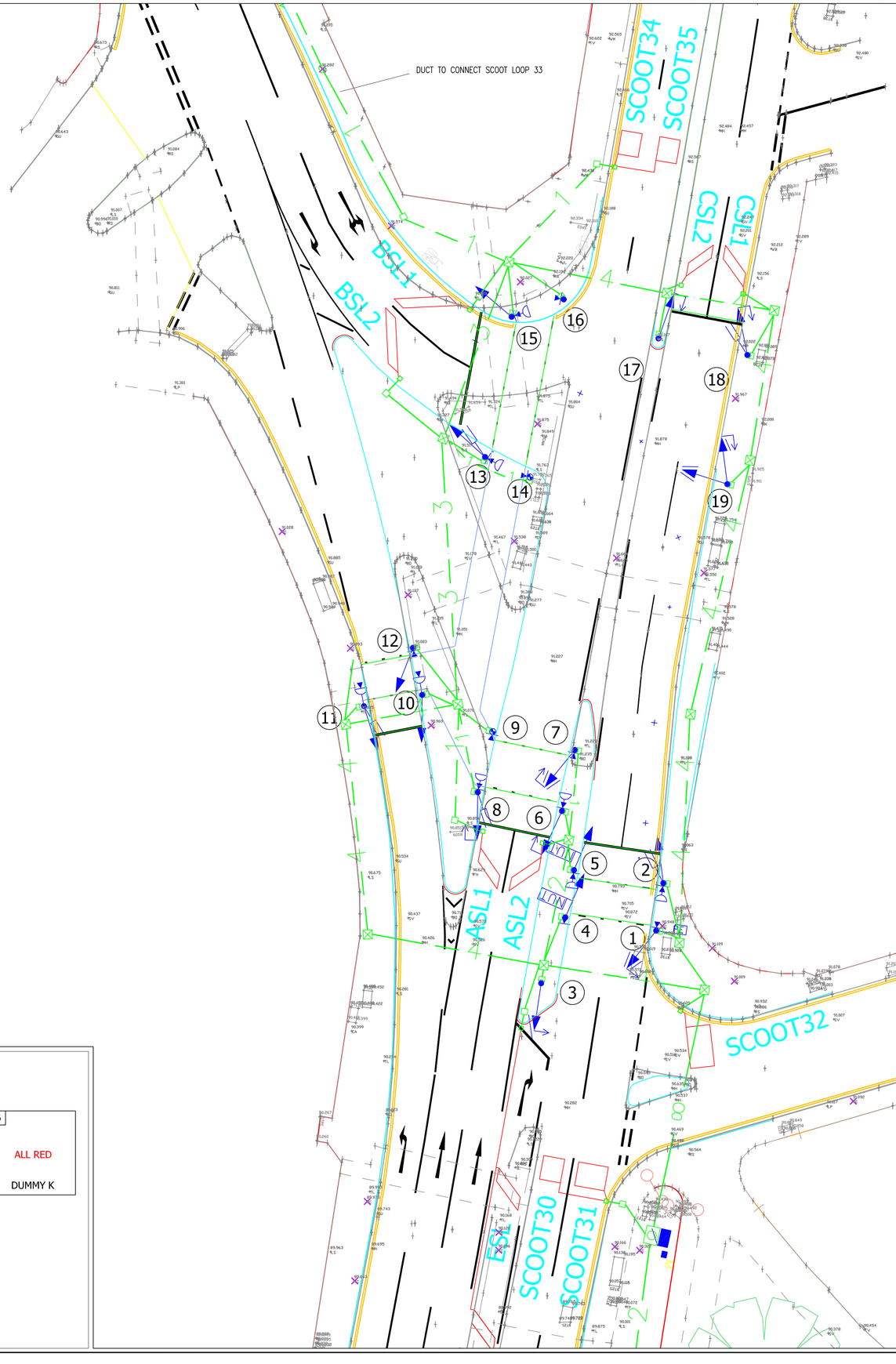
2031 DM adjusted to count
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	955	0	0	955
B - A508 S	1,365	0	868	0	2,233
C - Welford Rd	41	451	0	0	492
D - Cranford Road	0	0	0	0	0
Total	1,406	1,406	868	0	

2031 DS2 adjusted to count
PM Peak

	A - A508 N	B - A508 S	C - Welford Rd	D - Cranford Road	Total
A - A508 N	0	903	0	0	903
B - A508 S	1,352	0	841	0	2,193
C - Welford Rd	64	445	0	0	509
	0	0	0	0	0
Total	1,416	1,348	841	0	0

APPENDIX B



NOTES – WELFORD ROAD

1. ROAD MARKINGS TO BE LAID PRIOR TO SKID RESISTANT SURFACE TREATMENT. MARKINGS TO BE MASKED OVER DURING APPLICATION OF SURFACE THEN RELAID TO LEVEL OF NEW SURFACE COVERING. ALL MARKINGS SHOWN TO BE LAID IN ACCORDANCE WITH TSRGD 2002.

2. ALL DUCTING SHALL BE POLYPROPELENE, ORANGE IN COLOUR, SMOOTH BORE WITH "TRAFFIC SIGNALS" IMPRINTED ON THE DUCT. DRAW CORDS SHALL BE INCLUDED IN ALL DUCTS.

3. ALL DUCT CHAMBERS ARE TO HAVE A GRADE B COMPOSITE LID WITH STEEL FRAMES AND WILL HAVE 150MM CONCRETE BED AND SURROUND, POLE BOX CHAMBERS IN SOFT VERGE SHALL HAVE 1M HARD SURROUND FOR SIGNAL MAINTENANCE.

4. ALL POLES TO ARE TO BE 114MM DIAMETER STRAIGHT.

5. DUCTING FROM RS115 NAL UNITS TO ADJACENT CHAMBER IS TO BE 1x100MM UNLESS INDICATED OTHERWISE. ALL OTHER RUNS SHALL BE AS INDICATED BY NUMBER.

6. THE PHOTOCELL FOR DIMMING SHALL BE LOCATED ON A SIGNAL HEAD WHERE IT WILL NOT BE AFFECTED BY STREET LIGHTING.

7. ORANGE 50MM DUCT TO BE INSTALLED BETWEEN MAINS PILLAR AND CONTROLLER FOR ELECTRICITY SUPPLY.

8. THE CONTROLLER AND ALL ASSOCIATED EQUIPMENT IS TO BE EXTRA LOW VOLTAGE (ELV).

9. DRAWING TO BE READ IN CONJUNCTION WITH THE WORKS SPECIFICATION AND GENERAL ARRANGEMENT DRAWING 10589319-1200-004.

10. THE PRIVATE WIRE COMUNICATIONS LINE IS TO BE REUSED.

11. POLE 3 IS TO HAVE A SIDE COWLS FITTED.

12. A 16C LINK CABLE AND COMMS CABLE IS REQUIRED TO HARBOROUGH ROAD NEAR KINGSLAND AVE.

13. POLES 18 AND 19 TO HAVE THEIR BACKING BOARD REMOVED AND REPLACED WITH A REFLECTIVE STRIP.

14. THE EXISTING OTU IS TO BE RE-USED AND COMMISSIONED BY THE TRAFFIC SIGNAL COMPANY.

15. THE POSITION OF ALL POLES, CHAMBERS, ETC TO BE AGREED ONSITE WITH TRAFFIC SIGNAL ENGINEER.

16. ALL POLES WITH PEDESTRIAN EQUIPMENT TO BE ROTATED TO 45 DEG ANGLE TO PROVIDE REQUIRED CLEARANCE, AS AGREED ONSITE WITH TRAFFIC SIGNAL ENGINEER.

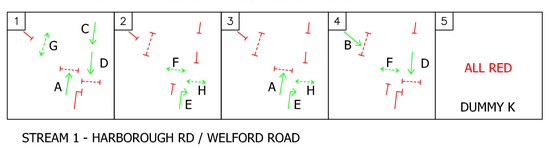
This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.

Northamptonshire County Council: Licence No. 100019331. Published 2012.

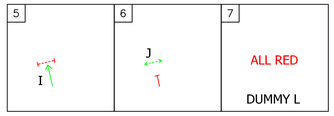
KEY:

- RAG PRIMARY
- RAG SECONDARY
- RAGA PRIMARY (RIGHT TURN ONLY WITH SIDE COWL)
- RAGA SECONDARY (RIGHT TURN ONLY)
- RAGA PRIMARY (AHEAD ONLY)
- RAGA SECONDARY (AHEAD ONLY)
- NLT — BOX SIGN
- NEARSIDED TOUCAN INDICATOR
- NEARSIDED PUFFIN INDICATOR
- PEDESTRIAN DEMAND UNIT AND TACTILE MOTOR
- MICROWAVE VEHICLE DETECTOR
- STRAIGHT SIGNAL POLE & POLE NO.
- STUB POLE
- PC — SOLAR CELL
- ELV TRAFFIC SIGNAL CONTROLLER AND INSPECTION CHAMBER (CIC)
- MP — MAINS SUPPLY FEEDER PILLAR
- 100MM DUCT (No. AS INDICATED)
- NAL RS115DF POLE HOUSING (750mm DEPTH)
- DUCT BOX (300mm x 300mm)
- LARGE DUCT BOX (600mm X 600mm)
- CARRIAGEWAY LOOP BOX
- SL21 — DETECTOR LOOPS

STREAM 0 - HARBOROUGH RD / WELFORD ROAD



STREAM 1 - HARBOROUGH RD / WELFORD ROAD



REV	DATE	BY	DESCRIPTION	CHK	APD
Ø	17/09/2012	BG	As Built	-	-

DRAWING STATUS: As Built

MGWSP — Northamptonshire County Council

Delivering transport and highways services together

PROJECT: Kingsthorpe Corridor Bus Improvements

TITLE: Traffic Signals Layout Welford Road Sheet 5

SCALE @ A1:	CHECKED:	APPROVED:
1:200		
KINGSTHORPE AS BUILTS.DWG	DESIGN-DRAWN: BG	DATE: 14/09/2012
PROJECT No: 10589319	DRAWING No: 10589319-1200-008/AB	REV: Ø

CAD File: N:\TRAFFIC ENGINEERING\11-12 TRAFFIC ENGINEERING\N. KINGSTHORPE CORRIDOR\DRAWINGS\KINGSTHORPE AS BUILTS.DWG

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Administration

General Specifications

Customer Name	Northamptonshire County Council	Customer Order No.	853620320
Intersection/ General Description	Harborough Road / Welford Road - Northampton ORN022	Controller/ Serial Number	7049776
		S.T.S. /EM Number	37325 Issue 1
Controller	(•) New ( ) Modification	Equipment Installation by	Siemens Mobility Traffic Solutions
Area Specifications/ Customer Drawings	10589319 - 1200 - 008	Slot Cutting by	Siemens Mobility Traffic Solutions
Specification Section	Rev E	Civil Works by	Siemens Mobility Traffic Solutions
Contract/Tender Ref:		Customer's Engineer	S.Collins
Quotation No.		Telephone Number	01604-364550
Works Order No.	460599127		

Signal Company Use Only

Signal Engineer: Kevin L Roberts

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 0

Configuration Check Value: 6C 58 50 9B

Controller Options

Hardware: ST900 ELV | Firmware Type and Issue: PB801 ISS 8 | Other Options:

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack: Cabinet | Kit Type Options: (•) UK-Std ( ) Non-UK ( ) ( )

Cabinet/Rack Variant: Black | Cuckoo Options: None | Gemini Unit Fitted: ☐

Mains Supply	230 Volts	50 Hz					
Peak Lamp Current	8 Amps	Dimming Voltage	27.5	Answer Issue	1	Date Created	30/06/11
Average Lamp Power	1000 Watts						
Total Average Power	1200 Watts	Low Inrush Transformer	☐	Edit Issue	3		

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams 2

Phases

( ) Current Total Number of Phases 12

(•) Number of Real Phases 10

( ) Number of Dummy Phases 2

Stages

( ) Current Number of stages (inc. ALL-RED stages) 8

Switched Signs

( ) Number of Switched Signs 0

Action

Add At | Delete At

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- ☐ Serial/Internal UTMC OTU
- ☑ Free-standing OTU
- ☐
- ☐ Serial MOVA

- ☑ Master Time Clock
- ☐ Holiday Clock
- ☑ FT To Current MAX
- ☐ Linked Fixed Time
- ☑ Lamp Monitoring
- ☑ RED Lamp Monitoring
- ☐ Pelican/Puffin/Toucan
- ☐ Standalone Manual
- ☐ Extend All Red
- ☐ Speed Measurement
- ☑ Ripple Change
- ☐ London IMU
- ☐ Non-UK
- ☐ Fail to Part Time
- ☐ Fail To Hardware Flashing
- ☐
- ☐ Download To Level 3

10 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
☐ Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Hurry Call	○	○	○	○	○	○	○	○	○	○	○	○	○
☐	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
☐ Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
☑ UTC	○	○	◉	○	○	○	○	○	○	○	○	○	○
☐	○	○	○	○	○	○	○	○	○	○	○	○	○
☐ CLF (Non-Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
☑ CLF (Base Time)	○	○	○	◉	○	○	○	○	○	○	○	○	○
☑ Vehicle Actuated	○	○	○	○	◉	○	○	○	○	○	○	○	○
☑ Fixed Time	○	○	○	○	○	○	○	○	○	○	◉	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standardPB801.8df
Default PROM data file

Correspondence Monitoring to inc.

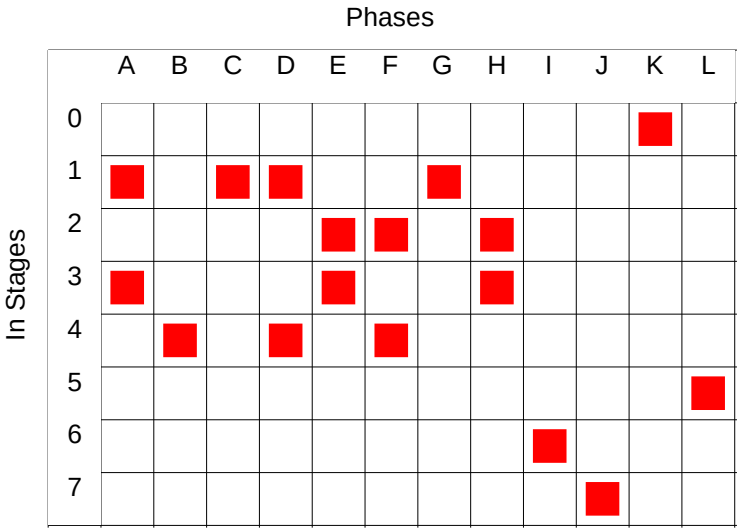
- ☑ Reds
- ☐ Switched Signs
- ☑ Ambers
- ☐ Ignore Reds and Ambers durin

Flash Rate (ms)

400 Off 400 On

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phases in Stages



Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions								
Startup Stage	1	6						
Switch Off Stage								
Standalone Pedestrian								

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream	0	1	2	3	4	5	6	7
0	■	■	■	■	■			
1						■	■	■

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phase Type and Conditions

Phase Type and Conditions

(●) Phases A to P ( ) Manual Output Allocation ☑

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase	No. of Drive Outputs "R"	"A"	"G"
A	Harborough Road Northbound	0 - UK Traffic	0	0 - I		1	1	1
B	Welford Road	0 - UK Traffic	0	0 - I		1	1	1
C	Harborough Road Southbound North	0 - UK Traffic	0	0 - I		1	1	1
D	Harborough Road Southbound South	0 - UK Traffic	0	0 - I		1	1	1
E	Harborough Road Northbound Right Turn	0 - UK Traffic	0	0 - I		1	1	1
F	Toucan across Harborough Road Northbound	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
G	Toucan across across Welford Road	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
H	Toucan across across Harborough Road Southbound	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
I	Harborough Road Northbound Left Turn	0 - UK Traffic	0	0 - I		1	1	1
J	Pedestrians across Harborough Road N-Bnd L-Turn	3 - UK Near Side Pedestrian	0	0 - I		1	1	2
K	Dummy All Red Stage 0 Stream 0	2 - UK GreenArrow	0	0 - I				
L	Dummy All Red Stage 5 Stream 1	2 - UK GreenArrow	0	0 - I				

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Initialise

☑ Amber Conflict Monitoring

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L
A		Co	o	o	o	Co	o	o			o	
B	Co		Co	o	o	o	Co	o			o	
C	o	Co		o	o	o	o	o			o	
D	o	o	o		Co	o	o	Co			o	
E	o	o	o	Co		o	o	o			o	
F	Co	o	o	o	o		o	o			o	
G	o	Co	o	o	o	o		o			o	
H	o	o	o	Co	o	o	o				o	
I										Co		o
J									Co			o
K	o	o	o	o	o	o	o	o				
L									o	o		

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

(●) Phases A to P ( )

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	20	42	58	20	0	0	0	0	☐
B	7	0	0.0	20	36	20	20	0	0	0	0	☐
C	7	0	0.0	20	32	48	20	0	0	0	0	☐
D	7	0	0.0	20	30	36	20	0	0	0	0	☐
E	7	0	0.0	12	16	16	12	0	0	0	0	☐
F	6	0	0.0	0	0	0	0	0	0	0	0	☐
G	8	0	0.0	0	0	0	0	0	0	0	0	☐
H	6	0	0.0	0	0	0	0	0	0	0	0	☐
I	7	0	0.0	18	24	24	18	0	0	0	0	☐
J	6	0	0.0	0	0	0	0	0	0	0	0	☐
K	3	0	0.0	0	0	0	0	0	0	0	0	☐
L	3	0	0.0	0	0	0	0	0	0	0	0	☐
												☐
												☐
												☐
												☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ 1 ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L
A		8				5					3	
B	6		6				5				3	
C		5									3	
D					6			5			3	
E				5							3	
F	7										3	
G		12									3	
H				8							3	
I										5		3
J									5			3
K	2	2	2	2	2	2	2	2				
L									2	2		

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Intergreen Handset Limits

HIGH 30

Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E	F	G	H	I	J	K	L
A		7				5					3	
B	5		5				5				3	
C		5									3	
D					5			5			3	
E				5							3	
F	6										3	
G		11									3	
H				5							3	
I										5		3
J									5			3
K	2	2	2	2	2	2	2	2				
L									2	2		

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.	Phase	Min. Green Min.	Min. Green Max.
A	7	30	Q		
B	7	30	R		
C	7	30	S		
D	7	30	T		
E	7	30	U		
F	5	30	V		
G	7	30	W		
H	5	30	X		
I	7	30	Y		
J	5	30	Z		
K	0	30	A2		
L	0	30	B2		
M			C2		
N			D2		
O			E2		
P			F2		

Max. Green Min. 7 Max. 255

Vehicle Extension Min. 0.0 Max. 12.0

Phase Delay Min. 0 Max. 12

Starting I/G Min. 10 Max. 20

Min Pedestrian Clearance (PBT) Min. 0 Max. 12

Traffic Phase Leaving Min. 3.0 Max. 3.0

Traffic Phase Red/Amber Min. 2 Max. 2

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	ASL1	ASL2		AMVDP8
B	BSL1	BSL2		BMVDP14
C	CSL1	CSL2		CMVDP19
D				DMVDP2
E	ESL	EZ		
F	FPBP6	FPBP7	FPBP8	FPBP9
G	GPBP14	GPBP15	GPBP16	GPBP17
H	HPBP1	HPBP2	HPBP3	HPBP4
I				IMVDP11
J	JPBP10	JPBP11	JPBP12	JPBP13
K				
L				

Extensions

			AMVDP8
			BMVDP14
			CMVDP19
			DMVDP2
ESL	EZ		
			IMVDP11

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E	F	G	H	I	J	K	L						
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E	F	G	H	I	J	K	L						
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E	F	G	H	I	J	K	L						
☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C		E											

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Stages - Prohibited, Alternative, Ignored Moves

Stages - Prohibited, Alternative, Ignored Moves

Sets
- (•) 1
- ( ) 2
- ( ) 3
- ( ) 4

Modes	Restrictions Apply To:	No Restrictions
Urban Traffic Control	(•)	( )
Cableless Linking	(•)	( )
Vehicle Actuated	(•)	( )
	( )	( )
Fixed Time	(•)	( )
	( )	( )

Modes	Restrictions Apply To:	No Restrictions
Manual	(•)	( )
	( )	( )
	( )	( )
	( )	( )
	( )	( )

To Stage / From Stage

From \ To	0	1	2	3	4	5	6	7
0	■							
1		■						
2			■	P				
3				■				
4					■			
5						■		
6							■	
7								■

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3	4	5	6	7								
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3	4	5	6	7								
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3	4	5	6	7								
☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0								

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Phase Delays

Phase Delays

(•) Phase Delays 0-29 ( ) Phase Delays 30-59 ( ) Phase Delays 60-89 ( ) Phase Delays 90-119

No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds	No.	Delay Phase	On Change from Stage	To Stage	By (X) Seconds
0	D	1	2	5	15				0
1	D	1	3	5	16				0
2	A	1	4	5	17				0
3	C	1	4	7	18				0
4	D	1	0	5	19				0
5	C	2	1	1	20				0
6	E	2	1	3	21				0
7	E	2	4	3	22				0
8	C	3	1	1	23				0
9	E	3	1	3	24				0
10	E	3	4	3	25				0
11	D	4	2	5	26				0
12	D	4	3	5	27				0
13	D	4	0	5	28				0
14				0	29				0

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

CLF - Base Time

CLF - Base Time

Controller Base Date: XX/XX/XX

Controller Base Time: 00:00:00

Plan Offset

	Minutes	Seconds		Minutes	Seconds
Plan 0	0	0	Plan 8	0	0
Plan 1	0	0	Plan 9	0	0
Plan 2	0	0	Plan 10	0	0
Plan 3	0	0	Plan 11	0	0
Plan 4	0	0	Plan 12	0	0
Plan 5	0	0	Plan 13	0	0
Plan 6	0	0	Plan 14	0	0
Plan 7	0	0	Plan 15	0	0

Handset Range Limits

	Minutes	Seconds
Min	0	0
Max	255	59

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

CLF - Demand Dependent Moves

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered. The data specified on this screen will also change the screen CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages

	A	B	C	D	E	F	G	H	I	J	K	L
0												
1												
2					■	■		■				
3					■			■				
4												
5												
6										■		
7												

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

3 Number of Control Words

5 Number of Reply Words

[ ] Controller to respond to TC bit.

[ ] Introduction of UTC to be disabled by Priority and LR'

[ ] Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	04:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	04:00:00

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

UTC Control and Reply Data Format

UTC Control and Reply Data Format

Control Words

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Word 1	F1	#F2	#F3	F4	F5	D2	D3	PV
Word 2						SO	TS	
Word 3	BD1	BD2	BD3	BD4				
Word 4								

Reply Words

Word 1	G1	G2	G3	G4	G5			GX
Word 2			CF	DF	LF1	RF2	CC	RR
Word 3	SCOOT30				SCOOT31			
Word 4	SCOOT32				SCOOT33			
Word 5	SCOOT34				SCOOT35			
Word 6								
Word 7								
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

UTC Phase Demand and Extend Definitions

UTC Demand and Extend Definitions

(●) Phases A to P ( )

Demands

For Unlatched demands, preceed the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A				
B				
C				
D				
E		D2	D3	
F		D2		
G				
H				
I				
J				
K				
L				

Extensions

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

UTC Stage and Mode Data Definitions

UTC Stage and Mode Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0	F5	G5		16			
1	F1	G1		17			
2	#F2	G2		18			
3	#F3	G3		19			
4	F4	G4		20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☑ RR ☐

Manual Mode Selected:
☐ G1/G2 ☑ RR ☐

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☑ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☑ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

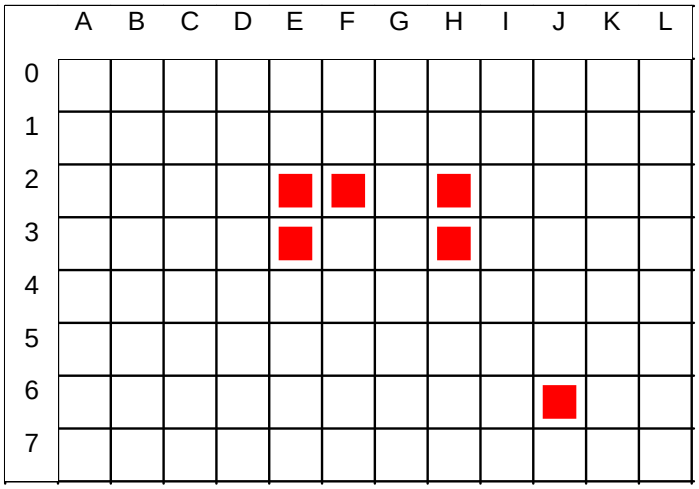
UTC Demand Dependent Forces

Clear Grid Data

Notes:
If no data is entered for a stage then a demand for any phases in that stage will be considered. The data specified on this screen will also change the screen CLF - Demands to Consider with Demand Dependent Stage Moves.

Phases

Stages



Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

MTC - Time Switch Parameters

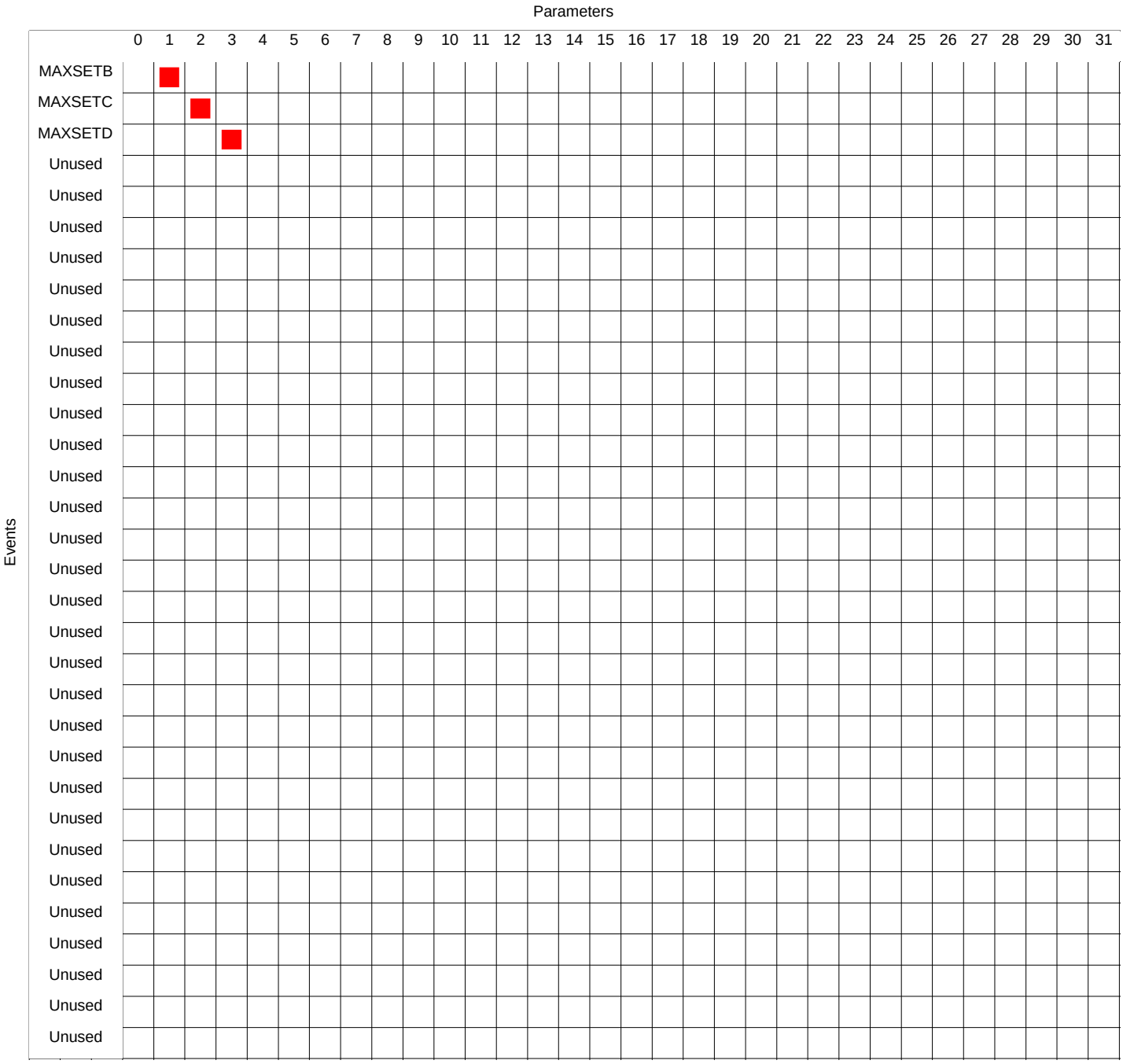
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	No Action	
4	No Action	
5	No Action	
6	No Action	
7	No Action	
8	No Action	
9	No Action	
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

MTC - Time Switch Parameters Array



Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

MTC - Timetable

MTC - Timetable

View Timetable Settings

(•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	7	00:00:00	MAXSET D	2	3
1	7	05:30:00	MAXSET A	2	0
2	9	07:30:00	MAXSET B	2	1
3	9	09:30:00	MAXSET A	2	0
4	9	15:30:00	MAXSET C	2	2
5	9	18:30:00	MAXSET A	2	0
6	0	05:30:00	MAXSET A	2	0
7	0	09:00:00	MAXSET B	2	1
8	0	13:00:00	MAXSET C	2	2
9	0	18:00:00	MAXSET A	2	0
10	1	09:00:00	MAXSET A	2	0
11	0			0	0
12	0			0	0
13	0			0	0
14	0			0	0
15	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

○ ◉ 48
○ ○

Red Lamp Monitoring

Max Red Bulb Wattage

First Red Lamp Fault Speed 0

☐ RLF2 Cancels RLM additional Intergreens

☑ RLF2 Only Cleared by RFL = 1

☐ RLF1 Only Cleared by RFL = 1

RLM Additional Intergreen Handset Limits

Minimum	Maximum
0	6

Streams with Phase BlackOut on RLF2

☐ 0 ☐ 1 ☐ ☐ ☐ ☐ ☐ ☐ ☐

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 1 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
A	Red	1	As Seq.	1: Siemens Helios ELV	○	F	Amber	7	Wait	2: Siemens LED Demand Indicator	○
A	Amber	1	As Seq.	1: Siemens Helios ELV	○	F	Green	6	R,G	3: Siemens LED Nearside Indicator	○
A	Green	1	As Seq.	1: Siemens Helios ELV	○	F	Green	N/A	N/A	N/A	○
B	Red	2	As Seq.	1: Siemens Helios ELV	○	G	Red	8	R,G	3: Siemens LED Nearside Indicator	○
B	Amber	2	As Seq.	1: Siemens Helios ELV	○	G	Amber	9	Wait	2: Siemens LED Demand Indicator	○
B	Green	2	As Seq.	1: Siemens Helios ELV	○	G	Green	8	R,G	3: Siemens LED Nearside Indicator	○
C	Red	3	As Seq.	1: Siemens Helios ELV	○	G	Green	N/A	N/A	N/A	○
C	Amber	3	As Seq.	1: Siemens Helios ELV	○	H	Red	10	R,G	3: Siemens LED Nearside Indicator	○
C	Green	3	As Seq.	1: Siemens Helios ELV	○	H	Amber	11	Wait	2: Siemens LED Demand Indicator	○
D	Red	4	As Seq.	1: Siemens Helios ELV	○	H	Green	10	R,G	3: Siemens LED Nearside Indicator	○
D	Amber	4	As Seq.	1: Siemens Helios ELV	○	H	Green	N/A	N/A	N/A	○
D	Green	4	As Seq.	1: Siemens Helios ELV	○	I	Red	12	As Seq.	1: Siemens Helios ELV	○
E	Red	5	As Seq.	1: Siemens Helios ELV	○	I	Amber	12	As Seq.	1: Siemens Helios ELV	○
E	Amber	5	As Seq.	1: Siemens Helios ELV	○	I	Green	12	As Seq.	1: Siemens Helios ELV	○
E	Green	5	As Seq.	1: Siemens Helios ELV	○	J	Red	13	R,G	3: Siemens LED Nearside Indicator	○
F	Red	6	R,G	3: Siemens LED Nearside Indicator	○	J	Amber	14	Wait	2: Siemens LED Demand Indicator	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Integral LMU Onboard Sensors

Integral LMU Onboard Sensors

No. of LSLS cards fitted	HPU Connection
2	1

Sensor Configuration For LSLS 2 (Cabinet 1)

Phase	Aspect	Sensor #	Sensor Type	Load Type		Phase	Aspect	Sensor #	Sensor Type	Load Type	
J	Green	13	R,G	3: Siemens LED Nearside Indicator	○	N/A	N/A		N/A	N/A	○
J	Green	N/A	N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○
N/A	N/A		N/A	N/A	○	N/A	N/A		N/A	N/A	○

Note : A (*) character next to a sensor number indicates that the sensor would also be available on the External sensors screen. Please be sure you wish to use these sensors here, as they will then become unavailable for Regulatory Signs.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Integral LMU External Sensors for Regulatory Signs

Integral LMU External Sensors for Regulatory Signs

External Sensors (1)

Sensor	Load Type
48	4: Siemens ELV Regulatory S
47	4: Siemens ELV Regulatory S
46	4: Siemens ELV Regulatory S
45	4: Siemens ELV Regulatory S

External Sensors (2)

Sensor	Load Type
44	4: Siemens ELV Regulatory S
43	4: Siemens ELV Regulatory S
42	4: Siemens ELV Regulatory S
41	4: Siemens ELV Regulatory S

External Sensors (3)

Sensor	Load Type

External Sensors (4)

Sensor	Load Type

External Sensors (5)

Sensor	Load Type

External Sensors (6)

Sensor	Load Type

Note: Sensors which have been used as Onboard sensors will not be available here.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

RLM Additional Intergreens

Phases Delayed

Phases with RLF1

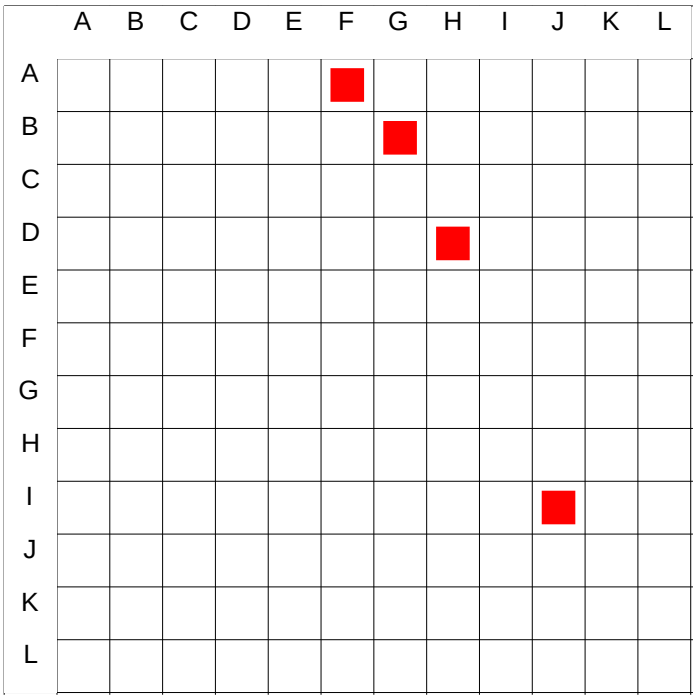
	A	B	C	D	E	F	G	H	I	J	K	L
A						2						
B							2					
C												
D								2				
E												
F												
G												
H												
I										2		
J												
K												
L												

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

RLM Phase Inhibits

Phases Inhibited/Blacked-Out

Phases with RLF2



Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0	1	2	3	4	5	6	7
0	All Red Stage 0 Stream 0 / All Red Stage 5 Stream 1	0	5						
1	Harborough Rd N-Bnd / Harborough Rd S-Bnd North	1	5						
2	Harborough Rd N-Bnd R-T / Ped x Harborough Rd N-Bnd _S-Bnd	2	5						
3	Harborough Rd N-Bnd _Right Turn / Ped x Harborough Road S-Bnd	3	5						
4	Welford Rd / Harborough Rd S-Bnd South _Harborough Rd N-Bnd	4	5						
5									
6									
7									

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	○	◉	○	○
RR	◉	○	○	○

Manual Signals On

- ○ Immediate Signals On
- ◉ As Start-Up

Manual Mode Enable

- ◉ Always
- ○ When Handset Plugged in (Note 1)
- ○ When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; AUX LED's
; ~~~~~~~~~
MAUXSW1=MIL22                                ; AUX 1 LED LIT WHEN AUX1 SWITCH ACTIVE ( dimming override ).
                                             ; AUX 2 LED LIT WHEN BD1 OR BD2 UTC INPUT ACTIVE.
                                             ; AUX 3 LED LIT WHEN BD3 OR BD4 UTC INPUT ACTIVE.
CNDTMA4+CNDTMA5+CNDTMA6+CNDTMA7=MIL07        ; AUX 4 ( HURRY CALL ) LED LIT WHEN BD1,BD2,BD3OR BD4 UTC INPUT ACTIVE.
(MODE0 EQL<6>)=MIL17                         ; AUX 5 ( HIGHER PRIORITY ) LED LIT WHEN UTC MODE ACTIVE.

; UTC REPLY BITS
; ~~~~~~~~~~~~~~
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(STAGE1)=G1; LAMPS OFF AND STAGE CONFIRMS FOR UTC G1 _G2 BITS
LMPON.LPSPRD.SWLMPS.NOT(FLF17).NOT(STAGE2)=G2
NOT(LMPANY0+LMPANY1)=LF1                     ; ANY LAMP FAULT EITHER STREAM REPLIES UTC LF1 BIT
NOT(LMP2RED0+LMP2RED1)=RF2                   ; 2ND RED LAMP FAULT EITHER STREAM REPLIES UTC RF2 BIT
NOT(FLFCOM)=CF                               ; CONTROLLER FAULT BIT
NOT(LMPON.SWLMPS.PHASEI.NOT(LMP2RED1))=GX    ; LAMPS ON AND PHASE I GREEN _NO RED LAMP FAULT REPLIES GX BIT

; UTC PED DEMAND
; ~~~~~~~~~~~~~~
PV=PRVST7                                    ; PREVENT PED PHASE APPEARING

; T900 SPECIAL FACILITIES
; ~~~~~~~~~~~~~~~~~~~~~~
MAXSETB=ESPTX1                               ; MAXSET INFORMATION ALSO SENT ALONG SERIAL LINK
MAXSETC=ESPTX2
MAXSETD=ESPTX3
TRUE=ESPTX4                                  ; FLAG TO DETECT SERIAL LINK DISCONNECTION

; DOOR SWITCH OMU SERIAL LINK
; ~~~~~~~~~~~~~~~~~~~~~~~~~~
NOT(DOORSW)=ESPTX0                           ; DOOR OPEN SEND SIGNAL TO OMU VIA SERIAL LINK

; DOOR CLOSED DISABLES MANUAL PANEL
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
DOORSW:=MNCONT                               ; DOOR CLOSED DISABLES MANUAL MODE CONTROL
       *=MSCONT
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; NORTHAMPTONSHIRE VA MOVES STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<2>) THN
        IFT (NXTSTG0 EQL<0>)+STAGE0 THN                    ; STAGE 0
        (LCPHA+UCPHA+LCPHC+UCPHC+LCPHD+UCPHD+LCPHG+UCPHG)=+UCST1
        (LCPHE+UCPHE+LCPHF+UCPHF+LCPHH+UCPHH)=+UCST2
        (LCPHB+UCPHB)=+UCST4
    END
        IFT (NXTSTG0 EQL<1>)+STAGE1 THN                    ; STAGE 1
        (LCPHF+UCPHF).(LCPHE+UCPHE+LCPHH+UCPHH)=+UCST2
        (LCPHE+UCPHE+LCPHH+UCPHH)=+UCST3
        (LCPHB+UCPHB+LCPHF+UCPHF)=+UCST4
    END
        IFT (NXTSTG0 EQL<2>)+STAGE2 THN                    ; STAGE 2
        (LCPHB+UCPHB)=+UCST4
        (LCPHA+UCPHA+LCPHC+UCPHC+LCPHD+UCPHD+LCPHG+UCPHG)=+UCST1
    END
        IFT (NXTSTG0 EQL<3>)+STAGE3 THN                    ; STAGE 3
        (LCPHB+UCPHB)=+UCST4
        (LCPHC+UCPHC+LCPHD+UCPHD+LCPHG+UCPHG)=+UCST1
        (LCPHF+UCPHF)=+UCST2
    END
        IFT (NXTSTG0 EQL<4>)+STAGE4 THN                    ; STAGE 4
        (LCPHA+UCPHA+LCPHC+UCPHC+LCPHG+UCPHG)=+UCST1
        (LCPHE+UCPHE+LCPHH+UCPHH)=+UCST3
    END
END

; STAGE PREVENTS FOR VA IN STREAM 0
; ================================
IFT (MODE0 EQL<2>) THN
    NOT(UCST1)=PRVST1                          ; PREVENT ALL STAGES UNLESS AN UNLATCHED CALL
    NOT(UCST2)=PRVST2                          ; IS PRESENT
    NOT(UCST3)=PRVST3
    NOT(UCST4)=PRVST4
ELS
      FALSE:::=PRVST1                          ; REMOVE PREVENTS FOR ALL OTHER MODES
             *=PRVST2
             *=PRVST3
             *=PRVST4
END

; NORTHAMPTONSHIRE VA MOVES STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE1 EQL<2>) THN
        IFT (NXTSTG1 EQL<6>)+STAGE6 THN                    ; STAGE 6
        (LCPHJ+UCPHJ)=+UCST7
    END
        IFT (NXTSTG1 EQL<7>)+STAGE7 THN                    ; STAGE 7
        TRUE=+UCST6
    END
END

; STAGE PREVENTS FOR VA IN STREAM 1
; ================================
IFT (MODE1 EQL<2>) THN
    NOT(UCST6)=PRVST6                          ; PREVENT ALL STAGES UNLESS AN UNLATCHED CALL IS PRESENT
    NOT(UCST7)=PRVST7
    NOT(UCST5)=PRVST5
ELS
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
        FALSE=PRVST6
        FALSE=PRVST7                    ; REMOVE PREVENTS FOR ALL OTHER MODES
        FALSE=PRVST5
END
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; NORTHAMPTONSHIRE UTC MOVES
; ~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<6>.F1+F2+F3+F4+F5) THN
        F1=+UCST1                                          ; F1
        F2.(LCPHF+UCPHF).(LCPHE+UCPHE+LCPHH+UCPHH)=+UCST2 ; F2
        F3.(LCPHE+UCPHE+LCPHH+UCPHH)=+UCST3                ; F3
        F4=+UCST4                                          ; F4
    END
; STAGE PREVENTS FOR UTC _V.A MODES

; ================================
IFT (MODE0 EQL<6>+(MODE0 EQL<2>)) THN
    NOT(UCST1)=PRVST1                       ; PREVENT ALL STAGES UNLESS AN UNLATCHED CALL
    NOT(UCST2)=PRVST2                       ; IS PRESENT
    NOT(UCST3)=PRVST3
    NOT(UCST4)=PRVST4
ELS
      FALSE:::=PRVST1                       ; REMOVE PREVENTS FOR ALL OTHER MODES
             *=PRVST2
             *=PRVST3
             *=PRVST4
END

(MODE0 EQL<6>.PV)=PRVST7                    ; PREVENT STAGE 7 IF IN UTC MODE ONLY WITH PV BIT ACTIVE
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; SPECIAL REVERSION TO ALL RED STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; TRAFFIC PHASE STAGE DEMANDS AND EXTENSIONS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT (MODE0 EQL<2>)+(MODE0 EQL<6>) $          ; IF VA, UTC, HURRY CALL OR PRIORITY MODES ARE ACTIVE
+(MODE0 EQL<13>) THN                        ; THEN IF THE FOLLOING CONDITIONS ARE MET SET A FLAG.
LCPHA+UCPHA+EXTAA+LCPHB+UCPHB+EXTAB $
+LCPHC+UCPHC+EXTAC+LCPHD+UCPHD+EXTAD $
+LCPHE+UCPHE+EXTAE+LCPHI+UCPHI+EXTAI $
+LCST1+UCST1+LCST2+UCST2+LCST3+UCST3 $
+LCST4+UCST4=2SCRT12
END

; PED DEMANDS
; ~~~~~~~~~~~
IFT (MODE0 EQL<2>)+(MODE0 EQL<6>) $          ; IF VA, UTC, HURRY CALL OR PRIORITY MODES ARE ACTIVE
+(MODE0 EQL<13>) THN                        ; THEN IF THE FOLLOING CONDITIONS ARE MET SET A FLAG.
((LCPHF(PEDBUTF.NOT(PHASEF))).NOT(FDH83B3)) $
+((LCPHG+(PEDBUTG.NOT(PHASEG))).NOT(FDH85B1)) $
+((LCPHH+(PEDBUTH.NOT(PHASEH))).NOT(FDH83B7+FDH84B1)) $
+((LCPHJ+(PEDBUTJ.NOT(PHASEJ))).NOT(FDH84B3))=SCRT13
END
IFT 2SCRT12+2SCRT13 THN                     ; IF ANY FLAG SET RUN A  DELAY TIMER

    RUN<0>
END
(MODE0 EQL<2>).CNDTMA0=PRVST0               ; DELAYED REVERT TO ALL RED TIMER 0
IFT CNDTER0 THN
    RUN<1>
END
NOT(CNDTMA0).CNDTMA1=+LCST0                 ; AFTER DELAY TIMER INSERT A LATCHED DCEMAND FOR STAGE 0
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; UTC FORCE BITS BD1, BD2, BD3 OR BD4 LIGHT MANUAL PANEL AUX LED'S
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
; BD1 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD1.NOT(SCRT2) THN
    RUN<4>
    TRUE=SCRT2
END
IFT NOT(BD1) THN
    FALSE=SCRT2
END

; BD2 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD2.NOT(SCRT3) THN
    RUN<5>
    TRUE=SCRT3
END
IFT NOT(BD2) THN
    FALSE=SCRT3
END

; BD3 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD3.NOT(SCRT4) THN
    RUN<6>
    TRUE=SCRT4
END
IFT NOT(BD3) THN
    FALSE=SCRT4
END

; BD4 5 SECONDS UTC FORCE BITS
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~
IFT BD4.NOT(SCRT5) THN
    RUN<7>
    TRUE=SCRT5
END
IFT NOT(BD4) THN
    FALSE=SCRT5
END

; BD3 OR BD4 ACTIVE LIGHTS HURRY CALL LED
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
(CNDTMA4+BD1)+(CNDTMA5+BD2)=MIL23
(CNDTMA6+BD3)+(CNDTMA7+BD4)=MIL05
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; PHASE TACTILE OUTPUTS STREAM 0
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LMPON.PHASEF.NOT(LMP2RED0)=TACTF            ; TACTILE OUTPUTS TACTF UNLESS 2 RED LAMPS FAULT STREAM 0
LMPON.PHASEG.NOT(LMP2RED0)=TACTG            ; TACTILE OUTPUTS TACTG UNLESS 2 RED LAMPS FAULT STREAM 0
LMPON.PHASEH.NOT(LMP2RED0)=TACTH            ; TACTILE OUTPUTS TACTH UNLESS 2 RED LAMPS FAULT STREAM 0

; PHASE TACTILE OUTPUTS STREAM 1
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
LMPON.PHASEJ.NOT(LMP2RED1)=TACTJ            ; TACTILE OUTPUTS TACTJ UNLESS 2 RED LAMPS FAULT STREAM 1
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; FREE STANDING OTU SCOOT INPUT - OUTPUT
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
SCOOT30=SCOOT300
SCOOT31=SCOOT310
SCOOT32=SCOOT320
SCOOT33=SCOOT330
SCOOT34=SCOOT340
SCOOT35=SCOOT350
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; DISABLE MANUAL MODE STREAM 1 IN ALL MODES EXCEPT VA.
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
((MODE0 EQL <4>)+(MODE1 EQL <4>)):::=DISMAN1
                                    *=DISHRY1
                                    *=DISCLF1
                                    *=DISFT1
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning

```
; ST900ELV LAMP SUPPLY FOR GEMINI II
; ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
;
; LAMPS OFF REPLY TO THE OMU (LAMPS OFF RELAY MUST BE FITTED TO ENABLE THIS TO WORK)
; ================================================================================
LMPON.SWLMPS.NOT(FLF17)=LAMPSON             ; IF LAMPS ARE SWITCHED OFF OR FAIL SEND REPLY BY
                                            ; USING AN I/O OUTPUT CALLED "LAMPSON"
```

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Conditioning Timers

Special Conditioning Timers

Timers

0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	30	0	255	☐	DELAYED REVERT TO ALL RED	16		0	255	☐	
1	2	0	255	☐	REVERT TO STAGE 0	17		0	255	☐	
2		0	255	☐		18		0	255	☐	
3		0	255	☐		19		0	255	☐	
4	5	0	255	☐	BD1 FORCE BIT MIN TIMER	20		0	255	☐	
5	5	0	255	☐	BD2 FORCE BIT MIN TIMER	21		0	255	☐	
6	5	0	255	☐	BD3 FORCE BIT MIN TIMER	22		0	255	☐	
7	5	0	255	☐	BD4 FORCE BIT MIN TIMER	23		0	255	☐	
8	0	0	0.6	☑	REPEATEDLY START TIMER 8	24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Fault Log Flags

Fault Log Flags

Fault No	Cond Flag	Act Flag
0	☑	☐
1	☑	☐
2	☑	☐
3	☑	☐
4	☑	☐
5	☑	☐
6	☑	☐
7	☑	☐
8	☑	☐
9	☑	☐
10	☑	☐
11	☑	☐
12	☐	☐
13	☑	☐
14	☑	☐
15	☑	☐

Fault No	Cond Flag	Act Flag
16	☑	☐
17	☐	☐
18	☑	☐
19	☑	☐
20	☑	☐
21	☑	☐
22	☐	☐
23	☑	☐
24	☑	☐
25	☑	☐
26	☑	☐
27	☑	☐
28	☑	☐
29	☑	☐
30	☑	☐
31	☑	☐

Fault No	Cond Flag	Act Flag
32	☑	☐
33	☑	☐
34	☑	☐
35	☑	☐
36	☐	☐
37	☑	☐
38	☑	☐
39	☑	☐
40	☑	☐
41	☑	☐
42	☑	☐
43	☑	☐
44	☑	☐
45	☑	☐
46	☑	☐
47	☑	☐

Fault No	Cond Flag	Act Flag
48	☑	☐
49	☑	☐
50	☑	☐
51	☑	☐
52	☑	☐
53	☑	☐
54	☑	☐
55	☐	☐
56	☑	☐
57	☑	☐
58	☑	☐
59	☑	☐
60	☑	☐
61	☑	☐
62	☑	☐
63	☑	☐

Note:

Cond Flag -
If a fault occurs which sets a fault log flag that has been checked for this Cond flag option then a flag will be set that can be read in Conditioning.

Act Flag -
If a fault occurs which sets a fault log flag that has been checked for this Act flag option then firstly the lamps will be switched OFF and secondly a flag will be set that can be read in conditioning, to allow any further actions required to be performed by conditioning.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Instructions

37325

Card Type	Rack Posn	Addr.	Port	Type	Line	Term Posn
Intelligent Backplane 16/0	Rack	01	0	I	000 - 007	2 LT1
Intelligent Backplane 16/0	Rack	01	1	I	008 - 015	2 LT1
Serial IO 24/16	1 I/O1	02	2	I	016 - 023	1 I/O1
Serial IO 24/16	1 I/O1	02	3	I	024 - 031	1 I/O1
Serial IO 24/16	1 I/O1	02	4	I	032 - 039	1 I/O1
Serial IO 24/16	1 I/O1	02	5	O	040 - 047	1 I/O1
Serial IO 24/16	1 I/O1	02	6	O	048 - 055	1 I/O1
Serial IO 24/16 (UTC)	1 I/O2	03	7	I	056 - 063	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	03	8	I	064 - 071	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	03	9	I	072 - 079	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	03	10	O	080 - 087	1 I/O2
Serial IO 24/16 (UTC)	1 I/O2	03	11	O	088 - 095	1 I/O2
CPU	A					

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/32900/020	ST900 ELV Cabinet UK 20A 1 LSLS - Grey			
3	667/1/32900/040	ST900 ELV Cabinet UK 40A 1 LSLS - Grey			
4	667/1/32900/021	ST900 ELV Cabinet UK 20A 1 LSLS - Black	1		
5	667/1/32900/041	ST900 ELV Cabinet UK 40A 1 LSLS - Black			
6					
7					
8					
9	667/1/32943/001	ELV Lamp switch (LSLS) kit	1		
10	667/1/32960/001	ELV Lamp switch (LSLS) backplane kit	1		
11	667/1/32995/002	ST900 I/O card kit (4 outputs)			
12	667/1/32995/001	ST900 I/O card kit (16 outputs)	2		
13					
14					
15					
16	667/1/27004/000	Integral TC12 OTU kit			
17	667/1/27005/000	SDE Facility kit			
18	667/1/32910/000	ST900 Intelligent detector backplane kit	1		
19	667/1/33002/000	ELV detector 6U rack expansion kit			
20	667/1/33074/000	ST900 ELV 24 V detector supply Kit (6A)			
21	667/1/20690/001	19" Detector Rack			
22					
23	667/1/32985/000	ELV 20A to 40A upgrade kit			
24					
25					
26	667/1/33070/000	ELV Regulatory Sign expansion kit			
27	667/1/32950/000	ELV Audible supply kit			
28	667/1/33009/000	ST900 300mA RCD kit			
29					
30	667/1/32900/001	Expansion cabinet kit - Black			
31	667/1/32900/000	Expansion cabinet kit - Grey			
32	667/1/33072/000	Cabinet mounted cut-out connection kit			
33					
34					
35					
36	667/1/27056/001	Manual Panel Full kit			
37	667/1/27110/000	Manual Panel RS232 kit			
38					
39					
40	667/1/16260/000	Configuration Eprom (Issue 1. 0)	1		

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Instructions

ST900 ELV CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/32900/920	ST900 ELV cuckoo Kit - T200			
43	667/1/32900/921	ST900 ELV cuckoo Kit - T400			
44	667/1/32900/922	ST900 ELV cuckoo Kit - T800			
45	667/1/32900/923	ST900 ELV cuckoo Kit - Microsense			
46	667/1/32900/925	ST900 ELV cuckoo Kit - Peek			
47					
48					
49					
50					
51					
52	667/1/33073/000	ST900 Isolator locking kit			
53	667/2/20234/000	Screw Lock Key			
54					
55					
56	667/1/27104/000	ST800 / ST900 DFM Lens Kit			
57	667/1/21150/002	ST800 / ST900 Gas Plinth			
58	667/2/27096/000	ST800 / ST900 Mounting Stool			
59					
60					
61					
62	667/1/26271/000	Telephone Kit (Lightning protection)			
63	667/1/27118/000	Surge Arrester (Lightning protection)			
64					
65					
66					
67	667/1/32900/120	ST900 ELV Cabinet Export 20A 1 LSLS - Grey			
68	667/1/32900/140	ST900 ELV Cabinet Export 40A 1 LSLS - Grey			
69	667/1/32900/121	ST900 ELV Cabinet Export 20A 1 LSLS - Black			
70	667/1/32900/141	ST900 ELV Cabinet Export 40A 1 LSLS - Black			
71					
72					
73	667/1/32900/900	ST900 ELV export rack Kit			
74	667/1/32945/000	ST900 ELV additional LSLS rack wiring kit			
75					
76	667/1/27007/000	IRM Facility			
77					
78					
79					
80					

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Special Instructions

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 0

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	ASL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A1
○	1	1	I	ASL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A2
○	2	2	I	BSL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A3
○	3	3	I	BSL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	A4
○	4	4	I	CSL1	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B1
○	5	5	I	CSL2	☑	☑	☐	☐	☐	A	0	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B2
○	6	6	I	SPARE2-3	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B3
○	7	7	I	SPARE2-4	☑	☑	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	B4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 1

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Intelligent Backplane 16/0
Card Address: 1

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	8	0	I	ESL	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C1
○	9	1	I	EZ	☑	☑	☐	☐	☐	A	0	1.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C2
○	10	2	I	SCOOT30	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C3
○	11	3	I	SCOOT31	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	C4
○	12	4	I	SCOOT32	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D1
○	13	5	I	SCOOT33	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D2
○	14	6	I	SCOOT34	☑	☑	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D3
○	15	7	I	SCOOT35	☑	☑	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	2 LT1	D4

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 2

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	16	0	I	AMVDP8	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	17	1	I	BMVDP14	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	18	2	I	CMVDP19	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	19	3	I	DMVDP2	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	20	4	I	IMVDP11	☑	☐	☐	☐	☐	A	0	0.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	21	5	I	FPBP6	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	22	6	I	FPBP7	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	23	7	I	FPBP8	☑	☐	☐		☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 3

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	24	0	I	FPBP9	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	8
○	25	1	I	GPBP14	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	9
○	26	2	I	GPBP15	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	10
○	27	3	I	GPBP16	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	11
○	28	4	I	GPBP17	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	12
○	29	5	I	HPBP1	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	13
○	30	6	I	HPBP2	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	14
○	31	7	I	HPBP3	☑	☐	☐		☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 4

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	32	0	I	HPBP4	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	16
○	33	1	I	JPBP10	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	17
○	34	2	I	JPBP11	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	18
○	35	3	I	JPBP12	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	19
○	36	4	I	JPBP13	☑	☐	☐	☐	☐	Y	2	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	20
○	37	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	21
○	38	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	22
○	39	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 5

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	40	0	O	TACTF	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	0
○	41	1	O	TACTG	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	1
○	42	2	O	TACTH	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	2
○	43	3	O	TACTJ	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	3
○	44	4	O	SCOOT30O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	4
○	45	5	O	SCOOT31O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	5
○	46	6	O	SCOOT32O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	6
○	47	7	O	SCOOT33O	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 6

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16
Card Address: 2

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	48	0	O	SCOOT34O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	8
○	49	1	O	SCOOT35O	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	9
○	50	2	O	LAMPSON	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	10
○	51	3	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	11
○	52	4	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	12
○	53	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	13
○	54	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	14
○	55	7	O		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O1	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 7

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	56	0	I	F1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	0
○	57	1	I	#F2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	1
○	58	2	I	#F3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	2
○	59	3	I	F4	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	3
○	60	4	I	F5	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	4
○	61	5	I	D2	☑	☐	☐	☐	☐	N		0.0	☑	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	5
○	62	6	I	D3	☑	☐	☐	☐	☐	N		0.0	☑	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	6
○	63	7	I	PV	☑	☐	☐		☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 8

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	64	0	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	8
○	65	1	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	9
○	66	2	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	10
○	67	3	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	11
○	68	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	12
○	69	5	I	SO	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	13
○	70	6	I	TS	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	14
○	71	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 9

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	72	0	I	BD1	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	16
○	73	1	I	BD2	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	17
○	74	2	I	BD3	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	18
○	75	3	I	BD4	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	19
○	76	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	20
○	77	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	21
○	78	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	22
○	79	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	23

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 10

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	80	0	O	G1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	0
○	81	1	O	G2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	1
○	82	2	O	G3	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	2
○	83	3	O	G4	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	3
○	84	4	O	G5	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	4
○	85	5	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	5
○	86	6	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	6
○	87	7	O	GX	☑	☐	☐		☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	7

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Inputs and Outputs

Inputs and Outputs

☐ Enable Signal Required Check boxes

☐ Manual Allocation

Port Number & Type

Port: 11

○ Inputs ○ Outputs ◉ Inputs & Outputs

Card Type & Address

Serial IO 24/16 (UTC)
Card Address: 3

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Line No
○	88	0	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	8
○	89	1	O		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1I/O2	9
○	90	2	O	CF	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	10
○	91	3	O	DF	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	11
○	92	4	O	LF1	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	12
○	93	5	O	RF2	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	13
○	94	6	O	CC	☑	☐	☐	☐	☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	14
○	95	7	O	RR	☑	☐	☐		☐	N		0.0	☐	☑	☐	☐	☐	☐	☐	☐	☐	1I/O2	15

Add | Delete | Move | Clear Used By | Move to/from backplane

Manual Map Optimisation

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 1 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	A	Red	Phase	16	F	Amber	Phase
31	A	Amber	Phase	15	F	Green	Phase
30	A	Green	Phase	14	F	Green	Phase
29	B	Red	Phase	13	G	Red	Phase
28	B	Amber	Phase	12	G	Amber	Phase
27	B	Green	Phase	11	G	Green	Phase
26	C	Red	Phase	10	G	Green	Phase
25	C	Amber	Phase	9	H	Red	Phase
24	C	Green	Phase	8	H	Amber	Phase
23	D	Red	Phase	7	H	Green	Phase
22	D	Amber	Phase	6	H	Green	Phase
21	D	Green	Phase	5	I	Red	Phase
20	E	Red	Phase	4	I	Amber	Phase
19	E	Amber	Phase	3	I	Green	Phase
18	E	Green	Phase	2	J	Red	Phase
17	F	Red	Phase	1	J	Amber	Phase

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

Aspect Drives (ELV Controllers)

Aspect Drives (ELV Controllers)

☐ Card Reversed

HPU Connection 1

Aspect Drive Configuration for LSLS 2 of 2 cards (Cabinet 1)

Output	Phase	Aspect	Use	Output	Phase	Aspect	Use
32	J	Green	Phase	16	N/A	N/A	N/A
31	J	Green	Phase	15	N/A	N/A	N/A
30	N/A	N/A	N/A	14	N/A	N/A	N/A
29	N/A	N/A	N/A	13	N/A	N/A	N/A
28	N/A	N/A	N/A	12	N/A	N/A	N/A
27	N/A	N/A	N/A	11	N/A	N/A	N/A
26	N/A	N/A	N/A	10	N/A	N/A	N/A
25	N/A	N/A	N/A	9	N/A	N/A	N/A
24	N/A	N/A	N/A	8	N/A	N/A	N/A
23	N/A	N/A	N/A	7	N/A	N/A	N/A
22	N/A	N/A	N/A	6	N/A	N/A	N/A
21	N/A	N/A	N/A	5	N/A	N/A	N/A
20	N/A	N/A	N/A	4	N/A	N/A	N/A
19	N/A	N/A	N/A	3	N/A	N/A	N/A
18	N/A	N/A	N/A	2	N/A	N/A	N/A
17	N/A	N/A	N/A	1	N/A	N/A	N/A

Works Order : 460599127
EM Number : 37325
Engineer : Kevin L Roberts
Intersection : Harborough Road / Welford Road - Northampton ORN022

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	9	9	9	9
Group 1	Active (Mins)	10	10	10	10
	InActive (Hrs)	168	168	168	168
Group 2	Active (Mins)	30	30	30	30
	InActive (Hrs)				
Group 3	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 4	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 5	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 6	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 7	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s) (No configuration data to print)
  - 4.2.2 CLF - Base Time
  - 4.2.3 CLF - Demand Dependent Moves
- 4.3 UTC and MOVA
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions
    - 4.3.3.2 UTC Stage and Mode Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 Integral LMU Onboard Sensors
  - 4.5.3 Integral LMU External Sensors for Regulatory Signs
  - 4.5.4 RLM Additional Intergreens
  - 4.5.5 RLM Phase Inhibits
- 4.6 Manual
  - 4.6.1 Manual Panel
  - 4.6.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags

6 Special Instructions

7 I/O
- 7.1 Call Cancel (No configuration data to print)
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives (ELV Controllers)
- 7.4 I/O - DFM Group Timings

APPENDIX C

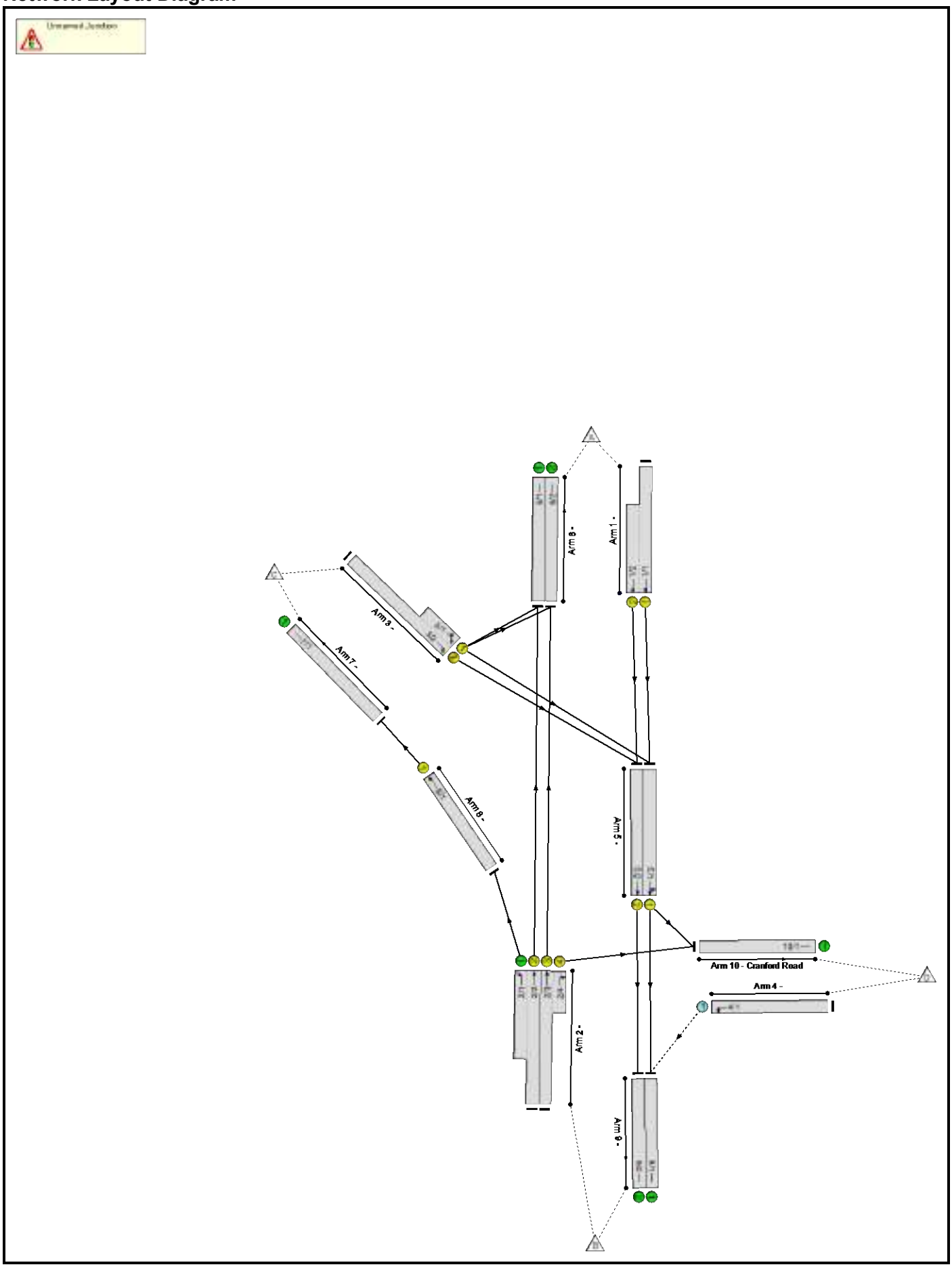
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 25
Location:	A508, Harborough Road (south)/ A5199, Welford Road/ A508, Harborough Road (north)/ Cranford Road/ Kingsland Avenue
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Full Input Data And Results

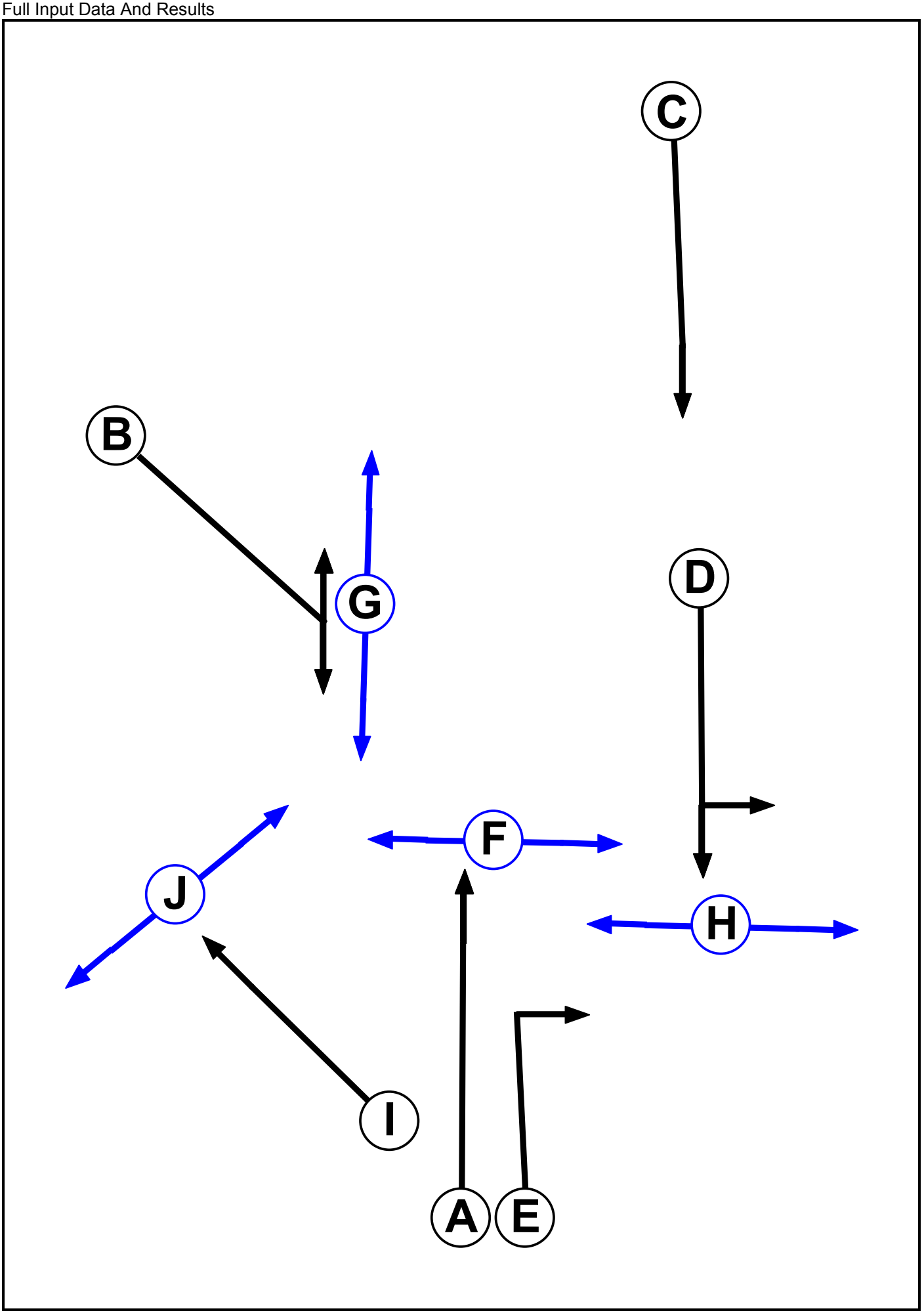
Network Layout Diagram



Full Input Data And Results

Phase Diagram

Full Input Data And Results



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Traffic	1		7	7
F	Pedestrian	1		7	7
G	Pedestrian	1		7	7
H	Pedestrian	1		7	7
I	Traffic	2		7	7
J	Pedestrian	2		7	7

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J
A		8	-	-	-	5	-	-	-	-
B	6		6	-	-	-	5	-	-	-
C	-	5		-	-	-	-	-	-	-
D	-	-	-		6	-	-	5	-	-
E	-	-	-	5		-	-	-	-	-
F	7	-	-	-	-		-	-	-	-
G	-	12	-	-	-	-		-	-	-
H	-	-	-	8	-	-	-		-	-
I	-	-	-	-	-	-	-	-		5
J	-	-	-	-	-	-	-	-	5	

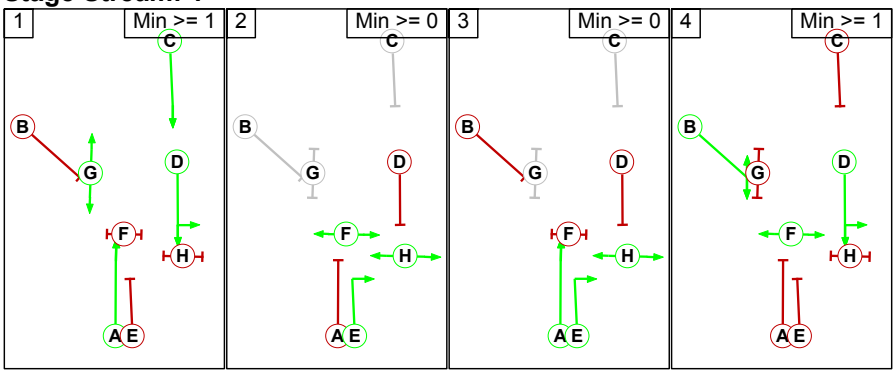
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A C D G
1	2	E F H
1	3	A E H
1	4	B D F
2	1	I
2	2	J

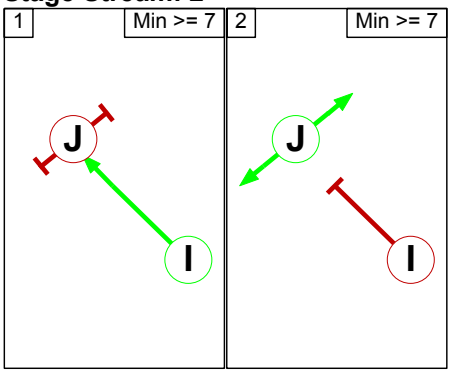
Full Input Data And Results

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage			
		1	2	3	4
From Stage	1		6	6	12
	2	8		7	8
	3	8	5		8
	4	7	6	7	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
4/1	9/1 (Left)	715	0	5/1	0.22	To 9/1 (Ahead)	-	-	-	-	-

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1	U	C	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
1/2	U	C	2	3	10.4	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
2/1	U		2	3	10.4	Geom	-	3.00	0.00	Y	Arm 8 Ahead	50.00
2/2	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
2/3	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
2/4	U	E	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 10 Right	7.50
3/1	U	B	2	3	5.2	Geom	-	4.00	0.00	Y	Arm 5 Right	20.00
											Arm 6 Left	10.00
3/2	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 5 Right	20.00
4/1	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 9 Left	7.50
5/1	U	D	2	3	4.9	Geom	-	3.00	0.00	Y	Arm 9 Ahead	Inf
											Arm 10 Left	Inf
5/2	U	D	2	3	4.9	Geom	-	3.00	0.00	Y	Arm 9 Ahead	Inf
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U	I	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 7 Ahead	Inf
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (Cranford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2017 Base AM'	08:00	09:00	01:00	
2: '2017 Base PM'	08:00	09:00	01:00	
3: '2021 20% Dev AM'	08:00	09:00	01:00	
4: '2021 20% Dev PM'	17:00	18:00	01:00	
5: '2021 DM AM'	17:00	18:00	01:00	
6: '2021 DM PM'	17:00	18:00	01:00	
7: '2021 DM + 2021 DS 20% AM'	08:00	09:00	01:00	F5 + F3
8: '2021 DM + 2021 DS 20% PM'	17:00	18:00	01:00	F6 + F4
9: '2021 DS2 AM'	08:00	09:00	01:00	
10: '2021 DS2 PM'	17:00	18:00	01:00	
11: '2031 DM AM'	08:00	09:00	01:00	
12: '2031 DM PM'	17:00	18:00	01:00	
13: '2031 DS2 AM'	08:00	09:00	01:00	
14: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2017 Base AM' (FG1: '2017 Base AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	882	0	0	882
	B	942	0	334	0	1276
	C	41	825	0	0	866
	D	0	0	0	0	0
	Tot.	983	1707	334	0	3024

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2017 Base AM
Junction: Unnamed Junction	
1/1 (with short)	882(In) 442(Out)
1/2 (short)	440
2/1 (short)	334
2/2 (with short)	833(In) 499(Out)
2/3 (with short)	443(In) 443(Out)
2/4 (short)	0
3/1 (short)	446
3/2 (with short)	866(In) 420(Out)
4/1	0
5/1	847
5/2	860
6/1	519
6/2	464
7/1	334
8/1	334
9/1	847
9/2	860
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	90.8 %	1862	1862
				Arm 6 Left	10.00	9.2 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2017 Base PM' (FG2: '2017 Base PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	761	0	0	761
	B	1141	0	658	0	1799
	C	51	458	0	0	509
	D	0	0	0	0	0
	Tot.	1192	1219	658	0	3069

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2017 Base PM
Junction: Unnamed Junction	
1/1 (with short)	761(In) 386(Out)
1/2 (short)	375
2/1 (short)	658
2/2 (with short)	1234(In) 576(Out)
2/3 (with short)	565(In) 565(Out)
2/4 (short)	0
3/1 (short)	258
3/2 (with short)	509(In) 251(Out)
4/1	0
5/1	593
5/2	626
6/1	601
6/2	591
7/1	658
8/1	658
9/1	593
9/2	626
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	80.2 %	1849	1849
				Arm 6 Left	10.00	19.8 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	979	0	0	979
	B	1121	0	344	0	1465
	C	39	762	0	0	801
	D	0	0	0	0	0
	Tot.	1160	1741	344	0	3245

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DM AM
Junction: Unnamed Junction	
1/1 (with short)	979(In) 493(Out)
1/2 (short)	486
2/1 (short)	344
2/2 (with short)	880(In) 536(Out)
2/3 (with short)	585(In) 585(Out)
2/4 (short)	0
3/1 (short)	409
3/2 (with short)	801(In) 392(Out)
4/1	0
5/1	863
5/2	878
6/1	555
6/2	605
7/1	344
8/1	344
9/1	863
9/2	878
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	90.5 %	1862	1862
				Arm 6 Left	10.00	9.5 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	888	0	0	888
	B	1291	0	740	0	2031
	C	41	437	0	0	478
	D	0	0	0	0	0
	Tot.	1332	1325	740	0	3397

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DM PM
Junction: Unnamed Junction	
1/1 (with short)	888(In) 457(Out)
1/2 (short)	431
2/1 (short)	740
2/2 (with short)	1336(In) 596(Out)
2/3 (with short)	695(In) 695(Out)
2/4 (short)	0
3/1 (short)	223
3/2 (with short)	478(In) 255(Out)
4/1	0
5/1	639
5/2	686
6/1	616
6/2	716
7/1	740
8/1	740
9/1	639
9/2	686
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	81.6 %	1851	1851
				Arm 6 Left	10.00	18.4 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2021 DS2 AM' (FG9: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	967	0	0	967
	B	1098	0	360	0	1458
	C	41	781	0	0	822
	D	0	0	0	0	0
	Tot.	1139	1748	360	0	3247

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS2 AM
Junction: Unnamed Junction	
1/1 (with short)	967(In) 487(Out)
1/2 (short)	480
2/1 (short)	360
2/2 (with short)	886(In) 526(Out)
2/3 (with short)	572(In) 572(Out)
2/4 (short)	0
3/1 (short)	420
3/2 (with short)	822(In) 402(Out)
4/1	0
5/1	866
5/2	882
6/1	546
6/2	593
7/1	360
8/1	360
9/1	866
9/2	882
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	90.2 %	1862	1862
				Arm 6 Left	10.00	9.8 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2021 DS2 PM' (FG10: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	875	0	0	875
	B	1265	0	784	0	2049
	C	69	374	0	0	443
	D	0	0	0	0	0
	Tot.	1334	1249	784	0	3367

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS2 PM
Junction: Unnamed Junction	
1/1 (with short)	875(In) 443(Out)
1/2 (short)	432
2/1 (short)	784
2/2 (with short)	1366(In) 582(Out)
2/3 (with short)	683(In) 683(Out)
2/4 (short)	0
3/1 (short)	225
3/2 (with short)	443(In) 218(Out)
4/1	0
5/1	599
5/2	650
6/1	616
6/2	718
7/1	784
8/1	784
9/1	599
9/2	650
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	69.3 %	1835	1835
				Arm 6 Left	10.00	30.7 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	1221	0	0	1221
	B	1144	0	412	0	1556
	C	39	939	0	0	978
	D	0	0	0	0	0
	Tot.	1183	2160	412	0	3755

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2031 DM AM
Junction: Unnamed Junction	
1/1 (with short)	1221(In) 618(Out)
1/2 (short)	603
2/1 (short)	412
2/2 (with short)	955(In) 543(Out)
2/3 (with short)	601(In) 601(Out)
2/4 (short)	0
3/1 (short)	495
3/2 (with short)	978(In) 483(Out)
4/1	0
5/1	1074
5/2	1086
6/1	562
6/2	621
7/1	412
8/1	412
9/1	1074
9/2	1086
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	92.1 %	1864	1864
				Arm 6 Left	10.00	7.9 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	955	0	0	955
	B	1365	0	868	0	2233
	C	41	451	0	0	492
	D	0	0	0	0	0
	Tot.	1406	1406	868	0	3680

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2031 DM PM
Junction: Unnamed Junction	
1/1 (with short)	955(In) 481(Out)
1/2 (short)	474
2/1 (short)	868
2/2 (with short)	1458(In) 590(Out)
2/3 (with short)	775(In) 775(Out)
2/4 (short)	0
3/1 (short)	249
3/2 (with short)	492(In) 243(Out)
4/1	0
5/1	689
5/2	717
6/1	610
6/2	796
7/1	868
8/1	868
9/1	689
9/2	717
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	83.5 %	1853	1853
				Arm 6 Left	10.00	16.5 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 11: '2031 DS2 AM' (FG13: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	1185	0	0	1185
	B	1067	0	490	0	1557
	C	55	945	0	0	1000
	D	0	0	0	0	0
	Tot.	1122	2130	490	0	3742

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS2 AM
Junction: Unnamed Junction	
1/1 (with short)	1185(In) 601(Out)
1/2 (short)	584
2/1 (short)	490
2/2 (with short)	999(In) 509(Out)
2/3 (with short)	558(In) 558(Out)
2/4 (short)	0
3/1 (short)	509
3/2 (with short)	1000(In) 491(Out)
4/1	0
5/1	1055
5/2	1075
6/1	536
6/2	586
7/1	490
8/1	490
9/1	1055
9/2	1075
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	89.2 %	1860	1860
				Arm 6 Left	10.00	10.8 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 12: '2031 DS2 PM' (FG14: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	903	0	0	903
	B	1352	0	841	0	2193
	C	64	445	0	0	509
	D	0	0	0	0	0
	Tot.	1416	1348	841	0	3605

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS2 PM
Junction: Unnamed Junction	
1/1 (with short)	903(In) 457(Out)
1/2 (short)	446
2/1 (short)	841
2/2 (with short)	1429(In) 588(Out)
2/3 (with short)	764(In) 764(Out)
2/4 (short)	0
3/1 (short)	259
3/2 (with short)	509(In) 250(Out)
4/1	0
5/1	652
5/2	696
6/1	620
6/2	796
7/1	841
8/1	841
9/1	652
9/2	696
10/1	0

Full Input Data And Results

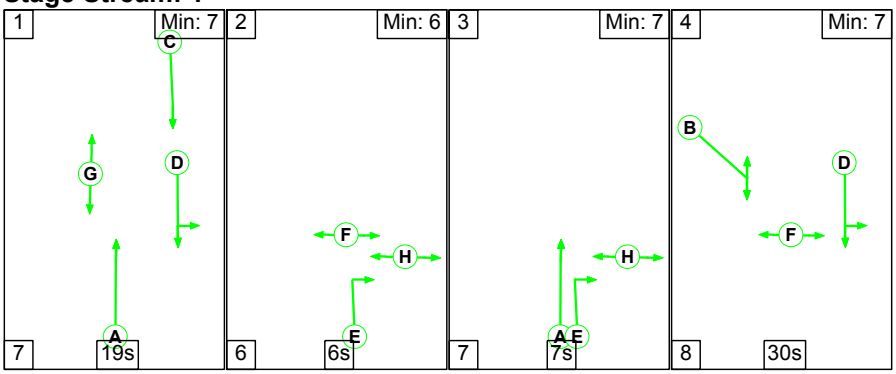
Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 8 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 10 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 5 Right	20.00	75.3 %	1843	1843
				Arm 6 Left	10.00	24.7 %		
3/2	4.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1874	1874
4/1	4.00	0.00	Y	Arm 9 Left	7.50	0.0 %	2015	2015
5/1	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
				Arm 10 Left	Inf	0.0 %		
5/2	3.00	0.00	Y	Arm 9 Ahead	Inf	100.0 %	1915	1915
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	3.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	1915	1915
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2017 Base AM' (FG1: '2017 Base AM', Plan 1: 'Network Control Plan 1')

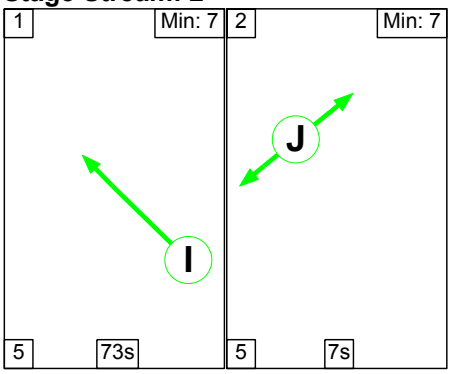
Stage Sequence Diagram

Stage Stream: 1



Full Input Data And Results

Stage Stream: 2



Stage Timings

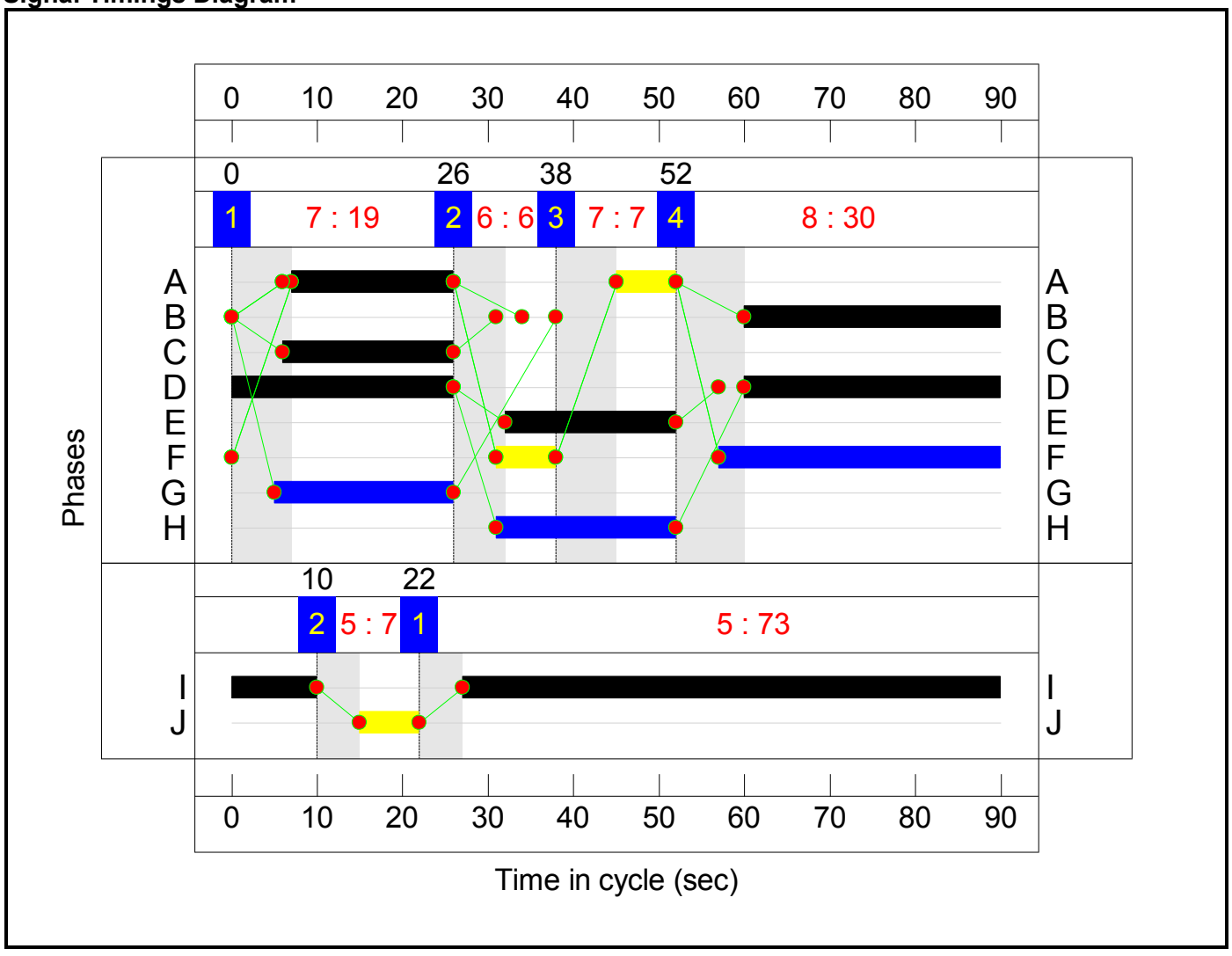
Stage Stream: 1

Stage	1	2	3	4
Duration	19	6	7	30
Change Point	0	26	38	52

Stage Stream: 2

Stage	1	2
Duration	73	7
Change Point	22	10

Signal Timings Diagram

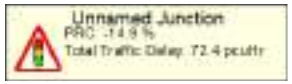


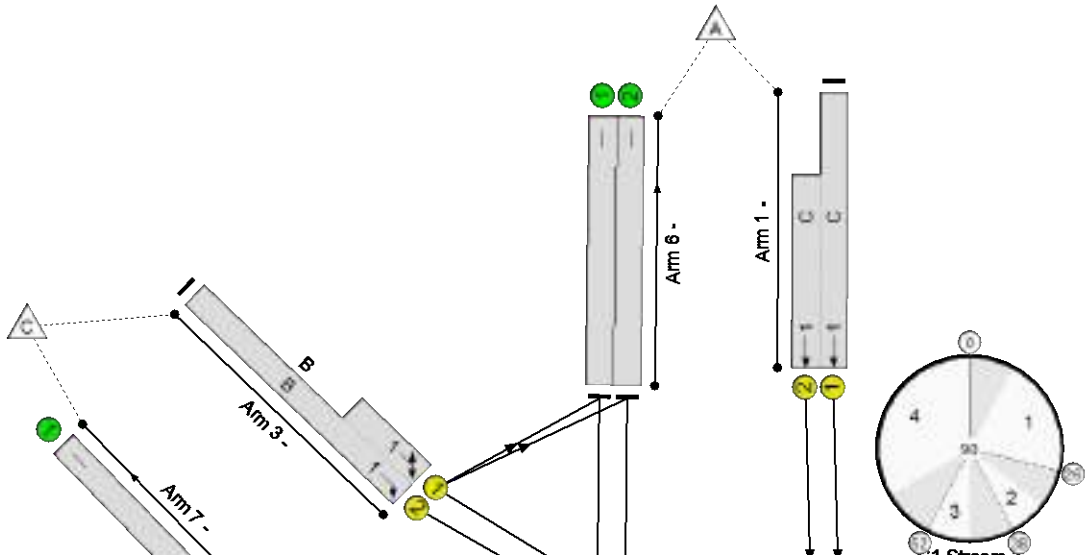
Full Input Data And Results

Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	20	-	882	1915:1915	434+432	101.9 : 101.9%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	26	-	833	1915:1859	595+398	83.8 : 83.8%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	26:20	-	443	1915:1915	596+0	74.4 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	30	-	866	1874:1862	406+431	103.4 : 103.4%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	533	0.0%
5/1	Ahead Left	U	1	N/A	D		1	56	-	847	1915	1213	68.1%
5/2	Ahead	U	1	N/A	D		1	56	-	860	1915	1213	69.1%
6/1		U	N/A	N/A	-		-	-	-	519	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	464	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	334	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	73	-	334	1915	1575	21.2%
9/1		U	N/A	N/A	-		-	-	-	847	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**23.0**	**49.3**	**0.0**	**72.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**23.0**	**49.3**	**0.0**	**72.4**	**-**	**-**	**-**	**-**
1/1+1/2	882	866	-	-	-	9.1	19.6	-	28.7	116.9	12.9	19.6	32.4
2/2+2/1	833	833	-	-	-	2.4	2.5	-	4.9	21.0	8.2	2.5	10.7
2/3+2/4	443	443	-	-	-	2.0	1.4	-	3.4	27.9	7.0	1.4	8.4
3/2+3/1	866	837	-	-	-	7.6	23.5	-	31.1	129.3	17.7	23.5	41.2
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	826	826	-	-	-	0.9	1.1	-	2.0	8.7	2.7	1.1	3.8
5/2	838	838	-	-	-	0.9	1.1	-	2.0	8.7	2.7	1.1	3.8
6/1	518	518	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	463	463	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	334	334	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	334	334	-	-	-	0.2	0.1	-	0.3	3.2	1.8	0.1	1.9
9/1	826	826	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	838	838	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

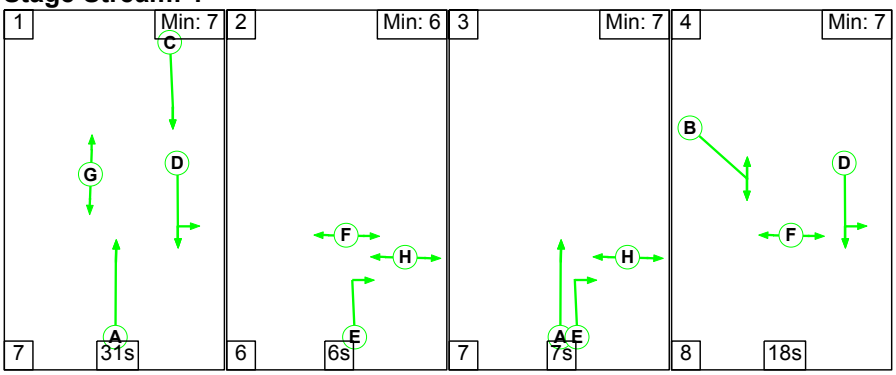
C1 Stream: 1 PRC for Signalled Lanes (%): -14.9 Total Delay for Signalled Lanes (pcuHr): 72.07 Cycle Time (s): 90
C1 Stream: 2 PRC for Signalled Lanes (%): 324.3 Total Delay for Signalled Lanes (pcuHr): 0.29 Cycle Time (s): 90
PRC Over All Lanes (%): -14.9 Total Delay Over All Lanes(pcuHr): 72.36

Full Input Data And Results

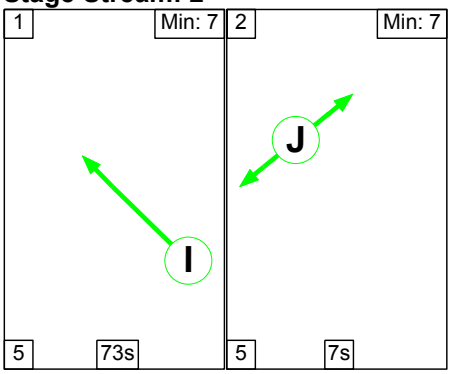
Scenario 2: '2017 Base PM' (FG2: '2017 Base PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

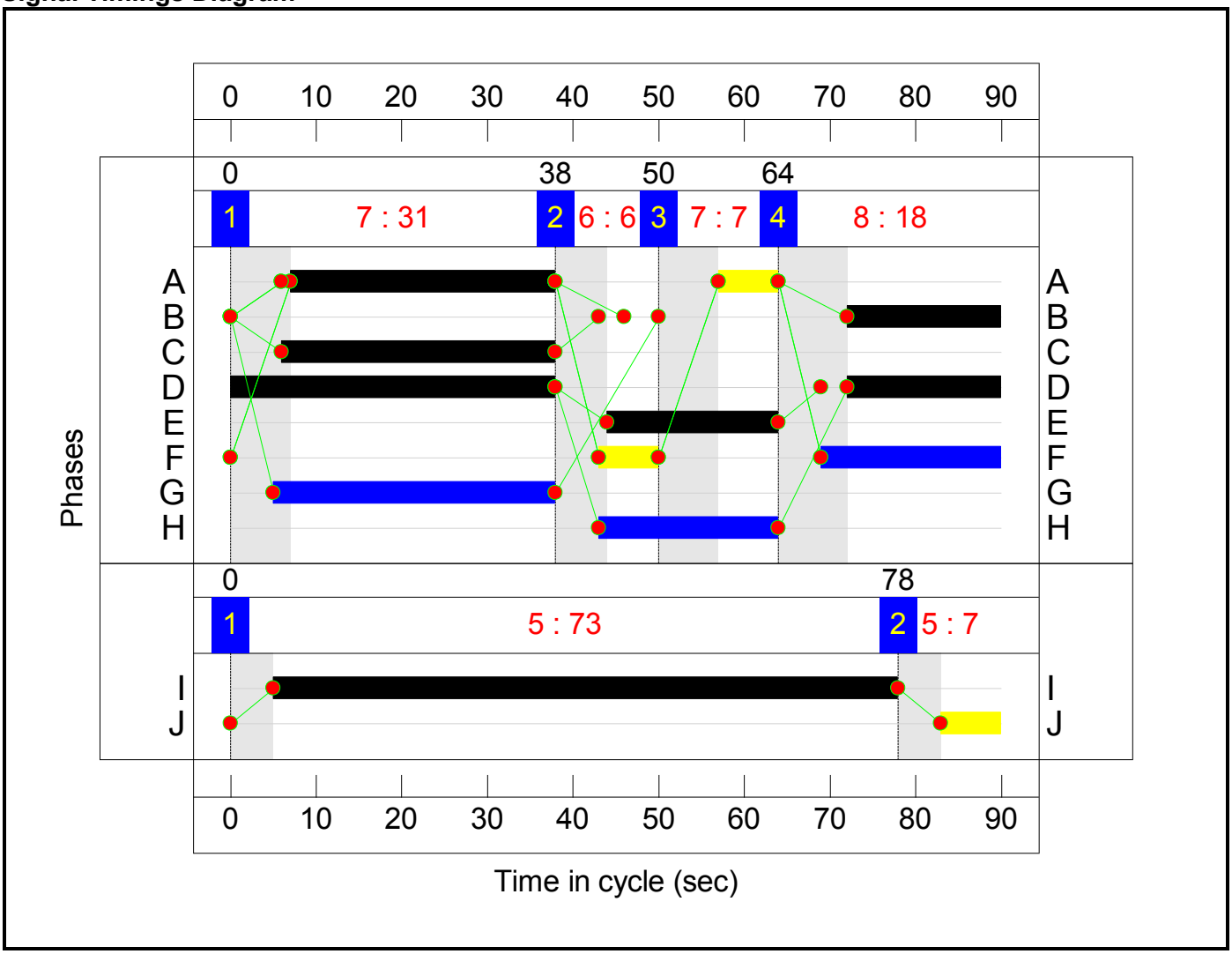
Stage	1	2	3	4
Duration	31	6	7	18
Change Point	0	38	50	64

Stage Stream: 2

Stage	1	2
Duration	73	7
Change Point	0	78

Full Input Data And Results

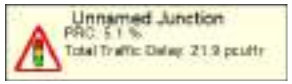
Signal Timings Diagram

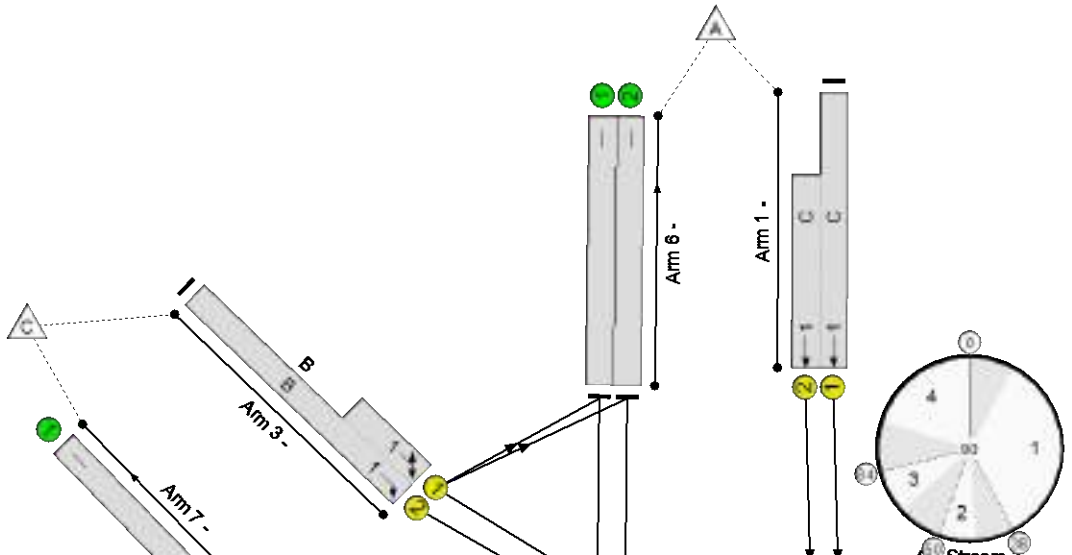


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**
1/1+1/2	Ahead	U	1	N/A	C		1	32	-	761	1915:1915	564+548	68.4 : 68.4%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	38	-	1234	1915:1859	711+812	81.0 : 81.0%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	38:20	-	565	1915:1915	851+0	66.4 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	18	-	509	1874:1849	293+301	85.7 : 85.7%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	585	0.0%
5/1	Ahead Left	U	1	N/A	D		1	56	-	593	1915	1213	48.9%
5/2	Ahead	U	1	N/A	D		1	56	-	626	1915	1213	51.6%
6/1		U	N/A	N/A	-		-	-	-	601	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	658	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	73	-	658	1915	1575	41.8%
9/1		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	626	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**13.5**	**8.3**	**0.0**	**21.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**13.5**	**8.3**	**0.0**	**21.9**	**-**	**-**	**-**	**-**
1/1+1/2	761	761	-	-	-	4.8	1.1	-	5.8	27.6	7.6	1.1	8.7
2/2+2/1	1234	1234	-	-	-	1.7	2.1	-	3.8	11.1	7.2	2.1	9.3
2/3+2/4	565	565	-	-	-	1.7	1.0	-	2.6	16.9	7.1	1.0	8.0
3/2+3/1	509	509	-	-	-	4.6	2.8	-	7.4	52.4	6.8	2.8	9.6
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	593	593	-	-	-	0.2	0.5	-	0.7	4.1	0.6	0.5	1.1
5/2	626	626	-	-	-	0.2	0.5	-	0.7	4.2	0.6	0.5	1.1
6/1	601	601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	591	591	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	658	658	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	658	658	-	-	-	0.4	0.4	-	0.8	4.1	4.4	0.4	4.7
9/1	593	593	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	626	626	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

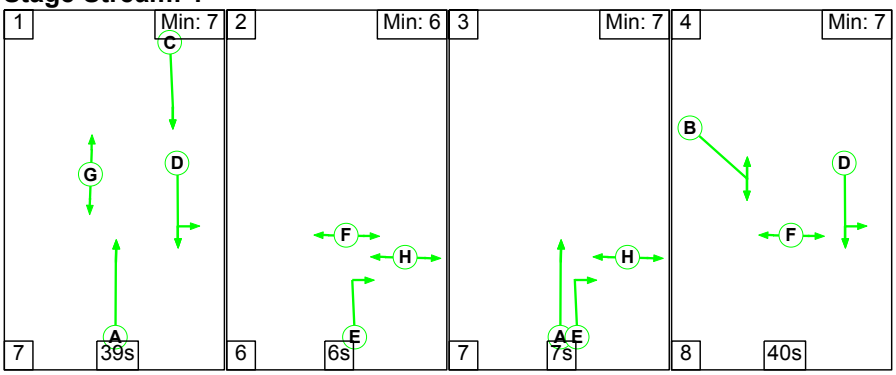
C1	Stream: 1 PRC for Signalled Lanes (%):	5.1	Total Delay for Signalled Lanes (pcuHr):	21.11	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	115.4	Total Delay for Signalled Lanes (pcuHr):	0.76	Cycle Time (s): 90
	PRC Over All Lanes (%):	5.1	Total Delay Over All Lanes(pcuHr):	21.87	

Full Input Data And Results

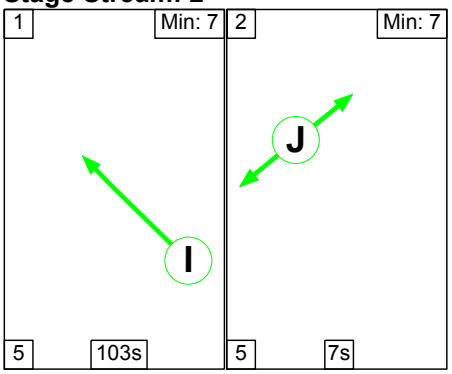
Scenario 3: '2021 DM AM' (FG5: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

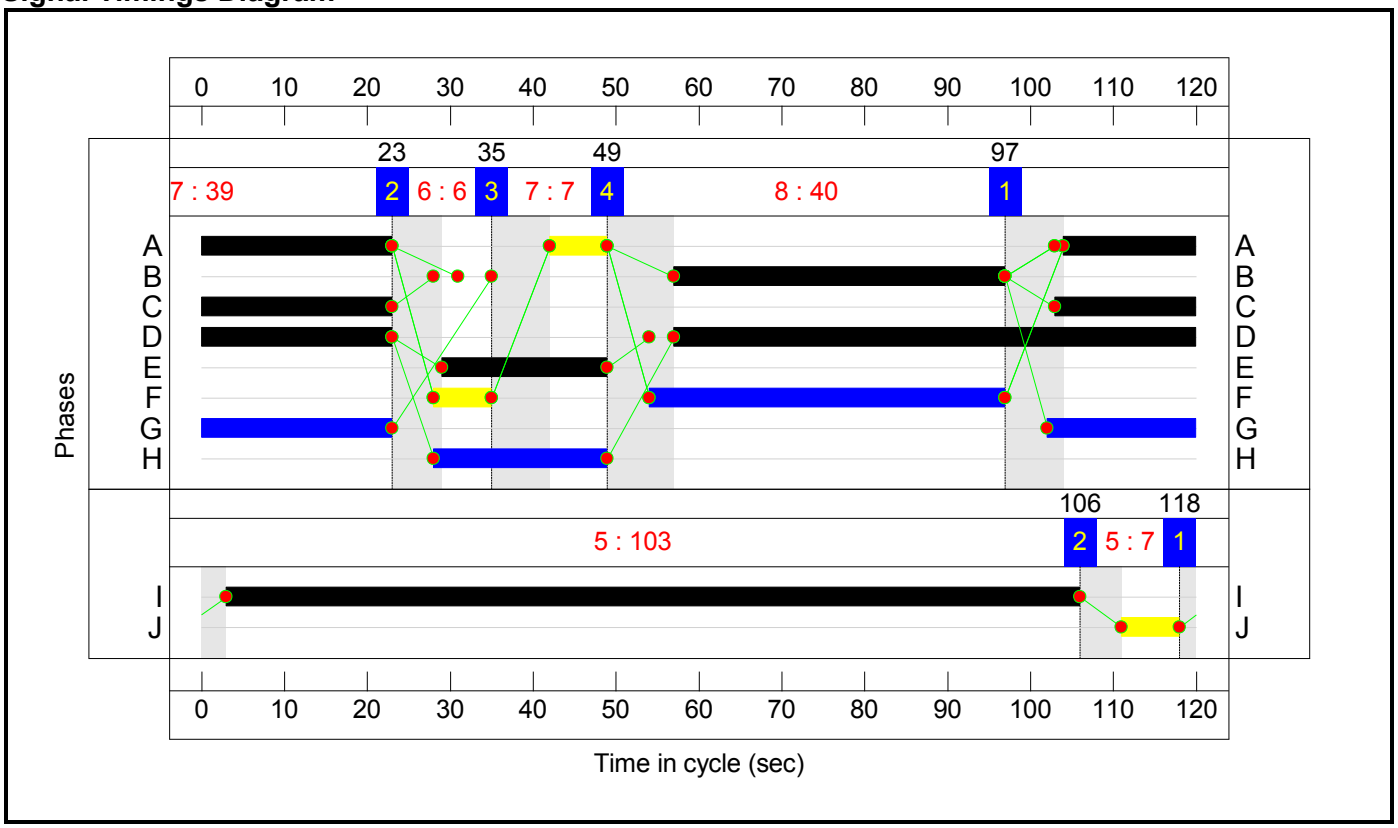
Stage	1	2	3	4
Duration	39	6	7	40
Change Point	97	23	35	49

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	118	106

Full Input Data And Results

Signal Timings Diagram

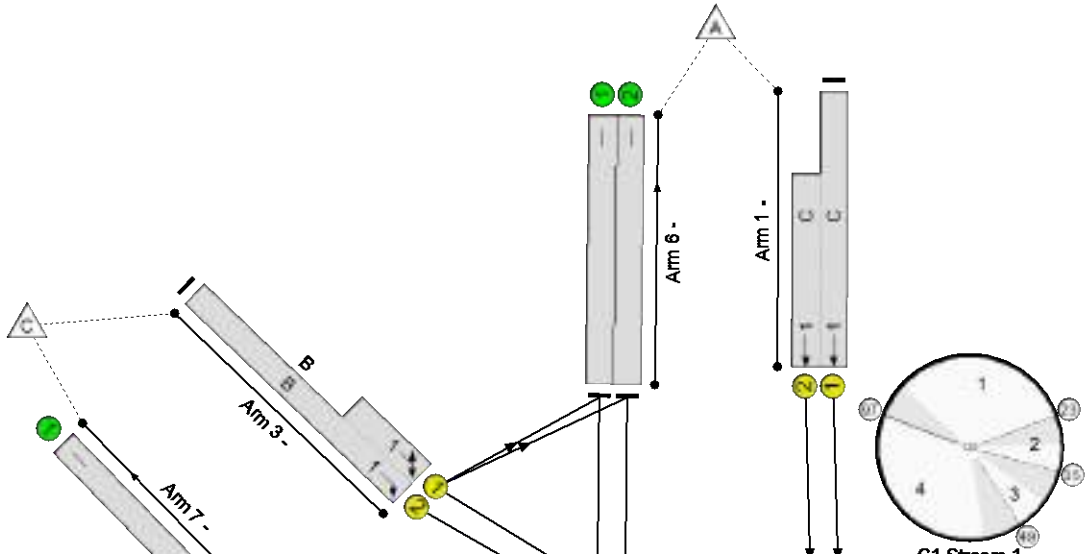


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results

Unnamed Junction
PRC: -11.2 %
Total Traffic Delay: 68.5 pcu/hr



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.9%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.9%**
1/1+1/2	Ahead	U	1	N/A	C		1	40	-	979	1915:1915	487+480	101.3 : 101.3%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	46	-	880	1915:1859	639+410	83.9 : 83.9%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	46:20	-	585	1915:1915	766+0	76.4 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	40	-	801	1874:1862	385+401	101.9 : 101.9%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	826	0.0%
5/1	Ahead Left	U	1	N/A	D		1	86	-	863	1915	1388	61.2%
5/2	Ahead	U	1	N/A	D		1	86	-	878	1915	1388	62.3%
6/1		U	N/A	N/A	-		-	-	-	555	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	605	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	344	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	344	1915	1660	20.7%
9/1		U	N/A	N/A	-		-	-	-	863	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	878	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.3**	**43.2**	**0.0**	**69.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**26.3**	**43.2**	**0.0**	**69.5**	**-**	**-**	**-**	**-**
1/1+1/2	979	967	-	-	-	10.6	19.0	-	29.7	109.0	23.6	19.0	42.6
2/2+2/1	880	880	-	-	-	2.8	2.5	-	5.3	21.8	12.1	2.5	14.6
2/3+2/4	585	585	-	-	-	3.2	1.6	-	4.7	29.2	12.5	1.6	14.1
3/2+3/1	801	786	-	-	-	8.8	18.3	-	27.1	121.8	22.9	18.3	41.2
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	850	850	-	-	-	0.4	0.8	-	1.2	4.9	1.4	0.8	2.2
5/2	865	865	-	-	-	0.4	0.8	-	1.2	5.0	1.4	0.8	2.2
6/1	555	555	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	344	344	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	344	344	-	-	-	0.1	0.1	-	0.2	2.6	1.5	0.1	1.6
9/1	850	850	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	865	865	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

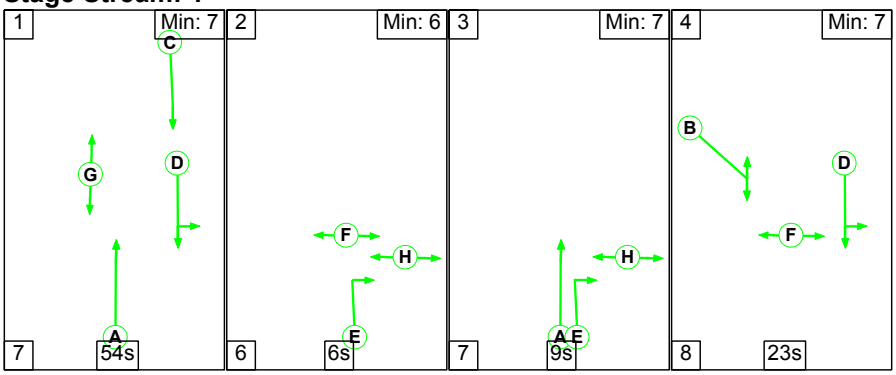
C1	Stream: 1 PRC for Signalled Lanes (%):	-13.2	Total Delay for Signalled Lanes (pcuHr):	69.20	Cycle Time (s): 120
C1	Stream: 2 PRC for Signalled Lanes (%):	334.2	Total Delay for Signalled Lanes (pcuHr):	0.25	Cycle Time (s): 120
	PRC Over All Lanes (%):	-13.2	Total Delay Over All Lanes(pcuHr):	69.45	

Full Input Data And Results

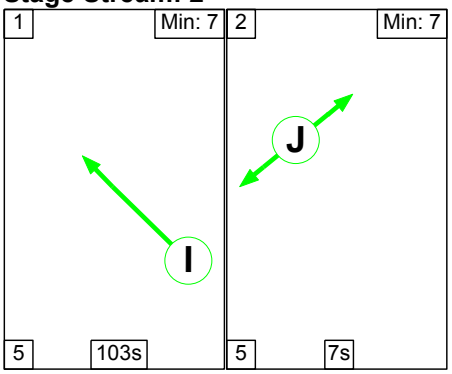
Scenario 4: '2021 DM PM' (FG6: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

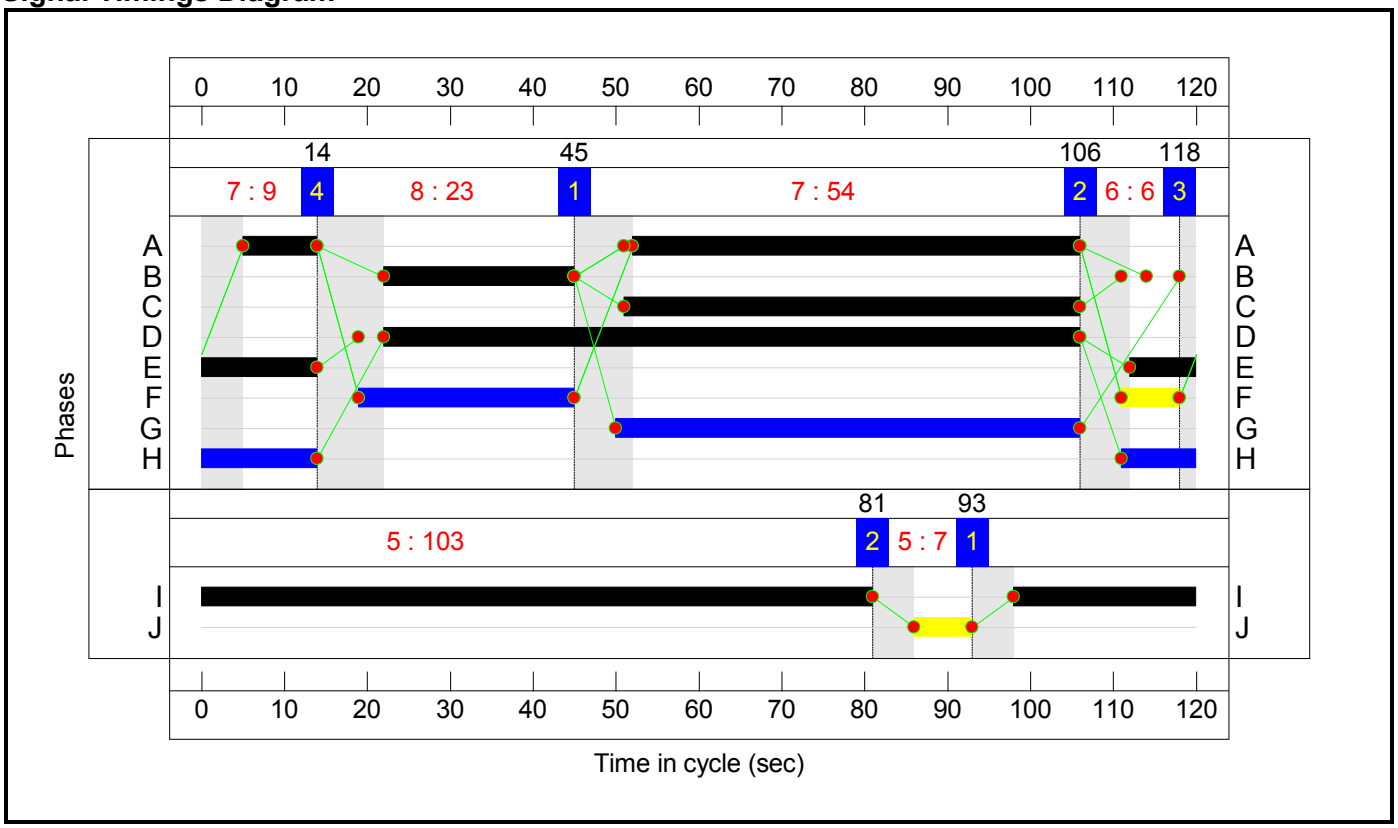
Stage	1	2	3	4
Duration	54	6	9	23
Change Point	45	106	118	14

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	93	81

Full Input Data And Results

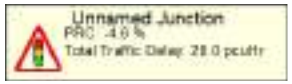
Signal Timings Diagram

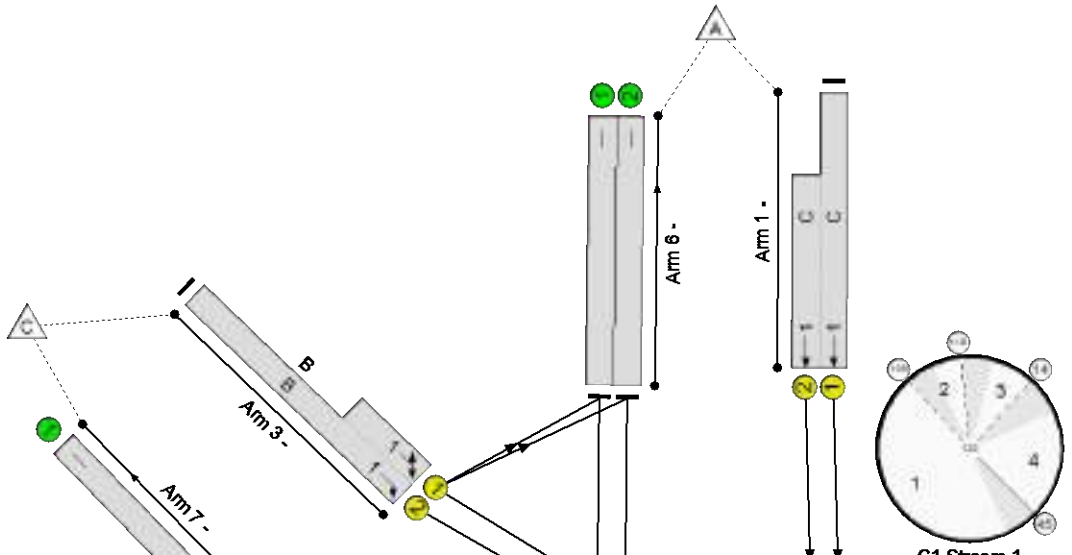


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.1%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.1%**
1/1+1/2	Ahead	U	1	N/A	C		1	55	-	888	1915:1915	614+579	74.5 : 74.5%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	63	-	1336	1915:1859	722+897	82.5 : 82.5%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	63:22	-	695	1915:1915	1037+0	67.0 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	23	-	478	1874:1851	271+237	94.1 : 94.1%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	574	0.0%
5/1	Ahead Left	U	1	N/A	D		1	84	-	639	1915	1356	47.1%
5/2	Ahead	U	1	N/A	D		1	84	-	686	1915	1356	50.6%
6/1		U	N/A	N/A	-		-	-	-	616	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	716	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	740	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	740	1915	1660	44.6%
9/1		U	N/A	N/A	-		-	-	-	639	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	686	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**16.1**	**11.9**	**0.0**	**28.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**16.1**	**11.9**	**0.0**	**28.0**	**-**	**-**	**-**	**-**
1/1+1/2	888	888	-	-	-	5.5	1.4	-	6.9	28.1	11.1	1.4	12.6
2/2+2/1	1336	1336	-	-	-	1.7	2.3	-	4.0	10.8	8.8	2.3	11.1
2/3+2/4	695	695	-	-	-	2.2	1.0	-	3.2	16.5	11.3	1.0	12.3
3/2+3/1	478	478	-	-	-	6.0	5.8	-	11.8	88.5	11.0	5.8	16.7
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	639	639	-	-	-	0.2	0.4	-	0.6	3.6	0.7	0.4	1.1
5/2	686	686	-	-	-	0.2	0.5	-	0.7	3.6	0.6	0.5	1.2
6/1	616	616	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	740	740	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	740	740	-	-	-	0.4	0.4	-	0.8	3.7	5.3	0.4	5.7
9/1	639	639	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	686	686	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

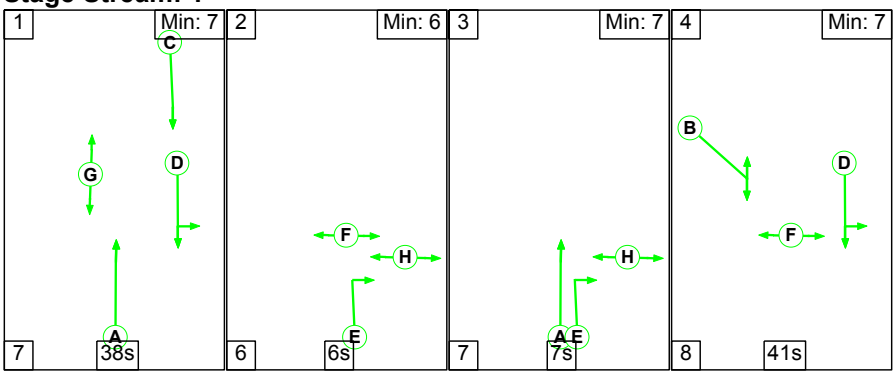
C1 Stream: 1 PRC for Signalled Lanes (%): -4.6 Total Delay for Signalled Lanes (pcuHr): 27.21 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 101.9 Total Delay for Signalled Lanes (pcuHr): 0.76 Cycle Time (s): 120
PRC Over All Lanes (%): -4.6 Total Delay Over All Lanes(pcuHr): 27.97

Full Input Data And Results

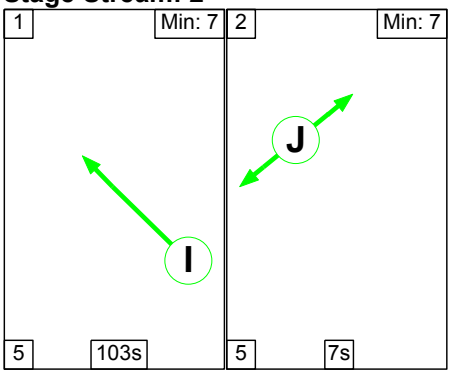
Scenario 5: '2021 DS2 AM' (FG9: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

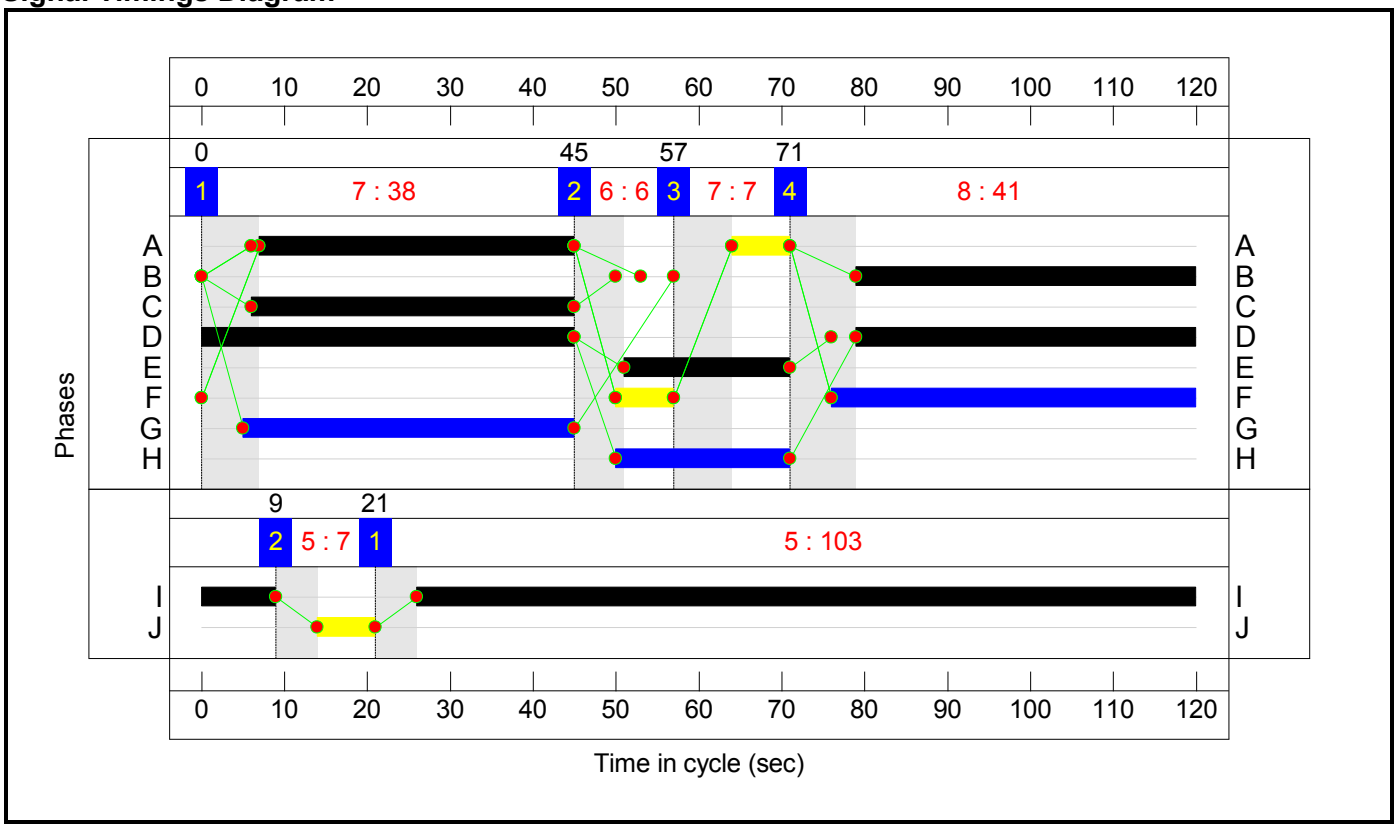
Stage	1	2	3	4
Duration	38	6	7	41
Change Point	0	45	57	71

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	21	9

Full Input Data And Results

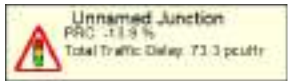
Signal Timings Diagram

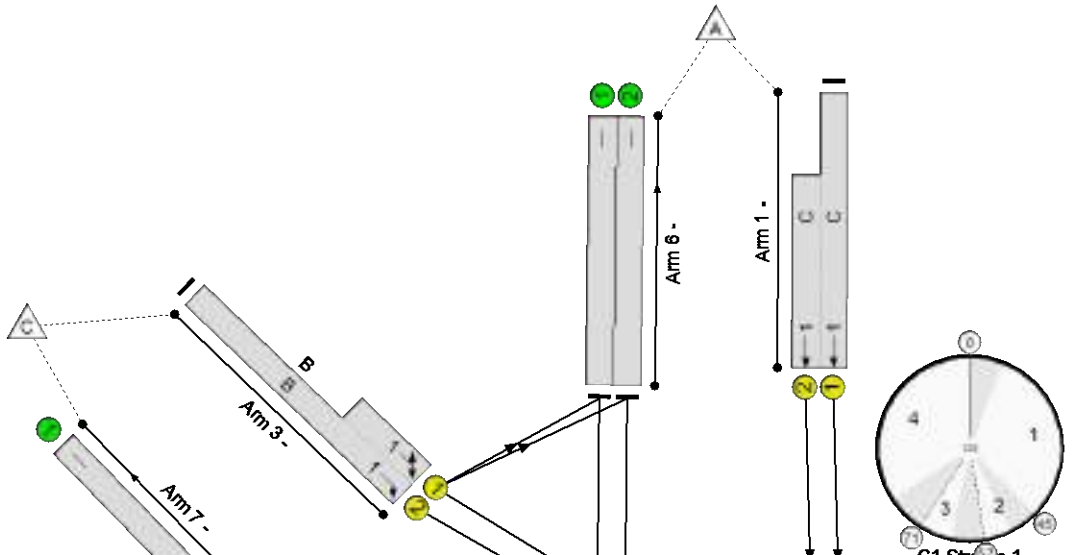


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**102.5%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**102.5%**
1/1+1/2	Ahead	U	1	N/A	C		1	39	-	967	1915:1915	479+472	101.7 : 101.7%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	45	-	886	1915:1859	624+427	84.3 : 84.3%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	45:20	-	572	1915:1915	750+0	76.3 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	41	-	822	1874:1862	392+410	102.5 : 102.5%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	528	0.0%
5/1	Ahead Left	U	1	N/A	D		1	86	-	866	1915	1388	61.1%
5/2	Ahead	U	1	N/A	D		1	86	-	882	1915	1388	62.2%
6/1		U	N/A	N/A	-		-	-	-	546	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	593	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	360	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	360	1915	1660	21.7%
9/1		U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	882	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.9**	**46.4**	**0.0**	**73.3**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**26.9**	**46.4**	**0.0**	**73.3**	**-**	**-**	**-**	**-**
1/1+1/2	967	951	-	-	-	10.8	20.2	-	31.0	115.4	23.6	20.2	43.8
2/2+2/1	886	886	-	-	-	2.8	2.6	-	5.4	22.0	11.9	2.6	14.5
2/3+2/4	572	572	-	-	-	3.2	1.6	-	4.7	29.8	12.4	1.6	14.0
3/2+3/1	822	802	-	-	-	9.2	20.3	-	29.5	129.4	23.3	20.3	43.6
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	848	848	-	-	-	0.4	0.8	-	1.2	4.9	1.4	0.8	2.2
5/2	864	864	-	-	-	0.4	0.8	-	1.2	5.0	1.4	0.8	2.2
6/1	546	546	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	360	360	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	360	360	-	-	-	0.1	0.1	-	0.3	2.7	1.7	0.1	1.8
9/1	848	848	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -13.9
C1 Stream: 2 PRC for Signalled Lanes (%): 314.9
PRC Over All Lanes (%): -13.9

Total Delay for Signalled Lanes (pcuHr): 73.05
Total Delay for Signalled Lanes (pcuHr): 0.27
Total Delay Over All Lanes(pcuHr): 73.32

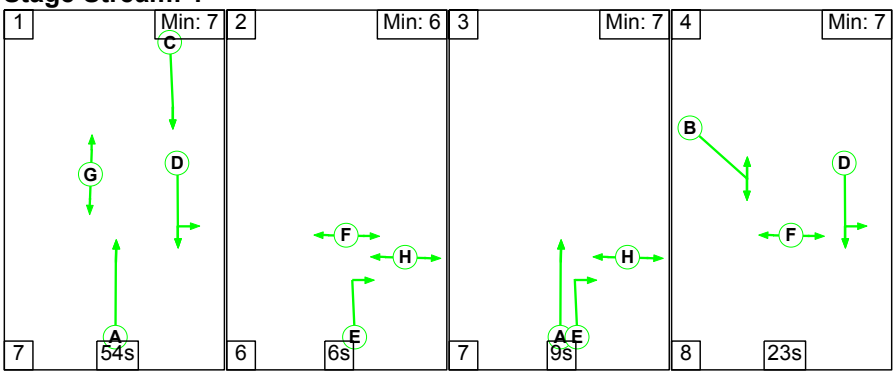
Cycle Time (s): 120
Cycle Time (s): 120

Full Input Data And Results

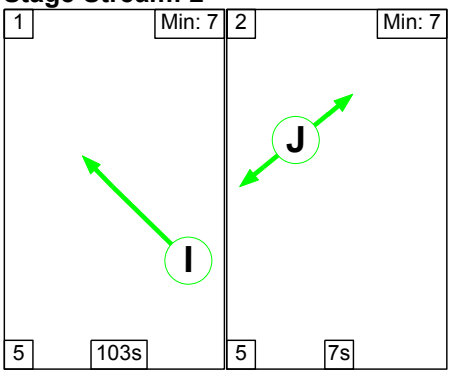
Scenario 6: '2021 DS2 PM' (FG10: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

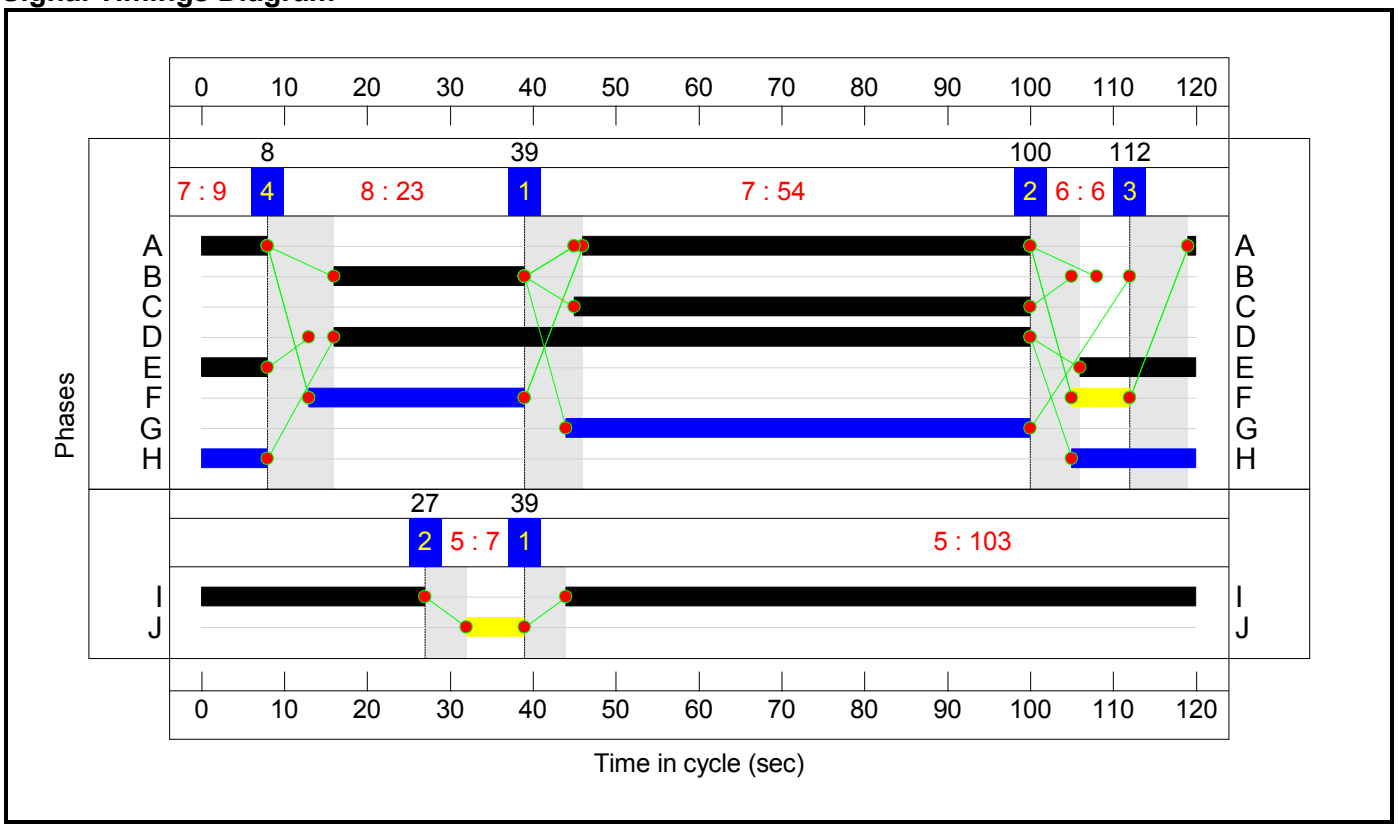
Stage	1	2	3	4
Duration	54	6	9	23
Change Point	39	100	112	8

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	39	27

Full Input Data And Results

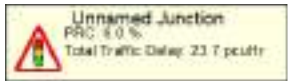
Signal Timings Diagram

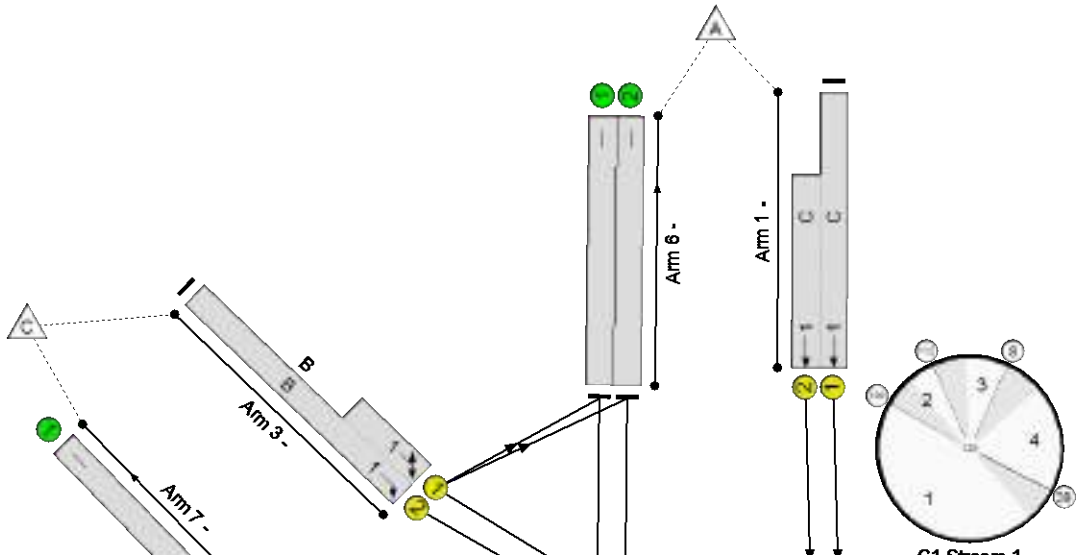


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.9%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.9%**
1/1+1/2	Ahead	U	1	N/A	C		1	55	-	875	1915:1915	609+594	72.8 : 72.8%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	63	-	1366	1915:1859	711+957	81.9 : 81.9%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	63:22	-	683	1915:1915	1037+0	65.8 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	23	-	443	1874:1835	257+265	84.9 : 84.9%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	895	0.0%
5/1	Ahead Left	U	1	N/A	D		1	84	-	599	1915	1356	44.2%
5/2	Ahead	U	1	N/A	D		1	84	-	650	1915	1356	47.9%
6/1		U	N/A	N/A	-		-	-	-	616	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	718	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	784	1915	1660	47.2%
9/1		U	N/A	N/A	-		-	-	-	599	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**15.3**	**8.5**	**0.0**	**23.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**15.3**	**8.5**	**0.0**	**23.7**	**-**	**-**	**-**	**-**
1/1+1/2	875	875	-	-	-	5.4	1.3	-	6.7	27.6	10.2	1.3	11.5
2/2+2/1	1366	1366	-	-	-	1.6	2.2	-	3.9	10.2	8.6	2.2	10.8
2/3+2/4	683	683	-	-	-	2.1	1.0	-	3.0	16.0	10.8	1.0	11.8
3/2+3/1	443	443	-	-	-	5.4	2.6	-	8.1	65.5	8.9	2.6	11.5
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	599	599	-	-	-	0.2	0.4	-	0.6	3.5	0.7	0.4	1.1
5/2	650	650	-	-	-	0.2	0.5	-	0.6	3.5	0.6	0.5	1.1
6/1	616	616	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	718	718	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	784	784	-	-	-	0.4	0.4	-	0.8	3.9	5.9	0.4	6.3
9/1	599	599	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	650	650	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

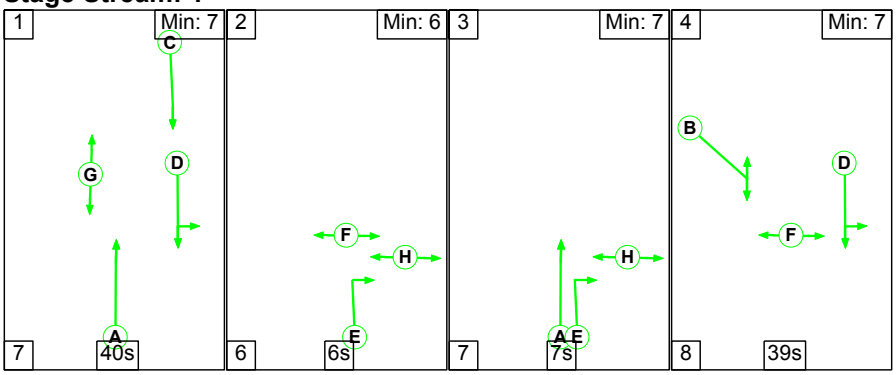
C1 Stream: 1 PRC for Signalled Lanes (%): 6.0 Total Delay for Signalled Lanes (pcuHr): 22.88 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 90.5 Total Delay for Signalled Lanes (pcuHr): 0.84 Cycle Time (s): 120
PRC Over All Lanes (%): 6.0 Total Delay Over All Lanes(pcuHr): 23.72

Full Input Data And Results

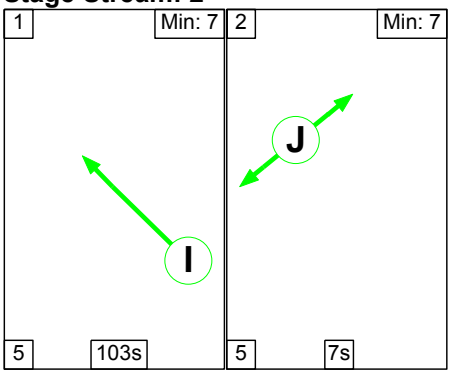
Scenario 9: '2031 DM AM' (FG11: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

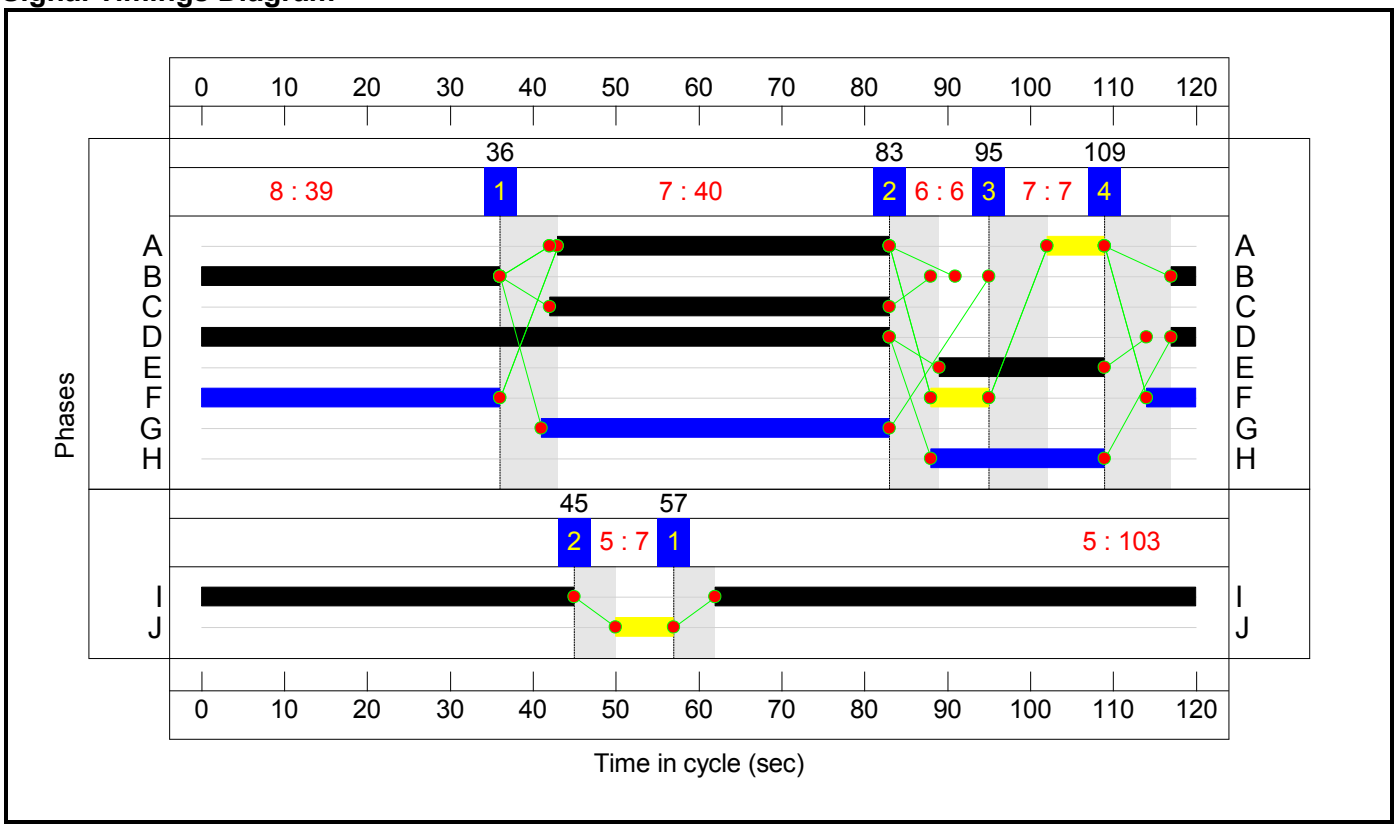
Stage	1	2	3	4
Duration	40	6	7	39
Change Point	36	83	95	109

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	57	45

Full Input Data And Results

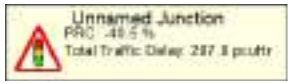
Signal Timings Diagram

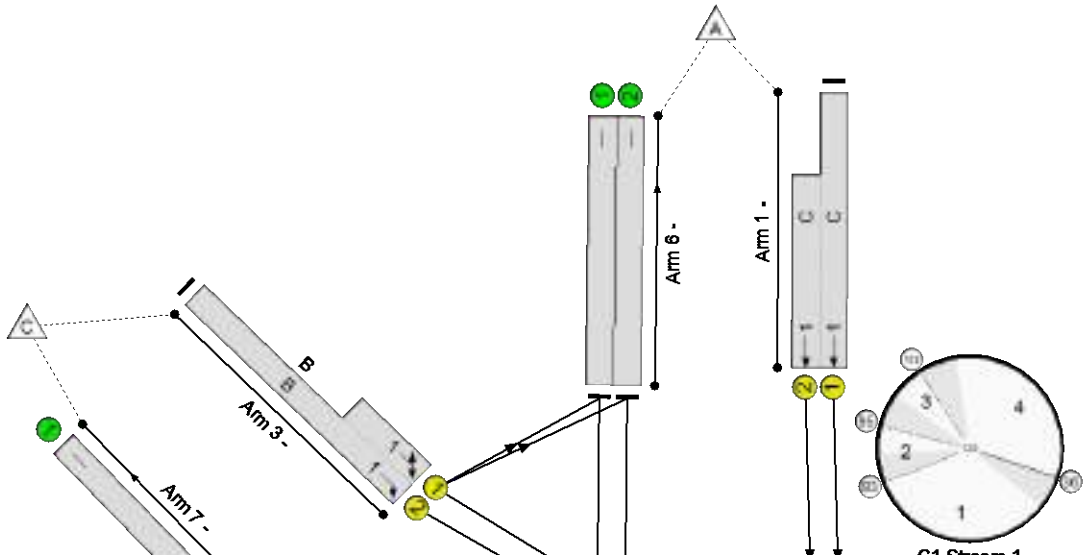


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**126.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	41	-	1221	1915:1915	496+484	124.7 : 124.7%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	47	-	955	1915:1859	634+481	85.6 : 85.6%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	47:20	-	601	1915:1915	782+0	76.9 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	39	-	978	1874:1864	382+392	126.4 : 126.4%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	527	0.0%
5/1	Ahead Left	U	1	N/A	D		1	86	-	1074	1915	1388	61.7%
5/2	Ahead	U	1	N/A	D		1	86	-	1086	1915	1388	62.4%
6/1		U	N/A	N/A	-		-	-	-	562	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	621	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	412	1915	1660	24.8%
9/1		U	N/A	N/A	-		-	-	-	1074	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1086	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**53.7**	**234.0**	**0.0**	**287.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**53.7**	**234.0**	**0.0**	**287.8**	**-**	**-**	**-**	**-**
1/1+1/2	1221	979	-	-	-	24.0	123.3	-	147.3	434.3	41.7	123.3	164.9
2/2+2/1	955	955	-	-	-	2.8	2.9	-	5.6	21.2	12.3	2.9	15.1
2/3+2/4	601	601	-	-	-	3.2	1.6	-	4.9	29.1	12.9	1.6	14.6
3/2+3/1	978	774	-	-	-	22.8	104.5	-	127.3	468.6	35.7	104.5	140.2
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	856	856	-	-	-	0.4	0.8	-	1.2	5.0	1.5	0.8	2.3
5/2	866	866	-	-	-	0.4	0.8	-	1.2	5.0	1.4	0.8	2.2
6/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	617	617	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	412	412	-	-	-	0.1	0.2	-	0.3	2.7	1.9	0.2	2.1
9/1	856	856	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -40.5
C1 Stream: 2 PRC for Signalled Lanes (%): 262.5
PRC Over All Lanes (%): -40.5

Total Delay for Signalled Lanes (pcuHr): 287.46
Total Delay for Signalled Lanes (pcuHr): 0.31
Total Delay Over All Lanes(pcuHr): 287.77

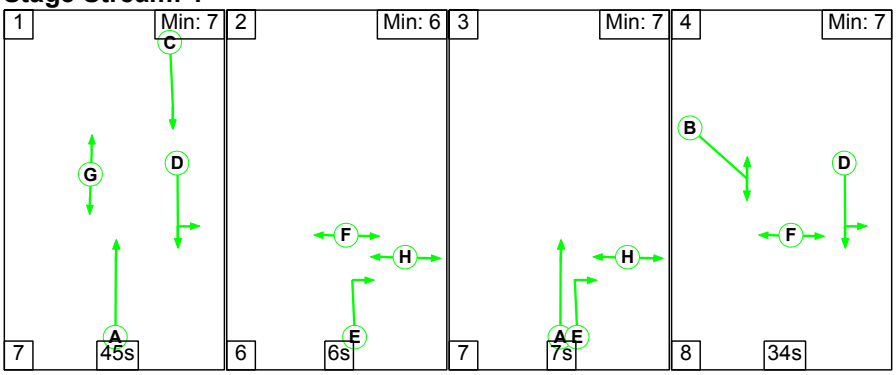
Cycle Time (s): 120
Cycle Time (s): 120

Full Input Data And Results

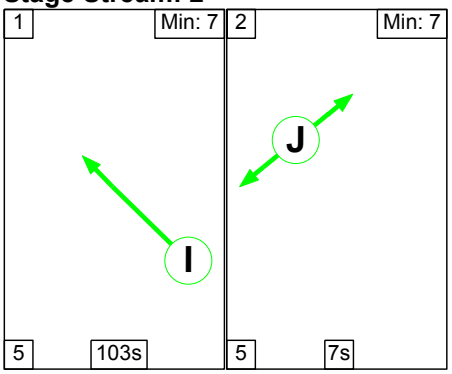
Scenario 10: '2031 DM PM' (FG12: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

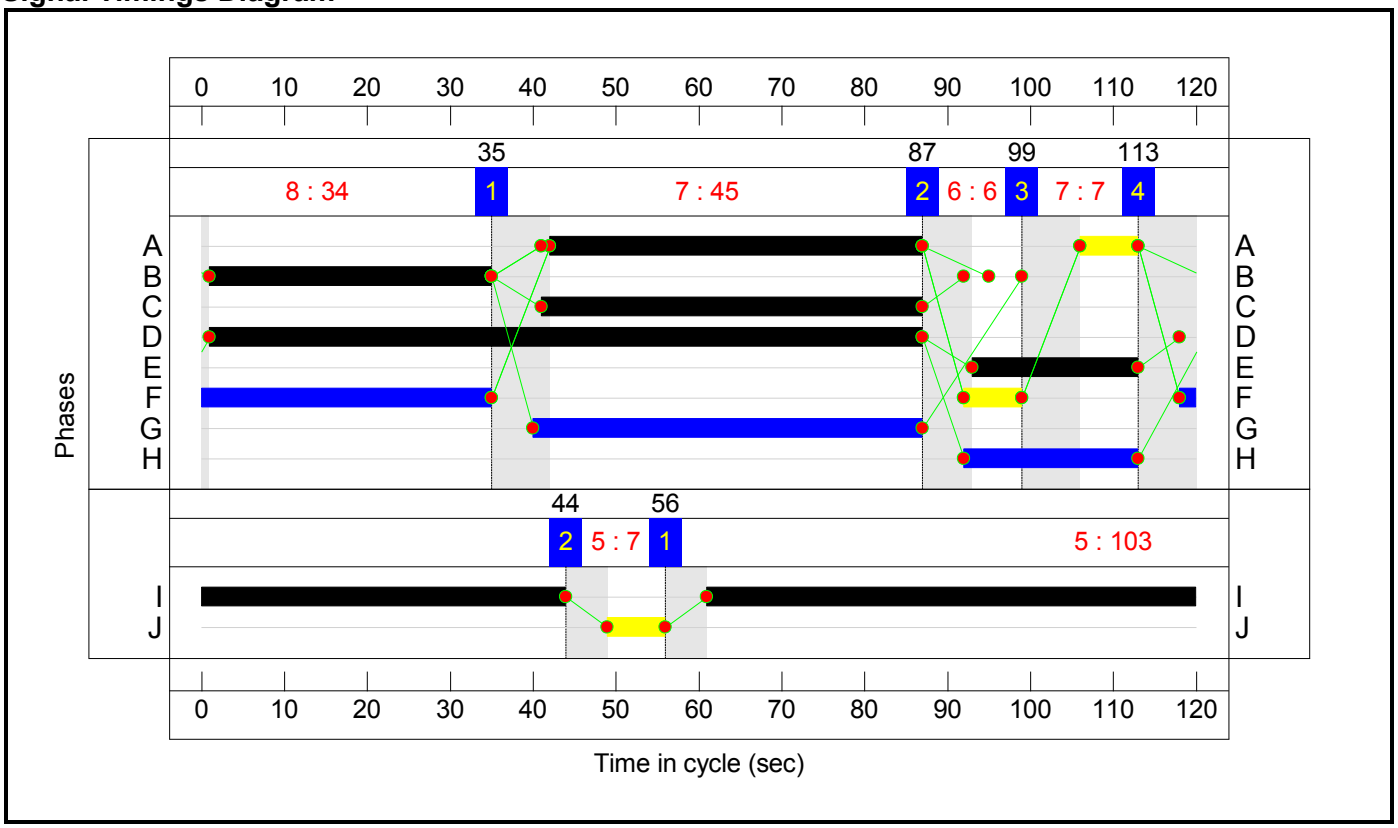
Stage	1	2	3	4
Duration	45	6	7	34
Change Point	35	87	99	113

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	56	44

Full Input Data And Results

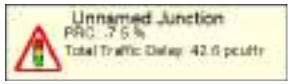
Signal Timings Diagram

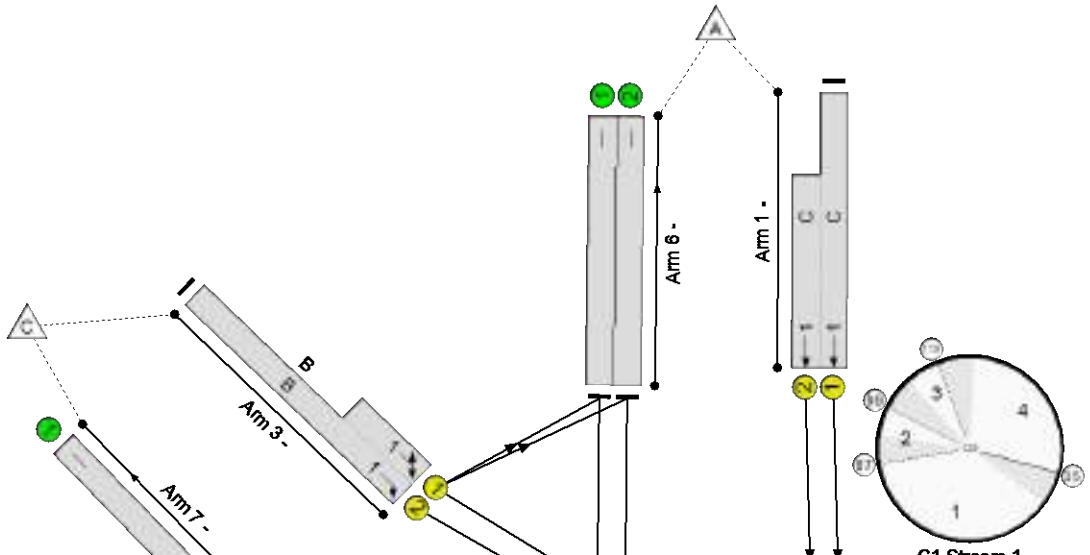


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.8%**
1/1+1/2	Ahead	U	1	N/A	C		1	46	-	955	1915:1915	535+527	89.9 : 89.9%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	52	-	1458	1915:1859	610+897	96.8 : 96.8%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	52:20	-	775	1915:1915	862+0	89.9 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	34	-	492	1874:1853	343+352	70.8 : 70.8%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	563	0.0%
5/1	Ahead Left	U	1	N/A	D		1	86	-	689	1915	1388	49.6%
5/2	Ahead	U	1	N/A	D		1	86	-	717	1915	1388	51.6%
6/1		U	N/A	N/A	-		-	-	-	610	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	796	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	868	1915	1660	52.3%
9/1		U	N/A	N/A	-		-	-	-	689	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**21.1**	**21.5**	**0.0**	**42.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**21.1**	**21.5**	**0.0**	**42.6**	**-**	**-**	**-**	**-**
1/1+1/2	955	955	-	-	-	8.0	4.1	-	12.1	45.7	17.9	4.1	22.0
2/2+2/1	1458	1458	-	-	-	2.7	10.5	-	13.2	32.5	17.7	10.5	28.2
2/3+2/4	775	775	-	-	-	4.9	4.1	-	8.9	41.5	19.4	4.1	23.5
3/2+3/1	492	492	-	-	-	4.8	1.2	-	6.0	43.8	8.9	1.2	10.1
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	689	689	-	-	-	0.2	0.5	-	0.7	3.5	0.7	0.5	1.2
5/2	717	717	-	-	-	0.2	0.5	-	0.7	3.6	0.7	0.5	1.2
6/1	610	610	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	796	796	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	868	868	-	-	-	0.4	0.5	-	1.0	4.0	6.5	0.5	7.0
9/1	689	689	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

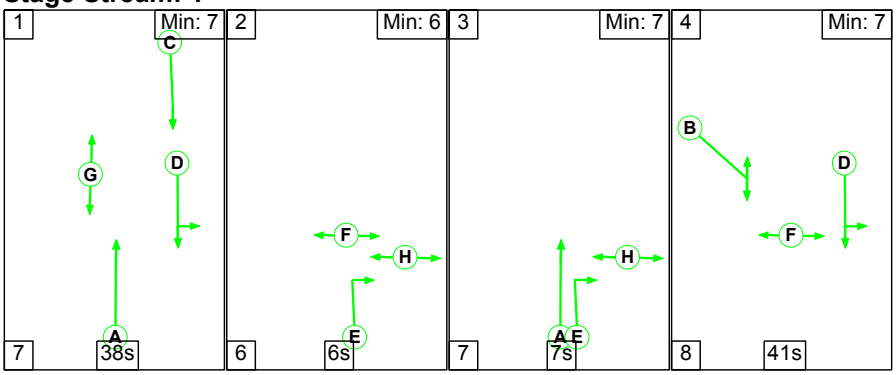
C1 Stream: 1 PRC for Signalled Lanes (%): -7.5 Total Delay for Signalled Lanes (pcuHr): 41.63 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 72.1 Total Delay for Signalled Lanes (pcuHr): 0.96 Cycle Time (s): 120
PRC Over All Lanes (%): -7.5 Total Delay Over All Lanes(pcuHr): 42.59

Full Input Data And Results

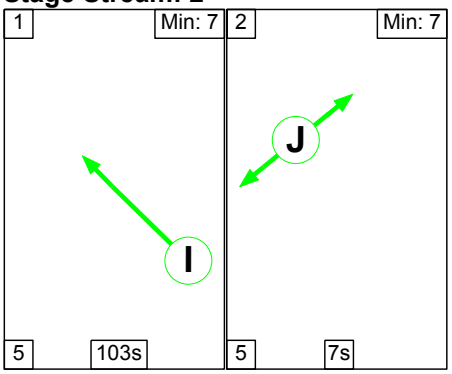
Scenario 11: '2031 DS2 AM' (FG13: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

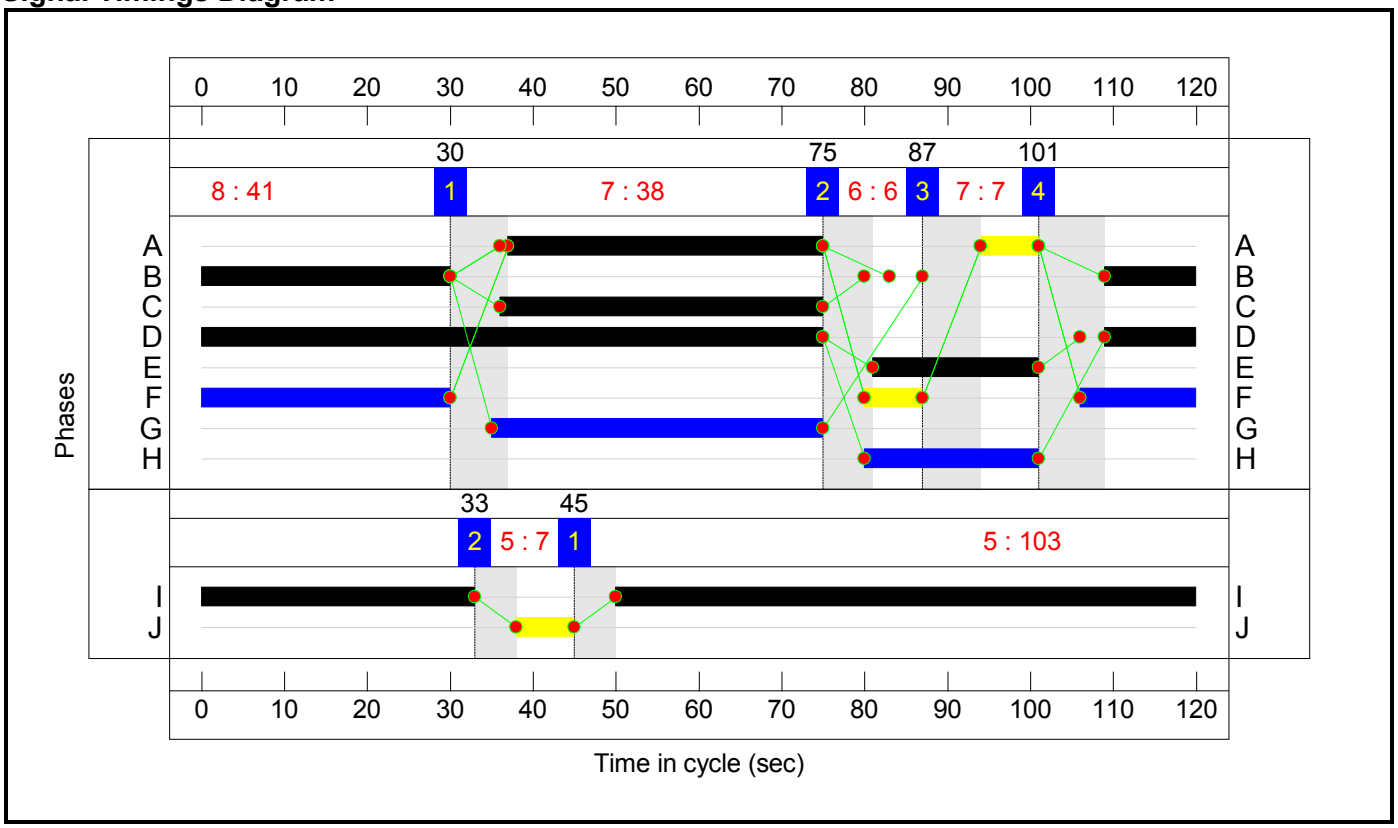
Stage	1	2	3	4
Duration	38	6	7	41
Change Point	30	75	87	101

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	45	33

Full Input Data And Results

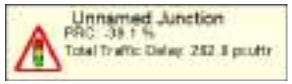
Signal Timings Diagram

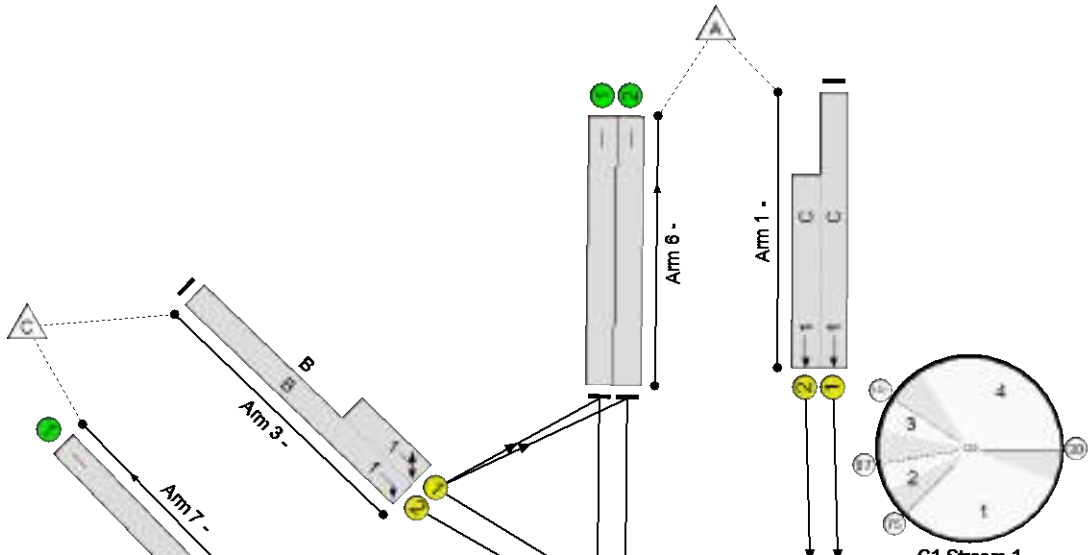


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**125.2%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**125.2%**
1/1+1/2	Ahead	U	1	N/A	C		1	39	-	1185	1915:1915	480+466	125.2 : 125.2%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	45	-	999	1915:1859	598+576	85.1 : 85.1%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	45:20	-	558	1915:1915	750+0	74.4 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	41	-	1000	1874:1860	394+408	124.6 : 124.6%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	529	0.0%
5/1	Ahead Left	U	1	N/A	D		1	86	-	1055	1915	1388	60.8%
5/2	Ahead	U	1	N/A	D		1	86	-	1075	1915	1388	62.0%
6/1		U	N/A	N/A	-		-	-	-	536	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	586	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	490	1915	1660	29.5%
9/1		U	N/A	N/A	-		-	-	-	1055	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	1075	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**53.8**	**229.0**	**0.0**	**282.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**53.8**	**229.0**	**0.0**	**282.8**	**-**	**-**	**-**	**-**
1/1+1/2	1185	946	-	-	-	24.4	121.8	-	146.2	444.1	40.3	121.8	162.1
2/2+2/1	999	999	-	-	-	2.7	2.8	-	5.5	19.7	11.0	2.8	13.7
2/3+2/4	558	558	-	-	-	3.1	1.4	-	4.5	28.9	11.9	1.4	13.4
3/2+3/1	1000	803	-	-	-	22.7	101.2	-	123.9	446.0	36.3	101.2	137.5
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	844	844	-	-	-	0.4	0.8	-	1.2	4.9	1.5	0.8	2.2
5/2	860	860	-	-	-	0.4	0.8	-	1.2	4.9	1.4	0.8	2.2
6/1	531	531	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	580	580	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	490	490	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	490	490	-	-	-	0.2	0.2	-	0.4	3.0	2.9	0.2	3.1
9/1	844	844	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	860	860	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

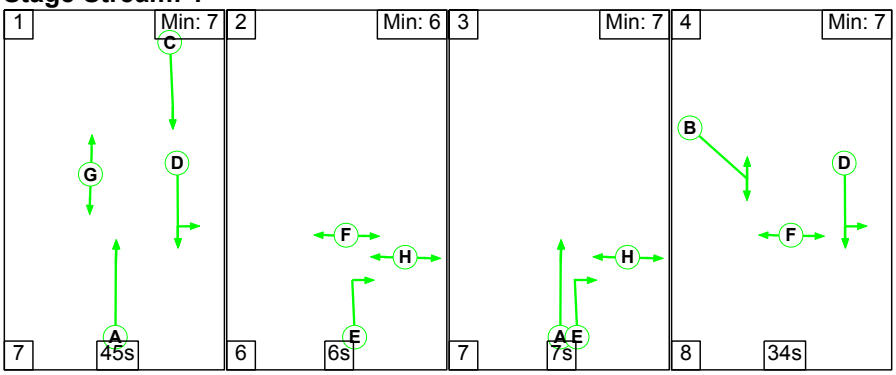
C1 Stream: 1 PRC for Signalled Lanes (%): -39.1 Total Delay for Signalled Lanes (pcuHr): 282.36 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 204.8 Total Delay for Signalled Lanes (pcuHr): 0.40 Cycle Time (s): 120
PRC Over All Lanes (%): -39.1 Total Delay Over All Lanes(pcuHr): 282.76

Full Input Data And Results

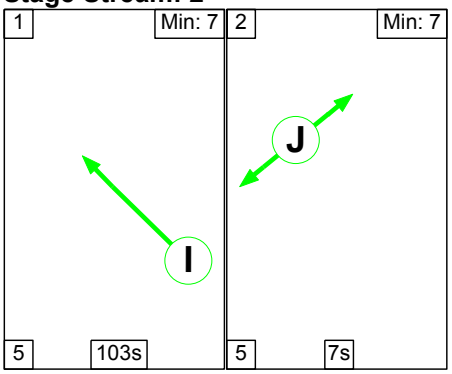
Scenario 12: '2031 DS2 PM' (FG14: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

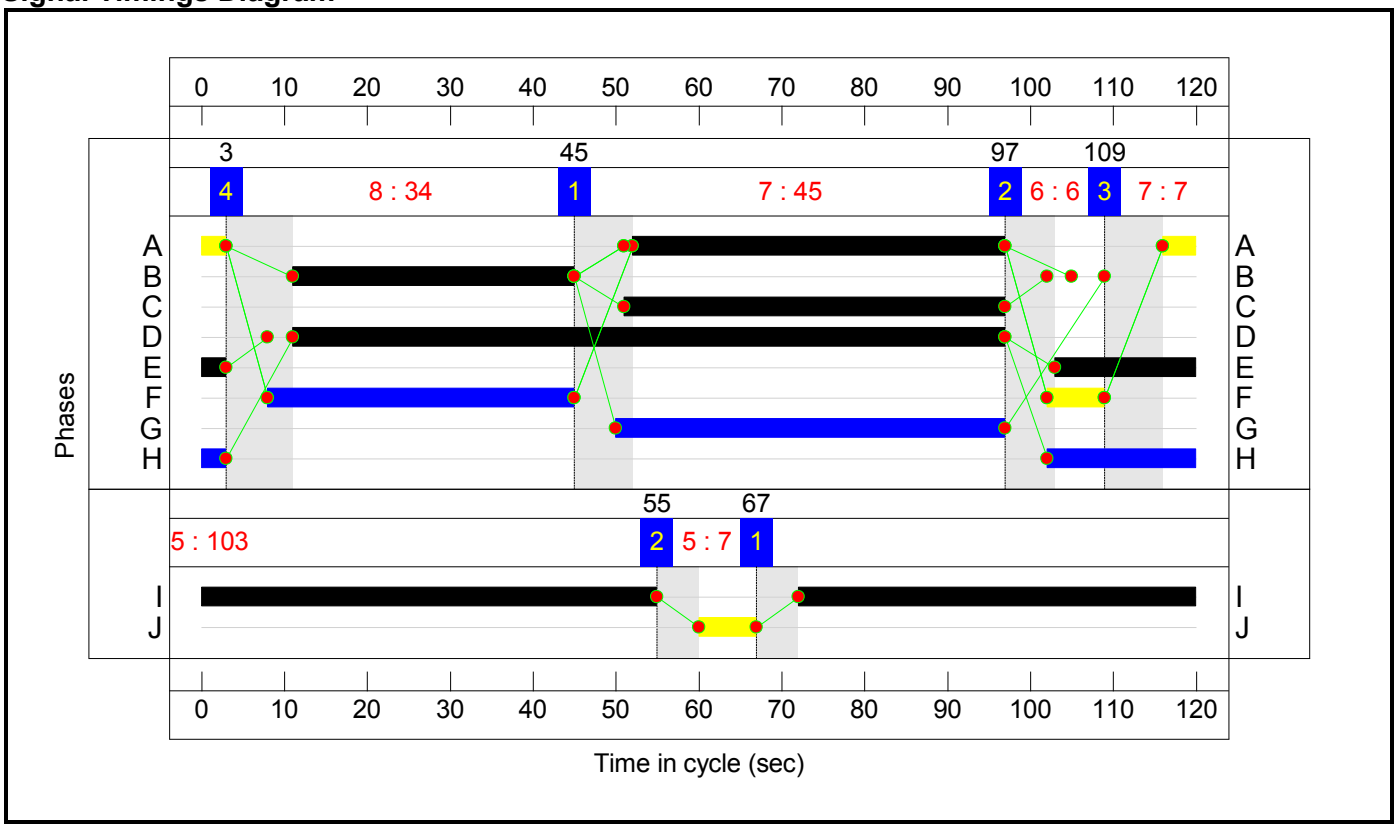
Stage	1	2	3	4
Duration	45	6	7	34
Change Point	45	97	109	3

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	67	55

Full Input Data And Results

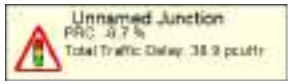
Signal Timings Diagram

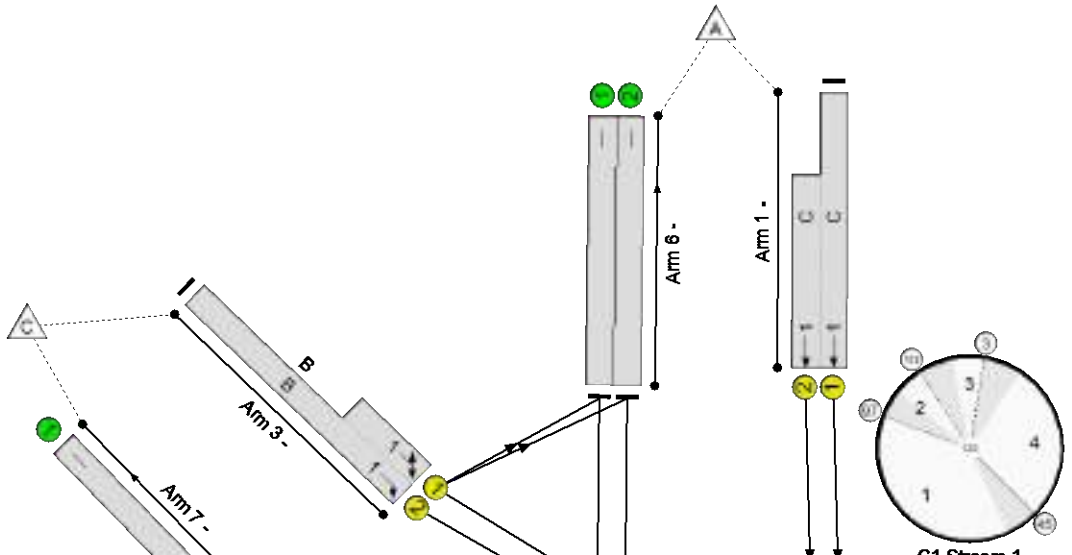


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.0%**
1/1+1/2	Ahead	U	1	N/A	C		1	46	-	903	1915:1915	536+523	85.2 : 85.2%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	52	-	1429	1915:1859	613+876	96.0 : 96.0%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	52:20	-	764	1915:1915	862+0	88.7 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	34	-	509	1874:1843	340+352	73.6 : 73.6%
4/1	Left	O	N/A	N/A	-		-	-	-	0	2015	880	0.0%
5/1	Ahead Left	U	1	N/A	D		1	86	-	652	1915	1388	47.0%
5/2	Ahead	U	1	N/A	D		1	86	-	696	1915	1388	50.1%
6/1		U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	796	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	841	Inf	Inf	0.0%
8/1	Ahead	U	2	N/A	I		1	103	-	841	1915	1660	50.7%
9/1		U	N/A	N/A	-		-	-	-	652	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	696	Inf	Inf	0.0%
10/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**20.5**	**18.4**	**0.0**	**38.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**20.5**	**18.4**	**0.0**	**38.9**	**-**	**-**	**-**	**-**
1/1+1/2	903	903	-	-	-	7.4	2.8	-	10.1	40.4	15.2	2.8	18.0
2/2+2/1	1429	1429	-	-	-	2.7	9.2	-	11.8	29.8	16.8	9.2	25.9
2/3+2/4	764	764	-	-	-	4.7	3.6	-	8.3	39.3	18.9	3.6	22.5
3/2+3/1	509	509	-	-	-	5.0	1.4	-	6.4	45.1	9.5	1.4	10.9
4/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	652	652	-	-	-	0.2	0.4	-	0.6	3.4	0.7	0.4	1.1
5/2	696	696	-	-	-	0.2	0.5	-	0.7	3.5	0.7	0.5	1.2
6/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	796	796	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	841	841	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	841	841	-	-	-	0.4	0.5	-	0.9	3.9	6.5	0.5	7.0
9/1	652	652	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	696	696	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -6.7 Total Delay for Signalled Lanes (pcuHr): 37.98 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 77.6 Total Delay for Signalled Lanes (pcuHr): 0.91 Cycle Time (s): 120
PRC Over All Lanes (%): -6.7 Total Delay Over All Lanes(pcuHr): 38.89

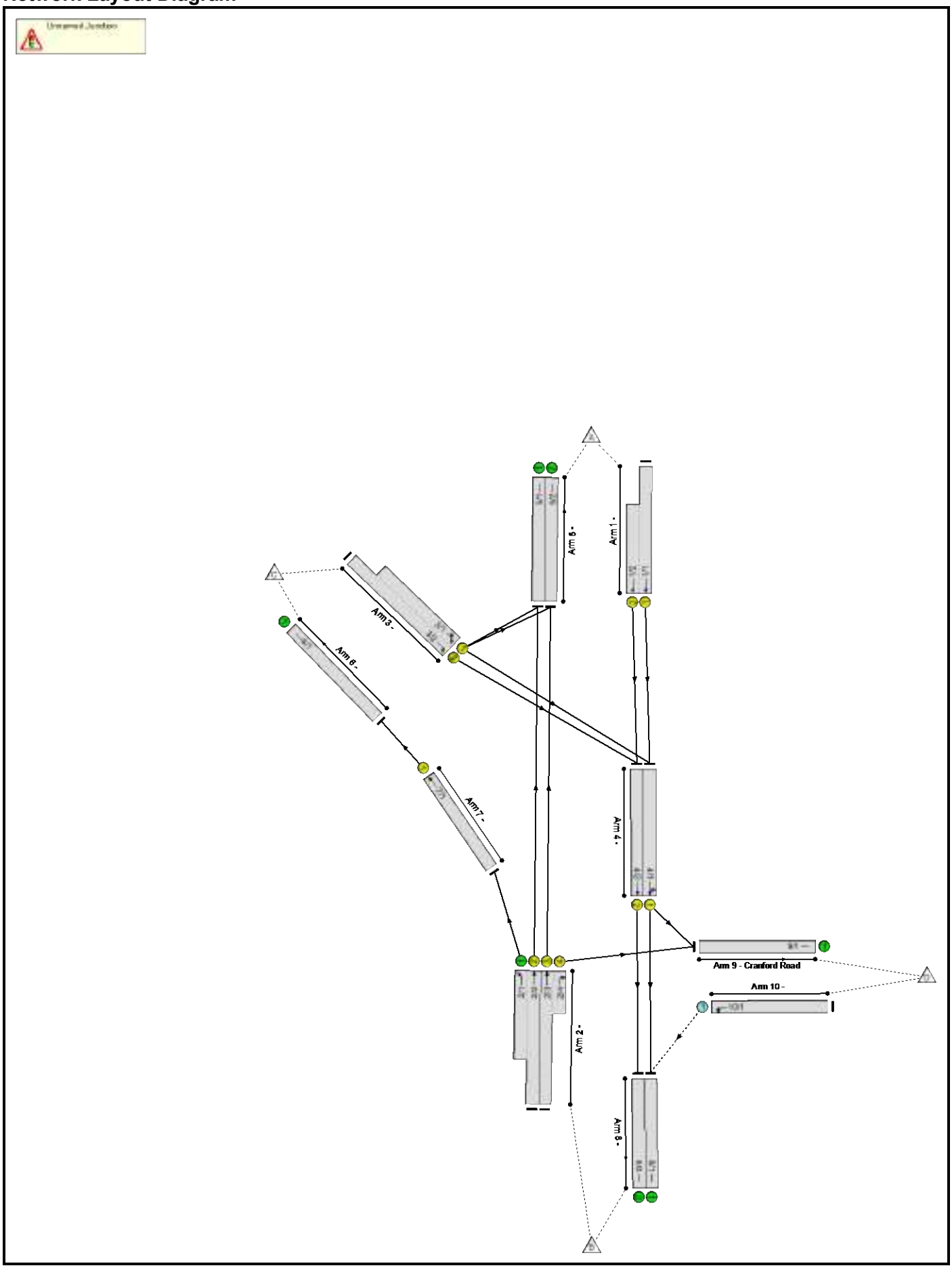
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 25
Location:	A508, Harborough Road (south)/ A5199, Welford Road/ A508, Harborough Road (north)/ Cranford Road/ Kingsland Avenue
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Full Input Data And Results

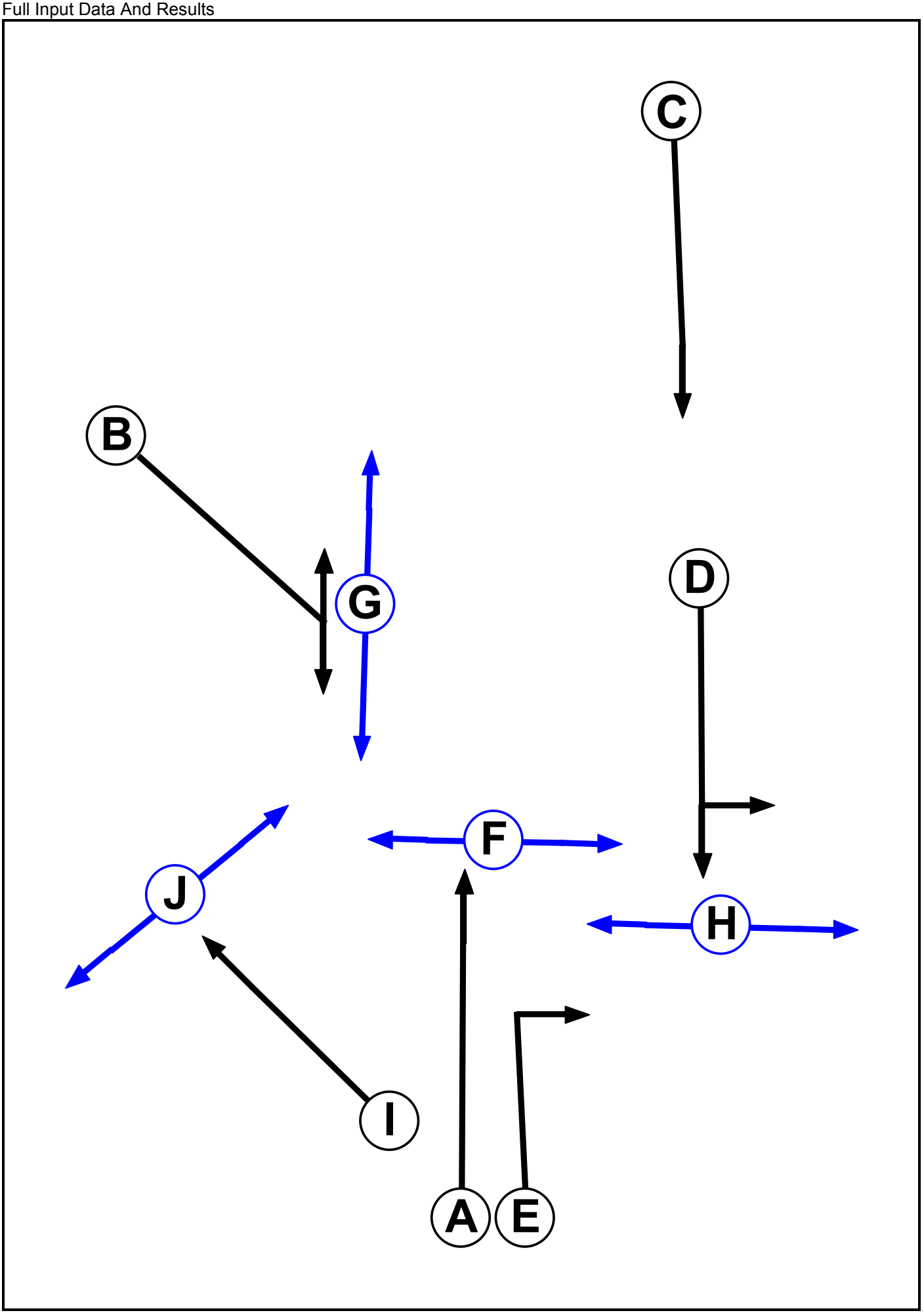
Network Layout Diagram



Full Input Data And Results

Phase Diagram

Full Input Data And Results



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Traffic	1		7	7
F	Pedestrian	1		7	7
G	Pedestrian	1		7	7
H	Pedestrian	1		7	7
I	Traffic	2		7	7
J	Pedestrian	2		7	7

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J
A		8	-	-	-	5	-	-	-	-
B	6		6	-	-	-	5	-	-	-
C	-	5		-	-	-	-	-	-	-
D	-	-	-		6	-	-	5	-	-
E	-	-	-	5		-	-	-	-	-
F	7	-	-	-	-		-	-	-	-
G	-	12	-	-	-	-		-	-	-
H	-	-	-	8	-	-	-		-	-
I	-	-	-	-	-	-	-	-		5
J	-	-	-	-	-	-	-	-	5	

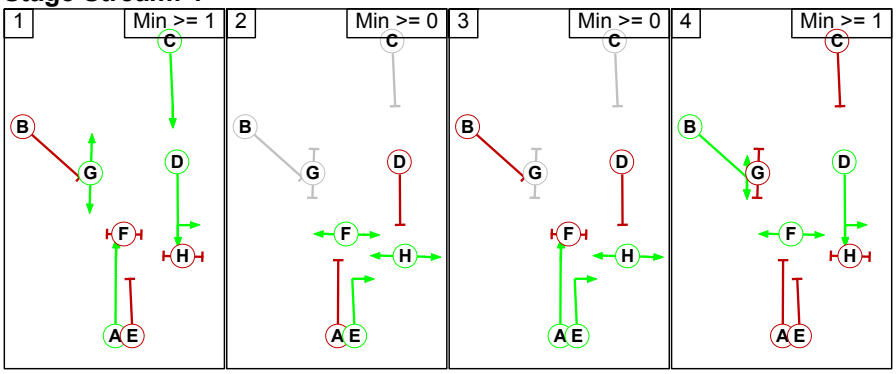
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A C D G
1	2	E F H
1	3	A E H
1	4	B D F
2	1	I
2	2	J

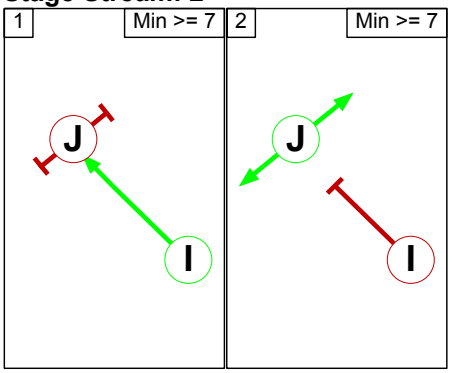
Full Input Data And Results

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage			
		1	2	3	4
From Stage	1		6	6	12
	2	8		7	8
	3	8	5		8
	4	7	6	7	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
10/1	8/1 (Left)	715	0	4/1	0.22	To 8/1 (Ahead)	-	-	-	-	-

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1	U	C	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Ahead	Inf
1/2	U	C	2	3	10.4	Geom	-	3.00	0.00	Y	Arm 4 Ahead	Inf
2/1	U		2	3	10.4	Geom	-	3.00	0.00	Y	Arm 7 Ahead	50.00
2/2	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
2/3	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
2/4	U	E	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 9 Right	7.50
3/1	U	B	2	3	12.2	Geom	-	4.00	0.00	Y	Arm 4 Right	20.00
											Arm 5 Left	10.00
3/2	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 4 Right	20.00
4/1	U	D	2	3	4.9	Geom	-	3.00	0.00	Y	Arm 8 Ahead	Inf
											Arm 9 Left	Inf
4/2	U	D	2	3	4.9	Geom	-	3.00	0.00	Y	Arm 8 Ahead	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U	I	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Cranford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 8 Left	7.50

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	967	0	0	967
	B	1098	0	360	0	1458
	C	41	781	0	0	822
	D	0	0	0	0	0
	Tot.	1139	1748	360	0	3247

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS2 AM
Junction: Unnamed Junction	
1/1 (with short)	967(In) 490(Out)
1/2 (short)	477
2/1 (short)	360
2/2 (with short)	889(In) 529(Out)
2/3 (with short)	569(In) 569(Out)
2/4 (short)	0
3/1 (short)	413
3/2 (with short)	822(In) 409(Out)
4/1	862
4/2	886
5/1	549
5/2	590
6/1	360
7/1	360
8/1	862
8/2	886
9/1	0
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	90.1 %	1862	1862
				Arm 5 Left	10.00	9.9 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	875	0	0	875
	B	1265	0	784	0	2049
	C	69	374	0	0	443
	D	0	0	0	0	0
	Tot.	1334	1249	784	0	3367

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS2 PM
Junction: Unnamed Junction	
1/1 (with short)	875(In) 445(Out)
1/2 (short)	430
2/1 (short)	784
2/2 (with short)	1375(In) 591(Out)
2/3 (with short)	674(In) 674(Out)
2/4 (short)	0
3/1 (short)	222
3/2 (with short)	443(In) 221(Out)
4/1	598
4/2	651
5/1	625
5/2	709
6/1	784
7/1	784
8/1	598
8/2	651
9/1	0
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	68.9 %	1835	1835
				Arm 5 Left	10.00	31.1 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	1185	0	0	1185
	B	1067	0	490	0	1557
	C	55	945	0	0	1000
	D	0	0	0	0	0
	Tot.	1122	2130	490	0	3742

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS2 AM
Junction: Unnamed Junction	
1/1 (with short)	1185(In) 604(Out)
1/2 (short)	581
2/1 (short)	490
2/2 (with short)	1002(In) 512(Out)
2/3 (with short)	555(In) 555(Out)
2/4 (short)	0
3/1 (short)	504
3/2 (with short)	1000(In) 496(Out)
4/1	1053
4/2	1077
5/1	539
5/2	583
6/1	490
7/1	490
8/1	1053
8/2	1077
9/1	0
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	89.1 %	1860	1860
				Arm 5 Left	10.00	10.9 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	903	0	0	903
	B	1352	0	841	0	2193
	C	64	445	0	0	509
	D	0	0	0	0	0
	Tot.	1416	1348	841	0	3605

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS2 PM
Junction: Unnamed Junction	
1/1 (with short)	903(In) 458(Out)
1/2 (short)	445
2/1 (short)	841
2/2 (with short)	1459(In) 618(Out)
2/3 (with short)	734(In) 734(Out)
2/4 (short)	0
3/1 (short)	256
3/2 (with short)	509(In) 253(Out)
4/1	650
4/2	698
5/1	650
5/2	766
6/1	841
7/1	841
8/1	650
8/2	698
9/1	0
10/1	0

Full Input Data And Results

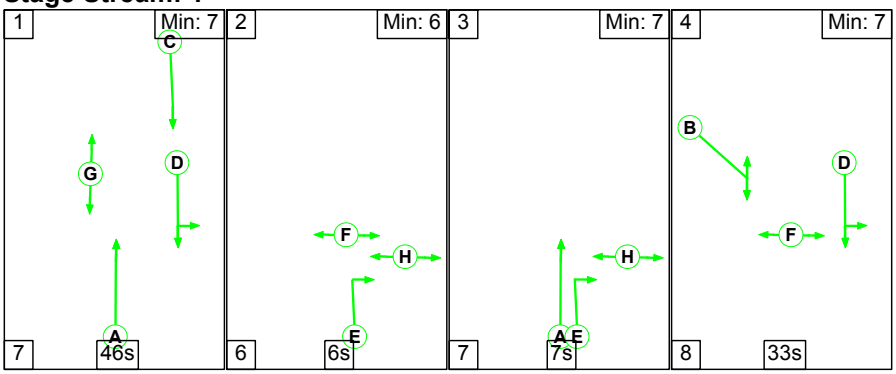
Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	75.0 %	1842	1842
				Arm 5 Left	10.00	25.0 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

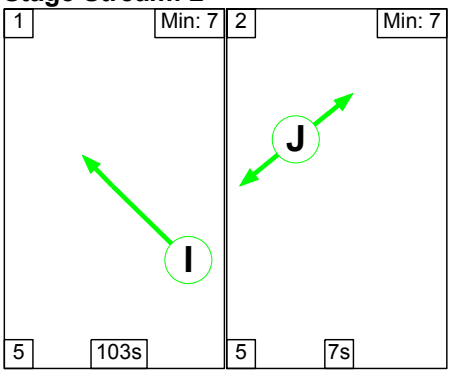
Stage Sequence Diagram

Stage Stream: 1



Full Input Data And Results

Stage Stream: 2



Stage Timings

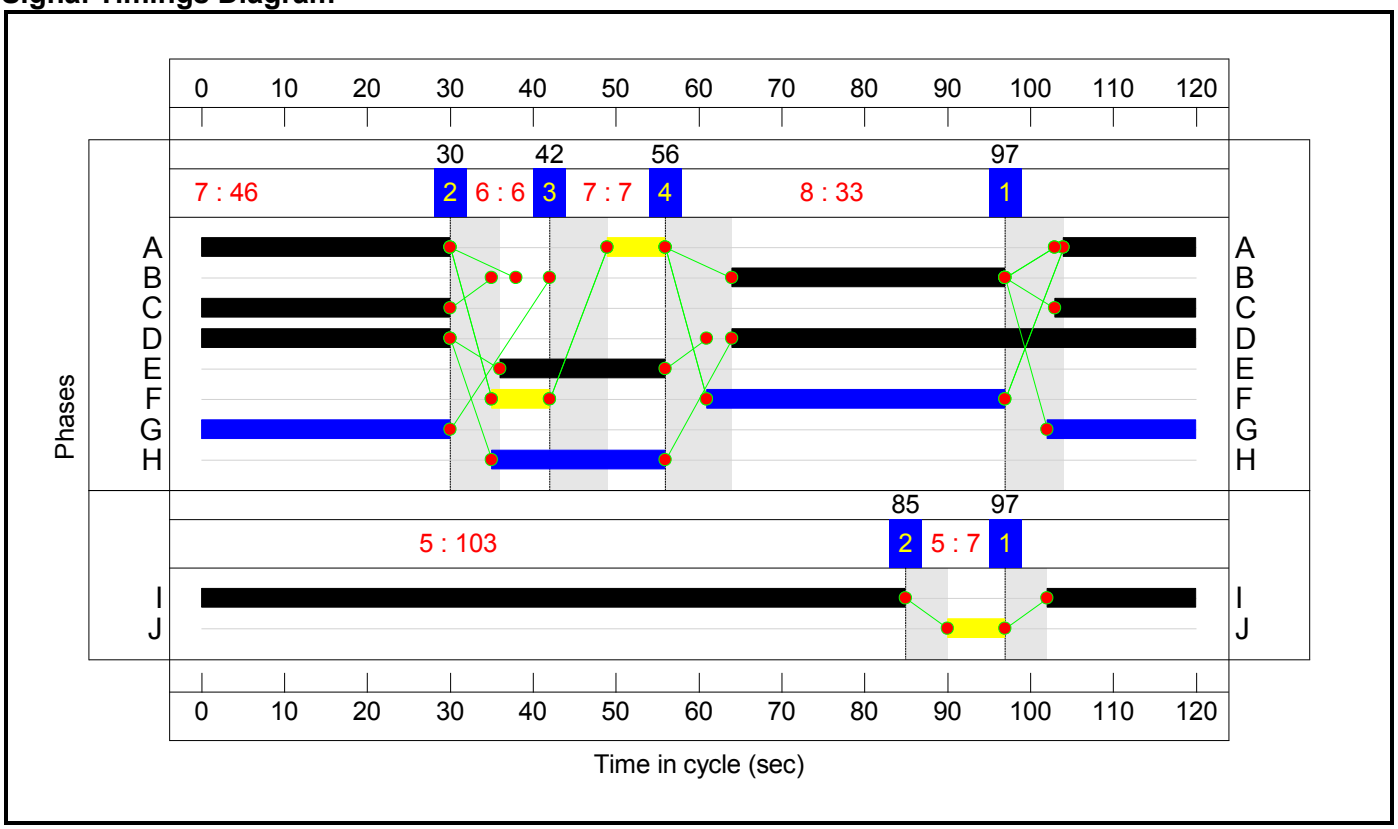
Stage Stream: 1

Stage	1	2	3	4
Duration	46	6	7	33
Change Point	97	30	42	56

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	97	85

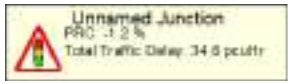
Signal Timings Diagram

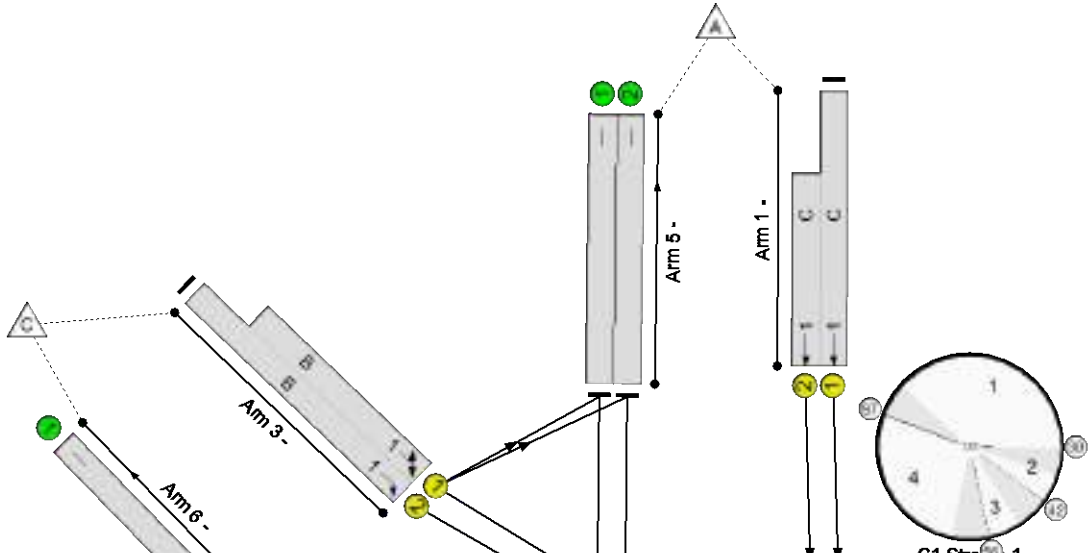


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.1%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.1%**
1/1+1/2	Ahead	U	1	N/A	C		1	47	-	979	1915:1915	544+530	91.1 : 91.1%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	53	-	883	1915:1859	706+451	76.3 : 76.3%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	53:20	-	582	1915:1915	878+0	66.3 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	33	-	801	1874:1862	448+451	89.1 : 89.1%
4/1	Ahead Left	U	1	N/A	D		1	86	-	859	1915	1388	61.9%
4/2	Ahead	U	1	N/A	D		1	86	-	882	1915	1388	63.5%
5/1		U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	602	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	344	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	344	1915	1660	20.7%
8/1		U	N/A	N/A	-		-	-	-	859	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	882	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	821	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.0**	**12.8**	**0.0**	**34.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**22.0**	**12.8**	**0.0**	**34.8**	**-**	**-**	**-**	**-**
1/1+1/2	979	979	-	-	-	8.1	4.7	-	12.8	46.9	19.0	4.7	23.6
2/2+2/1	883	883	-	-	-	2.2	1.6	-	3.8	15.5	9.7	1.6	11.3
2/3+2/4	582	582	-	-	-	2.5	1.0	-	3.4	21.2	10.8	1.0	11.8
3/2+3/1	801	801	-	-	-	8.7	3.8	-	12.5	56.3	12.4	3.8	16.2
4/1	859	859	-	-	-	0.2	0.8	-	1.0	4.2	0.7	0.8	1.6
4/2	882	882	-	-	-	0.2	0.9	-	1.1	4.3	0.7	0.9	1.6
5/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	602	602	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	344	344	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	344	344	-	-	-	0.1	0.1	-	0.3	2.7	1.8	0.1	1.9
8/1	859	859	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	882	882	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

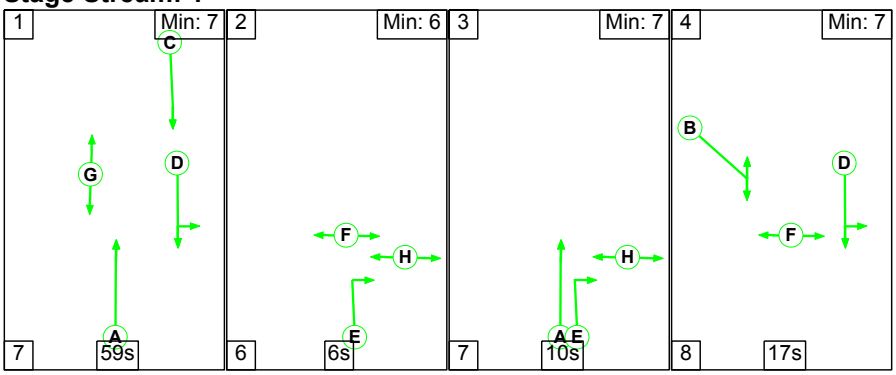
C1 Stream: 1 PRC for Signalled Lanes (%): -1.2 Total Delay for Signalled Lanes (pcuHr): 34.56 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 334.2 Total Delay for Signalled Lanes (pcuHr): 0.26 Cycle Time (s): 120
PRC Over All Lanes (%): -1.2 Total Delay Over All Lanes(pcuHr): 34.81

Full Input Data And Results

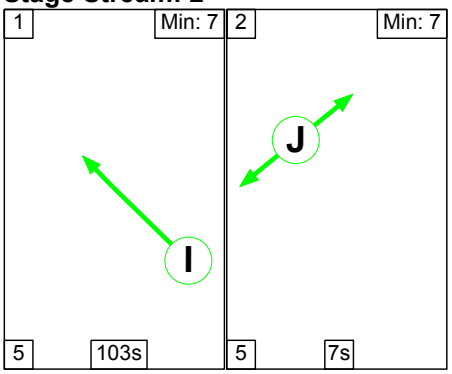
Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

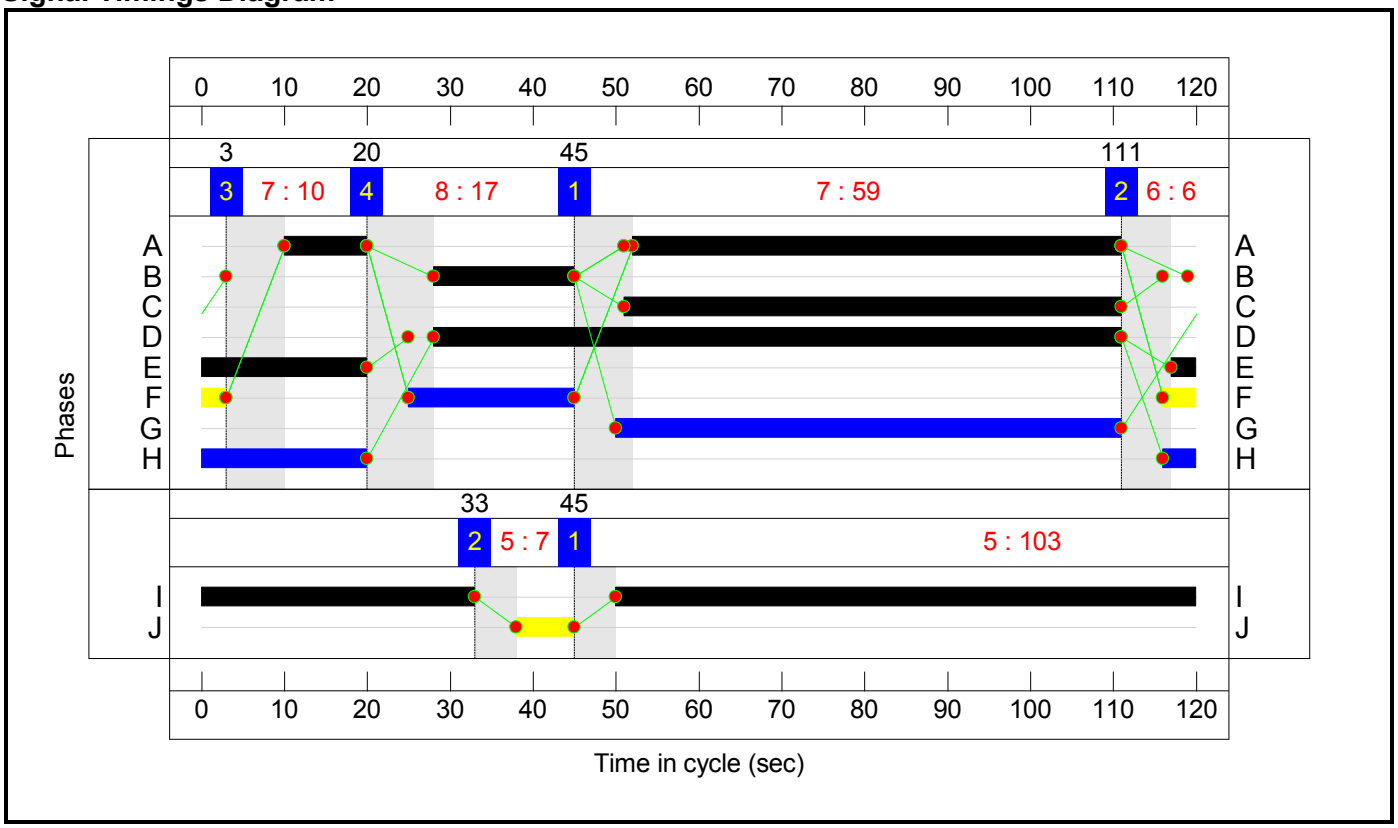
Stage	1	2	3	4
Duration	59	6	10	17
Change Point	45	111	3	20

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	45	33

Full Input Data And Results

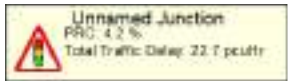
Signal Timings Diagram

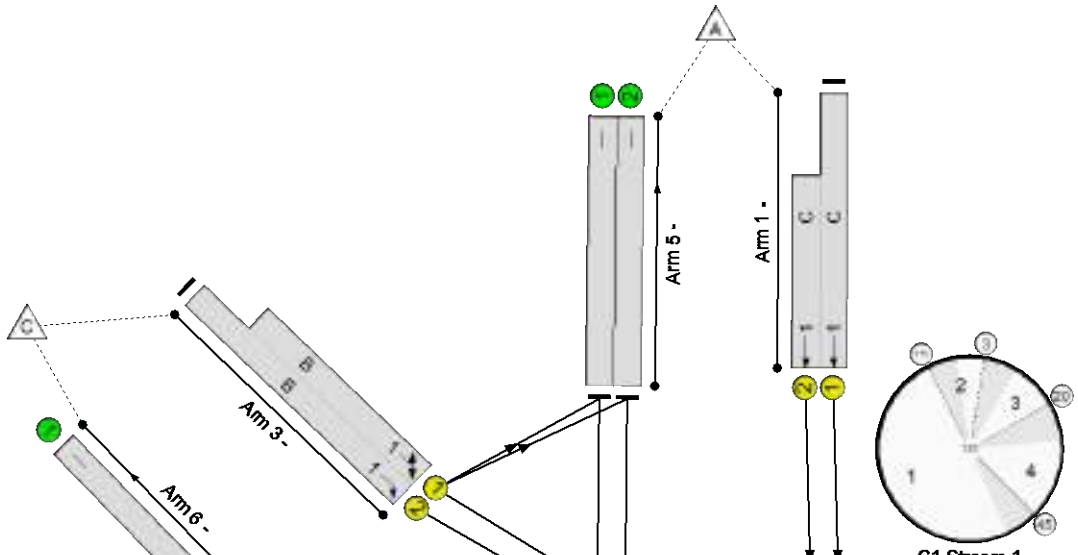


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**86.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	60	-	888	1915:1915	649+634	69.2 : 69.2%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	69	-	1341	1915:1859	774+953	77.6 : 77.6%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	69:23	-	690	1915:1915	1133+0	60.9 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	17	-	478	1874:1852	281+278	84.7 : 86.4%
4/1	Ahead Left	U	1	N/A	D		1	83	-	648	1915	1340	48.3%
4/2	Ahead	U	1	N/A	D		1	83	-	677	1915	1340	50.5%
5/1		U	N/A	N/A	-		-	-	-	621	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	740	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	740	1915	1660	44.6%
8/1		U	N/A	N/A	-		-	-	-	648	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	677	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	572	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**14.9**	**7.8**	**0.0**	**22.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**14.9**	**7.8**	**0.0**	**22.7**	**-**	**-**	**-**	**-**
1/1+1/2	888	888	-	-	-	4.7	1.1	-	5.8	23.4	9.6	1.1	10.7
2/2+2/1	1341	1341	-	-	-	1.3	1.7	-	3.0	8.1	7.5	1.7	9.2
2/3+2/4	690	690	-	-	-	1.6	0.8	-	2.4	12.4	9.2	0.8	10.0
3/2+3/1	478	478	-	-	-	6.6	2.8	-	9.4	70.6	7.8	2.8	10.6
4/1	648	648	-	-	-	0.2	0.5	-	0.7	3.6	0.7	0.5	1.1
4/2	677	677	-	-	-	0.2	0.5	-	0.7	3.7	0.7	0.5	1.2
5/1	621	621	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	740	740	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	740	740	-	-	-	0.4	0.4	-	0.8	3.7	5.3	0.4	5.7
8/1	648	648	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	677	677	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

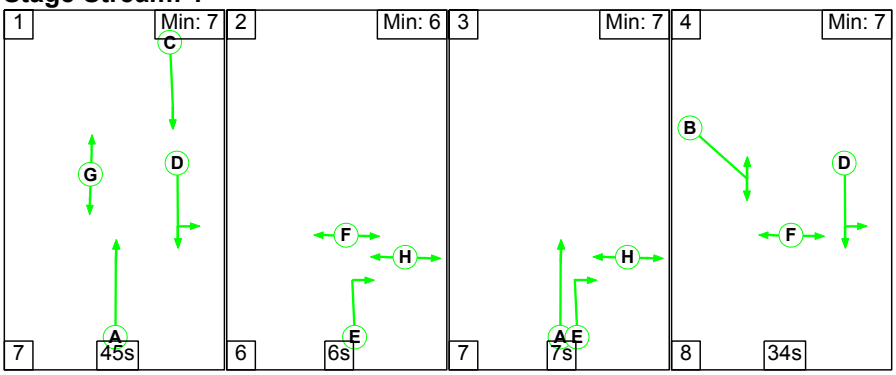
C1	Stream: 1 PRC for Signalled Lanes (%):	4.2	Total Delay for Signalled Lanes (pcuHr):	21.90	Cycle Time (s): 120
C1	Stream: 2 PRC for Signalled Lanes (%):	101.9	Total Delay for Signalled Lanes (pcuHr):	0.76	Cycle Time (s): 120
	PRC Over All Lanes (%):	4.2	Total Delay Over All Lanes(pcuHr):	22.66	

Full Input Data And Results

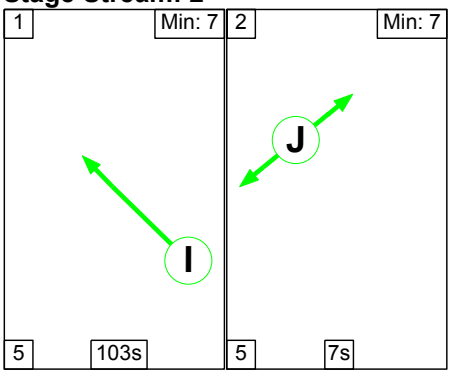
Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

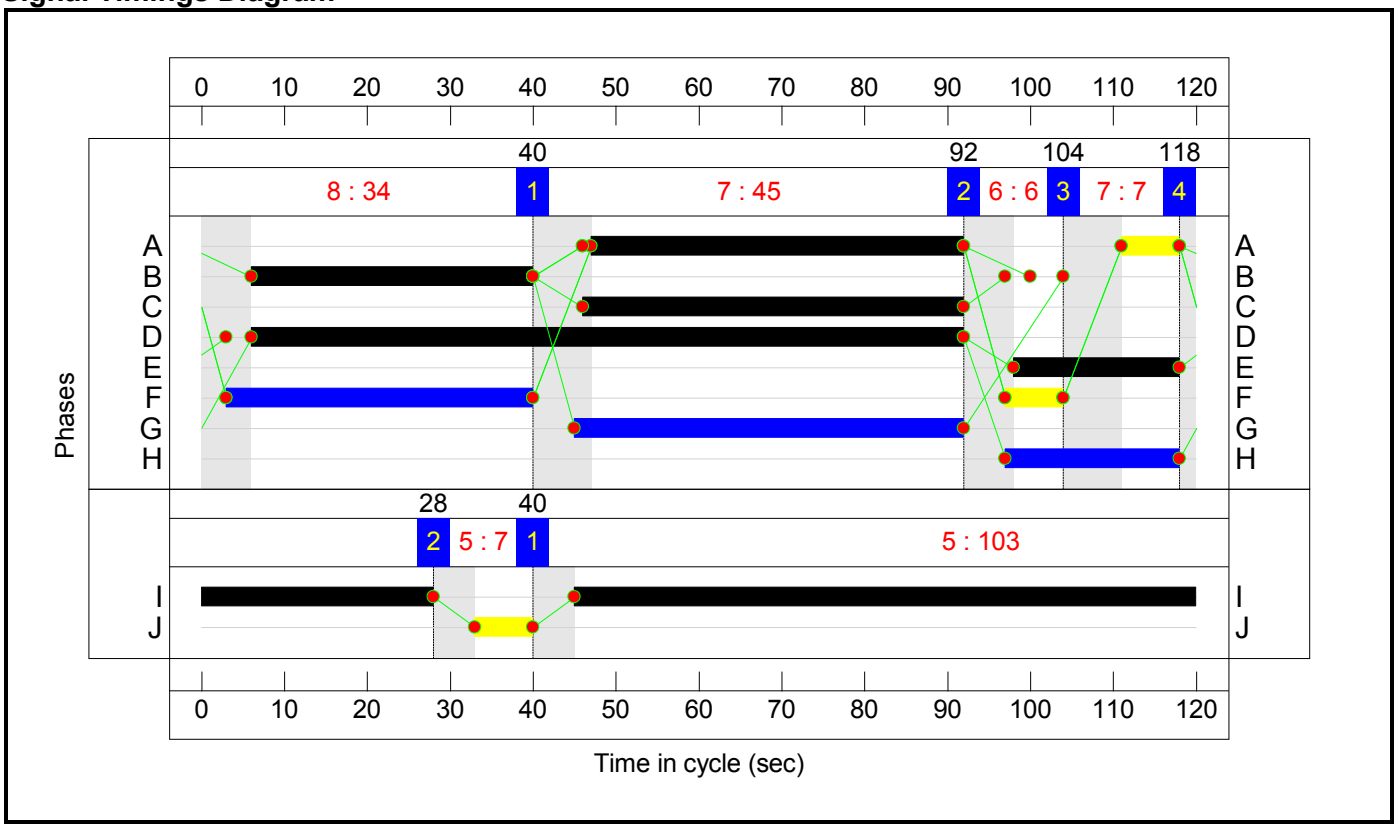
Stage	1	2	3	4
Duration	45	6	7	34
Change Point	40	92	104	118

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	40	28

Full Input Data And Results

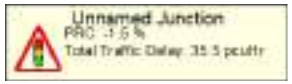
Signal Timings Diagram

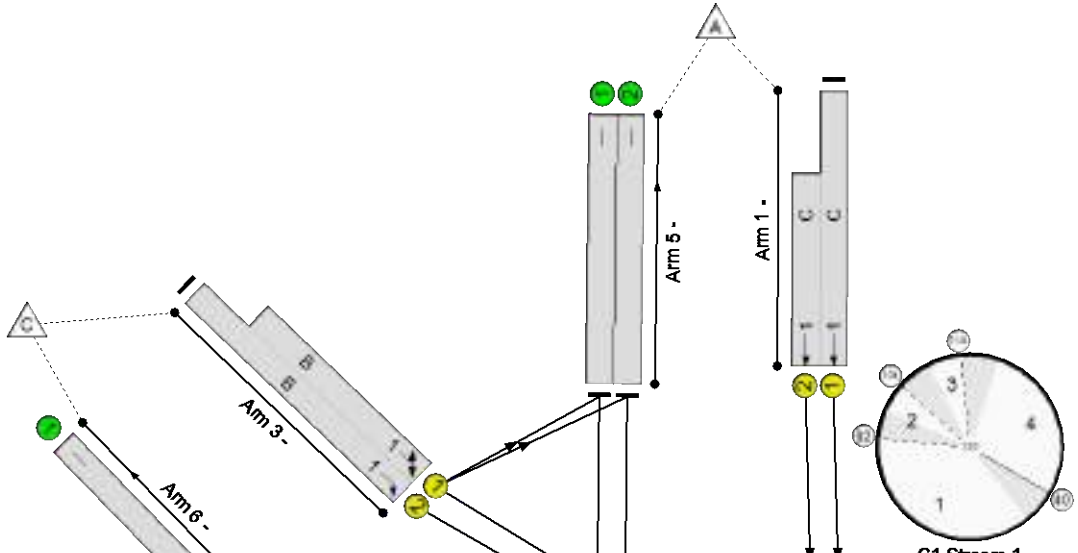


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	46	-	967	1915:1915	536+522	91.4 : 91.4%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	52	-	889	1915:1859	690+470	76.6 : 76.6%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	52:20	-	569	1915:1915	862+0	66.0 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	34	-	822	1874:1862	455+459	90.0 : 90.0%
4/1	Ahead Left	U	1	N/A	D		1	86	-	862	1915	1388	62.1%
4/2	Ahead	U	1	N/A	D		1	86	-	886	1915	1388	63.8%
5/1		U	N/A	N/A	-		-	-	-	549	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	590	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	360	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	360	1915	1660	21.7%
8/1		U	N/A	N/A	-		-	-	-	862	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	886	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	525	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.2**	**13.3**	**0.0**	**35.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**22.2**	**13.3**	**0.0**	**35.5**	**-**	**-**	**-**	**-**
1/1+1/2	967	967	-	-	-	8.2	4.8	-	13.0	48.2	18.9	4.8	23.7
2/2+2/1	889	889	-	-	-	2.2	1.6	-	3.8	15.6	9.7	1.6	11.3
2/3+2/4	569	569	-	-	-	2.5	1.0	-	3.4	21.7	10.7	1.0	11.7
3/2+3/1	822	822	-	-	-	8.8	4.1	-	12.9	56.6	13.1	4.1	17.2
4/1	862	862	-	-	-	0.2	0.8	-	1.0	4.2	0.7	0.8	1.6
4/2	886	886	-	-	-	0.2	0.9	-	1.1	4.3	0.7	0.9	1.6
5/1	549	549	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	590	590	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	360	360	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	360	360	-	-	-	0.1	0.1	-	0.3	2.7	1.9	0.1	2.0
8/1	862	862	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	886	886	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

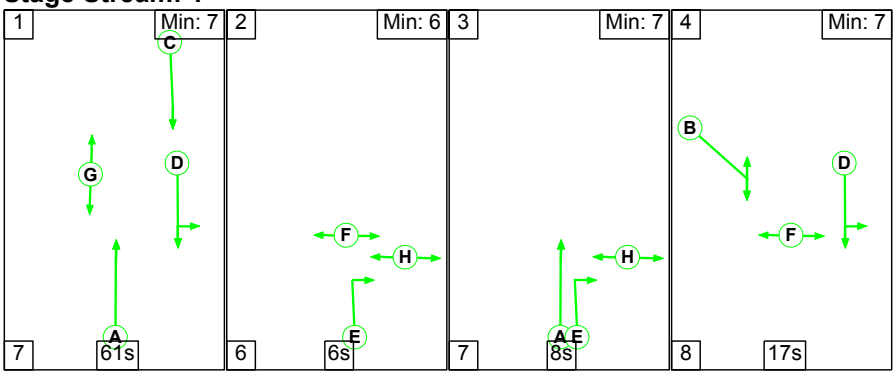
C1 Stream: 1 PRC for Signalled Lanes (%): -1.5 Total Delay for Signalled Lanes (pcuHr): 35.23 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 314.9 Total Delay for Signalled Lanes (pcuHr): 0.27 Cycle Time (s): 120
PRC Over All Lanes (%): -1.5 Total Delay Over All Lanes(pcuHr): 35.50

Full Input Data And Results

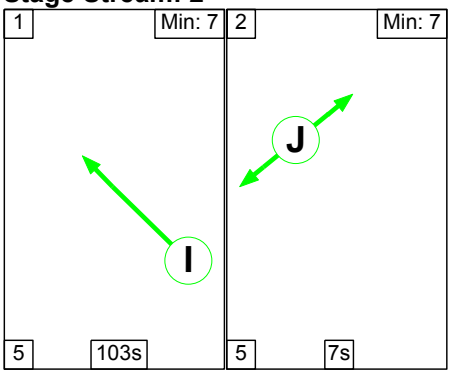
Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

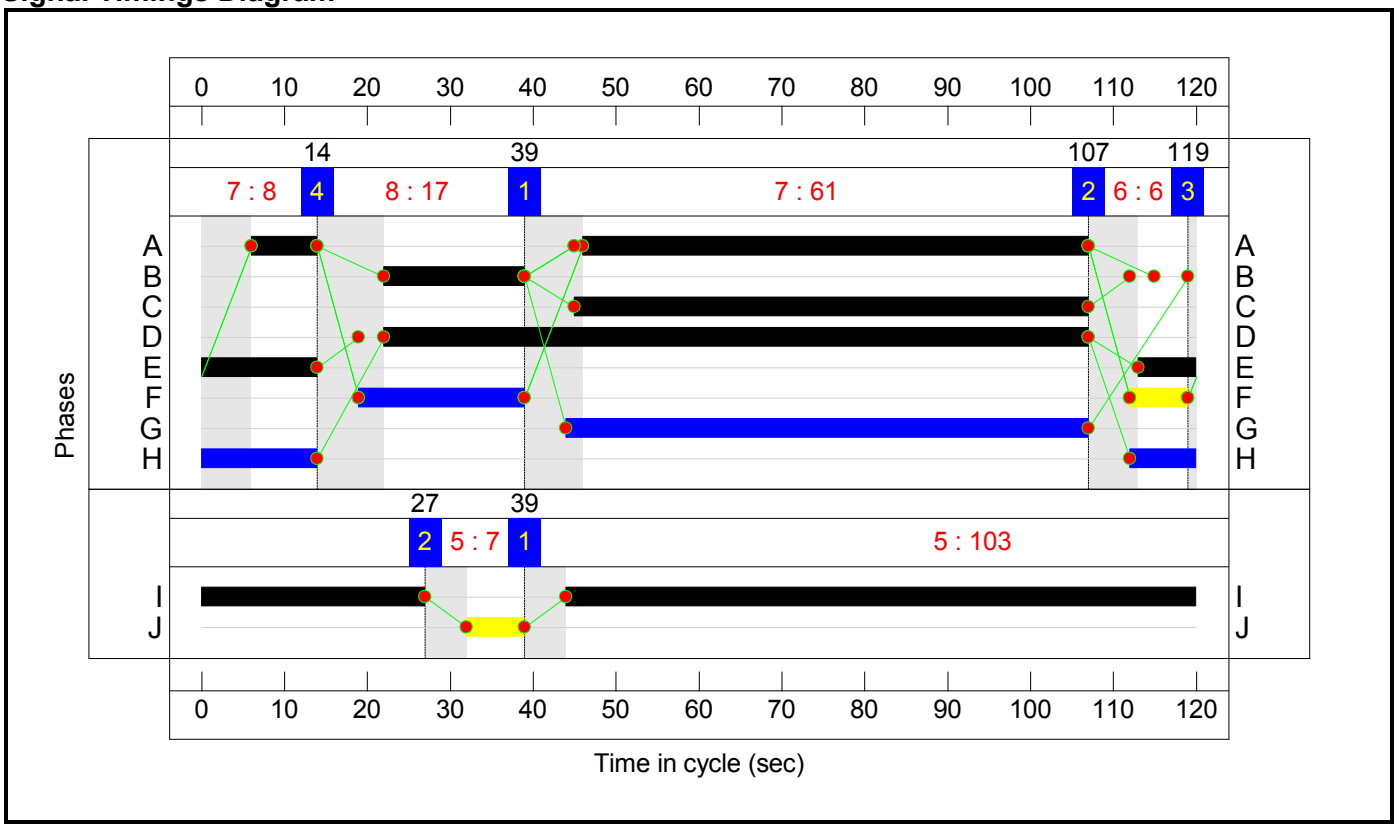
Stage	1	2	3	4
Duration	61	6	8	17
Change Point	39	107	119	14

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	39	27

Full Input Data And Results

Signal Timings Diagram

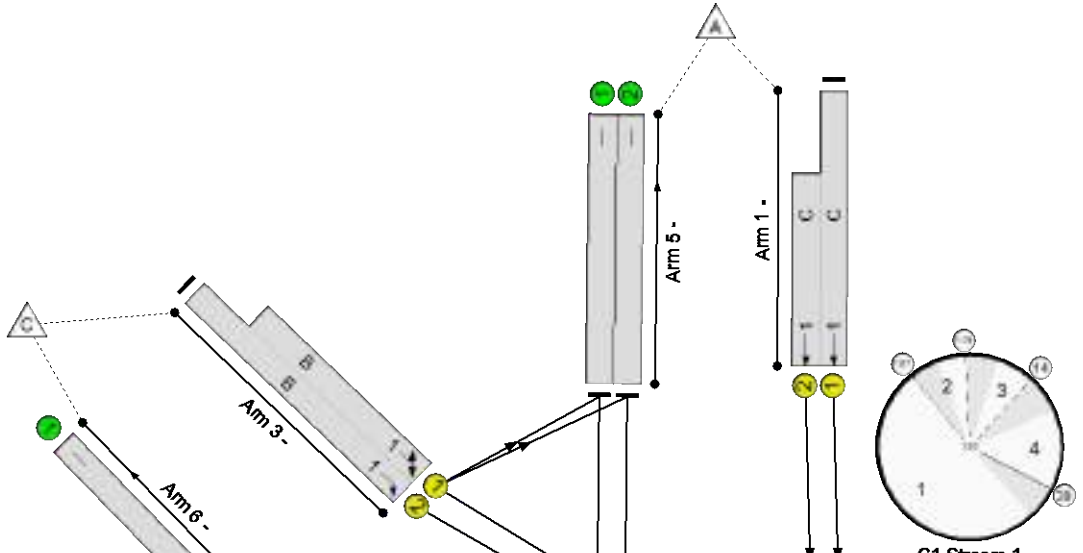


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**
1/1+1/2	Ahead	U	1	N/A	C		1	62	-	875	1915:1915	667+645	66.7 : 66.7%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	69	-	1375	1915:1859	744+987	79.4 : 79.4%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	69:21	-	674	1915:1915	1133+0	59.5 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	17	-	443	1874:1835	281+275	78.6 : 80.7%
4/1	Ahead Left	U	1	N/A	D		1	85	-	598	1915	1372	43.6%
4/2	Ahead	U	1	N/A	D		1	85	-	651	1915	1372	47.4%
5/1		U	N/A	N/A	-		-	-	-	625	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	784	1915	1660	47.2%
8/1		U	N/A	N/A	-		-	-	-	598	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	896	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**14.0**	**6.8**	**0.0**	**20.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**14.0**	**6.8**	**0.0**	**20.8**	**-**	**-**	**-**	**-**
1/1+1/2	875	875	-	-	-	4.3	1.0	-	5.3	21.7	9.1	1.0	10.1
2/2+2/1	1375	1375	-	-	-	1.3	1.9	-	3.2	8.3	7.2	1.9	9.1
2/3+2/4	674	674	-	-	-	1.7	0.7	-	2.4	12.7	9.3	0.7	10.0
3/2+3/1	443	443	-	-	-	6.1	1.9	-	7.9	64.6	7.2	1.9	9.0
4/1	598	598	-	-	-	0.2	0.4	-	0.6	3.4	0.7	0.4	1.1
4/2	651	651	-	-	-	0.2	0.5	-	0.6	3.4	0.6	0.5	1.1
5/1	625	625	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	784	784	-	-	-	0.4	0.4	-	0.8	3.9	5.9	0.4	6.3
8/1	598	598	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

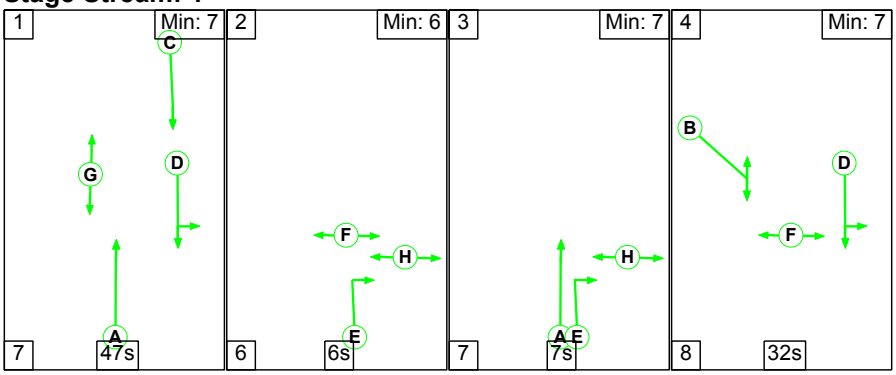
C1 Stream: 1 PRC for Signalled Lanes (%): 11.6 Total Delay for Signalled Lanes (pcuHr): 19.96 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 90.5 Total Delay for Signalled Lanes (pcuHr): 0.84 Cycle Time (s): 120
PRC Over All Lanes (%): 11.6 Total Delay Over All Lanes(pcuHr): 20.80

Full Input Data And Results

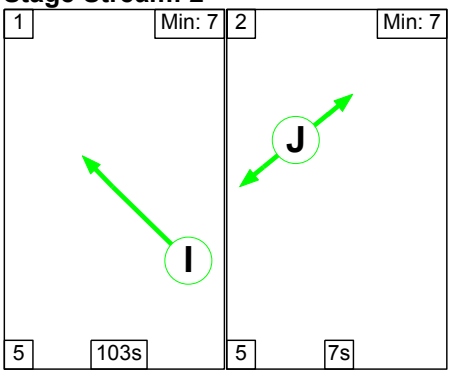
Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

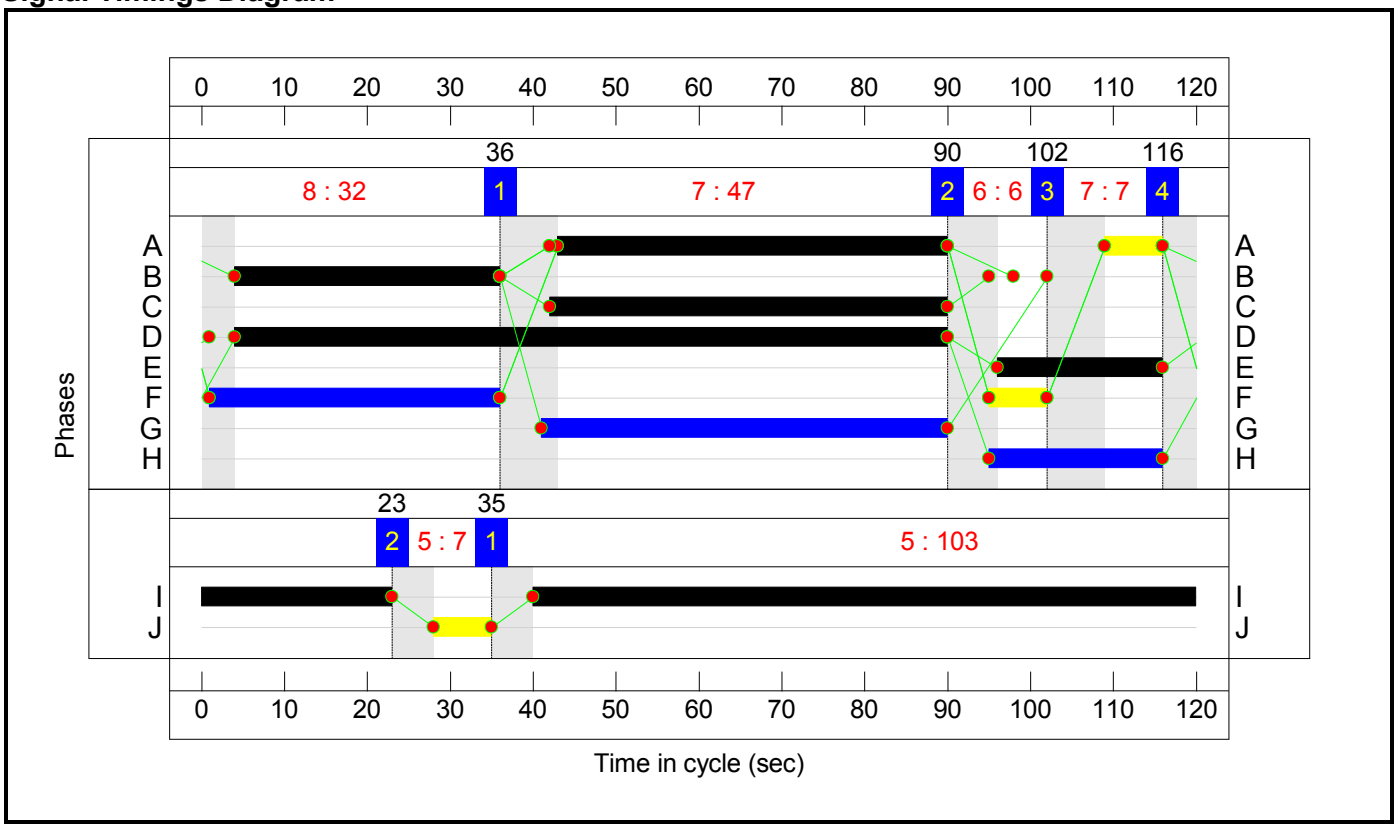
Stage	1	2	3	4
Duration	47	6	7	32
Change Point	36	90	102	116

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	35	23

Full Input Data And Results

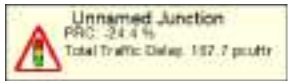
Signal Timings Diagram

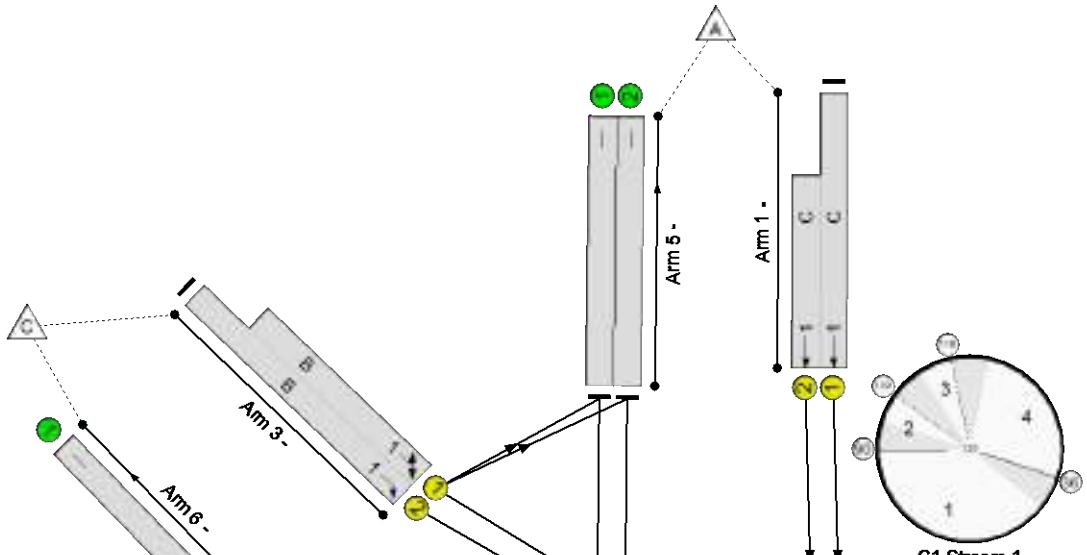


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.0%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.0%**
1/1+1/2	Ahead	U	1	N/A	C		1	48	-	1221	1915:1915	553+537	112.0 : 112.0%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	54	-	959	1915:1859	698+526	78.4 : 78.4%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	54:20	-	597	1915:1915	894+0	66.8 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	32	-	978	1874:1864	438+443	110.9 : 110.9%
4/1	Ahead Left	U	1	N/A	D		1	86	-	1072	1915	1388	69.2%
4/2	Ahead	U	1	N/A	D		1	86	-	1088	1915	1388	70.3%
5/1		U	N/A	N/A	-		-	-	-	566	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	617	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	412	1915	1660	24.8%
8/1		U	N/A	N/A	-		-	-	-	1072	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1088	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	504	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**39.8**	**127.9**	**0.0**	**167.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**39.8**	**127.9**	**0.0**	**167.7**	**-**	**-**	**-**	**-**
1/1+1/2	1221	1090	-	-	-	17.0	69.8	-	86.8	256.0	38.0	69.8	107.8
2/2+2/1	959	959	-	-	-	2.2	1.8	-	4.0	14.8	9.7	1.8	11.5
2/3+2/4	597	597	-	-	-	2.5	1.0	-	3.5	21.0	11.0	1.0	12.0
3/2+3/1	978	882	-	-	-	17.2	52.9	-	70.0	257.8	26.8	52.9	79.6
4/1	961	961	-	-	-	0.4	1.1	-	1.5	5.6	1.5	1.1	2.6
4/2	976	976	-	-	-	0.4	1.2	-	1.5	5.7	1.4	1.2	2.6
5/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	615	615	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	412	412	-	-	-	0.2	0.2	-	0.3	2.8	2.3	0.2	2.5
8/1	961	961	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	976	976	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

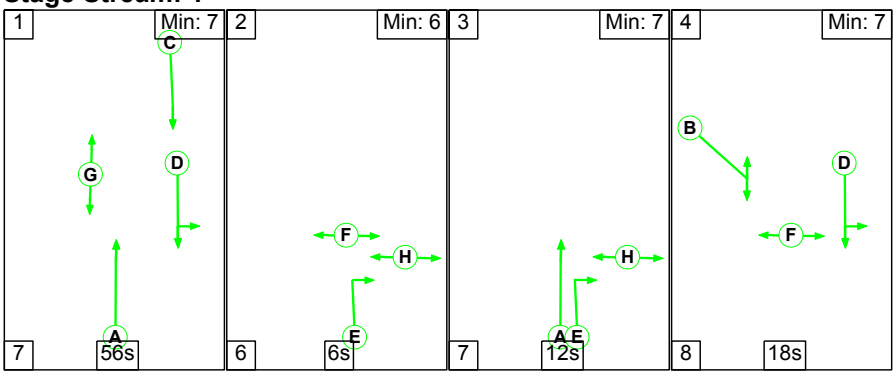
C1 Stream: 1 PRC for Signalled Lanes (%): -24.4 Total Delay for Signalled Lanes (pcuHr): 167.33 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 262.5 Total Delay for Signalled Lanes (pcuHr): 0.32 Cycle Time (s): 120
PRC Over All Lanes (%): -24.4 Total Delay Over All Lanes(pcuHr): 167.65

Full Input Data And Results

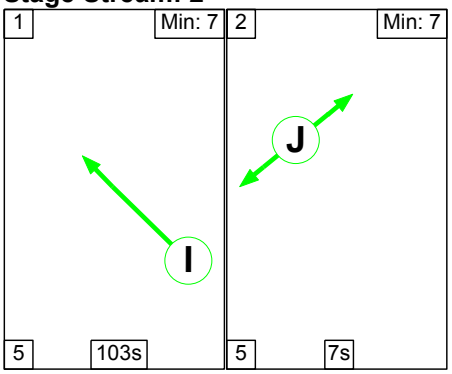
Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

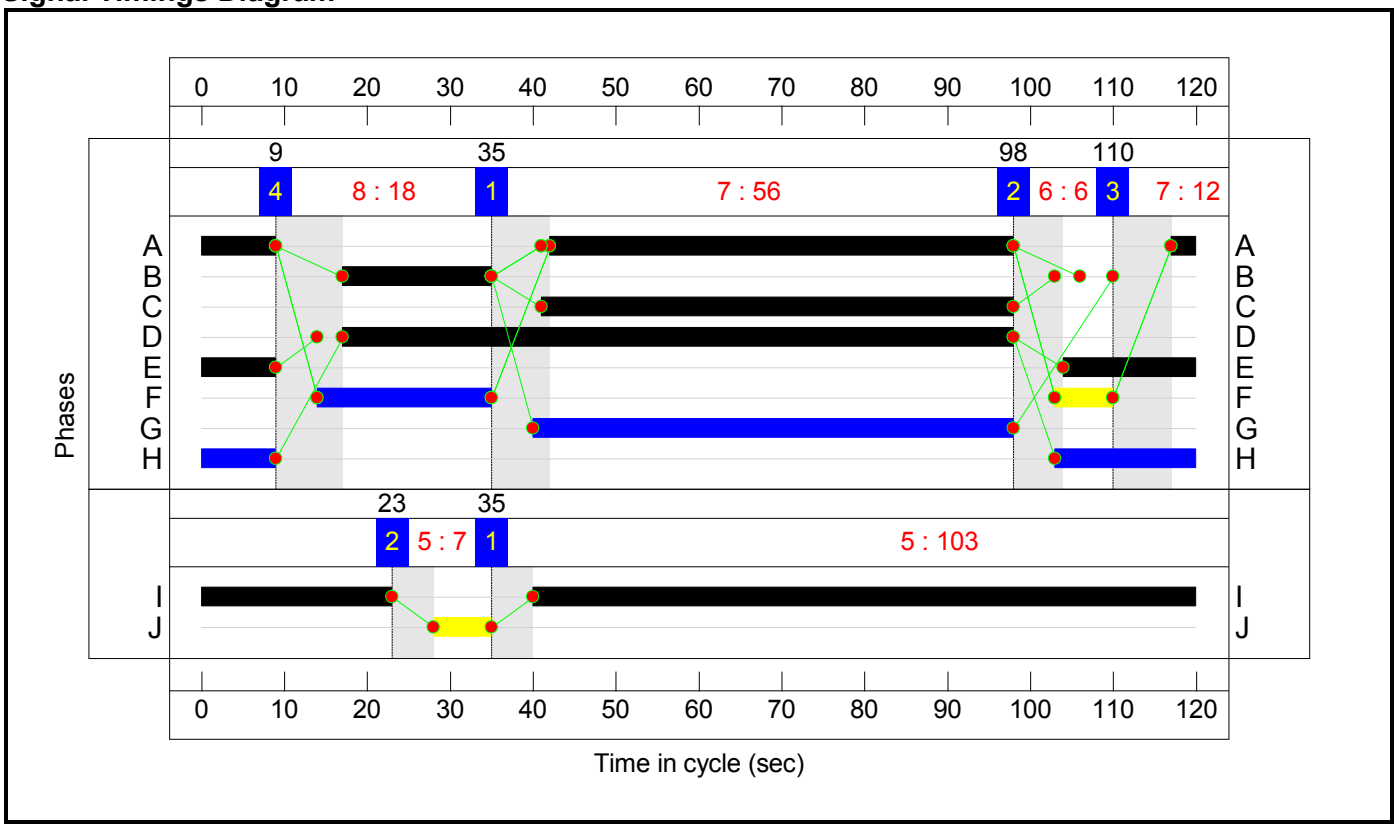
Stage	1	2	3	4
Duration	56	6	12	18
Change Point	35	98	110	9

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	35	23

Full Input Data And Results

Signal Timings Diagram

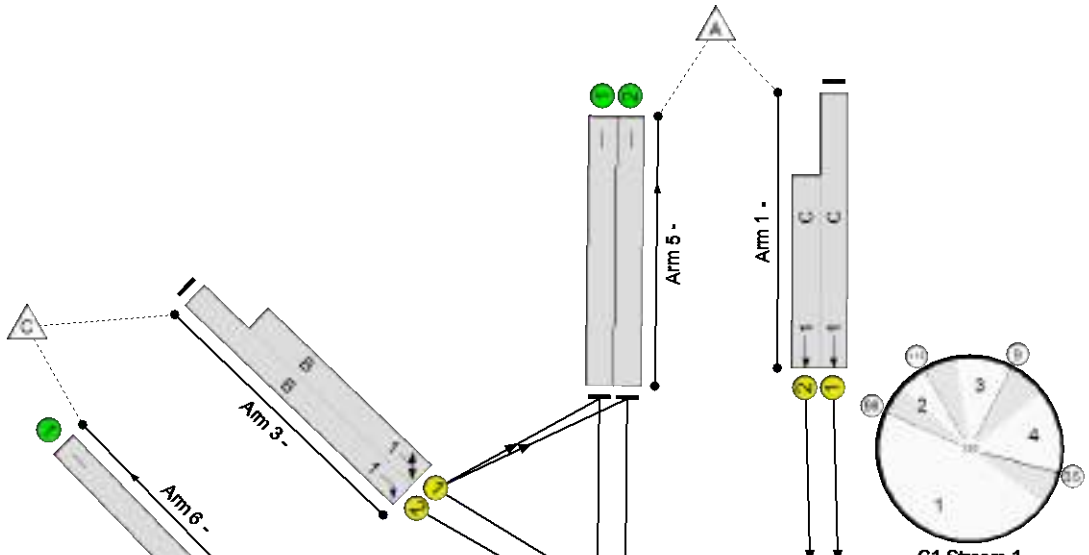


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.2%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.2%**
1/1+1/2	Ahead	U	1	N/A	C		1	57	-	955	1915:1915	625+611	77.3 : 77.3%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	68	-	1497	1915:1859	765+1056	82.2 : 82.2%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	68:25	-	736	1915:1915	1117+0	65.9 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	18	-	492	1874:1853	297+293	82.6 : 84.2%
4/1	Ahead Left	U	1	N/A	D		1	81	-	689	1915	1309	52.7%
4/2	Ahead	U	1	N/A	D		1	81	-	717	1915	1309	54.8%
5/1		U	N/A	N/A	-		-	-	-	649	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	757	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	868	1915	1660	52.3%
8/1		U	N/A	N/A	-		-	-	-	689	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	563	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**16.6**	**9.0**	**0.0**	**25.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**16.6**	**9.0**	**0.0**	**25.6**	**-**	**-**	**-**	**-**
1/1+1/2	955	955	-	-	-	5.7	1.7	-	7.4	27.7	12.3	1.7	13.9
2/2+2/1	1497	1497	-	-	-	1.5	2.3	-	3.7	9.0	8.2	2.3	10.5
2/3+2/4	736	736	-	-	-	1.9	1.0	-	2.8	13.8	10.4	1.0	11.4
3/2+3/1	492	492	-	-	-	6.7	2.4	-	9.1	66.5	8.0	2.4	10.3
4/1	689	689	-	-	-	0.2	0.6	-	0.8	4.0	0.7	0.6	1.3
4/2	717	717	-	-	-	0.2	0.6	-	0.8	4.1	0.7	0.6	1.3
5/1	649	649	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	757	757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	868	868	-	-	-	0.5	0.5	-	1.0	4.2	7.0	0.5	7.5
8/1	689	689	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

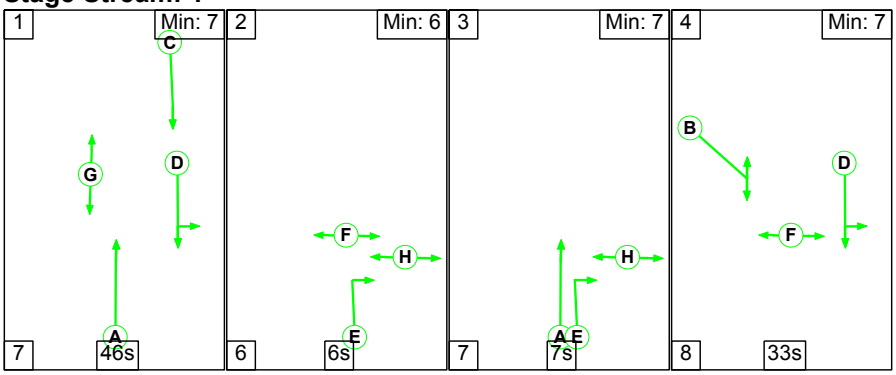
C1 Stream: 1 PRC for Signalled Lanes (%): 6.9 Total Delay for Signalled Lanes (pcuHr): 24.59 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 72.1 Total Delay for Signalled Lanes (pcuHr): 1.02 Cycle Time (s): 120
PRC Over All Lanes (%): 6.9 Total Delay Over All Lanes(pcuHr): 25.61

Full Input Data And Results

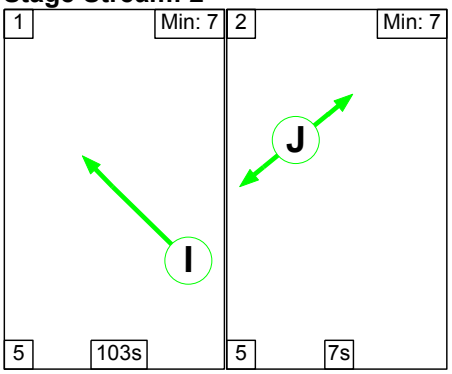
Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

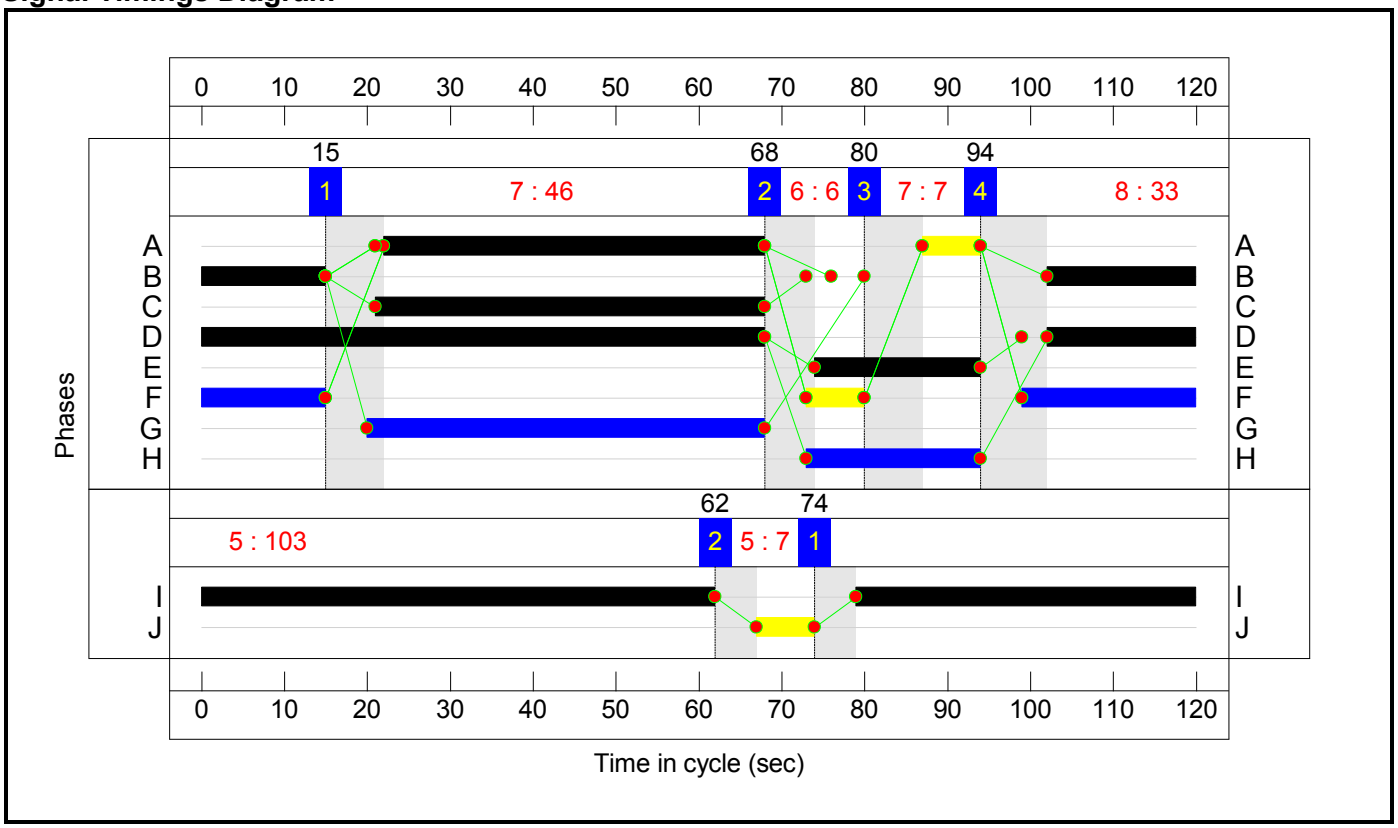
Stage	1	2	3	4
Duration	46	6	7	33
Change Point	15	68	80	94

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	74	62

Full Input Data And Results

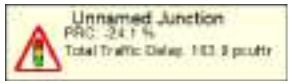
Signal Timings Diagram

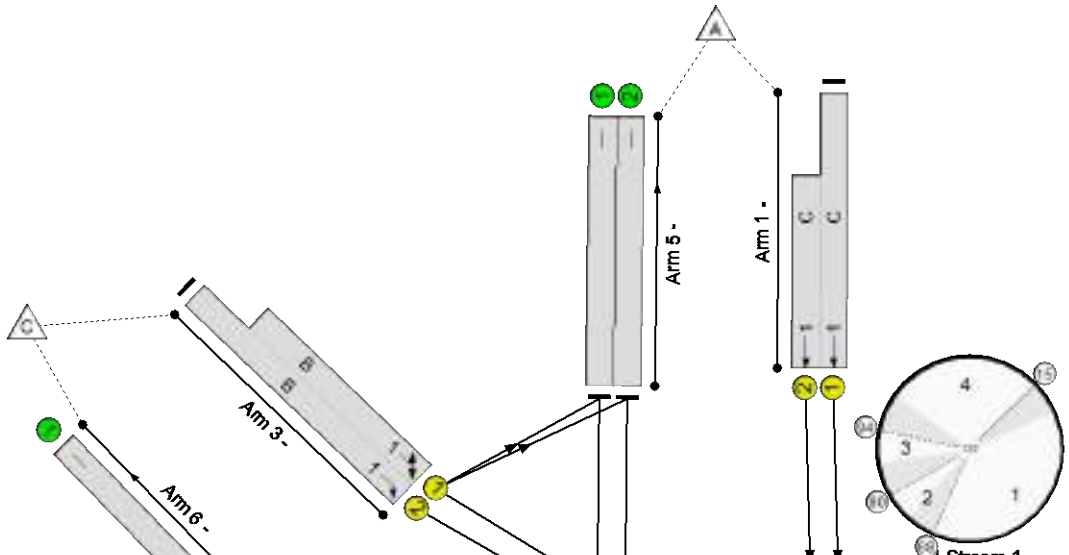


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.7%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**111.7%**
1/1+1/2	Ahead	U	1	N/A	C		1	47	-	1185	1915:1915	546+525	110.7 : 110.7%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	53	-	1002	1915:1859	663+634	77.3 : 77.3%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	53:20	-	555	1915:1915	878+0	63.2 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	33	-	1000	1874:1860	444+451	111.7 : 111.7%
4/1	Ahead Left	U	1	N/A	D		1	86	-	1053	1915	1388	68.3%
4/2	Ahead	U	1	N/A	D		1	86	-	1077	1915	1388	69.8%
5/1		U	N/A	N/A	-		-	-	-	539	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	583	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	490	1915	1660	29.5%
8/1		U	N/A	N/A	-		-	-	-	1053	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1077	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	506	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**40.4**	**123.4**	**0.0**	**163.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**40.4**	**123.4**	**0.0**	**163.9**	**-**	**-**	**-**	**-**
1/1+1/2	1185	1071	-	-	-	16.8	61.9	-	78.6	238.8	36.3	61.9	98.1
2/2+2/1	1002	1002	-	-	-	2.0	1.7	-	3.7	13.4	9.1	1.7	10.8
2/3+2/4	555	555	-	-	-	2.3	0.9	-	3.1	20.4	10.2	0.9	11.0
3/2+3/1	1000	896	-	-	-	18.4	56.6	-	75.0	270.0	27.9	56.6	84.5
4/1	948	948	-	-	-	0.4	1.1	-	1.5	5.5	1.5	1.1	2.5
4/2	969	969	-	-	-	0.4	1.1	-	1.5	5.6	1.4	1.1	2.6
5/1	536	536	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	580	580	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	490	490	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	490	490	-	-	-	0.2	0.2	-	0.4	3.0	2.9	0.2	3.1
8/1	948	948	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	969	969	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

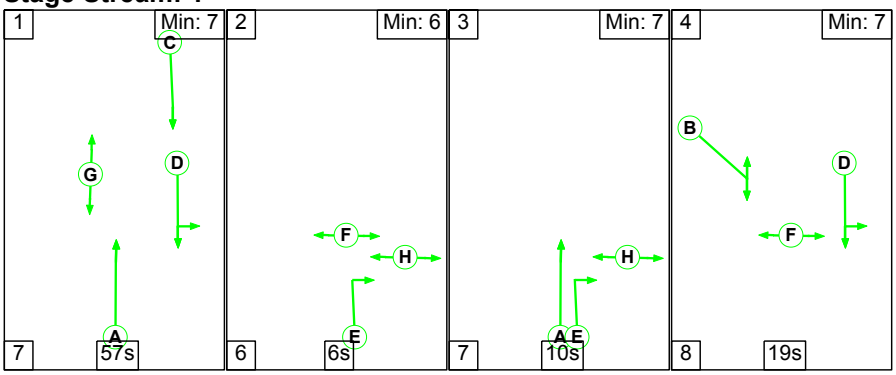
C1 Stream: 1 PRC for Signalled Lanes (%): -24.1 Total Delay for Signalled Lanes (pcuHr): 163.46 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 204.8 Total Delay for Signalled Lanes (pcuHr): 0.40 Cycle Time (s): 120
PRC Over All Lanes (%): -24.1 Total Delay Over All Lanes(pcuHr): 163.86

Full Input Data And Results

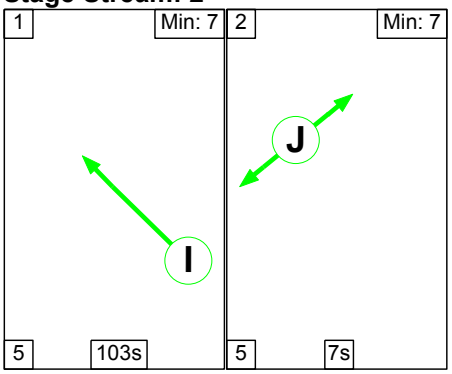
Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

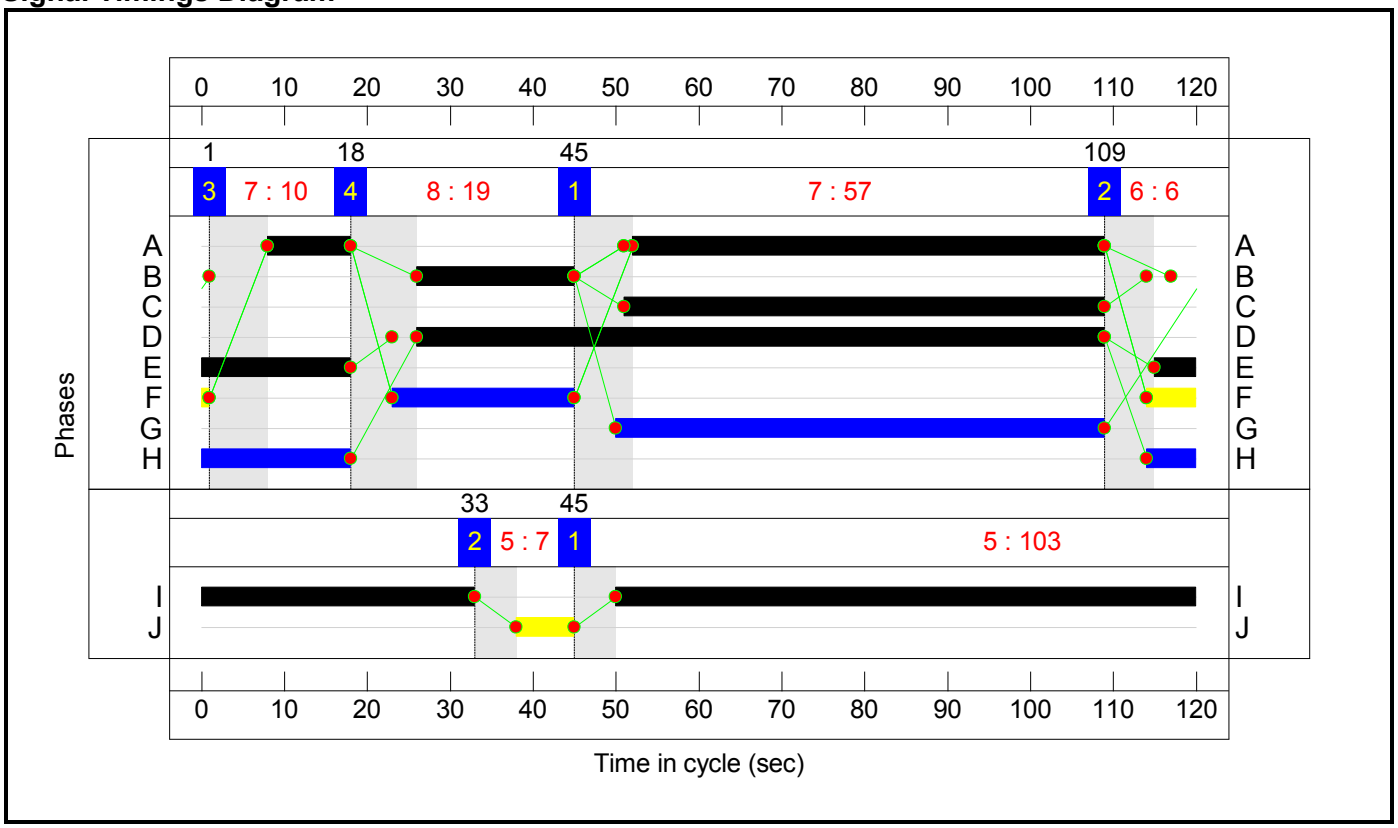
Stage	1	2	3	4
Duration	57	6	10	19
Change Point	45	109	1	18

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	45	33

Full Input Data And Results

Signal Timings Diagram

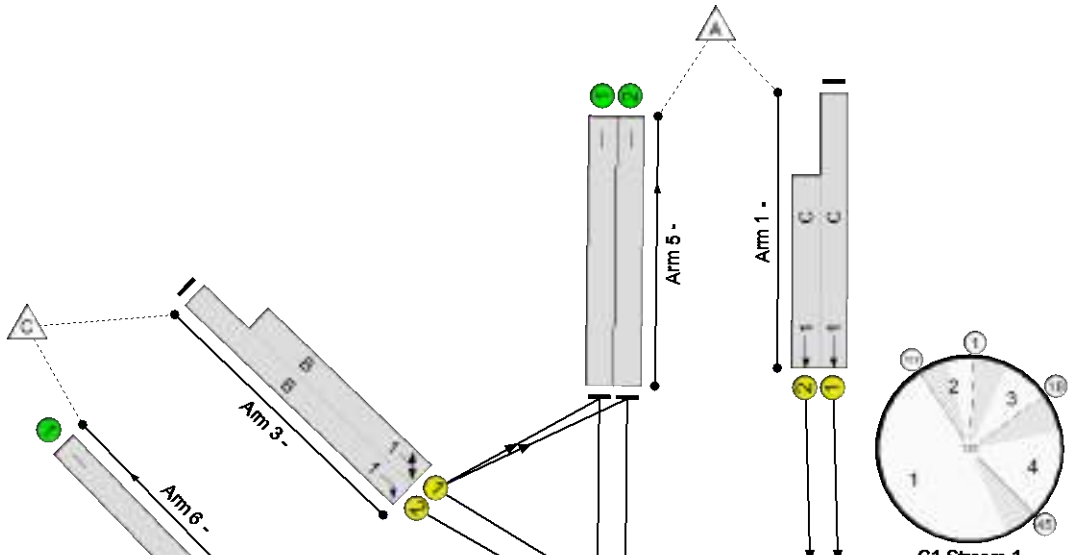


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	58	-	903	1915:1915	634+616	72.3 : 72.3%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	67	-	1459	1915:1859	745+1014	82.9 : 82.9%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	67:23	-	734	1915:1915	1101+0	66.7 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	19	-	509	1874:1842	312+307	81.0 : 83.4%
4/1	Ahead Left	U	1	N/A	D		1	83	-	650	1915	1340	48.5%
4/2	Ahead	U	1	N/A	D		1	83	-	698	1915	1340	52.1%
5/1		U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	841	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	841	1915	1660	50.7%
8/1		U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	698	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	880	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**16.2**	**8.4**	**0.0**	**24.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**16.2**	**8.4**	**0.0**	**24.6**	**-**	**-**	**-**	**-**
1/1+1/2	903	903	-	-	-	5.1	1.3	-	6.4	25.4	10.2	1.3	11.5
2/2+2/1	1459	1459	-	-	-	1.5	2.4	-	3.9	9.6	8.2	2.4	10.6
2/3+2/4	734	734	-	-	-	2.0	1.0	-	3.0	14.6	10.9	1.0	11.9
3/2+3/1	509	509	-	-	-	6.8	2.2	-	9.0	64.0	8.2	2.2	10.5
4/1	650	650	-	-	-	0.2	0.5	-	0.7	3.7	0.7	0.5	1.2
4/2	698	698	-	-	-	0.2	0.5	-	0.7	3.8	0.7	0.5	1.2
5/1	650	650	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	841	841	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	841	841	-	-	-	0.4	0.5	-	1.0	4.1	6.5	0.5	7.1
8/1	650	650	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	698	698	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 7.9 Total Delay for Signalled Lanes (pcuHr): 23.67 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 77.6 Total Delay for Signalled Lanes (pcuHr): 0.96 Cycle Time (s): 120
PRC Over All Lanes (%): 7.9 Total Delay Over All Lanes(pcuHr): 24.63

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

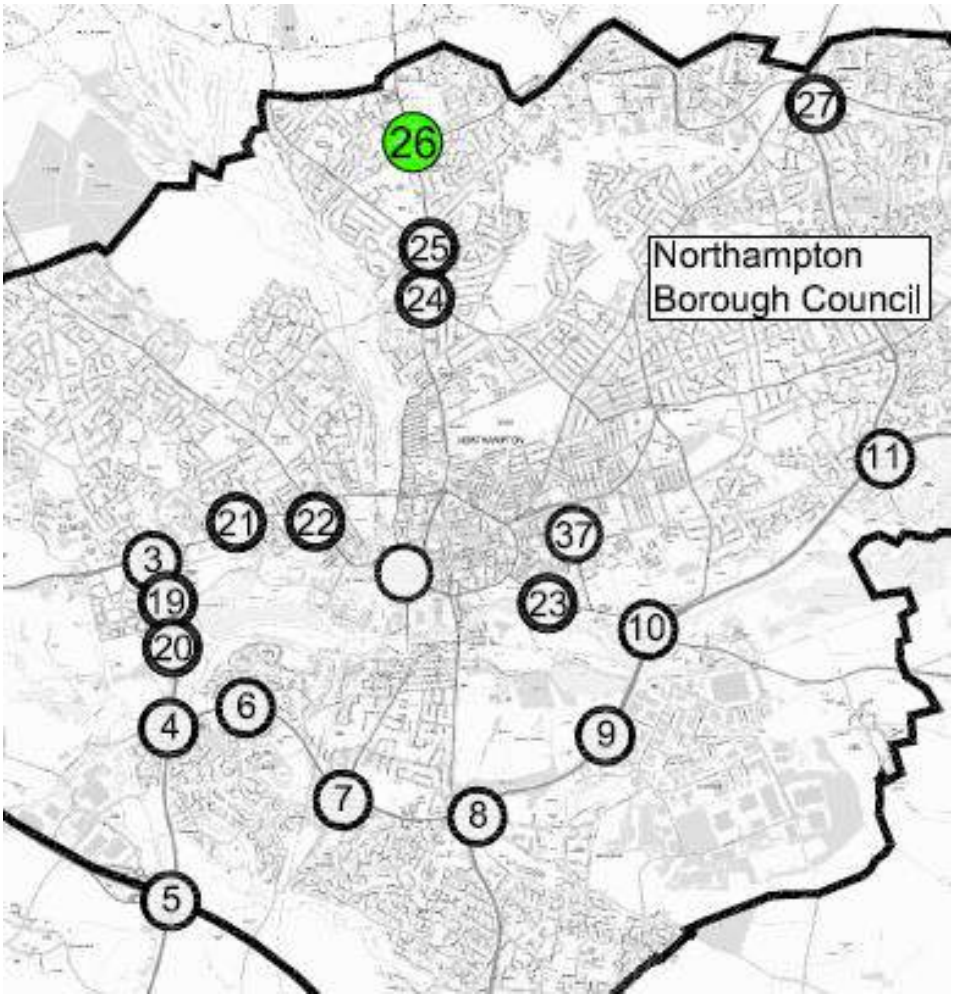
Technical Note No. 28

1 JUNCTION TWENTY SIX – A508 HARBOROUGH ROAD / A5076 HOLLY LODGE DRIVE

Site Description of the Base Junction

1.1 Junction Twenty Six is a three arm signalised junction to the south of Kingsthorpe cemetery and the east of Northgate School Arts College. It connects A508 Harborough Road and A5076 Holly Lodge Drive. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Twenty Six Location Plan



Base Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for Junction Two were conducted on Tuesday 6th June 2017 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the baseline flows along with queue length surveys recorded at five minute intervals. However, the junction was not in full operation as the Sandy Lane Relief Road (the northern arm) is not yet open to traffic. Therefore it is not possible to achieve an appropriately validated base model for this junction. The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios. This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.3 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

1.4 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Results of the Base Modelling

1.5 The results of the modelling for the existing junction layout, Shown in **Figure EL26** are summarised in **Table 2** and junction analysis results are included at **Appendix B**.

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		**AM**				**PM**			
Arm		**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**
DoS (%)	**2017**	**NA**				**NA**			
	2021 DM	63.3%	62.9%	63.4%	63.5%	66.8%	66.9%	81.5%	84.3%
	2021 DS	63.8%	64.2%	64.5%	58.3%	67.9%	68.0%	83.4%	85.4%
	2031 DM	100.70%	97.00%	100.50%	106.60%	64.40%	105.50%	92.00%	93.00%

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
	2031 DS	86.4%	86.0%	87.0%	98.4%	63.6%	102.1%	90.0%	95.4%
Queue – MMQ (PCU)	2017	NA				NA			
	2021 DM	10	8	8	8	5	10	6	13
	2021 DS	11	8	9	7	5	11	7	14
	2031 DM	47	15	32	74	4	64	9	11
	2031 DS	11	7	10	40	4	48	9	19
Average Delay (sec/pcu)	2017	NA				NA			
	2021 DM	14.7	48.6	15.4	13.3	62.5	13.3	5.5	8.0
	2021 DS	14.8	48.5	16.1	10.0	65.4	12.0	63.0	47.2
	2031 DM	91.3	95.2	88.2	176.4	54.1	149.7	80.6	60.2
	2031 DS	27.4	37.4	26.5	71.3	53.5	102.5	75.1	70.5

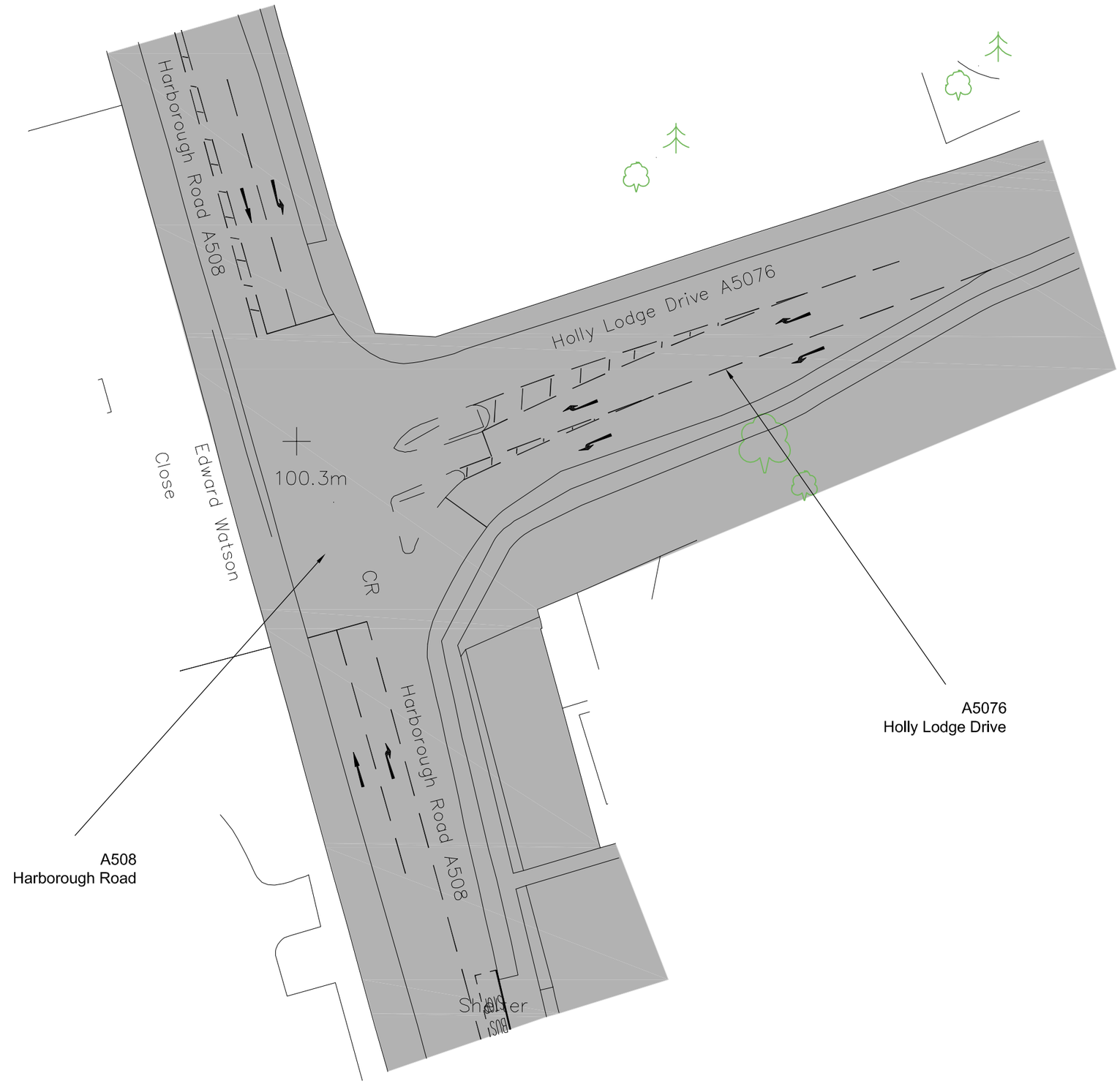
Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2015	2021 DM	2021 DS	2031 DM	2031 DS	2015	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (PRC)	-	48	50	102	87	-	55	58	109	104
Overall Junction Delay (PCUhr)	-	13	14	64	21	-	12	11	100	55

1.6 As shown in **Table 2**, Rail Central is shown to have minimal impact on the operation of the existing junction and that the junction remains within theoretical capacity in the 2031 AM and PM scenarios. Therefore mitigation is not considered necessary at this location.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A508 Harborough Road / A5076 Holly Lodge Drive Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	26.05.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL26	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

2015 Base Year

Morning Peak

	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	294	456	**750**
B - A508 S	426	0	213	**639**
C - Holly Lodge Drive	141	299	0	**440**
Total	**567**	**593**	**669**	**1,829**

Evening Peak

	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	419	458	**877**
B - A508 S	677	0	230	**907**
C - Holly Lodge Drive	125	94	0	**219**
Total	**802**	**513**	**688**	**2,003**

2021 DS2

Morning Peak

	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	289	521	**810**
B - A508 S	565	0	276	**841**
C - Holly Lodge Drive	191	252	0	**443**
Total	**756**	**541**	**797**	**2,094**

Evening Peak

	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	390	472	**862**
B - A508 S	766	0	310	**1,076**
C - Holly Lodge Drive	121	95	0	**216**
Total	**887**	**485**	**782**	**2,154**

2015 Base Year

Morning Peak

	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	294	456	**750**
B - A508 S	426	0	213	**639**
C - Holly Lodge Drive	141	299	0	**440**
Total	**567**	**593**	**669**	**1,829**

Evening Peak

	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	419	458	**877**
B - A508 S	677	0	230	**907**
C - Holly Lodge Drive	125	94	0	**219**
Total	**802**	**513**	**688**	**2,003**

2031 DS2

Morning Peak

	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	452	538	**990**
B - A508 S	476	0	426	**902**
C - Holly Lodge Drive	226	332	0	**558**
Total	**702**	**784**	**964**	**2,450**

Evening Peak

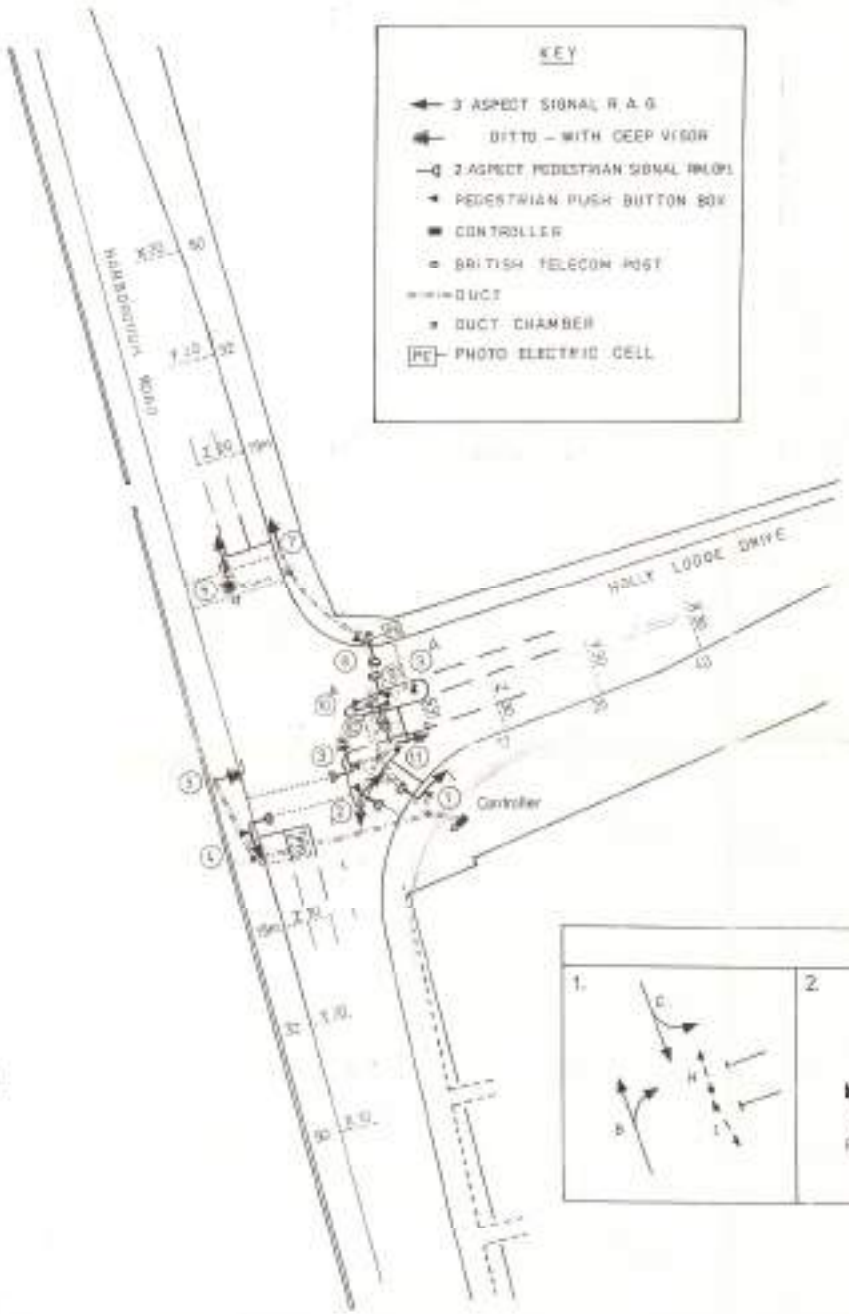
	A - A508 N	B - A508 S	C - Holly Lc	Total
A - A508 N	0	352	639	**991**
B - A508 S	550	0	546	**1,096**
C - Holly Lodge Drive	85	102	0	**187**
Total	**635**	**454**	**1,185**	**2,274**

APPENDIX B

Drawing No. 281 074/1/1

KEY

- 3 ASPECT SIGNAL R.A.G.
- DITTO – WITH DEEP VISOR
- 2 ASPECT PEDESTRIAN SIGNAL R&G(P)
- PEDESTRIAN PUSH BUTTON BOX
- CONTROLLER
- BRITISH TELECOM POST
- DUCT
- DUCT CHAMBER
- PE PHOTO ELECTRIC CELL



WIRING DIAGRAM



STAGE DIAGRAM



Northamptonshire

NORTHAMPTON

HARBOROUGH ROAD - HOLLY LODGE DRIVE

TRAFFIC SIGNAL LAYOUT

No.	Revision	Date
F	Rox redrawn	3-8-88

Michael J. Kendrick C.Eng., M.I.C.E., F.I.H.T.
Director of Planning and Transportation

	Name	Date
Drawn	C.H.L.	3-8-88
Traced		
Checked	R.J.L.	3-8-88
Approved		

Scale 1 : 500

Date Issued

File No.

Drawing No. 281 074/1/1

CUSTOMER DOCUMENTATION

OFFICE COPY

Project :- 00074C Version :- 11 Date :- 13-Sep-95

Customer :- NORTHAMPTONSHIRE COUNTY COUNCIL

Site :- NORTHAMPTON : Harborough Road / Holly Lodge Drive

Engineer :- D.E.HAMMOND

Telephone :- 01604-20223

Produced by

TLC 3 Database Generator :- Release 3 Issue 5 (30-May-95)

Coded by DEH

Country :-	44	Mains :-	50Hz
Manually selected modes revert on police-panel door closure ?	N	Dimming :-	160V
Need date/time on cold start ?	N	Starting i/g :-	3

Mode Priorities

1 Manual

2 VA (manually selected)

3 Fixed Time (manually selected)

4 VA (automatically selected)

DOCUMENT CONTROL

Ver	Date	Details
1	18/8/95	New Site Configuration.
2	24/8/95	Stage 7 Added.
3	24/8/95	Push Button Inputs Added.
4	12/9/95	Detector Inputs Modified.
5	12/9/95	Intergreens Modified.
6	12/9/95	Intergreens Modified.
7	13/9/95	Phase Delays Modified.
8	13/9/95	Manual Stage Display Altered.
9	13/9/95	Stage Changes Corrected.
10	13/9/95	Red Lamp Monitoring Added.
11	13/9/95	Stage Changes Altered.

STAGE - PHASE ALLOCATION

Stage stream 1

Stage	Phases
1	B, C, I, J
2	A, B, F, I
3	E, F, G, H
4	E, F, H, K
5	D, E, F, G
6	D, E, F, K
7	I, L
8	All-Red

STAGE SEQUENCES - FXT+VA

Y = permitted move, Ya = extra i/g on max change,
Yx = extra i/g on max change if extended, Ys = Conditional movement.

Stream 1

From \ To	1	2	3	4	5	6	7	8
1		Y	Y	Y	Y	Y	-	-
2	-		Y	Y	Y	Y	Y	-
3	-	-		Y	Y	-	-	-
4	Y	-	Y		-	Y	-	-
5	-	-	-	-		Y	-	-
6	Y	-	-	-	-		-	-
7	Y	-	-	-	-	-		-
8	Y	-	-	-	-	-	-	

Y = permitted move, Ya = extra i/g on max change,
Yx = extra i/g on max change if extended, Ys = Conditional movement.

Stream 1

From \ To	1	2	3	4	5	6	7	8
1		Y	Y	Y	Y	Y	-	Y
2	-		Y	Y	Y	Y	Y	Y
3	-	-		Y	Y	-	-	Y
4	Y	-	Y		-	Y	-	Y
5	-	-	-	-		Y	-	-
6	Y	-	-	-	-		-	-
7	Y	-	-	-	-	-		Y
8	Y	Y	Y	Y	Y	Y	Y	

MANUAL BUTTON INFORMATION

Button	Stage	Phases
All-Red	8	–
1	1	B, C, I, J
2	2	A, B, F, I
3	3	E, F, G, H
4	4	E, F, H, K
5	5	D, E, F, G
6	6	D, E, F, K
7	7	I, L
8	–	

DETECTOR DETAILS

Types :- I = internal pack, X = external/ped button, Z = dummy
O/C = normally open/closed, P = p.d. on 9/18 hr fault

Functions :- R = regular loop, P/B = ped btn without/with "WAIT"
M = MOVA, S/T = SCOOT Occupancy/Count, Q = queue
V = speed, K/W = puffin kerbside/crossing, Z = dummy
L = latching, N = non-latching (call/cancel)
U = unidirectional

No	Title	Type	Func	Phase/stg dem	Phase/stg ext	Timings cal	Timings can	Timings ext	Timings dfm	MOVA ID
1	XYZ10	IOP	RL-	B	B			1.5	9	
2	XYZ20	IOP	RL-	C	C			1.5	9	
3	XYZ30	IOP	RL-	F	F			1.5	9	
4	P10	IOP	RN-	A		4	2		9	
5	S31	IOP	RL-	E					9	
6	NOT USED	IOP	RN-							
7	NOT USED	IOP	RN-							
8	NOT USED	IOP	RN-							
9	P.BUTTONS	XO-	BL-	G						
10	P.BUTTONS	XO-	BL-	G						
11	P.BUTTONS	XO-	BL-	H						
12	P.BUTTONS	XO-	BL-	H						
13	P.BUTTONS	XO-	BL-	I						
14	P.BUTTONS	XO-	BL-	I						
15	P.BUTTONS	XO-	BL-	J						
16	P.BUTTONS	XO-	BL-	J						
17	DUMMY	ZO-	RN-		A			2.5	9	
18	DUMMY	ZO-	RN-		E			1.5	9	

No	Title	Type	Func	Phase/stg dem	ext	Timings cal	can	ext	dfm	MOVA ID
19										
20										
21										
22										

No	Title	Dummy condition / Input address	Wait lamp accessed as
1	XYZ10	card 1 input 1	
2	XYZ20	card 1 input 2	
3	XYZ30	card 1 input 3	
4	P10	card 1 input 4	
5	S31	card 1 input 5	
6	NOT USED	card 1 input 6	
7	NOT USED	card 1 input 7	
8	NOT USED	card 1 input 8	
9	P.BUTTONS	card 1 input 9	
10	P.BUTTONS	card 1 input 10	
11	P.BUTTONS	card 1 input 11	
12	P.BUTTONS	card 1 input 12	
13	P.BUTTONS	card 1 input 13	
14	P.BUTTONS	card 1 input 14	
15	P.BUTTONS	card 1 input 15	
16	P.BUTTONS	card 1 input 16	
17	DUMMY	id1	
18	DUMMY	id3	
19		WaitG	(amber G)
20		WaitH	(amber H)
21		WaitI	(amber I)
22		WaitJ	(amber J)

PHASE DETAILS

Types :- FT/FC = Full traffic (British/overseas), DU = dummy
IF/AF = Indicative or Filter arrow, ends in bkout/flashing green
PW/QW = Ped-with-traffic, without/with audible or tactile signal
PU = Ped-with-traffic, puffin sequence
PP/QP = Pelican ped -/+ audible/tactile, PT = Pelican traffic

Phase	location	type	minimum	blackout /flash	maximum greens			
A	HARBORO RD NB RT	IF	4 (3)		8	12	20	8
B	HARBORO RD NB	FT	5 (4)		16	16	24	16
C	HARBORO RD SB	FT	7 (6)		24	42	24	24
D	HARBORO RD SB LT	IF	0 (0)		0	0	0	0
E	HOLLY LD RT	FT	7 (6)		12	12	24	12
F	HOLLY LD LT	FT	7 (6)		12	24	12	12
G	HARBORO RD PEDS	PW	9 (8)		0	0	0	0
H	HOLLY LD PEDS	PW	6 (5)		0	0	0	0
I	HOLLY LD PEDS	PW	4 (3)		0	0	0	0
J	HOLLY LD PEDS	PW	5 (4)		0	0	0	0
K	DUMMY	DU	1 (0)		0	0	0	0
L	DUMMY	DU	2 (1)		0	0	0	0

	to C	to D	to E	to G	to H	to K	to L
from A	7 (6)	7 (6)	5 (4)	5 (4)	7 (6)	6 (5)	3 (2)

	to E	to G	to H	to K	to L
from B	5 (4)	5 (4)	7 (6)	6 (5)	3 (2)

	to E
from I	6 (5)

	to A	to E	to F	to G	to H	to K	to L
from C	5 (4)	7 (6)	8 (7)	8 (7)	7 (6)	6 (5)	3 (2)

	to A	to H
from D	5 (4)	7 (6)

	to A	to B	to C	to I
from E	6 (5)	6 (5)	6 (5)	5 (4)

	to C	to J	to L
from F	5 (4)	5 (4)	3 (2)

	to F	to L
from J	7 (6)	3 (2)

	to A	to B	to C	to K
from G	12 (11)	12 (11)	12 (11)	5 (4)

	to A	to B	to C	to D
from H	6 (5)	6 (5)	6 (5)	6 (5)

	to A	to B	to C	to G
from K	6 (5)	6 (5)	6 (5)	2 (1)

	to A	to B	to C	to F	to J
from L	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)

STAGE CHANGE TIMINGS

Change 1 :	stages	1 --> 2	
	lose	C [0],	J [1]
	gain	A [0],	F [0]
Change 2 :	stages	1 --> 3	
	lose	B [2],	C [0], I [2], J [1]
	gain	E [0],	F [0], G [0], H
Change 3 :	stages	1 --> 4	
	lose	B [2],	C [0], I [2], J [1]
	gain	E [0],	F [0], H [0], K
Change 4 :	stages	1 --> 5	
	lose	B [2],	C [0], I [2], J [1]
	gain	D [9],	E [0], F [0], G
Change 5 :	stages	1 --> 6	
	lose	B [2],	C [0], I [2], J [1]
	gain	D [9],	E [0], F [0], K
Change 6 :	stages	1 --> 8	
	lose	B [0],	C [0], I [0], J [0]
Change 7 :	stages	2 --> 1	
	lose	A [0],	F [0]
	gain	C [0],	J [0]
Change 8 :	stages	2 --> 3	
	lose	A [0],	B [0], I [0]
	gain	E [0],	G [0], H [0]
Change 9 :	stages	2 --> 4	
	lose	A [0],	B [0], I [0]
	gain	E [0],	H [0], K [0]
Change 10 :	stages	2 --> 5	
	lose	A [0],	B [0], I [0]
	gain	D [0],	E [0], G [0]
Change 11 :	stages	2 --> 6	
	lose	A [0],	B [0], I [0]
	gain	D [0],	E [0], K [0]
Change 12 :	stages	2 --> 7	
	lose	A [0],	B [0], F [0]
	gain	L [0]	

```
Change 13 :     stages   2 -->  8
                lose     A [0],  B [0],  F [0],  I [0]

Change 14 :     stages   3 -->  1
                lose     E [0],  F [0],  G [0],  H [0]
                gain     B [0],  C [0],  I [0],  J

Change 15 :     stages   3 -->  4
                lose     G [0]
                gain     K [0]

Change 16 :     stages   3 -->  5
                lose     H [0]
                gain     D [0]

Change 17 :     stages   3 -->  8
                lose     E [0],  F [0],  G [0],  H [0]

Change 18 :     stages   4 -->  1
                lose     E [0],  F [0],  H [0],  K [0]
                gain     B [0],  C [0],  I [0],  J

Change 19 :     stages   4 -->  3
                lose     K [0]
                gain     G [0]

Change 20 :     stages   4 -->  6
                lose     H [0]
                gain     D [0]

Change 21 :     stages   4 -->  8
                lose     E [0],  F [0],  H [0],  K [0]

Change 22 :     stages   5 -->  1
                lose     D [0],  E [0],  F [0],  G [0]
                gain     B [0],  C [0],  I [0],  J

Change 23 :     stages   5 -->  6
                lose     G [0]
                gain     K [0]

Change 24 :     stages   6 -->  1
                lose     D [0],  E [0],  F [0],  K [0]
                gain     B [0],  C [0],  I [0],  J

Change 25 :     stages   7 -->  1
                lose     L [0]
                gain     B [0],  C [0],  J [0]

Change 26 :     stages   7 -->  8
                lose     I [0],  L [0]
```

```
Change 27 :     stages   8 -->  1
                gain     B [0],  C [0],  I [0],  J [0]

Change 28 :     stages   8 -->  2
                gain     A [0],  B [0],  F [0],  I [0]

Change 29 :     stages   8 -->  3
                gain     E [0],  F [0],  G [0],  H [0]

Change 30 :     stages   8 -->  4
                gain     E [0],  F [0],  H [0],  K [0]

Change 31 :     stages   8 -->  5
                gain     D [0],  E [0],  F [0],  G [0]

Change 32 :     stages   8 -->  6
                gain     D [0],  E [0],  F [0],  K [0]

Change 33 :     stages   8 -->  7
                gain     I [0],  L [0]
```

CHANGE CONDNS - FXT + VA

STAGE 1

```
 1 -->  2   Movement no. 1   (change no. 1)   Alternative maximum.

            Demand        dA
            Inhibit       f
            Extend        eC

 1 -->  3   Movement no. 2   (change no. 2)   Alternative maximum.

            Demand        dG & dH
            Inhibit       dA
            Extend        eBC

 1 -->  4   Movement no. 3   (change no. 3)   Alternative maximum.

            Demand        dH
            Inhibit       dAG
            Extend        eBC
```

1 --> 5 Movement no. 4 (change no. 4) Alternative maximum.

Demand	dG
Inhibit	dAH
Extend	eBC

1 --> 6 Movement no. 5 (change no. 5) Alternative maximum.

Demand	dEF
Inhibit	dAGH
Extend	eBC

STAGE 2

2 --> 3 Movement no. 6 (change no. 8) Alternative maximum.

Demand	dG & dH
Inhibit	f
Extend	eAB

2 --> 4 Movement no. 7 (change no. 9) Alternative maximum.

Demand	dH
Inhibit	dG
Extend	eAB

2 --> 5 Movement no. 8 (change no. 10) Alternative maximum.

Demand	dG
Inhibit	dH
Extend	eAB

2 --> 6 Movement no. 9 (change no. 11) Alternative maximum.

Demand	dE
Inhibit	dGH
Extend	eAB

2 --> 7 Movement no. 10 (change no. 12)

Demand	dCJ
Inhibit	dEGH
Extend	f

STAGE 3

3 --> 4 Movement no. 11 (change no. 15)

Demand	-dBC
Inhibit	dBC
Extend	f

3 --> 5 Movement no. 12 (change no. 16)

Demand	dBC
Inhibit	f
Extend	f

STAGE 4

4 --> 6 Movement no. 13 (change no. 20)

Demand	dBCIJ & eEF
Inhibit	f
Extend	f

4 --> 1 Movement no. 14 (change no. 18) Alternative maximum.

Demand	dBCIJ
Inhibit	f
Extend	eEF

4 --> 3 Movement no. 15 (change no. 19)

Demand	dG
Inhibit	dBCIJ
Extend	f

STAGE 5

5 --> 6 Movement no. 16 (change no. 23)

Demand	t
Inhibit	f
Extend	f

STAGE 6

```
 6 -->  1   Movement no. 17   (change no. 24)   Alternative maximum.

            Demand         dBCGHIJ
            Inhibit        f
            Extend         eEF

STAGE 7

 7 -->  1   Movement no. 18   (change no. 25)

            Demand         t
            Inhibit        f
            Extend         f

STAGE 8

 8 -->  1   Movement no. 19   (change no. 27)

            Demand         t
            Inhibit        f
            Extend         f
```

TIMETABLE DETAILS

Influence bits :-
-- -- -- -- -- -- -- -- MX24 MX34 -- -- -- -- -- --

Entry	Time	Days	Function & Value	Influence bit pattern
1:	07:30:00	MTWTF..	MX 2	xxxx xxxx 10xx xxxx
2:	09:30:00	MTWTF..	MX 1	xxxx xxxx 00xx xxxx
3:	16:00:00	MTWTF..	MX 3	xxxx xxxx 01xx xxxx
4:	18:00:00	MTWTF..	MX 1	xxxx xxxx 00xx xxxx

LAMP MONITORING OPTION

Phase monitored: A, B*, C*, D, E*, F*, G, H, I, J

* = Red lamp failure on this phase affects safety

SPECIAL EVENTS

Event name	Pulse ?	Event number	Up-ramp time	Down-ramp time
won	N	2	0.25	0
1f1	N	20	0.25	0.25
gclrB	Y	21	0	7.75
gclrC	Y	22	0	8.75
gclrE	Y	23	0	6.75
gclrF	Y	24	0	5.75

EVENT FORMULAE

Event no.	name	Formula
2	won	= -f
3	holdon	= won + -off
4	woff	= woff + holdon.F & -holdon & -off
5	%bo	= bo
6	veA	= ed17
7	veE	= ed18
8	rdA	= veA.O + rdA & -gA
9	rdE	= veE.O + rdE & -gE
10	dB	= dpB + mF
11	dC	= dpC + mF
12	eE	= epE + ed18 + mF
13	eF	= epF + mF
14	dI	= dpI & -sf2E

Event no.	name	Formula
15	dJ	= dpJ & -sf2F
16	eC	= epC + mF
17	dE	= dpE + rdE + mF
18	eA	= epA + ed17 + mF
19	dF	= dpF + mF
20	lf1	= -lf1 & lf
21	gclrB	= -gB
22	gclrC	= -gC
23	gclrE	= -gE
24	gclrF	= -gF
25	dBC	= dB + dC
26	dBCIJ	= dB + dC + dI + dJ
27	eEF	= eE + eF
28	dG	= dpG & -sf2B & -sf2C
29	dH	= dpH & -sf2B & -sf2C
30	eB	= epB + mF
31	dA	= dpA + rdA + mF
32	zva	= -bf
33	off	= woff + (sr & -won) + off & -holdon.R # %bo.R
34	mnc	= mF
35	id17	= id17
36	id3	= id3
37		= dG & dH
38	eBC	= eB + eC

Event no.	name	Formula
39	dAG	= dA + dG
40	dAH	= dA + dH
41	dEF	= dE + dF
42	dAGH	= dA + dG + dH
43	eAB	= eA + eB
44	dGH	= dG + dH
45	dCJ	= dC + dJ
46	dEGH	= dE + dG + dH
47		= -dBC
48	dim	= iss & -sw32
49		= dBCIJ & eEF
50	df1	= df + bt # lf1
51	WaitG	= dd9 + dd10
52	dBCGHIJ	= dB + dC + dG + dH + dI + dJ
53	begH	= -sf2B & -sf2C
54	finH	= sf2B + sf2C
55	WaitH	= dd11 + dd12
56	lmxH	= sf1B & gclrB + (sf1C & gclrC)
57	WaitI	= dd13 + dd14
58	begI	= -sf2E
59	finI	= sf2E
60	WaitJ	= dd15 + dd16
61	lmxI	= sf1E & gclrE
62	begJ	= -sf2F

Event no.	name	Formula
63	finJ	= sf2F
64	zman	= bm
65	lmxJ	= sf1F & gclrF

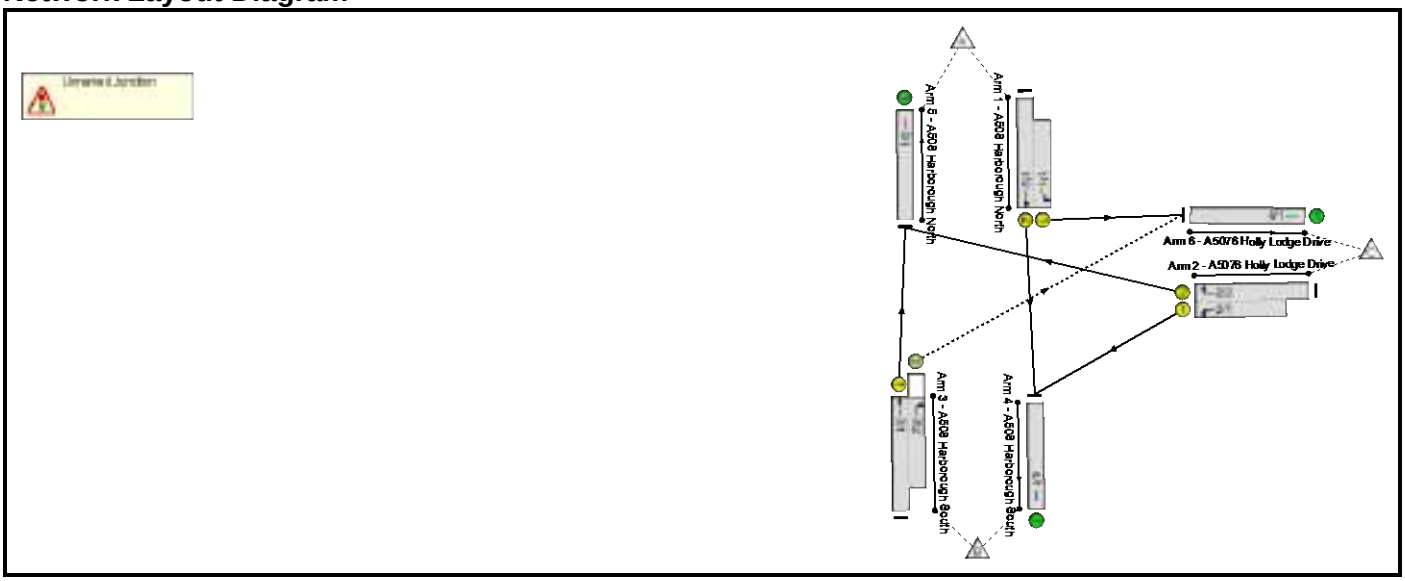
APPENDIX C

Full Input Data And Results

User and Project Details

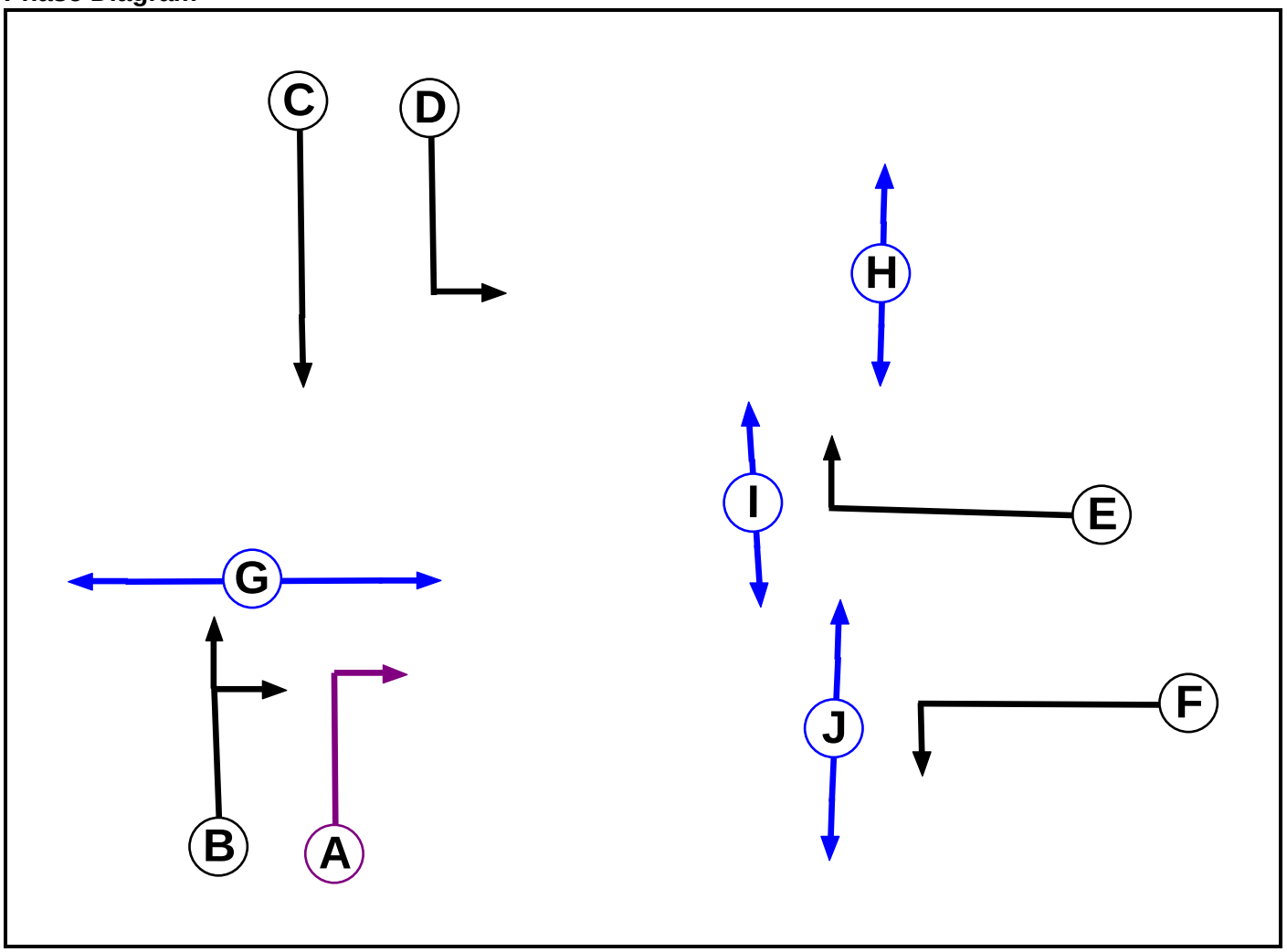
Project:	Rail Central
Title:	Junction 26
Location:	A508, Kingsthorpe Road/ Mill Lane/ Washington Street/ A508, Harborough Road/ A5095, Kingsthorpe Grove
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Ind. Arrow	B	4	4
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Traffic		7	7
F	Traffic		7	7
G	Pedestrian		7	7
H	Pedestrian		7	7
I	Pedestrian		7	7
J	Pedestrian		7	7

Full Input Data And Results

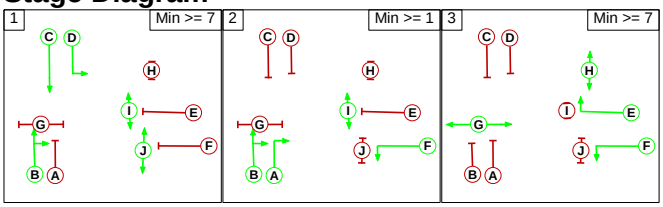
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J
A		-	7	7	5	-	5	7	-	-
B	-		-	-	5	-	5	7	-	-
C	5	-		-	7	8	8	7	-	-
D	5	-	-		-	-	-	7	-	-
E	6	6	6	-		-	-	-	5	-
F	-	-	5	-	-		-	-	-	5
G	12	12	12	-	-	-		-	-	-
H	6	6	6	6	-	-	-		7	-
I	-	-	-	-	6	-	-	-		-
J	-	-	-	-	-	7	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	B C D I J
2	A B F I
3	E F G H

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage \ To Stage	1	2	3
1		8	8
2	7		7
3	12	12	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
3/2 (A508 Harborough South)	6/1 (Right)	1439	0	1/2	1.09	All	2.00	-	0.50	2	2.00
				1/1	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A508 Harborough North)	U	D	2	3	7.8	Geom	-	3.00	0.00	Y	Arm 6 Left	10.00
1/2 (A508 Harborough North)	U	C	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Ahead	Inf
2/1 (A5076 Holly Lodge Drive)	U	F	2	3	8.7	Geom	-	5.00	0.00	Y	Arm 4 Left	25.00
2/2 (A5076 Holly Lodge Drive)	U	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	20.00
3/1 (A508 Harborough South)	U	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
3/2 (A508 Harborough South)	O	B A	2	3	11.3	Geom	-	3.00	0.00	Y	Arm 6 Right	20.00
4/1 (A508 Harborough South)	U		2	3	60.0	Geom	-	3.50	0.00	Y		
5/1 (A508 Harborough North)	U		2	3	60.0	Geom	-	3.50	0.00	Y		
6/1 (A5076 Holly Lodge Drive)	U		2	3	60.0	Geom	-	3.50	0.00	Y		

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM '	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM ', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	301	509	810
	B	536	0	280	816
	C	183	246	0	429
	Tot.	719	547	789	2055

Traffic Lane Flows

Lane	Scenario 1: 2021 DM AM
Junction: Unnamed Junction	
1/1 (short)	509
1/2 (with short)	810(In) 301(Out)
2/1 (short)	246
2/2 (with short)	429(In) 183(Out)
3/1 (with short)	816(In) 536(Out)
3/2 (short)	280
4/1	547
5/1	719
6/1	789

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	407	480	887
	B	742	0	321	1063
	C	119	94	0	213
	Tot.	861	501	801	2163

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DM PM
Junction: Unnamed Junction	
1/1 (short)	480
1/2 (with short)	887(In) 407(Out)
2/1 (short)	94
2/2 (with short)	213(In) 119(Out)
3/1 (with short)	1063(In) 742(Out)
3/2 (short)	321
4/1	501
5/1	861
6/1	801

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Full Input Data And Results

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	289	521	810
	B	565	0	276	841
	C	191	252	0	443
	Tot.	756	541	797	2094

Traffic Lane Flows

Lane	Scenario 3: 2021 DS2 AM
Junction: Unnamed Junction	
1/1 (short)	521
1/2 (with short)	810(In) 289(Out)
2/1 (short)	252
2/2 (with short)	443(In) 191(Out)
3/1 (with short)	841(In) 565(Out)
3/2 (short)	276
4/1	541
5/1	756
6/1	797

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	390	472	862
	B	766	0	310	1076
	C	121	95	0	216
	Tot.	887	485	782	2154

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS2 PM
Junction: Unnamed Junction	
1/1 (short)	472
1/2 (with short)	862(In) 390(Out)
2/1 (short)	95
2/2 (with short)	216(In) 121(Out)
3/1 (with short)	1076(In) 766(Out)
3/2 (short)	310
4/1	485
5/1	887
6/1	782

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Full Input Data And Results

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	553	501	1054
	B	481	0	458	939
	C	216	275	0	491
	Tot.	697	828	959	2484

Traffic Lane Flows

Lane	Scenario 5: 2031 DM AM
Junction: Unnamed Junction	
1/1 (short)	501
1/2 (with short)	1054(In) 553(Out)
2/1 (short)	275
2/2 (with short)	491(In) 216(Out)
3/1 (with short)	939(In) 481(Out)
3/2 (short)	458
4/1	828
5/1	697
6/1	959

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	388	652	1040
	B	502	0	575	1077
	C	86	96	0	182
	Tot.	588	484	1227	2299

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2031 DM PM
Junction: Unnamed Junction	
1/1 (short)	652
1/2 (with short)	1040(In) 388(Out)
2/1 (short)	96
2/2 (with short)	182(In) 86(Out)
3/1 (with short)	1077(In) 502(Out)
3/2 (short)	575
4/1	484
5/1	588
6/1	1227

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Full Input Data And Results

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	452	538	990
	B	476	0	426	902
	C	226	332	0	558
	Tot.	702	784	964	2450

Traffic Lane Flows

Lane	Scenario 7: 2031 DS2 AM
Junction: Unnamed Junction	
1/1 (short)	538
1/2 (with short)	990(In) 452(Out)
2/1 (short)	332
2/2 (with short)	558(In) 226(Out)
3/1 (with short)	902(In) 476(Out)
3/2 (short)	426
4/1	784
5/1	702
6/1	964

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination				
		A	B	C	Tot.
Origin	A	0	352	639	991
	B	550	0	546	1096
	C	85	102	0	187
	Tot.	635	454	1185	2274

Full Input Data And Results

Traffic Lane Flows

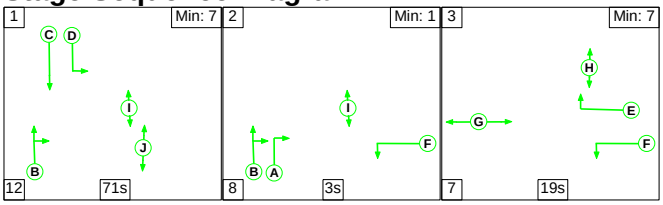
Lane	Scenario 8: 2031 DS2 PM
Junction: Unnamed Junction	
1/1 (short)	639
1/2 (with short)	991(In) 352(Out)
2/1 (short)	102
2/2 (with short)	187(In) 85(Out)
3/1 (with short)	1096(In) 550(Out)
3/2 (short)	546
4/1	454
5/1	635
6/1	1185

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A508 Harborough North)	3.00	0.00	Y	Arm 6 Left	10.00	100.0 %	1665	1665
1/2 (A508 Harborough North)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1 (A5076 Holly Lodge Drive)	5.00	0.00	Y	Arm 4 Left	25.00	100.0 %	1995	1995
2/2 (A5076 Holly Lodge Drive)	3.00	0.00	Y	Arm 5 Right	20.00	100.0 %	1781	1781
3/1 (A508 Harborough South)	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
3/2 (A508 Harborough South)	3.00	0.00	Y	Arm 6 Right	20.00	100.0 %	1781	1781
4/1 (A508 Harborough South)	3.50	0.00	Y				1965	1965
5/1 (A508 Harborough North)	3.50	0.00	Y				1965	1965
6/1 (A5076 Holly Lodge Drive)	3.50	0.00	Y				1965	1965

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM ', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

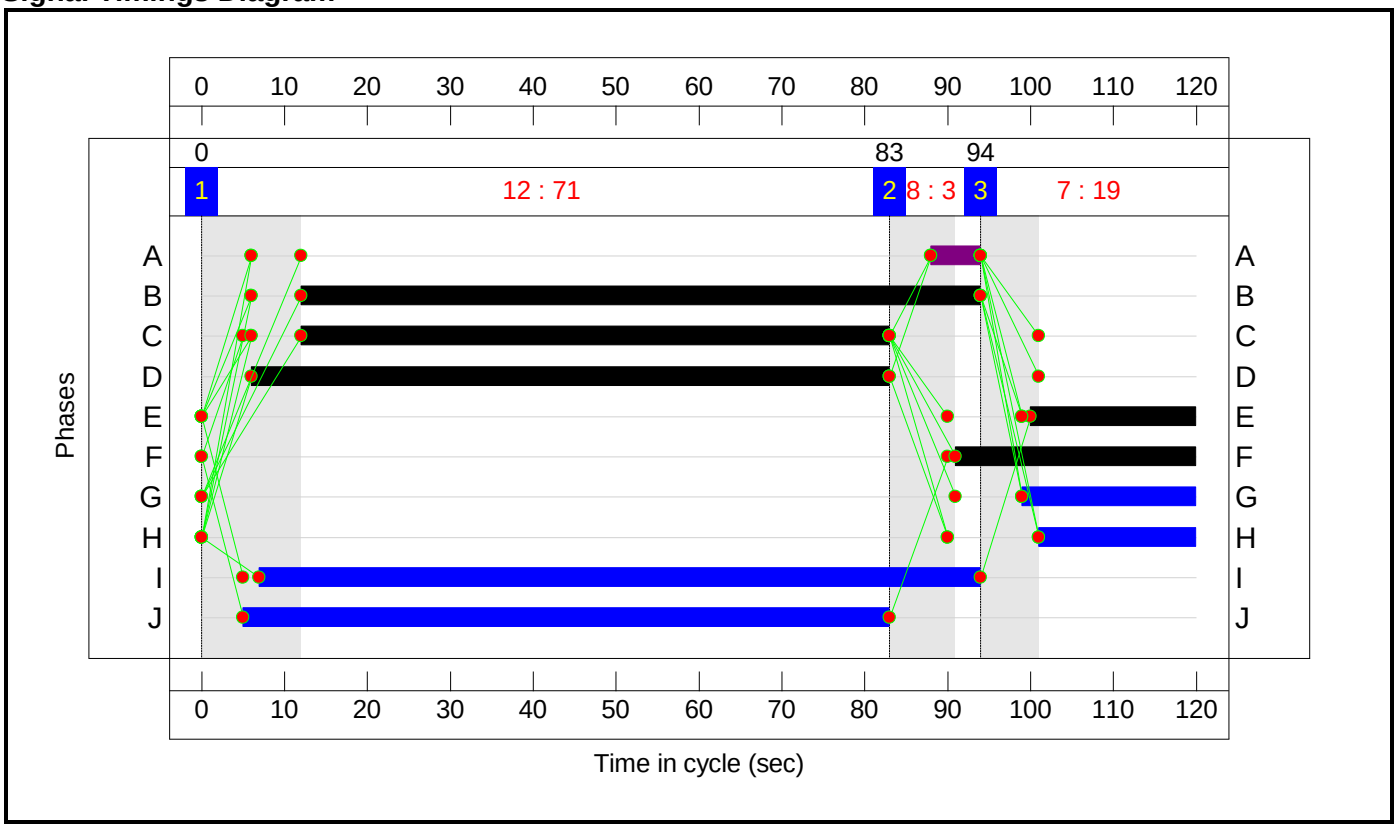


Full Input Data And Results

Stage Timings

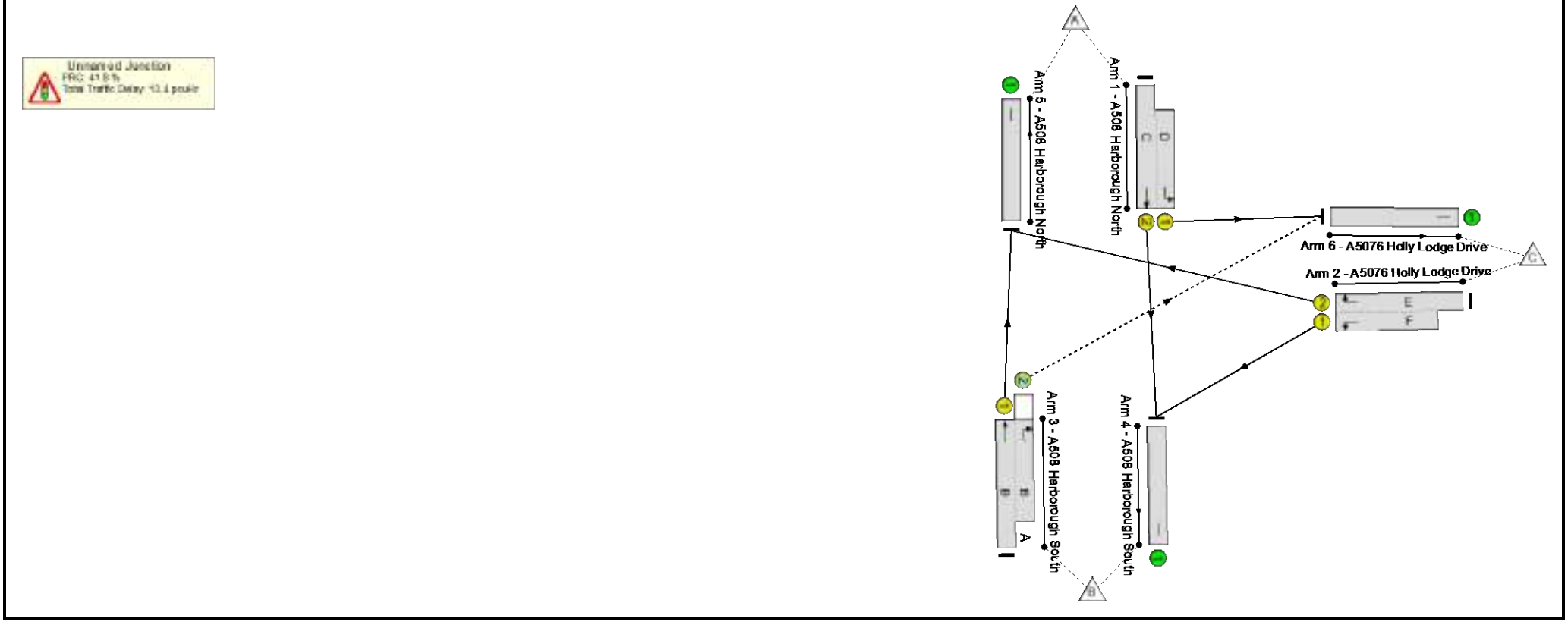
Stage	1	2	3
Duration	71	3	19
Change Point	0	83	94

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.4%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	71:77	-	810	1915:1665	476+805	63.3 : 63.3%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	20:29	-	429	1781:1995	291+391	62.9 : 62.9%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	82	6	816	1915:1781	970+441	55.2 : 63.4%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	547	1965	1965	27.8%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	719	1965	1965	36.6%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	789	1965	1965	40.2%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**254**	**21**	**5**	**9.5**	**3.2**	**0.7**	**13.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**254**	**21**	**5**	**9.5**	**3.2**	**0.7**	**13.4**	**-**	**-**	**-**	**-**
1/2+1/1	810	810	-	-	-	2.5	0.9	-	3.3	14.7	8.9	0.9	9.8
2/2+2/1	429	429	-	-	-	4.9	0.8	-	5.8	48.6	7.0	0.8	7.8
3/1+3/2	816	816	254	21	5	2.1	0.7	0.7	3.5	15.4	7.6	0.7	8.3
4/1	547	547	-	-	-	0.0	0.2	-	0.2	1.3	2.8	0.2	2.9
5/1	719	719	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
6/1	789	789	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3

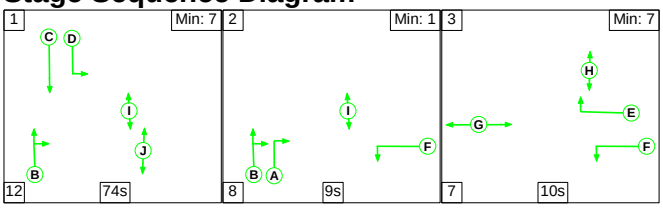
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	41.8	Total Delay for Signalled Lanes (pcuHr):	12.59	Cycle Time (s):	120
	PRC Over All Lanes (%):	41.8	Total Delay Over All Lanes(pcuHr):	13.41		

Full Input Data And Results

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

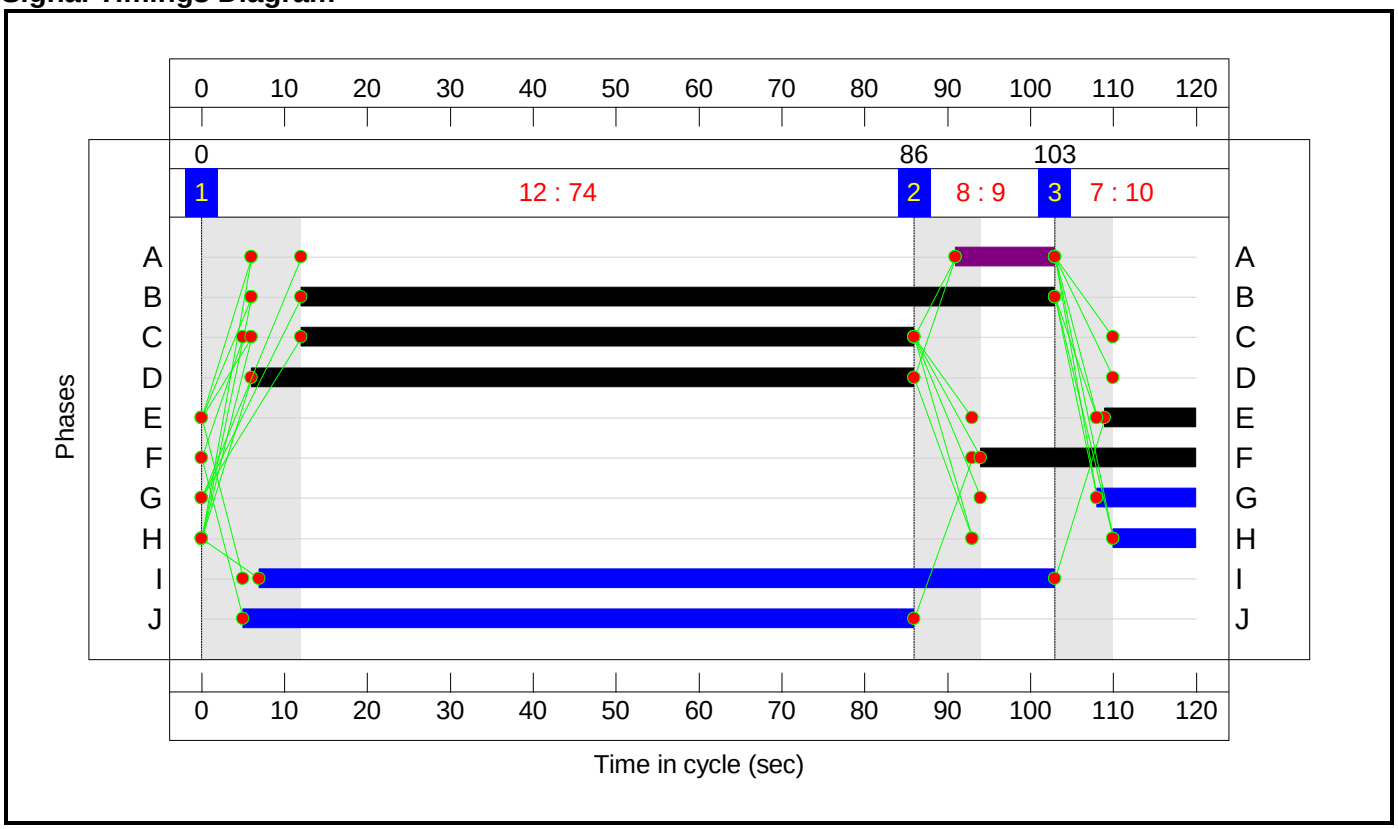
Stage Sequence Diagram



Stage Timings

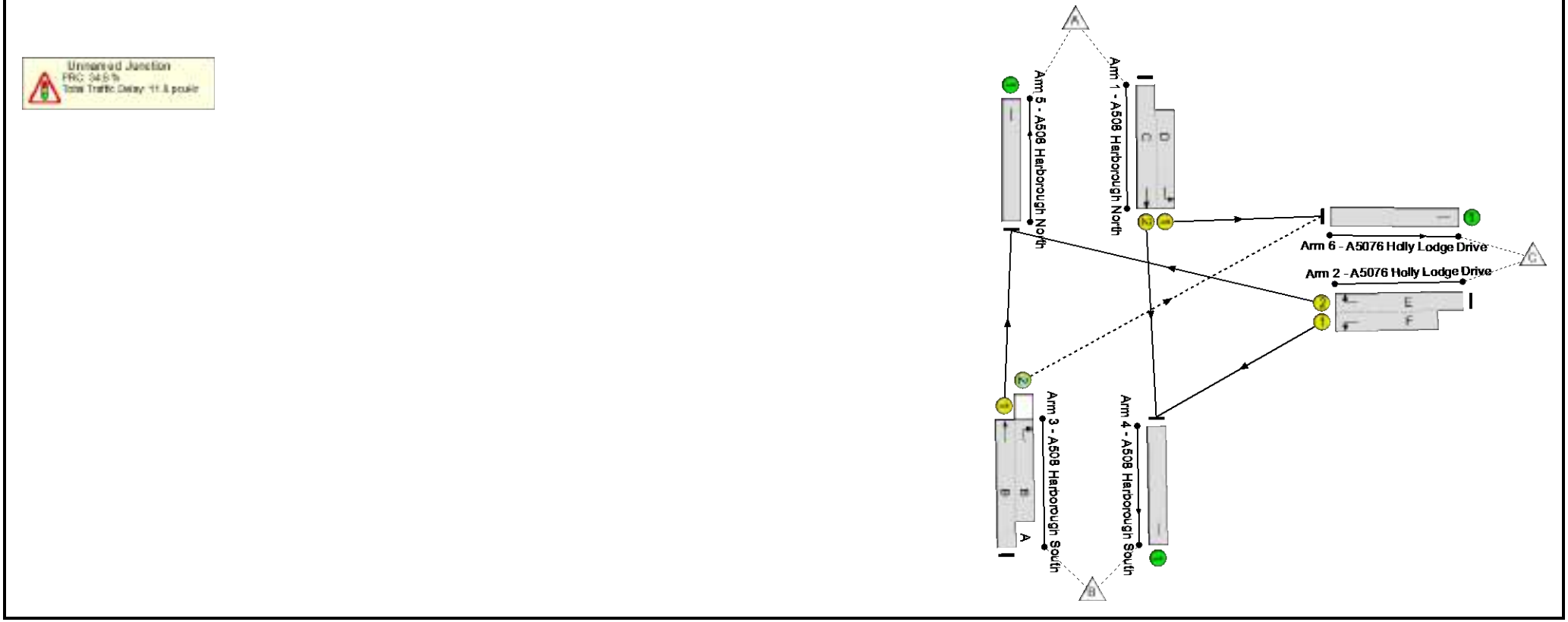
Stage	1	2	3
Duration	74	9	10
Change Point	0	86	103

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.9%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.9%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	74:80	-	887	1915:1665	641+756	63.5 : 63.5%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	11:26	-	213	1781:1995	178+141	66.8 : 66.8%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	91	12	1063	1915:1781	1110+480	66.9 : 66.9%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	501	1965	1965	25.5%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	861	1965	1965	43.8%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	801	1965	1965	40.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**246**	**70**	**5**	**7.0**	**3.8**	**1.0**	**11.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**246**	**70**	**5**	**7.0**	**3.8**	**1.0**	**11.8**	**-**	**-**	**-**	**-**
1/2+1/1	887	887	-	-	-	2.4	0.9	-	3.3	13.3	7.2	0.9	8.1
2/2+2/1	213	213	-	-	-	2.7	1.0	-	3.7	62.5	3.8	1.0	4.8
3/1+3/2	1063	1063	246	70	5	1.9	1.0	1.0	3.9	13.3	9.3	1.0	10.3
4/1	501	501	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
5/1	861	861	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
6/1	801	801	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3

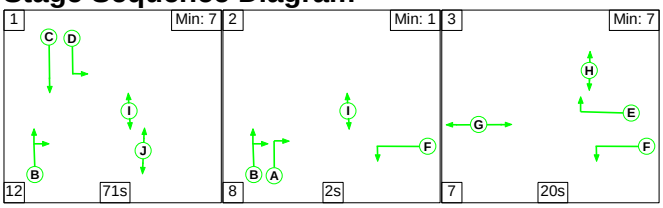
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	34.6	Total Delay for Signalled Lanes (pcuHr):	10.89	Cycle Time (s):	120
	PRC Over All Lanes (%):	34.6	Total Delay Over All Lanes(pcuHr):	11.79		

Full Input Data And Results

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

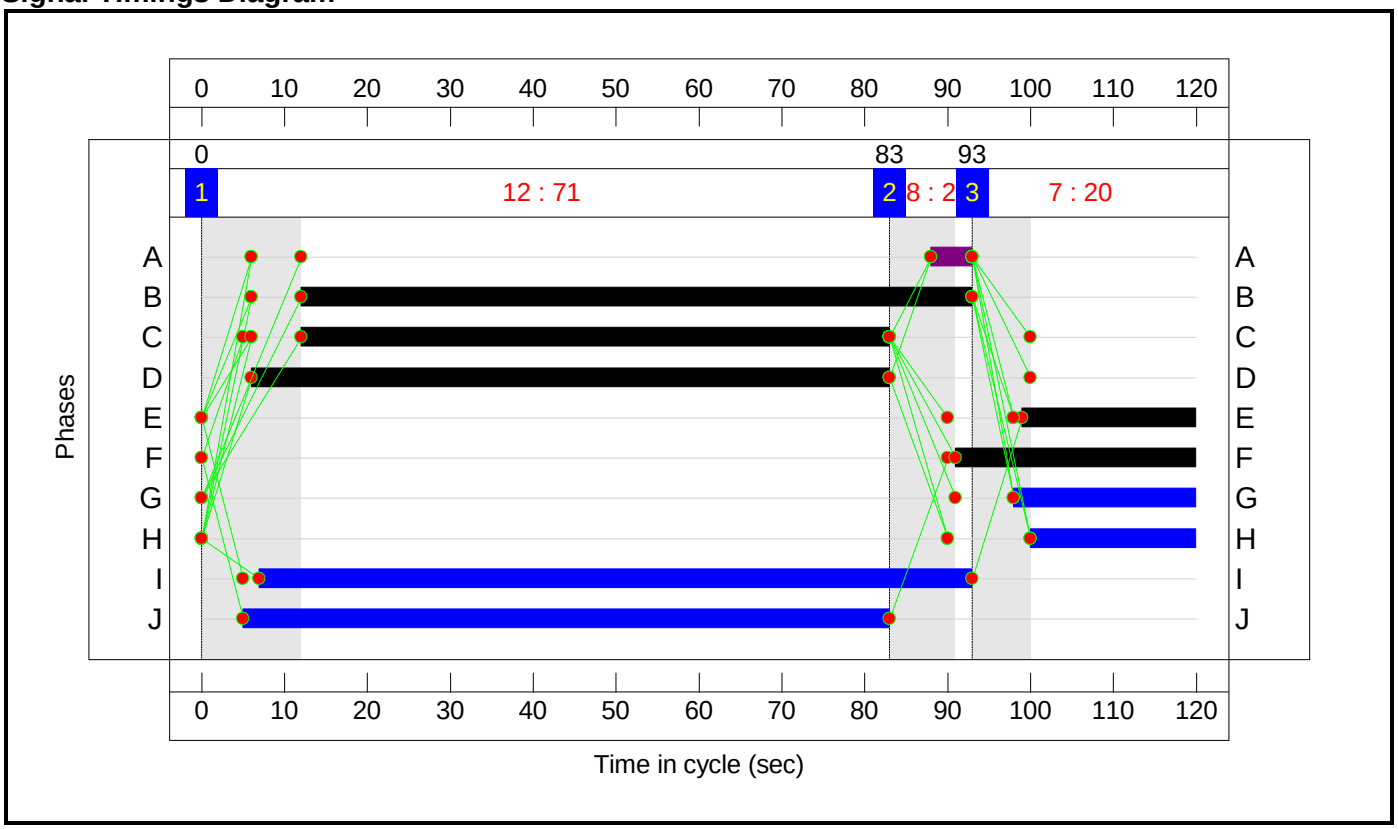
Stage Sequence Diagram



Stage Timings

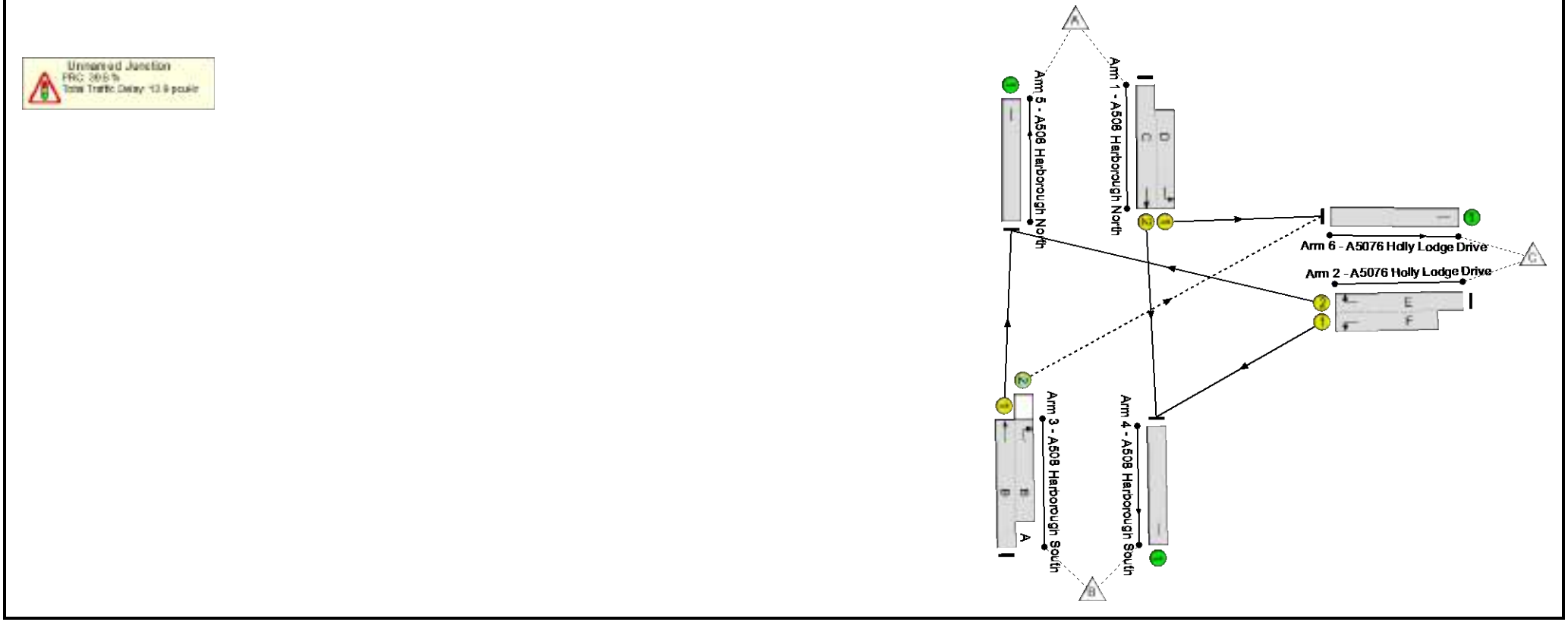
Stage	1	2	3
Duration	71	2	20
Change Point	0	83	93

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**64.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**64.5%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	71:77	-	810	1915:1665	453+817	63.8 : 63.8%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	21:29	-	443	1781:1995	298+393	64.2 : 64.2%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	81	5	841	1915:1781	975+428	58.0 : 64.5%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	541	1965	1965	27.5%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	756	1965	1965	38.5%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	797	1965	1965	40.6%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**253**	**18**	**5**	**9.8**	**3.4**	**0.7**	**13.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**253**	**18**	**5**	**9.8**	**3.4**	**0.7**	**13.9**	**-**	**-**	**-**	**-**
1/2+1/1	810	810	-	-	-	2.5	0.9	-	3.3	14.8	9.6	0.9	10.5
2/2+2/1	443	443	-	-	-	5.1	0.9	-	6.0	48.5	7.2	0.9	8.1
3/1+3/2	841	841	253	18	5	2.3	0.7	0.7	3.8	16.1	8.3	0.7	9.1
4/1	541	541	-	-	-	0.0	0.2	-	0.2	1.3	3.3	0.2	3.5
5/1	756	756	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
6/1	797	797	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3

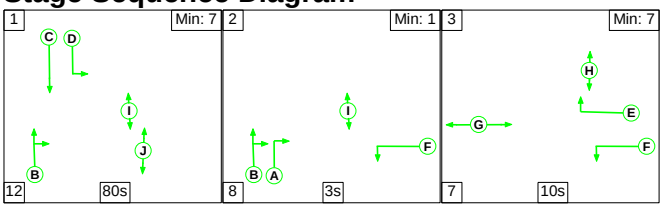
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	39.6	Total Delay for Signalled Lanes (pcuHr):	13.06	Cycle Time (s):	120
	PRC Over All Lanes (%):	39.6	Total Delay Over All Lanes(pcuHr):	13.91		

Full Input Data And Results

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

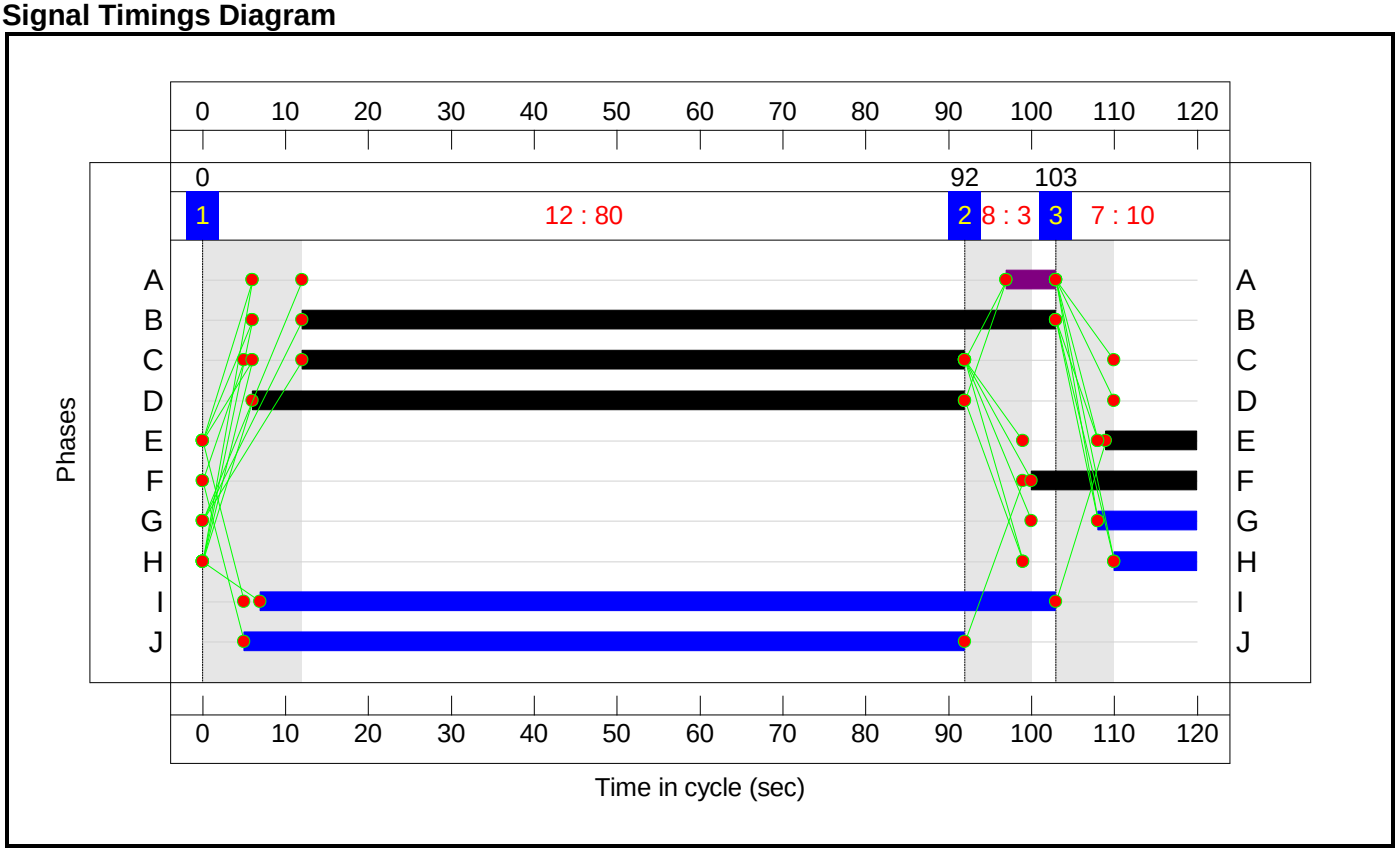
Stage Sequence Diagram



Stage Timings

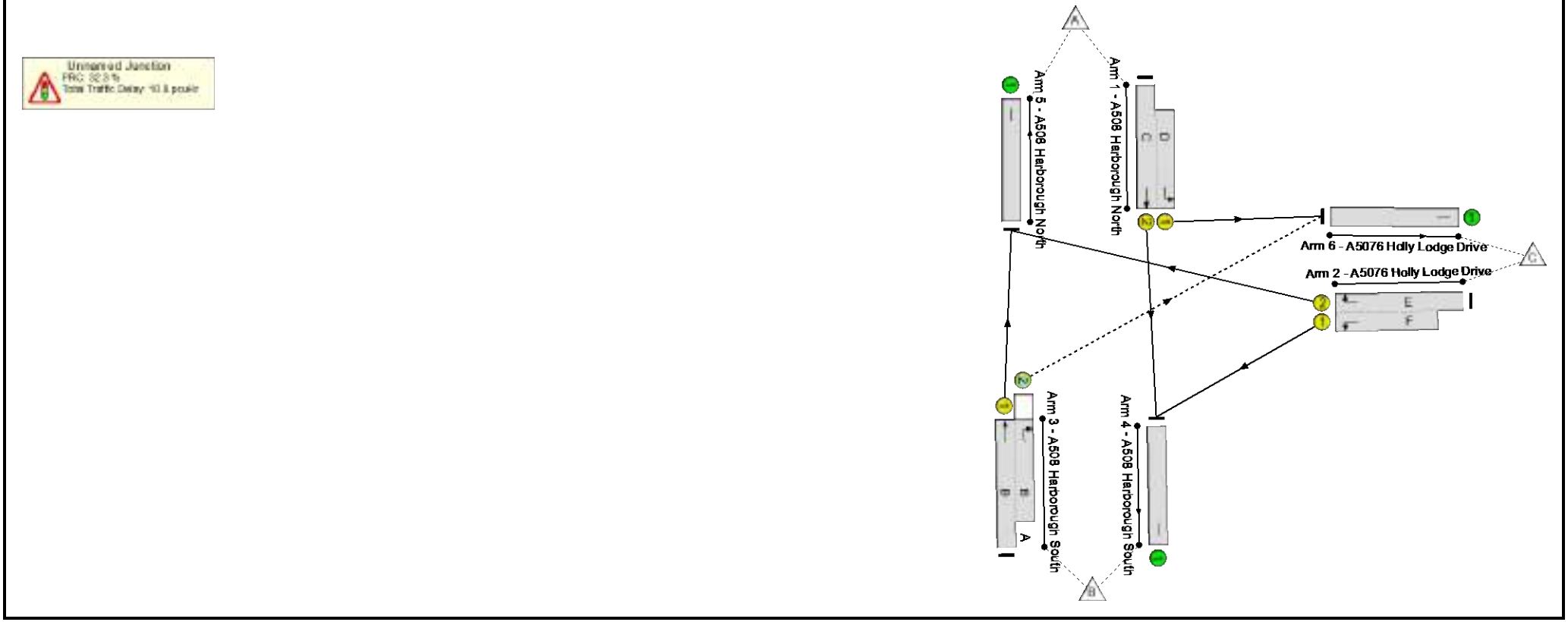
Stage	1	2	3
Duration	80	3	10
Change Point	0	92	103

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.0%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	80:86	-	862	1915:1665	669+810	58.3 : 58.3%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	11:20	-	216	1781:1995	178+140	67.9 : 67.9%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	91	6	1076	1915:1781	1126+456	68.0 : 68.0%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	485	1965	1965	24.7%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	887	1965	1965	45.1%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	782	1965	1965	39.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**282**	**23**	**5**	**6.3**	**3.7**	**0.8**	**10.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**282**	**23**	**5**	**6.3**	**3.7**	**0.8**	**10.8**	**-**	**-**	**-**	**-**
1/2+1/1	862	862	-	-	-	1.7	0.7	-	2.4	10.0	6.0	0.7	6.7
2/2+2/1	216	216	-	-	-	2.9	1.0	-	3.9	65.4	3.9	1.0	4.9
3/1+3/2	1076	1076	282	23	5	1.7	1.1	0.8	3.6	12.0	9.8	1.1	10.8
4/1	485	485	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
5/1	887	887	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
6/1	782	782	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3

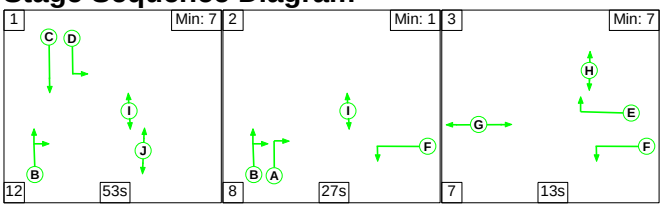
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	32.3	Total Delay for Signalled Lanes (pcuHr):	9.90	Cycle Time (s):	120
	PRC Over All Lanes (%):	32.3	Total Delay Over All Lanes(pcuHr):	10.80		

Full Input Data And Results

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

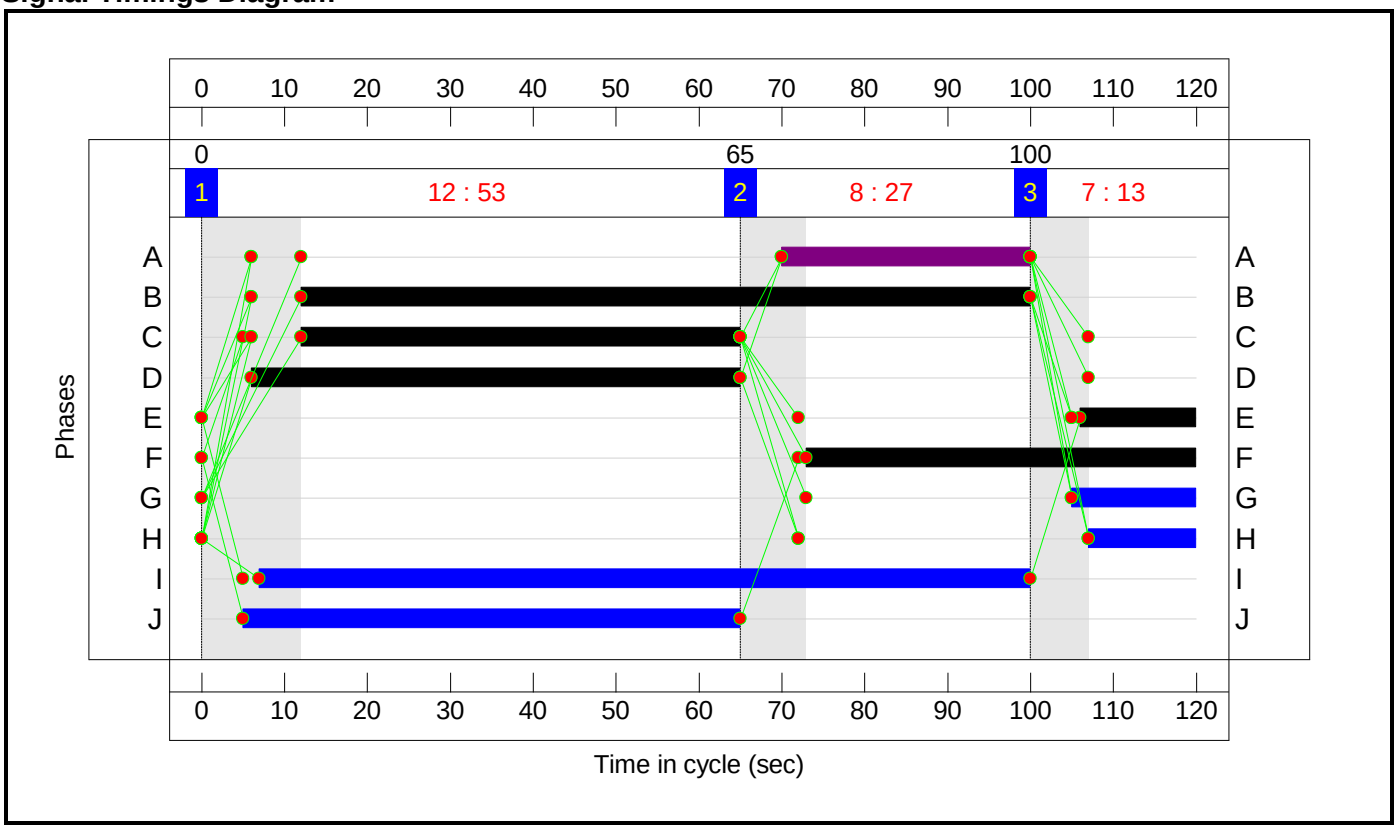
Stage Sequence Diagram



Stage Timings

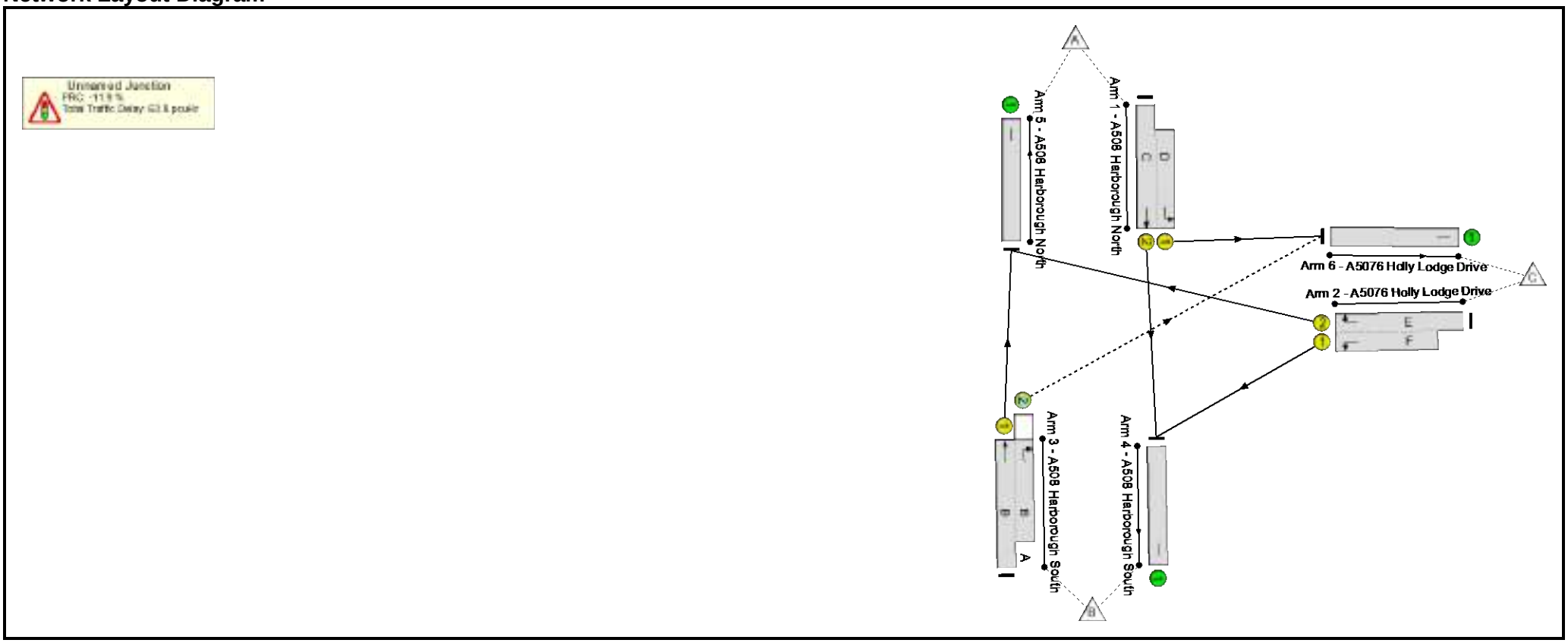
Stage	1	2	3
Duration	53	27	13
Change Point	0	65	100

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**100.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**100.7%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	53:59	-	1054	1915:1665	549+498	100.7 : 100.7%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	14:47	-	491	1781:1995	223+283	97.0 : 97.0%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	88	30	939	1915:1781	479+456	100.5 : 100.5%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	828	1965	1965	41.9%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	697	1965	1965	35.5%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	959	1965	1965	48.5%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**396**	**60**	**18.9**	**43.7**	**1.2**	**63.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**396**	**60**	**18.9**	**43.7**	**1.2**	**63.8**	**-**	**-**	**-**	**-**
1/2+1/1	1054	1047	-	-	-	8.6	18.1	-	26.7	91.3	28.9	18.1	47.0
2/2+2/1	491	491	-	-	-	5.1	7.9	-	13.0	95.2	7.1	7.9	15.1
3/1+3/2	939	937	0	396	60	5.3	16.5	1.2	23.0	88.2	15.3	16.5	31.9
4/1	824	824	-	-	-	0.0	0.4	-	0.4	1.6	2.2	0.4	2.6
5/1	697	697	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
6/1	953	953	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5

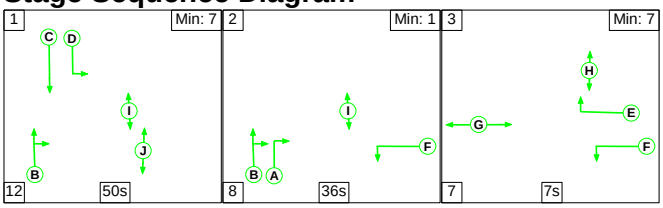
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-11.9	Total Delay for Signalled Lanes (pcuHr):	62.71	Cycle Time (s):	120
	PRC Over All Lanes (%):	-11.9	Total Delay Over All Lanes(pcuHr):	63.82		

Full Input Data And Results

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

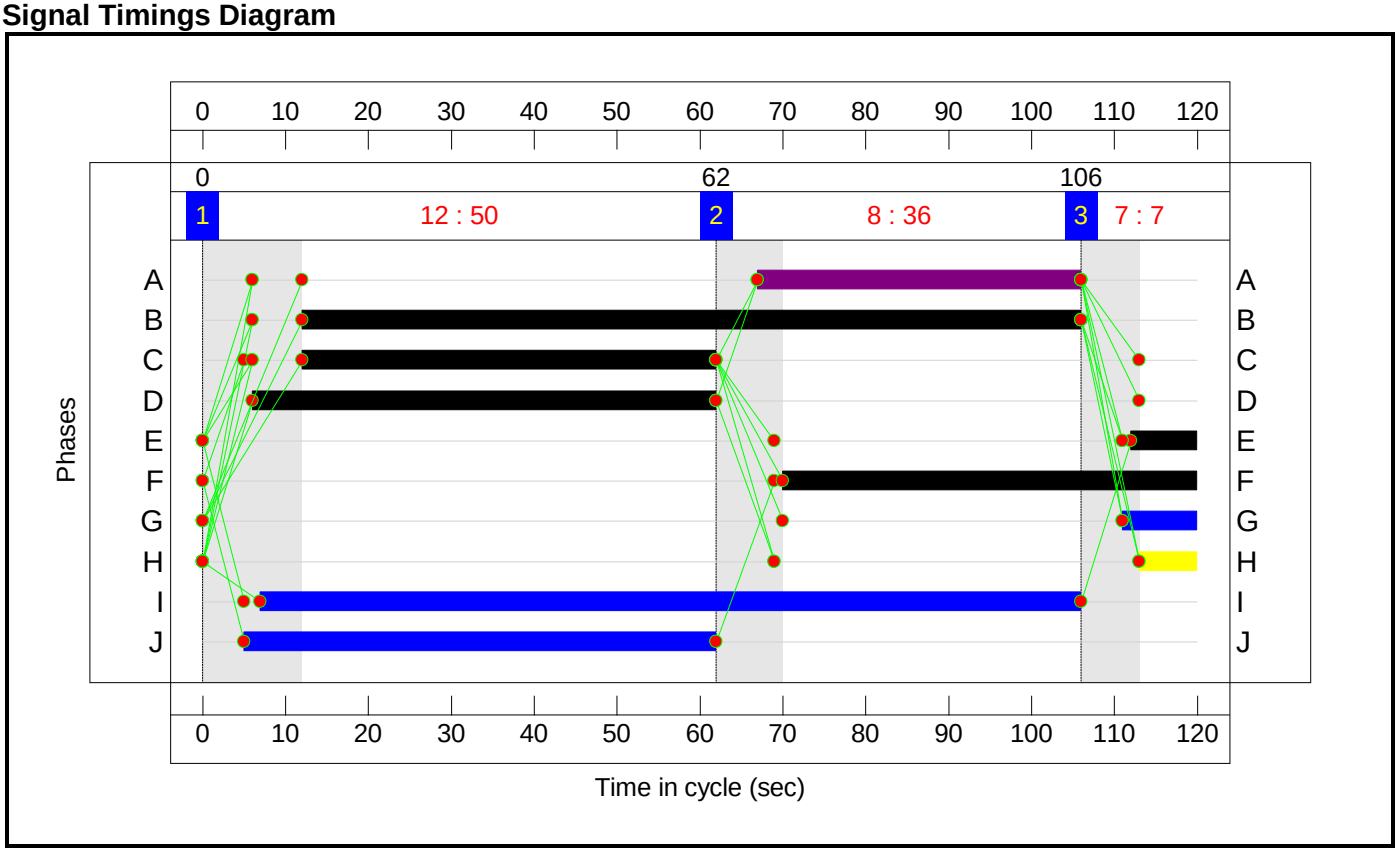
Stage Sequence Diagram



Stage Timings

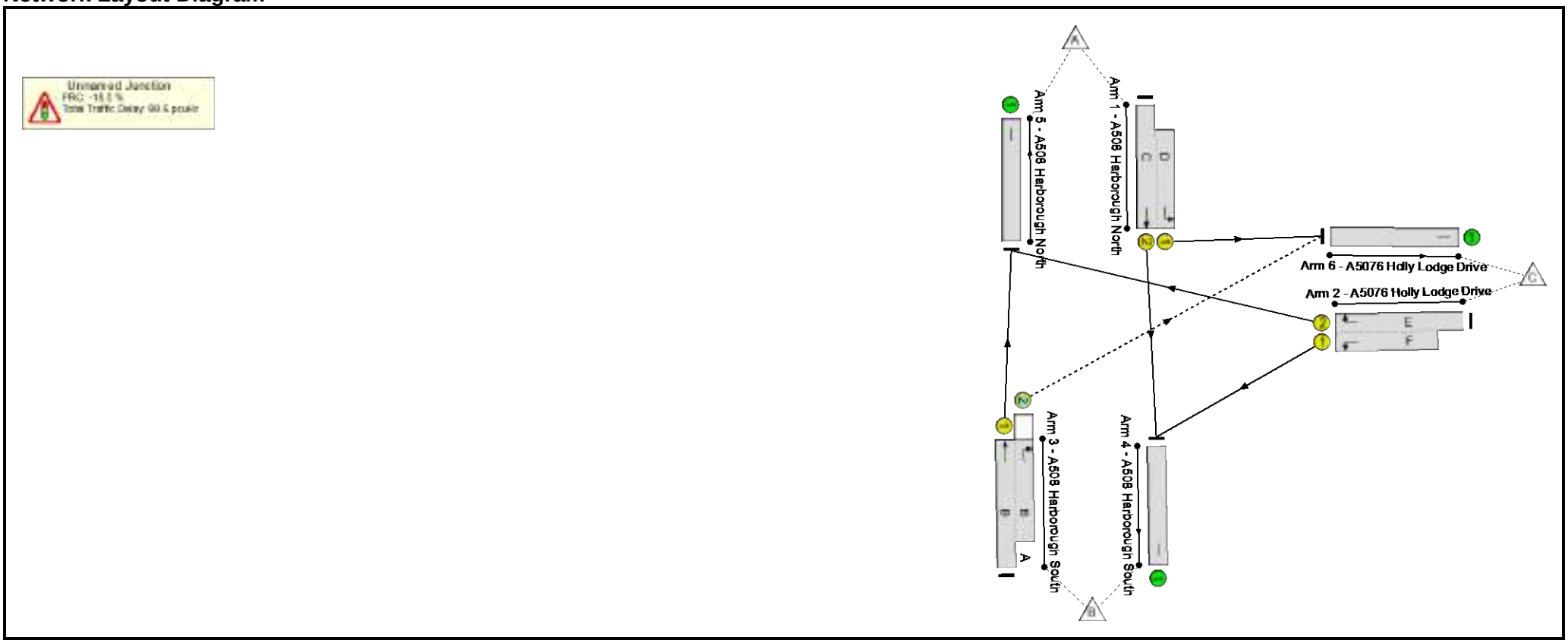
Stage	1	2	3
Duration	50	36	7
Change Point	0	62	106

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**106.6%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**106.6%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	50:56	-	1040	1915:1665	364+611	106.6 : 106.6%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	8:50	-	182	1781:1995	134+149	64.4 : 64.4%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	94	39	1077	1915:1781	476+545	105.5 : 105.5%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	484	1965	1965	23.4%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	588	1965	1965	28.6%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	1227	1965	1965	58.8%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**504**	**41**	**21.6**	**76.7**	**1.2**	**99.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**504**	**41**	**21.6**	**76.7**	**1.2**	**99.6**	**-**	**-**	**-**	**-**
1/2+1/1	1040	975	-	-	-	11.9	39.0	-	51.0	176.4	34.5	39.0	73.5
2/2+2/1	182	182	-	-	-	1.8	0.9	-	2.7	54.1	2.8	0.9	3.7
3/1+3/2	1077	1021	0	504	41	7.8	35.7	1.2	44.8	149.7	27.8	35.7	63.5
4/1	460	460	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
5/1	562	562	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2
6/1	1156	1156	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7

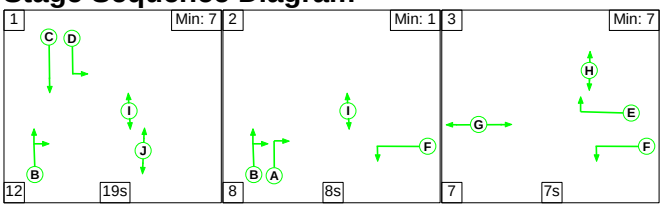
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-18.5	Total Delay for Signalled Lanes (pcuHr):	98.49	Cycle Time (s):	120
	PRC Over All Lanes (%):	-18.5	Total Delay Over All Lanes(pcuHr):	99.55		

Full Input Data And Results

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

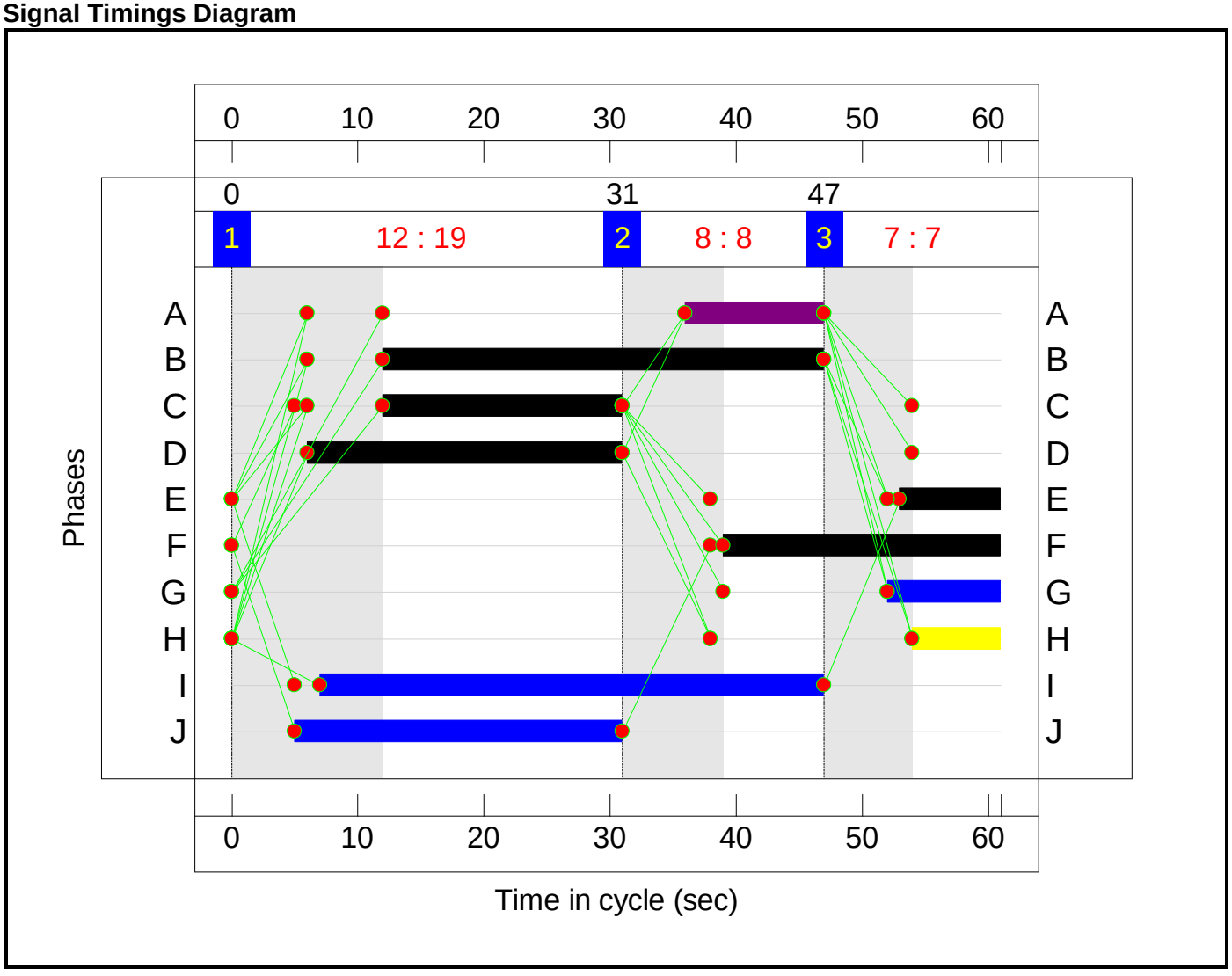
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	19	8	7
Change Point	0	31	47

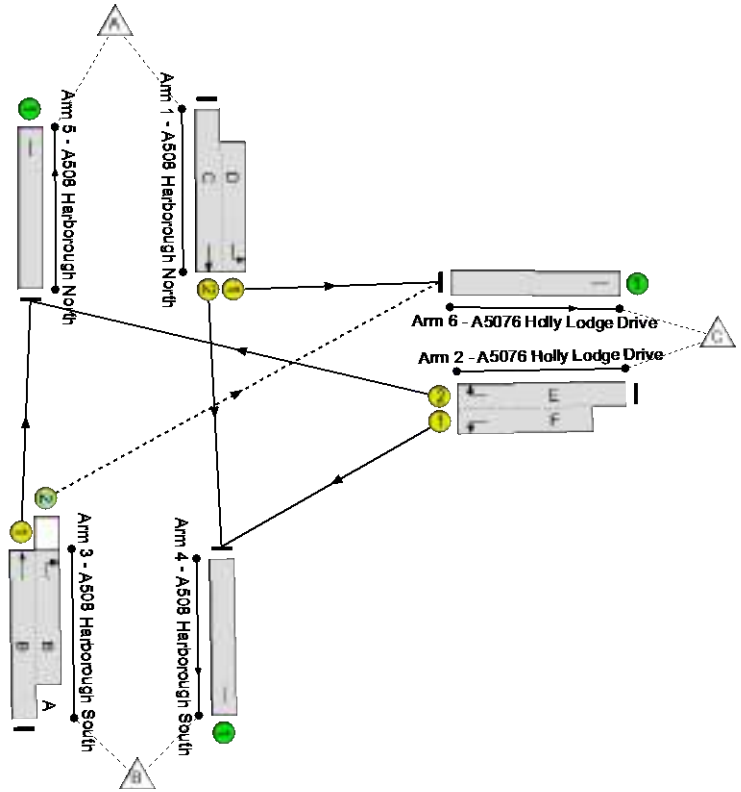
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.0%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	19:25	-	990	1915:1665	523+623	86.4 : 86.4%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	8:22	-	558	1781:1995	263+386	86.0 : 86.0%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	35	11	902	1915:1781	547+490	87.0 : 87.0%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	784	1965	1965	39.9%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	702	1965	1965	35.7%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	964	1965	1965	49.1%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**41**	**330**	**54**	**10.0**	**10.2**	**0.9**	**21.1**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**41**	**330**	**54**	**10.0**	**10.2**	**0.9**	**21.1**	**-**	**-**	**-**	**-**
1/2+1/1	990	990	-	-	-	4.5	3.1	-	7.5	27.4	7.6	3.1	10.7
2/2+2/1	558	558	-	-	-	2.9	2.9	-	5.8	37.4	4.1	2.9	7.0
3/1+3/2	902	902	41	330	54	2.6	3.2	0.9	6.6	26.5	6.7	3.2	9.9
4/1	784	784	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
5/1	702	702	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
6/1	964	964	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5

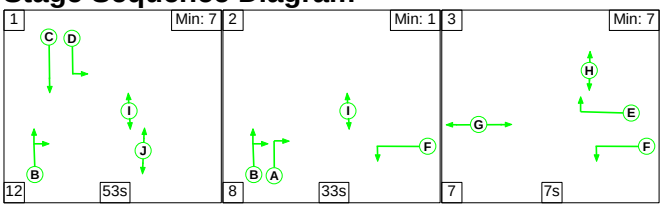
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	3.4	Total Delay for Signalled Lanes (pcuHr):	19.98	Cycle Time (s):	61
	PRC Over All Lanes (%):	3.4	Total Delay Over All Lanes(pcuHr):	21.07		

Full Input Data And Results

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

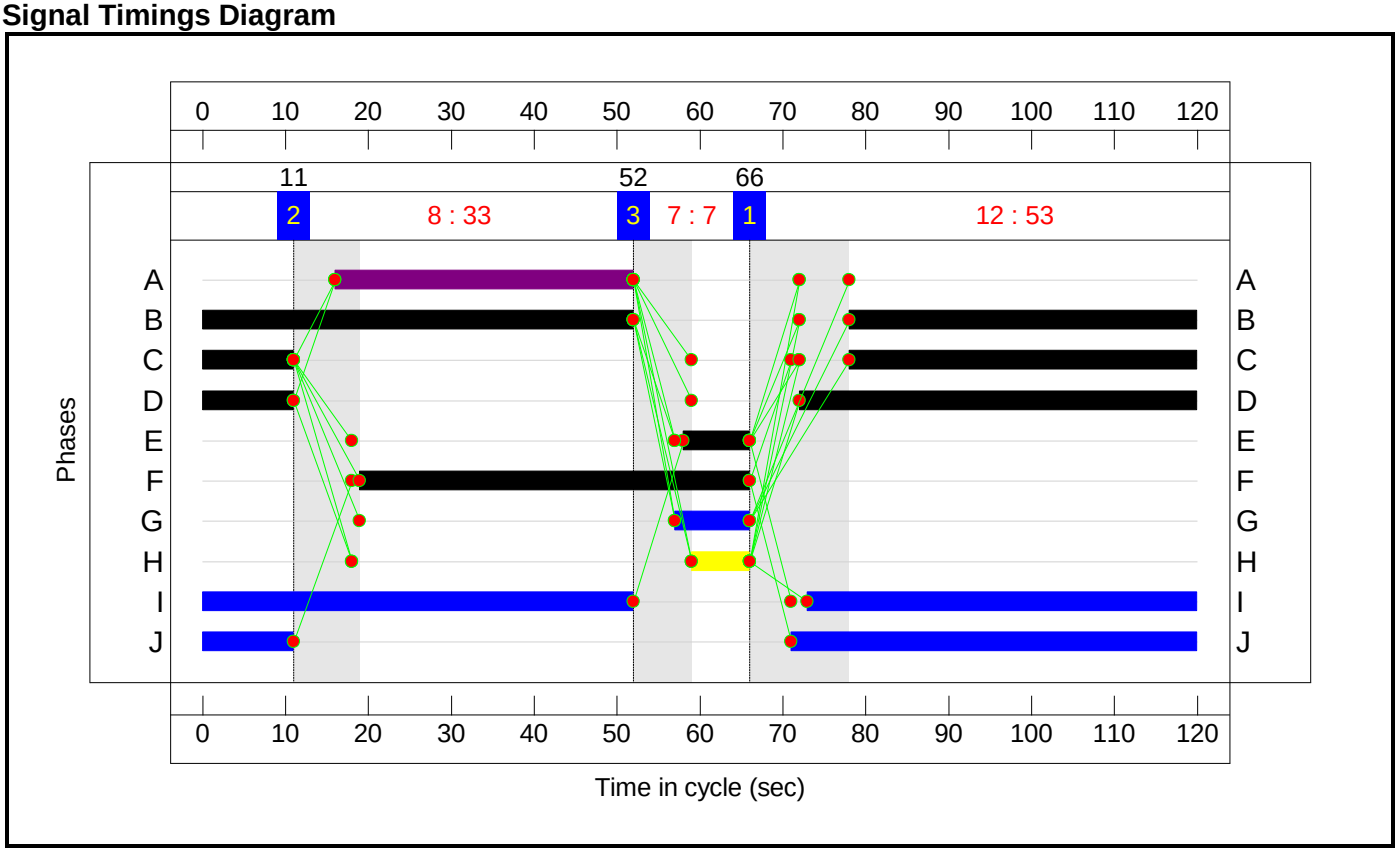
Stage Sequence Diagram



Stage Timings

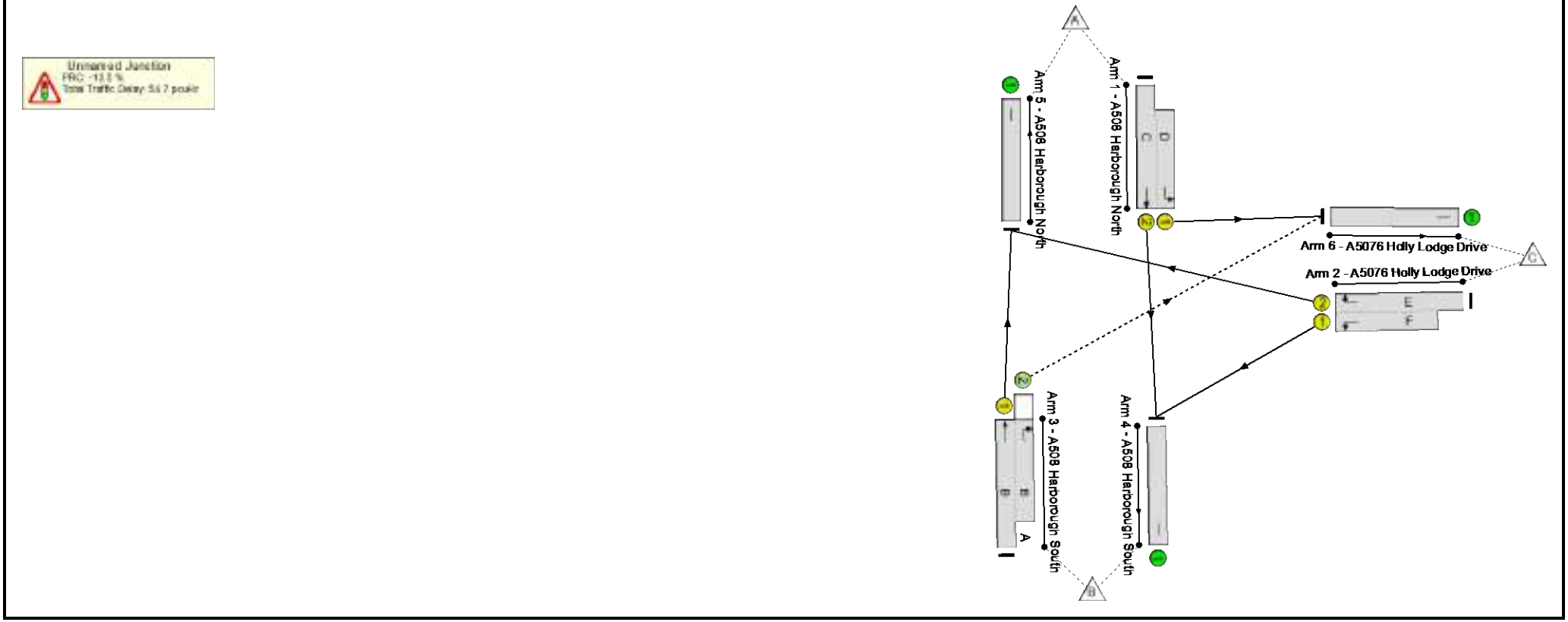
Stage	1	2	3
Duration	53	33	7
Change Point	66	11	52

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.1%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.1%**
1/2+1/1	A508 Harborough North Ahead Left	U	N/A	N/A	C D		1	53:59	-	991	1915:1665	358+649	98.4 : 98.4%
2/2+2/1	A5076 Holly Lodge Drive Left Right	U	N/A	N/A	E F		1	8:47	-	187	1781:1995	134+160	63.6 : 63.6%
3/1+3/2	A508 Harborough South Ahead Right	U+O	N/A	N/A	B	A	1	94	36	1096	1915:1781	539+535	102.1 : 102.1%
4/1	A508 Harborough South	U	N/A	N/A	-		-	-	-	454	1965	1965	23.1%
5/1	A508 Harborough North	U	N/A	N/A	-		-	-	-	635	1965	1965	32.3%
6/1	A5076 Holly Lodge Drive	U	N/A	N/A	-		-	-	-	1185	1965	1965	59.7%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**7**	**468**	**60**	**16.0**	**37.4**	**1.3**	**54.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**7**	**468**	**60**	**16.0**	**37.4**	**1.3**	**54.7**	**-**	**-**	**-**	**-**
1/2+1/1	991	991	-	-	-	7.4	12.2	-	19.6	71.3	27.9	12.2	40.1
2/2+2/1	187	187	-	-	-	1.9	0.9	-	2.8	53.5	2.7	0.9	3.6
3/1+3/2	1096	1085	7	468	60	6.7	23.2	1.3	31.2	102.5	24.4	23.2	47.6
4/1	454	454	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
5/1	635	635	-	-	-	0.0	0.2	-	0.2	1.4	0.0	0.2	0.2
6/1	1174	1174	-	-	-	0.0	0.7	-	0.7	2.3	0.0	0.7	0.7

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-13.5	Total Delay for Signalled Lanes (pcuHr):	53.61	Cycle Time (s):	120
	PRC Over All Lanes (%):	-13.5	Total Delay Over All Lanes(pcuHr):	54.74		

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

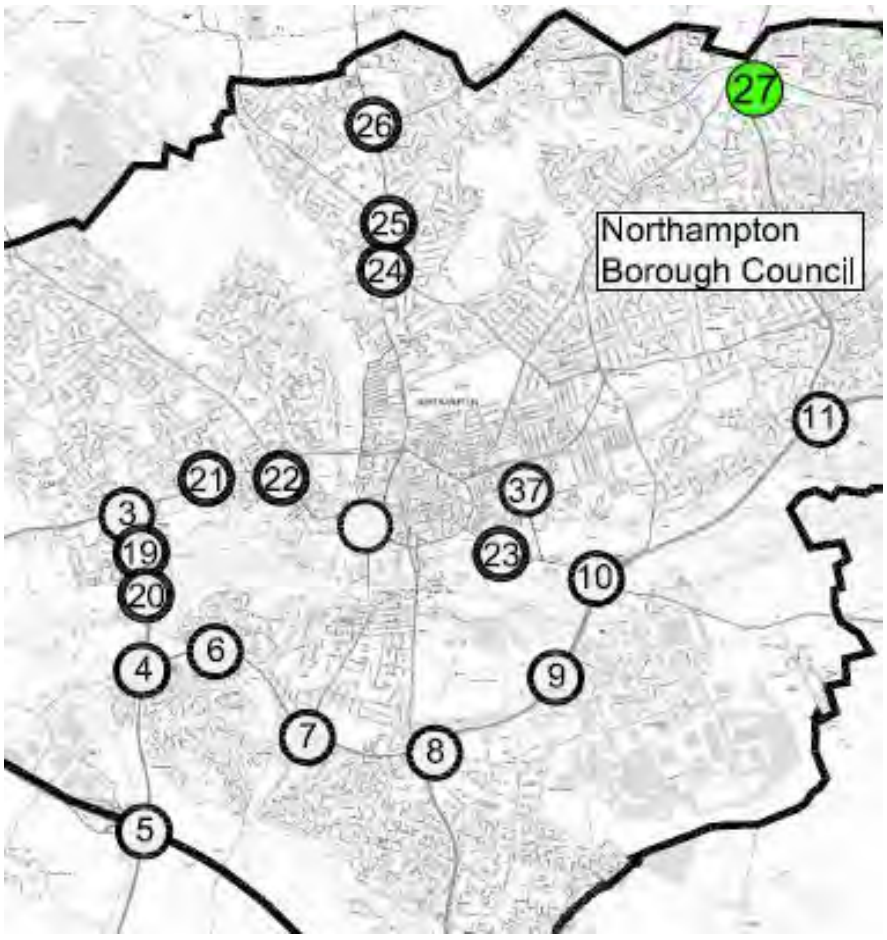
Technical Note No. 29

1 JUNCTION TWENTY SEVEN – A5076 TALAVERA WAY / A43 LUMBERTUBS WAY

Site Description of the Base Junction

1.1 Junction three is a four arm signalised roundabout to the north west of Sixfields Stadium. It connects the A5076 Talavera Way, Stone Circle Road, A5124 Booth Rise and A43 Lumbertubs Way. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Twenty Seven Location Plan



Base Survey Flows and Forecast Flows

1.2 Manual Classified Count (MCC) surveys for junction three were conducted on Thursday 18th June 2015 for the hours of 07:00 to 10:00 and 16:00 to 19:00 to establish the existing flows along with queue length surveys recorded at five minute intervals.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

1.6 Existing traffic signal data for the junction provided by NCC, has been applied to ensure that the model can replicate the current operation. The data included phases, intergreen times, stages, stage sequences, prohibited moves and phase delays included at **Appendix B**.

1.7 For all Forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time.

Results of the Base Modelling

1.8 The results of the modelling for the existing junction layout, shown in **Figure EL27**, are summarised in **Table 2** and **Table 3** and junction analysis results are in included at **Appendix C.**

Table 2 – Existing Junction Modelling Results per Arm

Peak Period		AM						PM					
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 6	Arm 1	Arm 2	Arm 3	Arm 4	Arm 5	Arm 6
DoS (%)	2015	NA						NA					
	2021 DM	102%	80%	170%	168%	74%	102%	102%	200%	146%	140%	76%	106%
	2021 DS	100%	76%	168%	167%	75%	103%	100%	197%	142%	137%	76%	106%
	2031 DM	105%	197%	142%	137%	76%	106%	121%	252%	196%	168%	63%	106%
	2031 DS	105%	84%	191%	197%	63%	119%	119%	225%	195%	175%	61%	106%
Queue – MMQ (PCU)	2015	NA						NA					
	2021 DM	46	3	346	305	7	28	31	130	170	177	9	57
	2021 DS	40	3	343	304	7	29	28	130	156	165	9	54
	2031 DM	64	7	443	341	3	63	106	167	302	237	6	54
	2031 DS	58	5	432	327	6	70	98	151	312	258	6	54
Average Delay (sec/pcu)	2015	NA						NA					
	2021 DM	93.4	75.1	830.3	825.3	13.1	134.0	120.0	1019.1	650.1	590.5	19.7	165.3
	2021 DS	78.1	65.4	820.5	814.7	13.8	138.5	101.8	1008.0	612.8	561.2	19.4	153.6
	2031 DM	152.0	106.2	980.6	1018.0	8.3	322.7	386.0	1225.3	914.6	827.0	9.5	150.3
	2031 DS	145.5	75.1	959.1	996.1	8.9	358.1	356.0	1132.7	929.9	872.3	8.8	155.2

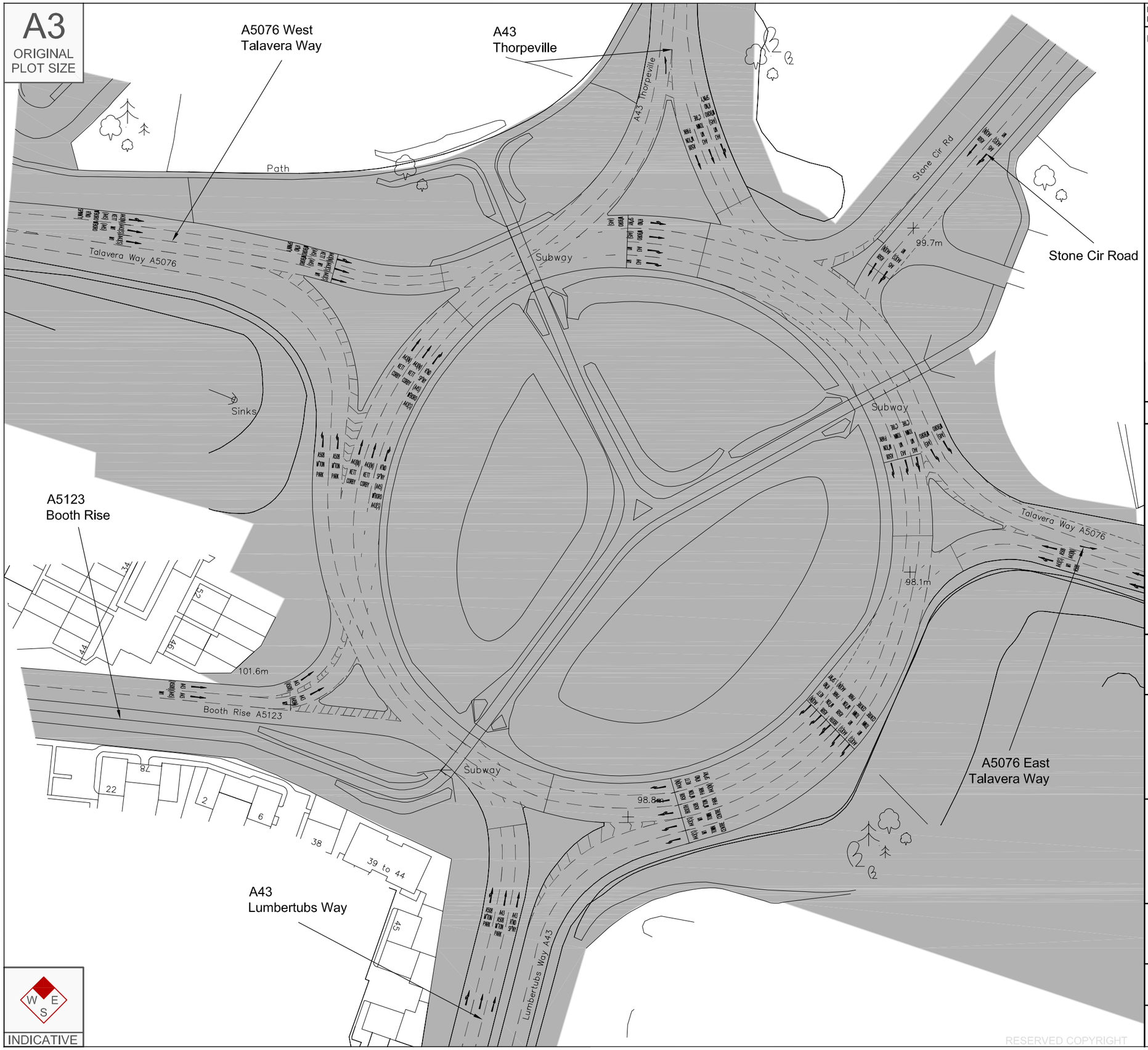
Table 3 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2015	2021 DM	2021 DS	2031 DM	2031 DS	2015	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (PRC)	NA	178	177	214	209	NA	212	209	269	240
Overall Junction Delay (PCUhr)		1019	998	1378	1338		813	757	1241	1255

1.9 As shown in **Table 3**, Rail Central is shown to have minimal impact on the operation of the existing junction and that the junction remains within theoretical capacity in the 2031 AM and PM scenarios. Therefore mitigation is not considered necessary at this location.

FIGURES

A3
ORIGINAL
PLOT SIZE



W E S

INDICATIVE

Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Northamptonshire

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
A43 Lumbertubs Way / A5076 Talavera Way Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:1000	26.05.17	RC	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL27	

RESERVED COPYRIGHT

APPENDIX A

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	132	91	273	197	693
B - A5123	1	0	187	74	233	42	537
C - A43 N	136	204	0	62	167	699	1,267
D - Stone Cir Road	104	70	75	0	105	267	621
E - A5076 E Talvera Way	655	269	31	88	0	179	1,222
F - Lumbertubs Way	107	4	518	309	69	0	1,007
Total	1,003	548	943	623	847	1,384	5,348

Modelled Flows
2021 DM
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	11	18	243	114	432	354	1,171
B - A5123	0	0	183	56	237	38	514
C - A43 N	143	249	0	48	106	960	1,506
D - Stone Cir Road	106	74	80	0	100	290	650
E - A5076 E Talvera Way	621	369	93	88	1	208	1,379
F - Lumbertubs Way	124	36	829	351	163	9	1,512
Total	1,005	746	1,428	656	1,037	1,860	6,732

Modelled Flows
2021 DS2
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	12	21	242	114	438	349	1,176
B - A5123	0	0	180	52	232	47	511
C - A43 N	137	243	0	48	133	929	1,491
D - Stone Cir Road	105	75	82	0	111	277	650
E - A5076 E Talvera Way	623	368	92	88	1	211	1,382
F - Lumbertubs Way	107	29	838	354	172	15	1,516
Total	985	736	1,434	657	1,087	1,828	6,726

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	0	0	0	0	0
B - A5123	0	0	0	0	0	0	0
C - A43 N	0	0	0	0	0	0	0
D - Stone Cir Road	0	0	0	0	0	0	0
E - A5076 E Talvera Way	0	0	0	0	0	0	0
F - Lumbertubs Way	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

2021 DM minus 2015 Base
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	11	18	111	23	159	157	478
B - A5123	0	0	-4	-18	3	-4	-23
C - A43 N	7	45	0	-13	-61	261	238
D - Stone Cir Road	1	4	6	0	-5	23	29
E - A5076 E Talvera Way	-34	100	62	0	0	29	157
F - Lumbertubs Way	17	32	311	42	94	9	505
Total	2	198	485	33	190	476	1,385

2021 DS2 minus 2015 Base
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	12	21	110	23	165	152	483
B - A5123	-1	0	-7	-21	-1	4	-26
C - A43 N	2	39	0	-14	-34	230	224
D - Stone Cir Road	1	5	8	0	5	10	29
E - A5076 E Talvera Way	-32	99	61	0	0	32	160
F - Lumbertubs Way	0	25	319	45	103	15	509
Total	-18	189	491	33	240	444	1,379

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	14	215	44	287	551	1,111
B - A5123	28	0	233	30	193	105	589
C - A43 N	361	170	1	75	45	1,079	1,731
D - Stone Cir Road	19	15	18	4	30	65	151
E - A5076 E Talvera Way	821	182	124	75	0	97	1,298
F - Lumbertubs Way	825	33	727	138	34	2	1,758
Total	2,054	414	1,317	365	588	1,899	6,637

2021 DM adjusted to count
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	11	32	326	67	446	708	1,589
B - A5123	28	0	229	12	197	101	566
C - A43 N	368	215	1	61	-17	1,340	1,969
D - Stone Cir Road	20	19	24	4	24	89	180
E - A5076 E Talvera Way	787	281	185	74	0	126	1,455
F - Lumbertubs Way	842	65	1,038	180	128	11	2,263
Total	2,056	612	1,803	398	779	2,375	8,022

2021 DS2 adjusted to count
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	12	35	326	67	452	703	1,594
B - A5123	27	0	225	9	192	109	563
C - A43 N	363	210	1	61	11	1,309	1,955
D - Stone Cir Road	20	20	26	4	35	76	180
E - A5076 E Talvera Way	789	280	185	75	0	129	1,457
F - Lumbertubs Way	825	58	1,046	183	137	17	2,267
Total	2,035	602	1,809	398	828	2,343	8,016

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	159	13	145	161	479
B - A5123	0	0	404	74	153	43	674
C - A43 N	74	122	0	152	165	599	1,112
D - Stone Cir Road	76	108	84	0	135	690	1,093
E - A5076 E Talvera Way	209	157	12	141	0	44	563
F - Lumbertubs Way	57	6	698	473	207	2	1,443
Total	416	393	1,357	852	805	1,540	5,363

Modelled Flows
2021 DM
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	1	6	417	103	455	446	1,427
B - A5123	0	0	338	67	253	16	675
C - A43 N	30	145	0	50	101	706	1,032
D - Stone Cir Road	96	102	88	0	115	756	1,158
E - A5076 E Talvera Way	370	241	47	119	0	124	902
F - Lumbertubs Way	3	1	784	501	252	7	1,548
Total	500	497	1,673	841	1,176	2,056	6,743

Modelled Flows
2021 DS2
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	1	5	420	100	441	436	1,403
B - A5123	0	0	366	97	197	41	700
C - A43 N	28	132	0	50	95	696	1,002
D - Stone Cir Road	99	97	87	0	115	760	1,158
E - A5076 E Talvera Way	366	217	52	102	0	121	858
F - Lumbertubs Way	14	8	734	491	248	8	1,503
Total	507	459	1,659	841	1,097	2,062	6,624

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	0	0	0	0	0
B - A5123	0	0	0	0	0	0	0
C - A43 N	0	0	0	0	0	0	0
D - Stone Cir Road	0	0	0	0	0	0	0
E - A5076 E Talvera Way	0	0	0	0	0	0	0
F - Lumbertubs Way	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

2021 DM minus 2015 Base
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	1	6	258	90	309	285	949
B - A5123	0	0	-65	-7	101	-27	1
C - A43 N	-45	23	0	-102	-64	108	-79
D - Stone Cir Road	21	-6	4	0	-20	66	65
E - A5076 E Talvera Way	162	85	35	-21	0	79	339
F - Lumbertubs Way	-54	-5	86	28	44	5	105
Total	84	103	317	-12	371	516	1,380

2021 DS2 minus 2015 Base
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	1	5	261	87	296	275	924
B - A5123	0	0	-38	23	44	-3	26
C - A43 N	-46	10	0	-101	-69	98	-109
D - Stone Cir Road	23	-11	3	0	-20	70	65
E - A5076 E Talvera Way	157	61	40	-39	0	77	296
F - Lumbertubs Way	-43	1	36	18	41	6	60
Total	91	66	302	-12	292	522	1,261

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	12	283	14	621	764	1,693
B - A5123	22	0	274	16	204	94	610
C - A43 N	159	198	0	20	121	901	1,398
D - Stone Cir Road	59	82	63	0	133	223	559
E - A5076 E Talvera Way	278	173	39	12	1	84	586
F - Lumbertubs Way	363	87	1,141	43	79	3	1,715
Total	880	552	1,799	105	1,159	2,068	6,562

2021 DM adjusted to count
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	1	18	540	104	930	1,049	2,642
B - A5123	22	0	208	10	305	67	611
C - A43 N	114	221	0	-81	57	1,009	1,319
D - Stone Cir Road	80	76	66	0	113	289	624
E - A5076 E Talvera Way	439	258	73	-9	1	163	925
F - Lumbertubs Way	309	82	1,227	71	123	8	1,820
Total	964	655	2,115	94	1,530	2,584	7,942

2021 DS2 adjusted to count
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	1	17	543	101	917	1,039	2,617
B - A5123	22	0	236	39	249	91	636
C - A43 N	112	208	0	-81	51	998	1,289
D - Stone Cir Road	82	71	66	0	113	292	624
E - A5076 E Talvera Way	435	233	79	-27	1	160	882
F - Lumbertubs Way	320	88	1,177	61	120	9	1,775
Total	971	617	2,101	93	1,451	2,590	7,823

AM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	132	91	273	197	693
B - A5123	1	0	187	74	233	42	537
C - A43 N	136	204	0	62	167	699	1,267
D - Stone Cir Road	104	70	75	0	105	267	621
E - A5076 E Talvera Way	655	269	31	88	0	179	1,222
F - Lumbertubs Way	107	4	518	309	69	0	1,007
Total	1,003	548	943	623	847	1,384	5,348

Modelled Flows
2031 DM
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	1	288	137	643	319	1,389
B - A5123	2	0	183	51	185	54	475
C - A43 N	95	288	0	54	173	1,029	1,641
D - Stone Cir Road	142	99	47	0	139	282	709
E - A5076 E Talvera Way	728	467	79	98	1	135	1,509
F - Lumbertubs Way	350	71	791	330	185	38	1,765
Total	1,317	926	1,389	672	1,326	1,858	7,488

Modelled Flows
2031 DS2
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	1	281	142	664	340	1,429
B - A5123	1	0	221	43	152	40	457
C - A43 N	101	280	0	59	164	1,023	1,626
D - Stone Cir Road	150	104	43	0	153	259	710
E - A5076 E Talvera Way	735	471	68	96	1	129	1,501
F - Lumbertubs Way	353	43	764	329	157	38	1,683
Total	1,340	898	1,377	669	1,292	1,830	7,406

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	0	0	0	0	0
B - A5123	0	0	0	0	0	0	0
C - A43 N	0	0	0	0	0	0	0
D - Stone Cir Road	0	0	0	0	0	0	0
E - A5076 E Talvera Way	0	0	0	0	0	0	0
F - Lumbertubs Way	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

2031 DM minus 2015 Base
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	1	156	46	370	122	696
B - A5123	1	0	-4	-22	-48	12	-62
C - A43 N	-40	84	0	-7	7	331	373
D - Stone Cir Road	38	28	-27	0	34	15	88
E - A5076 E Talvera Way	73	198	49	10	1	-44	287
F - Lumbertubs Way	243	67	273	21	117	38	759
Total	315	378	446	48	480	474	2,141

2031 DS2 minus 2015 Base
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	1	149	51	391	143	736
B - A5123	0	0	34	-31	-81	-3	-81
C - A43 N	-35	75	0	-3	-3	325	359
D - Stone Cir Road	45	34	-31	0	48	-7	89
E - A5076 E Talvera Way	80	202	38	8	1	-50	279
F - Lumbertubs Way	246	39	245	20	89	38	676
Total	337	351	435	45	445	446	2,059

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

Observed 2015 Count
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	14	215	44	287	551	1,111
B - A5123	28	0	233	30	193	105	589
C - A43 N	361	170	1	75	45	1,079	1,731
D - Stone Cir Road	19	15	18	4	30	65	151
E - A5076 E Talvera Way	821	182	124	75	0	97	1,298
F - Lumbertubs Way	825	33	727	138	34	2	1,758
Total	2,054	414	1,317	365	588	1,899	6,637

2031 DM adjusted to count
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	15	371	90	657	673	1,808
B - A5123	29	0	229	8	145	117	527
C - A43 N	321	254	1	67	51	1,410	2,104
D - Stone Cir Road	56	43	-10	4	63	81	238
E - A5076 E Talvera Way	893	379	172	85	1	53	1,584
F - Lumbertubs Way	1,068	100	1,000	159	150	40	2,517
Total	2,368	792	1,763	413	1,068	2,373	8,778

2031 DS2 adjusted to count
AM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	15	364	95	678	694	1,847
B - A5123	28	0	266	-1	112	102	508
C - A43 N	326	246	1	72	41	1,404	2,090
D - Stone Cir Road	64	49	-13	4	78	58	239
E - A5076 E Talvera Way	901	383	161	83	1	47	1,577
F - Lumbertubs Way	1,071	72	972	158	122	40	2,434
Total	2,391	764	1,752	411	1,033	2,345	8,696

PM Peak

1 Modelled Flows from the Northampton Strategic Model

Modelled Flows
2015 BASE
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	159	13	145	161	479
B - A5123	0	0	404	74	153	43	674
C - A43 N	74	122	0	152	165	599	1,112
D - Stone Cir Road	76	108	84	0	135	690	1,093
E - A5076 E Talvera Way	209	157	12	141	0	44	563
F - Lumbertubs Way	57	6	698	473	207	2	1,443
Total	416	393	1,357	852	805	1,540	5,363

Modelled Flows
2031 DM
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	1	412	93	595	310	1,411
B - A5123	1	0	377	70	225	38	711
C - A43 N	41	263	0	61	143	845	1,352
D - Stone Cir Road	105	144	79	0	184	731	1,243
E - A5076 E Talvera Way	377	413	42	145	2	159	1,138
F - Lumbertubs Way	59	19	638	490	289	6	1,501
Total	583	838	1,549	860	1,438	2,088	7,356

Modelled Flows
2031 DS2
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	446	87	582	288	1,403
B - A5123	2	0	332	61	215	48	657
C - A43 N	42	277	0	63	140	817	1,340
D - Stone Cir Road	102	157	84	0	179	721	1,243
E - A5076 E Talvera Way	366	417	48	182	1	150	1,164
F - Lumbertubs Way	95	28	656	466	296	21	1,563
Total	608	880	1,566	859	1,414	2,045	7,371

2 Change in Flows relative to the 2015 Base

Flow Differences to 2015 Base
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	0	0	0	0	0
B - A5123	0	0	0	0	0	0	0
C - A43 N	0	0	0	0	0	0	0
D - Stone Cir Road	0	0	0	0	0	0	0
E - A5076 E Talvera Way	0	0	0	0	0	0	0
F - Lumbertubs Way	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

2031 DM minus 2015 Base
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	1	253	80	450	149	933
B - A5123	1	0	-26	-4	72	-6	37
C - A43 N	-34	140	0	-90	-22	246	240
D - Stone Cir Road	29	36	-5	0	49	41	150
E - A5076 E Talvera Way	168	256	30	5	2	114	575
F - Lumbertubs Way	2	13	-59	17	82	4	58
Total	167	445	192	7	633	548	1,993

2031 DS2 minus 2015 Base
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	0	287	74	437	126	925
B - A5123	2	0	-72	-13	62	5	-16
C - A43 N	-32	155	0	-89	-25	219	228
D - Stone Cir Road	27	49	-0	0	44	31	150
E - A5076 E Talvera Way	157	260	36	41	1	106	602
F - Lumbertubs Way	38	22	-42	-7	89	19	120
Total	192	487	209	7	609	505	2,008

3 Adjusted Flows by adding the Change in Flows (2) to the observed Count information

2015 Count
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	12	283	14	621	764	1,693
B - A5123	22	0	274	16	204	94	610
C - A43 N	159	198	0	20	121	901	1,398
D - Stone Cir Road	59	82	63	0	133	223	559
E - A5076 E Talvera Way	278	173	39	12	1	84	586
F - Lumbertubs Way	363	87	1,141	43	79	3	1,715
Total	880	552	1,799	105	1,159	2,068	6,562

2031 DM adjusted to count
PM Peak

	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	13	535	94	1,071	912	2,626
B - A5123	23	0	247	12	276	88	647
C - A43 N	125	338	0	-70	99	1,147	1,638
D - Stone Cir Road	88	118	58	0	182	264	709
E - A5076 E Talvera Way	446	429	69	17	3	198	1,161
F - Lumbertubs Way	365	99	1,081	60	161	7	1,774
Total	1,047	997	1,991	113	1,791	2,616	8,555

2031 DS2 adjusted to count
PM Peak

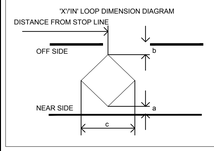
	A - A5076 W Talvera Way	B - A5123	C - A43 N	D - Stone Cir Road	E - A5076 E Talvera Way	F - Lumbertubs Way	Total
A - A5076 W Talvera Way	0	12	570	88	1,057	890	2,618
B - A5123	24	0	202	3	267	98	594
C - A43 N	126	353	0	-69	96	1,119	1,626
D - Stone Cir Road	86	131	63	0	177	253	709
E - A5076 E Talvera Way	435	433	74	53	2	190	1,188
F - Lumbertubs Way	401	109	1,099	36	168	22	1,835
Total	1,072	1,038	2,008	112	1,767	2,573	8,570

APPENDIX B

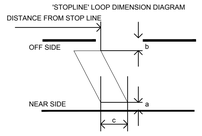
THORPEVILLE CONTROLLER–LOOP DETAILS

LOOP NUMBER	APROXIMATE LOCATION (FSL)	DISTANCE FROM NEARSIDE (a)	DISTANCE FROM OFFSIDE (b)	LOOP WIDTH (c)	LOOP TYPE
AIN1/SCOOT1	85m	0.3m	0.8m	1.1m	DIAMOND
AIN2/SCOOT2	85m	0.8m	0.5m	1.1m	DIAMOND
AX3	40m	0.3m	0.8m	1.1m	DIAMOND
AX4	40m	0.8m	0.8m	1.1m	DIAMOND
AX5	40m	0.8m	0.8m	1.1m	DIAMOND
ASNK6	40m	0.8m	0.5m	1.1m	DIAMOND
ASL7	3m	0.3m	0.5m	1.7m	CHEVRON
ASL8a/b	3m	0.5m	0.5m	1.7m	CHEVRON
BIN9/SCOOT3	80m	0.3m	0.8m	1.1m	DIAMOND
BIN10/SCOOT4	80m	0.8m	0.8m	1.1m	DIAMOND
BIN11/SCOOT5	80m	0.8m	0.5m	1.1m	DIAMOND
BX12	40m	0.3m	0.8m	1.1m	DIAMOND
BX13	40m	0.8m	0.8m	1.1m	DIAMOND
BX14	40m	0.8m	0.5m	1.1m	DIAMOND
BSL15a/b	3m	0.3m	0.5m	1.7m	CHEVRON
BSL16	3m	0.5m	0.5m	1.7m	CHEVRON
CIN1/SCOOT6	80m	0.3m	0.8m	1.1m	DIAMOND
CX2	19m	0.3m	0.8m	1.1m	DIAMOND
CX3	19m	0.8m	0.8m	1.1m	DIAMOND
CX4	19m	0.8m	0.8m	1.1m	DIAMOND
CX5	19m	0.8m	0.5m	1.1m	DIAMOND
CSL6a/b	3m	0.3m	0.5m	1.7m	CHEVRON
CSL7a/b	3m	0.3m	0.5m	1.7m	CHEVRON
DIN8/SCOOT7	80m	0.3m	0.8m	1.1m	DIAMOND
DIN9/SCOOT8	80m	0.8m	0.5m	1.1m	DIAMOND
DX10	40m	0.3m	0.8m	1.1m	DIAMOND
DX11	40m	0.8m	0.5m	1.1m	DIAMOND
DX12	23m	0.8m	0.5m	1.1m	DIAMOND
DSL13	3m	0.3m	0.5m	1.7m	CHEVRON
DSL14a/b	3m	0.3m	0.5m	1.7m	CHEVRON
Q15	60m	0.3m	0.5m	2.0m	RECTANGLE
Q16	60m	0.5m	0.5m	2.0m	RECTANGLE

'X'/'H' LOOP DIMENSION DIAGRAM



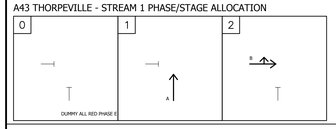
'STOPLINE' LOOP DIMENSION DIAGRAM



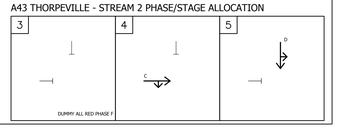
THORPEVILLE CONTROLLER–POLE AND SOCKET TYPE AND SETTING OUT DETAILS

POLE NUMBER	POLE TYPE	DISTANCE–POLE FACE TO STOP LINE	DISTANCE–POLE FACE TO KERB EDGE	NAL RETENTION SOCKET TYPE	NAL RETENTION SOCKET CO–ORDINATES (CENTRE OF POLE)	
1	6m Low Access	2.5m	0.75m	RSI68 Duck Foot	X = 478882.215	Y = 264956.813
2	6m Low Access	2.5m	0.75m	RSI68 Duck Foot	X = 478893.643	Y = 264961.670
3	4m straight	13m	0.75m	RSII5 Duck Foot	X = 478900.237	Y = 264954.083
4	4m straight	19m	2m	RSII5 Duck Foot	X = 478894.134	Y = 264933.098
5	4m straight	4m	0.5m	RSII5 Duck Foot	X = 478880.860	Y = 264940.469
6	4m straight	17m	2m	RSII5 Duck Foot	X = 478830.708	Y = 264936.657
7	6m Low Access	2.5m	0.75m	RSI68 Duck Foot	X = 478815.904	Y = 264925.485
8	6m Low Access	2.0m	0.95m	RSI68 Duck Foot	X = 478806.176	Y = 264933.202
9	4m straight	2.5m	1.5m	RSII5 Duck Foot	X = 478806.470	Y = 264946.438
10	4m straight	21m	1.2m	RSII5 Duck Foot	X = 478820.135	Y = 264950.139
11	4m straight	As shown	As shown	RSII5 Duck Foot	X = 478917.047	Y = 264942.357

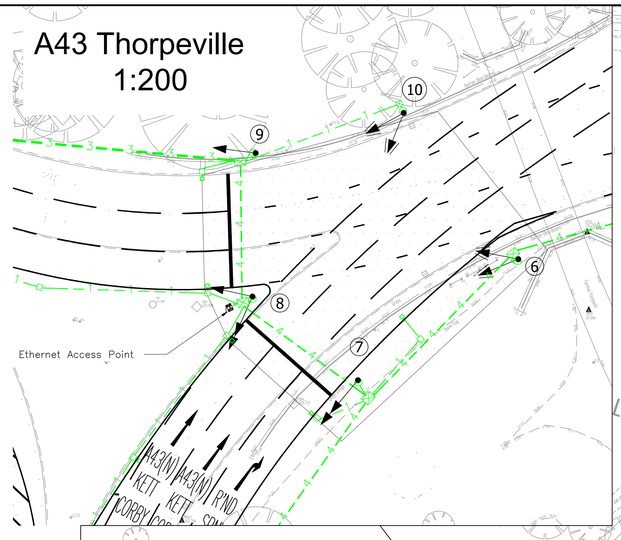
A43 THORPEVILLE - STREAM 1 PHASE/STAGE ALLOCATION

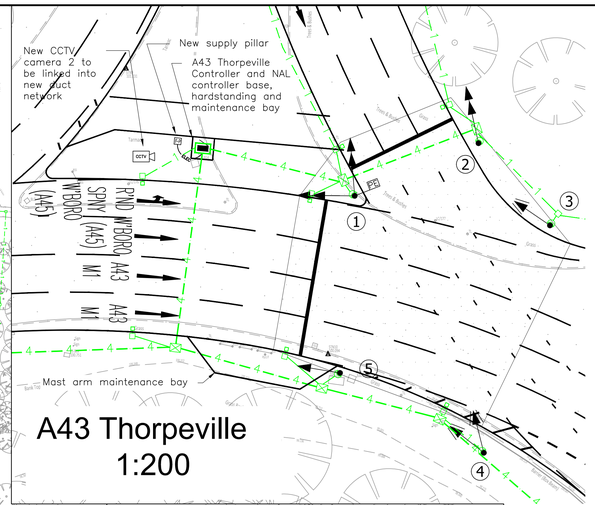


A43 THORPEVILLE - STREAM 2 PHASE/STAGE ALLOCATION



A43 Thorpeville
1:200



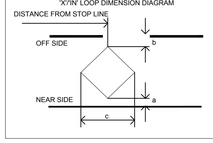


A43 Thorpeville
1:200

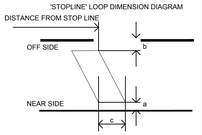
LUMBERTUBS WAY CONTROLLER–LOOP DETAILS

LOOP NUMBER	APROXIMATE LOCATION (FSL)	DISTANCE FROM NEARSIDE (a)	DISTANCE FROM OFFSIDE (b)	LOOP WIDTH (c)	LOOP TYPE
AIN1/SCOOT1	80m	0.3m	0.8m	1.1m	DIAMOND
AIN2/SCOOT2	80m	0.8m	0.5m	1.1m	DIAMOND
AX3	40m	0.3m	0.8m	1.1m	DIAMOND
AX4	40m	0.8m	0.8m	1.1m	DIAMOND
AX5	40m	0.8m	0.5m	1.1m	DIAMOND
ASL6a/b	3m	0.3m	0.5m	1.7m	CHEVRON
ASL7	3m	0.3m	0.5m	1.7m	CHEVRON
BIN8/SCOOT3	80m	0.3m	0.5m	1.1m	DIAMOND
BX9	40m	0.3m	0.8m	1.1m	DIAMOND
BX10	40m	0.8m	0.5m	1.1m	DIAMOND
BSL11	3m	0.3m	0.5m	1.7m	CHEVRON
BSL12	3m	0.3m	0.5m	1.7m	CHEVRON
CIN1/SCOOT4	80m	0.3m	0.8m	1.1m	DIAMOND
CIN2/SCOOT5	80m	0.8m	0.8m	1.1m	DIAMOND
CIN3/SCOOT6	80m	0.8m	0.5m	1.1m	DIAMOND
CX4	40m	0.3m	0.5m	1.1m	DIAMOND
CX5	40m	0.5m	0.8m	1.1m	DIAMOND
CX6	40m	0.8m	0.5m	1.1m	DIAMOND
CSL7	3m	0.3m	0.5m	1.7m	CHEVRON
CSL8a/b	3m	0.3m	0.5m	1.7m	CHEVRON
DIN9/SCOOT7	80m	0.3m	0.8m	1.1m	DIAMOND
DIN10/SCOOT8	80m	0.8m	0.8m	1.1m	DIAMOND
DIN11/SCOOT9	80m	0.8m	0.5m	1.1m	DIAMOND
DX12	40m	0.3m	0.8m	1.1m	DIAMOND
DX13	40m	0.8m	0.8m	1.1m	DIAMOND
DX14	40m	0.8m	0.5m	1.1m	DIAMOND
DSL15a/b	3m	0.3m	0.5m	1.7m	CHEVRON
DSL16	3m	0.3m	0.5m	1.7m	CHEVRON
Q17	60m	0.3m	0.5m	2.0m	RECTANGLE

'X'/'H' LOOP DIMENSION DIAGRAM



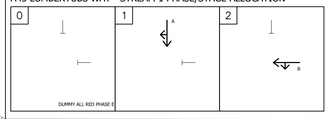
'STOPLINE' LOOP DIMENSION DIAGRAM



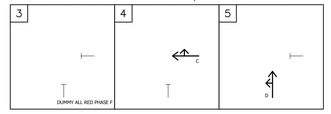
LUMBERTUBS WAY CONTROLLER–POLE AND SOCKET TYPE AND SETTING OUT DETAILS

POLE NUMBER	POLE TYPE	DISTANCE–POLE FACE TO STOP LINE	DISTANCE–POLE FACE TO KERB EDGE	NAL RETENTION SOCKET TYPE	NAL RETENTION SOCKET CO–ORDINATES (CENTRE OF POLE)	
1	6m Low Access	2.5m	0.75m	RSI68 Duck Foot	X = 478832.215	Y = 264800.697
2	6m Low Access	2.5m	0.75m	RSI68 Duck Foot	X = 478820.426	Y = 264798.647
3	4m straight	21m	1.4m	RSII5 Duck Foot	X = 478808.098	Y = 264813.285
4	4m straight	13m	2m	RSII5 Duck Foot	X = 478826.604	Y = 264817.670
5	4m straight	2.5m	2m	RSII5 Duck Foot	X = 478835.981	Y = 264813.595
6	4m straight	17m	2m	RSII5 Duck Foot	X = 478923.812	Y = 264856.040
7	4m straight	2.5m	2m	RSII5 Duck Foot	X = 478926.908	Y = 264871.156
8	4m straight	2.5m	0.75m	RSII5 Duck Foot	X = 478940.368	Y = 264870.289
9	4m straight	2.5m	0.5m	RSII5 Duck Foot	X = 478945.092	Y = 264862.023
10	4m straight	21m	2m	RSII5 Duck Foot	X = 478936.690	Y = 264845.269

A43 LUMBERTUBS WAY - STREAM 1 PHASE/STAGE ALLOCATION



A43 LUMBERTUBS WAY - STREAM 2 PHASE/STAGE ALLOCATION



NOTES

GENERAL REQUIREMENTS

1. DRAWING TO BE READ IN CONJUNCTION WITH THE WORKS SPECIFICATION. ALL TRAFFIC SIGNAL EQUIPMENT IS TO BE COMPLY WITH NORTHAMPTONSHIRE TRAFFIC SIGNAL EQUIPMENT GENERAL REQUIREMENTS AND APPENDIX 12/5 SPECIFICATION.

2. SCHEME WILL BE CARRIED OUT IN ACCORDANCE WITH DMRB CODE OF PRACTICE.

TRAFFIC SIGNAL REQUIREMENTS

3. ALL TRAFFIC SIGNAL STREET FURNITURE TO BE GREY IN COLOUR.

4. ALL SIGNAL HEADS TO BE ELV LED TYPE. STRAIGHT POLES TO BE ROTATED 45 DEG/POSITIONED TO ENSURE CORRECT CLEARANCE OF STREET FURNITURE TO EDGE OF CARRIAGEWAY.

5. THE PHOTOCELL FOR DIMMING SHALL BE LOCATED ON A SIGNAL HEAD WHERE IT WILL NOT BE AFFECTED BY STREET LIGHTING.

6. DE–COMMISSION EXISTING CONTROLLER AND REMOVE ALL EQUIPMENT TO STORE FOR RE–USE.

7. COMMUNICATIONS TO THE THORPEVILLE CONTROLLER WILL BE VIA BT PRIVATE FIBRE LINE. FOR UTMC, MOVA AND MONITORING.

8. ETHERNET LINK IS REQUIRED BETWEEN THE ROUTER AT THORPEVILLE CONTROLLER AND UTMC UNIT AT LUMBERTUBS WAY CONTROLLER FOR UTMC, MOVA AND MONITORING. LINK TO BE TERMINATED IN RG45 SOCKET.
COMMS PILLARS WITH ETHERNET LINK TO CONTROLLER TO BE INSTALLED IN POSITIONS AS INDICATED.
ETHERNET INTERFACE REQUIRED FROM CONTROLLER TO COMMS PILLARS AS INDICATED.

9. 2x20 CORE LINK CABLE TO BE PROVIDED BETWEEN BOTH CONTROLLERS FOR LINKING PURPOSES

10. ONLY 16 CORE CABLE OR GREATER TO BE USED FROM CONTROLLER TO EACH POLE

CIVILS REQUIREMENTS

11. ALL NEW DUCTING SHALL BE POLYPROPYLENE, ORANGE IN COLOUR, SMOOTH BORE WITH "TRAFFIC SIGNALS" IMPRINTED ON THE DUCT. DRAW CORDS SHALL BE INCLUDED IN ALL DUCTS.

12. ALL NEW DUCT AND CONTROLLER BASE CHAMBERS TO BE NAL LTD AS APPROVED BY MGWSP TRAFFIC SIGNAL ENGINEER. CHAMBERS TO HAVE GRADE B COMPOSITE LID AND STEEL FRAMES. BOXES TO BE INSTALLED TO MANUFACTURERS INSTRUCTIONS. CHAMBERS IN VERGE TO HAVE 150MM CONCRETE SURROUND

13. ONLY NAL LTD POLE RETENTION SOCKETS TO BE USED UNLESS OTHERWISE APPROVED BY MGWSP TRAFFIC SIGNAL ENGINEER. TYPE AS SPECIFIED ON SETTING OUT SCHEDULE. SOCKETS TO BE INSTALLED TO MANUFACTURERS INSTRUCTIONS. SOCKETS IN VERGE TO HAVE 1M CONCRETE SURROUND.

14. THE POLE SETTING OUT DETAILS ARE ONLY A GUIDE, EXACT POSITIONS OF POLES, DUCTS, ETC. SHALL BE DETERMINED ONSITE BY THE ENGINEER. CO–ORDINATES ARE TO ASSIST IN SETTING OUT HOWEVER DISTANCES TO KERB/STOP/TACTILES SHOULD BE STILL BE MET WHERE APPLICABLE.

15. DUCTING FROM RS115 NAL UNITS TO ADJACENT CHAMBER AND DETECTOR LINKS ON APPROACHES TO BE 1x100MM UNLESS INDICATED OTHERWISE. ALL OTHER RUNS SHALL BE AS INDICATED BY NUMBER.

16. BLACK 50MM DUCT TO BE INSTALLED BETWEEN NEW ADJACENT HALDO PILLAR AND THORPEVILLE CONTROLLER AND ALSO FOR LUMBERTUBS WAY CONTROLLER AND NEW ADJACENT HALDO PILLAR. HALDO PILLARS AND SUPPLY TO BE INSTALLED BY EON.

CCTV REQUIREMENTS

17. ETHERNET LINKS ARE REQUIRED FROM THE BT ROUTER TO BOTH THE NEW CAMERA 1 CONTROL EQUIPMENT AT A43 THORPEVILLE AND TO THE EXISTING CAMERA 2 AT A43 LUMBERTUBS WAY.

18. DUCT LINK IS REQUIRED FROM NEW CCTV CAMERA COLUMN 1 TO CONTROL EQUIPMENT IN NEW CONTROL/FEEDER PILLAR.

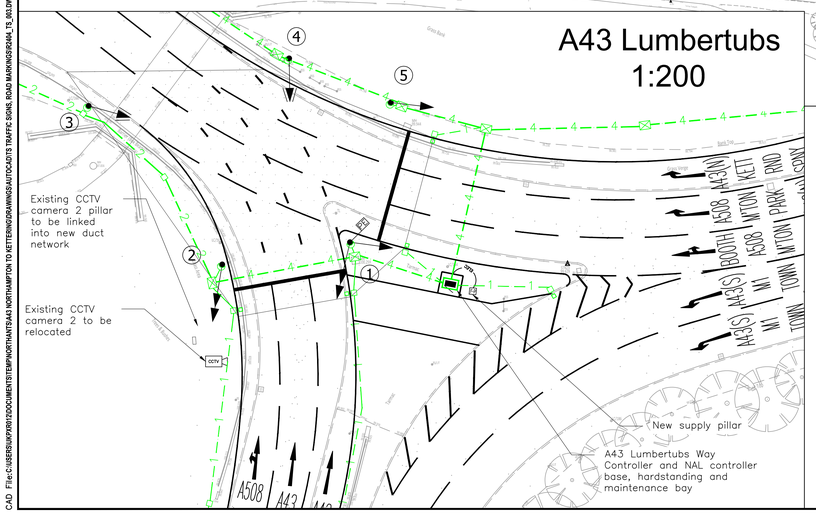
19. DUCT LINK IS REQUIRED FROM EXISTING CCTV CAMERA 2 CONTROL/FEEDER PILLAR TO NEW ADJACENT CHAMBER AS INDICATED TO ENABLE CONNECTION TO NEW DUCT NETWORK.

19. NCC'S CCTV CONTRACTOR ATEC WILL INSTALL AND COMMISSION THE NEW CCTV CAMERA1 ON NEW 10m COLUMN INSTALLED BY EON. AND ALSO RECONNECT AND COMMISSION EXISTING CCTV CAMERA 2 ON NEW COLUMN ALSO INSTALLED BY EON.

KEY:

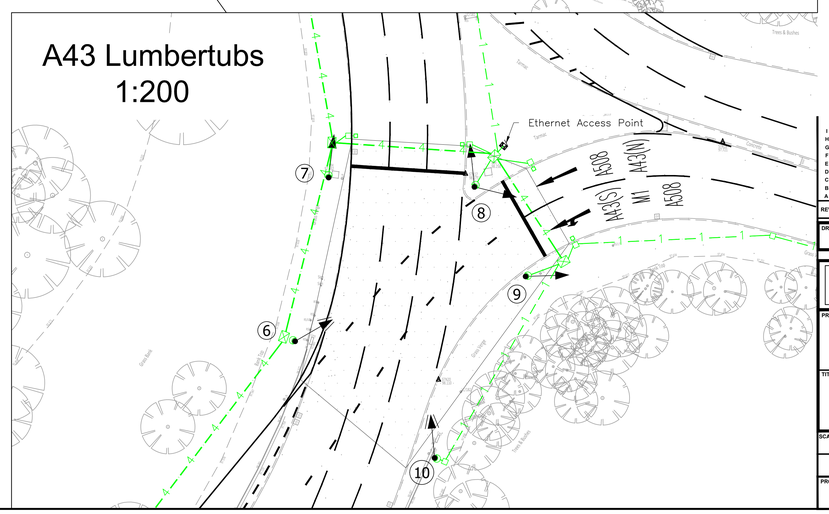
- RAG ELV LED PRIMARY
- RAG ELV LED SECONDARY
- RAG/RAG HIGH LEVEL ELV LED PRIMARY
- SIGNAL POLE & POLE NO.(SEE NOTE 14)
- SOLAR CELL
- CONTROLLER/MEC AND NAL CONTROLLER BASE
- FEEDER PILLAR
- 100MM DUCT No. AS INDICATED. (SEE NOTE 15)
- NAL RETENTION SOCKET
- NAL STAKKA BOX (600mmx600mm)
- NAL STAKKA BOX (300mmx300mm)
- NAL CARRIAGEWAY LOOP BOX
- DETECTOR LOOPS
- INTERVISIBILITY ZONE
- CCTV CAMERA

A43 Lumbertubs
1:200



1:500

A43 Lumbertubs
1:200



REV	DATE	BY	DESCRIPTION	CHK	APD
I	02-02-17	PAR	REVISED_TO_AS_BUILT	TS	AA
H	19-03-15	PAR	ALL_6M_POLE_SOCKETS_AMENDED_TO_168	TS	AA
G	19-03-15	PAR	NEW_POLE_6_ADDED	TS	AA
F	09-03-15	PAR	DET_AMENDED_LUMBERTUBS_WAY	TS	AA
E	06/03/15	PAR	POLE CO-ORDS. DET/STREAM CHANGED	TS	AA
D	26-11-14	PAR	AMENDED KEY AND MARKINGS	TS	AA
C	02-10-14	PAR	VALUE ENGINEERING AMENDMENTS	TS	AA
B	30-06-14	PAR	CCTV REQUIREMENTS ADDED	TS	AA
A	28-05-14	PAR	FIRST ISSUE	TS	AA

DRAWING STATUS: **AS BUILT**

G:\CAD\Drawing Frames\Northamptonshire Highways logo white on light green.jpg

PROJECT:

NORTHAMPTON
ROUND SPINNEY ROUNDABOUT

TITLE:

TRAFFIC SIGNAL INSTALLATION
A43 ROUND SPINNEY ROUNDABOUT
NORTHAMPTON

SCALE @ A0	CHECKED:	APPROVED:
As shown	TS	AA
	DESIGN/DRAWN: PAR	DATE: 28-05-14
PROJECT No: S1382	DRAWING No: R2404_TS_003	REV: I

C:\AD F:\sc\USERS\PAR\STDOCUMENTS\TEMP\NORTHANTS\A43 NORTHAMPTON TO KETTERING\DRAWINGS\AUTOCAD\TS TRAFFIC SIGNS, ROAD MARKINGS\R2404_TS_003.DWG

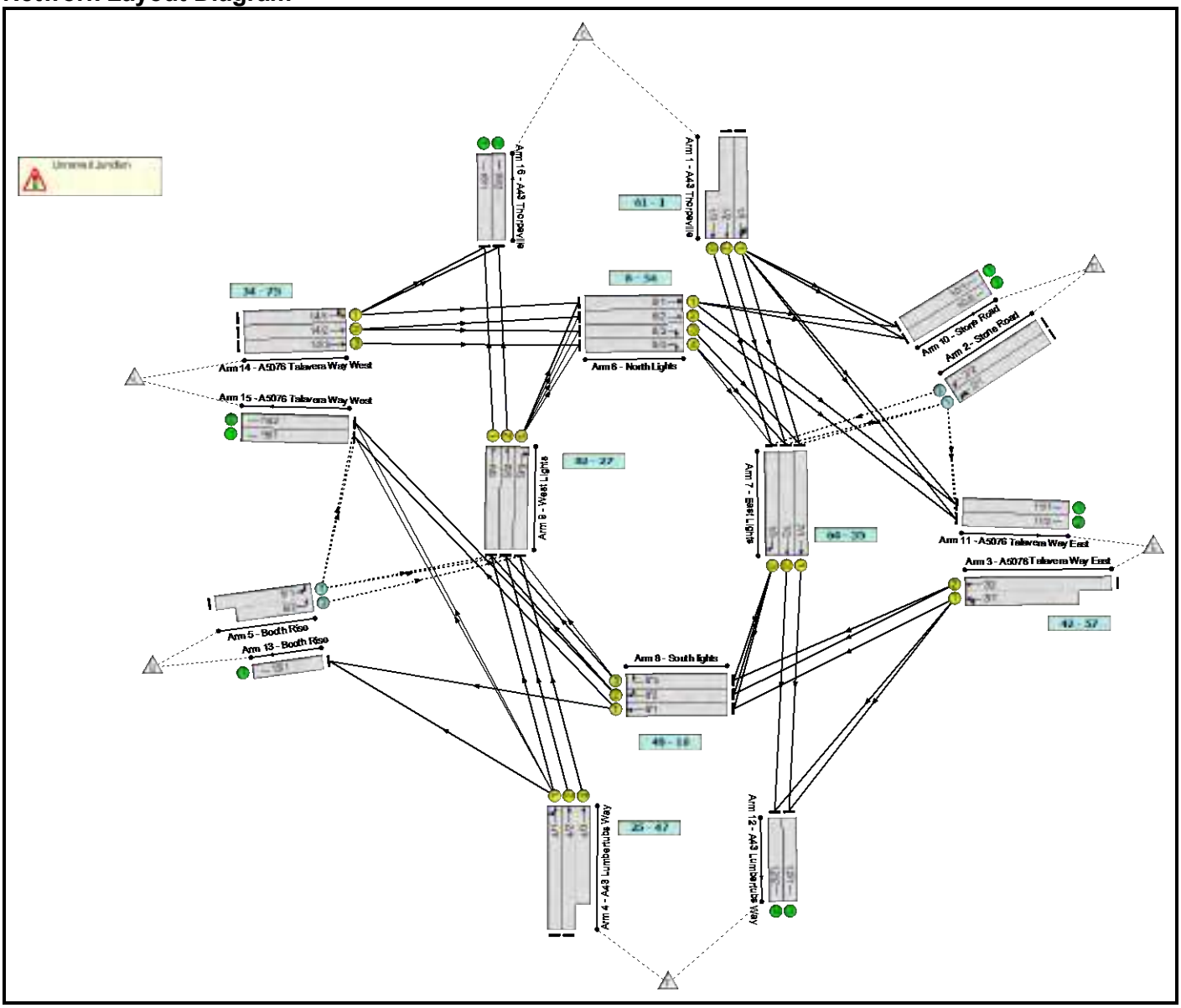
APPENDIX C

Full Input Data And Results

User and Project Details

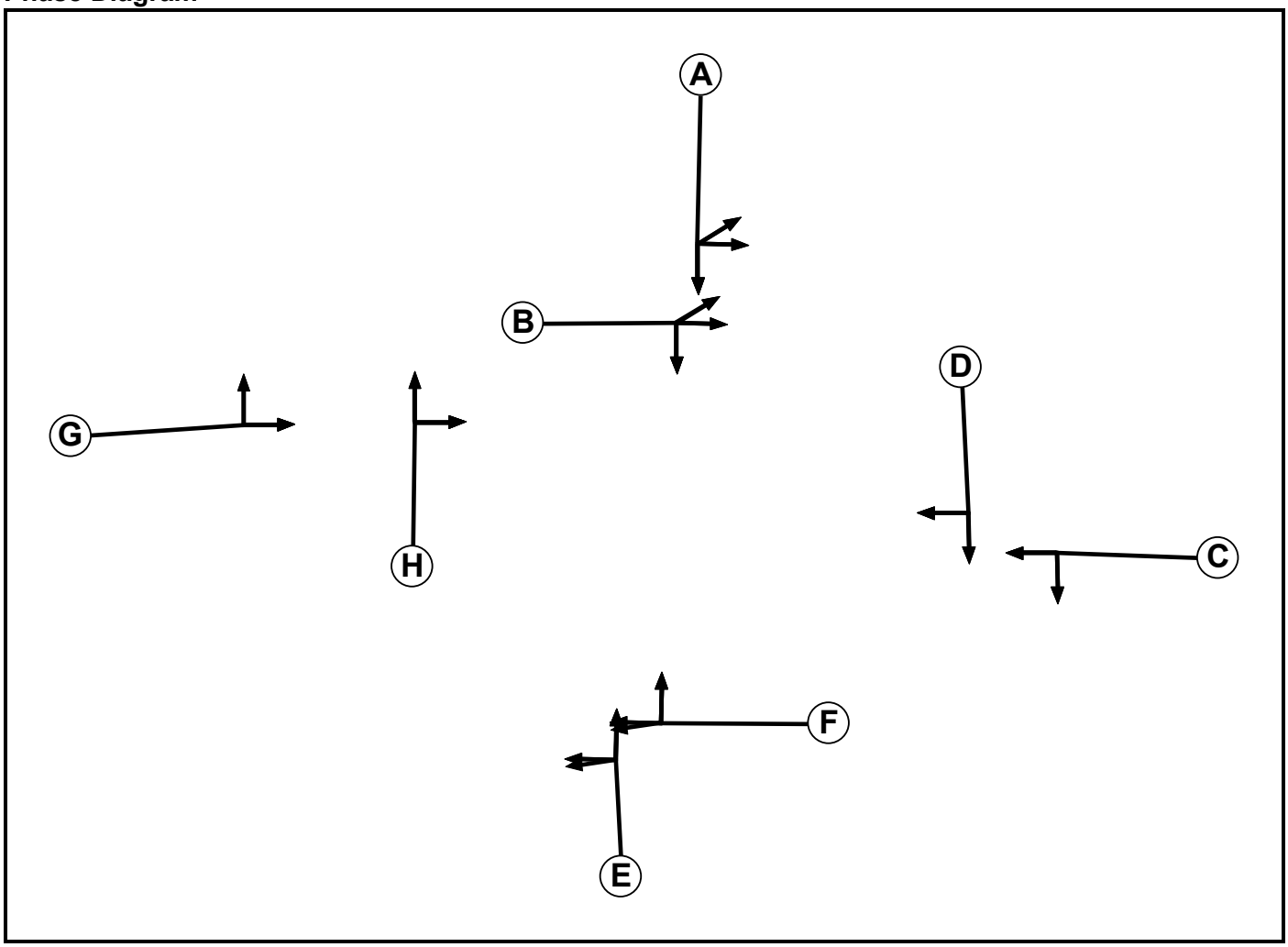
Project:	Rail Central
Title:	Junction 27
Location:	A5076 Talavera Way, Stone Circle Road, A5124 Booth Rise and A43 Lumbertubs Way
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Traffic	4		7	7
H	Traffic	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

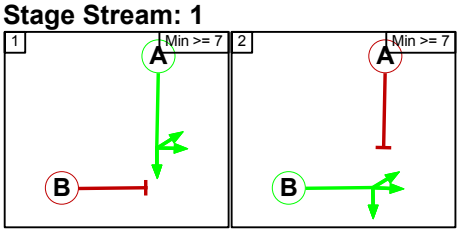
Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
A		7	-	-	-	-	-	-
B	7		-	-	-	-	-	-
C	-	-		7	-	-	-	-
D	-	-	7		-	-	-	-
E	-	-	-	-		-	-	-
F	-	-	-	-	7		-	-
G	-	-	-	-	-	-		7
H	-	-	-	-	-	-	7	

Phases in Stage

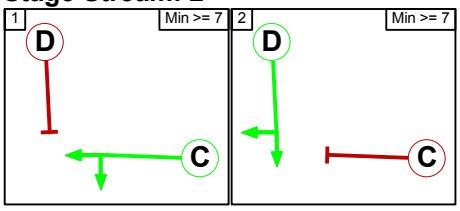
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	H
4	2	G

Stage Diagram

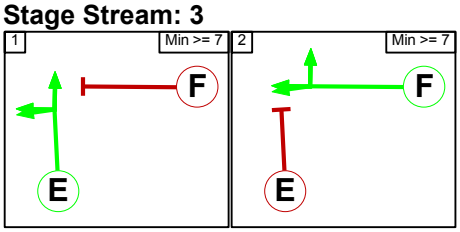
Stage Stream: 1



Stage Stream: 2

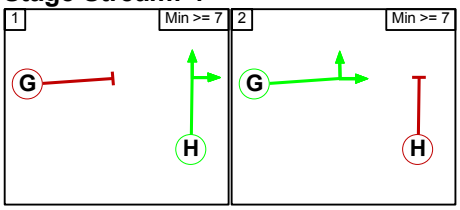


Stage Stream: 3



Full Input Data And Results

Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		2
	2	7	

Full Input Data And Results

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (Stone Road)	7/1 (Left)	1000	0	1/1	0.33	To 7/1 (Ahead)	-	-	-	-	-
				1/2	0.33	All					
				1/3	0.33	All					
				6/1	0.33	To 11/1 (Ahead)					
				6/2	0.33	All					
				6/3	0.33	All					
	7/2 (Left)	1000	0	1/1	0.33	To 7/1 (Ahead)					
				1/2	0.33	All					
				1/3	0.33	All					
				6/1	0.33	To 11/1 (Ahead)					
				6/2	0.33	All					
				6/3	0.33	All					
				6/4	0.33	All					
	11/1 (U-Turn)	1000	0	6/1	0.33	To 11/1 (Ahead)					
				6/2	0.33	All					
	11/2 (U-Turn)	1000	0	6/1	0.33	To 11/1 (Ahead)					
				6/2	0.33	All					
2/2 (Stone Road)	7/3 (Left)	1000	0	1/1	0.33	To 7/1 (Ahead)	-	-	-	-	-
				1/2	0.33	All					
				1/3	0.33	All					
				6/1	0.33	To 11/1 (Ahead)					
				6/2	0.33	All					
				6/3	0.33	All					

Full Input Data And Results

				6/4	0.33	All					
5/1 (Booth Rise)	9/1 (Left)	1000	0	4/1	0.33	To 9/1 (Ahead)	-	-	-	-	-
				4/2	0.33	All					
				4/3	0.33	All					
				8/1	0.33	To 15/1 (Ahead)					
				8/2	0.33	All					
	9/2 (Left)	1000	0	4/1	1.09	To 9/1 (Ahead)					
				4/2	0.33	All					
				4/3	0.33	All					
				8/1	0.33	To 15/1 (Ahead)					
				8/2	0.33	All					
				8/3	0.33	All					
	15/1 (U-Turn)	1000	0	4/1	0.33	To 9/1 (Ahead)					
				4/2	0.33	All					
				4/3	0.33	All					
				8/1	0.33	To 15/1 (Ahead)					
	15/2 (U-Turn)	1000	0	4/1	0.33	To 9/1 (Ahead)					
				4/2	0.33	All					
				4/3	0.33	All					
				8/1	0.33	To 15/1 (Ahead)					
5/2 (Booth Rise)	9/3 (Left)	1000	0	4/1	0.33	To 9/1 (Ahead)	-	-	-	-	-
				4/2	0.33	All					
				4/3	0.33	All					
				8/1	0.33	To 15/1 (Ahead)					
				8/2	0.33	All					
				8/3	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A43 Thorpeville)	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A43 Thorpeville)	U	A	2	3	14.0	User	1800	-	-	-	-	-
1/3 (A43 Thorpeville)	U	A	2	3	5.0	User	1800	-	-	-	-	-
2/1 (Stone Road)	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 7 Left	Inf
											Arm 11 U-Turn	Inf
2/2 (Stone Road)	O		2	3	60.0	Geom	-	4.00	0.00	N	Arm 7 Left	Inf
3/1 (A5076 Talavera Way East)	U	C	2	3	12.0	User	1800	-	-	-	-	-
3/2 (A5076 Talavera Way East)	U	C	2	3	60.0	User	1800	-	-	-	-	-
4/1 (A43 Lumbertubs Way)	U	E	2	3	60.0	User	1800	-	-	-	-	-
4/2 (A43 Lumbertubs Way)	U	E	2	3	60.0	User	1800	-	-	-	-	-
4/3 (A43 Lumbertubs Way)	U	E	2	3	22.0	User	1800	-	-	-	-	-
5/1 (Booth Rise)	O		2	3	60.0	Geom	-	4.50	0.00	Y	Arm 9 Left	Inf
											Arm 15 U-Turn	Inf
5/2 (Booth Rise)	O		2	3	10.0	Geom	-	4.50	0.00	N	Arm 9 Left	Inf
6/1 (North Lights)	U	B	2	3	5.0	User	1900	-	-	-	-	-
6/2 (North Lights)	U	B	2	3	6.0	User	1900	-	-	-	-	-
6/3 (North Lights)	U	B	2	3	6.0	User	1900	-	-	-	-	-
6/4 (North Lights)	U	B	2	3	7.0	User	1900	-	-	-	-	-
7/1 (East Lights)	U	D	2	3	9.0	User	1900	-	-	-	-	-

Full Input Data And Results

7/2 (East Lights)	U	D	2	3	7.0	User	1900	-	-	-	-	-
7/3 (East Lights)	U	D	2	3	10.0	User	1900	-	-	-	-	-
8/1 (South lights)	U	F	2	3	19.0	User	1900	-	-	-	-	-
8/2 (South lights)	U	F	2	3	18.0	User	1900	-	-	-	-	-
8/3 (South lights)	U	F	2	3	14.0	User	1900	-	-	-	-	-
9/1 (West Lights)	U	H	2	3	10.0	User	1900	-	-	-	-	-
9/2 (West Lights)	U	H	2	3	11.0	User	1900	-	-	-	-	-
9/3 (West Lights)	U	H	2	3	10.0	User	1900	-	-	-	-	-
10/1 (Stone Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (Stone Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A5076 Talavera Way East)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A5076 Talavera Way East)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (Booth Rise)	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1 (A5076 Talavera Way West)	U	G	2	3	15.0	User	1800	-	-	-	-	-
14/2 (A5076 Talavera Way West)	U	G	2	3	60.0	User	1800	-	-	-	-	-
14/3 (A5076 Talavera Way West)	U	G	2	3	60.0	User	1800	-	-	-	-	-
15/1 (A5076 Talavera Way West)	U		2	3	60.0	Inf	-	-	-	-	-	-
15/2 (A5076 Talavera Way West)	U		2	3	60.0	Inf	-	-	-	-	-	-

16/1 (A43 Thorpeville)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/2 (A43 Thorpeville)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	11	32	326	67	446	708	1590
	B	28	0	229	12	197	101	567
	C	368	215	1	61	0	1340	1985
	D	20	19	24	4	24	89	180
	E	787	281	185	74	0	126	1453
	F	842	65	1038	180	128	11	2264
	Tot.	2056	612	1803	398	795	2375	8039

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DM AM
Junction: Unnamed Junction	
1/1	894
1/2 (with short)	1091(In) 507(Out)
1/3 (short)	584
2/1	113
2/2	67
3/1 (short)	639
3/2 (with short)	1453(In) 814(Out)
4/1	977
4/2 (with short)	1287(In) 968(Out)
4/3 (short)	319
5/1 (with short)	567(In) 257(Out)
5/2 (short)	310
6/1	575
6/2	533
6/3	291
6/4	572
7/1	1142
7/2	1107
7/3	694
8/1	950
8/2	980
8/3	91
9/1	496
9/2	981
9/3	707
10/1	200
10/2	198
11/1	250
11/2	545
12/1	1205
12/2	1170
13/1	612
14/1	531
14/2	529
14/3	530
15/1	838

Full Input Data And Results

15/2	1218
16/1	659
16/2	1144

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	78.8 % 21.2 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	89.1 % 10.9 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	1	18	540	104	930	1049	2642
	B	22	0	208	10	305	67	612
	C	114	221	0	0	57	1009	1401
	D	80	76	66	0	113	289	624
	E	439	258	73	0	1	163	934
	F	309	82	1227	71	123	8	1820
	Tot.	965	655	2114	185	1529	2585	8033

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DM PM
Junction: Unnamed Junction	
1/1	630
1/2 (with short)	771(In) 436(Out)
1/3 (short)	335
2/1	402
2/2	222
3/1 (short)	467
3/2 (with short)	934(In) 467(Out)
4/1	810
4/2 (with short)	1010(In) 808(Out)
4/3 (short)	202
5/1 (with short)	612(In) 230(Out)
5/2 (short)	382
6/1	755
6/2	789
6/3	283
6/4	860
7/1	1135
7/2	1287
7/3	576
8/1	674
8/2	659
8/3	14
9/1	753
9/2	821
9/3	585
10/1	93
10/2	92
11/1	656
11/2	873
12/1	1217
12/2	1368
13/1	655
14/1	893
14/2	889
14/3	860
15/1	266

Full Input Data And Results

15/2	699
16/1	1023
16/2	1091

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	71.9 % 28.1 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	90.4 % 9.6 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	12	35	326	67	452	703	1595
	B	27	0	225	9	192	109	562
	C	363	210	1	61	11	1309	1955
	D	20	20	26	4	35	76	181
	E	789	280	185	75	0	129	1458
	F	825	58	1046	183	137	17	2266
	Tot.	2036	603	1809	399	827	2343	8017

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS2 AM
Junction: Unnamed Junction	
1/1	875
1/2 (with short)	1080(In) 506(Out)
1/3 (short)	574
2/1	111
2/2	70
3/1 (short)	651
3/2 (with short)	1458(In) 807(Out)
4/1	968
4/2 (with short)	1298(In) 961(Out)
4/3 (short)	337
5/1 (with short)	562(In) 252(Out)
5/2 (short)	310
6/1	583
6/2	536
6/3	310
6/4	566
7/1	1125
7/2	1089
7/3	691
8/1	951
8/2	977
8/3	92
9/1	509
9/2	974
9/3	726
10/1	202
10/2	197
11/1	269
11/2	558
12/1	1190
12/2	1153
13/1	603
14/1	533
14/2	530
14/3	532
15/1	832

Full Input Data And Results

15/2	1204
16/1	672
16/2	1137

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	68.5 % 31.5 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	89.3 % 10.7 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	1	17	543	101	917	1039	2618
	B	22	0	236	39	249	91	637
	C	112	208	0	0	51	998	1369
	D	82	71	66	0	113	292	624
	E	435	233	79	0	1	160	908
	F	320	88	1177	61	120	9	1775
	Tot.	972	617	2101	201	1451	2589	7931

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS2 PM
Junction: Unnamed Junction	
1/1	620
1/2 (with short)	749(In) 429(Out)
1/3 (short)	320
2/1	405
2/2	219
3/1 (short)	454
3/2 (with short)	908(In) 454(Out)
4/1	793
4/2 (with short)	982(In) 792(Out)
4/3 (short)	190
5/1 (with short)	637(In) 258(Out)
5/2 (short)	379
6/1	745
6/2	743
6/3	307
6/4	850
7/1	1153
7/2	1276
7/3	557
8/1	653
8/2	643
8/3	9
9/1	758
9/2	800
9/3	570
10/1	102
10/2	99
11/1	627
11/2	824
12/1	1233
12/2	1356
13/1	617
14/1	886
14/2	882
14/3	850
15/1	295

Full Input Data And Results

15/2	677
16/1	1030
16/2	1071

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	72.1 % 27.9 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	91.5 % 8.5 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	0	15	371	90	657	673	1806
	B	29	0	229	8	145	117	528
	C	321	254	1	67	51	1410	2104
	D	56	43	0	4	63	81	247
	E	893	379	172	85	1	53	1583
	F	1068	100	1000	159	150	40	2517
	Tot.	2367	791	1773	413	1067	2374	8785

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2031 DM AM
Junction: Unnamed Junction	
1/1	948
1/2 (with short)	1156(In) 580(Out)
1/3 (short)	576
2/1	144
2/2	103
3/1 (short)	645
3/2 (with short)	1583(In) 938(Out)
4/1	1168
4/2 (with short)	1349(In) 1000(Out)
4/3 (short)	349
5/1 (with short)	528(In) 258(Out)
5/2 (short)	270
6/1	666
6/2	633
6/3	245
6/4	600
7/1	1148
7/2	1173
7/3	694
8/1	1031
8/2	1095
8/3	98
9/1	394
9/2	1008
9/3	709
10/1	208
10/2	205
11/1	378
11/2	689
12/1	1175
12/2	1199
13/1	791
14/1	604
14/2	603
14/3	599
15/1	889

Full Input Data And Results

15/2	1478
16/1	580
16/2	1193

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	56.3 % 43.8 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	88.8 % 11.2 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	0	13	535	94	1071	912	2625
	B	23	0	247	12	276	88	646
	C	125	338	0	0	99	1147	1709
	D	88	118	58	0	182	264	710
	E	446	429	69	17	3	198	1162
	F	365	99	1081	60	161	7	1773
	Tot.	1047	997	1990	183	1792	2616	8625

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2031 DM PM
Junction: Unnamed Junction	
1/1	749
1/2 (with short)	960(In) 497(Out)
1/3 (short)	463
2/1	446
2/2	264
3/1 (short)	627
3/2 (with short)	1162(In) 535(Out)
4/1	774
4/2 (with short)	999(In) 771(Out)
4/3 (short)	228
5/1 (with short)	646(In) 270(Out)
5/2 (short)	376
6/1	846
6/2	848
6/3	166
6/4	854
7/1	1074
7/2	1344
7/3	740
8/1	898
8/2	767
8/3	39
9/1	665
9/2	790
9/3	624
10/1	92
10/2	91
11/1	804
11/2	988
12/1	1173
12/2	1443
13/1	997
14/1	887
14/2	884
14/3	854
15/1	194

Full Input Data And Results

15/2	853
16/1	933
16/2	1057

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	59.2 % 40.8 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	91.5 % 8.5 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	0	15	364	95	678	694	1846
	B	28	0	266	0	112	102	508
	C	326	246	1	72	41	1404	2090
	D	64	49	0	4	78	58	253
	E	901	383	161	83	1	47	1576
	F	1071	72	972	158	122	40	2435
	Tot.	2390	765	1764	412	1032	2345	8708

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS2 AM
Junction: Unnamed Junction	
1/1	944
1/2 (with short)	1146(In) 573(Out)
1/3 (short)	573
2/1	136
2/2	117
3/1 (short)	658
3/2 (with short)	1576(In) 918(Out)
4/1	1143
4/2 (with short)	1292(In) 972(Out)
4/3 (short)	320
5/1 (with short)	508(In) 294(Out)
5/2 (short)	214
6/1	624
6/2	629
6/3	237
6/4	614
7/1	1123
7/2	1175
7/3	705
8/1	1034
8/2	1081
8/3	119
9/1	397
9/2	1003
9/3	622
10/1	207
10/2	205
11/1	344
11/2	688
12/1	1147
12/2	1198
13/1	765
14/1	618
14/2	617
14/3	611
15/1	890

Full Input Data And Results

15/2	1500
16/1	579
16/2	1185

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	42.6 % 57.4 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	90.5 % 9.5 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	0	12	570	88	1057	890	2617
	B	24	0	202	3	267	98	594
	C	126	353	0	0	96	1119	1694
	D	86	131	63	0	177	253	710
	E	435	433	74	53	2	190	1187
	F	401	109	1099	36	168	22	1835
	Tot.	1072	1038	2008	180	1767	2572	8637

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS2 PM
Junction: Unnamed Junction	
1/1	735
1/2 (with short)	959(In) 480(Out)
1/3 (short)	479
2/1	430
2/2	280
3/1 (short)	623
3/2 (with short)	1187(In) 564(Out)
4/1	806
4/2 (with short)	1029(In) 803(Out)
4/3 (short)	226
5/1 (with short)	594(In) 226(Out)
5/2 (short)	368
6/1	814
6/2	860
6/3	179
6/4	843
7/1	1061
7/2	1321
7/3	771
8/1	929
8/2	775
8/3	64
9/1	626
9/2	812
9/3	649
10/1	91
10/2	89
11/1	771
11/2	996
12/1	1156
12/2	1416
13/1	1038
14/1	887
14/2	887
14/3	843
15/1	212

Full Input Data And Results

15/2	860
16/1	911
16/2	1097

Full Input Data And Results

Lane Saturation Flows

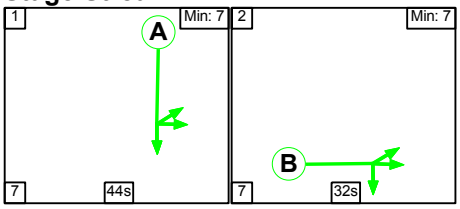
Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 Thorpeville Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 Thorpeville Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 Thorpeville Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Stone Road)	4.00	0.00	Y	Arm 7 Left Arm 11 U-Turn	Inf Inf	58.8 % 41.2 %	2015	2015
2/2 (Stone Road)	4.00	0.00	N	Arm 7 Left	Inf	100.0 %	2155	2155
3/1 (A5076 Talavera Way East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5076 Talavera Way East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 Lumbertubs Way Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 Lumbertubs Way Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 Lumbertubs Way Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Booth Rise)	4.50	0.00	Y	Arm 9 Left Arm 15 U-Turn	Inf Inf	89.4 % 10.6 %	2065	2065
5/2 (Booth Rise)	4.50	0.00	N	Arm 9 Left	Inf	100.0 %	2205	2205
6/1 (North Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (North Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (North Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (North Lights Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900
7/1 (East Lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
7/2 (East Lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
7/3 (East Lights Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
8/1 (South lights Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
8/2 (South lights Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

8/3 (South lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
9/1 (West Lights Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (West Lights Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (West Lights Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (Stone Road Lane 1)	Infinite Saturation Flow	Inf	Inf
10/2 (Stone Road Lane 2)	Infinite Saturation Flow	Inf	Inf
11/1 (A5076 Talavera Way East Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A5076 Talavera Way East Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow	Inf	Inf
12/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow	Inf	Inf
13/1 (Booth Rise Lane 1)	Infinite Saturation Flow	Inf	Inf
14/1 (A5076 Talavera Way West Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
14/2 (A5076 Talavera Way West Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
14/3 (A5076 Talavera Way West Lane 3)	This lane uses a directly entered Saturation Flow	1800	1800
15/1 (A5076 Talavera Way West Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (A5076 Talavera Way West Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A43 Thorpeville Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A43 Thorpeville Lane 2)	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

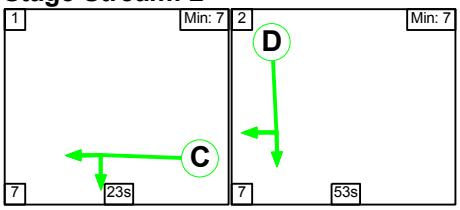
Stage Sequence Diagram

Stage Stream: 1

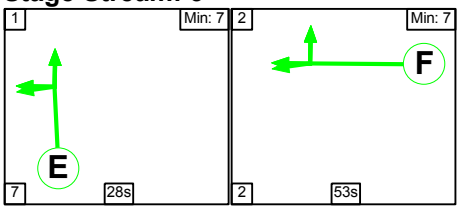


Full Input Data And Results

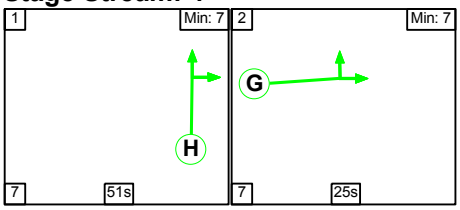
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	44	32
Change Point	45	6

Stage Stream: 2

Stage	1	2
Duration	23	53
Change Point	22	52

Stage Stream: 3

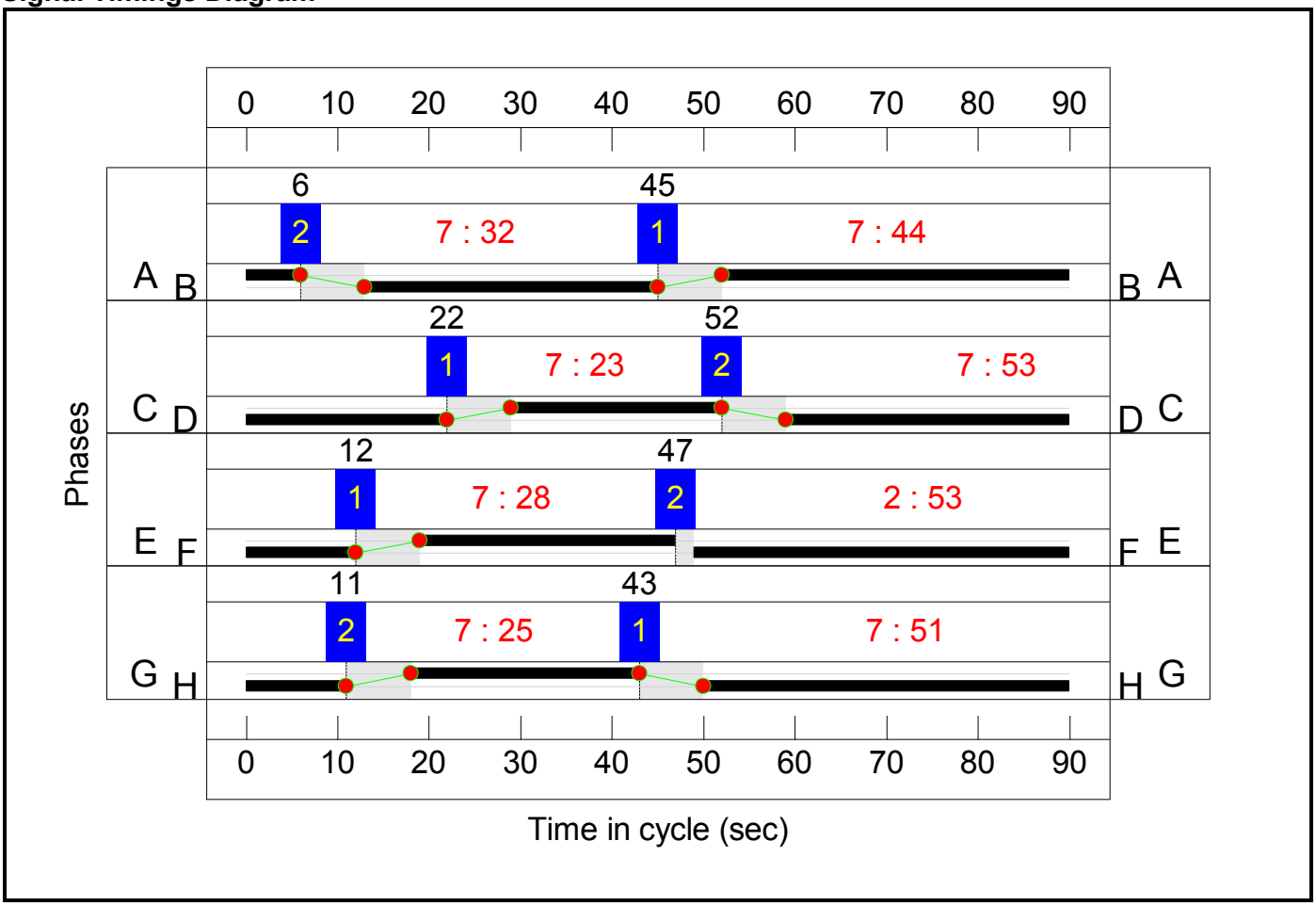
Stage	1	2
Duration	28	53
Change Point	12	47

Stage Stream: 4

Stage	1	2
Duration	51	25
Change Point	43	11

Full Input Data And Results

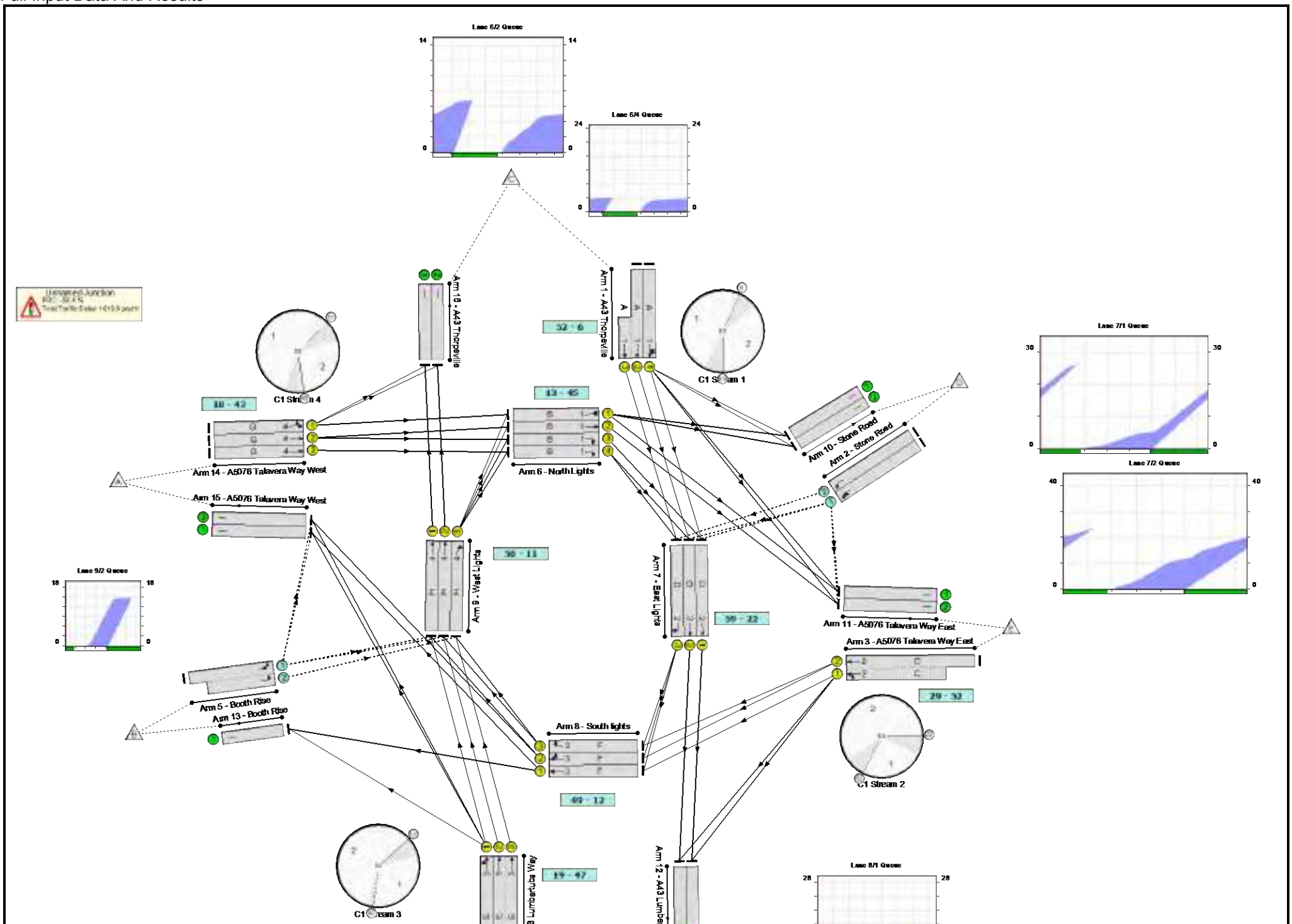
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**169.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**169.6%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	44	-	894	1800	900	99.3%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	44	-	1091	1800:1800	499+575	101.6 : 101.6%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	113	2015	141	80.2%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	67	2155	141	47.6%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	23	-	1453	1800:1800	480+377	169.6 : 169.6%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	28	-	977	1800	580	168.4%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	28	-	1287	1800:1800	580+191	166.9 : 166.9%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	567	2065:2205	438+420	58.7 : 73.8%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	32	-	575	1900	697	64.0%
6/2	North Lights Ahead	U	1	N/A	B		1	32	-	533	1900	697	71.6%
6/3	North Lights Right	U	1	N/A	B		1	32	-	291	1900	697	40.9%
6/4	North Lights Right	U	1	N/A	B		1	32	-	572	1900	697	80.4%
7/1	East Lights Ahead	U	2	N/A	D		1	53	-	1142	1900	1140	99.6%
7/2	East Lights Ahead	U	2	N/A	D		1	53	-	1107	1900	1140	95.4%
7/3	East Lights Right	U	2	N/A	D		1	53	-	694	1900	1140	60.0%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	53	-	950	1900	1140	64.3%
8/2	South lights Right Ahead	U	3	N/A	F		1	53	-	980	1900	1140	59.5%
8/3	South lights Right	U	3	N/A	F		1	53	-	91	1900	1140	4.9%
9/1	West Lights Ahead	U	4	N/A	H		1	51	-	496	1900	1098	36.2%
9/2	West Lights Ahead	U	4	N/A	H		1	51	-	981	1900	1098	53.5%
9/3	West Lights Right	U	4	N/A	H		1	51	-	707	1900	1098	50.0%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	200	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	198	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	250	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	545	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1205	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1170	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	612	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	25	-	531	1800	520	102.1%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	529	1800	520	101.7%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	530	1800	520	101.9%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	838	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	1218	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	659	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1144	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1034**	**280**	**0**	**147.8**	**871.2**	**0.0**	**1019.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1034**	**280**	**0**	**147.8**	**871.2**	**0.0**	**1019.0**	**-**	**-**	**-**	**-**
1/1	894	894	-	-	-	5.6	13.5	-	19.1	76.8	22.1	13.5	35.6
1/2+1/3	1091	1074	-	-	-	6.9	21.4	-	28.3	93.4	24.6	21.4	46.0
2/1	113	113	7	106	0	0.6	1.8	-	2.4	75.1	1.6	1.8	3.4
2/2	67	67	7	60	0	0.3	0.4	-	0.7	40.0	0.9	0.4	1.3
3/2+3/1	1453	857	-	-	-	35.8	299.3	-	335.1	830.3	46.7	299.3	346.0
4/1	977	580	-	-	-	24.3	199.7	-	224.0	825.3	34.4	199.7	234.1
4/2+4/3	1287	771	-	-	-	28.7	259.2	-	287.9	805.2	45.7	259.2	304.9
5/1+5/2	567	567	1019	115	0	1.1	1.0	-	2.1	13.1	6.2	1.0	7.2
6/1	446	446	-	-	-	3.6	0.9	-	4.5	36.2	7.6	0.9	8.5
6/2	499	499	-	-	-	2.9	1.2	-	4.2	30.3	6.9	1.2	8.2
6/3	285	285	-	-	-	1.3	0.3	-	1.6	20.6	2.9	0.3	3.3
6/4	560	560	-	-	-	2.2	2.0	-	4.2	27.2	4.0	2.0	6.0
7/1	1136	1136	-	-	-	2.7	15.8	-	18.5	58.6	27.5	15.8	43.3
7/2	1088	1088	-	-	-	5.7	8.0	-	13.6	45.1	23.5	8.0	31.4
7/3	684	684	-	-	-	0.4	0.7	-	1.2	6.1	7.0	0.7	7.8
8/1	733	733	-	-	-	1.8	0.9	-	2.7	13.3	11.8	0.9	12.7
8/2	678	678	-	-	-	2.0	0.7	-	2.7	14.3	13.8	0.7	14.5
8/3	55	55	-	-	-	0.1	0.0	-	0.1	6.0	0.7	0.0	0.8
9/1	397	397	-	-	-	0.7	0.3	-	0.9	8.5	4.4	0.3	4.6
9/2	588	588	-	-	-	3.6	0.6	-	4.2	25.6	14.7	0.6	15.3
9/3	549	549	-	-	-	2.4	0.5	-	2.9	18.9	9.7	0.5	10.2
10/1	148	148	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	146	146	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/2	511	511	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1173	1173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1125	1125	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	466	466	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	531	520	-	-	-	5.2	14.6	-	19.8	134.0	13.6	14.6	28.1
14/2	529	520	-	-	-	5.1	14.0	-	19.0	129.6	13.4	14.0	27.4
14/3	530	520	-	-	-	5.1	14.3	-	19.4	131.8	13.5	14.3	27.8
15/1	569	569	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	816	816	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	557	557	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

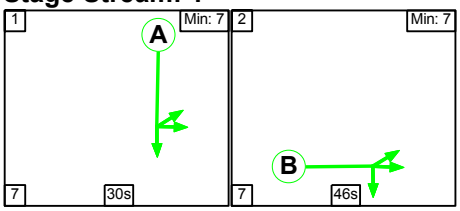
C1	Stream: 1 PRC for Signalled Lanes (%):	-12.9	Total Delay for Signalled Lanes (pcuHr):	61.91	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-88.4	Total Delay for Signalled Lanes (pcuHr):	368.42	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-87.2	Total Delay for Signalled Lanes (pcuHr):	517.35	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	-13.5	Total Delay for Signalled Lanes (pcuHr):	66.20	Cycle Time (s):	90
	PRC Over All Lanes (%):	-88.4	Total Delay Over All Lanes(pcuHr):	1019.04		

Full Input Data And Results

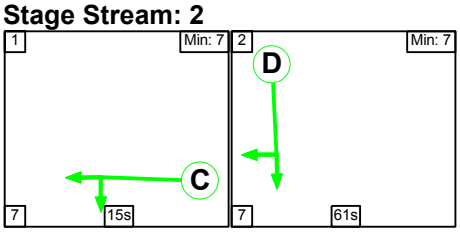
Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

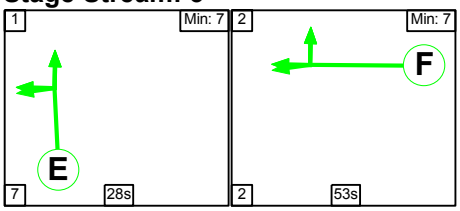
Stage Stream: 1



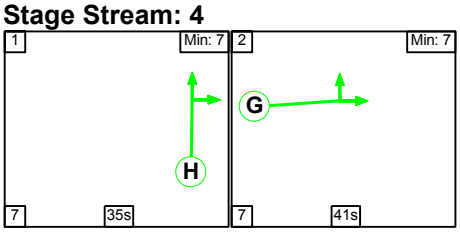
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	30	46
Change Point	54	1

Stage Stream: 2

Stage	1	2
Duration	15	61
Change Point	35	57

Stage Stream: 3

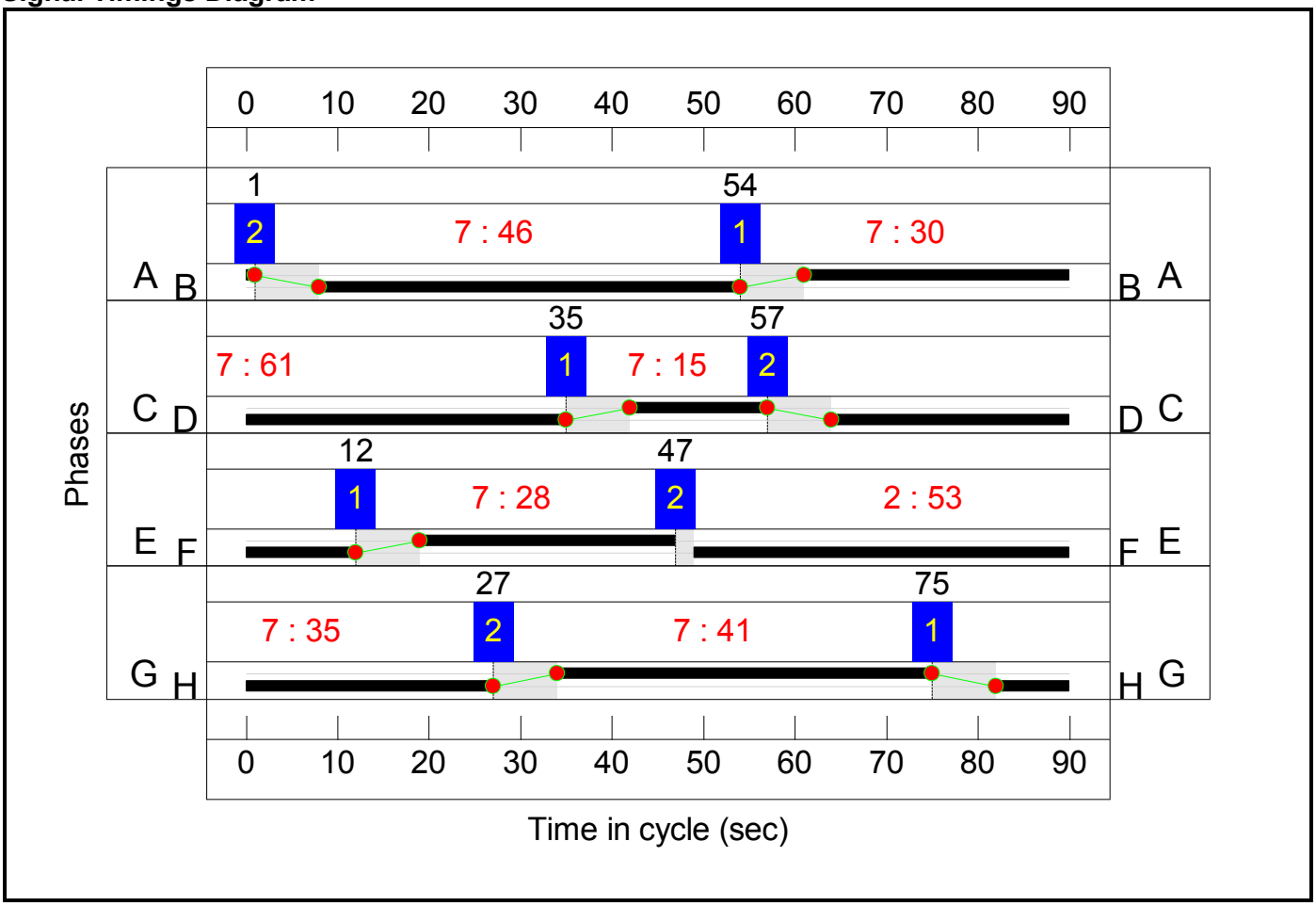
Stage	1	2
Duration	28	53
Change Point	12	47

Stage Stream: 4

Stage	1	2
Duration	35	41
Change Point	75	27

Full Input Data And Results

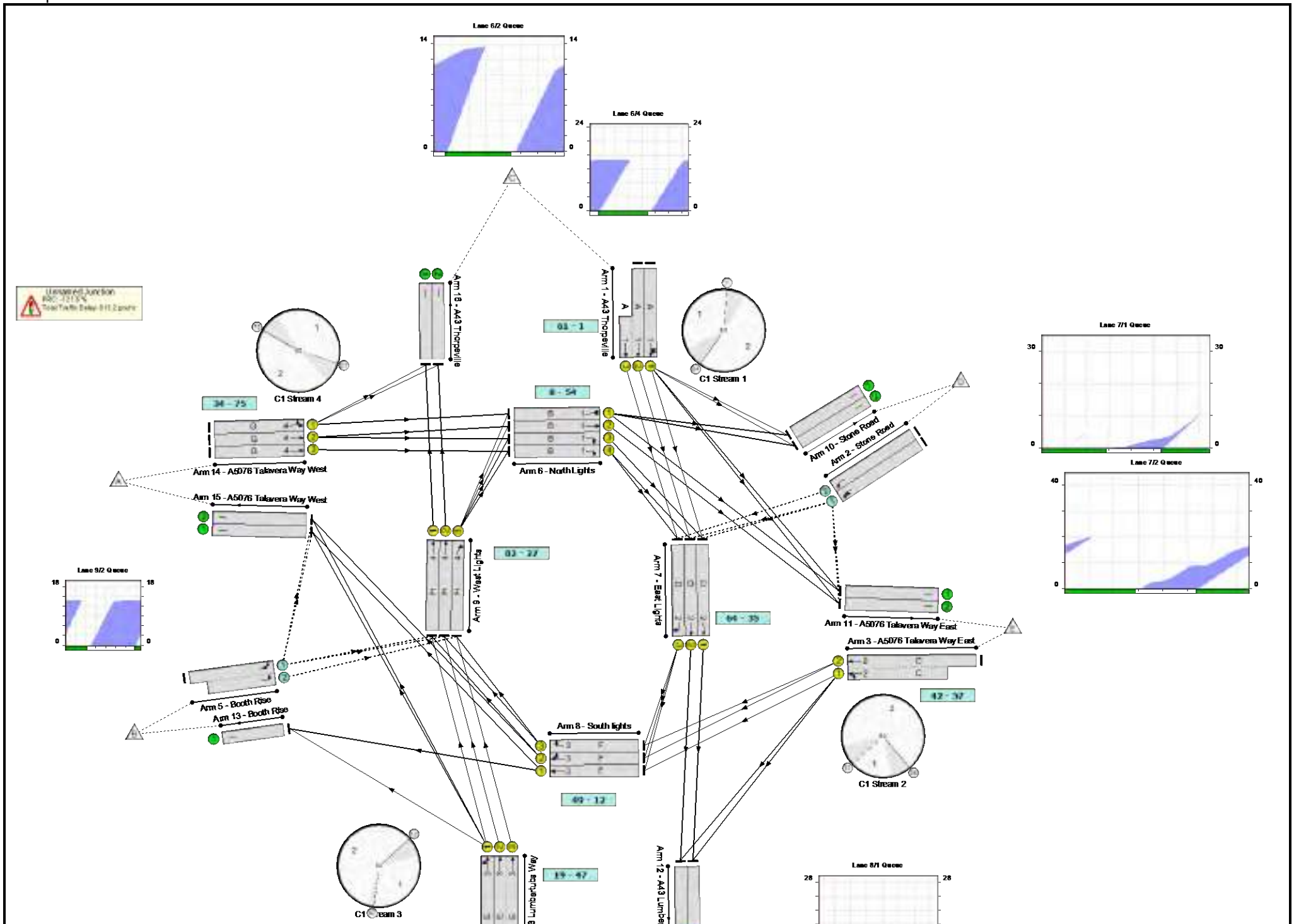
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**199.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**199.6%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	30	-	630	1800	620	101.6%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	30	-	771	1800:1800	438+336	99.7 : 99.7%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	402	2015	201	199.6%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	222	2155	188	118.2%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	15	-	934	1800:1800	320+320	145.9 : 145.9%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	28	-	810	1800	580	139.7%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	28	-	1010	1800:1800	580+145	139.3 : 139.3%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	612	2065:2205	303+503	75.9 : 75.9%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	46	-	755	1900	992	70.8%
6/2	North Lights Ahead	U	1	N/A	B		1	46	-	789	1900	992	75.1%
6/3	North Lights Right	U	1	N/A	B		1	46	-	283	1900	992	27.2%
6/4	North Lights Right	U	1	N/A	B		1	46	-	860	1900	992	84.7%
7/1	East Lights Ahead	U	2	N/A	D		1	61	-	1135	1900	1309	74.4%
7/2	East Lights Ahead	U	2	N/A	D		1	61	-	1287	1900	1309	96.5%
7/3	East Lights Right	U	2	N/A	D		1	61	-	576	1900	1309	41.4%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	53	-	674	1900	1140	49.1%
8/2	South lights Right Ahead	U	3	N/A	F		1	53	-	659	1900	1140	43.8%
8/3	South lights Right	U	3	N/A	F		1	53	-	14	1900	1140	1.0%
9/1	West Lights Ahead	U	4	N/A	H		1	35	-	753	1900	760	79.4%
9/2	West Lights Ahead	U	4	N/A	H		1	35	-	821	1900	760	77.7%
9/3	West Lights Right	U	4	N/A	H		1	35	-	585	1900	760	71.8%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	93	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	92	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	656	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	873	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1217	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1368	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	655	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	41	-	893	1800	840	106.3%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	889	1800	840	105.8%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	860	1800	840	102.4%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	266	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	699	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1023	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1091	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1221**	**393**	**0**	**144.5**	**668.7**	**0.0**	**813.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1221**	**393**	**0**	**144.5**	**668.7**	**0.0**	**813.2**	**-**	**-**	**-**	**-**
1/1	630	620	-	-	-	5.7	15.3	-	21.0	120.0	16.0	15.3	31.3
1/2+1/3	771	771	-	-	-	5.8	13.2	-	19.0	88.9	15.2	13.2	28.5
2/1	402	201	68	133	0	12.5	101.3	-	113.8	1019.1	28.8	101.3	130.1
2/2	222	188	55	133	0	2.7	19.9	-	22.5	365.4	15.9	19.9	35.8
3/2+3/1	934	640	-	-	-	20.1	148.6	-	168.7	650.1	21.8	148.6	170.4
4/1	810	580	-	-	-	16.1	116.7	-	132.9	590.5	26.0	116.7	142.7
4/2+4/3	1010	743	-	-	-	17.9	144.3	-	162.1	577.9	33.0	144.3	177.3
5/1+5/2	612	612	1098	126	0	1.8	1.6	-	3.3	19.7	7.4	1.6	9.0
6/1	703	703	-	-	-	3.9	1.2	-	5.1	25.9	15.0	1.2	16.2
6/2	745	745	-	-	-	5.4	1.5	-	6.9	33.2	13.6	1.5	15.1
6/3	270	270	-	-	-	1.3	0.2	-	1.5	19.7	4.8	0.2	5.0
6/4	840	840	-	-	-	6.8	2.7	-	9.5	40.6	14.5	2.7	17.2
7/1	974	974	-	-	-	0.7	1.4	-	2.1	7.9	11.1	1.4	12.6
7/2	1262	1262	-	-	-	3.4	9.6	-	13.0	37.0	19.7	9.6	29.3
7/3	541	541	-	-	-	0.4	0.4	-	0.8	5.3	6.5	0.4	6.8
8/1	560	560	-	-	-	0.5	0.5	-	1.0	6.5	2.8	0.5	3.3
8/2	499	499	-	-	-	0.3	0.4	-	0.7	5.3	5.3	0.4	5.7
8/3	11	11	-	-	-	0.0	0.0	-	0.0	8.4	0.1	0.0	0.1
9/1	604	604	-	-	-	5.9	1.9	-	7.8	46.7	14.1	1.9	16.0
9/2	590	590	-	-	-	8.1	1.7	-	9.8	60.0	14.0	1.7	15.7
9/3	546	546	-	-	-	3.3	1.3	-	4.6	30.1	11.3	1.3	12.5
10/1	83	83	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	82	82	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	595	595	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

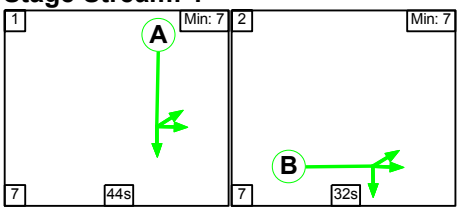
11/2	801	801	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1030	1030	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1318	1318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	538	538	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	893	840	-	-	-	7.8	33.2	-	41.0	165.3	23.7	33.2	56.9
14/2	889	840	-	-	-	7.6	31.5	-	39.2	158.5	23.4	31.5	55.0
14/3	860	840	-	-	-	6.4	20.5	-	26.9	112.7	22.0	20.5	42.5
15/1	202	202	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	525	525	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	858	858	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	844	844	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-12.9	Total Delay for Signalled Lanes (pcuHr):	62.92	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-62.2	Total Delay for Signalled Lanes (pcuHr):	184.57	Cycle Time (s):	90		
C1	Stream: 3 PRC for Signalled Lanes (%):	-55.2	Total Delay for Signalled Lanes (pcuHr):	296.76	Cycle Time (s):	90		
C1	Stream: 4 PRC for Signalled Lanes (%):	-18.1	Total Delay for Signalled Lanes (pcuHr):	129.28	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-121.8	Total Delay Over All Lanes(pcuHr):	813.20				

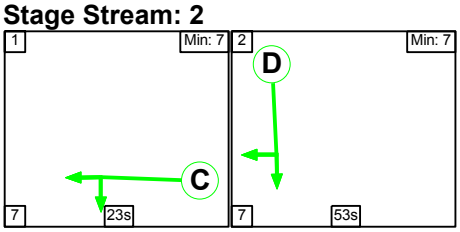
Full Input Data And Results
Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

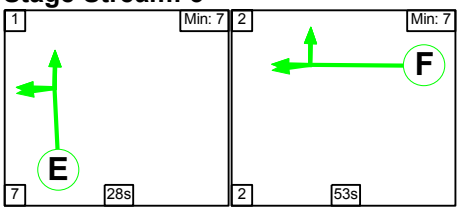
Stage Stream: 1



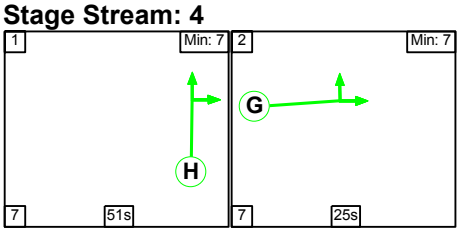
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	44	32
Change Point	45	6

Stage Stream: 2

Stage	1	2
Duration	23	53
Change Point	22	52

Stage Stream: 3

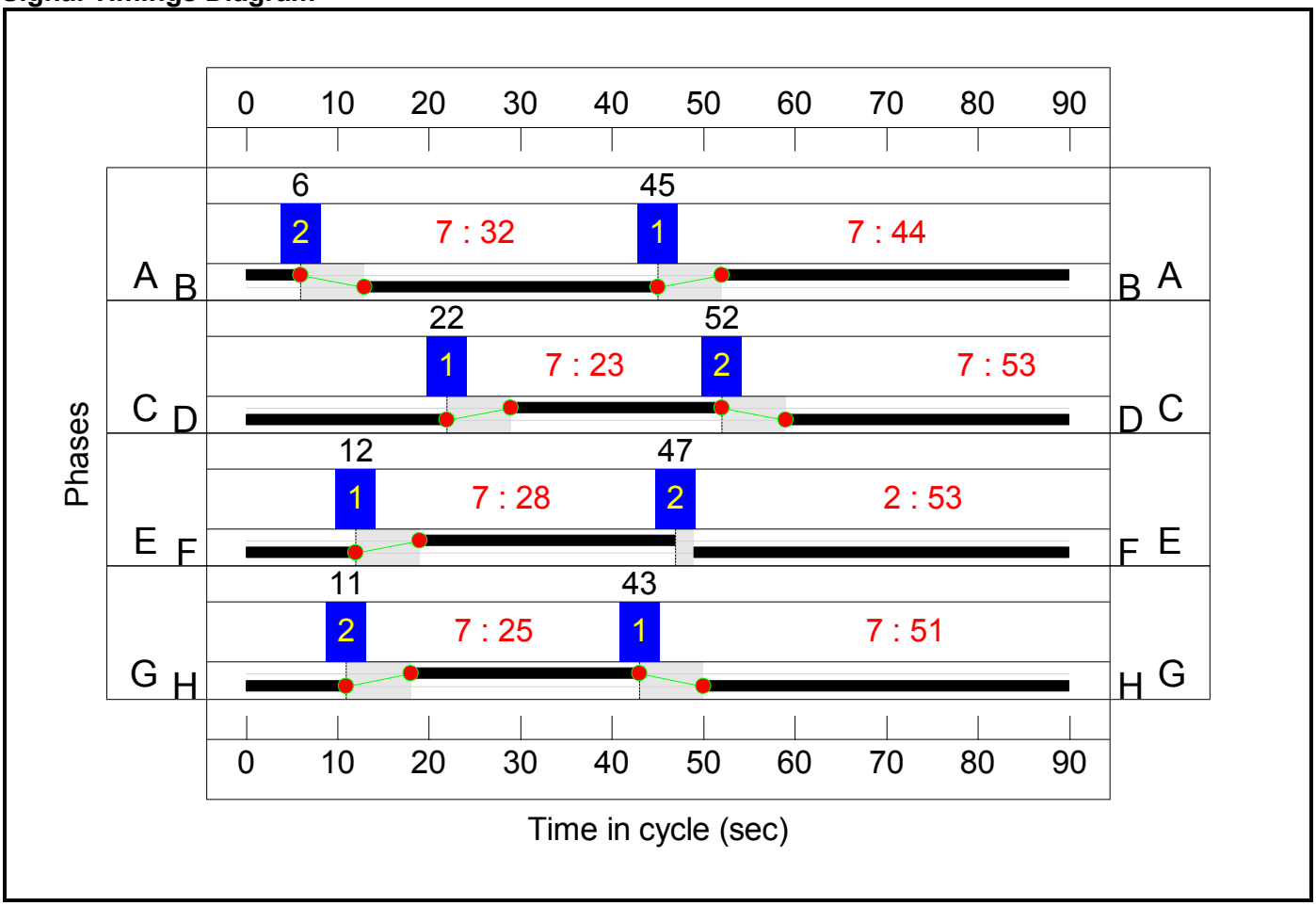
Stage	1	2
Duration	28	53
Change Point	12	47

Stage Stream: 4

Stage	1	2
Duration	51	25
Change Point	43	11

Full Input Data And Results

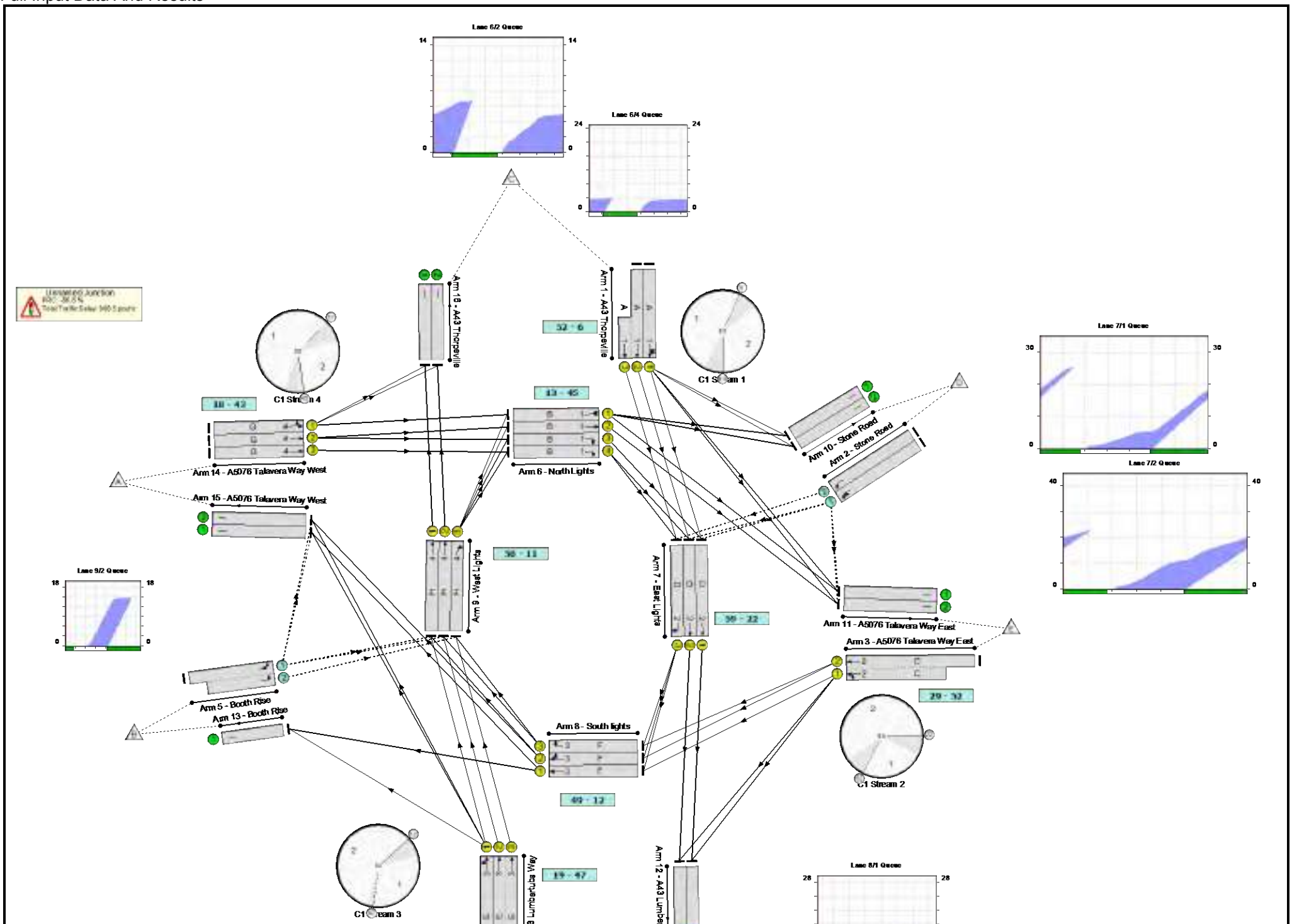
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**168.1%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**168.1%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	44	-	875	1800	900	97.2%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	44	-	1080	1800:1800	504+572	100.3 : 100.3%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	111	2015	145	76.3%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	70	2155	144	48.7%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	23	-	1458	1800:1800	480+387	168.1 : 168.1%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	28	-	968	1800	580	166.9%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	28	-	1298	1800:1800	580+203	165.7 : 165.7%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	562	2065:2205	431+413	58.5 : 75.0%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	32	-	583	1900	697	64.7%
6/2	North Lights Ahead	U	1	N/A	B		1	32	-	536	1900	697	71.8%
6/3	North Lights Right	U	1	N/A	B		1	32	-	310	1900	697	43.3%
6/4	North Lights Right	U	1	N/A	B		1	32	-	566	1900	697	79.1%
7/1	East Lights Ahead	U	2	N/A	D		1	53	-	1125	1900	1140	98.0%
7/2	East Lights Ahead	U	2	N/A	D		1	53	-	1089	1900	1140	94.2%
7/3	East Lights Right	U	2	N/A	D		1	53	-	691	1900	1140	60.3%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	53	-	951	1900	1140	64.7%
8/2	South lights Right Ahead	U	3	N/A	F		1	53	-	977	1900	1140	60.1%
8/3	South lights Right	U	3	N/A	F		1	53	-	92	1900	1140	4.9%
9/1	West Lights Ahead	U	4	N/A	H		1	51	-	509	1900	1098	36.9%
9/2	West Lights Ahead	U	4	N/A	H		1	51	-	974	1900	1098	53.5%
9/3	West Lights Right	U	4	N/A	H		1	51	-	726	1900	1098	51.2%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	202	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	197	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	269	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1190	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1153	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	603	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	25	-	533	1800	520	102.5%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	530	1800	520	101.9%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	532	1800	520	102.3%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	832	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	1204	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	672	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1137	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1027**	**278**	**0**	**146.6**	**851.8**	**0.0**	**998.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1027**	**278**	**0**	**146.6**	**851.8**	**0.0**	**998.5**	**-**	**-**	**-**	**-**
1/1	875	875	-	-	-	5.3	9.8	-	15.1	62.2	21.1	9.8	31.0
1/2+1/3	1080	1076	-	-	-	6.1	17.4	-	23.4	78.1	22.7	17.4	40.1
2/1	111	111	11	100	0	0.5	1.5	-	2.0	65.4	1.5	1.5	3.0
2/2	70	70	11	59	0	0.3	0.5	-	0.8	39.8	0.9	0.5	1.4
3/2+3/1	1458	867	-	-	-	35.7	296.6	-	332.3	820.5	46.4	296.6	343.0
4/1	968	580	-	-	-	23.8	195.2	-	219.1	814.7	33.9	195.2	229.1
4/2+4/3	1298	783	-	-	-	28.6	258.6	-	287.1	796.3	45.5	258.6	304.1
5/1+5/2	562	562	1006	118	0	1.2	1.0	-	2.2	13.8	6.3	1.0	7.3
6/1	451	451	-	-	-	3.6	0.9	-	4.6	36.3	7.7	0.9	8.6
6/2	500	500	-	-	-	2.9	1.3	-	4.2	30.1	6.9	1.3	8.2
6/3	302	302	-	-	-	1.4	0.4	-	1.8	21.6	3.4	0.4	3.8
6/4	551	551	-	-	-	2.2	1.8	-	4.0	26.3	3.8	1.8	5.7
7/1	1117	1117	-	-	-	2.8	11.9	-	14.7	47.5	25.2	11.9	37.1
7/2	1074	1074	-	-	-	5.4	6.7	-	12.1	40.7	23.3	6.7	30.0
7/3	688	688	-	-	-	0.4	0.8	-	1.2	6.3	7.4	0.8	8.2
8/1	737	737	-	-	-	1.8	0.9	-	2.8	13.5	12.3	0.9	13.2
8/2	685	685	-	-	-	2.0	0.7	-	2.7	14.3	13.8	0.7	14.6
8/3	56	56	-	-	-	0.1	0.0	-	0.1	6.0	0.8	0.0	0.8
9/1	405	405	-	-	-	0.7	0.3	-	1.0	8.6	4.8	0.3	5.0
9/2	588	588	-	-	-	3.6	0.6	-	4.2	25.6	14.7	0.6	15.3
9/3	562	562	-	-	-	2.5	0.5	-	3.0	19.4	10.1	0.5	10.6
10/1	149	149	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	145	145	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	241	241	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

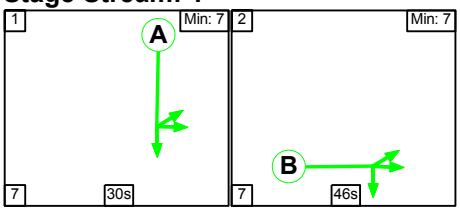
11/2	522	522	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1156	1156	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1112	1112	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	465	465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	533	520	-	-	-	5.3	15.2	-	20.5	138.5	13.7	15.2	28.9
14/2	530	520	-	-	-	5.1	14.3	-	19.4	131.8	13.5	14.3	27.8
14/3	532	520	-	-	-	5.2	14.9	-	20.1	136.3	13.6	14.9	28.5
15/1	568	568	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	816	816	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	747	747	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	53.15	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-86.8	Total Delay for Signalled Lanes (pcuHr):	360.37	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-85.4	Total Delay for Signalled Lanes (pcuHr):	511.77	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	-13.9	Total Delay for Signalled Lanes (pcuHr):	68.23	Cycle Time (s):	90
	PRC Over All Lanes (%):	-86.8	Total Delay Over All Lanes(pcuHr):	998.47		

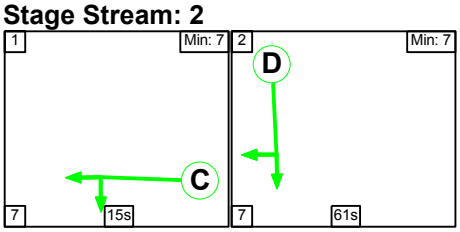
Full Input Data And Results
Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

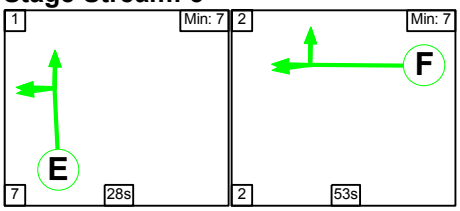
Stage Stream: 1



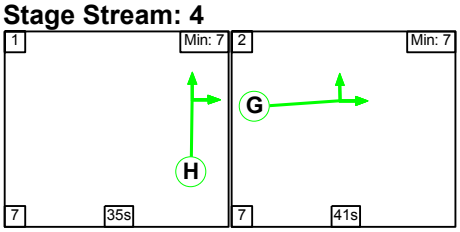
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	30	46
Change Point	54	1

Stage Stream: 2

Stage	1	2
Duration	15	61
Change Point	35	57

Stage Stream: 3

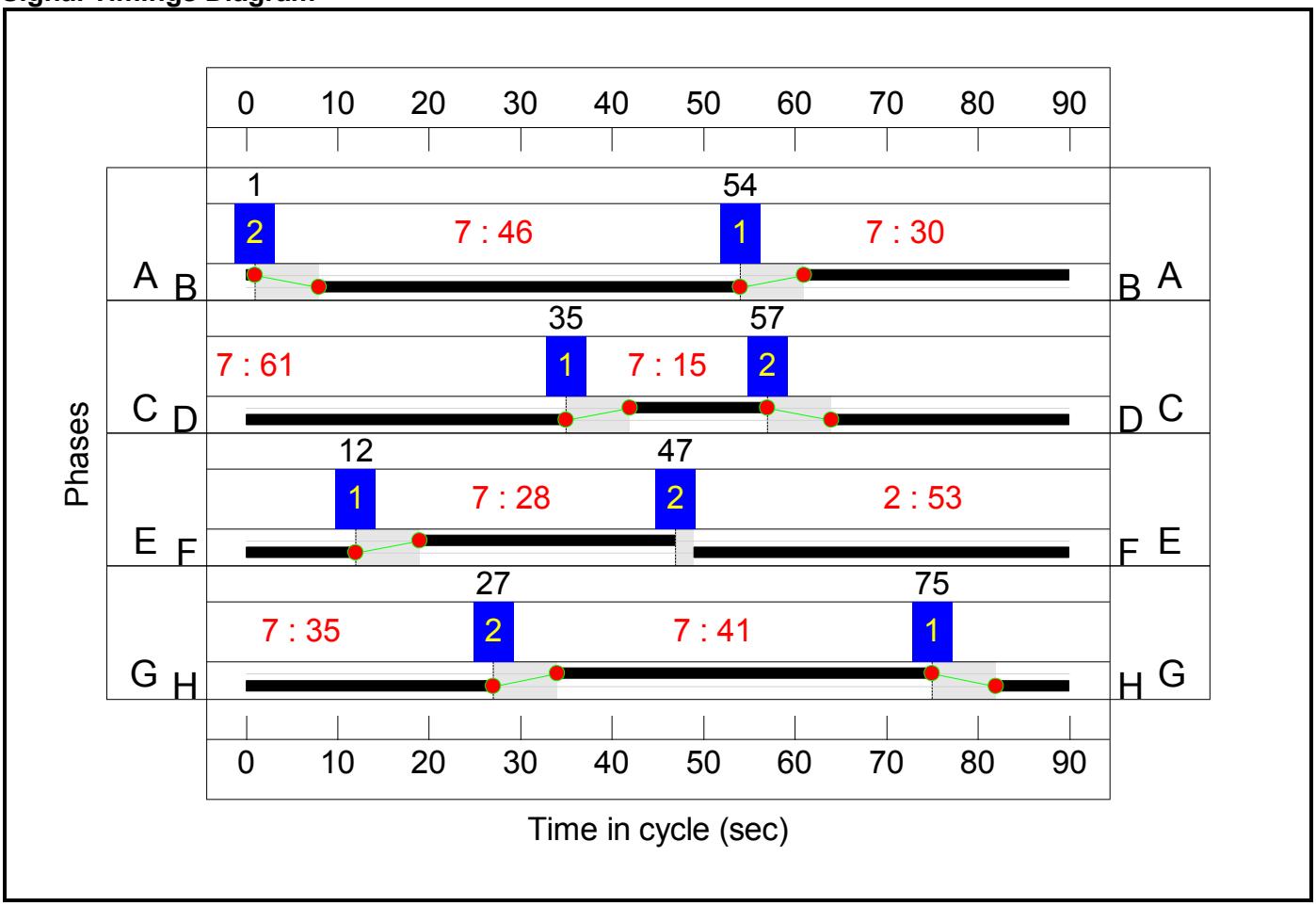
Stage	1	2
Duration	28	53
Change Point	12	47

Stage Stream: 4

Stage	1	2
Duration	35	41
Change Point	75	27

Full Input Data And Results

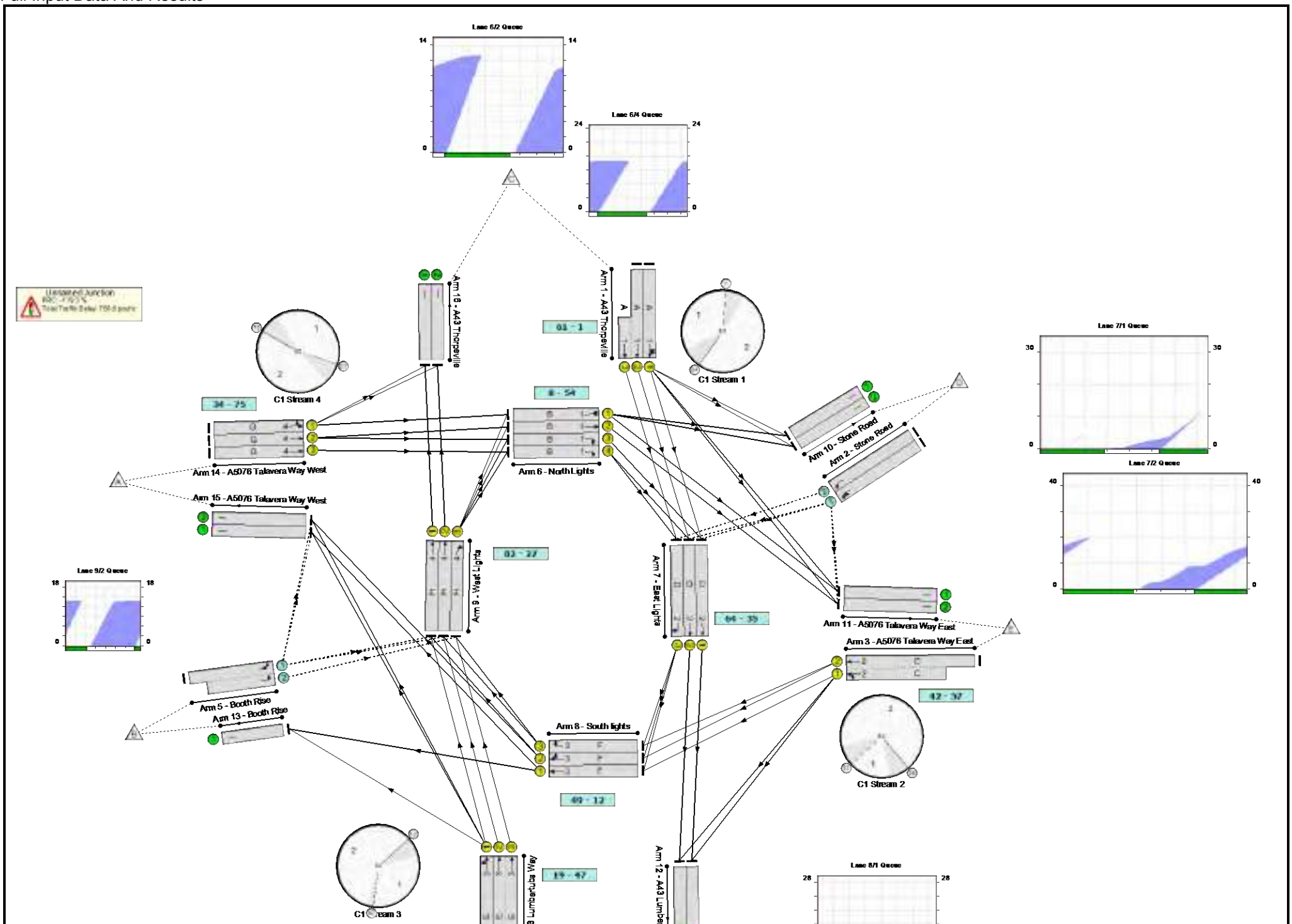
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**197.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**197.4%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	30	-	620	1800	620	100.0%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	30	-	749	1800:1800	441+329	97.4 : 97.4%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	405	2015	205	197.4%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	219	2155	191	114.6%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	15	-	908	1800:1800	320+320	141.9 : 141.9%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	28	-	793	1800	580	136.7%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	28	-	982	1800:1800	580+139	136.6 : 136.6%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	637	2065:2205	341+500	75.7 : 75.7%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	46	-	745	1900	992	70.8%
6/2	North Lights Ahead	U	1	N/A	B		1	46	-	743	1900	992	71.3%
6/3	North Lights Right	U	1	N/A	B		1	46	-	307	1900	992	29.8%
6/4	North Lights Right	U	1	N/A	B		1	46	-	850	1900	992	84.7%
7/1	East Lights Ahead	U	2	N/A	D		1	61	-	1153	1900	1309	76.8%
7/2	East Lights Ahead	U	2	N/A	D		1	61	-	1276	1900	1309	96.2%
7/3	East Lights Right	U	2	N/A	D		1	61	-	557	1900	1309	40.4%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	53	-	653	1900	1140	48.3%
8/2	South lights Right Ahead	U	3	N/A	F		1	53	-	643	1900	1140	43.7%
8/3	South lights Right	U	3	N/A	F		1	53	-	9	1900	1140	0.6%
9/1	West Lights Ahead	U	4	N/A	H		1	35	-	758	1900	760	82.2%
9/2	West Lights Ahead	U	4	N/A	H		1	35	-	800	1900	760	77.1%
9/3	West Lights Right	U	4	N/A	H		1	35	-	570	1900	760	71.0%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	102	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	99	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	627	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	824	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1233	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1356	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	617	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	41	-	886	1800	840	105.5%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	882	1800	840	105.0%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	850	1800	840	101.2%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	295	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	677	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1030	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1071	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1273**	**397**	**0**	**139.0**	**617.5**	**0.0**	**756.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1273**	**397**	**0**	**139.0**	**617.5**	**0.0**	**756.6**	**-**	**-**	**-**	**-**
1/1	620	620	-	-	-	5.1	12.4	-	17.5	101.8	15.3	12.4	27.8
1/2+1/3	749	749	-	-	-	5.6	9.5	-	15.1	72.6	14.6	9.5	24.1
2/1	405	205	71	135	0	12.5	100.9	-	113.4	1008.0	29.0	100.9	129.9
2/2	219	191	58	133	0	2.3	17.1	-	19.5	319.9	15.7	17.1	32.8
3/2+3/1	908	640	-	-	-	18.9	135.7	-	154.6	612.8	20.4	135.7	156.1
4/1	793	580	-	-	-	15.3	108.3	-	123.6	561.2	25.2	108.3	133.5
4/2+4/3	982	740	-	-	-	16.9	133.3	-	150.1	550.4	31.8	133.3	165.1
5/1+5/2	637	637	1145	129	0	1.9	1.5	-	3.4	19.4	7.4	1.5	8.9
6/1	702	702	-	-	-	3.8	1.2	-	5.0	25.9	15.0	1.2	16.2
6/2	707	707	-	-	-	5.2	1.2	-	6.4	32.5	12.7	1.2	13.9
6/3	296	296	-	-	-	1.3	0.2	-	1.6	18.9	5.4	0.2	5.6
6/4	840	840	-	-	-	6.8	2.7	-	9.5	40.6	14.5	2.7	17.2
7/1	1005	1005	-	-	-	0.7	1.6	-	2.3	8.4	11.6	1.6	13.3
7/2	1259	1259	-	-	-	3.4	9.2	-	12.6	36.0	19.6	9.2	28.8
7/3	529	529	-	-	-	0.4	0.3	-	0.8	5.2	6.4	0.3	6.7
8/1	551	551	-	-	-	0.5	0.5	-	1.0	6.4	2.8	0.5	3.2
8/2	498	498	-	-	-	0.3	0.4	-	0.7	5.3	5.3	0.4	5.7
8/3	7	7	-	-	-	0.0	0.0	-	0.0	7.1	0.0	0.0	0.0
9/1	625	625	-	-	-	5.9	2.2	-	8.2	47.0	14.7	2.2	16.9
9/2	586	586	-	-	-	8.1	1.7	-	9.7	59.8	13.9	1.7	15.5
9/3	540	540	-	-	-	3.2	1.2	-	4.4	29.6	11.1	1.2	12.4
10/1	94	94	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	92	92	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	571	571	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

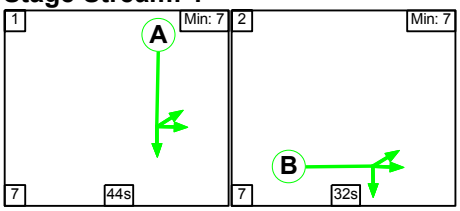
11/2	761	761	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1061	1061	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1315	1315	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	515	515	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	886	840	-	-	-	7.5	30.3	-	37.8	153.6	23.3	30.3	53.6
14/2	882	840	-	-	-	7.3	28.7	-	36.0	147.0	23.1	28.7	51.8
14/3	850	840	-	-	-	6.0	17.3	-	23.3	98.7	21.5	17.3	38.8
15/1	228	228	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	519	519	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	882	882	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	843	843	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-11.1	Total Delay for Signalled Lanes (pcuHr):	55.09	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	-57.6	Total Delay for Signalled Lanes (pcuHr):	170.26	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-51.9	Total Delay for Signalled Lanes (pcuHr):	275.49	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	-17.2	Total Delay for Signalled Lanes (pcuHr):	119.44	Cycle Time (s): 90
	PRC Over All Lanes (%):	-119.3	Total Delay Over All Lanes(pcuHr):	756.58	

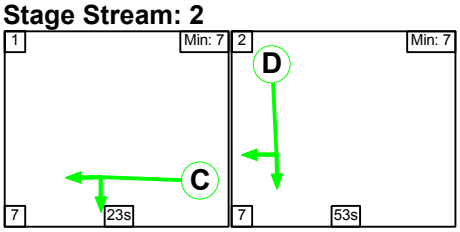
Full Input Data And Results
Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

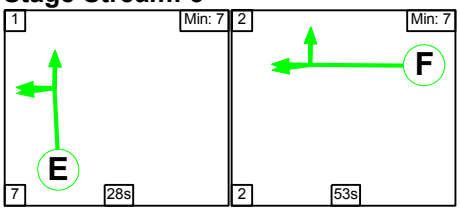
Stage Stream: 1



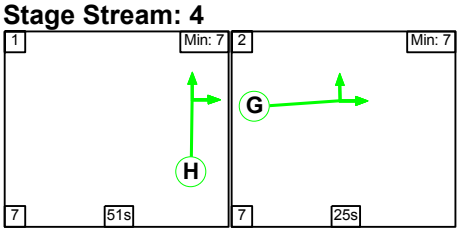
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	44	32
Change Point	45	6

Stage Stream: 2

Stage	1	2
Duration	23	53
Change Point	22	52

Stage Stream: 3

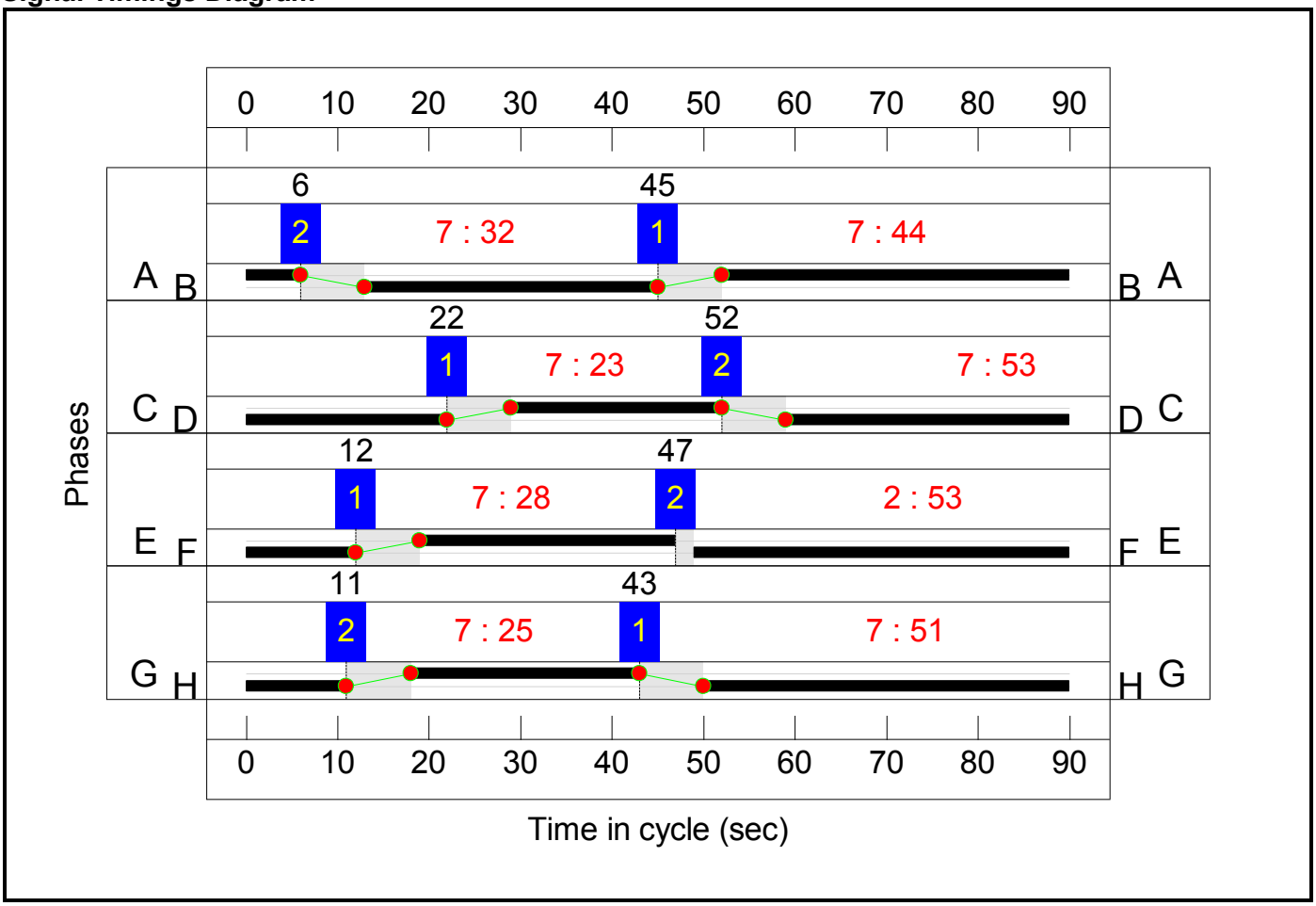
Stage	1	2
Duration	28	53
Change Point	12	47

Stage Stream: 4

Stage	1	2
Duration	51	25
Change Point	43	11

Full Input Data And Results

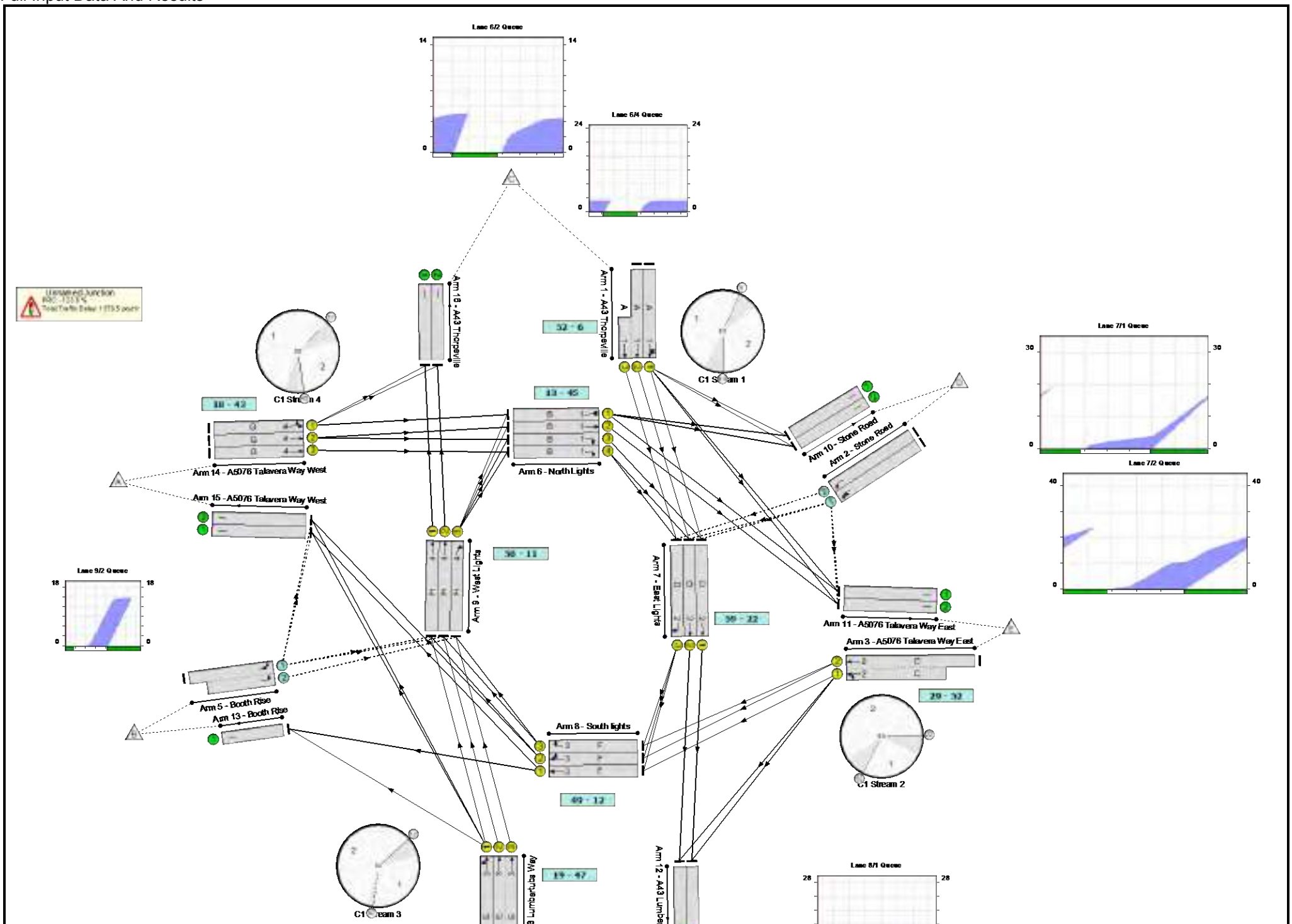
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**201.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**201.4%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	44	-	948	1800	900	105.3%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	44	-	1156	1800:1800	551+547	105.2 : 105.2%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	144	2015	158	91.2%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	103	2155	152	67.6%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	23	-	1583	1800:1800	480+330	195.4 : 195.4%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	28	-	1168	1800	580	201.4%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	28	-	1349	1800:1800	580+202	172.4 : 172.4%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	528	2065:2205	473+453	54.5 : 59.6%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	32	-	666	1900	697	69.1%
6/2	North Lights Ahead	U	1	N/A	B		1	32	-	633	1900	697	77.9%
6/3	North Lights Right	U	1	N/A	B		1	32	-	245	1900	697	31.1%
6/4	North Lights Right	U	1	N/A	B		1	32	-	600	1900	697	74.7%
7/1	East Lights Ahead	U	2	N/A	D		1	53	-	1148	1900	1140	94.5%
7/2	East Lights Ahead	U	2	N/A	D		1	53	-	1173	1900	1140	93.6%
7/3	East Lights Right	U	2	N/A	D		1	53	-	694	1900	1140	58.2%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	53	-	1031	1900	1140	63.3%
8/2	South lights Right Ahead	U	3	N/A	F		1	53	-	1095	1900	1140	59.0%
8/3	South lights Right	U	3	N/A	F		1	53	-	98	1900	1140	4.6%
9/1	West Lights Ahead	U	4	N/A	H		1	51	-	394	1900	1098	28.6%
9/2	West Lights Ahead	U	4	N/A	H		1	51	-	1008	1900	1098	53.2%
9/3	West Lights Right	U	4	N/A	H		1	51	-	709	1900	1098	47.4%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	208	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	205	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	378	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	689	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1175	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1199	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	791	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	25	-	604	1800	520	116.2%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	603	1800	520	116.0%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	599	1800	520	115.2%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	889	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	1478	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	580	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1193	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1009**	**294**	**0**	**183.8**	**1194.6**	**0.0**	**1378.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1009**	**294**	**0**	**183.8**	**1194.6**	**0.0**	**1378.5**	**-**	**-**	**-**	**-**
1/1	948	900	-	-	-	8.5	31.5	-	40.0	152.0	24.9	31.5	56.4
1/2+1/3	1156	1099	-	-	-	9.3	36.6	-	45.9	143.1	27.0	36.6	63.6
2/1	144	144	24	120	0	0.8	3.5	-	4.2	106.2	3.5	3.5	7.0
2/2	103	103	15	88	0	0.4	1.0	-	1.4	50.6	1.4	1.0	2.4
3/2+3/1	1583	810	-	-	-	43.7	387.5	-	431.2	980.6	55.9	387.5	443.4
4/1	1168	580	-	-	-	35.3	295.0	-	330.3	1018.0	45.6	295.0	340.6
4/2+4/3	1349	782	-	-	-	31.1	284.5	-	315.6	842.2	48.5	284.5	332.9
5/1+5/2	528	528	970	86	0	0.6	0.7	-	1.2	8.3	2.5	0.7	3.1
6/1	482	482	-	-	-	4.1	1.1	-	5.2	38.9	9.0	1.1	10.1
6/2	542	542	-	-	-	2.6	1.7	-	4.3	28.8	5.1	1.7	6.8
6/3	216	216	-	-	-	1.5	0.2	-	1.7	28.6	3.9	0.2	4.2
6/4	521	521	-	-	-	1.9	1.5	-	3.4	23.3	3.1	1.5	4.5
7/1	1077	1077	-	-	-	1.8	7.0	-	8.8	29.4	20.1	7.0	27.2
7/2	1067	1067	-	-	-	5.2	6.2	-	11.5	38.7	23.9	6.2	30.1
7/3	663	663	-	-	-	0.3	0.7	-	1.0	5.6	6.5	0.7	7.2
8/1	722	722	-	-	-	2.0	0.9	-	2.9	14.5	12.3	0.9	13.2
8/2	672	672	-	-	-	2.0	0.7	-	2.7	14.4	13.9	0.7	14.6
8/3	52	52	-	-	-	0.1	0.0	-	0.1	6.0	0.7	0.0	0.7
9/1	314	314	-	-	-	0.5	0.2	-	0.7	7.8	2.7	0.2	2.9
9/2	584	584	-	-	-	3.6	0.6	-	4.2	25.6	14.6	0.6	15.2
9/3	520	520	-	-	-	2.4	0.5	-	2.8	19.4	9.9	0.5	10.4
10/1	145	145	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	143	143	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/2	597	597	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1091	1091	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1080	1080	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	541	541	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	604	520	-	-	-	8.8	45.3	-	54.1	322.7	17.2	45.3	62.5
14/2	603	520	-	-	-	8.8	44.9	-	53.6	320.1	17.1	44.9	62.0
14/3	599	520	-	-	-	8.6	43.0	-	51.5	309.8	17.0	43.0	59.9
15/1	511	511	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	474	474	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	743	743	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

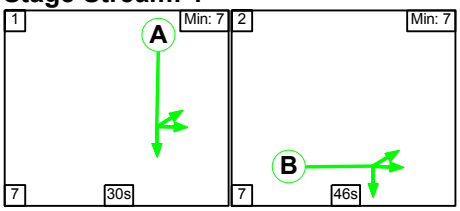
C1	Stream: 1 PRC for Signalled Lanes (%):	-17.0	Total Delay for Signalled Lanes (pcuHr):	100.60	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-117.1	Total Delay for Signalled Lanes (pcuHr):	452.45	Cycle Time (s):	90		
C1	Stream: 3 PRC for Signalled Lanes (%):	-123.8	Total Delay for Signalled Lanes (pcuHr):	651.54	Cycle Time (s):	90		
C1	Stream: 4 PRC for Signalled Lanes (%):	-29.1	Total Delay for Signalled Lanes (pcuHr):	166.95	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-123.8	Total Delay Over All Lanes(pcuHr):	1378.46				

Full Input Data And Results

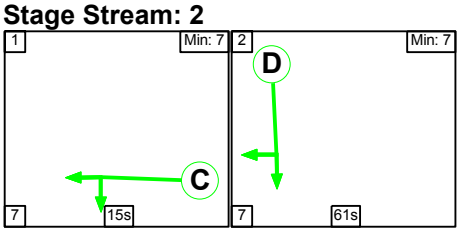
Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

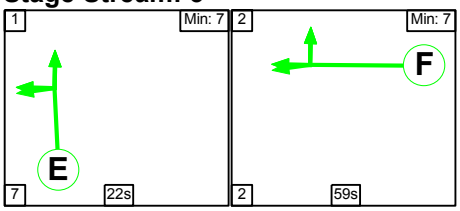
Stage Stream: 1



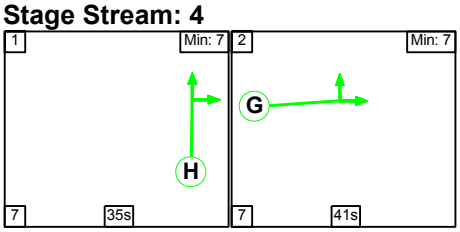
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	30	46
Change Point	54	1

Stage Stream: 2

Stage	1	2
Duration	15	61
Change Point	35	57

Stage Stream: 3

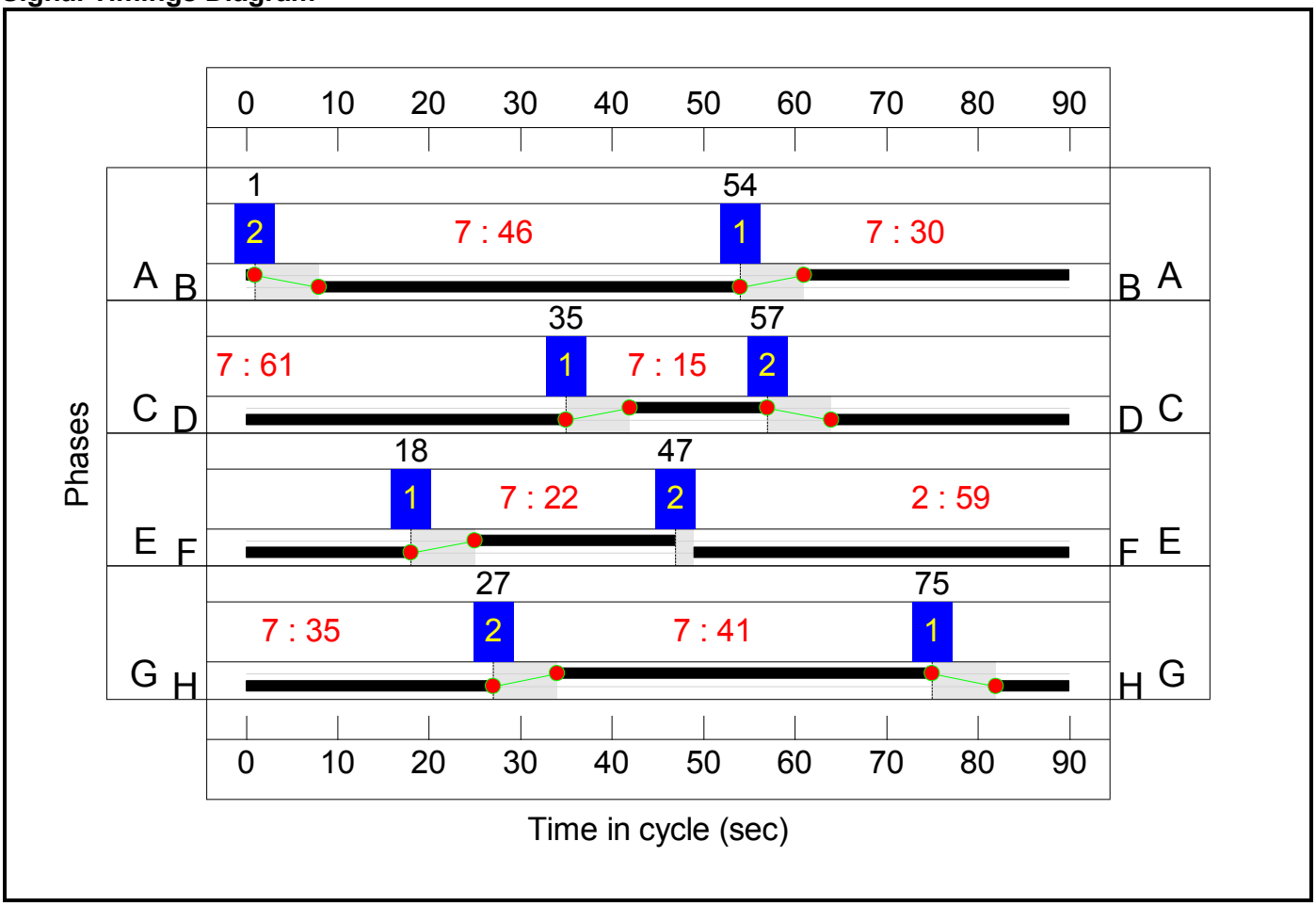
Stage	1	2
Duration	22	59
Change Point	18	47

Stage Stream: 4

Stage	1	2
Duration	35	41
Change Point	75	27

Full Input Data And Results

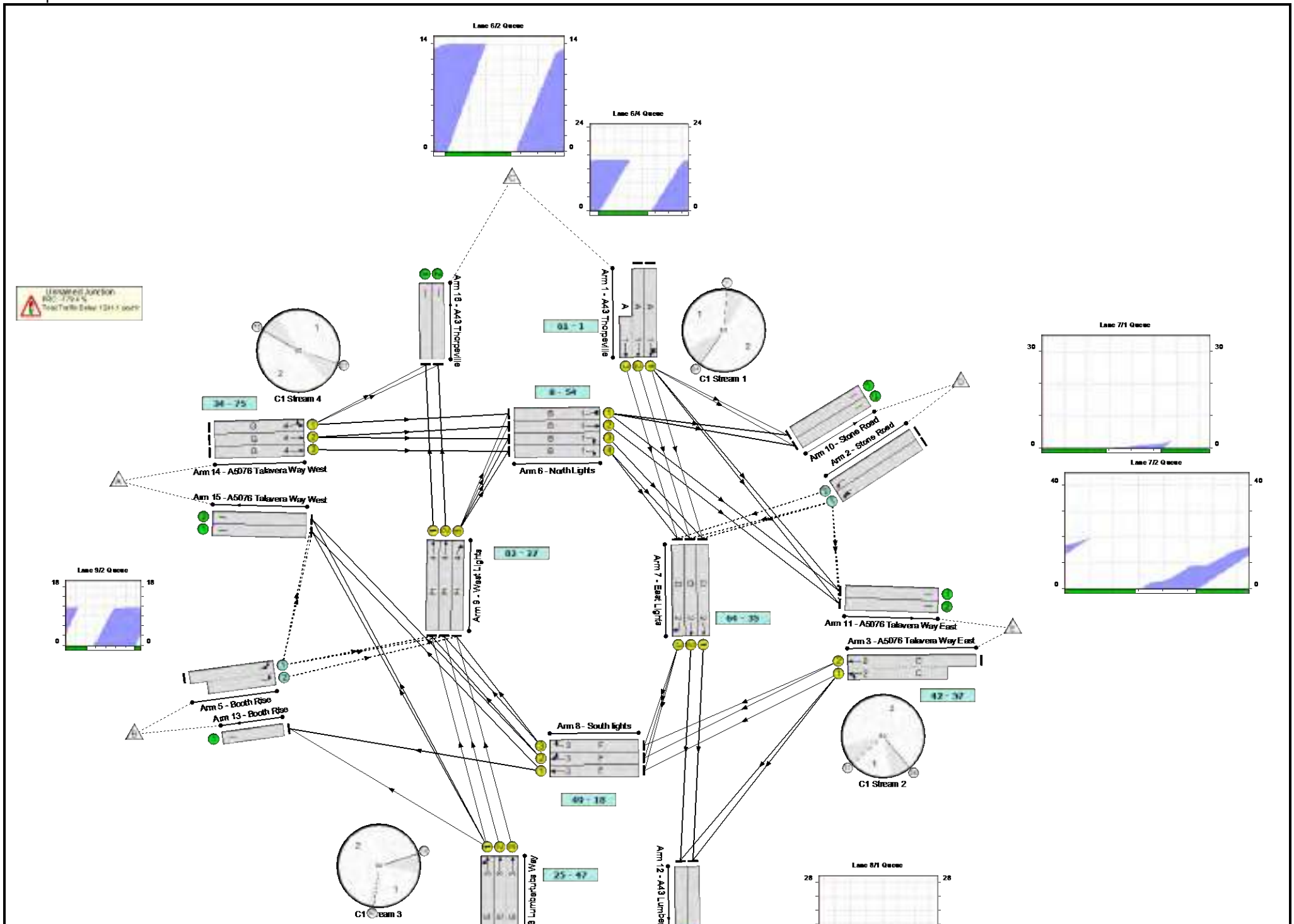
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**251.5%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**251.5%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	30	-	749	1800	620	120.8%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	30	-	960	1800:1800	417+389	119.1 : 119.1%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	446	2015	177	251.5%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	264	2155	164	161.1%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	15	-	1162	1800:1800	316+320	169.5 : 195.9%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	22	-	774	1800	460	168.3%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	22	-	999	1800:1800	460+136	167.6 : 167.6%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	646	2065:2205	431+600	62.6 : 62.6%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	46	-	846	1900	992	77.6%
6/2	North Lights Ahead	U	1	N/A	B		1	46	-	848	1900	992	80.5%
6/3	North Lights Right	U	1	N/A	B		1	46	-	166	1900	992	16.2%
6/4	North Lights Right	U	1	N/A	B		1	46	-	854	1900	992	84.7%
7/1	East Lights Ahead	U	2	N/A	D		1	61	-	1074	1900	1309	61.2%
7/2	East Lights Ahead	U	2	N/A	D		1	61	-	1344	1900	1309	95.3%
7/3	East Lights Right	U	2	N/A	D		1	61	-	740	1900	1309	43.2%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	59	-	898	1900	1267	46.5%
8/2	South lights Right Ahead	U	3	N/A	F		1	59	-	767	1900	1267	38.8%
8/3	South lights Right	U	3	N/A	F		1	59	-	39	1900	1267	1.9%
9/1	West Lights Ahead	U	4	N/A	H		1	35	-	665	1900	760	65.4%
9/2	West Lights Ahead	U	4	N/A	H		1	35	-	790	1900	760	62.1%
9/3	West Lights Right	U	4	N/A	H		1	35	-	624	1900	760	73.2%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	92	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	91	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	804	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	988	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1173	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1443	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	997	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	41	-	887	1800	840	105.6%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	884	1800	840	105.2%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	854	1800	840	101.7%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	853	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	933	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1057	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1236**	**397**	**0**	**183.2**	**1058.0**	**0.0**	**1241.1**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1236**	**397**	**0**	**183.2**	**1058.0**	**0.0**	**1241.1**	**-**	**-**	**-**	**-**
1/1	749	620	-	-	-	13.0	67.3	-	80.3	386.0	24.3	67.3	91.6
1/2+1/3	960	806	-	-	-	15.2	79.8	-	95.1	356.6	25.7	79.8	105.5
2/1	446	177	44	133	0	16.6	135.2	-	151.8	1225.3	32.0	135.2	167.1
2/2	264	164	30	133	0	6.7	51.4	-	58.1	791.7	18.9	51.4	70.3
3/2+3/1	1162	640	-	-	-	30.9	264.3	-	295.2	914.6	37.6	264.3	301.8
4/1	774	460	-	-	-	19.6	158.2	-	177.8	827.0	27.2	158.2	185.4
4/2+4/3	999	628	-	-	-	22.1	202.7	-	224.8	810.1	34.6	202.7	237.4
5/1+5/2	646	646	1161	131	0	0.9	0.8	-	1.7	9.5	5.4	0.8	6.3
6/1	770	770	-	-	-	4.4	1.7	-	6.1	28.6	16.7	1.7	18.4
6/2	799	799	-	-	-	6.3	2.0	-	8.3	37.6	14.0	2.0	16.1
6/3	161	161	-	-	-	0.4	0.1	-	0.5	11.8	1.9	0.1	2.0
6/4	840	840	-	-	-	6.8	2.7	-	9.5	40.6	14.5	2.7	17.2
7/1	801	801	-	-	-	0.2	0.8	-	1.0	4.6	2.2	0.8	3.0
7/2	1247	1247	-	-	-	3.3	8.0	-	11.3	32.7	19.2	8.0	27.2
7/3	565	565	-	-	-	0.2	0.4	-	0.6	3.8	3.7	0.4	4.1
8/1	589	589	-	-	-	0.1	0.4	-	0.6	3.4	0.8	0.4	1.2
8/2	492	492	-	-	-	0.1	0.3	-	0.4	3.0	0.7	0.3	1.0
8/3	24	24	-	-	-	0.0	0.0	-	0.0	2.8	0.0	0.0	0.0
9/1	497	497	-	-	-	4.2	0.9	-	5.1	37.2	11.2	0.9	12.1
9/2	472	472	-	-	-	6.3	0.8	-	7.1	54.0	11.7	0.8	12.5
9/3	556	556	-	-	-	4.6	1.3	-	5.9	38.3	12.5	1.3	13.9
10/1	78	78	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	77	77	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	692	692	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

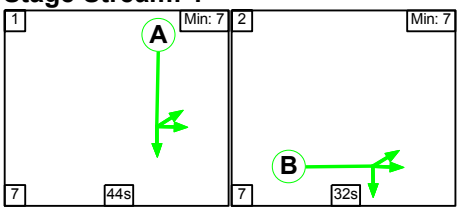
11/2	875	875	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	852	852	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1298	1298	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	648	648	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	887	840	-	-	-	7.5	30.7	-	38.2	155.2	23.4	30.7	54.1
14/2	884	840	-	-	-	7.4	29.5	-	36.9	150.3	23.2	29.5	52.7
14/3	854	840	-	-	-	6.2	18.5	-	24.7	104.1	21.7	18.5	40.2
15/1	120	120	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	546	546	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	751	751	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	725	725	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-34.2	Total Delay for Signalled Lanes (pcuHr):	199.85	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-117.7	Total Delay for Signalled Lanes (pcuHr):	308.16	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-87.0	Total Delay for Signalled Lanes (pcuHr):	403.60	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	-17.3	Total Delay for Signalled Lanes (pcuHr):	117.96	Cycle Time (s):	90
	PRC Over All Lanes (%):	-179.4	Total Delay Over All Lanes(pcuHr):	1241.13		

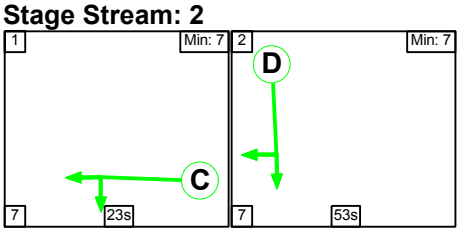
Full Input Data And Results
Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

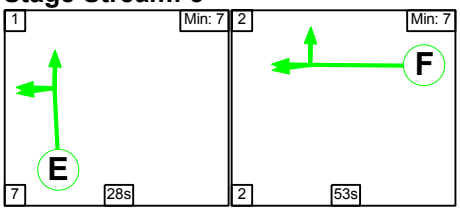
Stage Stream: 1



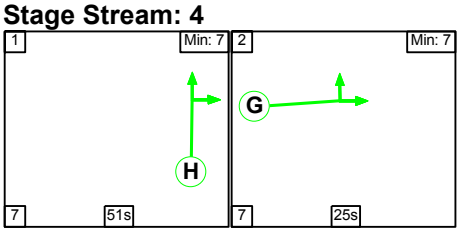
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	44	32
Change Point	45	6

Stage Stream: 2

Stage	1	2
Duration	23	53
Change Point	22	52

Stage Stream: 3

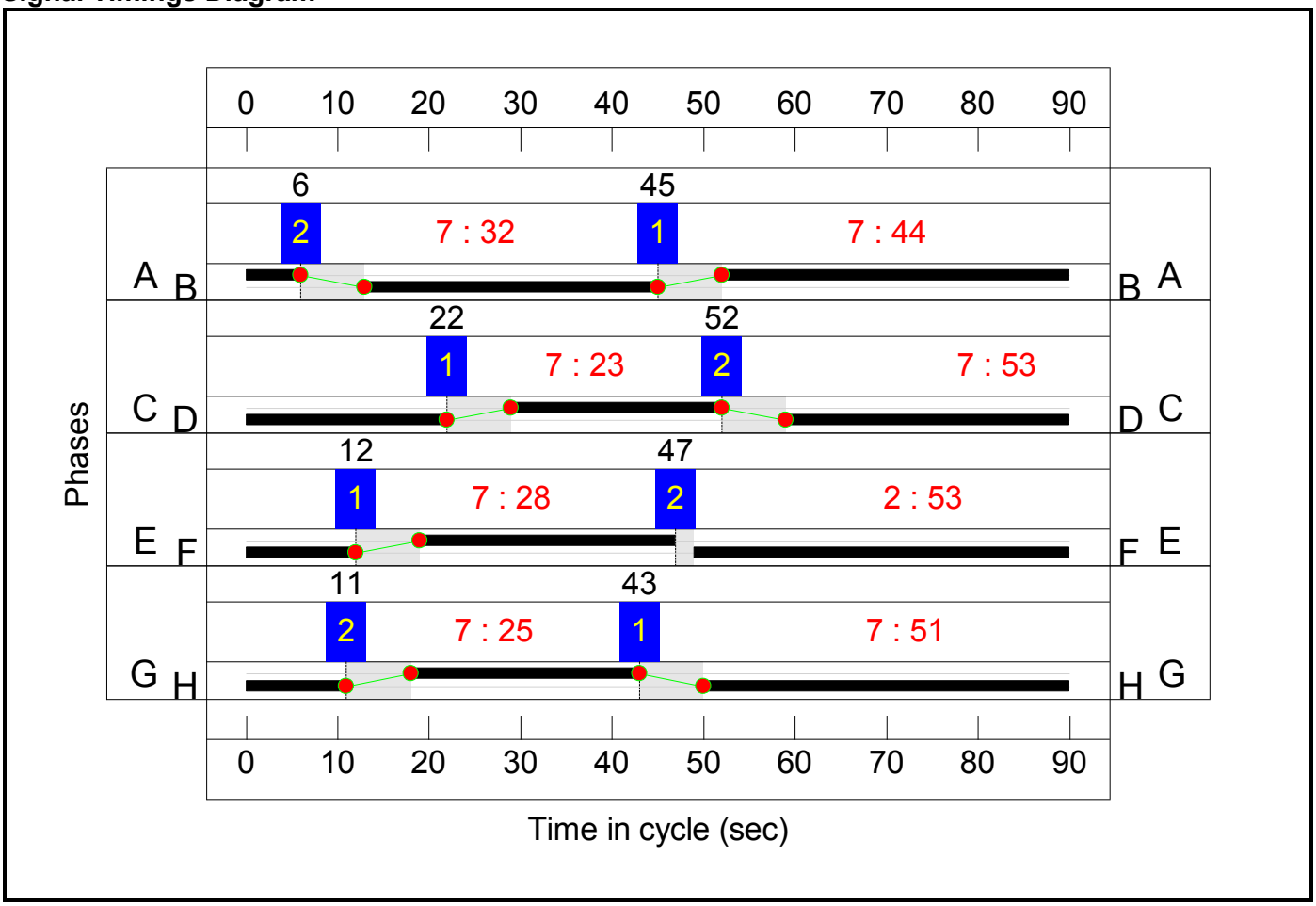
Stage	1	2
Duration	28	53
Change Point	12	47

Stage Stream: 4

Stage	1	2
Duration	51	25
Change Point	43	11

Full Input Data And Results

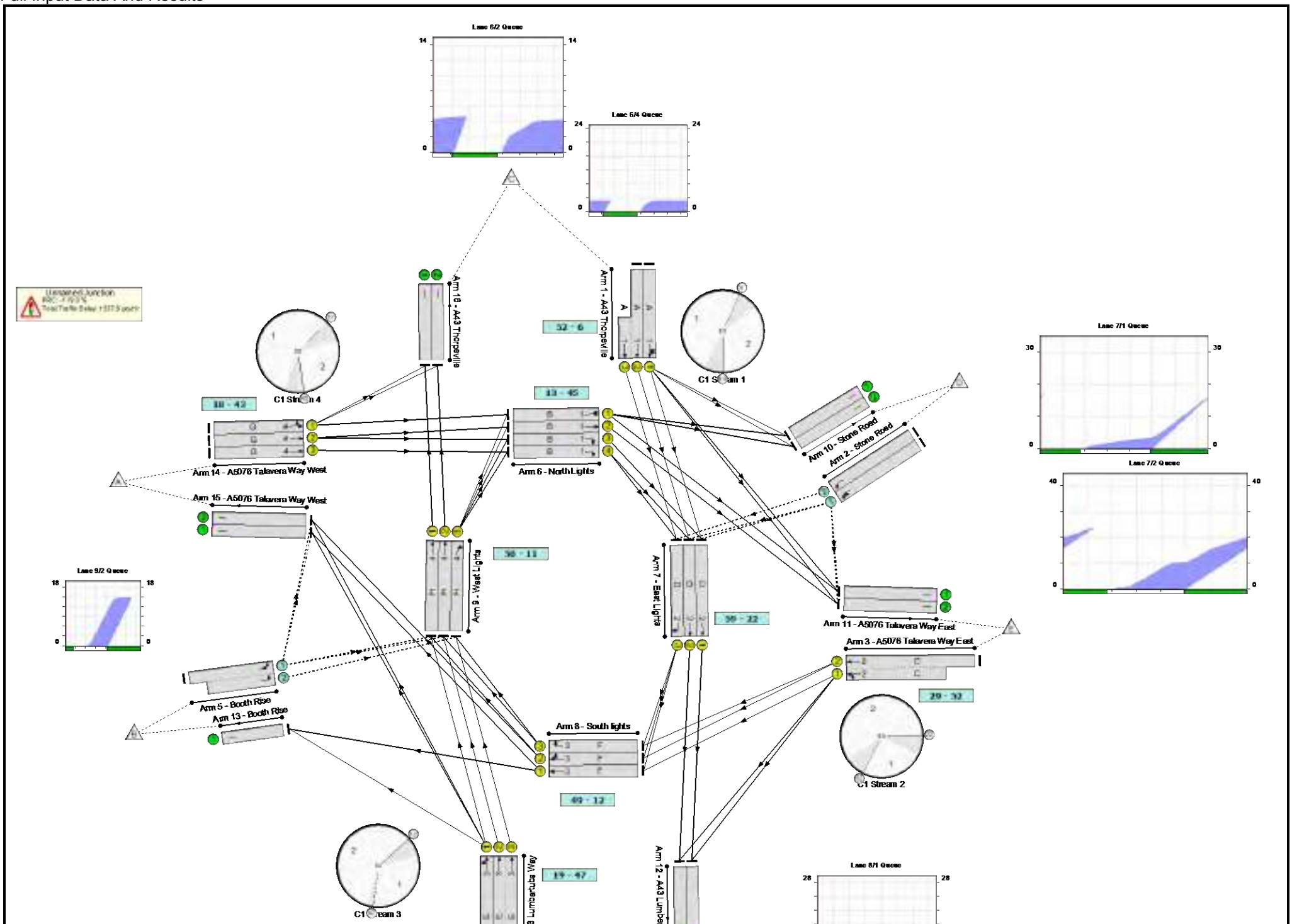
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**197.1%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**197.1%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	44	-	944	1800	900	104.9%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	44	-	1146	1800:1800	550+550	104.2 : 104.2%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	136	2015	163	83.6%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	117	2155	160	73.0%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	23	-	1576	1800:1800	480+344	191.3 : 191.3%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	28	-	1143	1800	580	197.1%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	28	-	1292	1800:1800	580+191	167.6 : 167.6%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	508	2065:2205	469+387	62.7 : 55.3%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	32	-	624	1900	697	65.7%
6/2	North Lights Ahead	U	1	N/A	B		1	32	-	629	1900	697	74.7%
6/3	North Lights Right	U	1	N/A	B		1	32	-	237	1900	697	29.7%
6/4	North Lights Right	U	1	N/A	B		1	32	-	614	1900	697	74.9%
7/1	East Lights Ahead	U	2	N/A	D		1	53	-	1123	1900	1140	92.5%
7/2	East Lights Ahead	U	2	N/A	D		1	53	-	1175	1900	1140	93.2%
7/3	East Lights Right	U	2	N/A	D		1	53	-	705	1900	1140	59.6%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	53	-	1034	1900	1140	63.7%
8/2	South lights Right Ahead	U	3	N/A	F		1	53	-	1081	1900	1140	60.4%
8/3	South lights Right	U	3	N/A	F		1	53	-	119	1900	1140	5.6%
9/1	West Lights Ahead	U	4	N/A	H		1	51	-	397	1900	1098	30.5%
9/2	West Lights Ahead	U	4	N/A	H		1	51	-	1003	1900	1098	54.3%
9/3	West Lights Right	U	4	N/A	H		1	51	-	622	1900	1098	41.3%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	207	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	205	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	344	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	688	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1147	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1198	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	765	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	25	-	618	1800	520	118.8%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	617	1800	520	118.7%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	25	-	611	1800	520	117.5%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	890	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	1500	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	579	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1185	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**965**	**304**	**0**	**179.3**	**1158.4**	**0.0**	**1337.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**965**	**304**	**0**	**179.3**	**1158.4**	**0.0**	**1337.8**	**-**	**-**	**-**	**-**
1/1	944	900	-	-	-	8.3	29.9	-	38.2	145.5	24.7	29.9	54.6
1/2+1/3	1146	1100	-	-	-	8.7	32.0	-	40.6	127.6	26.4	32.0	58.4
2/1	136	136	29	107	0	0.6	2.2	-	2.8	75.1	2.3	2.2	4.5
2/2	117	117	16	101	0	0.5	1.3	-	1.8	55.2	1.6	1.3	2.9
3/2+3/1	1576	824	-	-	-	42.8	377.0	-	419.9	959.1	54.9	377.0	431.9
4/1	1143	580	-	-	-	33.7	282.5	-	316.2	996.1	44.0	282.5	326.5
4/2+4/3	1292	771	-	-	-	28.9	261.8	-	290.7	810.0	46.0	261.8	307.7
5/1+5/2	508	508	921	95	0	0.5	0.7	-	1.3	8.9	5.1	0.7	5.8
6/1	457	457	-	-	-	3.7	0.9	-	4.6	36.6	7.7	0.9	8.6
6/2	521	521	-	-	-	2.5	1.5	-	4.0	27.5	4.6	1.5	6.1
6/3	207	207	-	-	-	1.4	0.2	-	1.6	28.3	3.6	0.2	3.8
6/4	522	522	-	-	-	1.9	1.5	-	3.4	23.5	3.1	1.5	4.6
7/1	1054	1054	-	-	-	1.4	5.4	-	6.9	23.5	17.5	5.4	22.9
7/2	1062	1062	-	-	-	5.2	5.9	-	11.1	37.7	23.8	5.9	29.7
7/3	680	680	-	-	-	0.4	0.7	-	1.1	5.9	6.9	0.7	7.7
8/1	726	726	-	-	-	2.1	0.9	-	3.0	14.7	12.8	0.9	13.7
8/2	689	689	-	-	-	2.0	0.8	-	2.8	14.6	14.3	0.8	15.0
8/3	64	64	-	-	-	0.1	0.0	-	0.1	5.9	0.9	0.0	0.9
9/1	335	335	-	-	-	0.6	0.2	-	0.8	8.4	2.9	0.2	3.1
9/2	596	596	-	-	-	3.7	0.6	-	4.2	25.7	14.9	0.6	15.5
9/3	453	453	-	-	-	2.1	0.4	-	2.4	19.1	8.8	0.4	9.1
10/1	146	146	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	144	144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	295	295	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

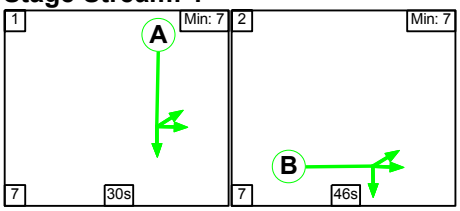
11/2	579	579	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1066	1066	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1074	1074	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	535	535	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	618	520	-	-	-	9.5	52.0	-	61.5	358.1	17.9	52.0	69.9
14/2	617	520	-	-	-	9.5	51.5	-	61.0	355.6	17.9	51.5	69.3
14/3	611	520	-	-	-	9.2	48.6	-	57.8	340.6	17.5	48.6	66.2
15/1	514	514	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	488	488	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	749	749	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-16.5	Total Delay for Signalled Lanes (pcuHr):	92.44	Cycle Time (s):	90		
C1	Stream: 2 PRC for Signalled Lanes (%):	-112.5	Total Delay for Signalled Lanes (pcuHr):	438.96	Cycle Time (s):	90		
C1	Stream: 3 PRC for Signalled Lanes (%):	-119.0	Total Delay for Signalled Lanes (pcuHr):	612.83	Cycle Time (s):	90		
C1	Stream: 4 PRC for Signalled Lanes (%):	-32.1	Total Delay for Signalled Lanes (pcuHr):	187.67	Cycle Time (s):	90		
	PRC Over All Lanes (%):	-119.0	Total Delay Over All Lanes(pcuHr):	1337.77				

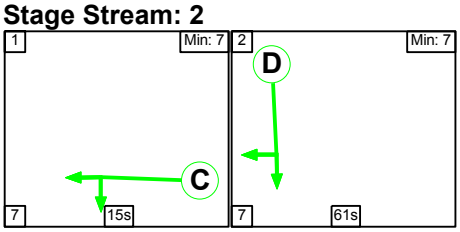
Full Input Data And Results
Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

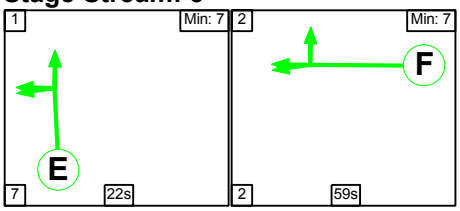
Stage Stream: 1



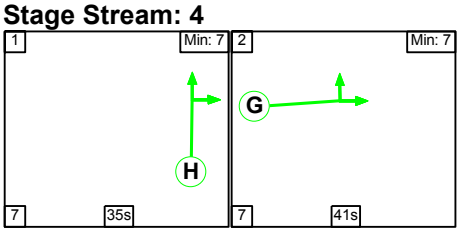
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	30	46
Change Point	54	1

Stage Stream: 2

Stage	1	2
Duration	15	61
Change Point	35	57

Stage Stream: 3

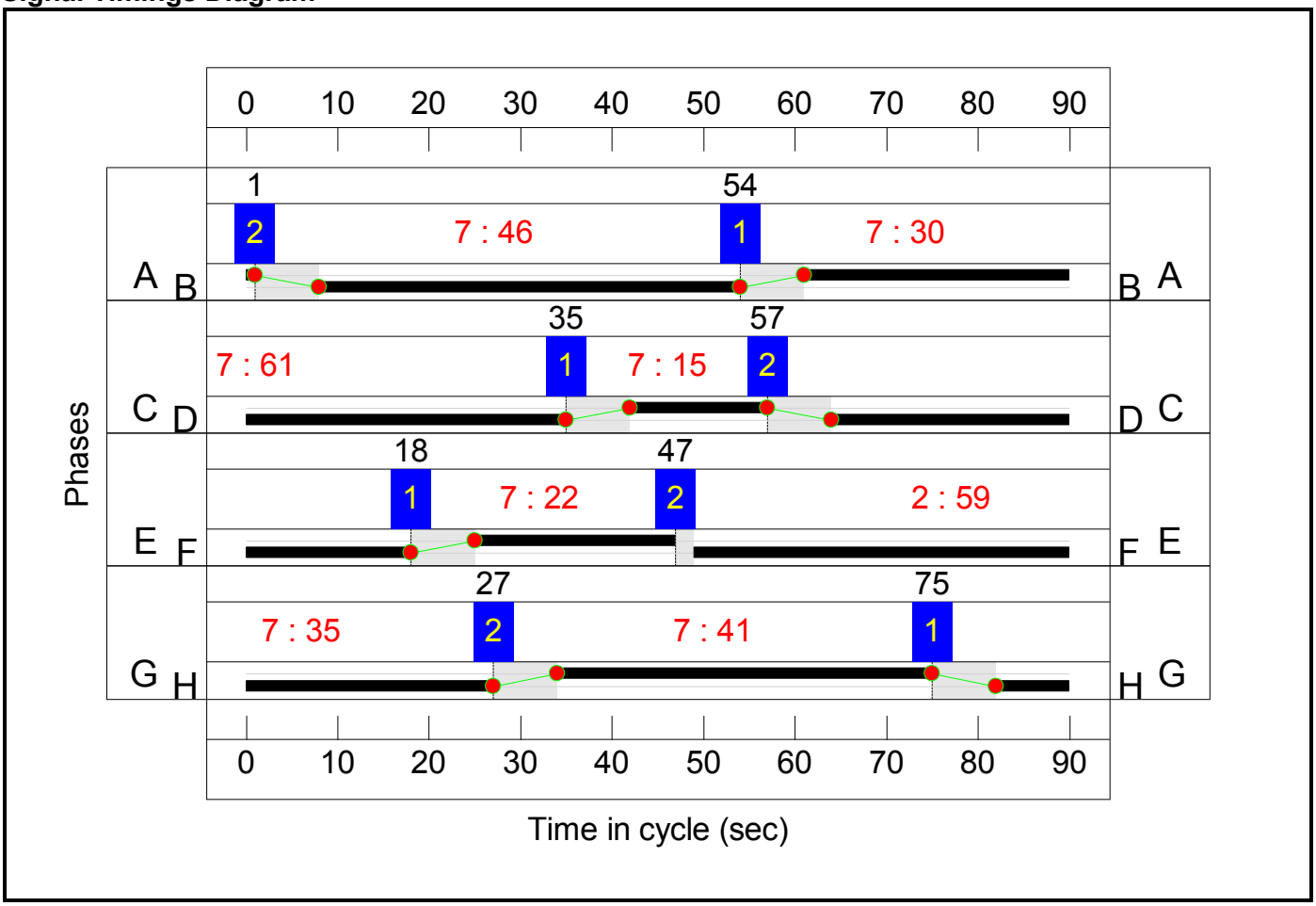
Stage	1	2
Duration	22	59
Change Point	18	47

Stage Stream: 4

Stage	1	2
Duration	35	41
Change Point	75	27

Full Input Data And Results

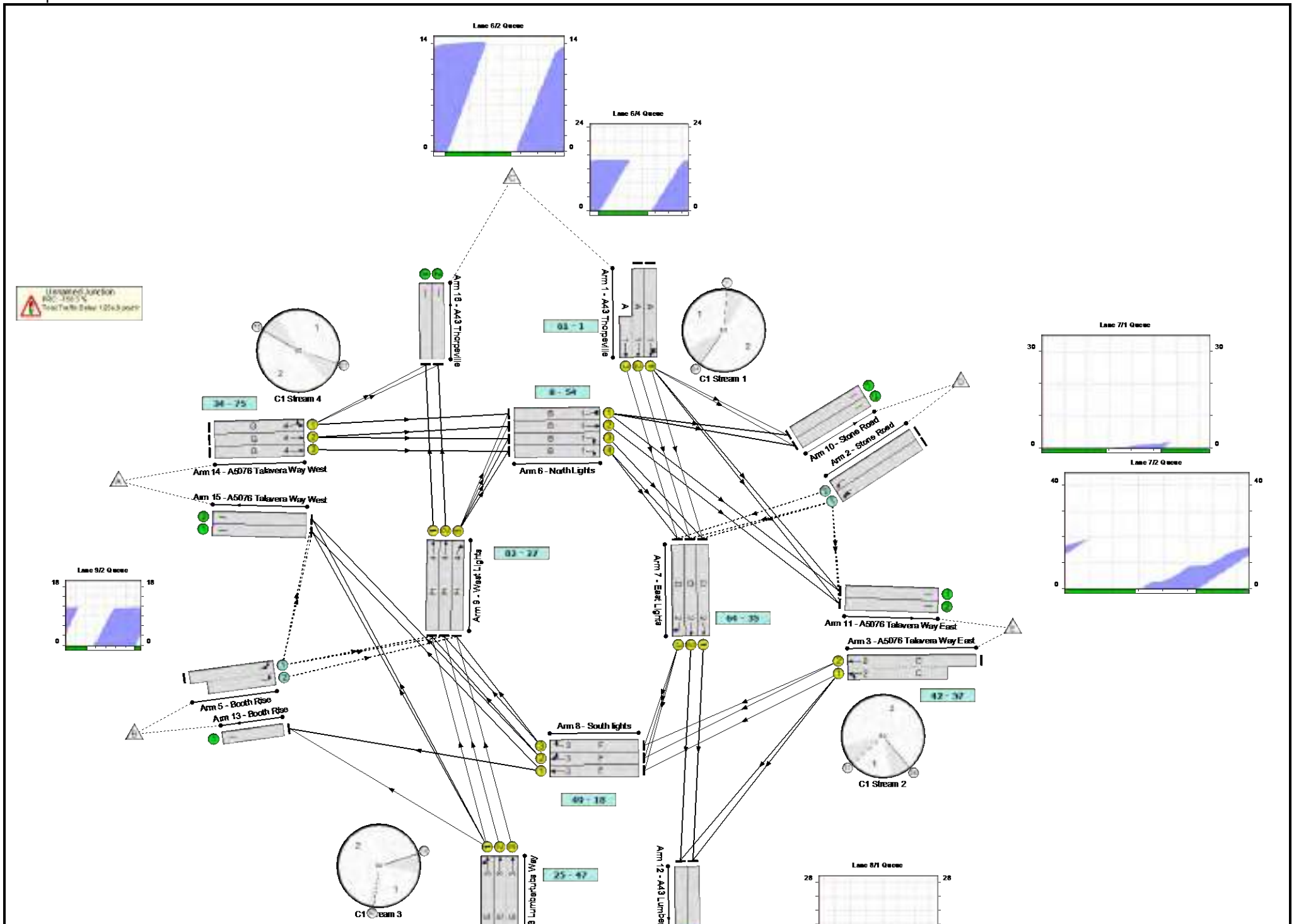
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**225.3%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**225.3%**
1/1	A43 Thorpeville Ahead Left Left2	U	1	N/A	A		1	30	-	735	1800	620	118.5%
1/2+1/3	A43 Thorpeville Ahead	U	1	N/A	A		1	30	-	959	1800:1800	410+409	117.0 : 117.0%
2/1	Stone Road Left U-Turn	O	N/A	N/A	-		-	-	-	430	2015	191	225.3%
2/2	Stone Road Left	O	N/A	N/A	-		-	-	-	280	2155	178	157.0%
3/2+3/1	A5076 Talavera Way East Ahead Left	U	2	N/A	C		1	15	-	1187	1800:1800	320+320	176.3 : 194.7%
4/1	A43 Lumbertubs Way Ahead Left Left2	U	3	N/A	E		1	22	-	806	1800	460	175.2%
4/2+4/3	A43 Lumbertubs Way Ahead	U	3	N/A	E		1	22	-	1029	1800:1800	460+129	174.6 : 174.6%
5/1+5/2	Booth Rise Left U-Turn	O	N/A	N/A	-		-	-	-	594	2065:2205	370+603	61.0 : 61.0%
6/1	North Lights Ahead Ahead2	U	1	N/A	B		1	46	-	814	1900	992	71.9%
6/2	North Lights Ahead	U	1	N/A	B		1	46	-	860	1900	992	81.5%
6/3	North Lights Right	U	1	N/A	B		1	46	-	179	1900	992	17.0%
6/4	North Lights Right	U	1	N/A	B		1	46	-	843	1900	992	84.7%
7/1	East Lights Ahead	U	2	N/A	D		1	61	-	1061	1900	1309	62.3%
7/2	East Lights Ahead	U	2	N/A	D		1	61	-	1321	1900	1309	94.9%
7/3	East Lights Right	U	2	N/A	D		1	61	-	771	1900	1309	45.8%

Full Input Data And Results

8/1	South lights Ahead Ahead2	U	3	N/A	F		1	59	-	929	1900	1267	48.9%
8/2	South lights Right Ahead	U	3	N/A	F		1	59	-	775	1900	1267	38.4%
8/3	South lights Right	U	3	N/A	F		1	59	-	64	1900	1267	2.9%
9/1	West Lights Ahead	U	4	N/A	H		1	35	-	626	1900	760	58.9%
9/2	West Lights Ahead	U	4	N/A	H		1	35	-	812	1900	760	61.2%
9/3	West Lights Right	U	4	N/A	H		1	35	-	649	1900	760	72.4%
10/1	Stone Road	U	N/A	N/A	-		-	-	-	91	Inf	Inf	0.0%
10/2	Stone Road	U	N/A	N/A	-		-	-	-	89	Inf	Inf	0.0%
11/1	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	771	Inf	Inf	0.0%
11/2	A5076 Talavera Way East	U	N/A	N/A	-		-	-	-	996	Inf	Inf	0.0%
12/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1156	Inf	Inf	0.0%
12/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1416	Inf	Inf	0.0%
13/1	Booth Rise	U	N/A	N/A	-		-	-	-	1038	Inf	Inf	0.0%
14/1	A5076 Talavera Way West Ahead Left	U	4	N/A	G		1	41	-	887	1800	840	105.6%
14/2	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	887	1800	840	105.6%
14/3	A5076 Talavera Way West Ahead	U	4	N/A	G		1	41	-	843	1800	840	100.4%
15/1	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	212	Inf	Inf	0.0%
15/2	A5076 Talavera Way West	U	N/A	N/A	-		-	-	-	860	Inf	Inf	0.0%
16/1	A43 Thorpeville	U	N/A	N/A	-		-	-	-	911	Inf	Inf	0.0%
16/2	A43 Thorpeville	U	N/A	N/A	-		-	-	-	1097	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1167**	**390**	**0**	**182.7**	**1072.0**	**0.0**	**1254.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1167**	**390**	**0**	**182.7**	**1072.0**	**0.0**	**1254.8**	**-**	**-**	**-**	**-**
1/1	735	620	-	-	-	12.2	60.5	-	72.7	356.0	23.3	60.5	83.8
1/2+1/3	959	820	-	-	-	14.4	73.0	-	87.4	328.2	24.6	73.0	97.6
2/1	430	191	58	133	0	14.8	120.5	-	135.3	1132.7	30.8	120.5	151.3
2/2	280	178	45	133	0	6.7	52.2	-	58.9	757.4	20.1	52.2	72.3
3/2+3/1	1187	640	-	-	-	32.0	274.6	-	306.6	929.9	37.8	274.6	312.4
4/1	806	460	-	-	-	21.1	174.2	-	195.3	872.3	28.8	174.2	203.0
4/2+4/3	1029	611	-	-	-	23.9	220.9	-	244.8	856.4	36.8	220.9	257.7
5/1+5/2	594	594	1064	124	0	0.7	0.8	-	1.5	8.8	5.1	0.8	5.9
6/1	714	714	-	-	-	3.9	1.3	-	5.2	26.0	15.5	1.3	16.8
6/2	808	808	-	-	-	6.4	2.1	-	8.5	38.1	14.2	2.1	16.3
6/3	169	169	-	-	-	0.4	0.1	-	0.5	10.6	2.2	0.1	2.3
6/4	840	840	-	-	-	6.8	2.7	-	9.5	40.6	14.5	2.7	17.2
7/1	815	815	-	-	-	0.3	0.8	-	1.1	4.8	2.3	0.8	3.1
7/2	1243	1243	-	-	-	3.3	7.6	-	10.9	31.7	19.0	7.6	26.7
7/3	600	600	-	-	-	0.3	0.4	-	0.8	4.5	6.9	0.4	7.3
8/1	619	619	-	-	-	0.1	0.5	-	0.6	3.5	0.8	0.5	1.2
8/2	486	486	-	-	-	0.1	0.3	-	0.4	3.0	0.7	0.3	1.0
8/3	37	37	-	-	-	0.0	0.0	-	0.0	1.8	0.0	0.0	0.0
9/1	448	448	-	-	-	3.7	0.7	-	4.5	35.8	9.9	0.7	10.7
9/2	465	465	-	-	-	6.2	0.8	-	7.0	54.2	11.6	0.8	12.4
9/3	550	550	-	-	-	4.5	1.3	-	5.8	37.9	12.4	1.3	13.7
10/1	71	71	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	69	69	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	653	653	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/2	888	888	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1291	1291	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	682	682	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	887	840	-	-	-	7.5	30.7	-	38.2	155.2	23.4	30.7	54.1
14/2	887	840	-	-	-	7.5	30.7	-	38.2	155.2	23.4	30.7	54.1
14/3	843	840	-	-	-	5.7	15.3	-	21.0	89.7	21.2	15.3	36.4
15/1	126	126	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	536	536	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	735	735	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-31.7	Total Delay for Signalled Lanes (pcuHr):	183.80	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	-116.3	Total Delay for Signalled Lanes (pcuHr):	319.41	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-94.7	Total Delay for Signalled Lanes (pcuHr):	441.13	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	-17.3	Total Delay for Signalled Lanes (pcuHr):	114.76	Cycle Time (s): 90
	PRC Over All Lanes (%):	-150.3	Total Delay Over All Lanes(pcuHr):	1254.75	

Ashfield Land Management Limited and Gazeley GLP Northampton s.à.r.l. Rail Central

Job number: 1211-80

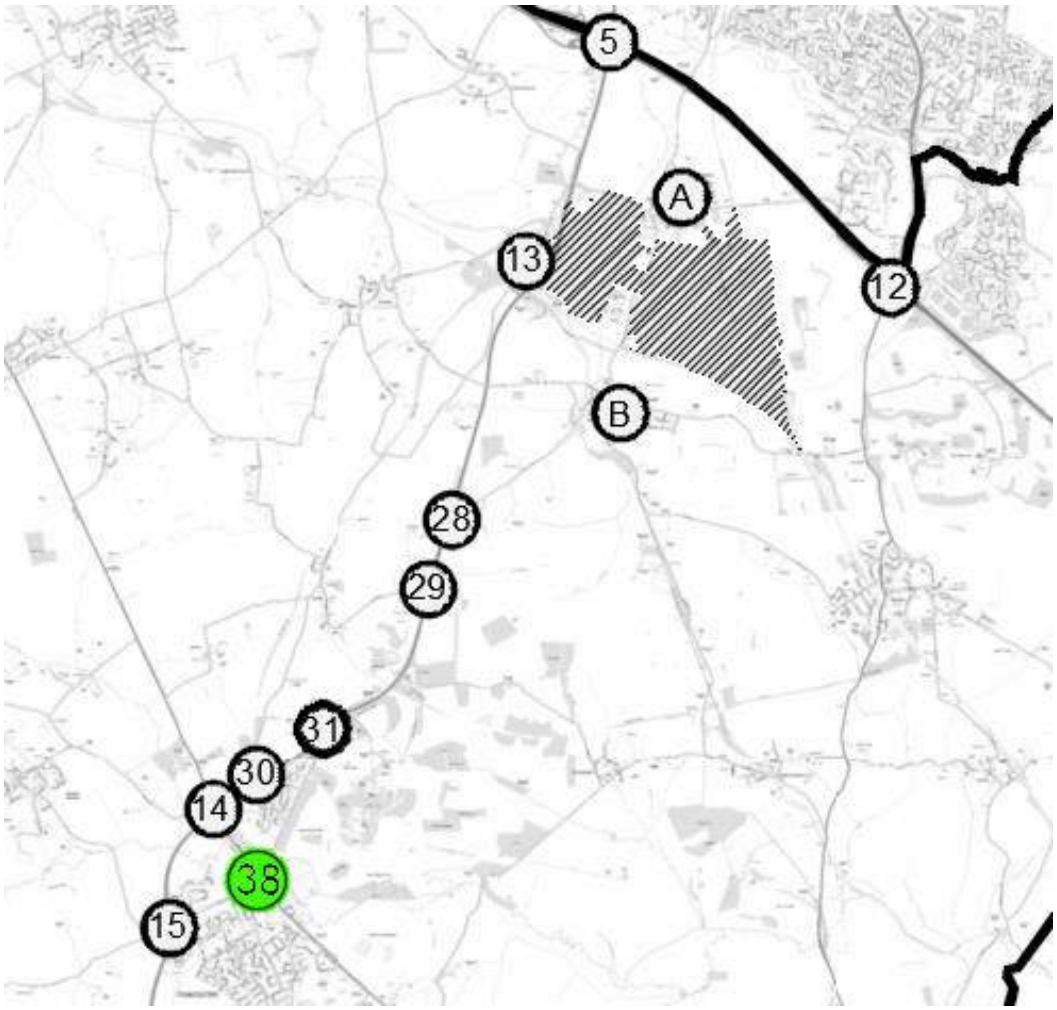
Technical Note No. 30

1 JUNCTION THIRTY EIGHT – WATLING STREET / BRACKLEY ROAD / NORTHAMPTON ROAD

Existing Junction Description

1.1 Junction Thirty Eight is a crossroads signalised junction, which the Saracens Head public house is situated. It connects Watling Street, Brackley Road and Northampton Road. The location of the junction, in its geographical context, can been seen on **Figure 1** below.

Figure 1 – Junction Thirty Eight Location Plan



Base Survey Flows and Forecast Flows

1.2 No base flows were provided by NCC, however based on previous NCC comments on other junctions, the standard set up of the model is considered appropriate and the validation of the model is deemed appropriate.

1.3 The forecast growth as determined from the Northamptonshire Strategic Transport Model (NSTM) has been applied to the baseline surveys for each of the future forecast scenarios.

1.4 This methodology has been agreed as appropriate with Northamptonshire County Council (NCC) and Highways England (HE). The baseline surveys and future forecast traffic flows are included at **Appendix A**.

The Standard Modelling Process for the Junction

1.5 The operation of the junction has been modelled using the Department for Transport (DfT) approved computer program 'LinSig 3'. The outputs from LINSIG relate to the Degree of Saturation (DoS), Practical Reserve Capacity (PRC), average queue length in 'Passenger Car Units' (PCUs) and delay in seconds per vehicle. The DoS gives the main indicator of the junction's performance, which is calculated from the maximum degree of saturation on a link. A junction is considered to be at theoretical capacity when the DoS is 100 percent or greater.

1.6 For all forecast scenarios, cycle time and signal timings have been optimised to provide the most efficient operation of the junction. This is considered an appropriate method to reflect how the junction would actually operate under MOVA or SCOOT, whereby cycle times and signal timings and optimised in real time, existing signal data is included at **Appendix B**.

Results of the Base Modelling

1.7 The results of the modelling for the existing junction layout, Shown in **Figure EL38** are summarised in **Table 2** and junction analysis results are included at **Appendix C**.

1.8 The names of each arm is as follows:

- Arm 1 – Watling Street
- Arm 2 – Northampton Road
- Arm 3 – Watling Street
- Arm 4 – Brackley Road

Table 1 – Existing Junction Modelling Results per Arm

Peak Period		AM				PM			
Arm		Arm 1	Arm 2	Arm 3	Arm 4	Arm 1	Arm 2	Arm 3	Arm 4
DoS (%)	2017	NA				NA			
	2021 DM	75.4	88.5	87.3	9.5	16.3	111.8	118.6	7.7
	2021 DS	74	95.5	86.7	13.3	17.9	113	119.9	13.1
	2031 DM	73.1	115.5	118.5	8.2	29.5	133.7	133.1	83.5
	2031 DS	101.9	130.2	133.2	63.4	69	146.6	145.7	146.6
Queue – MMQ (PCU)	2017	NA				NA			
	2021 DM	19	21	11	0	3	30	132	1
	2021 DS	19	27	12	1	3	32	136	1
	2031 DM	19	77	51	1	5	44	194	7
	2031 DS	35	138	61	12	9	66	207	50
Average Delay (sec/pcu)	2017	NA				NA			
	2021 DM	37.2	60.7	79.8	49.9	11.2	304.1	346.7	53.9
	2021 DS	36.5	81.6	76.6	52.6	11.3	318.7	365.4	54.3
	2031 DM	33.9	322.4	377.3	35.4	9.9	512.3	524.9	112.2
	2031 DS	127.3	509.6	555	42.4	17.5	685.6	653	706

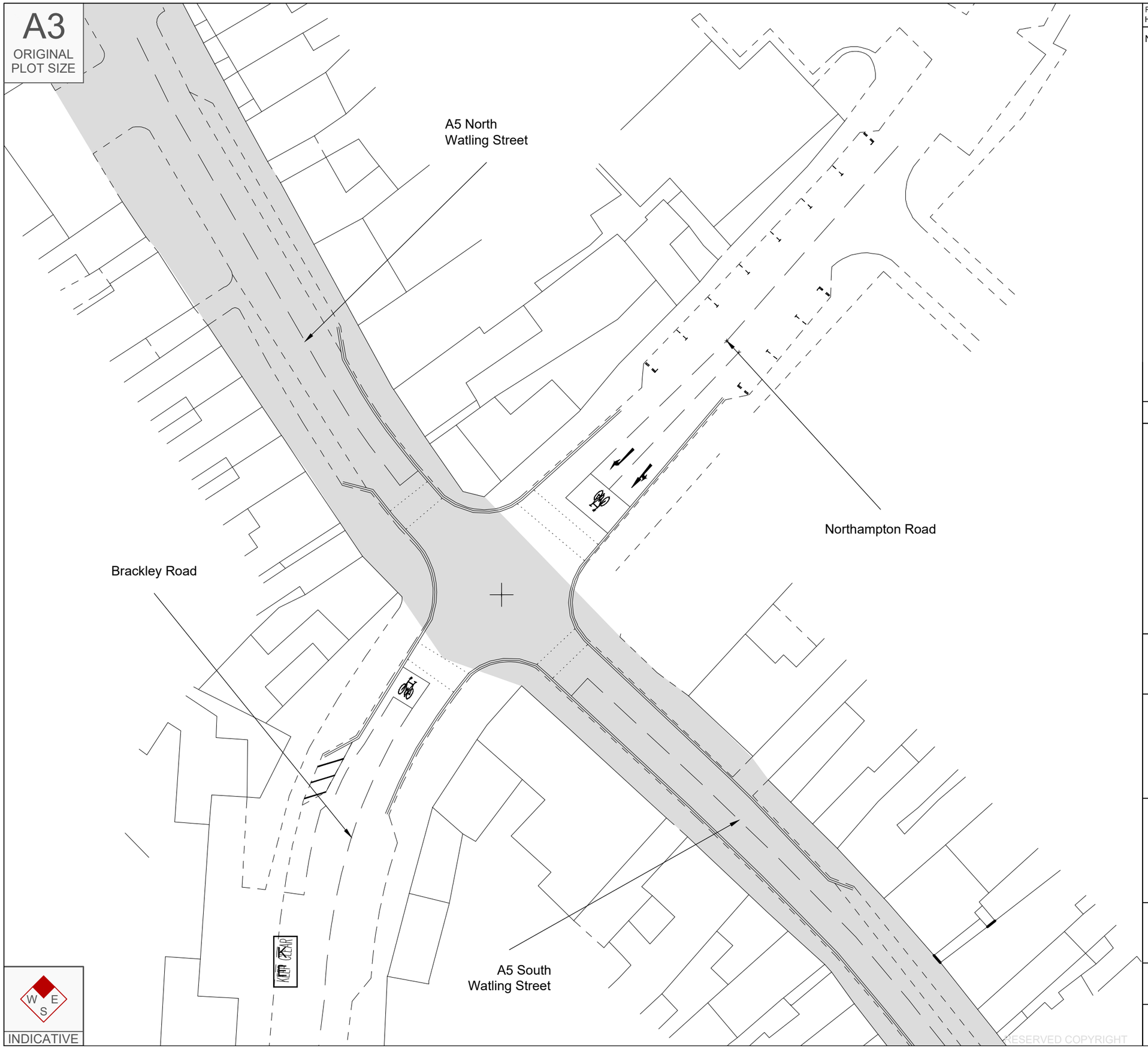
Table 2 – Existing Overall Junction Modelling Results

Peak Period	AM					PM				
Scenarios	2015	2021 DM	2021 DS	2031 DM	2031 DS	2015	2021 DM	2021 DS	2031 DM	2031 DS
Overall Junction capacity (PRC)	-	1.7	-6.1	-31.6	-48	-	-31.8	-33.3	-48.6	-62.9
Overall Junction Delay (PCUhr)	-	22.1	26.3	111.2	201.7	-	131.6	137.7	214.5	301.3

1.9. Junction capacity assessments suggest that there would be no material impact on the operation of the A5(T) in 2021 as a result of Rail Central. However, the 2031 assessments indicate an increase in queuing on the north eastern arm (controlled by NCC) and the south eastern arm (controlled by HE). It should be noted that the junction forms the end of a potential rat-run route between the A5 and the A43 to the north, and traffic using this junction will be significantly affected by the works to be carried out at the A43 Tove Roundabout. In addition, there is an existing highway safety concern associated with the A43 junction with Northampton Road at the other end of this rat-run route to the north of this junction. As such, it is not considered appropriate for any mitigation to be provided at this location, as this would likely encourage further traffic to use an unsuitable route, and this has been discussed previously with the highway authorities.

FIGURES

A3
ORIGINAL
PLOT SIZE



Reproduced from Ordnance Survey Superplan Data with the permission of The Controller of Her Majesty's Stationery Office. Crown Copyright - Licence No. AL100034021

NOTES:

KEY:

Approximate extent of adopted highway - Highways England

Rev	Date	Details	Drawn by	Checked by	Approved by
-	-	-	-	-	-

Bristol
Cambridge
London
Oxford
Welwyn Garden City

Transport Planning Associates

25 King Street
Bristol
BS1 4PB
0117 925 9400

www.tpa.uk.com

CLIENT: ASHFIELD LAND

PROJECT: Rail Central

TITLE:
Watling Street A5 / Brackley Road / Northampton Road Existing Layout

STATUS:
INFORMATION

SCALE:	DATE:	DRAWN:	CHECKED:	APPROVED:
1:500	26.06.17	DR	KS	MB

JOB NO:	DRAWING NO:	REVISION:
1211-80	EL38	

W E S

INDICATIVE

RESERVED COPYRIGHT

APPENDIX A

2015 Base Year

Morning Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	1	11	3	**15**
B - A5 (North)	24	0	4	1,140	**1,168**
C - Northampton Road	32	111	0	81	**224**
D - A5 (South	42	575	53	0	**670**
Total	**98**	**687**	**68**	**1,224**	**2,077**

Evening Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	175	114	62	**351**
B - A5 (North)	0	0	4	394	**398**
C - Northampton Road	96	75	0	302	**473**
D - A5 (South	4	679	563	0	**1,246**
Total	**100**	**929**	**681**	**758**	**2,468**

2021 DM

Morning Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	0	10	7	**17**
B - A5 (North)	0	0	4	630	**634**
C - Northampton Road	13	0	0	552	**565**
D - A5 (South	5	225	29	0	**259**
Total	**18**	**225**	**43**	**1,189**	**1,475**

Evening Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	0	19	1	**20**
B - A5 (North)	0	0	11	187	**198**
C - Northampton Road	82	0	0	211	**293**
D - A5 (South	7	589	504	0	**1,100**
Total	**89**	**589**	**534**	**399**	**1,611**

2021 DS1

Morning Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	0	10	6	**16**
B - A5 (North)	0	0	4	664	**668**
C - Northampton Road	12	0	0	553	**565**
D - A5 (South	5	238	29	0	**272**
Total	**17**	**238**	**43**	**1,223**	**1,521**

Evening Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	0	19	1	**20**
B - A5 (North)	0	0	13	215	**228**
C - Northampton Road	85	0	0	211	**296**
D - A5 (South	7	571	506	0	**1,084**
Total	**92**	**571**	**538**	**427**	**1,628**

2015 Base Year

Morning Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	1	11	3	**15**
B - A5 (North)	24	0	4	1,140	**1,168**
C - Northampton Road	32	111	0	81	**224**
D - A5 (South	42	575	53	0	**670**
Total	**98**	**687**	**68**	**1,224**	**2,077**

Evening Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	175	114	62	**351**
B - A5 (North)	0	0	4	394	**398**
C - Northampton Road	96	75	0	302	**473**
D - A5 (South	4	679	563	0	**1,246**
Total	**100**	**929**	**681**	**758**	**2,468**

2031 DM

Morning Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	29	16	3	**48**
B - A5 (North)	0	0	12	638	**650**
C - Northampton Road	25	3	0	656	**684**
D - A5 (South	5	377	32	0	**414**
Total	**30**	**409**	**60**	**1,297**	**1,796**

Evening Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	71	64	0	**135**
B - A5 (North)	0	0	11	375	**386**
C - Northampton Road	15	67	0	204	**286**
D - A5 (South	8	653	495	0	**1,156**
Total	**23**	**791**	**570**	**579**	**1,963**

2031 DS1

Morning Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	0	15	11	**26**
B - A5 (North)	0	0	8	612	**620**
C - Northampton Road	13	2	0	646	**661**
D - A5 (South	5	308	51	0	**364**
Total	**18**	**310**	**74**	**1,269**	**1,671**

Evening Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	30	110	1	**141**
B - A5 (North)	0	0	9	440	**449**
C - Northampton Road	40	51	0	225	**316**
D - A5 (South	7	698	453	0	**1,158**
Total	**47**	**779**	**572**	**666**	**2,064**

2031 DS2

Morning Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	334	63	3	**400**
B - A5 (North)	18	0	15	595	**627**
C - Northampton Road	140	16	0	690	**845**
D - A5 (South	1	320	36	0	**358**
Total	**158**	**670**	**114**	**1,288**	**2,230**

Evening Peak

	A - Brackley	B - A5 (Nor	C - Northam	D - A5 (Sout	Total
A - Brackley Road	0	71	166	0	**237**
B - A5 (North)	13	0	24	477	**513**
C - Northampton Road	34	96	0	206	**336**
D - A5 (South	0	600	438	0	**1,038**
Total	**46**	**768**	**628**	**683**	**2,125**

APPENDIX B

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Administration

General Specifications

Customer Name: Highways Agency

Intersection/ General Description: A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Controller: (•) New ( ) Modification

Area Specifications/ Customer Drawings: 96379/A5/1202

Specification Section:

Contract/Tender Ref:

Quotation No.:

Works Order No.:

Customer Order No.: 850914835

Controller/ Serial Number:

S.T.S. /EM Number: 60133 Issue: 7

Equipment Installation by: SIEMENS

Slot Cutting by:

Civil Works by:

Customer's Engineer: STUART MINCHIN

Telephone Number: 07941 500897

Signal Company Use Only

Signal Engineer: P M ROUSE

(IF PROM Label as >) PROM Number: 16260 PROM Variant: 100

Configuration Check Value: ED D3 C1 C8

Controller Options

Hardware: T800 Firmware Type and Issue: PB800 ISS 19 Other Options: KTD LO

ST950/ST900/ST750 Series Cabinet Options

Cabinet/Rack Kit Type Options ( ) ( ) ( ) ( )

Cabinet/Rack Variant Cuckoo Options [ ]

Mains Supply: 240 Volts 50 Hz

Peak Lamp Current: 6 Amps

Average Lamp Power: 1000 Watts

Total Average Power: 1000 Watts

Dimming Voltage: 160

Low Inrush Transformer: [ ]

Answer Issue: 0 Date Created: 01/11/05

Edit Issue: 18

Power feed fuse rating: requires 30 Amp minimum for controller, 15 Amp minimum for pelican/lightly loaded controller

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Phases, Stages and Streams

Phases, Stages and Streams

Add/Delete/Insert Streams:

Streams

(•) Current Number of Streams: 1

Phases

( ) Current Total Number of Phases: 5

(•) Number of Real Phases: 5

( ) Number of Dummy Phases: 0

Stages

( ) Current Number of stages (inc. ALL-RED stages): 4

Switched Signs

( ) Number of Switched Signs: 0

Action

Add At | Delete At

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Facilities/Modes Enabled and Mode Priority Levels

Facilities

UTC
- [x] Serial/Internal UTMC OTU
- [ ] Free-standing OTU
- [ ] Integral TC12 OTU
- [x] Serial MOVA

- [x] Master Time Clock
- [ ] Holiday Clock
- [x] FT To Current MAX
- [ ] Linked Fixed Time

- [x] Lamp Monitoring
- [x] RED Lamp Monitoring
- [ ] Pelican/Puffin/Toucan
- [ ] Standalone Manual

- [ ] Extend All Red
- [ ] Speed Measurement
- [ ] Ripple Change
- [ ] London IMU

- [ ] Non-UK
- [ ] Fail to Part Time
- [ ] Fail To Hardware Flashing
- [ ]
- [ ] Download To Level 3

9 Starting Intergreen

Mode Priority

	1	2	3	4	5	6	7	8	9	10	11	12	13
[ ] Part Time	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Emergency Vehicles	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Hurry Call	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Priority Vehicle	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Manual Control	◉	○	○	○	○	○	○	○	○	○	○	○	○
[ ] Manual Step On	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Selected FT or VA or CLF	○	◉	○	○	○	○	○	○	○	○	○	○	○
[x] UTC	○	○	◉	○	○	○	○	○	○	○	○	○	○
[ ]	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] CLF (Non-Base Time)	○	○	○	◉	○	○	○	○	○	○	○	○	○
[ ] CLF (Base Time)	○	○	○	○	○	○	○	○	○	○	○	○	○
[x] Vehicle Actuated	○	○	○	○	◉	○	○	○	○	○	○	○	○
[x] Fixed Time	○	○	○	○	○	◉	○	○	○	○	○	○	○

Configuration Complexity

○ Low ○ Medium ○ High ◉ Maximum

standard.8DF
Default PROM data file

Correspondence Monitoring to inc.

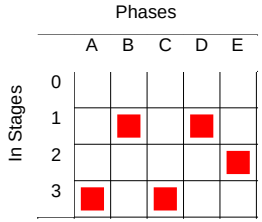
- [x] Reds
- [ ] Switched Signs
- [x] Ambers
- [ ] Ignore Reds and Ambers during

Flash Rate (ms)

400 Off 400 On

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Phases in Stages



Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Stages in Streams

Stages in Streams

	0	1	2	3	4	5	6	7
Phase or Stage to revert to in absence of demands/extensions	1							
Startup Stage	1							
Switch Off Stage	☐	☐	☐	☐	☐	☐	☐	☐
Standalone Pedestrian	☐	☐	☐	☐	☐	☐	☐	☐

Note: For a Stand-Alone Stream, the reversion must be to All Red stage or Traffic stage/phase to meet the relevant standard or specification.

Stages

In Stream	0	1	2	3
0	■	■	■	■

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Phase Type and Conditions

Phase Type and Conditions

◉ Phases A to P ○

Phase	Title	Type	App. Type	Term. Type	Assoc. Phase
A	Northampton Road	0 - UK Traffic	0	0 - I	
B	A5 (South)	0 - UK Traffic	0	0 - I	
C	Brackley Road	0 - UK Traffic	0	0 - I	
D	A5 (North)	0 - UK Traffic	0	0 - I	
E	Pedestrian All Round	1 - UK Far Side Pedestrian	0	0 - I	

1) App Types: 0 = Always Appears, 1 = Appears if dem'd prior to interstage, 2 = If dem'd, 3 = If dem'd before end of window time
2) Term Types: 0 = Term's at end of stage, 1 = Term's when Assoc phase gains R.O.W, 2 = Term's when Assoc phase loses R.O.W.
3) The H/W Fail Flash fields are for information only on all but ST900ELV Controllers. For other controllers, physical switches or links (etc.) select which aspects flash and these need to be set up manually.

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Opposing and Conflicting Phases

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

Initialise

To Phase

From Phase	A	B	C	D	E
A		Co	o	Co	Co
B	Co		Co	o	Co
C	o	Co		Co	Co
D	Co	o	Co		Co
E	Co	Co	Co	Co	

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Phase Minimums. Maximums, Extensions, Ped Leaving Periods

Phase Minimums, Maximums, Extensions, Ped Leaving Periods

◉ Phases A to P ○

Phase	Min Green	Min Ped Clr	Extensions	Maximums A	B	C	D	E	F	G	H	Pre-timed
A	7	0	0.0	32	20	25	20	20	30	30	30	☐
B	7	0	0.0	32	32	32	20	20	30	30	30	☐
C	7	0	0.0	32	20	25	20	20	30	30	30	☐
D	7	0	0.0	32	32	32	32	20	30	30	30	☐
E	8	0	0.0	8	8	8	8	8	8	8	8	☐

Note: For Standalone Streams see Help for use of Max Sets.

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Phase Intergreen Times

Select Stream(s) To Configure

○ All ○ 0 ○ ○ ○ ○ ○ ○ ○ ○

Note: On a Stand Alone Pelican/Toucan/Puffin Stream the Intergreens between Pedestrian and Traffic Phases are controlled by the timings (PBT, PIT, CMX, CDY, CRD and PAR), therefore 0 should be entered for the appropriate intergreen times in grid below.

To Phase

From Phase	A	B	C	D	E
A		6		6	9
B	6		6		9
C		5		5	9
D	6		6		9
E	9	9	9	9	

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Intergreen Handset Limits

HIGH 12 Copy Intergreen Values

To Phase

From Phase	A	B	C	D	E
A		5		6	8
B	5		5		8
C		5		5	8
D	6		6		8
E	8	8	8	8	

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Phase Timing Handset Ranges

Phase Timing Handset Ranges

Initialise Min Green Limits

Phase	Min. Green Min.	Min. Green Max.
A	7	20
B	7	20
C	7	20
D	7	20
E	7	20
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		

Phase	Min. Green Min.	Min. Green Max.
Q		
R		
S		
T		
U		
V		
W		
X		
Y		
Z		
A2		
B2		
C2		
D2		
E2		
F2		

Max. Green: Min. 0 Max. 255

Vehicle Extension: Min. 0.0 Max. 10.0

Phase Delay: Min. 0 Max. 16

Starting I/G: Min. 9 Max. 12

Min Pedestrian Clearance (PBT): Min. 0 Max. 12

Traffic Phase Leaving: Min. 3.0 Max. 3.0

Traffic Phase Red/Amber: Min. 2 Max. 2

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

VA Demand and Extend Definitions

VA Demand and Extend Definitions

(•) Phases A to P ( )

Demands

For Unlatched demands precede the name with a #.
Conditioning MUST be used to specify unlatched demands.

Phase				
A	AX1	ASL2A	#ASL2B	#ACSL3
B	BX7			
C	CX4	#CSL5	#CCSL6	
D	DX8			
E	PBE1	PBE2	PBE3	PBE4

Extensions

AX1	ASL2A	ASL2B	ACSL3
BX7			
CX4	CSL5	CCSL6	
DX8			

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Phase Internal/Revertive Demands

Phase Internal/Revertive Demands

Start-up Vehicle Responsive Demands

A	B	C	D	E												
☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

A	B	C	D	E												
☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Max Timers

A	B	C	D	E												
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Revertive Phase Demands

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	B	C	D												

Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Stage Internal Demands/Pedestrian Window Times

Stage Internal Demands/Pedestrian Window Times

Start-up Vehicle Responsive Demands

0	1	2	3													
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Demands Inserted When Leaving Manual and Fixed Time Modes

0	1	2	3													
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Unlatched Demands that Start Maximum Timers

0	1	2	3													
☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Window Times

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0												

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Exceptional Stages

☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Fixed Time

Fixed Time

Stage Moves & Times (Not Fixed Time to Current Max)

Current Stage	0	1	2	3	4	5	6	7
Next Stage								
Time								
Current Stage	8	9	10	11	12	13	14	15
Next Stage								
Time								
Current Stage	16	17	18	19	20	21	22	23
Next Stage								
Time								
Current Stage	24	25	26	27	28	29	30	31
Next Stage								
Time								

Phases Demanded and Extended under Fixed Time to Current Max.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Demand	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Q	R	S	T	U	V	W	X	Y	Z	A2	B2	C2	D2	E2	F2
Demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extend	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

UTC General Data

UTC General Data

Type of UTC

(•) 106 ( ) 316

Integral OTU Address

2 Number of Control Words

2 Number of Reply Words

☐ Controller to respond to TC bit.

☐ Introduction of UTC to be disabled by Priority and LR

☐ Non UTC RTC synchronisation input name

RTC Synchronisation Times

Clock Synchronise Time (UTC TS input)

Day	Time
Time Only	02:00:00

Clock Confirm Time (UTC RT output)

Day	Time
Time Only	02:00:00

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

UTC Control and Reply Data Format

UTC Control and Reply Data Format

	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
Control Words								
Word 1	F1	F2	F3					
Word 2								
Word 3								
Word 4								
Reply Words								
Word 1	G1	G2	G3					
Word 2								
Word 3								
Word 4								
Word 5								
Word 6								
Word 7								
Word 8								
Word 9								
Word 10								
Word 11								
Word 12								
Word 13								
Word 14								

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

UTC Stage and Mode Data Definitions

UTC Stage and Mode Data Definitions

Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit	Stage	Force Bit	Green Confirm Bit	Demand Confirm Bit
0				16			
1	F1	G1		17			
2	F2	G2		18			
3	F3	G3		19			
4				20			
5				21			
6				22			
7				23			
8				24			
9				25			
10				26			
11				27			
12				28			
13				29			
14				30			
15				31			

Mode Data Definitions

Manual Mode Operative:
☐ G1/G2 ☐ RR ☐

Manual Mode Selected:
☐ G1/G2 ☐ RR ☐

No Lamp Power, or Lamps Off due to RLM or Part Time:
☐ G1/G2 ☐ ☐

Detector Fault:
☐ ☐ ☐ DF

Normal NOT selected on the Manual Panel:
☐ G1/G2 ☐ RR ☐

RR Button Selected:
☐ G1/G2 ☐ RR ☐

If UTC Reply Confirms are required for a Controller Fault (CF) OR for separate MC and RR replies, Conditioning must be used.

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

UTC and MOVA Detectors

UTC and MOVA Detectors

Detector Mapping

☑ Combined

Set Selection

○ ○ ○ ○ ○

1		2	ASL2A	3	ACSL3	4	CX4	5	CSL5	6	CCSL6	7	BX7	8	DX8
9		10		11		12		13		14		15		16	
17		18		19		20		21		22		23		24	
25		26		27		28		29		30		31		32	
33		34		35		36		37		38		39		40	
41		42		43		44		45		46		47		48	
49		50		51		52		53		54		55		56	
57		58		59		60		61		62		63		64	

Note - only 32 detectors available on MOVA 4.0

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

MTC - Time Switch Parameters

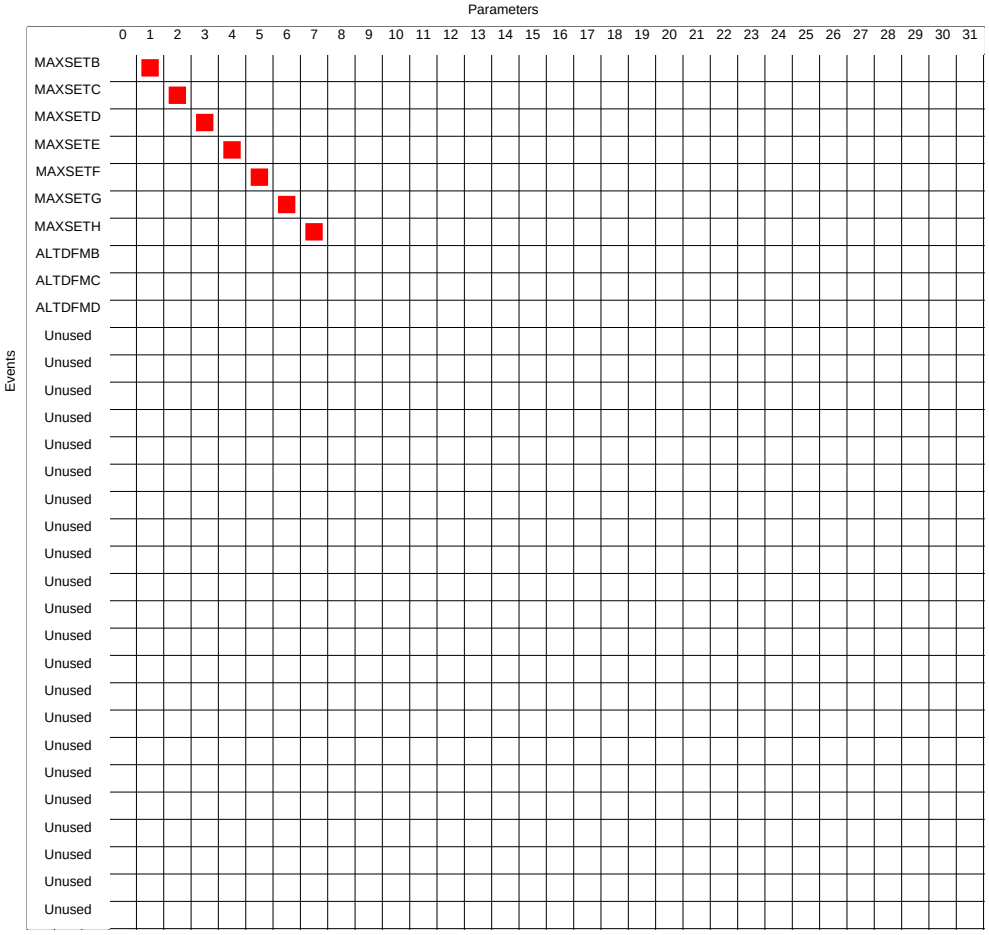
MTC - Time Switch Parameters

	Type	Event
0	Alternate Max	MAXSETB
1	Alternate Max	MAXSETC
2	Alternate Max	MAXSETD
3	Alternate Max	MAXSETE
4	Alternate Max	MAXSETF
5	Alternate Max	MAXSETG
6	Alternate Max	MAXSETH
7	Alternate DFM	ALTDFMB
8	Alternate DFM	ALTDFMC
9	Alternate DFM	ALTDFMD
10	No Action	
11	No Action	
12	No Action	
13	No Action	
14	No Action	
15	No Action	

	Type	Event
16	No Action	
17	No Action	
18	No Action	
19	No Action	
20	No Action	
21	No Action	
22	No Action	
23	No Action	
24	No Action	
25	No Action	
26	No Action	
27	No Action	
28	No Action	
29	No Action	
30	No Action	
31	No Action	

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

MTC - Time Switch Parameters Array



Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

MTC - Day Type

MTC - Day Type

No.	Mon	Tue	Wed	Thu	Fri	Sat	Sun
0	☐	☐	☐	☐	☐	☑	☐
1	☐	☐	☐	☐	☐	☐	☑
2	☑	☐	☐	☐	☐	☐	☐
3	☐	☑	☐	☐	☐	☐	☐
4	☐	☐	☑	☐	☐	☐	☐
5	☐	☐	☐	☑	☐	☐	☐
6	☐	☐	☐	☐	☑	☐	☐
7	☑	☑	☑	☑	☑	☑	☑
8	☑	☑	☑	☑	☑	☑	☐
9	☑	☑	☑	☑	☑	☐	☐
10	☐	☐	☐	☐	☐	☐	☐
11	☐	☐	☐	☐	☐	☐	☐
12	☐	☐	☐	☐	☐	☐	☐
13	☐	☐	☐	☐	☐	☐	☐
14	☐	☐	☐	☐	☐	☐	☐
15	☐	☐	☐	☐	☐	☐	☐

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

MTC - Timetable

MTC - Timetable

View Timetable Settings

(•) 0 - 15 ( ) 16 - 31 ( ) 32 - 47 ( ) 48 - 63

No.	Day Type	Time	Description	Function Code	Plan/ Parameter
0	9	06:30:00	MAXSET A	2	0
1	9	09:30:00	MAXSET B	2	1
2	9	15:30:00	MAXSET C	2	2
3	9	19:00:00	MAXSET D	2	3
4	9	22:00:00	MAXSET E	2	4
5	0	07:00:00	MAXSET B	2	1
6	0	22:00:00	MAXSET E	2	4
7	1	07:00:00	MAXSET B	2	1
8	1	22:00:00	MAXSET E	2	4
9	0			0	0
10	0			0	0
11	0			0	0
12	0			0	0
13	0			0	0
14	0			0	0
15	0			0	0

Function Codes:

0 = Isolate From CLF

1 = Introduce a CLF Plan

2 = Introduce a Parameter (Combination of event switches)

3 = Selects an Individual event switch to be set

4 = Selects an Individual event switch to be cleared.

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

LMU - General

LMU - General

Lamp Monitoring - LMU Voltage

(•) 200-240 ( )
( ) 50-0-50, 100-120 ( ) 230 CLS

Red Lamp Monitoring

Max Red Bulb Wattage 50

First Red Lamp Fault Speed

☑ RLF2 Cancels RLM additional Intergreens

☑ RLF2 Only Cleared by RFL = 1

☐ RLF1 Only Cleared by RFL = 1

RLM Additional Intergreen Handset Limits

Minimum	Maximum
2	10

Streams with Phase BlackOut on RLF2

☐ 0 ☐ ☐ ☐ ☐ ☐ ☐ ☐

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

LMU - Sensors

LMU - Sensors

Onboard Sensors

Sensor\ Phase	Sensor Type	Bulb Watts	Sensor\ Phase	Sensor Type	Bulb Watts
1 \ A	As Seq.	40	17 \ Q		
2 \ B	As Seq.	40	18 \ R		
3 \ C	As Seq.	40	19 \ S		
4 \ D	As Seq.	40	20 \ T		
5 \ E	As Seq.	40	21 \ U		
6 \ F	None	40	22 \ V		
7 \ G	None	40	23 \ W		
8 \ H	None	40	24 \ X		
9 \ I			25 \ Y		
10 \ J			26 \ Z		
11 \ K			27 \ A2		
12 \ L			28 \ B2		
13 \ M			29 \ C2		
14 \ N			30 \ D2		
15 \ O			31 \ E2		
16 \ P			32 \ F2		

External Sensors

Sensor\ Pin	Drive	Sensor Type	Bulb Watts
33 \ b14		Regulatory Sign	7
34 \ z16		Regulatory Sign	7
35 \ z14		Regulatory Sign	7
36 \ z12		Regulatory Sign	7
37 \ b14			
38 \ z16			
39 \ z14			
40 \ z12			
41 \ b14			
42 \ z16			
43 \ z14			
44 \ z12			
45 \ b14			
46 \ z16			
47 \ z14			
48 \ z12			

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

LMU Sensor Load Types

LMU Sensor Load Types

Screen Select: 1 of 1

Sensor	Phase	Sensor Type	LED R+W	Load Type	LLF Profile
1	A	As Seq.			
2	B	As Seq.			
3	C	As Seq.			
4	D	As Seq.			
5	E	As Seq.			
33	N/A	Regulatory Sign			
34	N/A	Regulatory Sign			
35	N/A	Regulatory Sign			
36	N/A	Regulatory Sign			

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

RLM Additional Intergreens

Phases Delayed

Phases with RLF1	A	B	C	D	E
A					2
B					2
C					2
D					2
E					

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

RLM Phase Inhibits

Phases Inhibited/Blacked-Out

Phases with RLF2	A	B	C	D	E
A					■
B					■
C					■
D					■
E					

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Manual Panel

Manual Panel

Stage Buttons and LEDs

Button No.	Title	Called Stage for Stream 0 1 2 3 4 5 6 7
0	All Red Stage 0	0
1	A5 (South) / A5 (North)	1
2	Pedestrian All Round	2
3	Northampton Road / Brackley Road	3
4		
5		
6		
7		

General LEDs

	AUX 1	AUX 2	AUX 3	AUX 4 (Hurry Call)	AUX 5 (Higher Priority)
Conditioned	☑	☑	☑	☑	☑

Manual Mode Enable

- (•) Always
- ( ) When Handset Plugged in (Note 1)
- ( ) When 'MND' Command Entered

NOTE:
For this to operate Special Conditioning is required.

General Buttons

	None	SW1	SW2	SW3
Momentary		☐	☐	☐
Dim Override	( )	(•)	( )	( )
RR	(•)	( )	( )	( )

Manual Signals On

- ( ) Immediate Signals On
- (•) As Start-Up

Mode Select Switches Disabled

☐ VA ☐ Fixed Time ☐ CLF

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Special Conditioning

```
; AUX LED'S
; =========

MAUXSW1=MIL22                          ;AUX 1 LED LIT WHEN AUX1 SWITCH ACTIVE ( dimming override )
(MODE0 EQL<6>)=MIL17                   ;AUX 5 ( HIGHER PRIORITY ) LED LIT WHEN MOVA MODE ACTIVE



; DELAYED CALL STOP LINE LOOPS
; ============================

IFT NOT(ASL2B) THN                     ; HOLD DELAY TIMER RESET WHEN ASL2B IS INACTIVE.
    RUN<0>
END
IFT PHASEA THN                         ; IF PHASE A IS GREEN FEED ASL2B DIRECTLY TO MOVA.
    ASL2B=+MOVADET2
ELS
    ASL2B.NOT(CNDTMA0):=+MOVADET2      ; IF PHASE A IS NOT GREEN ONLY FEED ASL2B TO MOVA
                       *=+LCPHA        ; AND DEMAND PHASE A AFTER DELAY TIME.
END

IFT NOT(ACSL3) THN                     ; HOLD DELAY TIMER RESET WHEN ACSL3 IS INACTIVE.
    RUN<1>
END
IFT PHASEA THN                         ; IF PHASE A IS GREEN FEED ACSL3 DIRECTLY TO MOVA.
    ACSL3=MOVADET3
ELS
    ACSL3.NOT(CNDTMA1):=MOVADET3       ; IF PHASE A IS NOT GREEN ONLY FEED ACSL3 TO MOVA
                       *=+LCPHA        ; AND DEMAND PHASE A AFTER DELAY TIME.
END

IFT NOT(CSL5) THN                      ; HOLD DELAY TIMER RESET WHEN CSL5 IS INACTIVE.
    RUN<2>
END
IFT PHASEC THN                         ; IF PHASE C IS GREEN FEED CSL5 DIRECTLY TO MOVA.
    CSL5=MOVADET5
ELS
    CSL5.NOT(CNDTMA2):=MOVADET5        ; IF PHASE C IS NOT GREEN ONLY FEED CSL5 TO MOVA
                       *=+LCPHC        ; AND DEMAND PHASE C AFTER DELAY TIME.
END


IFT NOT(CCSL6) THN                     ; HOLD DELAY TIMER RESET WHEN CCSL6 IS INACTIVE.
    RUN<3>
END
IFT PHASEC THN                         ; IF PHASE C IS GREEN FEED CCSL6 DIRECTLY TO MOVA.
    CCSL6=MOVADET6
ELS
    CCSL6.NOT(CNDTMA3):=MOVADET6       ; IF PHASE C IS NOT GREEN ONLY FEED CCSL6 TO MOVA
                       *=+LCPHC        ; AND DEMAND PHASE C AFTER DELAY TIME.
END



; DEMANDS
; =======

(PBE5+PBE6+PBE7+PBE8)=+LCPHE           ; PUSH BUTTONS DEMANDS PHASE E
```

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Special Conditioning

```
; ASL2B TO TOGGLE AX1
; ===================

IFT NOT(STAGE3) THN                          ; STAGE 3 AT GREEN DURATION TIMER
    RUN<18>
END
(MODE0 EQL<6>).STAGE3.ASL2B=SCRT0            ; CALL DELAY ON APPEARS IN STAGE 1
NOT((MODE0 EQL<6>).STAGE3.ASL2B)=ROUGH0
IFT CCTO0.NOT(CNDTMA16) THN                  ; PULSE TIMERS
    RUN<17>
END
IFT CNDTMA17.NOT(CNDTMA16) THN               ; PULSE TIMERS
    RUN<16>
END
CNDTMA18.CNDTMA17=+MOVADET1                  ; DURATION + PULSE TIMER ACTIVE SETS MOVADET2
NOT(CCTO0.CNDTMA18).AX1=+MOVADET1            ; IGNORE AX1 WHEN TOGGLE IS ACTIVE


; MOVA CRB
; ========

IFT (PRSLMPRA+PRSLMPAA+PRSLMPGA) THN                    ; MIN LAMPS OFF TIMER
    RUN<95>
END
IFT NOT(MODE0 EQL<6>).NOT(CNDTMA94).SSNRM THN           ; NOT IN MOVA MODE AND IN NORMAL RUN TIMER
    RUN<94>
END
IFT CNDTER94+((PRVMOD0 EQL<6>).NOT(MODE0 EQL<6>)) THN
    LOD<10> 1SCRTCH0
    TRUE=2SCRT1
END                                                      ; START A 2 SEC INTERNAL TIMER FOR CRB TOGGLE
NOT(1SCRTST0 EQL<0>)=.2SCRT1
IFT (1SCRTST0 GRT<0>) THN
    DEC 1SCRTCH0
END
SSNRM.(NOT(2SCRT1)+(MODE0 EQL<6>)).CNDTMA95=MOVACRB      ; WHEN TIMER TERMINATES TOGGLE CRB


; MOVA CONFIRM FOR PEDESTRIAN WAITS
; =================================

PRSLMPAE.NOT(LMUINHE)=MOVADET9                           ; DEMAND FOR PHASE E SETS MOVADET 9 UNLESS
                                                         ; INHIBITED BY RLM
```


Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Special Conditioning Timers

Special Conditioning Timers

Timers: 0-31

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
0	3	0	255	☐	ASL2B CALL DELAY	16	1.4	0.0	31.8	☑	DELAY O/P TOGGLE AX1
1	3	0	255	☐	ACSL3 CALL DELAY	17	0.6	0.0	31.8	☑	O/P TOGGLE AX1
2	3	0	255	☐	CSL5 CALL DELAY	18	20	0	255	☐	STAGE 3 DURATION OVERRIDE
3	3	0	255	☐	CCSL6 CALL DELAY	19		0	255	☐	
4		0	255	☐		20		0	255	☐	
5		0	255	☐		21		0	255	☐	
6		0	255	☐		22		0	255	☐	
7		0	255	☐		23		0	255	☐	
8		0	255	☐		24		0	255	☐	
9		0	255	☐		25		0	255	☐	
10		0	255	☐		26		0	255	☐	
11		0	255	☐		27		0	255	☐	
12		0	255	☐		28		0	255	☐	
13		0	255	☐		29		0	255	☐	
14		0	255	☐		30		0	255	☐	
15		0	255	☐		31		0	255	☐	

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Special Conditioning Timers

Special Conditioning Timers

Timers

64-95

No	Value	Min	Max	200ms	Description	No	Value	Min	Max	200ms	Description
64		0	255	☐		80		0	255	☐	
65		0	255	☐		81		0	255	☐	
66		0	255	☐		82		0	255	☐	
67		0	255	☐		83		0	255	☐	
68		0	255	☐		84		0	255	☐	
69		0	255	☐		85		0	255	☐	
70		0	255	☐		86		0	255	☐	
71		0	255	☐		87		0	255	☐	
72		0	255	☐		88		0	255	☐	
73		0	255	☐		89		0	255	☐	
74		0	255	☐		90		0	255	☐	
75		0	255	☐		91		0	255	☐	
76		0	255	☐		92		0	255	☐	
77		0	255	☐		93		0	255	☐	
78		0	255	☐		94	120	0	255	☐	CRB TOGGLE
79		0	255	☐		95	1	1	5	☐	MIN LAMPS OFF TIMER

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Special Instructions

60133

Board	Position	Skt	Port	Type I or O	Line	Cable	Block
CPU	A	X3I	0	I	00 - 07	101	1TBG
CPU	A	X3I	1	I	08 - 15		1TBH
CPU	A	X3O	11	O	88 - 91	105	1TBX
IO1	B	B	2	I	16 - 23	103	1TBJ
IO1	B	E	4	O	32 - 39		1TBK
IO1	B	C	3	I	24 - 31	103	1TBL
IO1	B	D	5	O	40 - 47		1TBM

The socket X3 on the CPU pcb is the double stacked one
X3I = Inner (nearest the board)
X3O = Outer

Last Modified 25/02/2015, Issue 7.0.18

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Special Instructions

ST800 CONTROLLER ITEMS LIST SHEET 1 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
1					
2	667/1/27000/003	Cabinet 8 Phase wired 8 Phase	1		
3	667/1/27000/002	Cabinet 24 Phase wired 32 Phase			
4	667/1/27001/001	Rack 8 Phase wired 16 Phase			
5	667/1/27001/002	Rack 24 Phase wired 32 Phase			
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23	667/1/27072/001	Cableform 8 Phase (long)			
24	667/1/27002/000	Lamp Switch Kit 8 Phase			
25	667/1/27003/000	I/O Kit	1		
26	667/1/27005/000	SDE Facility Kit			
27	667/1/27004/000	Integral OTU Kit			
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39	667/1/16260/100	Configuration Eprom (Issue 7. 0)	1		
40					

Note 1:
Please refer to special instruction pages for additional information on items marked with an '*'.

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Special Instructions

ST800 CONTROLLER ITEMS LIST SHEET 2 (*I*L*)

ITEM	DRAWING NUMBER	DESCRIPTION	QTY	TOT	REMARKS
41					
42	667/1/27056/001	Manual Panel Assy (Intersection Cont)			
43	667/1/27056/010	Manual Panel Assy (Sigs on/off)			
44	667/1/27056/000	Manual Panel Blanking Kit			
45					
46					Note 2:
47					Ancillary Processor PLD
48					Variants
49					101 OTU & LMU
50					102 OTU Only
51					103 LMU Only
52	667/7/25171/000	Current Transformer			104 OTU & LMU + Up/Download
53					105 OUT Only + Up/DownLoad
54					NB Controller Has built in LMU
55					So LMU on Ancillary Processor
56					Not required included for info
57					only.
58					
59					
60					Note 3:
61	667/1/27000/101	Cabinet Export 8 Phase wired 16 Phase			Fit Current Transformer
62	667/1/27000/102	Cabinet Export 24 Phase wired 32 Phase			starting from position
63	667/1/27001/101	Rack Export 8 Phase wired 16 Phase			TLB/z/16 on the first phase
64	667/1/27001/102	Rack Export 24 Phase wired 32 Phase			driver PCB. if more than 3
65	667/1/27002/100	Export Lamp Switch Kit			sensors are called up fit the
66	667/1/27084/001	Dimming Assembly (1.5KVA)(Fit Std UK)			4th sensor to the second
67	667/1/27084/002	Dimming Assembly (2.0KVA)			Phases driver PCB, and so on
68	667/1/27084/003	Dimming Assembly (3.0KVA)			until all sensors have been
69	667/1/27130/000	30A Controller Kit			used up.
70					TLB/b/14 - 1st sensor terminal
71	667/1/27001/310	ST800 SE Export Rack up to 8 Phase			TLB/z/16 - 2nd sensor terminal
72	667/1/27223/003	ST800 SE 8 Phase Driver No LMU			TLB/z/14 - 3rd sensor terminal
73	667/1/27223/403	ST800 SE 4 Phase Driver No LMU			TLB/z/12 - 4th sensor terminal
74					TLB/z/12 - 4th sensor terminal
75					
76					
77	667/1/27000/301	ST800 P In a Cabinet 4Ph 1 Stream PED			TLB/z/12 - 4th sensor terminal
78	667/1/27012/000	PED 2nd Stream Kit for ST800 P			
79	667/1/27001/300	ST800 P Rack Only 4Ph 1 Stream PED			

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Call Cancel

Call Cancel

Unit No.	Input Name	Call Delay	Cancel Delay	Phase Demanded (Unlatched Demand)
0	*SCRT0	5	2	
1		0	0	
2		0	0	
3		0	0	
4		0	0	
5		0	0	
6		0	0	
7		0	0	

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Port Number & Type

Port: 0

Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	0	0	I	AX1	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	1
○	1	1	I	ASL2A	☑	☐	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	2
○	2	2	I	ASL2B	☑	☐	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	3
○	3	3	I	ACSL3	☑	☐	☐	☐	☐	A	0	0.2	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	4
○	4	4	I	CX4	☑	☐	☐	☐	☐	A	0	4.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	5
○	5	5	I	CSL5	☑	☐	☐	☐	☐	A	0	1.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	6
○	6	6	I	CCSL6	☑	☐	☐	☐	☐	A	0	0.2	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	7
○	7	7	I	SPARE1	☑	☐	☐		☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBG	8

Add Delete Move Clear Used By

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Port Number & Type

Port: 1

○ ○ ◉ Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	8	0	I	BX7	☑	☐	☐	☐	☐	A	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	1
○	9	1	I	DX8	☑	☐	☐	☐	☐	A	0	4.6	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	2
○	10	2	I	SPARE2	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	3
○	11	3	I	SPARE3	☑	☐	☐	☐	☐	N		0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	4
○	12	4	I	PBE1	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	5
○	13	5	I	PBE2	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	6
○	14	6	I	PBE3	☑	☐	☐	☐	☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	7
○	15	7	I	PBE4	☑	☐	☐		☐	Y	1	0.0	☑	☐	☐	☐	☐	☐	☐	☐	☐	1TBH	8

Add | Delete | Move | Clear Used By

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Inputs and Outputs

Inputs and Outputs

Enable Signal Required Check boxes

Port Number & Type

Port: 2

○ ○ ◉ Inputs & Outputs

	DET No	Bit No	Type I or O	Name	Req'd	BP	Inv	U/D	Misc	DFM	DFM Group	Ext time	Used By: Phs	UTC	SDE	Pri	HC	CC	IG	UD	LRT	Term Block	Terminal No
○	16	0	I	PBE5	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	1
○	17	1	I	PBE6	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	2
○	18	2	I	PBE7	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	3
○	19	3	I	PBE8	☑	☐	☐	☐	☐	Y	1	0.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	4
○	20	4	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	5
○	21	5	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	6
○	22	6	I		☐	☐	☐	☐	☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	7
○	23	7	I		☐	☐	☐		☐				☐	☐	☐	☐	☐	☐	☐	☐	☐	1TBJ	8

Add | Delete | Move | Clear Used By

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

Aspect Drives

Aspect Drives

(•) A-L ( ) M-X ( ) Y-F2

Phase Driver Card 1

	Used For	Term Block	Term No
A - Red	Phase	1TBA	1
A - Amber	Phase	1TBA	2
A - Green	Phase	1TBA	3
B - Red	Phase	1TBA	4
B - Amber	Phase	1TBA	5
B - Green	Phase	1TBA	6
C - Red	Phase	1TBA	7
C - Amber	Phase	1TBA	8
C - Green	Phase	1TBA	9
D - Red	Phase	1TBA	10
D - Amber	Phase	1TBA	11
D - Green	Phase	1TBA	12

Phase Driver Card 1

	Used For	Term Block	Term No
E - Red	Phase	1TBB	1
E - Amber	Phase	1TBB	2
E - Green	Phase	1TBB	3
F - Red			
F - Amber			
F - Green			
G - Red			
G - Amber			
G - Green			
H - Red			
H - Amber			
H - Green			

Phase Driver Card 2

	Used For	Term Block	Term No
I - Red			
I - Amber			
I - Green			
J - Red			
J - Amber			
J - Green			
K - Red			
K - Amber			
K - Green			
L - Red			
L - Amber			
L - Green			

Works Order :
EM Number : 60133
Engineer : P M ROUSE
Intersection : A5 Northampton Road / Brackley Road Junction Crossroads Towcester 8J46

I/O - DFM Group Timings

I/O - DFM Group Timings

Input Group	State	SET A	SET B	SET C	SET D
Group 0	Active (Mins)	30	30	30	30
	InActive (Hrs)	18	18	18	18
Group 1	Active (Mins)	10	10	10	10
	InActive (Hrs)				
Group 2	Active (Mins)				
	InActive (Hrs)				
Group 3	Active (Mins)				
	InActive (Hrs)				
Group 4	Active (Mins)				
	InActive (Hrs)				
Group 5	Active (Mins)				
	InActive (Hrs)				
Group 6	Active (Mins)				
	InActive (Hrs)				
Group 7	Active (Mins)				
	InActive (Hrs)				

Note - 255 or blank disables DFM monitoring of that state (active or inactive) during that timeset (A to D)

Handset Limiting Values

State	Min	Max
Active (Mins)	0	254
InActive (Hrs)	0	254

Last Modified 25/02/2015, Issue 7.0.18

Index

1 General Junction Data
- 1.1 Administration
- 1.2 Phases, Stages and Streams
- 1.3 Facilities/Modes Enabled and Mode Priority Levels
- 1.4 Phases in Stages
- 1.5 Stages in Streams

2 Phases
- 2.1 Phase Type and Conditions
- 2.2 Opposing and Conflicting Phases
- 2.3 Timings
  - 2.3.1 Phase Minimums, Maximums, Extensions, Ped Leaving Periods
  - 2.3.2 Phase Intergreen Times
  - 2.3.3 Intergreen Handset Limits
  - 2.3.4 Phase Timing Handset Ranges
- 2.4 VA Demand and Extend Definitions
- 2.5 Phase Internal/Revertive Demands

3 Stage Movements
- 3.1 Stages - Prohibited, Alternative, Ignored Moves (No configuration data to print)
- 3.2 Stage Internal Demands/Pedestrian Window Times
- 3.3 Phase Delays (No configuration data to print)

4 Modes and Facilities - Detailed
- 4.1 Fixed Time
- 4.2 Cableless Linking
  - 4.2.1 CLF - Plan(s) (No configuration data to print)
  - 4.2.2 CLF - Demand Dependent Moves (No configuration data to print)
- 4.3 UTC and MOVA
  - 4.3.1 UTC General Data
  - 4.3.2 UTC Control and Reply Data Format
  - 4.3.3 UTC Data Definitions
    - 4.3.3.1 UTC Phase Demand and Extend Definitions (No configuration data to print)
    - 4.3.3.2 UTC Stage and Mode Data Definitions
    - 4.3.3.3 UTC Demand Dependent Forces (No configuration data to print)
  - 4.3.4 UTC and MOVA Detectors
- 4.4 Master Time Clock
  - 4.4.1 MTC - Time Switch Parameters
  - 4.4.2 MTC - Time Switch Parameters Array
  - 4.4.3 MTC - Day Type
  - 4.4.4 MTC - Timetable
- 4.5 Integral Lamp Monitoring
  - 4.5.1 LMU - General
  - 4.5.2 LMU - Sensors
  - 4.5.3 LMU Sensor Load Types
  - 4.5.4 RLM Additional Intergreens
  - 4.5.5 RLM Phase Inhibits
- 4.6 Manual
  - 4.6.1 Manual Panel
  - 4.6.2 Manual Mode - Optional Phases Appearance (No configuration data to print)

5 Conditioning Data
- 5.1 Special Conditioning
- 5.2 Special Conditioning Timers
- 5.3 Fault Log Flags (No configuration data to print)

6 Special Instructions

7 I/O
- 7.1 Call Cancel
- 7.2 Inputs and Outputs
- 7.3 Aspect Drives
- 7.4 I/O - DFM Group Timings

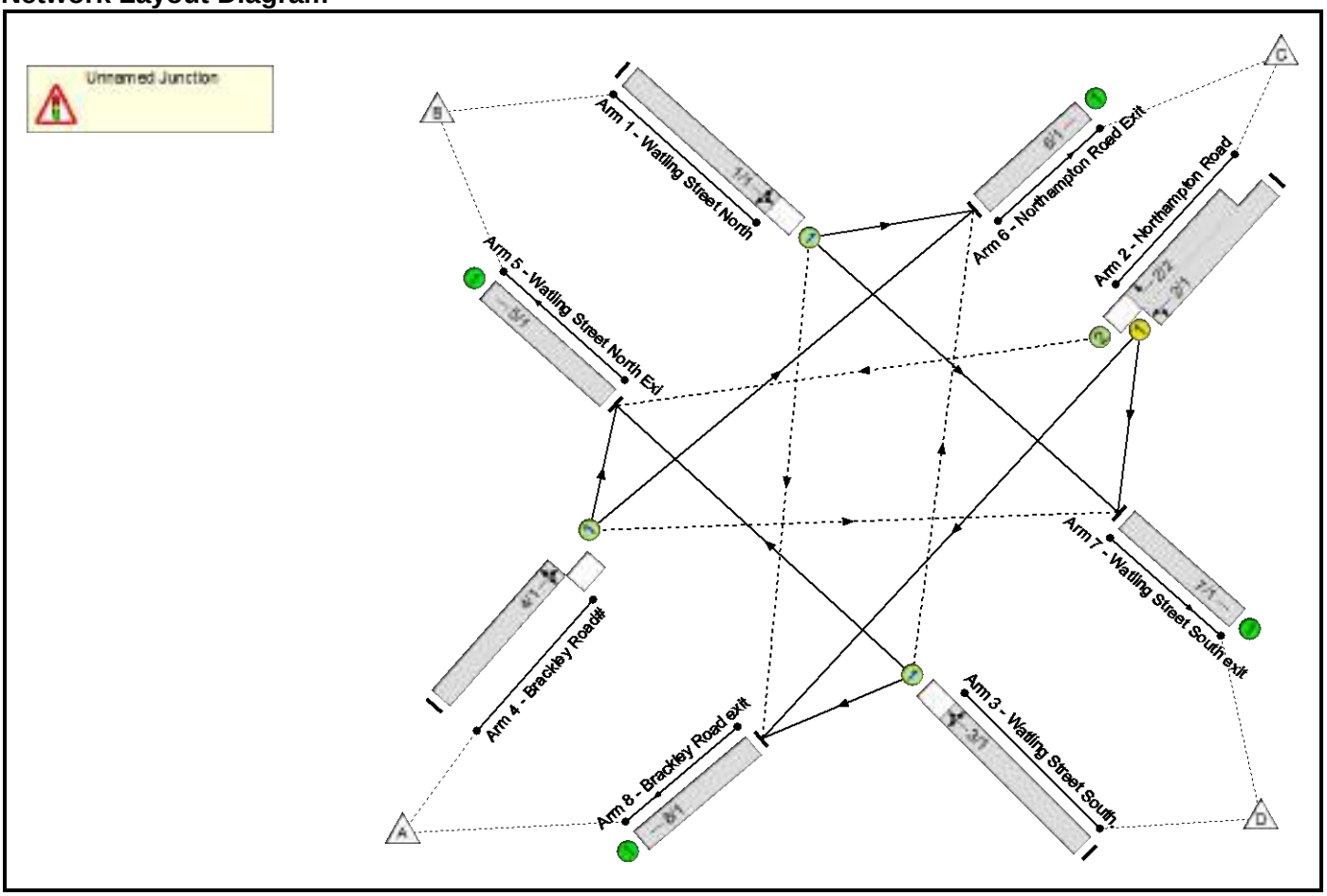
APPENDIX C

Full Input Data And Results

User and Project Details

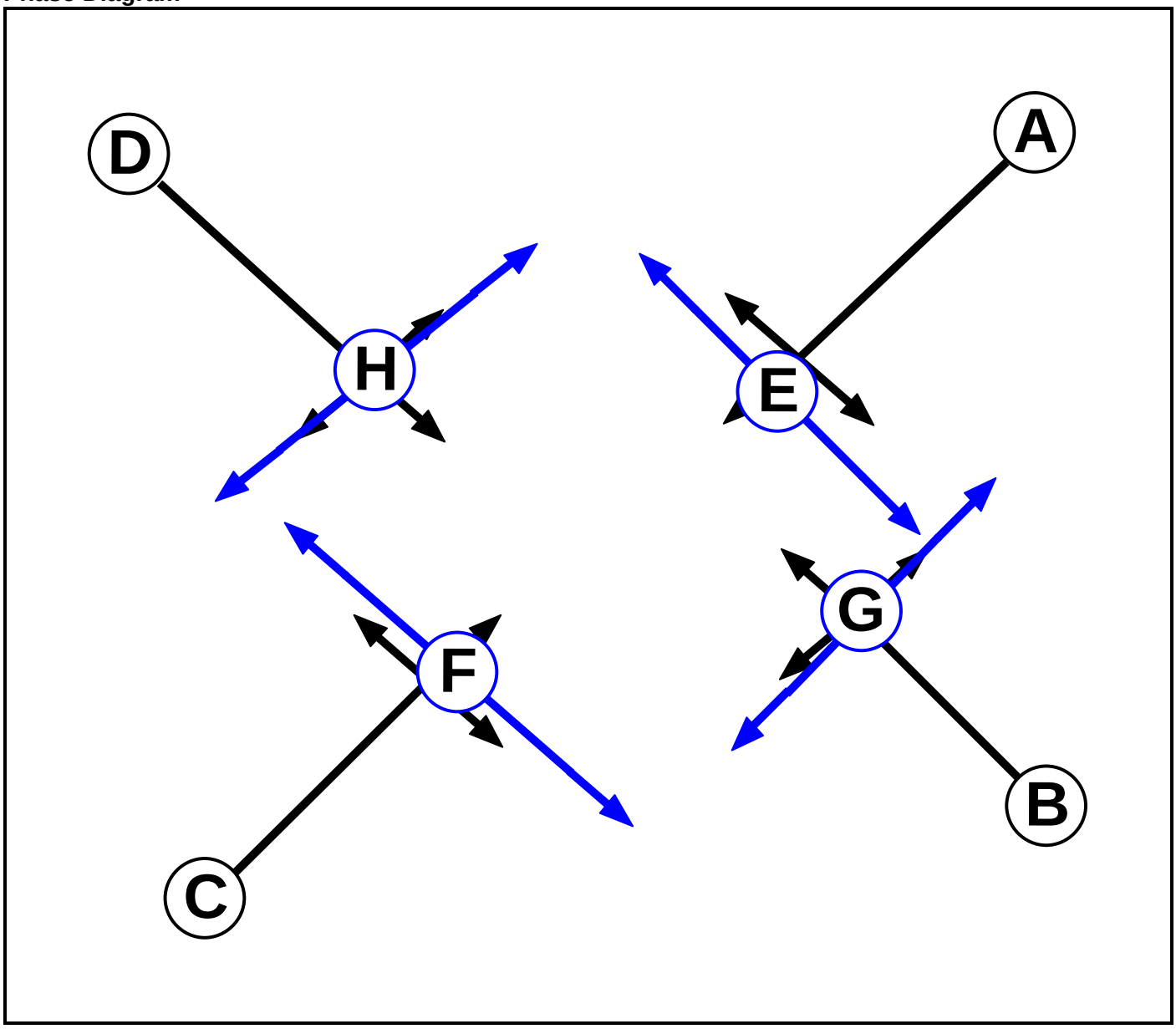
Project:	Rail Central
Title:	Junction 38
Location:	Watling Street / Brackley Road / Northampton Road
Additional detail:	Existing
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		7	7
F	Pedestrian		7	7
G	Pedestrian		7	7
H	Pedestrian		7	7

Full Input Data And Results

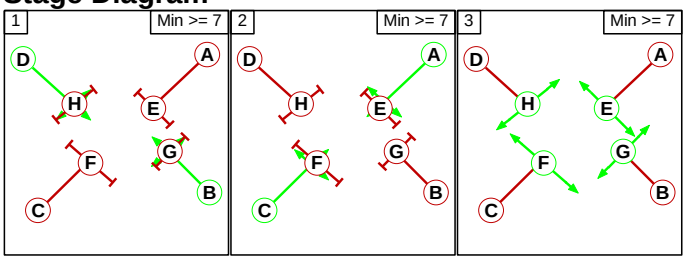
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H
A		6	-	6	9	9	9	9
B	6		6	-	9	9	9	9
C	-	5		5	9	9	9	9
D	6	-	6		9	9	9	9
E	9	9	9	9		-	-	-
F	9	9	9	9	-		-	-
G	9	9	9	9	-	-		-
H	9	9	9	9	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	B D
2	A C
3	E F G H

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage \ To Stage	1	2	3
1		6	9
2	6		9
3	9	9	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Watling Street North)	8/1 (Right)	1439	0	3/1	1.09	All	2.00	-	0.50	2	2.00
2/2 (Northampton Road)	5/1 (Right)	1439	0	4/1	1.09	All	2.00	-	0.50	2	2.00
3/1 (Watling Street South.)	6/1 (Right)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
4/1 (Brackley Road#)	7/1 (Right)	1439	0	2/1	1.09	All	2.00	2.00	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Watling Street North)	O	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 6 Left	Inf
											Arm 7 Ahead	Inf
											Arm 8 Right	Inf
2/1 (Northampton Road)	U	A	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 7 Left	Inf
											Arm 8 Ahead	Inf
2/2 (Northampton Road)	O	A	2	3	10.0	Geom	-	3.50	0.00	Y	Arm 5 Right	Inf
3/1 (Watling Street South.)	O	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	Inf
											Arm 8 Left	Inf
4/1 (Brackley Road#)	O	C	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Left	Inf
											Arm 6 Ahead	Inf
											Arm 7 Right	Inf
5/1 (Watling Street North Exi)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Northampton Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Watling Street South exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Brackley Road exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	
9: '2031 DS4 AM'	08:00	09:00	01:00	
10: '2031 DS4 PM'	17:00	18:00	01:00	

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	10	7	17
	B	0	0	4	630	634
	C	13	0	0	552	565
	D	5	225	29	0	259
	Tot.	18	225	43	1189	1475

Traffic Lane Flows

Lane	Scenario 1: 2021 DM AM
Junction: Unnamed Junction	
1/1	634
2/1 (with short)	565(In) 565(Out)
2/2 (short)	0
3/1	259
4/1	17
5/1	225
6/1	43
7/1	1189
8/1	18

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	0.6 %	1940	1940
				Arm 7 Ahead	Inf	99.4 %		
				Arm 8 Right	Inf	0.0 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	97.7 %	1965	1965
				Arm 8 Ahead	Inf	2.3 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	0.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	86.9 %	1940	1940
				Arm 6 Right	Inf	11.2 %		
				Arm 8 Left	Inf	1.9 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	0.0 %	1940	1940
				Arm 6 Ahead	Inf	58.8 %		
				Arm 7 Right	Inf	41.2 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	19	1	20
	B	0	0	11	187	198
	C	82	0	0	211	293
	D	7	589	504	0	1100
	Tot.	89	589	534	399	1611

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DM PM
Junction: Unnamed Junction	
1/1	198
2/1 (with short)	293(In) 293(Out)
2/2 (short)	0
3/1	1100
4/1	20
5/1	589
6/1	534
7/1	399
8/1	89

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	5.6 %	1940	1940
				Arm 7 Ahead	Inf	94.4 %		
				Arm 8 Right	Inf	0.0 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	72.0 %	1965	1965
				Arm 8 Ahead	Inf	28.0 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	0.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	53.5 %	1940	1940
				Arm 6 Right	Inf	45.8 %		
				Arm 8 Left	Inf	0.6 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	0.0 %	1940	1940
				Arm 6 Ahead	Inf	95.0 %		
				Arm 7 Right	Inf	5.0 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	13	8	21
	B	0	0	1	621	622
	C	13	0	0	597	610
	D	1	245	27	0	273
	Tot.	14	245	41	1226	1526

Traffic Lane Flows

Lane	Scenario 3: 2021 DS2 AM
Junction: Unnamed Junction	
1/1	622
2/1 (with short)	610(In) 610(Out)
2/2 (short)	0
3/1	273
4/1	21
5/1	245
6/1	41
7/1	1226
8/1	14

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	0.2 %	1940	1940
				Arm 7 Ahead	Inf	99.8 %		
				Arm 8 Right	Inf	0.0 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	97.9 %	1965	1965
				Arm 8 Ahead	Inf	2.1 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	0.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	89.7 %	1940	1940
				Arm 6 Right	Inf	9.9 %		
				Arm 8 Left	Inf	0.4 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	0.0 %	1940	1940
				Arm 6 Ahead	Inf	61.9 %		
				Arm 7 Right	Inf	38.1 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	14	19	1	34
	B	0	0	5	212	217
	C	86	0	0	210	296
	D	3	581	503	0	1087
	Tot.	89	595	527	423	1634

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS2 PM
Junction: Unnamed Junction	
1/1	217
2/1 (with short)	296(In) 296(Out)
2/2 (short)	0
3/1	1087
4/1	34
5/1	595
6/1	527
7/1	423
8/1	89

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	2.3 %	1940	1940
				Arm 7 Ahead	Inf	97.7 %		
				Arm 8 Right	Inf	0.0 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	70.9 %	1965	1965
				Arm 8 Ahead	Inf	29.1 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	0.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	53.4 %	1940	1940
				Arm 6 Right	Inf	46.3 %		
				Arm 8 Left	Inf	0.3 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	41.2 %	1940	1940
				Arm 6 Ahead	Inf	55.9 %		
				Arm 7 Right	Inf	2.9 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	29	16	3	48
	B	0	0	12	638	650
	C	25	3	0	656	684
	D	5	377	32	0	414
	Tot.	30	409	60	1297	1796

Traffic Lane Flows

Lane	Scenario 5: 2031 DM AM
Junction: Unnamed Junction	
1/1	650
2/1 (with short)	684(In) 681(Out)
2/2 (short)	3
3/1	414
4/1	48
5/1	409
6/1	60
7/1	1297
8/1	30

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	1.8 %	1940	1940
				Arm 7 Ahead	Inf	98.2 %		
				Arm 8 Right	Inf	0.0 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	96.3 %	1965	1965
				Arm 8 Ahead	Inf	3.7 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	100.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	91.1 %	1940	1940
				Arm 6 Right	Inf	7.7 %		
				Arm 8 Left	Inf	1.2 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	60.4 %	1940	1940
				Arm 6 Ahead	Inf	33.3 %		
				Arm 7 Right	Inf	6.3 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	71	64	0	135
	B	0	0	11	375	386
	C	15	67	0	204	286
	D	8	653	495	0	1156
	Tot.	23	791	570	579	1963

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2031 DM PM
Junction: Unnamed Junction	
1/1	386
2/1 (with short)	286(In) 219(Out)
2/2 (short)	67
3/1	1156
4/1	135
5/1	791
6/1	570
7/1	579
8/1	23

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	2.8 %	1940	1940
				Arm 7 Ahead	Inf	97.2 %		
				Arm 8 Right	Inf	0.0 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	93.2 %	1965	1965
				Arm 8 Ahead	Inf	6.8 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	100.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	56.5 %	1940	1940
				Arm 6 Right	Inf	42.8 %		
				Arm 8 Left	Inf	0.7 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	52.6 %	1940	1940
				Arm 6 Ahead	Inf	47.4 %		
				Arm 7 Right	Inf	0.0 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	334	63	3	400
	B	18	0	15	595	628
	C	140	16	0	690	846
	D	1	320	36	0	357
	Tot.	159	670	114	1288	2231

Traffic Lane Flows

Lane	Scenario 7: 2031 DS2 AM
Junction: Unnamed Junction	
1/1	628
2/1 (with short)	846(In) 830(Out)
2/2 (short)	16
3/1	357
4/1	400
5/1	670
6/1	114
7/1	1288
8/1	159

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	2.4 %	1940	1940
				Arm 7 Ahead	Inf	94.7 %		
				Arm 8 Right	Inf	2.9 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	83.1 %	1965	1965
				Arm 8 Ahead	Inf	16.9 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	100.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	89.6 %	1940	1940
				Arm 6 Right	Inf	10.1 %		
				Arm 8 Left	Inf	0.3 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	83.5 %	1940	1940
				Arm 6 Ahead	Inf	15.8 %		
				Arm 7 Right	Inf	0.8 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	71	166	0	237
	B	13	0	24	477	514
	C	34	96	0	206	336
	D	0	600	438	0	1038
	Tot.	47	767	628	683	2125

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS2 PM
Junction: Unnamed Junction	
1/1	514
2/1 (with short)	336(In) 240(Out)
2/2 (short)	96
3/1	1038
4/1	237
5/1	767
6/1	628
7/1	683
8/1	47

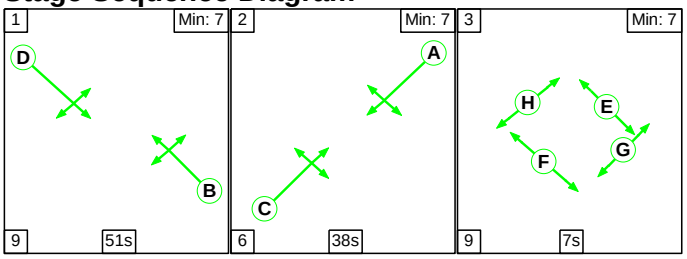
Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Watling Street North)	3.25	0.00	Y	Arm 6 Left	Inf	4.7 %	1940	1940
				Arm 7 Ahead	Inf	92.8 %		
				Arm 8 Right	Inf	2.5 %		
2/1 (Northampton Road)	3.50	0.00	Y	Arm 7 Left	Inf	85.8 %	1965	1965
				Arm 8 Ahead	Inf	14.2 %		
2/2 (Northampton Road)	3.50	0.00	Y	Arm 5 Right	Inf	100.0 %	1965	1965
3/1 (Watling Street South.)	3.25	0.00	Y	Arm 5 Ahead	Inf	57.8 %	1940	1940
				Arm 6 Right	Inf	42.2 %		
				Arm 8 Left	Inf	0.0 %		
4/1 (Brackley Road#)	3.25	0.00	Y	Arm 5 Left	Inf	30.0 %	1940	1940
				Arm 6 Ahead	Inf	70.0 %		
				Arm 7 Right	Inf	0.0 %		
5/1 (Watling Street North Exi Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Northampton Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Watling Street South exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Brackley Road exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

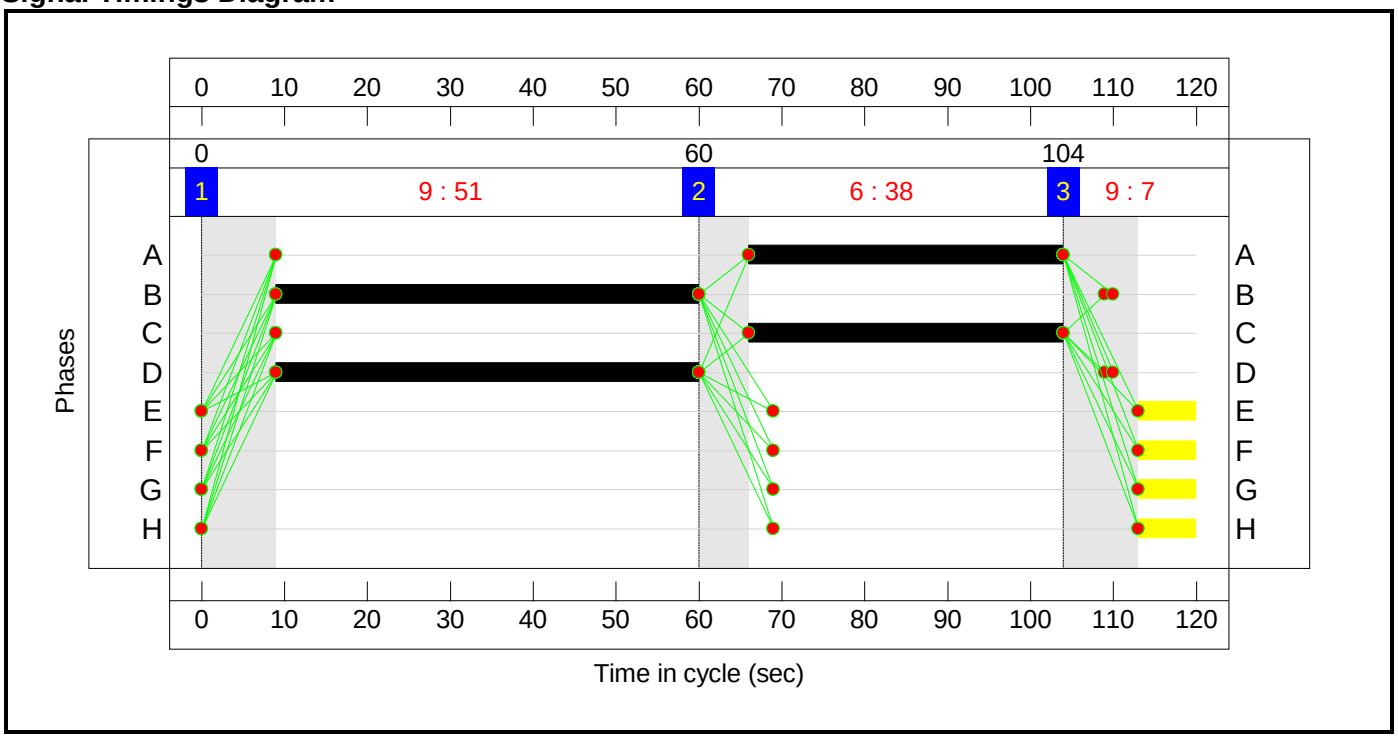
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	51	38	7
Change Point	0	60	104

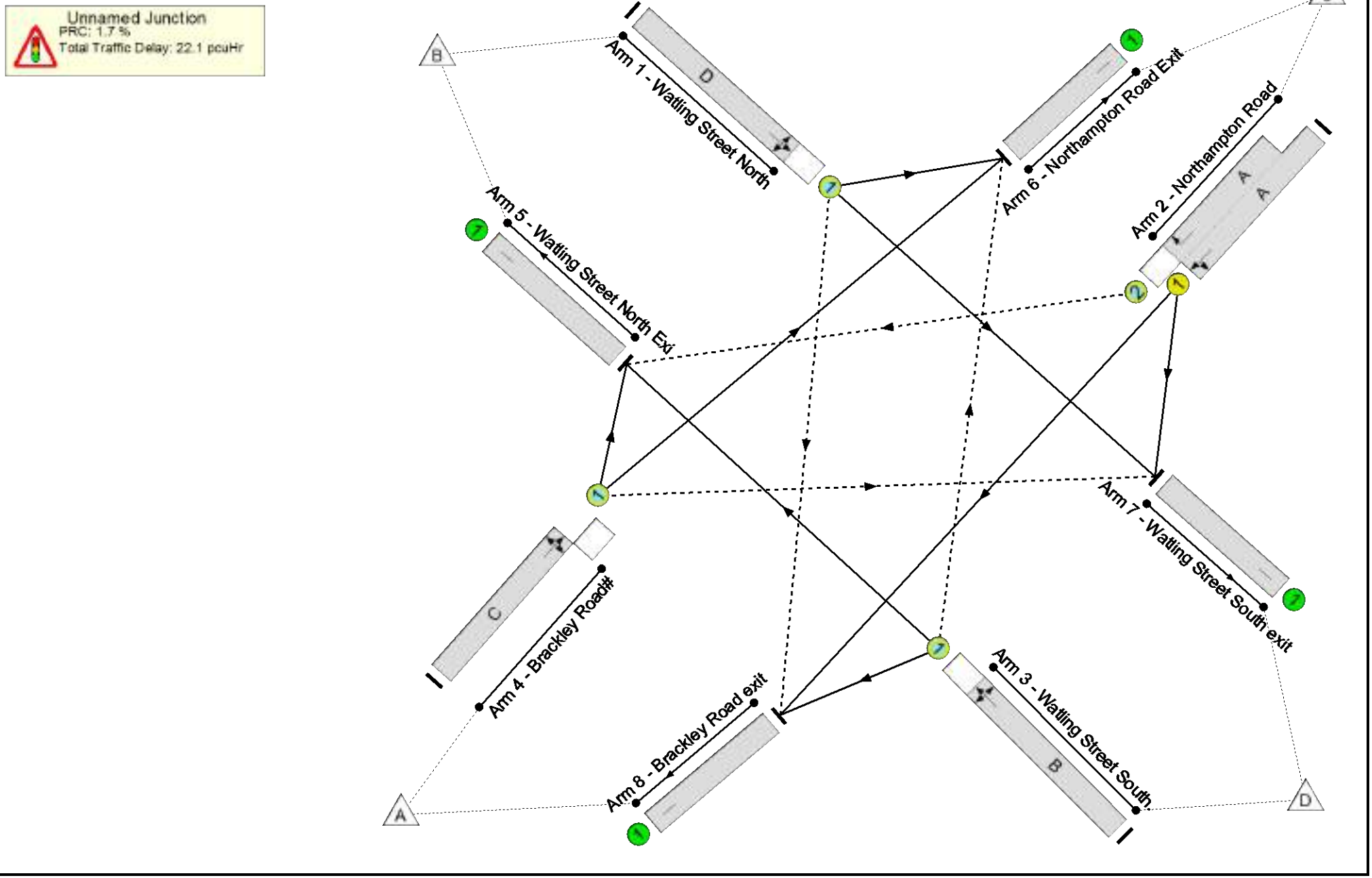
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.5%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	51	-	634	1940	841	75.4%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	38	-	565	1965:1965	639+0	88.5 : 0.0%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	51	-	259	1940	297	87.3%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	38	-	17	1940	178	9.5%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	43	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	1189	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	18	Inf	Inf	0.0%

Full Input Data And Results

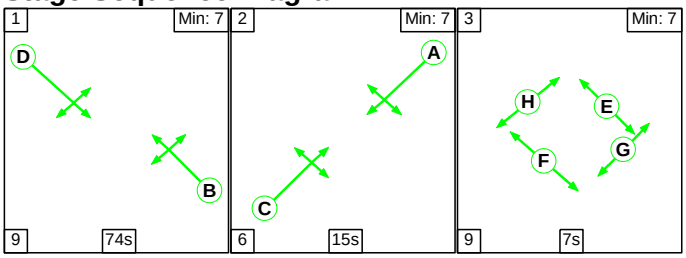
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**34**	**0**	**2**	**13.9**	**8.0**	**0.1**	**22.1**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**34**	**0**	**2**	**13.9**	**8.0**	**0.1**	**22.1**	**-**	**-**	**-**	**-**
1/1	634	634	0	0	0	5.0	1.5	0.0	6.6	37.2	17.8	1.5	19.3
2/1+2/2	565	565	0	0	0	6.0	3.5	0.0	9.5	60.7	17.7	3.5	21.2
3/1	259	259	27	0	2	2.7	3.0	0.1	5.7	79.8	8.3	3.0	11.3
4/1	17	17	7	0	0	0.1	0.1	0.1	0.2	49.9	0.4	0.1	0.4
5/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	43	43	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1189	1189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	18	18	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 1.7 Total Delay for Signalled Lanes (pcuHr): 22.06 Cycle Time (s): 120
PRC Over All Lanes (%): 1.7 Total Delay Over All Lanes(pcuHr): 22.06

Full Input Data And Results

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

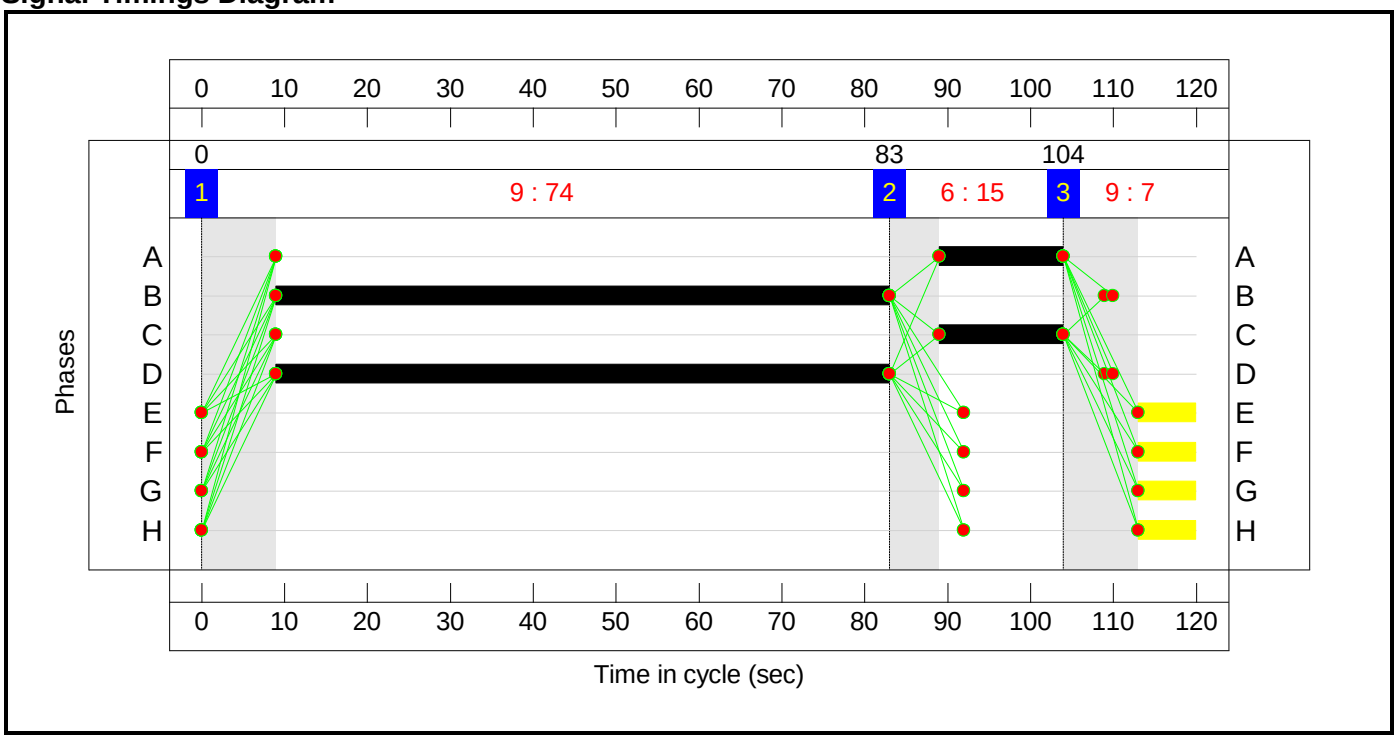
Stage Sequence Diagram



Stage Timings

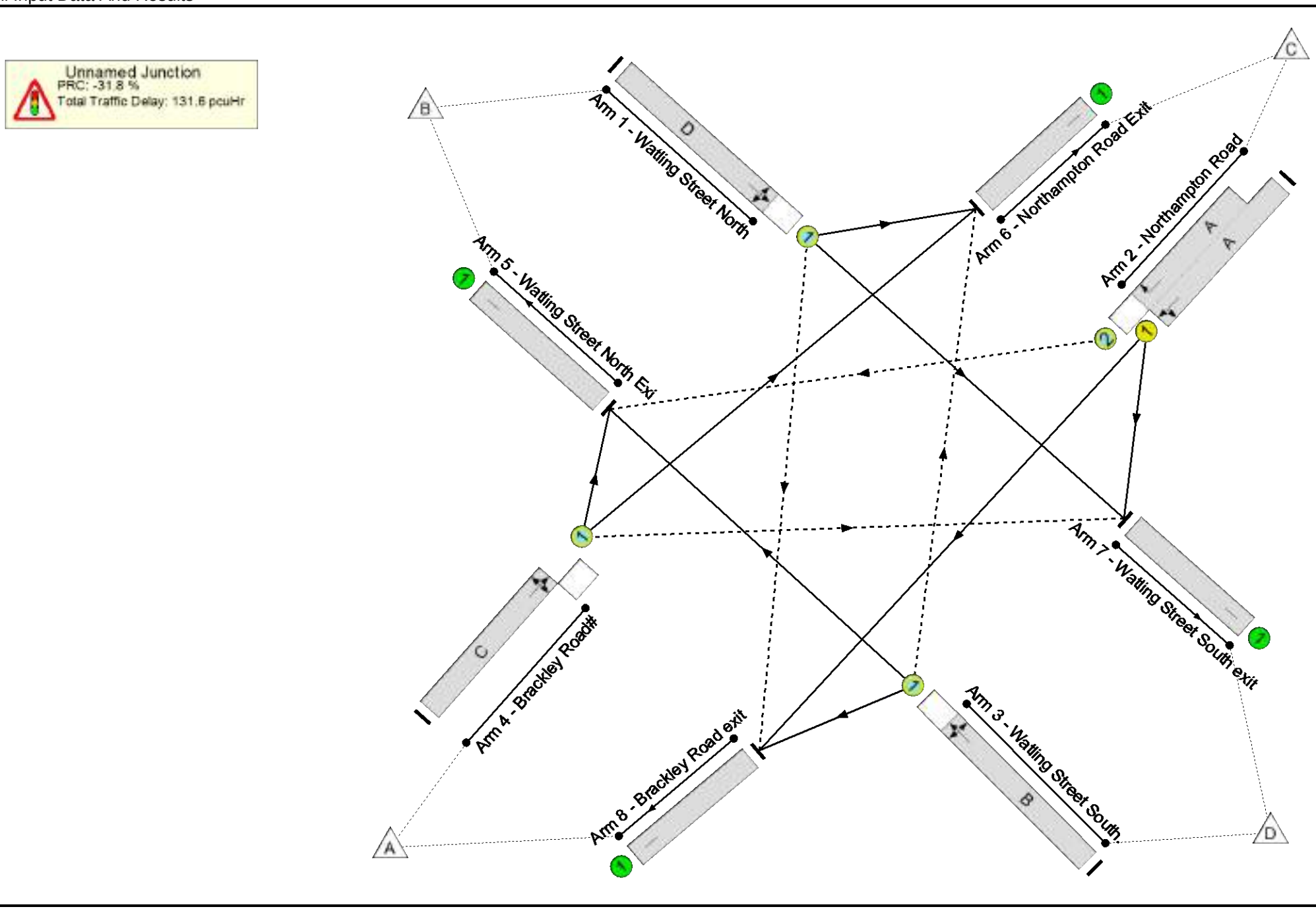
Stage	1	2	3
Duration	74	15	7
Change Point	0	83	104

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Unnamed Junction
PRC: -31.8 %
Total Traffic Delay: 131.6 pcuHr
Arm 1 - Watling Street North
Arm 2 - Northampton Road
Arm 3 - Watling Street South
Arm 4 - Brackley Road#
Arm 5 - Watling Street North Exi
Arm 6 - Northampton Road Exit
Arm 7 - Watling Street South exit
Arm 8 - Brackley Road exit
A
B
C
D

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**118.6%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**118.6%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	74	-	198	1940	1213	16.3%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	15	-	293	1965:1965	262+0	111.8 : 0.0%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	74	-	1100	1940	928	118.6%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	15	-	20	1940	259	7.7%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	589	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	534	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	89	Inf	Inf	0.0%

Full Input Data And Results

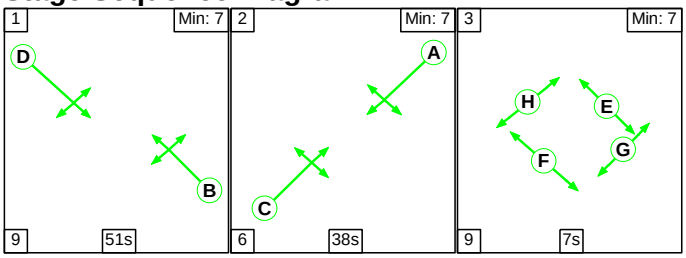
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**398**	**0**	**28**	**22.5**	**108.7**	**0.3**	**131.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**398**	**0**	**28**	**22.5**	**108.7**	**0.3**	**131.6**	**-**	**-**	**-**	**-**
1/1	198	198	0	0	0	0.5	0.1	0.0	0.6	11.2	2.7	0.1	2.8
2/1+2/2	293	262	0	0	0	5.5	19.3	0.0	24.7	304.1	11.1	19.3	30.4
3/1	1100	928	398	0	27	16.3	89.3	0.3	105.9	346.7	42.4	89.3	131.7
4/1	20	20	0	0	1	0.3	0.0	0.0	0.3	53.9	0.6	0.0	0.6
5/1	497	497	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	455	455	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	377	377	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	79	79	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -31.8 Total Delay for Signalled Lanes (pcuHr): 131.59 Cycle Time (s): 120
PRC Over All Lanes (%): -31.8 Total Delay Over All Lanes(pcuHr): 131.59

Full Input Data And Results

Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

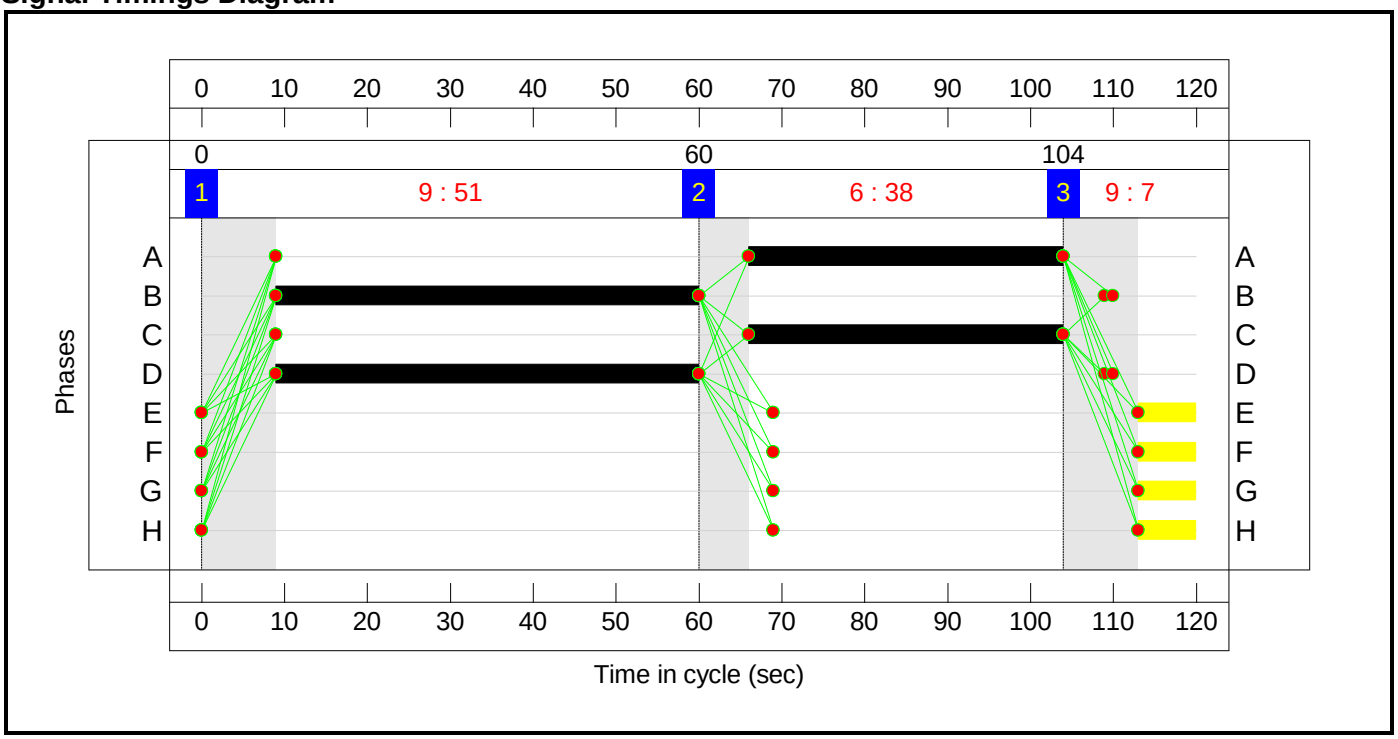
Stage Sequence Diagram



Stage Timings

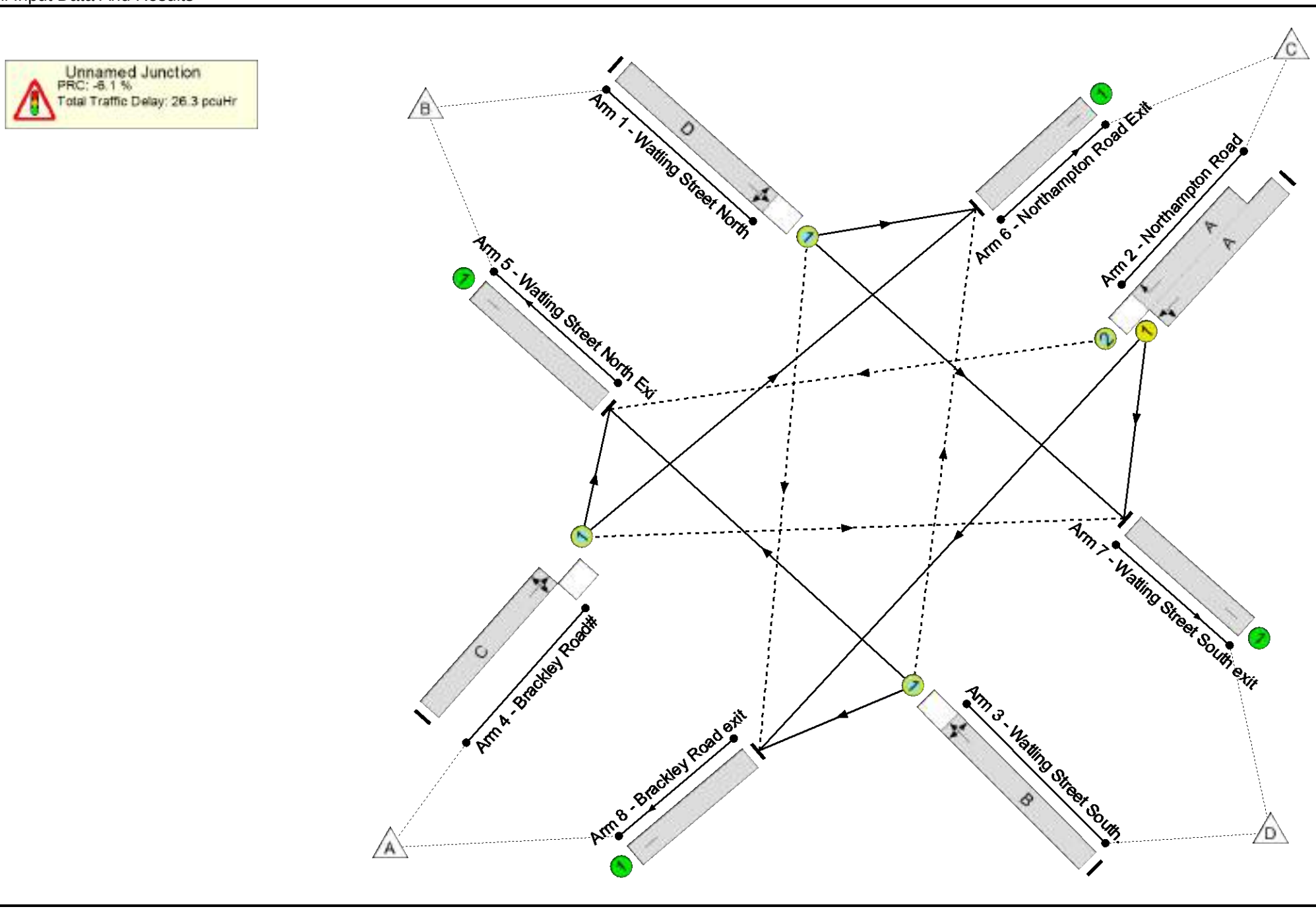
Stage	1	2	3
Duration	51	38	7
Change Point	0	60	104

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Unnamed Junction
PRC: -8.1 %
Total Traffic Delay: 26.3 pcuHr
Arm 1 - Watling Street North
Arm 6 - Northampton Road Exit
Arm 2 - Northampton Road
Arm 5 - Watling Street North Exi
Arm 7 - Watling Street South exit
Arm 4 - Brackley Road#
Arm 8 - Brackley Road exit
Arm 3 - Watling Street South
A
B
C
D

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.5%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	51	-	622	1940	841	74.0%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	38	-	610	1965:1965	639+0	95.5 : 0.0%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	51	-	273	1940	315	86.7%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	38	-	21	1940	158	13.3%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	245	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	41	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	1226	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	14	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**33**	**0**	**2**	**14.7**	**11.5**	**0.1**	**26.3**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**33**	**0**	**2**	**14.7**	**11.5**	**0.1**	**26.3**	**-**	**-**	**-**	**-**
1/1	622	622	0	0	0	4.9	1.4	0.0	6.3	36.5	17.3	1.4	18.7
2/1+2/2	610	610	0	0	0	6.7	7.1	0.0	13.8	81.6	19.8	7.1	26.9
3/1	273	273	25	0	2	2.9	2.9	0.1	5.8	76.6	8.8	2.9	11.7
4/1	21	21	8	0	0	0.2	0.1	0.1	0.3	52.6	0.5	0.1	0.5
5/1	245	245	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	41	41	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1226	1226	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	14	14	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1

PRC for Signalled Lanes (%): -6.1
PRC Over All Lanes (%): -6.1

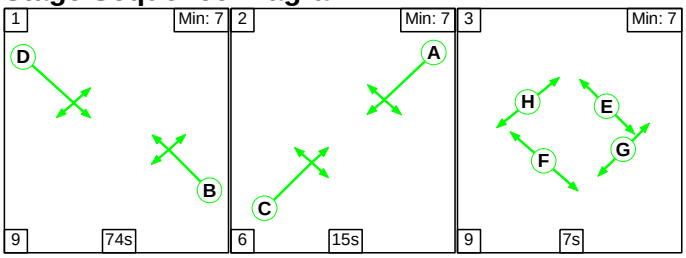
Total Delay for Signalled Lanes (pcuHr): 26.25
Total Delay Over All Lanes(pcuHr): 26.25

Cycle Time (s): 120

Full Input Data And Results

Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

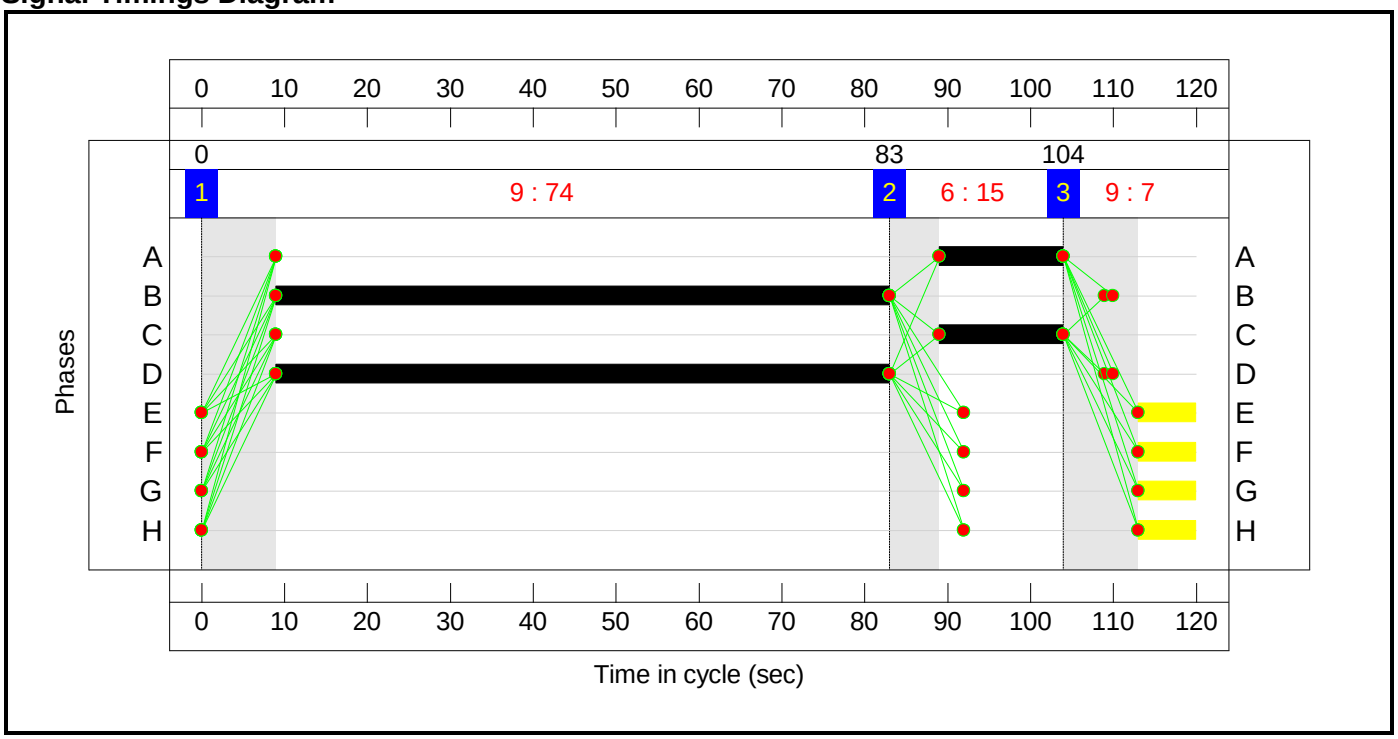
Stage Sequence Diagram



Stage Timings

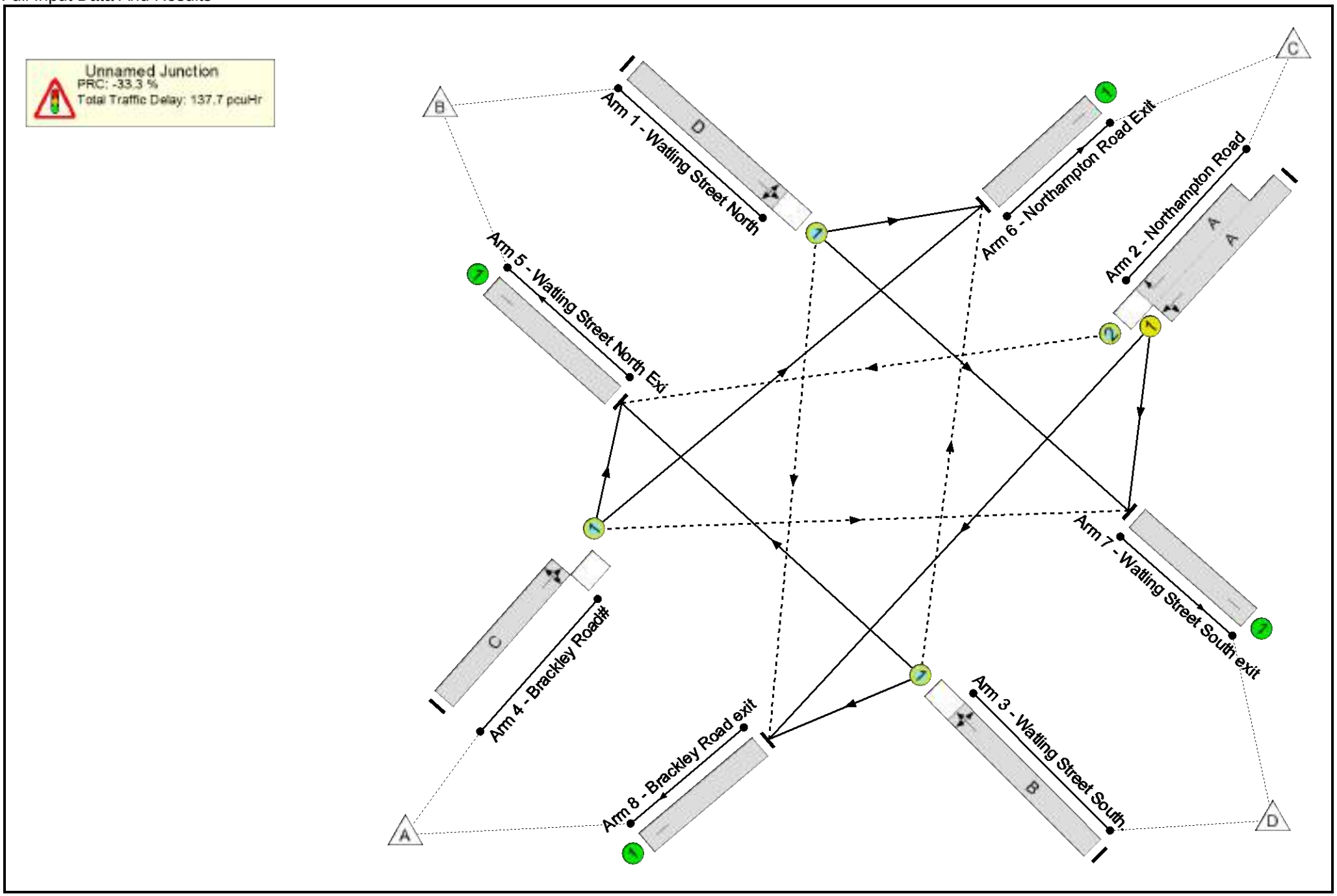
Stage	1	2	3
Duration	74	15	7
Change Point	0	83	104

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Unnamed Junction
PRC: -33.3 %
Total Traffic Delay: 137.7 pcuHr
Arm 1 - Watling Street North
Arm 6 - Northampton Road Exit
Arm 2 - Northampton Road
Arm 5 - Watling Street North Exi
Arm 7 - Watling Street South exit
Arm 4 - Brackley Road#
Arm 8 - Brackley Road exit
Arm 3 - Watling Street South
A
B
C
D

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.9%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.9%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	74	-	217	1940	1213	17.9%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	15	-	296	1965:1965	262+0	113.0 : 0.0%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	74	-	1087	1940	906	119.9%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	15	-	34	1940	259	13.1%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	595	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	527	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	423	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	89	Inf	Inf	0.0%

Full Input Data And Results

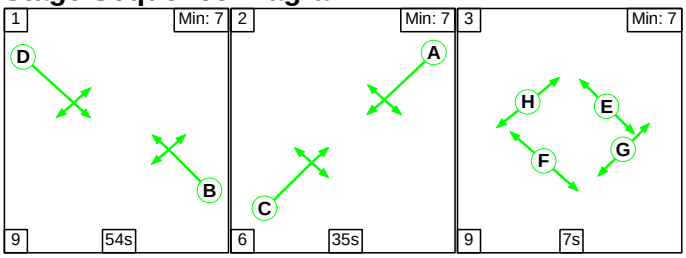
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**392**	**0**	**29**	**23.4**	**114.0**	**0.3**	**137.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**392**	**0**	**29**	**23.4**	**114.0**	**0.3**	**137.7**	**-**	**-**	**-**	**-**
1/1	217	217	0	0	0	0.6	0.1	0.0	0.7	11.3	3.0	0.1	3.1
2/1+2/2	296	262	0	0	0	5.6	20.6	0.0	26.2	318.7	11.3	20.6	31.9
3/1	1087	906	392	0	28	16.7	93.2	0.3	110.3	365.4	42.3	93.2	135.5
4/1	34	34	0	0	1	0.4	0.1	0.0	0.5	54.3	1.0	0.1	1.1
5/1	498	498	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	443	443	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	399	399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	79	79	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -33.3 Total Delay for Signalled Lanes (pcuHr): 137.74 Cycle Time (s): 120
PRC Over All Lanes (%): -33.3 Total Delay Over All Lanes(pcuHr): 137.74

Full Input Data And Results

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

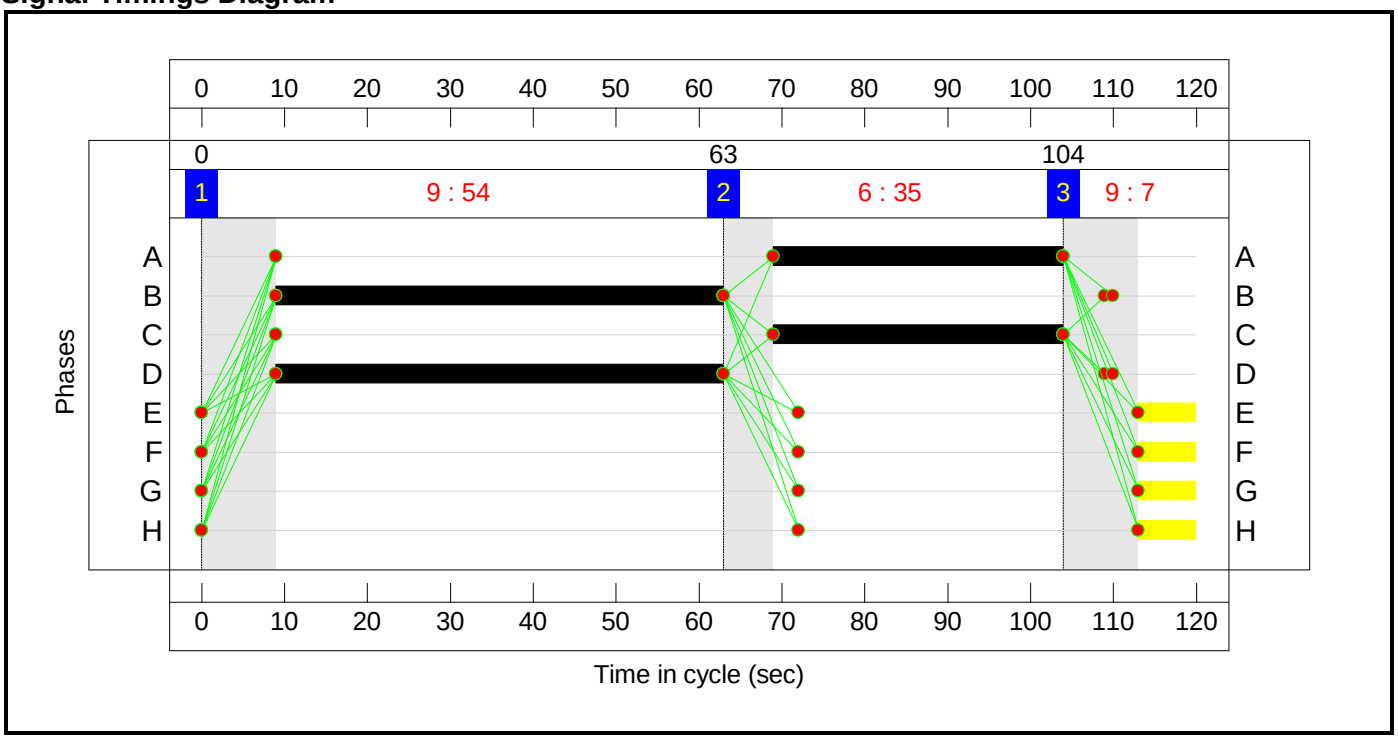
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	54	35	7
Change Point	0	63	104

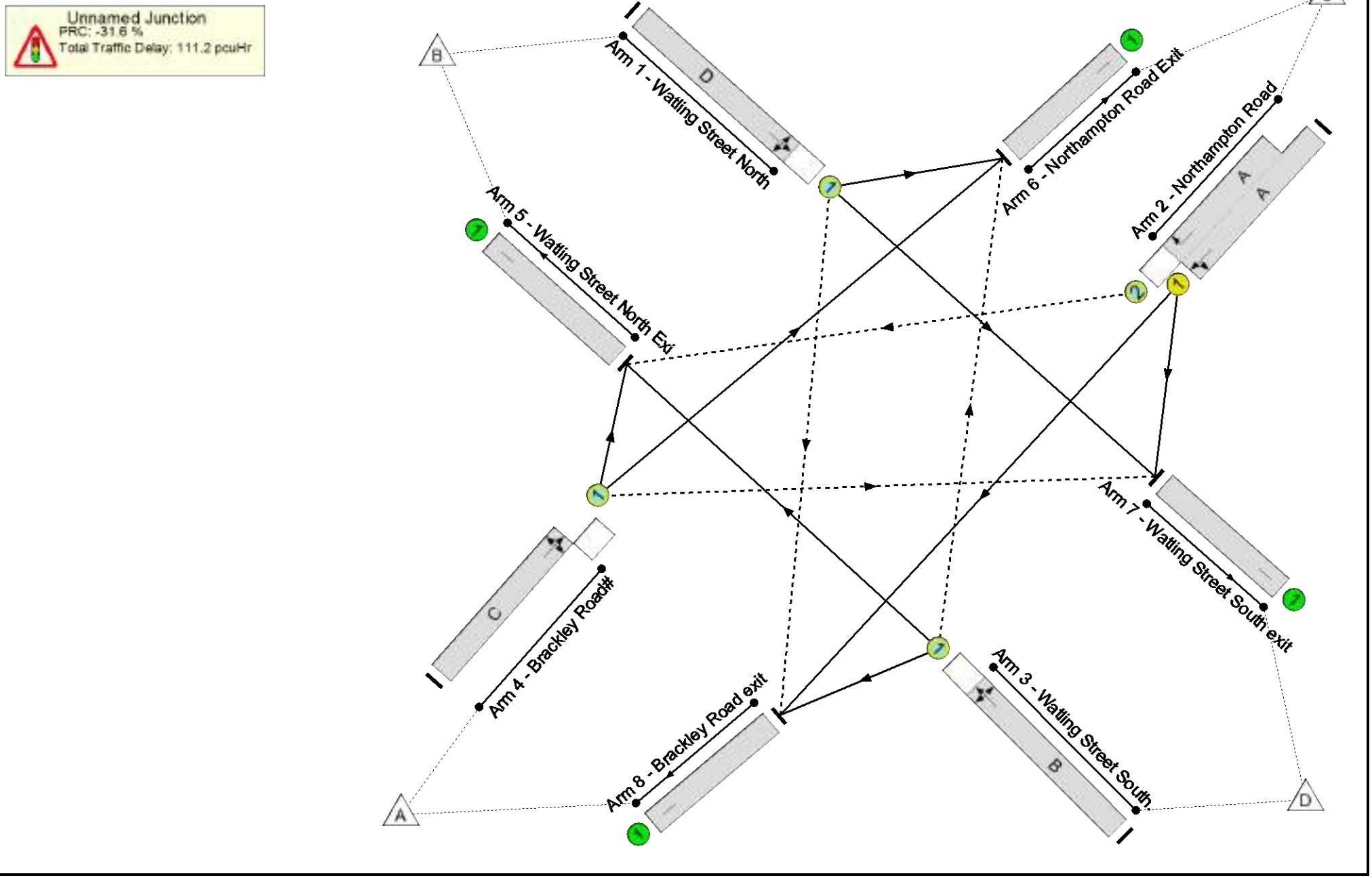
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**118.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**118.5%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	54	-	650	1940	889	73.1%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	35	-	684	1965:1965	590+3	115.5 : 115.5%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	54	-	414	1940	349	118.5%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	35	-	48	1940	582	8.2%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	409	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	60	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	1297	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	30	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**25**	**0**	**8**	**25.2**	**86.0**	**0.1**	**111.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**25**	**0**	**8**	**25.2**	**86.0**	**0.1**	**111.2**	**-**	**-**	**-**	**-**
1/1	650	650	0	0	0	4.8	1.3	0.0	6.1	33.9	17.5	1.3	18.9
2/1+2/2	684	592	3	0	0	11.8	49.4	0.0	61.3	322.4	27.3	49.4	76.8
3/1	414	349	22	0	5	8.1	35.2	0.1	43.4	377.3	16.0	35.2	51.2
4/1	48	48	0	0	3	0.4	0.0	0.0	0.5	35.4	1.1	0.0	1.2
5/1	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	55	55	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1209	1209	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	26	26	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1

PRC for Signalled Lanes (%): -31.6
PRC Over All Lanes (%): -31.6

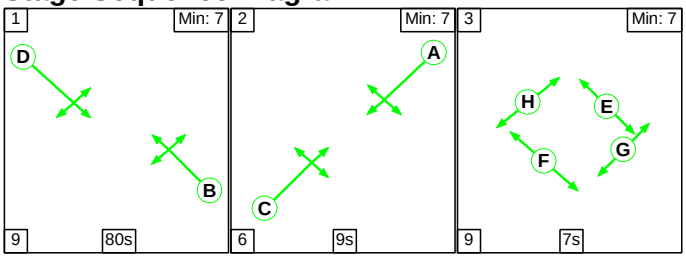
Total Delay for Signalled Lanes (pcuHr): 111.24
Total Delay Over All Lanes(pcuHr): 111.24

Cycle Time (s): 120

Full Input Data And Results

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

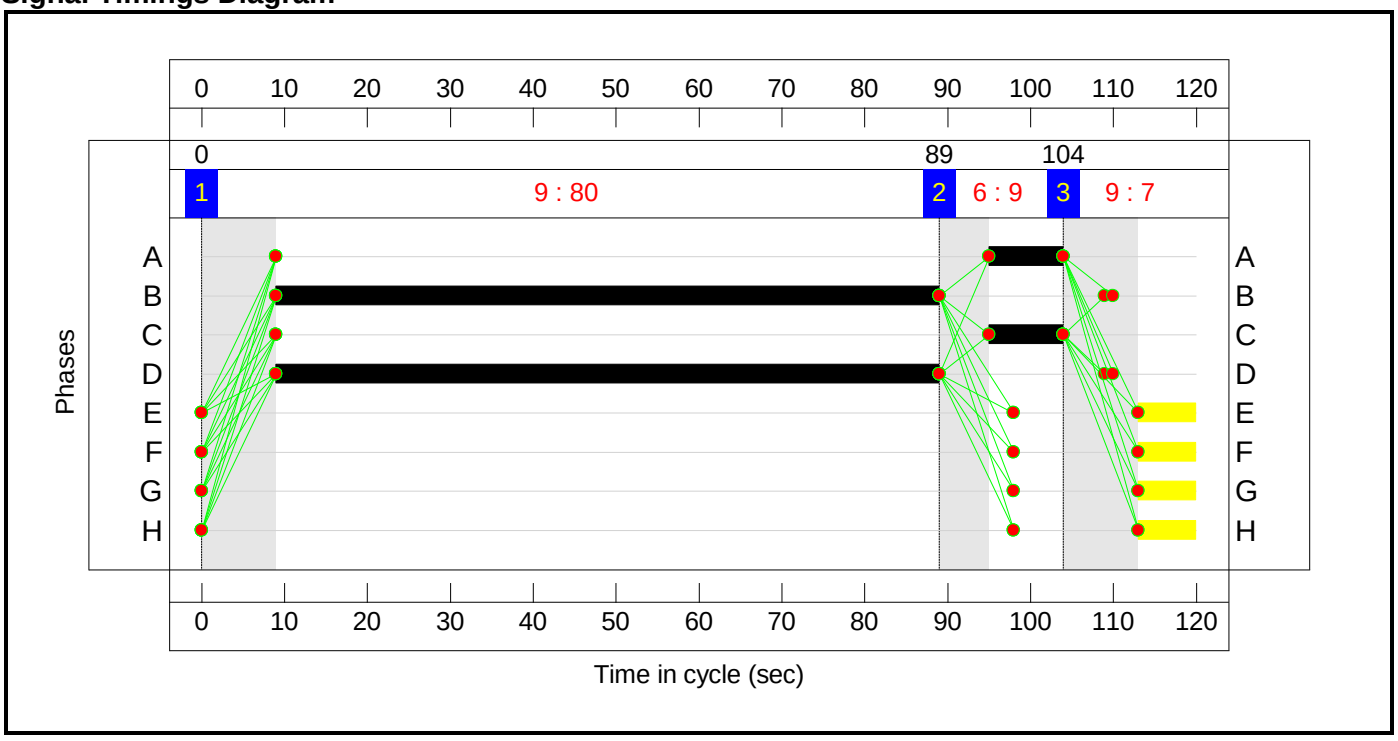
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	80	9	7
Change Point	0	89	104

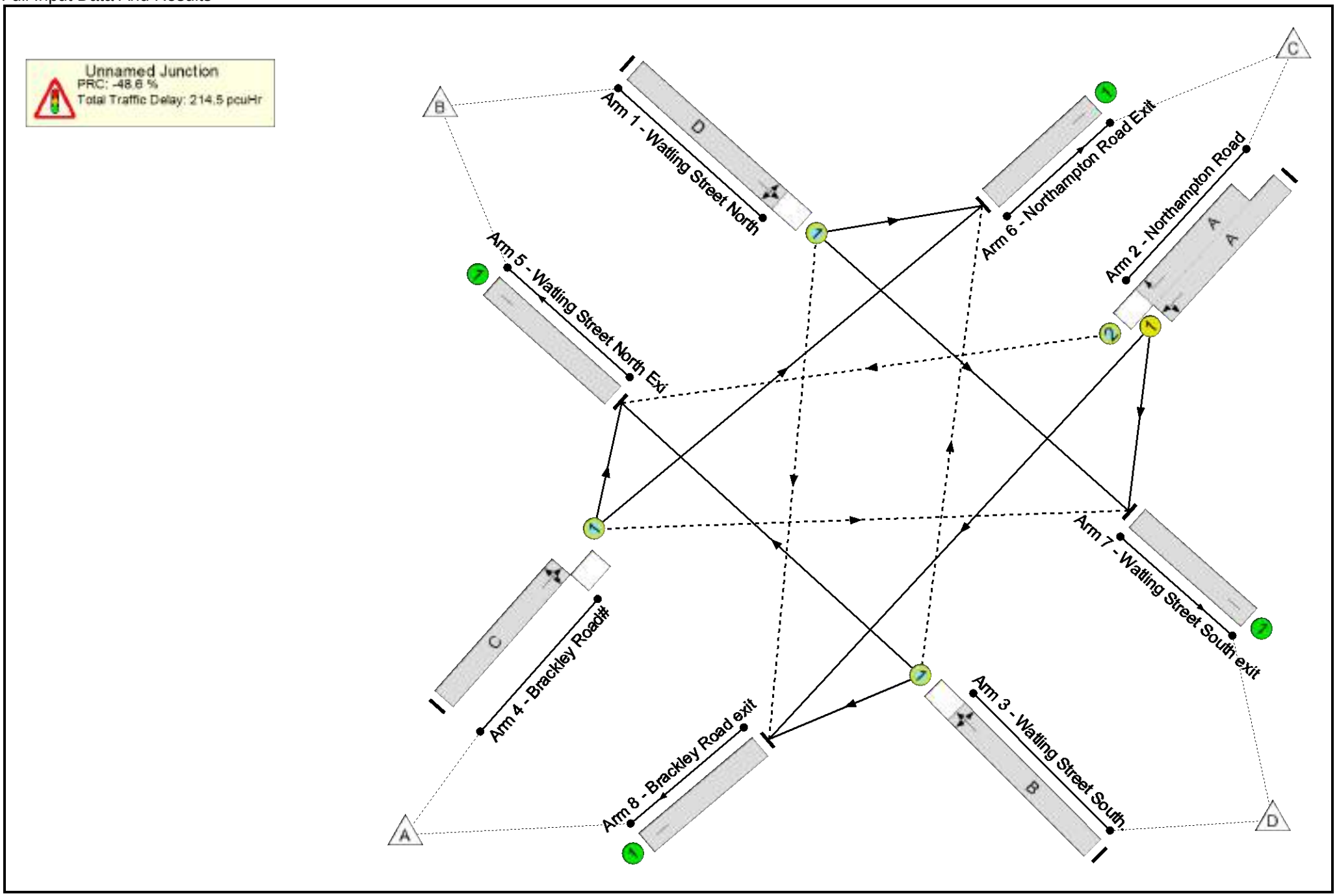
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**133.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**133.7%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	80	-	386	1940	1310	29.5%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	9	-	286	1965:1965	164+60	133.7 : 111.7%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	80	-	1156	1940	869	133.1%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	9	-	135	1940	162	83.5%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	791	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	570	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	579	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	23	Inf	Inf	0.0%

Full Input Data And Results

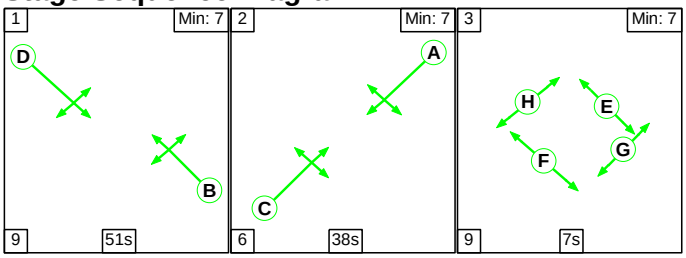
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**364**	**0**	**68**	**32.7**	**181.3**	**0.5**	**214.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**364**	**0**	**68**	**32.7**	**181.3**	**0.5**	**214.5**	**-**	**-**	**-**	**-**
1/1	386	386	0	0	0	0.8	0.2	0.0	1.1	9.9	5.1	0.2	5.4
2/1+2/2	286	224	18	0	42	7.3	33.3	0.2	40.7	512.3	10.3	33.3	43.6
3/1	1156	869	346	0	26	22.5	145.6	0.4	168.6	524.9	48.7	145.6	194.3
4/1	135	135	0	0	0	2.0	2.2	0.0	4.2	112.2	4.4	2.2	6.6
5/1	622	622	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	447	447	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	528	528	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	17	17	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -48.6 Total Delay for Signalled Lanes (pcuHr): 214.52 Cycle Time (s): 120
PRC Over All Lanes (%): -48.6 Total Delay Over All Lanes(pcuHr): 214.52

Full Input Data And Results

Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

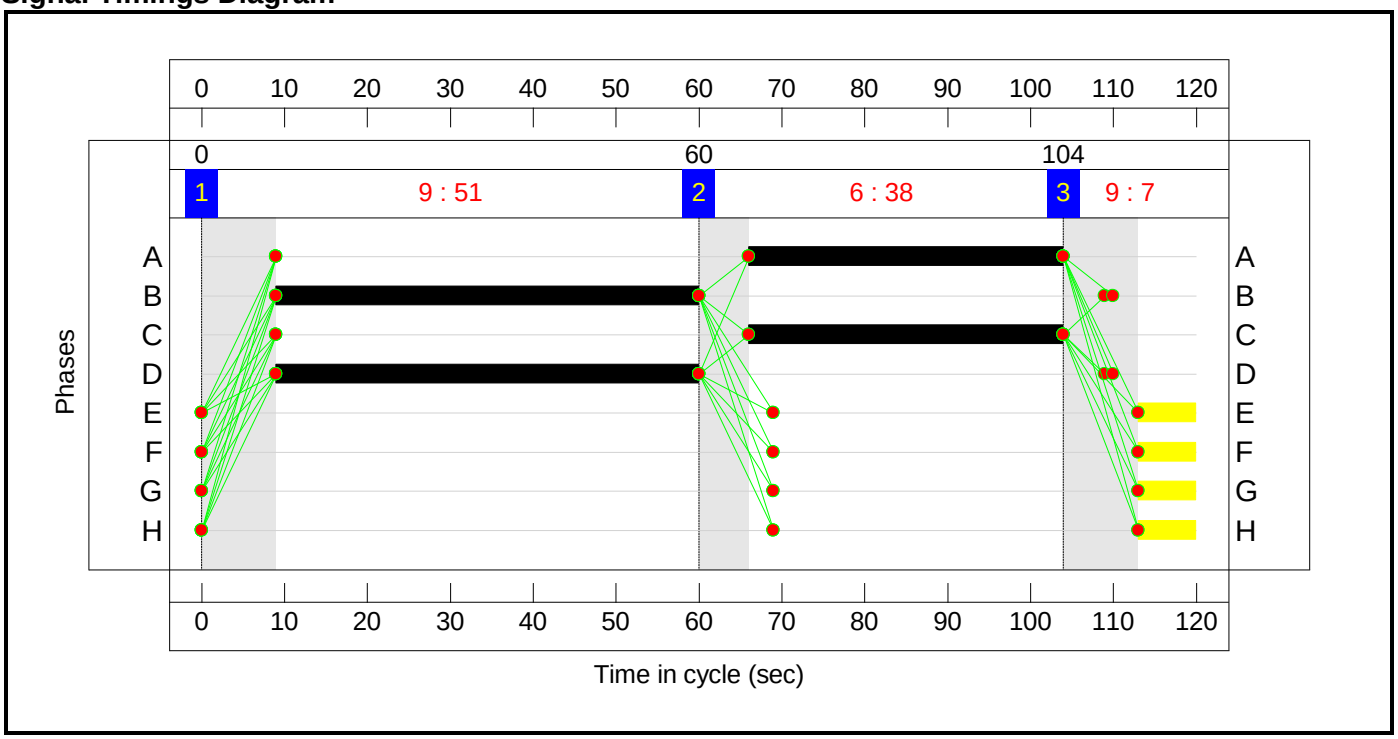
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	51	38	7
Change Point	0	60	104

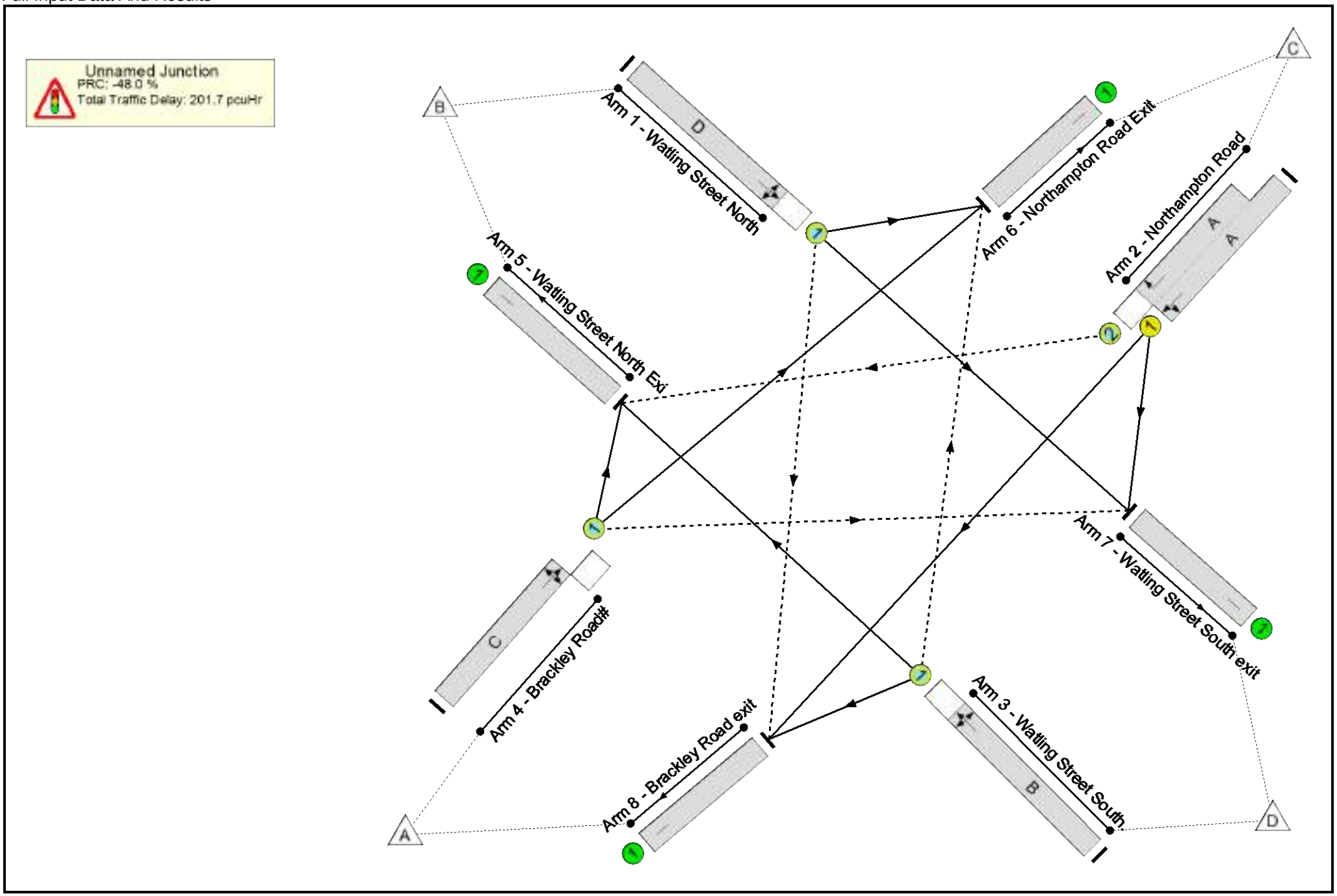
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**133.2%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**133.2%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	51	-	628	1940	616	101.9%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	38	-	846	1965:1965	637+12	130.2 : 130.2%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	51	-	357	1940	268	133.2%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	38	-	400	1940	631	63.4%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	670	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	114	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	1288	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	159	Inf	Inf	0.0%

Full Input Data And Results

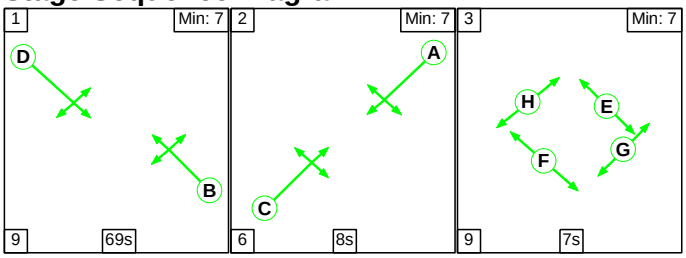
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**52**	**0**	**8**	**38.2**	**163.4**	**0.1**	**201.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**52**	**0**	**8**	**38.2**	**163.4**	**0.1**	**201.7**	**-**	**-**	**-**	**-**
1/1	628	616	16	0	2	6.4	15.8	0.0	22.2	127.3	19.5	15.8	35.3
2/1+2/2	846	650	12	0	0	19.5	100.3	0.0	119.8	509.6	38.0	100.3	138.3
3/1	357	268	23	0	4	8.5	46.4	0.1	55.0	555.0	14.9	46.4	61.3
4/1	400	400	0	0	3	3.8	0.9	0.0	4.7	42.4	11.3	0.9	12.2
5/1	586	586	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	105	105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1117	1117	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	126	126	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -48.0 Total Delay for Signalled Lanes (pcuHr): 201.71 Cycle Time (s): 120
PRC Over All Lanes (%): -48.0 Total Delay Over All Lanes(pcuHr): 201.71

Full Input Data And Results

Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

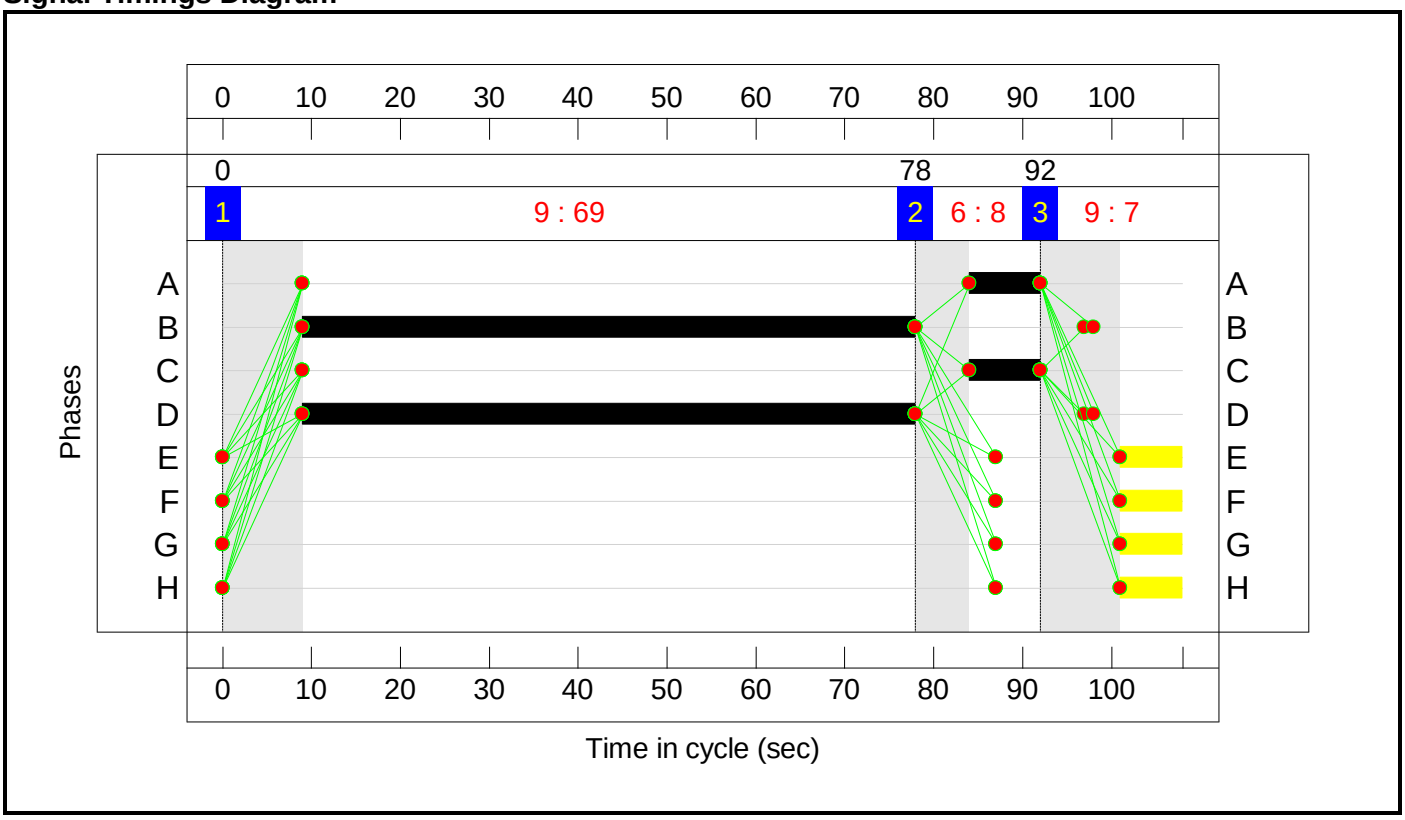
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	69	8	7
Change Point	0	78	92

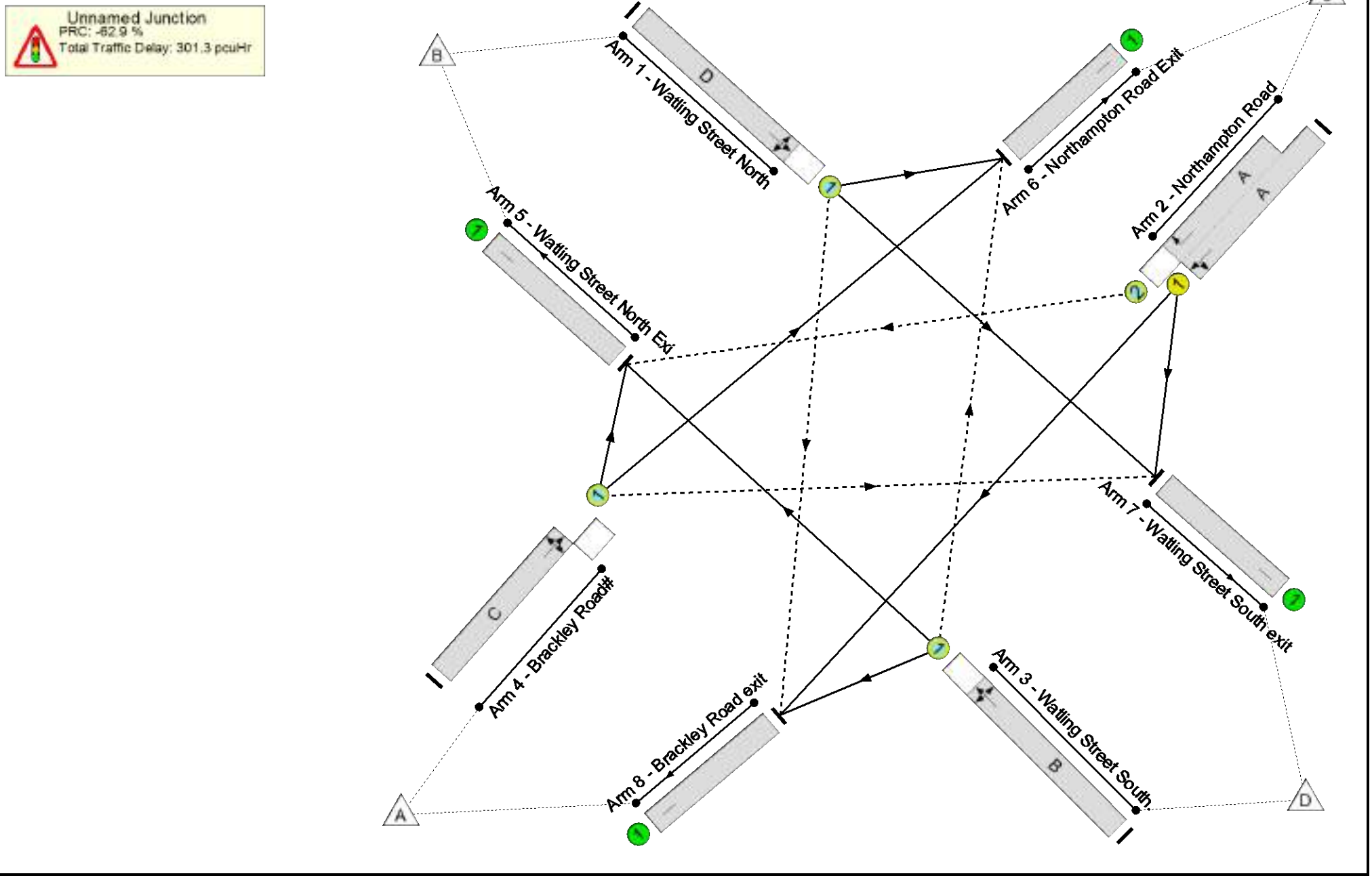
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**146.6%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**146.6%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	69	-	514	1940	745	69.0%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	8	-	336	1965:1965	164+67	146.6 : 144.0%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	69	-	1038	1940	712	145.7%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	8	-	237	1940	162	146.6%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	767	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	628	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	683	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	47	Inf	Inf	0.0%

Full Input Data And Results

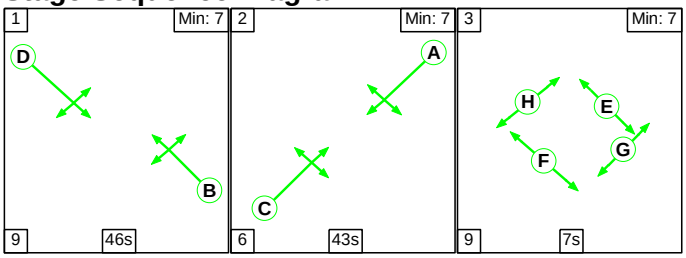
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**285**	**0**	**95**	**41.7**	**259.0**	**0.6**	**301.3**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**285**	**0**	**95**	**41.7**	**259.0**	**0.6**	**301.3**	**-**	**-**	**-**	**-**
1/1	514	514	13	0	0	1.4	1.1	0.0	2.5	17.5	7.7	1.1	8.8
2/1+2/2	336	230	0	0	67	9.5	54.3	0.2	64.0	685.6	11.3	54.3	65.6
3/1	1038	712	272	0	28	23.5	164.4	0.4	188.3	653.0	42.9	164.4	207.3
4/1	237	162	0	0	0	7.3	39.2	0.0	46.5	706.0	10.8	39.2	50.0
5/1	527	527	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	438	438	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	618	618	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	36	36	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -62.9 Total Delay for Signalled Lanes (pcuHr): 301.26 Cycle Time (s): 108
PRC Over All Lanes (%): -62.9 Total Delay Over All Lanes(pcuHr): 301.26

Full Input Data And Results

Scenario 9: '2031 DS4 AM' (FG9: '2031 DS4 AM', Plan 1: 'Network Control Plan 1')

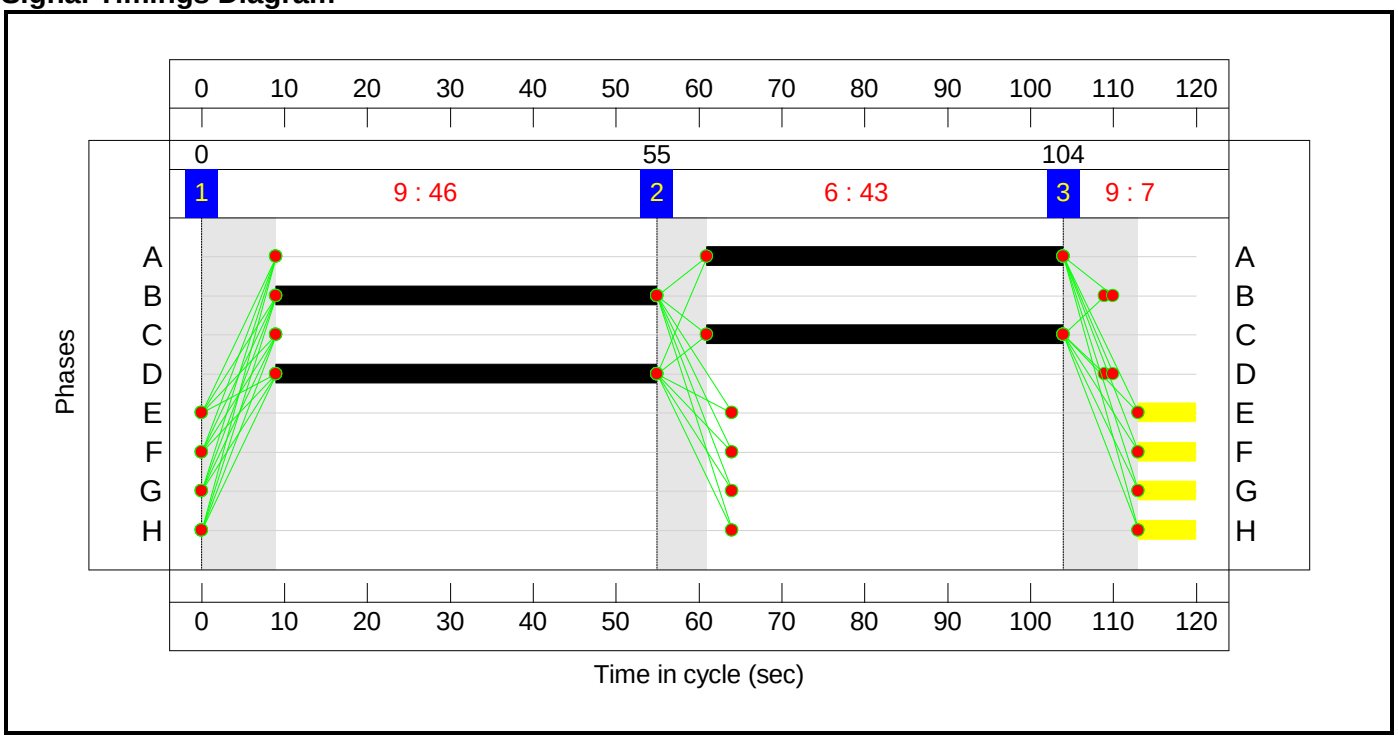
Stage Sequence Diagram



Stage Timings

Stage	1	2	3
Duration	46	43	7
Change Point	0	55	104

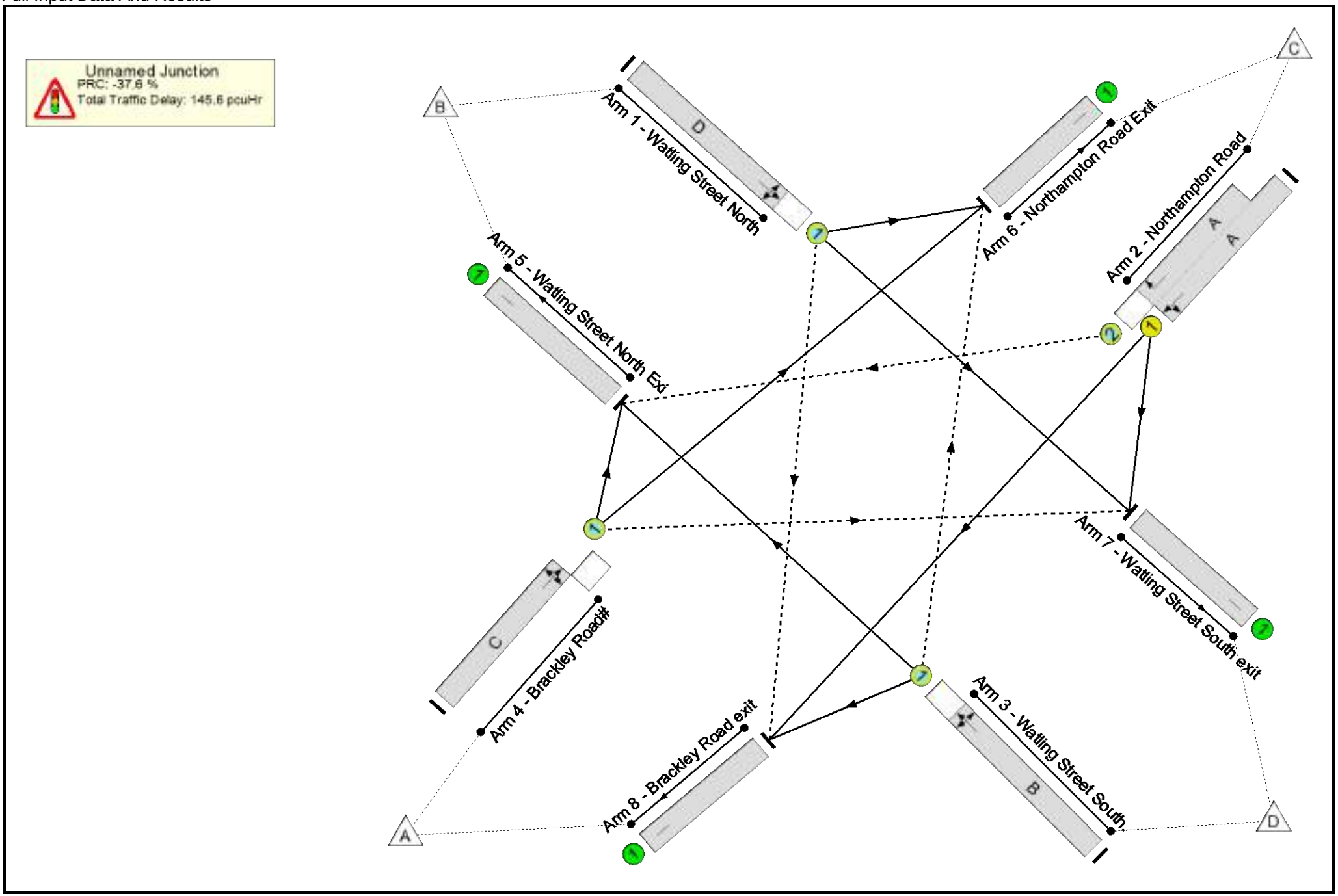
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**123.8%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**123.8%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	46	-	545	1940	760	71.7%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	43	-	899	1965:1965	721+6	123.8 : 123.8%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	46	-	346	1940	300	115.4%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	43	-	19	1940	380	5.0%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	323	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	57	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	1339	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	90	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**26**	**0**	**8**	**28.9**	**116.6**	**0.1**	**145.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**26**	**0**	**8**	**28.9**	**116.6**	**0.1**	**145.6**	**-**	**-**	**-**	**-**
1/1	545	545	0	0	0	4.7	1.3	0.0	5.9	39.2	15.3	1.3	16.5
2/1+2/2	899	726	6	0	0	17.5	88.9	0.0	106.4	426.1	38.2	88.9	127.1
3/1	346	300	20	0	5	6.6	26.4	0.1	33.1	344.1	13.1	26.4	39.5
4/1	19	19	0	0	3	0.1	0.0	0.0	0.2	35.1	0.4	0.0	0.4
5/1	279	279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	53	53	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1185	1185	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	73	73	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1

PRC for Signalled Lanes (%): -37.6
PRC Over All Lanes (%): -37.6

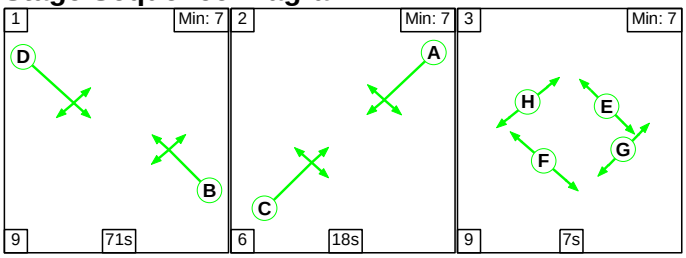
Total Delay for Signalled Lanes (pcuHr): 145.61
Total Delay Over All Lanes(pcuHr): 145.61

Cycle Time (s): 120

Full Input Data And Results

Scenario 10: '2031 DS4 PM' (FG10: '2031 DS4 PM', Plan 1: 'Network Control Plan 1')

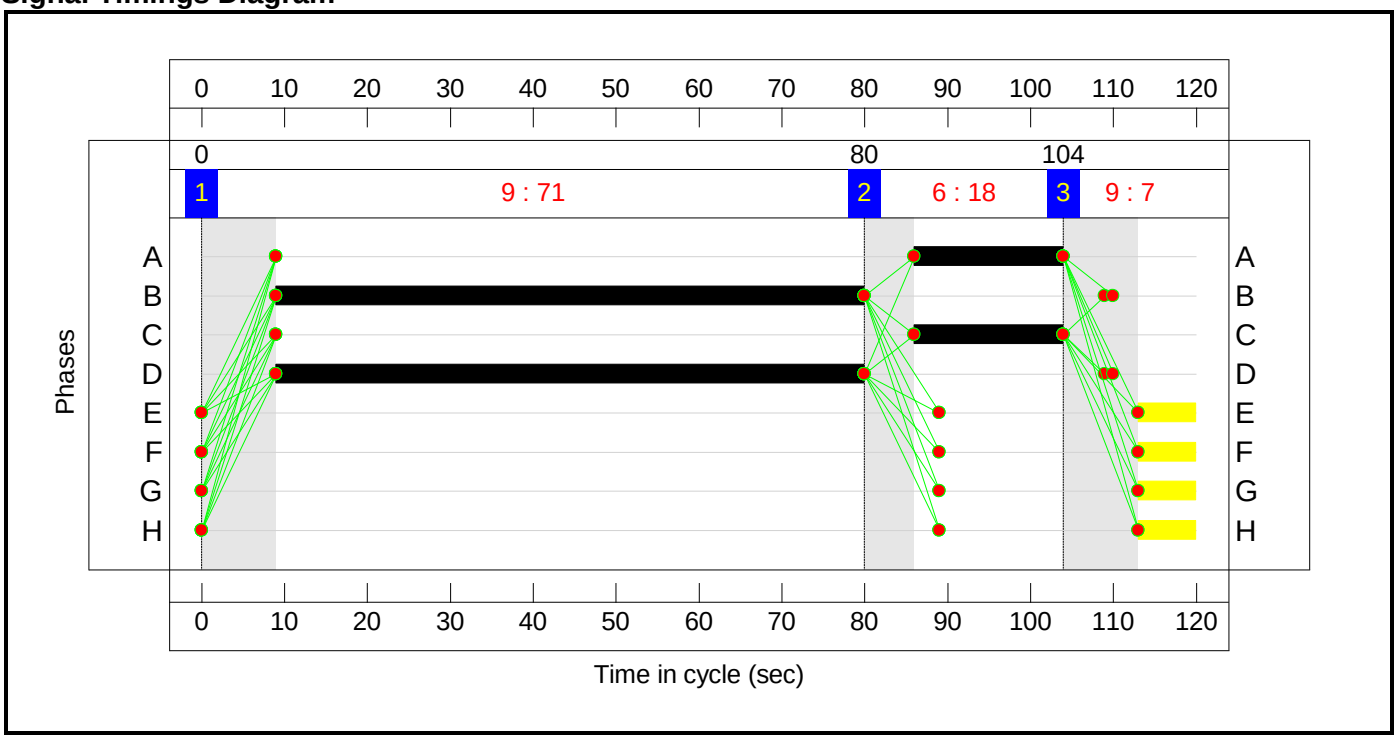
Stage Sequence Diagram



Stage Timings

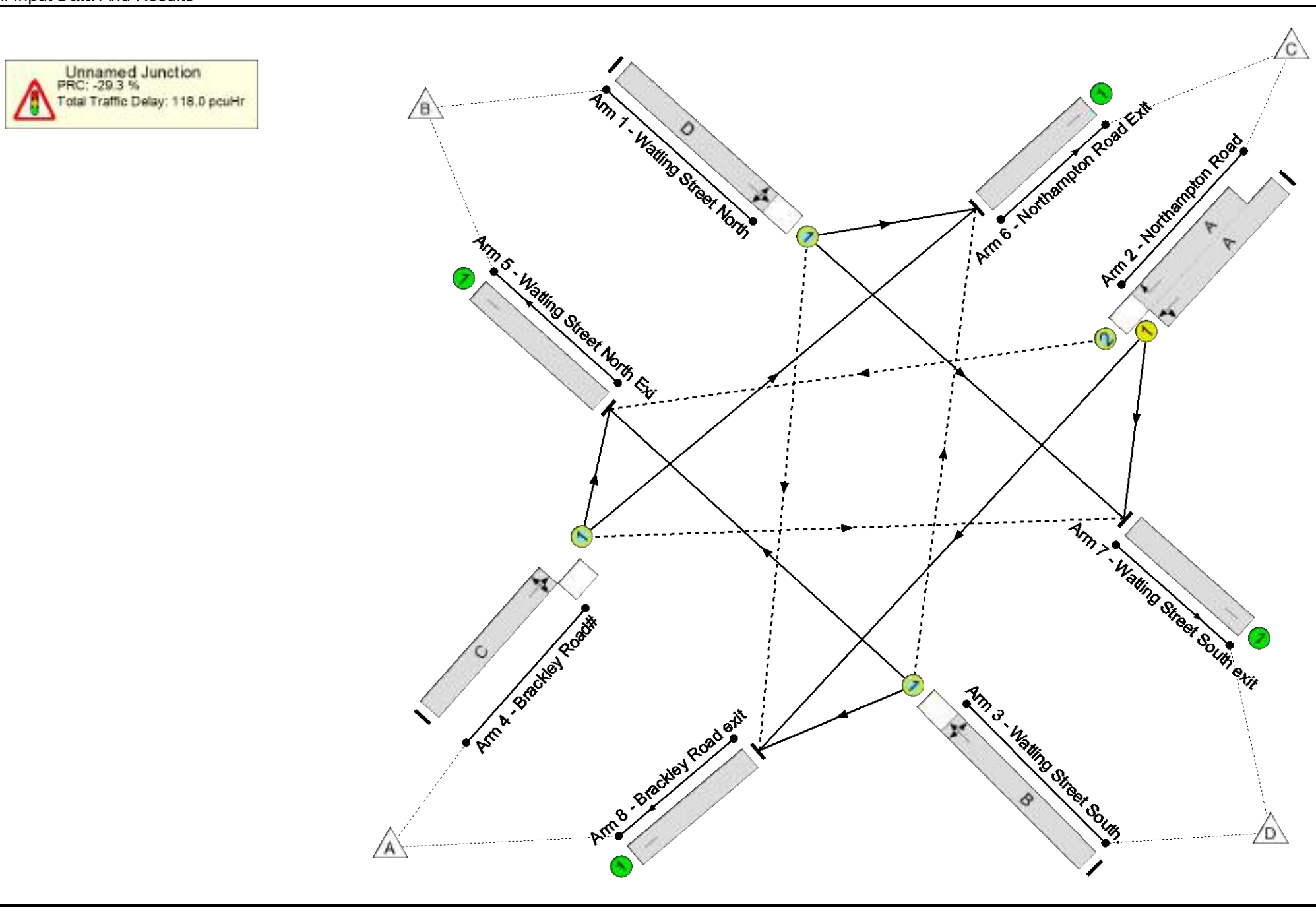
Stage	1	2	3
Duration	71	18	7
Change Point	0	80	104

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Unnamed Junction
PRC: -29.3 %
Total Traffic Delay: 118.0 pcuHr
Arm 1 - Watling Street North
Arm 6 - Northampton Road Exit
Arm 2 - Northampton Road
Arm 5 - Watling Street North Exi
Arm 7 - Watling Street South exit
Arm 4 - Brackley Road#
Arm 8 - Brackley Road exit
Arm 3 - Watling Street South
A
B
C
D

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**116.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**116.4%**
1/1	Watling Street North Left Ahead Right	O	N/A	N/A	D		1	71	-	290	1940	1164	24.9%
2/1+2/2	Northampton Road Right Left Ahead	U+O	N/A	N/A	A		1	18	-	363	1965:1965	311+1	116.4 : 116.4%
3/1	Watling Street South. Ahead Right Left	O	N/A	N/A	B		1	71	-	909	1940	786	115.7%
4/1	Brackley Road# Left Ahead Right	O	N/A	N/A	C		1	18	-	163	1940	307	53.1%
5/1	Watling Street North Exi	U	N/A	N/A	-		-	-	-	515	Inf	Inf	0.0%
6/1	Northampton Road Exit	U	N/A	N/A	-		-	-	-	583	Inf	Inf	0.0%
7/1	Watling Street South exit	U	N/A	N/A	-		-	-	-	520	Inf	Inf	0.0%
8/1	Brackley Road exit	U	N/A	N/A	-		-	-	-	107	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**375**	**0**	**32**	**23.2**	**94.4**	**0.4**	**118.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**375**	**0**	**32**	**23.2**	**94.4**	**0.4**	**118.0**	**-**	**-**	**-**	**-**
1/1	290	290	0	0	0	0.9	0.2	0.0	1.1	13.4	4.5	0.2	4.7
2/1+2/2	363	312	1	0	0	7.1	28.7	0.0	35.8	355.0	14.5	28.7	43.2
3/1	909	786	374	0	31	13.1	65.0	0.4	78.5	310.9	34.4	65.0	99.4
4/1	163	163	0	0	1	2.1	0.6	0.0	2.7	58.9	5.0	0.6	5.5
5/1	456	456	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	520	520	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	484	484	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	92	92	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1

PRC for Signalled Lanes (%): -29.3
PRC Over All Lanes (%): -29.3

Total Delay for Signalled Lanes (pcuHr): 118.05
Total Delay Over All Lanes(pcuHr): 118.05

Cycle Time (s): 120

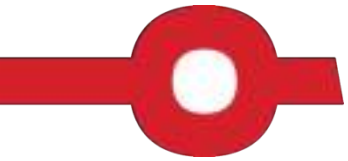
DRAFT

APPENDIX S
VISSIM Revalidation Report

Rail Central Northampton RFI **14/07/2017**

Reference number 104176

M1 J15 AND 15A VISSIM MODELLING REVALIDATION



SYSTRA

RAIL CENTRAL NORTHAMPTON RFI

M1 J15 AND 15A VISSIM MODELLING REVALIDATION

IDENTIFICATION TABLE	
Client/Project owner	Transport Planning Associates
Project	Rail Central Northampton RFI
Study	M1 J15 and 15a VISSIM Modelling Revalidation
Type of document	Technical Note
Date	14/07/2017
File name	104176-002 - M1 J15-15a VISSIM Model Revalidation.docx
Reference number	104176
Number of pages	31

APPROVAL

Version	Name		Position	Date	Modifications
1	Author	Dave Cope	Consultant	22/03/2017	
	Checked by	Matt Millard	Principal Consultant	22/03/2017	
	Approved by	Duncan Irons	Director	22/03/2017	
2	Author	Dave Cope	Consultant	03/04/2017	Revision to text as per comments made by TPA.
	Checked by	Matt Millard	Principal Consultant	03/04/2017	
	Approved by	Duncan Irons	Director	03/04/2017	
3	Author	Dave Cope	Consultant	14/07/2017	Updated following comments from AECOM
	Checked by	Matt Millard	Principal Consultant	14/07/2017	
	Approved by	Duncan Irons	Director	14/07/2017	
4	Author	Dave Cope	Consultant	07/08/2017	Updated following comments from AECOM
	Checked by	Matt Millard	Principal Consultant	07/08/2017	
	Approved by	Duncan Irons	Director	07/08/2017	

TABLE OF CONTENTS

1.	**INTRODUCTION**	**5**
1.1	BACKGROUND	5
1.2	MODEL REVIEW	6
1.3	MODEL REVALIDATION	6
1.4	THE MODEL	6
2.	**MODEL ALTERATIONS**	**7**
2.1	OVERVIEW	7
2.2	MATRIX	7
2.3	DETECTORS	7
2.4	ZONES	7
2.5	LINKS AND CONNECTORS	8
2.6	SLIP ROAD MODIFICATIONS	11
2.7	REDUCED SPEED AREAS	12
2.8	PRIORITY RULES	12
2.9	DESIRED SPEED DECISIONS	12
2.10	DRIVING BEHAVIOUR	12
2.11	SUMMARY	13
3.	**CALIBRATION AND VALIDATION STATISTICS**	**14**
3.1	OVERVIEW	14
3.2	TURNING COUNT CALIBRATION	14
3.3	ENTRY FLOW CALIBRATION	15
3.4	QUEUE LENGTH VALIDATION	17
3.5	JOURNEY TIME VALIDATION	18
3.6	EXIT FLOW VALIDATION	21
4.	**MODEL CONVERGENCE AND STABILITY**	**23**
5.	**SUMMARY**	**25**

LIST OF FIGURES

Figure 1. Model Extents. 5
Figure 2. PC MOVA Error Message. 7
Figure 3. Zone 8 and 9 Coding. 8
Figure 4. Zone 8 and 9 Coding Amendments. 8
Figure 5. Network Connectors. 9
Figure 6. 'Stuck' Vehicles. 9
Figure 7. Revised Network - Swan Valley Way|A43. 10
Figure 8. Revised Network - A5123|A43 10
Figure 9. HGV and Undertaking Behaviour -AM and PM. 11
Figure 10. Junction 15 Gyratory and Slip Road Modifications. 12
Figure 11. Lane Change Behaviour. 13

LIST OF TABLES

Table 1. Modelled Periods. 6
Table 2. Entry Flow Calibration Statistics. 16
Table 3. Maximum Queue Calibration Statistics. 17
Table 4. Journey Time Validation Statistics. 19
Table 5. Exit Flow Calibration Statistics. 22
Table 6. Volume on Paths 23
Table 7. Travel Time on Paths 24
Table 8. Total Travel Time Stability 24
Table B1: AM Turning Count Comparison From Previous LMVR 29
Table B2: PM Turning Count Comparison. 30

1. INTRODUCTION

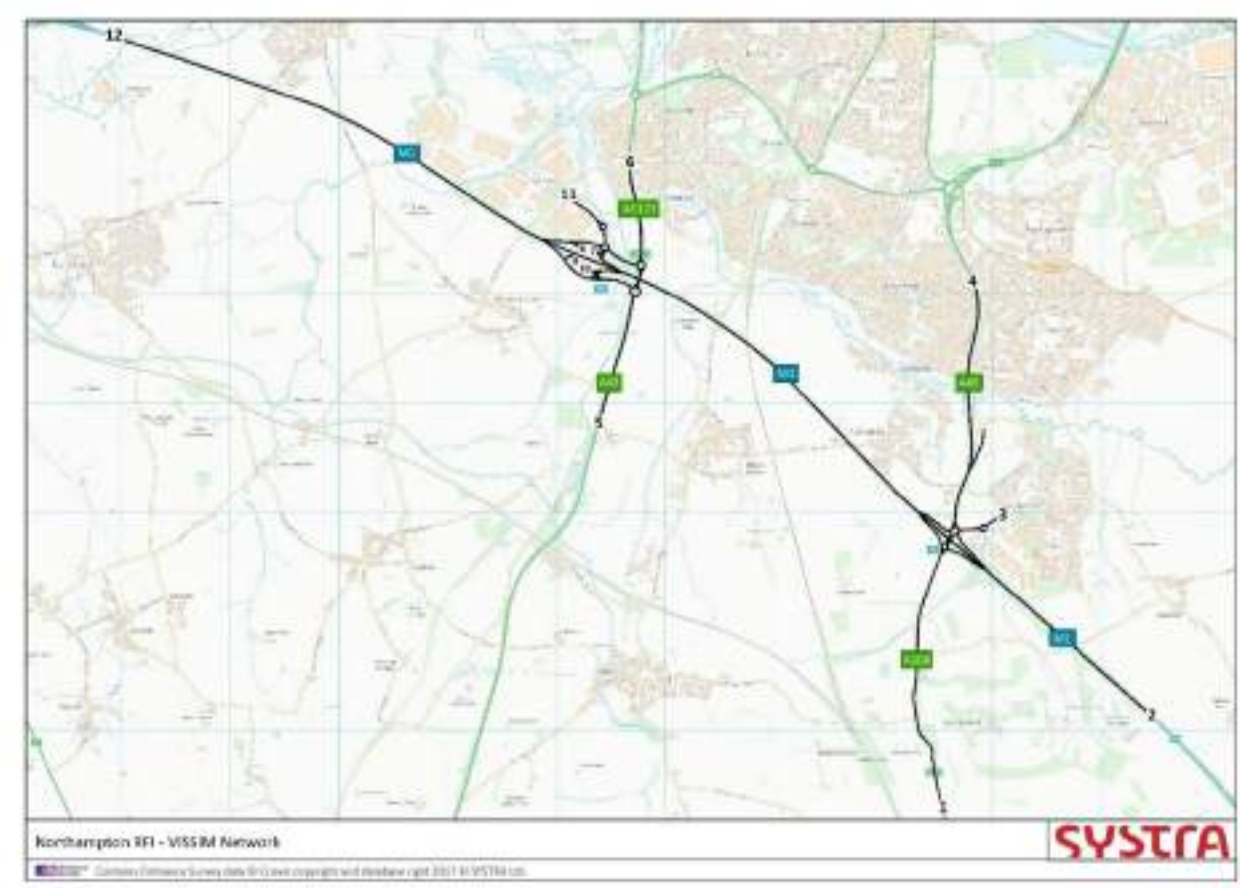
1.1 Background

1.1.1 SYSTRA previously undertook a review of a micro-simulation VISSIM model of Junction 15 and 15a of the M1 on behalf of Transport Planning Associates (TPA). This was to allow an understanding the accuracy of the existing model and identify if further work was required to update the model to accurately represent observed conditions. The model is intended for forecasting design options for the Rail Central Development, south of Northampton.

1.1.2 This Technical Note provides detail on what has been undertaken to amend the model as well as the recalibration and revalidation statistics to show the model is representative of observed survey data.

1.1.3 The model extents are illustrated within Figure 1 below. The model itself includes both junction 15 and 15a as well as sections of the M1, A5123, A43, A45, the A508 and local junctions.

Figure 1. Model Extents.



1.2 Model Review

1.2.1 To enable a thorough review, TPA provided SYSTRA with the following information:

- PDF: M1 J15_15a VISSIM base model 2016 LMVR - October 2016, and;
- PTV VISSIM 5.40: AM and PM M1 J15 and 15a Base Model.

1.2.2 This information has been used as the basis of the recalibration and validation of the model.

1.3 Model Revalidation

1.3.1 The following sections of this Technical Note summarise and explain the changes that have been applied to the model to improve its representation of the current operation of the local highway network. The note also summarises the new Calibration and Validation statistics, for both the AM and PM peak periods.

1.3.2 This report takes the following structure:

- Model Alterations;
- Revalidation Statistics, and;
- Summary.

1.4 The Model

1.4.1 The model uses version 5.40 of PTV's micro-simulation software VISSIM and linked to PC MOVA 2. The model provided to SYSTRA LTD has a base year of 2016 and AM and PM peak periods. Table 1 below shows the time periods used for each period.

1.4.2 The model has been recalibrated and revalidated such that it accurately represents the 2016 base year.

Table 1. Modelled Periods.

PERIOD	PRE-PEAK	PEAK	POST-PEAK
AM	06:15 to 07:15	07:15 to 08:15	08:15 to 08:45
PM	15:45 to 16:45	16:45 to 17:45	17:45 to 18:15

2. MODEL ALTERATIONS

2.1 Overview

2.1.1 To ensure a model accurately represents observed traffic conditions, coding the network correctly is important. For this model only slight alterations have been made so not to affect the overall calibration and validation, but to improve specific locations. This section revisits the items highlighted in a previous report presented to TPA and summarises what has been changed within the model.

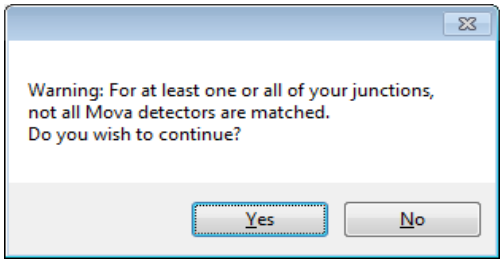
2.2 Matrix

2.2.1 To better replicate observed conditions the matrices have been amended and profiled into 15 minute segments. This used averages over a weekday period over the month March 2016 TRADS data on the M1. Factors for both the Light and Heavy matrices have been obtained and applied accordingly.

2.3 Detectors

2.3.1 When opening the MOVA set up for the first time resulted in the error message shown in Figure 2.

Figure 2. PC MOVA Error Message.



2.3.2 A single detector located within the gyratory of Junction 15 has been identified as the cause of this message. SYSTRA were not provided with any signal operation data at this junction thus the detector remains in the model, if required for future modelling. Its inclusion has no impact on the operation of the models.

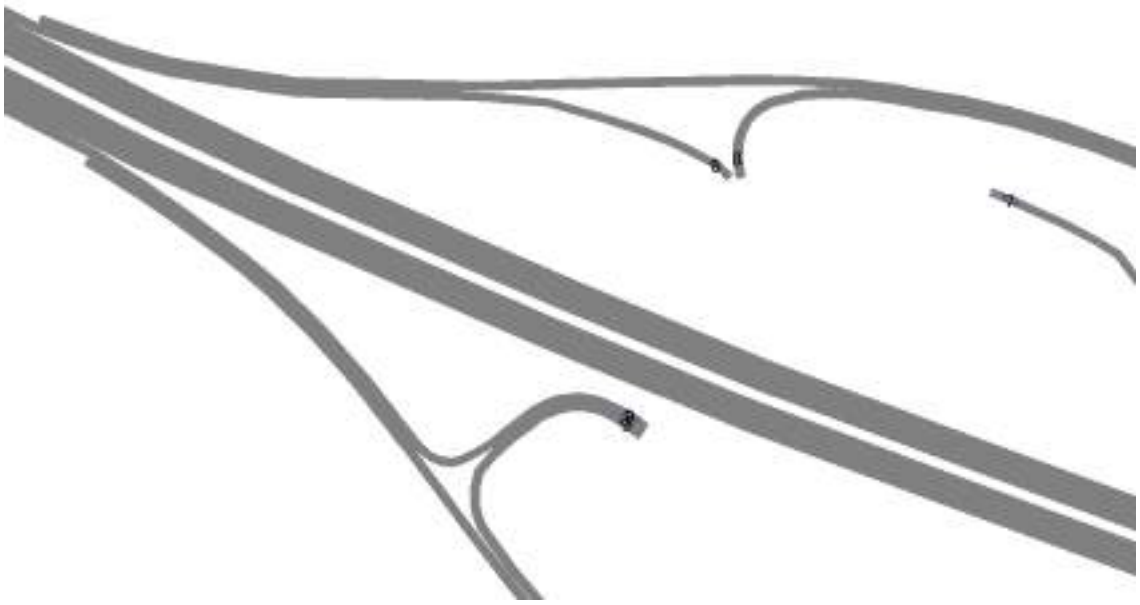
2.4 Zones

2.4.1 Figure 3 illustrates erroneous coding of Zone 9 and 8 which represents the eastbound and westbound service station access and egress at J15a.

2.4.2 In both instances the original network used two input parking lots, which share the demand on two separate links for zones 8 and 9 respectively.

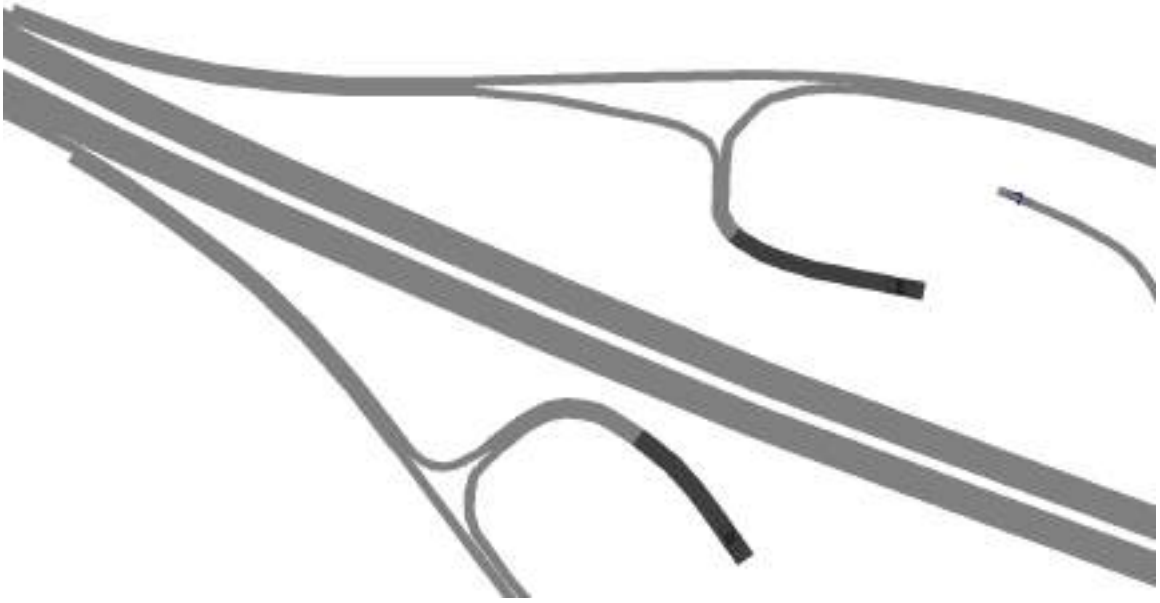
2.4.3 In the case of zone 9 the left hand parking lot did not allow vehicles to join the M1 Eastbound, and the right hand parking lot did not allow vehicles to join the M1 Westbound. This meant that some vehicles were unable to enter the model network resulting in lower levels of traffic on the modelled network.

Figure 3. Zone 8 and 9 Coding.



2.4.4 SYSTRA have merged the two links and their respective zones such that all the traffic enters the model network. The modified network is shown within Figure 4 below.

Figure 4. Zone 8 and 9 Coding Amendments.



2.5 Links and Connectors

2.5.1 There were some examples of inconsistent network coding within the model which led to erroneous vehicle behaviour including poor lane discipline. Some route closures have also been added to prevent illogical routes being used.

2.5.2 Figures 5 and 6 illustrate the use of short links and connectors which were identified to result in the occasional instance of vehicles becoming 'stuck' - such as the yellow car which is waiting for the red lorry shown in Figure 6.

2.5.3 Although this doesn't have a material impact upon results in the base year model, it could potentially cause issues in a forecast year model with higher demand.

Figure 5. Network Connectors.

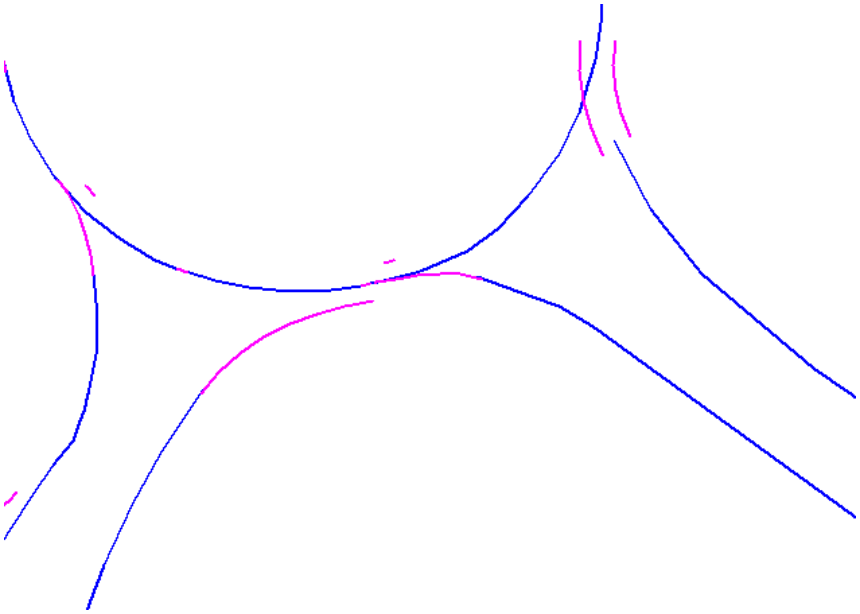
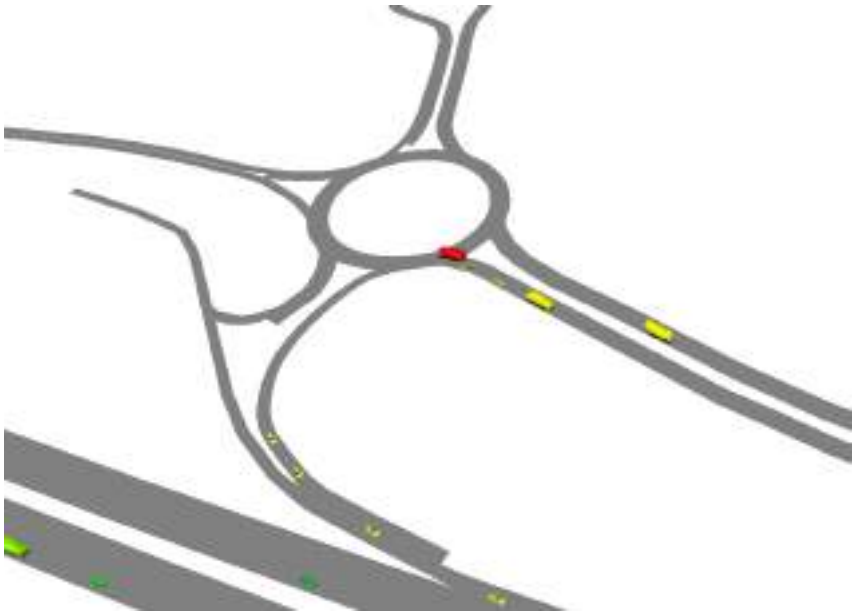


Figure 6. 'Stuck' Vehicles.



2.5.4 The coding at the junction where this occurred has been amended, along with others which used a similar technique. Figures 7 and 8 illustrate the revised coding at the same junction

shown in Figure 5. Connectors that have been identified to cause issues or not allow accurate lane change behaviour have been removed.

2.5.5 In the case of Figure 8, a connector enabling vehicles to move into the correct lane within the roundabout has been coded.

Figure 7. Revised Network - Swan Valley Way|A43.

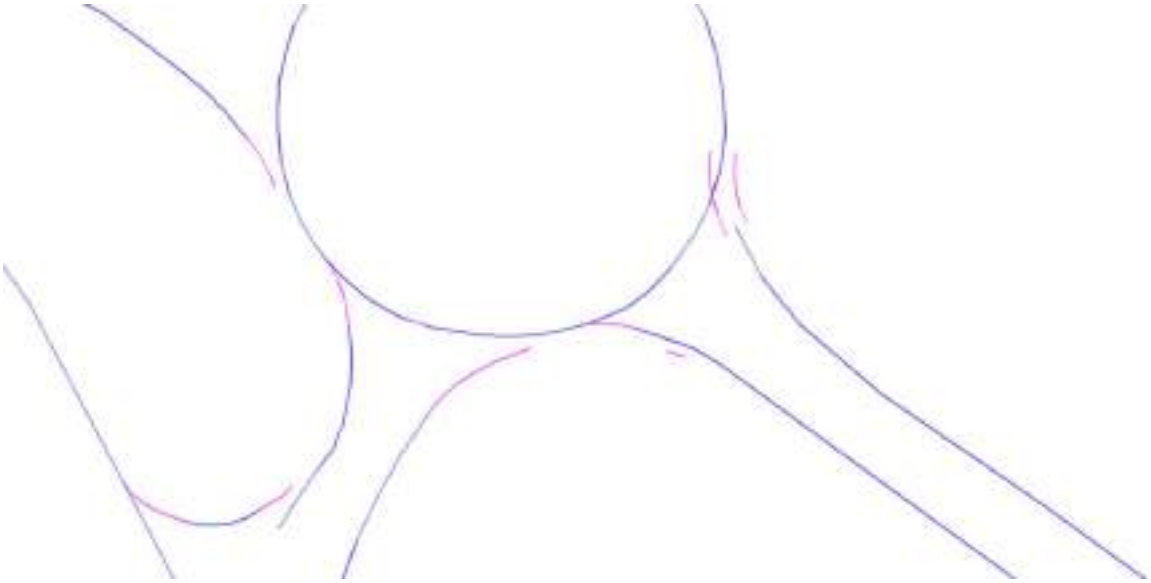
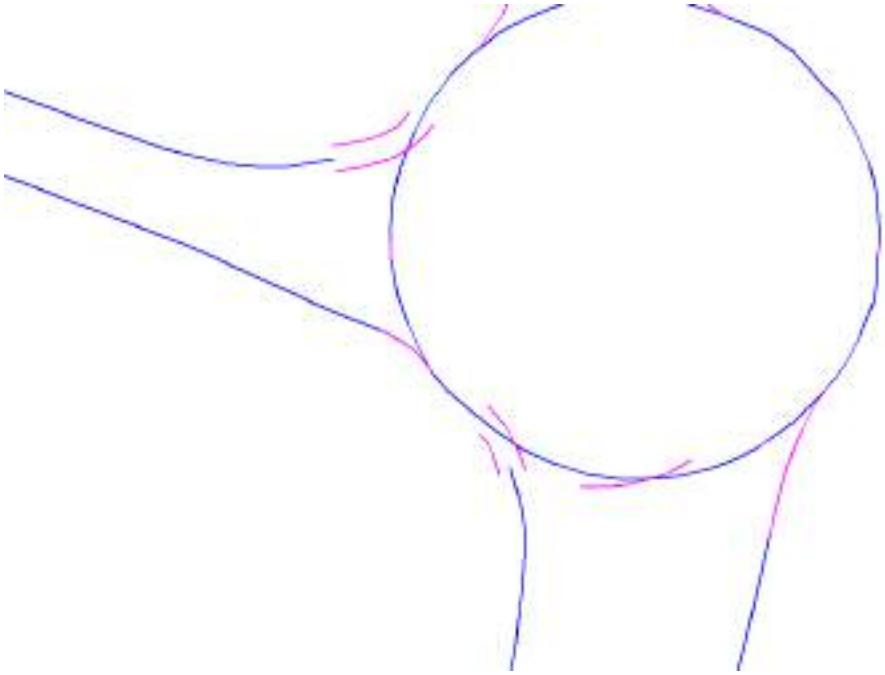


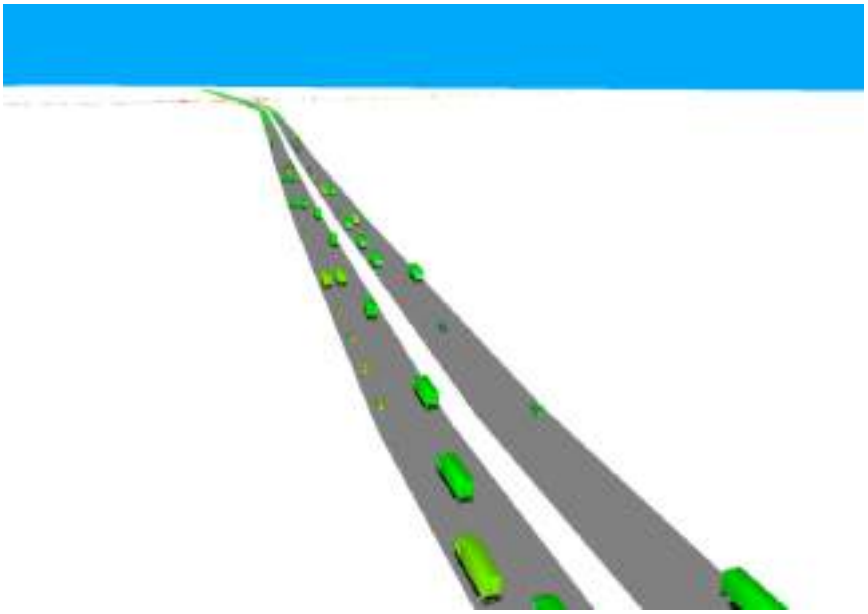
Figure 8. Revised Network - A5123|A43



2.5.6 Additionally, it was identified that HGVs were allowed to use the fast lane on the M1 as illustrated within Figure 9 below. This can have an impact upon the speed and capacity of the motorway, and the weaving behaviour of vehicles getting into lane for upcoming junctions.

2.5.7 This has now been amended and HGVs are banned from using the fast lane along the modelled length of the M1.

Figure 9. HGV and Undertaking Behaviour -AM and PM.



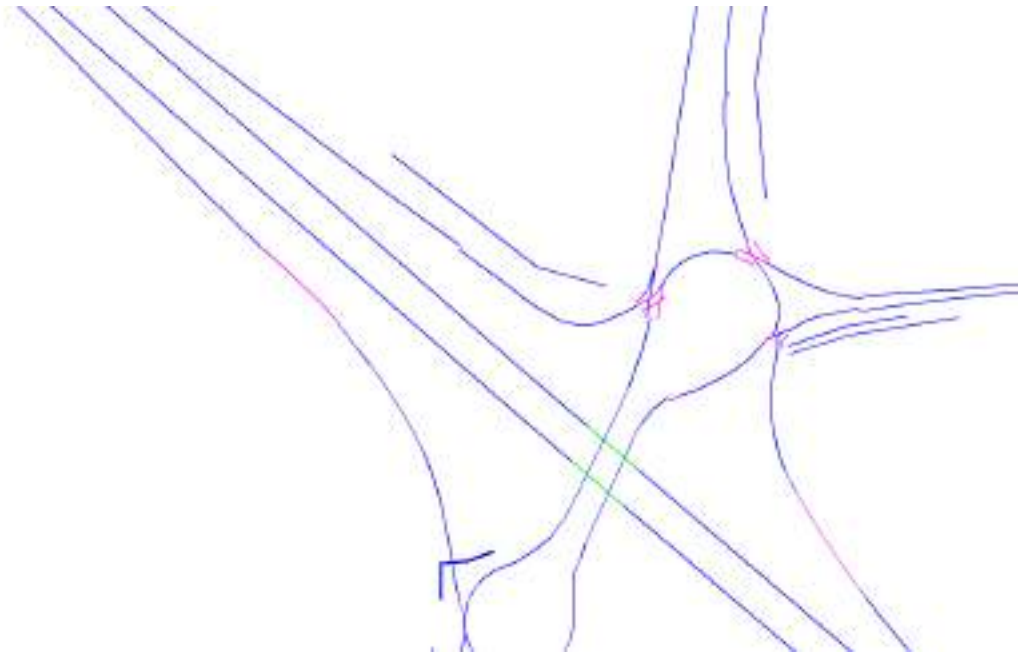
2.6 Slip Road Modifications

2.6.1 Network modifications have been made in the vicinity of Junction 15 to better replicate on site conditions. They include modifications to the M1 Junction 15 roundabout and on-slips as illustrated in Figure 10. The main amendments are as follows:

- The section of the gyratory , between Saxon Avenue and approximately 60m to the south of the M1 Westbound on-slip was coded as three lanes and has been modified to replicate the exiting two lane section, and;

- to better model merging interaction on the M1 on-slips the coding has also been amended to allow a more realistic use of the lanes and merging behaviour.

Figure 10. Junction 15 Gyratory and Slip Road Modifications.



2.7 Reduced Speed Areas

2.7.1 During calibration it was noted that there were some locations without reduced speed areas, these are coded to slow down traffic on the approaches or through junctions. Which are required to give accurate throughput at priority and signal junctions in VISSIM models.

2.8 Priority Rules

2.8.1 Improvements to priorities rules were undertaken specifically at the dumbbell roundabouts at Junction 15a to better replicate the delay and queues observed. A review of the existing priority rules at J15 and at the roundabouts of A43/Swan Valley Way and at A43/EB Services were not altered as the model performance was observed to be reflecting the observed data.

2.9 Desired Speed Decisions

2.9.1 Alterations to desired speed decisions were made in some locations to replicate the observed locations of speed limit signs.

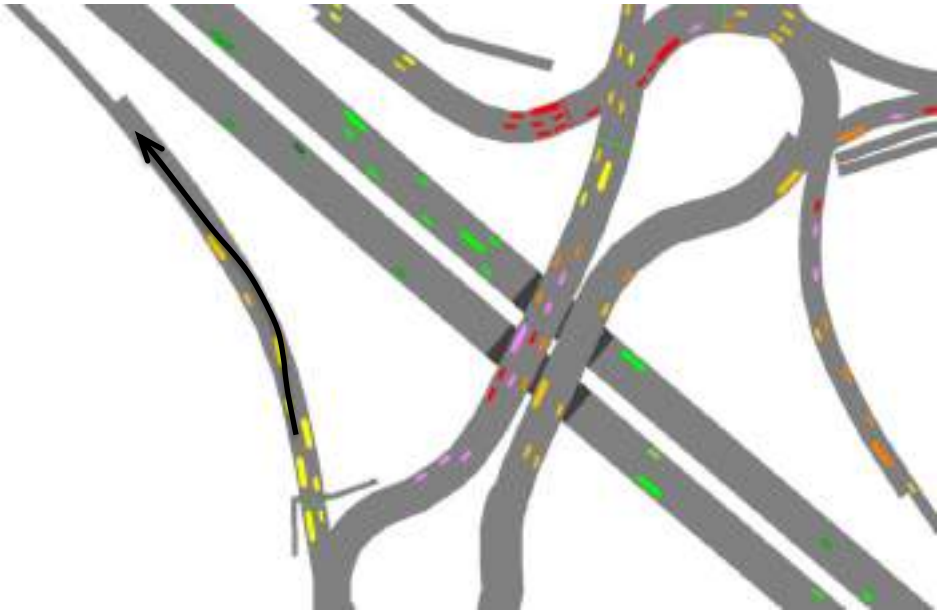
2.10 Driving Behaviour

2.10.1 Additional user generated driving behaviours have been used within this model, the LMVR states "*…driving behaviour parameters have been updated to represent the driving behaviour within the area of the model.*' The parameters assumed in these driving behaviours appear sensible but they have not always been used appropriately, resulting in unrealistic vehicle behaviour in some locations.

2.10.2 Figure 11 shows the effect of multiple driving behaviours on the same link where it has encouraged overtaking shortly before a lane drop. This behaviour has been noticed in both peaks at the M1 Northbound and Southbound on-slips.

2.10.3 Instances of where this occurred has been amended where required.

Figure 11. Lane Change Behaviour.



2.11 Summary

2.11.1 The modifications to the network have aimed to keep the core structure of the original model intact to not affect the overall calibration and validation. Where modelling was identified to be inconsistent with guidance or resulted in erroneous vehicle behaviour modifications to the network has taken place.

2.11.2 The following section summarises the results of the recalibration and revalidation of the model.

3. CALIBRATION AND VALIDATION STATISTICS

3.1 Overview

3.1.1 The modifications made to the network as outlined within the previous section, have led to the need for the calibration/validation of the model to be checked. The revised calibration and validation statistics are summarised within the following section. Each model has been run for ten random seeds and the average of results was presented.

3.1.2 Based on observed data the following peak hour models have been presented:

- AM Peak - 07:15 to 08:15; and
- PM Peak - 16:45 to 17:45.

MODEL CALIBRATION

3.2 Turning Count Calibration

3.2.1 No comparison of modelled and observed turning counts were provided within the original LMVR. These are required by WebTAG and have been presented as part of this model revalidation.

3.2.2 The required criteria from WebTAG Unit M3.1 section 3.2.7 require evaluation against two criteria, GEH and absolute, as shown below:

$$GEH = \sqrt{\frac{(M-C)^2}{(M+C)/2}}$$

where: GEH is the GEH statistic;

M is the modelled flow; and

C is the observed flow.

These two measures are broadly consistent and link flows that meet either criterion should be regarded as satisfactory.

The validation **criteria** and **acceptability guidelines** for link flows and turning movements are defined in Table 2.

Table 2 Link Flow and Turning Movement Validation Criteria and Acceptability Guidelines

Criteria	Description of Criteria	Acceptability Guideline
1	Individual flows within 100 veh/h of counts for flows less than 700 veh/h	> 85% of cases
	Individual flows within 15% of counts for flows from 700 to 2,700 veh/h	> 85% of cases
	Individual flows within 400 veh/h of counts for flows more than 2,700 veh/h	> 85% of cases
2	GEH < 5 for individual flows	> 85% of cases

3.2.3 As part of the model review, SYSTRA ran the original AECOM model for one random seed to give an indication of how it compares to observed turning flows. Although the model

technically calibrated according to these standards, it did not represent congestion sufficiently at J15a and this was partly caused by underestimation of traffic flow on key turns. These results can be seen in Appendix B and they show that the model was low for the turns from Site 2: A43S to A5123N (200 vehicles in the AM peak and 250 in the PM) and also on the turn from Site 3: A43S to A43N (150 in the AM peak and 250 in the PM peak). Some manual changes were made to the matrices by SYSTRA to address this. The model now calibrates well to turning counts in both peaks over each of the 5 sites previously surveyed – and queues form in the model where observed. Where the data is available each movement within the junction has been calculated.

3.2.4 A total of 52 turning movement counts have been identified, and for each movement the observed and modelled flow compared. The results are summarised within Appendix A. Overall the AM peak achieves a turning count calibration of 100% over a combined absolute or GEH measures, whilst the PM model reaches a total calibration of 98%.

3.2.5 This demonstrates that the model is calibrated to WebTAG turning count guidelines.

3.2.6 To give an indication of the impact of the flow changes to matrix totals, the peak hour matrix totals are as follows:

- AM Peak Lights – 14001 (compared to 13431 in the previous model);
- PM Peak Lights – 14193 (compared to 14059 in the previous model);

3.2.7 Therefore there is an increase in peak hour demand to create the required congestion. The heavies matrices were unchanged.

3.3 Entry Flow Calibration

3.3.1 In to the calibration statistics identified above, the entry flow calibration has also been summarised. The results are shown in Table 2 below. They show an overall calibration of 100% in both the AM and PM peaks which satisfies WebTAG criteria.

Table 2. Entry Flow Calibration Statistics.

ZONE LOCATION	AM						PM					
	OBSERVED	MODELLED	ABS.	%	DMRB	GEH	OBSERVED	MODELLED	ABS.	%	DMRB	GEH
A508 South	841	883	42	5%	PASS	1	757	812	55	7%	PASS	2
M1 South East	3700	3602	-98	-3%	PASS	2	4557	4627	70	2%	PASS	1
Saxon Avenue North East	340	340	0	0%	PASS	0	326	346	20	6%	PASS	1
A45 North	2847	2907	60	2%	PASS	1	2731	2718	-13	0%	PASS	0
A43 South	1431	1489	58	4%	PASS	2	1902	1767	-135	-7%	PASS	3
A5123 North	1676	1656	-20	-1%	PASS	0	956	998	42	4%	PASS	1
EB Services Area Exit	63	44	-19	-30%	PASS	3	47	42	-5	-11%	PASS	1
WB Services Area Exit	17	18	1	6%	PASS	0	24	27	3	11%	PASS	1
Swan Valley Way NW	140	125	-15	-11%	PASS	1	193	158	-35	-18%	PASS	3
M1 North West	4448	4815	366	8%	PASS	5	4273	4157	-116	-3%	PASS	2
Level Of Calibration Achieved (Pass either absolute or GEH measure)					100%						100%	

3.3.2 Model validation results have been provided below. The data used within this section, similarly to that of the calibration was provided to SYSTRA by TPA and is the same data used by AECOM as part of the original validation of this VISSIM model.

3.4 Queue Length Validation

3.4.1 A queue length (m) validation has been undertaken for each of the sites where surveys were undertaken.

3.4.2 A comparison of the model outputs and the observed queues are shown within Table 3. The revalidated models contain more congestion than those presented in the previous LMVR where it was considered that queue lengths were underestimated – especially at J15a, the key focus of this study.

3.4.3 WebTAG modelling guidance does not state that queue lengths should be matched in a model because of the difficulty associated with measuring them on site. This is both in terms of the subjectiveness of determining whether a vehicles is in a queue or just driving slowly, and that queues are often measured from a video survey which does not always show the end of the queue. Despite these issues it is expected that some method of verification is presented to show that the location and approximate length of modelled queues are representative of the observed conditions. A result average queues are difficult to observe and therefore we have focused on the maximum queues on each approach.

Table 3. Maximum Queue Calibration Statistics.

SITE ID	ARM DESCRIPTION	AM		PM	
		OBSERVED	MODELLED	OBSERVED	MODELLED
1	A43 W	15	18	36	14
	Swan Valley Way	33	17	21	21
	A43 E	42	19	18	24
2	A43 W	81	126	87	226
	A5123	93	105	54	34
3	A43 S	48	49	36	43
	A43 W	90	131	174	202
4	J15 Gyratory N	93	153	132	176
	A45	141	375	111	177

SITE ID	ARM DESCRIPTION	AM		PM	
		OBSERVED	MODELLED	OBSERVED	MODELLED
	M1 SB Off-Slip	123	129	129	130
5	J15 Gyratory SB	87	263	87	178
	M1 NB Off-Slip	114	84	114	82
	A508 NB	111	133	159	186

3.4.4 In both peaks, the maximum queues modelled are broadly close to those observed. From independent checks against alternate data sources it was clear that the surveys undertaken did not always report the full length of the queues. Specifically at A43 W of site 2, Junction 15a and A45 of site 4 Junction 15, where the modelled queues are higher than those reported in the queue lengths surveys which are considered to be under-reporting the typical queue lengths in those locations.

3.4.5 Overall the queue locations and lengths are sensible and representative of observed conditions.

3.5 Journey Time Validation

3.5.1 WebTAG journey time validation guidelines are that for 85% of journey time sections the modelled and observed times should be within 15% or 60 seconds – whichever is greater.

3.5.2 Table 4 below presents the overall validation of both the AM and PM peak models for the journey times. The model has achieved a 100% and 85% validation in the AM and PM peak periods respectively for average journey times.

3.5.3 It should be noted that for the three routes which do not pass the previous LMVR indicates that there was huge variation in observed travel time for these sections. This variation in TrafficMaster dataset, which is only a sample of vehicles, is likely to skew the observed data and explain why the modelled travel times do not match. As queue lengths and entry flow validation are very close between modelled and observed, this gives weight that the model does also represent observed conditions in these locations.

Table 4. Journey Time Validation Statistics.

FROM	TO	FROM TO ZONE	AM					PM				
			OBSERVED	MODELLED	ABS.	%	DMRB	OBSERVED	MODELLED	ABS.	%	DMRB
A508 Northampton Rd South	M1 Mainline South	Zone 1 to Zone 2	219	222	3	1%	PASS	287	221	-67	-23%	FAIL
	A45 London Road North	Zone 1 to Zone 4	165	158	-7	-4%	PASS	247	175	-72	-29%	FAIL
	A43 South	Zone 1 to Zone 5	349	395	46	13%	PASS	463	416	-47	-10%	PASS
M1 Mainline South	A45 London Road North	Zone 2 to Zone 4	189	202	13	7%	PASS	269	194	-75	-28%	FAIL
	A43 South	Zone 2 to Zone 5	320	372	52	16%	PASS	373	390	17	4%	PASS
	A5123 North	Zone 2 to Zone 6	318	359	41	13%	PASS	373	377	4	1%	PASS
	M1 Mainline North	Zone 2 to Zone 12	271	298	27	10%	PASS	323	305	-18	-6%	PASS
A45 London Road North	A508 Northampton Road South	Zone 4 to Zone 1	145	163	18	12%	PASS	114	113	-1	-1%	PASS
	M1 Mainline North	Zone 4 to Zone 12	353	347	-6	-2%	PASS	362	324	-38	-10%	PASS
A43 South	A508 Northampton Road South	Zone 5 to Zone 1	385	409	24	6%	PASS	389	390	1	0%	PASS
	M1 Mainline South	Zone 5 to Zone 2	367	364	-3	-1%	PASS	351	353	2	1%	PASS
	A5123 North	Zone 5 to Zone 6	121	129	8	7%	PASS	122	128	6	5%	PASS

FROM	TO	FROM TO ZONE	AM					PM				
			OBSERVED	MODELLED	ABS.	%	DMRB	OBSERVED	MODELLED	ABS.	%	DMRB
	M1 Mainline North	Zone 5 to Zone 12	146	163	17	12%	PASS	163	161	-2	-1%	PASS
A5123 North	A43 South	Zone 6 to Zone 5	143	131	-12	-8%	PASS	122	122	0	0%	PASS
EB Service Area	M1 Mainline South	Zone 7 to Zone 2	255	254	-1	-1%	PASS	237	244	7	3%	PASS
Swan Valley Way North	M1 Mainline South	Zone 11 to Zone 2	274	268	-6	-2%	PASS	256	261	5	2%	PASS
	A43 South	Zone 11 to Zone 5	135	132	-3	-2%	PASS	151	153	2	1%	PASS
M1 Mainline North	M1 Mainline South	Zone 12 to Zone 2	362	356	-6	-2%	PASS	335	341	6	2%	PASS
	A45 London Road North	Zone 12 to Zone 4	374	346	-28	-7%	PASS	358	343	-15	-4%	PASS
	A43 South	Zone 12 to Zone 5	258	261	3	1%	PASS	267	278	11	4%	PASS
Level Of Validation Achieved							100%					85%

3.6 Exit Flow Validation

3.6.1 Link flows have been presented to compare modelled and observed flow at exits from the model, using the same criteria as explained in section 3.2. The results shown in Table 5 can be directly compared with those from the LMVR. This shows that 100% of modelled exit flows pass WebTag guidance in both the AM peak and PM Peak. This indicates that the model accurately represents observed conditions.

Table 5. Exit Flow Calibration Statistics.

ZONE LOCATION	AM						PM					
	OBSERVED	MODELLED	ABS.	%	DMRB	GEH	OBSERVED	MODELLED	ABS.	%	DMRB	GEH
A508 South	1168	1204	36	3%	PASS	1	842	855	13	1%	PASS	0
M1 South East	4481	4768	288	6%	PASS	4	4065	4046	-19	0%	PASS	0
Saxon Avenue North East	238	238	0	0%	PASS	0	377	406	29	8%	PASS	1
A45 North	2721	2776	55	2%	PASS	1	2867	2979	112	4%	PASS	2
A43 South	1749	1776	27	2%	PASS	1	1370	1437	67	5%	PASS	2
A5123 North	930	897	-33	-4%	PASS	1	1327	1218	-109	-8%	PASS	3
EB Services Area Exit	51	96	45	89%	PASS	5	32	86	54	168%	PASS	7
WB Services Area Exit	155	153	-2	-2%	PASS	0	162	165	3	2%	PASS	0
Swan Valley Way NW	195	139	-56	-29%	PASS	4	120	97	-23	-19%	PASS	2
M1 North West	3844	3589	-254	-7%	PASS	4	4543	4491	-52	-1%	PASS	1
Level Of Validation Achieved (Pass either absolute or GEH measure)					100%						100%	

4. MODEL CONVERGENCE AND STABILITY

4.1.1 Model convergence statistics are presented below and the model successfully converges to WebTAG guidelines.

4.1.2 The guidelines state that the following should be met:

- 95% of all path traffic volumes change by less than 5% for at least four consecutive iterations;
- 95% of the travel times on all paths change by less than 20% for at least four consecutive iterations;
- The percentage change in user costs or time spent within the network (V) should be less than 1% for four consecutive iterations.

4.1.3 The AM peak model met these conditions after 6 runs and the PM peak after 8 runs as can be seen by the tables below.

Table 6. Volume on Paths

RUN	AM			PM		
	Seed	Paths Convergence Figure	Difference from previous run	Seed	Paths Convergence Figure	Difference from previous run
1	49	-	-	49	-	-
2	49	98%	-	49	98%	-
3	49	100%	2.15%	49	100%	2.28%
4	49	100%	0.00%	49	100%	0.00%
5	49	100%	0.00%	49	100%	0.00%
6	49	100%	0.00%	49	100%	0.00%
7				49	99%	-0.78%
8				49	99%	0.00%

Table 7. Travel Time on Paths

RUN	AM			PM		
	Seed	Paths Convergence Figure	Difference from previous run	Seed	Paths Convergence Figure	Difference from previous run
1	49	-	-	49	-	-
2	49	100%	-	49	100%	-
3	49	100%	0.00%	49	100%	0.24%
4	49	100%	0.00%	49	100%	0.00%
5	49	100%	0.00%	49	100%	0.00%
6	49	100%	0.00%	49	100%	-0.08%
7				49	100%	0.08%
8				49	100%	0.00%

Table 8. Total Travel Time Stability

RUN	AM			PM		
	Seed	Total Travel Time	Difference from previous run	Seed	Total Travel Time	Difference from previous run
1	49	1703.08	-	49	1645.98	-
2	49	1700.80	-0.13%	49	1652.15	0.38%
3	49	1708.45	0.45%	49	1652.15	0.00%
4	49	1708.45	0.00%	49	1652.15	0.00%
5	49	1708.45	0.00%	49	1652.15	0.00%
6	49	1708.45	0.00%	49	1652.16	0.00%
7				49	1649.81	-0.14%
8				49	1661.79	0.73%

5. SUMMARY

5.1.1 SYSTRA has undertaken a review of the VISSIM model and the accompanying LMVR on behalf of TPA with particular focus on the operation of Junctions 15 and 15A of the M1 which form part of the Strategic Road Network (SRN). This is to ensure that TPA have an accurate base model suitable for producing future year scenarios for assessment of the development of the Rail Central site located to the south of these junctions.

5.1.2 As part of the review a number of aspects were identified to require amendment. This report has illustrated what changes have been made as well as the revised calibration and validation statistics produced as part of the revalidation of the model.

5.1.3 The resultant model has been successfully calibrated and validated in accordance with WebTAG guidelines. With a turning count calibration of 100% and 98% for the AM and PM peaks respectively and 100% of entry flows passing DMRB or GEH criteria in both the AM and PM peak periods.

5.1.4 With a queue length validation broadly in line with the observed information and a journey time validation of 100% and 85% for the AM and PM peaks respectively the model is accurately reflecting current levels of congestion though these junctions.

5.1.5 Overall, the model is 'fit for purpose' in evaluating the impacts of the Rail Central development and any associated mitigation at the M1 Motorway Junctions 15 and 15A.

Report Appendix A – Turning Count Calibration Statistics

TURN DESCRIPTION	MOVEMENT	AM						PM					
		OBSERVED	MODELLED	ABS.	%	DMRB	GEH	OBSERVED	MODELLED	ABS.	%	DMRB	GEH
Services to A43 E	B to A	53	9	-44	-83%	Pass	8	37	11	-26	-70%	Pass	5
Services to Swan Valley Way	B to D	9	1	-8	-90%	Pass	4	9	0	-9	-100%	Pass	4
Services to A43 W	B to C	1	0	-1	-100%	Pass	1	1	0	-1	-100%	Pass	1
A43 E to M1 SB	A to B	770	759	-11	-1%	Pass	0	649	605	-44	-7%	Pass	2
A43 E U-turn	A to A	10	0	-10	-100%	Pass	4	6	0	-6	-100%	Pass	3
A43 E to Swan Valley Way	A to D	137	103	-34	-25%	Pass	3	99	80	-19	-19%	Pass	2
A43 E to A43 W	A to C	24	35	11	46%	Pass	2	9	45	36	401%	Pass	7
Swan Valley Way to A43 E	D to A	54	55	1	2%	Pass	0	89	75	-14	-16%	Pass	2
Swan Valley Way to M1 SB	D to B	82	65	-17	-21%	Pass	2	93	75	-18	-19%	Pass	2
Swan Valley Way U-turn	D to D	0	1	1	0%	Pass	1	0	1	1	0%	Pass	1
Swan Valley Way to A43 W	D to C	4	4	0	-10%	Pass	0	11	7	-4	-39%	Pass	1
A43 W to A43 E	C to A	426	507	81	19%	Pass	4	549	567	18	3%	Pass	1
A43 W to M1 SB	C to B	2	0	-2	-100%	Pass	2	0	0	0	0%	Pass	-
A43 W to Swan Valley Way	C to D	49	35	-14	-28%	Pass	2	21	16	-5	-26%	Pass	1
A43 W U-turn	C to C	1	0	-1	-100%	Pass	1	0	0	0	0%	Pass	-
A5123 U-turn	A to A	3	1	-2	-73%	Pass	2	2	6	4	200%	Pass	2
A5123 to A43 S	A to B	1181	1163	-18	-2%	Pass	1	703	731	28	4%	Pass	1
A5123 to A43 W	A to C	492	491	-1	0%	Pass	0	251	261	10	4%	Pass	1
A43 S to A5123	B to A	849	849	0	0%	Pass	0	1169	1108	-61	-5%	Pass	2
A43 S U-turn	B to B	0	0	0	0%	Pass	-	8	0	-8	-100%	Pass	4
A43 S to A43 W	B to C	442	407	-35	-8%	Pass	2	507	468	-39	-8%	Pass	2
A43 W to A5123	C to A	81	48	-33	-41%	Pass	4	158	104	-54	-34%	Pass	5

TURN DESCRIPTION	MOVEMENT	AM						PM					
		OBSERVED	MODELLED	ABS.	%	DMRB	GEH	OBSERVED	MODELLED	ABS.	%	DMRB	GEH
A43 W to A43 S	C to B	457	520	63	14%	Pass	3	521	554	33	6%	Pass	1
A43 W U-turn	C to C	1	0	-1	-100%	Pass	1	2	0	-2	-100%	Pass	2
A43 S U-turn	B to B	0	0	0	0%	Pass	-	0	0	0	0%	Pass	-
A43 S to A43 W	B to C	400	412	12	3%	Pass	1	556	538	-18	-3%	Pass	1
A43 S to A43 N	B to A	1031	1074	43	4%	Pass	1	1346	1234	-112	-8%	Pass	3
A43 W to A43 S	C to B	291	272	-19	-7%	Pass	1	216	232	16	7%	Pass	1
A43 W U-turn	C to C	0	0	0	0%	Pass	-	0	0	0	0%	Pass	-
A43 W to A43 N	C to A	253	183	-70	-28%	Pass	5	351	337	-15	-4%	Pass	1
A43 N to A43 S	A to B	1458	1503	45	3%	Pass	1	1154	1202	48	4%	Pass	1
A43 N to A43 W	A to C	179	179	0	0%	Pass	0	89	79	-10	-11%	Pass	1
A43 N U-turn	A to A	3	1	-2	-63%	Pass	1	0	3	3	0%	Pass	3
M1 J15 Off Slip EB to J15 Gyratory N	D to C	351	263	-88	-25%	Pass	5	175	73	-102	-58%	Fail	9
M1 J15 Off Slip EB to Saxon Ave	D to A	87	94	7	9%	Pass	1	103	114	11	11%	Pass	1
M1 J15 Off Slip EB to A45 London Road	D to E	1092	1203	111	10%	Pass	3	995	1103	108	11%	Pass	3
J15 Gyratory N to M1 J15 On Slip EB	C to B	45	41	-4	-8%	Pass	1	26	35	9	33%	Pass	2
J15 Gyratory N U-turn	C to C	0	0	0	0%	Pass	-	6	0	-6	-100%	Pass	3
J15 Gyratory N to Saxon Ave	C to A	83	81	-2	-2%	Pass	0	131	146	15	12%	Pass	1
J15 Gyratory N to A45 London Road	C to E	1629	1592	-37	-2%	Pass	1	1872	1873	1	0%	Pass	0
Saxon Ave to M1 J15 On Slip EB	A to B	116	114	-2	-2%	Pass	0	48	48	0	1%	Pass	0
Saxon Ave to J15 Gyratory N	A to C	224	224	0	0%	Pass	0	278	300	22	8%	Pass	1
A45 London Road to M1 J15 On Slip EB	E to B	1191	1158	-33	-3%	Pass	1	960	963	3	0%	Pass	0
A45 London Road to J15 Gyratory N	E to C	1588	1609	21	1%	Pass	1	1628	1622	-6	0%	Pass	0
A45 London Road to Saxon Ave	E to A	68	66	-2	-2%	Pass	0	143	145	2	1%	Pass	0
M1 J15 Off Slip NB to J15 Gyratory S	B to A	984	965	-19	-2%	Pass	1	1224	1226	2	0%	Pass	0

TURN DESCRIPTION	MOVEMENT	AM						PM					
		OBSERVED	MODELLED	ABS.	%	DMRB	GEH	OBSERVED	MODELLED	ABS.	%	DMRB	GEH
M1 J15 Off Slip NB to A508 Northampton Road	B to C	34	33	-1	-2%	Pass	0	34	34	-1	-1%	Pass	0
J15 Gyratory S to M1 J15 On Slip NB	A to D	902	819	-84	-9%	Pass	3	1040	968	-72	-7%	Pass	2
J15 Gyratory S U-turn	A to A	107	83	-24	-22%	Pass	2	246	209	-37	-15%	Pass	2
J15 Gyratory S to A508 Northampton Road	A to C	1134	1182	48	4%	Pass	1	808	817	9	1%	Pass	0
A508 Northampton Road to M1 J15 On Slip NB	C to D	168	206	38	22%	Pass	3	187	198	11	6%	Pass	1
A508 Northampton Road to J15 Gyratory S	C to A	673	662	-11	-2%	Pass	0	570	618	48	8%	Pass	2
Level Of Calibration Achieved (Pass either absolute or GEH measure)						100%						98%	

Report Appendix B – Original Model Turning Count Calibration Statistics

Table B1: AM Turning Count Comparison From Previous LMVR

NAME	MODELLED	OBSERVED	MOD - OBS	% DIFF	GEH	MODELLED	OBSERVED
Site 2: A5123 N U-turn	1	3	-2	-67%	1	1667	1676
Site 2: A5123 N to A43 S	1167	1181	-14	-1%	0		
Site 2: A5123 N to A43 W	499	492	7	1%	0		
Site 2: A43 S to A5123 N	650	849	-199	-23%	7	1092	1291
Site 2: A43 S U-turn	0	0	0	0%	0		
Site 2: A43 S to A43 W	442	442	0	0%	0		
Site 2: A43 W to A5123 N	49	81	-32	-40%	4	551	539
Site 2: A43 W to A43 S	502	457	45	10%	2		
Site 2: A43 W U-turn	0	1	-1	0%	0		
Site 3: A43 N U-turn	0	3	-3	-100%	2	1670	1640
Site 3: A43 N to A43 S	1464	1458	6	0%	0		
Site 3: A43 N to A43 W	206	179	27	15%	2		
Site 3: A43 S to A43 N	873	1031	-158	-15%	5	1264	1431
Site 3: A43 S U-turn	0	0	0	0%	0		
Site 3: A43 S to A43 W	391	400	-9	-2%	0		
Site 3: A43 W to A43 N	220	253	-33	-13%	2	504	544
Site 3: A43 W to A43 S	284	291	-7	-2%	0		
Site 3: A43 W U-turn	0	0	0	0%	0		

Table B2: PM Turning Count Comparison.

NAME	MODELLED	OBSERVED	MOD - OBS	% DIFF	GEH	MODELLED	OBERVED
Site 2: A5123 N U-turn	6	2	4	200%	2	1017	956
Site 2: A5123 N to A43 S	729	703	26	4%	1		
Site 2: A5123 N to A43 W	282	251	31	12%	2		
Site 2: A43 S to A5123 N	916	1169	-253	-22%	8	1401	1684
Site 2: A43 S U-turn	0	8	-8	-100%	4		
Site 2: A43 S to A43 W	485	507	-22	-4%	1		
Site 2: A43 W to A5123 N	108	158	-50	-32%	4	672	681
Site 2: A43 W to A43 S	564	521	43	8%	2		
Site 2: A43 W U-turn	0	2	-2	-100%	2		
Site 3: A43 N U-turn	0	0	0	0%	0	1289	1243
Site 3: A43 N to A43 S	1186	1154	32	3%	1		
Site 3: A43 N to A43 W	103	89	14	16%	1		
Site 3: A43 S to A43 N	1101	1346	-245	-18%	7	1645	1902
Site 3: A43 S U-turn	0	0	0	0%	0		
Site 3: A43 S to A43 W	544	556	-12	-2%	1		
Site 3: A43 W to A43 N	299	351	-52	-15%	3	532	567
Site 3: A43 W to A43 S	233	216	17	8%	1		
Site 3: A43 W U-turn	0	0	0	0%	0		

SYSTRA provides advice on transport, to central, regional and local government, agencies, developers, operators and financiers.

A diverse group of results-oriented people, we are part of a strong team of professionals worldwide. Through client business planning, customer research and strategy development we create solutions that work for real people in the real world.

For more information visit www.systra.co.uk

Birmingham – Newhall Street
5th Floor, Lancaster House, Newhall St,
Birmingham, B3 1NQ
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

Birmingham – Innovation Court
Innovation Court, 121 Edmund Street, Birmingham B3 2HJ
T: +44 (0)121 230 6010

Bristol
10 Victoria Street, Bristol, BS1 6BN
T: +44 (0)117 922 9040

Dublin
2nd Floor, Riverview House, 21-23 City Quay
Dublin 2,Ireland
T: +353 (0) 1 905 3961

Edinburgh – Thistle Street
Prospect House, 5 Thistle Street, Edinburgh EH2 1DF
United Kingdom
T: +44 (0)131 220 6966

Edinburgh – Manor Place
37 Manor Place, Edinburgh, EH3 7EB
Telephone +44 (0)131 225 7900 Fax: +44 (0)131 225 9229

Glasgow – St Vincent St
Seventh Floor, 124 St Vincent Street
Glasgow G2 5HF United Kingdom
T: +44 (0)141 225 4400

Glasgow – West George St
250 West George Street, Glasgow, G2 4QY
T: +44 (0)141 221 4030 F: +44 (0)800 066 4367

Leeds
100 Wellington Street, Leeds, LS1 1BA
T: +44 (0)113 397 9740 F: +44 (0)113 397 9741

Liverpool
Cotton Exchange, Bixteth Street, Liverpool, L3 9LQ
T: +44 (0)151 230 1930

London
5 Old Bailey, London EC4M 7BA United Kingdom
T: +44 (0)203 714 4400

London
Seventh Floor, 15 Old Bailey
London EC4M 7EF United Kingdom
T: +44 (0)20 7529 6500 F: +44 (0)20 3427 6274

Manchester – 16th Floor, City Tower
16th Floor, City Tower, Piccadilly Plaza
Manchester M1 4BT United Kingdom
T: +44 (0)161 831 5600

Manchester, 25th Floor, City Tower
25th Floor, City Tower, Piccadilly Plaza
Manchester M1 4BT United Kingdom
T: +44 (0)161 236 0282 F: +44 (0)161 236 0095

Newcastle
PO Box 438, Newcastle upon Tyne, NE3 9BT
United Kingdom
T: +44 (0)191 2136157

Perth
13 Rose Terrace, Perth PH1 5HA
T: +44 (0)1738 621 377 F: +44 (0)1738 632 887

Reading
Soane Point, 6-8 Market Place, Reading,
Berkshire, RG1 2EG
T: +44 (0)118 334 5510

Woking
Dukes Court, Duke Street
Woking, Surrey GU21 5BH United Kingdom
T: +44 (0)1483 728051 F: +44 (0)1483 755207

Other locations:

France:
Bordeaux, Lille, Lyon, Marseille, Paris

Northern Europe:
Astana, Copenhagen, Kiev, London, Moscow, Riga, Wroclaw

Southern Europe & Mediterranean: Algiers, Baku, Bucharest,
Madrid, Rabat, Rome, Sofia, Tunis

Middle East:
Cairo, Dubai, Riyadh

Asia Pacific:
Bangkok, Beijing, Brisbane, Delhi, Hanoi, Hong Kong, Manila, Seoul, Shanghai, Singapore, Shenzhen, Taipei

Africa:
Abidjan, Douala, Johannesburg, Kinshasa, Libreville, Nairobi

Latin America:
Lima, Mexico, Rio de Janeiro, Santiago, São Paulo

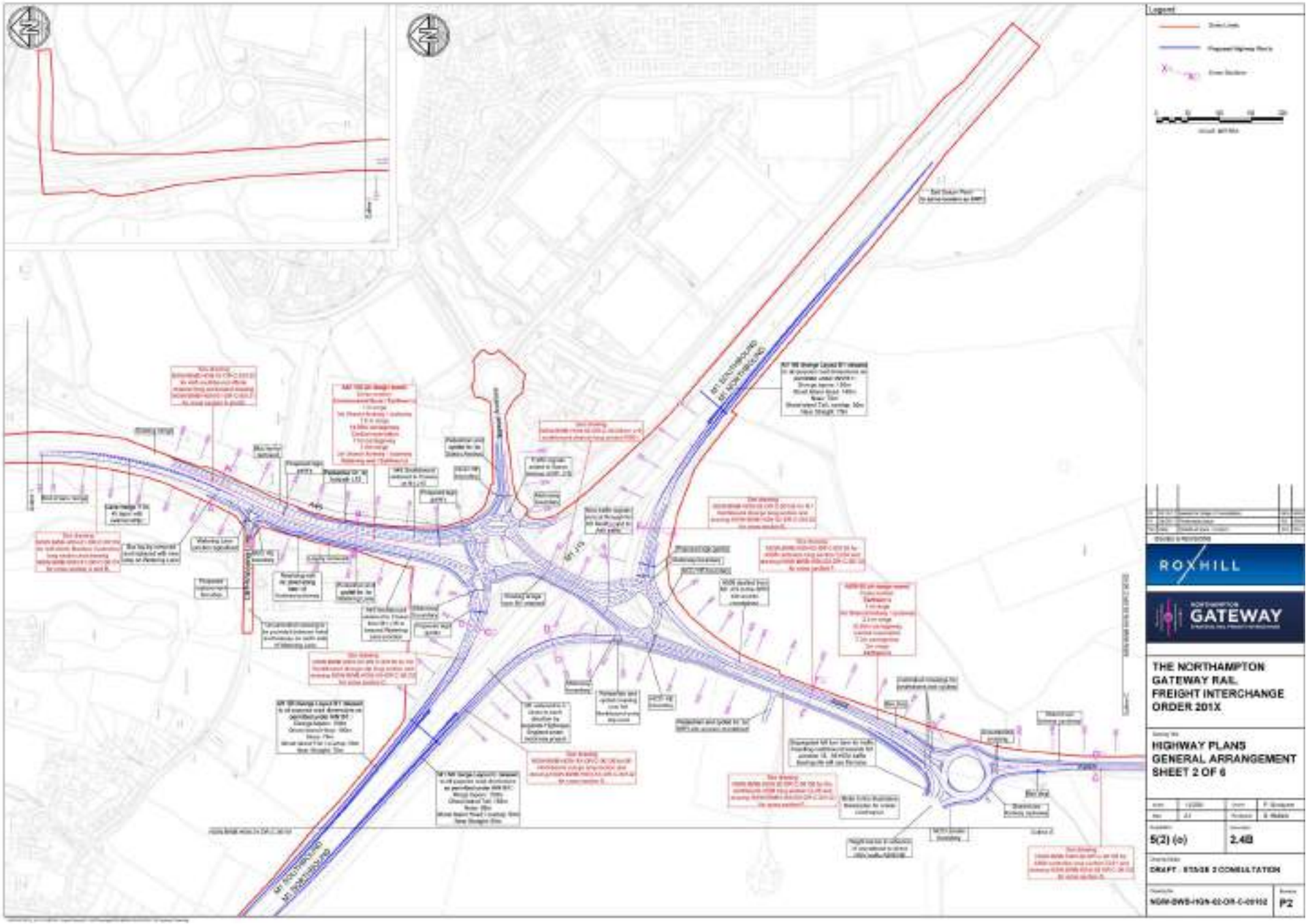
North America:
Little Falls, Los Angeles, Montreal, New-York, Philadelphia, Washington

SYSTRA

APPENDIX T

Northampton Gateway
Proposed M1 J15 Mitigation

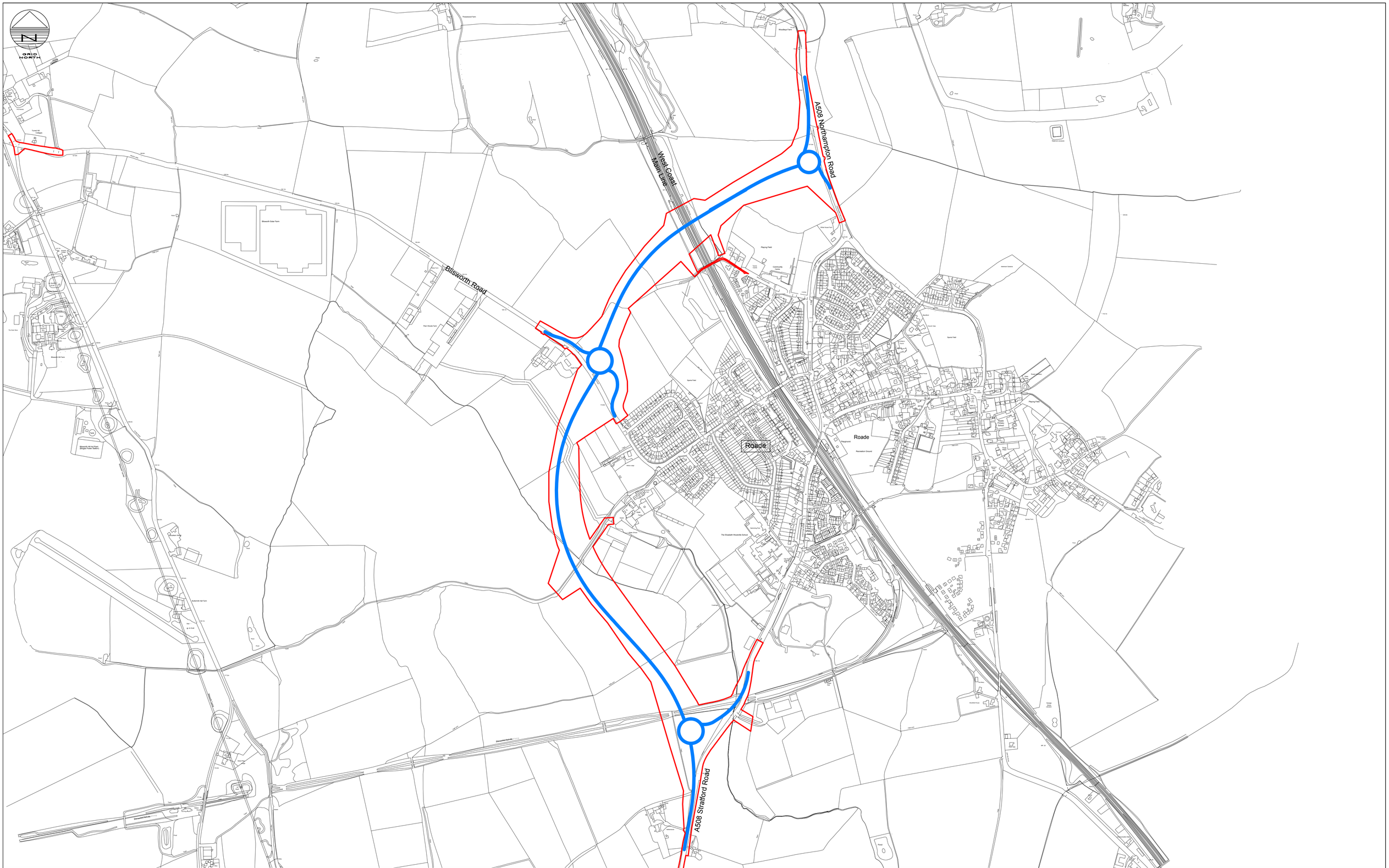
DRAFT


Legend
M1 SOUTHBOUND
M1 NORTHBOUND
A45
ROXHILL
NORTHAMPTON GATEWAY
THE NORTHAMPTON GATEWAY RAIL FREIGHT INTERCHANGE ORDER 201X
HIGHWAY PLANS GENERAL ARRANGEMENT SHEET 2 OF 6
5(2) (o)
2.48
DRAFT - S73/S8 2 CONSULTATION
NGW-BWS-HGN-02-DR-C-00102
P2

APPENDIX U

Northampton Gateway
Proposed Roade Bypass

DRAFT



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

© Copyright BWB Consulting Ltd

Legend

Order limits

ISSUES & REVISIONS

Rev	Date	Details of issue / revision	Drw	Rev
P1	31.03.17	Preliminary Issue	SRH	SRH
P2	21.09.17	Amended for consultation	SRH	SRH

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS
Birmingham | 0121 233 3322
Leeds | 0113 233 8000
London | 020 7234 9122
Manchester | 0161 233 4260
Nottingham | 0115 924 1100
www.bwbconsulting.com

Client: ROXHILL

Project Title: **NORTHAMPTON GATEWAY RAIL FREIGHT INTERCHANGE**

Drawing Title: **A508 ROADE BYPASS PREFERRED ROUTE**

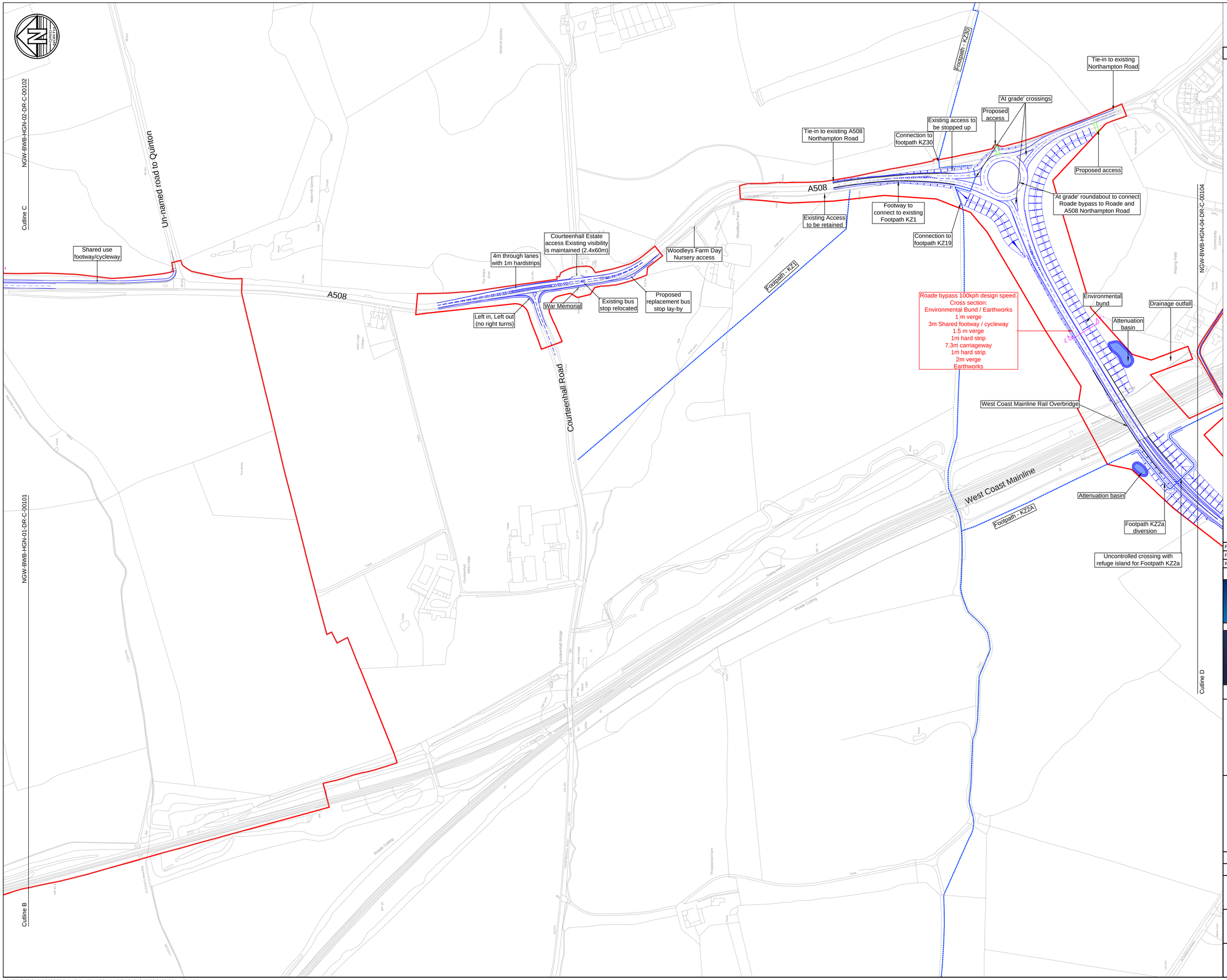
Drawn:	S. Hilditch		Reviewed:	S. Hilditch		
BWB Ref:	NTH 2315	Date:	31.03.17	Scale@A1:	1:5000	

Drawing Status: **FOR INFORMATION**

Project - Originator - Zone - Level - Type - Role - Number: **NGW-BWB-GEN-XX-SK-C-SK05**

Status: **S2**

Rev: **P2**



Rev	Date	Details of issue / revision	Drw	Rev
P2	28.09.17	Layout Updated	GDJ	SRH
P1	15.09.17	Preliminary Issue	PG	SRH

ISSUES & REVISIONS

ROXHILL

NORTHAMPTON GATEWAY
STRATEGIC RAIL FREIGHT INTERCHANGE

THE NORTHAMPTON GATEWAY RAIL FREIGHT INTERCHANGE ORDER 201X

Drawing Title

GENERAL ARRANGEMENT HIGHWAY PLANS SHEET 3 OF 6

DRAFT

Scale	1:2,500	Drawn	P. Goodyear
Size	A1	Reviewed	S. Hilditch

Regulation: 5(2) (p)

Document: 2.4C

Drawing Status: DRAFT - STAGE 2 CONSULTATION

Drawing No.: NGW-BWB-HGN-03-DR-C-00103

Revision: P2

Y:\NTH\NTH2315_M1 J15 SRFI\02. Project Delivery\01. WIP\Drawings\NGW-BWB-LSI-XX-DR-C-100 Highways Plans.dwg

NGW-BWB-HGN-03-DR-C-00103

NGW-BWB-HGN-05-DR-C-00105

ROADE

West Coast Main Line

A508 Stratford Road

Footpath - KZ2A

Private means of access

Environmental bund

"At grade" roundabout to connect Roade bypass to Roade and Bilsworth

Proposed access

Tie-in to existing Blisworth Road

Blisworth road

Proposed drainage outfall

Bridleway - KZ10

Attenuation basin

Environmental bund

Existing water course

Footway/Cycleway link between bypass and Bridleway KZ10/RZ1

Ecological mitigation

Proposed access

Culvert

Proposed tie-in to existing Knock lane

Underpass crossing of Bridleway RZ1 beneath bypass

Proposed Access

Roade bypass 100kph design speed.
Cross section:
Environmental Bund / Earthworks
1 m verge
3m Shared footway / cycleway
1.5 m verge
1m hard strip
7.3m carriageway
1m hard strip
2m verge
Earthworks

Existing access realigned

"At grade" uncontrolled crossings

Tie-in to existing A508 Stratford Road

Attenuation basin

Environmental bund

Existing access for NCC to be retained

Footway / cycleway link to Bridleway RZ6

Environmental Bund

Proposed Access

Existing access to be retained

"At grade" roundabout to connect Roade bypass to Roade and A508

"At grade" uncontrolled crossing with refuge island for foopath RZ3

Proposed access

Footpath - RZ3

Bridleway - RZ6

Dismantled railway

Culline D

Culline E

Hyde road

Bridleway - RZ1

Roade

ROADE

Recreation Ground

Playground

Sports Field

Community Centre

The Elizabeth Woodville School

Swimming Pool

Pond

Tank

Works

Sub Sta

Pumping Station

Scale 0 50 100 150 200

SCALE: METRES

Legend

- Order Limits
- Proposed Highway Works
- Section Lines (X – X')

Rev	Date	Details of issue / revision	Drw	Rev
P2	28.09.17	Updated Layout	GDJ	SRH
P1	15.09.17	Preliminary Issue	PG	SRH

ISSUES & REVISIONS

ROXHILL

NORTHAMPTON GATEWAY
STRATEGIC RAIL FREIGHT INTERCHANGE

THE NORTHAMPTON GATEWAY RAIL FREIGHT INTERCHANGE ORDER 201X

Drawing Title

GENERAL ARRANGEMENT HIGHWAY PLANS SHEET 4 OF 6

DRAFT

Scale	1:2,500	Drawn	P. Goodyear
Size	A1	Reviewed	S. Hilditch

Regulation: 5(2) (p)

Document: 2.4D

Drawing Status: DRAFT - STAGE 2 CONSULTATION

Drawing No.: NGW-BWB-HGN-04-DR-C-00104

Revision: P2

Y:\NTHNTH2315_M1 J15 SRFI\02. Project Delivery\01. WIP\Drawings\NGW-BWB-LSI-XX-DR-C-100 Highways Plans.dwg

APPENDIX V

Cumulative Assessment Modelling Results

DRAFT

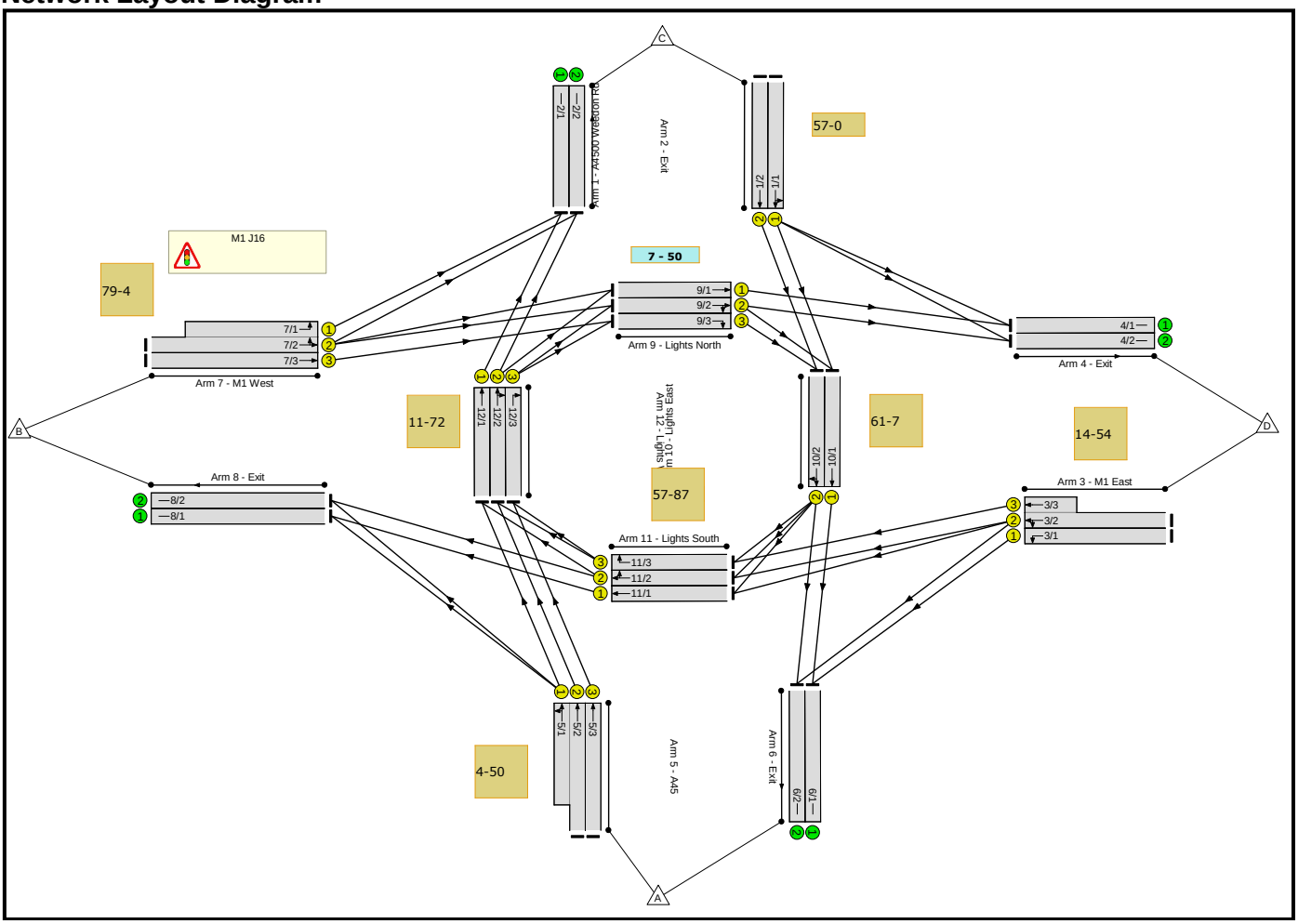
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 1
Location:	M1 J16
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

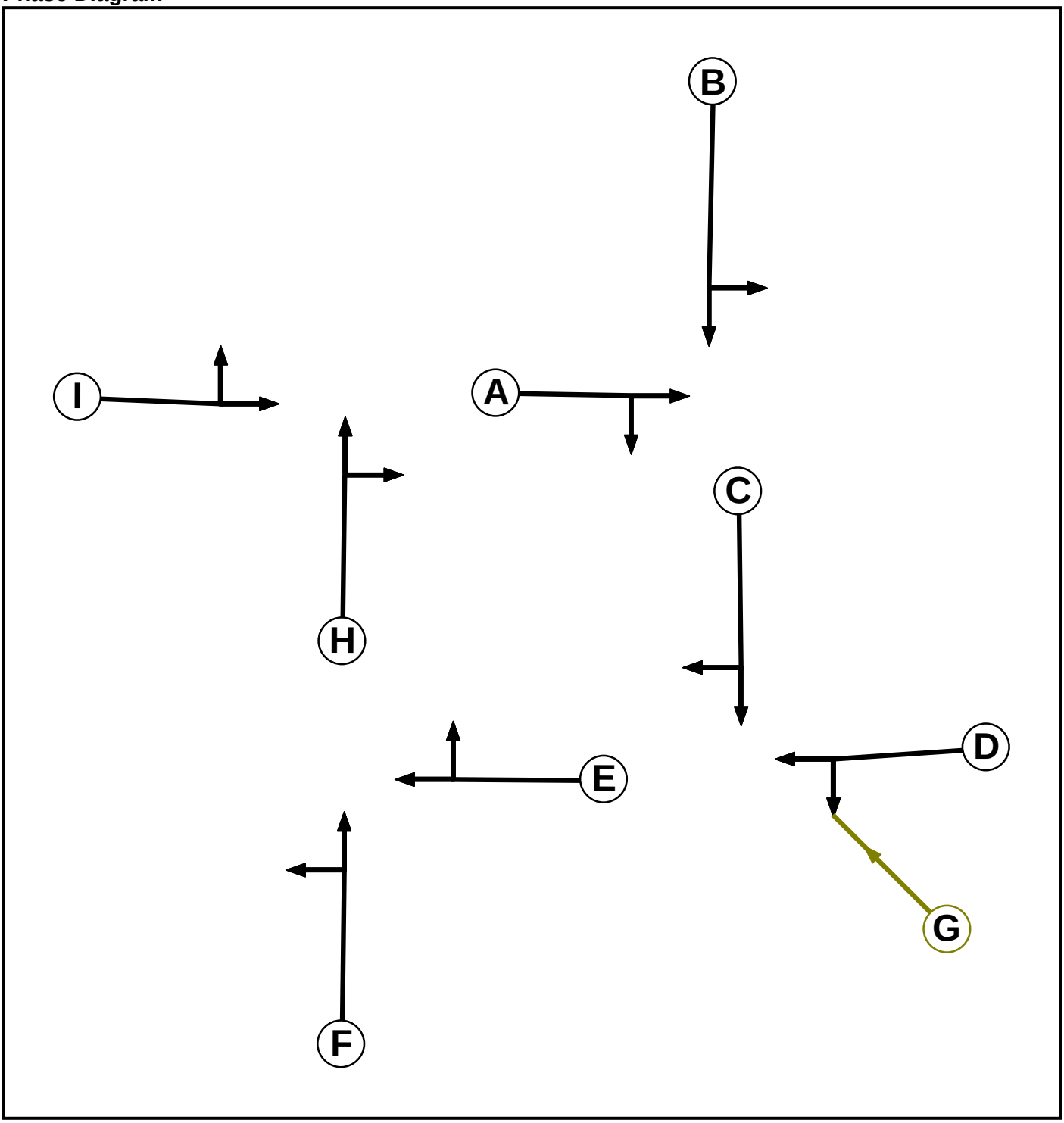
User and Project Details

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Filter			4	4
H	Traffic	4		7	7
I	Traffic	4		7	7

Phase Intergreens Matrix

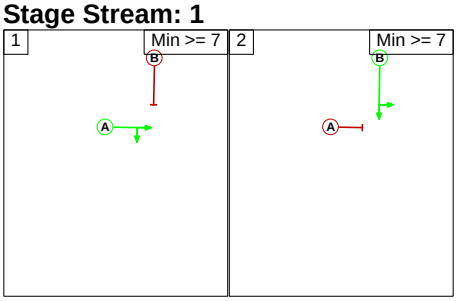
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		7	-	-	-	-	-	-	-
	B	7		-	-	-	-	-	-	-
	C	-	-		7	-	-	-	-	-
	D	-	-	7		-	-	-	-	-
	E	-	-	-	-		7	-	-	-
	F	-	-	-	-	7		-	-	-
	G	-	-	-	-	-	-		-	-
	H	-	-	-	-	-	-	-		7
	I	-	-	-	-	-	-	-	7	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	H
4	2	I

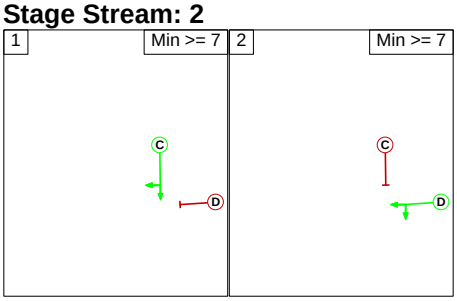
Stage Diagram

Stage Stream: 1

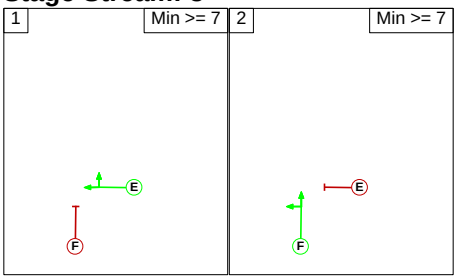


Full Input Data And Results

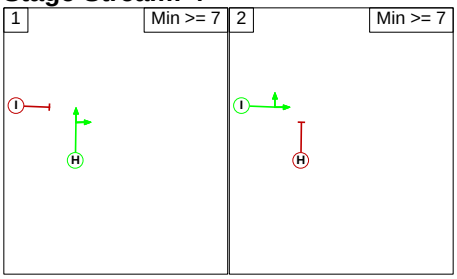
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		7
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: M1 J16
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: M1 J16

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A4500 Weedon Rd)	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A4500 Weedon Rd)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
2/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (M1 East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/2 (M1 East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/3 (M1 East)	U	D	2	3	5.0	User	1800	-	-	-	-	-
4/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (A45)	U	F	2	3	25.0	User	1800	-	-	-	-	-
5/2 (A45)	U	F	2	3	60.0	User	1800	-	-	-	-	-
5/3 (A45)	U	F	2	3	60.0	User	1800	-	-	-	-	-
6/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (M1 West)	U	I	2	3	20.0	User	1800	-	-	-	-	-
7/2 (M1 West)	U	I	2	3	60.0	User	1800	-	-	-	-	-
7/3 (M1 West)	U	I	2	3	60.0	User	1800	-	-	-	-	-
8/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Lights North)	U	A	2	3	7.0	User	1900	-	-	-	-	-
9/2 (Lights North)	U	A	2	3	8.0	User	1900	-	-	-	-	-
9/3 (Lights North)	U	A	2	3	10.0	User	1900	-	-	-	-	-
10/1 (Lights East)	U	C	2	3	15.0	User	1900	-	-	-	-	-

10/2 (Lights East)	U	C	2	3	16.0	User	1900	-	-	-	-	-
11/1 (Lights South)	U	E	2	3	6.0	User	1900	-	-	-	-	-
11/2 (Lights South)	U	E	2	3	7.0	User	1900	-	-	-	-	-
11/3 (Lights South)	U	E	2	3	7.0	User	1900	-	-	-	-	-
12/1 (Lights West)	U	H	2	3	16.0	User	1900	-	-	-	-	-
12/2 (Lights West)	U	H	2	3	17.0	User	1900	-	-	-	-	-
12/3 (Lights West)	U	H	2	3	18.0	User	1900	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	541	920	944	2405
	B	44	41	452	0	537
	C	731	153	0	226	1110
	D	808	0	289	0	1097
	Tot.	1583	735	1661	1170	5149

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2021 DS5 AM
Junction: M1 J16	
1/1	556
1/2	554
2/1	695
2/2	966
3/1	496
3/2 (with short)	601(In) 494(Out)
3/3 (short)	107
4/1	297
4/2	873
5/1 (short)	828
5/2 (with short)	1645(In) 817(Out)
5/3	760
6/1	826
6/2	757
7/1 (short)	226
7/2 (with short)	452(In) 226(Out)
7/3	85
8/1	270
8/2	465
9/1	184
9/2	760
9/3	85
10/1	330
10/2	639
11/1	0
11/2	376
11/3	107
12/1	469
12/2	924
12/3	760

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	525	753	1053	2331
	B	61	21	333	0	415
	C	619	134	0	512	1265
	D	796	0	292	0	1088
	Tot.	1476	680	1378	1565	5099

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2021 DS5 PM
Junction: M1 J16	
1/1	635
1/2	630
2/1	759
2/2	619
3/1	517
3/2 (with short)	571(In) 479(Out)
3/3 (short)	92
4/1	582
4/2	983
5/1 (short)	887
5/2 (with short)	1604(In) 717(Out)
5/3	727
6/1	701
6/2	775
7/1 (short)	197
7/2 (with short)	394(In) 197(Out)
7/3	21
8/1	374
8/2	306
9/1	326
9/2	788
9/3	21
10/1	184
10/2	651
11/1	112
11/2	243
11/3	92
12/1	562
12/2	809
12/3	727

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	596	1706	0	2302
	B	65	41	335	0	441
	C	790	399	0	202	1391
	D	720	0	220	0	940
	Tot.	1575	1036	2261	202	5074

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS5 AM
Junction: M1 J16	
1/1	774
1/2	617
2/1	821
2/2	1440
3/1	409
3/2 (with short)	531(In) 356(Out)
3/3 (short)	175
4/1	101
4/2	101
5/1 (short)	1179
5/2 (with short)	2302(In) 1123(Out)
5/3	0
6/1	1032
6/2	543
7/1 (short)	193
7/2 (with short)	386(In) 193(Out)
7/3	55
8/1	458
8/2	578
9/1	0
9/2	51
9/3	55
10/1	623
10/2	672
11/1	160
11/2	325
11/3	175
12/1	628
12/2	1298
12/3	0

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	557	855	1049	2461
	B	97	21	555	0	673
	C	793	192	0	560	1545
	D	650	0	273	0	923
	Tot.	1540	770	1683	1609	5602

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS5 PM
Junction: M1 J16	
1/1	775
1/2	770
2/1	746
2/2	937
3/1	397
3/2 (with short)	526(In) 342(Out)
3/3 (short)	184
4/1	521
4/2	1088
5/1 (short)	936
5/2 (with short)	1653(In) 717(Out)
5/3	808
6/1	612
6/2	928
7/1 (short)	278
7/2 (with short)	555(In) 277(Out)
7/3	118
8/1	334
8/2	436
9/1	241
9/2	808
9/3	118
10/1	215
10/2	888
11/1	56
11/2	246
11/3	184
12/1	468
12/2	901
12/3	808

Lane Saturation Flows

Full Input Data And Results

Junction: M1 J16								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 Weedon Rd Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A4500 Weedon Rd Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
2/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
3/1 (M1 East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (M1 East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (M1 East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (A45 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (A45 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (A45 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (M1 West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
7/2 (M1 West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
7/3 (M1 West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
8/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

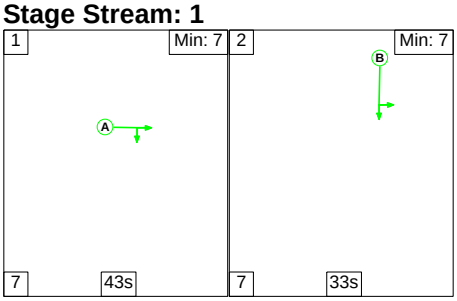
Full Input Data And Results

11/1 (Lights South Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (Lights South Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (Lights South Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (Lights West Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
12/2 (Lights West Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
12/3 (Lights West Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900

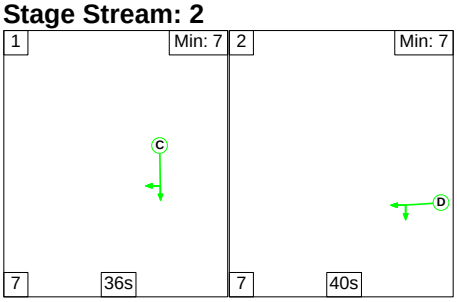
Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

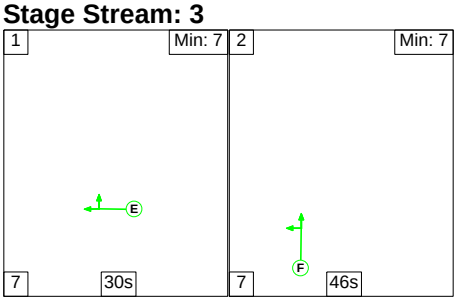
Stage Stream: 1



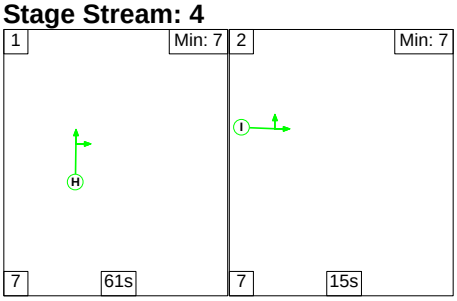
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	43	33
Change Point	0	50

Stage Stream: 2

Stage	1	2
Duration	36	40
Change Point	54	7

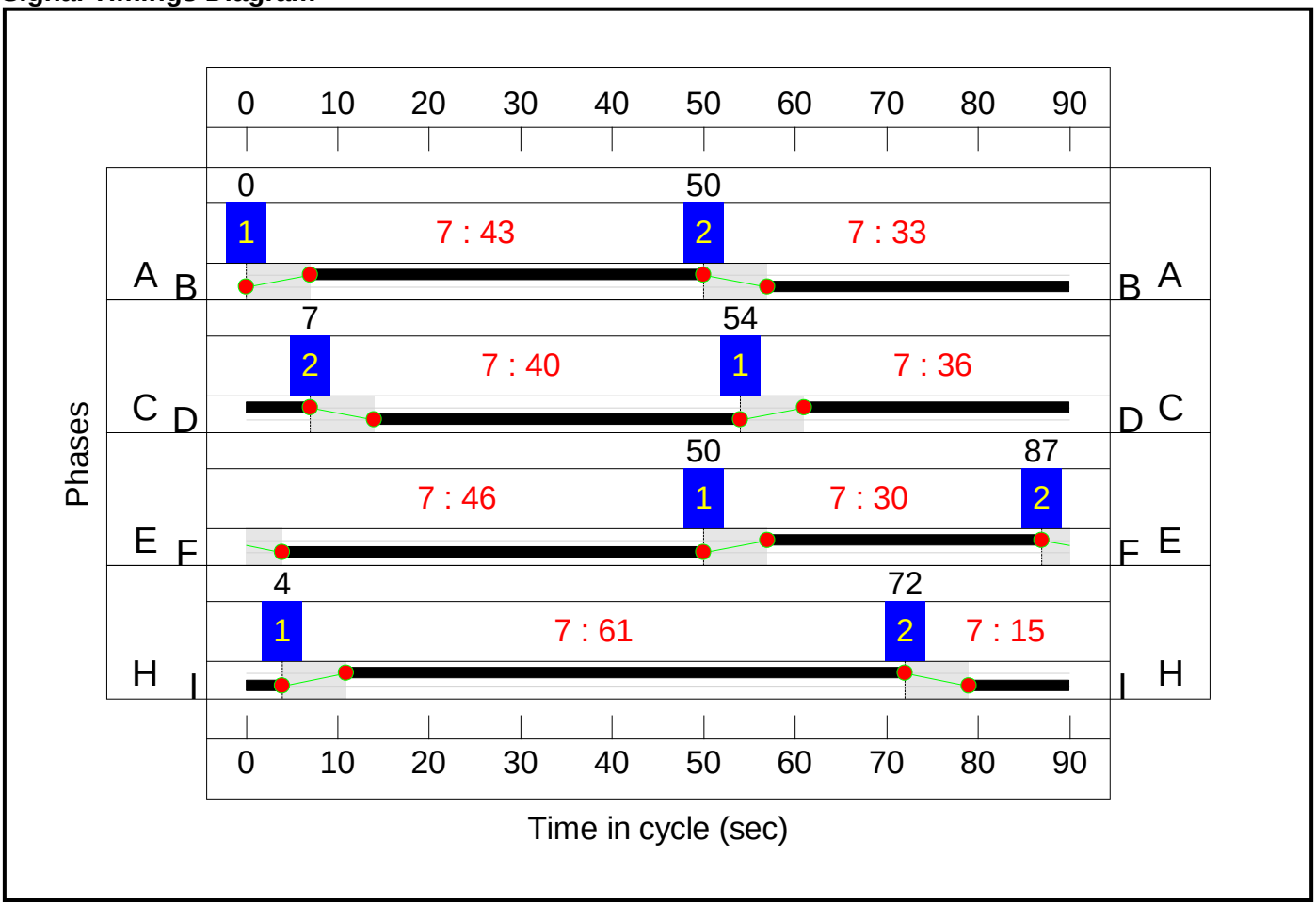
Stage Stream: 3

Stage	1	2
Duration	30	46
Change Point	50	87

Stage Stream: 4

Stage	1	2
Duration	61	15
Change Point	4	72

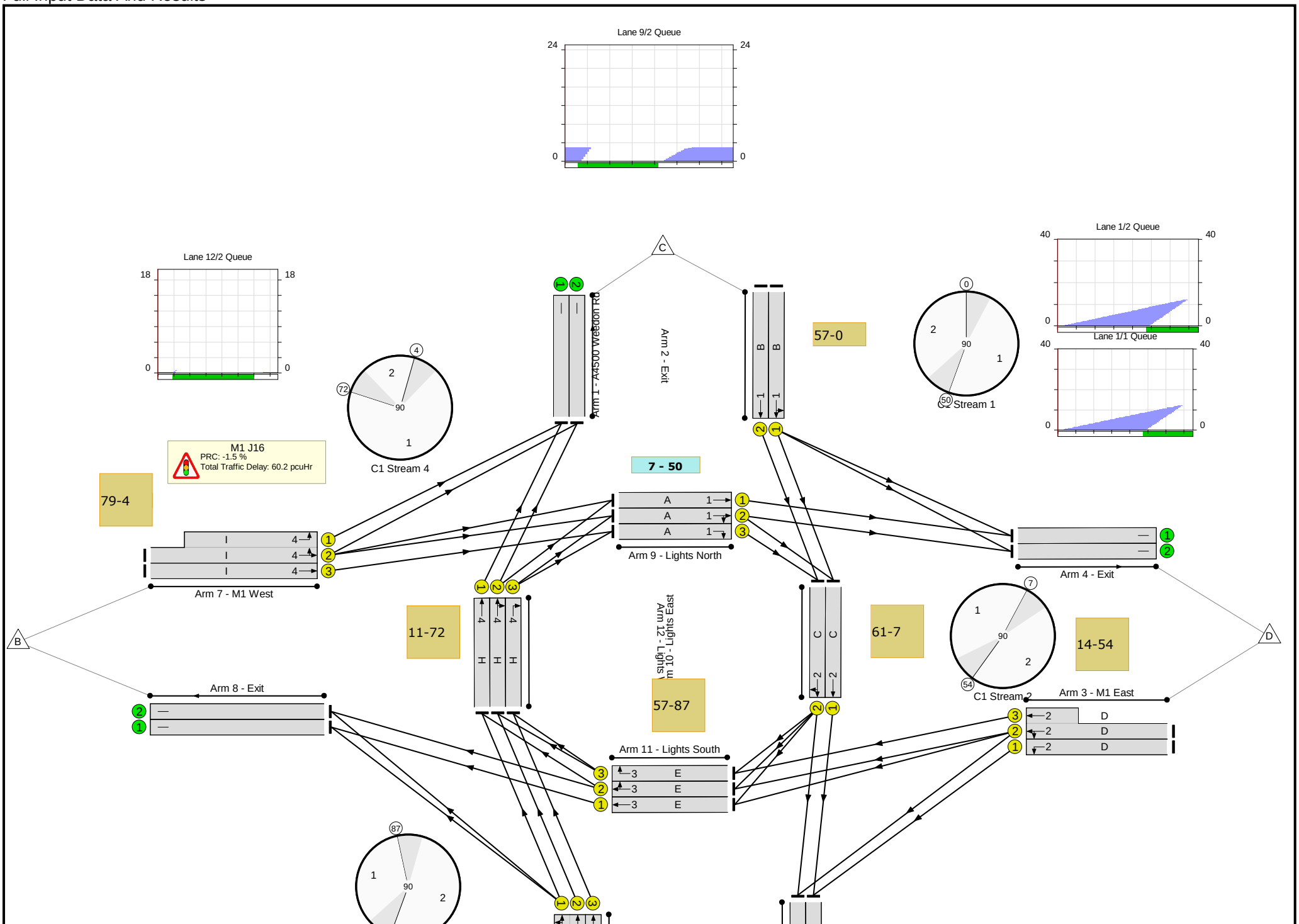
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
M1 J16	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.4%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	33	-	556	1800	680	81.8%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	33	-	554	1800	680	81.5%
2/1	Exit	U	N/A	N/A	-		-	-	-	695	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	966	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	40	-	496	1800	820	60.5%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	40	-	601	1800:1800	710+154	69.6 : 69.6%
4/1	Exit	U	N/A	N/A	-		-	-	-	297	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	873	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	46	-	1645	1800:1800	894+906	91.4 : 91.4%
5/3	A45 Ahead	U	3	N/A	F		1	46	-	760	1800	940	80.9%
6/1	Exit	U	N/A	N/A	-		-	-	-	826	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	757	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	15	-	452	1800:1800	320+320	70.6 : 70.6%
7/3	M1 West Ahead	U	4	N/A	I		1	15	-	85	1800	320	26.6%
8/1	Exit	U	N/A	N/A	-		-	-	-	270	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	465	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	43	-	184	1900	929	19.8%
9/2	Lights North Ahead Right	U	1	N/A	A		1	43	-	760	1900	929	81.8%
9/3	Lights North Right	U	1	N/A	A		1	43	-	85	1900	929	9.2%
10/1	Lights East Ahead	U	2	N/A	C		1	36	-	330	1900	781	42.2%
10/2	Lights East Ahead Right	U	2	N/A	C		1	36	-	639	1900	781	81.8%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	30	-	0	1900	654	0.0%
11/2	Lights South Ahead Right	U	3	N/A	E		1	30	-	376	1900	654	57.5%
11/3	Lights South Right	U	3	N/A	E		1	30	-	107	1900	654	16.3%
12/1	Lights West Ahead	U	4	N/A	H		1	61	-	469	1900	1309	35.8%
12/2	Lights West Ahead Right	U	4	N/A	H		1	61	-	924	1900	1309	70.6%
12/3	Lights West Right	U	4	N/A	H		1	61	-	760	1900	1309	58.1%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**37.8**	**22.5**	**0.0**	**60.2**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**37.8**	**22.5**	**0.0**	**60.2**	**-**	**-**	**-**	**-**
1/1	556	556	-	-	-	3.9	2.2	-	6.1	39.2	12.5	2.2	14.7
1/2	554	554	-	-	-	3.9	2.1	-	6.0	39.0	12.3	2.1	14.4
2/1	695	695	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	966	966	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	496	496	-	-	-	2.5	0.8	-	3.3	23.9	9.2	0.8	10.0
3/2+3/3	601	601	-	-	-	3.1	1.1	-	4.2	25.3	10.6	1.1	11.7
4/1	297	297	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	873	873	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	1645	1645	-	-	-	8.6	5.0	-	13.6	29.8	18.2	5.0	23.2
5/3	760	760	-	-	-	3.8	2.1	-	5.8	27.6	15.6	2.1	17.7
6/1	826	826	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	757	757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	452	452	-	-	-	4.4	1.2	-	5.6	44.3	5.3	1.2	6.5
7/3	85	85	-	-	-	0.8	0.2	-	0.9	39.6	1.8	0.2	2.0
8/1	270	270	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	465	465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	184	184	-	-	-	0.4	0.1	-	0.5	9.8	0.8	0.1	1.0
9/2	760	760	-	-	-	1.4	2.2	-	3.6	17.1	3.0	2.2	5.2
9/3	85	85	-	-	-	0.3	0.1	-	0.3	13.8	2.1	0.1	2.2
10/1	330	330	-	-	-	0.1	0.4	-	0.4	4.8	0.1	0.4	0.5
10/2	639	639	-	-	-	1.2	2.2	-	3.4	19.3	5.8	2.2	8.0
11/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	376	376	-	-	-	2.2	0.7	-	2.9	27.4	6.6	0.7	7.2
11/3	107	107	-	-	-	0.7	0.1	-	0.8	27.6	2.6	0.1	2.7
12/1	469	469	-	-	-	0.5	0.3	-	0.8	6.0	2.2	0.3	2.5

Full Input Data And Results

12/2	924	924	-	-	-	0.0	1.2	-	1.2	4.8	0.6	1.2	1.8
12/3	760	760	-	-	-	0.0	0.7	-	0.7	3.3	0.2	0.7	0.9

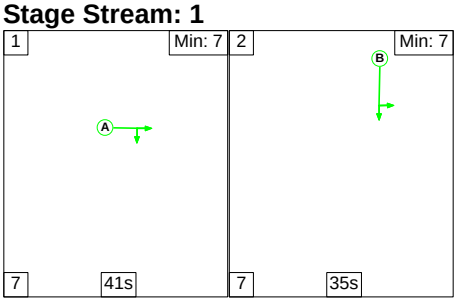
C1	Stream: 1 PRC for Signalled Lanes (%):	10.0	Total Delay for Signalled Lanes (pcuHr):	16.49	Cycle Time (s):	90	
C1	Stream: 2 PRC for Signalled Lanes (%):	10.0	Total Delay for Signalled Lanes (pcuHr):	11.39	Cycle Time (s):	90	
C1	Stream: 3 PRC for Signalled Lanes (%):	-1.5	Total Delay for Signalled Lanes (pcuHr):	23.13	Cycle Time (s):	90	
C1	Stream: 4 PRC for Signalled Lanes (%):	27.4	Total Delay for Signalled Lanes (pcuHr):	9.21	Cycle Time (s):	90	
	PRC Over All Lanes (%):	-1.5	Total Delay Over All Lanes(pcuHr):	60.22			

Full Input Data And Results

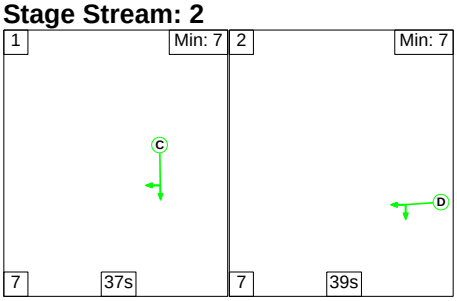
Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

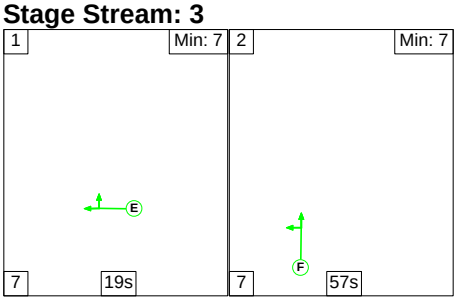
Stage Stream: 1



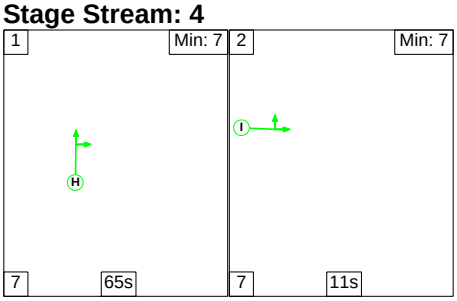
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	41	35
Change Point	0	48

Stage Stream: 2

Stage	1	2
Duration	37	39
Change Point	54	8

Full Input Data And Results

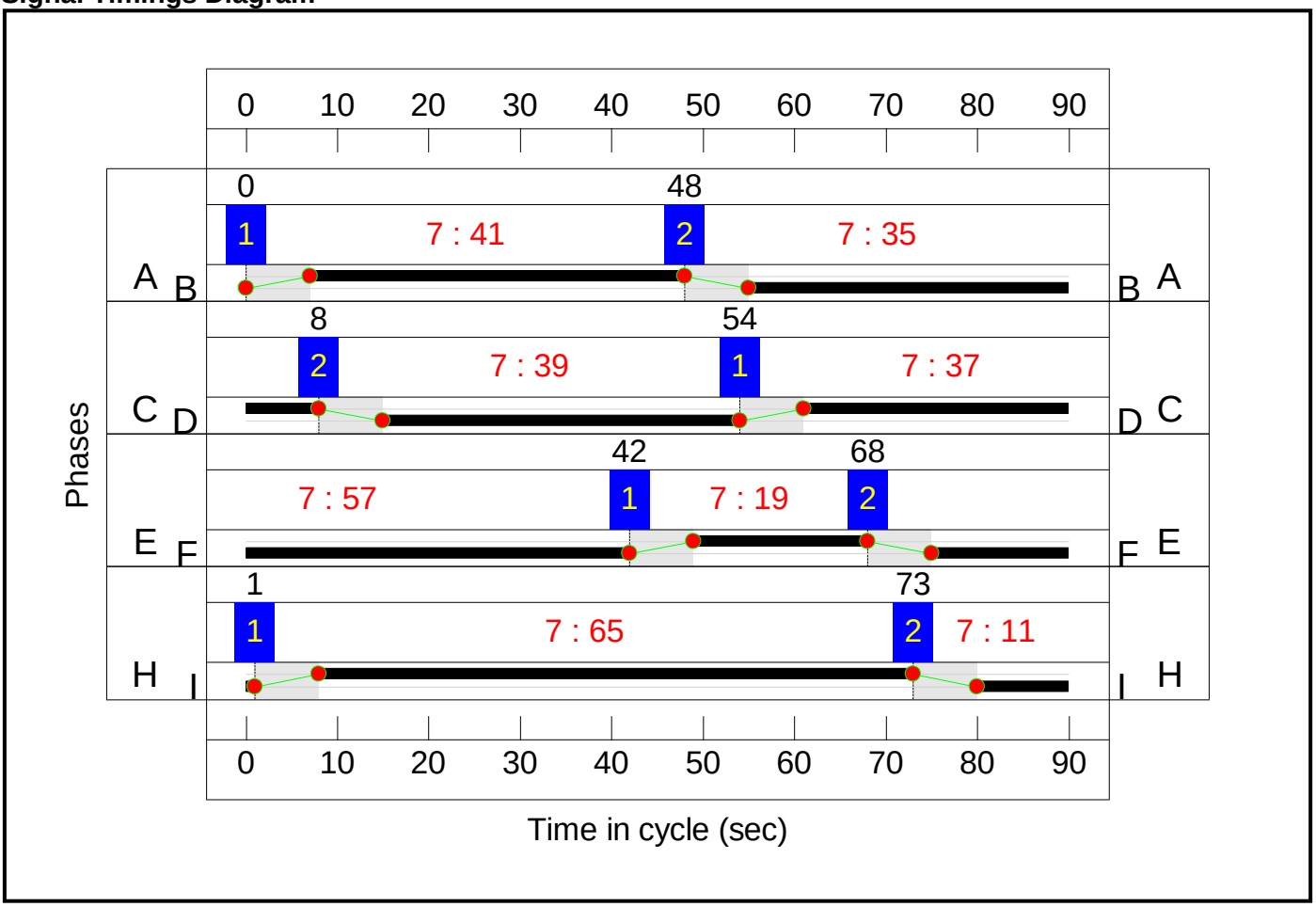
Stage Stream: 3

Stage	1	2
Duration	19	57
Change Point	42	68

Stage Stream: 4

Stage	1	2
Duration	65	11
Change Point	1	73

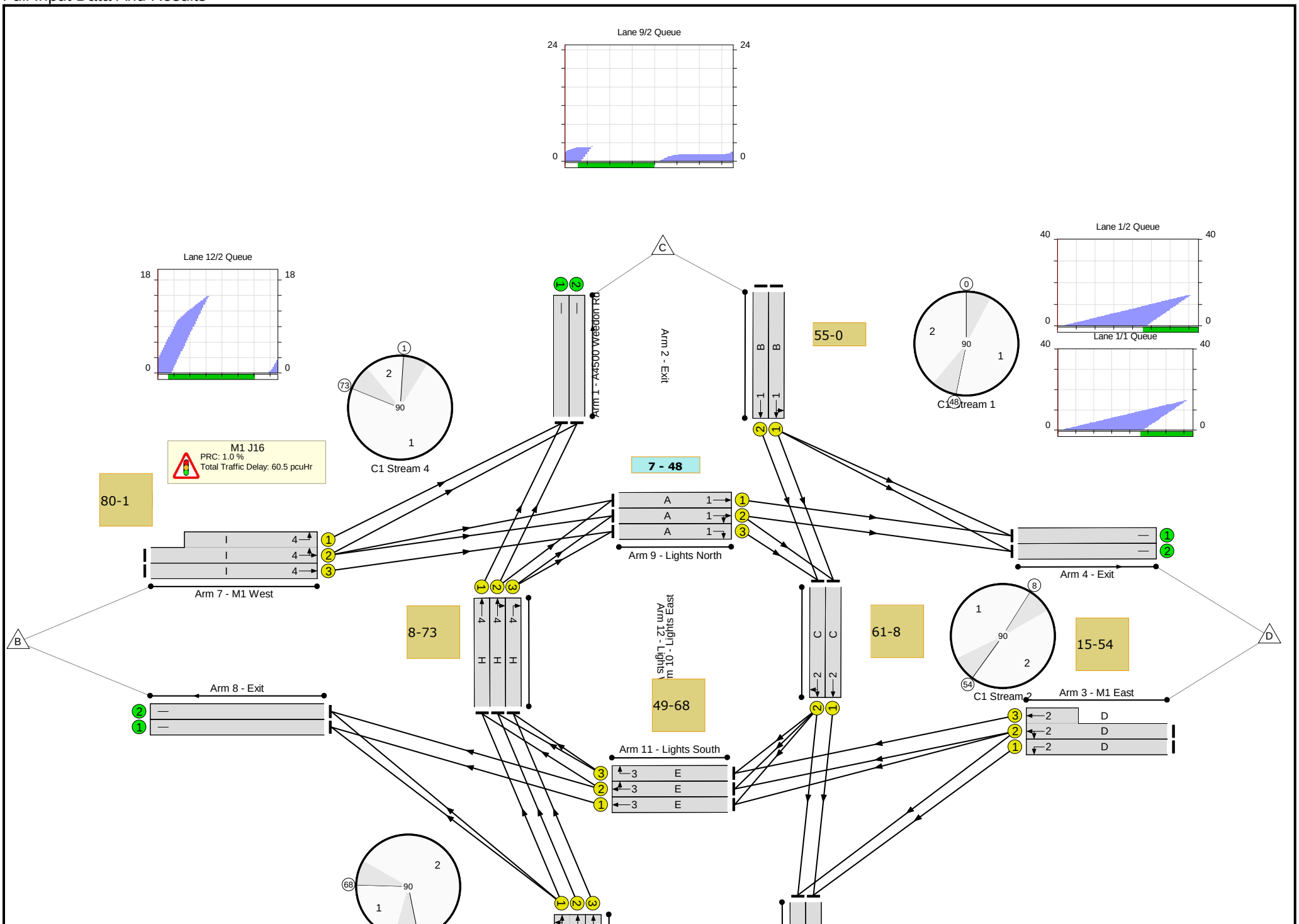
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.1%**
M1 J16	-	-	**N/A**	-	-		-	-	-	-	-	-	**89.1%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	35	-	635	1800	720	88.2%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	35	-	630	1800	720	87.5%
2/1	Exit	U	N/A	N/A	-		-	-	-	759	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	619	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	39	-	517	1800	800	64.6%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	39	-	571	1800:1800	703+135	68.1 : 68.1%
4/1	Exit	U	N/A	N/A	-		-	-	-	582	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	983	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	57	-	1604	1800:1800	805+995	89.1 : 89.1%
5/3	A45 Ahead	U	3	N/A	F		1	57	-	727	1800	1160	62.7%
6/1	Exit	U	N/A	N/A	-		-	-	-	701	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	775	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	11	-	394	1800:1800	240+240	82.1 : 82.1%
7/3	M1 West Ahead	U	4	N/A	I		1	11	-	21	1800	240	8.8%
8/1	Exit	U	N/A	N/A	-		-	-	-	374	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	306	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	41	-	326	1900	887	36.8%
9/2	Lights North Ahead Right	U	1	N/A	A		1	41	-	788	1900	887	88.9%
9/3	Lights North Right	U	1	N/A	A		1	41	-	21	1900	887	2.4%
10/1	Lights East Ahead	U	2	N/A	C		1	37	-	184	1900	802	22.9%
10/2	Lights East Ahead Right	U	2	N/A	C		1	37	-	651	1900	802	81.1%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	19	-	112	1900	422	26.5%
11/2	Lights South Ahead Right	U	3	N/A	E		1	19	-	243	1900	422	57.6%
11/3	Lights South Right	U	3	N/A	E		1	19	-	92	1900	422	21.8%
12/1	Lights West Ahead	U	4	N/A	H		1	65	-	562	1900	1393	40.3%
12/2	Lights West Ahead Right	U	4	N/A	H		1	65	-	809	1900	1393	58.1%
12/3	Lights West Right	U	4	N/A	H		1	65	-	727	1900	1393	52.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**36.0**	**24.5**	**0.0**	**60.5**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**36.0**	**24.5**	**0.0**	**60.5**	**-**	**-**	**-**	**-**
1/1	635	635	-	-	-	4.4	3.5	-	7.9	44.6	14.6	3.5	18.1
1/2	630	630	-	-	-	4.4	3.3	-	7.6	43.6	14.5	3.3	17.8
2/1	759	759	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	619	619	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	517	517	-	-	-	2.8	0.9	-	3.7	25.8	10.1	0.9	11.0
3/2+3/3	571	571	-	-	-	3.0	1.1	-	4.1	25.6	10.1	1.1	11.2
4/1	582	582	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	983	983	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	1604	1604	-	-	-	4.6	3.9	-	8.6	19.3	15.5	3.9	19.5
5/3	727	727	-	-	-	1.9	0.8	-	2.8	13.7	10.7	0.8	11.5
6/1	701	701	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	775	775	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	394	394	-	-	-	4.2	2.2	-	6.3	57.9	4.8	2.2	6.9
7/3	21	21	-	-	-	0.2	0.0	-	0.2	42.4	0.5	0.0	0.5
8/1	374	374	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	306	306	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	326	326	-	-	-	0.3	0.3	-	0.6	6.9	0.7	0.3	1.0
9/2	788	788	-	-	-	0.9	3.7	-	4.7	21.3	3.3	3.7	7.0
9/3	21	21	-	-	-	0.1	0.0	-	0.1	13.0	0.5	0.0	0.5
10/1	184	184	-	-	-	0.8	0.1	-	0.9	17.7	1.7	0.1	1.9
10/2	651	651	-	-	-	0.4	2.1	-	2.5	13.7	1.1	2.1	3.2
11/1	112	112	-	-	-	1.4	0.2	-	1.6	51.1	2.2	0.2	2.4
11/2	243	243	-	-	-	1.6	0.7	-	2.3	34.2	5.8	0.7	6.5
11/3	92	92	-	-	-	0.4	0.1	-	0.6	21.7	2.0	0.1	2.2
12/1	562	562	-	-	-	0.4	0.3	-	0.8	5.0	4.9	0.3	5.3

Full Input Data And Results

12/2	809	809	-	-	-	2.0	0.7	-	2.7	12.2	14.9	0.7	15.6
12/3	727	727	-	-	-	2.1	0.5	-	2.6	13.0	15.3	0.5	15.9

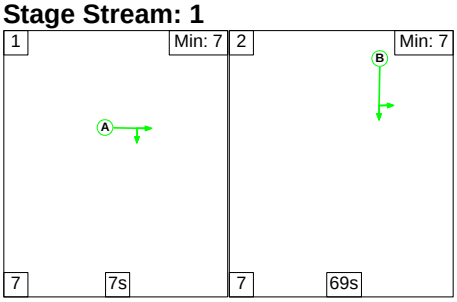
C1	Stream: 1	PRC for Signalled Lanes (%):	1.3	Total Delay for Signalled Lanes (pcuHr):	20.86	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	10.9	Total Delay for Signalled Lanes (pcuHr):	11.14	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	1.0	Total Delay for Signalled Lanes (pcuHr):	15.80	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	9.6	Total Delay for Signalled Lanes (pcuHr):	12.72	Cycle Time (s):	90
		PRC Over All Lanes (%):	1.0	Total Delay Over All Lanes(pcuHr):	60.52		

Full Input Data And Results

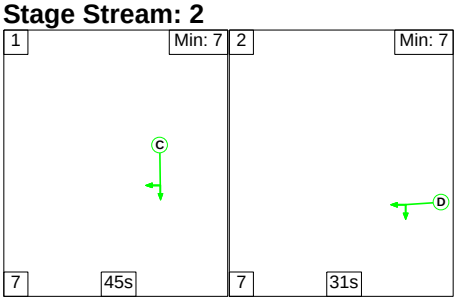
Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

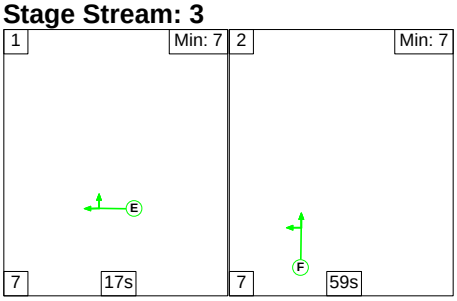
Stage Stream: 1



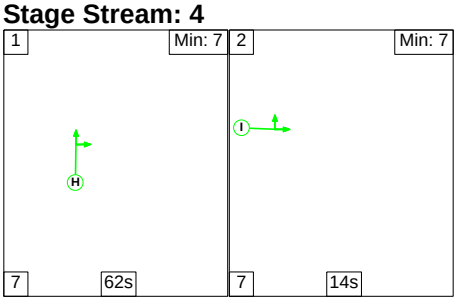
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	7	69
Change Point	0	14

Stage Stream: 2

Stage	1	2
Duration	45	31
Change Point	83	45

Full Input Data And Results

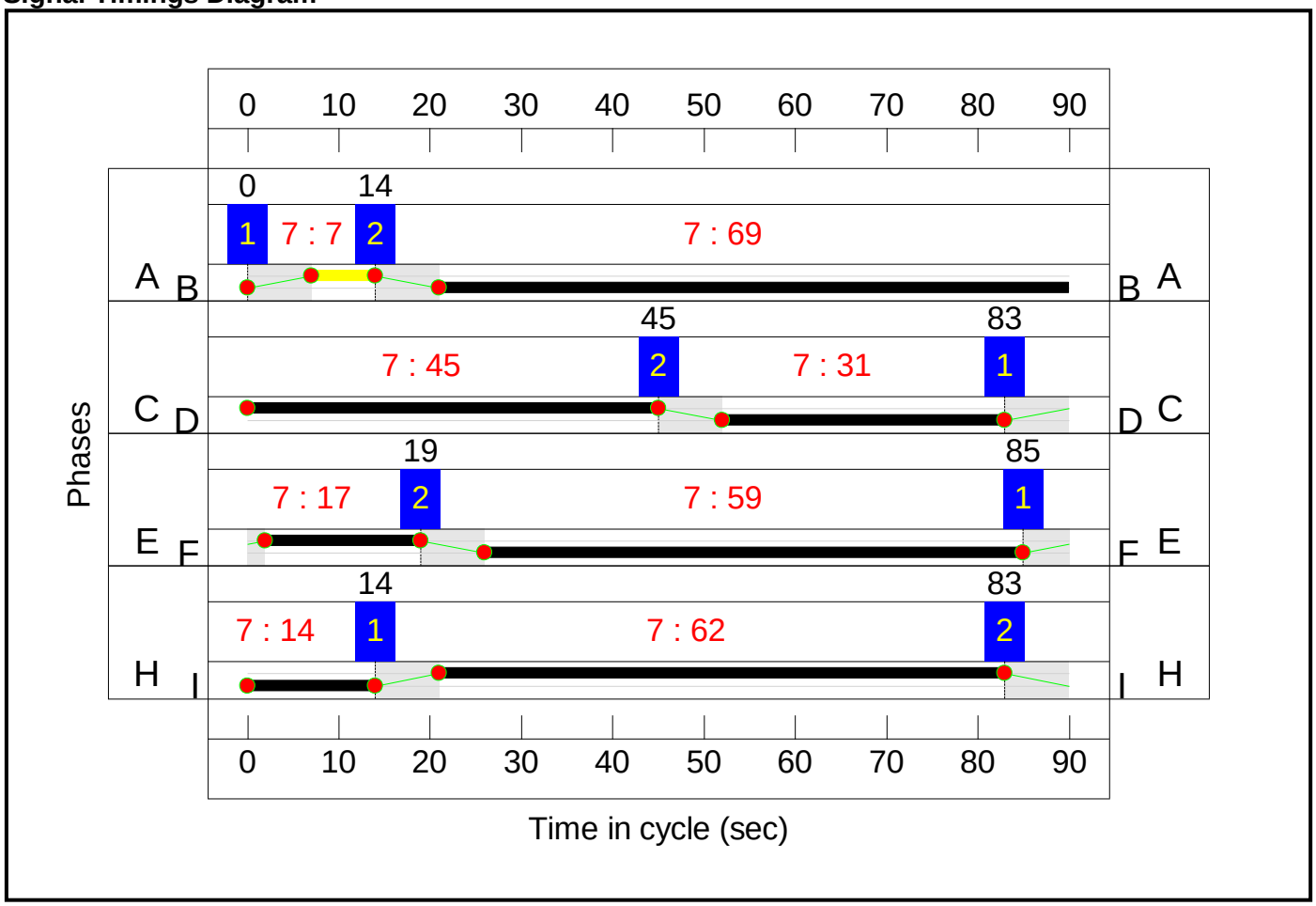
Stage Stream: 3

Stage	1	2
Duration	17	59
Change Point	85	19

Stage Stream: 4

Stage	1	2
Duration	62	14
Change Point	14	83

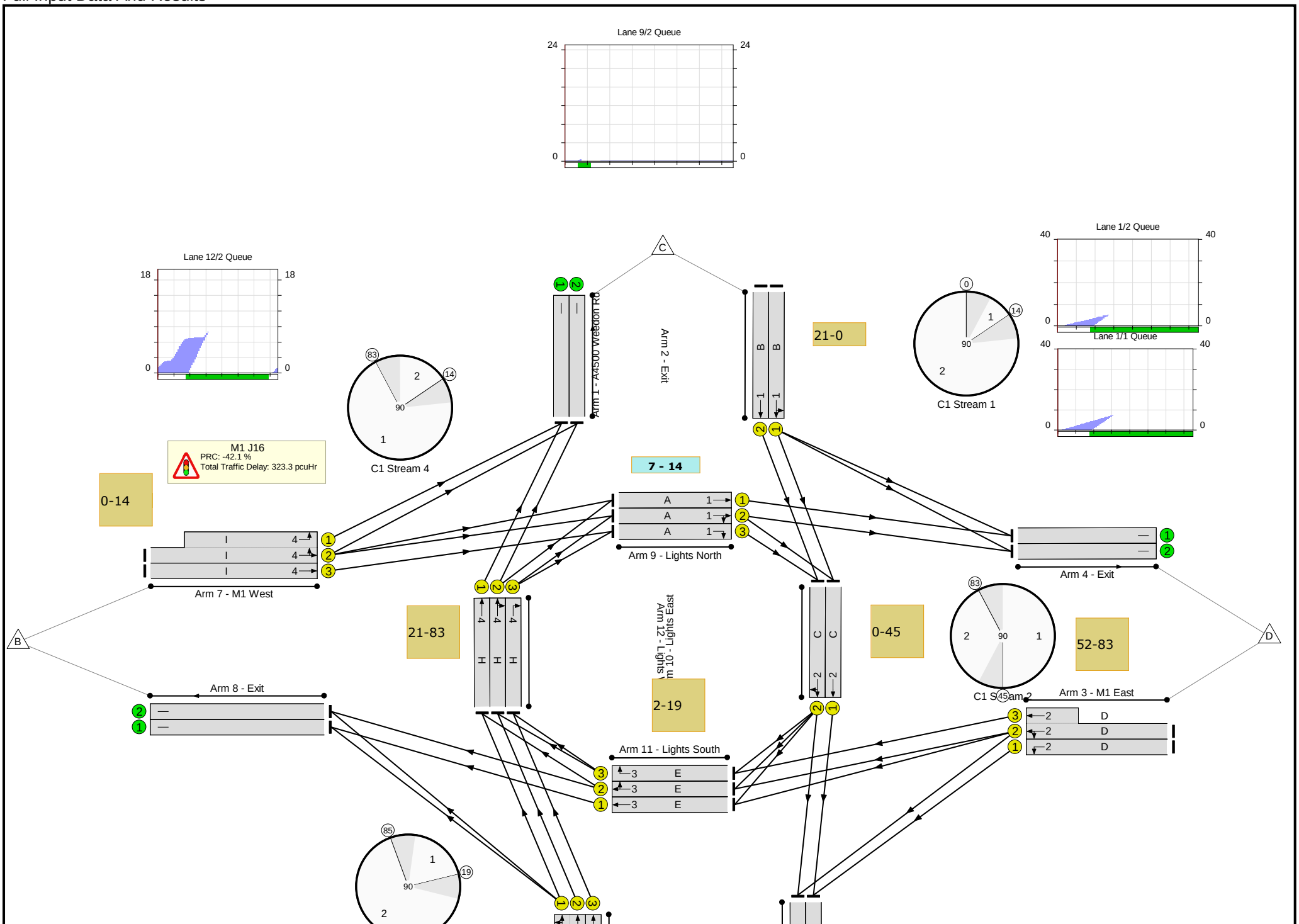
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**127.9%**
M1 J16	-	-	**N/A**	-	-		-	-	-	-	-	-	**127.9%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	69	-	774	1800	1400	55.3%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	69	-	617	1800	1400	44.1%
2/1	Exit	U	N/A	N/A	-		-	-	-	821	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	1440	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	31	-	409	1800	640	63.9%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	31	-	531	1800:1800	495+243	71.9 : 71.9%
4/1	Exit	U	N/A	N/A	-		-	-	-	101	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	101	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	59	-	2302	1800:1800	878+922	127.9 : 127.9%
5/3	A45 Ahead	U	3	N/A	F		1	59	-	0	1800	1200	0.0%
6/1	Exit	U	N/A	N/A	-		-	-	-	1032	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	543	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	14	-	386	1800:1800	300+300	64.3 : 64.3%
7/3	M1 West Ahead	U	4	N/A	I		1	14	-	55	1800	300	18.3%
8/1	Exit	U	N/A	N/A	-		-	-	-	458	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	578	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	7	-	0	1900	169	0.0%
9/2	Lights North Ahead Right	U	1	N/A	A		1	7	-	51	1900	169	30.2%
9/3	Lights North Right	U	1	N/A	A		1	7	-	55	1900	169	32.6%
10/1	Lights East Ahead	U	2	N/A	C		1	45	-	623	1900	971	64.2%
10/2	Lights East Ahead Right	U	2	N/A	C		1	45	-	672	1900	971	69.2%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	17	-	160	1900	380	42.1%
11/2	Lights South Ahead Right	U	3	N/A	E		1	17	-	325	1900	380	85.5%
11/3	Lights South Right	U	3	N/A	E		1	17	-	175	1900	380	46.1%
12/1	Lights West Ahead	U	4	N/A	H		1	62	-	628	1900	1330	37.7%
12/2	Lights West Ahead Right	U	4	N/A	H		1	62	-	1298	1900	1330	79.2%
12/3	Lights West Right	U	4	N/A	H		1	62	-	0	1900	1330	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**57.7**	**265.6**	**0.0**	**323.3**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**57.7**	**265.6**	**0.0**	**323.3**	**-**	**-**	**-**	**-**
1/1	774	774	-	-	-	0.8	0.6	-	1.5	6.8	7.5	0.6	8.1
1/2	617	617	-	-	-	0.6	0.4	-	1.0	5.7	5.1	0.4	5.5
2/1	694	694	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	1195	1195	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	409	409	-	-	-	2.7	0.9	-	3.6	31.9	8.5	0.9	9.4
3/2+3/3	531	531	-	-	-	3.4	1.3	-	4.7	31.7	8.6	1.3	9.9
4/1	101	101	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	101	101	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	2302	1800	-	-	-	33.0	253.3	-	286.2	447.6	79.8	253.3	333.1
5/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1032	1032	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	543	543	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	386	386	-	-	-	3.8	0.9	-	4.6	43.3	4.5	0.9	5.4
7/3	55	55	-	-	-	0.5	0.1	-	0.6	39.6	1.2	0.1	1.3
8/1	393	393	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	513	513	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	51	51	-	-	-	0.1	0.2	-	0.3	23.9	0.4	0.2	0.6
9/3	55	55	-	-	-	0.1	0.2	-	0.3	22.4	1.2	0.2	1.4
10/1	623	623	-	-	-	2.5	0.9	-	3.3	19.3	9.1	0.9	10.0
10/2	672	672	-	-	-	2.7	1.1	-	3.8	20.3	10.2	1.1	11.4
11/1	160	160	-	-	-	1.3	0.4	-	1.7	37.7	2.2	0.4	2.6
11/2	325	325	-	-	-	3.1	2.7	-	5.8	64.6	7.1	2.7	9.8
11/3	175	175	-	-	-	1.3	0.4	-	1.7	35.6	4.4	0.4	4.8
12/1	501	501	-	-	-	0.4	0.3	-	0.7	5.0	2.4	0.3	2.7

Full Input Data And Results

12/2	1053	1053	-	-	-	1.4	1.9	-	3.3	11.3	8.0	1.9	9.9
12/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

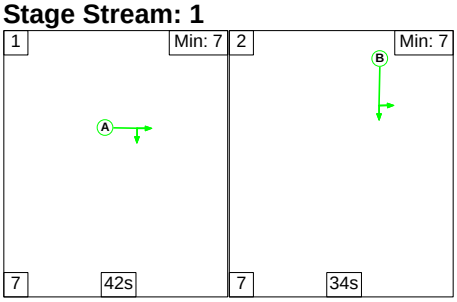
C1	Stream: 1	PRC for Signalled Lanes (%):	62.8	Total Delay for Signalled Lanes (pcuHr):	3.11	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	25.1	Total Delay for Signalled Lanes (pcuHr):	15.44	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-42.1	Total Delay for Signalled Lanes (pcuHr):	295.48	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	13.7	Total Delay for Signalled Lanes (pcuHr):	9.25	Cycle Time (s):	90
		PRC Over All Lanes (%):	-42.1	Total Delay Over All Lanes(pcuHr):	323.28		

Full Input Data And Results

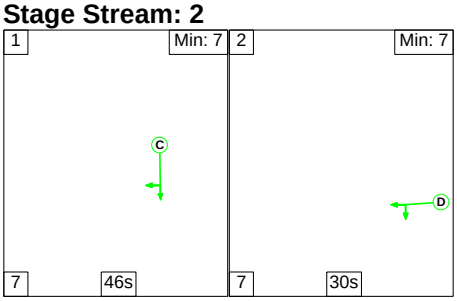
Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

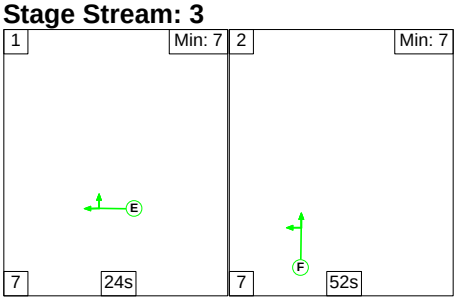
Stage Stream: 1



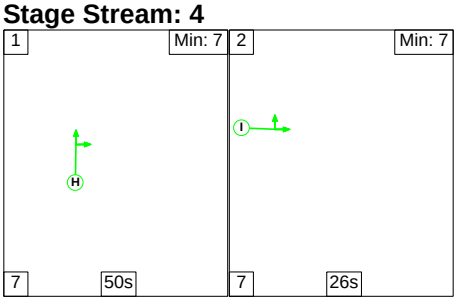
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	42	34
Change Point	0	49

Stage Stream: 2

Stage	1	2
Duration	46	30
Change Point	56	19

Full Input Data And Results

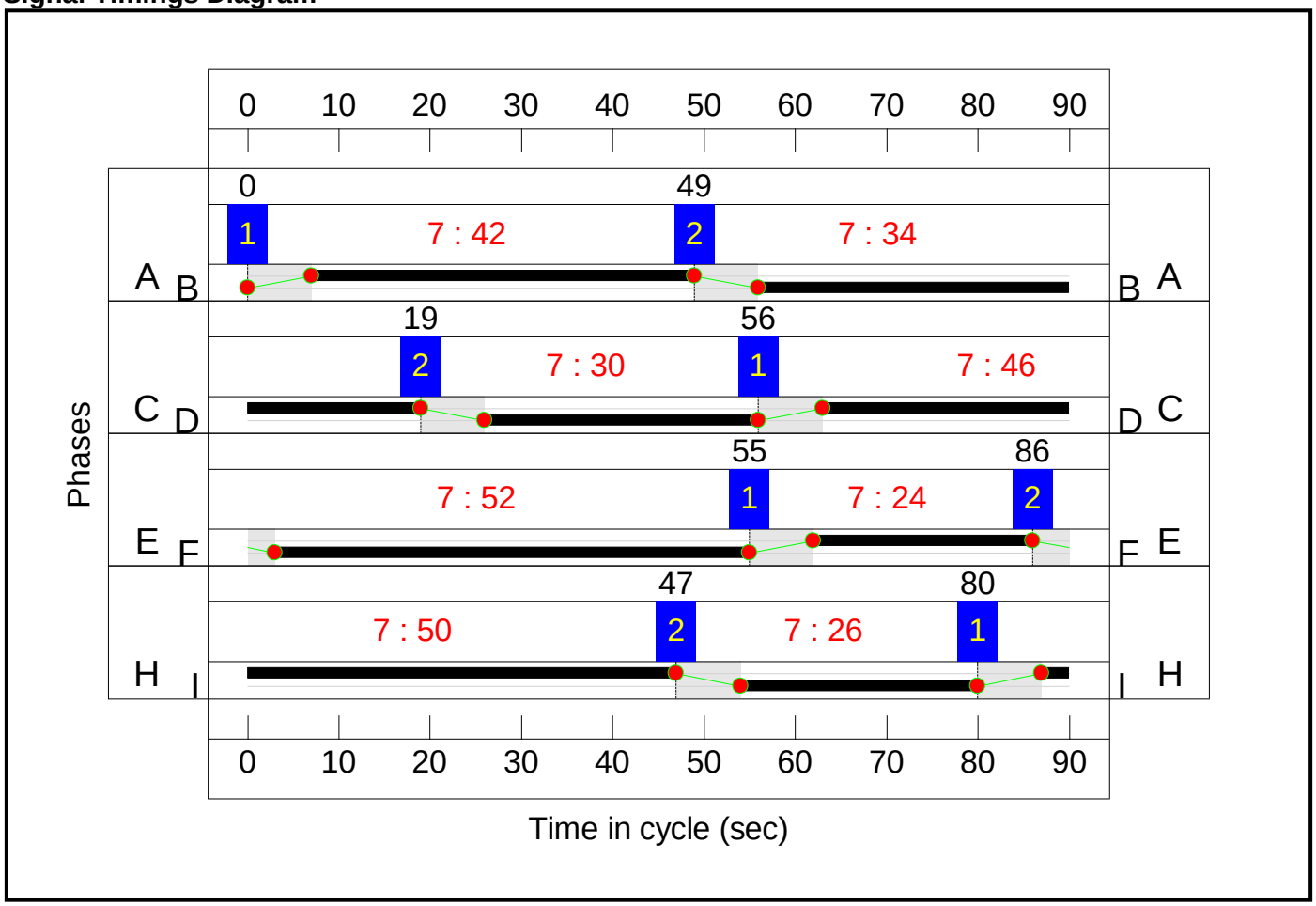
Stage Stream: 3

Stage	1	2
Duration	24	52
Change Point	55	86

Stage Stream: 4

Stage	1	2
Duration	50	26
Change Point	80	47

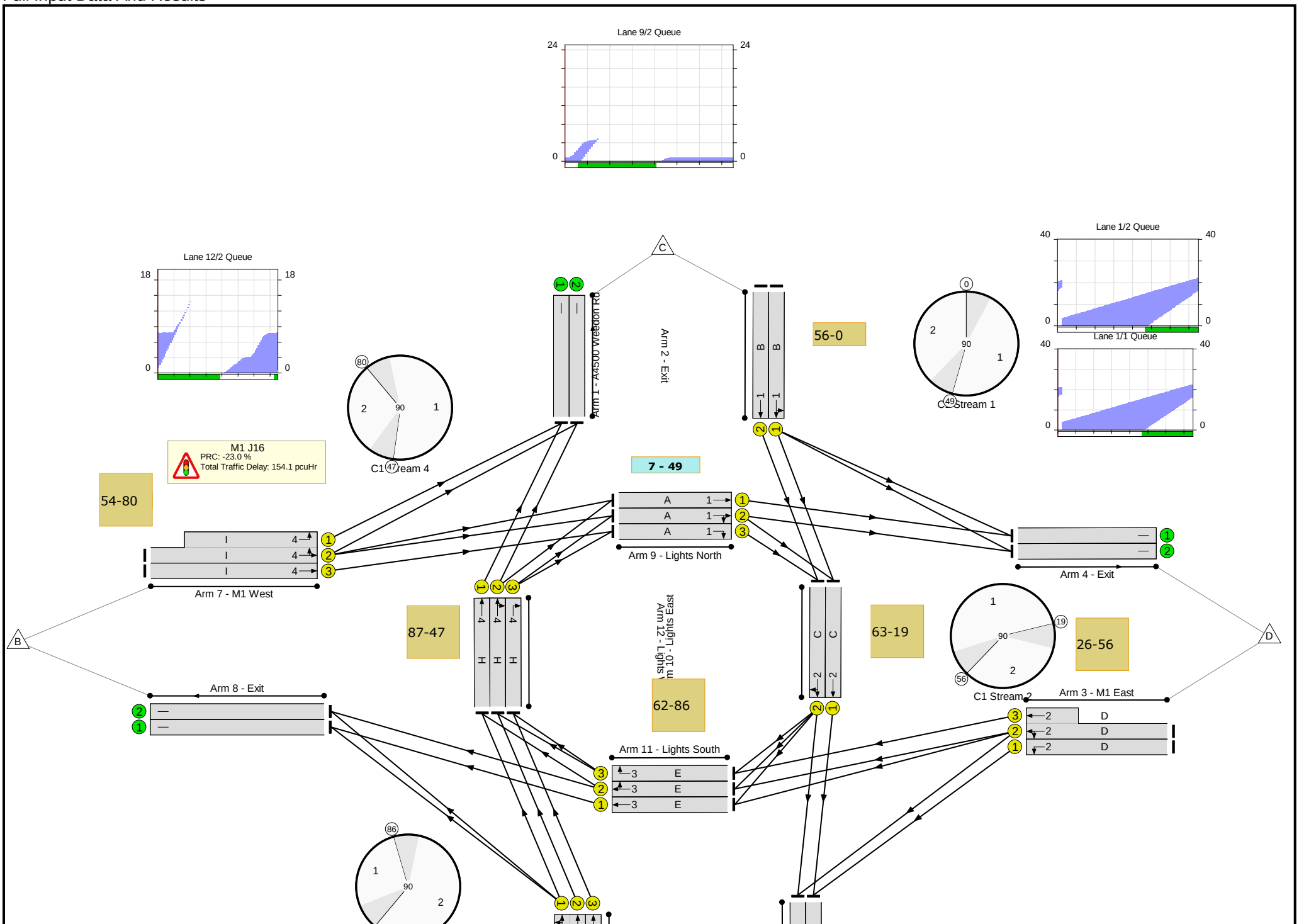
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.7%**
M1 J16	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.7%**
1/1	A4500 Weedon Rd Left Ahead	U	1	N/A	B		1	34	-	775	1800	700	110.7%
1/2	A4500 Weedon Rd Ahead	U	1	N/A	B		1	34	-	770	1800	700	110.0%
2/1	Exit	U	N/A	N/A	-		-	-	-	746	Inf	Inf	0.0%
2/2	Exit	U	N/A	N/A	-		-	-	-	937	Inf	Inf	0.0%
3/1	M1 East Left	U	2	N/A	D		1	30	-	397	1800	620	64.0%
3/2+3/3	M1 East Left Ahead	U	2	N/A	D		1	30	-	526	1800:1800	473+255	72.3 : 72.3%
4/1	Exit	U	N/A	N/A	-		-	-	-	521	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	1088	Inf	Inf	0.0%
5/2+5/1	A45 Left Ahead	U	3	N/A	F		1	52	-	1653	1800:1800	781+1019	91.8 : 91.8%
5/3	A45 Ahead	U	3	N/A	F		1	52	-	808	1800	1060	76.2%
6/1	Exit	U	N/A	N/A	-		-	-	-	612	Inf	Inf	0.0%
6/2	Exit	U	N/A	N/A	-		-	-	-	928	Inf	Inf	0.0%
7/2+7/1	M1 West Left Ahead	U	4	N/A	I		1	26	-	555	1800:1800	540+540	51.3 : 51.5%
7/3	M1 West Ahead	U	4	N/A	I		1	26	-	118	1800	540	21.9%
8/1	Exit	U	N/A	N/A	-		-	-	-	334	Inf	Inf	0.0%
8/2	Exit	U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
9/1	Lights North Ahead	U	1	N/A	A		1	42	-	241	1900	908	26.5%
9/2	Lights North Ahead Right	U	1	N/A	A		1	42	-	808	1900	908	89.0%
9/3	Lights North Right	U	1	N/A	A		1	42	-	118	1900	908	13.0%
10/1	Lights East Ahead	U	2	N/A	C		1	46	-	215	1900	992	19.6%
10/2	Lights East Ahead Right	U	2	N/A	C		1	46	-	888	1900	992	82.4%

Full Input Data And Results

11/1	Lights South Ahead	U	3	N/A	E		1	24	-	56	1900	528	9.8%
11/2	Lights South Ahead Right	U	3	N/A	E		1	24	-	246	1900	528	44.1%
11/3	Lights South Right	U	3	N/A	E		1	24	-	184	1900	528	34.9%
12/1	Lights West Ahead	U	4	N/A	H		1	50	-	468	1900	1077	43.5%
12/2	Lights West Ahead Right	U	4	N/A	H		1	50	-	901	1900	1077	83.7%
12/3	Lights West Right	U	4	N/A	H		1	50	-	808	1900	1077	75.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**51.0**	**103.1**	**0.0**	**154.1**	**-**	**-**	**-**	**-**
M1 J16	**-**	**-**	**0**	**0**	**0**	**51.0**	**103.1**	**0.0**	**154.1**	**-**	**-**	**-**	**-**
1/1	775	700	-	-	-	10.0	42.1	-	52.1	241.9	22.5	42.1	64.6
1/2	770	700	-	-	-	9.7	39.8	-	49.5	231.5	22.1	39.8	61.9
2/1	746	746	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	937	937	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	397	397	-	-	-	2.7	0.9	-	3.6	32.8	8.3	0.9	9.2
3/2+3/3	526	526	-	-	-	3.5	1.3	-	4.7	32.5	8.3	1.3	9.6
4/1	494	494	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	1061	1061	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2+5/1	1653	1653	-	-	-	6.6	5.2	-	11.9	25.9	20.0	5.2	25.3
5/3	808	808	-	-	-	3.1	1.6	-	4.7	20.9	15.0	1.6	16.6
6/1	591	591	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	875	875	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2+7/1	555	555	-	-	-	4.0	0.5	-	4.5	29.5	5.7	0.5	6.2
7/3	118	118	-	-	-	0.8	0.1	-	0.9	27.9	2.2	0.1	2.3
8/1	330	330	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	241	241	-	-	-	0.2	0.2	-	0.3	5.0	1.2	0.2	1.4
9/2	808	808	-	-	-	0.7	3.8	-	4.4	19.8	4.9	3.8	8.7
9/3	118	118	-	-	-	1.1	0.1	-	1.2	37.1	2.9	0.1	3.0
10/1	194	194	-	-	-	0.0	0.1	-	0.1	2.3	0.0	0.1	0.2
10/2	818	818	-	-	-	0.3	2.3	-	2.6	11.3	2.2	2.3	4.5
11/1	52	52	-	-	-	0.4	0.1	-	0.5	33.0	0.7	0.1	0.8
11/2	233	233	-	-	-	1.7	0.4	-	2.1	33.1	4.2	0.4	4.6
11/3	184	184	-	-	-	1.2	0.3	-	1.5	28.7	4.6	0.3	4.9
12/1	468	468	-	-	-	1.2	0.4	-	1.6	12.0	4.2	0.4	4.6

Full Input Data And Results

12/2	901	901	-	-	-	2.4	2.5	-	4.9	19.6	14.3	2.5	16.8
12/3	808	808	-	-	-	1.4	1.5	-	2.9	12.8	3.6	1.5	5.1

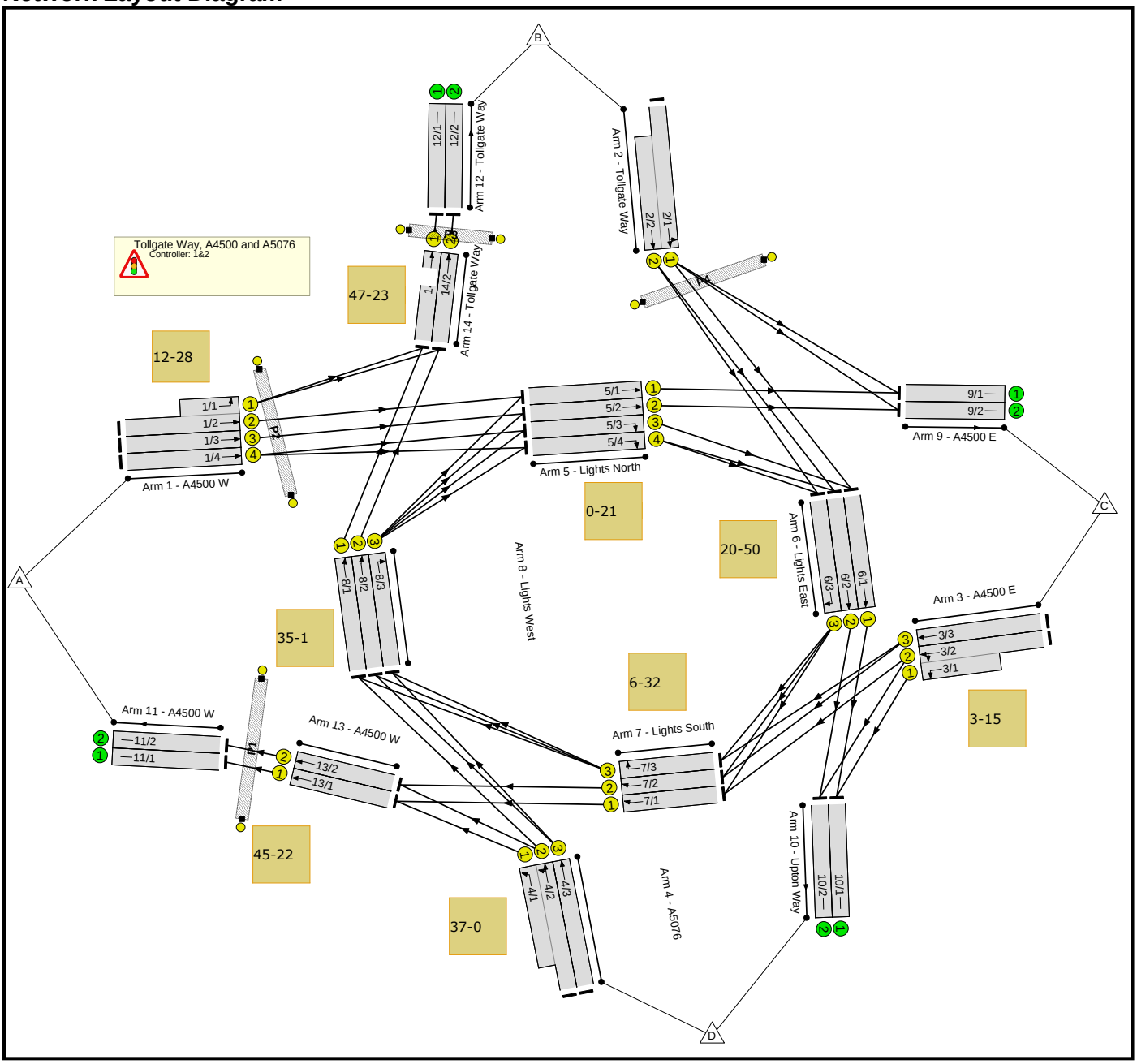
C1	Stream: 1	PRC for Signalled Lanes (%):	-23.0	Total Delay for Signalled Lanes (pcuHr):	107.59	Cycle Time (s):	90
C1	Stream: 2	PRC for Signalled Lanes (%):	9.2	Total Delay for Signalled Lanes (pcuHr):	11.06	Cycle Time (s):	90
C1	Stream: 3	PRC for Signalled Lanes (%):	-2.0	Total Delay for Signalled Lanes (pcuHr):	20.65	Cycle Time (s):	90
C1	Stream: 4	PRC for Signalled Lanes (%):	7.5	Total Delay for Signalled Lanes (pcuHr):	14.80	Cycle Time (s):	90
		PRC Over All Lanes (%):	-23.0	Total Delay Over All Lanes(pcuHr):	154.10		

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 3
Location:	A4500 Weedon Road / Tollgate Way / A4500 Weedon Road / A5076 Upton Way
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

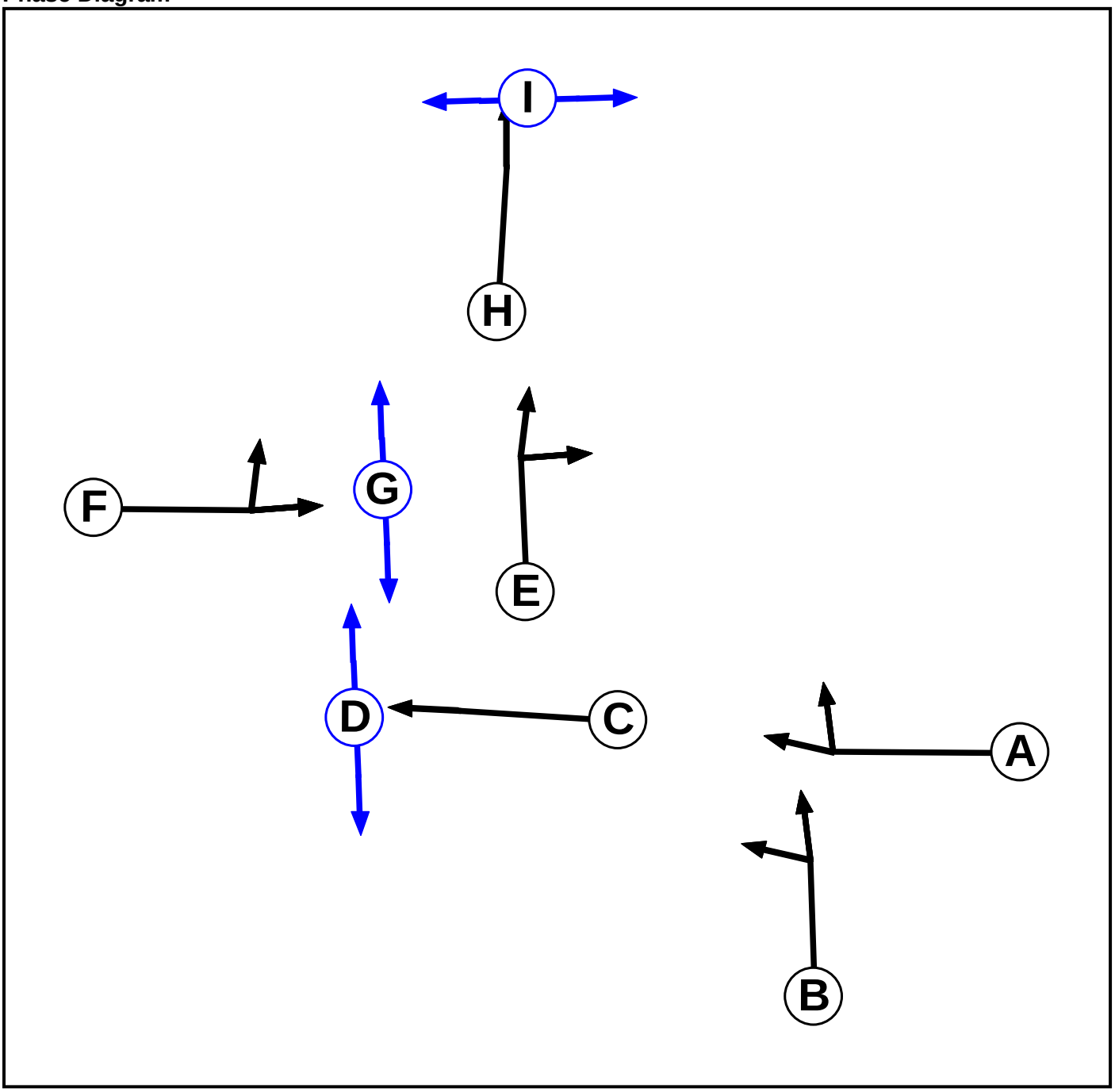
Network Layout Diagram



Full Input Data And Results

C1

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Pedestrian	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Pedestrian	3		7	7
H	Traffic	4		7	7
I	Pedestrian	4		7	7

Phase Intergreens Matrix

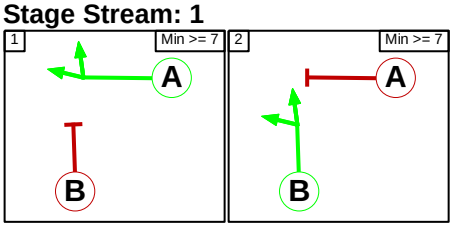
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		5	-	-	-	-	-	-	-
	B	6		-	-	-	-	-	-	-
	C	-	-		7	-	-	-	-	-
	D	-	-	9		-	-	-	-	-
	E	-	-	-	-		5	-	-	-
	F	-	-	-	-	7		6	-	-
	G	-	-	-	-	-	11		-	-
	H	-	-	-	-	-	-	-		8
	I	-	-	-	-	-	-	-	9	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	D
2	2	C
3	1	E G
3	2	F
4	1	I
4	2	H

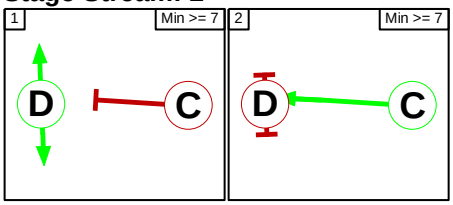
Stage Diagram

Stage Stream: 1

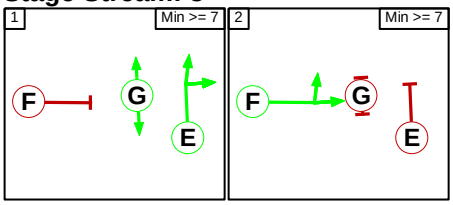


Full Input Data And Results

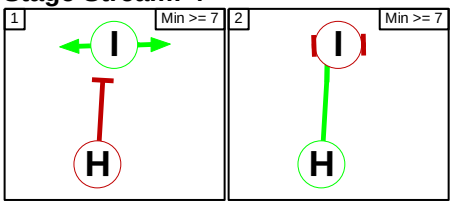
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		5
	2	6	

Full Input Data And Results

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		9
	2	7	

Stage Stream: 3

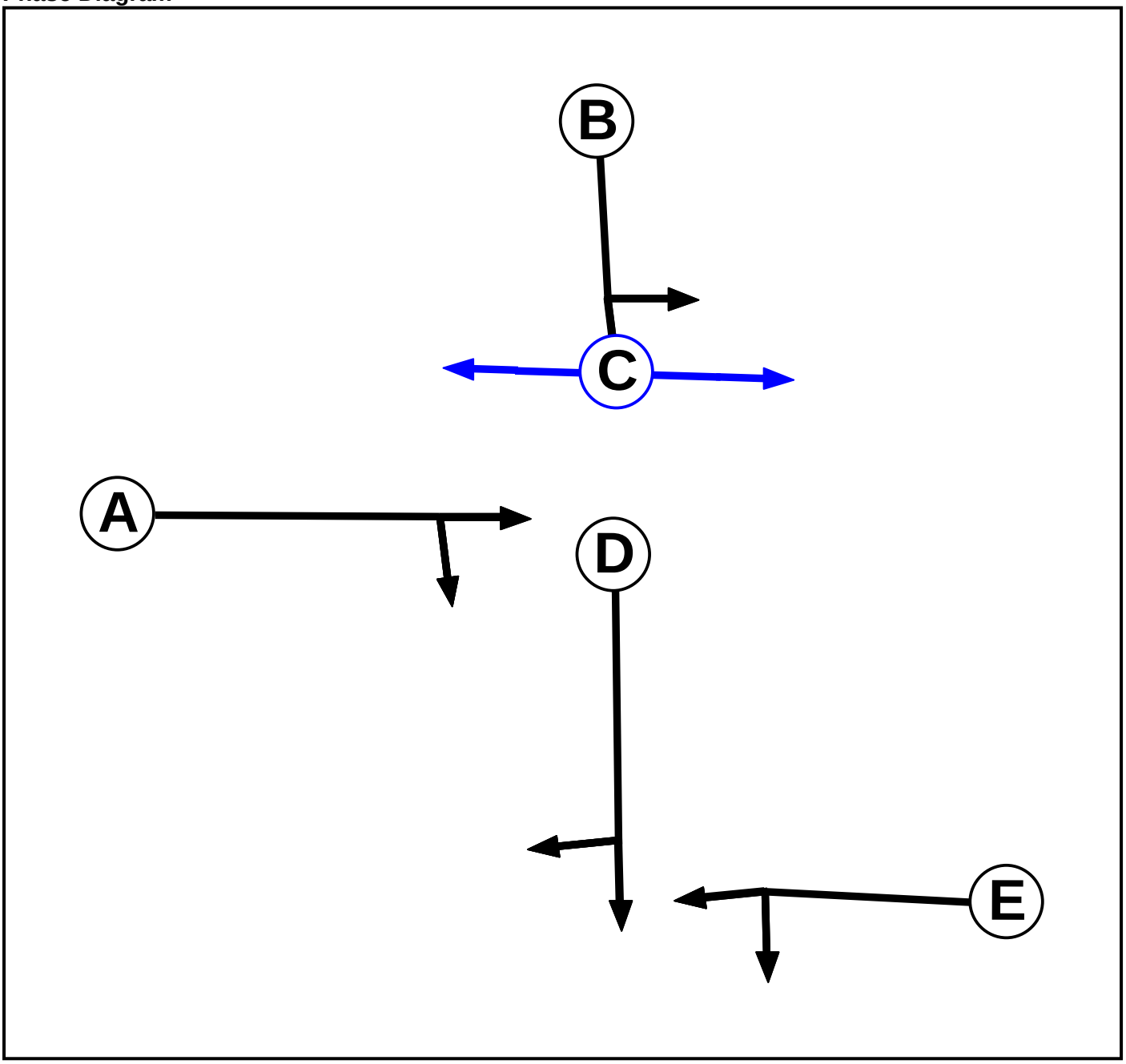
	To Stage		
		1	2
From Stage	1		11
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		9
	2	8	

C2

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Pedestrian	1		7	7
D	Traffic	2		7	7
E	Traffic	2		7	7

Full Input Data And Results

Phase Intergreens Matrix

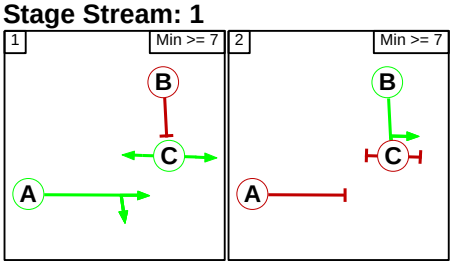
Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		5	-	-	-
	B	6		5	-	-
	C	-	9		-	-
	D	-	-	-		5
	E	-	-	-	5	

Phases in Stage

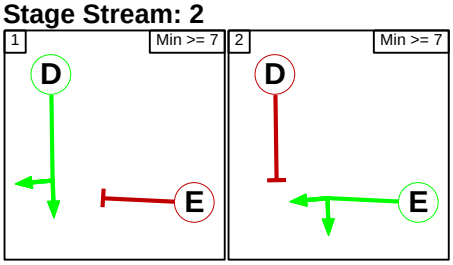
Stream	Stage No.	Phases in Stage
1	1	A C
1	2	B
2	1	D
2	2	E

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		9
	2	6	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Tollgate Way, A4500 and A5076
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A4500 W)	U	F	2	3	5.2	Geom	-	3.25	0.00	Y	Arm 14 Left	50.00
1/2 (A4500 W)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	68.00
1/3 (A4500 W)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	68.00
1/4 (A4500 W)	U	F	2	3	60.0	Geom	-	3.25	0.00	N	Arm 5 Ahead	68.00
2/1 (Tollgate Way)	U	B	2	3	60.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	58.00
											Arm 9 Left	Inf
2/2 (Tollgate Way)	U	B	2	3	12.0	Geom	-	3.50	0.00	N	Arm 6 Ahead	58.00
3/1 (A4500 E)	U	E	2	3	7.0	Geom	-	3.75	0.00	Y	Arm 10 Left	55.00
3/2 (A4500 E)	U	E	2	3	60.0	Geom	-	3.75	0.00	N	Arm 7 Ahead	60.00
											Arm 10 Left	55.00
3/3 (A4500 E)	U	E	2	3	60.0	Geom	-	3.75	0.00	N	Arm 7 Ahead	60.00
4/1 (A5076)	U	B	2	3	24.0	Geom	-	3.75	0.00	Y	Arm 13 Left	48.00
4/2 (A5076)	U	B	2	3	60.0	Geom	-	3.75	0.00	N	Arm 8 Ahead	58.00
											Arm 13 Left	47.00
4/3 (A5076)	U	B	2	3	60.0	Geom	-	3.75	0.00	N	Arm 8 Ahead	58.00
5/1 (Lights North)	U	A	0	3	3.0	Geom	-	3.50	0.00	N	Arm 9 Ahead	57.00
5/2 (Lights North)	U	A	0	3	3.0	Geom	-	3.50	0.00	N	Arm 9 Ahead	57.00
5/3 (Lights North)	U	A	0	3	3.0	Geom	-	3.50	0.00	N	Arm 6 Right	38.50
5/4 (Lights North)	U	A	0	3	4.0	Geom	-	3.50	0.00	N	Arm 6 Right	38.00
6/1 (Lights East)	U	D	0	3	6.0	Geom	-	3.25	0.00	Y	Arm 10 Ahead	56.00
6/2 (Lights East)	U	D	0	3	6.0	Geom	-	3.25	0.00	N	Arm 10 Ahead	57.00

Full Input Data And Results

6/3 (Lights East)	U	D	0	3	6.0	Geom	-	3.25	0.00	N	Arm 7 Right	58.00
7/1 (Lights South)	U	A	0	3	4.0	Geom	-	3.50	0.00	Y	Arm 13 Ahead	62.00
7/2 (Lights South)	U	A	0	3	4.0	Geom	-	3.50	0.00	N	Arm 13 Ahead	62.00
7/3 (Lights South)	U	A	0	3	5.0	Geom	-	3.50	0.00	N	Arm 8 Right	62.00
8/1 (Lights West)	U	E	0	3	4.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	58.00
8/2 (Lights West)	U	E	0	3	4.0	Geom	-	3.50	0.00	N	Arm 14 Ahead	57.00
8/3 (Lights West)	U	E	0	3	5.0	Geom	-	3.50	0.00	N	Arm 5 Right	56.00
9/1 (A4500 E)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A4500 E)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (Upton Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (Upton Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A4500 W)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A4500 W)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (Tollgate Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2 (Tollgate Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (A4500 W)	U	C	2	3	4.0	Geom	-	4.00	0.00	Y	Arm 11 Ahead	Inf
13/2 (A4500 W)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 11 Ahead	Inf
14/1 (Tollgate Way)	U	H	2	3	2.0	Geom	-	4.00	0.00	Y	Arm 12 Ahead	83.00
14/2 (Tollgate Way)	U	H	2	3	2.0	Geom	-	4.00	0.00	N	Arm 12 Ahead	84.00

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	
8: '2031 DS PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	181	658	378	1217
	B	270	0	104	1081	1455
	C	551	43	0	212	806
	D	382	540	176	0	1098
	Tot.	1203	764	938	1671	4576

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 9: 2021 DS5 AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	181
1/2 (with short)	522(In) 341(Out)
1/3	317
1/4	378
2/1 (with short)	1455(In) 679(Out)
2/2 (short)	776
3/1 (short)	210
3/2 (with short)	533(In) 323(Out)
3/3	273
4/1 (short)	178
4/2 (with short)	682(In) 504(Out)
4/3	416
5/1	419
5/2	415
5/3	169
5/4	209
6/1	744
6/2	715
6/3	270
7/1	405
7/2	416
7/3	43
8/1	309
8/2	274
8/3	176
9/1	471
9/2	467
10/1	954
10/2	717
11/1	583
11/2	620
12/1	388
12/2	376
13/1	583
13/2	620
14/1	388
14/2	376

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	84.7 %	2060	2060
				Arm 9 Left	Inf	15.3 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	99.4 %	2078	2078
				Arm 10 Left	55.00	0.6 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	59.5 %	2071	2071
				Arm 13 Left	47.00	40.5 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	106	804	279	1189
	B	195	0	68	492	755
	C	776	67	0	331	1174
	D	349	584	167	0	1100
	Tot.	1320	757	1039	1102	4218

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 10: 2021 DS5 PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	106
1/2 (with short)	512(In) 406(Out)
1/3	398
1/4	279
2/1 (with short)	755(In) 330(Out)
2/2 (short)	425
3/1 (short)	330
3/2 (with short)	769(In) 439(Out)
3/3	405
4/1 (short)	146
4/2 (with short)	663(In) 517(Out)
4/3	437
5/1	484
5/2	487
5/3	121
5/4	158
6/1	383
6/2	388
6/3	195
7/1	488
7/2	483
7/3	67
8/1	316
8/2	335
8/3	167
9/1	518
9/2	521
10/1	713
10/2	389
11/1	634
11/2	686
12/1	373
12/2	384
13/1	634
13/2	686
14/1	373
14/2	384

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	79.4 %	2063	2063
				Arm 9 Left	Inf	20.6 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	99.8 %	2078	2078
				Arm 10 Left	55.00	0.2 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	60.7 %	2072	2072
				Arm 13 Left	47.00	39.3 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	255	661	446	1362
	B	347	0	153	1050	1550
	C	820	75	0	223	1118
	D	249	628	246	0	1123
	Tot.	1416	958	1060	1719	5153

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 11: 2031 DS5 AM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	255
1/2 (with short)	592(In) 337(Out)
1/3	324
1/4	446
2/1 (with short)	1550(In) 733(Out)
2/2 (short)	817
3/1 (short)	222
3/2 (with short)	675(In) 453(Out)
3/3	443
4/1 (short)	115
4/2 (with short)	620(In) 505(Out)
4/3	503
5/1	454
5/2	453
5/3	175
5/4	271
6/1	755
6/2	741
6/3	347
7/1	573
7/2	594
7/3	75
8/1	396
8/2	307
8/3	246
9/1	530
9/2	530
10/1	977
10/2	742
11/1	688
11/2	728
12/1	396
12/2	562
13/1	688
13/2	728
14/1	396
14/2	562

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	79.1 %	2063	2063
				Arm 9 Left	Inf	20.9 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	99.8 %	2078	2078
				Arm 10 Left	55.00	0.2 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	73.5 %	2073	2073
				Arm 13 Left	47.00	26.5 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	154	893	204	1251
	B	309	0	132	576	1017
	C	679	93	0	483	1255
	D	371	657	249	0	1277
	Tot.	1359	904	1274	1263	4800

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 12: 2031 DS5 PM
Junction: Tollgate Way, A4500 and A5076	
1/1 (short)	154
1/2 (with short)	594(In) 440(Out)
1/3	453
1/4	204
2/1 (with short)	1017(In) 475(Out)
2/2 (short)	542
3/1 (short)	394
3/2 (with short)	839(In) 445(Out)
3/3	416
4/1 (short)	183
4/2 (with short)	738(In) 555(Out)
4/3	539
5/1	570
5/2	572
5/3	70
5/4	134
6/1	413
6/2	367
6/3	309
7/1	476
7/2	512
7/3	93
8/1	385
8/2	365
8/3	249
9/1	636
9/2	638
10/1	807
10/2	456
11/1	659
11/2	700
12/1	385
12/2	519
13/1	659
13/2	700
14/1	385
14/2	519

Lane Saturation Flows

Full Input Data And Results

Junction: Tollgate Way, A4500 and A5076								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4500 W)	3.25	0.00	Y	Arm 14 Left	50.00	100.0 %	1883	1883
1/2 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/3 (A4500 W)	3.50	0.00	N	Arm 5 Ahead	68.00	100.0 %	2060	2060
1/4 (A4500 W)	3.25	0.00	N	Arm 5 Ahead	68.00	100.0 %	2035	2035
2/1 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	72.2 %	2066	2066
				Arm 9 Left	Inf	27.8 %		
2/2 (Tollgate Way)	3.50	0.00	N	Arm 6 Ahead	58.00	100.0 %	2052	2052
3/1 (A4500 E)	3.75	0.00	Y	Arm 10 Left	55.00	100.0 %	1937	1937
3/2 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	80.0 %	2077	2077
				Arm 10 Left	55.00	20.0 %		
3/3 (A4500 E)	3.75	0.00	N	Arm 7 Ahead	60.00	100.0 %	2078	2078
4/1 (A5076)	3.75	0.00	Y	Arm 13 Left	48.00	100.0 %	1930	1930
4/2 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	66.1 %	2072	2072
				Arm 13 Left	47.00	33.9 %		
4/3 (A5076)	3.75	0.00	N	Arm 8 Ahead	58.00	100.0 %	2076	2076
5/1 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/2 (Lights North)	3.50	0.00	N	Arm 9 Ahead	57.00	100.0 %	2051	2051
5/3 (Lights North)	3.50	0.00	N	Arm 6 Right	38.50	100.0 %	2026	2026
5/4 (Lights North)	3.50	0.00	N	Arm 6 Right	38.00	100.0 %	2025	2025
6/1 (Lights East)	3.25	0.00	Y	Arm 10 Ahead	56.00	100.0 %	1889	1889
6/2 (Lights East)	3.25	0.00	N	Arm 10 Ahead	57.00	100.0 %	2027	2027
6/3 (Lights East)	3.25	0.00	N	Arm 7 Right	58.00	100.0 %	2028	2028
7/1 (Lights South)	3.50	0.00	Y	Arm 13 Ahead	62.00	100.0 %	1919	1919
7/2 (Lights South)	3.50	0.00	N	Arm 13 Ahead	62.00	100.0 %	2055	2055
7/3 (Lights South)	3.50	0.00	N	Arm 8 Right	62.00	100.0 %	2055	2055
8/1 (Lights West)	3.50	0.00	Y	Arm 14 Ahead	58.00	100.0 %	1915	1915

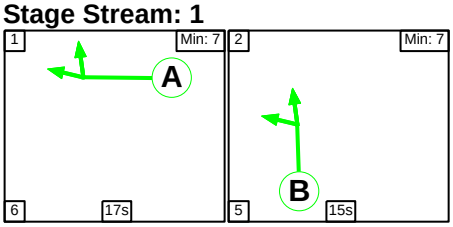
Full Input Data And Results

8/2 (Lights West)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
8/3 (Lights West)	3.50	0.00	N	Arm 5 Right	56.00	100.0 %	2050	2050
9/1 (A4500 E Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A4500 E Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (Upton Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (Upton Way Lane 2)	Infinite Saturation Flow						Inf	Inf
11/1 (A4500 W Lane 1)	Infinite Saturation Flow						Inf	Inf
11/2 (A4500 W Lane 2)	Infinite Saturation Flow						Inf	Inf
12/1 (Tollgate Way Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (Tollgate Way Lane 2)	Infinite Saturation Flow						Inf	Inf
13/1 (A4500 W)	4.00	0.00	Y	Arm 11 Ahead	Inf	100.0 %	2015	2015
13/2 (A4500 W)	4.00	0.00	N	Arm 11 Ahead	Inf	100.0 %	2155	2155
14/1 (Tollgate Way)	4.00	0.00	Y	Arm 12 Ahead	83.00	100.0 %	1979	1979
14/2 (Tollgate Way)	4.00	0.00	N	Arm 12 Ahead	84.00	100.0 %	2117	2117

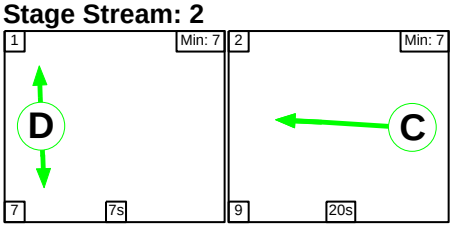
Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

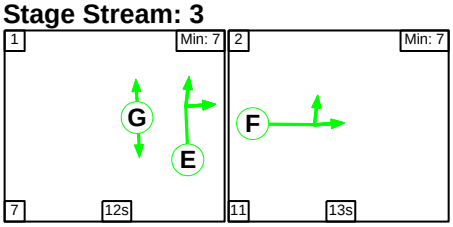
Stage Stream: 1



Stage Stream: 2

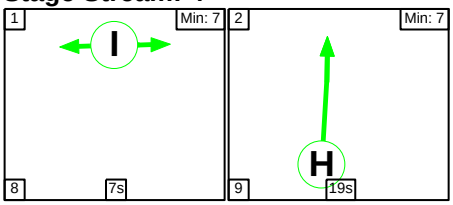


Stage Stream: 3



Full Input Data And Results

Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	15
Change Point	0	23

Stage Stream: 2

Stage	1	2
Duration	7	20
Change Point	25	39

Stage Stream: 3

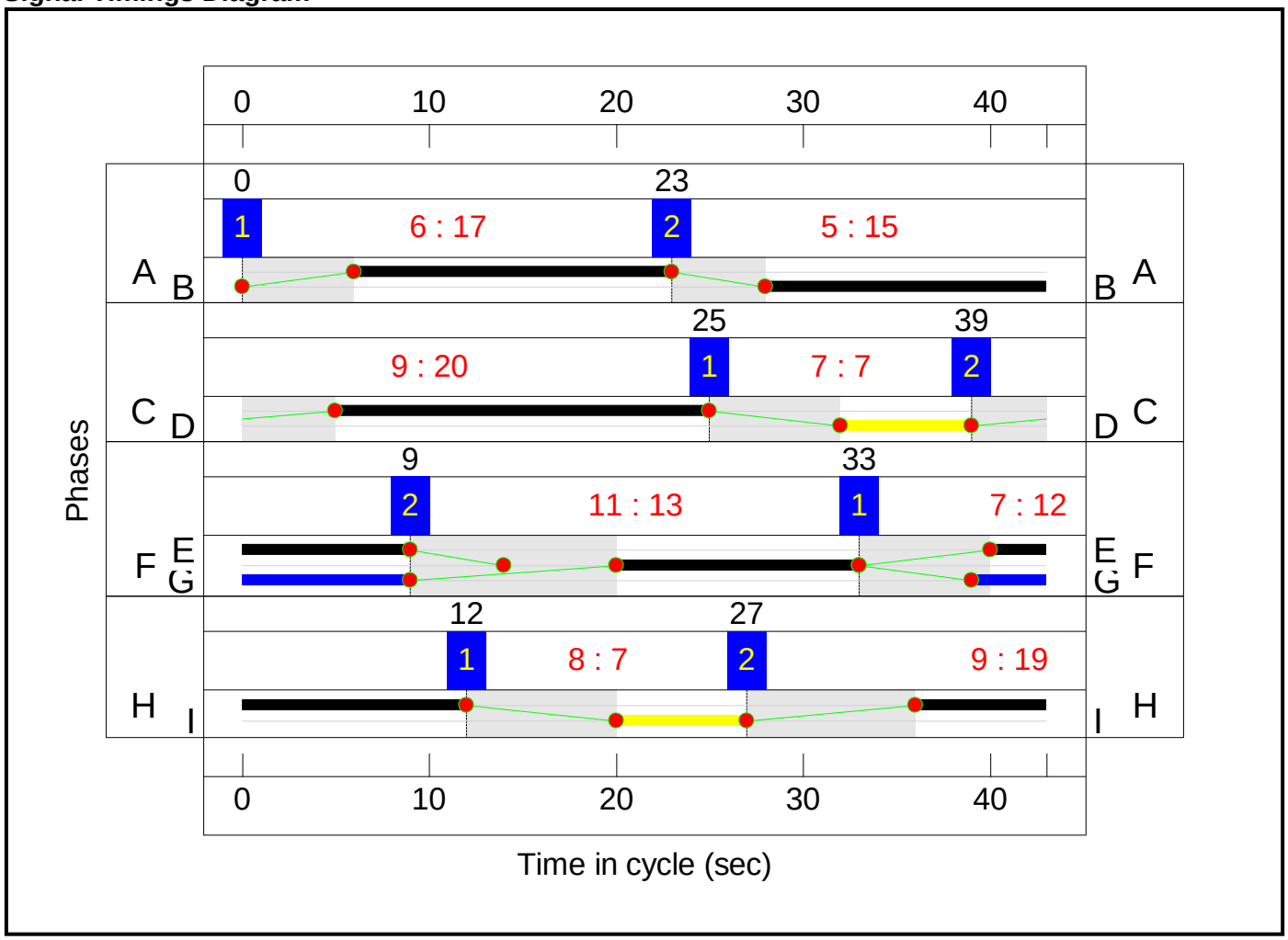
Stage	1	2
Duration	12	13
Change Point	33	9

Stage Stream: 4

Stage	1	2
Duration	7	19
Change Point	12	27

Full Input Data And Results

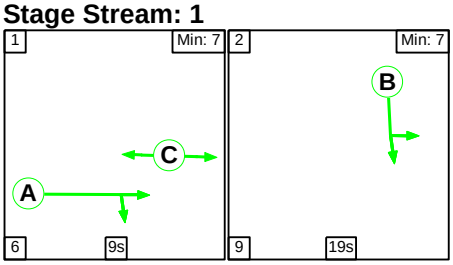
Signal Timings Diagram



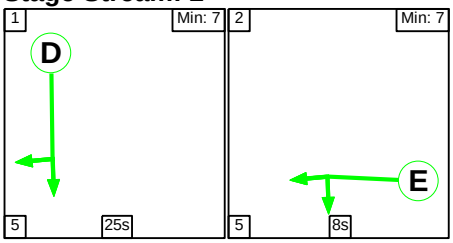
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

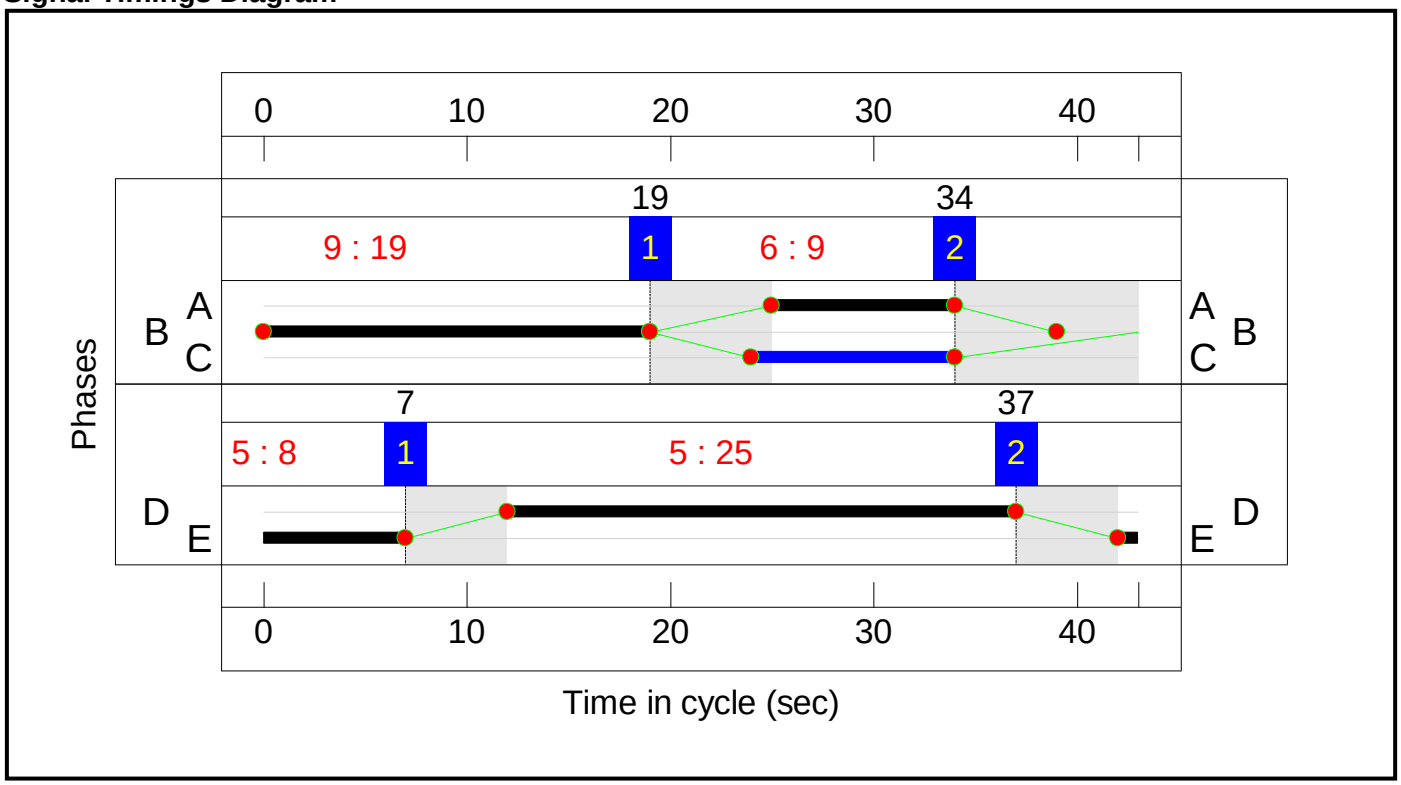
Stage Stream: 1

Stage	1	2
Duration	9	19
Change Point	19	34

Stage Stream: 2

Stage	1	2
Duration	25	8
Change Point	7	37

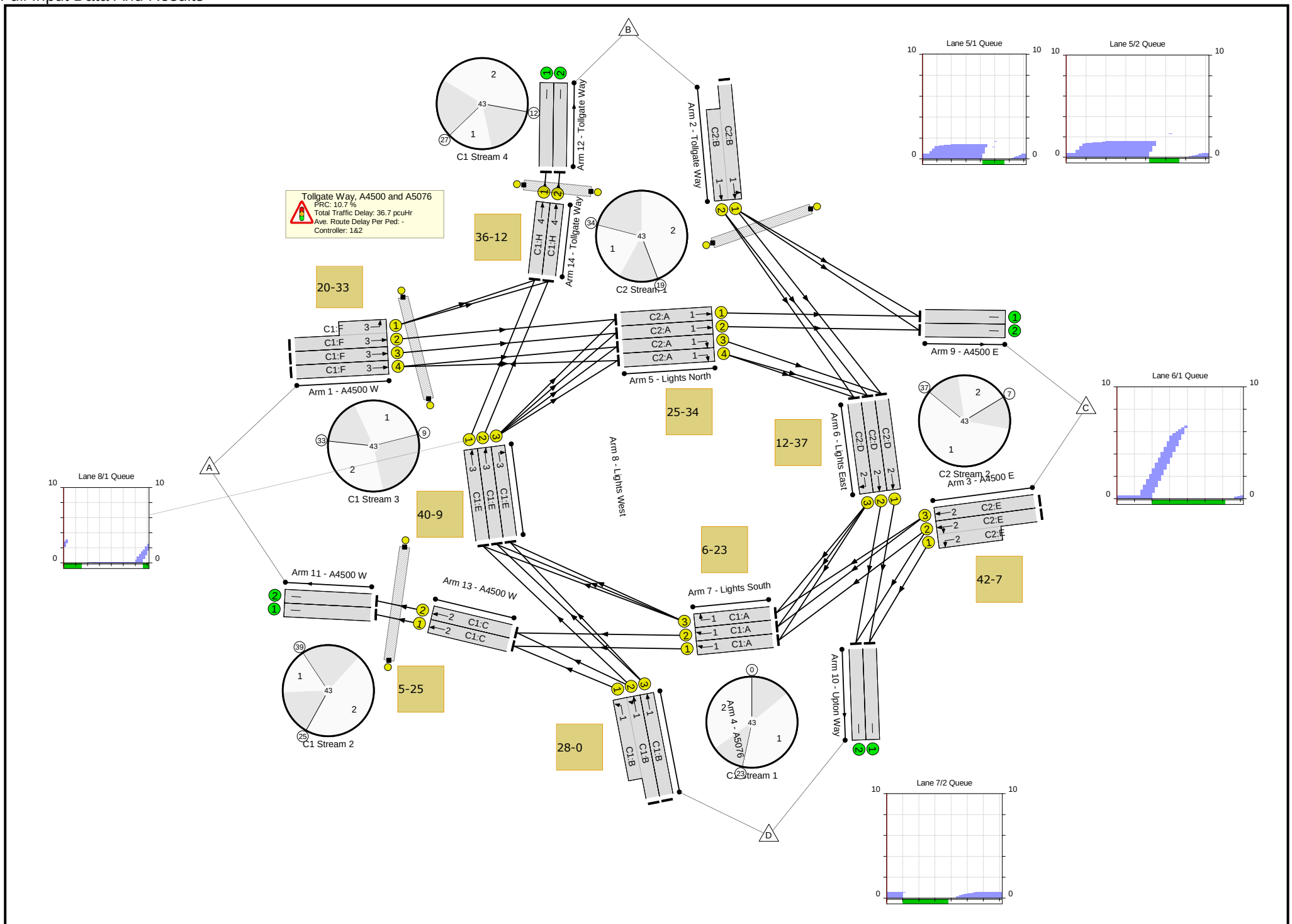
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.3%**
Tollgate Way, A4500 and A5076	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.3%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	13	-	522	2060:1883	583+309	58.5 : 58.5%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	13	-	317	2060	671	47.3%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	13	-	378	2035	663	57.1%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	19	-	1455	2060:2052	835+954	81.3 : 81.3%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	8	-	533	2078:1937	435+283	74.3 : 74.3%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	8	-	273	2078	435	62.8%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	15	-	682	2071:1930	771+414	65.4 : 43.0%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	15	-	416	2076	772	53.9%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	9	-	419	2051	572	73.2%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	9	-	415	2051	572	72.5%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	9	-	169	2026	565	29.9%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	9	-	209	2025	565	37.0%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	25	-	744	1889	1230	60.5%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	25	-	715	2027	1320	54.2%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	25	-	270	2028	1321	20.4%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	17	-	405	1919	893	45.4%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	17	-	416	2055	956	43.5%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	17	-	43	2055	956	4.5%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	12	-	309	1915	668	46.3%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	12	-	274	2051	715	38.3%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	12	-	176	2050	715	24.6%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	471	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	467	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	954	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	583	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	376	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	20	-	583	2015	984	59.2%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	20	-	620	2155	1052	58.9%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	19	-	388	1979	920	42.2%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	19	-	376	2117	985	38.2%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	13	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	10	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**20.8**	**15.9**	**0.0**	**36.7**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**20.8**	**15.9**	**0.0**	**36.7**	**-**	**-**	**-**	**-**
1/2+1/1	522	522	-	-	-	1.7	0.7	-	2.4	16.3	3.2	0.7	3.9
1/3	317	317	-	-	-	1.0	0.4	-	1.5	16.6	3.0	0.4	3.4
1/4	378	378	-	-	-	1.3	0.7	-	1.9	18.3	3.7	0.7	4.3
2/1+2/2	1455	1455	-	-	-	3.9	2.1	-	6.0	14.9	7.8	2.1	9.9
3/2+3/1	533	533	-	-	-	2.3	1.4	-	3.7	25.2	3.6	1.4	5.0
3/3	273	273	-	-	-	1.2	0.8	-	2.0	26.5	3.0	0.8	3.8
4/2+4/1	682	682	-	-	-	2.0	0.7	-	2.7	14.3	4.9	0.7	5.6
4/3	416	416	-	-	-	1.2	0.6	-	1.8	15.6	3.8	0.6	4.4
5/1	419	419	-	-	-	0.8	1.3	-	2.1	18.2	2.9	1.3	4.2
5/2	415	415	-	-	-	0.9	1.3	-	2.2	18.8	2.9	1.3	4.2
5/3	169	169	-	-	-	0.2	0.2	-	0.4	7.9	0.2	0.2	0.4
5/4	209	209	-	-	-	0.2	0.3	-	0.5	8.4	0.3	0.3	0.6
6/1	744	744	-	-	-	0.6	0.8	-	1.4	6.8	6.5	0.8	7.3
6/2	715	715	-	-	-	0.4	0.6	-	1.0	4.9	5.2	0.6	5.8
6/3	270	270	-	-	-	0.1	0.1	-	0.2	2.5	1.2	0.1	1.3
7/1	405	405	-	-	-	0.1	0.4	-	0.6	5.0	3.4	0.4	3.9
7/2	416	416	-	-	-	0.3	0.4	-	0.7	5.7	0.6	0.4	1.0
7/3	43	43	-	-	-	0.0	0.0	-	0.0	2.0	0.0	0.0	0.0
8/1	309	309	-	-	-	0.2	0.4	-	0.7	7.7	3.1	0.4	3.5
8/2	274	274	-	-	-	0.4	0.3	-	0.7	8.9	2.7	0.3	3.0
8/3	176	176	-	-	-	0.1	0.2	-	0.2	5.0	1.5	0.2	1.6
9/1	471	471	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	467	467	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	954	954	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

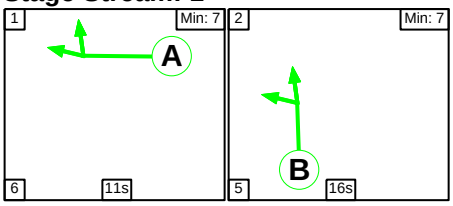
10/2	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	583	583	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	376	376	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	583	583	-	-	-	0.7	0.7	-	1.5	9.0	2.4	0.7	3.1
13/2	620	620	-	-	-	0.9	0.7	-	1.6	9.4	3.0	0.7	3.7
14/1	388	388	-	-	-	0.1	0.4	-	0.5	4.7	0.8	0.4	1.2
14/2	376	376	-	-	-	0.3	0.3	-	0.6	5.6	1.2	0.3	1.6
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	37.6	Total Delay for Signalled Lanes (pcuHr):	5.76	Cycle Time (s):	43		
C1	Stream: 2 PRC for Signalled Lanes (%):	51.9	Total Delay for Signalled Lanes (pcuHr):	3.07	Cycle Time (s):	43		
C1	Stream: 3 PRC for Signalled Lanes (%):	53.8	Total Delay for Signalled Lanes (pcuHr):	7.33	Cycle Time (s):	43		
C1	Stream: 4 PRC for Signalled Lanes (%):	113.5	Total Delay for Signalled Lanes (pcuHr):	1.09	Cycle Time (s):	43		
C2	Stream: 1 PRC for Signalled Lanes (%):	10.7	Total Delay for Signalled Lanes (pcuHr):	11.16	Cycle Time (s):	43		
C2	Stream: 2 PRC for Signalled Lanes (%):	21.2	Total Delay for Signalled Lanes (pcuHr):	8.30	Cycle Time (s):	43		
	PRC Over All Lanes (%):	10.7	Total Delay Over All Lanes(pcuHr):	36.70				

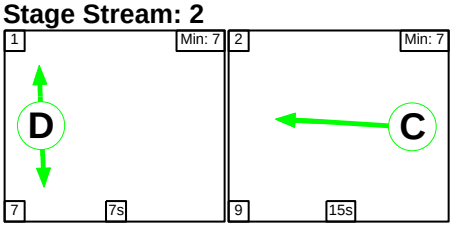
Full Input Data And Results
Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

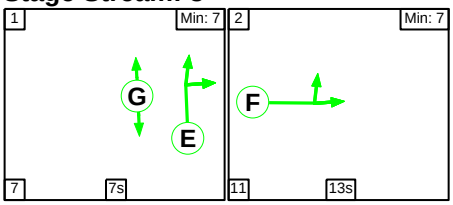
Stage Stream: 1



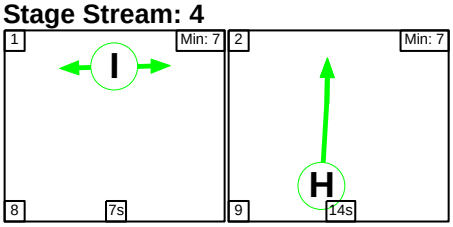
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	11	16
Change Point	0	17

Stage Stream: 2

Stage	1	2
Duration	7	15
Change Point	21	35

Stage Stream: 3

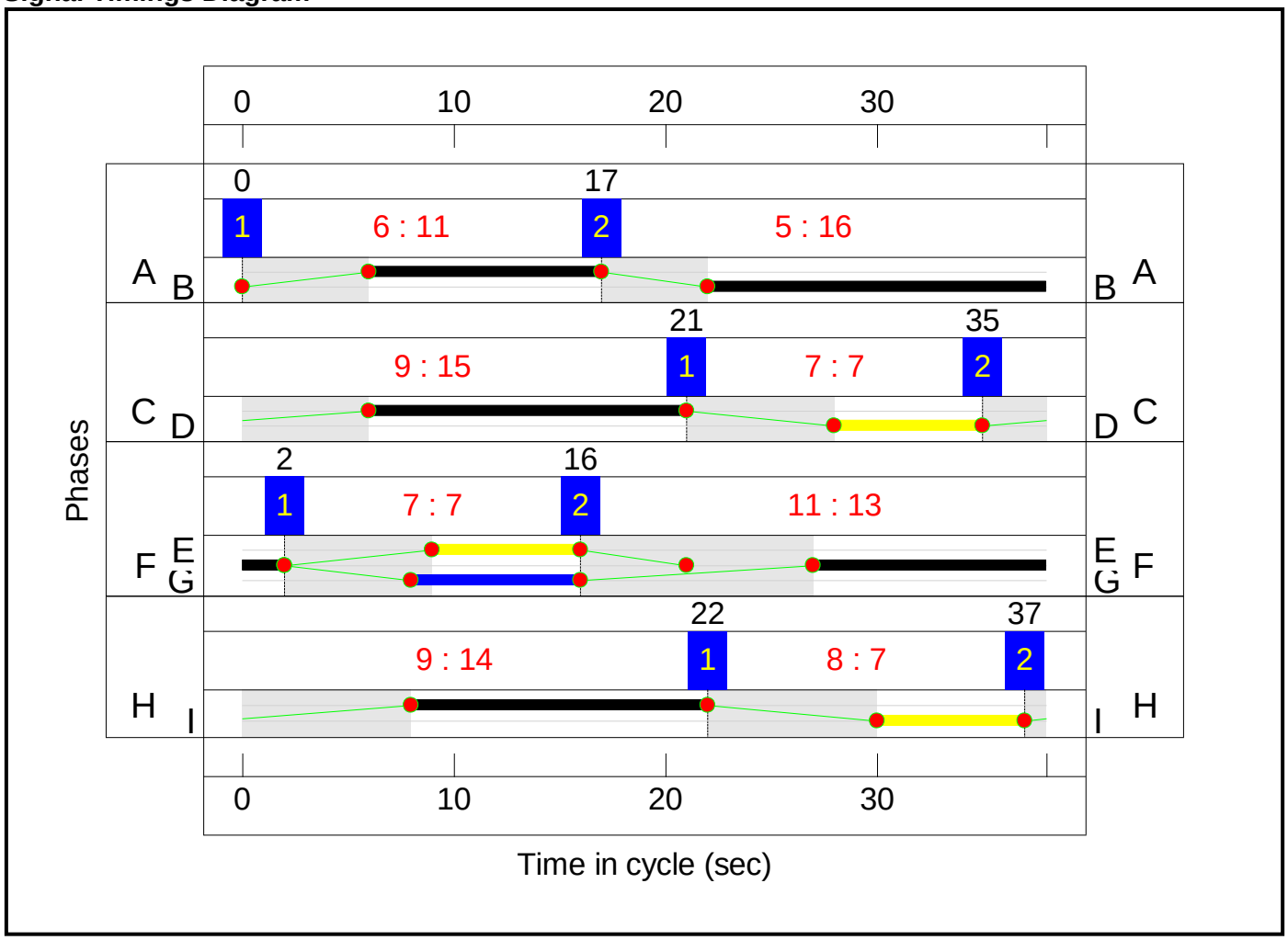
Stage	1	2
Duration	7	13
Change Point	2	16

Stage Stream: 4

Stage	1	2
Duration	7	14
Change Point	22	37

Full Input Data And Results

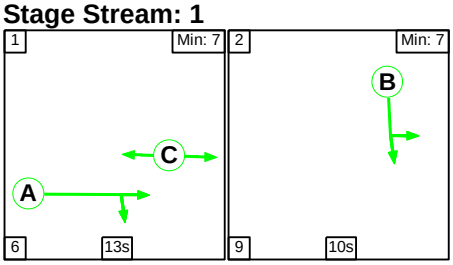
Signal Timings Diagram



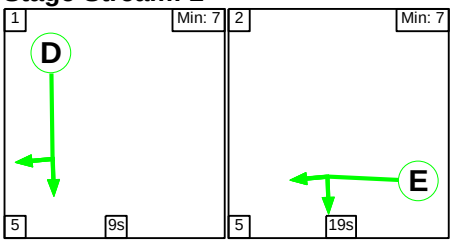
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

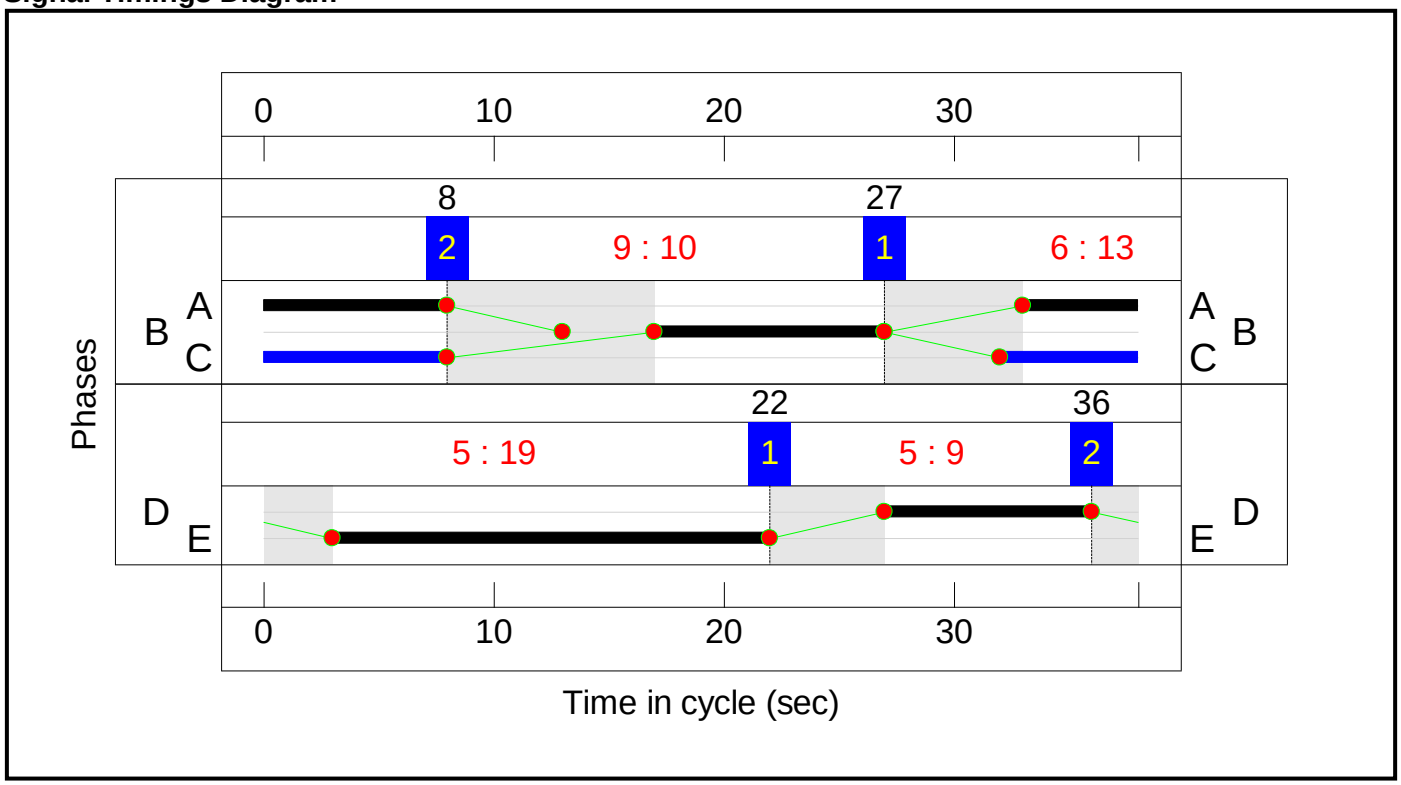
Stage Stream: 1

Stage	1	2
Duration	13	10
Change Point	27	8

Stage Stream: 2

Stage	1	2
Duration	9	19
Change Point	22	36

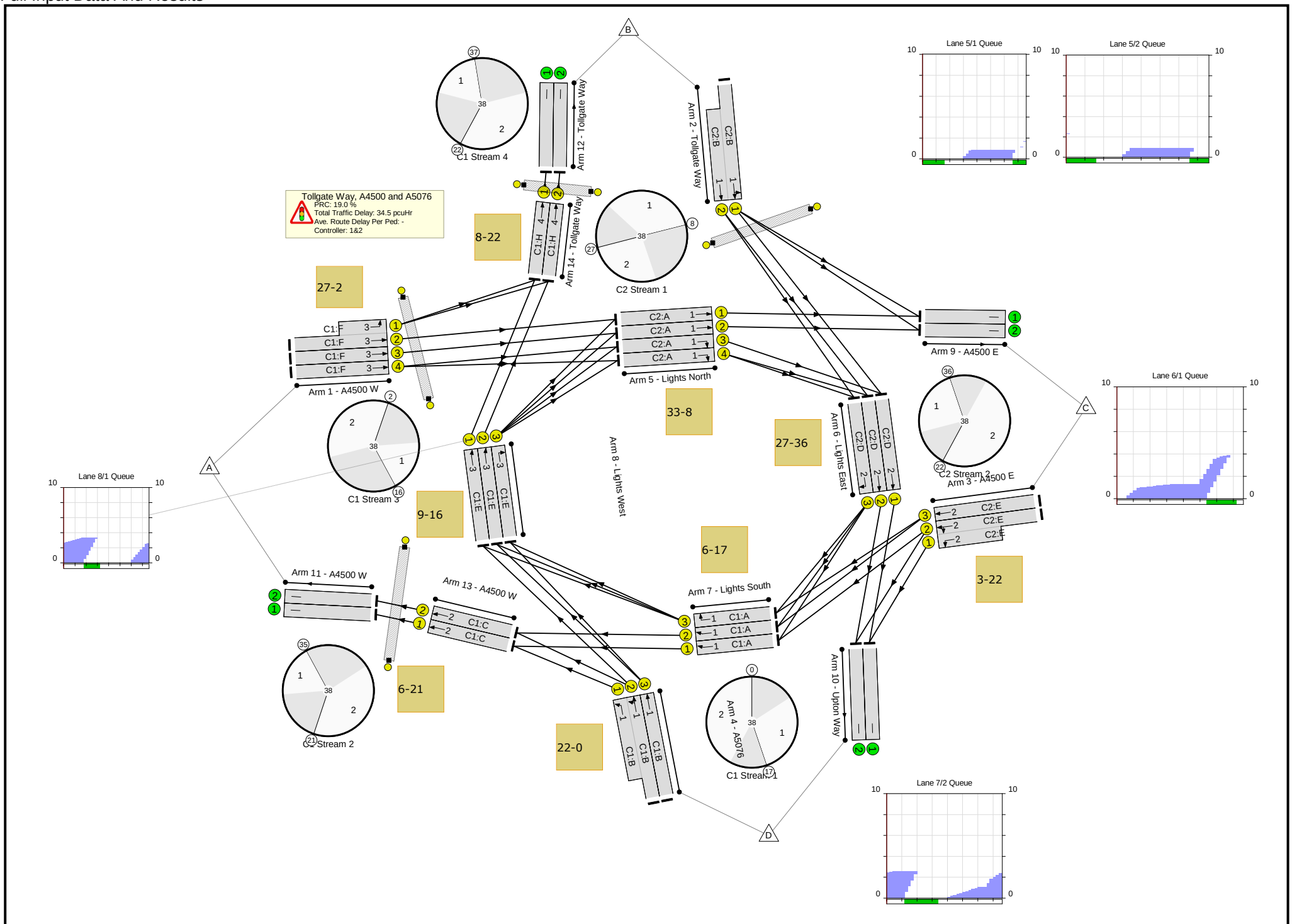
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**
Tollgate Way, A4500 and A5076	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	13	-	512	2060:1883	697+182	58.3 : 58.3%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	13	-	398	2060	759	52.4%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	13	-	279	2035	750	37.2%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	10	-	755	2063:2052	597+594	55.3 : 71.5%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	19	-	769	2078:1937	905+681	48.5 : 48.5%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	19	-	405	2078	1094	37.0%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	16	-	663	2072:1930	927+419	55.8 : 34.8%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	16	-	437	2076	929	47.1%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	13	-	484	2051	864	56.0%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	13	-	487	2051	864	56.4%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	13	-	121	2026	853	14.2%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	13	-	158	2025	853	18.5%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	9	-	383	1889	597	64.2%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	9	-	388	2027	640	60.6%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	9	-	195	2028	640	30.4%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	11	-	488	1919	707	69.0%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	11	-	483	2055	757	63.8%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	11	-	67	2055	757	8.8%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	7	-	316	1915	504	62.7%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	7	-	335	2051	540	62.1%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	7	-	167	2050	539	31.0%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	518	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	521	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	389	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	634	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	686	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	373	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	15	-	634	2015	848	74.7%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	15	-	686	2155	907	75.6%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	14	-	373	1979	781	47.7%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	14	-	384	2117	836	46.0%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	8	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	14	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**19.2**	**15.2**	**0.0**	**34.5**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**19.2**	**15.2**	**0.0**	**34.5**	**-**	**-**	**-**	**-**
1/2+1/1	512	512	-	-	-	1.3	0.7	-	2.0	14.1	3.3	0.7	4.0
1/3	398	398	-	-	-	1.0	0.5	-	1.6	14.4	3.2	0.5	3.8
1/4	279	279	-	-	-	0.7	0.3	-	1.0	12.6	2.1	0.3	2.4
2/1+2/2	755	755	-	-	-	2.5	0.9	-	3.3	15.9	4.0	0.9	4.9
3/2+3/1	769	769	-	-	-	1.1	0.5	-	1.6	7.5	2.7	0.5	3.2
3/3	405	405	-	-	-	0.6	0.3	-	0.9	7.9	2.5	0.3	2.8
4/2+4/1	663	663	-	-	-	1.4	0.5	-	1.9	10.0	3.9	0.5	4.4
4/3	437	437	-	-	-	0.9	0.4	-	1.3	11.0	3.2	0.4	3.6
5/1	484	484	-	-	-	0.4	0.6	-	1.0	7.5	2.9	0.6	3.5
5/2	487	487	-	-	-	0.4	0.6	-	1.1	7.9	2.9	0.6	3.5
5/3	121	121	-	-	-	0.0	0.1	-	0.1	2.5	0.0	0.1	0.1
5/4	158	158	-	-	-	0.0	0.1	-	0.1	2.6	0.0	0.1	0.1
6/1	383	383	-	-	-	1.0	0.9	-	1.9	17.7	3.9	0.9	4.8
6/2	388	388	-	-	-	1.1	0.8	-	1.9	17.7	4.0	0.8	4.7
6/3	195	195	-	-	-	0.0	0.2	-	0.2	4.5	0.8	0.2	1.0
7/1	488	488	-	-	-	0.9	1.1	-	2.0	14.6	2.8	1.1	3.9
7/2	483	483	-	-	-	1.0	0.9	-	1.9	13.9	2.6	0.9	3.4
7/3	67	67	-	-	-	0.1	0.0	-	0.2	8.1	0.2	0.0	0.3
8/1	316	316	-	-	-	1.3	0.8	-	2.1	23.8	3.3	0.8	4.2
8/2	335	335	-	-	-	1.2	0.8	-	2.0	21.4	3.2	0.8	4.0
8/3	167	167	-	-	-	0.6	0.2	-	0.8	18.0	1.8	0.2	2.0
9/1	518	518	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	521	521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

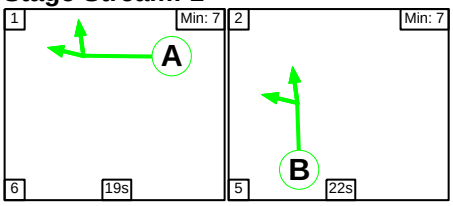
10/2	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	634	634	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	686	686	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	373	373	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	384	384	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	634	634	-	-	-	0.7	1.5	-	2.1	12.2	1.8	1.5	3.2
13/2	686	686	-	-	-	0.8	1.5	-	2.3	12.2	2.3	1.5	3.9
14/1	373	373	-	-	-	0.1	0.5	-	0.6	5.7	0.6	0.5	1.0
14/2	384	384	-	-	-	0.2	0.4	-	0.6	5.4	0.5	0.4	0.9
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	30.4	Total Delay for Signalled Lanes (pcuHr):	7.18	Cycle Time (s):	38		
C1	Stream: 2 PRC for Signalled Lanes (%):	19.0	Total Delay for Signalled Lanes (pcuHr):	4.47	Cycle Time (s):	38		
C1	Stream: 3 PRC for Signalled Lanes (%):	43.5	Total Delay for Signalled Lanes (pcuHr):	9.49	Cycle Time (s):	38		
C1	Stream: 4 PRC for Signalled Lanes (%):	88.5	Total Delay for Signalled Lanes (pcuHr):	1.17	Cycle Time (s):	38		
C2	Stream: 1 PRC for Signalled Lanes (%):	25.8	Total Delay for Signalled Lanes (pcuHr):	5.62	Cycle Time (s):	38		
C2	Stream: 2 PRC for Signalled Lanes (%):	40.2	Total Delay for Signalled Lanes (pcuHr):	6.53	Cycle Time (s):	38		
	PRC Over All Lanes (%):	19.0	Total Delay Over All Lanes(pcuHr):	34.46				

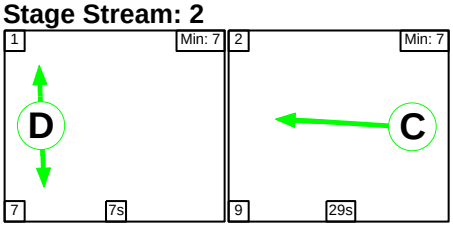
Full Input Data And Results
Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

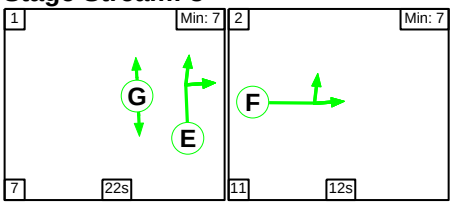
Stage Stream: 1



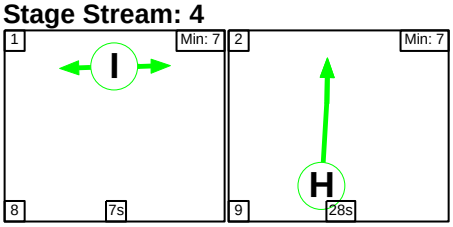
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	22
Change Point	9	34

Stage Stream: 2

Stage	1	2
Duration	7	29
Change Point	15	29

Stage Stream: 3

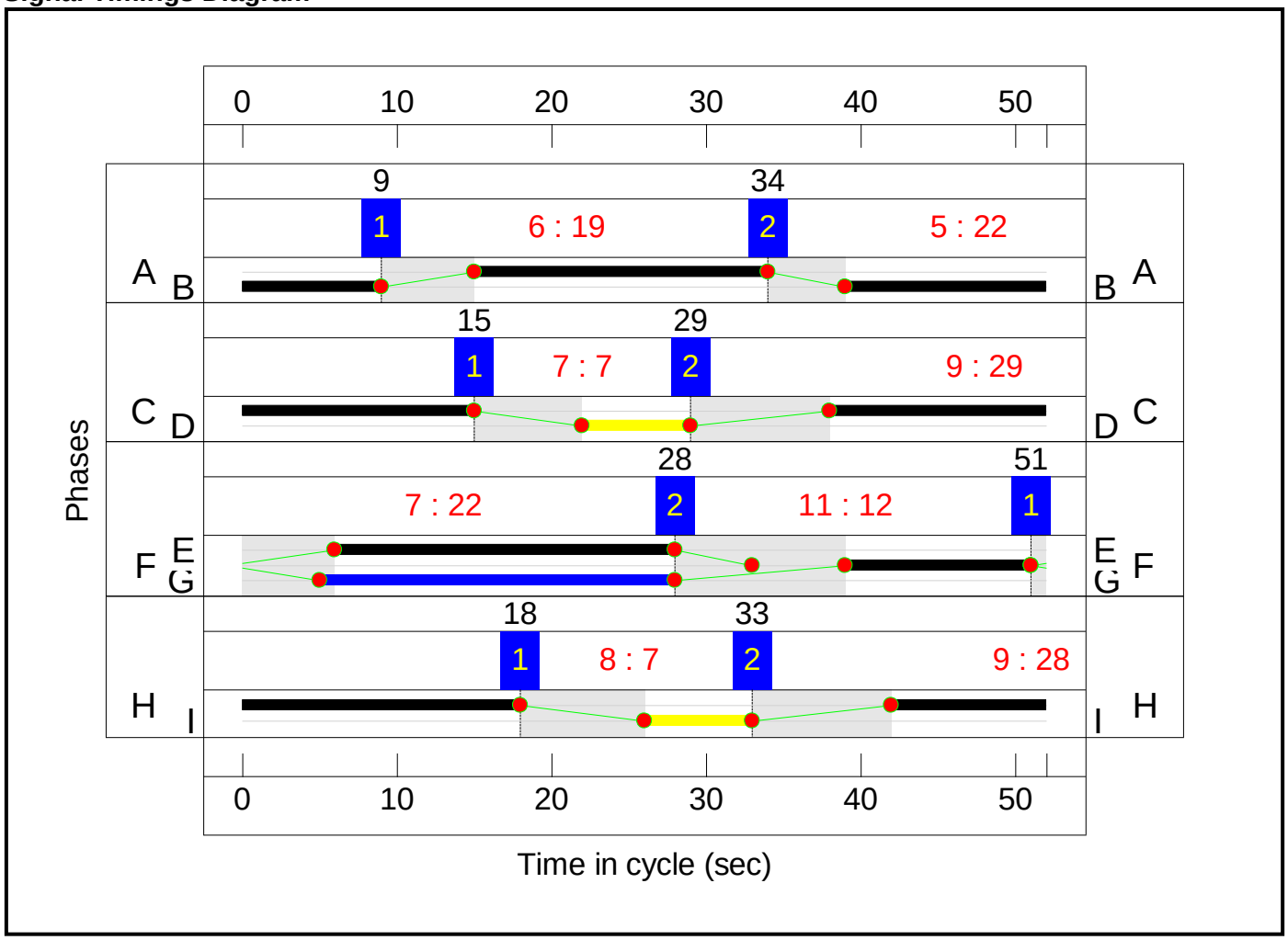
Stage	1	2
Duration	22	12
Change Point	51	28

Stage Stream: 4

Stage	1	2
Duration	7	28
Change Point	18	33

Full Input Data And Results

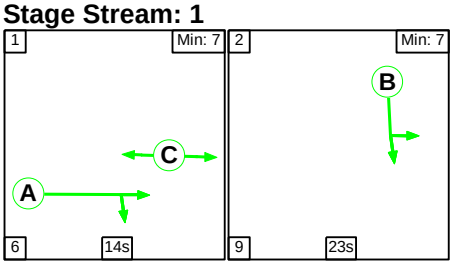
Signal Timings Diagram



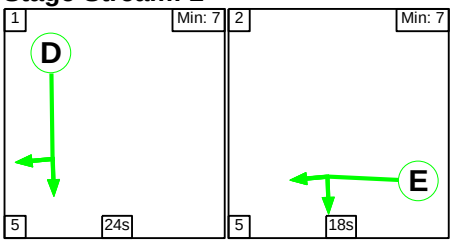
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

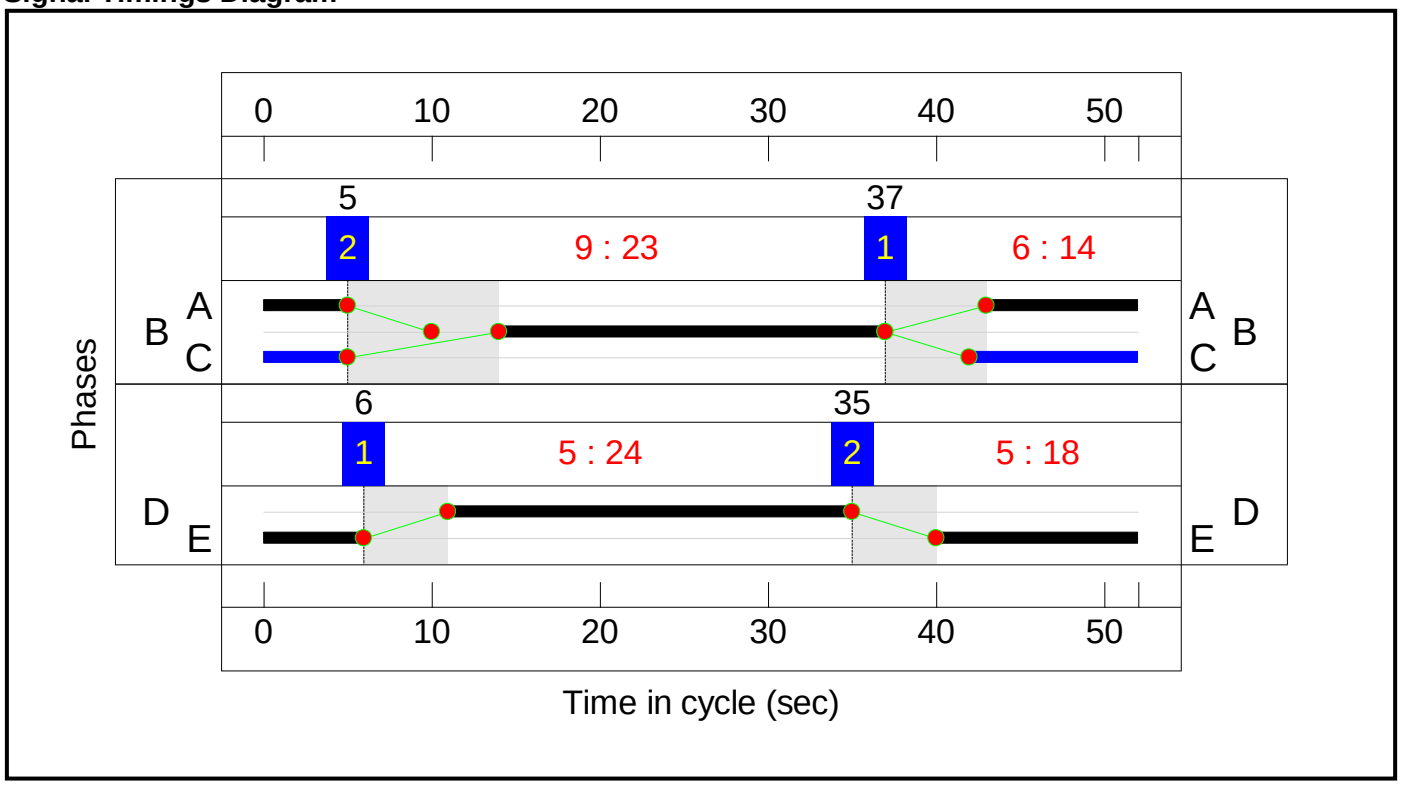
Stage Stream: 1

Stage	1	2
Duration	14	23
Change Point	37	5

Stage Stream: 2

Stage	1	2
Duration	24	18
Change Point	6	35

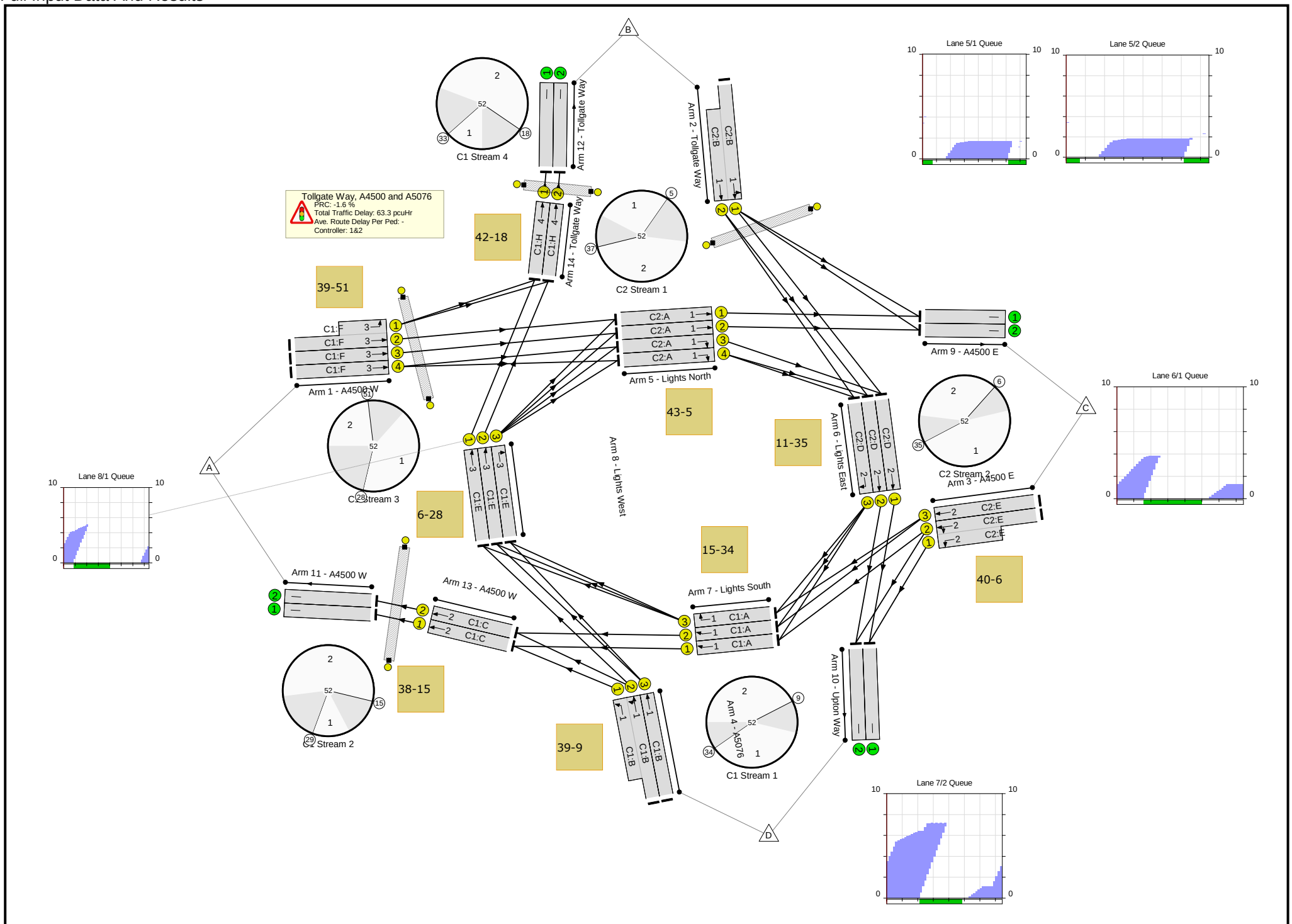
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.5%**
Tollgate Way, A4500 and A5076	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.5%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	12	-	592	2060:1883	444+336	75.9 : 75.9%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	12	-	324	2060	515	62.9%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	12	-	446	2035	509	87.7%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	23	-	1550	2063:2052	801+893	91.5 : 91.5%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	18	-	675	2078:1937	668+327	67.8 : 67.8%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	18	-	443	2078	759	58.3%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	22	-	620	2073:1930	917+209	55.1 : 55.1%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	22	-	503	2076	918	54.8%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	14	-	454	2051	671	67.7%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	14	-	453	2051	671	67.6%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	14	-	175	2026	662	26.4%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	14	-	271	2025	662	40.9%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	24	-	755	1889	981	77.0%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	24	-	741	2027	1052	70.4%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	24	-	347	2028	1053	33.0%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	19	-	573	1919	812	70.6%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	19	-	594	2055	869	68.3%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	19	-	75	2055	869	8.6%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	22	-	396	1915	921	43.0%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	22	-	307	2051	986	31.1%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	22	-	246	2050	986	25.0%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	530	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	530	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	977	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	742	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	688	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	728	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	396	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	562	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	688	2015	1163	59.2%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	728	2155	1243	58.6%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	396	1979	1104	35.9%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	562	2117	1181	47.6%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	23	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	15	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**38.8**	**24.5**	**0.0**	**63.3**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**38.8**	**24.5**	**0.0**	**63.3**	**-**	**-**	**-**	**-**
1/2+1/1	592	592	-	-	-	2.8	1.5	-	4.4	26.7	4.3	1.5	5.9
1/3	324	324	-	-	-	1.6	0.8	-	2.4	26.7	4.1	0.8	5.0
1/4	446	446	-	-	-	2.3	3.2	-	5.5	44.7	6.1	3.2	9.3
2/1+2/2	1550	1550	-	-	-	5.2	5.0	-	10.2	23.8	10.4	5.0	15.4
3/2+3/1	675	675	-	-	-	2.4	1.0	-	3.5	18.5	5.3	1.0	6.3
3/3	443	443	-	-	-	1.6	0.7	-	2.3	19.0	5.0	0.7	5.7
4/2+4/1	620	620	-	-	-	1.8	0.6	-	2.4	13.9	5.3	0.6	5.9
4/3	503	503	-	-	-	1.5	0.6	-	2.1	15.0	5.3	0.6	5.9
5/1	454	454	-	-	-	0.9	1.0	-	2.0	15.7	4.0	1.0	5.0
5/2	453	453	-	-	-	1.0	1.0	-	2.1	16.5	4.0	1.0	5.0
5/3	175	175	-	-	-	0.0	0.2	-	0.2	3.7	0.0	0.2	0.2
5/4	271	271	-	-	-	0.0	0.3	-	0.3	4.6	0.0	0.3	0.3
6/1	755	755	-	-	-	1.0	1.6	-	2.6	12.6	3.8	1.6	5.5
6/2	741	741	-	-	-	1.5	1.2	-	2.7	12.9	5.5	1.2	6.6
6/3	347	347	-	-	-	0.5	0.2	-	0.7	7.7	1.1	0.2	1.4
7/1	573	573	-	-	-	2.9	1.2	-	4.1	25.6	7.6	1.2	8.8
7/2	594	594	-	-	-	2.7	1.1	-	3.8	22.7	7.2	1.1	8.2
7/3	75	75	-	-	-	0.3	0.0	-	0.3	15.9	1.1	0.0	1.1
8/1	396	396	-	-	-	0.9	0.4	-	1.2	11.3	5.0	0.4	5.4
8/2	307	307	-	-	-	0.5	0.2	-	0.7	8.4	3.2	0.2	3.4
8/3	246	246	-	-	-	0.5	0.2	-	0.6	9.3	3.1	0.2	3.2
9/1	530	530	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	530	530	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	977	977	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

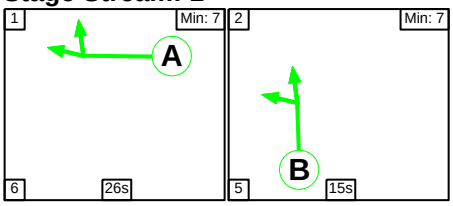
10/2	742	742	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	688	688	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	728	728	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	396	396	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	562	562	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	688	688	-	-	-	3.1	0.7	-	3.8	19.9	9.5	0.7	10.2
13/2	728	728	-	-	-	3.1	0.7	-	3.8	18.7	10.0	0.7	10.7
14/1	396	396	-	-	-	0.4	0.3	-	0.7	6.0	0.9	0.3	1.2
14/2	562	562	-	-	-	0.4	0.5	-	0.8	5.2	0.9	0.5	1.4
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	27.5	Total Delay for Signalled Lanes (pcuHr):	12.64	Cycle Time (s):	52		
C1	Stream: 2 PRC for Signalled Lanes (%):	52.1	Total Delay for Signalled Lanes (pcuHr):	7.60	Cycle Time (s):	52		
C1	Stream: 3 PRC for Signalled Lanes (%):	2.7	Total Delay for Signalled Lanes (pcuHr):	14.93	Cycle Time (s):	52		
C1	Stream: 4 PRC for Signalled Lanes (%):	89.1	Total Delay for Signalled Lanes (pcuHr):	1.47	Cycle Time (s):	52		
C2	Stream: 1 PRC for Signalled Lanes (%):	-1.6	Total Delay for Signalled Lanes (pcuHr):	14.82	Cycle Time (s):	52		
C2	Stream: 2 PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	11.85	Cycle Time (s):	52		
	PRC Over All Lanes (%):	-1.6	Total Delay Over All Lanes(pcuHr):	63.30				

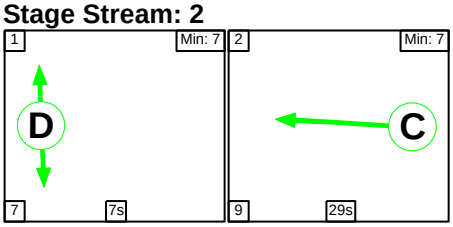
Full Input Data And Results
Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')
C1

Stage Sequence Diagram

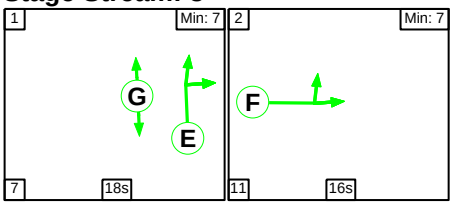
Stage Stream: 1



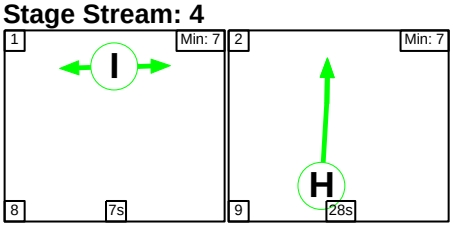
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	15
Change Point	0	32

Stage Stream: 2

Stage	1	2
Duration	7	29
Change Point	22	36

Stage Stream: 3

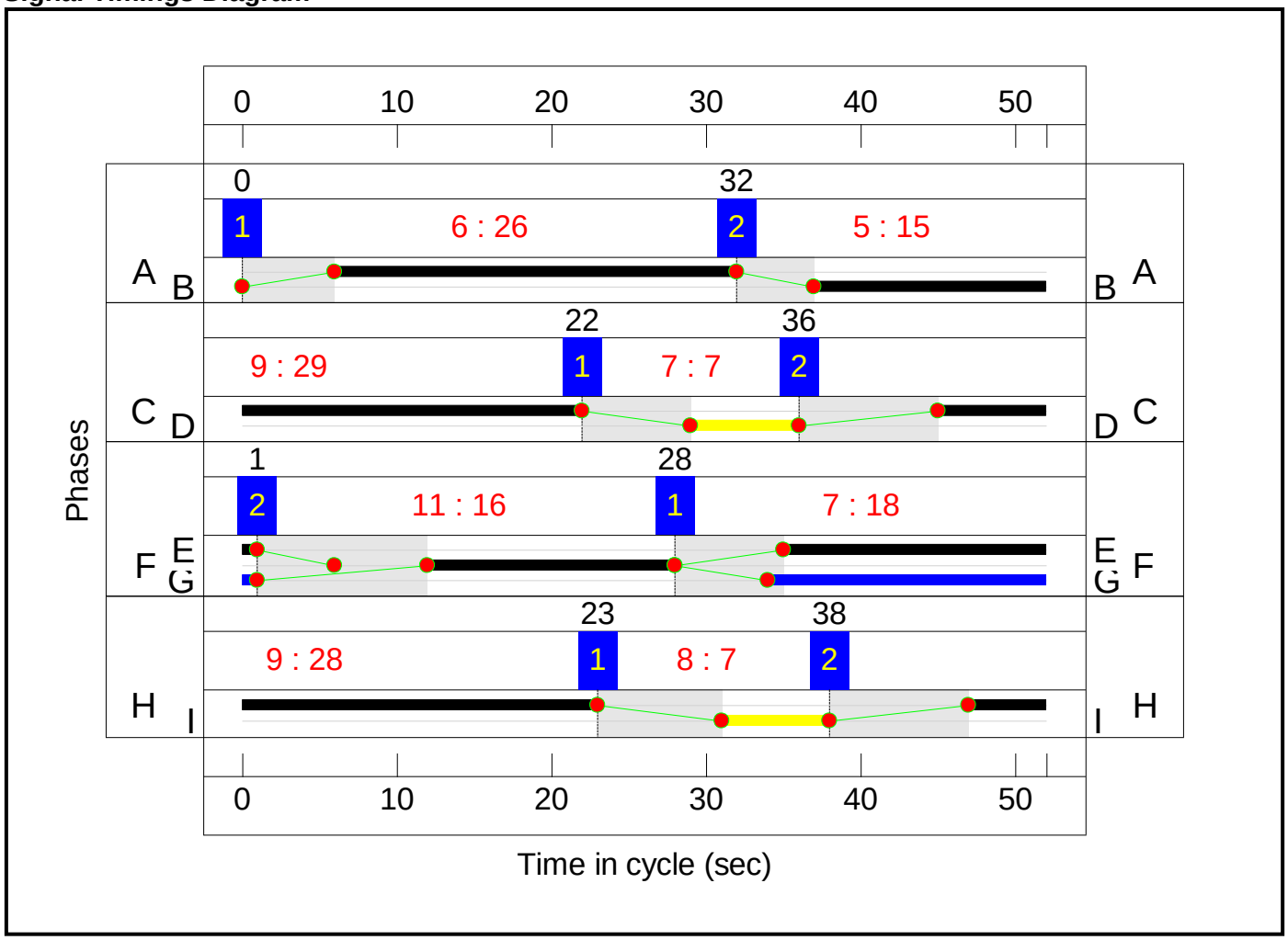
Stage	1	2
Duration	18	16
Change Point	28	1

Stage Stream: 4

Stage	1	2
Duration	7	28
Change Point	23	38

Full Input Data And Results

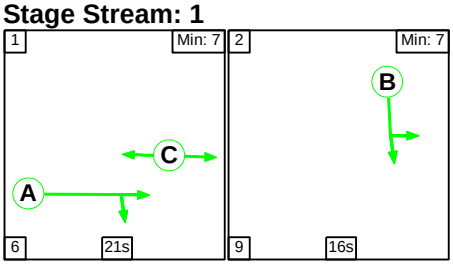
Signal Timings Diagram



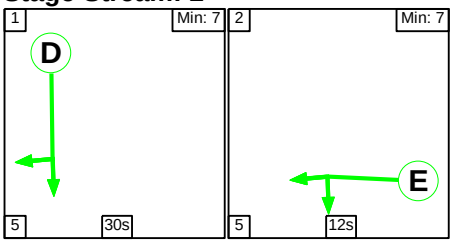
C2

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

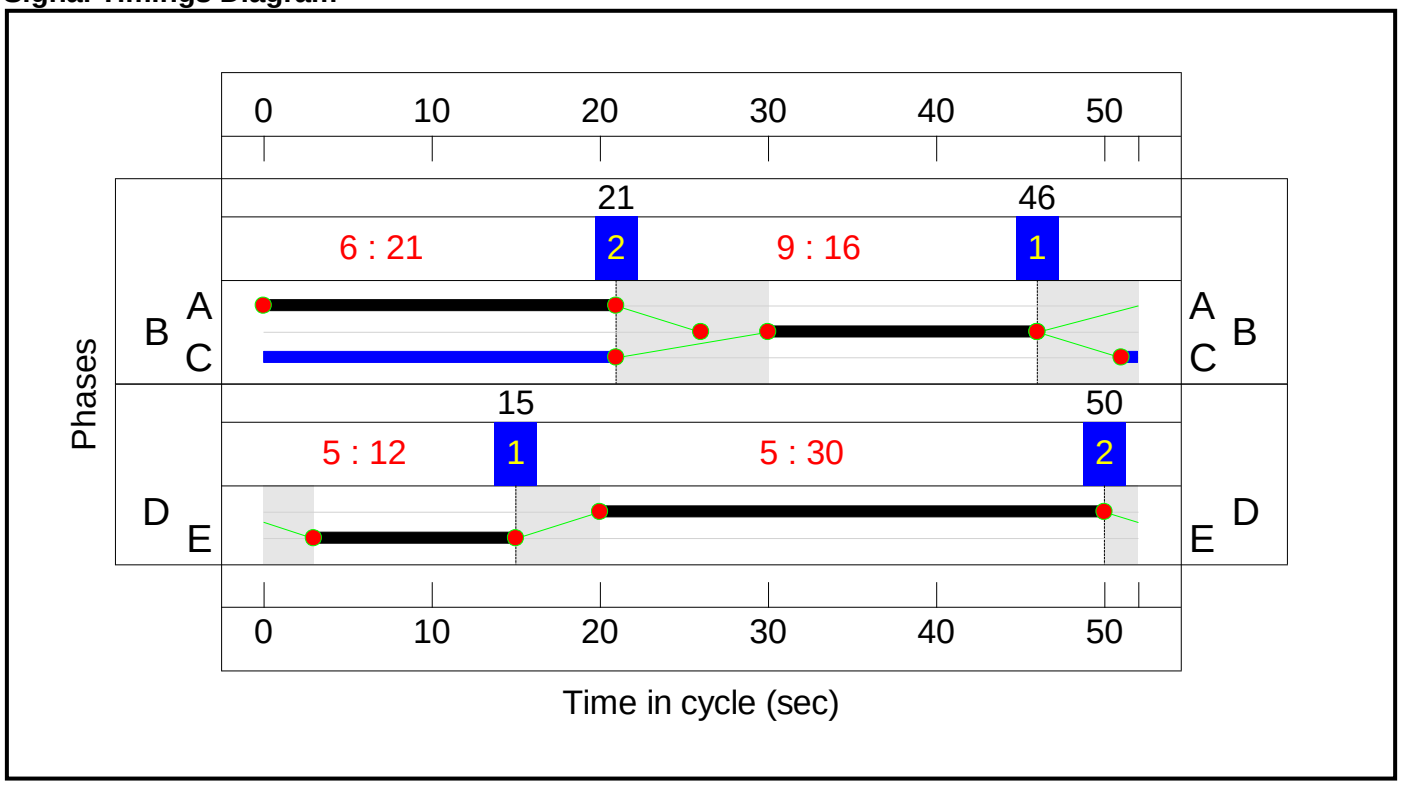
Stage Stream: 1

Stage	1	2
Duration	21	16
Change Point	46	21

Stage Stream: 2

Stage	1	2
Duration	30	12
Change Point	15	50

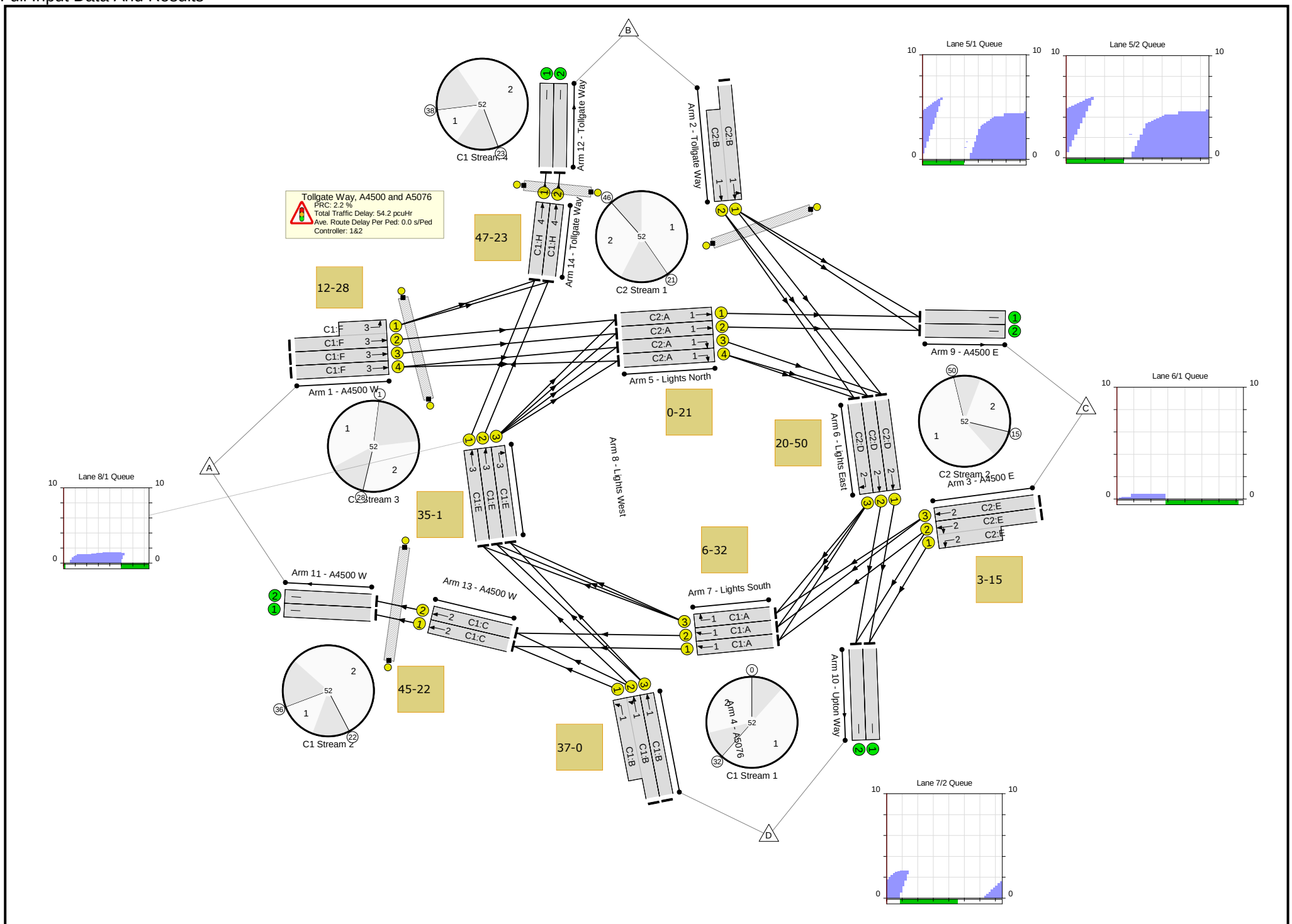
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.1%**
Tollgate Way, A4500 and A5076	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.1%**
1/2+1/1	A4500 W Ahead Left	U	1:3	N/A	C1:F		1	16	-	594	2060:1883	585+205	75.2 : 75.2%
1/3	A4500 W Ahead	U	1:3	N/A	C1:F		1	16	-	453	2060	673	67.3%
1/4	A4500 W Ahead	U	1:3	N/A	C1:F		1	16	-	204	2035	665	30.7%
2/1+2/2	Tollgate Way Ahead Left	U	2:1	N/A	C2:B		1	16	-	1017	2066:2052	588+671	80.8 : 80.8%
3/2+3/1	A4500 E Ahead Left	U	2:2	N/A	C2:E		1	12	-	839	2077:1937	505+447	88.1 : 88.1%
3/3	A4500 E Ahead	U	2:2	N/A	C2:E		1	12	-	416	2078	520	80.1%
4/2+4/1	A5076 Ahead Left	U	1:1	N/A	C1:B		1	15	-	738	2072:1930	638+210	87.1 : 87.1%
4/3	A5076 Ahead	U	1:1	N/A	C1:B		1	15	-	539	2076	639	84.4%
5/1	Lights North Ahead	U	2:1	N/A	C2:A		1	21	-	570	2051	947	60.2%
5/2	Lights North Ahead	U	2:1	N/A	C2:A		1	21	-	572	2051	947	60.4%
5/3	Lights North Right	U	2:1	N/A	C2:A		1	21	-	70	2026	935	7.5%
5/4	Lights North Right	U	2:1	N/A	C2:A		1	21	-	134	2025	935	14.3%
6/1	Lights East Ahead	U	2:2	N/A	C2:D		1	30	-	413	1889	1199	34.5%
6/2	Lights East Ahead	U	2:2	N/A	C2:D		1	30	-	367	2027	1286	28.5%
6/3	Lights East Right	U	2:2	N/A	C2:D		1	30	-	309	2028	1287	24.0%
7/1	Lights South Ahead	U	1:1	N/A	C1:A		1	26	-	476	1919	1070	44.5%

Full Input Data And Results

7/2	Lights South Ahead	U	1:1	N/A	C1:A		1	26	-	512	2055	1146	44.7%
7/3	Lights South Right	U	1:1	N/A	C1:A		1	26	-	93	2055	1146	8.1%
8/1	Lights West Ahead	U	1:3	N/A	C1:E		1	18	-	385	1915	773	49.8%
8/2	Lights West Ahead	U	1:3	N/A	C1:E		1	18	-	365	2051	828	44.1%
8/3	Lights West Right	U	1:3	N/A	C1:E		1	18	-	249	2050	828	30.1%
9/1	A4500 E	U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%
9/2	A4500 E	U	N/A	N/A	-		-	-	-	638	Inf	Inf	0.0%
10/1	Upton Way	U	N/A	N/A	-		-	-	-	807	Inf	Inf	0.0%
10/2	Upton Way	U	N/A	N/A	-		-	-	-	456	Inf	Inf	0.0%
11/1	A4500 W	U	N/A	N/A	-		-	-	-	659	Inf	Inf	0.0%
11/2	A4500 W	U	N/A	N/A	-		-	-	-	700	Inf	Inf	0.0%
12/1	Tollgate Way	U	N/A	N/A	-		-	-	-	385	Inf	Inf	0.0%
12/2	Tollgate Way	U	N/A	N/A	-		-	-	-	519	Inf	Inf	0.0%
13/1	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	659	2015	1163	56.7%
13/2	A4500 W Ahead	U	1:2	N/A	C1:C		1	29	-	700	2155	1243	56.3%
14/1	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	385	1979	1104	34.9%
14/2	Tollgate Way Ahead	U	1:4	N/A	C1:H		1	28	-	519	2117	1181	44.0%
Ped Link: P1	Unnamed Ped Link	-	1:2	-	C1:D		1	7	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1:3	-	C1:G		1	19	-	0	-	0	0.0%
Ped Link: P3	Unnamed Ped Link	-	1:4	-	C1:I		1	7	-	0	-	0	0.0%
Ped Link: P4	Unnamed Ped Link	-	2:1	-	C2:C		1	22	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**32.1**	**22.1**	**0.0**	**54.2**	**-**	**-**	**-**	**-**
Tollgate Way, A4500 and A5076	**-**	**-**	**0**	**0**	**0**	**32.1**	**22.1**	**0.0**	**54.2**	**-**	**-**	**-**	**-**
1/2+1/1	594	594	-	-	-	2.4	1.5	-	3.9	23.5	5.5	1.5	7.0
1/3	453	453	-	-	-	1.9	1.0	-	2.9	23.2	5.5	1.0	6.6
1/4	204	204	-	-	-	0.7	0.2	-	1.0	17.0	2.2	0.2	2.4
2/1+2/2	1017	1017	-	-	-	4.4	2.1	-	6.5	23.0	7.1	2.1	9.1
3/2+3/1	839	839	-	-	-	4.3	3.5	-	7.8	33.5	6.1	3.5	9.5
3/3	416	416	-	-	-	2.1	1.9	-	4.1	35.1	5.5	1.9	7.5
4/2+4/1	738	738	-	-	-	3.3	3.2	-	6.5	31.7	7.6	3.2	10.7
4/3	539	539	-	-	-	2.5	2.6	-	5.1	34.0	7.2	2.6	9.8
5/1	570	570	-	-	-	2.4	0.8	-	3.2	19.9	6.0	0.8	6.7
5/2	572	572	-	-	-	2.5	0.8	-	3.3	20.5	6.0	0.8	6.7
5/3	70	70	-	-	-	0.1	0.0	-	0.1	7.6	0.3	0.0	0.3
5/4	134	134	-	-	-	0.2	0.1	-	0.3	7.7	0.5	0.1	0.6
6/1	413	413	-	-	-	0.1	0.3	-	0.4	3.5	0.4	0.3	0.7
6/2	367	367	-	-	-	0.2	0.2	-	0.4	3.7	0.6	0.2	0.8
6/3	309	309	-	-	-	0.1	0.2	-	0.2	2.6	0.2	0.2	0.3
7/1	476	476	-	-	-	0.3	0.4	-	0.7	5.2	1.7	0.4	2.1
7/2	512	512	-	-	-	0.5	0.4	-	0.9	6.3	2.6	0.4	3.0
7/3	93	93	-	-	-	0.0	0.0	-	0.0	1.7	0.0	0.0	0.0
8/1	385	385	-	-	-	0.7	0.5	-	1.2	11.5	1.4	0.5	1.9
8/2	365	365	-	-	-	0.8	0.4	-	1.2	11.8	1.9	0.4	2.3
8/3	249	249	-	-	-	0.4	0.2	-	0.6	8.6	0.7	0.2	0.9
9/1	636	636	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	638	638	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	807	807	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/2	456	456	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	659	659	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	700	700	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	385	385	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	519	519	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	659	659	-	-	-	0.8	0.7	-	1.5	8.0	3.8	0.7	4.4
13/2	700	700	-	-	-	0.5	0.6	-	1.2	6.0	2.2	0.6	2.8
14/1	385	385	-	-	-	0.2	0.3	-	0.5	4.5	1.8	0.3	2.0
14/2	519	519	-	-	-	0.5	0.4	-	0.9	6.2	3.6	0.4	4.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P3	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P4	0	0	-	-	-	-	-	-	-	-	-	-	-

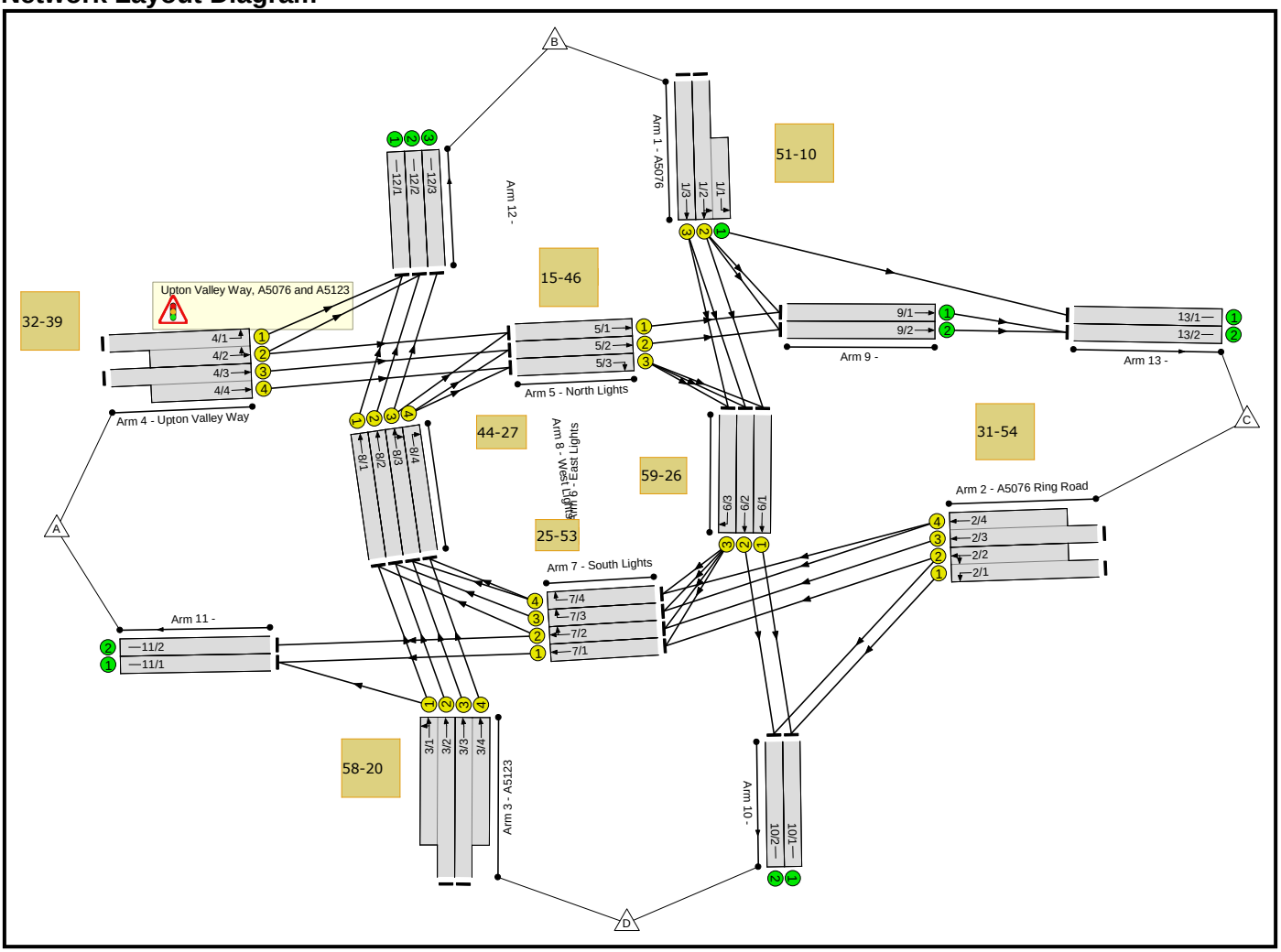
C1	Stream: 1 PRC for Signalled Lanes (%):	3.4	Total Delay for Signalled Lanes (pcuHr):	13.21	Cycle Time (s):	52		
C1	Stream: 2 PRC for Signalled Lanes (%):	58.8	Total Delay for Signalled Lanes (pcuHr):	2.63	Cycle Time (s):	52		
C1	Stream: 3 PRC for Signalled Lanes (%):	19.6	Total Delay for Signalled Lanes (pcuHr):	10.79	Cycle Time (s):	52		
C1	Stream: 4 PRC for Signalled Lanes (%):	104.7	Total Delay for Signalled Lanes (pcuHr):	1.38	Cycle Time (s):	52		
C2	Stream: 1 PRC for Signalled Lanes (%):	11.4	Total Delay for Signalled Lanes (pcuHr):	13.34	Cycle Time (s):	52		
C2	Stream: 2 PRC for Signalled Lanes (%):	2.2	Total Delay for Signalled Lanes (pcuHr):	12.84	Cycle Time (s):	52		
	PRC Over All Lanes (%):	2.2	Total Delay Over All Lanes(pcuHr):	54.19				

Full Input Data And Results

User and Project Details

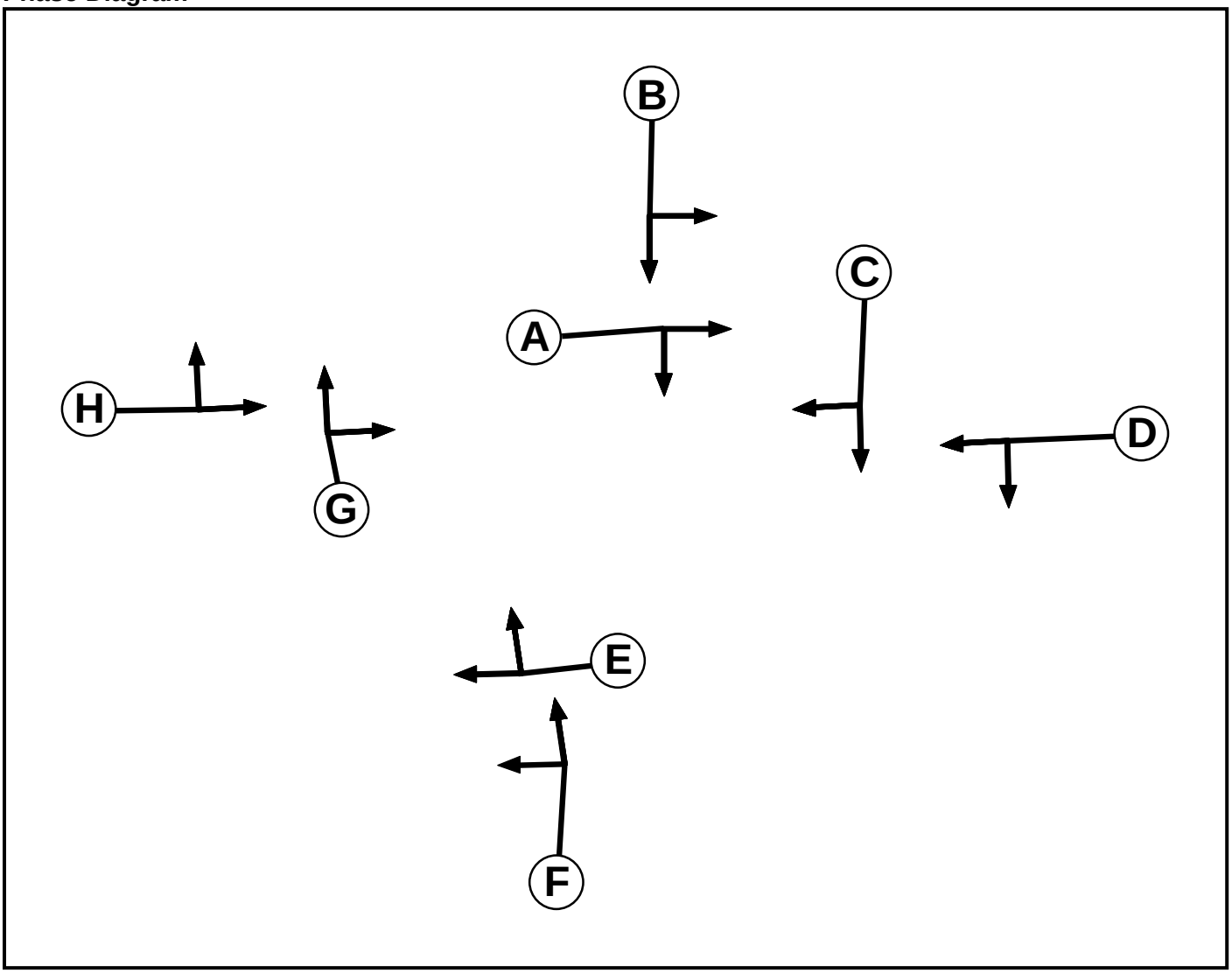
Project:	Rail Central
Title:	Junction 4
Location:	A5076 / A5123 / Upton Way Roundabout (Pineham Park) (Danes Camp Way)
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Traffic	4		7	7
H	Traffic	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

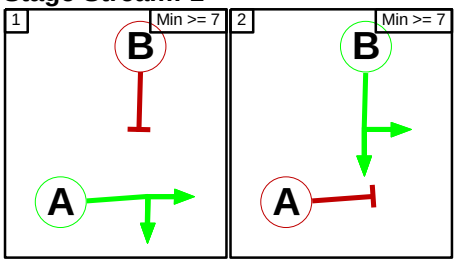
Terminating Phase	Starting Phase								
		A	B	C	D	E	F	G	H
	A		5	-	-	-	-	-	-
	B	5		-	-	-	-	-	-
	C	-	-		5	-	-	-	-
	D	-	-	5		-	-	-	-
	E	-	-	-	-		5	-	-
	F	-	-	-	-	5		-	-
	G	-	-	-	-	-	-		5
	H	-	-	-	-	-	-	5	

Phases in Stage

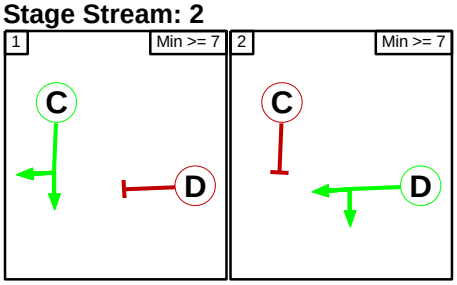
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	G
4	2	H

Stage Diagram

Stage Stream: 1

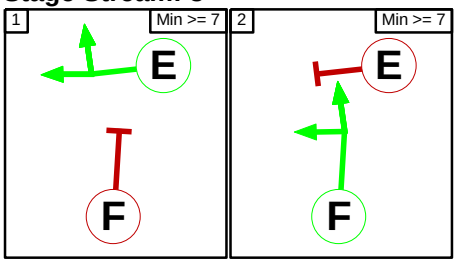


Stage Stream: 2

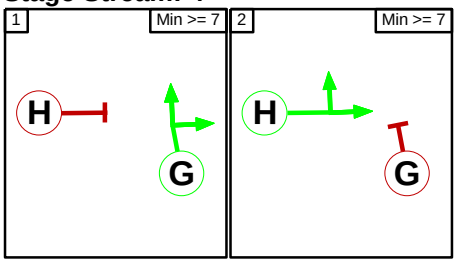


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		5
	2	5	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Upton Valley Way, A5076 and A5123
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5076)	U		2	3	7.0	Geom	-	4.50	0.00	Y	Arm 13 Left	40.00
1/2 (A5076)	U	B	2	3	60.0	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
											Arm 9 Left	42.00
1/3 (A5076)	U	B	2	3	60.0	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
2/1 (A5076 Ring Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 10 Left	46.00
2/2 (A5076 Ring Road)	U	D	2	3	12.7	Geom	-	3.25	0.00	N	Arm 7 Ahead	59.00
											Arm 10 Left	47.00
2/3 (A5076 Ring Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	N	Arm 7 Ahead	58.00
2/4 (A5076 Ring Road)	U	D	2	3	12.7	Geom	-	3.25	0.00	N	Arm 7 Ahead	58.00
3/1 (A5123)	U	F	2	3	14.6	Geom	-	3.50	0.00	Y	Arm 8 Ahead	56.00
											Arm 11 Left	45.00
3/2 (A5123)	U	F	2	3	60.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	56.00
3/3 (A5123)	U	F	2	3	60.0	Geom	-	4.50	0.00	N	Arm 8 Ahead	56.00
3/4 (A5123)	U	F	2	3	17.4	Geom	-	3.50	0.00	Y	Arm 8 Ahead	55.00
4/1 (Upton Valley Way)	U	H	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 12 Left	65.00
4/2 (Upton Valley Way)	U	H	2	3	8.7	Geom	-	3.50	0.00	N	Arm 5 Ahead	70.00
											Arm 12 Left	62.00
4/3 (Upton Valley Way)	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 5 Ahead	70.00
4/4 (Upton Valley Way)	U	H	2	3	8.7	Geom	-	3.50	0.00	N	Arm 5 Ahead	69.00
5/1 (North Lights)	U	A	2	3	5.0	Geom	-	4.00	0.00	Y	Arm 9 Ahead	60.00

Full Input Data And Results

5/2 (North Lights)	U	A	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 9 Ahead	60.00
5/3 (North Lights)	U	A	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 6 Right	35.00
6/1 (East Lights)	U	C	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 10 Ahead	60.00
6/2 (East Lights)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 10 Ahead	60.00
6/3 (East Lights)	U	C	2	3	4.0	Geom	-	4.00	0.00	N	Arm 7 Right	56.00
7/1 (South Lights)	U	E	2	3	5.0	Geom	-	3.75	0.00	Y	Arm 11 Ahead	58.00
7/2 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 8 Right Arm 11 Ahead	52.00 58.00
7/3 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 8 Right	52.00
7/4 (South Lights)	U	E	2	3	5.0	Geom	-	4.00	0.00	N	Arm 8 Right	52.00
8/1 (West Lights)	U	G	2	3	5.0	Geom	-	4.00	0.00	Y	Arm 12 Ahead	62.00
8/2 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	Y	Arm 12 Ahead	62.00
8/3 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	N	Arm 5 Right Arm 12 Ahead	35.00 62.00
8/4 (West Lights)	U	G	2	3	5.0	Geom	-	4.50	0.00	N	Arm 5 Right	32.00
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
12/3	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	266	375	114	755
	B	141	0	1079	1163	2383
	C	332	872	0	1231	2435
	D	25	454	777	0	1256
	Tot.	498	1592	2231	2508	6829

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 9: 2021 DS5 AM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	1079
1/2 (with short)	1733(In) 654(Out)
1/3	650
2/1 (with short)	1231(In) 594(Out)
2/2 (short)	637
2/3 (with short)	1204(In) 602(Out)
2/4 (short)	602
3/1 (short)	248
3/2 (with short)	479(In) 231(Out)
3/3 (with short)	777(In) 373(Out)
3/4 (short)	404
4/1 (with short)	451(In) 220(Out)
4/2 (short)	231
4/3 (with short)	304(In) 190(Out)
4/4 (short)	114
5/1	558
5/2	594
5/3	114
6/1	660
6/2	617
6/3	141
7/1	37
7/2	706
7/3	306
7/4	296
8/1	493
8/2	537
8/3	669
8/4	404
9/1	558
9/2	594
10/1	1254
10/2	1254
11/1	62

Full Input Data And Results

11/2	436
12/1	713
12/2	583
12/3	296
13/1	1079
13/2	1152

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	0.0 %	2016	2016
				Arm 10 Left	47.00	100.0 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	89.9 %	1913	1913
				Arm 11 Left	45.00	10.1 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	80.1 %	2060	2060
				Arm 12 Left	62.00	19.9 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	38.2 %	2098	2098
				Arm 11 Ahead	58.00	61.8 %		

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	55.8 %	2131	2131
				Arm 12 Ahead	62.00	44.2 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	0	169	18	187
	B	170	0	790	991	1951
	C	497	1317	0	658	2472
	D	102	1307	1504	0	2913
	Tot.	769	2624	2463	1667	7523

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 10: 2021 DS5 PM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	790
1/2 (with short)	1287(In) 497(Out)
1/3	664
2/1 (with short)	1155(In) 556(Out)
2/2 (short)	599
2/3 (with short)	1317(In) 588(Out)
2/4 (short)	729
3/1 (short)	698
3/2 (with short)	1407(In) 709(Out)
3/3 (with short)	1506(In) 796(Out)
3/4 (short)	710
4/1 (with short)	62(In) 0(Out)
4/2 (short)	62
4/3 (with short)	125(In) 107(Out)
4/4 (short)	18
5/1	856
5/2	817
5/3	18
6/1	499
6/2	510
6/3	170
7/1	583
7/2	672
7/3	351
7/4	378
8/1	1184
8/2	1060
8/3	1174
8/4	710
9/1	856
9/2	817
10/1	1055
10/2	612
11/1	685

Full Input Data And Results

11/2	84
12/1	1184
12/2	1060
12/3	380
13/1	790
13/2	1673

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	83.0 %	2026	2026
				Arm 10 Left	47.00	17.0 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	85.4 %	1912	1912
				Arm 11 Left	45.00	14.6 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	0.0 %	2015	2015
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
				Arm 12 Left	62.00	0.0 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	87.5 %	2095	2095
				Arm 11 Ahead	58.00	12.5 %		

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	67.6 %	2127	2127
				Arm 12 Ahead	62.00	32.4 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	10	237	813	160	1220
	B	123	0	1044	1234	2401
	C	410	883	1	1227	2521
	D	29	658	519	0	1206
	Tot.	572	1778	2377	2621	7348

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 11: 2031 DS5 AM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	1044
1/2 (with short)	1608(In) 564(Out)
1/3	793
2/1 (with short)	1240(In) 598(Out)
2/2 (short)	642
2/3 (with short)	1281(In) 638(Out)
2/4 (short)	643
3/1 (short)	294
3/2 (with short)	596(In) 302(Out)
3/3 (with short)	610(In) 327(Out)
3/4 (short)	283
4/1 (with short)	658(In) 237(Out)
4/2 (short)	421
4/3 (with short)	562(In) 392(Out)
4/4 (short)	170
5/1	658
5/2	675
5/3	170
6/1	654
6/2	740
6/3	133
7/1	125
7/2	659
7/3	310
7/4	333
8/1	506
8/2	612
8/3	660
8/4	283
9/1	658
9/2	675
10/1	1252
10/2	1369
11/1	154

Full Input Data And Results

11/2	418
12/1	743
12/2	612
12/3	423
13/1	1044
13/2	1333

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	2.0 %	2016	2016
				Arm 10 Left	47.00	98.0 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	90.1 %	1913	1913
				Arm 11 Left	45.00	9.9 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	100.0 %	1970	1970
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
				Arm 12 Left	62.00	0.0 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	36.6 %	2098	2098
				Arm 11 Ahead	58.00	63.4 %		

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	35.9 %	2139	2139
				Arm 12 Ahead	62.00	64.1 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	6	0	263	28	297
	B	162	0	765	1053	1980
	C	635	1413	0	926	2974
	D	72	1231	1524	0	2827
	Tot.	875	2644	2552	2007	8078

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 12: 2031 DS5 PM
Junction: Upton Valley Way, A5076 and A5123	
1/1 (short)	765
1/2 (with short)	1308(In) 543(Out)
1/3	672
2/1 (with short)	1457(In) 701(Out)
2/2 (short)	756
2/3 (with short)	1517(In) 758(Out)
2/4 (short)	759
3/1 (short)	610
3/2 (with short)	1303(In) 693(Out)
3/3 (with short)	1524(In) 805(Out)
3/4 (short)	719
4/1 (with short)	111(In) 0(Out)
4/2 (short)	111
4/3 (with short)	186(In) 152(Out)
4/4 (short)	34
5/1	916
5/2	871
5/3	34
6/1	545
6/2	536
6/3	168
7/1	650
7/2	807
7/3	367
7/4	392
8/1	1192
8/2	1060
8/3	1197
8/4	719
9/1	916
9/2	871
10/1	1246
10/2	761
11/1	722

Full Input Data And Results

11/2	153
12/1	1192
12/2	1060
12/3	392
13/1	765
13/2	1787

Lane Saturation Flows

Full Input Data And Results

Junction: Upton Valley Way, A5076 and A5123								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5076)	4.50	0.00	Y	Arm 13 Left	40.00	100.0 %	1990	1990
1/2 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
				Arm 9 Left	42.00	0.0 %		
1/3 (A5076)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (A5076 Ring Road)	3.25	0.00	Y	Arm 10 Left	46.00	100.0 %	1879	1879
2/2 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	59.00	70.2 %	2025	2025
				Arm 10 Left	47.00	29.8 %		
2/3 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
2/4 (A5076 Ring Road)	3.25	0.00	N	Arm 7 Ahead	58.00	100.0 %	2028	2028
3/1 (A5123)	3.50	0.00	Y	Arm 8 Ahead	56.00	88.2 %	1912	1912
				Arm 11 Left	45.00	11.8 %		
3/2 (A5123)	3.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2050	2050
3/3 (A5123)	4.50	0.00	N	Arm 8 Ahead	56.00	100.0 %	2147	2147
3/4 (A5123)	3.50	0.00	Y	Arm 8 Ahead	55.00	100.0 %	1913	1913
4/1 (Upton Valley Way)	4.00	0.00	Y	Arm 12 Left	65.00	0.0 %	2015	2015
4/2 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
				Arm 12 Left	62.00	0.0 %		
4/3 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	70.00	100.0 %	2061	2061
4/4 (Upton Valley Way)	3.50	0.00	N	Arm 5 Ahead	69.00	100.0 %	2060	2060
5/1 (North Lights)	4.00	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1966	1966
5/2 (North Lights)	3.75	0.00	Y	Arm 9 Ahead	60.00	100.0 %	1941	1941
5/3 (North Lights)	3.75	0.00	Y	Arm 6 Right	35.00	100.0 %	1908	1908
6/1 (East Lights)	4.00	0.00	Y	Arm 10 Ahead	60.00	100.0 %	1966	1966
6/2 (East Lights)	4.00	0.00	N	Arm 10 Ahead	60.00	100.0 %	2102	2102
6/3 (East Lights)	4.00	0.00	N	Arm 7 Right	56.00	100.0 %	2099	2099
7/1 (South Lights)	3.75	0.00	Y	Arm 11 Ahead	58.00	100.0 %	1940	1940
7/2 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	81.0 %	2096	2096
				Arm 11 Ahead	58.00	19.0 %		

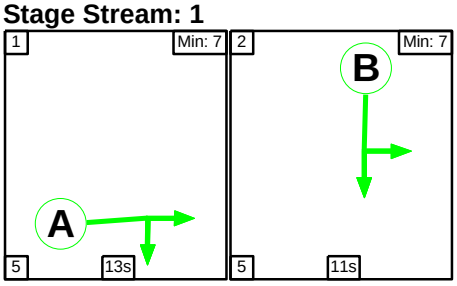
Full Input Data And Results

7/3 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
7/4 (South Lights)	4.00	0.00	N	Arm 8 Right	52.00	100.0 %	2095	2095
8/1 (West Lights)	4.00	0.00	Y	Arm 12 Ahead	62.00	100.0 %	1967	1967
8/2 (West Lights)	4.50	0.00	Y	Arm 12 Ahead	62.00	100.0 %	2016	2016
8/3 (West Lights)	4.50	0.00	N	Arm 5 Right	35.00	67.3 %	2127	2127
				Arm 12 Ahead	62.00	32.7 %		
8/4 (West Lights)	4.50	0.00	N	Arm 5 Right	32.00	100.0 %	2106	2106
9/1	Infinite Saturation Flow						Inf	Inf
9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
12/3	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf

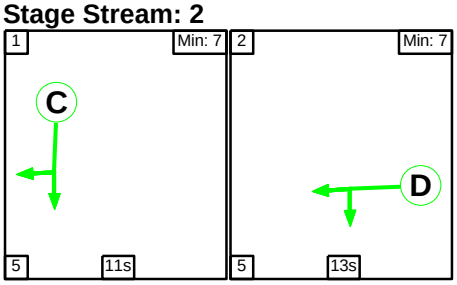
Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

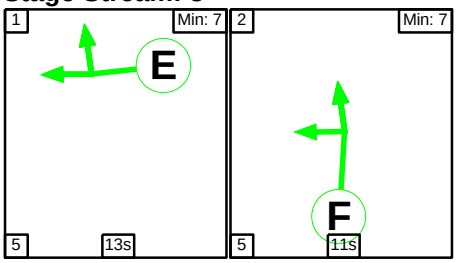


Stage Stream: 2

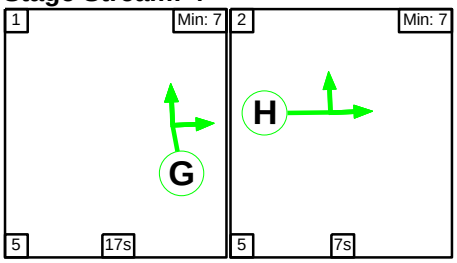


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	11
Change Point	13	31

Stage Stream: 2

Stage	1	2
Duration	11	13
Change Point	2	18

Stage Stream: 3

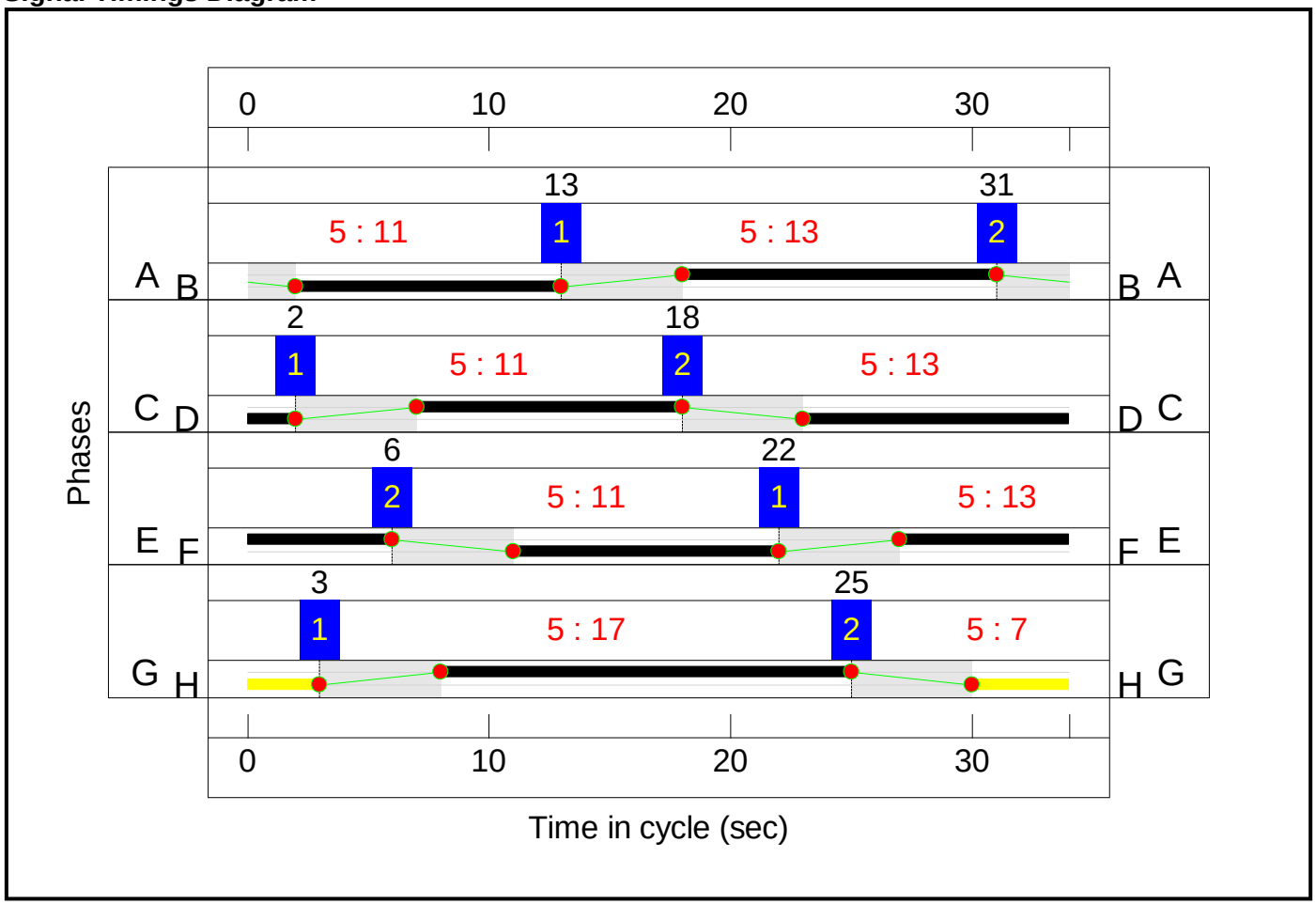
Stage	1	2
Duration	13	11
Change Point	22	6

Stage Stream: 4

Stage	1	2
Duration	17	7
Change Point	3	25

Full Input Data And Results

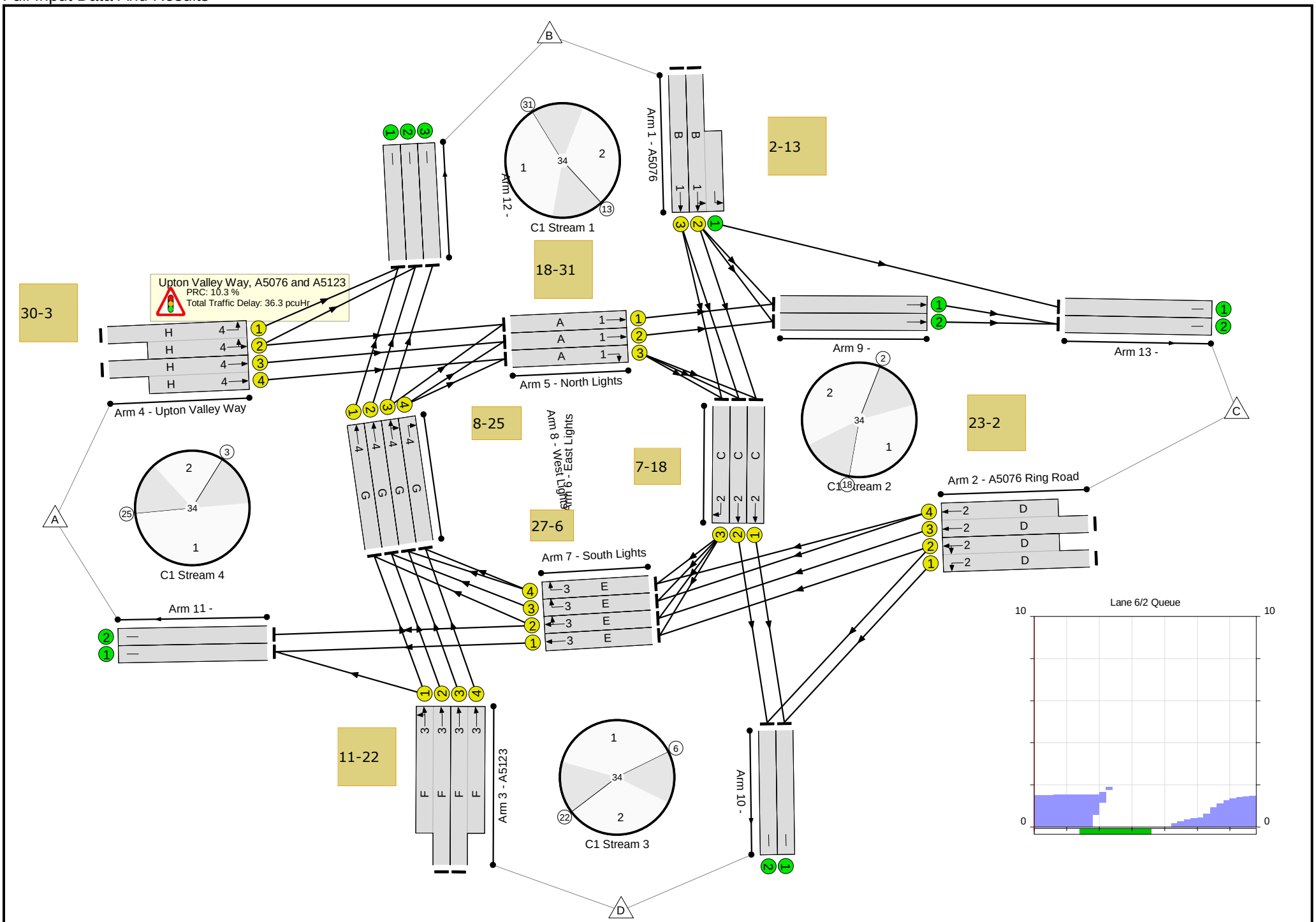
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.6%**
Upton Valley Way, A5076 and A5123	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.6%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	11	-	1653	2102:1990	664+1361	81.6 : 81.6%
1/3	A5076 Ahead	U	1	N/A	B		1	11	-	544	2102	742	73.3%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	13	-	1079	1879:2022	774+833	67.3 : 67.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	13	-	1125	2028:2028	787+835	59.1 : 79.0%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	11	-	400	2050:1912	724+675	29.3 : 27.9%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	11	-	755	2147:1913	758+675	47.9 : 58.1%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	372	1970:2061	464+485	36.0 : 42.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	281	2061:2060	485+406	35.5 : 26.8%
5/1	North Lights Ahead	U	1	N/A	A		1	13	-	566	1966	810	69.9%
5/2	North Lights Ahead	U	1	N/A	A		1	13	-	564	1941	799	70.6%
5/3	North Lights Right	U	1	N/A	A		1	13	-	109	1908	786	13.9%
6/1	East Lights Ahead	U	2	N/A	C		1	11	-	542	1966	694	78.1%
6/2	East Lights Ahead	U	2	N/A	C		1	11	-	498	2102	742	67.1%
6/3	East Lights Right	U	2	N/A	C		1	11	-	155	2099	741	20.9%
7/1	South Lights Ahead	U	3	N/A	E		1	13	-	391	1940	799	48.9%
7/2	South Lights Right Ahead	U	3	N/A	E		1	13	-	513	2096	863	59.4%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	13	-	355	2095	863	41.2%
7/4	South Lights Right	U	3	N/A	E		1	13	-	305	2095	863	35.4%
8/1	West Lights Ahead	U	4	N/A	G		1	17	-	550	1967	1041	52.8%
8/2	West Lights Ahead	U	4	N/A	G		1	17	-	567	2016	1067	53.1%
8/3	West Lights Right Ahead	U	4	N/A	G		1	17	-	668	2132	1129	59.2%
8/4	West Lights Right	U	4	N/A	G		1	17	-	392	2106	1115	35.2%
9/1	Ahead	U	N/A	N/A	-		-	-	-	566	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	564	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1063	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	772	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	411	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	131	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	569	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1111	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1130	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**20.1**	**16.3**	**0.0**	**36.3**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**20.1**	**16.3**	**0.0**	**36.3**	**-**	**-**	**-**	**-**
1/2+1/1	1653	1653	-	-	-	1.4	2.2	-	3.6	7.9	4.4	2.2	6.6
1/3	544	544	-	-	-	1.5	1.4	-	2.8	18.6	4.4	1.4	5.7
2/1+2/2	1079	1079	-	-	-	2.4	1.0	-	3.5	11.5	4.2	1.0	5.2
2/3+2/4	1125	1125	-	-	-	2.6	1.1	-	3.7	11.9	5.3	1.1	6.4
3/2+3/1	400	400	-	-	-	0.9	0.2	-	1.1	9.8	1.4	0.2	1.6
3/3+3/4	755	755	-	-	-	1.8	0.6	-	2.4	11.4	2.9	0.6	3.5
4/1+4/2	372	372	-	-	-	1.1	0.3	-	1.5	14.1	1.6	0.3	1.9
4/3+4/4	281	281	-	-	-	0.8	0.2	-	1.1	13.7	1.3	0.2	1.6
5/1	566	566	-	-	-	1.2	1.2	-	2.4	15.0	3.1	1.2	4.2
5/2	564	564	-	-	-	1.2	1.2	-	2.3	15.0	3.0	1.2	4.2
5/3	109	109	-	-	-	0.4	0.1	-	0.5	16.0	1.0	0.1	1.1
6/1	542	542	-	-	-	0.4	1.7	-	2.2	14.3	0.7	1.7	2.4
6/2	498	498	-	-	-	0.8	1.0	-	1.8	12.9	1.9	1.0	2.9
6/3	155	155	-	-	-	0.1	0.1	-	0.2	5.8	0.2	0.1	0.3
7/1	391	391	-	-	-	0.4	0.5	-	0.9	8.5	1.4	0.5	1.9
7/2	513	513	-	-	-	0.4	0.7	-	1.1	8.1	1.0	0.7	1.8
7/3	355	355	-	-	-	0.3	0.3	-	0.6	6.6	0.6	0.3	0.9
7/4	305	305	-	-	-	0.3	0.3	-	0.5	6.3	0.5	0.3	0.8
8/1	550	550	-	-	-	0.6	0.6	-	1.1	7.4	3.6	0.6	4.2
8/2	567	567	-	-	-	0.5	0.6	-	1.1	6.8	3.4	0.6	3.9
8/3	668	668	-	-	-	0.6	0.7	-	1.3	7.0	3.1	0.7	3.8
8/4	392	392	-	-	-	0.3	0.3	-	0.6	5.3	0.8	0.3	1.0
9/1	566	566	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

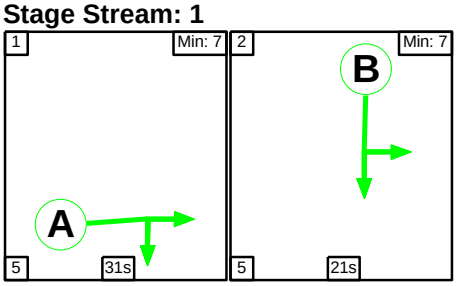
10/1	1063	1063	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	772	772	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	411	411	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	131	131	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	569	569	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	305	305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1111	1111	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1130	1130	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	10.3	Total Delay for Signalled Lanes (pcuHr):	11.64	Cycle Time (s):	34		
C1	Stream: 2 PRC for Signalled Lanes (%):	13.9	Total Delay for Signalled Lanes (pcuHr):	11.37	Cycle Time (s):	34		
C1	Stream: 3 PRC for Signalled Lanes (%):	51.4	Total Delay for Signalled Lanes (pcuHr):	6.73	Cycle Time (s):	34		
C1	Stream: 4 PRC for Signalled Lanes (%):	52.1	Total Delay for Signalled Lanes (pcuHr):	6.61	Cycle Time (s):	34		
	PRC Over All Lanes (%):	10.3	Total Delay Over All Lanes(pcuHr):	36.34				

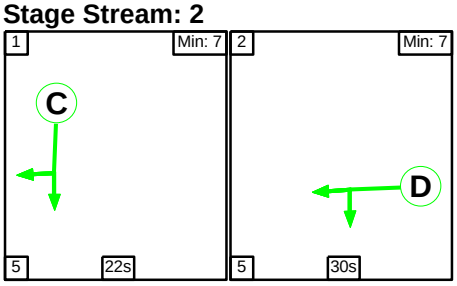
Full Input Data And Results
Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

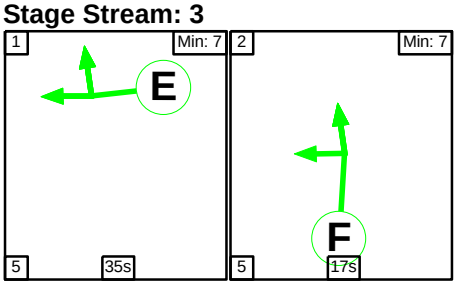
Stage Stream: 1



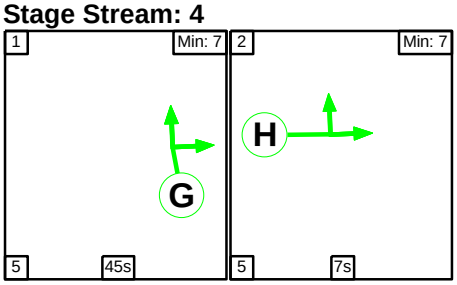
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	31	21
Change Point	43	17

Stage Stream: 2

Stage	1	2
Duration	22	30
Change Point	23	50

Stage Stream: 3

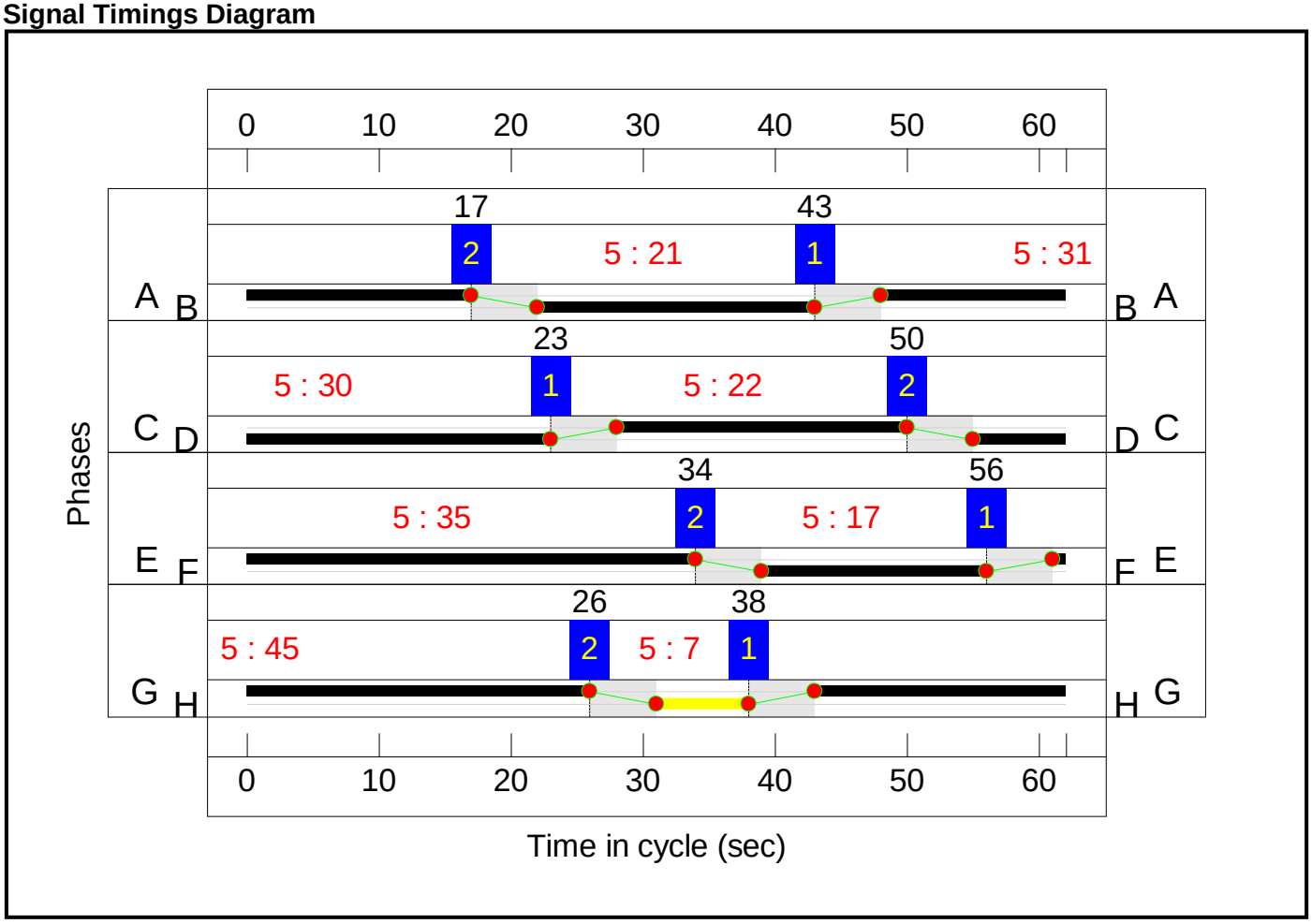
Stage	1	2
Duration	35	17
Change Point	56	34

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	45	7
Change Point	38	26

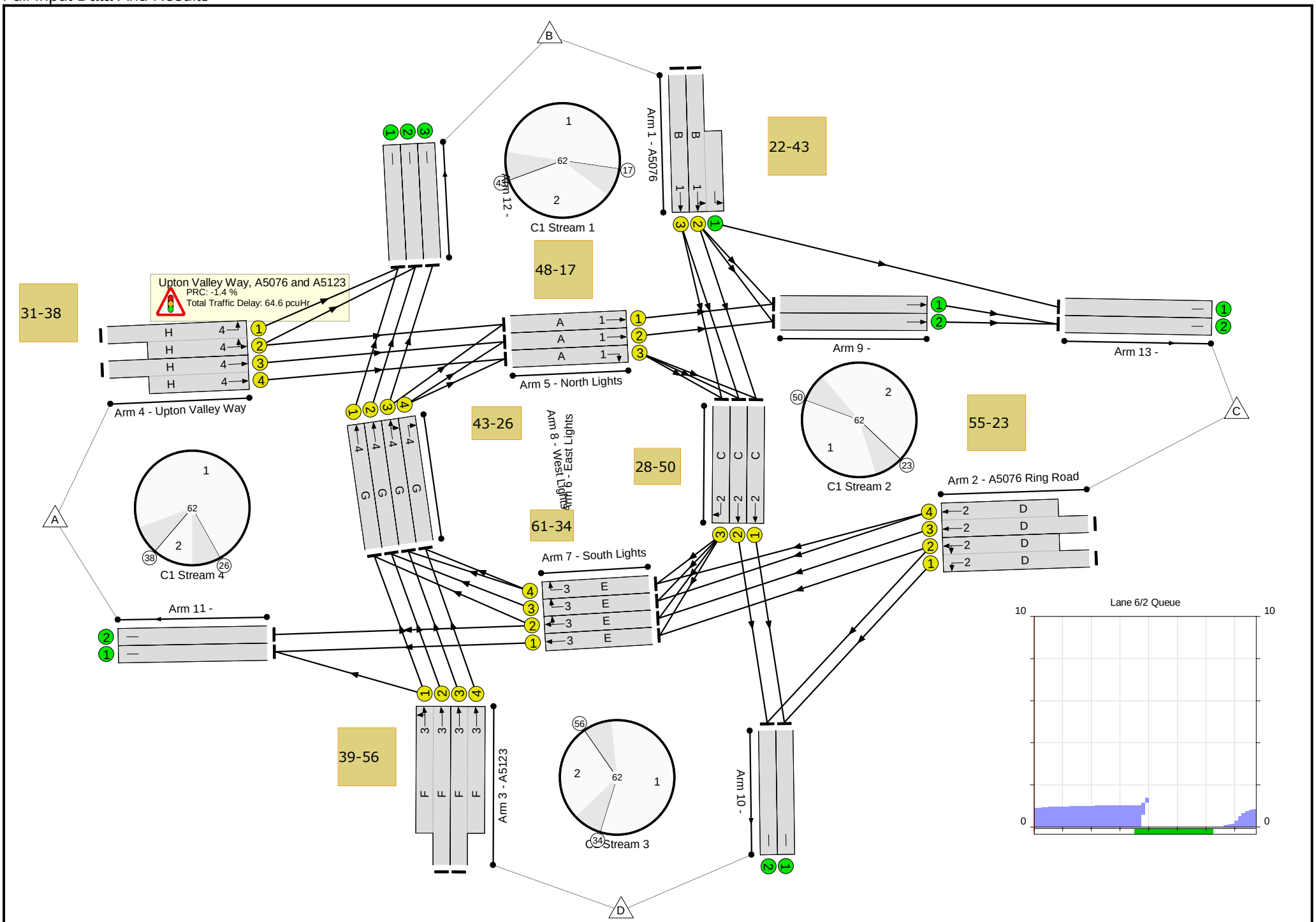
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.2%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.2%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	21	-	1409	2102:1990	515+1035	90.9 : 90.9%
1/3	A5076 Ahead	U	1	N/A	B		1	21	-	582	2102	746	78.0%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	30	-	1393	1879:2023	829+892	81.0 : 81.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	30	-	1415	2028:2028	656+917	90.0 : 90.0%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	17	-	1029	2050:1913	595+555	91.2 : 87.5%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	17	-	1059	2147:1913	623+555	89.2 : 90.6%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	163	2015:2061	0+266	0.0 : 61.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	245	2061:2060	266+88	69.2 : 69.2%
5/1	North Lights Ahead	U	1	N/A	A		1	31	-	601	1966	1015	59.2%
5/2	North Lights Ahead	U	1	N/A	A		1	31	-	680	1941	1002	67.9%
5/3	North Lights Right	U	1	N/A	A		1	31	-	68	1908	985	6.9%
6/1	East Lights Ahead	U	2	N/A	C		1	22	-	489	1966	729	67.0%
6/2	East Lights Ahead	U	2	N/A	C		1	22	-	476	2102	780	61.0%
6/3	East Lights Right	U	2	N/A	C		1	22	-	153	2099	779	19.6%
7/1	South Lights Ahead	U	3	N/A	E		1	35	-	509	1940	1126	45.2%
7/2	South Lights Right Ahead	U	3	N/A	E		1	35	-	645	2095	1216	53.0%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	35	-	382	2095	1216	31.4%
7/4	South Lights Right	U	3	N/A	E		1	35	-	443	2095	1216	36.4%
8/1	West Lights Ahead	U	4	N/A	G		1	45	-	1027	1967	1459	70.4%
8/2	West Lights Ahead	U	4	N/A	G		1	45	-	925	2016	1496	61.8%
8/3	West Lights Right Ahead	U	4	N/A	G		1	45	-	999	2136	1585	63.0%
8/4	West Lights Right	U	4	N/A	G		1	45	-	503	2106	1563	32.2%
9/1	Ahead	U	N/A	N/A	-		-	-	-	601	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	680	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1160	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	787	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	55	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1027	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	925	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	561	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	941	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1281	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**33.6**	**31.0**	**0.0**	**64.6**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**33.6**	**31.0**	**0.0**	**64.6**	**-**	**-**	**-**	**-**
1/2+1/1	1409	1409	-	-	-	2.2	4.7	-	6.8	17.5	6.6	4.7	11.3
1/3	582	582	-	-	-	2.9	1.7	-	4.6	28.6	8.9	1.7	10.6
2/1+2/2	1393	1393	-	-	-	4.7	2.1	-	6.8	17.5	9.6	2.1	11.7
2/3+2/4	1415	1415	-	-	-	4.8	4.2	-	9.0	23.0	11.9	4.2	16.2
3/2+3/1	1029	1029	-	-	-	6.0	4.0	-	10.0	35.0	8.9	4.0	12.9
3/3+3/4	1059	1059	-	-	-	6.2	4.1	-	10.4	35.2	9.1	4.1	13.2
4/1+4/2	163	163	-	-	-	1.2	0.8	-	1.9	42.8	2.6	0.8	3.4
4/3+4/4	245	245	-	-	-	1.7	1.1	-	2.8	41.6	3.0	1.1	4.1
5/1	601	601	-	-	-	0.4	0.7	-	1.2	6.9	2.9	0.7	3.6
5/2	680	680	-	-	-	0.5	1.0	-	1.5	8.2	3.9	1.0	4.9
5/3	68	68	-	-	-	0.1	0.0	-	0.2	9.7	1.0	0.0	1.1
6/1	489	489	-	-	-	0.3	1.0	-	1.3	9.7	2.8	1.0	3.8
6/2	476	476	-	-	-	0.6	0.8	-	1.3	10.1	1.4	0.8	2.2
6/3	153	153	-	-	-	0.0	0.1	-	0.2	3.9	0.1	0.1	0.2
7/1	509	509	-	-	-	0.5	0.4	-	0.9	6.2	2.7	0.4	3.1
7/2	645	645	-	-	-	0.3	0.6	-	0.8	4.6	1.9	0.6	2.4
7/3	382	382	-	-	-	0.0	0.2	-	0.2	2.3	0.0	0.2	0.3
7/4	443	443	-	-	-	0.0	0.3	-	0.3	2.4	0.0	0.3	0.3
8/1	1027	1027	-	-	-	0.4	1.2	-	1.6	5.6	3.3	1.2	4.5
8/2	925	925	-	-	-	0.4	0.8	-	1.2	4.6	3.4	0.8	4.2
8/3	999	999	-	-	-	0.4	0.9	-	1.3	4.7	3.6	0.9	4.5
8/4	503	503	-	-	-	0.0	0.2	-	0.2	1.7	0.0	0.2	0.2
9/1	601	601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	680	680	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

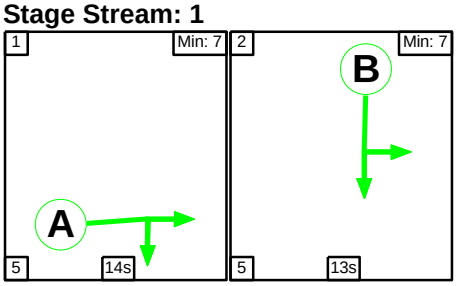
10/1	1160	1160	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	787	787	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	55	55	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1027	1027	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	925	925	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	561	561	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	941	941	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1281	1281	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-1.0	Total Delay for Signalled Lanes (pcuHr):	14.34	Cycle Time (s):	62		
C1	Stream: 2 PRC for Signalled Lanes (%):	0.1	Total Delay for Signalled Lanes (pcuHr):	18.61	Cycle Time (s):	62		
C1	Stream: 3 PRC for Signalled Lanes (%):	-1.4	Total Delay for Signalled Lanes (pcuHr):	22.60	Cycle Time (s):	62		
C1	Stream: 4 PRC for Signalled Lanes (%):	27.9	Total Delay for Signalled Lanes (pcuHr):	9.09	Cycle Time (s):	62		
	PRC Over All Lanes (%):	-1.4	Total Delay Over All Lanes(pcuHr):	64.64				

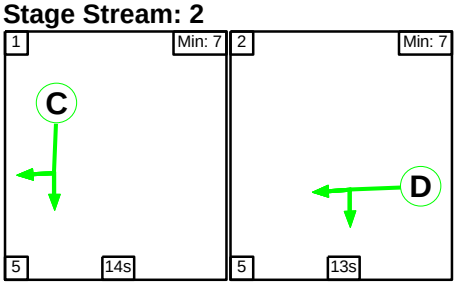
Full Input Data And Results
Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

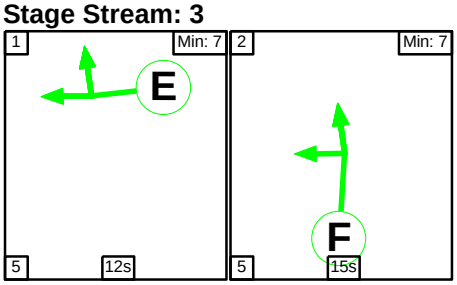
Stage Stream: 1



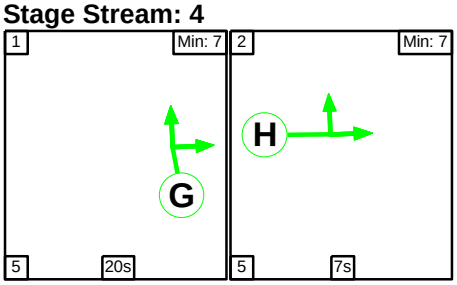
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	14	13
Change Point	27	9

Stage Stream: 2

Stage	1	2
Duration	14	13
Change Point	15	34

Stage Stream: 3

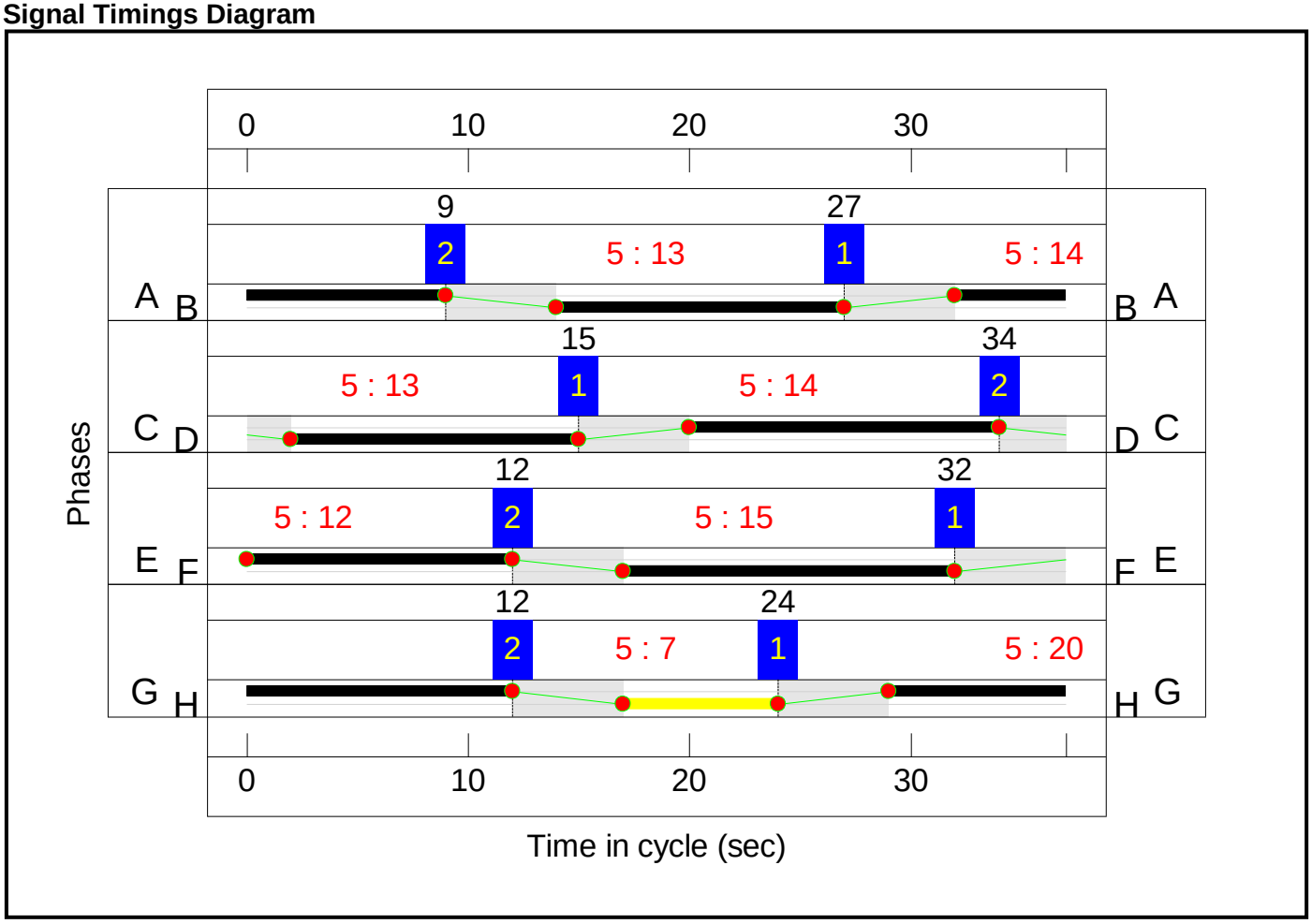
Stage	1	2
Duration	12	15
Change Point	32	12

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	20	7
Change Point	24	12

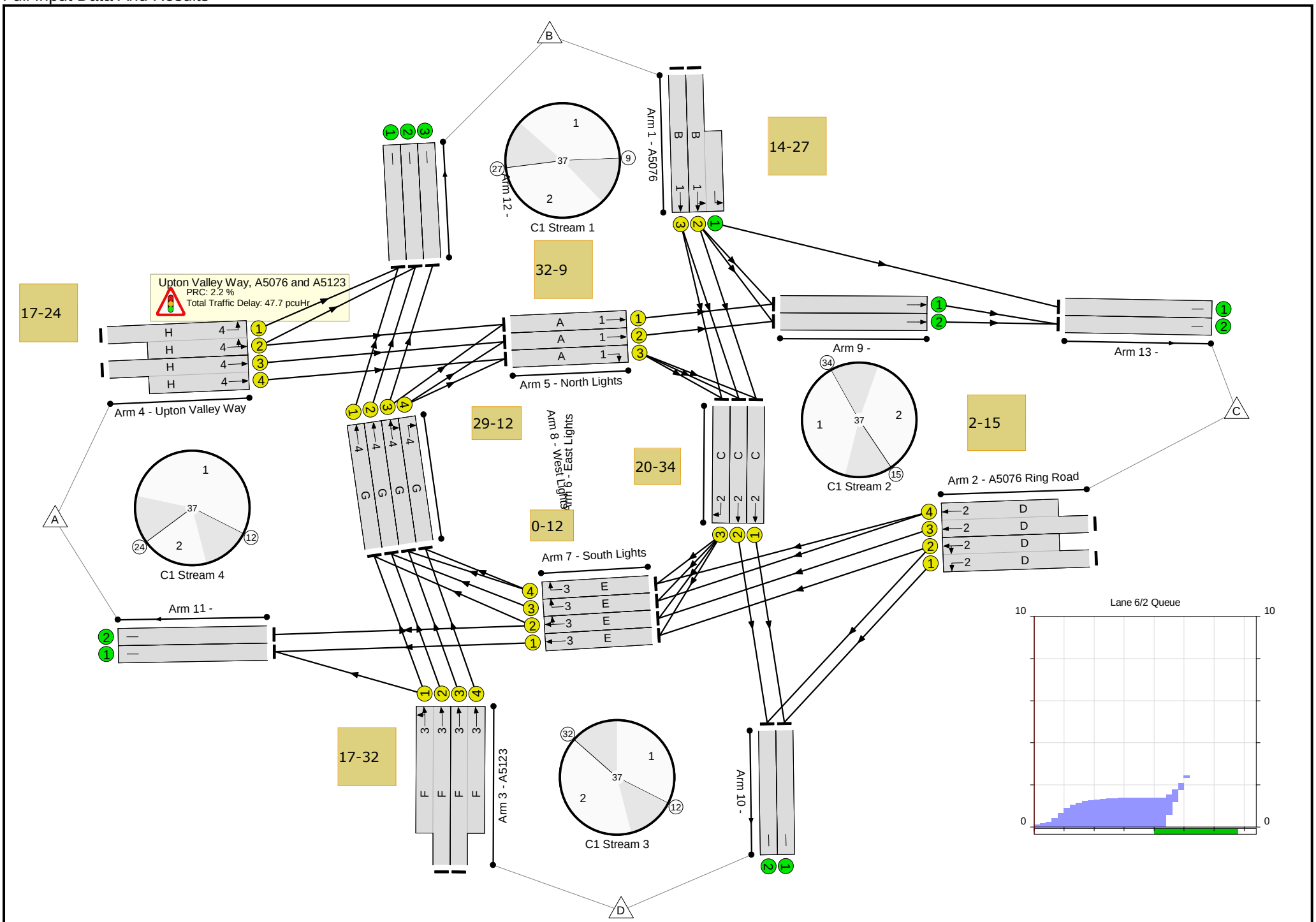
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.1%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**88.1%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	13	-	1735	2102:1990	722+1248	88.1 : 88.1%
1/3	A5076 Ahead	U	1	N/A	B		1	13	-	657	2102	795	82.6%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	13	-	1208	1879:2017	711+763	81.9 : 82.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	13	-	1163	2028:2028	767+767	67.4 : 84.2%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	15	-	478	2050:1913	886+827	24.6 : 31.4%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	15	-	839	2147:1913	928+827	44.9 : 51.0%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	426	1970:2060	426+445	48.8 : 48.9%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	292	2061:2060	446+356	38.1 : 34.2%
5/1	North Lights Ahead	U	1	N/A	A		1	14	-	585	1966	797	73.4%
5/2	North Lights Ahead	U	1	N/A	A		1	14	-	592	1941	787	75.2%
5/3	North Lights Right	U	1	N/A	A		1	14	-	122	1908	774	15.8%
6/1	East Lights Ahead	U	2	N/A	C		1	14	-	655	1966	797	82.2%
6/2	East Lights Ahead	U	2	N/A	C		1	14	-	617	2102	852	72.4%
6/3	East Lights Right	U	2	N/A	C		1	14	-	143	2099	851	16.8%
7/1	South Lights Ahead	U	3	N/A	E		1	12	-	194	1940	682	28.5%
7/2	South Lights Right Ahead	U	3	N/A	E		1	12	-	520	2098	737	70.5%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	12	-	342	2095	736	46.5%
7/4	South Lights Right	U	3	N/A	E		1	12	-	304	2095	736	41.3%
8/1	West Lights Ahead	U	4	N/A	G		1	20	-	482	1967	1116	43.2%
8/2	West Lights Ahead	U	4	N/A	G		1	20	-	560	2016	1144	48.9%
8/3	West Lights Right Ahead	U	4	N/A	G		1	20	-	721	2130	1209	59.6%
8/4	West Lights Right	U	4	N/A	G		1	20	-	422	2106	1195	35.3%
9/1	Ahead	U	N/A	N/A	-		-	-	-	585	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	592	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1237	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1189	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	218	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	274	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	690	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	610	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1099	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1177	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**26.0**	**21.7**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**26.0**	**21.7**	**0.0**	**47.7**	**-**	**-**	**-**	**-**
1/2+1/1	1735	1735	-	-	-	1.8	3.6	-	5.4	11.2	5.7	3.6	9.2
1/3	657	657	-	-	-	1.9	2.3	-	4.2	23.0	6.0	2.3	8.3
2/1+2/2	1208	1208	-	-	-	3.5	2.2	-	5.7	17.0	5.7	2.2	8.0
2/3+2/4	1163	1163	-	-	-	3.3	1.6	-	4.8	14.9	5.9	1.6	7.5
3/2+3/1	478	478	-	-	-	0.9	0.2	-	1.1	8.3	1.7	0.2	1.9
3/3+3/4	839	839	-	-	-	1.8	0.5	-	2.2	9.5	3.0	0.5	3.5
4/1+4/2	426	426	-	-	-	1.5	0.5	-	2.0	16.8	1.9	0.5	2.4
4/3+4/4	292	292	-	-	-	1.0	0.3	-	1.3	15.8	1.5	0.3	1.7
5/1	585	585	-	-	-	0.6	1.4	-	2.0	12.2	2.2	1.4	3.6
5/2	592	592	-	-	-	0.6	1.5	-	2.1	12.5	2.3	1.5	3.8
5/3	122	122	-	-	-	0.2	0.1	-	0.3	9.4	1.2	0.1	1.3
6/1	655	655	-	-	-	0.3	2.2	-	2.5	13.9	1.7	2.2	3.9
6/2	617	617	-	-	-	0.7	1.3	-	2.0	11.6	2.4	1.3	3.7
6/3	143	143	-	-	-	0.0	0.1	-	0.1	3.7	0.1	0.1	0.2
7/1	194	194	-	-	-	0.4	0.2	-	0.6	10.8	1.6	0.2	1.8
7/2	520	520	-	-	-	2.2	1.2	-	3.3	23.1	3.5	1.2	4.7
7/3	342	342	-	-	-	1.5	0.4	-	1.9	20.0	2.6	0.4	3.0
7/4	304	304	-	-	-	1.3	0.4	-	1.6	19.4	2.3	0.4	2.6
8/1	482	482	-	-	-	0.7	0.4	-	1.1	8.0	3.1	0.4	3.5
8/2	560	560	-	-	-	0.7	0.5	-	1.2	7.7	3.1	0.5	3.6
8/3	721	721	-	-	-	0.9	0.7	-	1.7	8.3	4.9	0.7	5.7
8/4	422	422	-	-	-	0.3	0.3	-	0.6	5.3	3.6	0.3	3.8
9/1	585	585	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

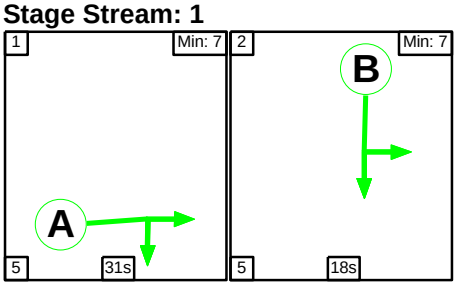
10/1	1237	1237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1189	1189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	218	218	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	274	274	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	690	690	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	610	610	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1099	1099	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1177	1177	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	2.2	Total Delay for Signalled Lanes (pcuHr):	13.94	Cycle Time (s):	37
C1	Stream: 2 PRC for Signalled Lanes (%):	6.9	Total Delay for Signalled Lanes (pcuHr):	15.18	Cycle Time (s):	37
C1	Stream: 3 PRC for Signalled Lanes (%):	27.6	Total Delay for Signalled Lanes (pcuHr):	10.77	Cycle Time (s):	37
C1	Stream: 4 PRC for Signalled Lanes (%):	50.9	Total Delay for Signalled Lanes (pcuHr):	7.82	Cycle Time (s):	37
	PRC Over All Lanes (%):	2.2	Total Delay Over All Lanes(pcuHr):	47.71		

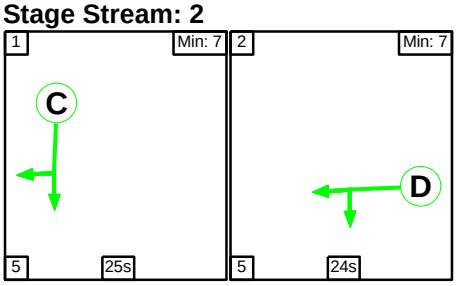
Full Input Data And Results
Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

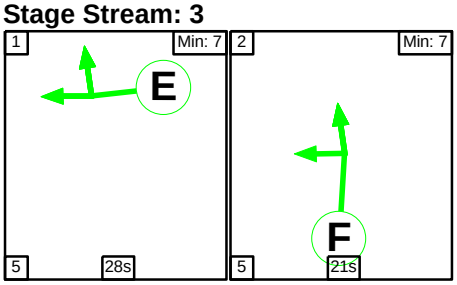
Stage Stream: 1



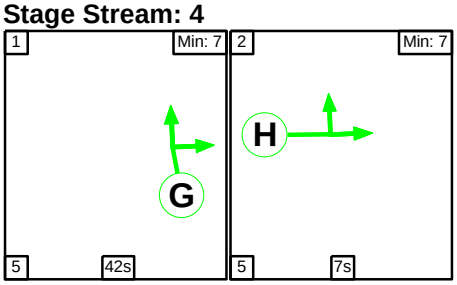
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	31	18
Change Point	50	27

Stage Stream: 2

Stage	1	2
Duration	25	24
Change Point	34	5

Stage Stream: 3

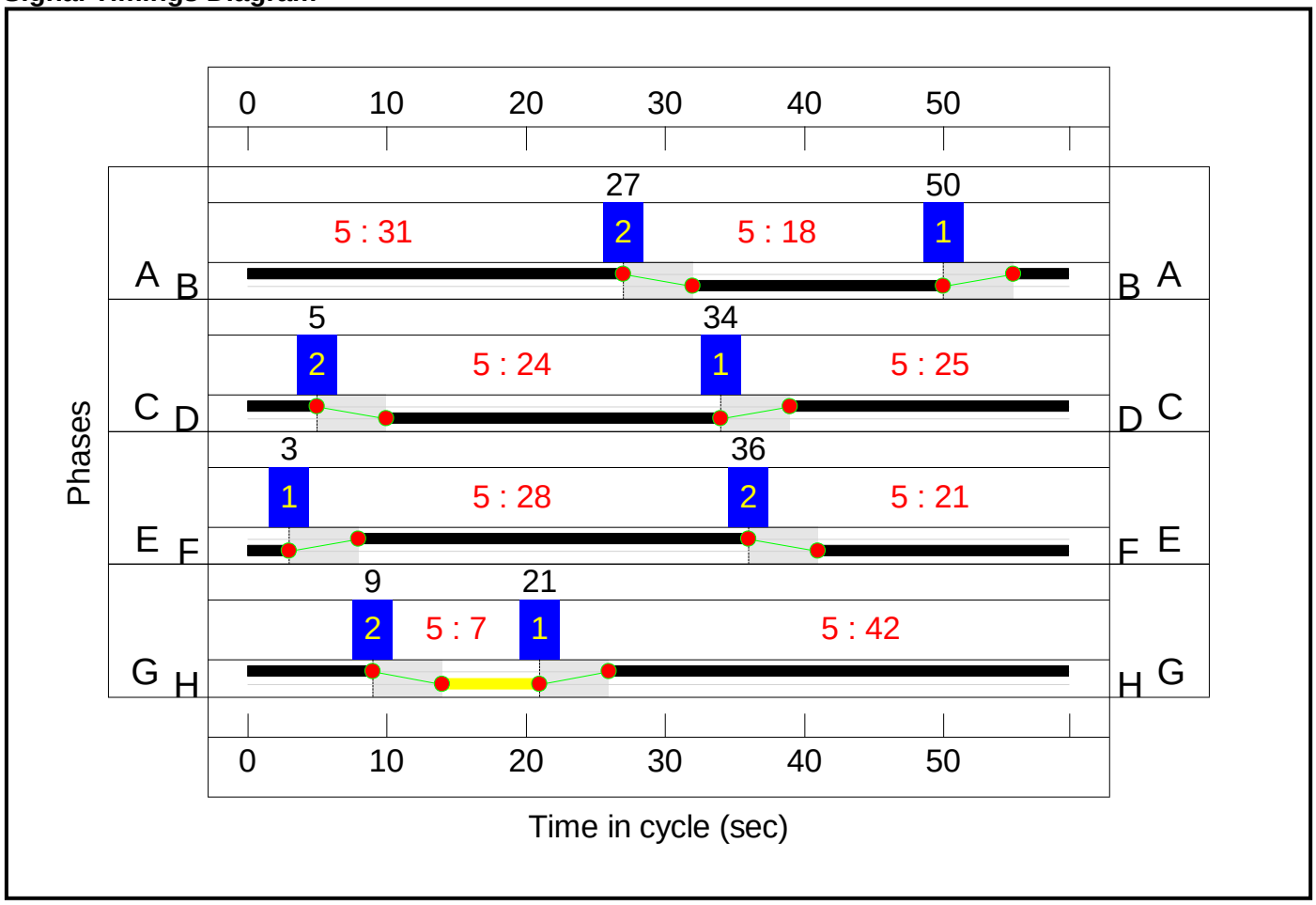
Stage	1	2
Duration	28	21
Change Point	3	36

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	42	7
Change Point	21	9

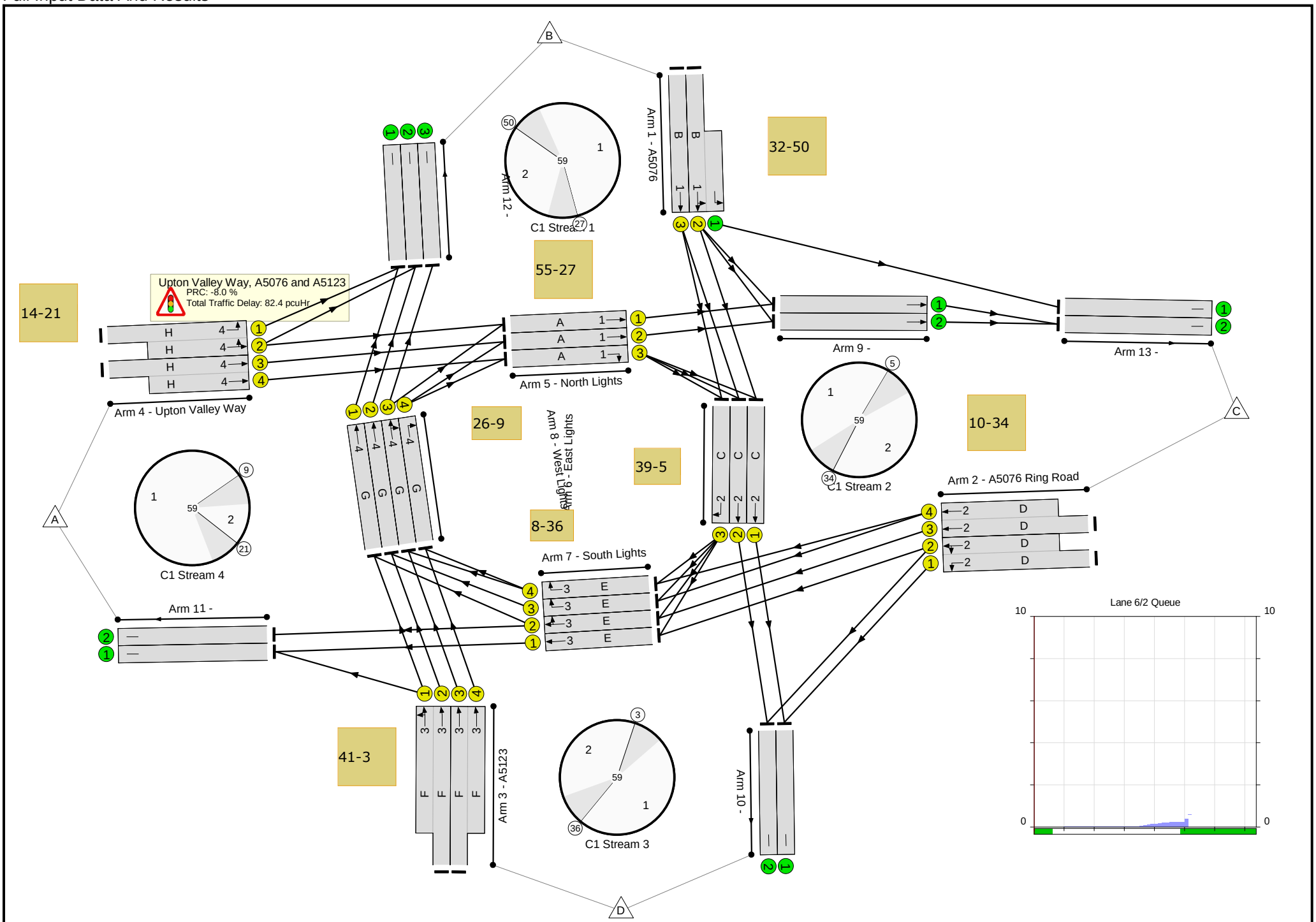
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.2%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	18	-	1390	2102:1990	511+948	95.2 : 95.2%
1/3	A5076 Ahead	U	1	N/A	B		1	18	-	603	2102	677	89.1%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	24	-	1158	1879:2027	773+834	72.0 : 72.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	24	-	1274	2028:2028	460+851	97.2 : 97.2%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	21	-	1369	2050:1912	764+713	90.8 : 94.7%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	21	-	1414	2147:1913	801+713	90.1 : 97.2%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	84	2015:2061	0+279	0.0 : 30.1%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	111	2061:2060	279+61	32.6 : 32.6%
5/1	North Lights Ahead	U	1	N/A	A		1	31	-	737	1966	1066	69.1%
5/2	North Lights Ahead	U	1	N/A	A		1	31	-	784	1941	1053	74.5%
5/3	North Lights Right	U	1	N/A	A		1	31	-	20	1908	1035	1.9%
6/1	East Lights Ahead	U	2	N/A	C		1	25	-	493	1966	866	56.9%
6/2	East Lights Ahead	U	2	N/A	C		1	25	-	457	2102	926	49.3%
6/3	East Lights Right	U	2	N/A	C		1	25	-	160	2099	925	17.3%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	553	1940	954	58.0%
7/2	South Lights Right Ahead	U	3	N/A	E		1	28	-	567	2096	1030	55.0%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	396	2095	1030	38.5%
7/4	South Lights Right	U	3	N/A	E		1	28	-	431	2095	1030	41.9%
8/1	West Lights Ahead	U	4	N/A	G		1	42	-	1013	1967	1434	70.7%
8/2	West Lights Ahead	U	4	N/A	G		1	42	-	1090	2016	1469	74.2%
8/3	West Lights Right Ahead	U	4	N/A	G		1	42	-	1152	2131	1553	74.2%
8/4	West Lights Right	U	4	N/A	G		1	42	-	693	2106	1535	45.2%
9/1	Ahead	U	N/A	N/A	-		-	-	-	737	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1050	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	545	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	662	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	120	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1013	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1090	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	499	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	903	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1521	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**35.7**	**46.7**	**0.0**	**82.4**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**35.7**	**46.7**	**0.0**	**82.4**	**-**	**-**	**-**	**-**
1/2+1/1	1390	1390	-	-	-	2.4	8.1	-	10.5	27.1	7.8	8.1	15.9
1/3	603	603	-	-	-	3.2	3.7	-	6.9	41.1	9.4	3.7	13.1
2/1+2/2	1158	1158	-	-	-	4.5	1.3	-	5.8	17.9	8.0	1.3	9.3
2/3+2/4	1274	1274	-	-	-	5.4	10.9	-	16.3	46.0	13.1	10.9	24.0
3/2+3/1	1369	1369	-	-	-	6.7	5.7	-	12.5	32.8	10.7	5.7	16.4
3/3+3/4	1414	1414	-	-	-	7.0	6.3	-	13.3	33.8	11.2	6.3	17.5
4/1+4/2	84	84	-	-	-	0.5	0.2	-	0.8	32.2	1.2	0.2	1.5
4/3+4/4	111	111	-	-	-	0.7	0.2	-	0.9	30.8	1.3	0.2	1.6
5/1	737	737	-	-	-	0.3	1.1	-	1.4	6.8	1.7	1.1	2.8
5/2	784	784	-	-	-	0.4	1.4	-	1.9	8.5	3.3	1.4	4.7
5/3	20	20	-	-	-	0.0	0.0	-	0.0	3.6	0.0	0.0	0.0
6/1	493	493	-	-	-	0.0	0.7	-	0.7	5.0	3.3	0.7	4.0
6/2	457	457	-	-	-	0.0	0.5	-	0.5	4.2	0.6	0.5	1.1
6/3	160	160	-	-	-	0.0	0.1	-	0.1	2.5	0.1	0.1	0.2
7/1	553	553	-	-	-	0.6	0.7	-	1.3	8.2	1.6	0.7	2.3
7/2	567	567	-	-	-	0.8	0.6	-	1.4	9.0	2.7	0.6	3.3
7/3	396	396	-	-	-	0.7	0.3	-	1.0	8.8	1.4	0.3	1.7
7/4	431	431	-	-	-	0.7	0.4	-	1.1	9.0	1.5	0.4	1.9
8/1	1013	1013	-	-	-	0.6	1.2	-	1.8	6.2	6.8	1.2	8.0
8/2	1090	1090	-	-	-	0.5	1.4	-	1.9	6.4	5.1	1.4	6.5
8/3	1152	1152	-	-	-	0.5	1.4	-	2.0	6.1	4.2	1.4	5.6
8/4	693	693	-	-	-	0.2	0.4	-	0.6	3.3	0.9	0.4	1.3
9/1	737	737	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

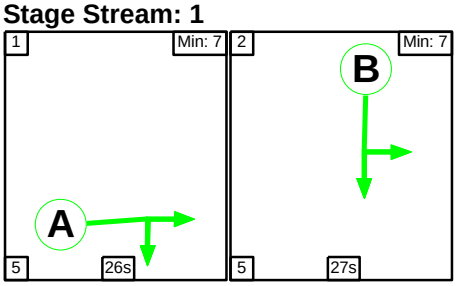
10/1	1050	1050	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	545	545	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	662	662	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	120	120	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1013	1013	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1090	1090	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	499	499	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	903	903	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1521	1521	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-5.8	Total Delay for Signalled Lanes (pcuHr):	20.64	Cycle Time (s):	59		
C1	Stream: 2 PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	23.37	Cycle Time (s):	59		
C1	Stream: 3 PRC for Signalled Lanes (%):	-7.9	Total Delay for Signalled Lanes (pcuHr):	30.46	Cycle Time (s):	59		
C1	Stream: 4 PRC for Signalled Lanes (%):	21.3	Total Delay for Signalled Lanes (pcuHr):	7.96	Cycle Time (s):	59		
	PRC Over All Lanes (%):	-8.0	Total Delay Over All Lanes(pcuHr):	82.43				

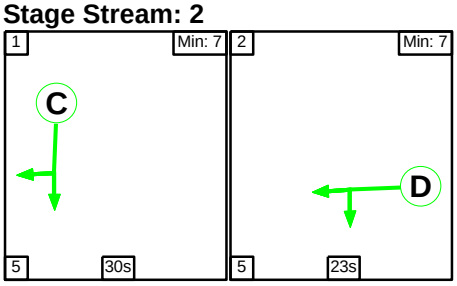
Full Input Data And Results
Scenario 5: '2031 DM AM ' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

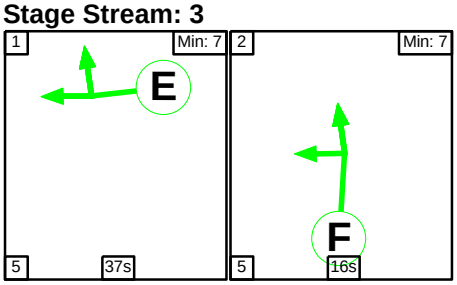
Stage Stream: 1



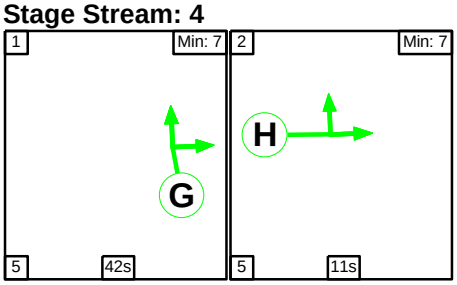
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	27
Change Point	7	38

Stage Stream: 2

Stage	1	2
Duration	30	23
Change Point	43	15

Stage Stream: 3

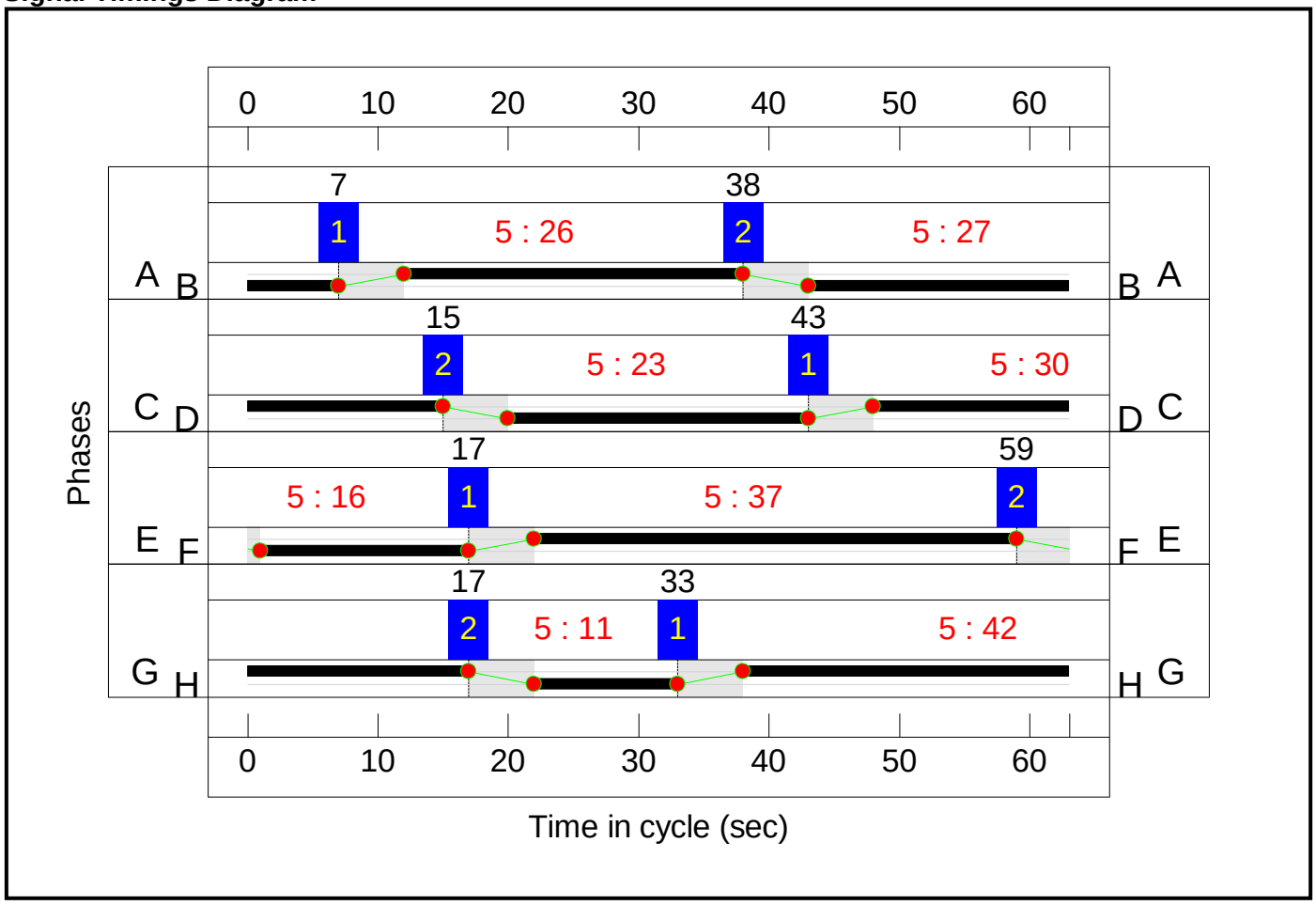
Stage	1	2
Duration	37	16
Change Point	17	59

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	42	11
Change Point	33	17

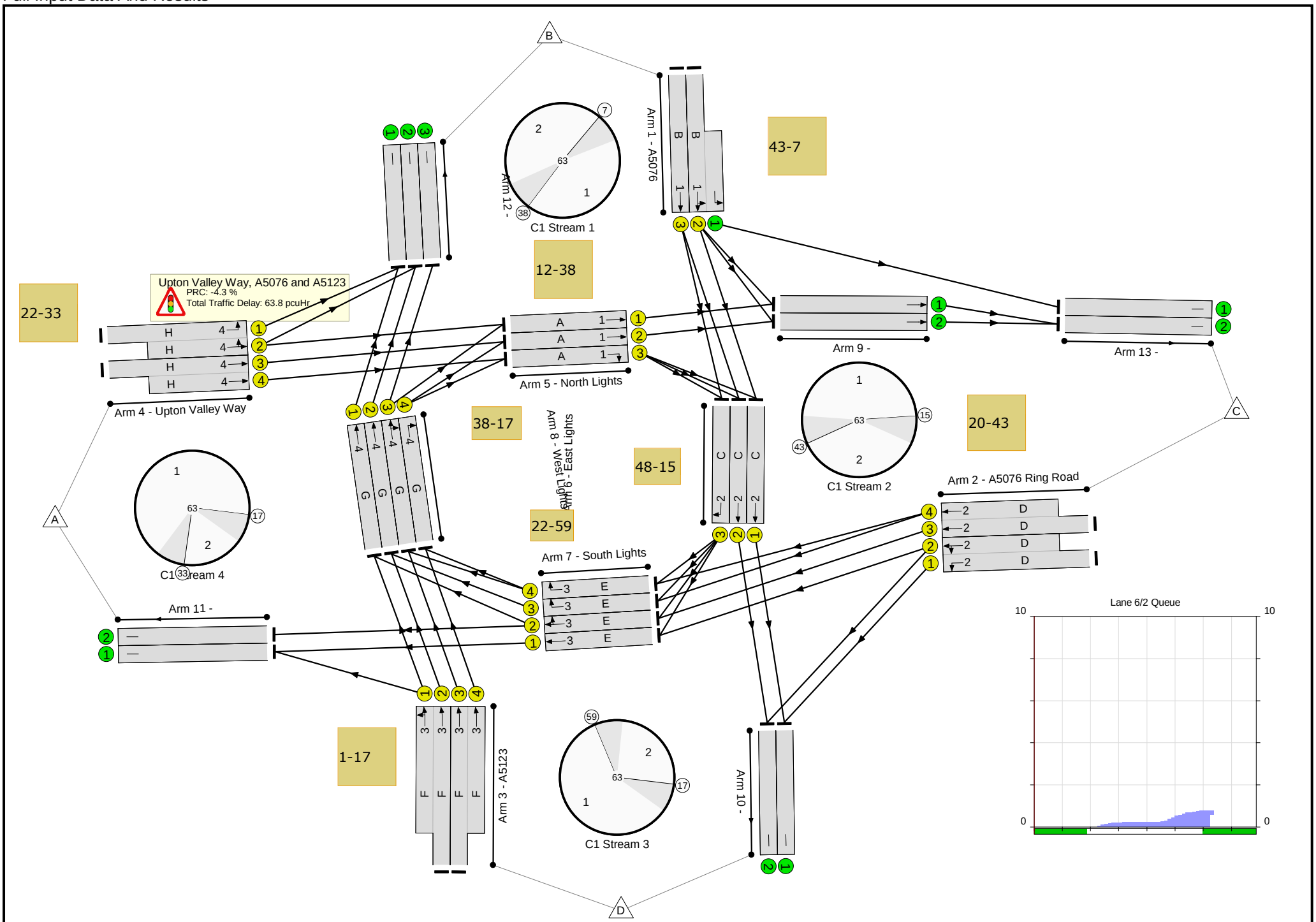
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	27	-	1584	2102:1990	575+1113	93.8 : 93.8%
1/3	A5076 Ahead	U	1	N/A	B		1	27	-	798	2102	934	85.4%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	23	-	1230	1879:2023	710+765	83.4 : 83.4%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	23	-	1186	2028:2028	628+769	84.9 : 84.9%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	16	-	517	2050:1913	553+516	48.6 : 48.0%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	16	-	714	2147:1913	579+516	64.4 : 66.1%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	11	-	585	1970:2060	310+392	83.3 : 83.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	11	-	405	2061:2060	393+119	79.2 : 79.2%
5/1	North Lights Ahead	U	1	N/A	A		1	26	-	665	1966	843	78.9%
5/2	North Lights Ahead	U	1	N/A	A		1	26	-	651	1941	832	78.3%
5/3	North Lights Right	U	1	N/A	A		1	26	-	95	1908	818	11.6%
6/1	East Lights Ahead	U	2	N/A	C		1	30	-	593	1966	967	61.3%
6/2	East Lights Ahead	U	2	N/A	C		1	30	-	650	2102	1034	62.8%
6/3	East Lights Right	U	2	N/A	C		1	30	-	190	2099	1033	18.4%
7/1	South Lights Ahead	U	3	N/A	E		1	37	-	470	1940	1170	40.2%
7/2	South Lights Right Ahead	U	3	N/A	E		1	37	-	629	2097	1265	49.7%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	37	-	357	2095	1264	28.3%
7/4	South Lights Right	U	3	N/A	E		1	37	-	296	2095	1264	23.4%
8/1	West Lights Ahead	U	4	N/A	G		1	42	-	606	1967	1343	45.1%
8/2	West Lights Ahead	U	4	N/A	G		1	42	-	626	2016	1376	45.5%
8/3	West Lights Right Ahead	U	4	N/A	G		1	42	-	669	2131	1454	46.0%
8/4	West Lights Right	U	4	N/A	G		1	42	-	341	2106	1437	23.7%
9/1	Ahead	U	N/A	N/A	-		-	-	-	665	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1185	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	912	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	249	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	864	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	662	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	295	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1044	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1316	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**35.4**	**28.4**	**0.0**	**63.8**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**35.4**	**28.4**	**0.0**	**63.8**	**-**	**-**	**-**	**-**
1/2+1/1	1584	1584	-	-	-	2.0	6.7	-	8.7	19.8	8.3	6.7	15.1
1/3	798	798	-	-	-	3.5	2.8	-	6.3	28.4	12.4	2.8	15.2
2/1+2/2	1230	1230	-	-	-	6.0	2.5	-	8.5	24.8	9.9	2.5	12.4
2/3+2/4	1186	1186	-	-	-	5.7	2.7	-	8.4	25.5	10.3	2.7	13.1
3/2+3/1	517	517	-	-	-	2.8	0.5	-	3.2	22.6	3.9	0.5	4.4
3/3+3/4	714	714	-	-	-	4.0	0.9	-	5.0	25.1	5.7	0.9	6.6
4/1+4/2	585	585	-	-	-	3.9	2.4	-	6.3	39.0	5.4	2.4	7.9
4/3+4/4	405	405	-	-	-	2.7	1.8	-	4.5	40.1	5.2	1.8	7.0
5/1	665	665	-	-	-	1.1	1.8	-	3.0	16.1	3.4	1.8	5.2
5/2	651	651	-	-	-	1.1	1.8	-	2.8	15.7	2.8	1.8	4.5
5/3	95	95	-	-	-	0.1	0.1	-	0.1	4.7	0.1	0.1	0.2
6/1	593	593	-	-	-	0.2	0.8	-	1.0	6.2	3.8	0.8	4.6
6/2	650	650	-	-	-	0.2	0.8	-	1.0	5.7	0.8	0.8	1.6
6/3	190	190	-	-	-	0.0	0.1	-	0.2	3.0	0.2	0.1	0.3
7/1	470	470	-	-	-	0.3	0.3	-	0.7	5.1	1.5	0.3	1.8
7/2	629	629	-	-	-	0.3	0.5	-	0.8	4.7	1.4	0.5	1.9
7/3	357	357	-	-	-	0.0	0.2	-	0.2	2.0	0.0	0.2	0.2
7/4	296	296	-	-	-	0.0	0.2	-	0.2	1.9	0.0	0.2	0.2
8/1	606	606	-	-	-	0.3	0.4	-	0.7	4.4	5.0	0.4	5.4
8/2	626	626	-	-	-	0.3	0.4	-	0.7	4.1	3.0	0.4	3.4
8/3	669	669	-	-	-	0.5	0.4	-	0.9	4.9	3.2	0.4	3.7
8/4	341	341	-	-	-	0.4	0.2	-	0.5	5.7	1.4	0.2	1.5
9/1	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

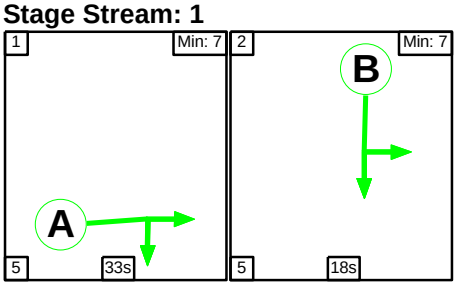
10/1	1185	1185	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	912	912	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	249	249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	864	864	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	662	662	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	295	295	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1044	1044	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1316	1316	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-4.3	Total Delay for Signalled Lanes (pcuHr):	20.92	Cycle Time (s):	63
C1	Stream: 2 PRC for Signalled Lanes (%):	6.0	Total Delay for Signalled Lanes (pcuHr):	19.10	Cycle Time (s):	63
C1	Stream: 3 PRC for Signalled Lanes (%):	36.2	Total Delay for Signalled Lanes (pcuHr):	10.06	Cycle Time (s):	63
C1	Stream: 4 PRC for Signalled Lanes (%):	8.0	Total Delay for Signalled Lanes (pcuHr):	13.76	Cycle Time (s):	63
	PRC Over All Lanes (%):	-4.3	Total Delay Over All Lanes(pcuHr):	63.84		

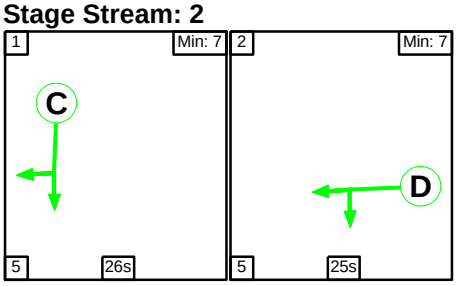
Full Input Data And Results
Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

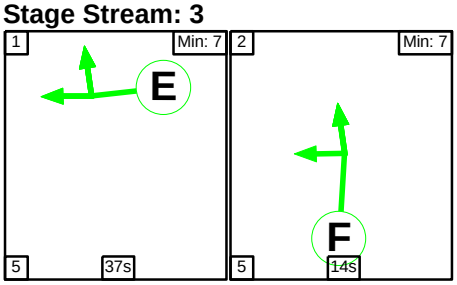
Stage Stream: 1



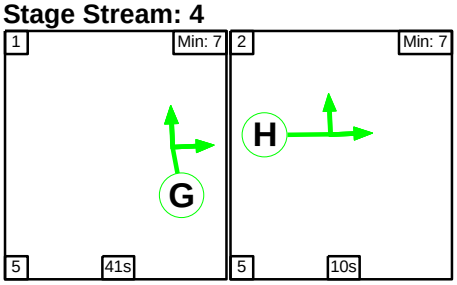
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	33	18
Change Point	4	42

Stage Stream: 2

Stage	1	2
Duration	26	25
Change Point	48	18

Stage Stream: 3

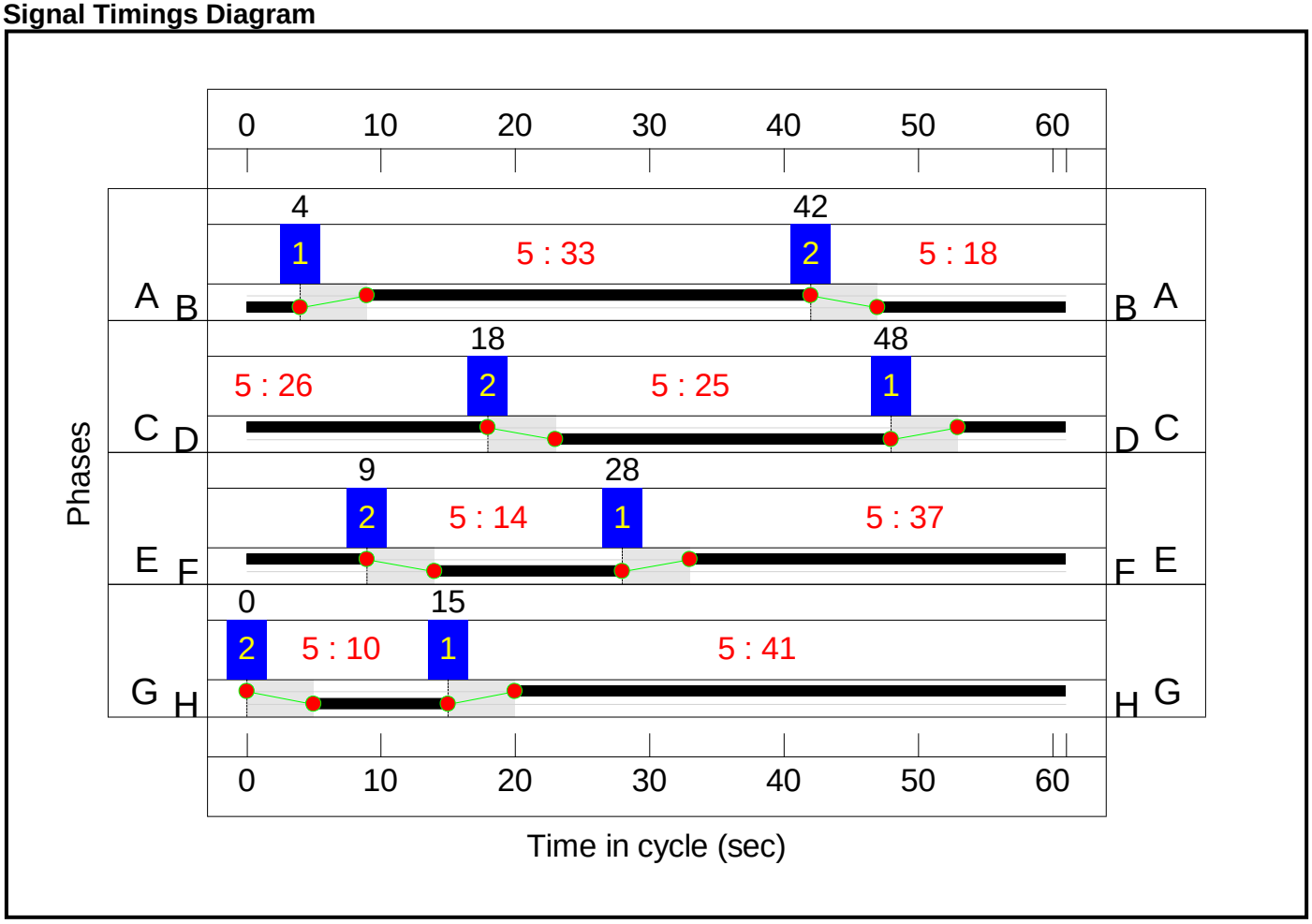
Stage	1	2
Duration	37	14
Change Point	28	9

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	41	10
Change Point	15	0

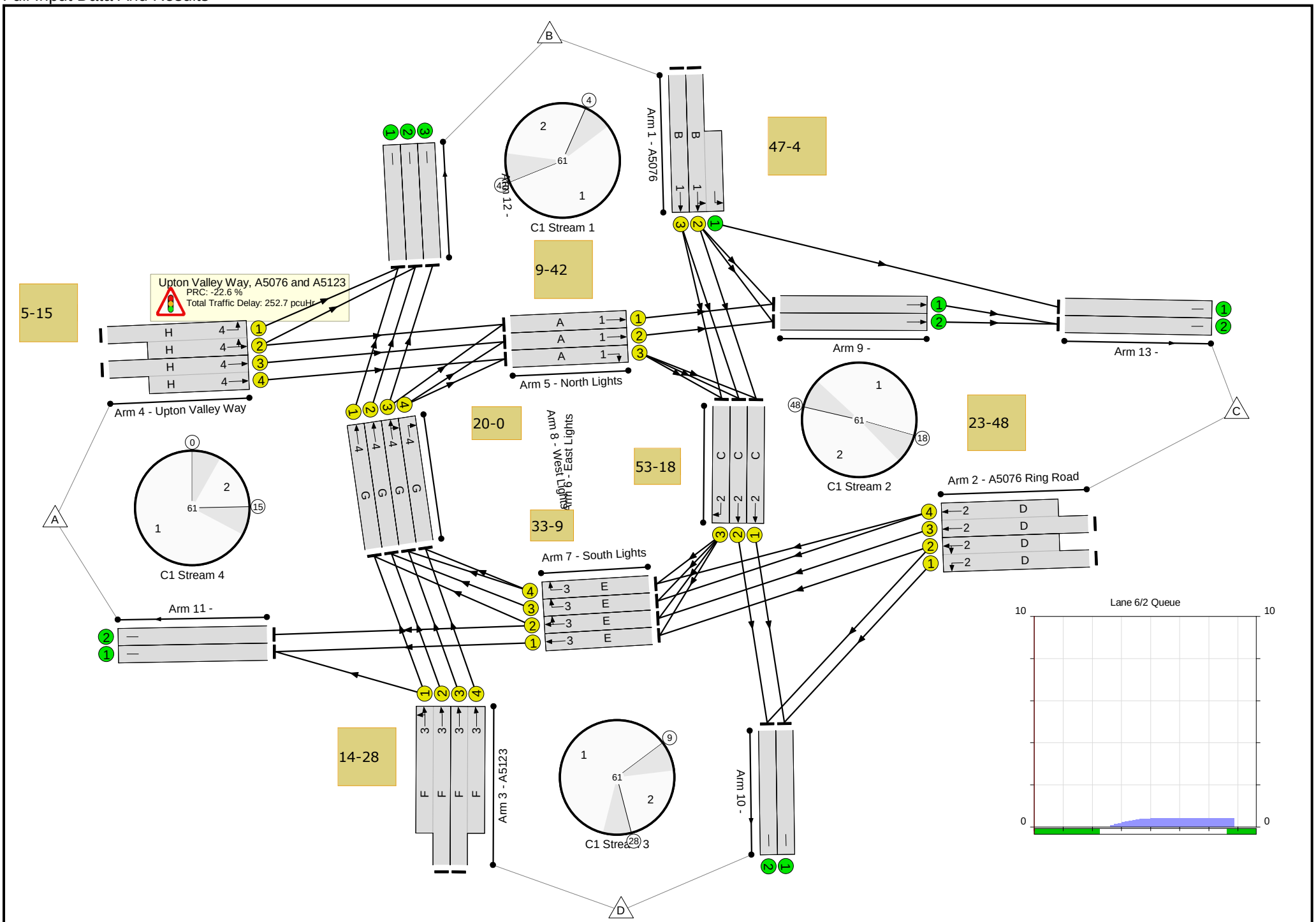
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.3%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**110.3%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	18	-	1359	2102:1990	496+897	97.6 : 97.6%
1/3	A5076 Ahead	U	1	N/A	B		1	18	-	609	2102	655	93.0%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	25	-	1647	1879:2025	765+824	103.7 : 103.7%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	25	-	1539	2028:2028	558+838	110.3 : 110.3%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	14	-	971	2050:1913	504+470	102.8 : 96.3%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	14	-	1057	2147:1913	528+470	104.2 : 107.8%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	10	-	303	1970:2061	21+372	77.2 : 77.2%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	10	-	380	2061:2060	372+114	78.3 : 78.3%
5/1	North Lights Ahead	U	1	N/A	A		1	33	-	787	1966	1096	70.0%
5/2	North Lights Ahead	U	1	N/A	A		1	33	-	815	1941	1082	71.8%
5/3	North Lights Right	U	1	N/A	A		1	33	-	89	1908	1063	8.4%
6/1	East Lights Ahead	U	2	N/A	C		1	26	-	528	1966	870	60.7%
6/2	East Lights Ahead	U	2	N/A	C		1	26	-	481	2102	930	51.7%
6/3	East Lights Right	U	2	N/A	C		1	26	-	173	2099	929	18.6%
7/1	South Lights Ahead	U	3	N/A	E		1	37	-	667	1940	1209	53.4%
7/2	South Lights Right Ahead	U	3	N/A	E		1	37	-	730	2096	1306	51.5%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	37	-	445	2095	1305	30.9%
7/4	South Lights Right	U	3	N/A	E		1	37	-	480	2095	1305	33.3%
8/1	West Lights Ahead	U	4	N/A	G		1	41	-	1057	1967	1354	73.8%
8/2	West Lights Ahead	U	4	N/A	G		1	41	-	963	2016	1388	65.4%
8/3	West Lights Right Ahead	U	4	N/A	G		1	41	-	1013	2134	1469	64.5%
8/4	West Lights Right	U	4	N/A	G		1	41	-	524	2106	1450	33.5%
9/1	Ahead	U	N/A	N/A	-		-	-	-	787	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	815	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1321	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	725	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	678	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	115	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1073	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	964	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	512	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	875	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1602	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**48.3**	**204.4**	**0.0**	**252.7**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**48.3**	**204.4**	**0.0**	**252.7**	**-**	**-**	**-**	**-**
1/2+1/1	1359	1359	-	-	-	2.6	11.8	-	14.4	38.1	9.3	11.8	21.1
1/3	609	609	-	-	-	3.4	5.4	-	8.8	52.2	10.0	5.4	15.4
2/1+2/2	1647	1589	-	-	-	9.2	39.7	-	49.0	107.0	21.4	39.7	61.1
2/3+2/4	1539	1395	-	-	-	10.2	76.9	-	87.1	203.7	24.0	76.9	100.9
3/2+3/1	971	957	-	-	-	6.6	21.7	-	28.2	104.7	9.0	21.7	30.7
3/3+3/4	1057	998	-	-	-	8.4	36.5	-	44.9	153.0	9.7	36.5	46.2
4/1+4/2	303	303	-	-	-	2.0	1.6	-	3.6	43.1	4.6	1.6	6.3
4/3+4/4	380	380	-	-	-	2.5	1.7	-	4.2	39.8	4.7	1.7	6.4
5/1	767	767	-	-	-	0.6	1.2	-	1.7	8.1	1.4	1.2	2.6
5/2	777	777	-	-	-	0.6	1.3	-	1.9	8.7	1.8	1.3	3.0
5/3	89	89	-	-	-	0.0	0.0	-	0.0	1.8	0.0	0.0	0.0
6/1	528	528	-	-	-	0.3	0.8	-	1.1	7.5	3.3	0.8	4.1
6/2	481	481	-	-	-	0.2	0.5	-	0.7	5.5	0.4	0.5	1.0
6/3	173	173	-	-	-	0.1	0.1	-	0.2	5.1	0.3	0.1	0.4
7/1	645	645	-	-	-	0.3	0.6	-	0.8	4.7	4.9	0.6	5.5
7/2	673	673	-	-	-	0.8	0.5	-	1.3	6.9	9.2	0.5	9.7
7/3	404	404	-	-	-	0.0	0.2	-	0.3	2.3	0.9	0.2	1.1
7/4	435	435	-	-	-	0.0	0.2	-	0.3	2.3	1.2	0.2	1.5
8/1	1000	1000	-	-	-	0.2	1.4	-	1.6	5.7	4.9	1.4	6.3
8/2	908	908	-	-	-	0.2	0.9	-	1.1	4.6	2.8	0.9	3.8
8/3	948	948	-	-	-	0.2	0.9	-	1.1	4.2	1.3	0.9	2.2
8/4	486	486	-	-	-	0.0	0.3	-	0.3	1.9	0.0	0.3	0.3
9/1	767	767	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	777	777	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

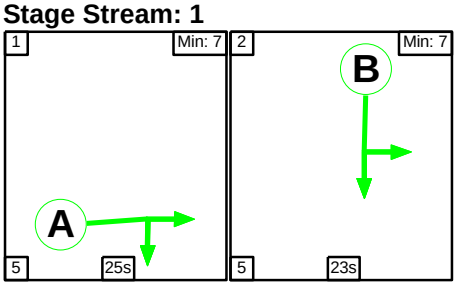
10/1	1293	1293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	656	656	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	115	115	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1016	1016	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	909	909	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	467	467	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	875	875	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1544	1544	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-8.4	Total Delay for Signalled Lanes (pcuHr):	26.86	Cycle Time (s):	61		
C1	Stream: 2 PRC for Signalled Lanes (%):	-22.6	Total Delay for Signalled Lanes (pcuHr):	138.13	Cycle Time (s):	61		
C1	Stream: 3 PRC for Signalled Lanes (%):	-19.8	Total Delay for Signalled Lanes (pcuHr):	75.81	Cycle Time (s):	61		
C1	Stream: 4 PRC for Signalled Lanes (%):	14.9	Total Delay for Signalled Lanes (pcuHr):	11.94	Cycle Time (s):	61		
	PRC Over All Lanes (%):	-22.6	Total Delay Over All Lanes(pcuHr):	252.74				

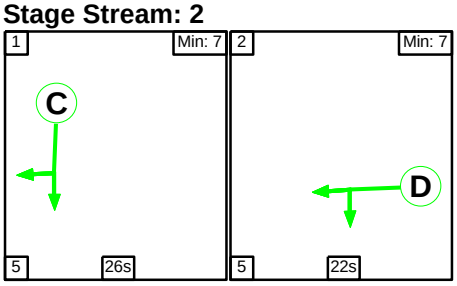
Full Input Data And Results
Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

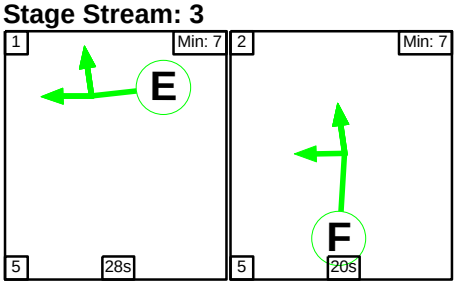
Stage Stream: 1



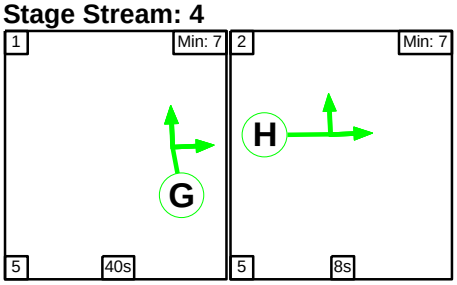
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	23
Change Point	22	52

Stage Stream: 2

Stage	1	2
Duration	26	22
Change Point	55	28

Stage Stream: 3

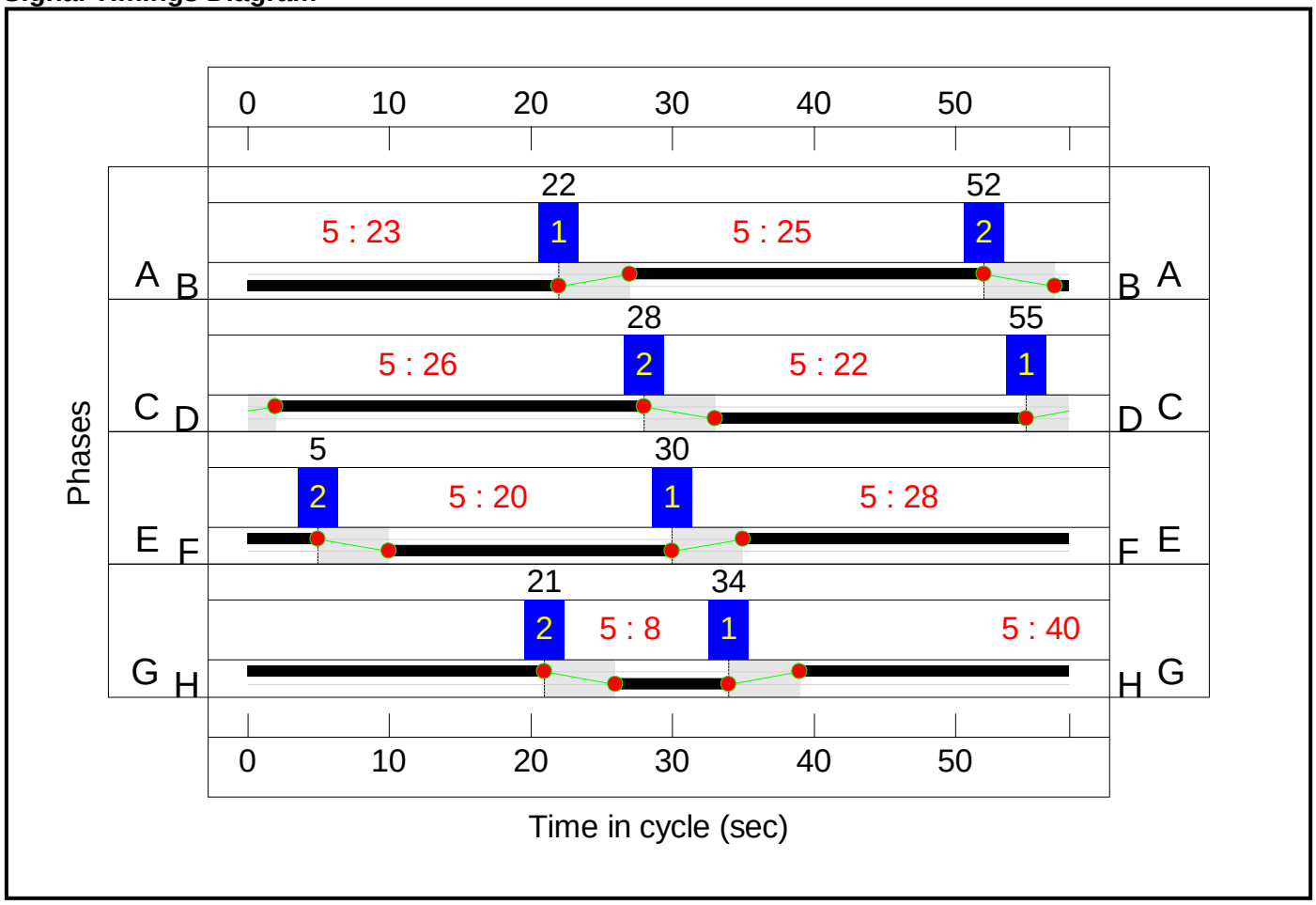
Stage	1	2
Duration	28	20
Change Point	30	5

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	40	8
Change Point	34	21

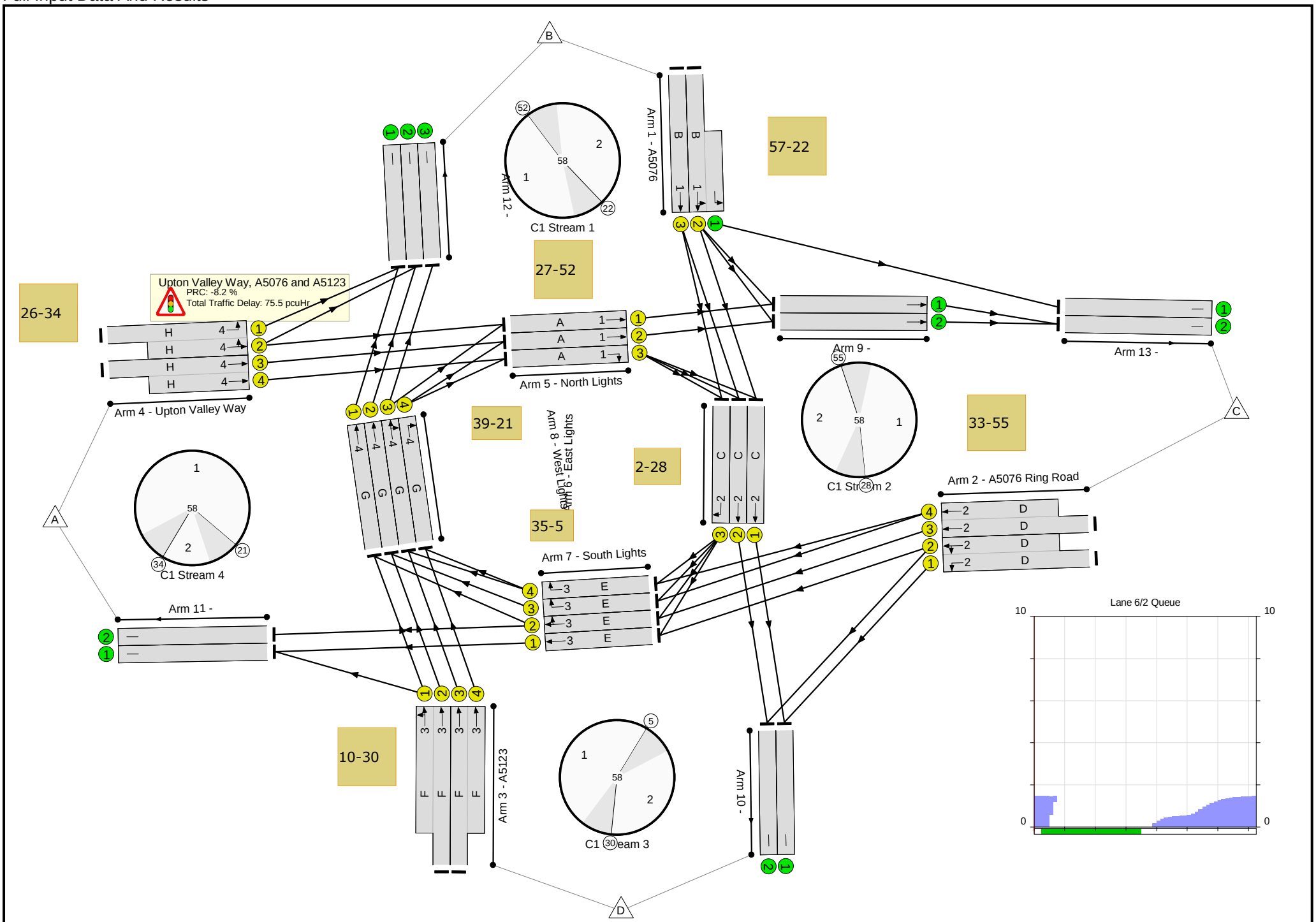
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.4%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**97.4%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	23	-	1564	2102:1990	588+1018	97.4 : 97.4%
1/3	A5076 Ahead	U	1	N/A	B		1	23	-	790	2102	870	90.8%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	22	-	1275	1879:2018	745+800	82.5 : 82.5%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	22	-	1216	2028:2028	698+804	80.9 : 80.9%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	20	-	694	2050:1913	742+693	46.5 : 50.4%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	20	-	866	2147:1913	777+693	57.1 : 60.9%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	8	-	565	1970:2061	306+320	86.4 : 94.1%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	8	-	415	2061:2060	320+161	86.3 : 86.3%
5/1	North Lights Ahead	U	1	N/A	A		1	25	-	730	1966	881	82.8%
5/2	North Lights Ahead	U	1	N/A	A		1	25	-	702	1941	870	80.7%
5/3	North Lights Right	U	1	N/A	A		1	25	-	139	1908	855	16.3%
6/1	East Lights Ahead	U	2	N/A	C		1	26	-	647	1966	915	70.7%
6/2	East Lights Ahead	U	2	N/A	C		1	26	-	712	2102	979	72.8%
6/3	East Lights Right	U	2	N/A	C		1	26	-	143	2099	977	14.6%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	225	1940	970	23.2%
7/2	South Lights Right Ahead	U	3	N/A	E		1	28	-	599	2098	1049	57.1%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	353	2095	1047	33.7%
7/4	South Lights Right	U	3	N/A	E		1	28	-	298	2095	1047	28.4%
8/1	West Lights Ahead	U	4	N/A	G		1	40	-	546	1967	1390	39.3%
8/2	West Lights Ahead	U	4	N/A	G		1	40	-	698	2016	1425	49.0%
8/3	West Lights Right Ahead	U	4	N/A	G		1	40	-	738	2130	1506	49.0%
8/4	West Lights Right	U	4	N/A	G		1	40	-	426	2106	1489	28.6%
9/1	Ahead	U	N/A	N/A	-		-	-	-	730	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1262	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1256	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	370	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	810	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	294	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	991	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1432	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**36.7**	**38.8**	**0.0**	**75.5**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**36.7**	**38.8**	**0.0**	**75.5**	**-**	**-**	**-**	**-**
1/2+1/1	1564	1564	-	-	-	2.2	11.9	-	14.1	32.6	11.3	11.9	23.3
1/3	790	790	-	-	-	3.5	4.5	-	8.0	36.3	11.8	4.5	16.3
2/1+2/2	1275	1275	-	-	-	5.6	2.3	-	7.9	22.2	9.5	2.3	11.9
2/3+2/4	1216	1216	-	-	-	5.1	2.1	-	7.2	21.3	9.2	2.1	11.3
3/2+3/1	694	694	-	-	-	2.8	0.5	-	3.2	16.7	4.4	0.5	4.8
3/3+3/4	866	866	-	-	-	3.6	0.7	-	4.3	18.0	5.7	0.7	6.4
4/1+4/2	565	565	-	-	-	3.8	4.1	-	7.9	50.3	4.8	4.1	8.9
4/3+4/4	415	415	-	-	-	2.7	2.9	-	5.6	48.5	4.3	2.9	7.2
5/1	730	730	-	-	-	0.8	2.3	-	3.2	15.6	4.4	2.3	6.8
5/2	702	702	-	-	-	0.8	2.0	-	2.8	14.4	3.8	2.0	5.9
5/3	139	139	-	-	-	0.0	0.1	-	0.1	2.5	0.0	0.1	0.1
6/1	647	647	-	-	-	0.5	1.2	-	1.7	9.6	3.3	1.2	4.5
6/2	712	712	-	-	-	0.5	1.3	-	1.9	9.5	1.5	1.3	2.8
6/3	143	143	-	-	-	0.1	0.1	-	0.2	4.5	0.2	0.1	0.3
7/1	225	225	-	-	-	0.4	0.2	-	0.6	9.1	1.8	0.2	1.9
7/2	599	599	-	-	-	0.2	0.7	-	0.8	5.1	0.7	0.7	1.3
7/3	353	353	-	-	-	0.1	0.3	-	0.3	3.1	0.1	0.3	0.4
7/4	298	298	-	-	-	0.0	0.2	-	0.2	2.9	0.1	0.2	0.3
8/1	546	546	-	-	-	0.8	0.3	-	1.1	7.2	3.2	0.3	3.5
8/2	698	698	-	-	-	0.8	0.5	-	1.3	6.5	3.3	0.5	3.8
8/3	738	738	-	-	-	1.2	0.5	-	1.7	8.4	4.9	0.5	5.4
8/4	426	426	-	-	-	1.2	0.2	-	1.4	11.8	4.6	0.2	4.8
9/1	730	730	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	702	702	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

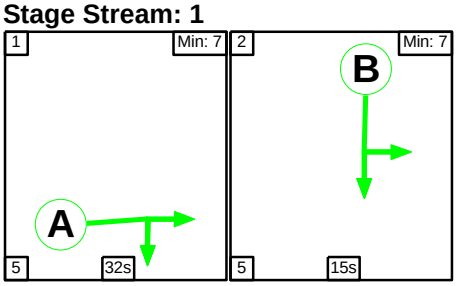
10/1	1262	1262	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1256	1256	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	370	370	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	810	810	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	294	294	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	991	991	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1432	1432	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-8.2	Total Delay for Signalled Lanes (pcuHr):	28.18	Cycle Time (s):	58		
C1	Stream: 2 PRC for Signalled Lanes (%):	9.0	Total Delay for Signalled Lanes (pcuHr):	18.86	Cycle Time (s):	58		
C1	Stream: 3 PRC for Signalled Lanes (%):	47.7	Total Delay for Signalled Lanes (pcuHr):	9.51	Cycle Time (s):	58		
C1	Stream: 4 PRC for Signalled Lanes (%):	-4.6	Total Delay for Signalled Lanes (pcuHr):	18.95	Cycle Time (s):	58		
	PRC Over All Lanes (%):	-8.2	Total Delay Over All Lanes(pcuHr):	75.50				

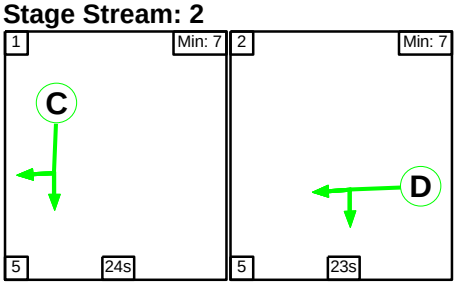
Full Input Data And Results
Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

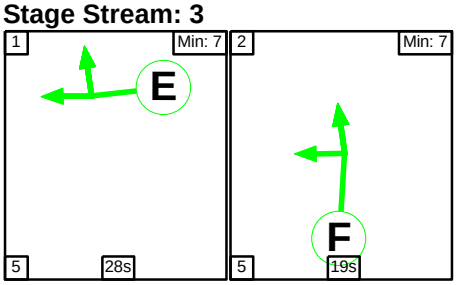
Stage Stream: 1



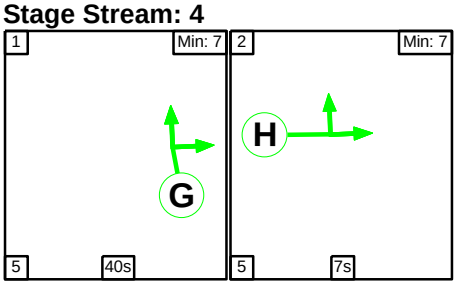
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	32	15
Change Point	9	46

Stage Stream: 2

Stage	1	2
Duration	24	23
Change Point	54	26

Stage Stream: 3

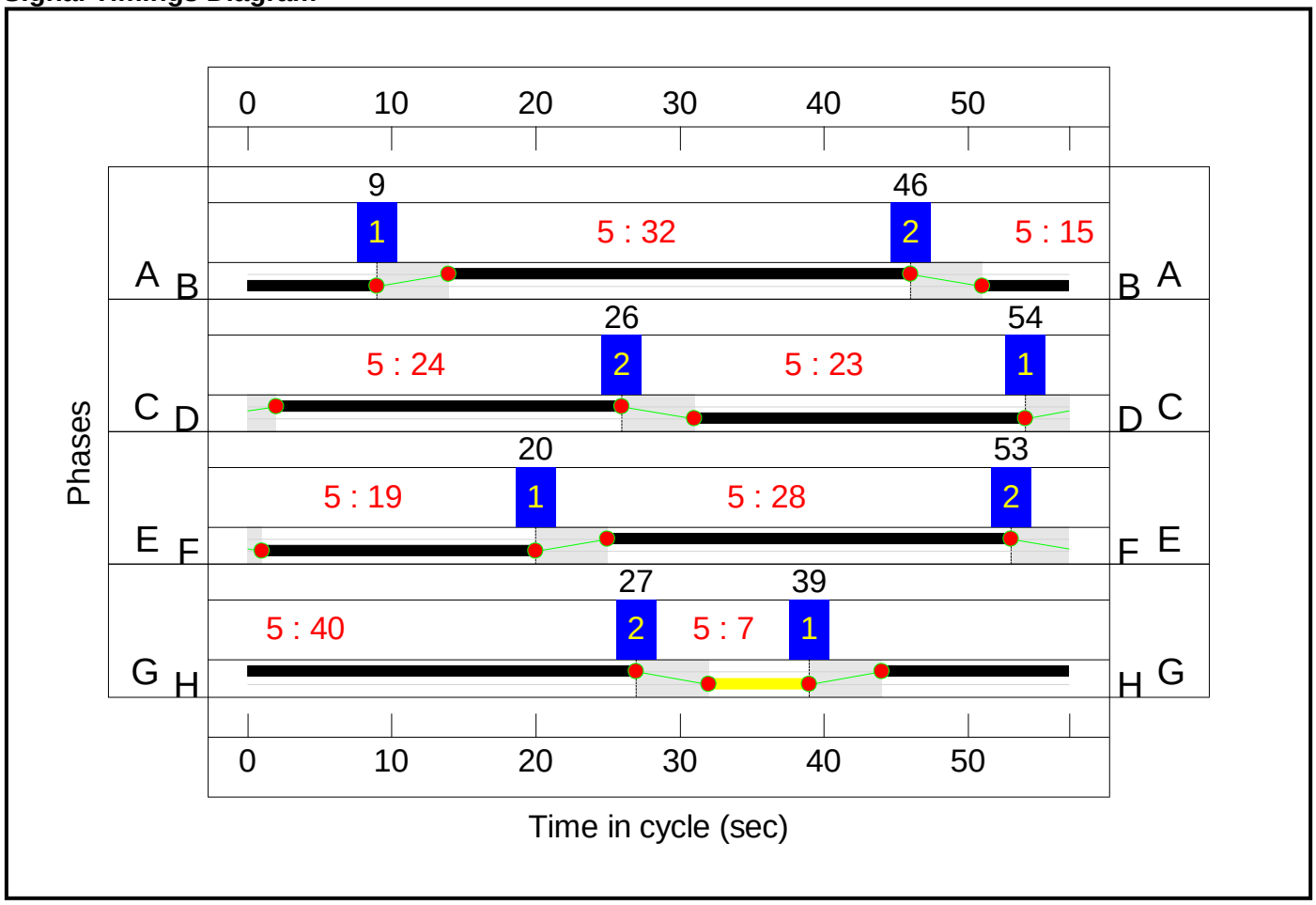
Stage	1	2
Duration	28	19
Change Point	20	53

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	40	7
Change Point	39	27

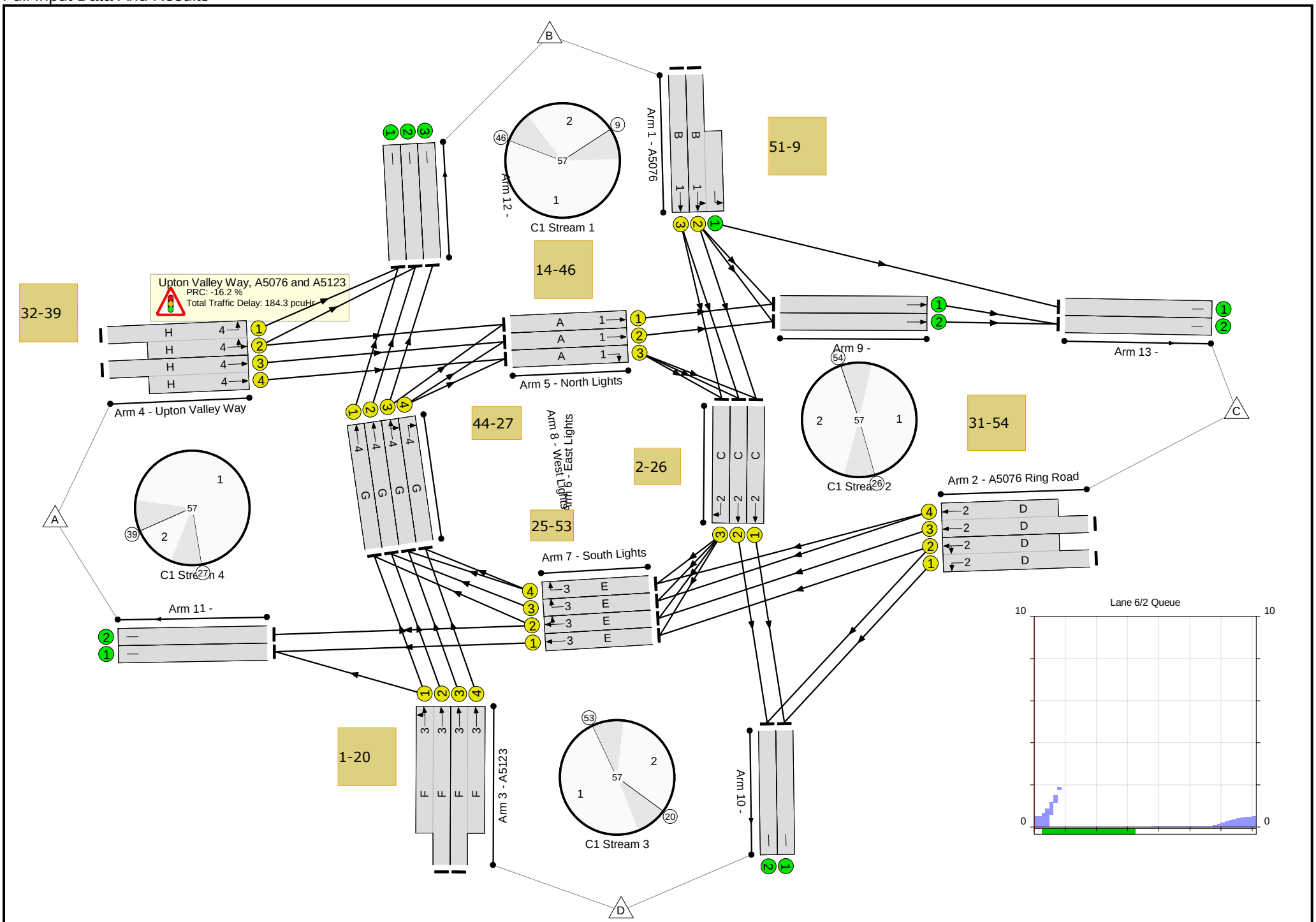
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.6%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**104.6%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	15	-	1367	2102:1990	495+832	103.0 : 103.0%
1/3	A5076 Ahead	U	1	N/A	B		1	15	-	617	2102	590	104.6%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	23	-	1488	1879:2026	784+846	91.3 : 91.3%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	23	-	1429	2028:2028	536+854	102.8 : 102.8%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	19	-	1288	2050:1912	719+671	92.7 : 92.6%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	19	-	1466	2147:1913	753+671	102.6 : 103.2%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	131	2015:2061	0+289	0.0 : 45.3%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	195	2061:2060	289+61	55.7 : 55.7%
5/1	North Lights Ahead	U	1	N/A	A		1	32	-	899	1966	1138	77.3%
5/2	North Lights Ahead	U	1	N/A	A		1	32	-	854	1941	1124	74.1%
5/3	North Lights Right	U	1	N/A	A		1	32	-	34	1908	1105	3.1%
6/1	East Lights Ahead	U	2	N/A	C		1	24	-	511	1966	862	57.6%
6/2	East Lights Ahead	U	2	N/A	C		1	24	-	489	2102	922	50.9%
6/3	East Lights Right	U	2	N/A	C		1	24	-	161	2099	921	16.7%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	679	1940	987	68.6%
7/2	South Lights Right Ahead	U	3	N/A	E		1	28	-	668	2096	1066	60.7%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	420	2095	1066	38.3%
7/4	South Lights Right	U	3	N/A	E		1	28	-	459	2095	1066	41.9%
8/1	West Lights Ahead	U	4	N/A	G		1	40	-	1091	1967	1415	76.0%
8/2	West Lights Ahead	U	4	N/A	G		1	40	-	1087	2016	1450	74.2%
8/3	West Lights Right Ahead	U	4	N/A	G		1	40	-	1232	2129	1531	78.3%
8/4	West Lights Right	U	4	N/A	G		1	40	-	693	2106	1515	44.3%
9/1	Ahead	U	N/A	N/A	-		-	-	-	899	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1227	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	625	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	760	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	117	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1091	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1087	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	464	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	857	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1753	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**45.7**	**138.6**	**0.0**	**184.3**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**45.7**	**138.6**	**0.0**	**184.3**	**-**	**-**	**-**	**-**
1/2+1/1	1367	1352	-	-	-	3.4	30.8	-	34.2	90.1	13.1	30.8	43.9
1/3	617	590	-	-	-	4.3	20.9	-	25.2	147.1	10.2	20.9	31.1
2/1+2/2	1488	1488	-	-	-	6.4	4.9	-	11.3	27.3	11.4	4.9	16.3
2/3+2/4	1429	1389	-	-	-	6.7	31.1	-	37.8	95.3	16.3	31.1	47.4
3/2+3/1	1288	1288	-	-	-	6.4	5.7	-	12.0	33.7	10.0	5.7	15.7
3/3+3/4	1466	1425	-	-	-	8.7	32.1	-	40.8	100.3	12.6	32.1	44.7
4/1+4/2	131	131	-	-	-	0.8	0.4	-	1.2	33.8	1.9	0.4	2.3
4/3+4/4	195	195	-	-	-	1.2	0.6	-	1.8	34.1	2.4	0.6	3.0
5/1	879	879	-	-	-	0.4	1.7	-	2.1	8.4	6.7	1.7	8.4
5/2	832	832	-	-	-	0.3	1.4	-	1.8	7.6	1.6	1.4	3.0
5/3	34	34	-	-	-	0.0	0.0	-	0.0	2.8	0.0	0.0	0.0
6/1	496	496	-	-	-	0.1	0.7	-	0.8	5.5	6.6	0.7	7.3
6/2	469	469	-	-	-	0.1	0.5	-	0.6	5.0	1.9	0.5	2.4
6/3	154	154	-	-	-	0.0	0.1	-	0.1	2.5	0.1	0.1	0.2
7/1	677	677	-	-	-	1.6	1.1	-	2.7	14.5	3.8	1.1	4.9
7/2	647	647	-	-	-	0.8	0.8	-	1.5	8.6	2.8	0.8	3.6
7/3	408	408	-	-	-	1.1	0.3	-	1.4	12.3	2.5	0.3	2.8
7/4	446	446	-	-	-	1.2	0.4	-	1.6	12.5	2.7	0.4	3.0
8/1	1075	1075	-	-	-	0.4	1.6	-	1.9	6.4	4.4	1.6	5.9
8/2	1075	1075	-	-	-	0.7	1.4	-	2.1	7.0	4.5	1.4	5.9
8/3	1200	1200	-	-	-	0.9	1.8	-	2.6	8.0	5.4	1.8	7.1
8/4	671	671	-	-	-	0.2	0.4	-	0.6	3.1	0.8	0.4	1.2
9/1	879	879	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	832	832	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

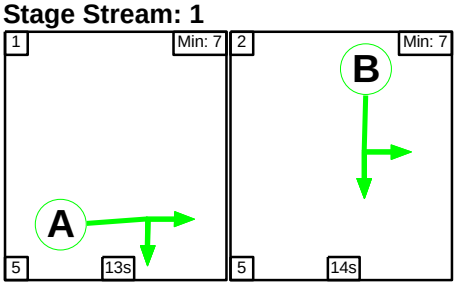
10/1	1212	1212	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	758	758	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	112	112	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1075	1075	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1075	1075	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	451	451	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	857	857	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1712	1712	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-16.2	Total Delay for Signalled Lanes (pcuHr):	63.26	Cycle Time (s):	57
C1	Stream: 2 PRC for Signalled Lanes (%):	-14.2	Total Delay for Signalled Lanes (pcuHr):	50.60	Cycle Time (s):	57
C1	Stream: 3 PRC for Signalled Lanes (%):	-14.7	Total Delay for Signalled Lanes (pcuHr):	60.09	Cycle Time (s):	57
C1	Stream: 4 PRC for Signalled Lanes (%):	14.9	Total Delay for Signalled Lanes (pcuHr):	10.34	Cycle Time (s):	57
	PRC Over All Lanes (%):	-16.2	Total Delay Over All Lanes(pcuHr):	184.29		

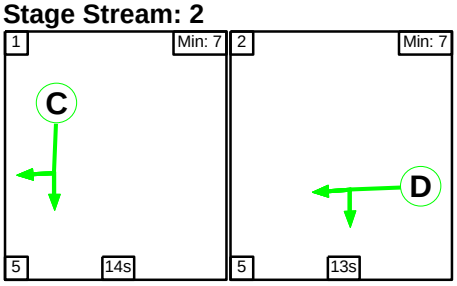
Full Input Data And Results
Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

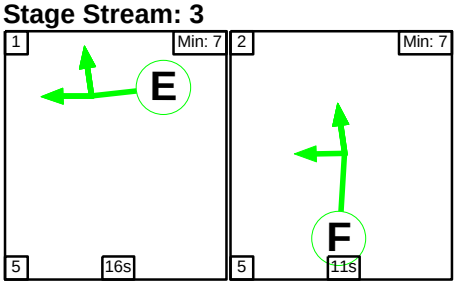
Stage Stream: 1



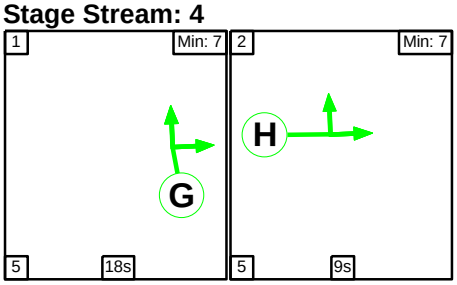
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	14
Change Point	0	18

Stage Stream: 2

Stage	1	2
Duration	14	13
Change Point	24	6

Stage Stream: 3

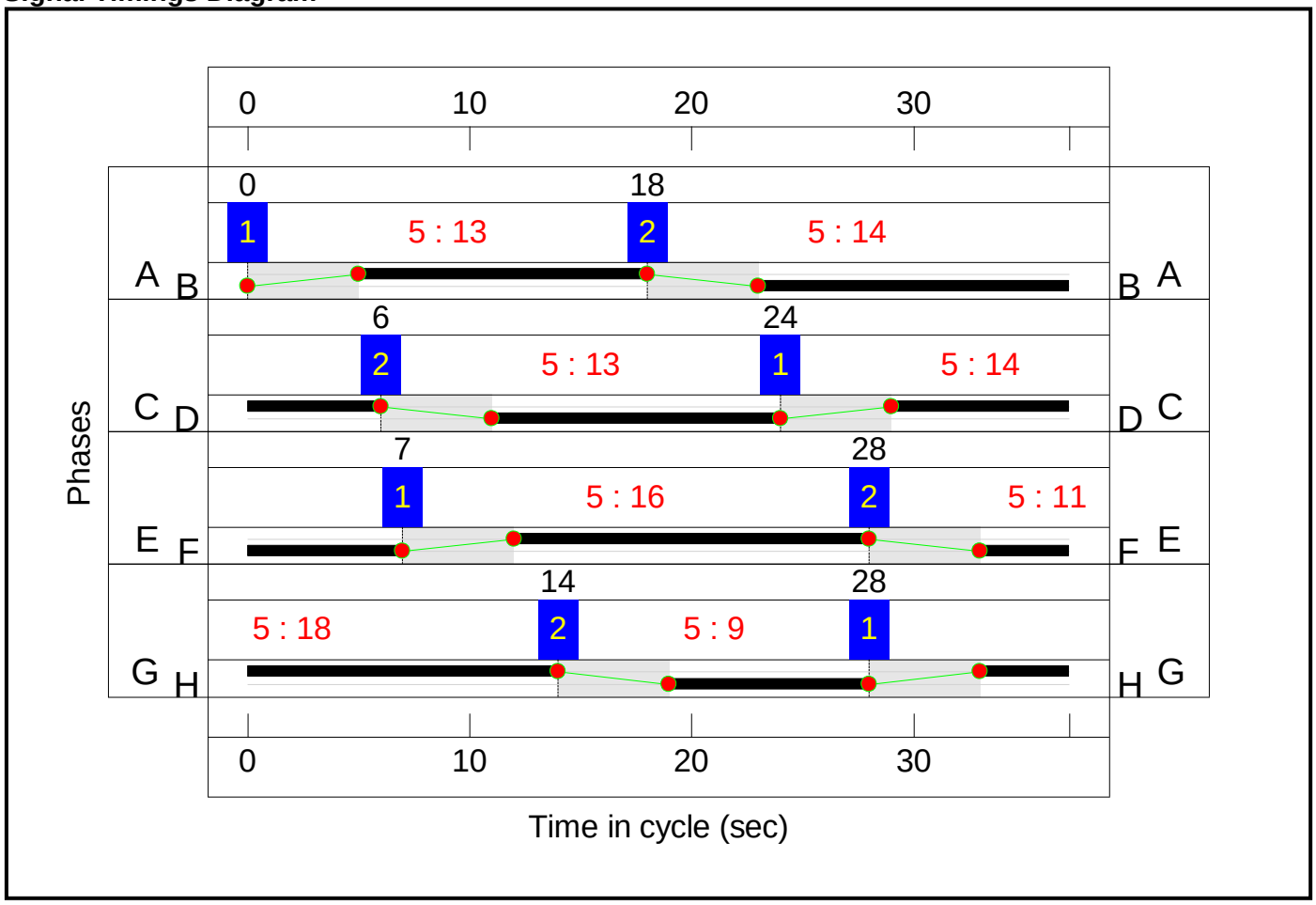
Stage	1	2
Duration	16	11
Change Point	7	28

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	18	9
Change Point	28	14

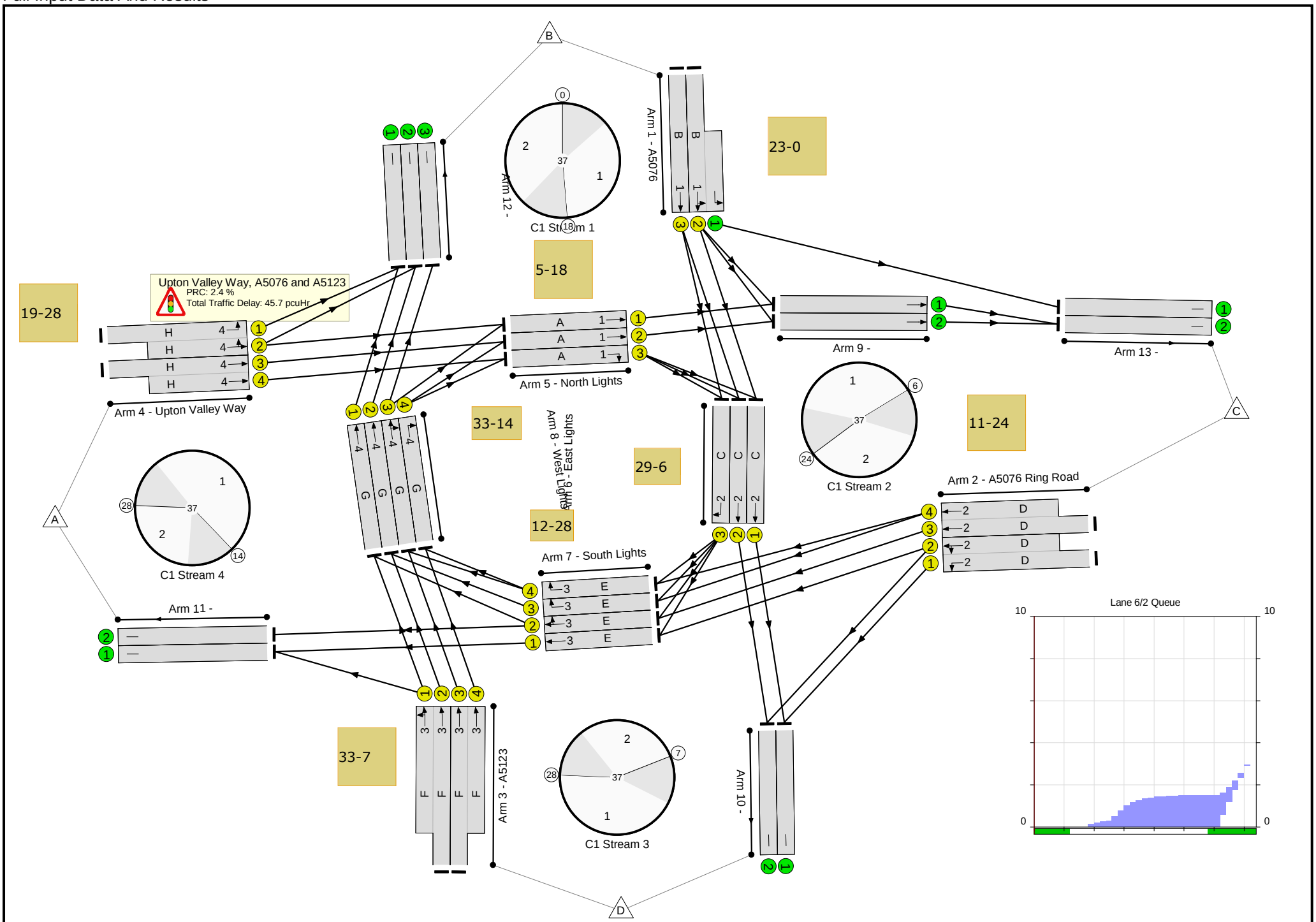
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.9%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.9%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	14	-	1733	2102:1990	744+1228	87.9 : 87.9%
1/3	A5076 Ahead	U	1	N/A	B		1	14	-	650	2102	852	76.3%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	13	-	1231	1879:2016	711+763	83.5 : 83.5%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	13	-	1204	2028:2028	767+767	78.5 : 78.5%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	11	-	479	2050:1913	665+620	34.7 : 40.0%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	11	-	777	2147:1913	696+620	53.6 : 65.1%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	9	-	451	1970:2060	532+557	41.3 : 41.5%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	9	-	304	2061:2060	557+334	34.1 : 34.1%
5/1	North Lights Ahead	U	1	N/A	A		1	13	-	558	1966	744	75.0%
5/2	North Lights Ahead	U	1	N/A	A		1	13	-	594	1941	734	80.9%
5/3	North Lights Right	U	1	N/A	A		1	13	-	114	1908	722	15.8%
6/1	East Lights Ahead	U	2	N/A	C		1	14	-	660	1966	797	82.8%
6/2	East Lights Ahead	U	2	N/A	C		1	14	-	617	2102	852	72.4%
6/3	East Lights Right	U	2	N/A	C		1	14	-	141	2099	851	16.6%
7/1	South Lights Ahead	U	3	N/A	E		1	16	-	37	1940	891	4.2%
7/2	South Lights Right Ahead	U	3	N/A	E		1	16	-	706	2098	964	73.2%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	16	-	306	2095	963	31.8%
7/4	South Lights Right	U	3	N/A	E		1	16	-	296	2095	963	30.8%
8/1	West Lights Ahead	U	4	N/A	G		1	18	-	493	1967	1010	48.8%
8/2	West Lights Ahead	U	4	N/A	G		1	18	-	537	2016	1035	51.9%
8/3	West Lights Right Ahead	U	4	N/A	G		1	18	-	669	2131	1094	61.1%
8/4	West Lights Right	U	4	N/A	G		1	18	-	404	2106	1081	37.4%
9/1	Ahead	U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1254	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1254	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	62	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	583	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	296	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1079	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1152	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**23.4**	**22.3**	**0.0**	**45.7**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**23.4**	**22.3**	**0.0**	**45.7**	**-**	**-**	**-**	**-**
1/2+1/1	1733	1733	-	-	-	1.7	3.5	-	5.2	10.9	5.6	3.5	9.2
1/3	650	650	-	-	-	1.7	1.6	-	3.3	18.2	5.6	1.6	7.2
2/1+2/2	1231	1231	-	-	-	3.6	2.5	-	6.1	17.7	5.8	2.5	8.3
2/3+2/4	1204	1204	-	-	-	3.4	1.8	-	5.2	15.6	5.4	1.8	7.2
3/2+3/1	479	479	-	-	-	1.3	0.3	-	1.6	11.9	1.9	0.3	2.2
3/3+3/4	777	777	-	-	-	2.3	0.7	-	3.0	13.8	3.5	0.7	4.2
4/1+4/2	451	451	-	-	-	1.4	0.4	-	1.7	13.9	1.9	0.4	2.3
4/3+4/4	304	304	-	-	-	0.9	0.3	-	1.2	13.8	1.5	0.3	1.8
5/1	558	558	-	-	-	1.2	1.5	-	2.7	17.3	3.0	1.5	4.4
5/2	594	594	-	-	-	1.4	2.1	-	3.4	20.7	3.4	2.1	5.5
5/3	114	114	-	-	-	0.4	0.1	-	0.5	17.0	1.2	0.1	1.3
6/1	660	660	-	-	-	0.3	2.3	-	2.6	14.3	1.7	2.3	4.0
6/2	617	617	-	-	-	0.7	1.3	-	2.0	11.8	3.0	1.3	4.3
6/3	141	141	-	-	-	0.1	0.1	-	0.2	4.0	0.1	0.1	0.2
7/1	37	37	-	-	-	0.1	0.0	-	0.1	8.0	0.3	0.0	0.3
7/2	706	706	-	-	-	0.7	1.4	-	2.1	10.6	2.0	1.4	3.4
7/3	306	306	-	-	-	0.2	0.2	-	0.5	5.7	0.5	0.2	0.8
7/4	296	296	-	-	-	0.2	0.2	-	0.5	5.6	0.5	0.2	0.7
8/1	493	493	-	-	-	0.5	0.5	-	1.0	7.1	2.8	0.5	3.2
8/2	537	537	-	-	-	0.6	0.5	-	1.1	7.6	3.1	0.5	3.6
8/3	669	669	-	-	-	0.6	0.8	-	1.4	7.4	3.1	0.8	3.9
8/4	404	404	-	-	-	0.1	0.3	-	0.4	3.5	0.2	0.3	0.5
9/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	594	594	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1254	1254	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1254	1254	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	62	62	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	436	436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	583	583	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1079	1079	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1152	1152	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

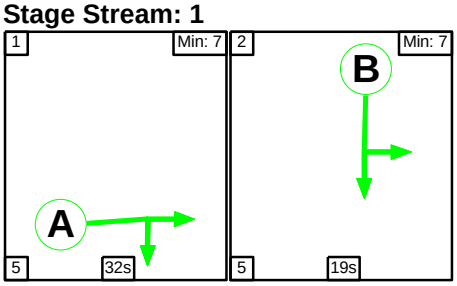
C1	Stream: 1 PRC for Signalled Lanes (%):	2.4	Total Delay for Signalled Lanes (pcuHr):	15.17	Cycle Time (s):	37		
C1	Stream: 2 PRC for Signalled Lanes (%):	7.7	Total Delay for Signalled Lanes (pcuHr):	16.08	Cycle Time (s):	37		
C1	Stream: 3 PRC for Signalled Lanes (%):	22.9	Total Delay for Signalled Lanes (pcuHr):	7.67	Cycle Time (s):	37		
C1	Stream: 4 PRC for Signalled Lanes (%):	47.2	Total Delay for Signalled Lanes (pcuHr):	6.79	Cycle Time (s):	37		
	PRC Over All Lanes (%):	2.4	Total Delay Over All Lanes(pcuHr):	45.71				

Full Input Data And Results

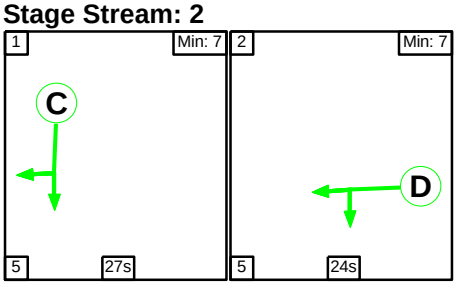
Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

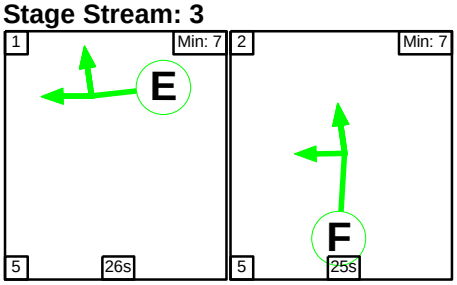
Stage Stream: 1



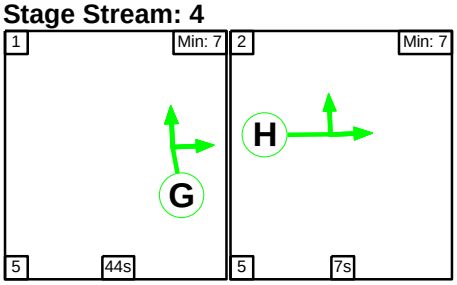
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	32	19
Change Point	57	33

Stage Stream: 2

Stage	1	2
Duration	27	24
Change Point	47	18

Stage Stream: 3

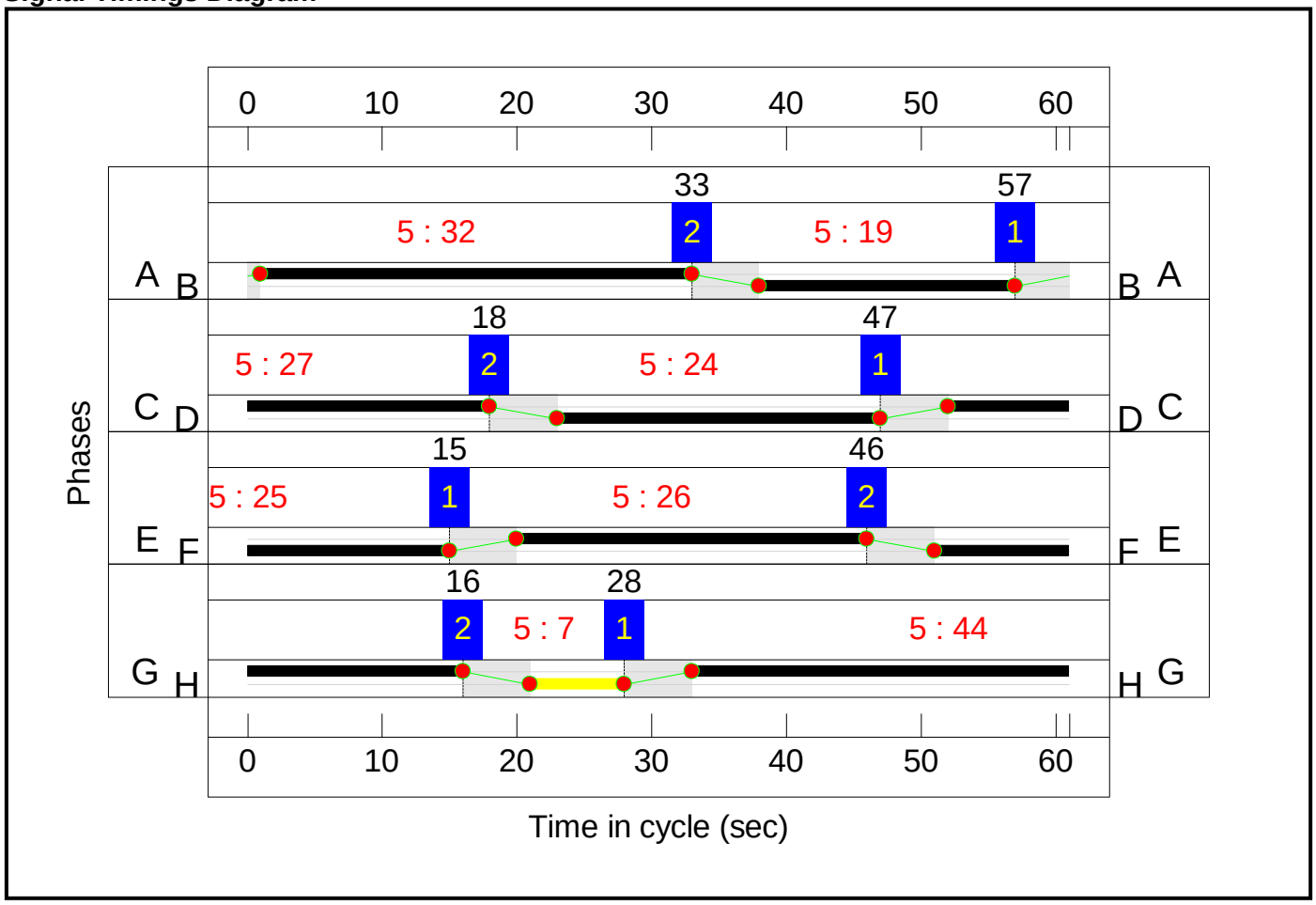
Stage	1	2
Duration	26	25
Change Point	15	46

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	44	7
Change Point	28	16

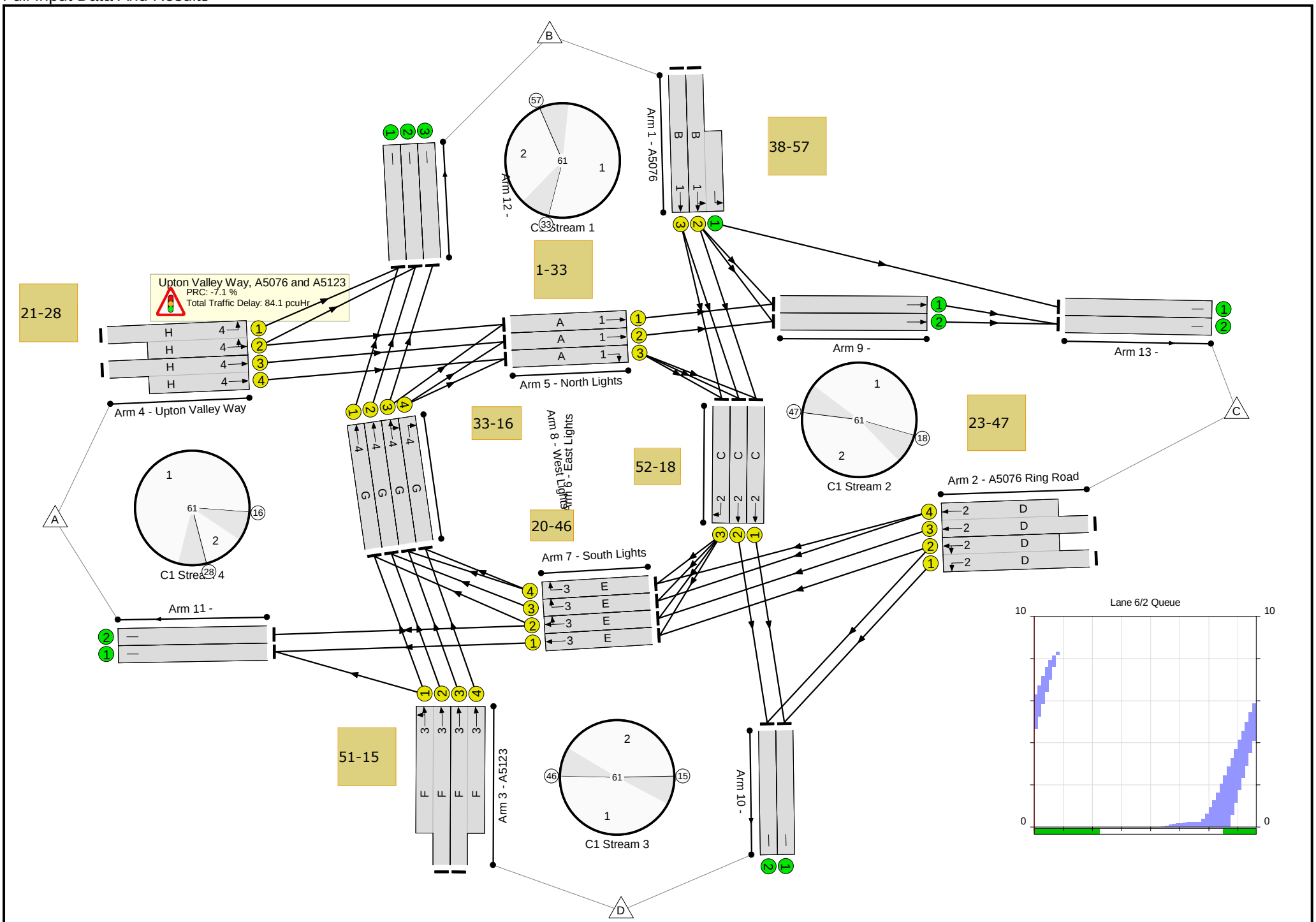
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.3%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**96.3%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	19	-	1287	2102:1990	516+820	96.3 : 96.3%
1/3	A5076 Ahead	U	1	N/A	B		1	19	-	664	2102	689	96.3%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	24	-	1155	1879:2026	749+807	74.2 : 74.2%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	24	-	1317	2028:2028	656+813	89.7 : 89.7%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	25	-	1407	2050:1912	830+815	85.5 : 85.6%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	25	-	1506	2147:1913	915+815	87.0 : 87.1%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	62	2015:2061	0+270	0.0 : 22.9%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	125	2061:2060	270+45	39.6 : 39.6%
5/1	North Lights Ahead	U	1	N/A	A		1	32	-	856	1966	1064	80.5%
5/2	North Lights Ahead	U	1	N/A	A		1	32	-	817	1941	1050	77.8%
5/3	North Lights Right	U	1	N/A	A		1	32	-	18	1908	1032	1.7%
6/1	East Lights Ahead	U	2	N/A	C		1	27	-	499	1966	902	55.3%
6/2	East Lights Ahead	U	2	N/A	C		1	27	-	510	2102	965	52.9%
6/3	East Lights Right	U	2	N/A	C		1	27	-	170	2099	963	17.6%
7/1	South Lights Ahead	U	3	N/A	E		1	26	-	583	1940	859	67.9%
7/2	South Lights Right Ahead	U	3	N/A	E		1	26	-	672	2095	927	72.5%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	26	-	351	2095	927	37.9%
7/4	South Lights Right	U	3	N/A	E		1	26	-	378	2095	927	40.8%
8/1	West Lights Ahead	U	4	N/A	G		1	44	-	1184	1967	1451	81.6%
8/2	West Lights Ahead	U	4	N/A	G		1	44	-	1060	2016	1487	71.3%
8/3	West Lights Right Ahead	U	4	N/A	G		1	44	-	1174	2127	1569	74.8%
8/4	West Lights Right	U	4	N/A	G		1	44	-	710	2106	1554	45.7%
9/1	Ahead	U	N/A	N/A	-		-	-	-	856	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	817	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1055	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	612	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	84	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1184	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1060	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	790	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1673	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**41.0**	**43.0**	**0.0**	**84.1**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**41.0**	**43.0**	**0.0**	**84.1**	**-**	**-**	**-**	**-**
1/2+1/1	1287	1287	-	-	-	2.5	9.4	-	12.0	33.5	9.1	9.4	18.6
1/3	664	664	-	-	-	3.7	8.0	-	11.8	63.8	10.9	8.0	18.9
2/1+2/2	1155	1155	-	-	-	4.8	1.4	-	6.3	19.5	8.5	1.4	9.9
2/3+2/4	1317	1317	-	-	-	5.8	4.1	-	9.9	27.1	11.3	4.1	15.5
3/2+3/1	1407	1407	-	-	-	6.1	2.9	-	9.0	23.0	10.7	2.9	13.6
3/3+3/4	1506	1506	-	-	-	6.7	3.3	-	9.9	23.8	12.2	3.3	15.4
4/1+4/2	62	62	-	-	-	0.4	0.1	-	0.6	32.4	0.9	0.1	1.1
4/3+4/4	125	125	-	-	-	0.8	0.3	-	1.2	33.6	1.6	0.3	2.0
5/1	856	856	-	-	-	0.9	2.0	-	2.9	12.3	6.8	2.0	8.8
5/2	817	817	-	-	-	0.8	1.7	-	2.6	11.3	3.3	1.7	5.0
5/3	18	18	-	-	-	0.0	0.0	-	0.0	4.5	0.0	0.0	0.0
6/1	499	499	-	-	-	0.8	0.6	-	1.5	10.6	8.3	0.6	9.0
6/2	510	510	-	-	-	0.6	0.6	-	1.2	8.2	8.3	0.6	8.9
6/3	170	170	-	-	-	0.1	0.1	-	0.2	3.7	1.2	0.1	1.3
7/1	583	583	-	-	-	1.2	1.0	-	2.3	14.0	2.9	1.0	4.0
7/2	672	672	-	-	-	1.3	1.3	-	2.6	14.1	3.1	1.3	4.4
7/3	351	351	-	-	-	0.8	0.3	-	1.1	11.8	1.6	0.3	1.9
7/4	378	378	-	-	-	0.9	0.3	-	1.3	11.9	1.8	0.3	2.1
8/1	1184	1184	-	-	-	0.7	2.2	-	2.8	8.6	9.9	2.2	12.1
8/2	1060	1060	-	-	-	0.6	1.2	-	1.8	6.3	5.0	1.2	6.3
8/3	1174	1174	-	-	-	0.8	1.5	-	2.3	7.0	5.4	1.5	6.8
8/4	710	710	-	-	-	0.5	0.4	-	0.9	4.5	2.0	0.4	2.4
9/1	856	856	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	817	817	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1055	1055	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	612	612	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	685	685	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	84	84	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1184	1184	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	380	380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	790	790	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1673	1673	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

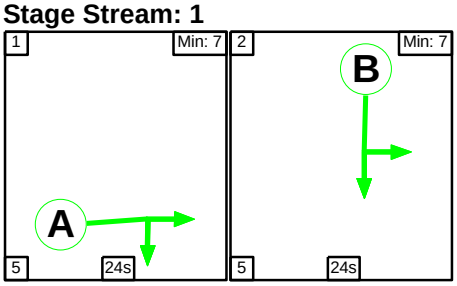
C1	Stream: 1 PRC for Signalled Lanes (%):	-7.1	Total Delay for Signalled Lanes (pcuHr):	29.25	Cycle Time (s):	61
C1	Stream: 2 PRC for Signalled Lanes (%):	0.3	Total Delay for Signalled Lanes (pcuHr):	19.00	Cycle Time (s):	61
C1	Stream: 3 PRC for Signalled Lanes (%):	3.4	Total Delay for Signalled Lanes (pcuHr):	26.23	Cycle Time (s):	61
C1	Stream: 4 PRC for Signalled Lanes (%):	10.3	Total Delay for Signalled Lanes (pcuHr):	9.58	Cycle Time (s):	61
	PRC Over All Lanes (%):	-7.1	Total Delay Over All Lanes(pcuHr):	84.06		

Full Input Data And Results

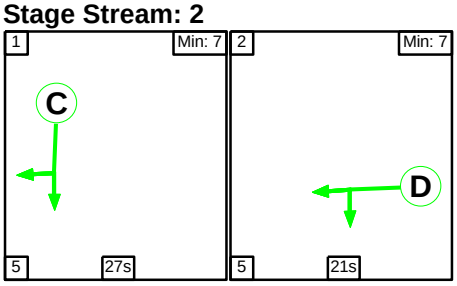
Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

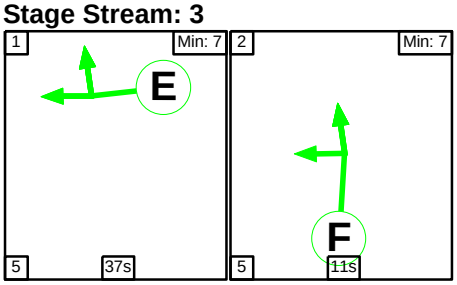
Stage Stream: 1



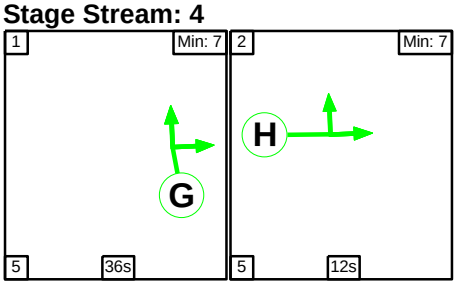
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	24	24
Change Point	0	29

Stage Stream: 2

Stage	1	2
Duration	27	21
Change Point	33	7

Stage Stream: 3

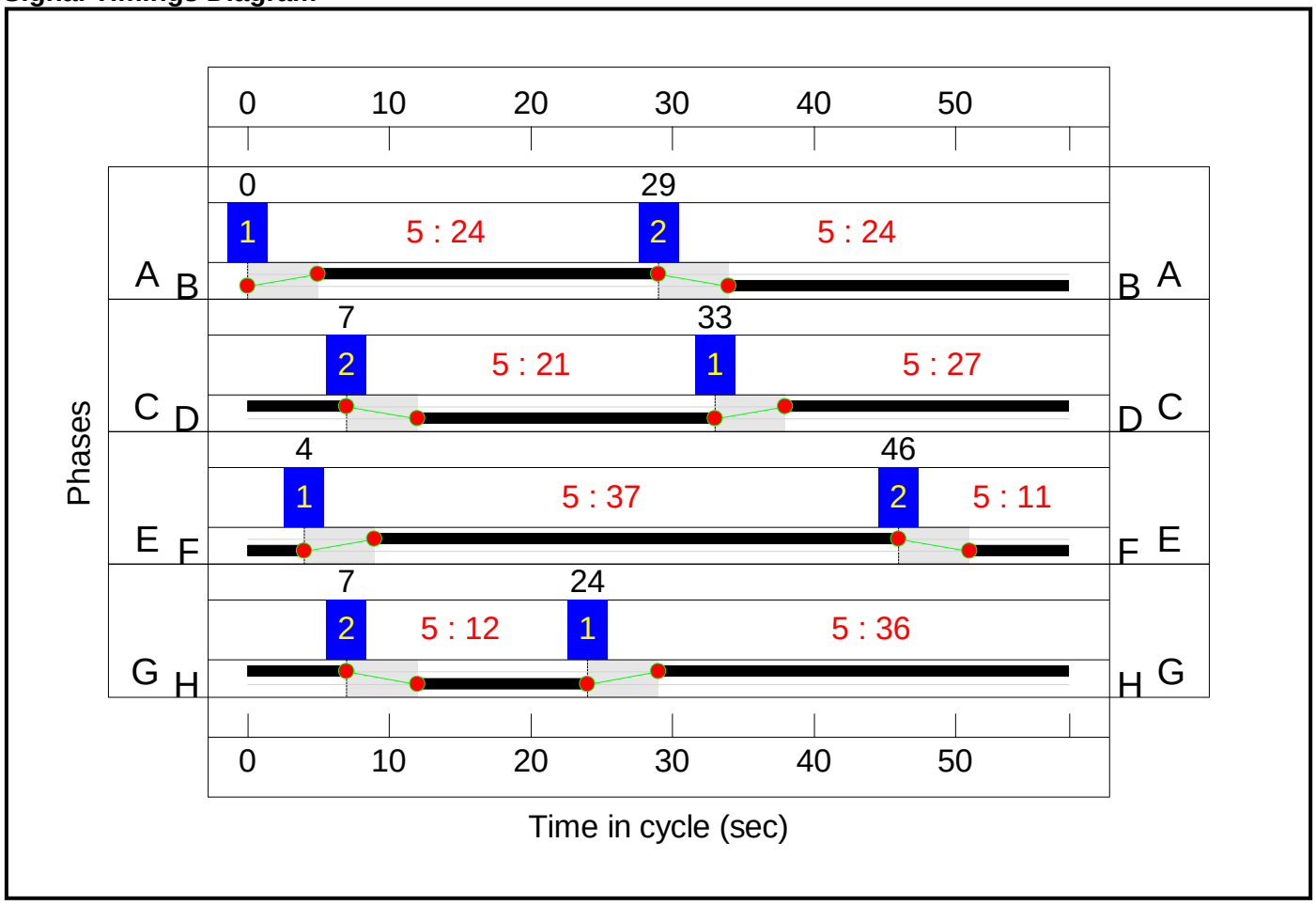
Stage	1	2
Duration	37	11
Change Point	4	46

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	36	12
Change Point	24	7

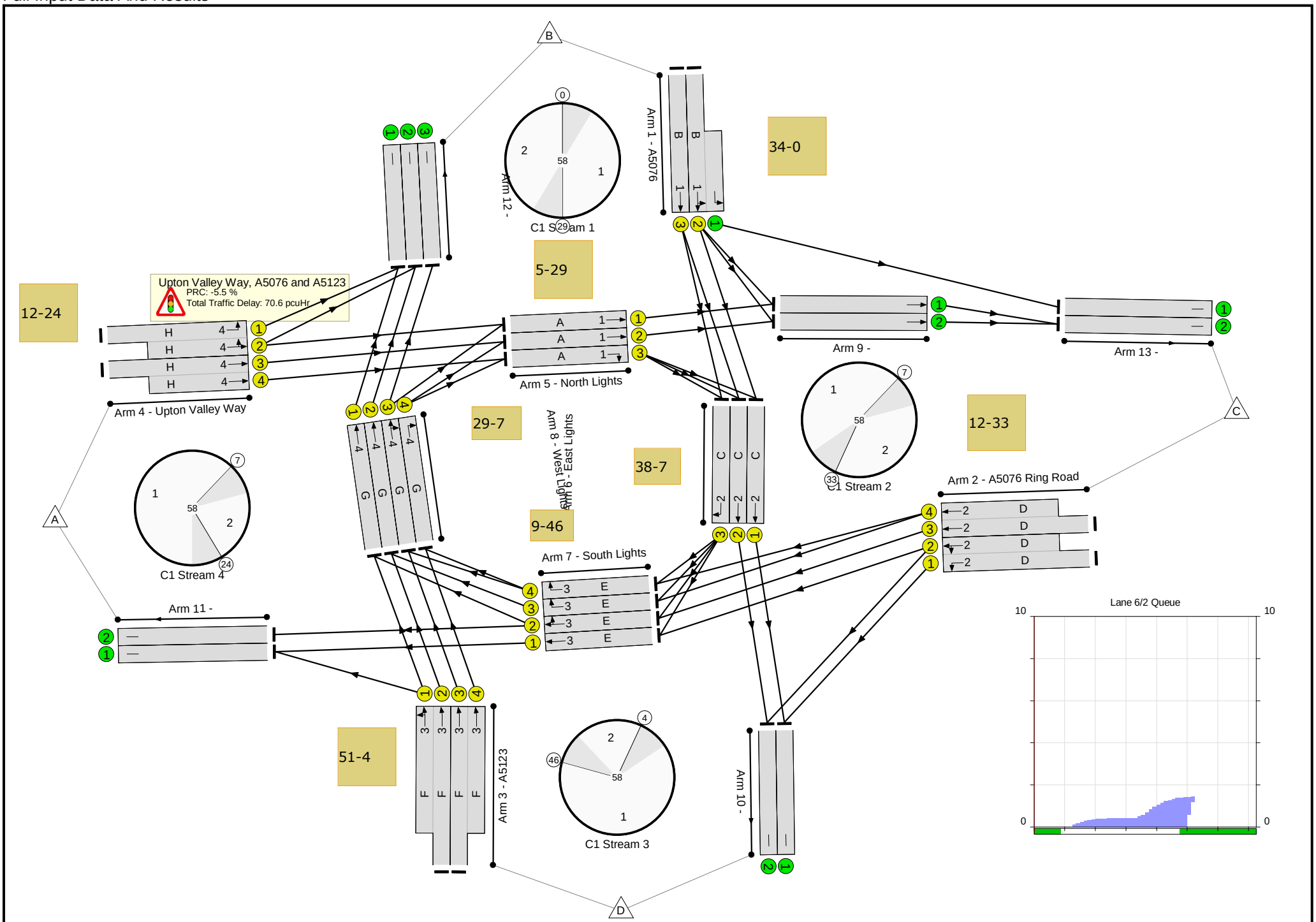
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.0%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.0%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	24	-	1608	2102:1990	594+1099	95.0 : 95.0%
1/3	A5076 Ahead	U	1	N/A	B		1	24	-	793	2102	906	87.5%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	21	-	1240	1879:2016	713+765	83.9 : 84.0%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	21	-	1281	2028:2028	769+769	82.9 : 83.6%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	11	-	596	2050:1913	424+396	71.2 : 74.3%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	11	-	610	2147:1913	444+396	73.6 : 71.5%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	12	-	658	1970:2061	260+462	91.1 : 91.1%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	12	-	562	2061:2060	462+200	84.9 : 84.9%
5/1	North Lights Ahead	U	1	N/A	A		1	24	-	658	1966	847	77.6%
5/2	North Lights Ahead	U	1	N/A	A		1	24	-	675	1941	837	80.7%
5/3	North Lights Right	U	1	N/A	A		1	24	-	170	1908	822	20.7%
6/1	East Lights Ahead	U	2	N/A	C		1	27	-	654	1966	949	68.9%
6/2	East Lights Ahead	U	2	N/A	C		1	27	-	740	2102	1015	72.9%
6/3	East Lights Right	U	2	N/A	C		1	27	-	133	2099	1013	13.1%
7/1	South Lights Ahead	U	3	N/A	E		1	37	-	125	1940	1271	9.8%
7/2	South Lights Right Ahead	U	3	N/A	E		1	37	-	659	2098	1375	47.9%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	37	-	310	2095	1373	22.6%
7/4	South Lights Right	U	3	N/A	E		1	37	-	333	2095	1373	24.3%
8/1	West Lights Ahead	U	4	N/A	G		1	36	-	506	1967	1255	40.3%
8/2	West Lights Ahead	U	4	N/A	G		1	36	-	612	2016	1286	47.6%
8/3	West Lights Right Ahead	U	4	N/A	G		1	36	-	660	2139	1365	48.4%
8/4	West Lights Right	U	4	N/A	G		1	36	-	283	2106	1343	21.1%
9/1	Ahead	U	N/A	N/A	-		-	-	-	658	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	675	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1252	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1369	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	154	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	418	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	743	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	612	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	423	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	1044	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1333	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**36.0**	**34.6**	**0.0**	**70.6**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**36.0**	**34.6**	**0.0**	**70.6**	**-**	**-**	**-**	**-**
1/2+1/1	1608	1608	-	-	-	2.0	7.9	-	10.0	22.3	8.3	7.9	16.3
1/3	793	793	-	-	-	3.3	3.3	-	6.6	30.1	11.5	3.3	14.8
2/1+2/2	1240	1240	-	-	-	5.6	2.6	-	8.2	23.8	9.3	2.6	11.8
2/3+2/4	1281	1281	-	-	-	5.8	2.4	-	8.3	23.2	9.3	2.4	11.7
3/2+3/1	596	596	-	-	-	3.6	1.3	-	4.9	29.4	4.4	1.3	5.8
3/3+3/4	610	610	-	-	-	3.6	1.3	-	4.9	29.2	4.9	1.3	6.2
4/1+4/2	658	658	-	-	-	3.9	4.5	-	8.4	45.8	6.5	4.5	11.1
4/3+4/4	562	562	-	-	-	3.2	2.7	-	5.9	37.8	6.0	2.7	8.6
5/1	658	658	-	-	-	1.1	1.7	-	2.8	15.3	2.9	1.7	4.6
5/2	675	675	-	-	-	1.0	2.0	-	3.0	16.1	3.3	2.0	5.3
5/3	170	170	-	-	-	0.1	0.1	-	0.2	4.8	0.2	0.1	0.3
6/1	654	654	-	-	-	0.4	1.1	-	1.5	8.1	3.9	1.1	5.0
6/2	740	740	-	-	-	0.4	1.3	-	1.7	8.2	1.4	1.3	2.8
6/3	133	133	-	-	-	0.1	0.1	-	0.1	3.5	0.2	0.1	0.3
7/1	125	125	-	-	-	0.2	0.1	-	0.3	8.5	1.4	0.1	1.5
7/2	659	659	-	-	-	0.1	0.5	-	0.5	2.8	0.3	0.5	0.8
7/3	310	310	-	-	-	0.0	0.1	-	0.2	1.7	0.0	0.1	0.2
7/4	333	333	-	-	-	0.0	0.2	-	0.2	1.8	0.0	0.2	0.2
8/1	506	506	-	-	-	0.4	0.3	-	0.7	5.1	1.9	0.3	2.3
8/2	612	612	-	-	-	0.4	0.5	-	0.9	5.1	2.5	0.5	2.9
8/3	660	660	-	-	-	0.5	0.5	-	1.0	5.2	3.0	0.5	3.5
8/4	283	283	-	-	-	0.3	0.1	-	0.5	5.9	1.0	0.1	1.1
9/1	658	658	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	675	675	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1252	1252	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1369	1369	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	154	154	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	418	418	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	743	743	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	612	612	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	1044	1044	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1333	1333	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

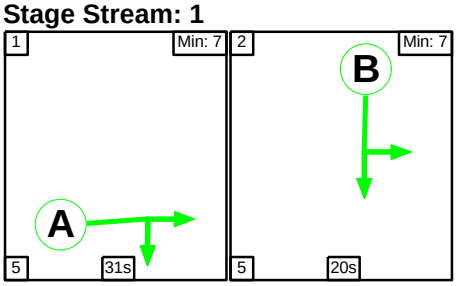
C1	Stream: 1 PRC for Signalled Lanes (%):	-5.5	Total Delay for Signalled Lanes (pcuHr):	22.65	Cycle Time (s):	58
C1	Stream: 2 PRC for Signalled Lanes (%):	7.2	Total Delay for Signalled Lanes (pcuHr):	19.75	Cycle Time (s):	58
C1	Stream: 3 PRC for Signalled Lanes (%):	21.2	Total Delay for Signalled Lanes (pcuHr):	10.94	Cycle Time (s):	58
C1	Stream: 4 PRC for Signalled Lanes (%):	-1.3	Total Delay for Signalled Lanes (pcuHr):	17.30	Cycle Time (s):	58
	PRC Over All Lanes (%):	-5.5	Total Delay Over All Lanes(pcuHr):	70.64		

Full Input Data And Results

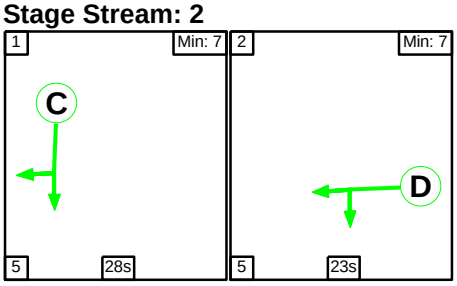
Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

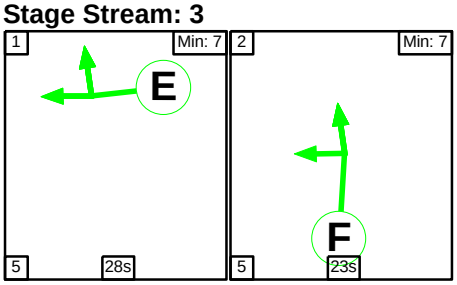
Stage Stream: 1



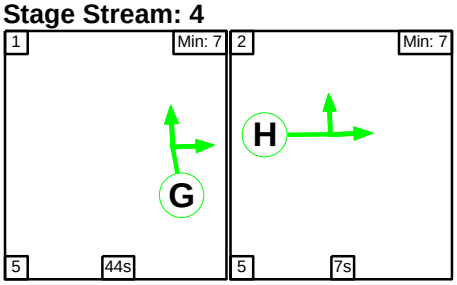
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	31	20
Change Point	10	46

Stage Stream: 2

Stage	1	2
Duration	28	23
Change Point	54	26

Stage Stream: 3

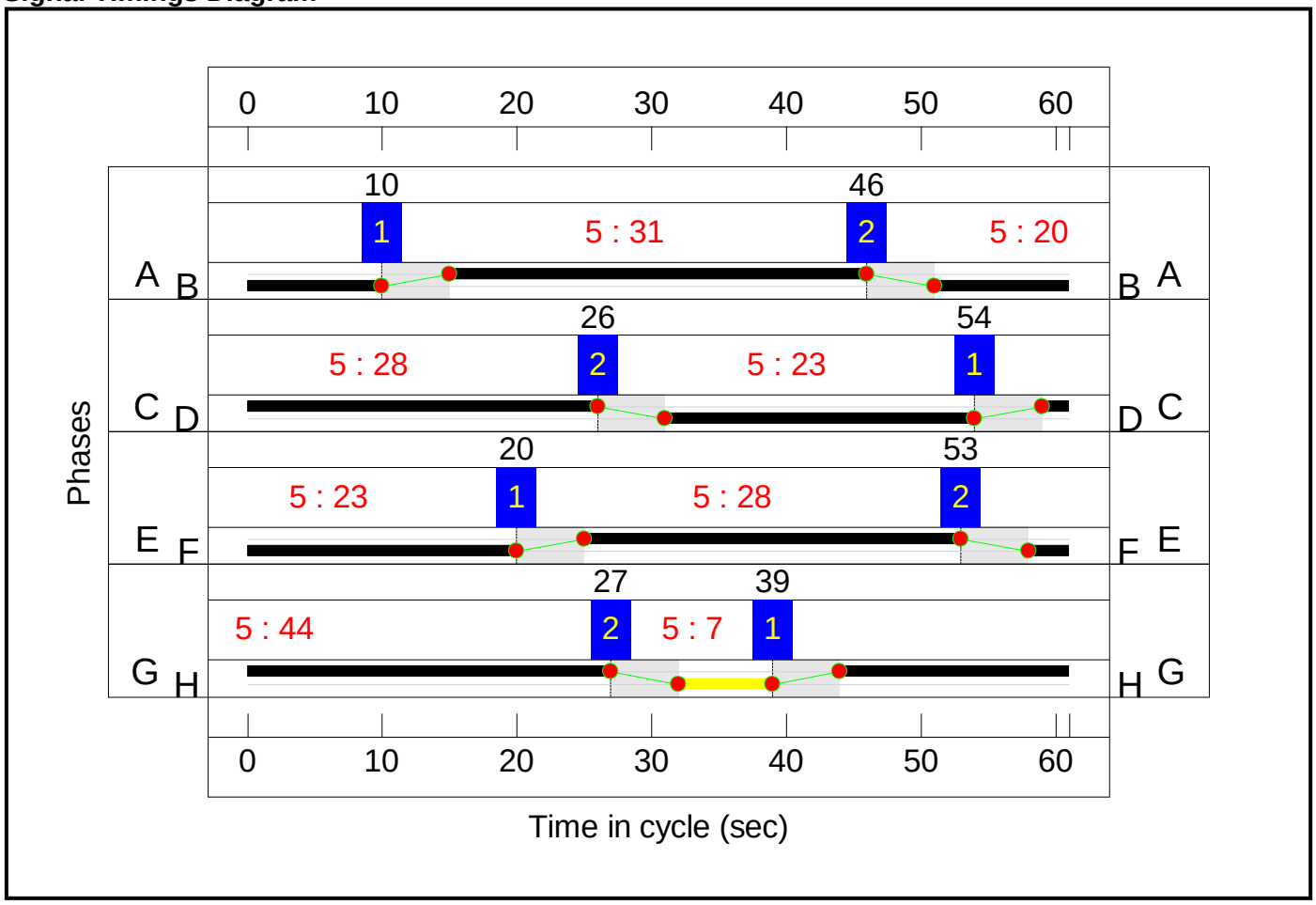
Stage	1	2
Duration	28	23
Change Point	20	53

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	44	7
Change Point	39	27

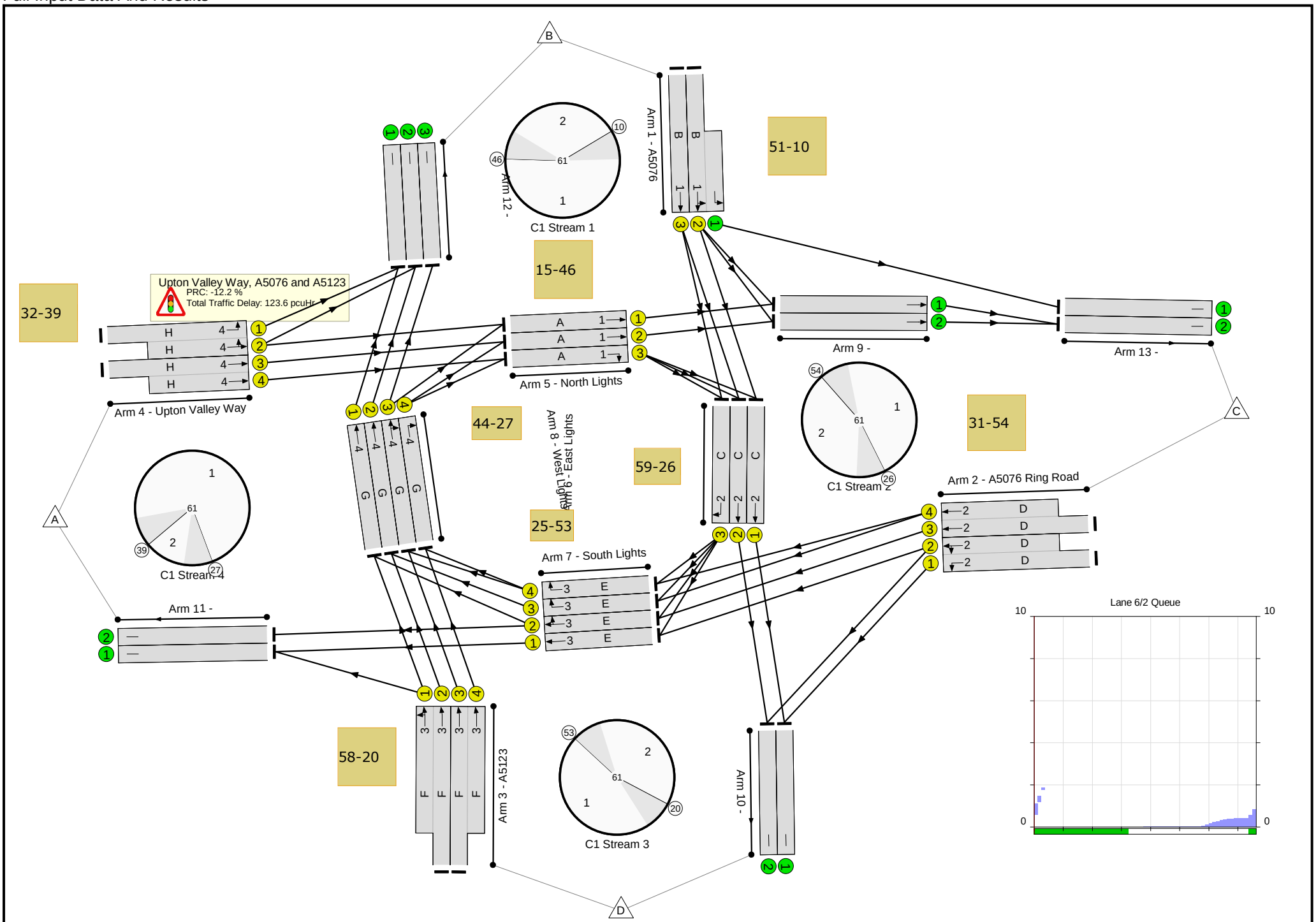
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.0%**
Upton Valley Way, A5076 and A5123	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.0%**
1/2+1/1	A5076 Ahead Left Left2	U	1	N/A	B -		1	20	-	1308	2102:1990	538+758	101.0 : 101.0%
1/3	A5076 Ahead	U	1	N/A	B		1	20	-	672	2102	724	92.9%
2/1+2/2	A5076 Ring Road Ahead Left	U	2	N/A	D		1	23	-	1457	1879:2025	733+790	95.7 : 95.7%
2/3+2/4	A5076 Ring Road Ahead	U	2	N/A	D		1	23	-	1517	2028:2028	787+788	96.3 : 96.3%
3/2+3/1	A5123 Ahead Left	U	3	N/A	F		1	23	-	1303	2050:1912	807+731	85.9 : 83.4%
3/3+3/4	A5123 Ahead	U	3	N/A	F		1	23	-	1524	2147:1913	845+753	95.3 : 95.5%
4/1+4/2	Upton Valley Way Ahead Left	U	4	N/A	H		1	7	-	111	2015:2061	0+270	0.0 : 41.1%
4/3+4/4	Upton Valley Way Ahead	U	4	N/A	H		1	7	-	186	2061:2060	270+60	56.2 : 56.2%
5/1	North Lights Ahead	U	1	N/A	A		1	31	-	916	1966	1031	88.8%
5/2	North Lights Ahead	U	1	N/A	A		1	31	-	871	1941	1018	85.5%
5/3	North Lights Right	U	1	N/A	A		1	31	-	34	1908	1001	3.4%
6/1	East Lights Ahead	U	2	N/A	C		1	28	-	545	1966	935	57.7%
6/2	East Lights Ahead	U	2	N/A	C		1	28	-	536	2102	999	53.6%
6/3	East Lights Right	U	2	N/A	C		1	28	-	168	2099	998	16.8%
7/1	South Lights Ahead	U	3	N/A	E		1	28	-	650	1940	922	70.5%
7/2	South Lights Right Ahead	U	3	N/A	E		1	28	-	807	2096	996	81.0%

Full Input Data And Results

7/3	South Lights Right	U	3	N/A	E		1	28	-	367	2095	996	36.8%
7/4	South Lights Right	U	3	N/A	E		1	28	-	392	2095	996	39.4%
8/1	West Lights Ahead	U	4	N/A	G		1	44	-	1192	1967	1451	82.1%
8/2	West Lights Ahead	U	4	N/A	G		1	44	-	1060	2016	1487	71.3%
8/3	West Lights Right Ahead	U	4	N/A	G		1	44	-	1197	2127	1569	76.3%
8/4	West Lights Right	U	4	N/A	G		1	44	-	719	2106	1554	46.3%
9/1	Ahead	U	N/A	N/A	-		-	-	-	916	Inf	Inf	0.0%
9/2	Ahead	U	N/A	N/A	-		-	-	-	871	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	1246	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	761	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	722	Inf	Inf	0.0%
11/2		U	N/A	N/A	-		-	-	-	153	Inf	Inf	0.0%
12/1		U	N/A	N/A	-		-	-	-	1192	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	1060	Inf	Inf	0.0%
12/3		U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	765	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1787	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**48.7**	**74.9**	**0.0**	**123.6**	**-**	**-**	**-**	**-**
Upton Valley Way, A5076 and A5123	**-**	**-**	**0**	**0**	**0**	**48.7**	**74.9**	**0.0**	**123.6**	**-**	**-**	**-**	**-**
1/2+1/1	1308	1296	-	-	-	3.1	21.5	-	24.6	67.7	13.5	21.5	35.1
1/3	672	672	-	-	-	3.6	5.4	-	9.0	48.1	10.8	5.4	16.2
2/1+2/2	1457	1457	-	-	-	7.2	8.7	-	16.0	39.4	12.4	8.7	21.1
2/3+2/4	1517	1517	-	-	-	7.6	9.8	-	17.3	41.1	12.4	9.8	22.2
3/2+3/1	1303	1303	-	-	-	6.1	2.7	-	8.8	24.2	10.6	2.7	13.3
3/3+3/4	1524	1524	-	-	-	7.6	8.4	-	16.0	37.9	13.2	8.4	21.6
4/1+4/2	111	111	-	-	-	0.8	0.3	-	1.1	35.6	1.7	0.3	2.1
4/3+4/4	186	186	-	-	-	1.3	0.6	-	1.9	36.9	2.4	0.6	3.0
5/1	916	916	-	-	-	1.2	3.7	-	4.9	19.4	14.9	3.7	18.6
5/2	871	871	-	-	-	0.9	2.8	-	3.8	15.5	12.1	2.8	15.0
5/3	34	34	-	-	-	0.0	0.0	-	0.0	3.2	0.0	0.0	0.0
6/1	540	540	-	-	-	0.1	0.7	-	0.8	5.1	6.7	0.7	7.4
6/2	536	536	-	-	-	0.1	0.6	-	0.7	4.6	1.8	0.6	2.4
6/3	168	168	-	-	-	0.0	0.1	-	0.1	2.6	0.2	0.1	0.3
7/1	650	650	-	-	-	2.1	1.2	-	3.3	18.3	5.1	1.2	6.3
7/2	807	807	-	-	-	2.5	2.1	-	4.6	20.6	5.3	2.1	7.4
7/3	367	367	-	-	-	1.0	0.3	-	1.3	13.1	2.2	0.3	2.5
7/4	392	392	-	-	-	1.1	0.3	-	1.4	13.2	2.3	0.3	2.6
8/1	1192	1192	-	-	-	1.2	2.3	-	3.5	10.4	11.1	2.3	13.4
8/2	1060	1060	-	-	-	0.5	1.2	-	1.8	6.0	5.1	1.2	6.3
8/3	1197	1197	-	-	-	0.6	1.6	-	2.2	6.7	6.5	1.6	8.1
8/4	719	719	-	-	-	0.1	0.4	-	0.6	2.8	0.5	0.4	1.0
9/1	916	916	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	871	871	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

10/1	1241	1241	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	761	761	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	722	722	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	153	153	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1192	1192	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	392	392	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	759	759	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1787	1787	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

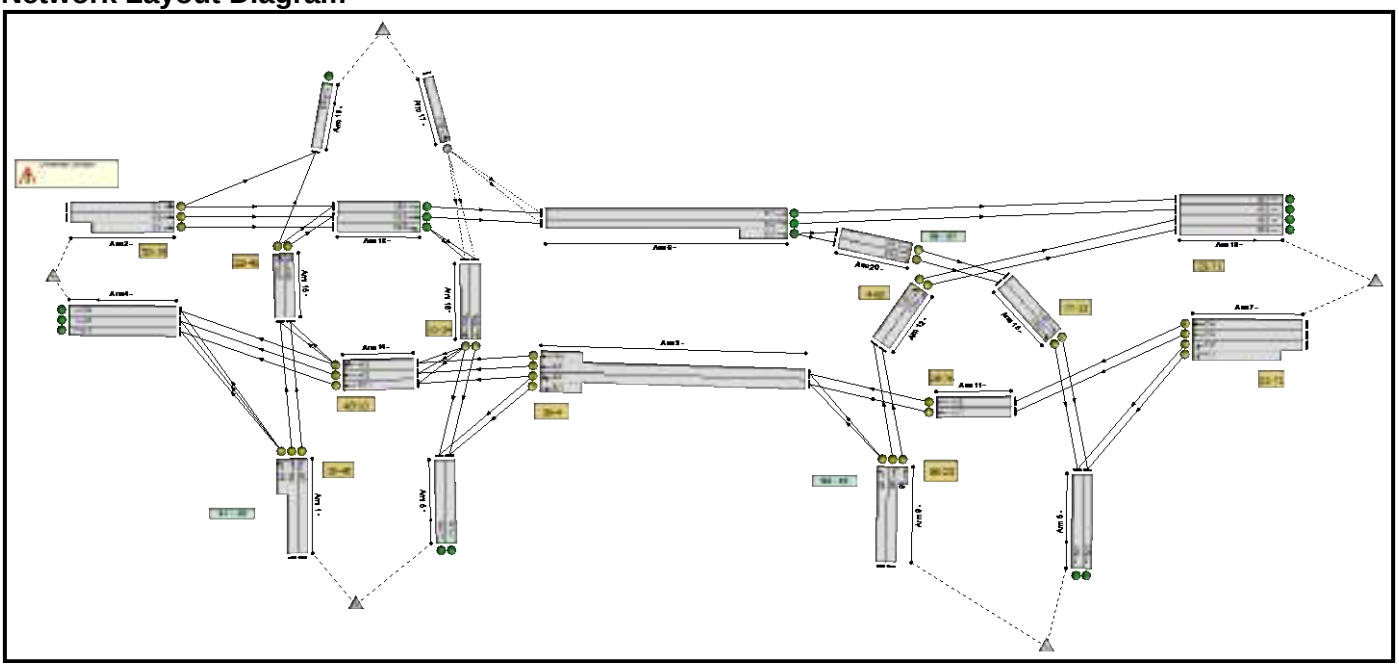
C1	Stream: 1 PRC for Signalled Lanes (%):	-12.2	Total Delay for Signalled Lanes (pcuHr):	42.29	Cycle Time (s):	61
C1	Stream: 2 PRC for Signalled Lanes (%):	-7.0	Total Delay for Signalled Lanes (pcuHr):	34.83	Cycle Time (s):	61
C1	Stream: 3 PRC for Signalled Lanes (%):	-6.1	Total Delay for Signalled Lanes (pcuHr):	35.50	Cycle Time (s):	61
C1	Stream: 4 PRC for Signalled Lanes (%):	9.6	Total Delay for Signalled Lanes (pcuHr):	10.98	Cycle Time (s):	61
	PRC Over All Lanes (%):	-12.2	Total Delay Over All Lanes(pcuHr):	123.60		

Full Input Data And Results

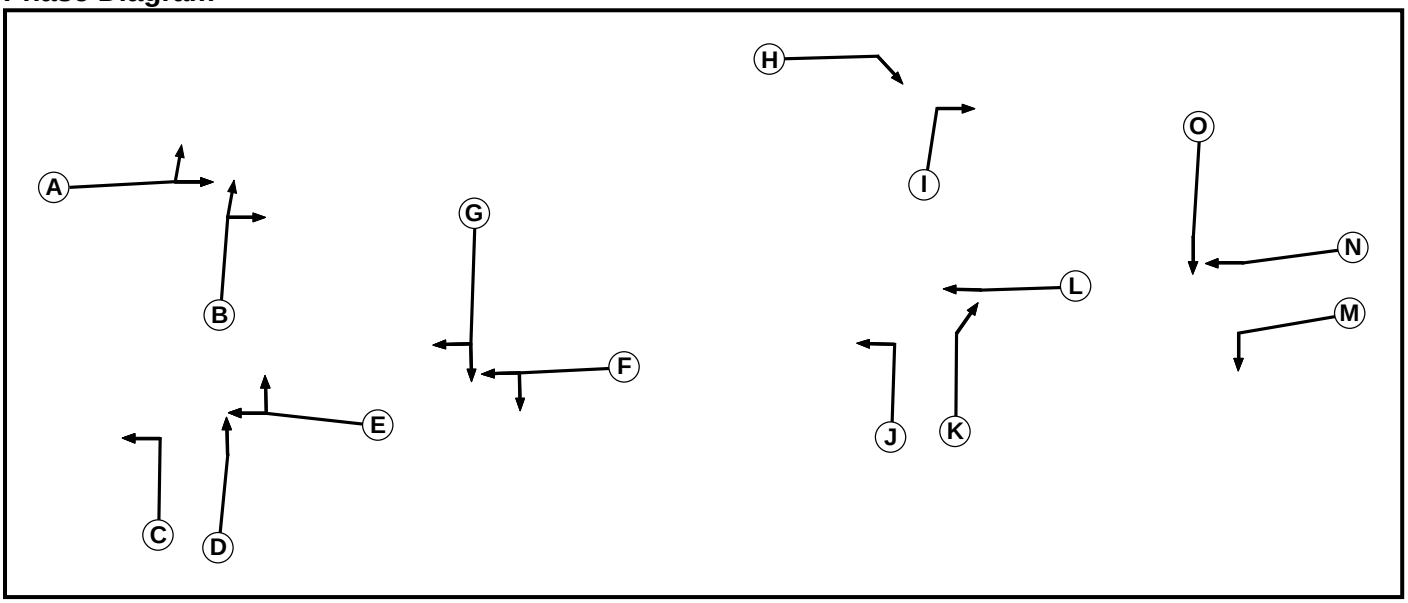
User and Project Details

Project:	Rail Central
Title:	Junction 5
Location:	M1 J15A
Additional detail:	Mitigation
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	2		7	7
F	Traffic	3		7	7
G	Traffic	3		7	7
H	Traffic	4		7	7
I	Traffic	4		7	7
J	Traffic	5		7	7
K	Traffic	5		7	7
L	Traffic	5		7	7
M	Traffic	6		7	7
N	Traffic	6		7	7
O	Traffic	6		7	7

Full Input Data And Results

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A		6	-	-	-	-	-	-	-	-	-	-	-	-	-
B	7		-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-		-	5	-	-	-	-	-	-	-	-	-	-
D	-	-	-		5	-	-	-	-	-	-	-	-	-	-
E	-	-	7	5		-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-		6	-	-	-	-	-	-	-	-
G	-	-	-	-	-	5		-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-		7	-	-	-	-	-	-
I	-	-	-	-	-	-	-	6		-	-	-	-	-	-
J	-	-	-	-	-	-	-	-	-		-	5	-	-	-
K	-	-	-	-	-	-	-	-	-	-		5	-	-	-
L	-	-	-	-	-	-	-	-	-	8	5		-	-	-
M	-	-	-	-	-	-	-	-	-	-	-	-		-	5
N	-	-	-	-	-	-	-	-	-	-	-	-	-		6
O	-	-	-	-	-	-	-	-	-	-	-	-	8	5	

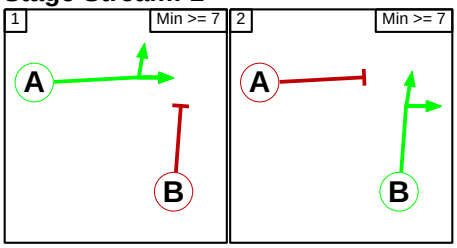
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	C D
2	3	E
3	1	F
3	2	G
4	1	H
4	2	I
5	1	J
5	2	J K
5	3	L
6	1	M
6	2	M N
6	3	O

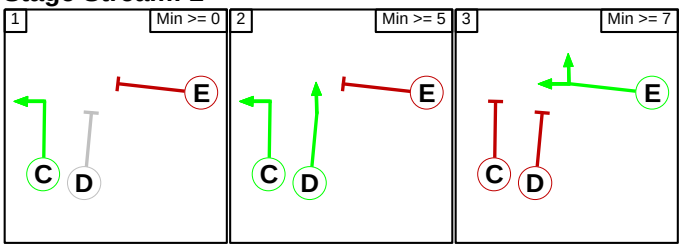
Full Input Data And Results

Stage Diagram

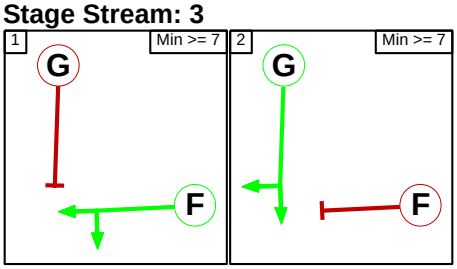
Stage Stream: 1



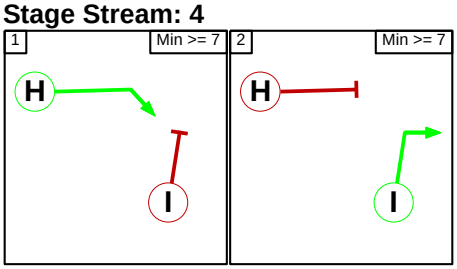
Stage Stream: 2



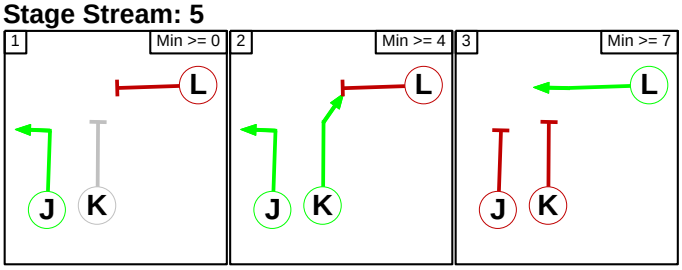
Stage Stream: 3



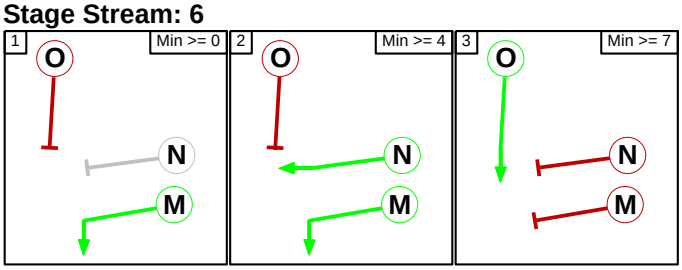
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Full Input Data And Results

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 5

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 6

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2
1		6
2	7	

Stage Stream: 2

From Stage \ To Stage	1	2	3
1		2	5
2	0		5
3	7	7	

Stage Stream: 3

From Stage \ To Stage	1	2
1		6
2	5	

Full Input Data And Results

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		7
	2	6	

Stage Stream: 5

	To Stage			
		1	2	3
From Stage	1		2	5
	2	0		5
	3	8	8	

Stage Stream: 6

	To Stage			
		1	2	3
From Stage	1		2	5
	2	0		6
	3	8	8	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
17/1	6/1 (Left)	1000	0	18/1	0.33	All	-	-	-	-	-
				18/2	0.33	All					
				18/3	0.33	All					
	6/2 (Left)	1000	0	18/1	0.33	All					
				18/2	0.33	All					
				18/3	0.33	All					
	16/1 (Ahead)	1000	0	18/1	0.33	All					
				18/2	0.33	All					
				18/3	0.33	All					
	16/2 (Ahead)	1000	0	18/1	0.33	All					
				18/2	0.33	All					
				18/3	0.33	All					

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1	U	C	2	3	5.2	User	1800	-	-	-	-	-
1/2	U	D	2	3	60.0	User	1800	-	-	-	-	-
1/3	U	D	2	3	60.0	User	1800	-	-	-	-	-
2/1	U	A	2	3	60.0	User	1800	-	-	-	-	-
2/2	U	A	2	3	60.0	User	1800	-	-	-	-	-
2/3	U	A	2	3	13.0	User	1800	-	-	-	-	-
3/1	U	F	2	3	6.1	User	1800	-	-	-	-	-
3/2	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/3	U	F	2	3	54.8	User	1800	-	-	-	-	-
3/4	U	F	2	3	6.1	User	1800	-	-	-	-	-
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2	U		2	3	60.0	Inf	-	-	-	-	-	-
4/3	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	22.6	User	1800	-	-	-	-	-
6/2	U		2	3	60.0	User	1800	-	-	-	-	-
6/3	U		2	3	7.0	User	1800	-	-	-	-	-
7/1	U	M	2	3	17.4	User	1800	-	-	-	-	-
7/2	U	M	2	3	60.0	User	1800	-	-	-	-	-
7/3	U	N	2	3	60.0	User	1800	-	-	-	-	-
7/4	U	N	2	3	60.0	User	1800	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U	J	2	3	60.0	User	1800	-	-	-	-	-
9/2	U	K	2	3	60.0	User	1800	-	-	-	-	-
9/3	U	K	2	3	2.6	User	1800	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/3	U		2	3	60.0	Inf	-	-	-	-	-	-
10/4	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U	L	0	3	2.0	User	1900	-	-	-	-	-
11/2	U	L	0	3	2.0	User	1900	-	-	-	-	-
12/1	U	I	0	3	3.0	User	1900	-	-	-	-	-
12/2	U	I	0	3	3.0	User	1900	-	-	-	-	-
13/1	U	O	2	3	5.2	User	1900	-	-	-	-	-
13/2	U	O	2	3	5.2	User	1900	-	-	-	-	-
14/1	U	E	2	3	3.5	User	1900	-	-	-	-	-

Full Input Data And Results

14/2	U	E	2	3	3.5	User	1900	-	-	-	-	-
14/3	U	E	2	3	3.5	User	1900	-	-	-	-	-
15/1	U	B	0	3	2.0	User	1900	-	-	-	-	-
15/2	U	B	0	3	2.0	User	1900	-	-	-	-	-
16/1	U	G	2	3	6.1	User	1900	-	-	-	-	-
16/2	U	G	2	3	6.1	User	1900	-	-	-	-	-
17/1	O		2	3	60.0	Inf	-	-	-	-	-	-
18/1	U		0	3	60.0	User	1900	-	-	-	-	-
18/2	U		0	3	60.0	User	1900	-	-	-	-	-
18/3	U		0	3	60.0	User	1900	-	-	-	-	-
19/1	U		2	3	60.0	Inf	-	-	-	-	-	-
20/1	U	H	2	3	7.0	User	1800	-	-	-	-	-
20/2	U	H	2	3	7.0	User	1800	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
5: '2021 DM + Dev AM'	08:00	09:00	01:00	F1+F3
6: '2021 DM + Dev PM'	17:00	18:00	01:00	F2+F4
7: '2031 DM AM'	08:00	09:00	01:00	
8: '2031 DM PM'	17:00	18:00	01:00	
9: '2031 DM + Dev AM'	08:00	09:00	01:00	F7+F3
10: '2031 DM + Dev PM'	17:00	18:00	01:00	F8 + F4
11: '2021 DM + Dev (Realistic) AM'	08:00	09:00	01:00	F1+ (F3*0.2)
12: '2021 DM + Dev (Realistic) PM'	17:00	18:00	01:00	F2+(F4*0.2)
13: '2021 DS5 AM'	08:00	09:00	01:00	
14: '2021 DS5 PM'	17:00	18:00	01:00	
15: '2031 DS5 AM'	08:00	09:00	01:00	
16: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 11: '2021 DS5 AM' (FG13: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	202	230	1967	63	2462
	B	291	0	52	882	15	1240
	C	213	17	0	421	9	660
	D	1225	640	595	0	8	2468
	E	10	1	3	2	0	16
	Tot.	1739	860	880	3272	95	6846

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 11: 2021 DS5 AM
Junction: Unnamed Junction	
1/1 (short)	291
1/2 (with short)	768(In) 477(Out)
1/3	472
2/1	1170
2/2 (with short)	1292(In) 1090(Out)
2/3 (short)	202
3/1 (short)	360
3/2 (with short)	1057(In) 697(Out)
3/3 (with short)	1055(In) 456(Out)
3/4 (short)	599
4/1	502
4/2	556
4/3	681
5/1	465
5/2	395
6/1	1570
6/2 (with short)	1566(In) 1281(Out)
6/3 (short)	285
7/1 (short)	297
7/2 (with short)	595(In) 298(Out)
7/3	937
7/4	936
8/1	396
8/2	484
9/1	239
9/2 (with short)	421(In) 210(Out)
9/3 (short)	211
10/1	1570
10/2	1281
10/3	210
10/4	211
11/1	937
11/2	936
12/1	210

Full Input Data And Results

12/2	211
13/1	99
13/2	186
14/1	405
14/2	459
14/3	601
15/1	494
15/2	472
16/1	105
16/2	108
17/1	16
18/1	1569
18/2	1562
18/3	202
19/1	95
20/1	99
20/2	186

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	This lane uses a directly entered Saturation Flow						1800	1800
1/2	This lane uses a directly entered Saturation Flow						1800	1800
1/3	This lane uses a directly entered Saturation Flow						1800	1800
2/1	This lane uses a directly entered Saturation Flow						1800	1800
2/2	This lane uses a directly entered Saturation Flow						1800	1800
2/3	This lane uses a directly entered Saturation Flow						1800	1800
3/1	This lane uses a directly entered Saturation Flow						1800	1800
3/2	This lane uses a directly entered Saturation Flow						1800	1800
3/3	This lane uses a directly entered Saturation Flow						1800	1800
3/4	This lane uses a directly entered Saturation Flow						1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
4/2	Infinite Saturation Flow						Inf	Inf
4/3	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	This lane uses a directly entered Saturation Flow						1800	1800
6/2	This lane uses a directly entered Saturation Flow						1800	1800
6/3	This lane uses a directly entered Saturation Flow						1800	1800
7/1	This lane uses a directly entered Saturation Flow						1800	1800
7/2	This lane uses a directly entered Saturation Flow						1800	1800
7/3	This lane uses a directly entered Saturation Flow						1800	1800
7/4	This lane uses a directly entered Saturation Flow						1800	1800
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1800	1800
9/2	This lane uses a directly entered Saturation Flow						1800	1800
9/3	This lane uses a directly entered Saturation Flow						1800	1800
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
10/3	Infinite Saturation Flow						Inf	Inf
10/4	Infinite Saturation Flow						Inf	Inf
11/1	This lane uses a directly entered Saturation Flow						1900	1900
11/2	This lane uses a directly entered Saturation Flow						1900	1900
12/1	This lane uses a directly entered Saturation Flow						1900	1900
12/2	This lane uses a directly entered Saturation Flow						1900	1900
13/1	This lane uses a directly entered Saturation Flow						1900	1900
13/2	This lane uses a directly entered Saturation Flow						1900	1900
14/1	This lane uses a directly entered Saturation Flow						1900	1900

14/2	This lane uses a directly entered Saturation Flow	1900	1900
14/3	This lane uses a directly entered Saturation Flow	1900	1900
15/1	This lane uses a directly entered Saturation Flow	1900	1900
15/2	This lane uses a directly entered Saturation Flow	1900	1900
16/1	This lane uses a directly entered Saturation Flow	1900	1900
16/2	This lane uses a directly entered Saturation Flow	1900	1900
17/1	Infinite Saturation Flow	Inf	Inf
18/1	This lane uses a directly entered Saturation Flow	1900	1900
18/2	This lane uses a directly entered Saturation Flow	1900	1900
18/3	This lane uses a directly entered Saturation Flow	1900	1900
19/1	Infinite Saturation Flow	Inf	Inf
20/1	This lane uses a directly entered Saturation Flow	1800	1800
20/2	This lane uses a directly entered Saturation Flow	1800	1800

Scenario 12: '2021 DS5 PM' (FG14: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	404	187	1059	8	1658
	B	610	0	156	699	2	1467
	C	454	134	0	943	1	1532
	D	1692	593	1006	0	1	3292
	E	42	14	16	8	0	80
	Tot.	2798	1145	1365	2709	12	8029

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 12: 2021 DS5 PM
Junction: Unnamed Junction	
1/1 (short)	610
1/2 (with short)	1041(In) 431(Out)
1/3	426
2/1	641
2/2 (with short)	1017(In) 613(Out)
2/3 (short)	404
3/1 (short)	402
3/2 (with short)	1438(In) 1036(Out)
3/3 (with short)	1437(In) 763(Out)
3/4 (short)	674
4/1	927
4/2	980
4/3	891
5/1	633
5/2	512
6/1	1064
6/2 (with short)	1061(In) 702(Out)
6/3 (short)	359
7/1 (short)	503
7/2 (with short)	1006(In) 503(Out)
7/3	1150
7/4	1136
8/1	657
8/2	708
9/1	589
9/2 (with short)	943(In) 471(Out)
9/3 (short)	472
10/1	1064
10/2	702
10/3	471
10/4	472
11/1	1150
11/2	1136
12/1	471

Full Input Data And Results

12/2	472
13/1	154
13/2	205
14/1	724
14/2	776
14/3	690
15/1	433
15/2	426
16/1	231
16/2	229
17/1	80
18/1	1062
18/2	1039
18/3	404
19/1	12
20/1	154
20/2	205

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	This lane uses a directly entered Saturation Flow						1800	1800
1/2	This lane uses a directly entered Saturation Flow						1800	1800
1/3	This lane uses a directly entered Saturation Flow						1800	1800
2/1	This lane uses a directly entered Saturation Flow						1800	1800
2/2	This lane uses a directly entered Saturation Flow						1800	1800
2/3	This lane uses a directly entered Saturation Flow						1800	1800
3/1	This lane uses a directly entered Saturation Flow						1800	1800
3/2	This lane uses a directly entered Saturation Flow						1800	1800
3/3	This lane uses a directly entered Saturation Flow						1800	1800
3/4	This lane uses a directly entered Saturation Flow						1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
4/2	Infinite Saturation Flow						Inf	Inf
4/3	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	This lane uses a directly entered Saturation Flow						1800	1800
6/2	This lane uses a directly entered Saturation Flow						1800	1800
6/3	This lane uses a directly entered Saturation Flow						1800	1800
7/1	This lane uses a directly entered Saturation Flow						1800	1800
7/2	This lane uses a directly entered Saturation Flow						1800	1800
7/3	This lane uses a directly entered Saturation Flow						1800	1800
7/4	This lane uses a directly entered Saturation Flow						1800	1800
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1800	1800
9/2	This lane uses a directly entered Saturation Flow						1800	1800
9/3	This lane uses a directly entered Saturation Flow						1800	1800
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
10/3	Infinite Saturation Flow						Inf	Inf
10/4	Infinite Saturation Flow						Inf	Inf
11/1	This lane uses a directly entered Saturation Flow						1900	1900
11/2	This lane uses a directly entered Saturation Flow						1900	1900
12/1	This lane uses a directly entered Saturation Flow						1900	1900
12/2	This lane uses a directly entered Saturation Flow						1900	1900
13/1	This lane uses a directly entered Saturation Flow						1900	1900
13/2	This lane uses a directly entered Saturation Flow						1900	1900
14/1	This lane uses a directly entered Saturation Flow						1900	1900

14/2	This lane uses a directly entered Saturation Flow	1900	1900
14/3	This lane uses a directly entered Saturation Flow	1900	1900
15/1	This lane uses a directly entered Saturation Flow	1900	1900
15/2	This lane uses a directly entered Saturation Flow	1900	1900
16/1	This lane uses a directly entered Saturation Flow	1900	1900
16/2	This lane uses a directly entered Saturation Flow	1900	1900
17/1	Infinite Saturation Flow	Inf	Inf
18/1	This lane uses a directly entered Saturation Flow	1900	1900
18/2	This lane uses a directly entered Saturation Flow	1900	1900
18/3	This lane uses a directly entered Saturation Flow	1900	1900
19/1	Infinite Saturation Flow	Inf	Inf
20/1	This lane uses a directly entered Saturation Flow	1800	1800
20/2	This lane uses a directly entered Saturation Flow	1800	1800

Scenario 13: '2031 DS5 AM' (FG15: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	230	213	2165	54	2662
	B	253	0	91	969	18	1331
	C	305	160	0	648	11	1124
	D	1189	916	526	0	7	2638
	E	9	2	2	2	0	15
	Tot.	1756	1308	832	3784	90	7770

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 13: 2031 DS5 AM
Junction: Unnamed Junction	
1/1 (short)	253
1/2 (with short)	737(In) 484(Out)
1/3	594
2/1	1268
2/2 (with short)	1394(In) 1164(Out)
2/3 (short)	230
3/1 (short)	590
3/2 (with short)	1279(In) 689(Out)
3/3 (with short)	1309(In) 660(Out)
3/4 (short)	649
4/1	296
4/2	745
4/3	715
5/1	702
5/2	606
6/1	1682
6/2 (with short)	1760(In) 1454(Out)
6/3 (short)	306
7/1 (short)	263
7/2 (with short)	526(In) 263(Out)
7/3	1056
7/4	1056
8/1	388
8/2	444
9/1	476
9/2 (with short)	648(In) 324(Out)
9/3 (short)	324
10/1	1682
10/2	1454
10/3	324
10/4	324
11/1	1056
11/2	1056
12/1	324

Full Input Data And Results

12/2	324
13/1	125
13/2	181
14/1	212
14/2	660
14/3	649
15/1	502
15/2	594
16/1	112
16/2	129
17/1	15
18/1	1680
18/2	1758
18/3	230
19/1	90
20/1	125
20/2	181

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	This lane uses a directly entered Saturation Flow						1800	1800
1/2	This lane uses a directly entered Saturation Flow						1800	1800
1/3	This lane uses a directly entered Saturation Flow						1800	1800
2/1	This lane uses a directly entered Saturation Flow						1800	1800
2/2	This lane uses a directly entered Saturation Flow						1800	1800
2/3	This lane uses a directly entered Saturation Flow						1800	1800
3/1	This lane uses a directly entered Saturation Flow						1800	1800
3/2	This lane uses a directly entered Saturation Flow						1800	1800
3/3	This lane uses a directly entered Saturation Flow						1800	1800
3/4	This lane uses a directly entered Saturation Flow						1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
4/2	Infinite Saturation Flow						Inf	Inf
4/3	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	This lane uses a directly entered Saturation Flow						1800	1800
6/2	This lane uses a directly entered Saturation Flow						1800	1800
6/3	This lane uses a directly entered Saturation Flow						1800	1800
7/1	This lane uses a directly entered Saturation Flow						1800	1800
7/2	This lane uses a directly entered Saturation Flow						1800	1800
7/3	This lane uses a directly entered Saturation Flow						1800	1800
7/4	This lane uses a directly entered Saturation Flow						1800	1800
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1800	1800
9/2	This lane uses a directly entered Saturation Flow						1800	1800
9/3	This lane uses a directly entered Saturation Flow						1800	1800
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
10/3	Infinite Saturation Flow						Inf	Inf
10/4	Infinite Saturation Flow						Inf	Inf
11/1	This lane uses a directly entered Saturation Flow						1900	1900
11/2	This lane uses a directly entered Saturation Flow						1900	1900
12/1	This lane uses a directly entered Saturation Flow						1900	1900
12/2	This lane uses a directly entered Saturation Flow						1900	1900
13/1	This lane uses a directly entered Saturation Flow						1900	1900
13/2	This lane uses a directly entered Saturation Flow						1900	1900
14/1	This lane uses a directly entered Saturation Flow						1900	1900

14/2	This lane uses a directly entered Saturation Flow	1900	1900
14/3	This lane uses a directly entered Saturation Flow	1900	1900
15/1	This lane uses a directly entered Saturation Flow	1900	1900
15/2	This lane uses a directly entered Saturation Flow	1900	1900
16/1	This lane uses a directly entered Saturation Flow	1900	1900
16/2	This lane uses a directly entered Saturation Flow	1900	1900
17/1	Infinite Saturation Flow	Inf	Inf
18/1	This lane uses a directly entered Saturation Flow	1900	1900
18/2	This lane uses a directly entered Saturation Flow	1900	1900
18/3	This lane uses a directly entered Saturation Flow	1900	1900
19/1	Infinite Saturation Flow	Inf	Inf
20/1	This lane uses a directly entered Saturation Flow	1800	1800
20/2	This lane uses a directly entered Saturation Flow	1800	1800

Scenario 14: '2031 DS5 PM' (FG16: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	361	151	1458	7	1977
	B	698	0	159	787	2	1646
	C	405	275	0	884	1	1565
	D	1657	625	1011	0	1	3294
	E	46	12	14	8	0	80
	Tot.	2806	1273	1335	3137	11	8562

Full Input Data And Results

Traffic Lane Flows

Full Input Data And Results

Lane	Scenario 14: 2031 DS5 PM
Junction: Unnamed Junction	
1/1 (short)	698
1/2 (with short)	918(In) 220(Out)
1/3	728
2/1	807
2/2 (with short)	1170(In) 809(Out)
2/3 (short)	361
3/1 (short)	263
3/2 (with short)	1401(In) 1138(Out)
3/3 (with short)	1563(In) 776(Out)
3/4 (short)	787
4/1	756
4/2	1018
4/3	1032
5/1	453
5/2	820
6/1	1026
6/2 (with short)	1551(In) 1227(Out)
6/3 (short)	324
7/1 (short)	505
7/2 (with short)	1011(In) 506(Out)
7/3	1125
7/4	1158
8/1	621
8/2	714
9/1	681
9/2 (with short)	884(In) 442(Out)
9/3 (short)	442
10/1	1026
10/2	1227
10/3	442
10/4	442
11/1	1125
11/2	1158
12/1	442

Full Input Data And Results

12/2	442
13/1	116
13/2	208
14/1	523
14/2	786
14/3	801
15/1	222
15/2	728
16/1	190
16/2	229
17/1	80
18/1	1018
18/2	1537
18/3	361
19/1	11
20/1	116
20/2	208

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	This lane uses a directly entered Saturation Flow						1800	1800
1/2	This lane uses a directly entered Saturation Flow						1800	1800
1/3	This lane uses a directly entered Saturation Flow						1800	1800
2/1	This lane uses a directly entered Saturation Flow						1800	1800
2/2	This lane uses a directly entered Saturation Flow						1800	1800
2/3	This lane uses a directly entered Saturation Flow						1800	1800
3/1	This lane uses a directly entered Saturation Flow						1800	1800
3/2	This lane uses a directly entered Saturation Flow						1800	1800
3/3	This lane uses a directly entered Saturation Flow						1800	1800
3/4	This lane uses a directly entered Saturation Flow						1800	1800
4/1	Infinite Saturation Flow						Inf	Inf
4/2	Infinite Saturation Flow						Inf	Inf
4/3	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	This lane uses a directly entered Saturation Flow						1800	1800
6/2	This lane uses a directly entered Saturation Flow						1800	1800
6/3	This lane uses a directly entered Saturation Flow						1800	1800
7/1	This lane uses a directly entered Saturation Flow						1800	1800
7/2	This lane uses a directly entered Saturation Flow						1800	1800
7/3	This lane uses a directly entered Saturation Flow						1800	1800
7/4	This lane uses a directly entered Saturation Flow						1800	1800
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1800	1800
9/2	This lane uses a directly entered Saturation Flow						1800	1800
9/3	This lane uses a directly entered Saturation Flow						1800	1800
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
10/3	Infinite Saturation Flow						Inf	Inf
10/4	Infinite Saturation Flow						Inf	Inf
11/1	This lane uses a directly entered Saturation Flow						1900	1900
11/2	This lane uses a directly entered Saturation Flow						1900	1900
12/1	This lane uses a directly entered Saturation Flow						1900	1900
12/2	This lane uses a directly entered Saturation Flow						1900	1900
13/1	This lane uses a directly entered Saturation Flow						1900	1900
13/2	This lane uses a directly entered Saturation Flow						1900	1900
14/1	This lane uses a directly entered Saturation Flow						1900	1900

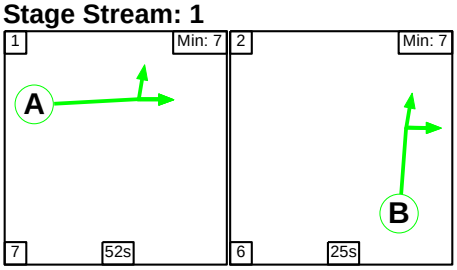
Full Input Data And Results

14/2	This lane uses a directly entered Saturation Flow	1900	1900
14/3	This lane uses a directly entered Saturation Flow	1900	1900
15/1	This lane uses a directly entered Saturation Flow	1900	1900
15/2	This lane uses a directly entered Saturation Flow	1900	1900
16/1	This lane uses a directly entered Saturation Flow	1900	1900
16/2	This lane uses a directly entered Saturation Flow	1900	1900
17/1	Infinite Saturation Flow	Inf	Inf
18/1	This lane uses a directly entered Saturation Flow	1900	1900
18/2	This lane uses a directly entered Saturation Flow	1900	1900
18/3	This lane uses a directly entered Saturation Flow	1900	1900
19/1	Infinite Saturation Flow	Inf	Inf
20/1	This lane uses a directly entered Saturation Flow	1800	1800
20/2	This lane uses a directly entered Saturation Flow	1800	1800

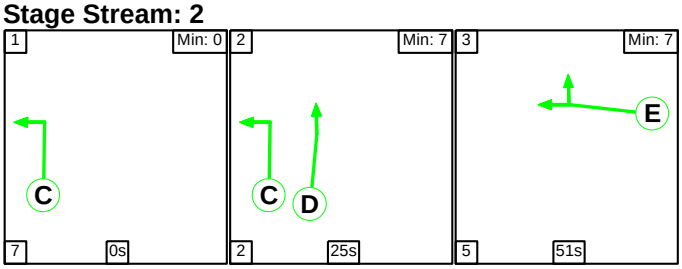
Scenario 11: '2021 DS5 AM' (FG13: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

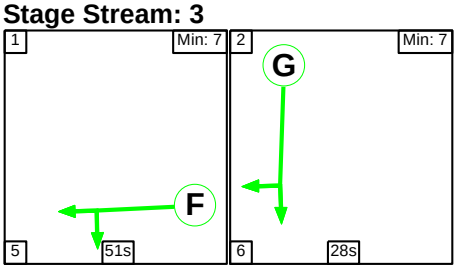
Stage Stream: 1



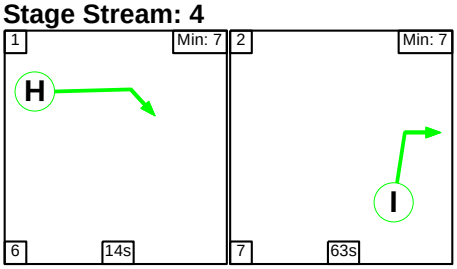
Stage Stream: 2



Stage Stream: 3

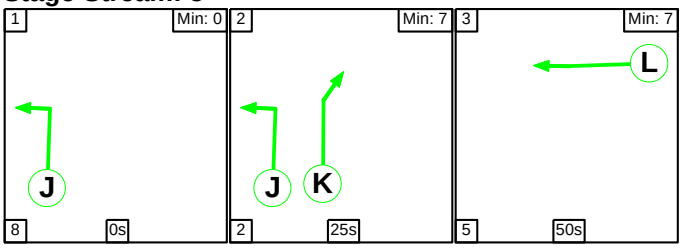


Stage Stream: 4

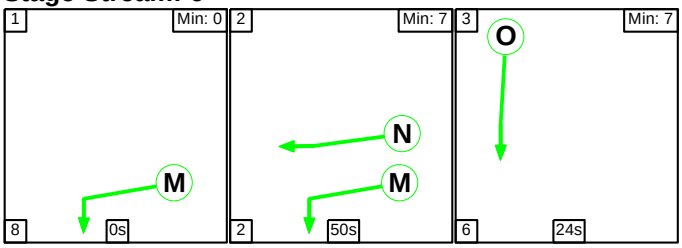


Full Input Data And Results

Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	52	25
Change Point	33	2

Stage Stream: 2

Stage	1	2	3
Duration	0	25	51
Change Point	83	0	27

Stage Stream: 3

Stage	1	2
Duration	51	28
Change Point	21	77

Stage Stream: 4

Stage	1	2
Duration	14	63
Change Point	63	83

Stage Stream: 5

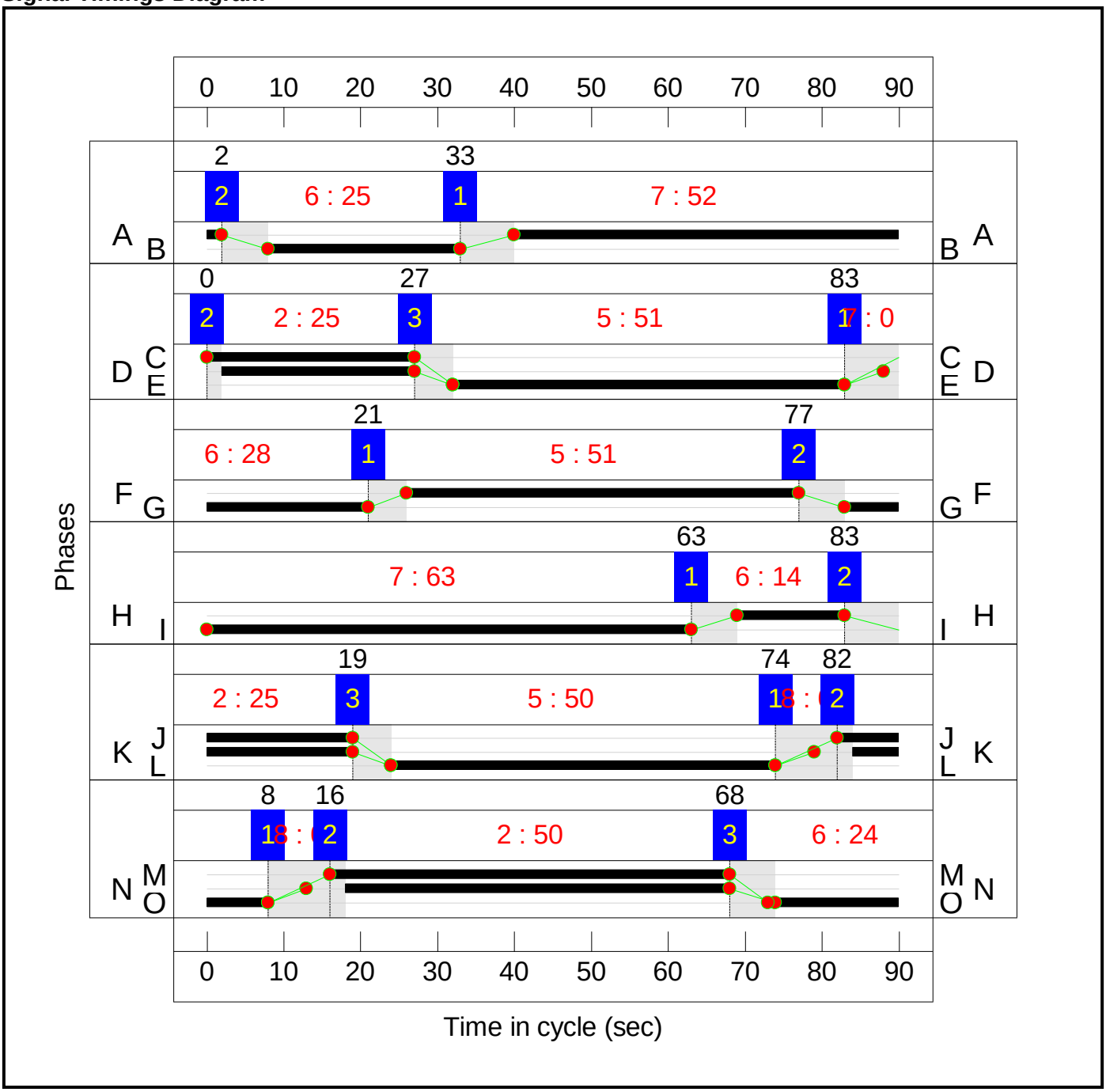
Stage	1	2	3
Duration	0	25	50
Change Point	74	82	19

Stage Stream: 6

Stage	1	2	3
Duration	0	50	24
Change Point	8	16	68

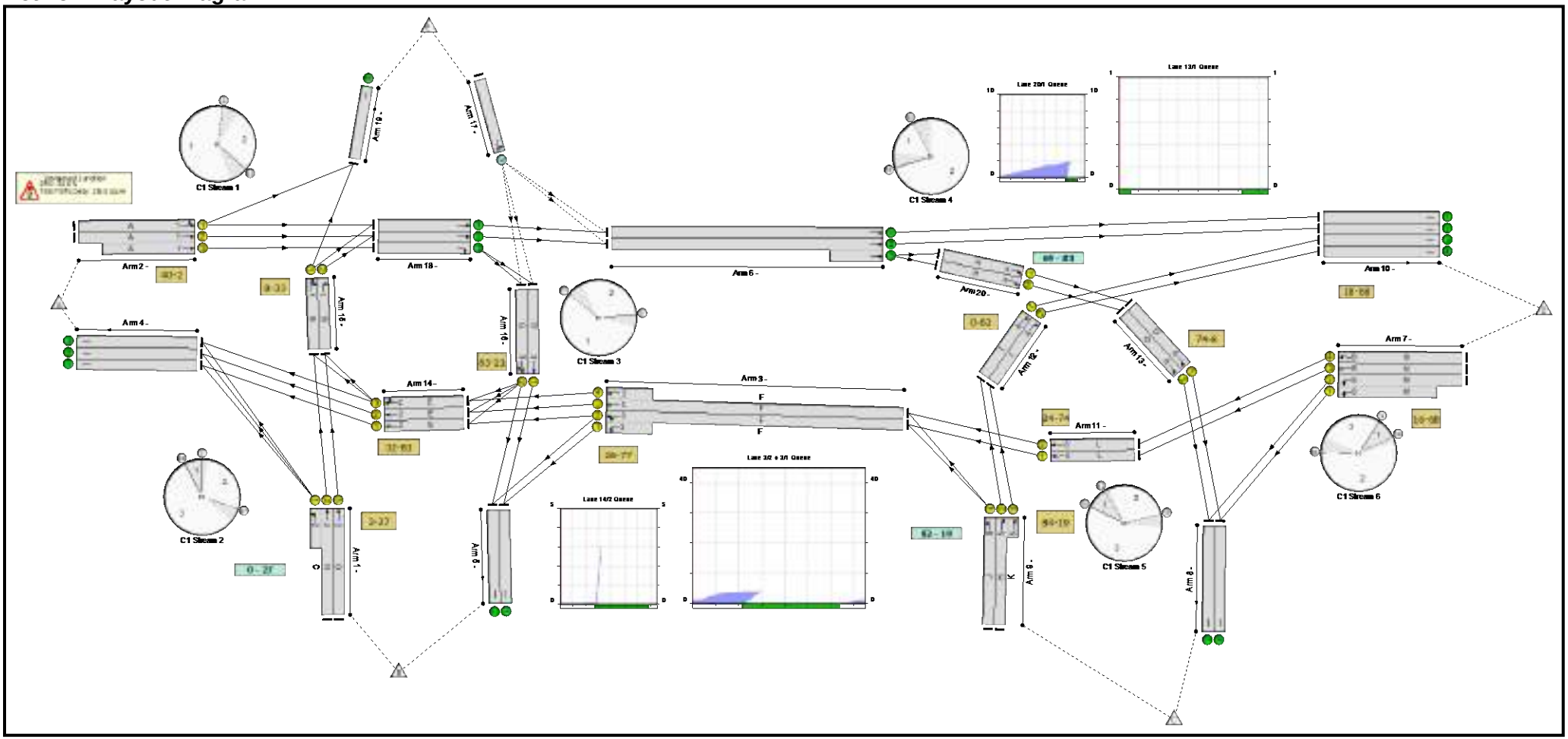
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.8%**
1/2+1/1	Left Ahead	U	2	N/A	D C		1	25:27	-	768	1800:1800	405+247	117.8 : 117.8%
1/3	Ahead	U	2	N/A	D		1	25	-	472	1800	520	90.8%
2/1	Ahead Left	U	1	N/A	A		1	52	-	1170	1800	1060	110.4%
2/2+2/3	Ahead	U	1	N/A	A		1	52	-	1292	1800:1800	976+181	111.7 : 111.7%
3/2+3/1	Left Ahead	U	3	N/A	F		1	51	-	1057	1800:1800	771+398	90.4 : 90.4%
3/3+3/4	Ahead	U	3	N/A	F		1	51	-	1055	1800:1800	531+698	85.9 : 85.9%
4/1		U	N/A	N/A	-		-	-	-	502	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	556	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	681	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	465	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
6/1	Ahead	U	N/A	N/A	-		-	-	-	1570	1800	1800	77.6%
6/2+6/3	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1566	1800:1800	1472+328	80.9 : 79.6%
7/2+7/1	Left	U	6	N/A	M		1	52	-	595	1800:1800	883+880	33.8 : 33.8%
7/3	Ahead	U	6	N/A	N		1	50	-	937	1800	1020	91.9%
7/4	Ahead	U	6	N/A	N		1	50	-	936	1800	1020	91.8%
8/1		U	N/A	N/A	-		-	-	-	396	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	484	Inf	Inf	0.0%
9/1	Left	U	5	N/A	J		1	27	-	239	1800	560	42.7%
9/2+9/3	Ahead	U	5	N/A	K		1	25	-	421	1800:1800	317+319	66.2 : 66.2%
10/1		U	N/A	N/A	-		-	-	-	1570	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1281	Inf	Inf	0.0%

Full Input Data And Results

10/3		U	N/A	N/A	-		-	-	-	210	Inf	Inf	0.0%
10/4		U	N/A	N/A	-		-	-	-	211	Inf	Inf	0.0%
11/1	Ahead	U	5	N/A	L		1	50	-	937	1900	1119	83.7%
11/2	Ahead	U	5	N/A	L		1	50	-	936	1900	1119	83.7%
12/1	Right	U	4	N/A	I		1	63	-	210	1900	1393	15.1%
12/2	Right	U	4	N/A	I		1	63	-	211	1900	1393	15.1%
13/1	Ahead	U	6	N/A	O		1	24	-	99	1900	528	17.4%
13/2	Ahead	U	6	N/A	O		1	24	-	186	1900	528	32.0%
14/1	Ahead	U	2	N/A	E		1	51	-	405	1900	1098	36.9%
14/2	Ahead	U	2	N/A	E		1	51	-	459	1900	1098	41.8%
14/3	Ahead Right	U	2	N/A	E		1	51	-	601	1900	1098	54.7%
15/1	Right Ahead	U	1	N/A	B		1	25	-	494	1900	591	71.4%
15/2	Right	U	1	N/A	B		1	25	-	472	1900	591	79.8%
16/1	Ahead	U	3	N/A	G		1	28	-	105	1900	612	15.4%
16/2	Ahead Right	U	3	N/A	G		1	28	-	108	1900	612	16.0%
17/1	Left Ahead	O	N/A	N/A	-		-	-	-	16	Inf	146	11.0%
18/1	Ahead	U	N/A	N/A	-		-	-	-	1569	1900	1900	73.4%
18/2	Ahead	U	N/A	N/A	-		-	-	-	1562	1900	1900	76.2%
18/3	Right	U	N/A	N/A	-		-	-	-	202	1900	1900	9.5%
19/1		U	N/A	N/A	-		-	-	-	95	Inf	Inf	0.0%
20/1	Ahead	U	4	N/A	H		1	14	-	99	1800	300	30.6%
20/2	Ahead	U	4	N/A	H		1	14	-	186	1800	300	56.4%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**16**	**0**	**0**	**60.6**	**224.3**	**0.0**	**285.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**16**	**0**	**0**	**60.6**	**224.3**	**0.0**	**285.0**	**-**	**-**	**-**	**-**
1/2+1/1	768	652	-	-	-	11.7	61.0	-	72.7	340.8	20.0	61.0	81.0
1/3	472	472	-	-	-	4.0	4.2	-	8.2	62.8	11.3	4.2	15.5
2/1	1170	1060	-	-	-	12.2	59.9	-	72.1	221.8	33.1	59.9	93.0
2/2+2/3	1292	1156	-	-	-	10.7	72.3	-	83.0	231.3	35.1	72.3	107.4
3/2+3/1	1057	1057	-	-	-	1.5	4.4	-	5.8	19.9	9.6	4.4	14.0
3/3+3/4	1055	1055	-	-	-	1.4	2.9	-	4.3	14.8	9.6	2.9	12.5
4/1	487	487	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	541	541	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	666	666	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	385	385	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1396	1396	-	-	-	0.0	1.7	-	1.7	4.4	0.0	1.7	1.7
6/2+6/3	1452	1452	-	-	-	0.0	2.1	-	2.1	5.1	11.5	2.1	13.6
7/2+7/1	595	595	-	-	-	1.5	0.3	-	1.8	10.7	3.6	0.3	3.9
7/3	937	937	-	-	-	4.6	5.0	-	9.6	37.0	21.1	5.0	26.1
7/4	936	936	-	-	-	4.6	5.0	-	9.6	36.8	21.1	5.0	26.0
8/1	389	389	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	467	467	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	239	239	-	-	-	1.6	0.4	-	2.0	30.2	4.7	0.4	5.1
9/2+9/3	421	421	-	-	-	3.1	1.0	-	4.0	34.5	6.2	1.0	7.2
10/1	1396	1396	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1191	1191	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	210	210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/4	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	937	937	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	936	936	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	210	210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	92	92	-	-	-	0.0	0.1	-	0.1	4.1	0.0	0.1	0.1
13/2	169	169	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	405	405	-	-	-	0.0	0.0	-	0.0	0.3	0.6	0.0	0.6
14/2	459	459	-	-	-	0.0	0.0	-	0.0	0.4	3.0	0.0	3.0
14/3	601	601	-	-	-	0.0	0.0	-	0.0	0.2	2.1	0.0	2.1
15/1	422	422	-	-	-	0.2	0.0	-	0.2	1.8	0.4	0.0	0.4
15/2	472	472	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	94	94	-	-	-	0.5	0.1	-	0.6	22.0	1.7	0.1	1.8
16/2	98	98	-	-	-	0.5	0.1	-	0.6	21.1	1.6	0.1	1.7
17/1	16	16	16	0	0	0.1	0.1	-	0.1	30.7	0.2	0.1	0.3
18/1	1395	1395	-	-	-	0.0	1.4	-	1.4	3.5	0.0	1.4	1.4
18/2	1448	1448	-	-	-	0.0	1.6	-	1.6	4.0	0.0	1.6	1.6
18/3	181	181	-	-	-	0.0	0.1	-	0.1	1.0	0.0	0.1	0.1
19/1	87	87	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/1	92	92	-	-	-	0.8	0.2	-	1.0	41.1	1.9	0.2	2.1
20/2	169	169	-	-	-	1.6	0.6	-	2.2	47.2	3.6	0.6	4.3

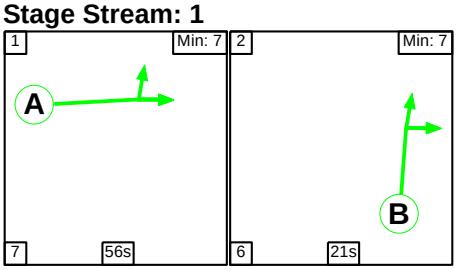
C1	Stream: 1 PRC for Signalled Lanes (%):	-24.1	Total Delay for Signalled Lanes (pcuHr):	155.30	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	-30.8	Total Delay for Signalled Lanes (pcuHr):	81.05	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-0.5	Total Delay for Signalled Lanes (pcuHr):	11.33	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	59.7	Total Delay for Signalled Lanes (pcuHr):	3.26	Cycle Time (s): 90
C1	Stream: 5 PRC for Signalled Lanes (%):	7.5	Total Delay for Signalled Lanes (pcuHr):	6.04	Cycle Time (s): 90
C1	Stream: 6 PRC for Signalled Lanes (%):	-2.1	Total Delay for Signalled Lanes (pcuHr):	21.05	Cycle Time (s): 90
	PRC Over All Lanes (%):	-30.8	Total Delay Over All Lanes(pcuHr):	284.96	

Full Input Data And Results

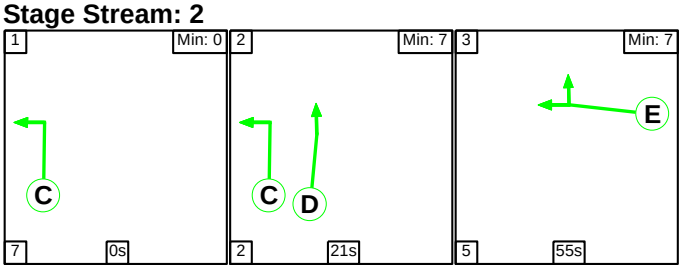
Scenario 12: '2021 DS5 PM' (FG14: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

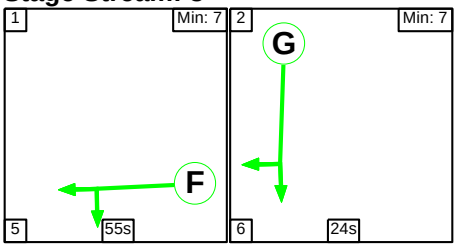
Stage Stream: 1



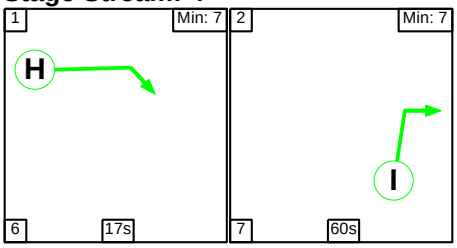
Stage Stream: 2



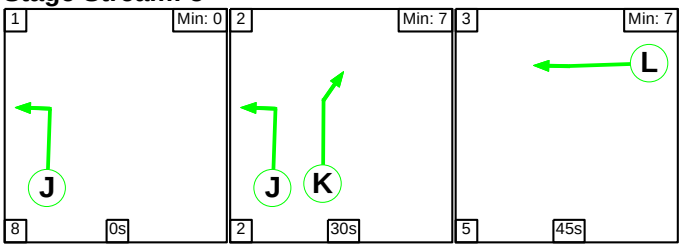
Stage Stream: 3



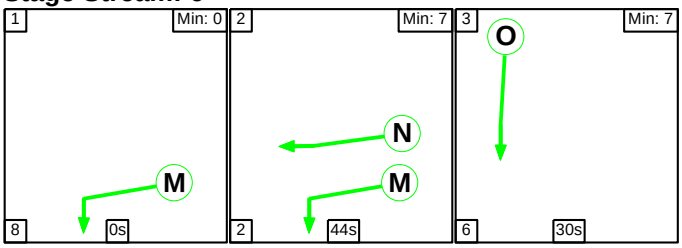
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	56	21
Change Point	46	19

Stage Stream: 2

Stage	1	2	3
Duration	0	21	55
Change Point	10	17	40

Stage Stream: 3

Stage	1	2
Duration	55	24
Change Point	34	4

Stage Stream: 4

Stage	1	2
Duration	17	60
Change Point	59	82

Stage Stream: 5

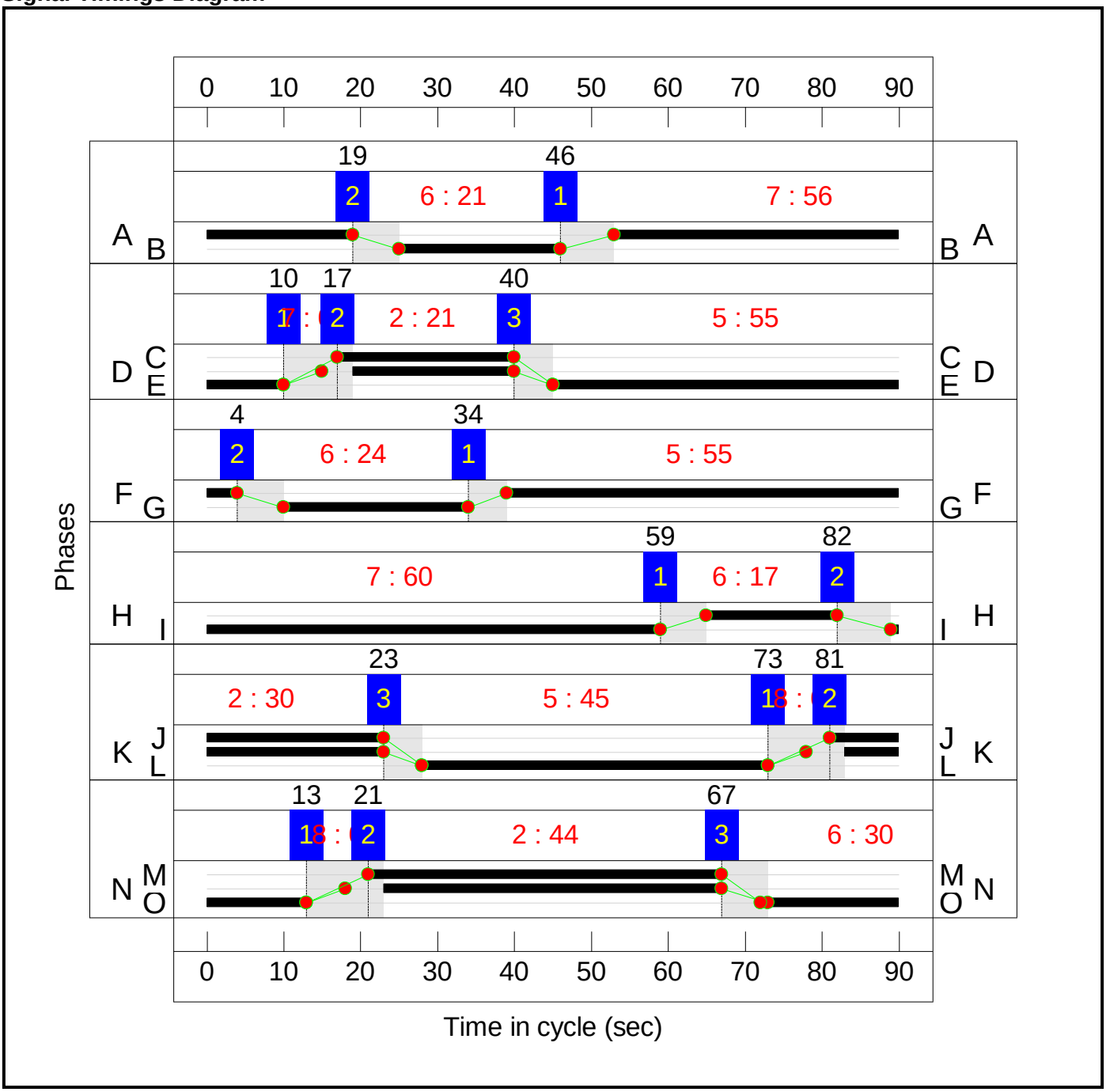
Stage	1	2	3
Duration	0	30	45
Change Point	73	81	23

Stage Stream: 6

Stage	1	2	3
Duration	0	44	30
Change Point	13	21	67

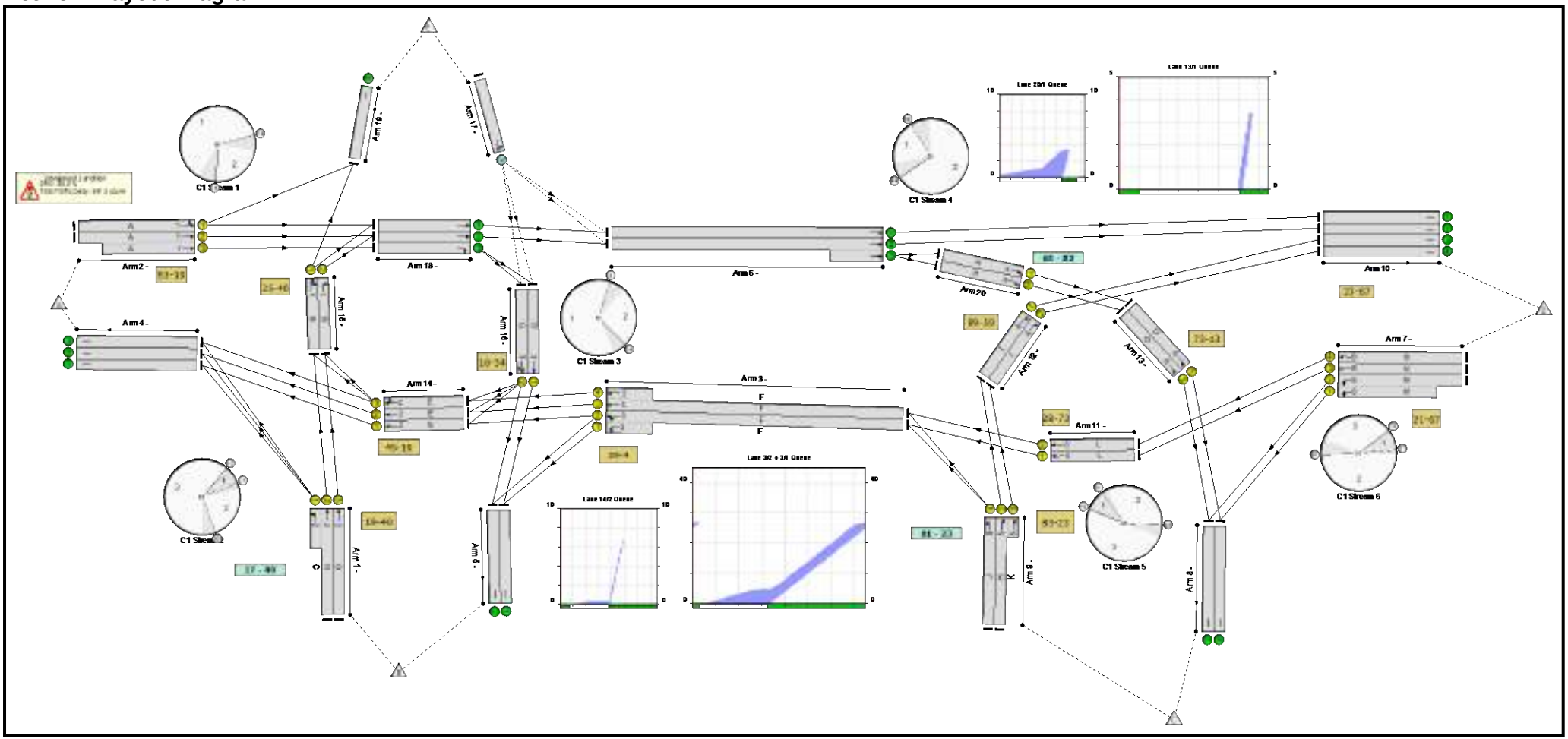
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**164.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**164.6%**
1/2+1/1	Left Ahead	U	2	N/A	D C		1	21:23	-	1041	1800:1800	262+371	164.6 : 164.6%
1/3	Ahead	U	2	N/A	D		1	21	-	426	1800	440	96.8%
2/1	Ahead Left	U	1	N/A	A		1	56	-	641	1800	1140	56.2%
2/2+2/3	Ahead	U	1	N/A	A		1	56	-	1017	1800:1800	894+589	68.6 : 68.6%
3/2+3/1	Left Ahead	U	3	N/A	F		1	55	-	1438	1800:1800	877+340	97.7 : 97.2%
3/3+3/4	Ahead	U	3	N/A	F		1	55	-	1437	1800:1800	711+628	89.3 : 90.2%
4/1		U	N/A	N/A	-		-	-	-	927	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	980	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	891	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	633	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	512	Inf	Inf	0.0%
6/1	Ahead	U	N/A	N/A	-		-	-	-	1064	1800	1800	49.8%
6/2+6/3	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1061	1800:1800	1191+609	58.9 : 58.9%
7/2+7/1	Left	U	6	N/A	M		1	46	-	1006	1800:1800	822+822	61.2 : 61.2%
7/3	Ahead	U	6	N/A	N		1	44	-	1150	1800	900	127.8%
7/4	Ahead	U	6	N/A	N		1	44	-	1136	1800	900	126.2%
8/1		U	N/A	N/A	-		-	-	-	657	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	708	Inf	Inf	0.0%
9/1	Left	U	5	N/A	J		1	32	-	589	1800	660	89.2%
9/2+9/3	Ahead	U	5	N/A	K		1	30	-	943	1800:1800	368+368	128.1 : 128.1%
10/1		U	N/A	N/A	-		-	-	-	1064	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%

Full Input Data And Results

10/3		U	N/A	N/A	-		-	-	-	471	Inf	Inf	0.0%
10/4		U	N/A	N/A	-		-	-	-	472	Inf	Inf	0.0%
11/1	Ahead	U	5	N/A	L		1	45	-	1150	1900	1013	88.8%
11/2	Ahead	U	5	N/A	L		1	45	-	1136	1900	1013	88.8%
12/1	Right	U	4	N/A	I		1	60	-	471	1900	1330	27.6%
12/2	Right	U	4	N/A	I		1	60	-	472	1900	1330	27.7%
13/1	Ahead	U	6	N/A	O		1	30	-	154	1900	654	23.5%
13/2	Ahead	U	6	N/A	O		1	30	-	205	1900	654	31.3%
14/1	Ahead	U	2	N/A	E		1	55	-	724	1900	1182	51.0%
14/2	Ahead	U	2	N/A	E		1	55	-	776	1900	1182	54.8%
14/3	Ahead Right	U	2	N/A	E		1	55	-	690	1900	1182	49.3%
15/1	Right Ahead	U	1	N/A	B		1	21	-	433	1900	507	52.0%
15/2	Right	U	1	N/A	B		1	21	-	426	1900	507	84.1%
16/1	Ahead	U	3	N/A	G		1	24	-	231	1900	528	43.8%
16/2	Ahead Right	U	3	N/A	G		1	24	-	229	1900	528	43.4%
17/1	Left Ahead	O	N/A	N/A	-		-	-	-	80	Inf	351	22.8%
18/1	Ahead	U	N/A	N/A	-		-	-	-	1062	1900	1900	47.0%
18/2	Ahead	U	N/A	N/A	-		-	-	-	1039	1900	1900	54.7%
18/3	Right	U	N/A	N/A	-		-	-	-	404	1900	1900	21.3%
19/1		U	N/A	N/A	-		-	-	-	12	Inf	Inf	0.0%
20/1	Ahead	U	4	N/A	H		1	17	-	154	1800	360	42.8%
20/2	Ahead	U	4	N/A	H		1	17	-	205	1800	360	56.9%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**80**	**0**	**0**	**104.6**	**592.6**	**0.0**	**697.3**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**80**	**0**	**0**	**104.6**	**592.6**	**0.0**	**697.3**	**-**	**-**	**-**	**-**
1/2+1/1	1041	632	-	-	-	26.3	205.6	-	231.8	801.7	34.0	205.6	239.6
1/3	426	426	-	-	-	4.0	7.4	-	11.4	96.2	10.5	7.4	17.9
2/1	641	641	-	-	-	1.7	0.6	-	2.3	13.0	9.1	0.6	9.7
2/2+2/3	1017	1017	-	-	-	2.4	1.1	-	3.5	12.5	8.5	1.1	9.6
3/2+3/1	1188	1188	-	-	-	3.8	11.4	-	15.2	46.0	27.1	11.4	38.5
3/3+3/4	1201	1201	-	-	-	2.3	4.1	-	6.4	19.2	24.1	4.1	28.2
4/1	726	726	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	772	772	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	704	704	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	562	562	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	454	454	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	896	896	-	-	-	0.0	0.5	-	0.5	2.0	0.0	0.5	0.5
6/2+6/3	1061	1061	-	-	-	0.0	0.7	-	0.7	2.5	13.1	0.7	13.8
7/2+7/1	1006	1006	-	-	-	4.0	0.8	-	4.8	17.1	8.2	0.8	9.0
7/3	1150	900	-	-	-	16.4	127.3	-	143.7	449.8	35.0	127.3	162.3
7/4	1136	900	-	-	-	15.8	120.4	-	136.2	431.6	34.3	120.4	154.7
8/1	657	657	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	708	708	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	589	589	-	-	-	4.4	3.8	-	8.1	49.8	13.7	3.8	17.5
9/2+9/3	943	736	-	-	-	17.1	105.8	-	122.9	469.0	26.7	105.8	132.4
10/1	896	896	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	702	702	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/4	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	900	900	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	900	900	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	368	368	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	154	154	-	-	-	0.1	0.2	-	0.3	6.1	3.4	0.2	3.6
13/2	205	205	-	-	-	0.1	0.0	-	0.1	2.3	4.4	0.0	4.4
14/1	603	603	-	-	-	0.1	0.0	-	0.1	0.6	2.1	0.0	2.1
14/2	648	648	-	-	-	0.2	0.0	-	0.2	1.0	7.0	0.0	7.0
14/3	582	582	-	-	-	0.2	0.0	-	0.2	1.2	6.5	0.0	6.5
15/1	264	264	-	-	-	0.0	0.0	-	0.0	0.3	0.0	0.0	0.0
15/2	426	426	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	231	231	-	-	-	1.5	0.4	-	1.9	30.1	5.1	0.4	5.5
16/2	229	229	-	-	-	1.5	0.4	-	1.9	29.1	4.9	0.4	5.3
17/1	80	80	80	0	0	0.1	0.1	-	0.2	9.3	0.5	0.1	0.6
18/1	894	894	-	-	-	0.0	0.4	-	0.4	1.8	0.0	0.4	0.4
18/2	1039	1039	-	-	-	0.0	0.6	-	0.6	2.1	0.0	0.6	0.6
18/3	404	404	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
19/1	11	11	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/1	154	154	-	-	-	1.0	0.4	-	1.4	32.2	3.3	0.4	3.7
20/2	205	205	-	-	-	1.7	0.7	-	2.3	41.1	4.1	0.7	4.8

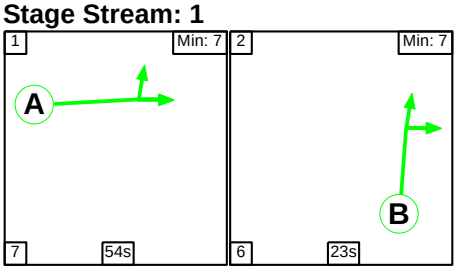
C1	Stream: 1 PRC for Signalled Lanes (%):	7.0	Total Delay for Signalled Lanes (pcuHr):	5.86	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	-82.9	Total Delay for Signalled Lanes (pcuHr):	243.67	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-8.6	Total Delay for Signalled Lanes (pcuHr):	25.37	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	58.0	Total Delay for Signalled Lanes (pcuHr):	3.72	Cycle Time (s): 90
C1	Stream: 5 PRC for Signalled Lanes (%):	-42.4	Total Delay for Signalled Lanes (pcuHr):	131.00	Cycle Time (s): 90
C1	Stream: 6 PRC for Signalled Lanes (%):	-42.0	Total Delay for Signalled Lanes (pcuHr):	285.02	Cycle Time (s): 90
	PRC Over All Lanes (%):	-82.9	Total Delay Over All Lanes(pcuHr):	697.26	

Full Input Data And Results

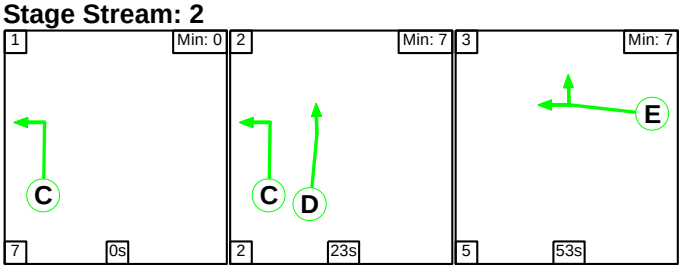
Scenario 13: '2031 DS5 AM' (FG15: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

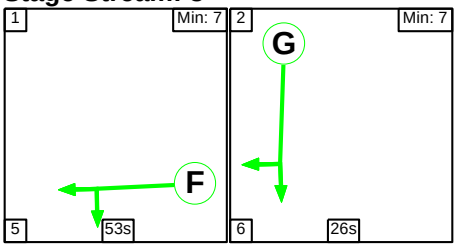
Stage Stream: 1



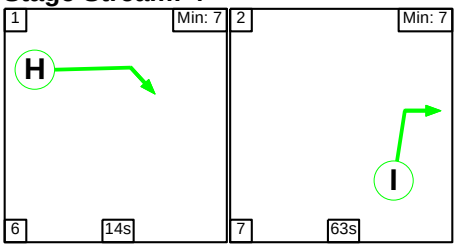
Stage Stream: 2



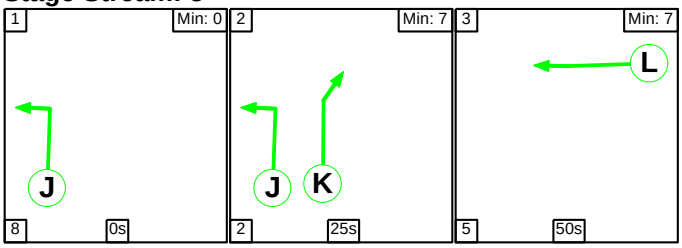
Stage Stream: 3



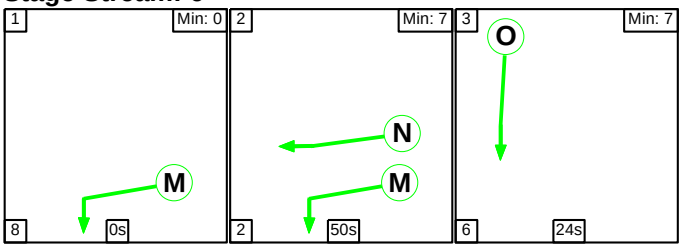
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	54	23
Change Point	31	2

Stage Stream: 2

Stage	1	2	3
Duration	0	23	53
Change Point	83	0	25

Stage Stream: 3

Stage	1	2
Duration	53	26
Change Point	19	77

Stage Stream: 4

Stage	1	2
Duration	14	63
Change Point	63	83

Stage Stream: 5

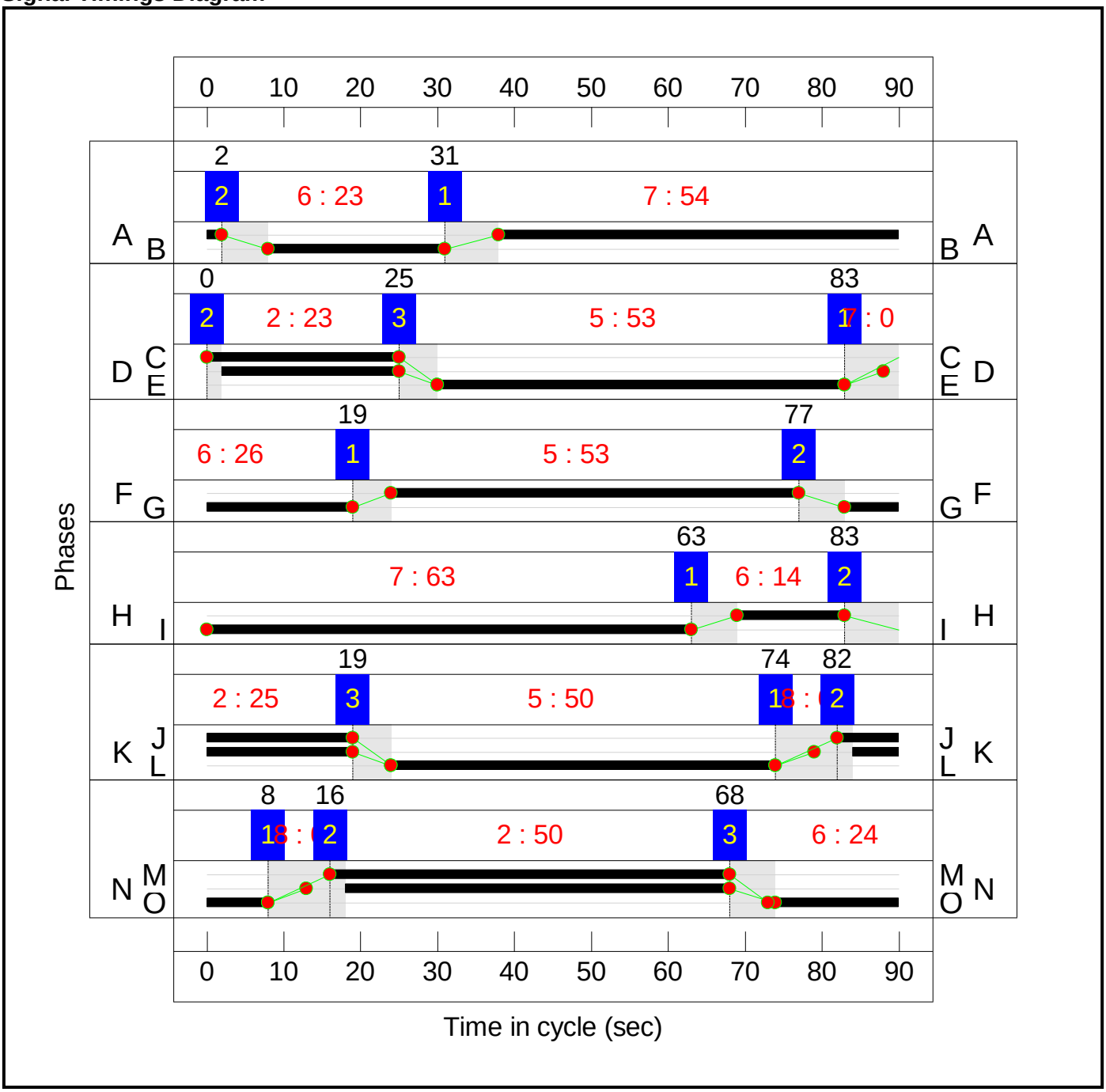
Stage	1	2	3
Duration	0	25	50
Change Point	74	82	19

Stage Stream: 6

Stage	1	2	3
Duration	0	50	24
Change Point	8	16	68

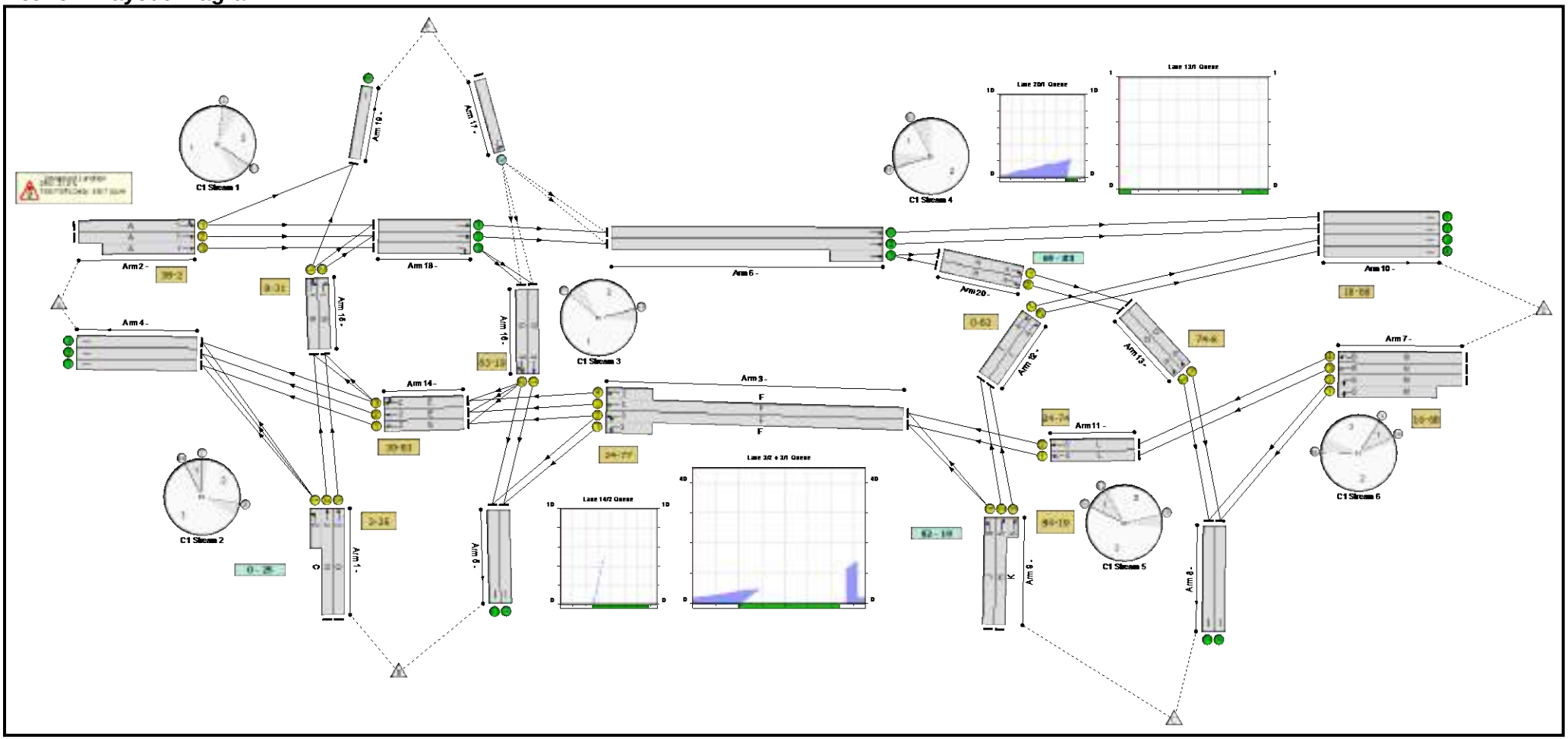
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**124.1%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**124.1%**
1/2+1/1	Left Ahead	U	2	N/A	D C		1	23:25	-	737	1800:1800	390+204	124.1 : 124.1%
1/3	Ahead	U	2	N/A	D		1	23	-	594	1800	480	123.8%
2/1	Ahead Left	U	1	N/A	A		1	54	-	1268	1800	1100	115.3%
2/2+2/3	Ahead	U	1	N/A	A		1	54	-	1394	1800:1800	1004+198	115.9 : 115.9%
3/2+3/1	Left Ahead	U	3	N/A	F		1	53	-	1279	1800:1800	696+596	96.1 : 96.3%
3/3+3/4	Ahead	U	3	N/A	F		1	53	-	1309	1800:1800	667+656	96.2 : 96.3%
4/1		U	N/A	N/A	-		-	-	-	296	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	745	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	715	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	702	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	606	Inf	Inf	0.0%
6/1	Ahead	U	N/A	N/A	-		-	-	-	1682	1800	1800	79.5%
6/2+6/3	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1760	1800:1800	1487+313	82.5 : 82.9%
7/2+7/1	Left	U	6	N/A	M		1	52	-	526	1800:1800	881+881	29.8 : 29.8%
7/3	Ahead	U	6	N/A	N		1	50	-	1056	1800	1020	103.5%
7/4	Ahead	U	6	N/A	N		1	50	-	1056	1800	1020	103.5%
8/1		U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	444	Inf	Inf	0.0%
9/1	Left	U	5	N/A	J		1	27	-	476	1800	560	85.0%
9/2+9/3	Ahead	U	5	N/A	K		1	25	-	648	1800:1800	318+318	101.9 : 101.9%
10/1		U	N/A	N/A	-		-	-	-	1682	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1454	Inf	Inf	0.0%

Full Input Data And Results

10/3		U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
10/4		U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
11/1	Ahead	U	5	N/A	L		1	50	-	1056	1900	1119	91.2%
11/2	Ahead	U	5	N/A	L		1	50	-	1056	1900	1119	91.2%
12/1	Right	U	4	N/A	I		1	63	-	324	1900	1393	22.8%
12/2	Right	U	4	N/A	I		1	63	-	324	1900	1393	22.8%
13/1	Ahead	U	6	N/A	O		1	24	-	125	1900	528	20.1%
13/2	Ahead	U	6	N/A	O		1	24	-	181	1900	528	29.1%
14/1	Ahead	U	2	N/A	E		1	53	-	212	1900	1140	18.2%
14/2	Ahead	U	2	N/A	E		1	53	-	660	1900	1140	56.3%
14/3	Ahead Right	U	2	N/A	E		1	53	-	649	1900	1140	55.4%
15/1	Right Ahead	U	1	N/A	B		1	23	-	502	1900	549	74.3%
15/2	Right	U	1	N/A	B		1	23	-	594	1900	549	87.4%
16/1	Ahead	U	3	N/A	G		1	26	-	112	1900	570	17.0%
16/2	Ahead Right	U	3	N/A	G		1	26	-	129	1900	570	19.8%
17/1	Left Ahead	O	N/A	N/A	-		-	-	-	15	Inf	127	11.9%
18/1	Ahead	U	N/A	N/A	-		-	-	-	1680	1900	1900	75.2%
18/2	Ahead	U	N/A	N/A	-		-	-	-	1758	1900	1900	78.1%
18/3	Right	U	N/A	N/A	-		-	-	-	230	1900	1900	10.4%
19/1		U	N/A	N/A	-		-	-	-	90	Inf	Inf	0.0%
20/1	Ahead	U	4	N/A	H		1	14	-	125	1800	300	35.3%
20/2	Ahead	U	4	N/A	H		1	14	-	181	1800	300	51.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**15**	**0**	**0**	**87.0**	**421.7**	**0.0**	**508.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**15**	**0**	**0**	**87.0**	**421.7**	**0.0**	**508.7**	**-**	**-**	**-**	**-**
1/2+1/1	737	594	-	-	-	13.0	74.0	-	87.0	424.9	20.3	74.0	94.3
1/3	594	480	-	-	-	10.7	59.5	-	70.2	425.2	17.7	59.5	77.2
2/1	1268	1100	-	-	-	15.6	87.6	-	103.3	293.2	38.3	87.6	126.0
2/2+2/3	1394	1203	-	-	-	13.8	99.1	-	112.9	291.5	39.0	99.1	138.1
3/2+3/1	1243	1243	-	-	-	2.3	9.2	-	11.6	33.5	14.1	9.2	23.3
3/3+3/4	1273	1273	-	-	-	2.5	9.3	-	11.8	33.3	14.1	9.3	23.4
4/1	275	275	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	710	710	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	681	681	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	671	671	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	574	574	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1431	1431	-	-	-	0.0	1.9	-	1.9	4.8	0.0	1.9	1.9
6/2+6/3	1486	1486	-	-	-	0.0	2.3	-	2.3	5.7	12.5	2.3	14.8
7/2+7/1	526	526	-	-	-	1.3	0.2	-	1.5	10.4	3.1	0.2	3.4
7/3	1056	1020	-	-	-	7.1	27.6	-	34.6	118.1	27.3	27.6	54.9
7/4	1056	1020	-	-	-	7.1	27.6	-	34.6	118.1	27.3	27.6	54.9
8/1	369	369	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	416	416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	476	476	-	-	-	3.8	2.7	-	6.5	49.2	11.1	2.7	13.8
9/2+9/3	648	636	-	-	-	6.0	16.1	-	22.1	122.7	14.1	16.1	30.2
10/1	1431	1431	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1227	1227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/4	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	1020	1020	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1020	1020	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	106	106	-	-	-	0.0	0.1	-	0.1	4.3	0.0	0.1	0.1
13/2	153	153	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	207	207	-	-	-	0.0	0.0	-	0.0	0.8	0.3	0.0	0.3
14/2	642	642	-	-	-	0.0	0.0	-	0.0	0.2	5.0	0.0	5.0
14/3	631	631	-	-	-	0.0	0.0	-	0.0	0.2	5.3	0.0	5.3
15/1	408	408	-	-	-	0.2	0.0	-	0.2	2.1	0.4	0.0	0.4
15/2	480	480	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	97	97	-	-	-	0.5	0.1	-	0.6	23.1	1.8	0.1	1.9
16/2	113	113	-	-	-	0.6	0.1	-	0.7	22.6	1.9	0.1	2.0
17/1	15	15	15	0	0	0.1	0.1	-	0.1	34.6	0.2	0.1	0.3
18/1	1429	1429	-	-	-	0.0	1.5	-	1.5	3.8	0.0	1.5	1.5
18/2	1484	1484	-	-	-	0.0	1.8	-	1.8	4.3	0.0	1.8	1.8
18/3	198	198	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
19/1	79	79	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/1	106	106	-	-	-	0.9	0.3	-	1.2	41.2	2.2	0.3	2.5
20/2	153	153	-	-	-	1.4	0.5	-	1.9	45.2	3.4	0.5	3.9

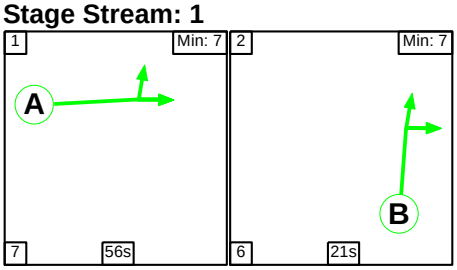
C1	Stream: 1 PRC for Signalled Lanes (%):	-28.8	Total Delay for Signalled Lanes (pcuHr):	216.38	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	-37.9	Total Delay for Signalled Lanes (pcuHr):	157.27	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-7.1	Total Delay for Signalled Lanes (pcuHr):	24.67	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	75.9	Total Delay for Signalled Lanes (pcuHr):	3.14	Cycle Time (s): 90
C1	Stream: 5 PRC for Signalled Lanes (%):	-13.2	Total Delay for Signalled Lanes (pcuHr):	28.59	Cycle Time (s): 90
C1	Stream: 6 PRC for Signalled Lanes (%):	-15.0	Total Delay for Signalled Lanes (pcuHr):	70.93	Cycle Time (s): 90
	PRC Over All Lanes (%):	-37.9	Total Delay Over All Lanes(pcuHr):	508.71	

Full Input Data And Results

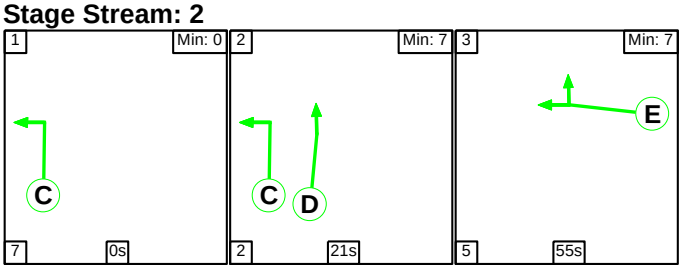
Scenario 14: '2031 DS5 PM' (FG16: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

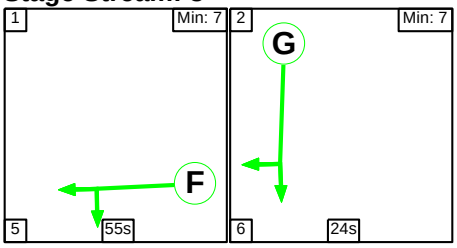
Stage Stream: 1



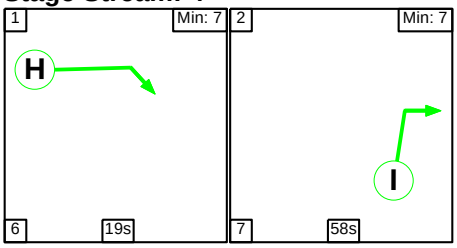
Stage Stream: 2



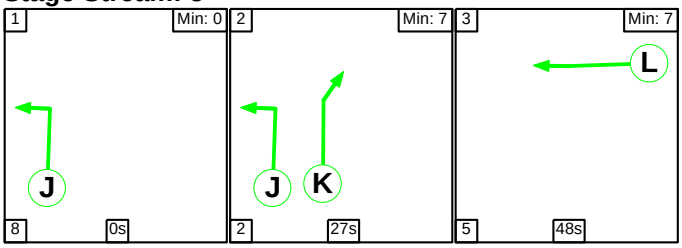
Stage Stream: 3



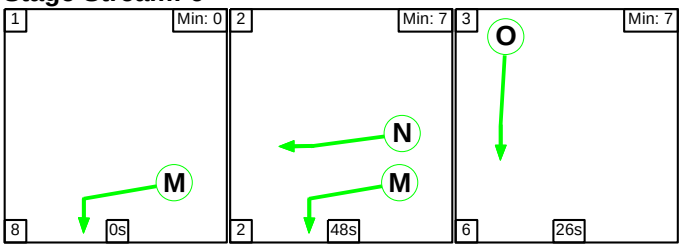
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	56	21
Change Point	46	19

Stage Stream: 2

Stage	1	2	3
Duration	0	21	55
Change Point	10	17	40

Stage Stream: 3

Stage	1	2
Duration	55	24
Change Point	34	4

Stage Stream: 4

Stage	1	2
Duration	19	58
Change Point	62	87

Stage Stream: 5

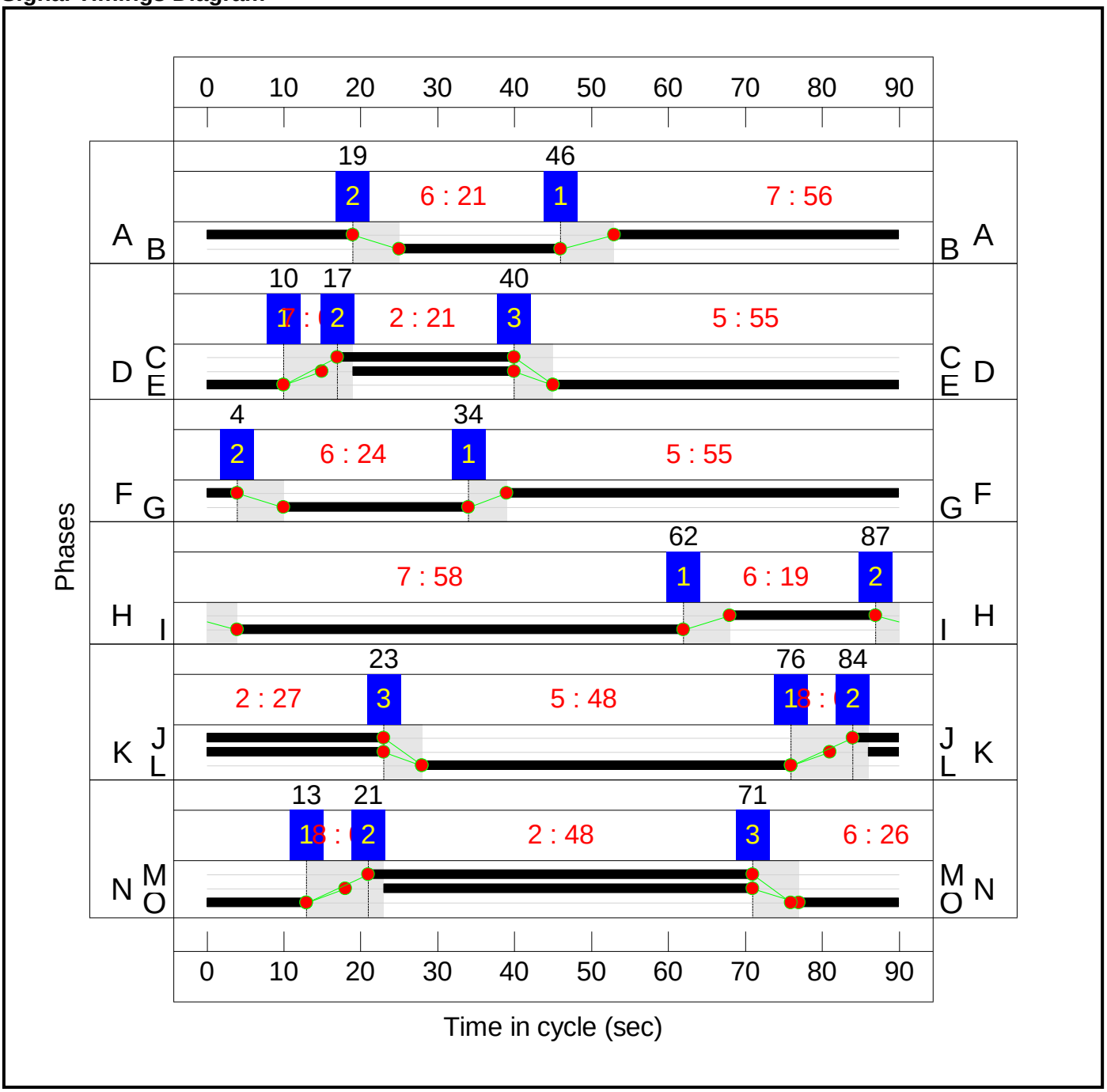
Stage	1	2	3
Duration	0	27	48
Change Point	76	84	23

Stage Stream: 6

Stage	1	2	3
Duration	0	48	26
Change Point	13	21	71

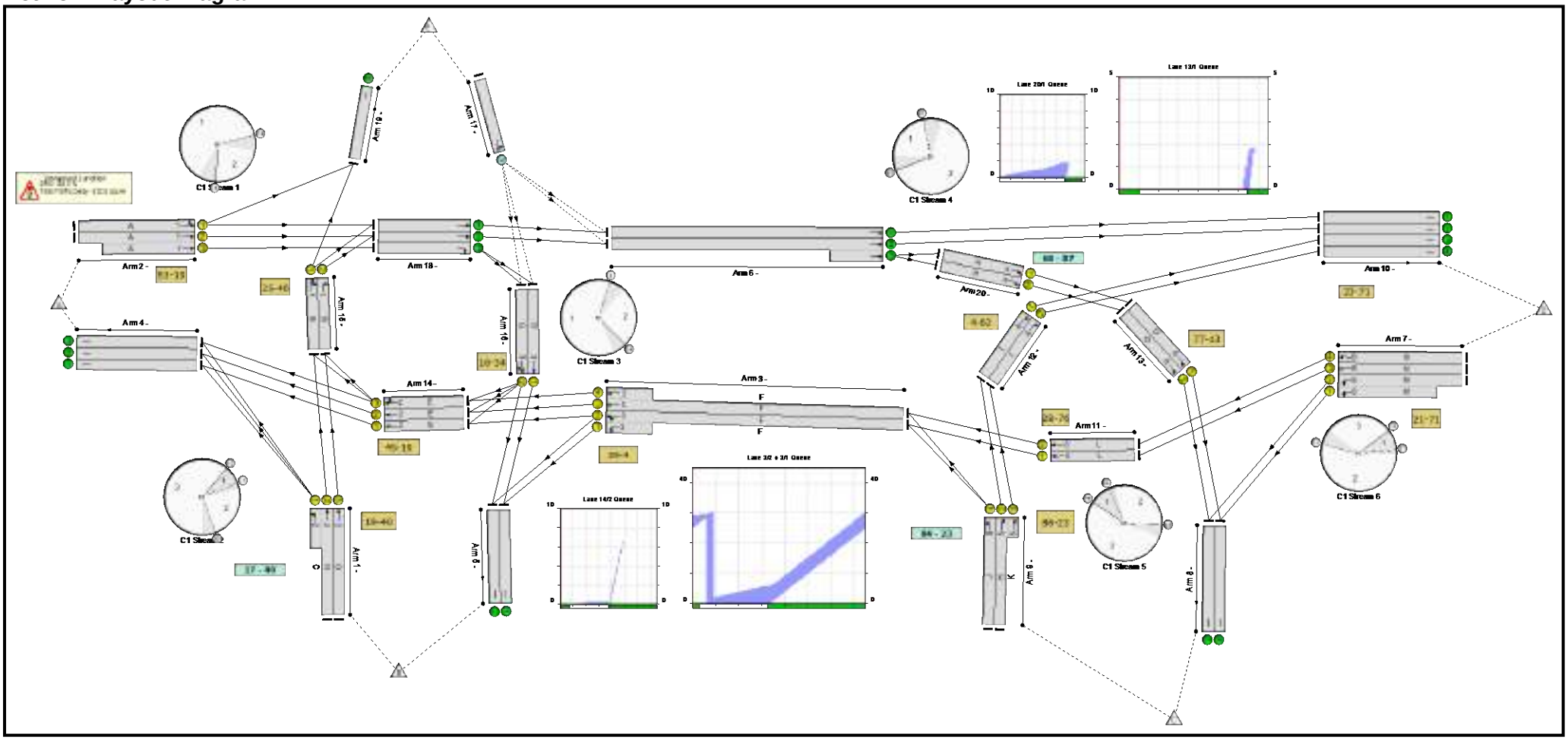
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**166.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**166.8%**
1/2+1/1	Left Ahead	U	2	N/A	D C		1	21:23	-	918	1800:1800	132+418	166.8 : 166.8%
1/3	Ahead	U	2	N/A	D		1	21	-	728	1800	440	165.5%
2/1	Ahead Left	U	1	N/A	A		1	56	-	807	1800	1140	70.8%
2/2+2/3	Ahead	U	1	N/A	A		1	56	-	1170	1800:1800	949+423	85.3 : 85.3%
3/2+3/1	Left Ahead	U	3	N/A	F		1	55	-	1401	1800:1800	957+221	103.8 : 103.8%
3/3+3/4	Ahead	U	3	N/A	F		1	55	-	1563	1800:1800	677+687	98.1 : 98.0%
4/1		U	N/A	N/A	-		-	-	-	756	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	1018	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	1032	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	453	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	820	Inf	Inf	0.0%
6/1	Ahead	U	N/A	N/A	-		-	-	-	1026	1800	1800	52.1%
6/2+6/3	Ahead Ahead2	U	N/A	N/A	-		-	-	-	1551	1800:1800	1424+376	70.4 : 69.4%
7/2+7/1	Left	U	6	N/A	M		1	50	-	1011	1800:1800	863+861	58.7 : 58.7%
7/3	Ahead	U	6	N/A	N		1	48	-	1125	1800	980	114.8%
7/4	Ahead	U	6	N/A	N		1	48	-	1158	1800	980	118.2%
8/1		U	N/A	N/A	-		-	-	-	621	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	714	Inf	Inf	0.0%
9/1	Left	U	5	N/A	J		1	29	-	681	1800	600	113.5%
9/2+9/3	Ahead	U	5	N/A	K		1	27	-	884	1800:1800	338+338	130.8 : 130.8%
10/1		U	N/A	N/A	-		-	-	-	1026	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1227	Inf	Inf	0.0%

Full Input Data And Results

10/3		U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
10/4		U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
11/1	Ahead	U	5	N/A	L		1	48	-	1125	1900	1077	91.0%
11/2	Ahead	U	5	N/A	L		1	48	-	1158	1900	1077	91.0%
12/1	Right	U	4	N/A	I		1	58	-	442	1900	1288	26.2%
12/2	Right	U	4	N/A	I		1	58	-	442	1900	1288	26.2%
13/1	Ahead	U	6	N/A	O		1	26	-	116	1900	570	16.5%
13/2	Ahead	U	6	N/A	O		1	26	-	208	1900	570	29.3%
14/1	Ahead	U	2	N/A	E		1	55	-	523	1900	1182	37.7%
14/2	Ahead	U	2	N/A	E		1	55	-	786	1900	1182	57.0%
14/3	Ahead Right	U	2	N/A	E		1	55	-	801	1900	1182	58.1%
15/1	Right Ahead	U	1	N/A	B		1	21	-	222	1900	507	26.4%
15/2	Right	U	1	N/A	B		1	21	-	728	1900	507	86.8%
16/1	Ahead	U	3	N/A	G		1	24	-	190	1900	528	36.0%
16/2	Ahead Right	U	3	N/A	G		1	24	-	229	1900	528	43.4%
17/1	Left Ahead	O	N/A	N/A	-		-	-	-	80	Inf	298	26.8%
18/1	Ahead	U	N/A	N/A	-		-	-	-	1018	1900	1900	49.0%
18/2	Ahead	U	N/A	N/A	-		-	-	-	1537	1900	1900	65.7%
18/3	Right	U	N/A	N/A	-		-	-	-	361	1900	1900	19.0%
19/1		U	N/A	N/A	-		-	-	-	11	Inf	Inf	0.0%
20/1	Ahead	U	4	N/A	H		1	19	-	116	1800	400	23.5%
20/2	Ahead	U	4	N/A	H		1	19	-	208	1800	400	41.8%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**80**	**0**	**0**	**116.8**	**703.1**	**0.0**	**820.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**80**	**0**	**0**	**116.8**	**703.1**	**0.0**	**820.0**	**-**	**-**	**-**	**-**
1/2+1/1	918	550	-	-	-	23.5	185.1	-	208.6	818.0	31.8	185.1	216.8
1/3	728	440	-	-	-	18.8	145.3	-	164.0	811.0	25.4	145.3	170.7
2/1	807	807	-	-	-	2.5	1.2	-	3.7	16.3	13.2	1.2	14.4
2/2+2/3	1170	1170	-	-	-	3.2	2.8	-	6.0	18.6	14.3	2.8	17.1
3/2+3/1	1223	1194	-	-	-	5.0	31.8	-	36.9	108.5	30.2	31.8	62.0
3/3+3/4	1337	1337	-	-	-	3.7	12.8	-	16.5	44.4	27.8	12.8	40.6
4/1	585	585	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	813	813	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	825	825	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	729	729	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	939	939	-	-	-	0.0	0.5	-	0.5	2.1	0.0	0.5	0.5
6/2+6/3	1263	1263	-	-	-	0.0	1.2	-	1.2	3.4	15.1	1.2	16.2
7/2+7/1	1011	1011	-	-	-	3.3	0.7	-	4.0	14.3	7.6	0.7	8.3
7/3	1125	980	-	-	-	11.7	76.2	-	87.9	281.2	31.8	76.2	107.9
7/4	1158	980	-	-	-	13.1	92.1	-	105.2	327.1	33.4	92.1	125.5
8/1	599	599	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	673	673	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	681	600	-	-	-	9.5	44.3	-	53.8	284.6	19.1	44.3	63.4
9/2+9/3	884	676	-	-	-	17.0	106.1	-	123.1	501.2	25.2	106.1	131.3
10/1	939	939	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1002	1002	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	338	338	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/4	338	338	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1	980	980	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	980	980	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	338	338	-	-	-	0.0	0.0	-	0.0	0.3	3.2	0.0	3.2
12/2	338	338	-	-	-	0.0	0.0	-	0.0	0.3	3.2	0.0	3.2
13/1	94	94	-	-	-	0.1	0.1	-	0.2	6.8	1.9	0.1	2.0
13/2	167	167	-	-	-	0.2	0.0	-	0.2	3.2	3.6	0.0	3.6
14/1	445	445	-	-	-	0.2	0.0	-	0.2	1.2	1.2	0.0	1.2
14/2	674	674	-	-	-	0.1	0.0	-	0.1	0.8	6.6	0.0	6.6
14/3	687	687	-	-	-	0.2	0.0	-	0.2	1.0	6.6	0.0	6.6
15/1	134	134	-	-	-	0.0	0.0	-	0.0	0.6	0.0	0.0	0.0
15/2	440	440	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	190	190	-	-	-	1.2	0.3	-	1.5	28.8	4.1	0.3	4.4
16/2	229	229	-	-	-	1.4	0.4	-	1.8	28.6	4.9	0.4	5.3
17/1	80	80	80	0	0	0.1	0.2	-	0.3	13.8	0.8	0.2	1.0
18/1	931	931	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
18/2	1249	1249	-	-	-	0.0	1.0	-	1.0	2.8	0.0	1.0	1.0
18/3	361	361	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
19/1	10	10	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
20/1	94	94	-	-	-	0.7	0.2	-	0.9	32.7	1.8	0.2	1.9
20/2	167	167	-	-	-	1.3	0.4	-	1.7	35.8	3.4	0.4	3.8

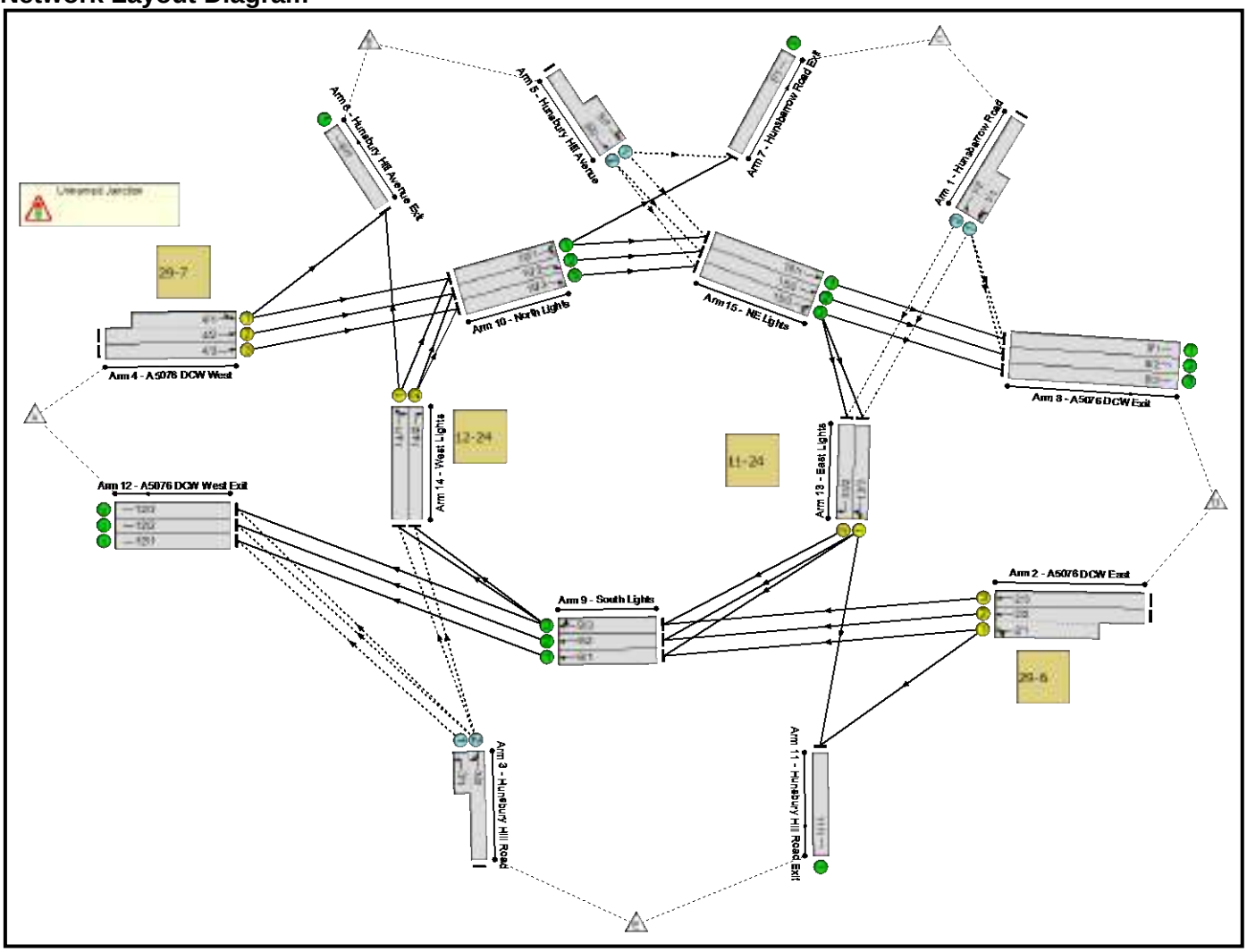
C1	Stream: 1 PRC for Signalled Lanes (%):	3.6	Total Delay for Signalled Lanes (pcuHr):	9.73	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-85.3	Total Delay for Signalled Lanes (pcuHr):	373.08	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-15.4	Total Delay for Signalled Lanes (pcuHr):	56.67	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	115.2	Total Delay for Signalled Lanes (pcuHr):	2.57	Cycle Time (s):	90
C1	Stream: 5 PRC for Signalled Lanes (%):	-45.3	Total Delay for Signalled Lanes (pcuHr):	176.90	Cycle Time (s):	90
C1	Stream: 6 PRC for Signalled Lanes (%):	-31.3	Total Delay for Signalled Lanes (pcuHr):	197.42	Cycle Time (s):	90
	PRC Over All Lanes (%):	-85.3	Total Delay Over All Lanes(pcuHr):	819.96		

Full Input Data And Results

User and Project Details

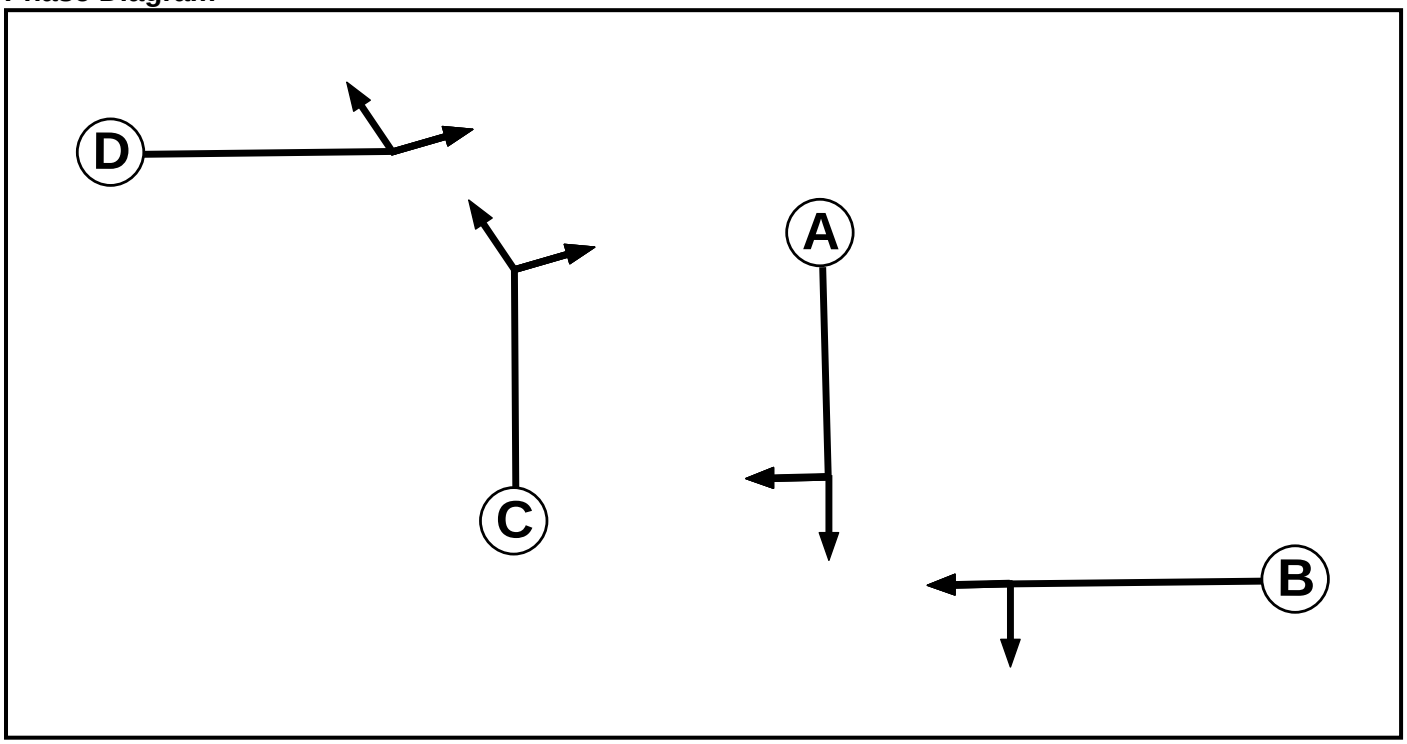
Project:	Rail Central
Title:	Junction 6
Location:	A5076 (west)/ Hunsbury Hill Avenue/ Hunsbarrow Road / A5076, Danes Camp Way / Hunsbury Hill Road
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Phase Intergreens Matrix

		Starting Phase			
		A	B	C	D
Terminating Phase	A		5	-	-
	B	5		-	-
	C	-	-		5
	D	-	-	5	

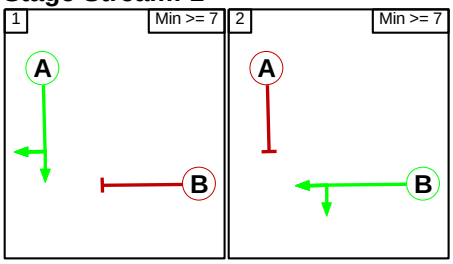
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

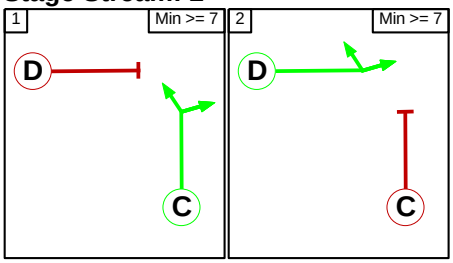
Full Input Data And Results

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		5
	2	5	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Full Input Data And Results

Junction: Unnamed Junction

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (Hunsbarrow Road)	8/1 (Left)	1000	0	15/1	0.33	All	-	-	-	-	-
				15/2	0.33	All					
				15/3	0.33	To 8/3 (Ahead)					
	8/2 (Left)	1000	0	15/1	0.33	All					
				15/2	0.33	All					
				15/3	0.33	To 8/3 (Ahead)					
	13/1 (Ahead)	1000	0	15/1	0.33	All					
				15/2	0.33	All					
				15/3	0.33	All					
1/2 (Hunsbarrow Road)	13/2 (Ahead)	1000	0	15/1	0.33	All	-	-	-	-	-
				15/2	0.33	All					
				15/3	0.33	All					
3/1 (Hunsbury Hill Road)	12/1 (Left)	1000	0	9/1	0.33	All	-	-	-	-	-
				9/2	0.33	All					
				9/3	0.33	To 12/3 (Ahead)					
3/2 (Hunsbury Hill Road)	12/2 (Left)	1000	0	9/1	0.33	All	-	-	-	-	-
				9/2	0.33	To 12/2 (Ahead)					
				9/3	0.33	To 12/3 (Ahead)					
	12/3 (Left)	1000	0	9/1	0.33	All					
				9/2	0.33	To 12/2 (Ahead)					
				9/3	0.33	To 12/3 (Ahead)					
	14/1 (Ahead)	1000	0	9/1	0.33	All					
				9/2	0.33	All					
				9/3	0.33	All					

Full Input Data And Results

	14/2 (Ahead)	1000	0	9/1	0.33	All					
				9/2	0.33	All					
				9/3	0.33	All					
5/1 (Hunsbury Hill Avenue)	7/1 (Left)	1000	0	10/1	0.33	To 7/1 (Left)	-	-	-	-	-
	15/1 (Ahead)	1000	0	10/1	0.33	All					
5/2 (Hunsbury Hill Avenue)	15/2 (Ahead)	1000	0	10/1	0.33	All	-	-	-	-	-
				10/2	0.33	All					
	15/3 (Ahead)	1000	0	10/1	0.33	All					
				10/2	0.33	All					
				10/3	0.33	All					

Full Input Data And Results

Lane Input Data

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Hunsbarrow Road)	O		2	3	5.0	Geom	-	3.60	0.00	Y	Arm 8 Left	40.00
											Arm 13 Ahead	55.00
1/2 (Hunsbarrow Road)	O		2	3	60.0	Geom	-	3.60	0.00	N	Arm 13 Ahead	55.00
2/1 (A5076 DCW East)	U	B	2	3	10.0	Geom	-	3.70	0.00	Y	Arm 9 Ahead	58.00
											Arm 11 Left	40.00
2/2 (A5076 DCW East)	U	B	2	3	60.0	Geom	-	3.70	0.00	N	Arm 9 Ahead	58.00
2/3 (A5076 DCW East)	U	B	2	3	60.0	Geom	-	3.70	0.00	N	Arm 9 Ahead	58.00
3/1 (Hunsbury Hill Road)	O		2	3	4.0	Geom	-	4.00	0.00	Y	Arm 12 Left	48.00
3/2 (Hunsbury Hill Road)	O		2	3	60.0	Geom	-	3.00	0.00	N	Arm 12 Left	47.00
											Arm 14 Ahead	55.00
4/1 (A5076 DCW West)	U	D	2	3	10.0	Geom	-	3.70	0.00	Y	Arm 6 Left	40.00
											Arm 10 Ahead	58.00
4/2 (A5076 DCW West)	U	D	2	3	60.0	Geom	-	3.70	0.00	N	Arm 10 Ahead	58.00
4/3 (A5076 DCW West)	U	D	2	3	60.0	Geom	-	3.70	0.00	N	Arm 10 Ahead	58.00
5/1 (Hunsbury Hill Avenue)	O		2	3	5.0	Geom	-	3.25	0.00	Y	Arm 7 Left	37.00
											Arm 15 Ahead	58.00
5/2 (Hunsbury Hill Avenue)	O		2	3	60.0	Geom	-	3.25	0.00	N	Arm 15 Ahead	58.00
6/1 (Hunsbury Hill Avenue Exit)	U		2	3	60.0	Geom	-	3.25	0.00	Y		
7/1 (Hunsbarrow Road Exit)	U		2	3	60.0	Geom	-	3.25	0.00	Y		
8/1 (A5076 DCW Exit)	U		2	3	17.0	Inf	-	-	-	-	-	-

Full Input Data And Results

8/2 (A5076 DCW Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/3 (A5076 DCW Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (South Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
9/2 (South Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
9/3 (South Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
10/1 (North Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
10/2 (North Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
10/3 (North Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
11/1 (Hunsbury Hill Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (A5076 DCW West Exit)	U		2	3	17.0	Inf	-	-	-	-	-	-
12/2 (A5076 DCW West Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/3 (A5076 DCW West Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (East Lights)	U	A	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 9 Right Arm 11 Ahead	40.00 Inf
13/2 (East Lights)	U	A	2	3	3.0	Geom	-	4.00	0.00	N	Arm 9 Right	40.00
14/1 (West Lights)	U	C	2	3	3.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead Arm 10 Right	Inf 40.00
14/2 (West Lights)	U	C	2	3	3.0	Geom	-	4.00	0.00	N	Arm 10 Right	40.00
15/1 (NE Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
15/2 (NE Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-
15/3 (NE Lights)	U		2	3	5.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DS AM'	08:00	09:00	01:00	
2: '2021 DS PM'	17:00	18:00	01:00	
3: '2031 DS AM'	08:00	09:00	01:00	
4: '2031 DS PM'	17:00	18:00	01:00	
5: '2021 DS5 AM'	08:00	09:00	01:00	
6: '2021 DS5 PM'	17:00	18:00	01:00	
7: '2031 DS5 AM'	08:00	09:00	01:00	
8: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 5: '2021 DS5 AM' (FG5: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	240	32	1937	0	2209
	B	72	0	6	58	0	136
	C	141	12	0	38	51	242
	D	2154	55	52	0	72	2333
	E	57	5	0	243	0	305
	Tot.	2424	312	90	2276	123	5225

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS5 AM
Junction: Unnamed Junction	
1/1 (short)	127
1/2 (with short)	242(In) 115(Out)
2/1 (short)	745
2/2 (with short)	1541(In) 796(Out)
2/3	792
3/1 (short)	57
3/2 (with short)	305(In) 248(Out)
4/1 (short)	704
4/2 (with short)	1459(In) 755(Out)
4/3	750
5/1 (short)	64
5/2 (with short)	136(In) 72(Out)
6/1	312
7/1	90
8/1	594
8/2	853
8/3	829
9/1	695
9/2	818
9/3	973
10/1	601
10/2	834
10/3	829
11/1	123
12/1	752
12/2	818
12/3	854
13/1	95
13/2	181
14/1	209
14/2	158
15/1	575
15/2	834
15/3	901

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	29.9 %	1917	1917
				Arm 13 Ahead	55.00	70.1 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	90.3 %	1933	1933
				Arm 11 Left	40.00	9.7 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	0.0 %	2000	2000
				Arm 14 Ahead	55.00	100.0 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	34.1 %	1928	1928
				Arm 10 Ahead	58.00	65.9 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	9.4 %	1889	1889
				Arm 15 Ahead	58.00	90.6 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right	40.00	46.3 %	1981	1981
				Arm 11 Ahead	Inf	53.7 %		
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead	Inf	34.4 %	1967	1967
				Arm 10 Right	40.00	65.6 %		
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2021 DS5 PM' (FG6: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	342	60	2016	30	2448
	B	57	0	5	78	8	148
	C	403	63	0	52	76	594
	D	1847	20	76	0	27	1970
	E	224	5	0	258	0	487
	Tot.	2531	430	141	2404	141	5647

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS5 PM
Junction: Unnamed Junction	
1/1 (short)	296
1/2 (with short)	594(In) 298(Out)
2/1 (short)	629
2/2 (with short)	1302(In) 673(Out)
2/3	668
3/1 (short)	224
3/2 (with short)	487(In) 263(Out)
4/1 (short)	780
4/2 (with short)	1617(In) 837(Out)
4/3	831
5/1 (short)	83
5/2 (with short)	148(In) 65(Out)
6/1	430
7/1	141
8/1	542
8/2	962
8/3	900
9/1	704
9/2	775
9/3	987
10/1	574
10/2	936
10/3	930
11/1	141
12/1	928
12/2	775
12/3	828
13/1	318
13/2	319
14/1	224
14/2	198
15/1	516
15/2	936
15/3	995

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	17.6 %	1919	1919
				Arm 13 Ahead	55.00	82.4 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	95.7 %	1934	1934
				Arm 11 Left	40.00	4.3 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	0.0 %	2000	2000
				Arm 14 Ahead	55.00	100.0 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	43.8 %	1925	1925
				Arm 10 Ahead	58.00	56.2 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	6.0 %	1889	1889
				Arm 15 Ahead	58.00	94.0 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right	40.00	64.2 %	1968	1968
				Arm 11 Ahead	Inf	35.8 %		
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead	Inf	39.3 %	1970	1970
				Arm 10 Right	40.00	60.7 %		
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2031 DS5 AM' (FG7: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	245	32	2063	0	2340
	B	94	0	6	76	0	176
	C	178	20	0	15	51	264
	D	2274	49	49	0	67	2439
	E	44	6	0	234	0	284
	Tot.	2590	320	87	2388	118	5503

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS5 AM
Junction: Unnamed Junction	
1/1 (short)	136
1/2 (with short)	264(In) 128(Out)
2/1 (short)	779
2/2 (with short)	1611(In) 832(Out)
2/3	828
3/1 (short)	44
3/2 (with short)	284(In) 240(Out)
4/1 (short)	746
4/2 (with short)	1545(In) 799(Out)
4/3	795
5/1 (short)	82
5/2 (with short)	176(In) 94(Out)
6/1	320
7/1	87
8/1	641
8/2	879
8/3	868
9/1	749
9/2	869
9/3	1046
10/1	638
10/2	872
10/3	868
11/1	118
12/1	793
12/2	869
12/3	928
13/1	125
13/2	218
14/1	212
14/2	146
15/1	633
15/2	872
15/3	962

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	11.0 %	1920	1920
				Arm 13 Ahead	55.00	89.0 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	91.4 %	1933	1933
				Arm 11 Left	40.00	8.6 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	0.0 %	2000	2000
				Arm 14 Ahead	55.00	100.0 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	32.8 %	1928	1928
				Arm 10 Ahead	58.00	67.2 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	7.3 %	1889	1889
				Arm 15 Ahead	58.00	92.7 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right	40.00	59.2 %	1971	1971
				Arm 11 Ahead	Inf	40.8 %		
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead	Inf	35.4 %	1967	1967
				Arm 10 Right	40.00	64.6 %		
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2031 DS5 PM' (FG8: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	385	62	2049	69	2565
	B	83	0	7	85	8	183
	C	537	39	0	51	58	685
	D	2049	10	23	0	13	2095
	E	433	13	0	213	0	659
	Tot.	3102	447	92	2398	148	6187

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS5 PM
Junction: Unnamed Junction	
1/1 (short)	345
1/2 (with short)	685(In) 340(Out)
2/1 (short)	716
2/2 (with short)	1482(In) 766(Out)
2/3	613
3/1 (short)	335
3/2 (with short)	659(In) 324(Out)
4/1 (short)	815
4/2 (with short)	1692(In) 877(Out)
4/3	873
5/1 (short)	92
5/2 (with short)	183(In) 91(Out)
6/1	447
7/1	92
8/1	527
8/2	985
8/3	886
9/1	840
9/2	903
9/3	998
10/1	501
10/2	960
10/3	955
11/1	148
12/1	1175
12/2	952
12/3	975
13/1	409
13/2	385
14/1	133
14/2	165
15/1	501
15/2	960
15/3	1046

Lane Saturation Flows

Full Input Data And Results

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Hunsbarrow Road)	3.60	0.00	Y	Arm 8 Left	40.00	14.8 %	1920	1920
				Arm 13 Ahead	55.00	85.2 %		
1/2 (Hunsbarrow Road)	3.60	0.00	N	Arm 13 Ahead	55.00	100.0 %	2059	2059
2/1 (A5076 DCW East)	3.70	0.00	Y	Arm 9 Ahead	58.00	98.2 %	1935	1935
				Arm 11 Left	40.00	1.8 %		
2/2 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
2/3 (A5076 DCW East)	3.70	0.00	N	Arm 9 Ahead	58.00	100.0 %	2071	2071
3/1 (Hunsbury Hill Road)	4.00	0.00	Y	Arm 12 Left	48.00	100.0 %	1954	1954
3/2 (Hunsbury Hill Road)	3.00	0.00	N	Arm 12 Left	47.00	30.2 %	1998	1998
				Arm 14 Ahead	55.00	69.8 %		
4/1 (A5076 DCW West)	3.70	0.00	Y	Arm 6 Left	40.00	47.2 %	1925	1925
				Arm 10 Ahead	58.00	52.8 %		
4/2 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
4/3 (A5076 DCW West)	3.70	0.00	N	Arm 10 Ahead	58.00	100.0 %	2071	2071
5/1 (Hunsbury Hill Avenue)	3.25	0.00	Y	Arm 7 Left	37.00	7.6 %	1889	1889
				Arm 15 Ahead	58.00	92.4 %		
5/2 (Hunsbury Hill Avenue)	3.25	0.00	N	Arm 15 Ahead	58.00	100.0 %	2028	2028
6/1 (Hunsbury Hill Avenue Exit)	3.25	0.00	Y				1940	1940
7/1 (Hunsbarrow Road Exit)	3.25	0.00	Y				1940	1940
8/1 (A5076 DCW Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A5076 DCW Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
8/3 (A5076 DCW Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
9/1 (South Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (South Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
9/3 (South Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
10/1 (North Lights Lane 1)	Infinite Saturation Flow						Inf	Inf

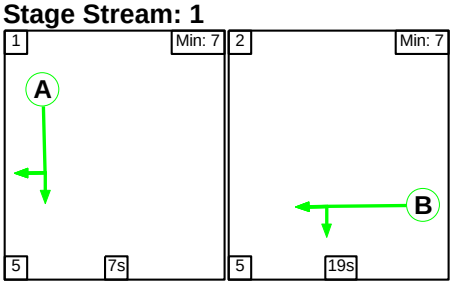
Full Input Data And Results

10/2 (North Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
10/3 (North Lights Lane 3)	Infinite Saturation Flow						Inf	Inf
11/1 (Hunsbury Hill Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/1 (A5076 DCW West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
12/2 (A5076 DCW West Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
12/3 (A5076 DCW West Exit Lane 3)	Infinite Saturation Flow						Inf	Inf
13/1 (East Lights)	4.00	0.00	Y	Arm 9 Right	40.00	67.0 %	1966	1966
				Arm 11 Ahead	Inf	33.0 %		
13/2 (East Lights)	4.00	0.00	N	Arm 9 Right	40.00	100.0 %	2077	2077
14/1 (West Lights)	4.00	0.00	Y	Arm 6 Ahead	Inf	46.6 %	1975	1975
				Arm 10 Right	40.00	53.4 %		
14/2 (West Lights)	4.00	0.00	N	Arm 10 Right	40.00	100.0 %	2077	2077
15/1 (NE Lights Lane 1)	Infinite Saturation Flow						Inf	Inf
15/2 (NE Lights Lane 2)	Infinite Saturation Flow						Inf	Inf
15/3 (NE Lights Lane 3)	Infinite Saturation Flow						Inf	Inf

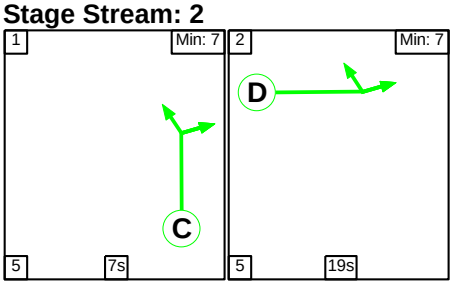
Scenario 5: '2021 DS5 AM' (FG5: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

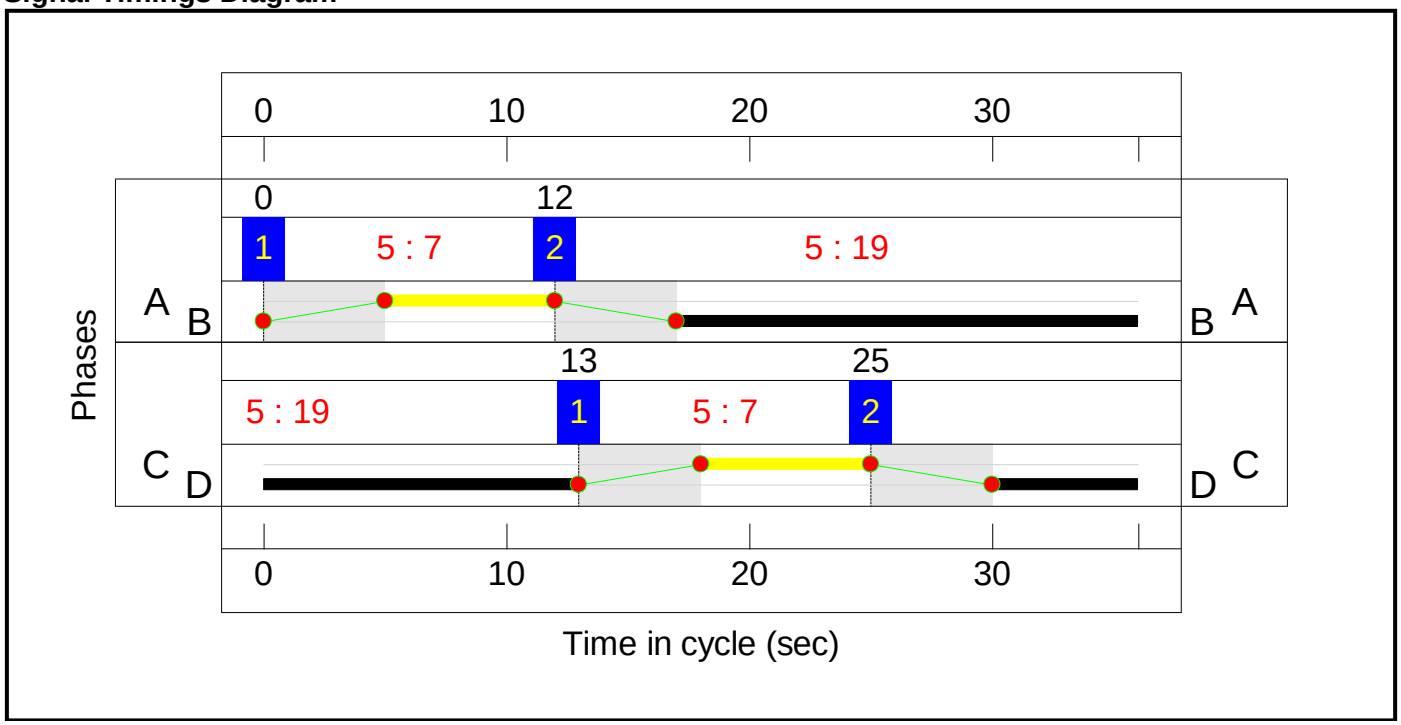
Stage Stream: 1

Stage	1	2
Duration	7	19
Change Point	0	12

Stage Stream: 2

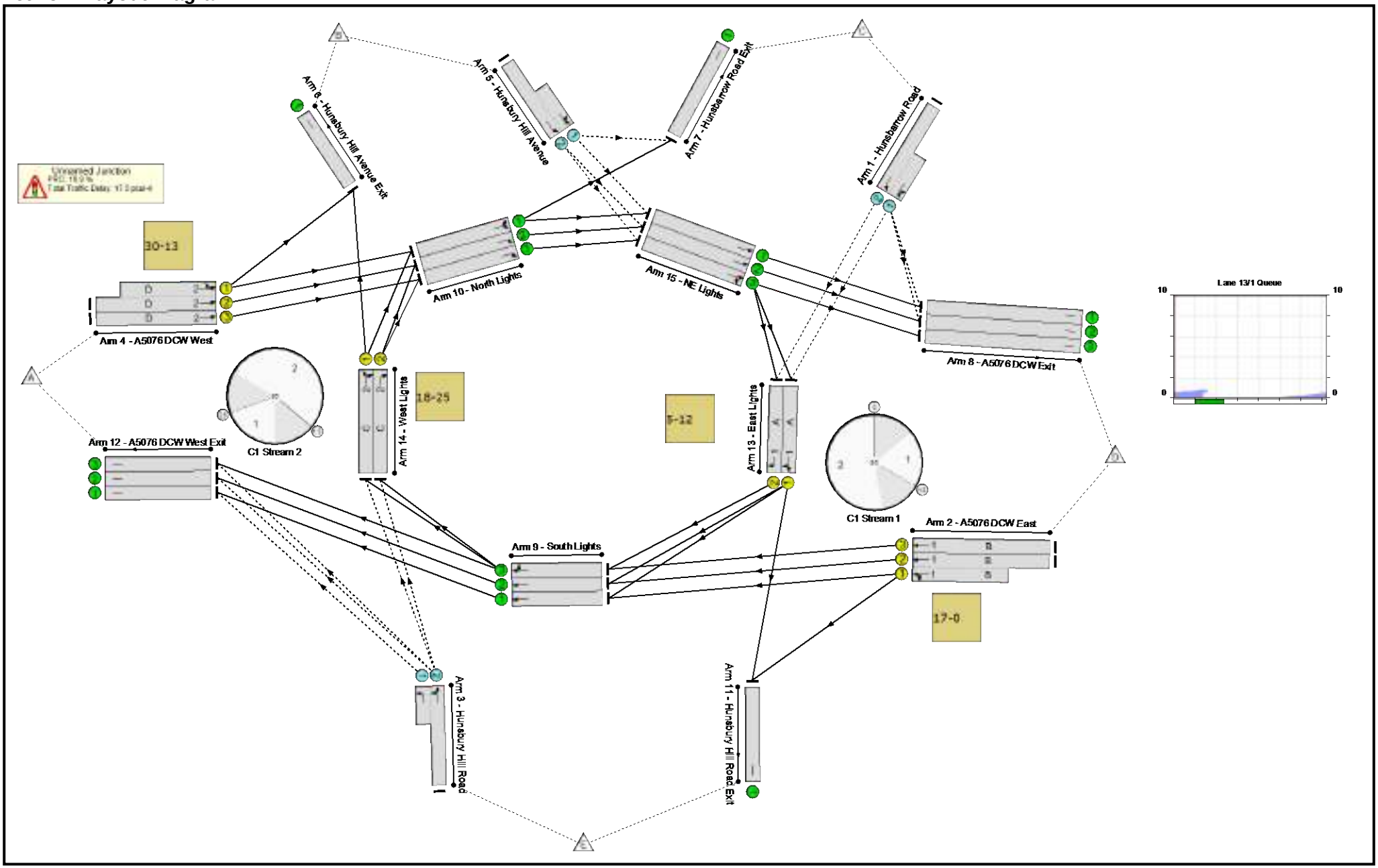
Stage	1	2
Duration	7	19
Change Point	13	25

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.0%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	242	2059:1917	281+286	41.0 : 44.4%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	19	-	1541	2071:1933	1034+968	77.0 : 77.0%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	19	-	792	2071	1151	68.8%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	305	2000:1954	366+84	67.8 : 67.8%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	19	-	1459	2071:1928	1035+965	73.0 : 73.0%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	19	-	750	2071	1151	65.2%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	136	2028:1889	379+337	19.0 : 19.0%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	312	1940	1940	16.1%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	90	1940	1940	4.6%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	594	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	853	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	829	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	695	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	818	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	973	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	601	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	834	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	829	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	123	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	752	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	818	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	854	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	7	-	95	1981	440	21.6%
13/2	East Lights Right	U	1	N/A	A		1	7	-	181	2077	462	39.2%
14/1	West Lights Ahead Right	U	2	N/A	C		1	7	-	209	1967	437	47.8%
14/2	West Lights Right	U	2	N/A	C		1	7	-	158	2077	462	34.2%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	575	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	834	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	901	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1366**	**0**	**0**	**9.7**	**7.9**	**0.0**	**17.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1366**	**0**	**0**	**9.7**	**7.9**	**0.0**	**17.5**	**-**	**-**	**-**	**-**
1/2+1/1	242	242	484	0	0	0.2	0.4	-	0.6	8.6	0.7	0.4	1.0
2/2+2/1	1541	1541	-	-	-	2.5	1.7	-	4.1	9.7	5.5	1.7	7.2
2/3	792	792	-	-	-	1.3	1.1	-	2.4	10.7	5.5	1.1	6.6
3/2+3/1	305	305	610	0	0	0.6	1.0	-	1.6	18.9	2.0	1.0	3.0
4/2+4/1	1459	1459	-	-	-	2.3	1.3	-	3.6	8.9	5.2	1.3	6.6
4/3	750	750	-	-	-	1.2	0.9	-	2.1	10.0	5.2	0.9	6.1
5/2+5/1	136	136	272	0	0	0.1	0.1	-	0.2	4.4	0.3	0.1	0.4
6/1	312	312	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
7/1	90	90	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	594	594	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	853	853	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	829	829	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	695	695	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	973	973	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	601	601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	834	834	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	829	829	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	123	123	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	752	752	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	818	818	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	854	854	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	95	95	-	-	-	0.2	0.1	-	0.4	13.7	0.8	0.1	0.9
13/2	181	181	-	-	-	0.5	0.3	-	0.8	16.5	1.5	0.3	1.8

Full Input Data And Results

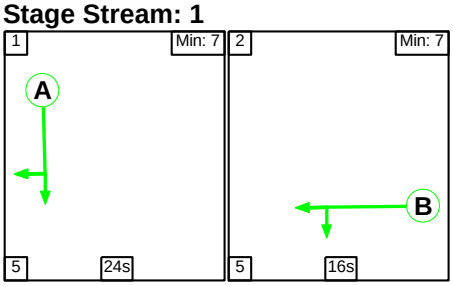
14/1	209	209	-	-	-	0.7	0.5	-	1.1	19.6	1.8	0.5	2.2
14/2	158	158	-	-	-	0.3	0.3	-	0.5	11.8	0.8	0.3	1.1
15/1	575	575	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	834	834	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	901	901	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	7.69	Cycle Time (s):	36
C1	Stream: 2 PRC for Signalled Lanes (%):	23.3	Total Delay for Signalled Lanes (pcuHr):	7.37	Cycle Time (s):	36
	PRC Over All Lanes (%):	16.9	Total Delay Over All Lanes(pcuHr):	17.52		

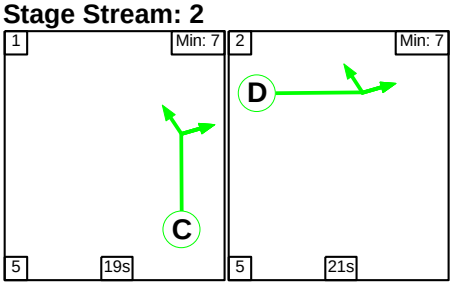
Full Input Data And Results
Scenario 6: '2021 DS5 PM' (FG6: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

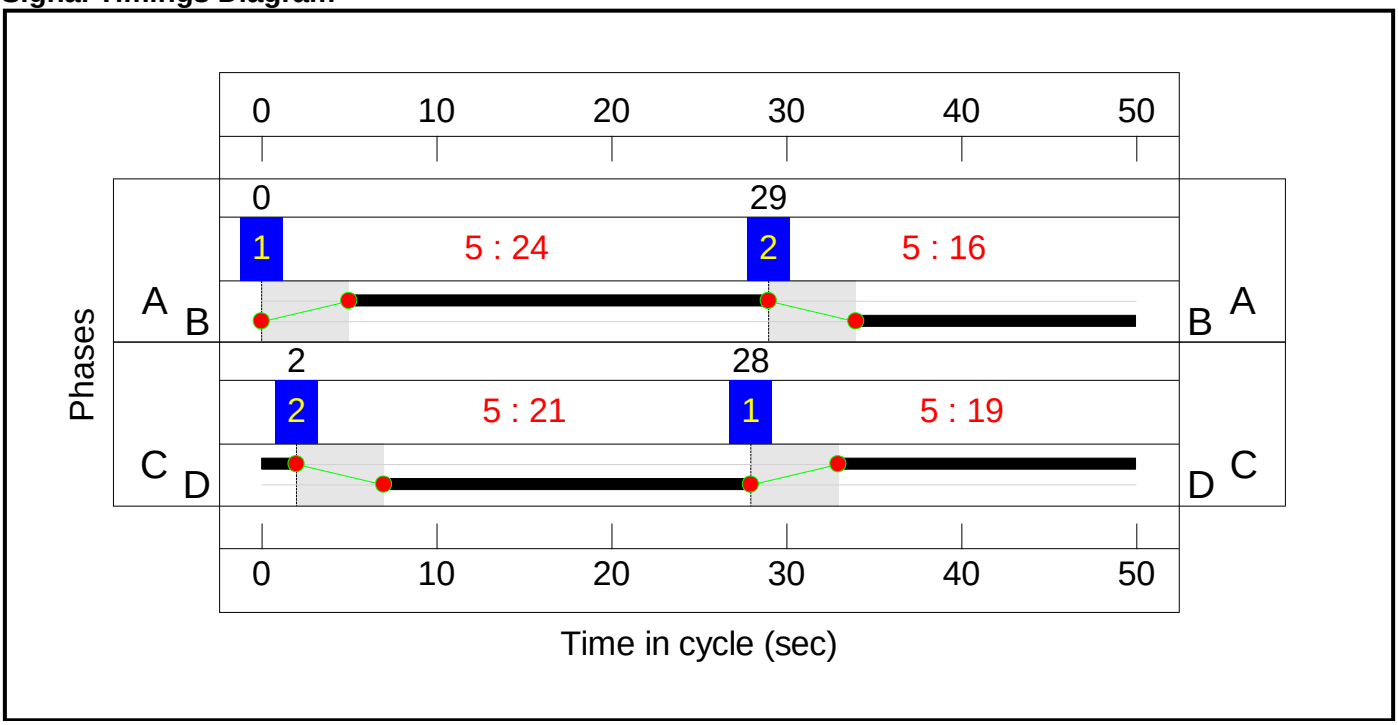
Stage Stream: 1

Stage	1	2
Duration	24	16
Change Point	0	29

Stage Stream: 2

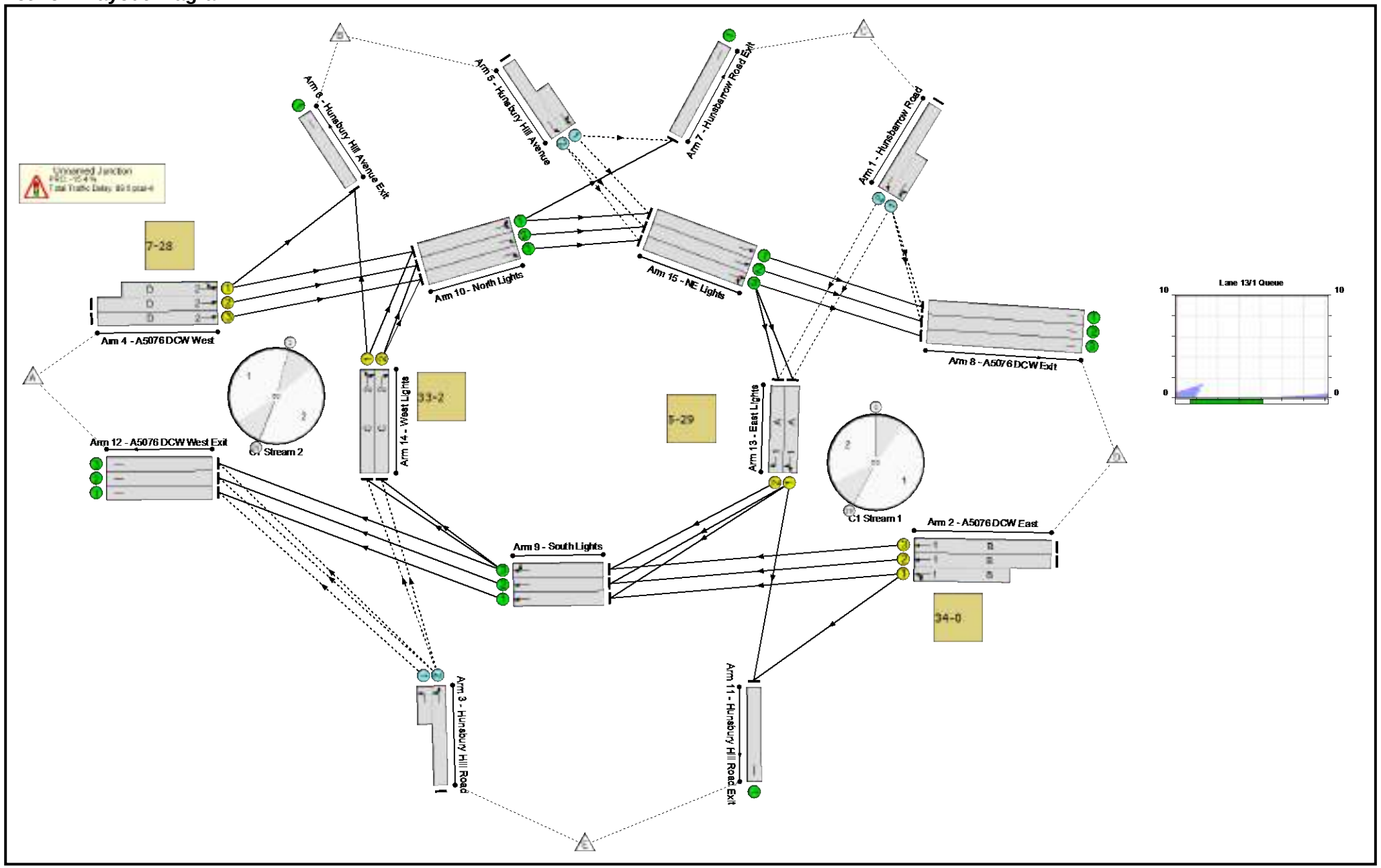
Stage	1	2
Duration	19	21
Change Point	28	2

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.9%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**103.9%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	594	2059:1919	287+290	103.9 : 102.0%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	16	-	1302	2071:1934	704+658	95.6 : 95.7%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	16	-	668	2071	704	94.9%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	487	2000:1954	437+380	60.2 : 58.9%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	21	-	1617	2071:1925	823+767	101.6 : 101.6%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	21	-	831	2071	911	91.2%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	148	2028:1889	417+533	15.6 : 15.6%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	430	1940	1940	21.8%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	141	1940	1940	7.2%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	542	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	962	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	900	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	704	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	775	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	987	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	574	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	936	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	930	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	141	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	928	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	775	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	828	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	24	-	318	1968	984	31.8%
13/2	East Lights Right	U	1	N/A	A		1	24	-	319	2077	1038	29.7%
14/1	West Lights Ahead Right	U	2	N/A	C		1	19	-	224	1970	788	28.1%
14/2	West Lights Right	U	2	N/A	C		1	19	-	198	2077	831	23.8%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	516	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	936	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	995	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2424**	**0**	**0**	**23.1**	**66.5**	**0.0**	**89.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**2424**	**0**	**0**	**23.1**	**66.5**	**0.0**	**89.6**	**-**	**-**	**-**	**-**
1/2+1/1	594	577	1154	0	0	2.4	17.1	-	19.5	118.2	10.5	17.1	27.6
2/2+2/1	1302	1302	-	-	-	5.8	8.5	-	14.3	39.6	9.0	8.5	17.5
2/3	668	668	-	-	-	3.0	6.7	-	9.7	52.4	8.9	6.7	15.6
3/2+3/1	487	487	974	0	0	0.9	0.7	-	1.6	11.8	2.5	0.7	3.2
4/2+4/1	1617	1592	-	-	-	6.5	27.7	-	34.2	76.2	16.7	27.7	44.4
4/3	831	831	-	-	-	3.0	4.6	-	7.7	33.2	10.6	4.6	15.3
5/2+5/1	148	148	296	0	0	0.1	0.1	-	0.2	4.6	0.5	0.1	0.6
6/1	422	422	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
7/1	140	140	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	536	536	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	949	949	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	900	900	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	702	702	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	773	773	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	976	976	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	567	567	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	923	923	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	930	930	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	140	140	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	926	926	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	773	773	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	819	819	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	313	313	-	-	-	0.2	0.2	-	0.4	5.1	1.4	0.2	1.6
13/2	308	308	-	-	-	0.1	0.2	-	0.3	3.6	0.9	0.2	1.1

Full Input Data And Results

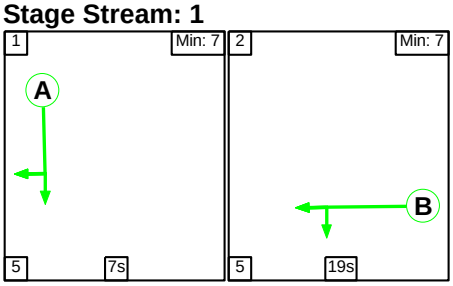
14/1	222	222	-	-	-	0.7	0.2	-	0.9	14.9	2.4	0.2	2.6
14/2	198	198	-	-	-	0.4	0.2	-	0.5	9.2	2.1	0.2	2.2
15/1	510	510	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	923	923	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	995	995	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-6.3	Total Delay for Signalled Lanes (pcuHr):	24.80	Cycle Time (s): 50
C1	Stream: 2 PRC for Signalled Lanes (%):	-12.9	Total Delay for Signalled Lanes (pcuHr):	43.33	Cycle Time (s): 50
	PRC Over All Lanes (%):	-15.4	Total Delay Over All Lanes(pcuHr):	89.60	

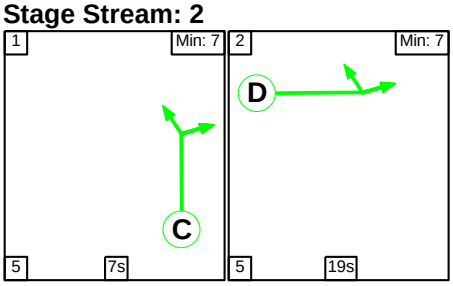
Full Input Data And Results
Scenario 7: '2031 DS5 AM' (FG7: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

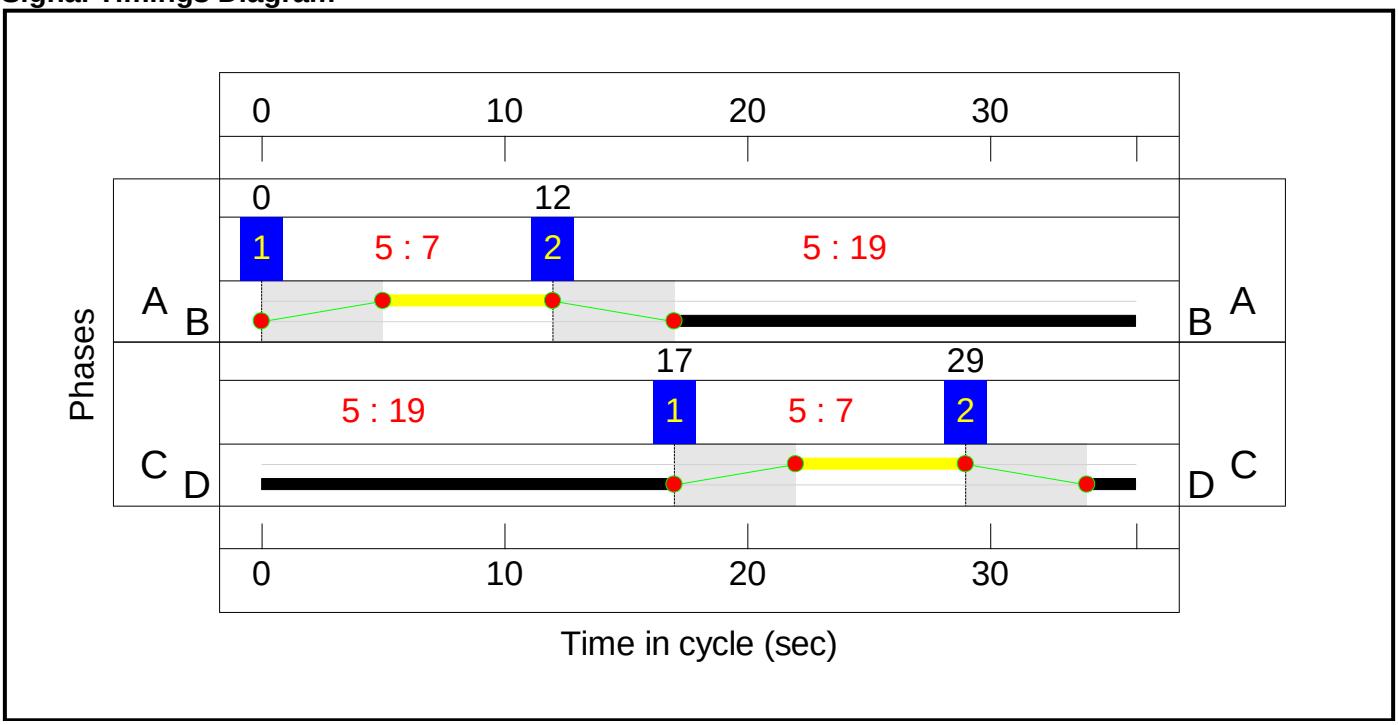
Stage Stream: 1

Stage	1	2
Duration	7	19
Change Point	0	12

Stage Stream: 2

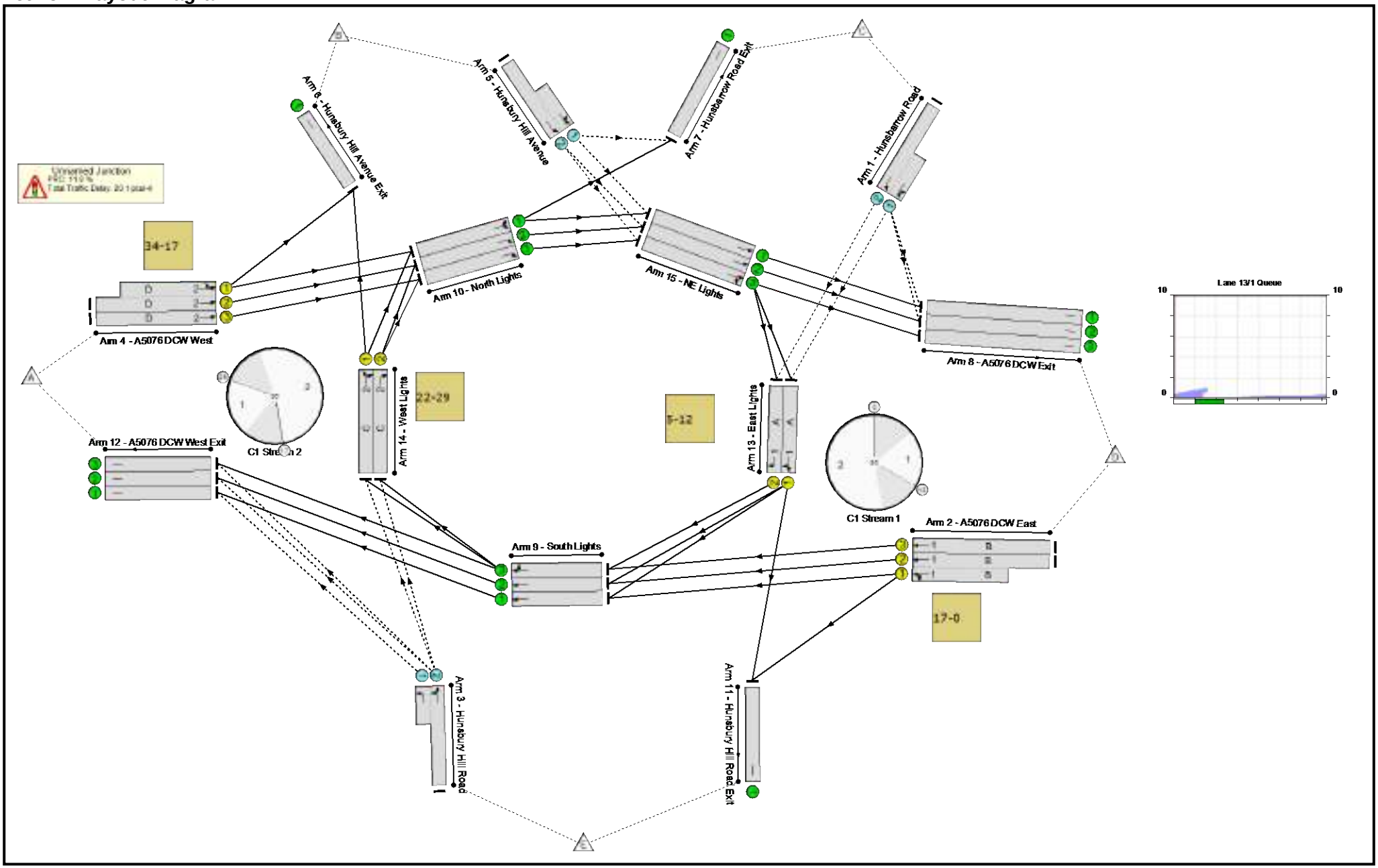
Stage	1	2
Duration	7	19
Change Point	17	29

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.5%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.5%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	264	2059:1920	248+250	51.7 : 54.4%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	19	-	1611	2071:1933	1034+968	80.5 : 80.5%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	19	-	828	2071	1151	72.0%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	284	2000:1954	330+61	72.7 : 72.7%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	19	-	1545	2071:1928	1034+965	77.3 : 77.3%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	19	-	795	2071	1151	69.1%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	176	2028:1889	364+317	25.9 : 25.9%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	320	1940	1940	16.5%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	87	1940	1940	4.5%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	641	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	879	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	749	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	869	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	1046	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	638	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	872	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	118	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	793	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	869	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	928	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	7	-	125	1971	438	28.5%
13/2	East Lights Right	U	1	N/A	A		1	7	-	218	2077	462	47.2%
14/1	West Lights Ahead Right	U	2	N/A	C		1	7	-	212	1967	437	48.5%
14/2	West Lights Right	U	2	N/A	C		1	7	-	146	2077	462	31.6%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	633	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	872	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	962	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1448**	**0**	**0**	**10.5**	**9.6**	**0.0**	**20.1**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**1448**	**0**	**0**	**10.5**	**9.6**	**0.0**	**20.1**	**-**	**-**	**-**	**-**
1/2+1/1	264	264	528	0	0	0.3	0.6	-	0.9	12.4	0.9	0.6	1.5
2/2+2/1	1611	1611	-	-	-	2.7	2.0	-	4.7	10.5	6.0	2.0	8.0
2/3	828	828	-	-	-	1.4	1.3	-	2.6	11.5	6.0	1.3	7.3
3/2+3/1	284	284	568	0	0	0.6	1.3	-	1.9	24.1	2.0	1.3	3.3
4/2+4/1	1545	1545	-	-	-	2.5	1.7	-	4.2	9.7	5.8	1.7	7.5
4/3	795	795	-	-	-	1.3	1.1	-	2.4	10.8	5.5	1.1	6.6
5/2+5/1	176	176	352	0	0	0.1	0.2	-	0.3	5.5	0.5	0.2	0.7
6/1	320	320	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
7/1	87	87	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	641	641	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	879	879	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	749	749	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	869	869	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	1046	1046	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	638	638	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	118	118	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	793	793	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	869	869	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	928	928	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	125	125	-	-	-	0.2	0.2	-	0.4	12.7	0.9	0.2	1.1
13/2	218	218	-	-	-	0.6	0.4	-	1.0	16.9	1.9	0.4	2.3

Full Input Data And Results

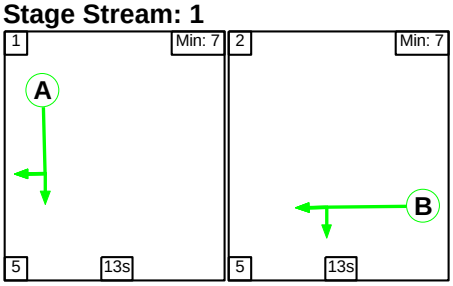
14/1	212	212	-	-	-	0.7	0.5	-	1.1	19.4	1.8	0.5	2.3
14/2	146	146	-	-	-	0.2	0.2	-	0.4	9.5	0.9	0.2	1.1
15/1	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	962	962	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	11.8	Total Delay for Signalled Lanes (pcuHr):	8.80	Cycle Time (s):	36
C1	Stream: 2 PRC for Signalled Lanes (%):	16.5	Total Delay for Signalled Lanes (pcuHr):	8.09	Cycle Time (s):	36
	PRC Over All Lanes (%):	11.8	Total Delay Over All Lanes(pcuHr):	20.09		

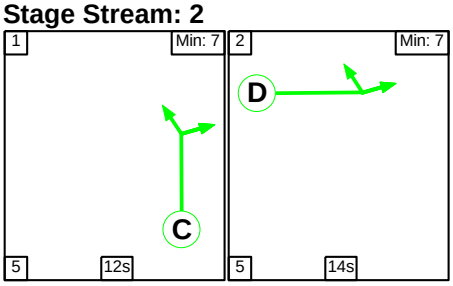
Full Input Data And Results
Scenario 8: '2031 DS5 PM' (FG8: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

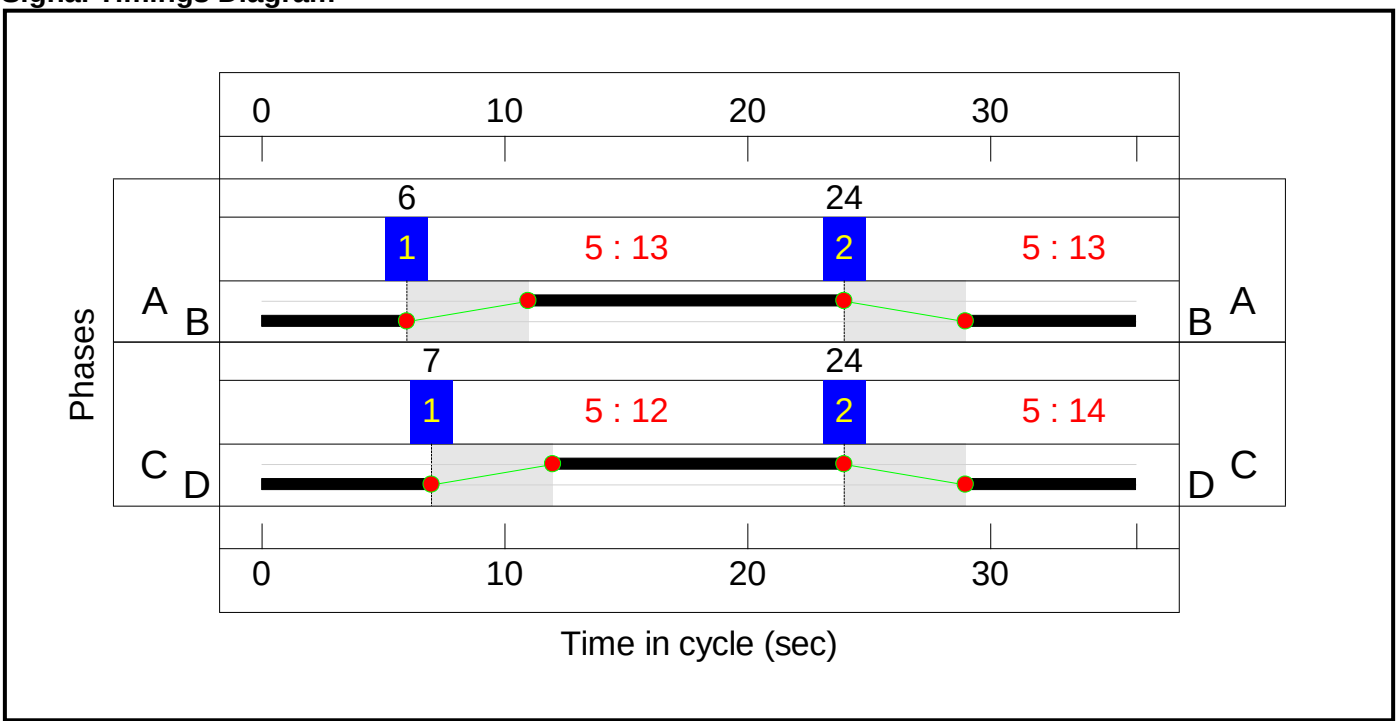
Stage Stream: 1

Stage	1	2
Duration	13	13
Change Point	6	24

Stage Stream: 2

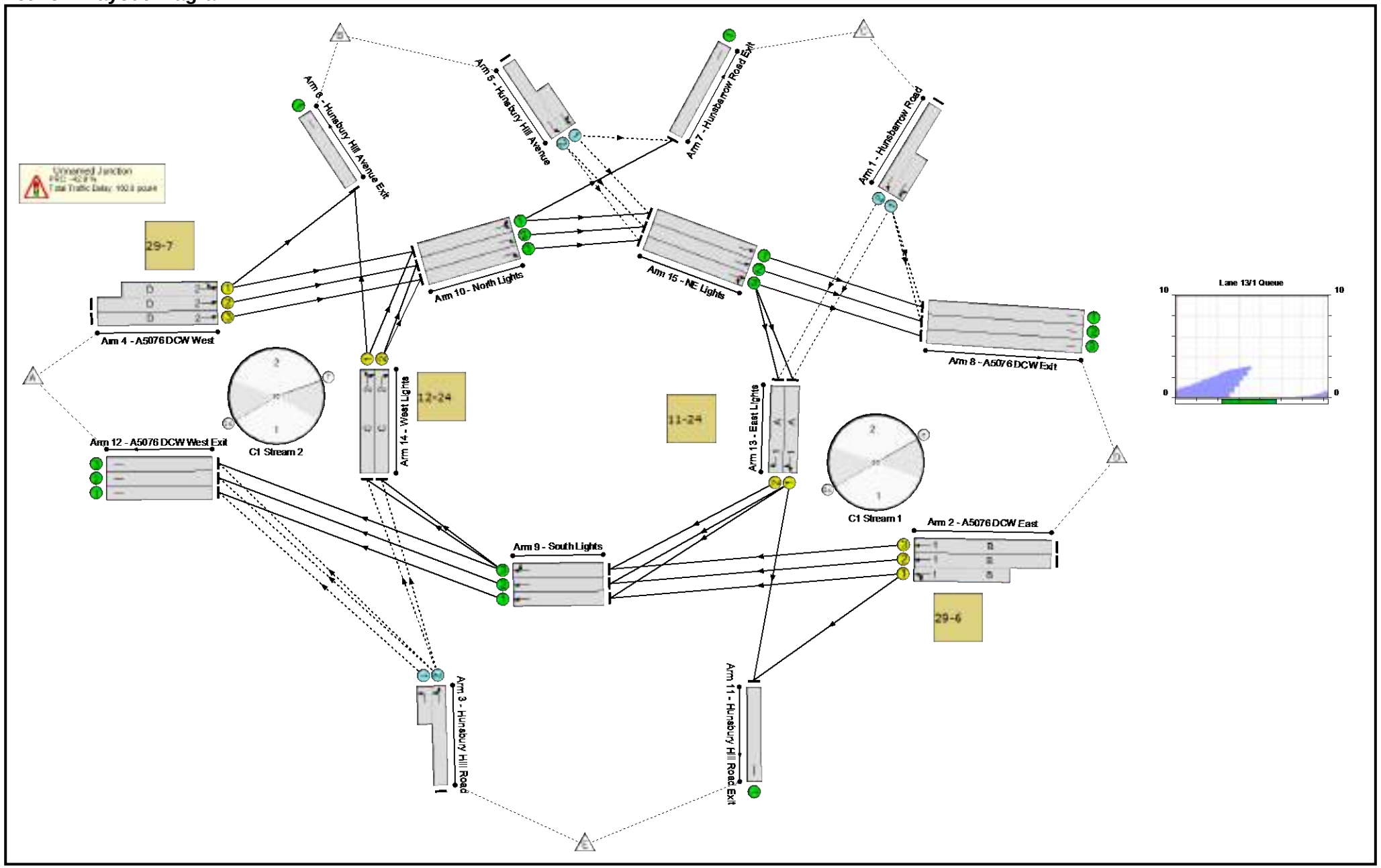
Stage	1	2
Duration	12	14
Change Point	7	24

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Full Input Data And Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.5%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**128.5%**
1/2+1/1	Hunsbarrow Road Left Ahead	O	N/A	N/A	-		-	-	-	685	2059:1920	265+269	128.5 : 128.4%
2/2+2/1	A5076 DCW East Ahead Left	U	1	N/A	B		1	13	-	1482	2071:1935	805+753	95.1 : 95.1%
2/3	A5076 DCW East Ahead	U	1	N/A	B		1	13	-	613	2071	805	76.1%
3/2+3/1	Hunsbury Hill Road Left Ahead	O	N/A	N/A	-		-	-	-	659	1998:1954	386+390	83.9 : 86.0%
4/2+4/1	A5076 DCW West Left Ahead	U	2	N/A	D		1	14	-	1692	2071:1925	863+802	101.6 : 101.6%
4/3	A5076 DCW West Ahead	U	2	N/A	D		1	14	-	873	2071	863	101.2%
5/2+5/1	Hunsbury Hill Avenue Left Ahead	O	N/A	N/A	-		-	-	-	183	2028:1889	426+431	21.3 : 21.3%
6/1	Hunsbury Hill Avenue Exit	U	N/A	N/A	-		-	-	-	447	1940	1940	22.3%
7/1	Hunsbarrow Road Exit	U	N/A	N/A	-		-	-	-	92	1940	1940	4.7%
8/1	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	527	Inf	Inf	0.0%
8/2	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	985	Inf	Inf	0.0%
8/3	A5076 DCW Exit	U	N/A	N/A	-		-	-	-	886	Inf	Inf	0.0%
9/1	South Lights Ahead	U	N/A	N/A	-		-	-	-	840	Inf	Inf	0.0%
9/2	South Lights Ahead	U	N/A	N/A	-		-	-	-	903	Inf	Inf	0.0%
9/3	South Lights Ahead Right	U	N/A	N/A	-		-	-	-	998	Inf	Inf	0.0%

Full Input Data And Results

10/1	North Lights Left Ahead	U	N/A	N/A	-		-	-	-	501	Inf	Inf	0.0%
10/2	North Lights Ahead	U	N/A	N/A	-		-	-	-	960	Inf	Inf	0.0%
10/3	North Lights Ahead	U	N/A	N/A	-		-	-	-	955	Inf	Inf	0.0%
11/1	Hunsbury Hill Road Exit	U	N/A	N/A	-		-	-	-	148	Inf	Inf	0.0%
12/1	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	1175	Inf	Inf	0.0%
12/2	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	952	Inf	Inf	0.0%
12/3	A5076 DCW West Exit	U	N/A	N/A	-		-	-	-	975	Inf	Inf	0.0%
13/1	East Lights Right Ahead	U	1	N/A	A		1	13	-	409	1966	765	44.9%
13/2	East Lights Right	U	1	N/A	A		1	13	-	385	2077	808	38.3%
14/1	West Lights Ahead Right	U	2	N/A	C		1	12	-	133	1975	713	17.4%
14/2	West Lights Right	U	2	N/A	C		1	12	-	165	2077	750	22.0%
15/1	NE Lights Ahead	U	N/A	N/A	-		-	-	-	501	Inf	Inf	0.0%
15/2	NE Lights Ahead	U	N/A	N/A	-		-	-	-	960	Inf	Inf	0.0%
15/3	NE Lights Ahead Right	U	N/A	N/A	-		-	-	-	1046	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**2750**	**0**	**0**	**23.3**	**137.6**	**0.0**	**160.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**2750**	**0**	**0**	**23.3**	**137.6**	**0.0**	**160.9**	**-**	**-**	**-**	**-**
1/2+1/1	685	533	1066	0	0	4.8	78.1	-	82.9	435.5	9.6	78.1	87.7
2/2+2/1	1482	1482	-	-	-	4.4	8.1	-	12.4	30.2	7.2	8.1	15.3
2/3	613	613	-	-	-	1.6	1.6	-	3.2	18.8	5.3	1.6	6.8
3/2+3/1	659	659	1318	0	0	1.6	2.7	-	4.3	23.6	3.0	2.7	5.7
4/2+4/1	1692	1665	-	-	-	5.5	28.4	-	33.9	72.0	8.9	28.4	37.3
4/3	873	863	-	-	-	2.7	17.5	-	20.2	83.5	8.8	17.5	26.3
5/2+5/1	183	183	366	0	0	0.1	0.1	-	0.3	5.1	0.5	0.1	0.7
6/1	432	432	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
7/1	91	91	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
8/1	515	515	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	965	965	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	877	877	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	814	814	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	877	877	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/3	923	923	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	494	494	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	946	946	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/3	945	945	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	134	134	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	1149	1149	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	926	926	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/3	908	908	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	343	343	-	-	-	0.9	0.4	-	1.3	13.3	3.0	0.4	3.4
13/2	310	310	-	-	-	0.8	0.3	-	1.1	12.9	3.0	0.3	3.3

Full Input Data And Results

14/1	124	124	-	-	-	0.3	0.1	-	0.4	11.6	0.9	0.1	1.0
14/2	165	165	-	-	-	0.6	0.1	-	0.8	16.8	1.6	0.1	1.7
15/1	495	495	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	946	946	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/3	1036	1036	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1 PRC for Signalled Lanes (%):	-5.7	Total Delay for Signalled Lanes (pcuHr):	18.02	Cycle Time (s): 36
C1	Stream: 2 PRC for Signalled Lanes (%):	-12.9	Total Delay for Signalled Lanes (pcuHr):	55.28	Cycle Time (s): 36
	PRC Over All Lanes (%):	-42.8	Total Delay Over All Lanes(pcuHr):	160.90	

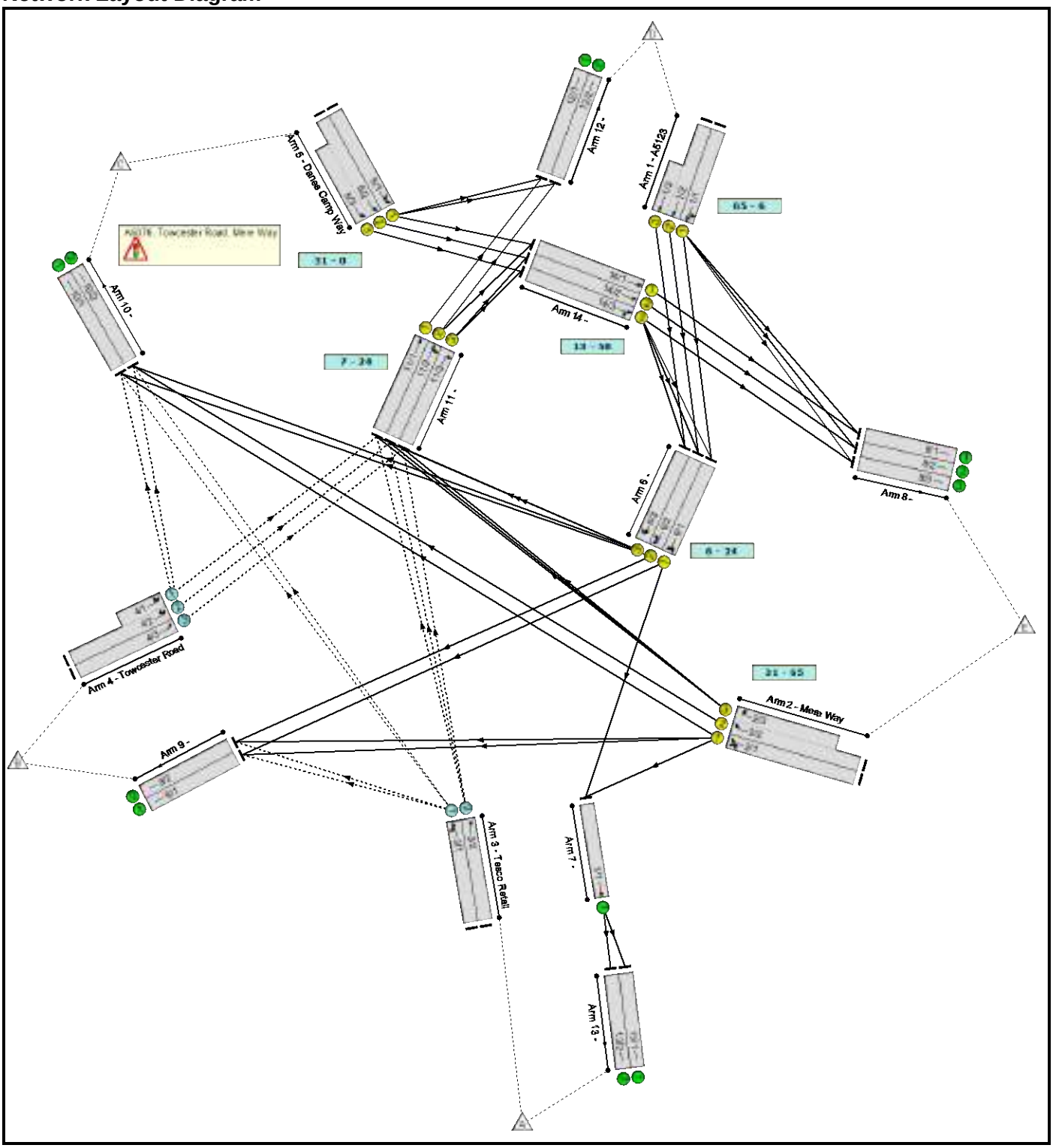
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 7
Location:	Towcester Road / A5076 Danes Camp Way / A5123 Towcester Road / Mere Way/ Tesco Access
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

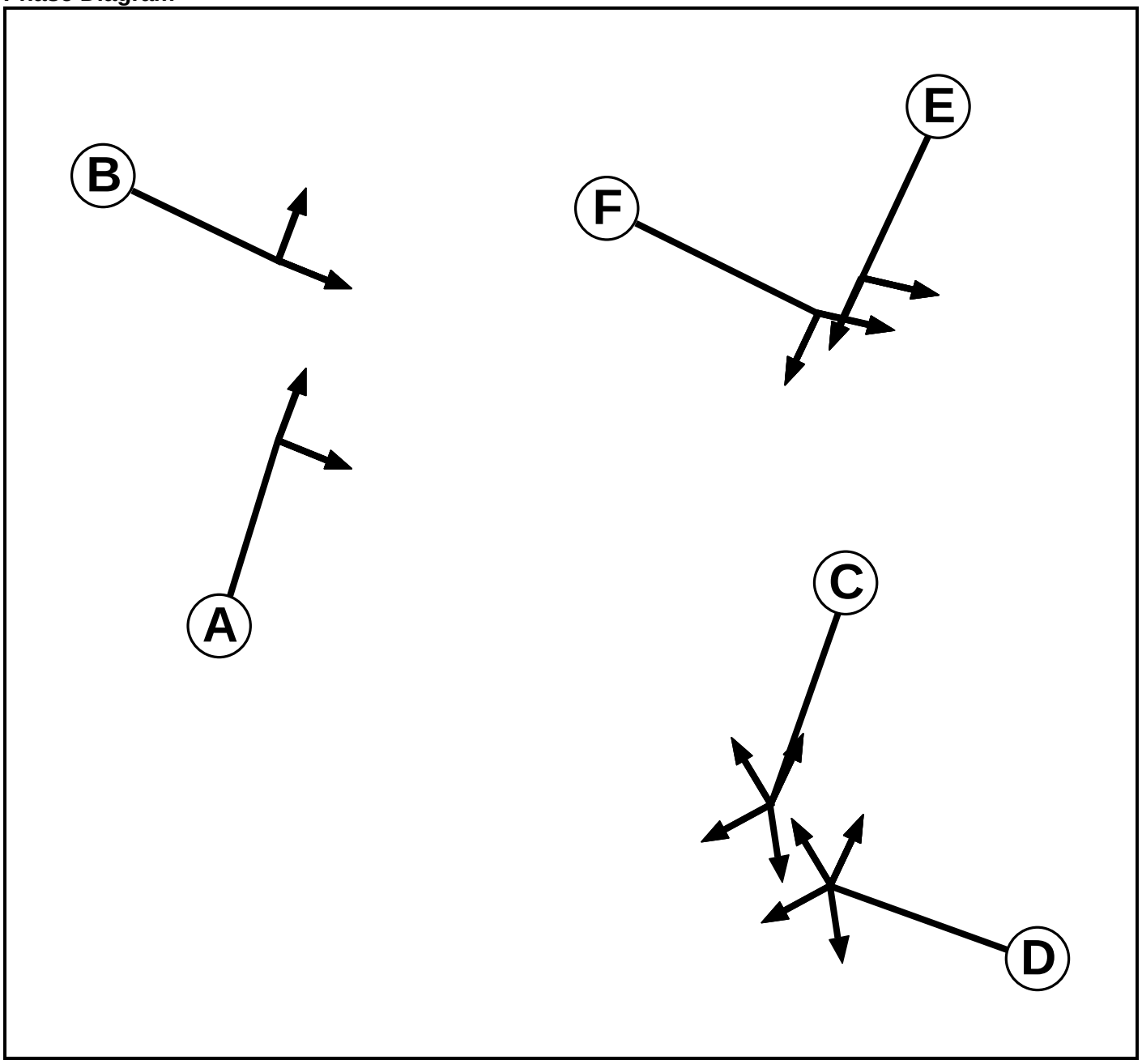
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

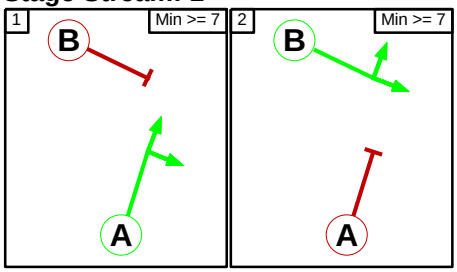
Terminating Phase	Starting Phase A	B	C	D	E	F
A		7	-	-	-	-
B	7		-	-	-	-
C	-	-		7	-	-
D	-	-	7		-	-
E	-	-	-	-		7
F	-	-	-	-	7	

Phases in Stage

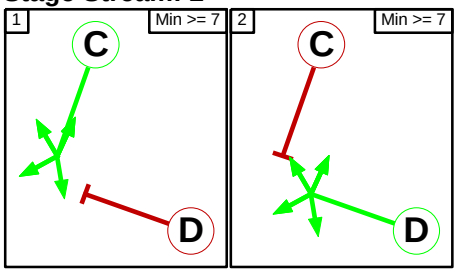
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F

Stage Diagram

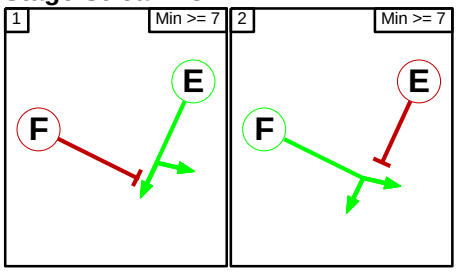
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Full Input Data And Results

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		7
	2	7	

Stage Stream: 3

	To Stage		
From Stage		1	2
	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A5076, Towcester Road, Mere Way

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
3/1 (Tesco Retail)	9/1 (Left)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead)	-	-	-	-	-
				6/1	0.33	To 9/1 (Ahead)					
				6/2	0.33	To 9/2 (Ahead)					
				6/2	0.33	All					
	9/2 (Left)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead)					
				6/1	0.33	To 9/1 (Ahead)					
	10/1 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				6/2	0.33	All					
				6/1	0.33	To 9/1 (Ahead)					
				6/3	0.33	To 10/2 (Right)					
				2/2	0.33	All					
	10/2 (Ahead)	1439	0	2/1	1.09	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				2/2	1.09	All					
				2/3	1.09	All					
				6/1	1.09	To 9/1 (Ahead)					
				6/2	1.09	All					
				6/3	1.09	All					
3/2 (Tesco Retail)	11/1 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)	-	-	-	-	-
				2/2	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					

4/1 (Towcester Road)				6/1	0.33	To 9/1 (Ahead)					
				2/3	0.33	All					
	11/2 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				2/2	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					
				6/1	0.33	To 9/1 (Ahead)					
				2/3	0.30	All					
	11/3 (Ahead)	1000	0	2/1	0.33	To 9/1 (Ahead) To 9/2 (Ahead) To 10/1 (Ahead)					
				2/2	0.33	All					
				6/2	0.33	All					
				6/3	0.33	All					
				6/1	0.33	To 9/1 (Ahead)					
				2/3	0.33	All					
	10/1 (Left)	1000	0	3/1	0.33	To 10/1 (Ahead)	-	-	-	-	-
				2/1	0.33	To 10/1 (Ahead)					
				6/3	0.33	All					
				6/2	0.33	To 10/1 (Right)					
				2/2	0.33	All					
				3/2	0.33	All					
				2/3	0.33	All					
	11/1 (Ahead)	1000	0	2/1	0.33	To 10/1 (Ahead)					
				2/2	0.33	All					
				2/3	0.33	All					
				3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)					
				3/2	0.33	All					
				6/2	0.33	To 10/1 (Right)					

				6/3	0.33	All						
4/2 (Towcester Road)	10/2 (Left)	1000	0	2/1	0.33	To 10/1 (Ahead)	-	-	-	-	-
				2/2	0.33	All						
				3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)						
				3/2	0.33	All						
				6/2	0.33	To 10/1 (Right)						
				6/3	0.33	All						
	11/2 (Ahead)			2/3	0.33	All						
				3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)						
				3/2	0.33	All						
				2/1	0.33	To 10/1 (Ahead)						
				2/2	0.33	All						
				2/3	0.33	All						
				6/2	0.33	To 10/1 (Right)						
				6/3	0.33	All						
4/3 (Towcester Road)	11/3 (Ahead)	1000	0	3/1	0.33	To 10/1 (Ahead) To 10/2 (Ahead)	-	-	-	-	-
				3/2	0.33	All						
				2/1	0.33	To 10/1 (Ahead)						
				2/2	0.33	All						
				6/3	0.33	All						
				6/2	0.33	To 10/1 (Right)						
				2/3	0.33	All						

Full Input Data And Results

Lane Input Data

Junction: A5076, Towcester Road, Mere Way												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A5123)	U	E	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 6 Ahead	62.00
											Arm 8 Left	42.00
1/2 (A5123)	U	E	2	3	7.0	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
1/3 (A5123)	U	E	2	3	5.4	Geom	-	4.00	0.00	N	Arm 6 Ahead	60.00
2/1 (Mere Way)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 7 Left	34.00
											Arm 9 Ahead	80.00
											Arm 10 Ahead	56.00
2/2 (Mere Way)	U	D	2	3	60.0	Geom	-	3.50	0.00	N	Arm 10 Ahead	55.00
2/3 (Mere Way)	U	D	2	3	22.6	Geom	-	3.50	0.00	N	Arm 11 Right	45.00
3/1 (Tesco Retail)	O		2	3	10.4	Geom	-	3.50	0.00	Y	Arm 9 Left	32.00
											Arm 10 Ahead	48.00
3/2 (Tesco Retail)	O		2	3	10.4	Geom	-	3.50	0.00	Y	Arm 11 Ahead	53.00
4/1 (Towcester Road)	O		2	3	5.0	Geom	-	3.75	0.00	Y	Arm 10 Left	40.00
											Arm 11 Ahead	51.00
4/2 (Towcester Road)	O		2	3	7.8	Geom	-	3.50	0.00	N	Arm 10 Left	41.00
											Arm 11 Ahead	51.00
4/3 (Towcester Road)	O		2	3	60.0	Geom	-	3.25	0.00	N	Arm 11 Ahead	51.00
5/1 (Danes Camp Way)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 12 Left	42.00
											Arm 14 Ahead	58.00
5/2 (Danes Camp Way)	U	B	2	3	60.0	Geom	-	4.00	0.00	N	Arm 14 Ahead	58.00
5/3 (Danes Camp Way)	U	B	2	3	8.7	Geom	-	3.50	0.00	N	Arm 14 Ahead	57.00
6/1	U	C	2	3	4.0	Geom	-	3.50	0.00	N	Arm 7 Ahead	47.00

Full Input Data And Results

											Arm 9 Ahead	41.00
6/2	U	C	2	3	5.0	Geom	-	3.25	0.00	N	Arm 9 Ahead	41.00
											Arm 10 Right	39.00
6/3	U	C	2	3	6.1	Geom	-	3.25	0.00	N	Arm 10 Right	39.00
											Arm 11 U-Turn	Inf
7/1	U		2	3	2.1	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
8/3	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U	A	2	3	5.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	60.00
11/2	U	A	2	3	6.1	Geom	-	3.50	0.00	N	Arm 12 Ahead	60.00
											Arm 14 Right	Inf
11/3	U	A	2	3	5.6	Geom	-	3.50	0.00	N	Arm 14 Right	48.00
12/1	U		2	3	60.0	Inf	-	-	-	-	-	-
12/2	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1	U	F	2	3	5.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	Inf
14/2	U	F	2	3	5.0	Geom	-	3.50	0.00	N	Arm 8 Ahead	Inf
14/3	U	F	2	3	5.0	Geom	-	3.50	0.00	N	Arm 6 Right	Inf
											Arm 8 Ahead	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	

8: '2031 DS PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	51	142	75	170	438
	B	18	0	95	35	300	448
	C	115	150	5	39	1918	2227
	D	79	0	186	0	330	595
	E	114	363	1549	470	14	2510
	Tot.	326	564	1977	619	2732	6218

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2021 DM AM
Junction: A5076, Towcester Road, Mere Way	
1/1	409
1/2 (with short)	186(In) 63(Out)
1/3 (short)	123
2/1	970
2/2 (with short)	1540(In) 1056(Out)
2/3 (short)	484
3/1	193
3/2	245
4/1 (short)	130
4/2 (with short)	315(In) 185(Out)
4/3	133
5/1	824
5/2 (with short)	1403(In) 706(Out)
5/3 (short)	697
6/1	215
6/2	210
6/3	128
7/1	326
8/1	1085
8/2	971
8/3	676
9/1	211
9/2	353
10/1	722
10/2	1255
11/1	361
11/2	409
11/3	312
12/1	380
12/2	239
13/1	164
13/2	162
14/1	975
14/2	861
14/3	854

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	19.3 %	1950	1950
				Arm 8 Left	42.00	80.7 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	11.8 %	1916	1916
				Arm 9 Ahead	80.00	37.4 %		
				Arm 10 Ahead	56.00	50.8 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	26.4 %	1898	1898
				Arm 10 Ahead	48.00	73.6 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	73.1 %	1922	1922
				Arm 11 Ahead	51.00	26.9 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	0.0 %	2045	2045
				Arm 11 Ahead	51.00	100.0 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	4.7 %	1915	1915
				Arm 14 Ahead	58.00	95.3 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	98.6 %	2040	2040
				Arm 9 Ahead	41.00	1.4 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	70.0 %	2005	2005
				Arm 10 Right	39.00	30.0 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	53.5 %	2077	2077
				Arm 14 Right	Inf	46.5 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	33.7 %	2105	2105
				Arm 8 Ahead	Inf	66.3 %		

Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	90	246	85	150	571
	B	38	0	167	161	228	594
	C	174	194	0	129	1564	2061
	D	96	0	161	0	236	493
	E	139	275	1600	255	0	2269
	Tot.	447	559	2174	630	2178	5988

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 2: 2021 DM PM
Junction: A5076, Towcester Road, Mere Way	
1/1	332
1/2 (with short)	161(In) 11(Out)
1/3 (short)	150
2/1	962
2/2 (with short)	1307(In) 1052(Out)
2/3 (short)	255
3/1	336
3/2	235
4/1 (short)	227
4/2 (with short)	446(In) 219(Out)
4/3	148
5/1	736
5/2 (with short)	1325(In) 667(Out)
5/3 (short)	658
6/1	308
6/2	205
6/3	150
7/1	447
8/1	870
8/2	860
8/3	448
9/1	183
9/2	376
10/1	786
10/2	1388
11/1	336
11/2	349
11/3	232
12/1	400
12/2	230
13/1	224
13/2	223
14/1	791
14/2	782
14/3	775

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	28.9 %	1952	1952
				Arm 8 Left	42.00	71.1 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	14.4 %	1913	1913
				Arm 9 Ahead	80.00	28.6 %		
				Arm 10 Ahead	56.00	57.0 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	26.8 %	1898	1898
				Arm 10 Ahead	48.00	73.2 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	45.8 %	1926	1926
				Arm 11 Ahead	51.00	54.2 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	28.8 %	2041	2041
				Arm 11 Ahead	51.00	71.2 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	17.5 %	1912	1912
				Arm 14 Ahead	58.00	82.5 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	100.0 %	2040	2040
				Arm 9 Ahead	41.00	0.0 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	94.6 %	2006	2006
				Arm 10 Right	39.00	5.4 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	47.3 %	2080	2080
				Arm 14 Right	Inf	52.7 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	52.4 %	2105	2105
				Arm 8 Ahead	Inf	47.6 %		

Scenario 3: '2021 DS AM' (FG3: '2021 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	53	141	75	170	439
	B	19	0	116	59	332	526
	C	114	134	14	44	1970	2276
	D	79	0	197	0	317	593
	E	114	317	1751	447	0	2629
	Tot.	326	504	2219	625	2789	6463

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 3: 2021 DS AM
Junction: A5076, Towcester Road, Mere Way	
1/1	396
1/2 (with short)	197(In) 69(Out)
1/3 (short)	128
2/1	1052
2/2 (with short)	1577(In) 1130(Out)
2/3 (short)	447
3/1	194
3/2	245
4/1 (short)	171
4/2 (with short)	378(In) 207(Out)
4/3	148
5/1	820
5/2 (with short)	1456(In) 733(Out)
5/3 (short)	723
6/1	217
6/2	199
6/3	141
7/1	326
8/1	1088
8/2	992
8/3	709
9/1	191
9/2	313
10/1	877
10/2	1342
11/1	372
11/2	415
11/3	315
12/1	394
12/2	231
13/1	164
13/2	162
14/1	982
14/2	887
14/3	884

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	19.9 %	1950	1950
				Arm 8 Left	42.00	80.1 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	10.8 %	1915	1915
				Arm 9 Ahead	80.00	30.1 %		
				Arm 10 Ahead	56.00	59.0 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	27.3 %	1898	1898
				Arm 10 Ahead	48.00	72.7 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	67.8 %	1923	1923
				Arm 11 Ahead	51.00	32.2 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	0.0 %	2045	2045
				Arm 11 Ahead	51.00	100.0 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	5.4 %	1914	1914
				Arm 14 Ahead	58.00	94.6 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	97.7 %	2040	2040
				Arm 9 Ahead	41.00	2.3 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	64.8 %	2005	2005
				Arm 10 Right	39.00	35.2 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	50.4 %	2079	2079
				Arm 14 Right	Inf	49.6 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	31.8 %	2105	2105
				Arm 8 Ahead	Inf	68.2 %		

Scenario 4: '2021 DS PM' (FG4: '2021 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	91	245	86	149	571
	B	38	0	156	104	241	539
	C	175	241	1	126	1606	2149
	D	95	0	119	0	106	320
	E	140	284	1377	276	0	2077
	Tot.	448	616	1898	592	2102	5656

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2021 DS PM
Junction: A5076, Towcester Road, Mere Way	
1/1	201
1/2 (with short)	119(In) 13(Out)
1/3 (short)	106
2/1	859
2/2 (with short)	1218(In) 942(Out)
2/3 (short)	276
3/1	336
3/2	235
4/1 (short)	209
4/2 (with short)	417(In) 208(Out)
4/3	122
5/1	773
5/2 (with short)	1376(In) 691(Out)
5/3 (short)	685
6/1	309
6/2	253
6/3	107
7/1	448
8/1	877
8/2	847
8/3	378
9/1	189
9/2	427
10/1	705
10/2	1193
11/1	315
11/2	346
11/3	233
12/1	378
12/2	214
13/1	225
13/2	223
14/1	842
14/2	811
14/3	798

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	47.3 %	1956	1956
				Arm 8 Left	42.00	52.7 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	16.3 %	1913	1913
				Arm 9 Ahead	80.00	33.1 %		
				Arm 10 Ahead	56.00	50.6 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	27.1 %	1898	1898
				Arm 10 Ahead	48.00	72.9 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	64.6 %	1923	1923
				Arm 11 Ahead	51.00	35.4 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	10.1 %	2043	2043
				Arm 11 Ahead	51.00	89.9 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	16.3 %	1912	1912
				Arm 14 Ahead	58.00	83.7 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	99.7 %	2040	2040
				Arm 9 Ahead	41.00	0.3 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	94.9 %	2006	2006
				Arm 10 Right	39.00	5.1 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	43.6 %	2082	2082
				Arm 14 Right	Inf	56.4 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	57.0 %	2105	2105
				Arm 8 Ahead	Inf	43.0 %		

Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	50	141	77	175	443
	B	16	0	221	160	432	829
	C	118	132	18	47	1791	2106
	D	79	0	137	0	393	609
	E	115	394	1789	530	39	2867
	Tot.	328	576	2306	814	2830	6854

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2031 DM AM
Junction: A5076, Towcester Road, Mere Way	
1/1	472
1/2 (with short)	137(In) 57(Out)
1/3 (short)	80
2/1	1109
2/2 (with short)	1758(In) 1189(Out)
2/3 (short)	569
3/1	191
3/2	252
4/1 (short)	303
4/2 (with short)	591(In) 288(Out)
4/3	238
5/1	781
5/2 (with short)	1325(In) 659(Out)
5/3 (short)	666
6/1	224
6/2	179
6/3	97
7/1	328
8/1	1100
8/2	1005
8/3	725
9/1	233
9/2	343
10/1	924
10/2	1382
11/1	469
11/2	533
11/3	427
12/1	492
12/2	322
13/1	165
13/2	163
14/1	969
14/2	874
14/3	878

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	16.7 %	1949	1949
				Arm 8 Left	42.00	83.3 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	10.4 %	1916	1916
				Arm 9 Ahead	80.00	35.5 %		
				Arm 10 Ahead	56.00	54.1 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	26.2 %	1898	1898
				Arm 10 Ahead	48.00	73.8 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	64.7 %	1923	1923
				Arm 11 Ahead	51.00	35.3 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	8.7 %	2044	2044
				Arm 11 Ahead	51.00	91.3 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	6.0 %	1914	1914
				Arm 14 Ahead	58.00	94.0 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	95.1 %	2039	2039
				Arm 9 Ahead	41.00	4.9 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	67.6 %	2005	2005
				Arm 10 Right	39.00	32.4 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	55.9 %	2076	2076
				Arm 14 Right	Inf	44.1 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	32.3 %	2105	2105
				Arm 8 Ahead	Inf	67.7 %		

Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	96	242	87	151	576
	B	32	0	197	122	143	494
	C	179	216	6	148	1498	2047
	D	97	120	183	0	263	663
	E	140	450	1575	328	0	2493
	Tot.	448	882	2203	685	2055	6273

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2031 DM PM
Junction: A5076, Towcester Road, Mere Way	
1/1	360
1/2 (with short)	303(In) 120(Out)
1/3 (short)	183
2/1	1044
2/2 (with short)	1449(In) 1121(Out)
2/3 (short)	328
3/1	338
3/2	238
4/1 (short)	192
4/2 (with short)	374(In) 182(Out)
4/3	120
5/1	755
5/2 (with short)	1292(In) 652(Out)
5/3 (short)	640
6/1	327
6/2	317
6/3	189
7/1	448
8/1	834
8/2	830
8/3	391
9/1	292
9/2	590
10/1	704
10/2	1499
11/1	371
11/2	305
11/3	187
12/1	445
12/2	240
13/1	225
13/2	223
14/1	746
14/2	743
14/3	736

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	26.9 %	1951	1951
				Arm 8 Left	42.00	73.1 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	13.4 %	1916	1916
				Arm 9 Ahead	80.00	43.1 %		
				Arm 10 Ahead	56.00	43.5 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	28.4 %	1897	1897
				Arm 10 Ahead	48.00	71.6 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	67.2 %	1923	1923
				Arm 11 Ahead	51.00	32.8 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	37.4 %	2040	2040
				Arm 11 Ahead	51.00	62.6 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	19.6 %	1912	1912
				Arm 14 Ahead	58.00	80.4 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	94.2 %	2039	2039
				Arm 9 Ahead	41.00	5.8 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	100.0 %	2007	2007
				Arm 10 Right	39.00	0.0 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	54.4 %	2077	2077
				Arm 14 Right	Inf	45.6 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	58.8 %	2105	2105
				Arm 8 Ahead	Inf	41.2 %		

Scenario 7: '2031 DS AM' (FG7: '2031 DS AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	50	141	78	176	445
	B	20	0	175	179	481	855
	C	116	136	28	43	1788	2111
	D	79	0	171	0	315	565
	E	114	344	1872	500	20	2850
	Tot.	329	530	2387	800	2780	6826

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS AM
Junction: A5076, Towcester Road, Mere Way	
1/1	394
1/2 (with short)	171(In) 78(Out)
1/3 (short)	93
2/1	1125
2/2 (with short)	1725(In) 1205(Out)
2/3 (short)	520
3/1	191
3/2	254
4/1 (short)	299
4/2 (with short)	588(In) 289(Out)
4/3	267
5/1	797
5/2 (with short)	1314(In) 658(Out)
5/3 (short)	656
6/1	236
6/2	194
6/3	120
7/1	329
8/1	1097
8/2	995
8/3	688
9/1	218
9/2	312
10/1	953
10/2	1434
11/1	475
11/2	520
11/3	459
12/1	496
12/2	304
13/1	165
13/2	164
14/1	992
14/2	890
14/3	883

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	20.1 %	1950	1950
				Arm 8 Left	42.00	79.9 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	10.1 %	1915	1915
				Arm 9 Ahead	80.00	30.6 %		
				Arm 10 Ahead	56.00	59.3 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	26.2 %	1898	1898
				Arm 10 Ahead	48.00	73.8 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	45.8 %	1926	1926
				Arm 11 Ahead	51.00	54.2 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	13.1 %	2043	2043
				Arm 11 Ahead	51.00	86.9 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	5.4 %	1914	1914
				Arm 14 Ahead	58.00	94.6 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	91.1 %	2039	2039
				Arm 9 Ahead	41.00	8.9 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	59.3 %	2005	2005
				Arm 10 Right	39.00	40.7 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	54.2 %	2077	2077
				Arm 14 Right	Inf	45.8 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	34.0 %	2105	2105
				Arm 8 Ahead	Inf	66.0 %		

Scenario 8: '2031 DS PM' (FG8: '2031 DS PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	95	243	86	152	576
	B	35	0	148	95	152	430
	C	177	206	42	153	1595	2173
	D	96	0	277	0	153	526
	E	141	406	1377	279	0	2203
	Tot.	449	707	2087	613	2052	5908

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS PM
Junction: A5076, Towcester Road, Mere Way	
1/1	249
1/2 (with short)	277(In) 49(Out)
1/3 (short)	228
2/1	919
2/2 (with short)	1284(In) 1005(Out)
2/3 (short)	279
3/1	338
3/2	238
4/1 (short)	168
4/2 (with short)	330(In) 162(Out)
4/3	100
5/1	804
5/2 (with short)	1369(In) 680(Out)
5/3 (short)	689
6/1	320
6/2	248
6/3	265
7/1	449
8/1	843
8/2	829
8/3	380
9/1	263
9/2	444
10/1	651
10/2	1436
11/1	319
11/2	282
11/3	198
12/1	395
12/2	218
13/1	226
13/2	223
14/1	792
14/2	778
14/3	789

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	38.6 %	1954	1954
				Arm 8 Left	42.00	61.4 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	15.3 %	1915	1915
				Arm 9 Ahead	80.00	44.2 %		
				Arm 10 Ahead	56.00	40.5 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	28.1 %	1897	1897
				Arm 10 Ahead	48.00	71.9 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	61.9 %	1924	1924
				Arm 11 Ahead	51.00	38.1 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	27.2 %	2041	2041
				Arm 11 Ahead	51.00	72.8 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	19.0 %	1912	1912
				Arm 14 Ahead	58.00	81.0 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	96.3 %	2040	2040
				Arm 9 Ahead	41.00	3.8 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	78.2 %	2006	2006
				Arm 10 Right	39.00	21.8 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	50.0 %	2079	2079
				Arm 14 Right	Inf	50.0 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	58.3 %	2105	2105
				Arm 8 Ahead	Inf	41.7 %		

Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	51	142	76	171	440
	B	20	0	134	125	368	647
	C	120	131	14	25	1920	2210
	D	77	0	169	0	326	572
	E	112	311	1836	442	0	2701
	Tot.	329	493	2295	668	2785	6570

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2021 DS5 AM
Junction: A5076, Towcester Road, Mere Way	
1/1	403
1/2 (with short)	169(In) 40(Out)
1/3 (short)	129
2/1	1087
2/2 (with short)	1614(In) 1172(Out)
2/3 (short)	442
3/1	193
3/2	247
4/1 (short)	237
4/2 (with short)	461(In) 224(Out)
4/3	186
5/1	786
5/2 (with short)	1424(In) 717(Out)
5/3 (short)	707
6/1	217
6/2	172
6/3	142
7/1	329
8/1	1074
8/2	999
8/3	712
9/1	182
9/2	311
10/1	909
10/2	1386
11/1	417
11/2	430
11/3	355
12/1	429
12/2	239
13/1	165
13/2	164
14/1	965
14/2	891
14/3	888

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	19.1 %	1950	1950
				Arm 8 Left	42.00	80.9 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	10.3 %	1915	1915
				Arm 9 Ahead	80.00	28.6 %		
				Arm 10 Ahead	56.00	61.1 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	26.4 %	1898	1898
				Arm 10 Ahead	48.00	73.6 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	56.1 %	1925	1925
				Arm 11 Ahead	51.00	43.9 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	0.4 %	2045	2045
				Arm 11 Ahead	51.00	99.6 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	3.2 %	1915	1915
				Arm 14 Ahead	58.00	96.8 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	100.0 %	2040	2040
				Arm 9 Ahead	41.00	0.0 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	76.2 %	2006	2006
				Arm 10 Right	39.00	23.8 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	52.6 %	2078	2078
				Arm 14 Right	Inf	47.4 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	32.1 %	2105	2105
				Arm 8 Ahead	Inf	67.9 %		

Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	93	245	86	147	571
	B	35	0	155	160	222	572
	C	175	221	0	81	1590	2067
	D	98	0	198	0	80	376
	E	143	291	1423	281	0	2138
	Tot.	451	605	2021	608	2039	5724

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2021 DS5 PM
Junction: A5076, Towcester Road, Mere Way	
1/1	178
1/2 (with short)	198(In) 35(Out)
1/3 (short)	163
2/1	895
2/2 (with short)	1243(In) 962(Out)
2/3 (short)	281
3/1	338
3/2	233
4/1 (short)	235
4/2 (with short)	459(In) 224(Out)
4/3	113
5/1	735
5/2 (with short)	1332(In) 671(Out)
5/3 (short)	661
6/1	309
6/2	255
6/3	163
7/1	451
8/1	851
8/2	813
8/3	375
9/1	194
9/2	411
10/1	729
10/2	1292
11/1	346
11/2	351
11/3	234
12/1	386
12/2	222
13/1	227
13/2	224
14/1	824
14/2	787
14/3	779

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	55.1 %	1958	1958
				Arm 8 Left	42.00	44.9 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	16.0 %	1913	1913
				Arm 9 Ahead	80.00	32.5 %		
				Arm 10 Ahead	56.00	51.5 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	27.5 %	1898	1898
				Arm 10 Ahead	48.00	72.5 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	47.2 %	1926	1926
				Arm 11 Ahead	51.00	52.8 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	19.6 %	2042	2042
				Arm 11 Ahead	51.00	80.4 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	11.0 %	1913	1913
				Arm 14 Ahead	58.00	89.0 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	99.7 %	2040	2040
				Arm 9 Ahead	41.00	0.3 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	86.3 %	2006	2006
				Arm 10 Right	39.00	13.7 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	51.6 %	2078	2078
				Arm 14 Right	Inf	48.4 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	55.3 %	2105	2105
				Arm 8 Ahead	Inf	44.7 %		

Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	52	142	77	175	446
	B	18	0	133	249	512	912
	C	112	92	17	13	1890	2124
	D	81	0	144	0	293	518
	E	115	301	1946	470	21	2853
	Tot.	326	445	2382	809	2891	6853

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS5 AM
Junction: A5076, Towcester Road, Mere Way	
1/1	374
1/2 (with short)	144(In) 63(Out)
1/3 (short)	81
2/1	1140
2/2 (with short)	1713(In) 1222(Out)
2/3 (short)	491
3/1	194
3/2	252
4/1 (short)	323
4/2 (with short)	637(In) 314(Out)
4/3	275
5/1	808
5/2 (with short)	1316(In) 658(Out)
5/3 (short)	658
6/1	220
6/2	148
6/3	96
7/1	326
8/1	1158
8/2	987
8/3	746
9/1	186
9/2	259
10/1	960
10/2	1422
11/1	534
11/2	527
11/3	461
12/1	540
12/2	269
13/1	164
13/2	162
14/1	1060
14/2	890
14/3	887

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	21.7 %	1950	1950
				Arm 8 Left	42.00	78.3 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	10.1 %	1914	1914
				Arm 9 Ahead	80.00	26.4 %		
				Arm 10 Ahead	56.00	63.5 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	26.8 %	1898	1898
				Arm 10 Ahead	48.00	73.2 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	31.0 %	1928	1928
				Arm 11 Ahead	51.00	69.0 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	10.5 %	2043	2043
				Arm 11 Ahead	51.00	89.5 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	1.6 %	1915	1915
				Arm 14 Ahead	58.00	98.4 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	95.9 %	2040	2040
				Arm 9 Ahead	41.00	4.1 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	56.1 %	2005	2005
				Arm 10 Right	39.00	43.9 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	49.7 %	2079	2079
				Arm 14 Right	Inf	50.3 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	26.9 %	2105	2105
				Arm 8 Ahead	Inf	73.1 %		

Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	96	246	84	150	576
	B	32	0	147	303	139	621
	C	178	283	27	54	1659	2201
	D	98	0	124	0	42	264
	E	141	359	1567	236	0	2303
	Tot.	449	738	2111	677	1990	5965

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS5 PM
Junction: A5076, Towcester Road, Mere Way	
1/1	140
1/2 (with short)	124(In) 7(Out)
1/3 (short)	117
2/1	998
2/2 (with short)	1305(In) 1069(Out)
2/3 (short)	236
3/1	342
3/2	234
4/1 (short)	254
4/2 (with short)	498(In) 244(Out)
4/3	123
5/1	818
5/2 (with short)	1383(In) 683(Out)
5/3 (short)	700
6/1	340
6/2	259
6/3	143
7/1	449
8/1	880
8/2	821
8/3	289
9/1	260
9/2	478
10/1	711
10/2	1400
11/1	368
11/2	357
11/3	219
12/1	395
12/2	282
13/1	225
13/2	224
14/1	866
14/2	807
14/3	795

Full Input Data And Results

Lane Saturation Flows

Junction: A5076, Towcester Road, Mere Way								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5123)	4.00	0.00	Y	Arm 6 Ahead	62.00	70.0 %	1961	1961
				Arm 8 Left	42.00	30.0 %		
1/2 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
1/3 (A5123)	4.00	0.00	N	Arm 6 Ahead	60.00	100.0 %	2102	2102
2/1 (Mere Way)	3.50	0.00	Y	Arm 7 Left	34.00	14.1 %	1915	1915
				Arm 9 Ahead	80.00	36.0 %		
				Arm 10 Ahead	56.00	49.9 %		
2/2 (Mere Way)	3.50	0.00	N	Arm 10 Ahead	55.00	100.0 %	2049	2049
2/3 (Mere Way)	3.50	0.00	N	Arm 11 Right	45.00	100.0 %	2037	2037
3/1 (Tesco Retail)	3.50	0.00	Y	Arm 9 Left	32.00	28.1 %	1897	1897
				Arm 10 Ahead	48.00	71.9 %		
3/2 (Tesco Retail)	3.50	0.00	Y	Arm 11 Ahead	53.00	100.0 %	1911	1911
4/1 (Towcester Road)	3.75	0.00	Y	Arm 10 Left	40.00	32.3 %	1928	1928
				Arm 11 Ahead	51.00	67.7 %		
4/2 (Towcester Road)	3.50	0.00	N	Arm 10 Left	41.00	26.6 %	2041	2041
				Arm 11 Ahead	51.00	73.4 %		
4/3 (Towcester Road)	3.25	0.00	N	Arm 11 Ahead	51.00	100.0 %	2021	2021
5/1 (Danes Camp Way)	3.50	0.00	Y	Arm 12 Left	42.00	6.6 %	1914	1914
				Arm 14 Ahead	58.00	93.4 %		
5/2 (Danes Camp Way)	4.00	0.00	N	Arm 14 Ahead	58.00	100.0 %	2101	2101
5/3 (Danes Camp Way)	3.50	0.00	N	Arm 14 Ahead	57.00	100.0 %	2051	2051
6/1	3.50	0.00	N	Arm 7 Ahead	47.00	90.6 %	2039	2039
				Arm 9 Ahead	41.00	9.4 %		
6/2	3.25	0.00	N	Arm 9 Ahead	41.00	96.9 %	2006	2006
				Arm 10 Right	39.00	3.1 %		
6/3	3.25	0.00	N	Arm 10 Right	39.00	100.0 %	2003	2003
				Arm 11 U-Turn	Inf	0.0 %		
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
8/3	Infinite Saturation Flow						Inf	Inf
9/1	Infinite Saturation Flow						Inf	Inf

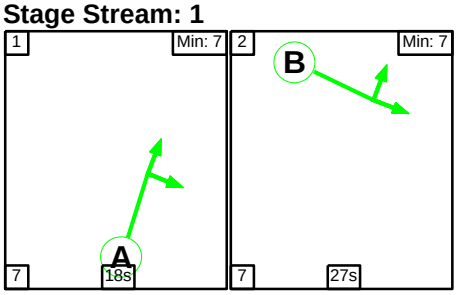
Full Input Data And Results

9/2	Infinite Saturation Flow						Inf	Inf
10/1	Infinite Saturation Flow						Inf	Inf
10/2	Infinite Saturation Flow						Inf	Inf
11/1	3.50	0.00	N	Arm 12 Ahead	60.00	100.0 %	2054	2054
11/2	3.50	0.00	N	Arm 12 Ahead	60.00	71.4 %	2068	2068
				Arm 14 Right	Inf	28.6 %		
11/3	3.50	0.00	N	Arm 14 Right	48.00	100.0 %	2041	2041
12/1	Infinite Saturation Flow						Inf	Inf
12/2	Infinite Saturation Flow						Inf	Inf
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/2	3.50	0.00	N	Arm 8 Ahead	Inf	100.0 %	2105	2105
14/3	3.50	0.00	N	Arm 6 Right	Inf	65.4 %	2105	2105
				Arm 8 Ahead	Inf	34.6 %		

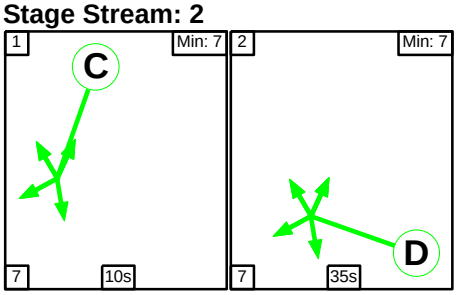
Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

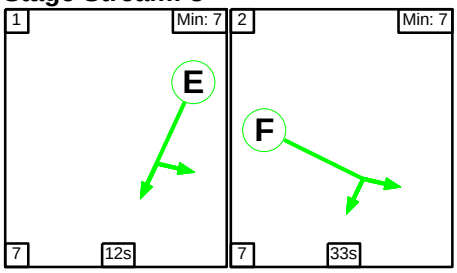
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	27
Change Point	0	25

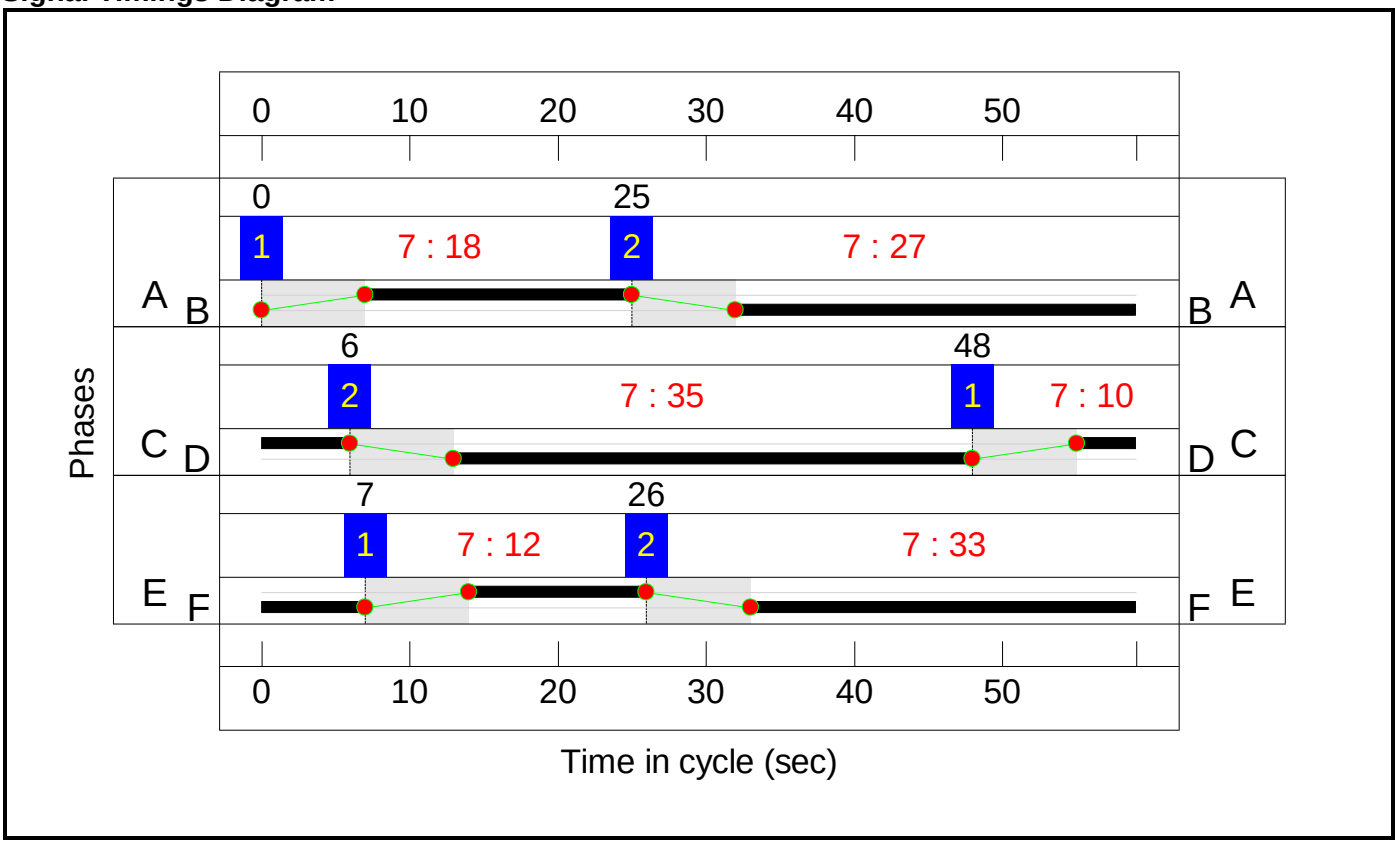
Stage Stream: 2

Stage	1	2
Duration	10	35
Change Point	48	6

Stage Stream: 3

Stage	1	2
Duration	12	33
Change Point	7	26

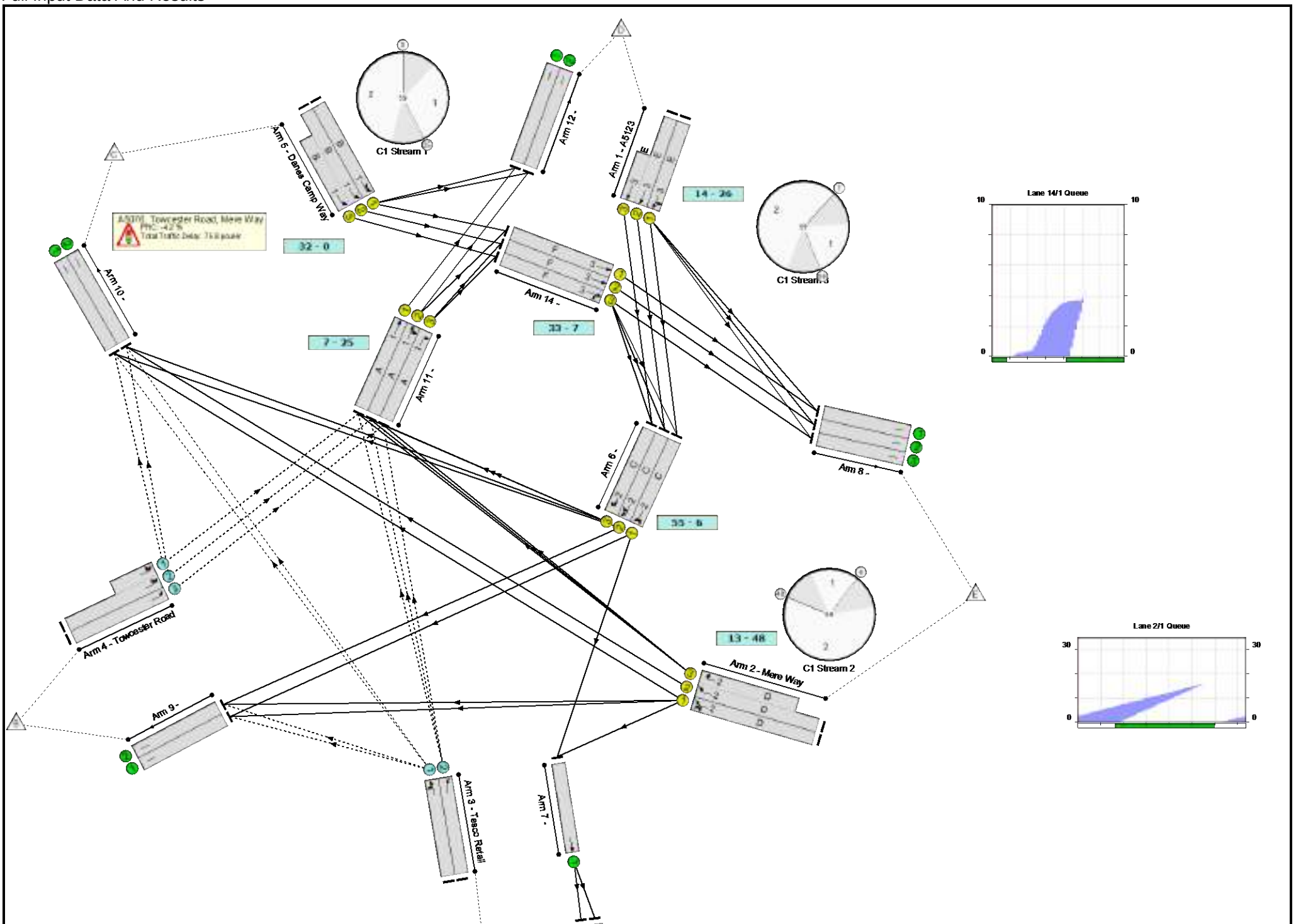
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.8%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	12	-	403	1950	430	93.8%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	12	-	169	2102:2102	133+429	30.1 : 30.1%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	35	-	1087	1915	1168	93.0%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	35	-	1614	2049:2037	1250+472	93.7 : 93.7%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	193	1898	341	56.6%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	247	1911	321	77.1%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	461	2045:1925	249+258	90.1 : 92.0%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	186	2021	249	74.8%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	27	-	786	1915	909	86.5%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	27	-	1424	2101:2051	768+758	93.3 : 93.3%
6/1	Ahead Ahead2	U	2	N/A	C		1	10	-	217	2040	380	57.1%
6/2	Ahead Right	U	2	N/A	C		1	10	-	172	2006	374	46.0%
6/3	Right U-Turn	U	2	N/A	C		1	10	-	142	2003	373	38.0%
7/1	Ahead	U	N/A	N/A	-		-	-	-	329	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1074	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	999	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	712	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	182	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	311	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	909	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1386	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	18	-	417	2054	661	63.0%
11/2	Ahead Right	U	1	N/A	A		1	18	-	430	2078	669	64.3%
11/3	Right	U	1	N/A	A		1	18	-	355	2041	657	54.0%
12/1		U	N/A	N/A	-		-	-	-	429	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	239	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	165	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	33	-	965	2105	1213	79.6%
14/2	Ahead	U	3	N/A	F		1	33	-	891	2105	1213	73.5%
14/3	Right Ahead	U	3	N/A	F		1	33	-	888	2105	1213	73.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1284**	**264**	**0**	**32.1**	**43.7**	**0.0**	**75.8**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1284**	**264**	**0**	**32.1**	**43.7**	**0.0**	**75.8**	**-**	**-**	**-**	**-**
1/1	403	403	-	-	-	2.5	5.4	-	7.9	70.7	6.4	5.4	11.8
1/2+1/3	169	169	-	-	-	0.9	0.2	-	1.1	23.5	1.8	0.2	2.0
2/1	1087	1087	-	-	-	3.1	5.8	-	9.0	29.7	16.0	5.8	21.8
2/2+2/3	1614	1614	-	-	-	4.1	6.7	-	10.8	24.0	17.3	6.7	23.9
3/1	193	193	59	134	0	0.8	0.6	-	1.4	26.2	2.6	0.6	3.3
3/2	247	247	117	130	0	1.1	1.6	-	2.7	39.1	3.6	1.6	5.2
4/2+4/1	461	461	922	0	0	2.2	4.3	-	6.4	50.3	3.8	4.3	8.0
4/3	186	186	186	0	0	0.8	1.4	-	2.2	42.6	2.7	1.4	4.1
5/1	786	786	-	-	-	3.0	3.0	-	6.1	27.8	11.4	3.0	14.4
5/2+5/3	1424	1424	-	-	-	4.9	6.2	-	11.1	28.2	11.5	6.2	17.7
6/1	217	217	-	-	-	1.1	0.7	-	1.7	28.9	3.1	0.7	3.8
6/2	172	172	-	-	-	0.8	0.4	-	1.2	24.8	2.2	0.4	2.7
6/3	142	142	-	-	-	1.2	0.3	-	1.5	38.1	2.3	0.3	2.6
7/1	329	329	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1074	1074	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	999	999	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	712	712	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	182	182	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	311	311	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	909	909	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1386	1386	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	417	417	-	-	-	1.5	0.8	-	2.4	20.5	4.3	0.8	5.1
11/2	430	430	-	-	-	1.2	0.9	-	2.1	17.3	4.4	0.9	5.3

Full Input Data And Results

11/3	355	355	-	-	-	0.4	0.6	-	1.0	9.9	4.1	0.6	4.7
12/1	429	429	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	239	239	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	165	165	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	164	164	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	965	965	-	-	-	0.9	1.9	-	2.8	10.6	4.1	1.9	6.0
14/2	891	891	-	-	-	0.8	1.4	-	2.2	9.0	3.1	1.4	4.5
14/3	888	888	-	-	-	0.9	1.4	-	2.2	9.0	3.2	1.4	4.6

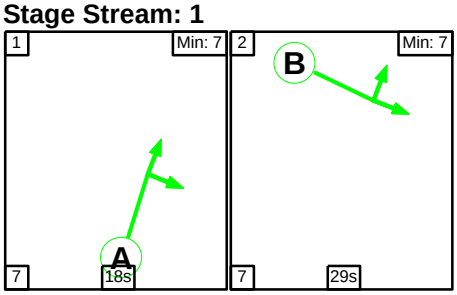
C1 Stream: 1 PRC for Signalled Lanes (%):	-3.7	Total Delay for Signalled Lanes (pcuHr):	22.63	Cycle Time (s):	59
C1 Stream: 2 PRC for Signalled Lanes (%):	-4.2	Total Delay for Signalled Lanes (pcuHr):	24.17	Cycle Time (s):	59
C1 Stream: 3 PRC for Signalled Lanes (%):	-4.2	Total Delay for Signalled Lanes (pcuHr):	16.30	Cycle Time (s):	59
PRC Over All Lanes (%):	-4.2	Total Delay Over All Lanes(pcuHr):	75.82		

Full Input Data And Results

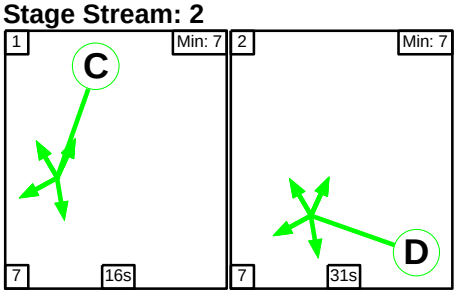
Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

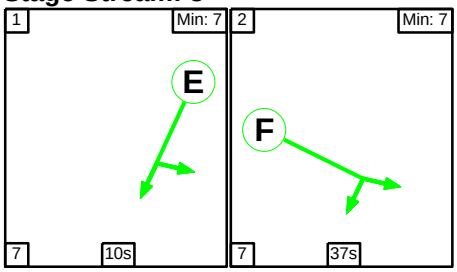
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	29
Change Point	0	25

Stage Stream: 2

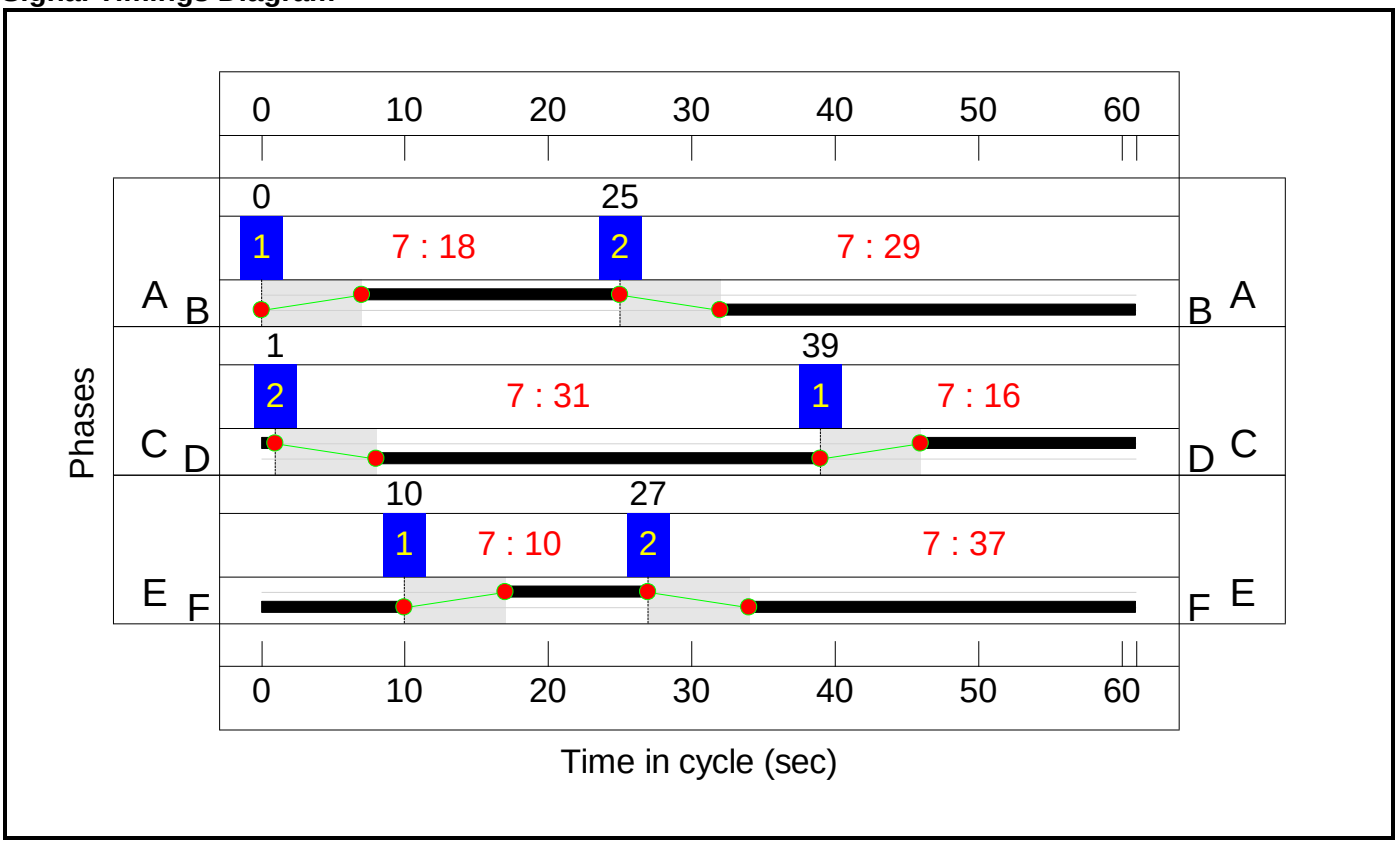
Stage	1	2
Duration	16	31
Change Point	39	1

Stage Stream: 3

Stage	1	2
Duration	10	37
Change Point	10	27

Full Input Data And Results

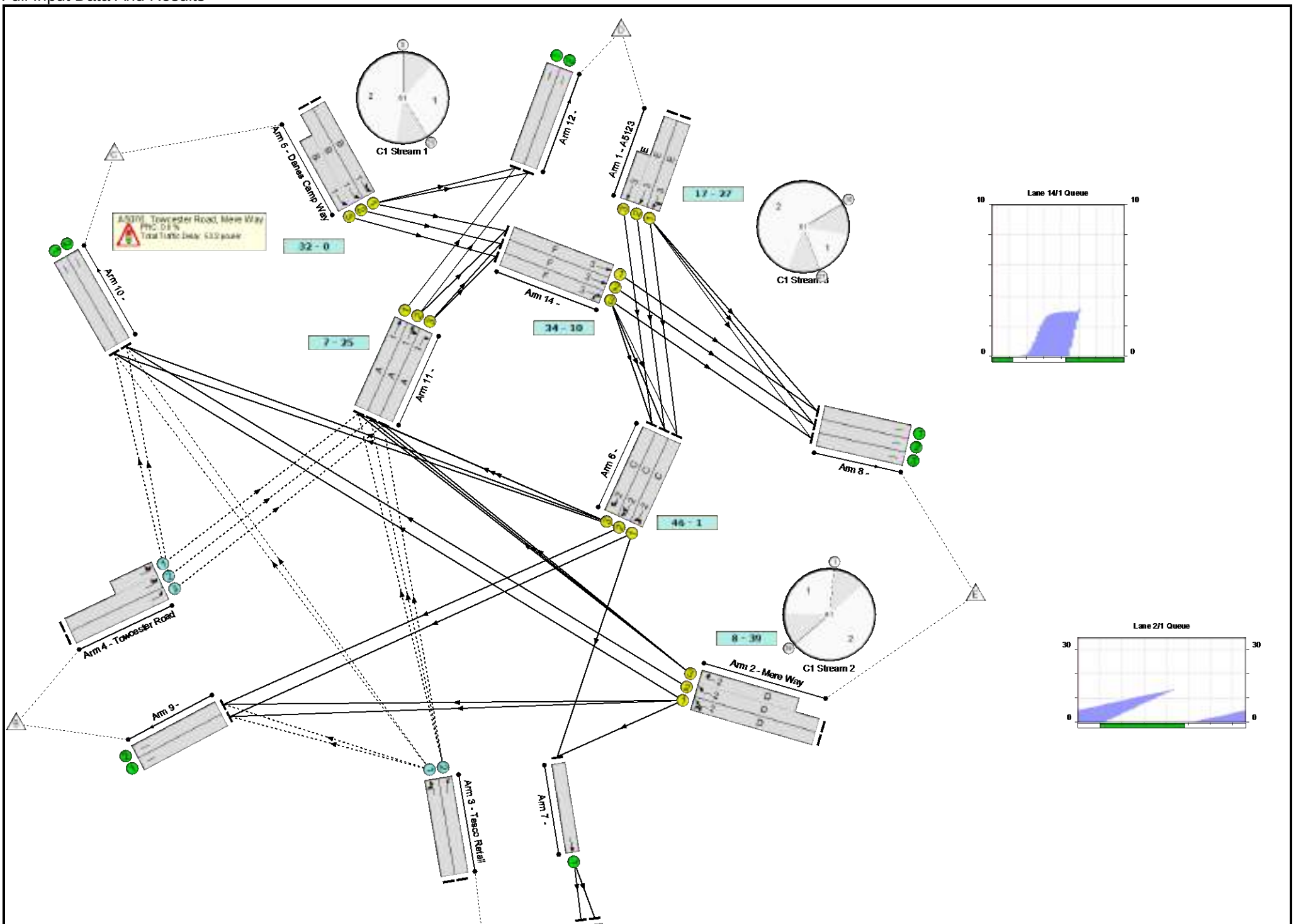
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.5%**
A5076, Towcester Road, Mere Way	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.5%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	10	-	178	1958	353	50.4%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	10	-	198	2102:2102	78+365	44.6 : 44.6%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	31	-	895	1913	1004	89.2%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	31	-	1243	2049:2037	1075+314	89.5 : 89.5%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	338	1898	378	89.5%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	233	1911	391	59.5%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	459	2042:1926	317+332	70.7 : 70.9%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	113	2021	317	35.7%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	29	-	735	1913	941	78.1%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	29	-	1332	2101:2051	778+766	86.3 : 86.3%
6/1	Ahead Ahead2	U	2	N/A	C		1	16	-	309	2040	569	54.4%
6/2	Ahead Right	U	2	N/A	C		1	16	-	255	2006	559	45.6%
6/3	Right U-Turn	U	2	N/A	C		1	16	-	163	2003	558	29.2%
7/1	Ahead	U	N/A	N/A	-		-	-	-	451	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	851	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	813	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	375	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	194	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	411	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	729	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1292	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	18	-	346	2054	640	54.1%
11/2	Ahead Right	U	1	N/A	A		1	18	-	351	2078	647	54.2%
11/3	Right	U	1	N/A	A		1	18	-	234	2041	636	36.8%
12/1		U	N/A	N/A	-		-	-	-	386	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	222	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	227	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	37	-	824	2105	1311	62.8%
14/2	Ahead	U	3	N/A	F		1	37	-	787	2105	1311	60.0%
14/3	Right Ahead	U	3	N/A	F		1	37	-	779	2105	1311	59.4%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1299**	**303**	**0**	**28.8**	**24.4**	**0.0**	**53.2**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1299**	**303**	**0**	**28.8**	**24.4**	**0.0**	**53.2**	**-**	**-**	**-**	**-**
1/1	178	178	-	-	-	1.1	0.5	-	1.6	32.8	2.7	0.5	3.2
1/2+1/3	198	198	-	-	-	1.2	0.4	-	1.6	29.3	2.4	0.4	2.8
2/1	895	895	-	-	-	3.2	3.8	-	7.1	28.4	13.4	3.8	17.3
2/2+2/3	1243	1243	-	-	-	4.1	4.0	-	8.1	23.6	14.4	4.0	18.5
3/1	338	338	156	182	0	1.5	3.6	-	5.1	54.0	5.4	3.6	9.0
3/2	233	233	112	121	0	0.6	0.7	-	1.4	21.2	3.0	0.7	3.7
4/2+4/1	459	459	918	0	0	1.5	1.2	-	2.6	20.8	3.2	1.2	4.4
4/3	113	113	113	0	0	0.2	0.3	-	0.5	16.4	1.0	0.3	1.3
5/1	735	735	-	-	-	2.6	1.8	-	4.4	21.4	10.2	1.8	12.0
5/2+5/3	1332	1332	-	-	-	4.3	3.1	-	7.3	19.9	8.4	3.1	11.4
6/1	309	309	-	-	-	1.2	0.6	-	1.8	20.9	3.8	0.6	4.4
6/2	255	255	-	-	-	0.9	0.4	-	1.3	18.6	2.1	0.4	2.5
6/3	163	163	-	-	-	0.9	0.2	-	1.1	25.2	2.8	0.2	3.0
7/1	451	451	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	851	851	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	813	813	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	375	375	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	194	194	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	411	411	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	729	729	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1292	1292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	346	346	-	-	-	1.2	0.6	-	1.8	18.6	3.8	0.6	4.4
11/2	351	351	-	-	-	1.3	0.6	-	1.8	18.9	4.7	0.6	5.3

Full Input Data And Results

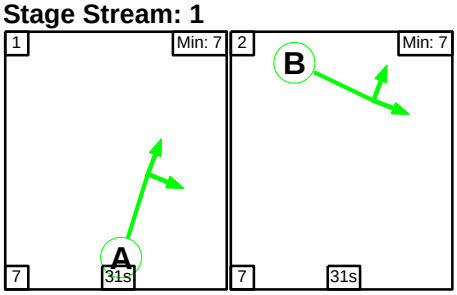
11/3	234	234	-	-	-	0.9	0.3	-	1.2	18.8	3.6	0.3	3.9
12/1	386	386	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	222	222	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	227	227	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	824	824	-	-	-	0.8	0.8	-	1.7	7.2	3.1	0.8	4.0
14/2	787	787	-	-	-	0.6	0.7	-	1.3	6.1	2.0	0.7	2.8
14/3	779	779	-	-	-	0.6	0.7	-	1.3	6.1	2.1	0.7	2.8

C1	Stream: 1 PRC for Signalled Lanes (%):	4.3	Total Delay for Signalled Lanes (pcuHr):	16.57	Cycle Time (s): 61
C1	Stream: 2 PRC for Signalled Lanes (%):	0.6	Total Delay for Signalled Lanes (pcuHr):	19.46	Cycle Time (s): 61
C1	Stream: 3 PRC for Signalled Lanes (%):	43.2	Total Delay for Signalled Lanes (pcuHr):	7.53	Cycle Time (s): 61
	PRC Over All Lanes (%):	0.6	Total Delay Over All Lanes(pcuHr):	53.18	

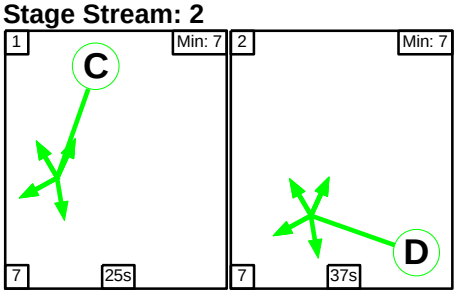
Full Input Data And Results
Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

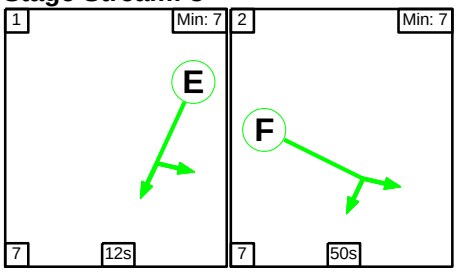
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	31	31
Change Point	0	38

Stage Stream: 2

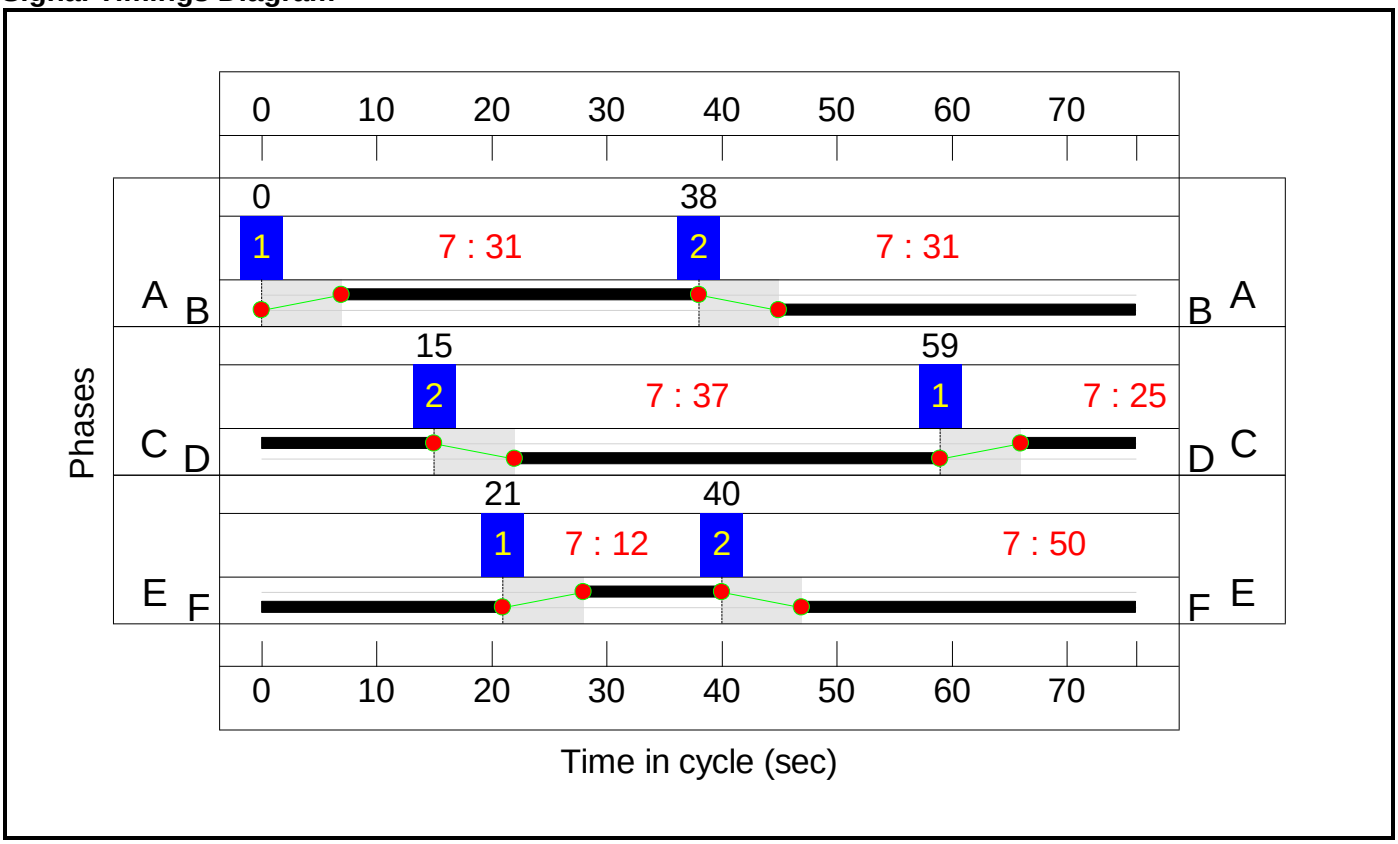
Stage	1	2
Duration	25	37
Change Point	59	15

Stage Stream: 3

Stage	1	2
Duration	12	50
Change Point	21	40

Full Input Data And Results

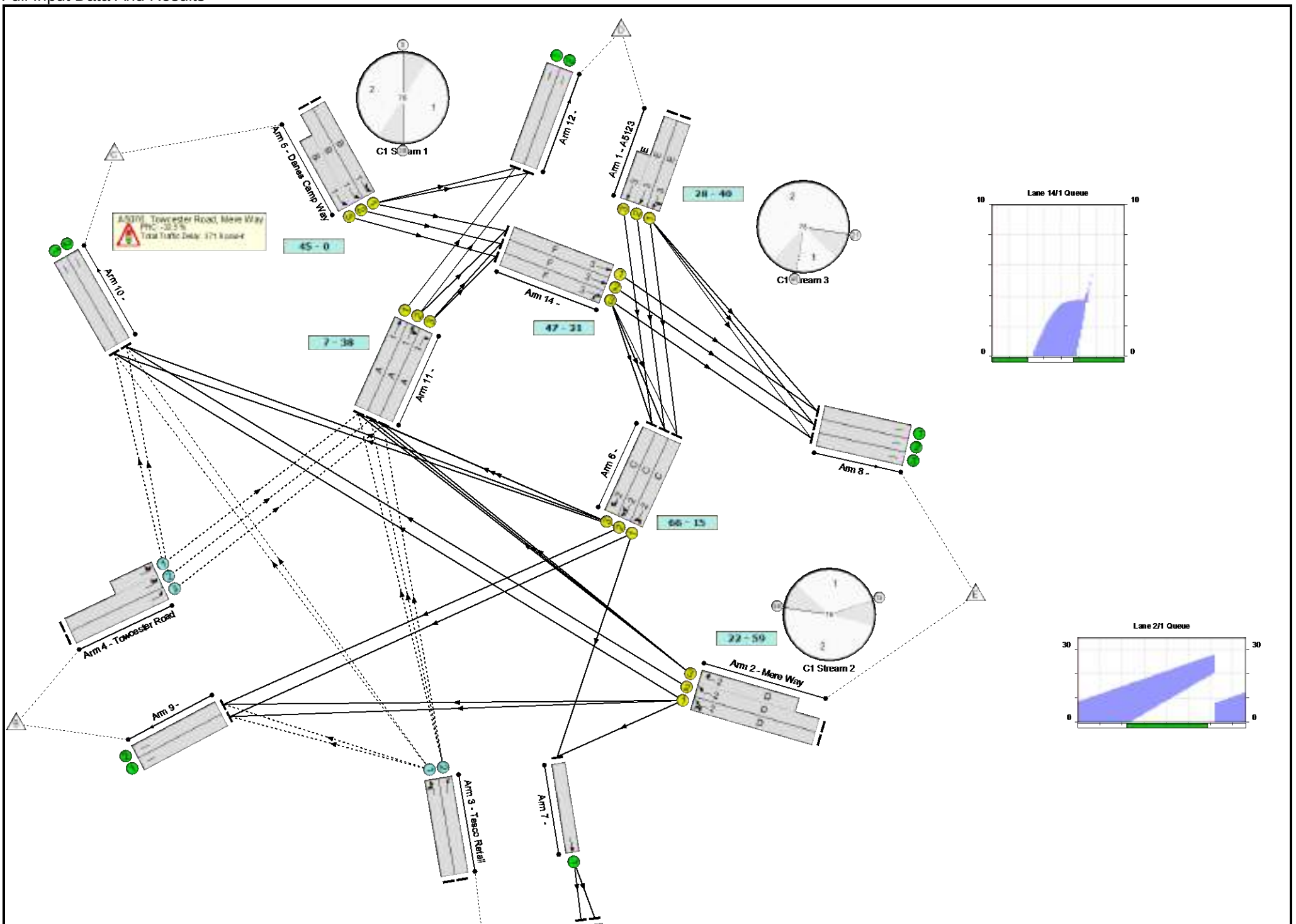
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.3%**
A5076, Towcester Road, Mere Way	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**119.3%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	12	-	374	1950	334	112.1%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	12	-	144	2102:2102	244+314	25.8 : 25.8%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	37	-	1140	1914	957	119.1%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	37	-	1713	2049:2037	1025+412	119.3 : 119.3%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	194	1898	470	41.3%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	252	1911	430	58.6%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	637	2043:1928	344+349	91.4 : 92.6%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	275	2021	344	80.0%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	31	-	808	1915	806	100.2%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	31	-	1316	2101:2051	648+648	101.5 : 101.5%
6/1	Ahead Ahead2	U	2	N/A	C		1	25	-	220	2040	698	30.0%
6/2	Ahead Right	U	2	N/A	C		1	25	-	148	2005	686	21.4%
6/3	Right U-Turn	U	2	N/A	C		1	25	-	96	2003	685	14.0%
7/1	Ahead	U	N/A	N/A	-		-	-	-	326	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	1158	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	987	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	746	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	259	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	960	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1422	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	31	-	534	2054	865	56.2%
11/2	Ahead Right	U	1	N/A	A		1	31	-	527	2079	875	56.9%
11/3	Right	U	1	N/A	A		1	31	-	461	2041	859	53.3%
12/1		U	N/A	N/A	-		-	-	-	540	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	269	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	164	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	162	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	50	-	1060	2105	1413	74.9%
14/2	Ahead	U	3	N/A	F		1	50	-	890	2105	1413	62.2%
14/3	Right Ahead	U	3	N/A	F		1	50	-	887	2105	1413	62.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1792**	**203**	**0**	**60.1**	**311.7**	**0.0**	**371.9**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1792**	**203**	**0**	**60.1**	**311.7**	**0.0**	**371.9**	**-**	**-**	**-**	**-**
1/1	374	334	-	-	-	4.6	24.1	-	28.7	276.1	8.7	24.1	32.9
1/2+1/3	144	144	-	-	-	1.1	0.2	-	1.3	31.4	1.5	0.2	1.6
2/1	1140	957	-	-	-	11.6	94.5	-	106.1	335.0	27.9	94.5	122.4
2/2+2/3	1713	1436	-	-	-	15.8	141.5	-	157.2	330.4	39.7	141.5	181.1
3/1	194	194	90	104	0	0.7	0.4	-	1.0	18.8	2.7	0.4	3.1
3/2	252	252	153	99	0	1.0	0.7	-	1.7	24.4	3.9	0.7	4.6
4/2+4/1	637	637	1274	0	0	3.5	4.9	-	8.4	47.6	6.5	4.9	11.3
4/3	275	275	275	0	0	1.4	1.9	-	3.3	43.1	5.1	1.9	7.0
5/1	808	806	-	-	-	5.0	14.6	-	19.7	87.6	17.1	14.6	31.7
5/2+5/3	1316	1297	-	-	-	7.6	23.6	-	31.1	85.2	19.5	23.6	43.1
6/1	209	209	-	-	-	0.7	0.2	-	1.0	16.4	3.0	0.2	3.3
6/2	147	147	-	-	-	0.6	0.1	-	0.7	17.9	2.0	0.1	2.1
6/3	96	96	-	-	-	0.7	0.1	-	0.8	28.4	1.8	0.1	1.9
7/1	297	297	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1145	1145	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	965	965	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	728	728	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	162	162	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	234	234	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	844	844	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1224	1224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	486	486	-	-	-	1.5	0.6	-	2.1	15.8	4.7	0.6	5.3
11/2	498	498	-	-	-	1.2	0.7	-	1.8	13.1	5.5	0.7	6.2

Full Input Data And Results

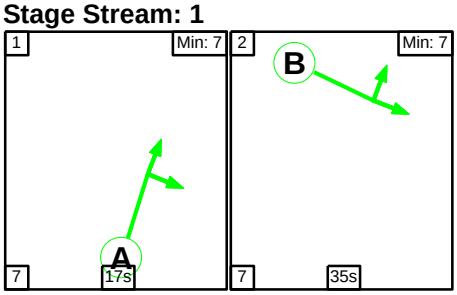
11/3	458	458	-	-	-	0.7	0.6	-	1.3	10.1	7.4	0.6	8.0
12/1	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	241	241	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	149	149	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	148	148	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	1058	1058	-	-	-	1.0	1.5	-	2.5	8.5	5.9	1.5	7.3
14/2	879	879	-	-	-	0.8	0.8	-	1.6	6.5	3.0	0.8	3.8
14/3	876	876	-	-	-	0.8	0.8	-	1.6	6.6	3.1	0.8	3.9

C1	Stream: 1 PRC for Signalled Lanes (%):	-12.8	Total Delay for Signalled Lanes (pcuHr):	56.03	Cycle Time (s): 76
C1	Stream: 2 PRC for Signalled Lanes (%):	-32.5	Total Delay for Signalled Lanes (pcuHr):	265.78	Cycle Time (s): 76
C1	Stream: 3 PRC for Signalled Lanes (%):	-24.6	Total Delay for Signalled Lanes (pcuHr):	35.63	Cycle Time (s): 76
	PRC Over All Lanes (%):	-32.5	Total Delay Over All Lanes(pcuHr):	371.86	

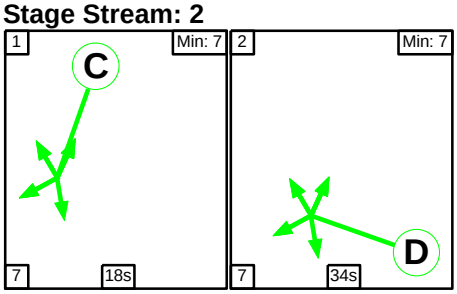
Full Input Data And Results
Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

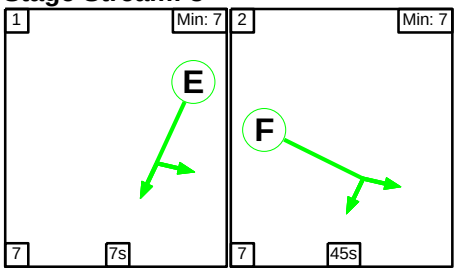
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	35
Change Point	0	24

Stage Stream: 2

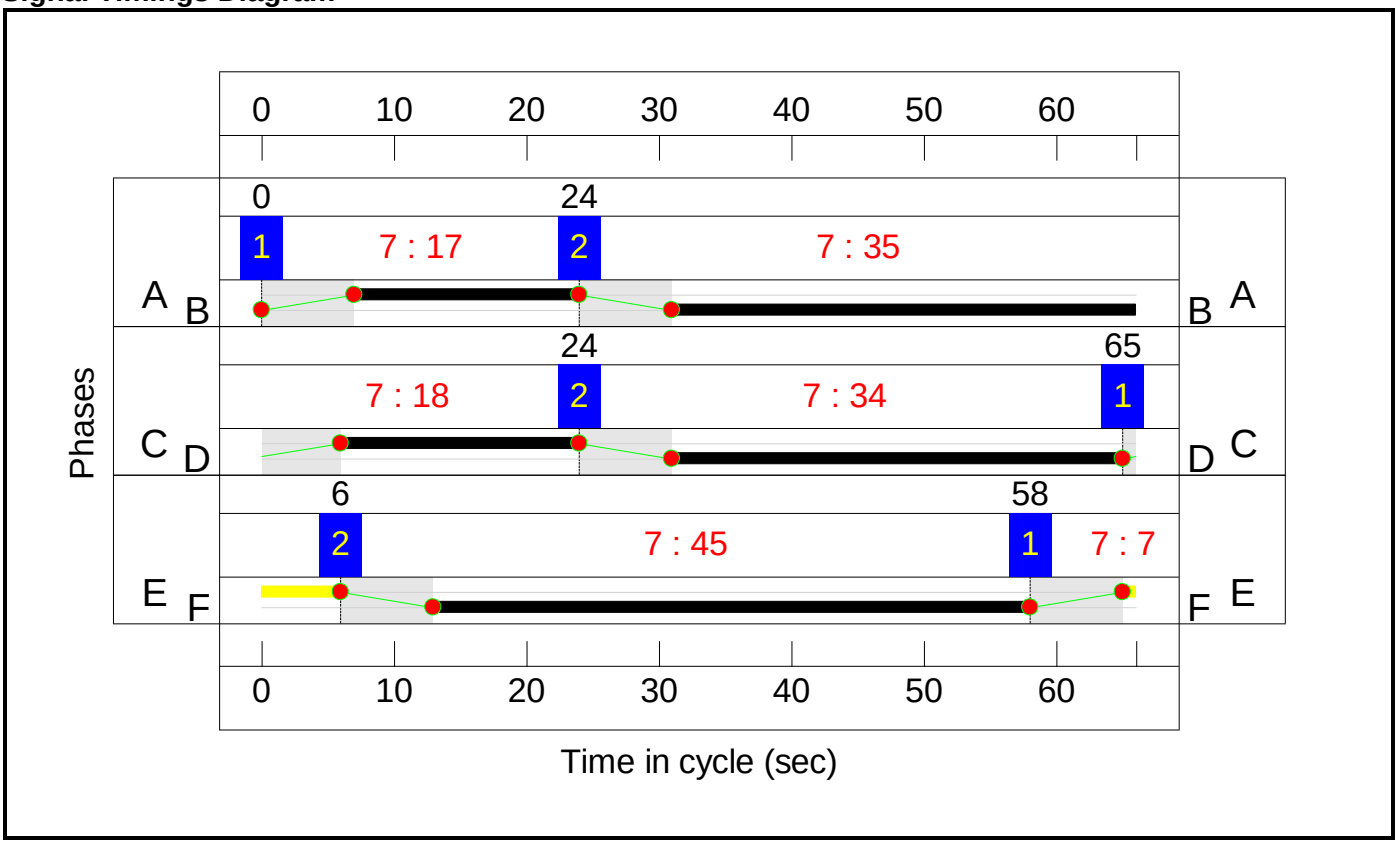
Stage	1	2
Duration	18	34
Change Point	65	24

Stage Stream: 3

Stage	1	2
Duration	7	45
Change Point	58	6

Full Input Data And Results

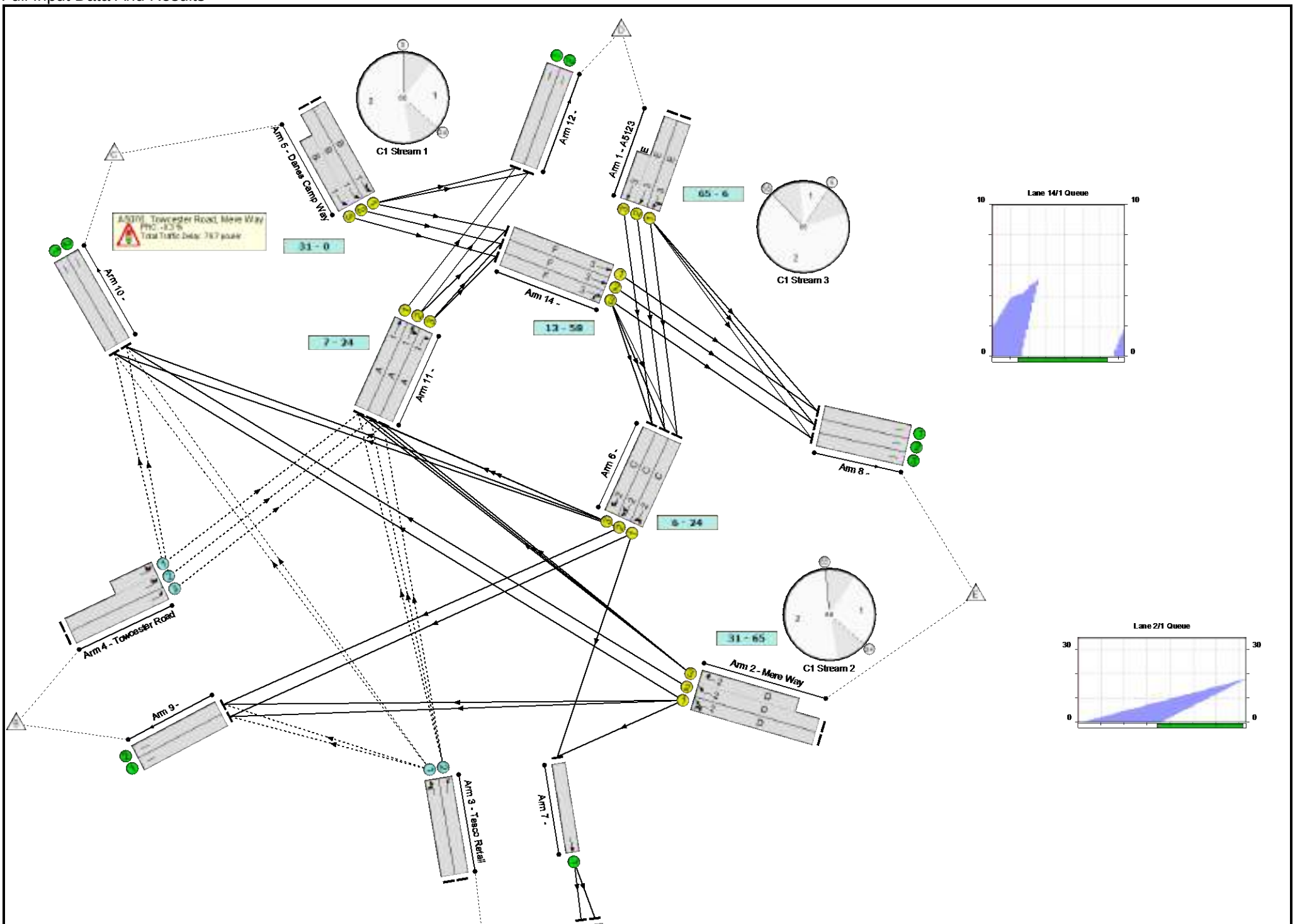
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.4%**
A5076, Towcester Road, Mere Way	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.4%**
1/1	A5123 Ahead Left	U	3	N/A	E		1	7	-	140	1961	238	58.9%
1/2+1/3	A5123 Ahead	U	3	N/A	E		1	7	-	124	2102:2102	15+255	45.9 : 45.9%
2/1	Mere Way Left Ahead Ahead2	U	2	N/A	D		1	34	-	998	1915	1016	98.3%
2/2+2/3	Mere Way Ahead Right	U	2	N/A	D		1	34	-	1305	2049:2037	1087+240	98.4 : 98.4%
3/1	Tesco Retail Left Ahead	O	N/A	N/A	-		-	-	-	342	1897	373	91.8%
3/2	Tesco Retail Ahead	O	N/A	N/A	-		-	-	-	234	1911	349	67.0%
4/2+4/1	Towcester Road Left Ahead	O	N/A	N/A	-		-	-	-	498	2041:1928	281+290	87.0 : 87.5%
4/3	Towcester Road Ahead	O	N/A	N/A	-		-	-	-	123	2021	281	43.8%
5/1	Danes Camp Way Left Ahead	U	1	N/A	B		1	35	-	818	1914	1044	78.4%
5/2+5/3	Danes Camp Way Ahead	U	1	N/A	B		1	35	-	1383	2101:2051	796+816	85.8 : 85.8%
6/1	Ahead Ahead2	U	2	N/A	C		1	18	-	340	2039	587	57.9%
6/2	Ahead Right	U	2	N/A	C		1	18	-	259	2006	577	44.8%
6/3	Right U-Turn	U	2	N/A	C		1	18	-	143	2003	577	24.8%
7/1	Ahead	U	N/A	N/A	-		-	-	-	449	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	880	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	821	Inf	Inf	0.0%

Full Input Data And Results

8/3		U	N/A	N/A	-		-	-	-	289	Inf	Inf	0.0%
9/1		U	N/A	N/A	-		-	-	-	260	Inf	Inf	0.0%
9/2		U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%
10/1		U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
10/2		U	N/A	N/A	-		-	-	-	1400	Inf	Inf	0.0%
11/1	Ahead	U	1	N/A	A		1	17	-	368	2054	560	65.7%
11/2	Ahead Right	U	1	N/A	A		1	17	-	357	2068	564	63.3%
11/3	Right	U	1	N/A	A		1	17	-	219	2041	557	39.3%
12/1		U	N/A	N/A	-		-	-	-	395	Inf	Inf	0.0%
12/2		U	N/A	N/A	-		-	-	-	282	Inf	Inf	0.0%
13/1		U	N/A	N/A	-		-	-	-	225	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
14/1	Ahead	U	3	N/A	F		1	45	-	866	2105	1467	59.0%
14/2	Ahead	U	3	N/A	F		1	45	-	807	2105	1467	55.0%
14/3	Right Ahead	U	3	N/A	F		1	45	-	795	2105	1467	54.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**1409**	**286**	**0**	**34.2**	**45.5**	**0.0**	**79.7**	**-**	**-**	**-**	**-**
A5076, Towcester Road, Mere Way	**-**	**-**	**1409**	**286**	**0**	**34.2**	**45.5**	**0.0**	**79.7**	**-**	**-**	**-**	**-**
1/1	140	140	-	-	-	1.1	0.7	-	1.8	45.6	2.4	0.7	3.1
1/2+1/3	124	124	-	-	-	0.9	0.4	-	1.4	39.2	2.0	0.4	2.4
2/1	998	998	-	-	-	4.2	12.0	-	16.2	58.5	17.7	12.0	29.8
2/2+2/3	1305	1305	-	-	-	5.1	13.5	-	18.5	51.1	19.0	13.5	32.5
3/1	342	342	168	174	0	1.7	4.3	-	6.0	63.4	6.0	4.3	10.3
3/2	234	234	122	112	0	0.9	1.0	-	1.9	29.6	3.5	1.0	4.5
4/2+4/1	498	498	996	0	0	2.2	3.1	-	5.4	38.8	4.2	3.1	7.4
4/3	123	123	123	0	0	0.4	0.4	-	0.8	22.8	1.5	0.4	1.9
5/1	818	818	-	-	-	2.7	1.8	-	4.5	19.8	11.8	1.8	13.6
5/2+5/3	1383	1383	-	-	-	3.9	2.9	-	6.9	17.9	8.7	2.9	11.7
6/1	340	340	-	-	-	1.6	0.7	-	2.2	23.7	5.4	0.7	6.1
6/2	259	259	-	-	-	1.3	0.4	-	1.7	23.5	3.9	0.4	4.3
6/3	143	143	-	-	-	0.1	0.2	-	0.3	7.3	1.3	0.2	1.5
7/1	449	449	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	880	880	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	821	821	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/3	289	289	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	260	260	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	478	478	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1400	1400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	368	368	-	-	-	2.5	0.9	-	3.5	33.9	5.6	0.9	6.6
11/2	357	357	-	-	-	2.2	0.9	-	3.0	30.5	5.0	0.9	5.8

Full Input Data And Results

11/3	219	219	-	-	-	0.9	0.3	-	1.2	19.6	1.8	0.3	2.1
12/1	395	395	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	282	282	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	225	225	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	224	224	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	866	866	-	-	-	1.1	0.7	-	1.8	7.4	5.0	0.7	5.7
14/2	807	807	-	-	-	0.7	0.6	-	1.3	6.0	4.3	0.6	4.9
14/3	795	795	-	-	-	0.7	0.6	-	1.3	6.0	4.0	0.6	4.6

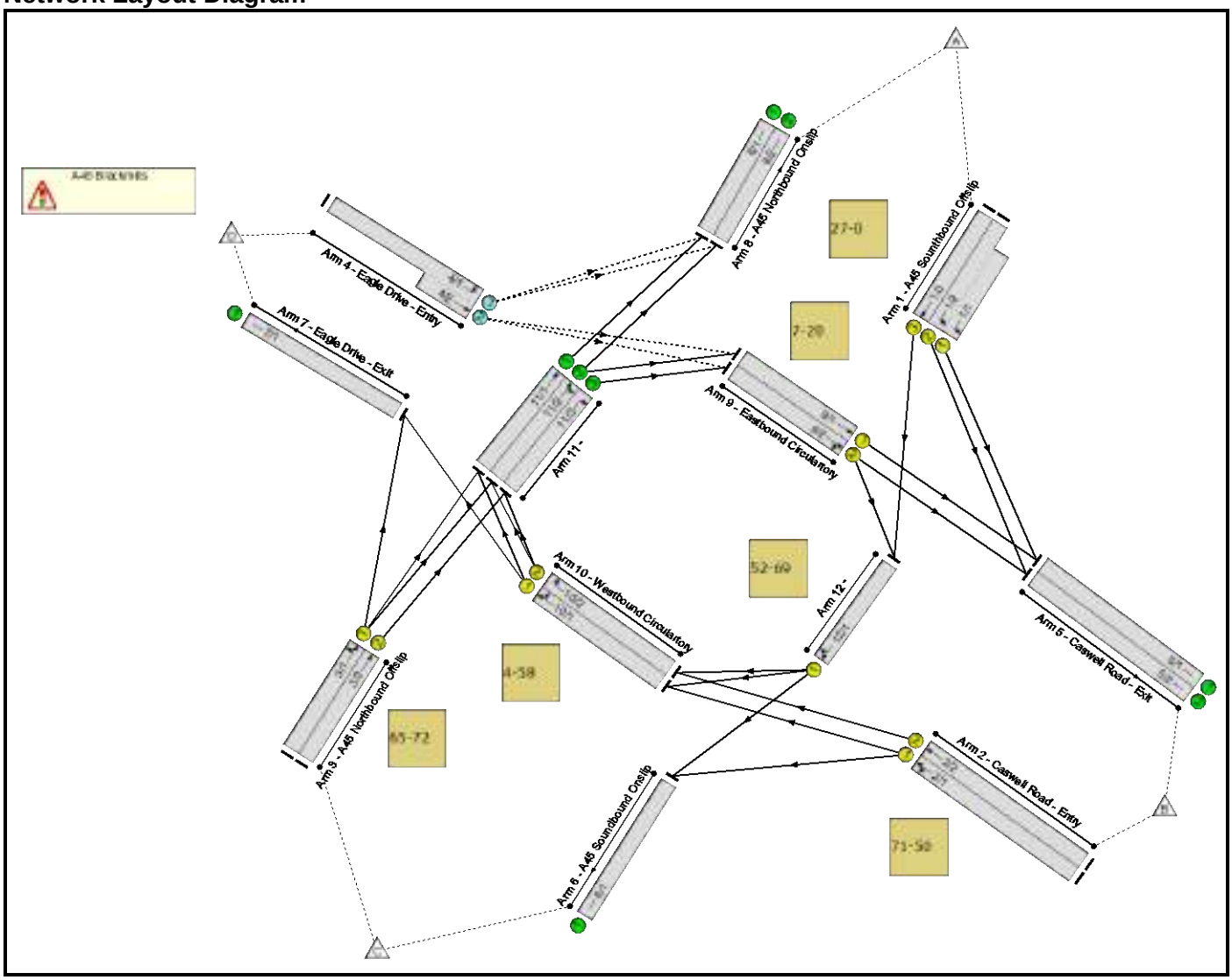
C1	Stream: 1 PRC for Signalled Lanes (%):	4.9	Total Delay for Signalled Lanes (pcuHr):	19.05	Cycle Time (s):	66
C1	Stream: 2 PRC for Signalled Lanes (%):	-9.3	Total Delay for Signalled Lanes (pcuHr):	38.98	Cycle Time (s):	66
C1	Stream: 3 PRC for Signalled Lanes (%):	52.5	Total Delay for Signalled Lanes (pcuHr):	7.59	Cycle Time (s):	66
	PRC Over All Lanes (%):	-9.3	Total Delay Over All Lanes(pcuHr):	79.71		

Full Input Data And Results

User and Project Details

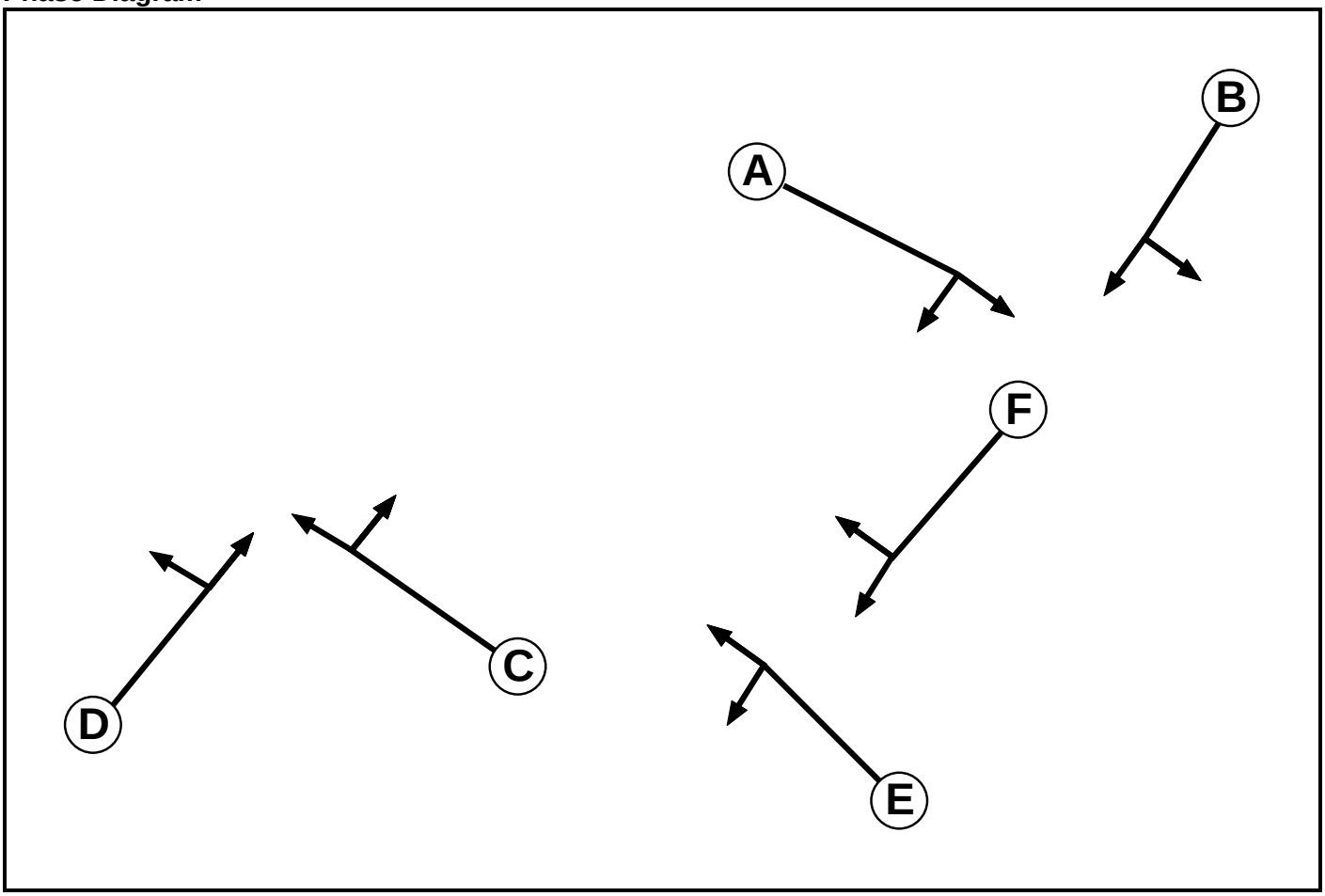
Project:	Rail Central
Title:	Junction 9
Location:	A45 (south) / Eagle Drive/ A45 (north) / Caswell Road
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

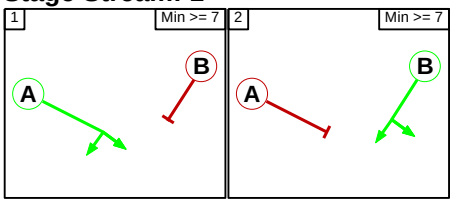
Terminating Phase	Starting Phase						
		A	B	C	D	E	F
	A		7	-	-	-	-
	B	7		-	-	-	-
	C	-	-		7	-	-
	D	-	-	7		-	-
	E	-	-	-	-		-
	F	-	-	-	-	-	

Phases in Stage

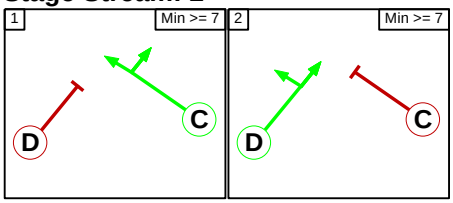
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	F
3	2	E

Stage Diagram

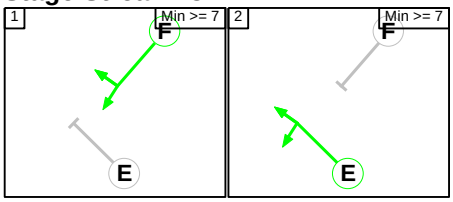
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		7
	2	7	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		7
	2	7	

Stage Stream: 3

		To Stage	
		1	2
From Stage	1		2
	2	2	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 Brackmills

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
4/1 (Eagle Drive - Entry)	8/1 (Left)	1000	0	11/1	0.33	All	-	-	-	-	-
	8/2 (Left)			11/1	1.09	All					
				11/2	1.09	To 8/2 (Ahead)					
4/2 (Eagle Drive - Entry)	9/1 (Ahead)	1000	0	11/1	0.33	All	-	-	-	-	-
				11/2	0.33	All					
	9/2 (Ahead)			11/1	1.09	All					
				11/2	1.09	All					
				11/3	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: A45 Brackmills

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A45 Sounthbound Offslip)	U	B	2	3	10.0	User	1800	-	-	-	-	-
1/2 (A45 Sounthbound Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A45 Sounthbound Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Caswell Road - Entry)	U	E	2	3	60.0	User	1800	-	-	-	-	-
2/2 (Caswell Road - Entry)	U	E	2	3	60.0	User	1800	-	-	-	-	-
3/1 (A45 Northbound Offslip)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/2 (A45 Northbound Offslip)	U	D	2	3	60.0	User	1800	-	-	-	-	-
4/1 (Eagle Drive - Entry)	O		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Eagle Drive - Entry)	O		2	3	5.2	Inf	-	-	-	-	-	-
5/1 (Caswell Road - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Caswell Road - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (A45 Soundbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Eagle Drive - Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (A45 Northbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (A45 Northbound Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Eastbound Circulartory)	U	A	2	3	15.0	User	1900	-	-	-	-	-

9/2 (Eastbound Circulartory)	U	A	2	3	15.0	User	1900	-	-	-	-	-
10/1 (Westbound Circulartory)	U	C	2	3	16.0	User	1900	-	-	-	-	-
10/2 (Westbound Circulartory)	U	C	2	3	16.0	User	1900	-	-	-	-	-
11/1	U		2	3	15.7	Inf	-	-	-	-	-	-
11/2	U		2	3	15.7	Inf	-	-	-	-	-	-
11/3	U		2	3	15.7	Inf	-	-	-	-	-	-
12/1	U	F	2	3	17.4	User	1900	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	
8: '2031 DS PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	1275	0	94	1369
	B	628	0	197	27	852
	C	0	377	442	102	921
	D	18	11	22	0	51
	Tot.	646	1663	661	223	3193

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2021 DS5 AM
Junction: A45 Brackmills	
1/1 (short)	637
1/2 (with short)	1275(In) 638(Out)
1/3	94
2/1	464
2/2	388
3/1	479
3/2	442
4/1 (with short)	51(In) 18(Out)
4/2 (short)	33
5/1	1025
5/2	638
6/1	661
7/1	223
8/1	249
8/2	397
9/1	388
9/2	464
10/1	361
10/2	388
11/1	240
11/2	765
11/3	442
12/1	558

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	343	0	22	365
	B	2148	0	446	103	2697
	C	0	240	26	107	373
	D	161	77	0	0	238
	Tot.	2309	660	472	232	3673

Traffic Lane Flows

Lane	Scenario 10: 2021 DS5 PM
Junction: A45 Brackmills	
1/1 (short)	171
1/2 (with short)	343(In) 172(Out)
1/3	22
2/1	1473
2/2	1224
3/1	187
3/2	186
4/1 (with short)	238(In) 161(Out)
4/2 (short)	77
5/1	328
5/2	332
6/1	472
7/1	232
8/1	1004
8/2	1305
9/1	157
9/2	186
10/1	1049
10/2	1224
11/1	924
11/2	1304
11/3	186
12/1	48

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	892	0	91	983
	B	540	0	399	27	966
	C	0	796	448	105	1349
	D	20	20	16	0	56
	Tot.	560	1708	863	223	3354

Traffic Lane Flows

Lane	Scenario 11: 2031 DS5 AM
Junction: A45 Brackmills	
1/1 (short)	446
1/2 (with short)	892(In) 446(Out)
1/3	91
2/1	511
2/2	455
3/1	705
3/2	644
4/1 (with short)	56(In) 20(Out)
4/2 (short)	36
5/1	1066
5/2	642
6/1	863
7/1	223
8/1	95
8/2	465
9/1	620
9/2	660
10/1	203
10/2	455
11/1	85
11/2	1055
11/3	644
12/1	555

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	463	0	22	485
	B	2060	0	878	11	2949
	C	0	72	26	35	133
	D	124	76	0	0	200
	Tot.	2184	611	904	68	3767

Traffic Lane Flows

Lane	Scenario 12: 2031 DS5 PM
Junction: A45 Brackmills	
1/1 (short)	231
1/2 (with short)	463(In) 232(Out)
1/3	22
2/1	1485
2/2	1464
3/1	67
3/2	66
4/1 (with short)	200(In) 124(Out)
4/2 (short)	76
5/1	319
5/2	292
6/1	904
7/1	68
8/1	658
8/2	1526
9/1	88
9/2	86
10/1	629
10/2	1464
11/1	596
11/2	1496
11/3	66
12/1	48

Full Input Data And Results

Lane Saturation Flows

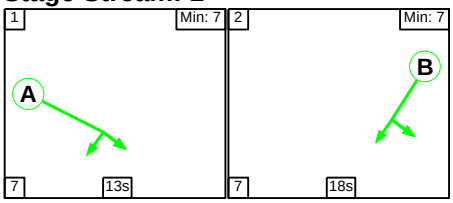
Junction: A45 Brackmills								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 Sounthbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 Sounthbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 Sounthbound Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Caswell Road - Entry Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Caswell Road - Entry Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 Northbound Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 Northbound Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Eagle Drive - Entry Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Eagle Drive - Entry Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Caswell Road - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Caswell Road - Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A45 Soundbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Eagle Drive - Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A45 Northbound Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
8/2 (A45 Northbound Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
9/1 (Eastbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Eastbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Westbound Circulartory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
10/2 (Westbound Circulartory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

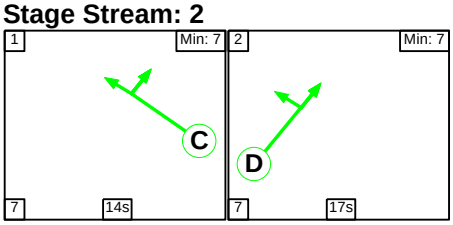
Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

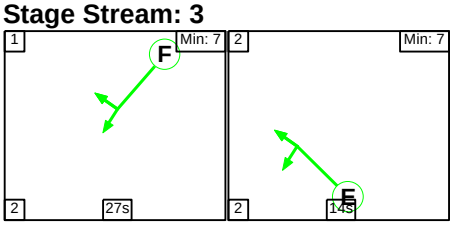
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	18
Change Point	0	20

Stage Stream: 2

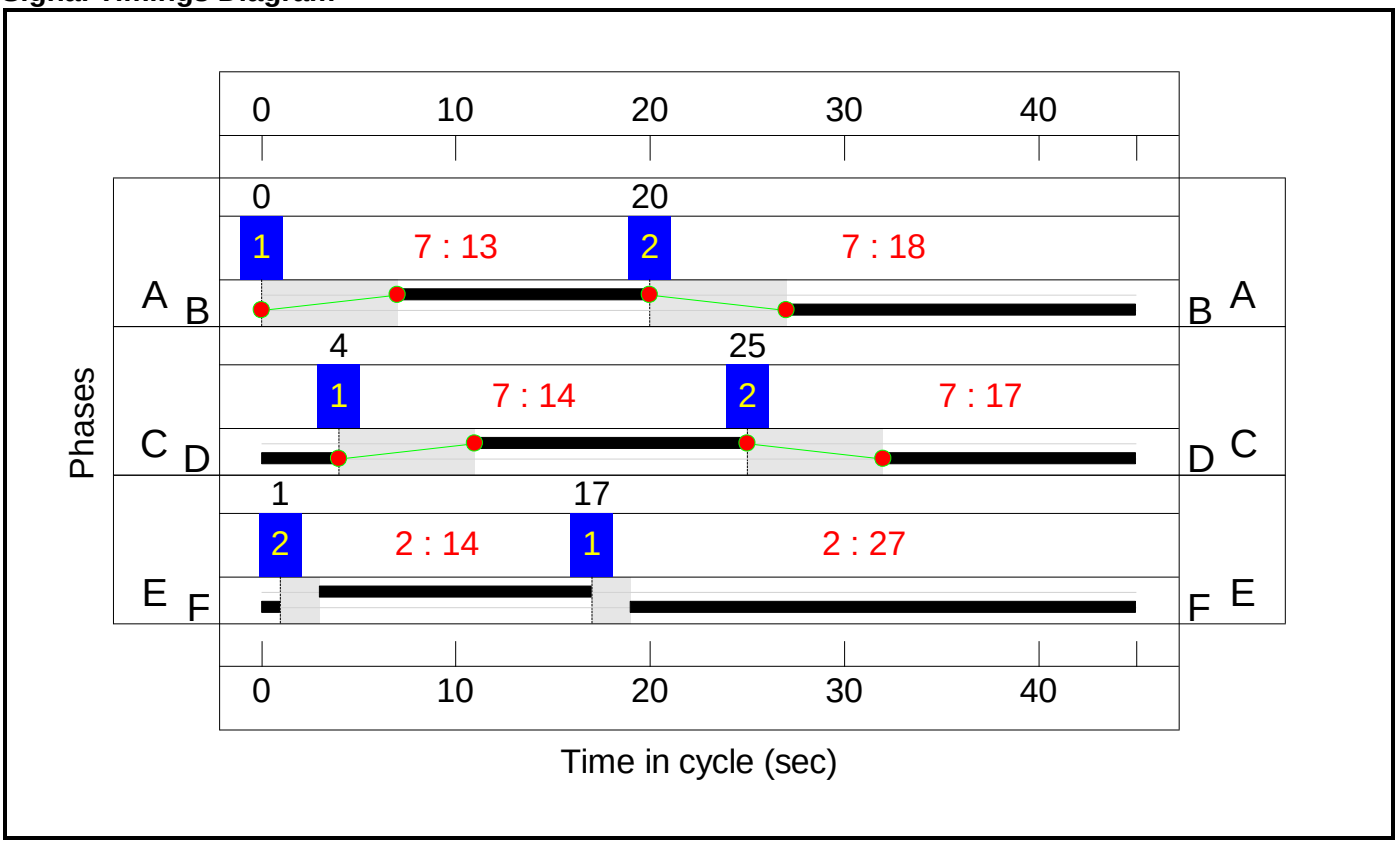
Stage	1	2
Duration	14	17
Change Point	4	25

Stage Stream: 3

Stage	1	2
Duration	27	14
Change Point	17	1

Full Input Data And Results

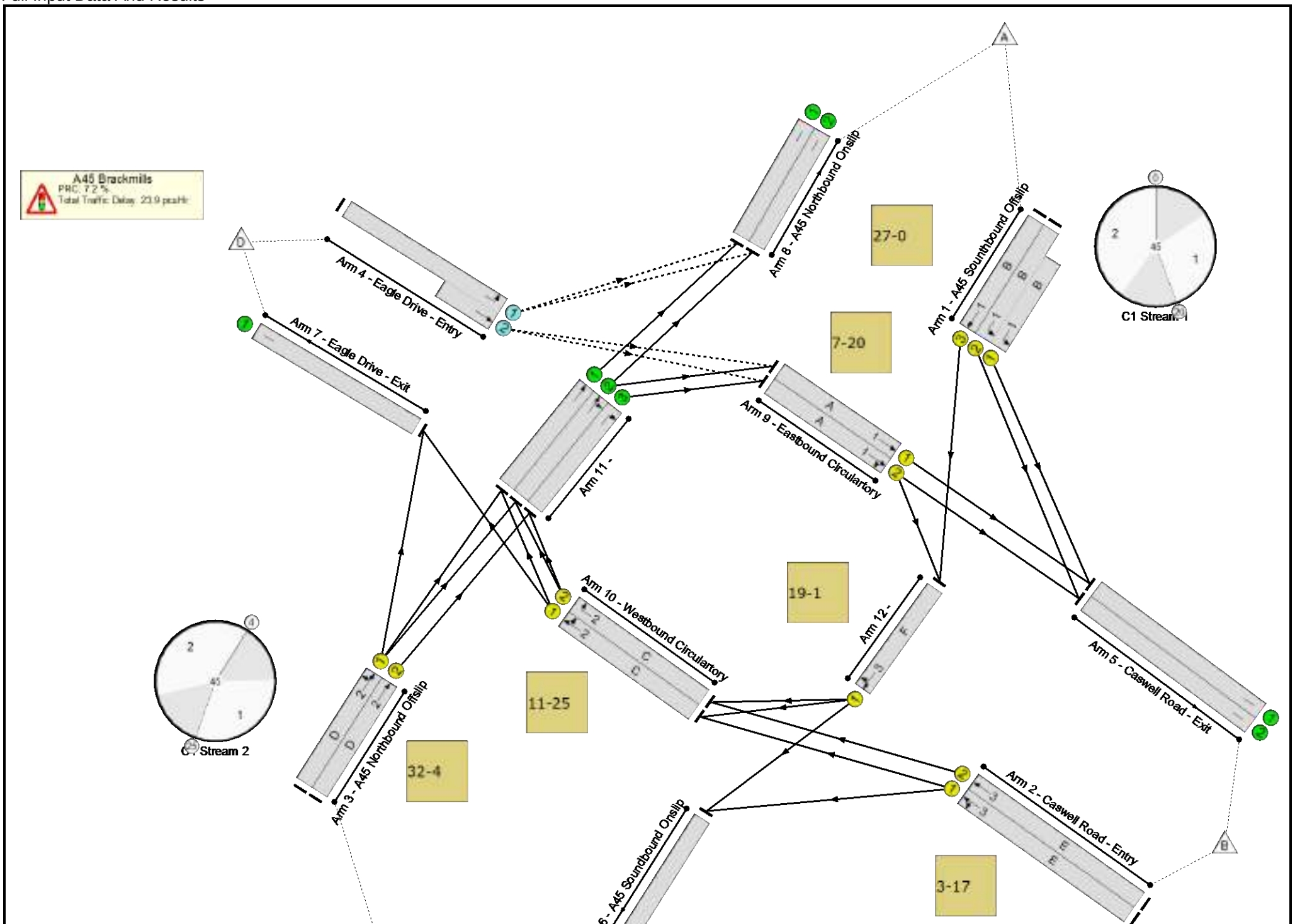
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.9%**
A45 Brackmills	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.9%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	18	-	1275	1800:1800	760+760	83.9 : 83.8%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	18	-	94	1800	760	12.4%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	14	-	464	1800	600	77.3%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	14	-	388	1800	600	64.7%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	17	-	479	1800	720	66.5%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	17	-	442	1800	720	61.4%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	51	Inf : Inf	95+173	19.0 : 19.0%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1025	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	638	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	661	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	249	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	397	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	13	-	388	1900	591	65.6%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	13	-	464	1900	591	78.5%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	14	-	361	1900	633	57.0%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	14	-	388	1900	633	61.3%
11/1	Ahead	U	N/A	N/A	-		-	-	-	240	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	765	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	27	-	558	1900	1182	47.2%

Full Input Data And Results

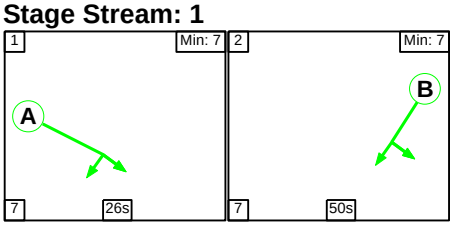
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**102**	**0**	**0**	**12.2**	**11.7**	**0.0**	**23.9**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**102**	**0**	**0**	**12.2**	**11.7**	**0.0**	**23.9**	**-**	**-**	**-**	**-**
1/2+1/1	1275	1275	-	-	-	4.1	2.5	-	6.7	18.8	7.1	2.5	9.6
1/3	94	94	-	-	-	0.2	0.1	-	0.3	10.7	0.7	0.1	0.8
2/1	464	464	-	-	-	1.7	1.7	-	3.4	26.4	5.2	1.7	6.8
2/2	388	388	-	-	-	1.4	0.9	-	2.3	21.2	4.1	0.9	5.0
3/1	479	479	-	-	-	1.5	1.0	-	2.5	18.5	4.8	1.0	5.8
3/2	442	442	-	-	-	1.3	0.8	-	2.1	17.2	4.3	0.8	5.1
4/1+4/2	51	51	102	0	0	0.1	0.1	-	0.2	13.4	0.2	0.1	0.3
5/1	1025	1025	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	638	638	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	661	661	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	249	249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	397	397	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	388	388	-	-	-	0.5	0.9	-	1.4	13.0	3.3	0.9	4.3
9/2	464	464	-	-	-	0.7	1.8	-	2.4	18.9	4.9	1.8	6.7
10/1	361	361	-	-	-	0.5	0.7	-	1.1	11.3	2.2	0.7	2.9
10/2	388	388	-	-	-	0.2	0.8	-	0.9	8.8	0.6	0.8	1.4
11/1	240	240	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	765	765	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	442	442	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	558	558	-	-	-	0.1	0.4	-	0.6	3.8	4.3	0.4	4.7

C1	Stream: 1 PRC for Signalled Lanes (%):	7.2	Total Delay for Signalled Lanes (pcuHr):	10.78	Cycle Time (s): 45
C1	Stream: 2 PRC for Signalled Lanes (%):	35.3	Total Delay for Signalled Lanes (pcuHr):	6.64	Cycle Time (s): 45
C1	Stream: 3 PRC for Signalled Lanes (%):	16.4	Total Delay for Signalled Lanes (pcuHr):	6.28	Cycle Time (s): 45
	PRC Over All Lanes (%):	7.2	Total Delay Over All Lanes(pcuHr):	23.89	

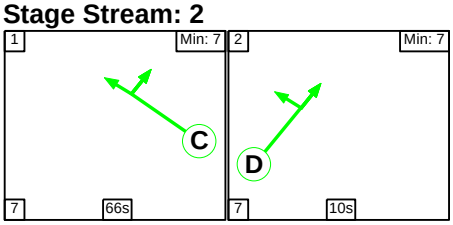
Full Input Data And Results
Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

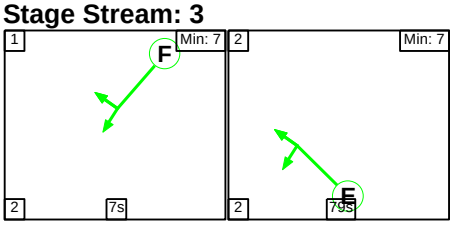
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	26	50
Change Point	0	33

Stage Stream: 2

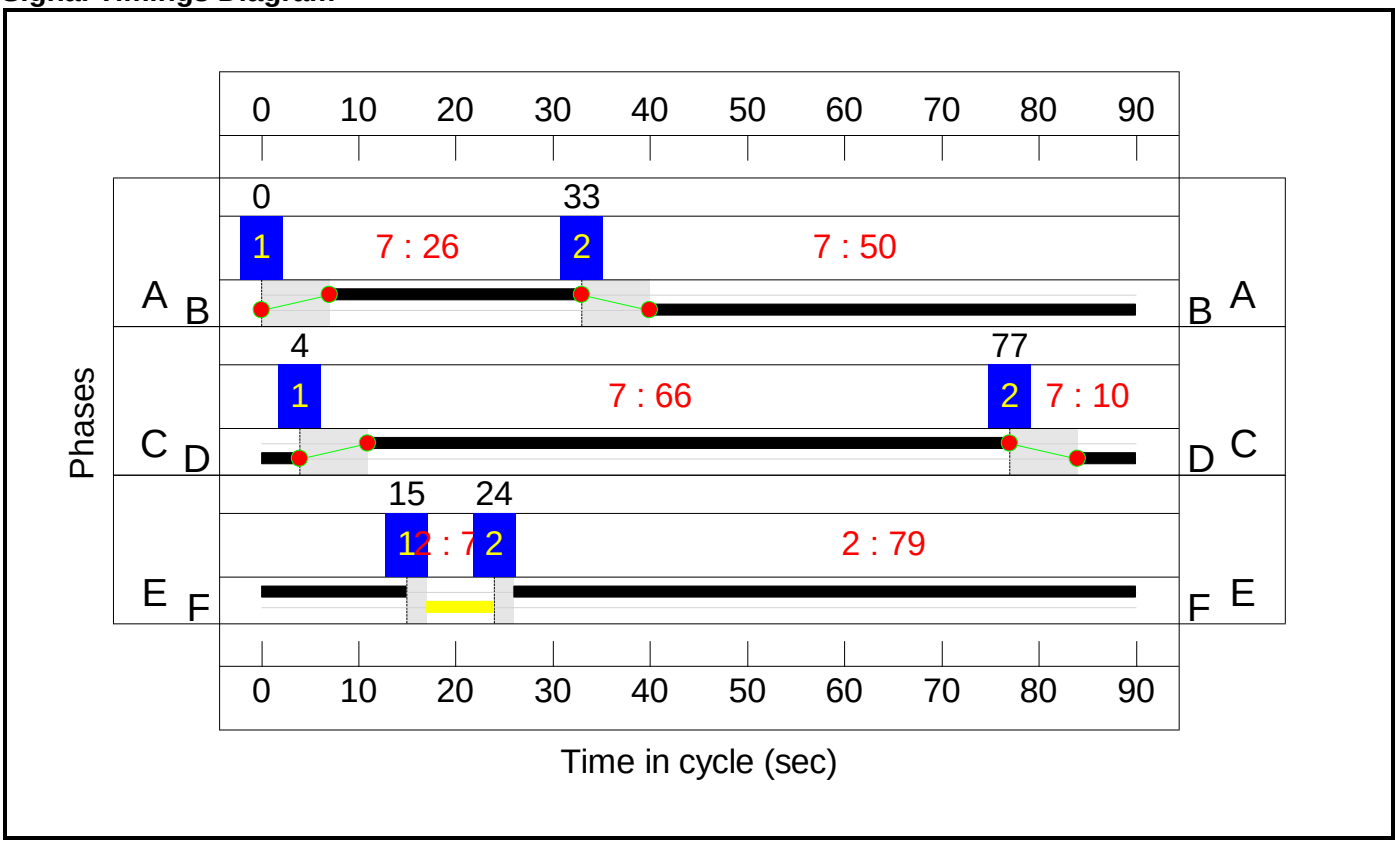
Stage	1	2
Duration	66	10
Change Point	4	77

Stage Stream: 3

Stage	1	2
Duration	7	79
Change Point	15	24

Full Input Data And Results

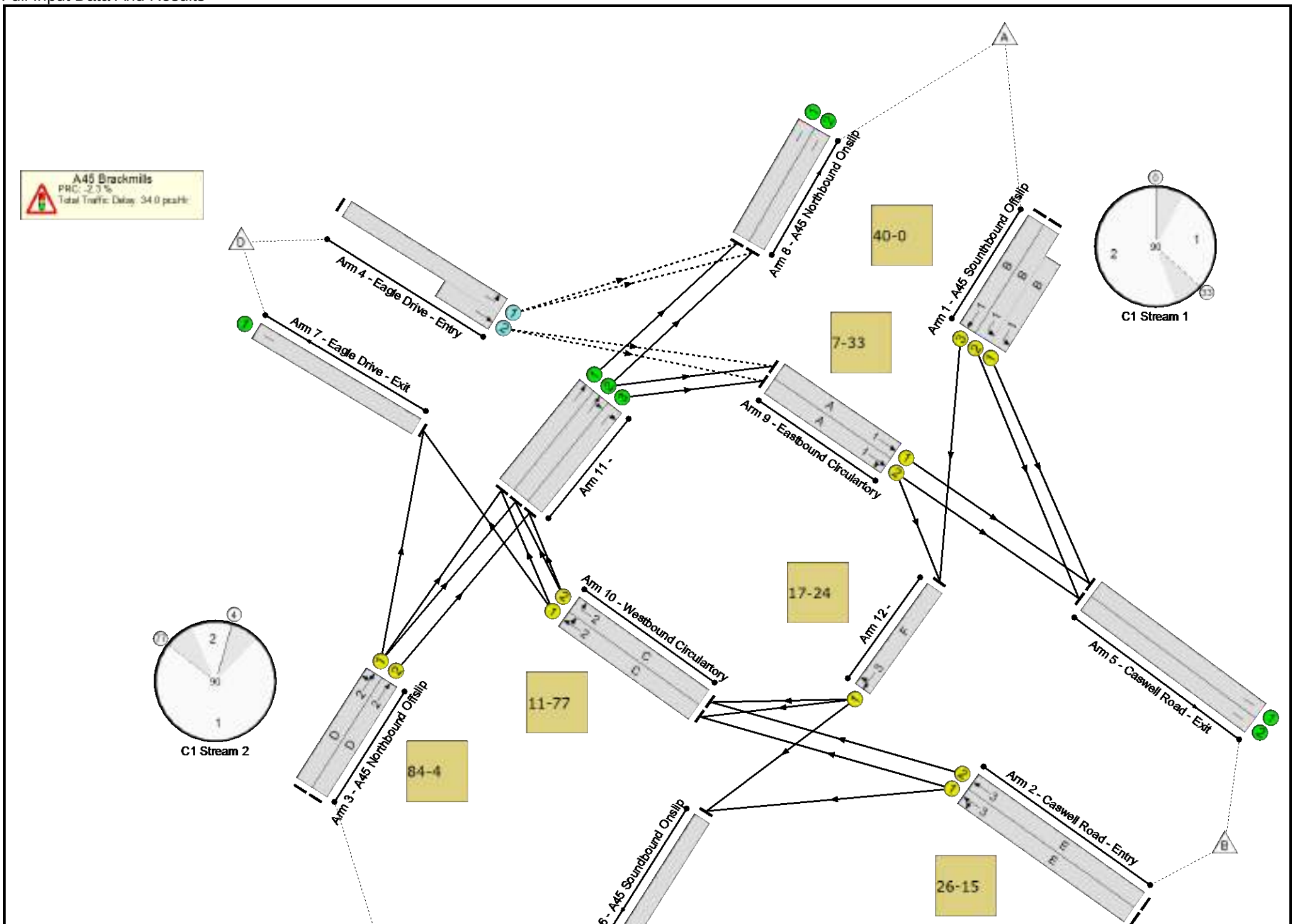
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.1%**
A45 Brackmills	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.1%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	50	-	343	1800:1800	711+707	24.2 : 24.2%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	50	-	22	1800	1020	2.2%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	79	-	1473	1800	1600	92.1%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	79	-	1224	1800	1600	76.5%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	10	-	187	1800	220	85.0%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	10	-	186	1800	220	84.5%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	238	Inf : Inf	183+87	88.2 : 88.2%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	328	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	332	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	472	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	232	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1004	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1305	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	26	-	157	1900	570	27.5%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	26	-	186	1900	570	32.6%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	66	-	1049	1900	1414	74.2%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	66	-	1224	1900	1414	86.5%
11/1	Ahead	U	N/A	N/A	-		-	-	-	924	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1304	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	186	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	7	-	48	1900	169	28.4%

Full Input Data And Results

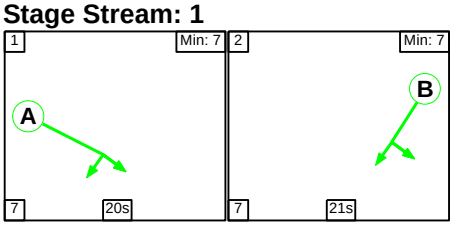
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**476**	**0**	**0**	**13.7**	**20.3**	**0.0**	**34.0**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**476**	**0**	**0**	**13.7**	**20.3**	**0.0**	**34.0**	**-**	**-**	**-**	**-**
1/2+1/1	343	343	-	-	-	0.9	0.2	-	1.0	11.0	2.1	0.2	2.2
1/3	22	22	-	-	-	0.1	0.0	-	0.1	10.5	0.2	0.0	0.2
2/1	1473	1473	-	-	-	1.3	5.3	-	6.6	16.1	22.5	5.3	27.9
2/2	1224	1224	-	-	-	0.6	1.6	-	2.2	6.5	10.5	1.6	12.2
3/1	187	187	-	-	-	2.0	2.5	-	4.5	86.2	4.6	2.5	7.0
3/2	186	186	-	-	-	2.0	2.4	-	4.4	85.1	4.5	2.4	6.9
4/1+4/2	238	238	476	0	0	1.7	3.1	-	4.8	73.0	3.8	3.1	7.0
5/1	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	332	332	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	472	472	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	232	232	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1004	1004	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1305	1305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	157	157	-	-	-	0.4	0.2	-	0.6	13.6	1.5	0.2	1.7
9/2	186	186	-	-	-	0.0	0.2	-	0.3	5.0	0.0	0.2	0.3
10/1	1049	1049	-	-	-	1.8	1.4	-	3.2	11.0	11.3	1.4	12.7
10/2	1224	1224	-	-	-	2.3	3.1	-	5.4	15.9	13.8	3.1	16.9
11/1	924	924	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1304	1304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	186	186	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	48	48	-	-	-	0.7	0.2	-	0.9	67.4	1.1	0.2	1.3

C1	Stream: 1 PRC for Signalled Lanes (%):	175.8	Total Delay for Signalled Lanes (pcuHr):	1.97	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	4.0	Total Delay for Signalled Lanes (pcuHr):	17.50	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-2.3	Total Delay for Signalled Lanes (pcuHr):	9.70	Cycle Time (s): 90
	PRC Over All Lanes (%):	-2.3	Total Delay Over All Lanes(pcuHr):	34.00	

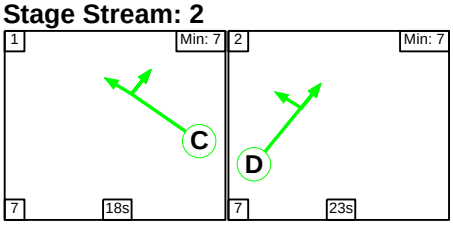
Full Input Data And Results
Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

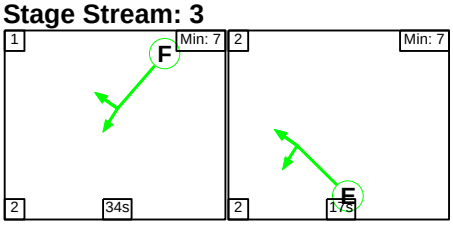
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	21
Change Point	0	27

Stage Stream: 2

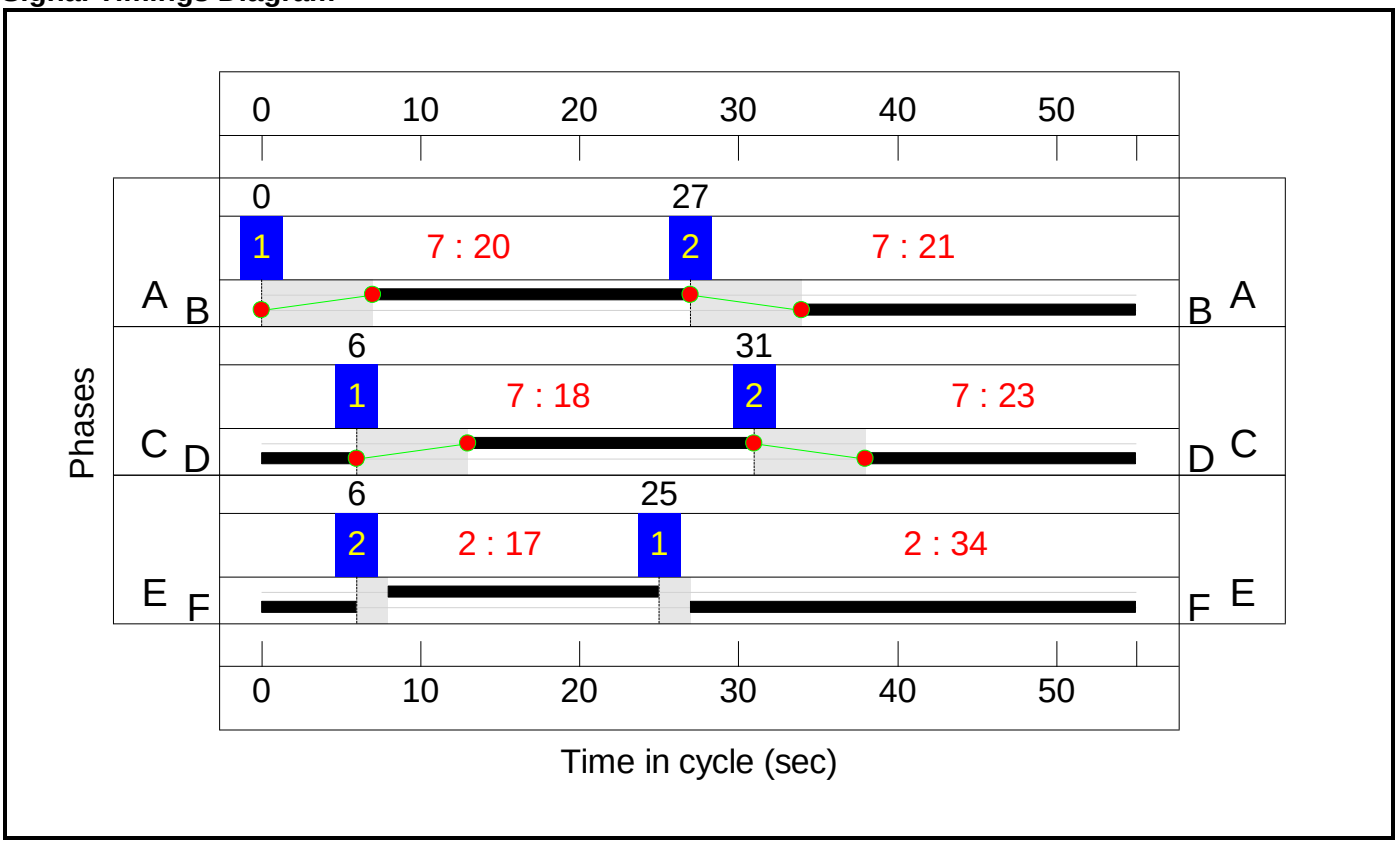
Stage	1	2
Duration	18	23
Change Point	6	31

Stage Stream: 3

Stage	1	2
Duration	34	17
Change Point	25	6

Full Input Data And Results

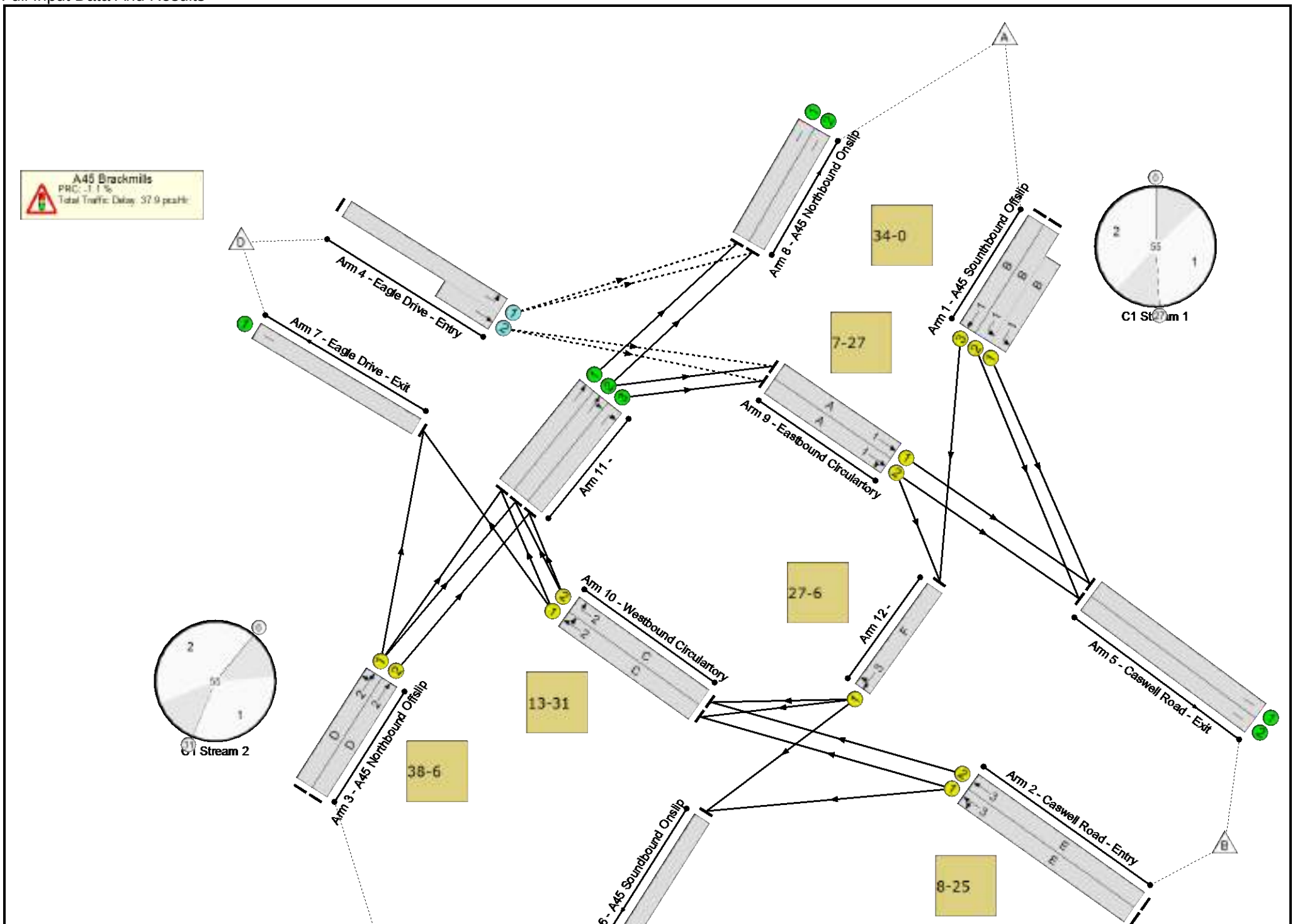
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.0%**
A45 Brackmills	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.0%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	21	-	892	1800:1800	687+687	64.9 : 64.9%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	21	-	91	1800	720	12.6%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	17	-	511	1800	589	86.7%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	17	-	455	1800	589	77.2%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	23	-	705	1800	785	89.8%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	23	-	644	1800	785	82.0%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	56	Inf : Inf	85+154	23.4 : 23.4%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	1066	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	642	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	863	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	223	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	95	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	465	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	20	-	620	1900	725	85.5%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	20	-	660	1900	725	91.0%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	18	-	203	1900	656	30.9%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	18	-	455	1900	656	69.3%
11/1	Ahead	U	N/A	N/A	-		-	-	-	85	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1055	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	644	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	34	-	555	1900	1209	45.9%

Full Input Data And Results

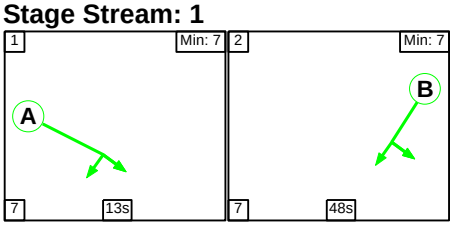
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**112**	**0**	**0**	**16.9**	**21.0**	**0.0**	**37.9**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**112**	**0**	**0**	**16.9**	**21.0**	**0.0**	**37.9**	**-**	**-**	**-**	**-**
1/2+1/1	892	892	-	-	-	3.3	0.9	-	4.2	16.9	5.3	0.9	6.2
1/3	91	91	-	-	-	0.3	0.1	-	0.3	13.3	0.9	0.1	0.9
2/1	511	511	-	-	-	2.5	3.0	-	5.5	38.8	7.2	3.0	10.3
2/2	455	455	-	-	-	2.1	1.7	-	3.8	29.8	6.2	1.7	7.8
3/1	705	705	-	-	-	2.8	4.0	-	6.8	34.7	9.8	4.0	13.8
3/2	644	644	-	-	-	2.4	2.2	-	4.6	25.9	8.6	2.2	10.8
4/1+4/2	56	56	112	0	0	0.1	0.2	-	0.3	16.2	0.3	0.2	0.4
5/1	1066	1066	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	642	642	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	863	863	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	223	223	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	95	95	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	465	465	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	620	620	-	-	-	0.8	2.8	-	3.6	21.0	8.7	2.8	11.5
9/2	660	660	-	-	-	1.1	4.4	-	5.5	30.1	9.8	4.4	14.2
10/1	203	203	-	-	-	0.5	0.2	-	0.7	12.1	1.5	0.2	1.7
10/2	455	455	-	-	-	0.4	1.1	-	1.5	11.9	0.6	1.1	1.7
11/1	85	85	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1055	1055	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	644	644	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	555	555	-	-	-	0.7	0.4	-	1.1	7.3	6.7	0.4	7.2

C1	Stream: 1 PRC for Signalled Lanes (%):	-1.1	Total Delay for Signalled Lanes (pcuHr):	13.65	Cycle Time (s): 55
C1	Stream: 2 PRC for Signalled Lanes (%):	0.3	Total Delay for Signalled Lanes (pcuHr):	13.63	Cycle Time (s): 55
C1	Stream: 3 PRC for Signalled Lanes (%):	3.8	Total Delay for Signalled Lanes (pcuHr):	10.38	Cycle Time (s): 55
	PRC Over All Lanes (%):	-1.1	Total Delay Over All Lanes(pcuHr):	37.91	

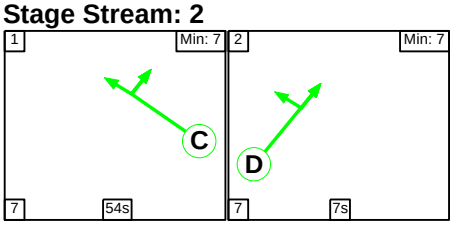
Full Input Data And Results
Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

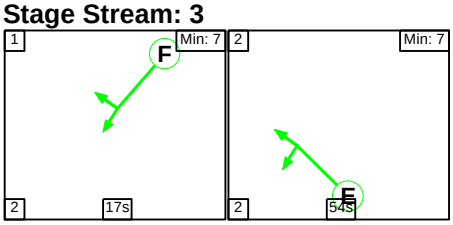
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	48
Change Point	0	20

Stage Stream: 2

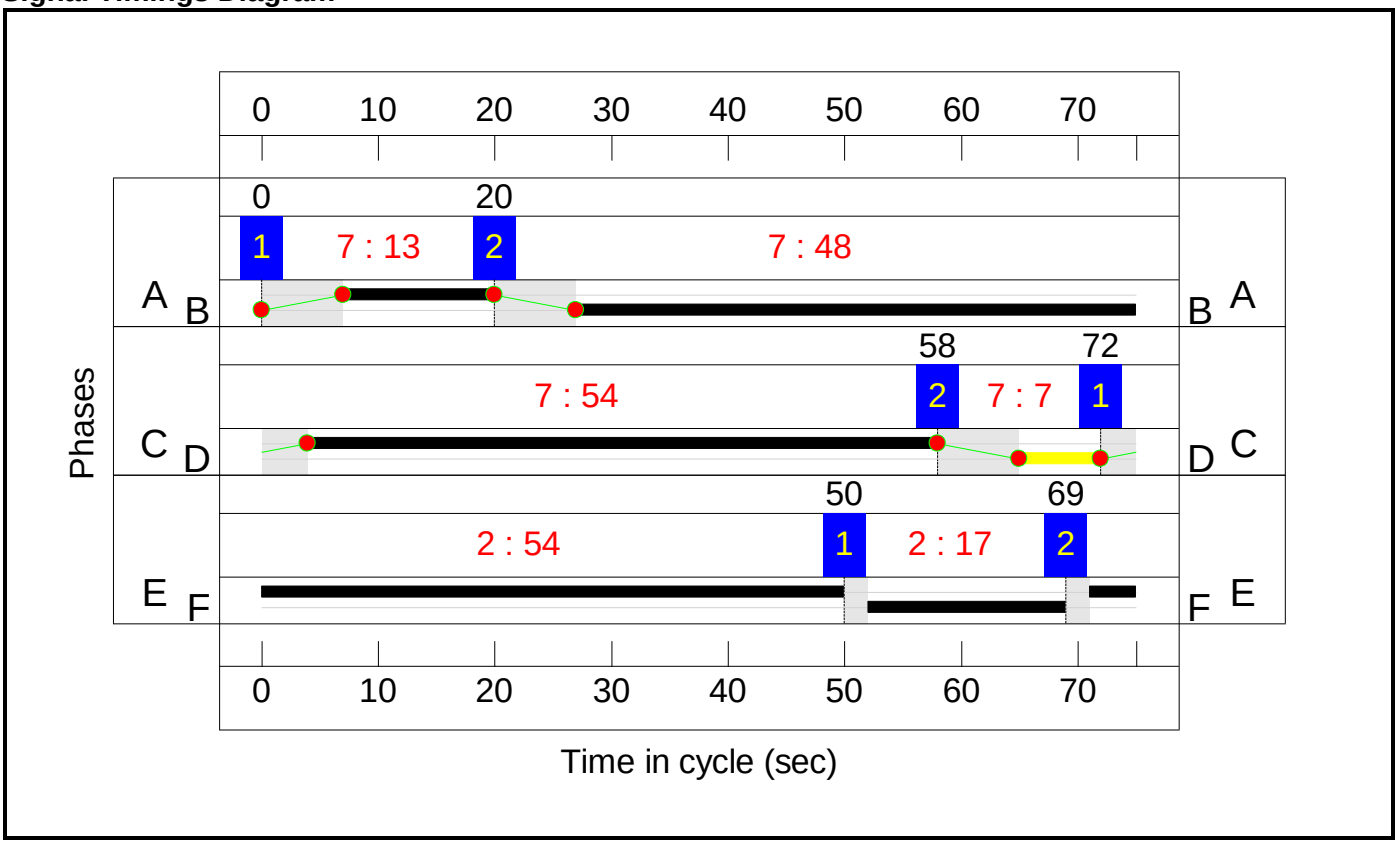
Stage	1	2
Duration	54	7
Change Point	72	58

Stage Stream: 3

Stage	1	2
Duration	17	54
Change Point	50	69

Full Input Data And Results

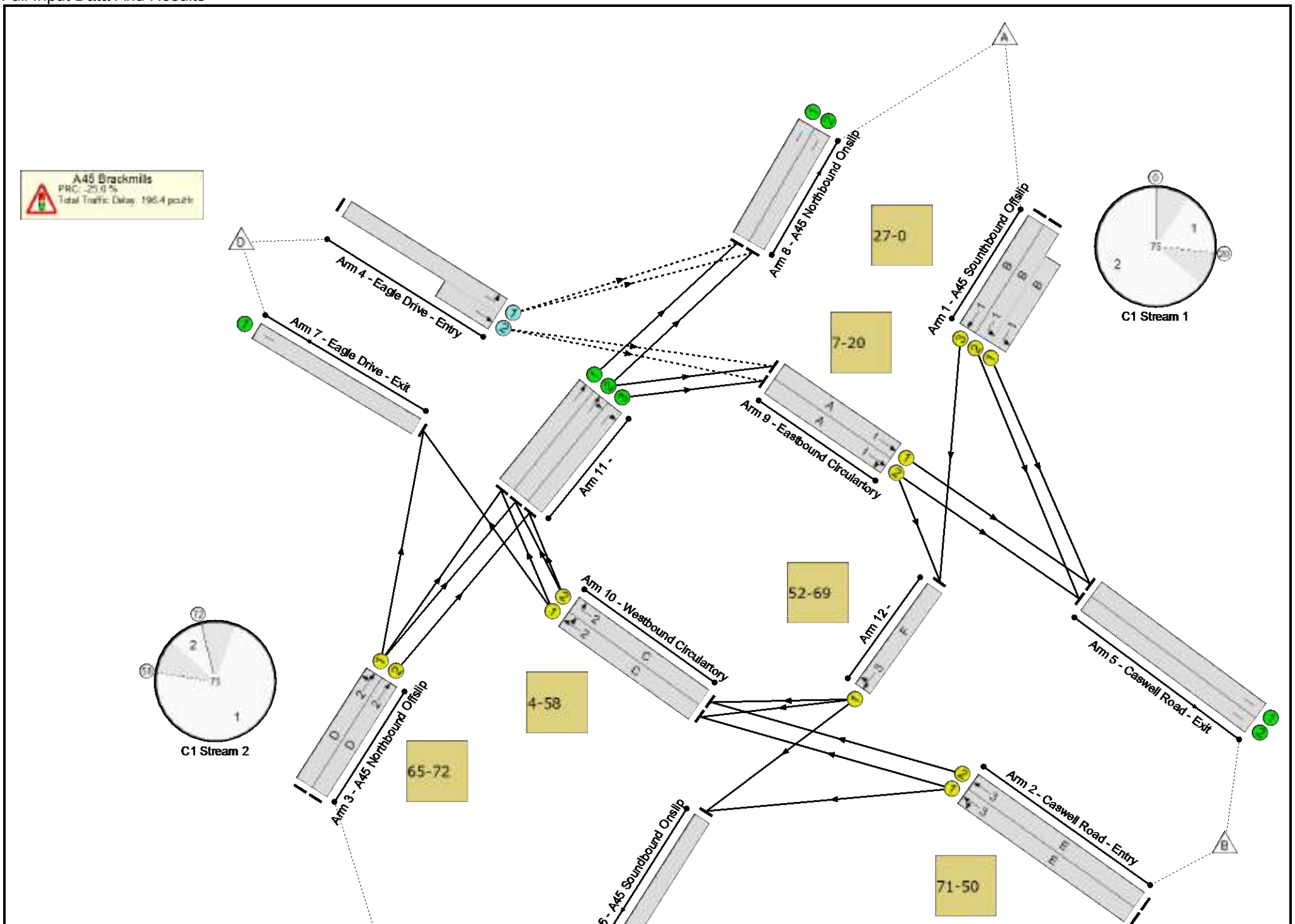
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.5%**
A45 Brackmills	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.5%**
1/2+1/1	A45 Sounthbound Offslip Left	U	1	N/A	B		1	48	-	463	1800:1800	829+825	28.0 : 28.0%
1/3	A45 Sounthbound Offslip Ahead	U	1	N/A	B		1	48	-	22	1800	1176	1.9%
2/1	Caswell Road - Entry Left Ahead	U	3	N/A	E		1	54	-	1485	1800	1320	112.5%
2/2	Caswell Road - Entry Ahead	U	3	N/A	E		1	54	-	1464	1800	1320	110.9%
3/1	A45 Northbound Offslip Left Ahead	U	2	N/A	D		1	7	-	67	1800	192	34.9%
3/2	A45 Northbound Offslip Ahead	U	2	N/A	D		1	7	-	66	1800	192	34.4%
4/1+4/2	Eagle Drive - Entry Left Ahead	O	N/A	N/A	-		-	-	-	200	Inf : Inf	186+127	66.7 : 59.7%
5/1	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
5/2	Caswell Road - Exit	U	N/A	N/A	-		-	-	-	292	Inf	Inf	0.0%
6/1	A45 Soundbound Onslip	U	N/A	N/A	-		-	-	-	904	Inf	Inf	0.0%
7/1	Eagle Drive - Exit	U	N/A	N/A	-		-	-	-	68	Inf	Inf	0.0%
8/1	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	658	Inf	Inf	0.0%
8/2	A45 Northbound Onslip	U	N/A	N/A	-		-	-	-	1526	Inf	Inf	0.0%
9/1	Eastbound Circulartory Ahead	U	1	N/A	A		1	13	-	88	1900	355	24.8%
9/2	Eastbound Circulartory Ahead Right	U	1	N/A	A		1	13	-	86	1900	355	24.2%

Full Input Data And Results

10/1	Westbound Circulartory Ahead Right	U	2	N/A	C		1	54	-	629	1900	1393	40.3%
10/2	Westbound Circulartory Right	U	2	N/A	C		1	54	-	1464	1900	1393	94.7%
11/1	Ahead	U	N/A	N/A	-		-	-	-	596	Inf	Inf	0.0%
11/2	Ahead Right	U	N/A	N/A	-		-	-	-	1496	Inf	Inf	0.0%
11/3	Right	U	N/A	N/A	-		-	-	-	66	Inf	Inf	0.0%
12/1	Ahead Right	U	3	N/A	F		1	17	-	48	1900	456	10.5%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**400**	**0**	**0**	**23.1**	**173.3**	**0.0**	**196.4**	**-**	**-**	**-**	**-**
A45 Brackmills	**-**	**-**	**400**	**0**	**0**	**23.1**	**173.3**	**0.0**	**196.4**	**-**	**-**	**-**	**-**
1/2+1/1	463	463	-	-	-	0.7	0.2	-	0.9	6.7	1.9	0.2	2.1
1/3	22	22	-	-	-	0.0	0.0	-	0.0	6.2	0.2	0.0	0.2
2/1	1485	1320	-	-	-	9.9	86.8	-	96.6	234.3	34.4	86.8	121.2
2/2	1464	1320	-	-	-	9.1	76.8	-	85.8	211.1	33.5	76.8	110.3
3/1	67	67	-	-	-	0.6	0.3	-	0.8	45.5	1.3	0.3	1.6
3/2	66	66	-	-	-	0.6	0.3	-	0.8	45.3	1.3	0.3	1.5
4/1+4/2	200	200	400	0	0	1.5	0.9	-	2.3	42.2	2.3	0.9	3.2
5/1	319	319	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	292	292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	806	806	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	67	67	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	592	592	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	1382	1382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	88	88	-	-	-	0.1	0.2	-	0.2	9.1	0.4	0.2	0.6
9/2	86	86	-	-	-	0.1	0.2	-	0.2	8.8	0.6	0.2	0.7
10/1	562	562	-	-	-	0.2	0.3	-	0.5	3.3	1.1	0.3	1.4
10/2	1320	1320	-	-	-	0.2	7.5	-	7.7	21.0	3.7	7.5	11.2
11/1	530	530	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	1352	1352	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	66	66	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	48	48	-	-	-	0.3	0.1	-	0.4	28.9	0.9	0.1	1.0

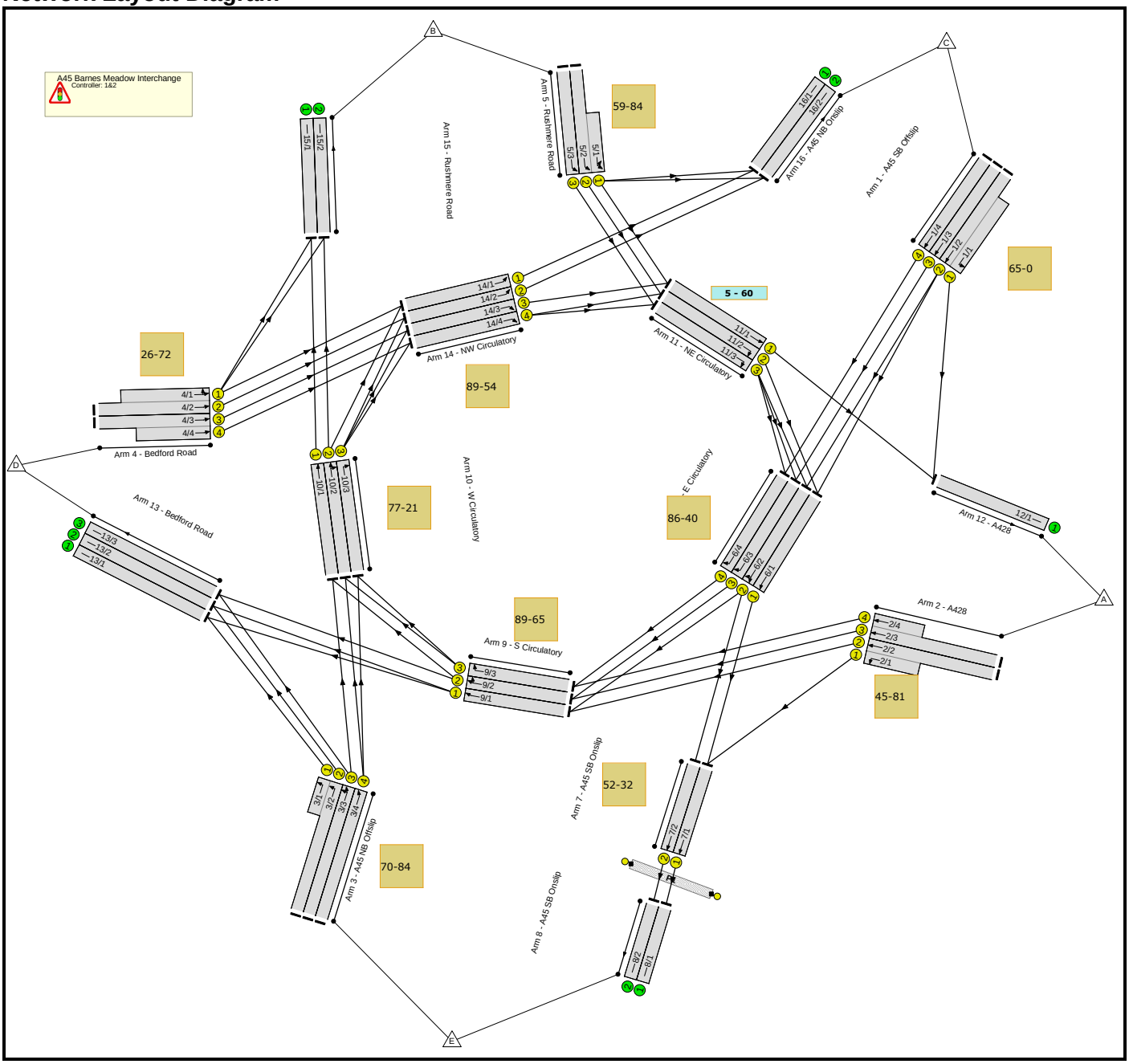
C1	Stream: 1 PRC for Signalled Lanes (%):	221.5	Total Delay for Signalled Lanes (pcuHr):	1.33	Cycle Time (s): 75
C1	Stream: 2 PRC for Signalled Lanes (%):	-5.3	Total Delay for Signalled Lanes (pcuHr):	9.90	Cycle Time (s): 75
C1	Stream: 3 PRC for Signalled Lanes (%):	-25.0	Total Delay for Signalled Lanes (pcuHr):	182.85	Cycle Time (s): 75
	PRC Over All Lanes (%):	-25.0	Total Delay Over All Lanes(pcuHr):	196.43	

Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 10
Location:	A45, Nene Valley Way (south); A428, Bedford Road (west)/ A5095, Rushmere Road/ A45, Nene Valley Way (north)/ A428, Bedford Road (east)
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

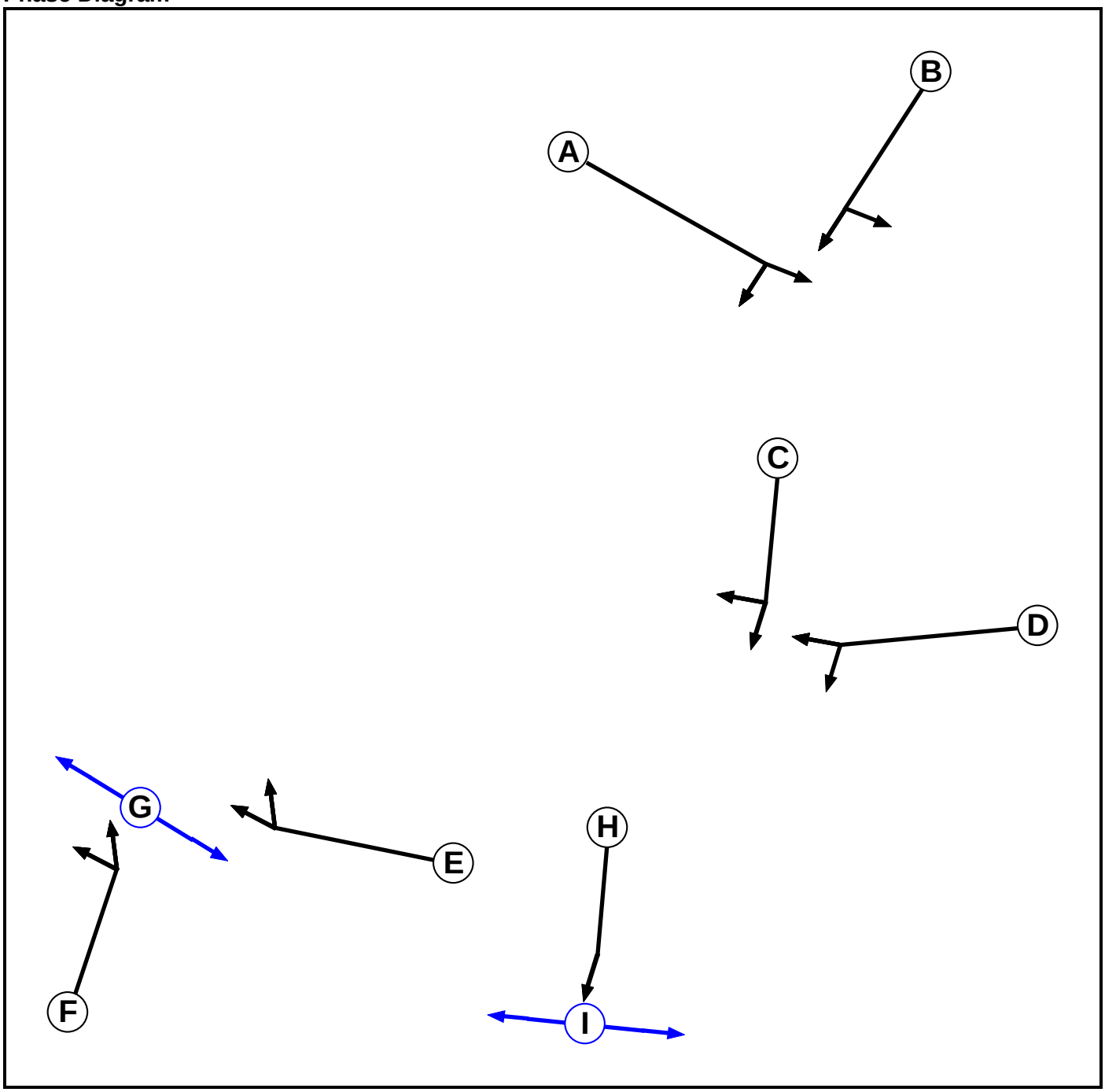
Network Layout Diagram



Full Input Data And Results

C1 - ORN 43

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	4		7	7
D	Traffic	4		7	7
E	Traffic	2		7	7
F	Traffic	2		7	7
G	Pedestrian	2		7	7
H	Traffic	3		7	7
I	Pedestrian	3		7	7

Phase Intergreens Matrix

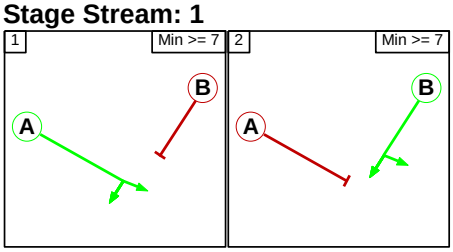
		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		5	-	-	-	-	-	-	-
	B	5		-	-	-	-	-	-	-
	C	-	-		5	-	-	-	-	-
	D	-	-	5		-	-	-	-	-
	E	-	-	-	-		5	-	-	-
	F	-	-	-	-	5		5	-	-
	G	-	-	-	-	-	14		-	-
	H	-	-	-	-	-	-	-		5
	I	-	-	-	-	-	-	-	8	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	E G
2	2	E
2	3	F
3	1	H
3	2	I
4	1	C
4	2	D

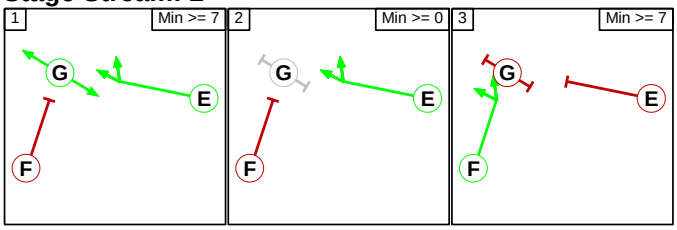
Stage Diagram

Stage Stream: 1

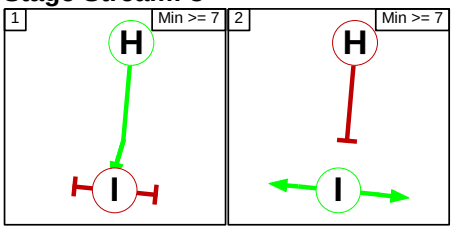


Full Input Data And Results

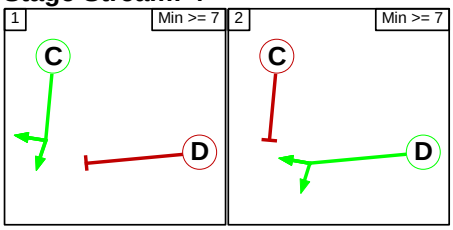
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage	To Stage 1	To Stage 2
1		5
2	5	

Full Input Data And Results

Stage Stream: 2

		To Stage		
		1	2	3
From Stage	1		0	14
	2	0		5
	3	5	5	

Stage Stream: 3

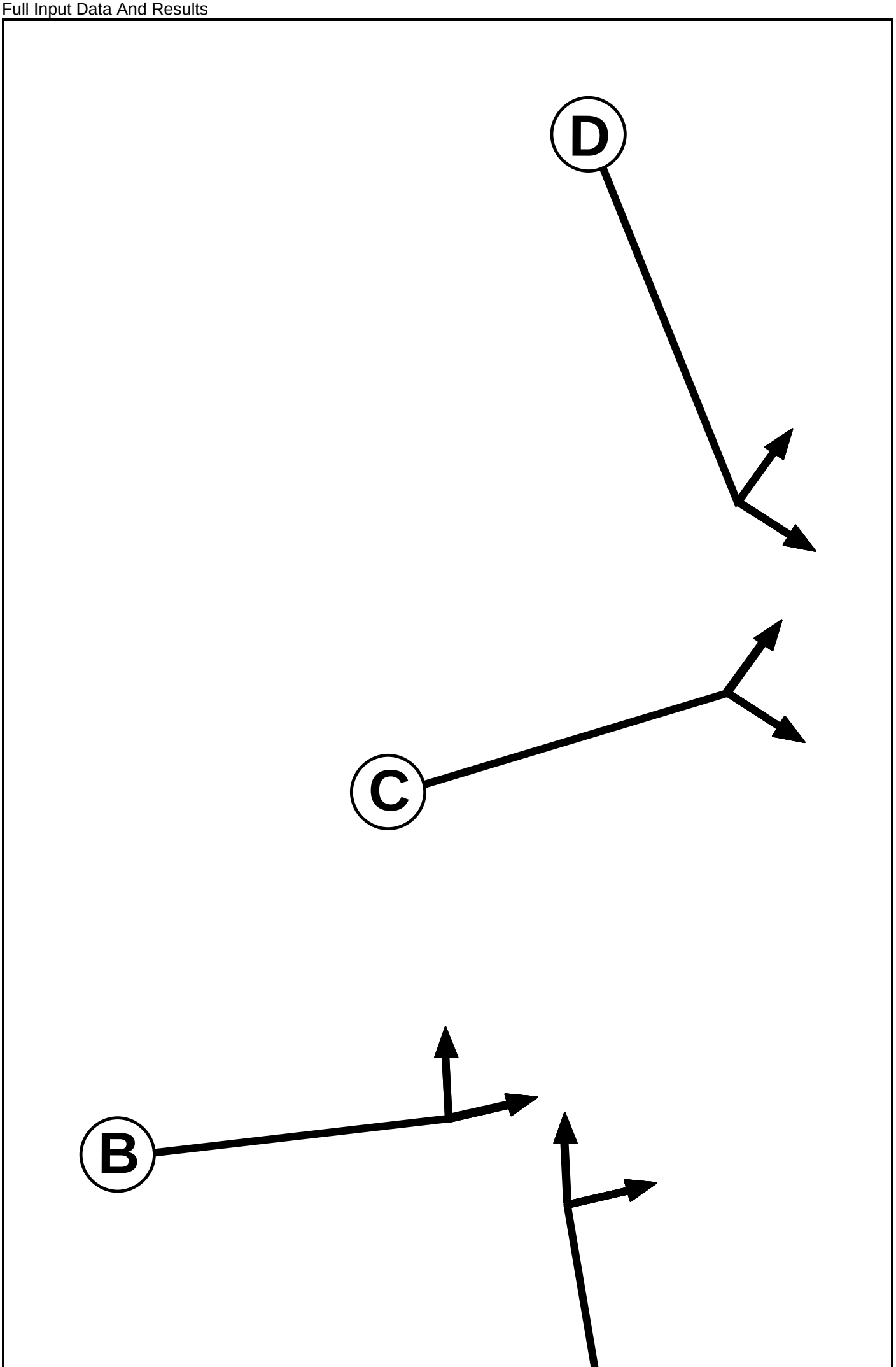
		To Stage	
		1	2
From Stage	1		5
	2	8	

Stage Stream: 4

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

C2 - ORN101
Phase Diagram


D
C
B

Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7

Phase Intergreens Matrix

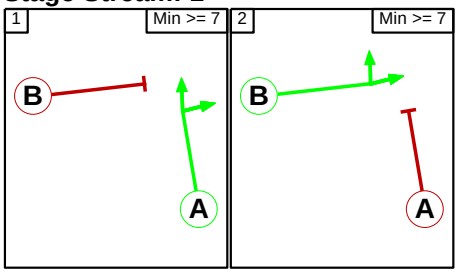
		Starting Phase			
		A	B	C	D
Terminating Phase	A		5	-	-
	B	5		-	-
	C	-	-		5
	D	-	-	5	

Phases in Stage

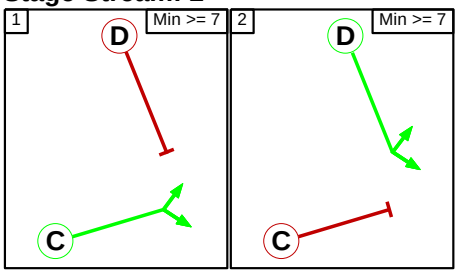
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 Barnes Meadow Interchange
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: A45 Barnes Meadow Interchange												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A45 SB Offslip)	U	B	2	3	15.0	User	1800	-	-	-	-	-
1/2 (A45 SB Offslip)	U	B	2	3	27.0	User	1800	-	-	-	-	-
1/3 (A45 SB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/4 (A45 SB Offslip)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (A428)	U	D	2	3	6.5	User	1800	-	-	-	-	-
2/2 (A428)	U	D	2	3	7.0	User	1800	-	-	-	-	-
2/3 (A428)	U	D	2	3	60.0	User	1800	-	-	-	-	-
2/4 (A428)	U	D	2	3	6.0	User	1800	-	-	-	-	-
3/1 (A45 NB Offslip)	U	F	2	3	4.3	User	1800	-	-	-	-	-
3/2 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/3 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/4 (A45 NB Offslip)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/1 (Bedford Road)	U	B	2	3	10.4	User	1800	-	-	-	-	-
4/2 (Bedford Road)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/3 (Bedford Road)	U	B	2	3	60.0	User	1800	-	-	-	-	-
4/4 (Bedford Road)	U	B	2	3	8.7	User	1800	-	-	-	-	-
5/1 (Rushmere Road)	U	D	2	3	7.0	User	1800	-	-	-	-	-
5/2 (Rushmere Road)	U	D	2	3	12.2	User	1800	-	-	-	-	-
5/3 (Rushmere Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
6/1 (E Circulatory)	U	C	2	3	8.0	User	1900	-	-	-	-	-
6/2 (E Circulatory)	U	C	2	3	8.0	User	1900	-	-	-	-	-

Full Input Data And Results

6/3 (E Circulatory)	U	C	2	3	9.0	User	1900	-	-	-	-	-
6/4 (E Circulatory)	U	C	2	3	12.0	User	1900	-	-	-	-	-
7/1 (A45 SB Onslip)	U	H	2	3	4.3	User	1800	-	-	-	-	-
7/2 (A45 SB Onslip)	U	H	2	3	4.3	User	1800	-	-	-	-	-
8/1 (A45 SB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2 (A45 SB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (S Circulatory)	U	E	2	3	11.3	User	1900	-	-	-	-	-
9/2 (S Circulatory)	U	E	2	3	13.0	User	1900	-	-	-	-	-
9/3 (S Circulatory)	U	E	2	3	13.0	User	1900	-	-	-	-	-
10/1 (W Circulatory)	U	A	2	3	10.4	User	1900	-	-	-	-	-
10/2 (W Circulatory)	U	A	2	3	24.3	User	1900	-	-	-	-	-
10/3 (W Circulatory)	U	A	2	3	24.3	User	1900	-	-	-	-	-
11/1 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
11/2 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
11/3 (NE Circulatory)	U	A	2	3	15.7	User	1900	-	-	-	-	-
12/1 (A428)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/1 (Bedford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2 (Bedford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
13/3 (Bedford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/2 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/3 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
14/4 (NW Circulatory)	U	C	2	3	7.0	User	1900	-	-	-	-	-
15/1 (Rushmere Road)	U		2	3	60.0	Inf	-	-	-	-	-	-

15/2 (Rushmere Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/1 (A45 NB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
16/2 (A45 NB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS AM'	08:00	09:00	01:00	
4: '2021 DS PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS AM'	08:00	09:00	01:00	
8: '2031 DS PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 5: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	1	81	323	770	534	1709
	B	189	0	21	0	1150	1360
	C	387	160	0	781	0	1328
	D	369	3	353	0	1057	1782
	E	605	135	0	774	0	1514
	Tot.	1551	379	697	2325	2741	7693

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS5 AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	387
1/2 (with short)	789(In) 402(Out)
1/3	379
1/4	160
2/1 (short)	534
2/2 (with short)	844(In) 310(Out)
2/3 (with short)	865(In) 494(Out)
2/4 (short)	371
3/1 (short)	278
3/2 (with short)	556(In) 278(Out)
3/3	353
3/4	605
4/1 (short)	131
4/2 (with short)	356(In) 225(Out)
4/3 (with short)	1426(In) 369(Out)
4/4 (short)	1057
5/1 (short)	210
5/2 (with short)	763(In) 553(Out)
5/3	597
6/1	1153
6/2	1456
6/3	379
6/4	160
7/1	1687
7/2	1054
8/1	1687
8/2	1054
9/1	712
9/2	873
9/3	531
10/1	169
10/2	523
10/3	613

Full Input Data And Results

11/1	1164
11/2	1153
11/3	1054
12/1	1551
13/1	634
13/2	634
13/3	1057
14/1	444
14/2	232
14/3	975
14/4	1057
15/1	170
15/2	209
16/1	455
16/2	242

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 6: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	122	843	352	1015	2332
	B	69	0	104	178	826	1177
	C	330	104	0	597	0	1031
	D	206	72	1295	0	958	2531
	E	303	382	0	569	0	1254
	Tot.	908	680	2242	1696	2799	8325

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS5 PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	330
1/2 (with short)	658(In) 328(Out)
1/3	283
1/4	90
2/1 (short)	1015
2/2 (with short)	1061(In) 46(Out)
2/3 (with short)	1271(In) 424(Out)
2/4 (short)	847
3/1 (short)	275
3/2 (with short)	551(In) 276(Out)
3/3	316
3/4	387
4/1 (short)	687
4/2 (with short)	1367(In) 680(Out)
4/3 (with short)	1164(In) 206(Out)
4/4 (short)	958
5/1 (short)	173
5/2 (with short)	676(In) 503(Out)
5/3	501
6/1	893
6/2	1219
6/3	461
6/4	90
7/1	1908
7/2	891
8/1	1908
8/2	891
9/1	374
9/2	885
9/3	937
10/1	430
10/2	648
10/3	676

Full Input Data And Results

11/1	578
11/2	893
11/3	1069
12/1	908
13/1	462
13/2	463
13/3	771
14/1	1085
14/2	1053
14/3	509
14/4	958
15/1	466
15/2	214
16/1	1137
16/2	1105

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 7: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	11	89	673	627	458	1858
	B	206	0	113	163	882	1364
	C	569	185	0	705	0	1459
	D	385	91	408	0	784	1668
	E	263	64	0	660	0	987
	Tot.	1434	429	1194	2155	2124	7336

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS5 AM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	569
1/2 (with short)	755(In) 186(Out)
1/3	530
1/4	174
2/1 (short)	458
2/2 (with short)	1085(In) 627(Out)
2/3 (with short)	773(In) 89(Out)
2/4 (short)	684
3/1 (short)	250
3/2 (with short)	499(In) 249(Out)
3/3	225
3/4	263
4/1 (short)	256
4/2 (with short)	499(In) 243(Out)
4/3 (with short)	1169(In) 385(Out)
4/4 (short)	784
5/1 (short)	319
5/2 (with short)	843(In) 524(Out)
5/3	521
6/1	877
6/2	1011
6/3	657
6/4	174
7/1	1335
7/2	789
8/1	1335
8/2	789
9/1	849
9/2	746
9/3	858
10/1	164
10/2	595
10/3	526

Full Input Data And Results

11/1	865
11/2	877
11/3	952
12/1	1434
13/1	675
13/2	673
13/3	807
14/1	586
14/2	495
14/3	659
14/4	784
15/1	209
15/2	220
16/1	643
16/2	551

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

Scenario 8: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	7	140	1095	333	777	2352
	B	83	0	347	273	569	1272
	C	462	94	1	587	0	1144
	D	319	169	1141	0	902	2531
	E	100	370	0	493	0	963
	Tot.	971	773	2584	1686	2248	8262

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS5 PM
Junction: A45 Barnes Meadow Interchange	
1/1 (short)	462
1/2 (with short)	612(In) 150(Out)
1/3	445
1/4	87
2/1 (short)	777
2/2 (with short)	1110(In) 333(Out)
2/3 (with short)	1242(In) 140(Out)
2/4 (short)	1102
3/1 (short)	225
3/2 (with short)	450(In) 225(Out)
3/3	282
3/4	231
4/1 (short)	697
4/2 (with short)	1310(In) 613(Out)
4/3 (with short)	1221(In) 319(Out)
4/4 (short)	902
5/1 (short)	430
5/2 (with short)	852(In) 422(Out)
5/3	420
6/1	827
6/2	816
6/3	696
6/4	87
7/1	1604
7/2	644
8/1	1604
8/2	644
9/1	505
9/2	836
9/3	1189
10/1	387
10/2	704
10/3	716

Full Input Data And Results

11/1	509
11/2	827
11/3	917
12/1	971
13/1	478
13/2	477
13/3	731
14/1	1015
14/2	1222
14/3	426
14/4	902
15/1	471
15/2	302
16/1	1189
16/2	1395

Full Input Data And Results

Lane Saturation Flows

Junction: A45 Barnes Meadow Interchange								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 SB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A45 SB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A45 SB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A45 SB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A428 Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A428 Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A428 Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/4 (A428 Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A45 NB Offslip Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A45 NB Offslip Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (A45 NB Offslip Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (A45 NB Offslip Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Bedford Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Bedford Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Bedford Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (Bedford Road Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Rushmere Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/2 (Rushmere Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
5/3 (Rushmere Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
6/1 (E Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
6/2 (E Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
6/3 (E Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
6/4 (E Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						1900	1900

Full Input Data And Results

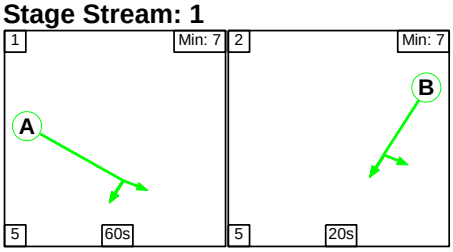
7/1 (A45 SB Onslip Lane 1)	This lane uses a directly entered Saturation Flow	1800	1800
7/2 (A45 SB Onslip Lane 2)	This lane uses a directly entered Saturation Flow	1800	1800
8/1 (A45 SB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
8/2 (A45 SB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
9/1 (S Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
9/2 (S Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
9/3 (S Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
10/1 (W Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
10/2 (W Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
10/3 (W Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
11/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
11/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
11/3 (NE Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
12/1 (A428 Lane 1)	Infinite Saturation Flow	Inf	Inf
13/1 (Bedford Road Lane 1)	Infinite Saturation Flow	Inf	Inf
13/2 (Bedford Road Lane 2)	Infinite Saturation Flow	Inf	Inf
13/3 (Bedford Road Lane 3)	Infinite Saturation Flow	Inf	Inf
14/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (NW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
14/4 (NW Circulatory Lane 4)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (Rushmere Road Lane 1)	Infinite Saturation Flow	Inf	Inf
15/2 (Rushmere Road Lane 2)	Infinite Saturation Flow	Inf	Inf
16/1 (A45 NB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
16/2 (A45 NB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf

Full Input Data And Results

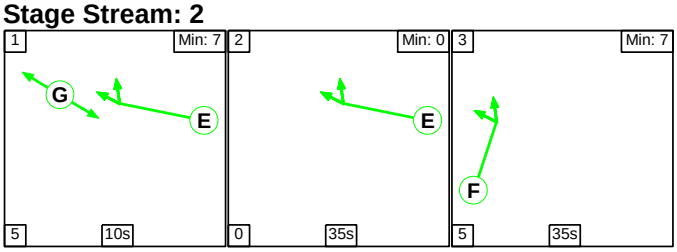
Scenario 5: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

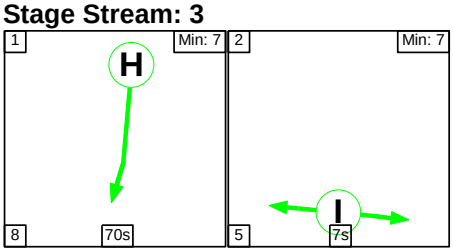
Stage Stream: 1



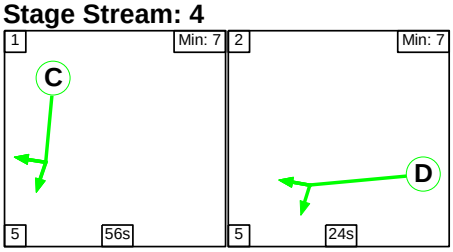
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	60	20
Change Point	0	65

Stage Stream: 2

Stage	1	2	3
Duration	10	35	35
Change Point	19	34	69

Stage Stream: 3

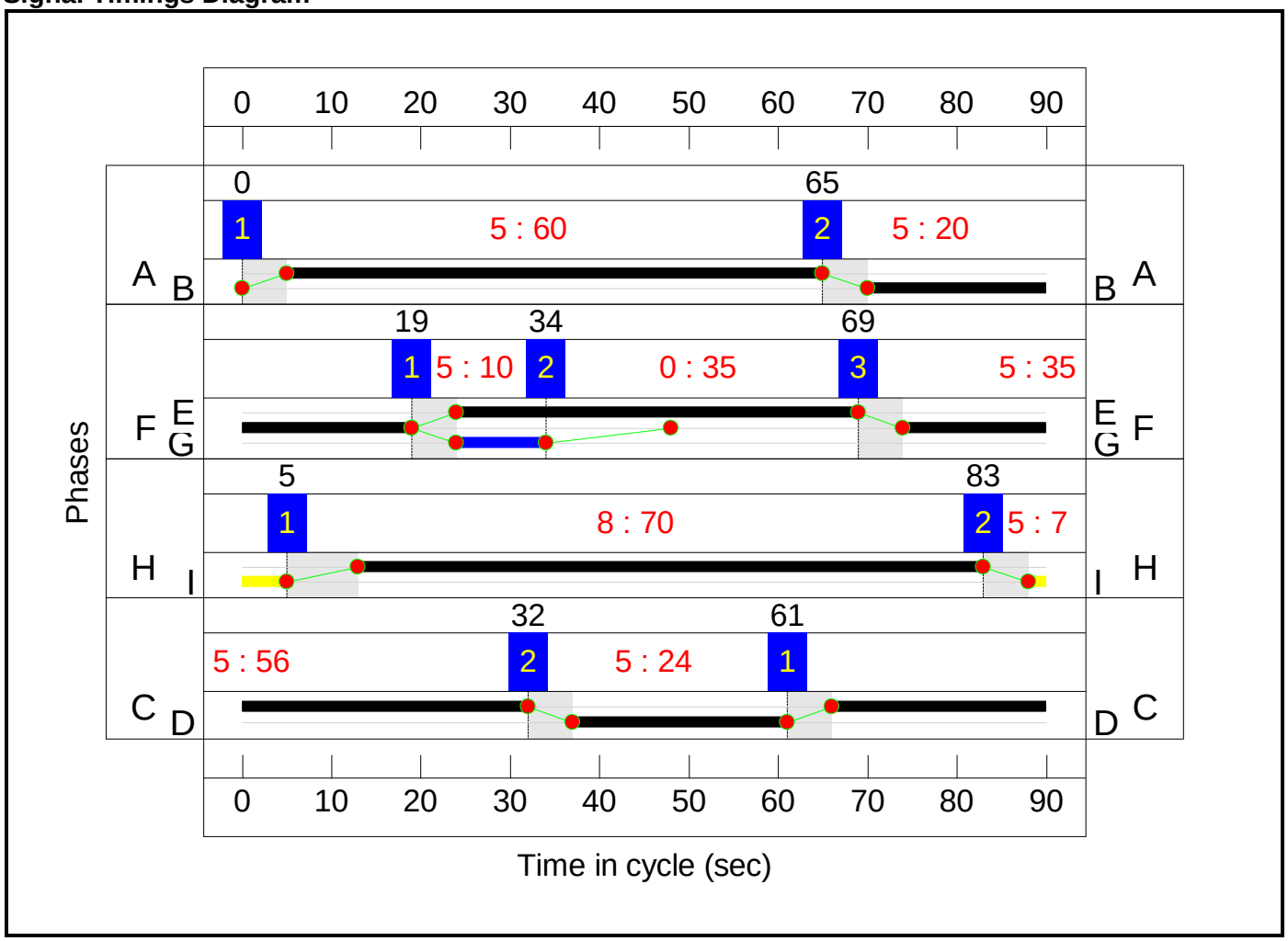
Stage	1	2
Duration	70	7
Change Point	5	83

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	56	24
Change Point	61	32

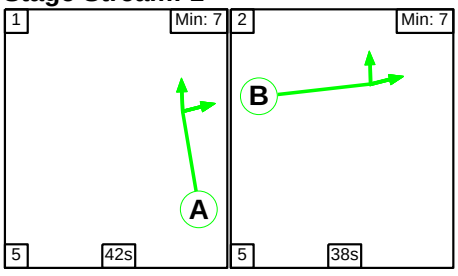
Signal Timings Diagram



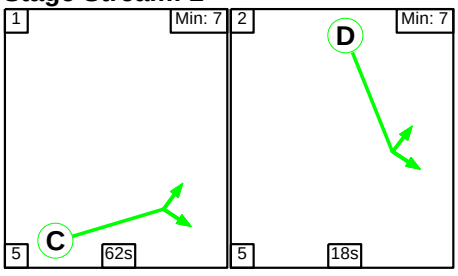
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

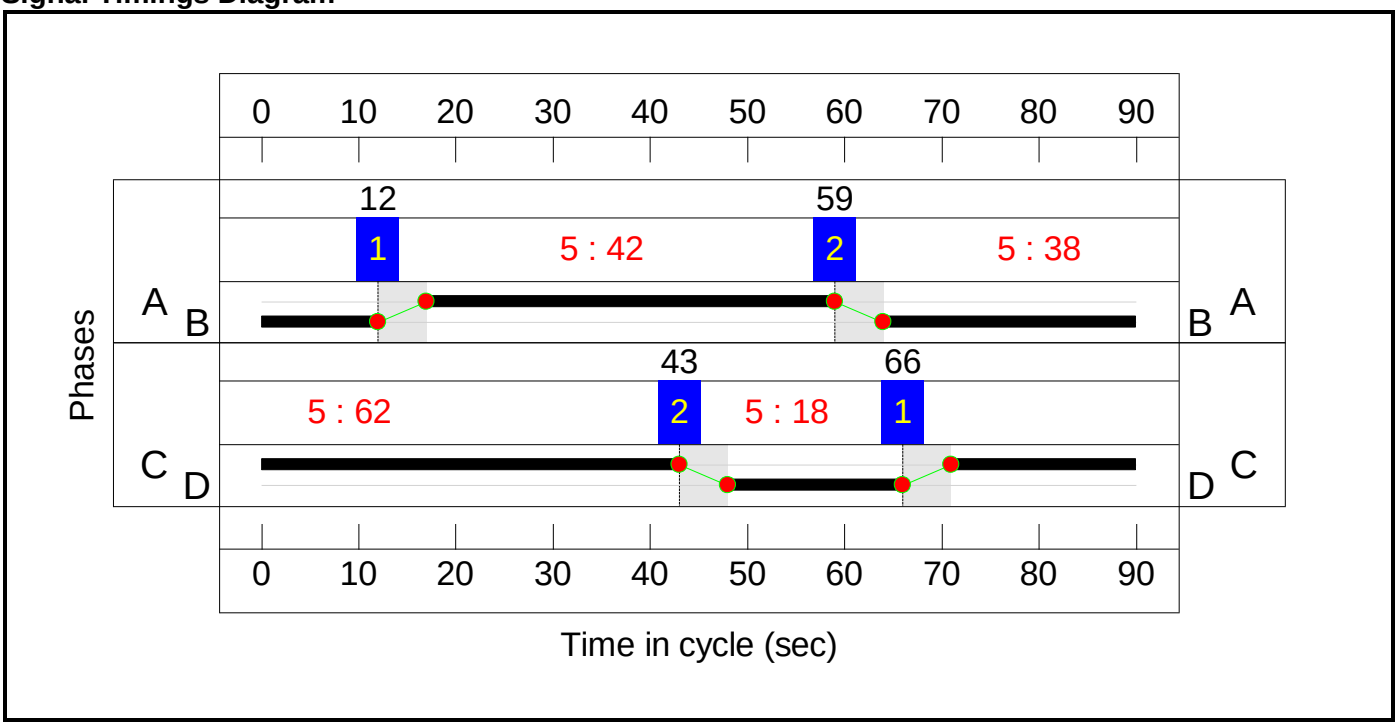
Stage Stream: 1

Stage	1	2
Duration	42	38
Change Point	12	59

Stage Stream: 2

Stage	1	2
Duration	62	18
Change Point	66	43

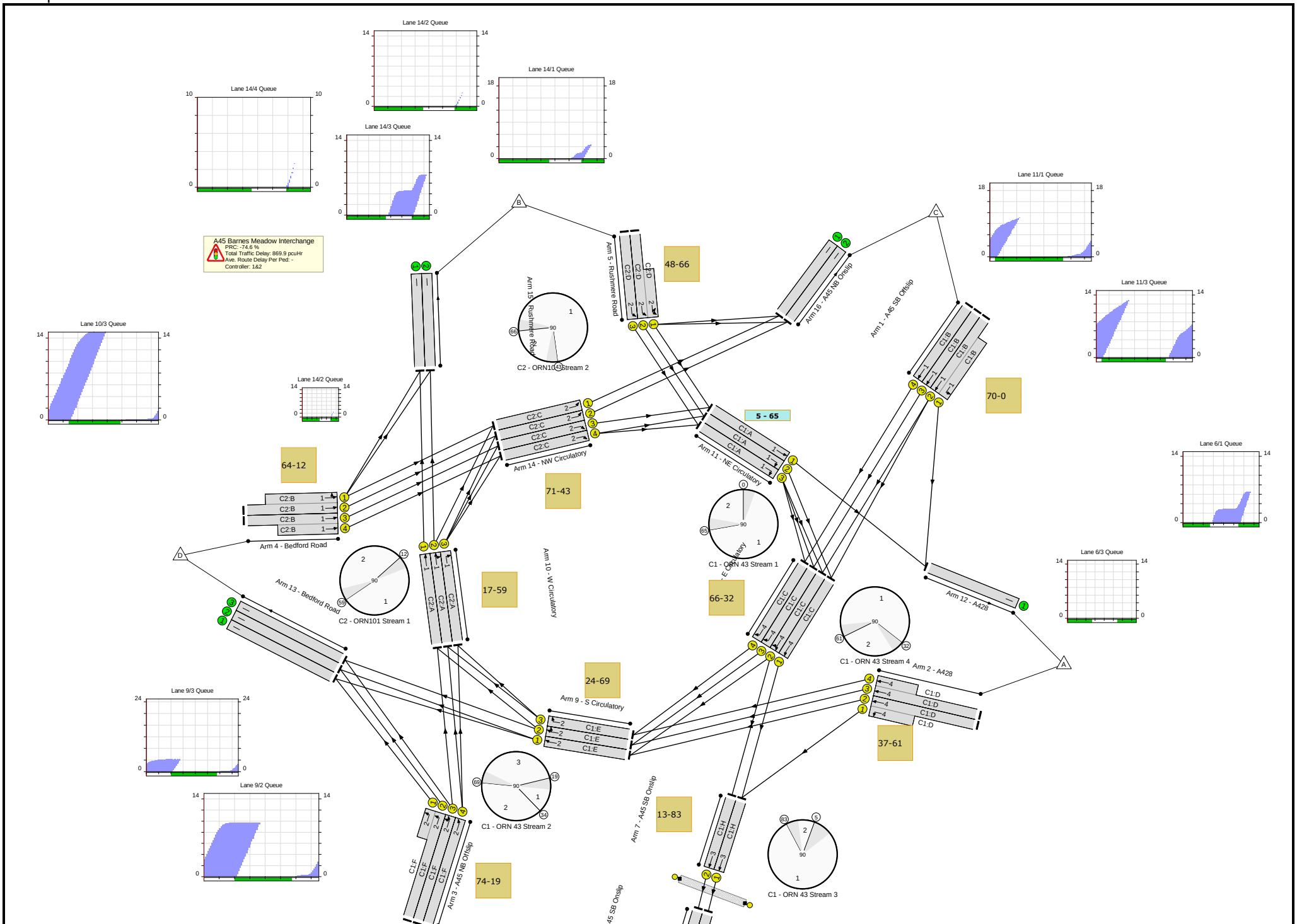
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**157.1%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**157.1%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	20	-	789	1800:1800	420+420	95.7 : 92.1%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	20	-	379	1800	420	90.2%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	20	-	160	1800	420	38.1%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	24	-	844	1800:1800	244+420	127.3 : 127.3%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	24	-	865	1800:1800	388+292	127.2 : 127.2%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	35	-	556	1800:1800	449+449	61.9 : 61.9%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	35	-	353	1800	720	49.0%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	35	-	605	1800	720	84.0%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	38	-	356	1800:1800	652+380	34.5 : 34.5%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	38	-	1426	1800:1800	237+680	155.5 : 155.5%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	18	-	763	1800:1800	352+134	156.9 : 156.9%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	18	-	597	1800	380	157.1%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	56	-	1153	1900	1203	61.3%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	56	-	1456	1900	1203	89.4%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	56	-	379	1900	1203	31.5%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	56	-	160	1900	1203	13.3%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	70	-	1687	1800	1420	81.5%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	70	-	1054	1800	1420	47.5%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	1687	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	1054	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	45	-	712	1900	971	66.5%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	45	-	873	1900	971	79.0%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	45	-	531	1900	971	46.5%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	42	-	169	1900	908	17.8%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	42	-	523	1900	908	49.1%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	42	-	613	1900	908	67.3%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	60	-	1164	1900	1288	74.8%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	60	-	1153	1900	1288	57.3%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	60	-	1054	1900	1288	52.3%
12/1	A428	U	N/A	N/A	-		-	-	-	1551	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	634	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	634	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	1057	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	62	-	444	1900	1330	28.3%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	62	-	232	1900	1330	17.3%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	62	-	975	1900	1330	63.4%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	62	-	1057	1900	1330	51.1%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	170	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	209	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	455	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	242	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**145.6**	**724.3**	**0.0**	**869.9**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**145.6**	**724.3**	**0.0**	**869.9**	**-**	**-**	**-**	**-**
1/2+1/1	789	789	-	-	-	7.4	6.2	-	13.6	62.3	9.8	6.2	16.0
1/3	379	379	-	-	-	3.5	3.9	-	7.4	70.4	9.2	3.9	13.0
1/4	160	160	-	-	-	1.3	0.3	-	1.6	35.9	3.3	0.3	3.6
2/2+2/1	844	663	-	-	-	13.7	92.7	-	106.4	453.9	23.3	92.7	115.9
2/3+2/4	865	680	-	-	-	14.0	94.7	-	108.7	452.4	23.2	94.7	117.8
3/2+3/1	556	556	-	-	-	3.0	0.8	-	3.8	24.4	5.8	0.8	6.6
3/3	353	353	-	-	-	2.0	0.5	-	2.5	25.0	6.6	0.5	7.0
3/4	605	605	-	-	-	4.1	2.5	-	6.6	39.4	13.6	2.5	16.1
4/2+4/1	356	356	-	-	-	1.6	0.3	-	1.9	18.8	3.6	0.3	3.9
4/3+4/4	1426	917	-	-	-	35.7	256.0	-	291.7	736.4	52.1	256.0	308.1
5/2+5/1	763	486	-	-	-	17.6	139.7	-	157.3	742.2	25.8	139.7	165.5
5/3	597	380	-	-	-	15.1	109.9	-	125.0	753.7	22.3	109.9	132.2
6/1	738	738	-	-	-	1.3	0.8	-	2.1	10.4	6.5	0.8	7.3
6/2	1076	1076	-	-	-	0.6	4.0	-	4.6	15.4	5.8	4.0	9.8
6/3	379	379	-	-	-	0.0	0.2	-	0.2	2.2	0.0	0.2	0.2
6/4	160	160	-	-	-	0.0	0.1	-	0.1	1.7	0.0	0.1	0.1
7/1	1158	1158	-	-	-	0.1	2.2	-	2.2	7.0	9.2	2.2	11.4
7/2	674	674	-	-	-	0.0	0.5	-	0.5	2.7	9.2	0.5	9.6
8/1	1158	1158	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	674	674	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	646	646	-	-	-	3.5	1.0	-	4.4	24.8	10.2	1.0	11.2
9/2	767	767	-	-	-	3.3	1.9	-	5.2	24.3	9.8	1.9	11.6
9/3	452	452	-	-	-	1.4	0.4	-	1.8	14.7	4.2	0.4	4.6
10/1	162	162	-	-	-	0.8	0.1	-	0.9	19.3	3.6	0.1	3.7

Full Input Data And Results

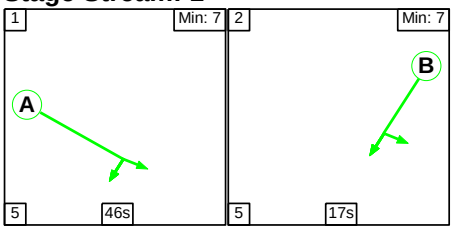
10/2	445	445	-	-	-	2.4	0.5	-	2.9	23.5	5.2	0.5	5.7
10/3	611	611	-	-	-	3.4	1.0	-	4.4	26.1	15.2	1.0	16.3
11/1	963	963	-	-	-	1.6	1.5	-	3.1	11.6	10.7	1.5	12.1
11/2	738	738	-	-	-	3.1	0.7	-	3.8	18.5	14.6	0.7	15.2
11/3	674	674	-	-	-	2.9	0.5	-	3.5	18.6	12.8	0.5	13.4
12/1	1350	1350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	601	601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	601	601	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	959	959	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	377	377	-	-	-	0.2	0.2	-	0.4	4.2	3.5	0.2	3.7
14/2	231	231	-	-	-	0.0	0.1	-	0.1	2.0	2.7	0.1	2.8
14/3	843	843	-	-	-	1.6	0.9	-	2.5	10.7	7.6	0.9	8.4
14/4	680	680	-	-	-	0.0	0.5	-	0.5	2.8	2.7	0.5	3.2
15/1	163	163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	199	199	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	384	384	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	237	237	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-6.3	Total Delay for Signalled Lanes (pcuHr):	33.04	Cycle Time (s):	90
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	7.1	Total Delay for Signalled Lanes (pcuHr):	24.34	Cycle Time (s):	90
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	10.4	Total Delay for Signalled Lanes (pcuHr):	2.74	Cycle Time (s):	90
C1 - ORN 43	Stream: 4 PRC for Signalled Lanes (%):	-41.4	Total Delay for Signalled Lanes (pcuHr):	222.16	Cycle Time (s):	90
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-72.8	Total Delay for Signalled Lanes (pcuHr):	301.76	Cycle Time (s):	90
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	-74.6	Total Delay for Signalled Lanes (pcuHr):	285.89	Cycle Time (s):	90
	PRC Over All Lanes (%):	-74.6	Total Delay Over All Lanes(pcuHr):	869.92		

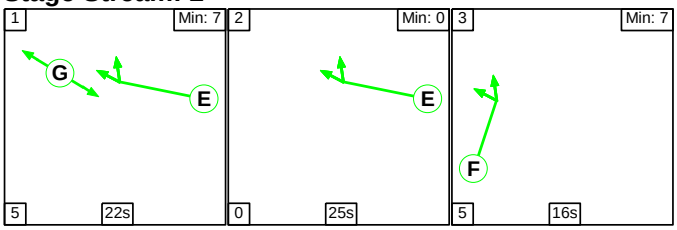
Full Input Data And Results
Scenario 6: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

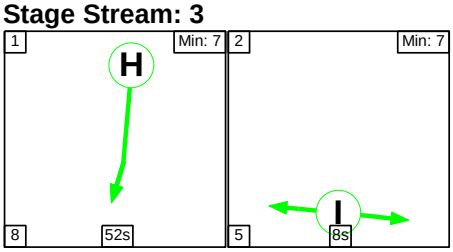
Stage Stream: 1



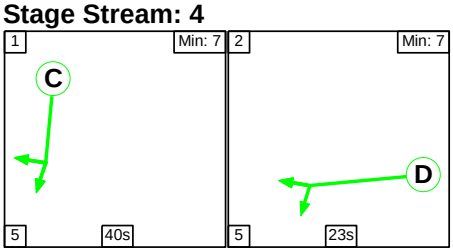
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	46	17
Change Point	0	51

Stage Stream: 2

Stage	1	2	3
Duration	22	25	16
Change Point	64	18	43

Stage Stream: 3

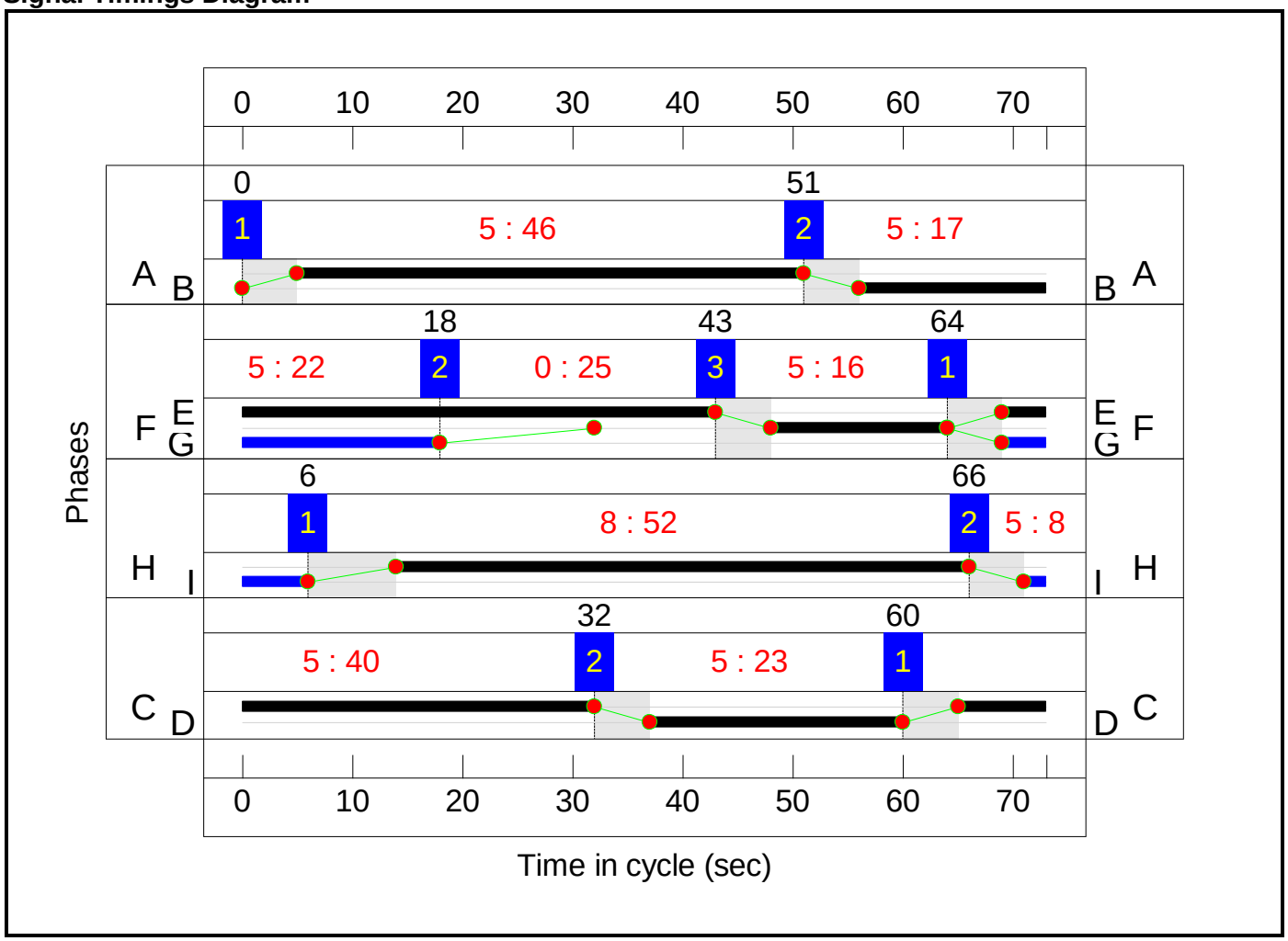
Stage	1	2
Duration	52	8
Change Point	6	66

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	40	23
Change Point	60	32

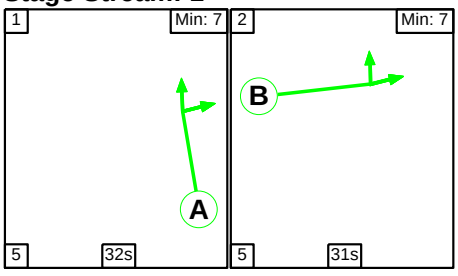
Signal Timings Diagram



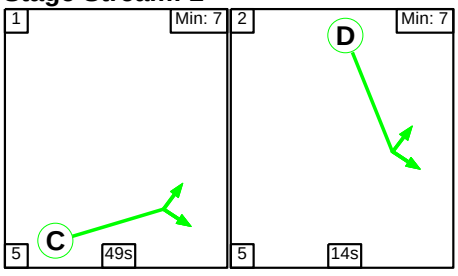
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

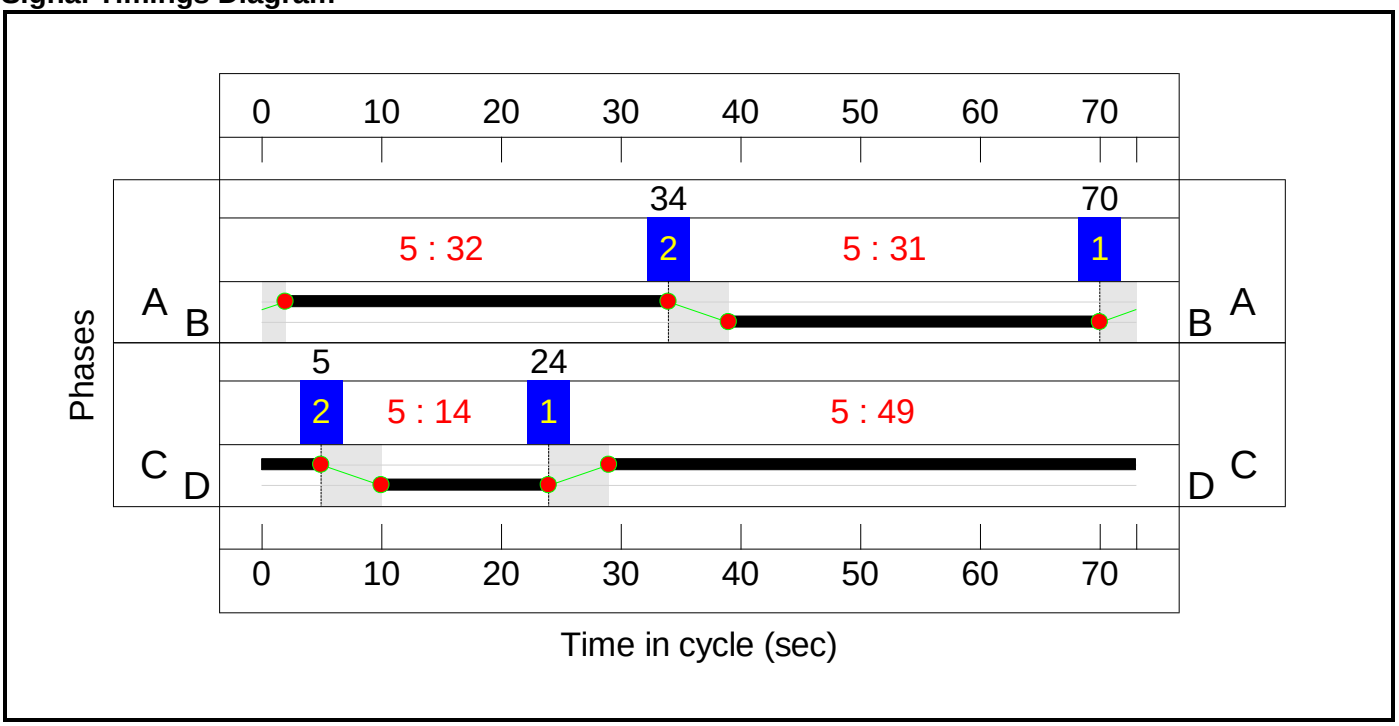
Stage Stream: 1

Stage	1	2
Duration	32	31
Change Point	70	34

Stage Stream: 2

Stage	1	2
Duration	49	14
Change Point	24	5

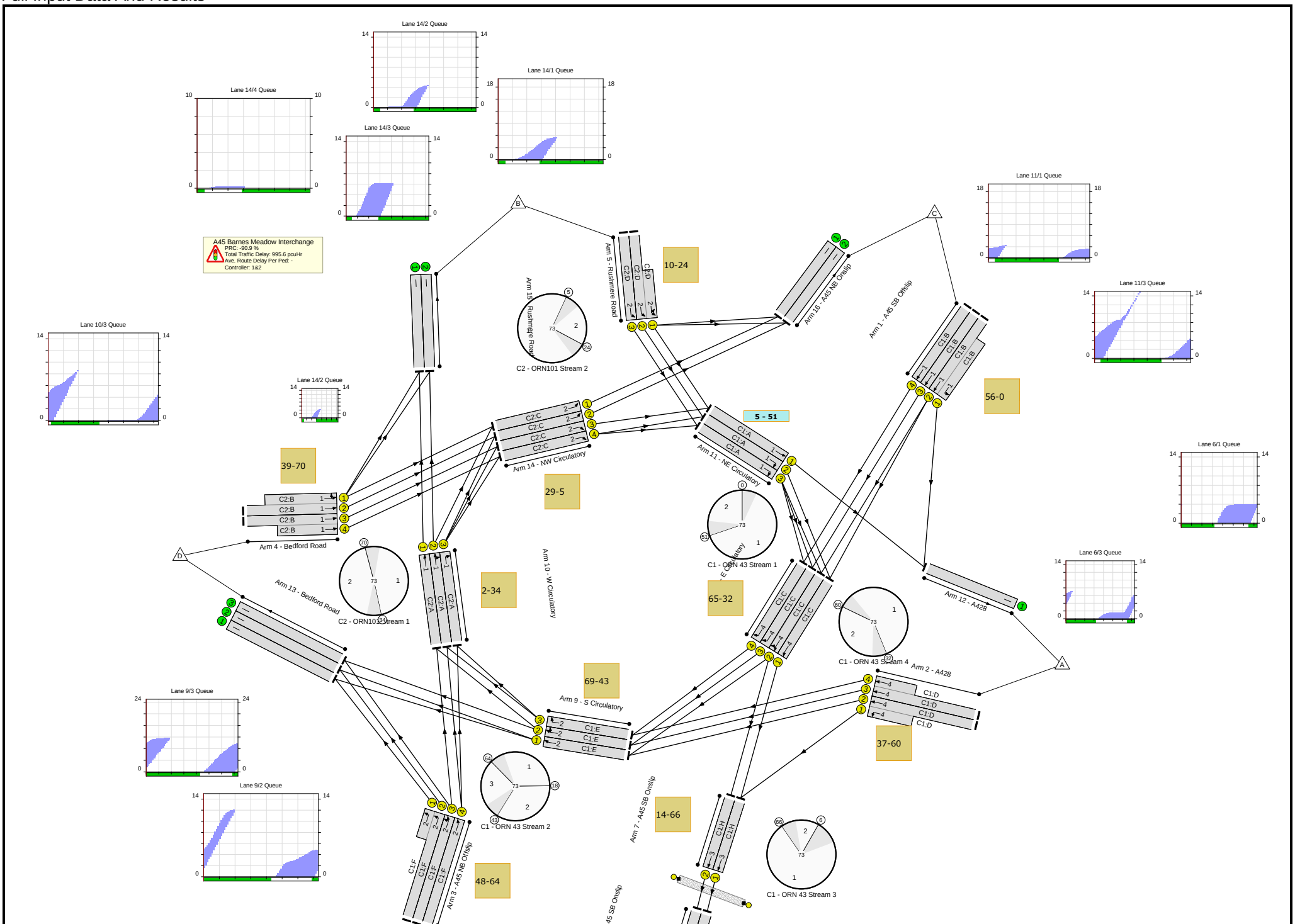
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**171.8%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**171.8%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	17	-	658	1800:1800	444+444	73.9 : 74.4%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	17	-	283	1800	444	63.8%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	17	-	90	1800	444	20.3%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	23	-	1061	1800:1800	27+592	171.5 : 171.5%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	23	-	1271	1800:1800	247+493	171.8 : 171.8%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	16	-	551	1800:1800	320+319	86.3 : 86.3%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	16	-	316	1800	419	75.4%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	16	-	387	1800	419	92.3%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	31	-	1367	1800:1800	651+658	104.4 : 104.4%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	31	-	1164	1800:1800	159+740	129.4 : 129.4%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	14	-	676	1800:1800	364+125	138.4 : 138.4%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	14	-	501	1800	370	135.5%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	40	-	893	1900	1067	62.3%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	40	-	1219	1900	1067	94.2%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	40	-	461	1900	1067	38.8%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	40	-	90	1900	1067	8.4%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	52	-	1908	1800	1307	96.2%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	52	-	891	1800	1307	51.8%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	1908	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	891	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	47	-	374	1900	1249	28.4%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	47	-	885	1900	1249	52.9%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	47	-	937	1900	1249	46.7%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	32	-	430	1900	859	44.3%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	32	-	648	1900	859	52.4%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	32	-	676	1900	859	60.6%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	46	-	578	1900	1223	41.9%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	46	-	893	1900	1223	54.4%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	46	-	1069	1900	1223	66.1%
12/1	A428	U	N/A	N/A	-		-	-	-	908	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	462	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	463	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	771	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	49	-	1085	1900	1301	66.3%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	49	-	1053	1900	1301	66.8%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	49	-	509	1900	1301	35.5%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	49	-	958	1900	1301	56.9%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	466	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	214	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1137	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1105	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	8	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**134.6**	**861.0**	**0.0**	**995.6**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**134.6**	**861.0**	**0.0**	**995.6**	**-**	**-**	**-**	**-**
1/2+1/1	658	658	-	-	-	4.6	1.4	-	6.1	33.1	6.1	1.4	7.6
1/3	283	283	-	-	-	1.9	0.9	-	2.8	35.7	5.1	0.9	6.0
1/4	90	90	-	-	-	0.5	0.1	-	0.7	26.9	1.4	0.1	1.6
2/2+2/1	1061	619	-	-	-	23.2	222.4	-	245.6	833.3	36.2	222.4	258.6
2/3+2/4	1271	740	-	-	-	27.5	266.7	-	294.2	833.4	40.8	266.7	307.5
3/2+3/1	551	551	-	-	-	3.9	3.0	-	6.8	44.7	6.0	3.0	8.9
3/3	316	316	-	-	-	2.3	1.5	-	3.8	43.0	5.9	1.5	7.4
3/4	387	387	-	-	-	2.9	4.7	-	7.6	70.7	7.6	4.7	12.3
4/2+4/1	1367	1310	-	-	-	8.4	37.7	-	46.2	121.6	21.4	37.7	59.2
4/3+4/4	1164	900	-	-	-	15.6	134.4	-	150.0	463.9	29.9	134.4	164.2
5/2+5/1	676	489	-	-	-	11.9	95.5	-	107.4	571.8	16.4	95.5	111.9
5/3	501	370	-	-	-	8.7	67.4	-	76.1	546.7	12.8	67.4	80.2
6/1	665	665	-	-	-	1.7	0.8	-	2.5	13.5	4.0	0.8	4.8
6/2	1005	1005	-	-	-	2.0	6.7	-	8.7	31.1	10.6	6.7	17.3
6/3	414	414	-	-	-	1.1	0.3	-	1.4	12.0	7.2	0.3	7.5
6/4	90	90	-	-	-	0.1	0.0	-	0.1	4.8	1.5	0.0	1.5
7/1	1257	1257	-	-	-	1.9	9.2	-	11.1	31.7	25.0	9.2	34.2
7/2	677	677	-	-	-	1.6	0.5	-	2.1	11.3	13.7	0.5	14.3
8/1	1257	1257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	677	677	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	355	355	-	-	-	0.1	0.2	-	0.3	2.9	0.4	0.2	0.6
9/2	661	661	-	-	-	1.8	0.6	-	2.4	12.9	12.1	0.6	12.6
9/3	583	583	-	-	-	3.3	0.4	-	3.8	23.3	11.7	0.4	12.1
10/1	381	381	-	-	-	1.2	0.4	-	1.6	15.5	7.1	0.4	7.5

Full Input Data And Results

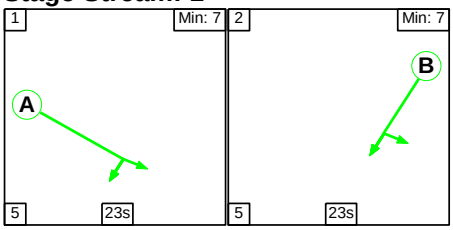
10/2	450	450	-	-	-	0.3	0.5	-	0.9	6.9	1.9	0.5	2.4
10/3	520	520	-	-	-	1.2	0.8	-	2.0	13.9	8.5	0.8	9.3
11/1	512	512	-	-	-	0.8	0.4	-	1.2	8.3	3.4	0.4	3.7
11/2	665	665	-	-	-	1.0	0.6	-	1.6	8.7	5.9	0.6	6.5
11/3	809	809	-	-	-	1.9	1.0	-	2.8	12.6	14.9	1.0	15.9
12/1	842	842	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	452	452	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	453	453	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	597	597	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	863	863	-	-	-	0.8	1.0	-	1.8	7.6	5.6	1.0	6.6
14/2	869	869	-	-	-	0.5	1.0	-	1.5	6.3	4.4	1.0	5.4
14/3	462	462	-	-	-	1.7	0.3	-	2.0	15.4	6.2	0.3	6.5
14/4	740	740	-	-	-	0.1	0.7	-	0.7	3.5	0.2	0.7	0.8
15/1	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	211	211	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	900	900	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	21.0	Total Delay for Signalled Lanes (pcuHr):	15.13	Cycle Time (s):	73		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-2.6	Total Delay for Signalled Lanes (pcuHr):	24.65	Cycle Time (s):	73		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	-6.9	Total Delay for Signalled Lanes (pcuHr):	13.20	Cycle Time (s):	73		
C1 - ORN 43	Stream: 4 PRC for Signalled Lanes (%):	-90.9	Total Delay for Signalled Lanes (pcuHr):	552.48	Cycle Time (s):	73		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-43.8	Total Delay for Signalled Lanes (pcuHr):	200.66	Cycle Time (s):	73		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	-53.7	Total Delay for Signalled Lanes (pcuHr):	189.48	Cycle Time (s):	73		
	PRC Over All Lanes (%):	-90.9	Total Delay Over All Lanes(pcuHr):	995.60				

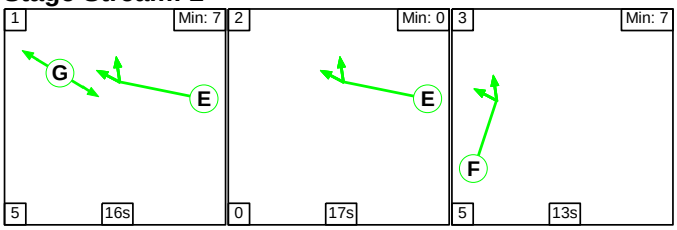
Full Input Data And Results
Scenario 7: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

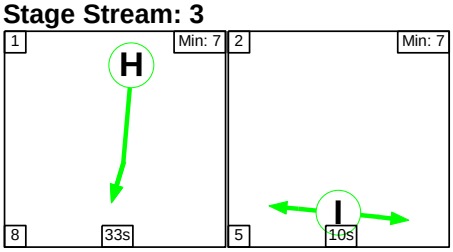
Stage Stream: 1



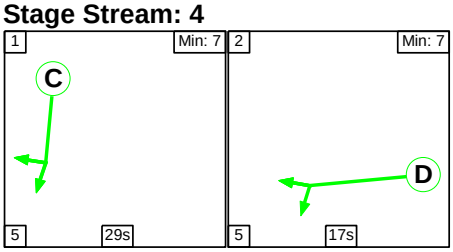
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	23
Change Point	0	28

Stage Stream: 2

Stage	1	2	3
Duration	16	17	13
Change Point	45	10	27

Stage Stream: 3

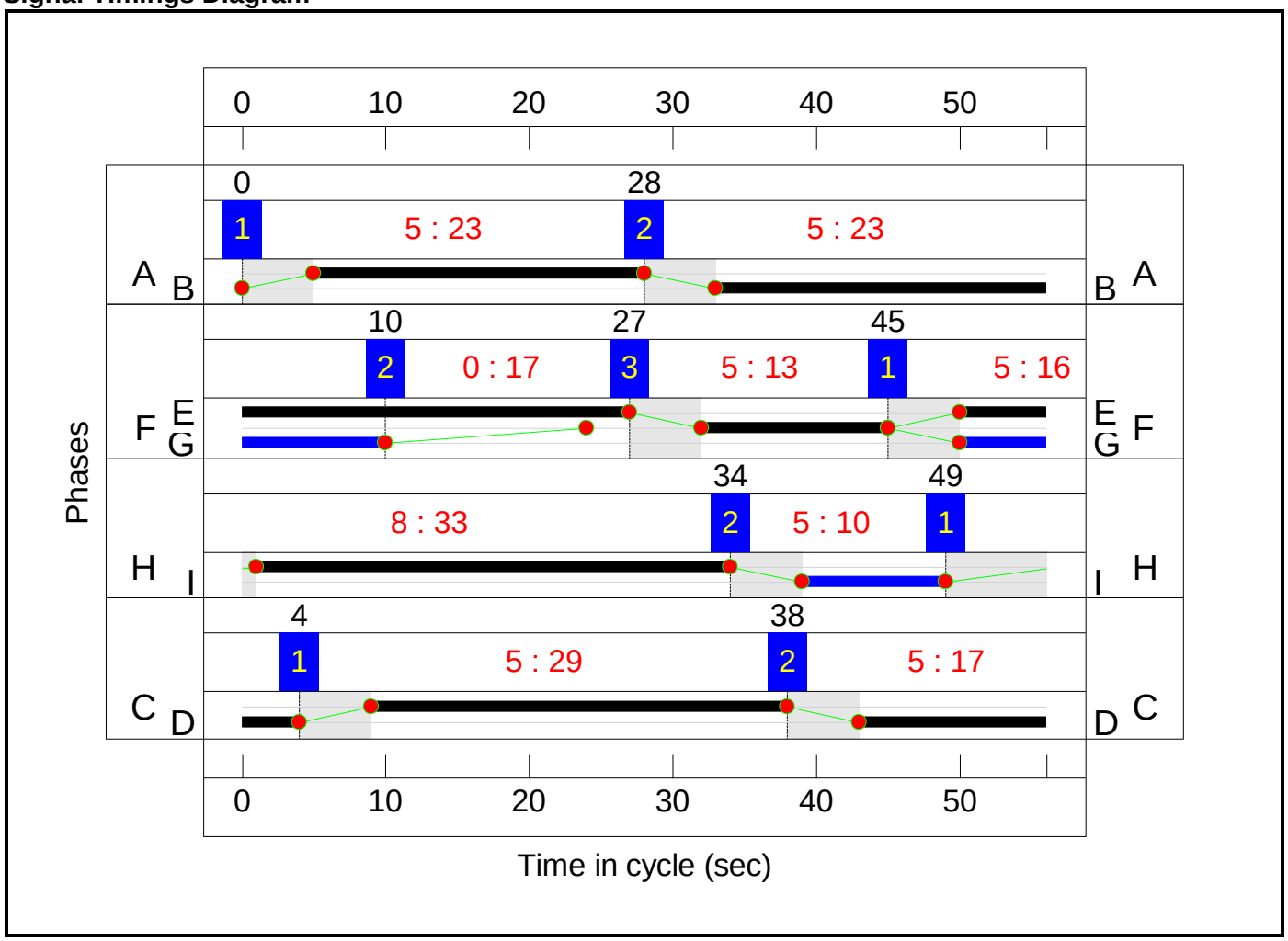
Stage	1	2
Duration	33	10
Change Point	49	34

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	29	17
Change Point	4	38

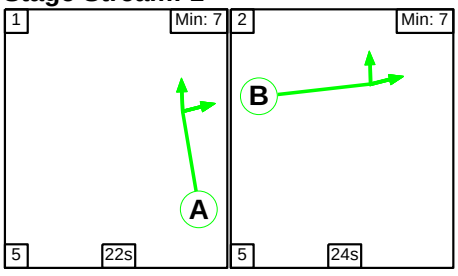
Signal Timings Diagram



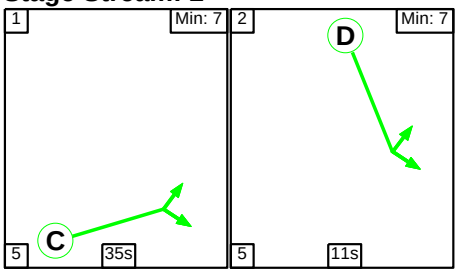
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

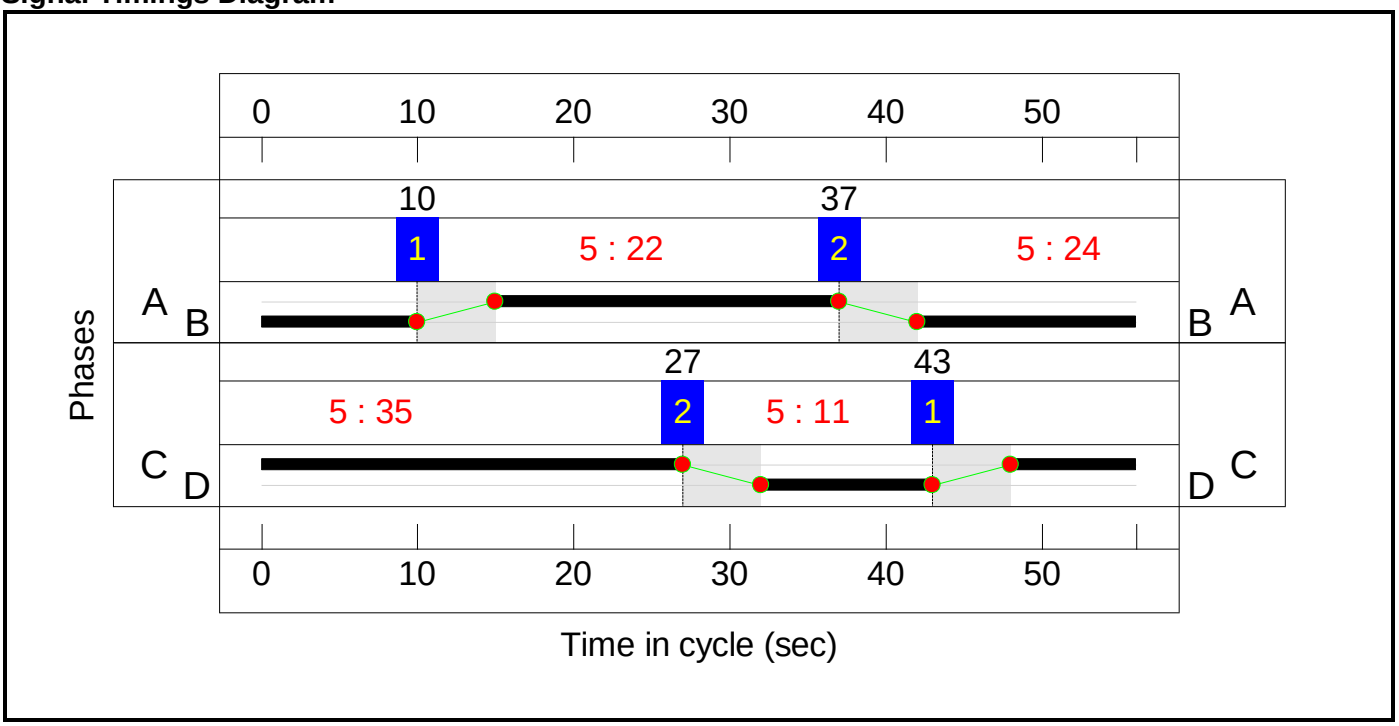
Stage Stream: 1

Stage	1	2
Duration	22	24
Change Point	10	37

Stage Stream: 2

Stage	1	2
Duration	35	11
Change Point	43	27

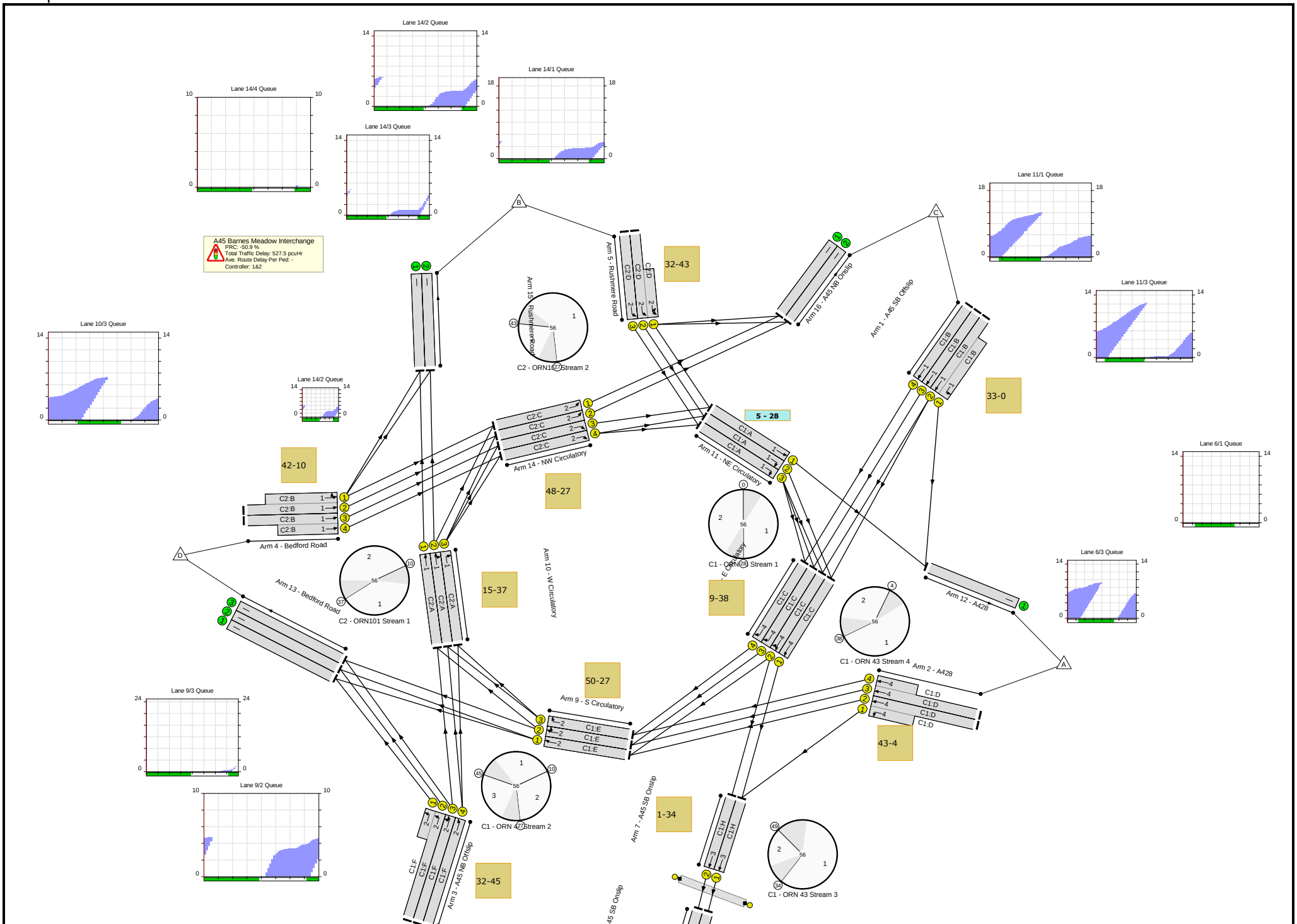
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**135.9%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**135.9%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	23	-	755	1800:1800	252+771	73.8 : 73.8%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	23	-	530	1800	771	68.7%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	23	-	174	1800	771	22.6%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	17	-	1085	1800:1800	523+382	120.0 : 120.0%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	17	-	773	1800:1800	72+556	122.9 : 122.9%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	13	-	499	1800:1800	367+369	67.8 : 67.8%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	13	-	225	1800	450	50.0%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	13	-	263	1800	450	58.4%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	24	-	499	1800:1800	709+747	34.3 : 34.3%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	24	-	1169	1800:1800	363+740	105.9 : 105.9%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	11	-	843	1800:1800	386+235	135.9 : 135.9%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	11	-	521	1800	386	135.1%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	29	-	877	1900	1018	70.6%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	29	-	1011	1900	1018	86.9%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	29	-	657	1900	1018	61.3%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	29	-	174	1900	1018	17.1%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	33	-	1335	1800	1093	100.7%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	33	-	789	1800	1093	61.5%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	1335	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	789	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	33	-	849	1900	1154	63.7%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	33	-	746	1900	1154	60.4%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	33	-	858	1900	1154	63.3%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	22	-	164	1900	780	18.9%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	22	-	595	1900	780	66.2%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	22	-	526	1900	780	61.1%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	23	-	865	1900	814	96.7%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	23	-	877	1900	814	88.3%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	23	-	952	1900	814	97.3%
12/1	A428	U	N/A	N/A	-		-	-	-	1434	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	675	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	673	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	807	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	35	-	586	1900	1221	41.5%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	35	-	495	1900	1221	36.7%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	35	-	659	1900	1221	52.0%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	35	-	784	1900	1221	60.6%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	209	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	220	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	643	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	551	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	10	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**78.7**	**448.7**	**0.0**	**527.5**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**78.7**	**448.7**	**0.0**	**527.5**	**-**	**-**	**-**	**-**
1/2+1/1	755	755	-	-	-	2.6	1.4	-	4.0	19.2	7.3	1.4	8.7
1/3	530	530	-	-	-	1.9	1.1	-	3.0	20.4	6.6	1.1	7.7
1/4	174	174	-	-	-	0.5	0.1	-	0.6	13.2	1.7	0.1	1.8
2/2+2/1	1085	904	-	-	-	11.1	93.3	-	104.5	346.6	16.8	93.3	110.1
2/3+2/4	773	629	-	-	-	8.6	74.7	-	83.3	387.8	14.8	74.7	89.5
3/2+3/1	499	499	-	-	-	2.5	1.0	-	3.6	25.8	3.3	1.0	4.4
3/3	225	225	-	-	-	1.1	0.5	-	1.6	26.0	2.9	0.5	3.4
3/4	263	263	-	-	-	1.3	0.7	-	2.0	28.0	3.6	0.7	4.3
4/2+4/1	499	499	-	-	-	1.4	0.3	-	1.6	11.8	2.6	0.3	2.8
4/3+4/4	1169	1104	-	-	-	6.5	40.0	-	46.5	143.1	17.5	40.0	57.5
5/2+5/1	843	621	-	-	-	8.9	113.1	-	122.0	520.9	14.0	113.1	127.1
5/3	521	386	-	-	-	6.6	69.5	-	76.1	525.7	10.9	69.5	80.4
6/1	719	719	-	-	-	0.0	1.2	-	1.2	6.0	0.0	1.2	1.2
6/2	885	885	-	-	-	1.1	3.2	-	4.3	17.4	12.7	3.2	15.9
6/3	624	624	-	-	-	3.6	0.8	-	4.4	25.1	9.2	0.8	9.9
6/4	174	174	-	-	-	0.8	0.1	-	0.9	18.9	2.2	0.1	2.3
7/1	1101	1093	-	-	-	1.6	18.6	-	20.3	66.4	17.3	18.6	35.9
7/2	672	672	-	-	-	0.7	0.8	-	1.5	8.1	4.7	0.8	5.5
8/1	1093	1093	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	672	672	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	735	735	-	-	-	0.1	0.9	-	1.0	4.9	3.7	0.9	4.6
9/2	696	696	-	-	-	1.5	0.8	-	2.3	11.7	4.7	0.8	5.5
9/3	730	730	-	-	-	0.1	0.9	-	0.9	4.6	2.2	0.9	3.0
10/1	147	147	-	-	-	0.5	0.1	-	0.6	15.1	1.8	0.1	1.9

Full Input Data And Results

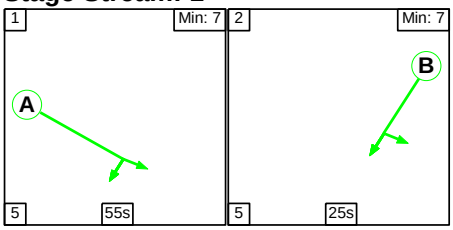
10/2	516	516	-	-	-	0.7	1.0	-	1.7	11.8	5.8	1.0	6.8
10/3	477	477	-	-	-	2.5	0.8	-	3.3	24.9	7.3	0.8	8.1
11/1	787	787	-	-	-	4.0	8.8	-	12.8	58.7	12.1	8.8	20.8
11/2	719	719	-	-	-	2.7	3.5	-	6.2	31.1	10.8	3.5	14.3
11/3	793	793	-	-	-	3.0	9.7	-	12.6	57.5	12.2	9.7	21.9
12/1	1356	1356	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	618	618	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	616	616	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	774	774	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	507	507	-	-	-	1.0	0.4	-	1.4	9.7	4.4	0.4	4.7
14/2	448	448	-	-	-	1.2	0.3	-	1.5	12.4	5.9	0.3	6.2
14/3	635	635	-	-	-	0.4	0.5	-	0.9	5.3	4.8	0.5	5.3
14/4	740	740	-	-	-	0.0	0.8	-	0.8	3.7	0.2	0.8	1.0
15/1	192	192	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	220	220	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	549	549	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	489	489	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	-8.2	Total Delay for Signalled Lanes (pcuHr):	39.35	Cycle Time (s):	56		
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	32.7	Total Delay for Signalled Lanes (pcuHr):	11.45	Cycle Time (s):	56		
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	-11.9	Total Delay for Signalled Lanes (pcuHr):	21.81	Cycle Time (s):	56		
C1 - ORN 43	Stream: 4 PRC for Signalled Lanes (%):	-36.6	Total Delay for Signalled Lanes (pcuHr):	198.46	Cycle Time (s):	56		
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-17.7	Total Delay for Signalled Lanes (pcuHr):	53.73	Cycle Time (s):	56		
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	-50.9	Total Delay for Signalled Lanes (pcuHr):	202.67	Cycle Time (s):	56		
	PRC Over All Lanes (%):	-50.9	Total Delay Over All Lanes(pcuHr):	527.46				

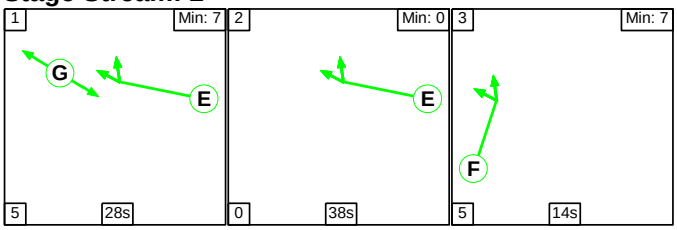
Full Input Data And Results
Scenario 8: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')
C1 - ORN 43

Stage Sequence Diagram

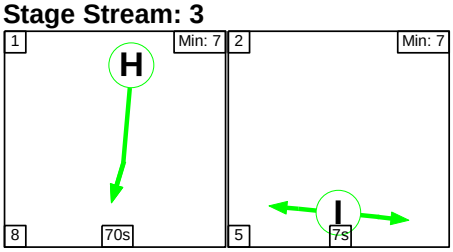
Stage Stream: 1



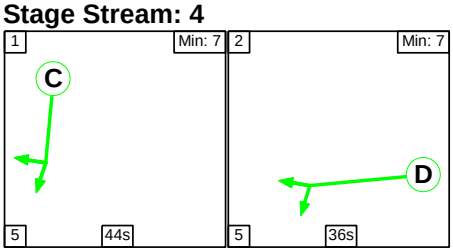
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	55	25
Change Point	0	60

Stage Stream: 2

Stage	1	2	3
Duration	28	38	14
Change Point	84	27	65

Stage Stream: 3

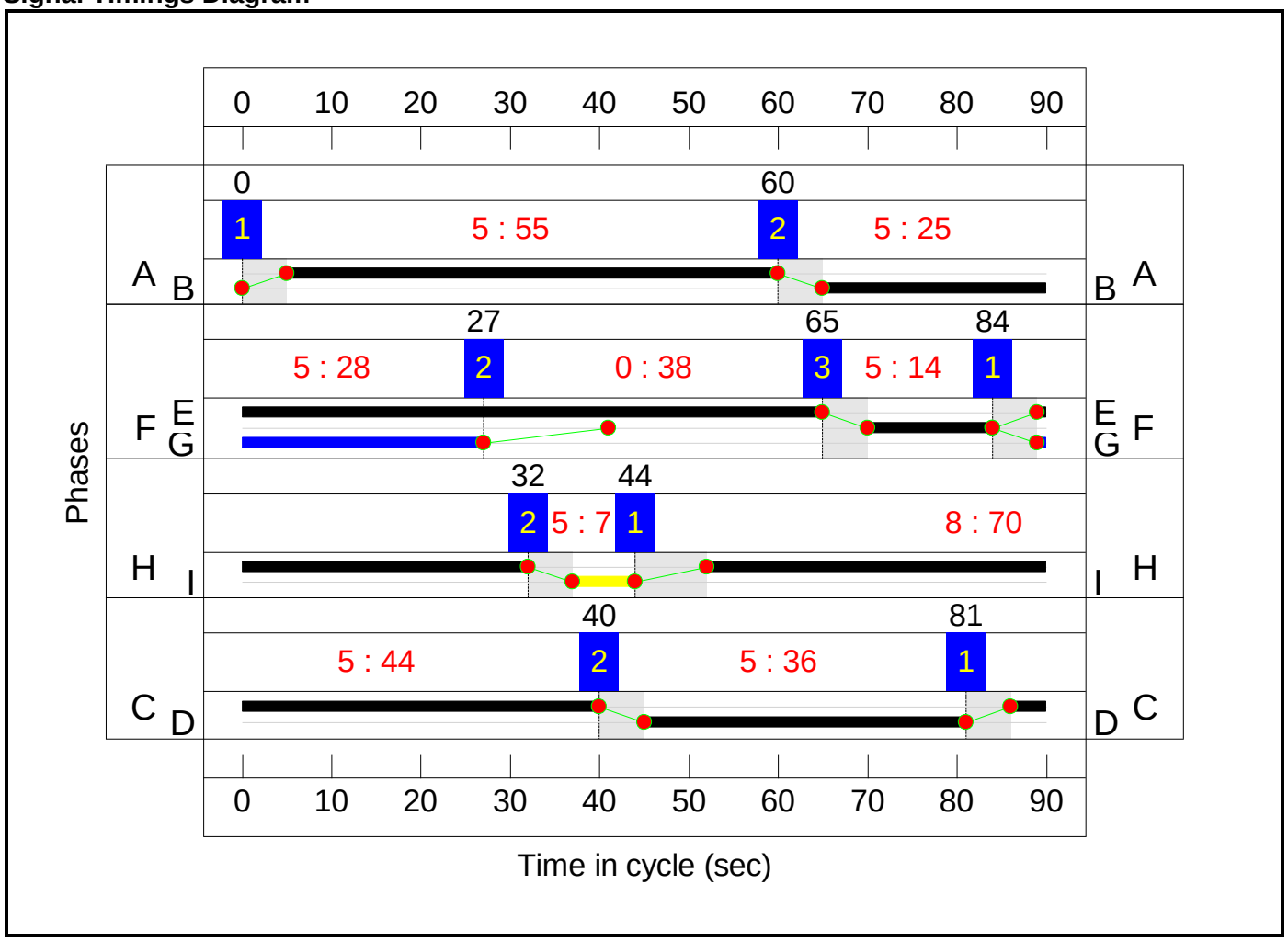
Stage	1	2
Duration	70	7
Change Point	44	32

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	44	36
Change Point	81	40

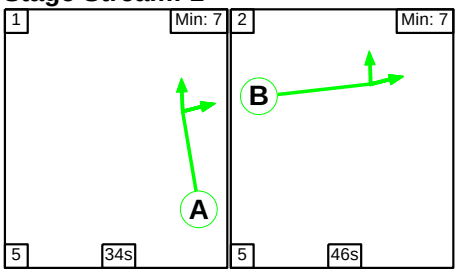
Signal Timings Diagram



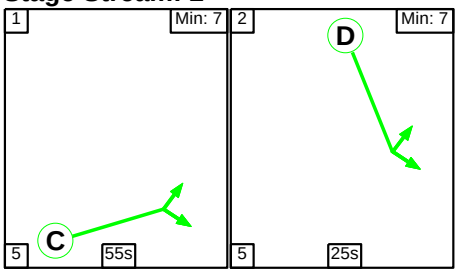
C2 - ORN101

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Full Input Data And Results

Stage Timings

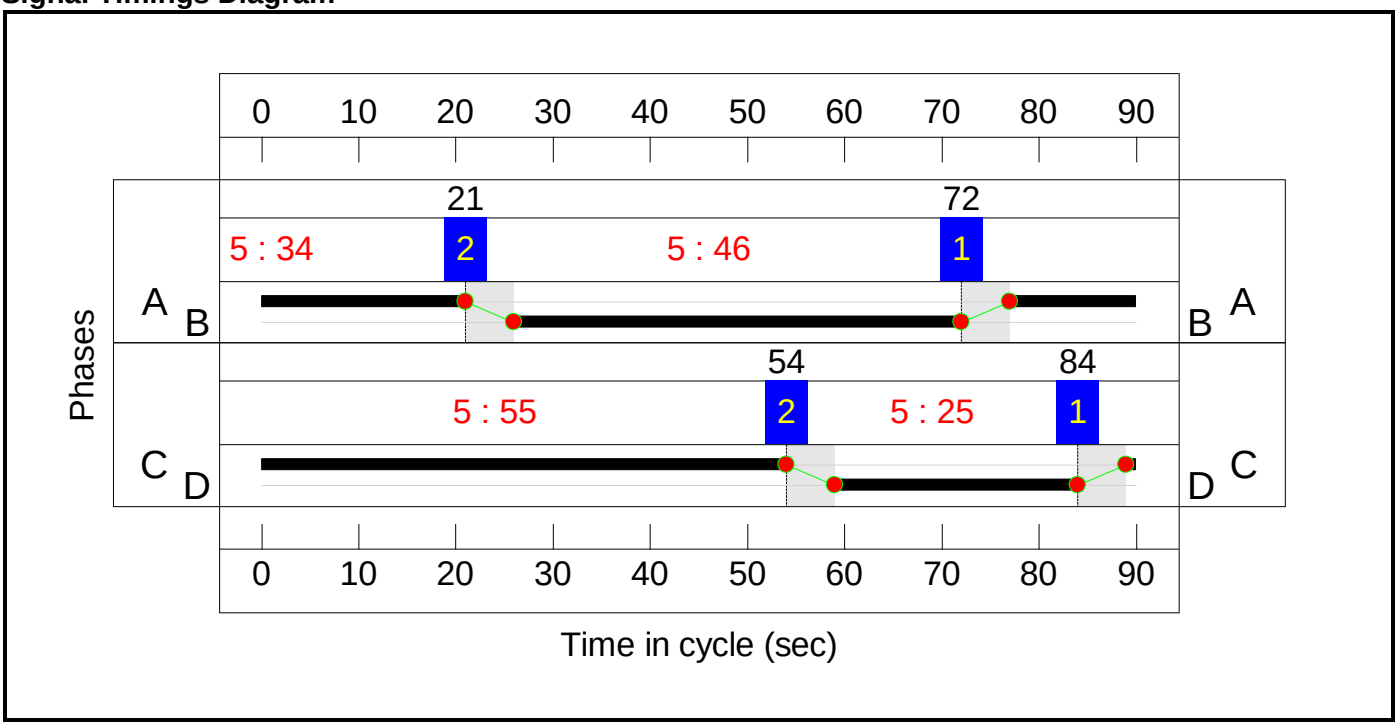
Stage Stream: 1

Stage	1	2
Duration	34	46
Change Point	72	21

Stage Stream: 2

Stage	1	2
Duration	55	25
Change Point	84	54

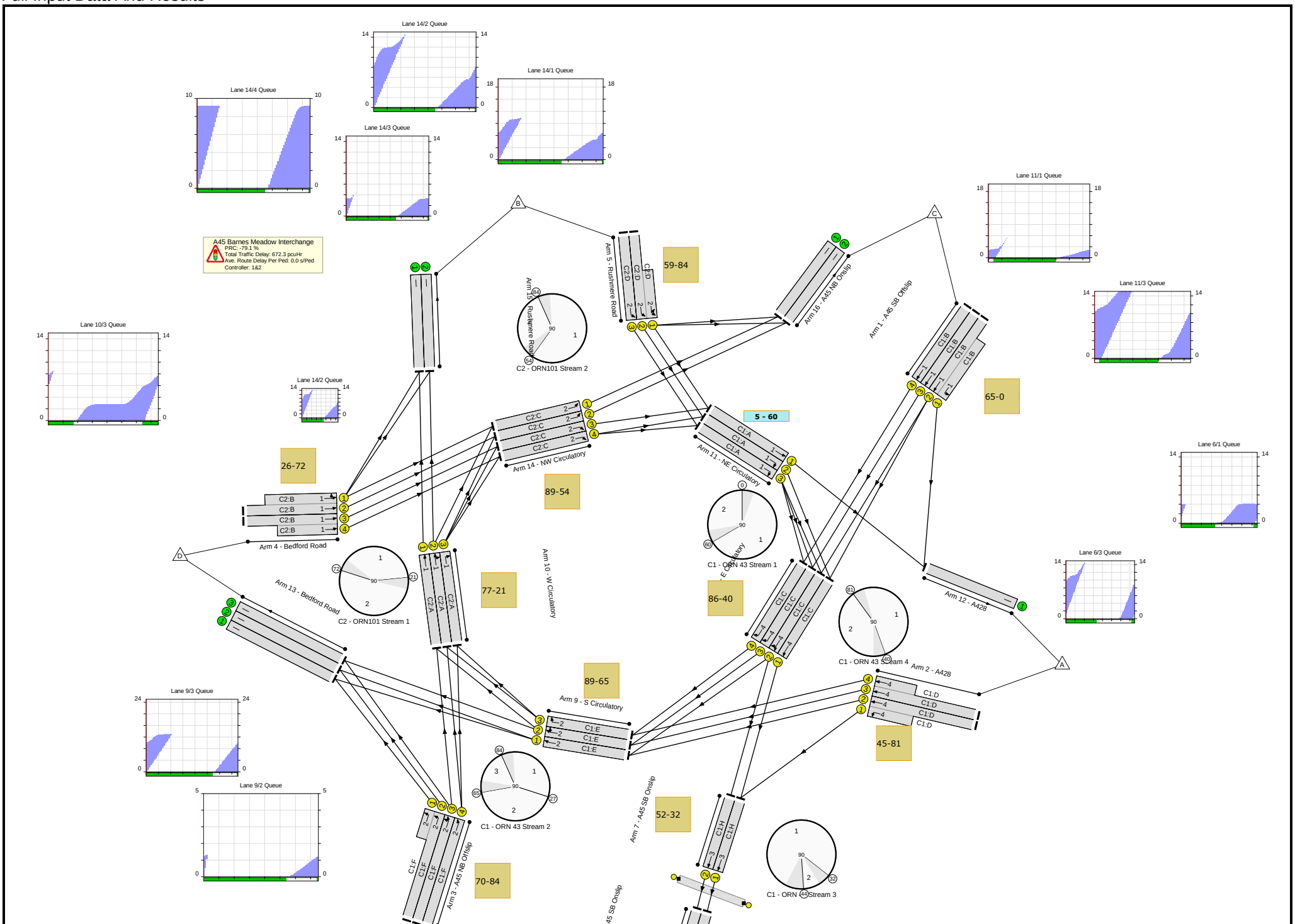
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**161.2%**
A45 Barnes Meadow Interchange	-	-	**N/A**	-	-		-	-	-	-	-	-	**161.2%**
1/2+1/1	A45 SB Offslip Ahead Left	U	1:1	N/A	C1:B		1	25	-	612	1800:1800	169+520	88.8 : 88.8%
1/3	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	25	-	445	1800	520	85.6%
1/4	A45 SB Offslip Ahead	U	1:1	N/A	C1:B		1	25	-	87	1800	520	16.7%
2/2+2/1	A428 Left Ahead	U	1:4	N/A	C1:D		1	36	-	1110	1800:1800	259+604	128.6 : 128.6%
2/3+2/4	A428 Ahead	U	1:4	N/A	C1:D		1	36	-	1242	1800:1800	87+684	161.2 : 161.2%
3/2+3/1	A45 NB Offslip Left	U	1:2	N/A	C1:F		1	14	-	450	1800:1800	239+239	94.1 : 94.1%
3/3	A45 NB Offslip Ahead Left	U	1:2	N/A	C1:F		1	14	-	282	1800	300	94.0%
3/4	A45 NB Offslip Ahead	U	1:2	N/A	C1:F		1	14	-	231	1800	300	77.0%
4/2+4/1	Bedford Road Ahead Left	U	2:1	N/A	C2:B		1	46	-	1310	1800:1800	616+701	99.5 : 99.5%
4/3+4/4	Bedford Road Ahead	U	2:1	N/A	C2:B		1	46	-	1221	1800:1800	282+797	113.2 : 113.2%
5/2+5/1	Rushmere Road Left U-Turn	U	2:2	N/A	C2:D		1	25	-	852	1800:1800	394+401	107.2 : 107.2%
5/3	Rushmere Road Left	U	2:2	N/A	C2:D		1	25	-	420	1800	520	80.8%
6/1	E Circulatory Ahead	U	1:4	N/A	C1:C		1	44	-	827	1900	950	79.1%
6/2	E Circulatory Ahead Right	U	1:4	N/A	C1:C		1	44	-	816	1900	950	79.8%
6/3	E Circulatory Right	U	1:4	N/A	C1:C		1	44	-	696	1900	950	73.3%

Full Input Data And Results

6/4	E Circulatory Right	U	1:4	N/A	C1:C		1	44	-	87	1900	950	9.2%
7/1	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	70	-	1604	1800	1420	95.5%
7/2	A45 SB Onslip Ahead	U	1:3	N/A	C1:H		1	70	-	644	1800	1420	41.3%
8/1	A45 SB Onslip	U	N/A	N/A	-		-	-	-	1604	Inf	Inf	0.0%
8/2	A45 SB Onslip	U	N/A	N/A	-		-	-	-	644	Inf	Inf	0.0%
9/1	S Circulatory Ahead	U	1:2	N/A	C1:E		1	66	-	505	1900	1414	30.5%
9/2	S Circulatory Right Ahead	U	1:2	N/A	C1:E		1	66	-	836	1900	1414	55.3%
9/3	S Circulatory Right	U	1:2	N/A	C1:E		1	66	-	1189	1900	1414	54.5%
10/1	W Circulatory Ahead	U	2:1	N/A	C2:A		1	34	-	387	1900	739	45.2%
10/2	W Circulatory Right Ahead	U	2:1	N/A	C2:A		1	34	-	704	1900	739	70.3%
10/3	W Circulatory Right	U	2:1	N/A	C2:A		1	34	-	716	1900	739	65.3%
11/1	NE Circulatory Ahead	U	1:1	N/A	C1:A		1	55	-	509	1900	1182	39.2%
11/2	NE Circulatory Right	U	1:1	N/A	C1:A		1	55	-	827	1900	1182	63.6%
11/3	NE Circulatory Right	U	1:1	N/A	C1:A		1	55	-	917	1900	1182	72.7%
12/1	A428	U	N/A	N/A	-		-	-	-	971	Inf	Inf	0.0%
13/1	Bedford Road	U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%
13/2	Bedford Road	U	N/A	N/A	-		-	-	-	477	Inf	Inf	0.0%
13/3	Bedford Road	U	N/A	N/A	-		-	-	-	731	Inf	Inf	0.0%
14/1	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	55	-	1015	1900	1182	70.2%
14/2	NW Circulatory Ahead	U	2:2	N/A	C2:C		1	55	-	1222	1900	1182	83.8%
14/3	NW Circulatory Right	U	2:2	N/A	C2:C		1	55	-	426	1900	1182	32.7%

Full Input Data And Results

14/4	NW Circulatory Right	U	2:2	N/A	C2:C		1	55	-	902	1900	1182	67.4%
15/1	Rushmere Road	U	N/A	N/A	-		-	-	-	471	Inf	Inf	0.0%
15/2	Rushmere Road	U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
16/1	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1189	Inf	Inf	0.0%
16/2	A45 NB Onslip	U	N/A	N/A	-		-	-	-	1395	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	1:3	-	C1:I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**136.9**	**535.5**	**0.0**	**672.3**	**-**	**-**	**-**	**-**
A45 Barnes Meadow Interchange	**-**	**-**	**0**	**0**	**0**	**136.9**	**535.5**	**0.0**	**672.3**	**-**	**-**	**-**	**-**
1/2+1/1	612	612	-	-	-	5.0	3.6	-	8.6	50.6	11.0	3.6	14.7
1/3	445	445	-	-	-	3.7	2.8	-	6.5	52.6	10.5	2.8	13.3
1/4	87	87	-	-	-	0.6	0.1	-	0.7	28.1	1.6	0.1	1.7
2/2+2/1	1110	863	-	-	-	18.0	125.6	-	143.6	465.8	35.5	125.6	161.1
2/3+2/4	1242	770	-	-	-	31.7	237.1	-	268.8	779.0	51.8	237.1	288.9
3/2+3/1	450	450	-	-	-	4.5	5.7	-	10.2	81.6	6.7	5.7	12.4
3/3	282	282	-	-	-	2.9	5.0	-	7.9	101.2	6.9	5.0	11.9
3/4	231	231	-	-	-	2.3	1.6	-	3.9	60.8	5.5	1.6	7.1
4/2+4/1	1310	1310	-	-	-	6.3	16.5	-	22.8	62.7	23.1	16.5	39.7
4/3+4/4	1221	1078	-	-	-	11.7	75.3	-	87.0	256.6	33.7	75.3	109.1
5/2+5/1	852	795	-	-	-	8.8	34.7	-	43.5	184.0	16.6	34.7	51.3
5/3	420	420	-	-	-	3.5	2.0	-	5.5	47.0	9.7	2.0	11.7
6/1	751	751	-	-	-	1.5	1.9	-	3.3	15.9	4.0	1.9	5.9
6/2	758	758	-	-	-	3.2	1.9	-	5.1	24.3	11.2	1.9	13.2
6/3	696	696	-	-	-	1.9	1.4	-	3.3	17.1	14.4	1.4	15.8
6/4	87	87	-	-	-	0.3	0.1	-	0.4	15.1	2.0	0.1	2.0
7/1	1356	1356	-	-	-	3.3	8.4	-	11.7	31.0	24.4	8.4	32.7
7/2	586	586	-	-	-	1.0	0.4	-	1.3	8.1	5.1	0.4	5.4
8/1	1356	1356	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	586	586	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	431	431	-	-	-	0.5	0.2	-	0.8	6.4	3.5	0.2	3.7
9/2	783	783	-	-	-	0.2	0.6	-	0.8	3.7	1.3	0.6	1.9
9/3	771	771	-	-	-	2.9	0.6	-	3.5	16.2	12.9	0.6	13.5
10/1	334	334	-	-	-	0.2	0.4	-	0.6	6.6	1.0	0.4	1.4

Full Input Data And Results

10/2	519	519	-	-	-	3.2	1.2	-	4.3	30.1	10.2	1.2	11.4
10/3	483	483	-	-	-	2.3	0.9	-	3.2	24.1	8.5	0.9	9.4
11/1	464	464	-	-	-	0.6	0.3	-	0.9	6.9	5.3	0.3	5.6
11/2	751	751	-	-	-	3.6	0.9	-	4.5	21.4	14.8	0.9	15.7
11/3	859	859	-	-	-	4.3	1.3	-	5.6	23.4	16.7	1.3	18.0
12/1	926	926	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/1	441	441	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	440	440	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/3	731	731	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	830	830	-	-	-	2.2	1.2	-	3.3	14.5	10.6	1.2	11.7
14/2	991	991	-	-	-	2.9	2.5	-	5.4	19.7	14.4	2.5	16.9
14/3	386	386	-	-	-	0.9	0.2	-	1.1	10.6	3.8	0.2	4.1
14/4	797	797	-	-	-	3.1	1.0	-	4.1	18.6	9.2	1.0	10.2
15/1	418	418	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/2	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/1	992	992	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1153	1153	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

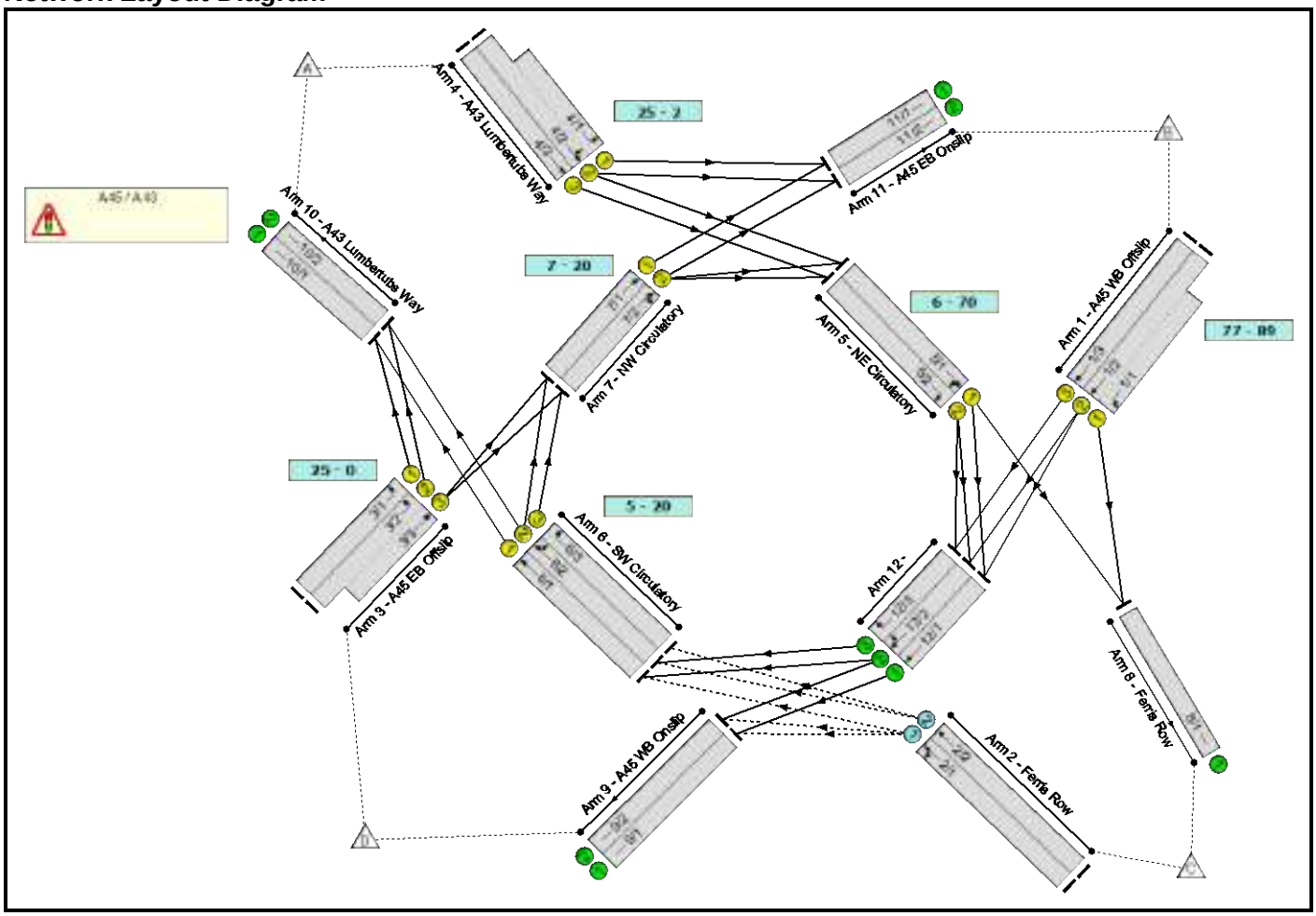
C1 - ORN 43	Stream: 1 PRC for Signalled Lanes (%):	1.3	Total Delay for Signalled Lanes (pcuHr):	26.71	Cycle Time (s): 90
C1 - ORN 43	Stream: 2 PRC for Signalled Lanes (%):	-4.6	Total Delay for Signalled Lanes (pcuHr):	27.04	Cycle Time (s): 90
C1 - ORN 43	Stream: 3 PRC for Signalled Lanes (%):	-6.1	Total Delay for Signalled Lanes (pcuHr):	12.99	Cycle Time (s): 90
C1 - ORN 43	Stream: 4 PRC for Signalled Lanes (%):	-79.1	Total Delay for Signalled Lanes (pcuHr):	424.51	Cycle Time (s): 90
C2 - ORN101	Stream: 1 PRC for Signalled Lanes (%):	-25.8	Total Delay for Signalled Lanes (pcuHr):	118.04	Cycle Time (s): 90
C2 - ORN101	Stream: 2 PRC for Signalled Lanes (%):	-19.1	Total Delay for Signalled Lanes (pcuHr):	63.04	Cycle Time (s): 90
	PRC Over All Lanes (%):	-79.1	Total Delay Over All Lanes(pcuHr):	672.34	

Full Input Data And Results

User and Project Details

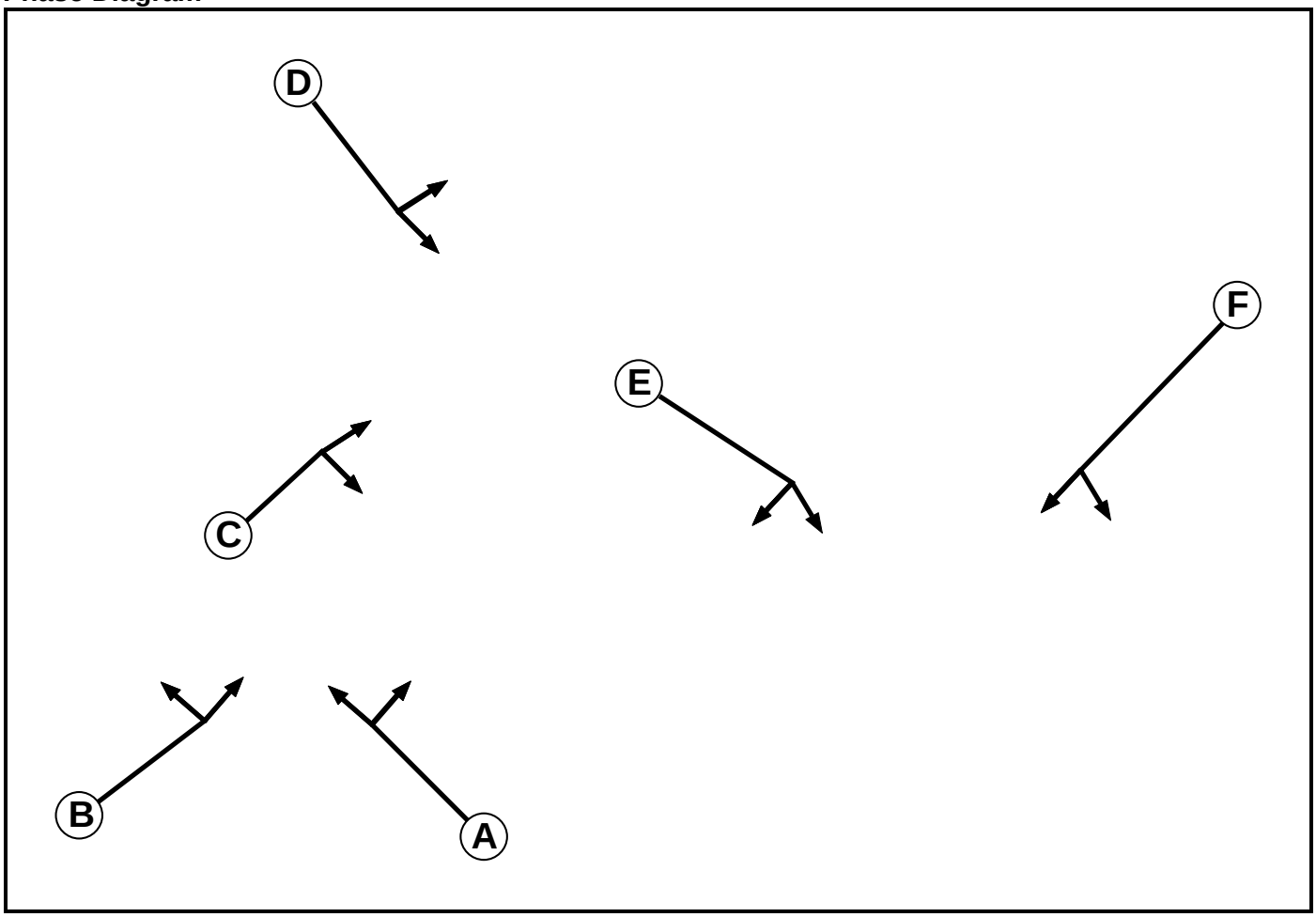
Project:	Rail Central
Title:	Junction 11
Location:	A45, Nene Valley Way (south); A43, Lumbertubs Way/ A45, Nene Valley Way (north)/ Ferris Row
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

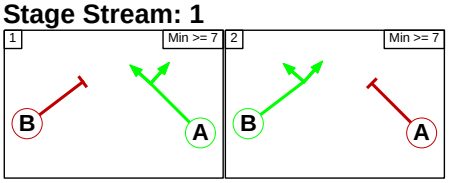
Terminating Phase	Starting Phase						
		A	B	C	D	E	F
	A		5	-	-	-	-
	B	5		-	-	-	-
	C	-	-		5	-	-
	D	-	-	5		-	-
	E	-	-	-	-		7
	F	-	-	-	-	7	

Phases in Stage

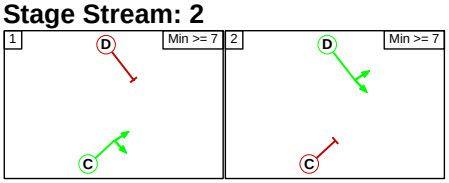
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F

Stage Diagram

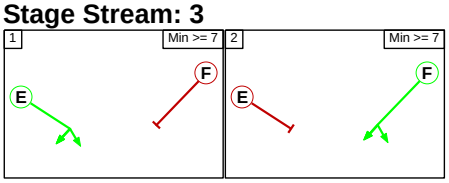
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 2

	To Stage		
From Stage		1	2
	1		5
	2	5	

Stage Stream: 3

	To Stage		
From Stage		1	2
	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A45 / A43

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (Ferris Row)	6/1 (Ahead)	1100	0	12/1	0.33	All	-	-	-	-	-
				12/2	0.33	All					
	9/1 (Left)	1100	0	12/1	0.33	All					
	9/2 (Left)	1100	0	12/1	0.33	All					
				12/2	0.33	To 9/2 (Ahead)					
2/2 (Ferris Row)	6/2 (Ahead)	1300	0	12/1	0.33	All	-	-	-	-	-
				12/2	0.33	All					
				12/3	0.33	All					
	6/3 (Ahead)	1300	0	12/1	0.33	All					
				12/2	0.33	All					
				12/3	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A45 / A43

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A45 WB Offslip)	U	F	2	3	11.3	Geom	-	3.75	0.00	Y	Arm 8 Left	90.00
1/2 (A45 WB Offslip)	U	F	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 12 Ahead	140.00
1/3 (A45 WB Offslip)	U	F	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 12 Ahead	190.00
2/1 (Ferris Row)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
											Arm 9 Left	110.00
2/2 (Ferris Row)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	50.00
3/1 (A45 EB Offslip)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 10 Left	100.00
3/2 (A45 EB Offslip)	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 10 Left	120.00
3/3 (A45 EB Offslip)	U	B	2	3	12.2	Geom	-	3.50	0.00	Y	Arm 7 Ahead	200.00
4/1 (A43 Lumbertubs Way)	U	D	2	3	9.0	Geom	-	4.00	0.00	Y	Arm 11 Left	75.00
4/2 (A43 Lumbertubs Way)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Ahead	110.00
											Arm 11 Left	85.00
4/3 (A43 Lumbertubs Way)	U	D	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 5 Ahead	120.00
5/1 (NE Circulatory)	U	E	2	3	19.0	User	2100	-	-	-	-	-
5/2 (NE Circulatory)	U	E	2	3	20.5	User	2100	-	-	-	-	-
6/1 (SW Circulatory)	U	A	2	3	20.7	User	2100	-	-	-	-	-
6/2 (SW Circulatory)	U	A	2	3	24.3	User	2100	-	-	-	-	-
6/3 (SW Circulatory)	U	A	2	3	24.3	User	2100	-	-	-	-	-

7/1 (NW Circulatory)	U	C	2	3	5.9	User	2100	-	-	-	-	-
7/2 (NW Circulatory)	U	C	2	3	6.4	User	2100	-	-	-	-	-
8/1 (Ferris Row)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (A45 WB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
9/2 (A45 WB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/2 (A43 Lumbertubs Way)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1 (A45 EB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2 (A45 EB Onslip)	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1	U		2	3	6.1	Inf	-	-	-	-	-	-
12/2	U		2	3	6.1	Inf	-	-	-	-	-	-
12/3	U		2	3	6.1	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DS AM'	08:00	09:00	01:00	
2: '2021 DS PM'	17:00	18:00	01:00	
3: '2031 DS AM'	08:00	09:00	01:00	
4: '2031 DS PM'	17:00	18:00	01:00	
5: '2021 DS5 AM'	08:00	09:00	01:00	
6: '2021 DS5 PM'	17:00	18:00	01:00	
7: '2031 DS5 AM'	08:00	09:00	01:00	
8: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 5: '2021 DS5 AM' (FG5: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	55	332	342	2157	2886
	B	247	0	202	0	449
	C	34	91	0	189	314
	D	2078	0	236	0	2314
	Tot.	2414	423	780	2346	5963

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS5 AM
Junction: A45 / A43	
1/1 (short)	202
1/2 (with short)	293(In) 91(Out)
1/3	156
2/1	204
2/2	110
3/1	1084
3/2 (with short)	1230(In) 994(Out)
3/3 (short)	236
4/1 (short)	221
4/2 (with short)	1472(In) 1251(Out)
4/3	1414
5/1	1376
5/2	1414
6/1	159
6/2	189
6/3	79
7/1	12
7/2	315
8/1	780
9/1	892
9/2	1454
10/1	1243
10/2	1171
11/1	233
11/2	190
12/1	798
12/2	1503
12/3	158

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	100.0 %	1944	1944
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead Arm 9 Left	Inf 110.00	7.4 % 92.6 %	1940	1940
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead Arm 11 Left	110.00 85.00	91.1 % 8.9 %	1938	1938
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 6: '2021 DS5 PM' (FG6: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	51	348	323	2083	2805
	B	258	0	216	0	474
	C	0	309	0	235	544
	D	2892	0	92	0	2984
	Tot.	3201	657	631	2318	6807

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS5 PM
Junction: A45 / A43	
1/1 (short)	216
1/2 (with short)	331(In) 115(Out)
1/3	143
2/1	235
2/2	309
3/1	1448
3/2 (with short)	1536(In) 1444(Out)
3/3 (short)	92
4/1 (short)	272
4/2 (with short)	1437(In) 1165(Out)
4/3	1368
5/1	1181
5/2	1368
6/1	166
6/2	313
6/3	139
7/1	170
7/2	231
8/1	631
9/1	883
9/2	1435
10/1	1614
10/2	1587
11/1	442
11/2	215
12/1	766
12/2	1483
12/3	143

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	100.0 %	1944	1944
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1939	1939
				Arm 9 Left	110.00	100.0 %		
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead	110.00	93.5 %	1938	1938
				Arm 11 Left	85.00	6.5 %		
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 7: '2031 DS5 AM' (FG7: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	122	390	449	2119	3080
	B	103	0	234	0	337
	C	123	109	0	189	421
	D	1587	0	247	0	1834
	Tot.	1935	499	930	2308	5672

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS5 AM
Junction: A45 / A43	
1/1 (short)	234
1/2 (with short)	234(In) 0(Out)
1/3	103
2/1	265
2/2	156
3/1	813
3/2 (with short)	1021(In) 774(Out)
3/3 (short)	247
4/1 (short)	302
4/2 (with short)	1577(In) 1275(Out)
4/3	1503
5/1	1434
5/2	1503
6/1	198
6/2	247
6/3	12
7/1	97
7/2	259
8/1	930
9/1	832
9/2	1476
10/1	1011
10/2	924
11/1	399
11/2	100
12/1	738
12/2	1503
12/3	103

Full Input Data And Results

Lane Saturation Flows

Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	0.0 %	1965	1965
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	28.7 %	1946	1946
				Arm 9 Left	110.00	71.3 %		
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead	110.00	93.1 %	1938	1938
				Arm 11 Left	85.00	6.9 %		
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

Scenario 8: '2031 DS5 PM' (FG8: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	43	158	339	1881	2421
	B	364	0	186	0	550
	C	0	313	0	340	653
	D	2197	0	73	29	2299
	Tot.	2604	471	598	2250	5923

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS5 PM
Junction: A45 / A43	
1/1 (short)	186
1/2 (with short)	406(In) 220(Out)
1/3	144
2/1	340
2/2	313
3/1	1092
3/2 (with short)	1207(In) 1105(Out)
3/3 (short)	102
4/1 (short)	145
4/2 (with short)	1223(In) 1078(Out)
4/3	1198
5/1	1152
5/2	1213
6/1	263
6/2	304
6/3	153
7/1	160
7/2	255
8/1	598
9/1	910
9/2	1340
10/1	1355
10/2	1249
11/1	305
11/2	166
12/1	740
12/2	1433
12/3	144

Full Input Data And Results

Lane Saturation Flows

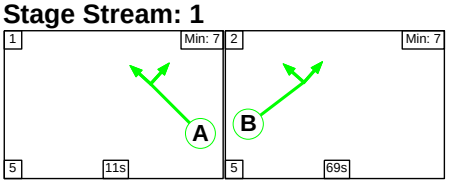
Junction: A45 / A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A45 WB Offslip)	3.75	0.00	Y	Arm 8 Left	90.00	100.0 %	1957	1957
1/2 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	140.00	100.0 %	1944	1944
1/3 (A45 WB Offslip)	3.50	0.00	Y	Arm 12 Ahead	190.00	100.0 %	1950	1950
2/1 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	Inf	0.0 %	1939	1939
				Arm 9 Left	110.00	100.0 %		
2/2 (Ferris Row)	3.50	0.00	Y	Arm 6 Ahead	50.00	100.0 %	1908	1908
3/1 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	100.00	100.0 %	1936	1936
3/2 (A45 EB Offslip)	3.50	0.00	Y	Arm 10 Left	120.00	100.0 %	1941	1941
3/3 (A45 EB Offslip)	3.50	0.00	Y	Arm 7 Ahead	200.00	100.0 %	1950	1950
4/1 (A43 Lumbertubs Way)	4.00	0.00	Y	Arm 11 Left	75.00	100.0 %	1975	1975
4/2 (A43 Lumbertubs Way)	3.50	0.00	Y	Arm 5 Ahead	110.00	98.8 %	1938	1938
				Arm 11 Left	85.00	1.2 %		
4/3 (A43 Lumbertubs Way)	3.75	0.00	Y	Arm 5 Ahead	120.00	100.0 %	1965	1965
5/1 (NE Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
5/2 (NE Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/1 (SW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
6/2 (SW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
6/3 (SW Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2100	2100
7/1 (NW Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2100	2100
7/2 (NW Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2100	2100
8/1 (Ferris Row Lane 1)	Infinite Saturation Flow						Inf	Inf
9/1 (A45 WB Onslip Lane 1)	Infinite Saturation Flow						Inf	Inf
9/2 (A45 WB Onslip Lane 2)	Infinite Saturation Flow						Inf	Inf
10/1 (A43 Lumbertubs Way Lane 1)	Infinite Saturation Flow						Inf	Inf
10/2 (A43 Lumbertubs Way Lane 2)	Infinite Saturation Flow						Inf	Inf

11/1 (A45 EB Onslip Lane 1)	Infinite Saturation Flow	Inf	Inf
11/2 (A45 EB Onslip Lane 2)	Infinite Saturation Flow	Inf	Inf
12/1	Infinite Saturation Flow	Inf	Inf
12/2	Infinite Saturation Flow	Inf	Inf
12/3	Infinite Saturation Flow	Inf	Inf

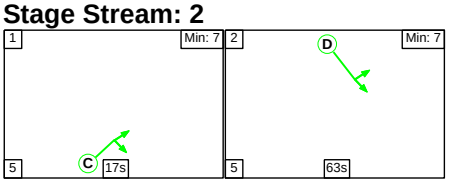
Scenario 5: '2021 DS5 AM' (FG5: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

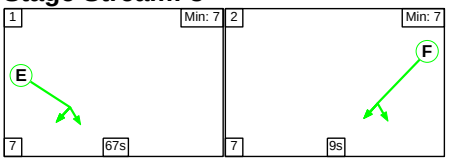
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	11	69
Change Point	0	16

Stage Stream: 2

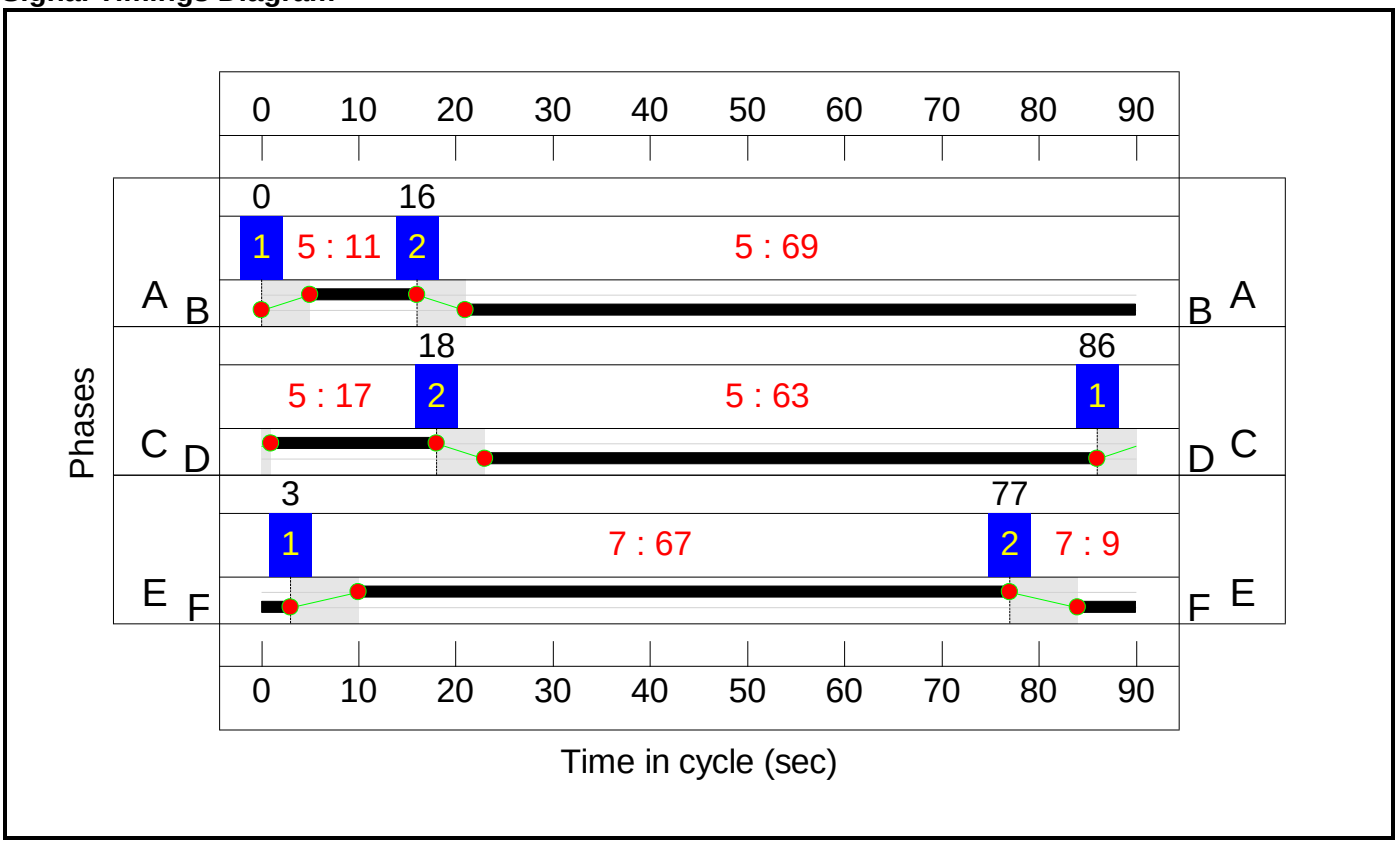
Stage	1	2
Duration	17	63
Change Point	86	18

Stage Stream: 3

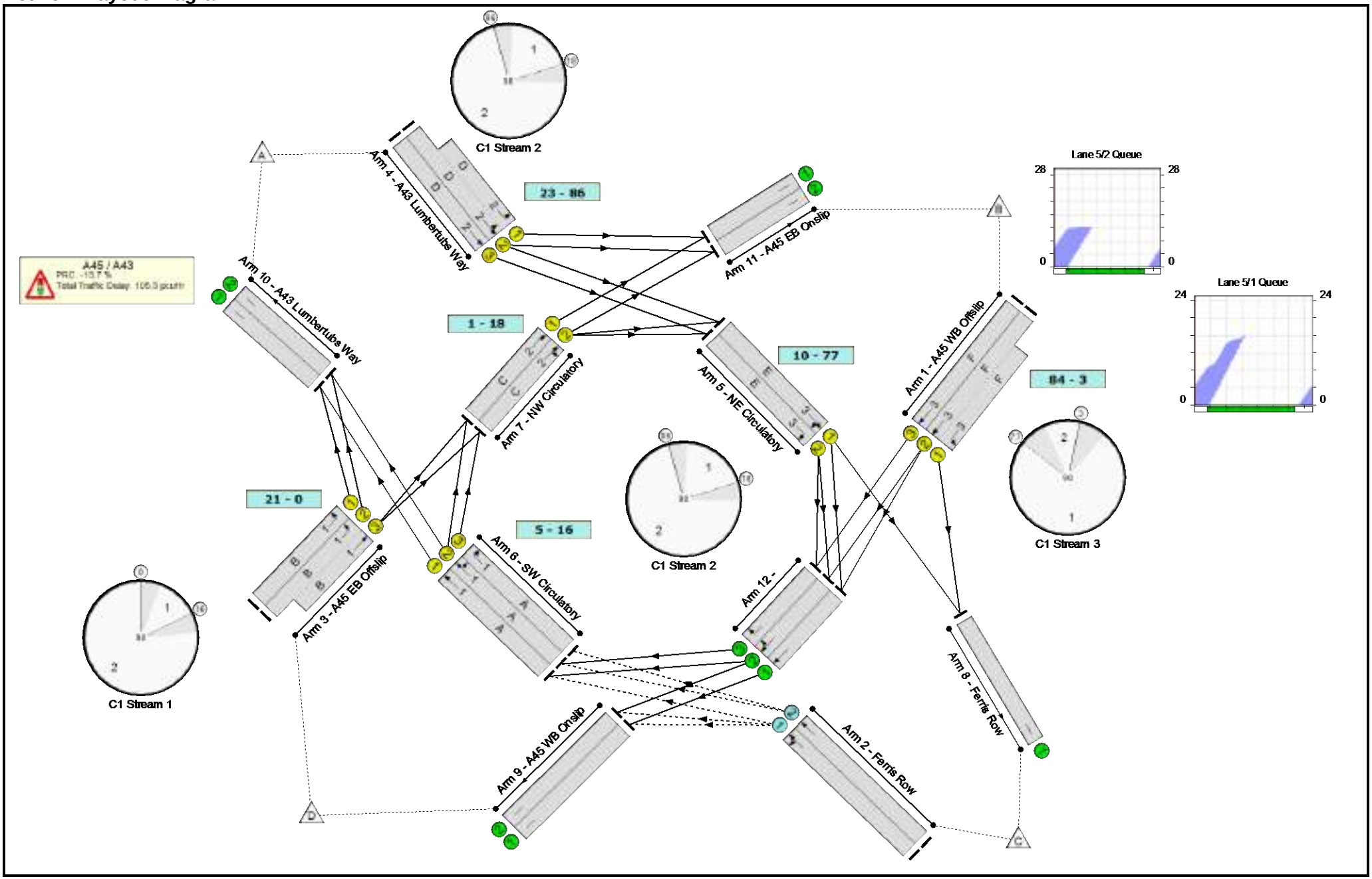
Stage	1	2
Duration	67	9
Change Point	3	77

Full Input Data And Results

Signal Timings Diagram



Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.3%**
A45 / A43	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**102.3%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	9	-	293	1944:1957	98+217	92.9 : 92.9%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	9	-	156	1950	217	72.0%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	204	1940	460	44.4%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	110	1908	500	22.0%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	69	-	1084	1936	1506	72.0%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	69	-	1230	1941:1950	1322+314	75.2 : 75.2%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	63	-	1472	1938:1975	1223+216	102.3 : 102.3%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	63	-	1414	1965	1397	101.2%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	67	-	1376	2100	1587	85.1%
5/2	NE Circulatory Right	U	3	N/A	E		1	67	-	1414	2100	1587	88.1%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	11	-	159	2100	280	56.6%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	11	-	189	2100	280	67.5%
6/3	SW Circulatory Right	U	1	N/A	A		1	11	-	79	2100	280	28.2%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	17	-	12	2100	420	2.9%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	17	-	315	2100	420	75.0%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	780	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	892	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1454	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1243	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1171	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	190	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	798	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1503	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	158	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**314**	**0**	**0**	**33.7**	**71.6**	**0.0**	**105.3**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**314**	**0**	**0**	**33.7**	**71.6**	**0.0**	**105.3**	**-**	**-**	**-**	**-**
1/2+1/1	293	293	-	-	-	3.2	4.6	-	7.8	95.8	5.0	4.6	9.6
1/3	156	156	-	-	-	1.7	1.2	-	2.9	67.2	3.7	1.2	5.0
2/1	204	204	204	0	0	0.1	0.4	-	0.5	8.6	1.8	0.4	2.2
2/2	110	110	110	0	0	0.0	0.1	-	0.1	4.6	0.0	0.1	0.1
3/1	1084	1084	-	-	-	1.5	1.3	-	2.8	9.3	13.5	1.3	14.8
3/2+3/3	1230	1230	-	-	-	1.4	1.5	-	2.9	8.6	11.0	1.5	12.5
4/2+4/1	1472	1439	-	-	-	6.0	29.3	-	35.3	86.2	37.7	29.3	67.0
4/3	1414	1397	-	-	-	5.7	23.4	-	29.1	74.2	35.8	23.4	59.2
5/1	1350	1350	-	-	-	2.7	2.8	-	5.5	14.6	16.5	2.8	19.3
5/2	1397	1397	-	-	-	2.9	3.6	-	6.4	16.5	12.3	3.6	15.8
6/1	158	158	-	-	-	1.9	0.6	-	2.6	58.6	3.2	0.6	3.9
6/2	189	189	-	-	-	3.0	1.0	-	4.0	76.6	4.0	1.0	5.0
6/3	79	79	-	-	-	0.8	0.2	-	1.0	44.1	1.8	0.2	2.0
7/1	12	12	-	-	-	0.1	0.0	-	0.1	32.7	0.1	0.0	0.1
7/2	315	315	-	-	-	2.8	1.5	-	4.3	48.8	6.1	1.5	7.6
8/1	772	772	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	874	874	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1438	1438	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1242	1242	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1171	1171	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	228	228	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	187	187	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	780	780	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1486	1486	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

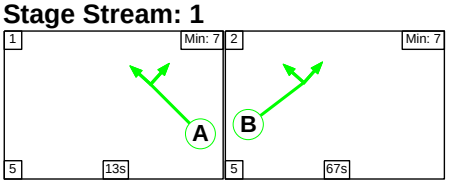
12/3	158	158	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	Stream: 1	PRC for Signalled Lanes (%):	19.7	Total Delay for Signalled Lanes (pcuHr):	13.29	Cycle Time (s):	90	
C1	Stream: 2	PRC for Signalled Lanes (%):	-13.7	Total Delay for Signalled Lanes (pcuHr):	68.75	Cycle Time (s):	90	
C1	Stream: 3	PRC for Signalled Lanes (%):	-3.2	Total Delay for Signalled Lanes (pcuHr):	22.59	Cycle Time (s):	90	
		PRC Over All Lanes (%):	-13.7	Total Delay Over All Lanes(pcuHr):	105.26			

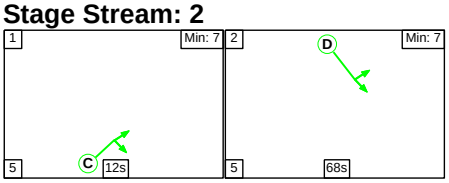
Full Input Data And Results
Scenario 6: '2021 DS5 PM' (FG6: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

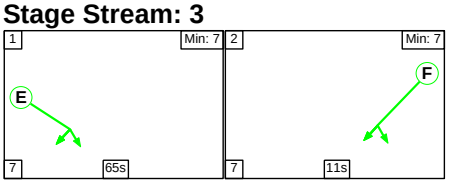
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	13	67
Change Point	0	18

Stage Stream: 2

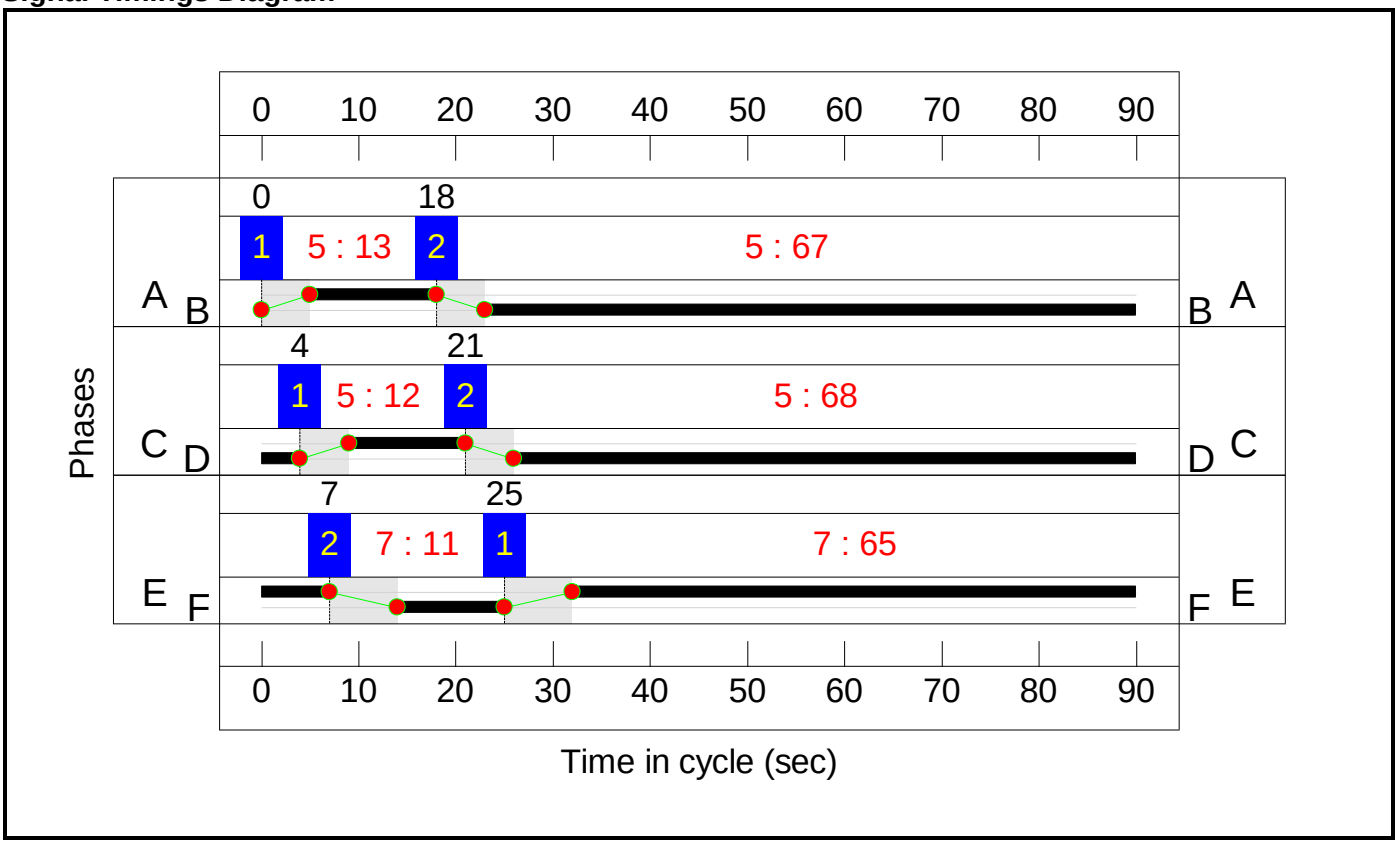
Stage	1	2
Duration	12	68
Change Point	4	21

Stage Stream: 3

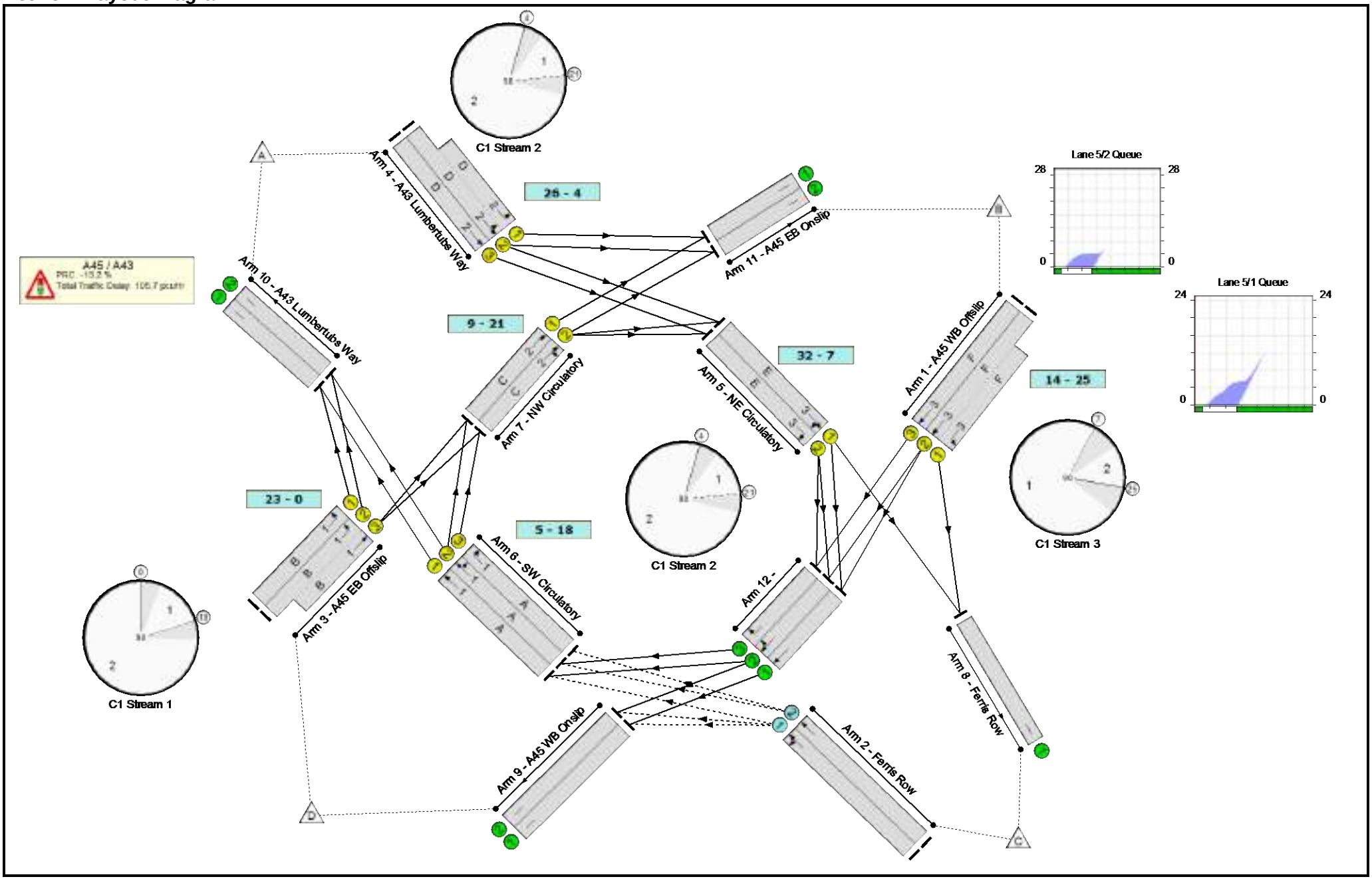
Stage	1	2
Duration	65	11
Change Point	25	7

Full Input Data And Results

Signal Timings Diagram



Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.9%**
A45 / A43	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.9%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	11	-	331	1944:1957	139+261	82.8 : 82.8%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	11	-	143	1950	260	55.0%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	235	1939	489	48.1%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	309	1908	511	60.5%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	67	-	1448	1936	1463	99.0%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	67	-	1536	1941:1950	1417+90	101.9 : 101.9%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	68	-	1437	1938:1975	1271+297	91.7 : 91.7%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	68	-	1368	1965	1506	90.8%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	65	-	1181	2100	1540	76.6%
5/2	NE Circulatory Right	U	3	N/A	E		1	65	-	1368	2100	1540	88.8%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	13	-	166	2100	327	50.8%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	13	-	313	2100	327	95.8%
6/3	SW Circulatory Right	U	1	N/A	A		1	13	-	139	2100	327	42.6%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	12	-	170	2100	303	56.0%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	12	-	231	2100	303	75.6%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	631	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	883	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1435	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1614	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1587	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	215	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1483	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	143	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**544**	**0**	**0**	**33.6**	**72.0**	**0.0**	**105.7**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**544**	**0**	**0**	**33.6**	**72.0**	**0.0**	**105.7**	**-**	**-**	**-**	**-**
1/2+1/1	331	331	-	-	-	3.4	2.3	-	5.7	61.8	5.2	2.3	7.5
1/3	143	143	-	-	-	1.4	0.6	-	2.1	51.7	3.3	0.6	3.9
2/1	235	235	235	0	0	0.2	0.5	-	0.7	10.7	3.3	0.5	3.7
2/2	309	309	309	0	0	0.1	0.8	-	0.9	10.3	4.0	0.8	4.8
3/1	1448	1448	-	-	-	4.3	15.7	-	20.0	49.7	35.0	15.7	50.7
3/2+3/3	1536	1507	-	-	-	5.4	28.0	-	33.4	78.3	40.2	28.0	68.2
4/2+4/1	1437	1437	-	-	-	2.6	5.1	-	7.7	19.4	24.2	5.1	29.3
4/3	1368	1368	-	-	-	3.1	4.6	-	7.7	20.2	26.2	4.6	30.8
5/1	1179	1179	-	-	-	1.2	1.6	-	2.8	8.6	11.8	1.6	13.4
5/2	1368	1368	-	-	-	1.0	3.8	-	4.8	12.6	5.4	3.8	9.2
6/1	166	166	-	-	-	2.2	0.5	-	2.7	58.9	4.0	0.5	4.5
6/2	313	313	-	-	-	4.1	6.1	-	10.2	117.4	7.8	6.1	13.8
6/3	139	139	-	-	-	1.3	0.4	-	1.7	43.6	3.0	0.4	3.4
7/1	170	170	-	-	-	1.9	0.6	-	2.5	52.9	2.6	0.6	3.2
7/2	229	229	-	-	-	1.3	1.5	-	2.8	44.5	4.9	1.5	6.4
8/1	629	629	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	883	883	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1435	1435	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1614	1614	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1560	1560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	442	442	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	215	215	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1483	1483	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

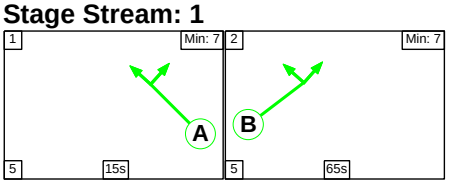
12/3	143	143	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1	PRC for Signalled Lanes (%):	-13.2	Total Delay for Signalled Lanes (pcuHr):	67.98	Cycle Time (s):	90	
C1	Stream: 2	PRC for Signalled Lanes (%):	-1.8	Total Delay for Signalled Lanes (pcuHr):	20.77	Cycle Time (s):	90	
C1	Stream: 3	PRC for Signalled Lanes (%):	1.3	Total Delay for Signalled Lanes (pcuHr):	15.34	Cycle Time (s):	90	
		PRC Over All Lanes (%):	-13.2	Total Delay Over All Lanes(pcuHr):	105.66			

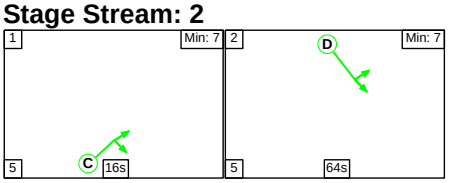
Full Input Data And Results
Scenario 7: '2031 DS5 AM' (FG7: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

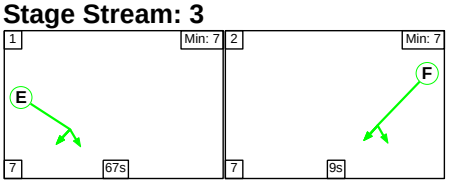
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	15	65
Change Point	0	20

Stage Stream: 2

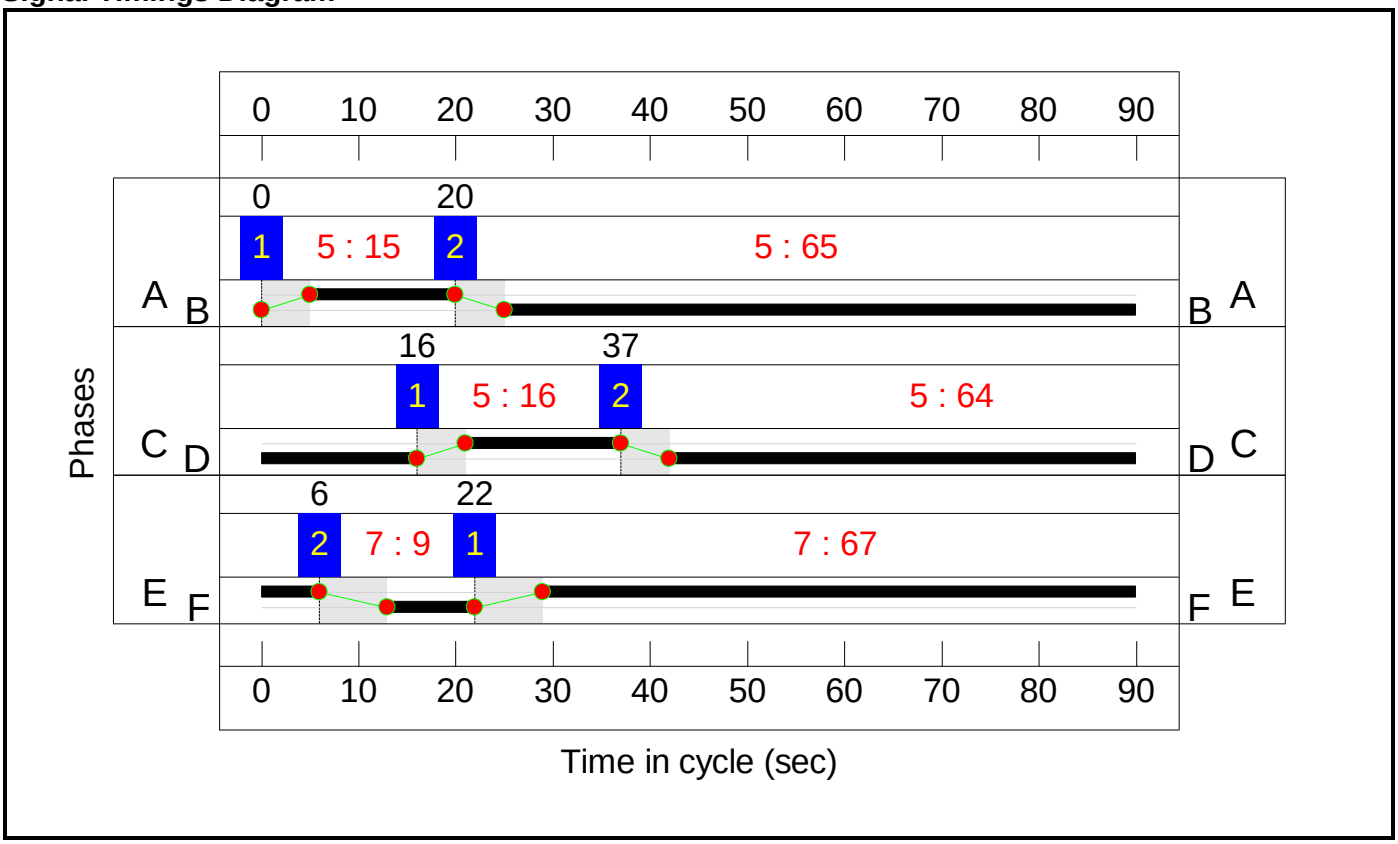
Stage	1	2
Duration	16	64
Change Point	16	37

Stage Stream: 3

Stage	1	2
Duration	67	9
Change Point	22	6

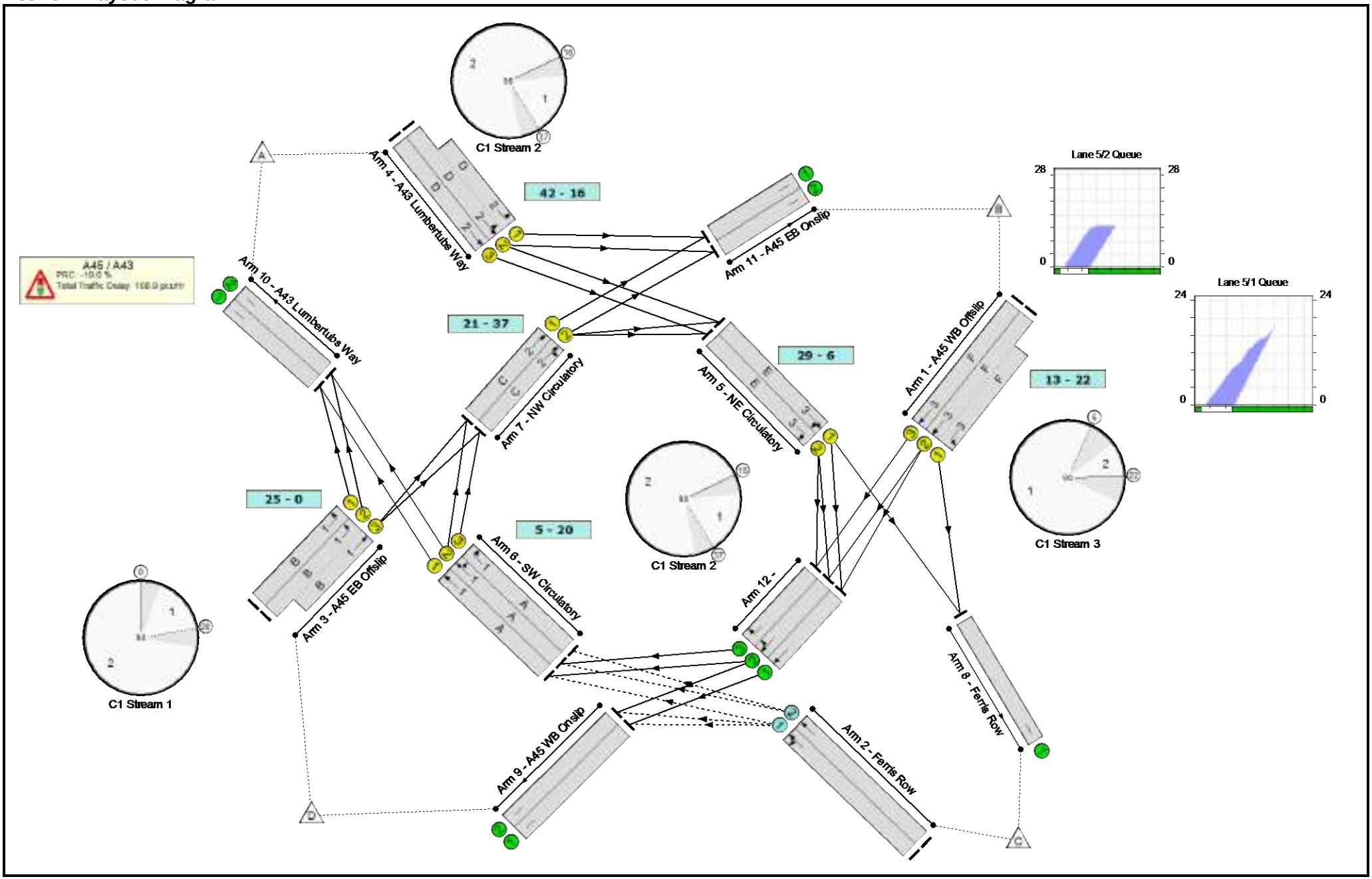
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**107.6%**
A45 / A43	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**107.6%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	9	-	234	1965:1957	0+217	0.0 : 107.6%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	9	-	103	1950	217	47.5%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	265	1946	472	56.2%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	156	1908	569	27.4%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	65	-	813	1936	1420	57.3%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	65	-	1021	1941:1950	1206+385	64.2 : 64.2%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	64	-	1577	1938:1975	1199+284	106.4 : 106.4%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	64	-	1503	1965	1419	105.9%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	67	-	1434	2100	1587	85.9%
5/2	NE Circulatory Right	U	3	N/A	E		1	67	-	1503	2100	1587	89.4%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	15	-	198	2100	373	51.2%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	15	-	247	2100	373	66.2%
6/3	SW Circulatory Right	U	1	N/A	A		1	15	-	12	2100	373	3.2%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	16	-	97	2100	397	24.5%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	16	-	259	2100	397	65.3%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	930	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	832	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1476	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1011	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	924	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	100	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	738	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1503	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	103	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**421**	**0**	**0**	**39.7**	**129.2**	**0.0**	**168.9**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**421**	**0**	**0**	**39.7**	**129.2**	**0.0**	**168.9**	**-**	**-**	**-**	**-**
1/2+1/1	234	217	-	-	-	3.3	12.8	-	16.2	248.8	6.3	12.8	19.1
1/3	103	103	-	-	-	1.1	0.4	-	1.5	53.3	2.4	0.4	2.9
2/1	265	265	265	0	0	0.2	0.6	-	0.8	11.0	2.6	0.6	3.3
2/2	156	156	156	0	0	0.0	0.2	-	0.2	4.4	0.0	0.2	0.2
3/1	813	813	-	-	-	1.2	0.7	-	1.9	8.5	9.3	0.7	9.9
3/2+3/3	1021	1021	-	-	-	1.4	0.9	-	2.3	8.1	8.4	0.9	9.3
4/2+4/1	1577	1483	-	-	-	9.9	54.4	-	64.3	146.8	43.2	54.4	97.6
4/3	1503	1419	-	-	-	9.7	49.5	-	59.2	141.9	39.7	49.5	89.2
5/1	1363	1363	-	-	-	2.6	3.0	-	5.6	14.8	18.2	3.0	21.1
5/2	1419	1419	-	-	-	3.0	4.0	-	7.0	17.8	12.8	4.0	16.9
6/1	191	191	-	-	-	1.6	0.5	-	2.1	39.7	4.2	0.5	4.7
6/2	247	247	-	-	-	3.1	1.0	-	4.1	59.3	5.9	1.0	6.9
6/3	12	12	-	-	-	0.1	0.0	-	0.1	35.8	0.2	0.0	0.3
7/1	97	97	-	-	-	0.1	0.2	-	0.3	9.6	2.1	0.2	2.2
7/2	259	259	-	-	-	2.3	0.9	-	3.3	45.5	4.7	0.9	5.6
8/1	887	887	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	788	788	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1399	1399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1004	1004	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	924	924	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	381	381	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	95	95	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	694	694	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1419	1419	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

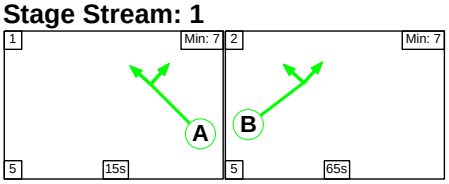
12/3	103	103	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1	PRC for Signalled Lanes (%):	36.0	Total Delay for Signalled Lanes (pcuHr):	10.50	Cycle Time (s):	90	
C1	Stream: 2	PRC for Signalled Lanes (%):	-18.2	Total Delay for Signalled Lanes (pcuHr):	127.09	Cycle Time (s):	90	
C1	Stream: 3	PRC for Signalled Lanes (%):	-19.6	Total Delay for Signalled Lanes (pcuHr):	30.31	Cycle Time (s):	90	
		PRC Over All Lanes (%):	-19.6	Total Delay Over All Lanes(pcuHr):	168.90			

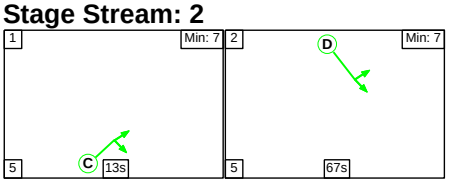
Full Input Data And Results
Scenario 8: '2031 DS5 PM' (FG8: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

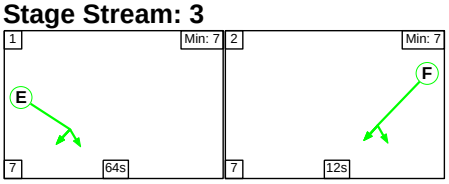
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	15	65
Change Point	0	20

Stage Stream: 2

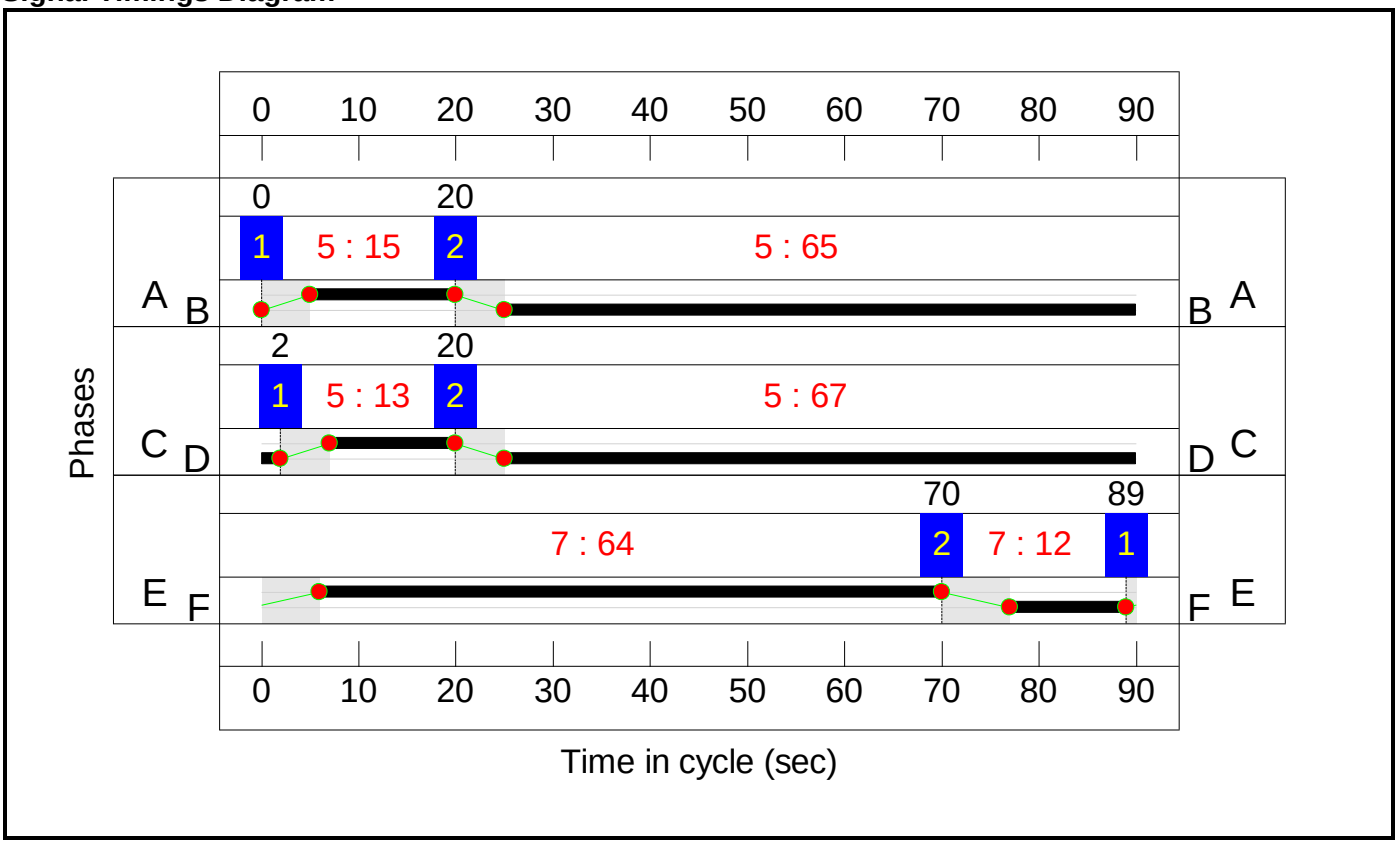
Stage	1	2
Duration	13	67
Change Point	2	20

Stage Stream: 3

Stage	1	2
Duration	64	12
Change Point	89	70

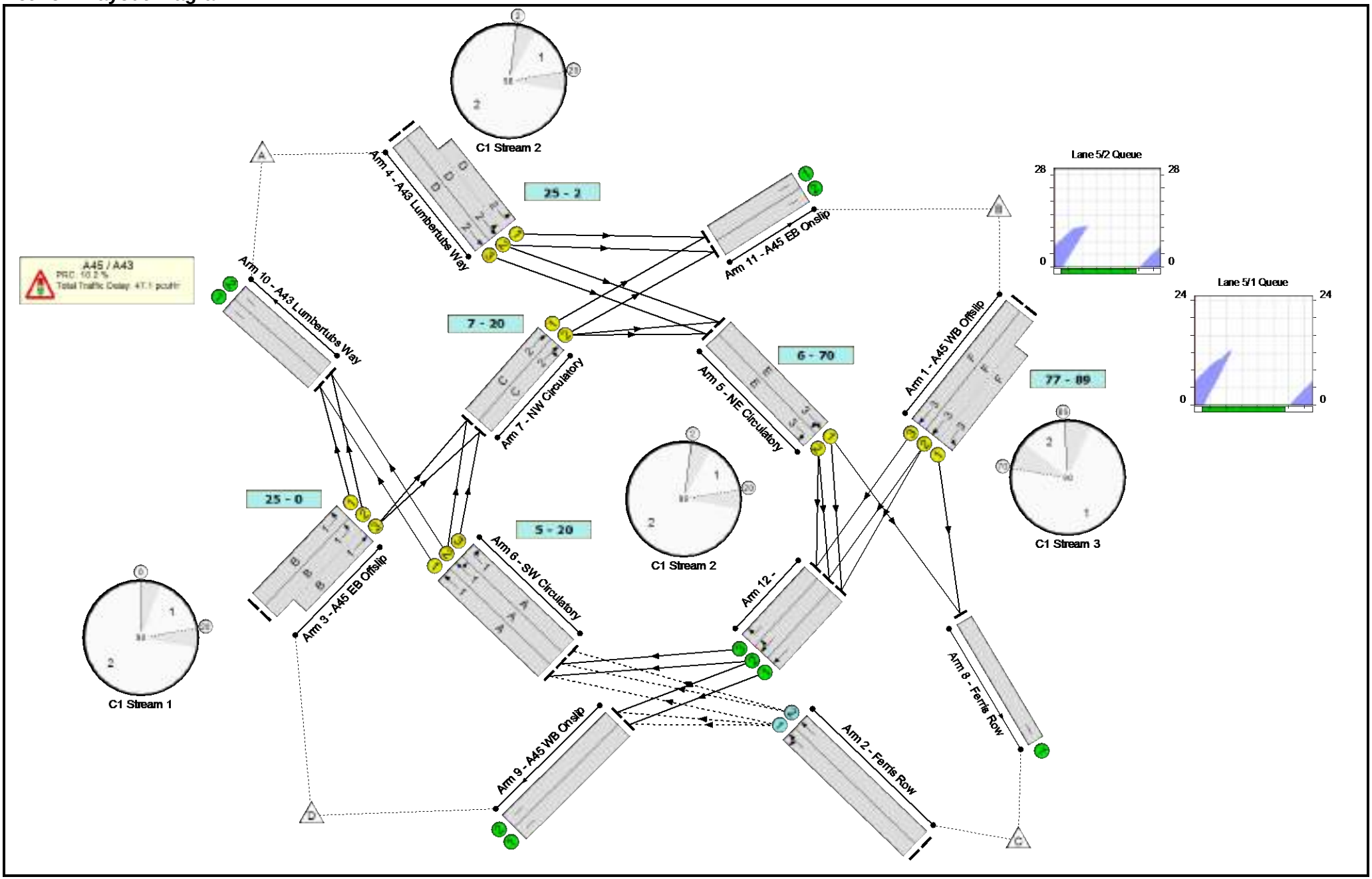
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.6%**
A45 / A43	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.6%**
1/2+1/1	A45 WB Offslip Left Ahead	U	3	N/A	F		1	12	-	406	1944:1957	281+283	78.3 : 65.8%
1/3	A45 WB Offslip Ahead	U	3	N/A	F		1	12	-	144	1950	282	51.1%
2/1	Ferris Row Ahead Left	O	N/A	N/A	-		-	-	-	340	1939	531	64.1%
2/2	Ferris Row Ahead	O	N/A	N/A	-		-	-	-	313	1908	535	58.5%
3/1	A45 EB Offslip Left	U	1	N/A	B		1	65	-	1092	1936	1420	76.9%
3/2+3/3	A45 EB Offslip Ahead Left	U	1	N/A	B		1	65	-	1207	1941:1950	1353+125	81.6 : 81.6%
4/2+4/1	A43 Lumbertubs Way Ahead Left	U	2	N/A	D		1	67	-	1223	1938:1975	1330+179	81.0 : 81.0%
4/3	A43 Lumbertubs Way Ahead	U	2	N/A	D		1	67	-	1198	1965	1485	80.7%
5/1	NE Circulatory Ahead Right	U	3	N/A	E		1	64	-	1152	2100	1517	76.0%
5/2	NE Circulatory Right	U	3	N/A	E		1	64	-	1213	2100	1517	80.0%
6/1	SW Circulatory Ahead	U	1	N/A	A		1	15	-	263	2100	373	70.4%
6/2	SW Circulatory Right Ahead	U	1	N/A	A		1	15	-	304	2100	373	81.4%
6/3	SW Circulatory Right	U	1	N/A	A		1	15	-	153	2100	373	41.0%
7/1	NW Circulatory Ahead	U	2	N/A	C		1	13	-	160	2100	327	49.0%
7/2	NW Circulatory Right Ahead	U	2	N/A	C		1	13	-	255	2100	327	78.1%
8/1	Ferris Row	U	N/A	N/A	-		-	-	-	598	Inf	Inf	0.0%

Full Input Data And Results

9/1	A45 WB Onslip	U	N/A	N/A	-		-	-	-	910	Inf	Inf	0.0%
9/2	A45 WB Onslip	U	N/A	N/A	-		-	-	-	1340	Inf	Inf	0.0%
10/1	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1355	Inf	Inf	0.0%
10/2	A43 Lumbertubs Way	U	N/A	N/A	-		-	-	-	1249	Inf	Inf	0.0%
11/1	A45 EB Onslip	U	N/A	N/A	-		-	-	-	305	Inf	Inf	0.0%
11/2	A45 EB Onslip	U	N/A	N/A	-		-	-	-	166	Inf	Inf	0.0%
12/1	Ahead	U	N/A	N/A	-		-	-	-	740	Inf	Inf	0.0%
12/2	Right Ahead	U	N/A	N/A	-		-	-	-	1433	Inf	Inf	0.0%
12/3	Right	U	N/A	N/A	-		-	-	-	144	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**653**	**0**	**0**	**26.4**	**20.7**	**0.0**	**47.1**	**-**	**-**	**-**	**-**
A45 / A43	**-**	**-**	**653**	**0**	**0**	**26.4**	**20.7**	**0.0**	**47.1**	**-**	**-**	**-**	**-**
1/2+1/1	406	406	-	-	-	4.2	1.3	-	5.4	48.1	5.3	1.3	6.5
1/3	144	144	-	-	-	1.4	0.5	-	1.9	48.6	3.3	0.5	3.8
2/1	340	340	340	0	0	0.4	0.9	-	1.3	13.8	3.1	0.9	4.0
2/2	313	313	313	0	0	0.1	0.7	-	0.8	9.3	2.2	0.7	2.9
3/1	1092	1092	-	-	-	2.2	1.6	-	3.9	12.8	16.7	1.6	18.3
3/2+3/3	1207	1207	-	-	-	2.4	2.2	-	4.6	13.7	17.9	2.2	20.1
4/2+4/1	1223	1223	-	-	-	2.1	2.1	-	4.2	12.3	17.2	2.1	19.3
4/3	1198	1198	-	-	-	2.3	2.1	-	4.4	13.1	18.6	2.1	20.7
5/1	1152	1152	-	-	-	2.1	1.6	-	3.6	11.3	12.5	1.6	14.1
5/2	1213	1213	-	-	-	2.5	2.0	-	4.5	13.3	12.6	2.0	14.6
6/1	263	263	-	-	-	1.3	1.2	-	2.4	33.2	2.6	1.2	3.7
6/2	304	304	-	-	-	1.9	2.1	-	4.0	47.0	6.6	2.1	8.7
6/3	153	153	-	-	-	1.3	0.3	-	1.7	39.7	3.3	0.3	3.7
7/1	160	160	-	-	-	0.6	0.5	-	1.1	25.1	0.8	0.5	1.3
7/2	255	255	-	-	-	1.6	1.7	-	3.3	47.2	3.6	1.7	5.3
8/1	598	598	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	910	910	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/2	1340	1340	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	1355	1355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	1249	1249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	305	305	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	166	166	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	740	740	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/2	1433	1433	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

12/3	144	144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1	Stream: 1	PRC for Signalled Lanes (%):	10.2	Total Delay for Signalled Lanes (pcuHr):	16.54	Cycle Time (s):	90	
C1	Stream: 2	PRC for Signalled Lanes (%):	11.1	Total Delay for Signalled Lanes (pcuHr):	12.98	Cycle Time (s):	90	
C1	Stream: 3	PRC for Signalled Lanes (%):	12.5	Total Delay for Signalled Lanes (pcuHr):	15.45	Cycle Time (s):	90	
		PRC Over All Lanes (%):	10.2	Total Delay Over All Lanes(pcuHr):	47.09			

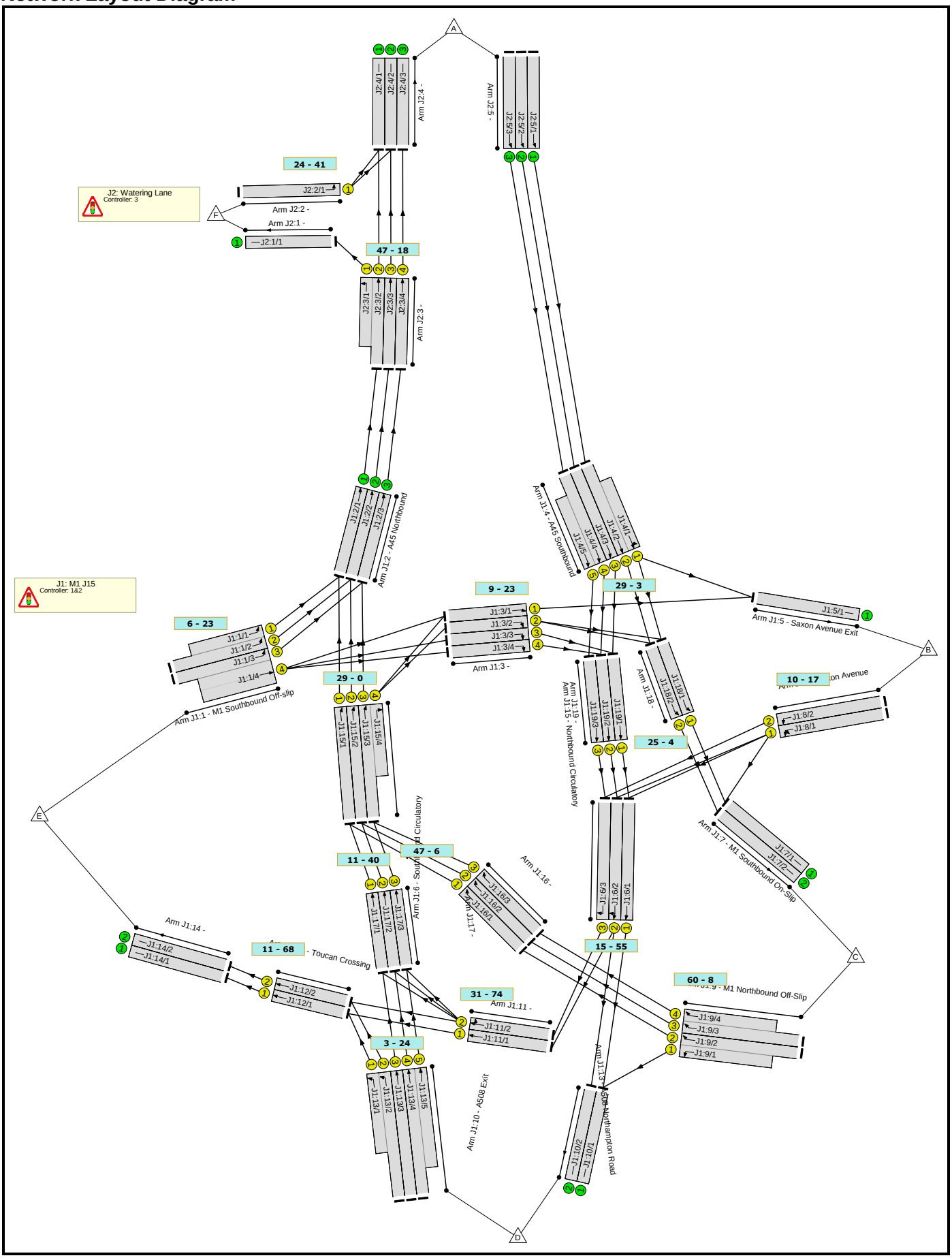
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 12
Location:	M1 Junction 15 / A45 (north to Northampton and Wellingborough) / Saxon Avenue/ A508, Northampton Road (south to Milton Keynes)
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

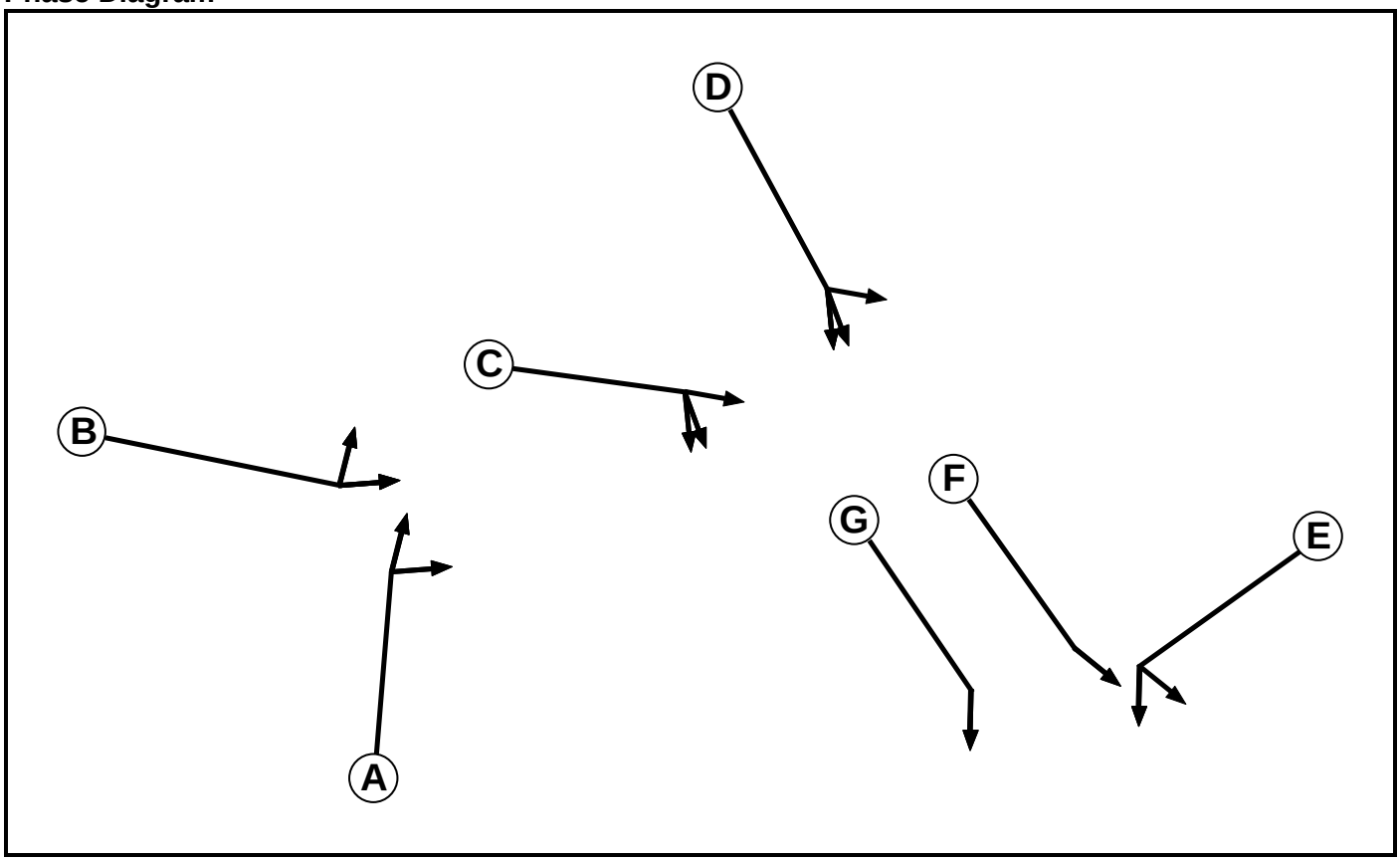
Full Input Data And Results

Network Layout Diagram



C1 - Eastside Controller

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Traffic	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Traffic	3		7	7

Full Input Data And Results

Phase Intergreens Matrix

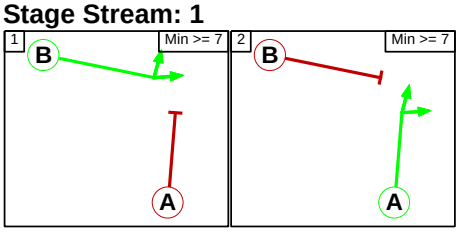
Terminating Phase	Starting Phase							
		A	B	C	D	E	F	G
	A		6	-	-	-	-	-
	B	6		-	-	-	-	-
	C	-	-		6	-	-	-
	D	-	-	6		-	-	-
	E	-	-	-	-		8	8
	F	-	-	-	-	6		-
	G	-	-	-	-	6	-	

Phases in Stage

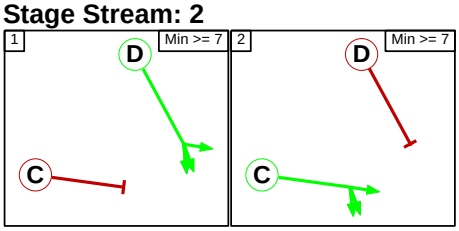
Stream	Stage No.	Phases in Stage
1	1	B
1	2	A
2	1	D
2	2	C
3	1	E
3	2	F G

Stage Diagram

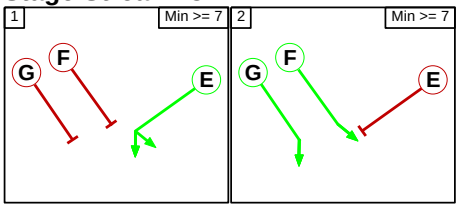
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Full Input Data And Results

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage	
		1	2
From Stage	1		6
	2	6	

Stage Stream: 2

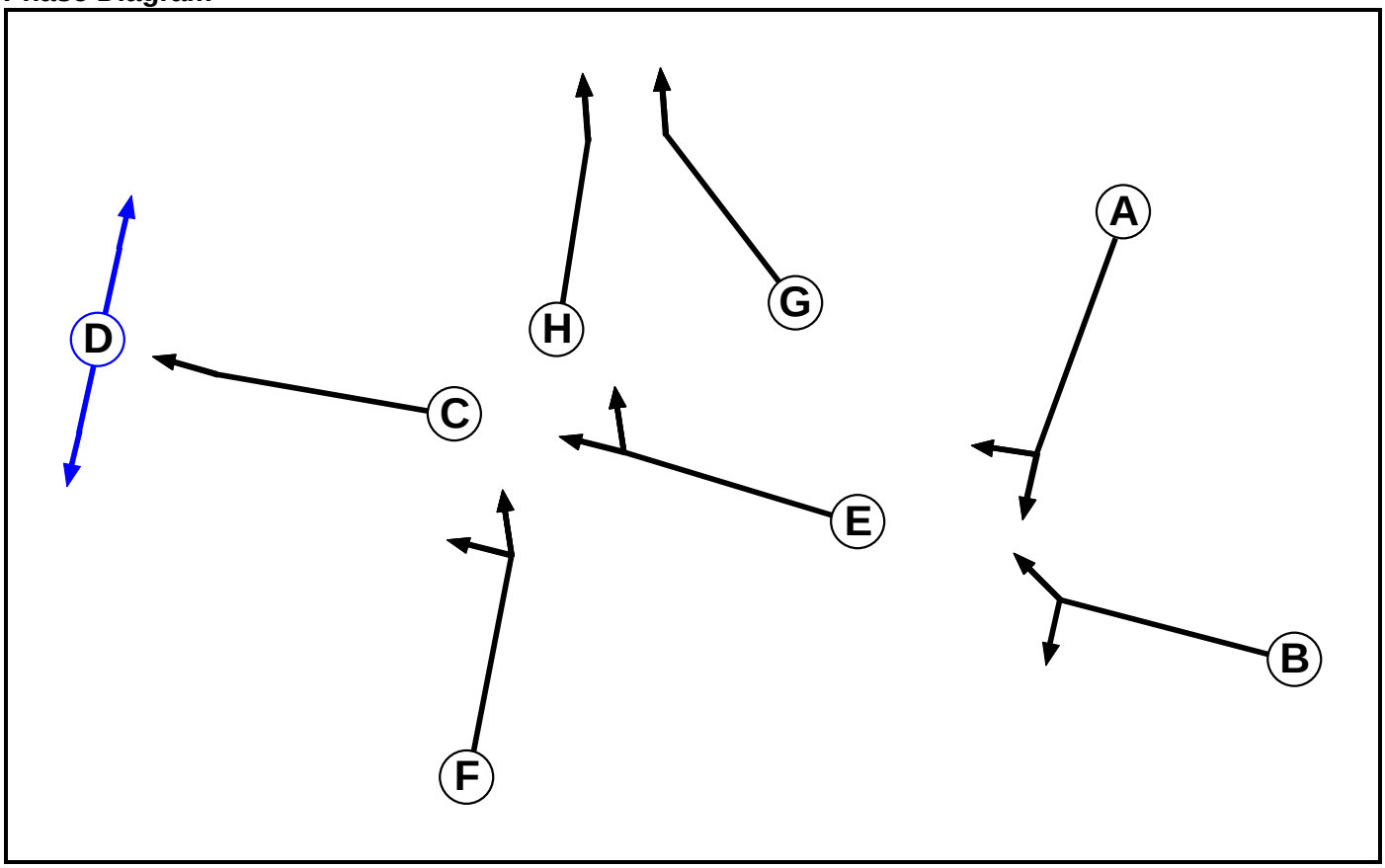
		To Stage	
		1	2
From Stage	1		6
	2	6	

Stage Stream: 3

		To Stage	
		1	2
From Stage	1		8
	2	6	

C2 - Westside Controller

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	7
D	Pedestrian	2		7	7
E	Traffic	3		7	7
F	Traffic	3		7	7
G	Traffic	4		7	7
H	Traffic	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

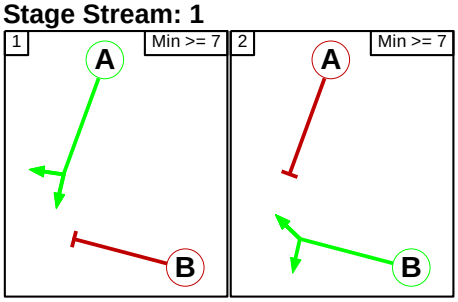
Terminating Phase	Starting Phase							
	A	B	C	D	E	F	G	H
A		5	-	-	-	-	-	-
B	7		-	-	-	-	-	-
C	-	-		5	-	-	-	-
D	-	-	7		-	-	-	-
E	-	-	-	-		5	-	-
F	-	-	-	-	7		-	-
G	-	-	-	-	-	-		5
H	-	-	-	-	-	-	7	

Phases in Stage

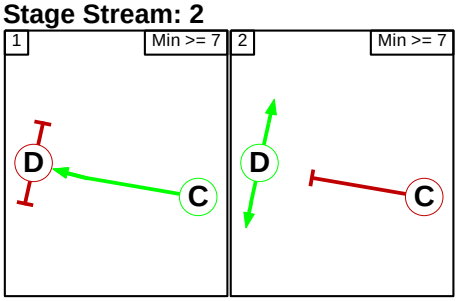
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E
3	2	F
4	1	H
4	2	G

Stage Diagram

Stage Stream: 1

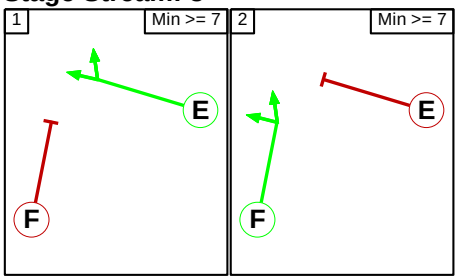


Stage Stream: 2

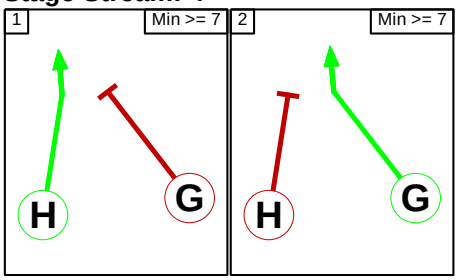


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		5
	2	7	

Full Input Data And Results

Stage Stream: 3

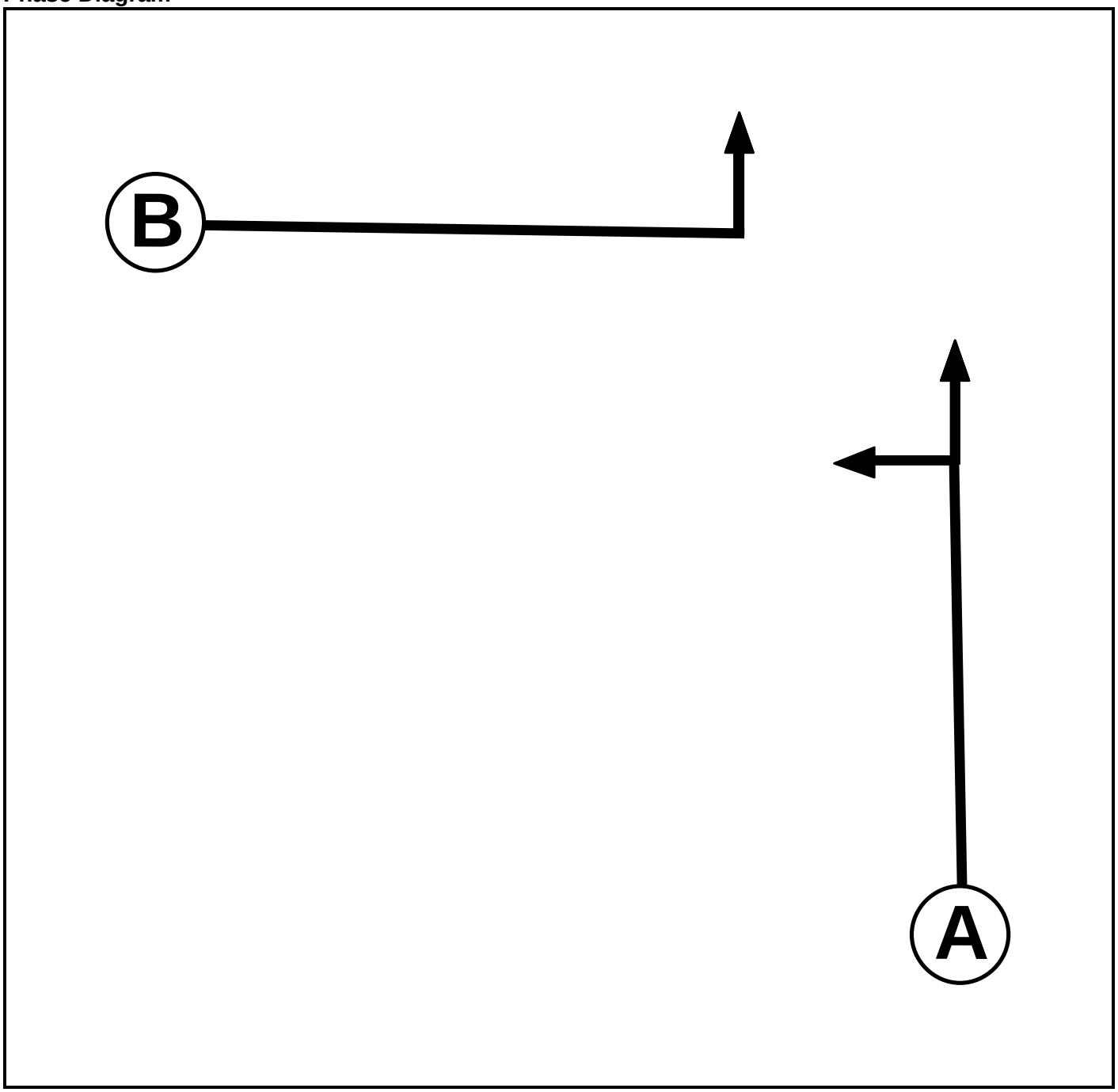
	To Stage		
From Stage		1	2
	1		5
	2	7	

Stage Stream: 4

	To Stage		
From Stage		1	2
	1		7
	2	5	

C3 - Watering Lane

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7

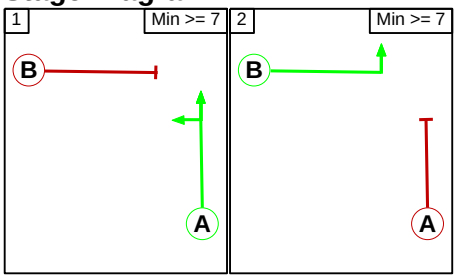
Phase Intergreens Matrix

	Starting Phase		
Terminating Phase		A	B
	A		6
	B	6	

Phases in Stage

Stage No.	Phases in Stage
1	A
2	B

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
		1	2
From Stage	1		6
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: J1: M1 J15
There are no Opposed Lanes in this Junction

Junction: J2: Watering Lane
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: J1: M1 J15

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
J1:1/1 (M1 Southbound Off-slip)	U	B	2	3	18.0	Geom	-	3.65	0.00	Y	Arm J1:2 Left	Inf
J1:1/2 (M1 Southbound Off-slip)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm J1:2 Left	Inf
J1:1/3 (M1 Southbound Off-slip)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm J1:2 Left	Inf
J1:1/4 (M1 Southbound Off-slip)	U	B	2	3	18.0	User	4000	-	-	-	-	-
J1:2/1 (A45 Northbound)	U		2	3	4.3	Inf	-	-	-	-	-	-
J1:2/2 (A45 Northbound)	U		2	3	4.3	Inf	-	-	-	-	-	-
J1:2/3 (A45 Northbound)	U		2	3	4.3	Inf	-	-	-	-	-	-
J1:3/1	U	C	2	3	7.0	User	1900	-	-	-	-	-
J1:3/2	U	C	2	3	5.2	User	1900	-	-	-	-	-
J1:3/3	U	C	2	3	4.3	User	1900	-	-	-	-	-
J1:3/4	U	C	2	3	4.3	User	1900	-	-	-	-	-
J1:4/1 (A45 Southbound)	U	D	2	3	33.0	Geom	-	3.65	0.00	Y	Arm J1:5 Left Arm J1:18 Ahead	Inf Inf
J1:4/2 (A45 Southbound)	U	D	2	3	67.8	Geom	-	3.65	0.00	N	Arm J1:18 Ahead	Inf
J1:4/3 (A45 Southbound)	U	D	2	3	67.8	Geom	-	3.65	0.00	N	Arm J1:19 Ahead	Inf
J1:4/4 (A45 Southbound)	U	D	2	3	67.8	Geom	-	3.65	0.00	N	Arm J1:19 Ahead	Inf
J1:4/5 (A45 Southbound)	U	D	2	3	33.0	Geom	-	3.65	0.00	N	Arm J1:19 Ahead	Inf
J1:5/1 (Saxon Avenue Exit)	U		2	3	4.3	Inf	-	-	-	-	-	-

J1:6/1 (Southbound Circulatory)	U	A	2	3	33.0	User	2000	-	-	-	-	-
J1:6/2 (Southbound Circulatory)	U	A	2	3	33.0	User	2000	-	-	-	-	-
J1:6/3 (Southbound Circulatory)	U	A	2	3	33.0	User	2000	-	-	-	-	-
J1:7/1 (M1 Southbound On-Slip)	U		2	3	4.3	Inf	-	-	-	-	-	-
J1:7/2 (M1 Southbound On-Slip)	U		2	3	4.3	Inf	-	-	-	-	-	-
J1:8/1 (Saxon Avenue)	U	E	2	3	60.0	Geom	-	3.50	0.00	Y	Arm J1:6 Left Arm J1:7 Left	Inf 30.00
J1:8/2 (Saxon Avenue)	U	E	2	3	60.0	Geom	-	3.50	0.00	N	Arm J1:6 Left	Inf
J1:9/1 (M1 Northbound Off-Slip)	U	B	2	3	12.0	Geom	-	3.65	0.00	Y	Arm J1:10 Left	Inf
J1:9/2 (M1 Northbound Off-Slip)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm J1:16 Ahead	Inf
J1:9/3 (M1 Northbound Off-Slip)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm J1:16 Ahead	Inf
J1:9/4 (M1 Northbound Off-Slip)	U	B	2	3	40.0	Geom	-	3.65	0.00	N	Arm J1:16 Ahead	Inf
J1:10/1 (A508 Exit)	U		2	3	4.3	Inf	-	-	-	-	-	-
J1:10/2 (A508 Exit)	U		2	3	4.3	Inf	-	-	-	-	-	-
J1:11/1	U	E	2	3	13.9	User	1900	-	-	-	-	-
J1:11/2	U	E	2	3	13.0	User	1900	-	-	-	-	-
J1:12/1 (Toucan Crossing)	U	C	2	3	4.3	Geom	-	3.80	0.00	Y	Arm J1:14 Ahead	Inf
J1:12/2 (Toucan Crossing)	U	C	2	3	4.3	Geom	-	3.80	0.00	Y	Arm J1:14 Ahead	Inf
J1:13/1 (A508 Northampton Road)	U	F	2	3	10.0	Geom	-	3.65	0.00	Y	Arm J1:12 Left	Inf

Full Input Data And Results

J1:13/2 (A508 Northampton Road)	U	F	2	3	60.0	Geom	-	3.65	0.00	Y	Arm J1:12 Left	Inf
J1:13/3 (A508 Northampton Road)	U	F	2	3	60.0	Geom	-	3.65	0.00	N	Arm J1:17 Ahead	Inf
J1:13/4 (A508 Northampton Road)	U	F	2	3	60.0	Geom	-	3.65	0.00	N	Arm J1:17 Ahead	Inf
J1:13/5 (A508 Northampton Road)	U	F	2	3	20.0	Geom	-	3.65	0.00	N	Arm J1:17 Ahead	Inf
J1:14/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:14/2	U		2	3	60.0	Inf	-	-	-	-	-	-
J1:15/1 (Northbound Circulatory)	U	A	2	3	26.1	User	2000	-	-	-	-	-
J1:15/2 (Northbound Circulatory)	U	A	2	3	26.1	User	2000	-	-	-	-	-
J1:15/3 (Northbound Circulatory)	U	A	2	3	26.1	User	2000	-	-	-	-	-
J1:15/4 (Northbound Circulatory)	U	A	2	3	9.0	User	2000	-	-	-	-	-
J1:16/1	U	G	2	3	8.7	User	2000	-	-	-	-	-
J1:16/2	U	G	2	3	7.0	User	2000	-	-	-	-	-
J1:16/3	U	G	2	3	6.1	User	2000	-	-	-	-	-
J1:17/1	U	H	2	3	9.6	User	2000	-	-	-	-	-
J1:17/2	U	H	2	3	9.6	User	2000	-	-	-	-	-
J1:17/3	U	H	2	3	9.6	User	2000	-	-	-	-	-
J1:18/1	U	F	2	3	3.5	User	2000	-	-	-	-	-
J1:18/2	U	F	2	3	3.5	User	2000	-	-	-	-	-
J1:19/1	U	G	2	3	7.0	User	2000	-	-	-	-	-
J1:19/2	U	G	2	3	6.1	User	2000	-	-	-	-	-
J1:19/3	U	G	2	3	5.2	User	2000	-	-	-	-	-

Full Input Data And Results

Junction: J2: Watering Lane												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
J2:1/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:2/1	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm J2:4 Left	25.00
J2:3/1	U	A	2	3	10.0	Geom	-	3.65	0.00	Y	Arm J2:1 Left	15.00
J2:3/2	U	A	2	3	60.0	Geom	-	3.65	0.00	N	Arm J2:4 Ahead	Inf
J2:3/3	U	A	2	3	60.0	Geom	-	3.65	0.00	N	Arm J2:4 Ahead	Inf
J2:3/4	U	A	2	3	60.0	User	1900	-	-	-	-	-
J2:4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:4/2	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:4/3	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
J2:5/3	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 Total AM Peak'	08:00	09:00	01:00	
2: '2021 Total PM Peak'	17:00	18:00	01:00	
3: '2031 Total AM Peak'	08:00	09:00	01:00	
4: '2031 Total PM Peak'	17:00	18:00	01:00	
7: '2021 Cumulative AM'	08:00	09:00	01:00	F1+F5
8: '2021 Cumulative PM'	17:00	18:00	01:00	F2+F6
9: '2031 Cumulative AM'	08:00	09:00	01:00	F3+F5
10: '2031 Cumulative PM'	17:00	18:00	01:00	F4+F6
11: '2021 DS5 AM'	08:00	09:00	01:00	
12: '2021 DS5 PM'	17:00	18:00	01:00	
13: '2031 DS5 AM'	08:00	09:00	01:00	
14: '2031 DS5 PM'	17:00	18:00	01:00	
15: '2021 DM AM'	08:00	09:00	01:00	
16: '2021 DM PM'	17:00	18:00	01:00	
17: '2031 DM AM'	08:00	09:00	01:00	
18: '2031 DM PM'	17:00	18:00	01:00	

Scenario 13: '2021 DS5 AM' (FG11: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	30	84	1165	1232	1347	15	3873
	B	0	0	79	21	36	0	136
	C	1341	76	0	239	0	110	1766
	D	469	31	136	0	268	55	959
	E	1437	127	0	494	0	110	2168
	F	443	0	0	0	0	0	443
	Tot.	3720	318	1380	1986	1651	290	9345

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 13: 2021 DS5 AM
Junction: J1: M1 J15	
J1:1/1 (short)	532
J1:1/2 (with short)	1018(In) 486(Out)
J1:1/3 (with short)	1150(In) 529(Out)
J1:1/4 (short)	621
J1:2/1	1279
J1:2/2	1195
J1:2/3	1063
J1:3/1	234
J1:3/2	136
J1:3/3	249
J1:3/4	245
J1:4/1 (short)	627
J1:4/2 (with short)	1249(In) 622(Out)
J1:4/3	794
J1:4/4 (with short)	1800(In) 795(Out)
J1:4/5 (short)	1005
J1:5/1	318
J1:6/1	1056
J1:6/2	1053
J1:6/3	1036
J1:7/1	699
J1:7/2	681
J1:8/1	105
J1:8/2	31
J1:9/1 (short)	239
J1:9/2 (with short)	752(In) 513(Out)
J1:9/3 (with short)	1014(In) 485(Out)
J1:9/4 (short)	529
J1:10/1	1295
J1:10/2	691
J1:11/1	362
J1:11/2	1036
J1:12/1	591
J1:12/2	1060

Full Input Data And Results

J1:13/1 (short)	229
J1:13/2 (with short)	268(In) 39(Out)
J1:13/3	219
J1:13/4 (with short)	472(In) 224(Out)
J1:13/5 (short)	248
J1:14/1	591
J1:14/2	1060
J1:15/1	747
J1:15/2	709
J1:15/3 (with short)	777(In) 534(Out)
J1:15/4 (short)	243
J1:16/1	513
J1:16/2	485
J1:16/3	529
J1:17/1	234
J1:17/2	224
J1:17/3	248
J1:18/1	620
J1:18/2	681
J1:19/1	1043
J1:19/2	1040
J1:19/3	1005
Junction: J2: Watering Lane	
J2:1/1	290
J2:2/1	443
J2:3/1 (short)	290
J2:3/2 (with short)	1279(In) 989(Out)
J2:3/3	1195
J2:3/4	1063
J2:4/1	1210
J2:4/2	1417
J2:4/3	1063
J2:5/1	1249
J2:5/2	794
J2:5/3	1800

Full Input Data And Results

Lane Saturation Flows

Junction: J1: M1 J15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (M1 Southbound Off-slip)	3.65	0.00	Y	Arm J1:2 Left	Inf	100.0 %	1980	1980
J1:1/2 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/3 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/4 (M1 Southbound Off-slip Lane 4)	This lane uses a directly entered Saturation Flow						4000	4000
J1:2/1 (A45 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:2/2 (A45 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:2/3 (A45 Northbound Lane 3)	Infinite Saturation Flow						Inf	Inf
J1:3/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/3	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/1 (A45 Southbound)	3.65	0.00	Y	Arm J1:5 Left	Inf	13.4 %	1980	1980
				Arm J1:18 Ahead	Inf	86.6 %		
J1:4/2 (A45 Southbound)	3.65	0.00	N	Arm J1:18 Ahead	Inf	100.0 %	2120	2120
J1:4/3 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/4 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/5 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:5/1 (Saxon Avenue Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (Southbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/2 (Southbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/3 (Southbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:7/1 (M1 Southbound On-Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/2 (M1 Southbound On-Slip Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

J1:8/1 (Saxon Avenue)	3.50	0.00	Y	Arm J1:6 Left	Inf	24.8 %	1894	1894
				Arm J1:7 Left	30.00	75.2 %		
J1:8/2 (Saxon Avenue)	3.50	0.00	N	Arm J1:6 Left	Inf	100.0 %	2105	2105
J1:9/1 (M1 Northbound Off-Slip)	3.65	0.00	Y	Arm J1:10 Left	Inf	100.0 %	1980	1980
J1:9/2 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/3 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/4 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:10/1 (A508 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:10/2 (A508 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:11/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:12/2 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:13/1 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/2 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/3 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/4 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/5 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:14/1	Infinite Saturation Flow						Inf	Inf
J1:14/2	Infinite Saturation Flow						Inf	Inf
J1:15/1 (Northbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/2 (Northbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/3 (Northbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/4 (Northbound Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/2	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/3	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/2	This lane uses a directly entered Saturation Flow						2000	2000

J1:17/3	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/3	This lane uses a directly entered Saturation Flow	2000	2000

Junction: J2: Watering Lane

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1	Infinite Saturation Flow						Inf	Inf
J2:2/1	4.00	0.00	Y	Arm J2:4 Left	25.00	100.0 %	1901	1901
J2:3/1	3.65	0.00	Y	Arm J2:1 Left	15.00	100.0 %	1800	1800
J2:3/2	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/3	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	Infinite Saturation Flow						Inf	Inf

Scenario 14: '2021 DS5 PM' (FG12: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	16	154	1139	958	1720	64	4051
	B	114	0	65	19	32	0	230
	C	1325	60	0	185	0	81	1651
	D	1152	44	206	0	724	40	2166
	E	1163	118	0	384	0	81	1746
	F	518	0	0	0	0	0	518
	Tot.	4288	376	1410	1546	2476	266	10362

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 14: 2021 DS5 PM
Junction: J1: M1 J15	
J1:1/1 (short)	415
J1:1/2 (with short)	776(In) 361(Out)
J1:1/3 (with short)	970(In) 468(Out)
J1:1/4 (short)	502
J1:2/1	1443
J1:2/2	1368
J1:2/3	1209
J1:3/1	222
J1:3/2	206
J1:3/3	179
J1:3/4	205
J1:4/1 (short)	655
J1:4/2 (with short)	1293(In) 638(Out)
J1:4/3	919
J1:4/4 (with short)	1823(In) 865(Out)
J1:4/5 (short)	958
J1:5/1	376
J1:6/1	1107
J1:6/2	1103
J1:6/3	1081
J1:7/1	685
J1:7/2	725
J1:8/1	107
J1:8/2	123
J1:9/1 (short)	185
J1:9/2 (with short)	653(In) 468(Out)
J1:9/3 (with short)	998(In) 490(Out)
J1:9/4 (short)	508
J1:10/1	1292
J1:10/2	254
J1:11/1	849
J1:11/2	1081
J1:12/1	1221
J1:12/2	1255

Full Input Data And Results

J1:13/1 (short)	372
J1:13/2 (with short)	724(In) 352(Out)
J1:13/3	476
J1:13/4 (with short)	966(In) 483(Out)
J1:13/5 (short)	483
J1:14/1	1221
J1:14/2	1255
J1:15/1	1028
J1:15/2	1007
J1:15/3 (with short)	1051(In) 741(Out)
J1:15/4 (short)	310
J1:16/1	468
J1:16/2	490
J1:16/3	508
J1:17/1	560
J1:17/2	517
J1:17/3	543
J1:18/1	620
J1:18/2	725
J1:19/1	1098
J1:19/2	1070
J1:19/3	958
Junction: J2: Watering Lane	
J2:1/1	266
J2:2/1	518
J2:3/1 (short)	266
J2:3/2 (with short)	1443(In) 1177(Out)
J2:3/3	1368
J2:3/4	1209
J2:4/1	1436
J2:4/2	1627
J2:4/3	1209
J2:5/1	1293
J2:5/2	919
J2:5/3	1823

Full Input Data And Results

Lane Saturation Flows

Junction: J1: M1 J15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (M1 Southbound Off-slip)	3.65	0.00	Y	Arm J1:2 Left	Inf	100.0 %	1980	1980
J1:1/2 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/3 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/4 (M1 Southbound Off-slip Lane 4)	This lane uses a directly entered Saturation Flow						4000	4000
J1:2/1 (A45 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:2/2 (A45 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:2/3 (A45 Northbound Lane 3)	Infinite Saturation Flow						Inf	Inf
J1:3/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/3	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/1 (A45 Southbound)	3.65	0.00	Y	Arm J1:5 Left	Inf	23.5 %	1980	1980
				Arm J1:18 Ahead	Inf	76.5 %		
J1:4/2 (A45 Southbound)	3.65	0.00	N	Arm J1:18 Ahead	Inf	100.0 %	2120	2120
J1:4/3 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/4 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/5 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:5/1 (Saxon Avenue Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (Southbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/2 (Southbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/3 (Southbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:7/1 (M1 Southbound On-Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/2 (M1 Southbound On-Slip Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

J1:8/1 (Saxon Avenue)	3.50	0.00	Y	Arm J1:6 Left	Inf	39.3 %	1907	1907
				Arm J1:7 Left	30.00	60.7 %		
J1:8/2 (Saxon Avenue)	3.50	0.00	N	Arm J1:6 Left	Inf	100.0 %	2105	2105
J1:9/1 (M1 Northbound Off-Slip)	3.65	0.00	Y	Arm J1:10 Left	Inf	100.0 %	1980	1980
J1:9/2 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/3 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/4 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:10/1 (A508 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:10/2 (A508 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:11/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:12/2 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:13/1 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/2 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/3 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/4 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/5 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:14/1	Infinite Saturation Flow						Inf	Inf
J1:14/2	Infinite Saturation Flow						Inf	Inf
J1:15/1 (Northbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/2 (Northbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/3 (Northbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/4 (Northbound Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/2	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/3	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/2	This lane uses a directly entered Saturation Flow						2000	2000

J1:17/3	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/3	This lane uses a directly entered Saturation Flow	2000	2000

Junction: J2: Watering Lane

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1	Infinite Saturation Flow						Inf	Inf
J2:2/1	4.00	0.00	Y	Arm J2:4 Left	25.00	100.0 %	1901	1901
J2:3/1	3.65	0.00	Y	Arm J2:1 Left	15.00	100.0 %	1800	1800
J2:3/2	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/3	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	Infinite Saturation Flow						Inf	Inf

Scenario 15: '2031 DS5 AM' (FG13: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	39	73	973	1069	1685	17	3856
	B	0	0	86	17	47	0	150
	C	1308	80	0	257	0	110	1755
	D	681	42	170	0	292	55	1240
	E	1532	166	0	517	1	110	2326
	F	443	0	0	0	0	0	443
	Tot.	4003	361	1229	1860	2025	292	9770

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 15: 2031 DS5 AM
Junction: J1: M1 J15	
J1:1/1 (short)	552
J1:1/2 (with short)	1082(In) 530(Out)
J1:1/3 (with short)	1243(In) 560(Out)
J1:1/4 (short)	683
J1:2/1	1377
J1:2/2	1289
J1:2/3	1147
J1:3/1	288
J1:3/2	170
J1:3/3	251
J1:3/4	266
J1:4/1 (short)	524
J1:4/2 (with short)	1046(In) 522(Out)
J1:4/3	872
J1:4/4 (with short)	1899(In) 847(Out)
J1:4/5 (short)	1052
J1:5/1	361
J1:6/1	1133
J1:6/2	1128
J1:6/3	1091
J1:7/1	629
J1:7/2	600
J1:8/1	111
J1:8/2	39
J1:9/1 (short)	257
J1:9/2 (with short)	758(In) 501(Out)
J1:9/3 (with short)	997(In) 499(Out)
J1:9/4 (short)	498
J1:10/1	1390
J1:10/2	470
J1:11/1	658
J1:11/2	1091
J1:12/1	853
J1:12/2	1171

Full Input Data And Results

J1:13/1 (short)	195
J1:13/2 (with short)	292(In) 97(Out)
J1:13/3	307
J1:13/4 (with short)	641(In) 260(Out)
J1:13/5 (short)	381
J1:14/1	853
J1:14/2	1171
J1:15/1	825
J1:15/2	759
J1:15/3 (with short)	879(In) 587(Out)
J1:15/4 (short)	292
J1:16/1	501
J1:16/2	499
J1:16/3	498
J1:17/1	324
J1:17/2	260
J1:17/3	381
J1:18/1	543
J1:18/2	600
J1:19/1	1123
J1:19/2	1113
J1:19/3	1052
Junction: J2: Watering Lane	
J2:1/1	292
J2:2/1	443
J2:3/1 (short)	292
J2:3/2 (with short)	1377(In) 1085(Out)
J2:3/3	1289
J2:3/4	1147
J2:4/1	1306
J2:4/2	1511
J2:4/3	1147
J2:5/1	1046
J2:5/2	872
J2:5/3	1899

Full Input Data And Results

Lane Saturation Flows

Junction: J1: M1 J15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (M1 Southbound Off-slip)	3.65	0.00	Y	Arm J1:2 Left	Inf	100.0 %	1980	1980
J1:1/2 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/3 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/4 (M1 Southbound Off-slip Lane 4)	This lane uses a directly entered Saturation Flow						4000	4000
J1:2/1 (A45 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:2/2 (A45 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:2/3 (A45 Northbound Lane 3)	Infinite Saturation Flow						Inf	Inf
J1:3/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/3	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/1 (A45 Southbound)	3.65	0.00	Y	Arm J1:5 Left	Inf	13.9 %	1980	1980
				Arm J1:18 Ahead	Inf	86.1 %		
J1:4/2 (A45 Southbound)	3.65	0.00	N	Arm J1:18 Ahead	Inf	100.0 %	2120	2120
J1:4/3 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/4 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/5 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:5/1 (Saxon Avenue Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (Southbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/2 (Southbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/3 (Southbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:7/1 (M1 Southbound On-Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/2 (M1 Southbound On-Slip Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

J1:8/1 (Saxon Avenue)	3.50	0.00	Y	Arm J1:6 Left	Inf	22.5 %	1892	1892
				Arm J1:7 Left	30.00	77.5 %		
J1:8/2 (Saxon Avenue)	3.50	0.00	N	Arm J1:6 Left	Inf	100.0 %	2105	2105
J1:9/1 (M1 Northbound Off-Slip)	3.65	0.00	Y	Arm J1:10 Left	Inf	100.0 %	1980	1980
J1:9/2 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/3 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/4 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:10/1 (A508 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:10/2 (A508 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:11/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:12/2 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:13/1 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/2 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/3 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/4 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/5 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:14/1	Infinite Saturation Flow						Inf	Inf
J1:14/2	Infinite Saturation Flow						Inf	Inf
J1:15/1 (Northbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/2 (Northbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/3 (Northbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/4 (Northbound Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/2	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/3	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/2	This lane uses a directly entered Saturation Flow						2000	2000

J1:17/3	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/3	This lane uses a directly entered Saturation Flow	2000	2000

Junction: J2: Watering Lane

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1	Infinite Saturation Flow						Inf	Inf
J2:2/1	4.00	0.00	Y	Arm J2:4 Left	25.00	100.0 %	1901	1901
J2:3/1	3.65	0.00	Y	Arm J2:1 Left	15.00	100.0 %	1800	1800
J2:3/2	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/3	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	Infinite Saturation Flow						Inf	Inf

Scenario 16: '2031 DS5 PM' (FG14: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination						
		A	B	C	D	E	F	Tot.
Origin	A	38	147	1043	817	1566	74	3685
	B	127	0	59	18	29	0	233
	C	1481	69	0	173	0	81	1804
	D	1243	52	225	0	734	40	2294
	E	1041	139	0	418	0	81	1679
	F	518	0	0	0	0	0	518
	Tot.	4448	407	1327	1426	2329	276	10213

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 16: 2031 DS5 PM
Junction: J1: M1 J15	
J1:1/1 (short)	412
J1:1/2 (with short)	734(In) 322(Out)
J1:1/3 (with short)	945(In) 388(Out)
J1:1/4 (short)	557
J1:2/1	1500
J1:2/2	1407
J1:2/3	1261
J1:3/1	260
J1:3/2	225
J1:3/3	212
J1:3/4	206
J1:4/1 (short)	611
J1:4/2 (with short)	1190(In) 579(Out)
J1:4/3	790
J1:4/4 (with short)	1667(In) 790(Out)
J1:4/5 (short)	877
J1:5/1	407
J1:6/1	1020
J1:6/2	1021
J1:6/3	1008
J1:7/1	645
J1:7/2	682
J1:8/1	102
J1:8/2	131
J1:9/1 (short)	173
J1:9/2 (with short)	655(In) 482(Out)
J1:9/3 (with short)	1149(In) 522(Out)
J1:9/4 (short)	627
J1:10/1	1193
J1:10/2	233
J1:11/1	788
J1:11/2	1008
J1:12/1	1157
J1:12/2	1172

Full Input Data And Results

J1:13/1 (short)	369
J1:13/2 (with short)	734(In) 365(Out)
J1:13/3	504
J1:13/4 (with short)	1056(In) 524(Out)
J1:13/5 (short)	532
J1:14/1	1157
J1:14/2	1172
J1:15/1	1088
J1:15/2	1085
J1:15/3 (with short)	1219(In) 873(Out)
J1:15/4 (short)	346
J1:16/1	482
J1:16/2	522
J1:16/3	627
J1:17/1	606
J1:17/2	563
J1:17/3	592
J1:18/1	586
J1:18/2	682
J1:19/1	1002
J1:19/2	996
J1:19/3	877
Junction: J2: Watering Lane	
J2:1/1	276
J2:2/1	518
J2:3/1 (short)	276
J2:3/2 (with short)	1500(In) 1224(Out)
J2:3/3	1407
J2:3/4	1261
J2:4/1	1483
J2:4/2	1666
J2:4/3	1261
J2:5/1	1190
J2:5/2	790
J2:5/3	1667

Full Input Data And Results

Lane Saturation Flows

Junction: J1: M1 J15								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
J1:1/1 (M1 Southbound Off-slip)	3.65	0.00	Y	Arm J1:2 Left	Inf	100.0 %	1980	1980
J1:1/2 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/3 (M1 Southbound Off-slip)	3.65	0.00	N	Arm J1:2 Left	Inf	100.0 %	2120	2120
J1:1/4 (M1 Southbound Off-slip Lane 4)	This lane uses a directly entered Saturation Flow						4000	4000
J1:2/1 (A45 Northbound Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:2/2 (A45 Northbound Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:2/3 (A45 Northbound Lane 3)	Infinite Saturation Flow						Inf	Inf
J1:3/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/3	This lane uses a directly entered Saturation Flow						1900	1900
J1:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J1:4/1 (A45 Southbound)	3.65	0.00	Y	Arm J1:5 Left	Inf	24.1 %	1980	1980
				Arm J1:18 Ahead	Inf	75.9 %		
J1:4/2 (A45 Southbound)	3.65	0.00	N	Arm J1:18 Ahead	Inf	100.0 %	2120	2120
J1:4/3 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/4 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:4/5 (A45 Southbound)	3.65	0.00	N	Arm J1:19 Ahead	Inf	100.0 %	2120	2120
J1:5/1 (Saxon Avenue Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:6/1 (Southbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/2 (Southbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:6/3 (Southbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:7/1 (M1 Southbound On-Slip Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:7/2 (M1 Southbound On-Slip Lane 2)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

J1:8/1 (Saxon Avenue)	3.50	0.00	Y	Arm J1:6 Left	Inf	42.2 %	1910	1910
				Arm J1:7 Left	30.00	57.8 %		
J1:8/2 (Saxon Avenue)	3.50	0.00	N	Arm J1:6 Left	Inf	100.0 %	2105	2105
J1:9/1 (M1 Northbound Off-Slip)	3.65	0.00	Y	Arm J1:10 Left	Inf	100.0 %	1980	1980
J1:9/2 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/3 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:9/4 (M1 Northbound Off-Slip)	3.65	0.00	N	Arm J1:16 Ahead	Inf	100.0 %	2120	2120
J1:10/1 (A508 Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
J1:10/2 (A508 Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
J1:11/1	This lane uses a directly entered Saturation Flow						1900	1900
J1:11/2	This lane uses a directly entered Saturation Flow						1900	1900
J1:12/1 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:12/2 (Toucan Crossing)	3.80	0.00	Y	Arm J1:14 Ahead	Inf	100.0 %	1995	1995
J1:13/1 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/2 (A508 Northampton Road)	3.65	0.00	Y	Arm J1:12 Left	Inf	100.0 %	1980	1980
J1:13/3 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/4 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:13/5 (A508 Northampton Road)	3.65	0.00	N	Arm J1:17 Ahead	Inf	100.0 %	2120	2120
J1:14/1	Infinite Saturation Flow						Inf	Inf
J1:14/2	Infinite Saturation Flow						Inf	Inf
J1:15/1 (Northbound Circulatory Lane 1)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/2 (Northbound Circulatory Lane 2)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/3 (Northbound Circulatory Lane 3)	This lane uses a directly entered Saturation Flow						2000	2000
J1:15/4 (Northbound Circulatory Lane 4)	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/2	This lane uses a directly entered Saturation Flow						2000	2000
J1:16/3	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/1	This lane uses a directly entered Saturation Flow						2000	2000
J1:17/2	This lane uses a directly entered Saturation Flow						2000	2000

J1:17/3	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:18/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/1	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/2	This lane uses a directly entered Saturation Flow	2000	2000
J1:19/3	This lane uses a directly entered Saturation Flow	2000	2000

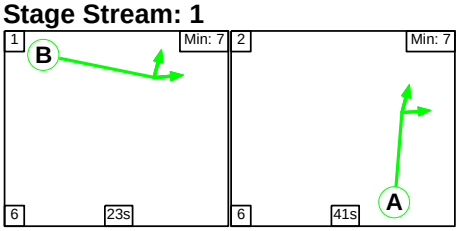
Junction: J2: Watering Lane

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
J2:1/1	Infinite Saturation Flow						Inf	Inf
J2:2/1	4.00	0.00	Y	Arm J2:4 Left	25.00	100.0 %	1901	1901
J2:3/1	3.65	0.00	Y	Arm J2:1 Left	15.00	100.0 %	1800	1800
J2:3/2	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/3	3.65	0.00	N	Arm J2:4 Ahead	Inf	100.0 %	2120	2120
J2:3/4	This lane uses a directly entered Saturation Flow						1900	1900
J2:4/1	Infinite Saturation Flow						Inf	Inf
J2:4/2	Infinite Saturation Flow						Inf	Inf
J2:4/3	Infinite Saturation Flow						Inf	Inf
J2:5/1	Infinite Saturation Flow						Inf	Inf
J2:5/2	Infinite Saturation Flow						Inf	Inf
J2:5/3	Infinite Saturation Flow						Inf	Inf

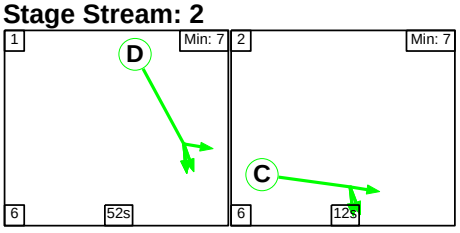
Scenario 13: '2021 DS5 AM' (FG11: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')
C1 - Eastside Controller

Stage Sequence Diagram

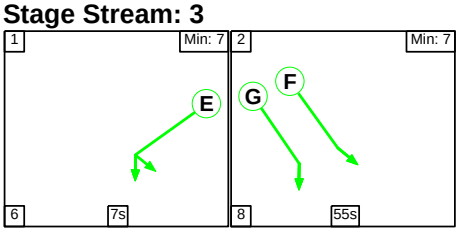
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Full Input Data And Results

Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	41
Change Point	0	29

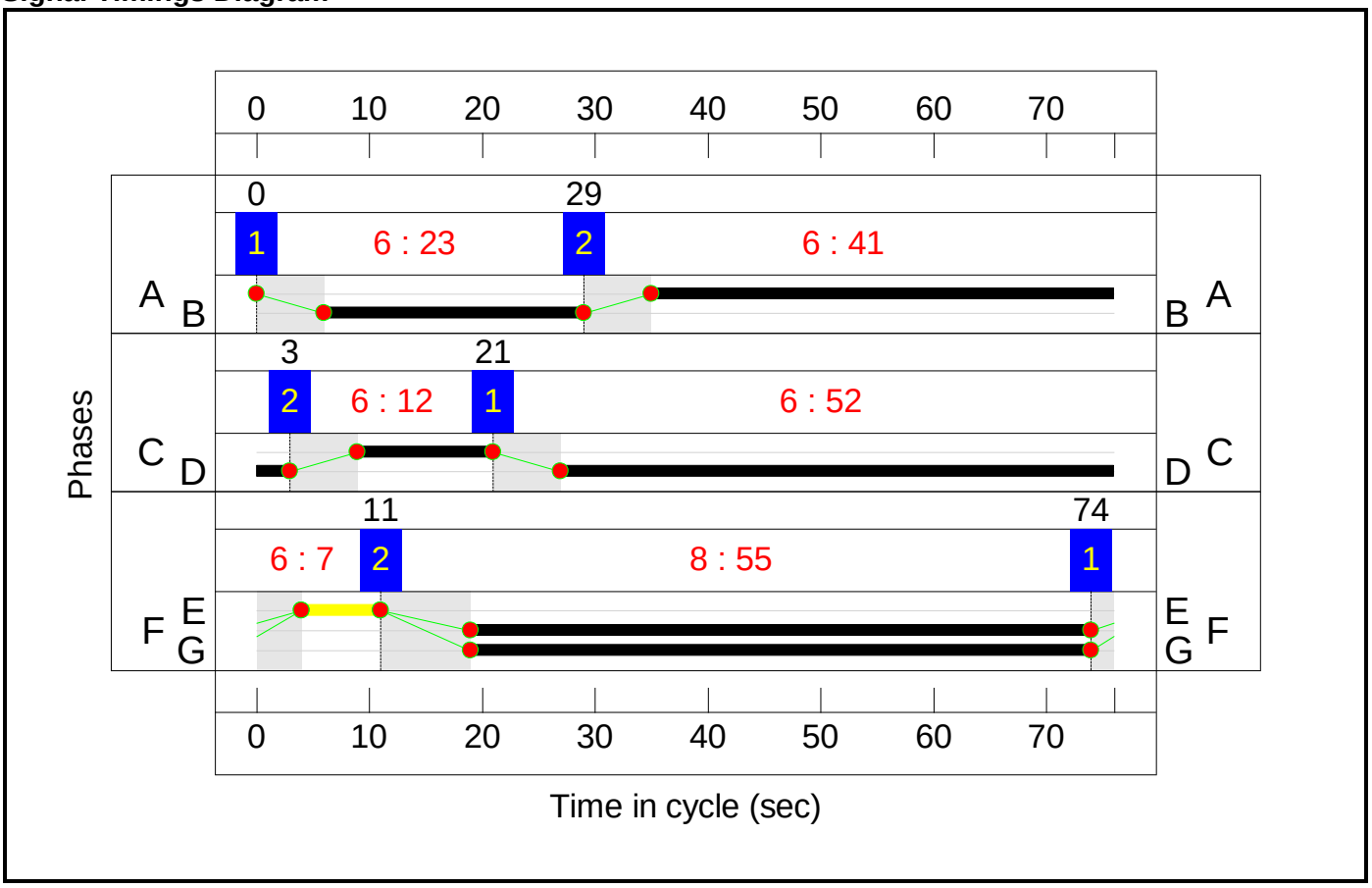
Stage Stream: 2

Stage	1	2
Duration	52	12
Change Point	21	3

Stage Stream: 3

Stage	1	2
Duration	7	55
Change Point	74	11

Signal Timings Diagram

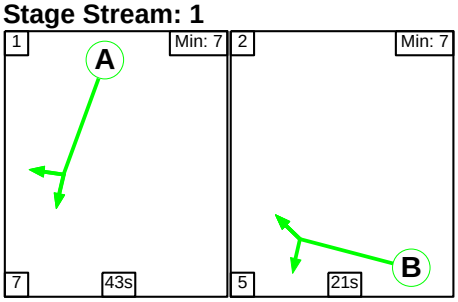


Full Input Data And Results

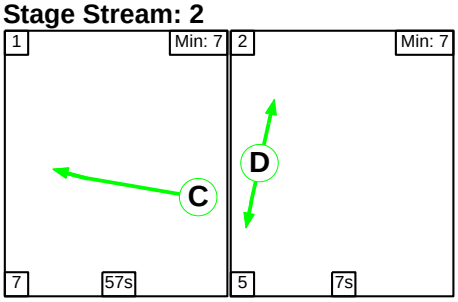
C2 - Westside Controller

Stage Sequence Diagram

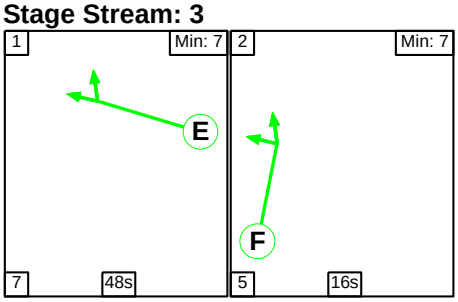
Stage Stream: 1



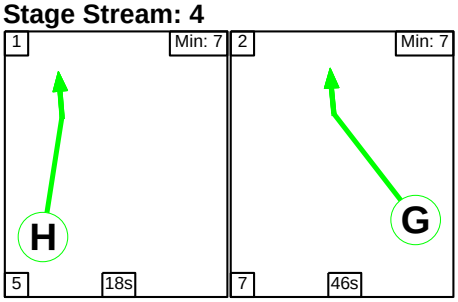
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	43	21
Change Point	27	1

Stage Stream: 2

Stage	1	2
Duration	57	7
Change Point	42	30

Full Input Data And Results

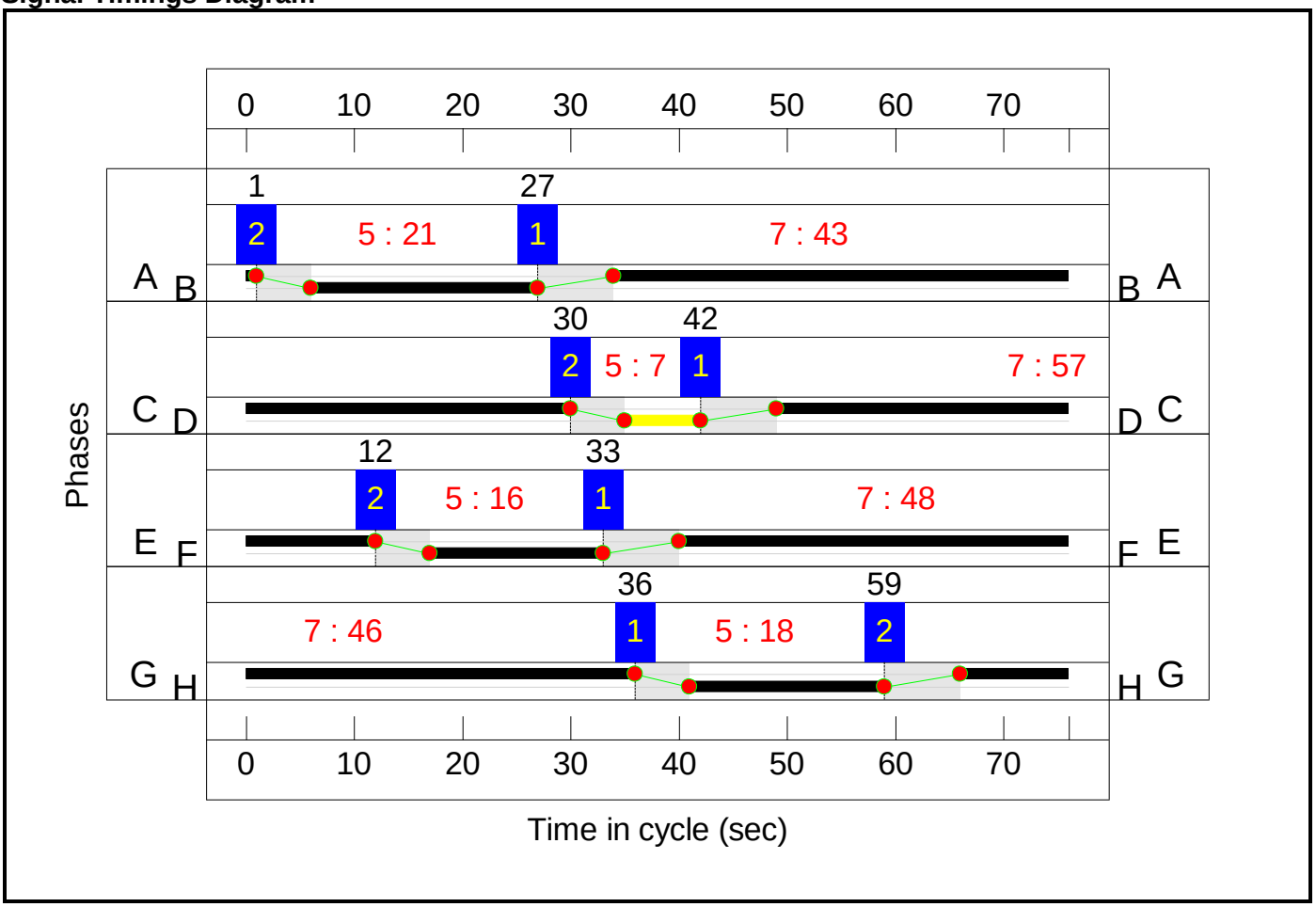
Stage Stream: 3

Stage	1	2
Duration	48	16
Change Point	33	12

Stage Stream: 4

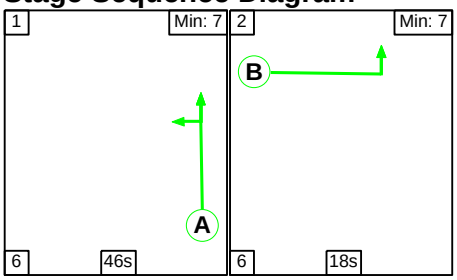
Stage	1	2
Duration	18	46
Change Point	36	59

Signal Timings Diagram



C3 - Watering Lane

Stage Sequence Diagram

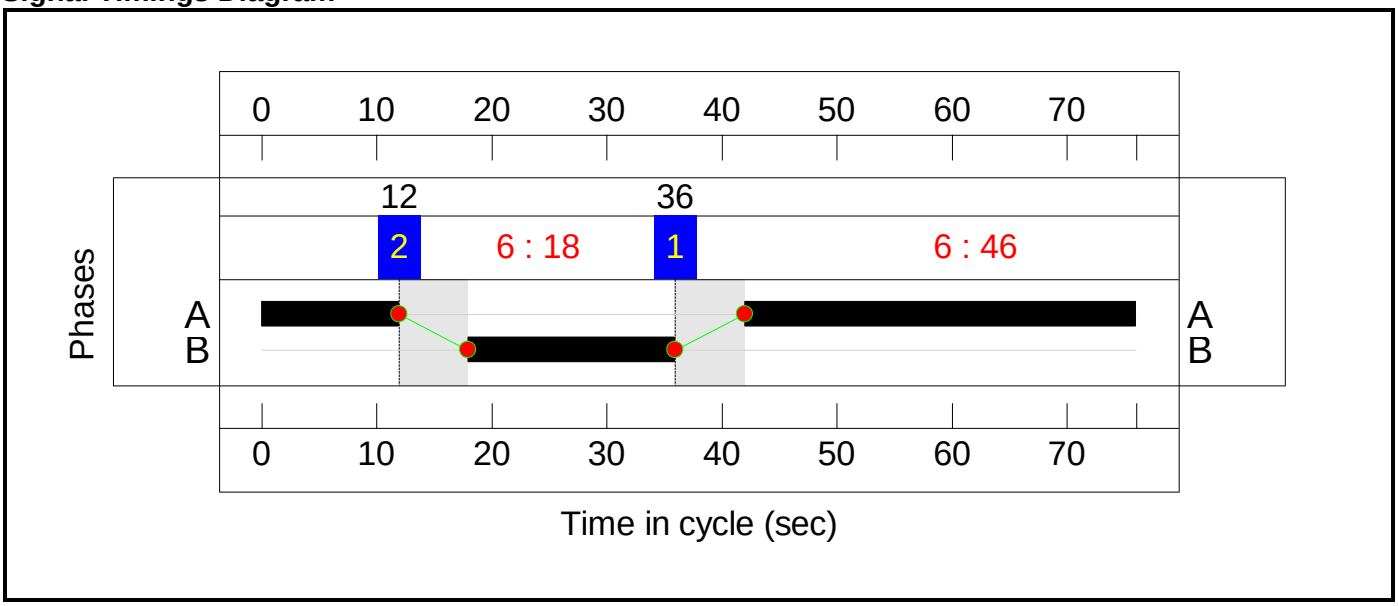


Full Input Data And Results

Stage Timings

Stage	1	2
Duration	46	18
Change Point	36	12

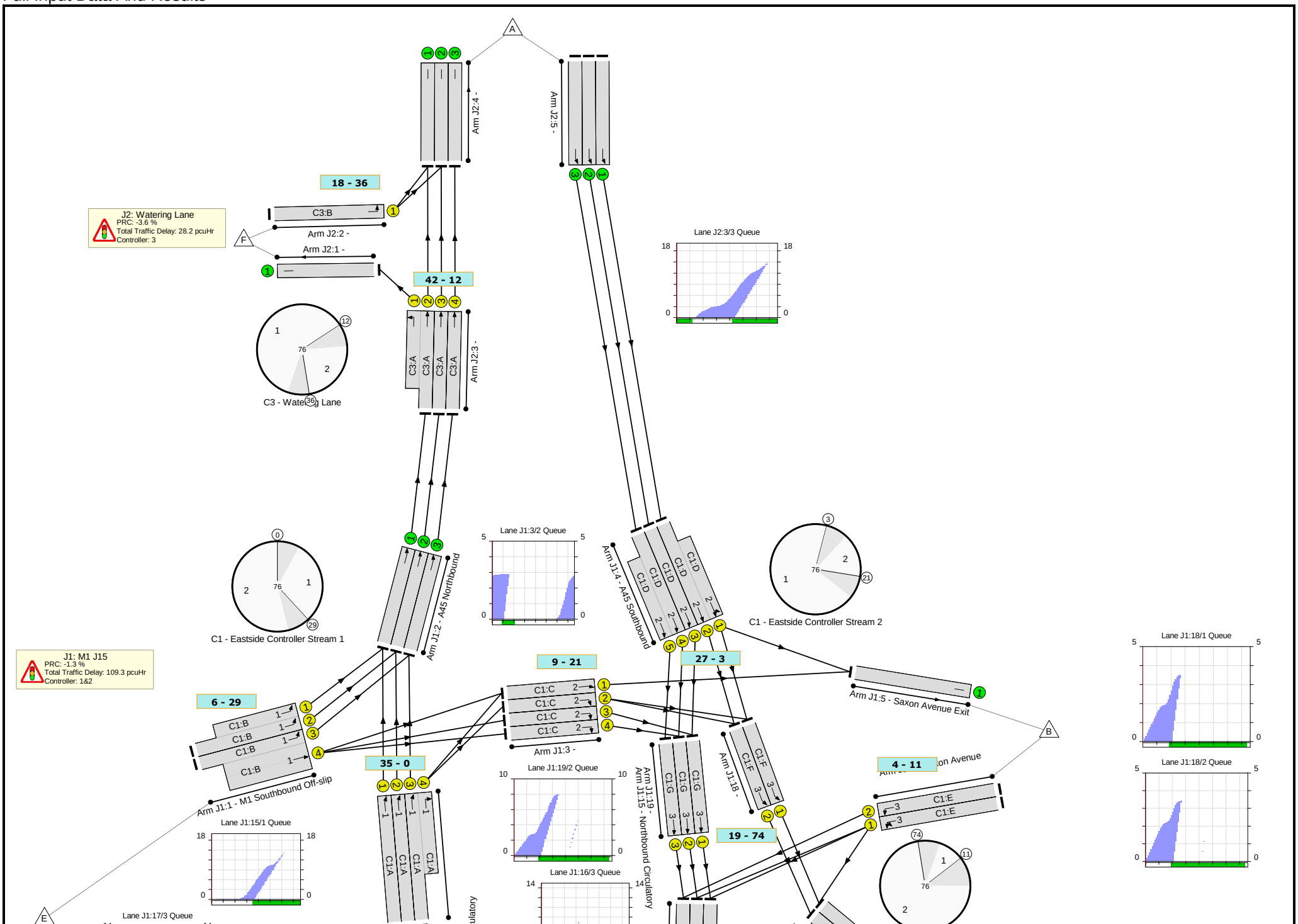
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.2%**
J1: M1 J15	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.2%**
1/2+1/1	M1 Southbound Off-slip Left	U	1:1	N/A	C1:B		1	23	-	1018	2120:1980	655+625	74.2 : 85.1%
1/3+1/4	M1 Southbound Off-slip Left Ahead	U	1:1	N/A	C1:B		1	23	-	1150	2120:4000	669+786	79.0 : 79.0%
2/1	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1279	Inf	Inf	0.0%
2/2	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1195	Inf	Inf	0.0%
2/3	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1063	Inf	Inf	0.0%
3/1	Ahead	U	1:2	N/A	C1:C		1	12	-	234	1900	325	72.0%
3/2	Right	U	1:2	N/A	C1:C		1	12	-	136	1900	325	41.8%
3/3	Right	U	1:2	N/A	C1:C		1	12	-	249	1900	325	76.6%
3/4	Right	U	1:2	N/A	C1:C		1	12	-	245	1900	325	75.4%
4/2+4/1	A45 Southbound Left Ahead	U	1:2	N/A	C1:D		1	52	-	1249	2120:1980	1020+1028	61.0 : 61.0%
4/3	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	52	-	794	2120	1478	53.7%
4/4+4/5	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	52	-	1800	2120:2120	936+1184	84.9 : 84.9%
5/1	Saxon Avenue Exit	U	N/A	N/A	-		-	-	-	318	Inf	Inf	0.0%
6/1	Southbound Circulatory Ahead	U	2:1	N/A	C2:A		1	43	-	1056	2000	1158	91.2%
6/2	Southbound Circulatory Ahead Right	U	2:1	N/A	C2:A		1	43	-	1053	2000	1158	90.9%
6/3	Southbound Circulatory Right	U	2:1	N/A	C2:A		1	43	-	1036	2000	1158	89.5%

Full Input Data And Results

7/1	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	699	Inf	Inf	0.0%
7/2	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	681	Inf	Inf	0.0%
8/1	Saxon Avenue Left Left2	U	1:3	N/A	C1:E		1	7	-	105	1894	199	52.7%
8/2	Saxon Avenue Left	U	1:3	N/A	C1:E		1	7	-	31	2105	222	14.0%
9/2+9/1	M1 Northbound Off-Slip Left Ahead	U	2:1	N/A	C2:B		1	21	-	752	2120:1980	606+282	84.7 : 84.7%
9/3+9/4	M1 Northbound Off-Slip Ahead	U	2:1	N/A	C2:B		1	21	-	1014	2120:2120	614+614	79.0 : 86.2%
10/1	A508 Exit	U	N/A	N/A	-		-	-	-	1295	Inf	Inf	0.0%
10/2	A508 Exit	U	N/A	N/A	-		-	-	-	691	Inf	Inf	0.0%
11/1	Ahead	U	2:3	N/A	C2:E		1	48	-	362	1900	1225	29.6%
11/2	Ahead Right	U	2:3	N/A	C2:E		1	48	-	1036	1900	1225	84.6%
12/1	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	591	1995	1523	38.8%
12/2	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	1060	1995	1523	69.6%
13/2+13/1	A508 Northampton Road Left	U	2:3	N/A	C2:F		1	16	-	268	1980:1980	75+443	51.7 : 51.7%
13/3	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	16	-	219	2120	474	46.2%
13/4+13/5	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	16	-	472	2120:2120	474+474	47.2 : 52.3%
14/1		U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1060	Inf	Inf	0.0%
15/1	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	41	-	747	2000	1105	67.6%
15/2	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	41	-	709	2000	1105	64.1%

Full Input Data And Results

15/3+15/4	Northbound Circulatory Ahead Right	U	1:1	N/A	C1:A		1	41	-	777	2000:2000	897+408	59.6 : 59.6%
16/1	Ahead	U	2:4	N/A	C2:G		1	46	-	513	2000	1237	41.5%
16/2	Ahead	U	2:4	N/A	C2:G		1	46	-	485	2000	1237	39.2%
16/3	Ahead	U	2:4	N/A	C2:G		1	46	-	529	2000	1237	42.8%
17/1	Ahead	U	2:4	N/A	C2:H		1	18	-	234	2000	500	46.8%
17/2	Ahead	U	2:4	N/A	C2:H		1	18	-	224	2000	500	44.8%
17/3	Ahead	U	2:4	N/A	C2:H		1	18	-	248	2000	500	49.6%
18/1	Ahead	U	1:3	N/A	C1:F		1	55	-	620	2000	1474	42.1%
18/2	Ahead	U	1:3	N/A	C1:F		1	55	-	681	2000	1474	46.2%
19/1	Ahead	U	1:3	N/A	C1:G		1	55	-	1043	2000	1474	70.8%
19/2	Ahead	U	1:3	N/A	C1:G		1	55	-	1040	2000	1474	70.6%
19/3	Ahead	U	1:3	N/A	C1:G		1	55	-	1005	2000	1474	68.2%
J2: Watering Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.2%**
1/1		U	N/A	N/A	-		-	-	-	290	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	C3:B		1	18	-	443	1901	475	93.2%
3/2+3/1	Left Ahead	U	N/A	N/A	C3:A		1	46	-	1279	2120:1800	1096+321	90.3 : 90.3%
3/3	Ahead	U	N/A	N/A	C3:A		1	46	-	1195	2120	1311	91.1%
3/4	Ahead	U	N/A	N/A	C3:A		1	46	-	1063	1900	1175	90.5%
4/1		U	N/A	N/A	-		-	-	-	1210	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	1417	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	1063	Inf	Inf	0.0%
5/1	Ahead	U	N/A	N/A	-		-	-	-	1249	Inf	Inf	0.0%
5/2	Ahead	U	N/A	N/A	-		-	-	-	794	Inf	Inf	0.0%
5/3	Ahead	U	N/A	N/A	-		-	-	-	1800	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**72.2**	**65.3**	**0.0**	**137.5**	**-**	**-**	**-**	**-**
J1: M1 J15	**-**	**-**	**0**	**0**	**0**	**62.7**	**46.6**	**0.0**	**109.3**	**-**	**-**	**-**	**-**
1/2+1/1	1018	1018	-	-	-	6.7	1.9	-	8.6	30.5	10.5	1.9	12.4
1/3+1/4	1150	1150	-	-	-	7.1	1.9	-	9.0	28.1	10.1	1.9	12.0
2/1	1279	1279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	1195	1195	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/3	1063	1063	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	234	234	-	-	-	1.8	1.3	-	3.0	46.6	3.7	1.3	4.9
3/2	136	136	-	-	-	0.8	0.4	-	1.2	31.0	2.9	0.4	3.2
3/3	249	249	-	-	-	1.4	1.6	-	2.9	42.5	1.8	1.6	3.3
3/4	245	245	-	-	-	1.3	1.5	-	2.8	41.4	1.7	1.5	3.2
4/2+4/1	1249	1249	-	-	-	1.7	0.8	-	2.5	7.3	5.7	0.8	6.5
4/3	794	794	-	-	-	1.2	0.6	-	1.8	8.2	7.9	0.6	8.5
4/4+4/5	1800	1800	-	-	-	3.1	2.8	-	5.8	11.7	12.0	2.8	14.8
5/1	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1056	1056	-	-	-	2.2	4.7	-	7.0	23.8	20.7	4.7	25.4
6/2	1053	1053	-	-	-	2.2	4.6	-	6.8	23.4	20.6	4.6	25.2
6/3	1036	1036	-	-	-	1.7	4.0	-	5.7	19.9	8.5	4.0	12.5
7/1	699	699	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	681	681	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	105	105	-	-	-	0.9	0.5	-	1.5	51.1	2.1	0.5	2.6
8/2	31	31	-	-	-	0.3	0.1	-	0.3	40.3	0.6	0.1	0.7
9/2+9/1	752	752	-	-	-	5.1	2.7	-	7.7	37.0	10.1	2.7	12.8
9/3+9/4	1014	1014	-	-	-	7.1	2.3	-	9.4	33.5	10.4	2.3	12.8
10/1	1295	1295	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	691	691	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	362	362	-	-	-	0.0	0.2	-	0.2	2.2	0.0	0.2	0.2

Full Input Data And Results

11/2	1036	1036	-	-	-	0.1	2.7	-	2.7	9.5	8.4	2.7	11.1
12/1	591	591	-	-	-	0.3	0.3	-	0.7	4.0	2.5	0.3	2.8
12/2	1060	1060	-	-	-	0.0	1.1	-	1.2	4.0	1.3	1.1	2.4
13/2+13/1	268	268	-	-	-	1.9	0.5	-	2.4	32.7	4.2	0.5	4.7
13/3	219	219	-	-	-	1.6	0.4	-	2.0	32.6	4.0	0.4	4.4
13/4+13/5	472	472	-	-	-	3.4	0.5	-	3.9	29.6	4.5	0.5	5.0
14/1	591	591	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1060	1060	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	747	747	-	-	-	1.2	1.0	-	2.3	10.9	14.0	1.0	15.1
15/2	709	709	-	-	-	1.1	0.9	-	2.0	10.2	11.1	0.9	12.0
15/3+15/4	777	777	-	-	-	1.1	0.7	-	1.8	8.4	9.8	0.7	10.5
16/1	513	513	-	-	-	0.1	0.4	-	0.4	3.0	6.3	0.4	6.6
16/2	485	485	-	-	-	0.1	0.3	-	0.4	2.8	5.7	0.3	6.0
16/3	529	529	-	-	-	0.1	0.4	-	0.4	3.1	6.8	0.4	7.2
17/1	234	234	-	-	-	1.1	0.4	-	1.5	23.7	4.9	0.4	5.3
17/2	224	224	-	-	-	1.0	0.4	-	1.4	22.1	4.7	0.4	5.1
17/3	248	248	-	-	-	1.1	0.5	-	1.6	22.8	5.2	0.5	5.7
18/1	620	620	-	-	-	0.5	0.4	-	0.8	4.9	3.5	0.4	3.9
18/2	681	681	-	-	-	0.5	0.4	-	1.0	5.1	3.4	0.4	3.9
19/1	1043	1043	-	-	-	1.0	1.2	-	2.2	7.6	8.0	1.2	9.2
19/2	1040	1040	-	-	-	1.0	1.2	-	2.2	7.5	7.9	1.2	9.1
19/3	1005	1005	-	-	-	0.8	1.1	-	1.9	6.8	9.0	1.1	10.1
J2: Watering Lane	**-**	**-**	**0**	**0**	**0**	**9.5**	**18.7**	**0.0**	**28.2**	**-**	**-**	**-**	**-**
1/1	290	290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	443	443	-	-	-	3.4	5.2	-	8.6	70.1	9.1	5.2	14.3
3/2+3/1	1279	1279	-	-	-	2.0	4.4	-	6.3	17.8	11.5	4.4	15.9
3/3	1195	1195	-	-	-	2.4	4.8	-	7.2	21.6	14.8	4.8	19.5
3/4	1063	1063	-	-	-	1.7	4.4	-	6.1	20.7	16.4	4.4	20.8
4/1	1210	1210	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

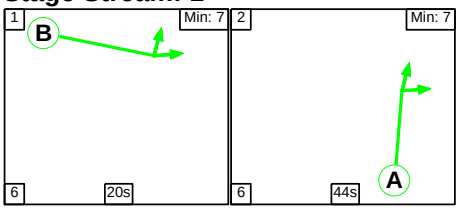
4/2	1417	1417	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	1063	1063	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1249	1249	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	794	794	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	1800	1800	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - Eastside Controller	Stream: 1 PRC for Signalled Lanes (%):	5.8	Total Delay for Signalled Lanes (pcuHr):	23.70	Cycle Time (s): 76
C1 - Eastside Controller	Stream: 2 PRC for Signalled Lanes (%):	6.0	Total Delay for Signalled Lanes (pcuHr):	20.13	Cycle Time (s): 76
C1 - Eastside Controller	Stream: 3 PRC for Signalled Lanes (%):	27.2	Total Delay for Signalled Lanes (pcuHr):	9.92	Cycle Time (s): 76
C2 - Westside Controller	Stream: 1 PRC for Signalled Lanes (%):	-1.3	Total Delay for Signalled Lanes (pcuHr):	36.70	Cycle Time (s): 76
C2 - Westside Controller	Stream: 2 PRC for Signalled Lanes (%):	29.3	Total Delay for Signalled Lanes (pcuHr):	1.85	Cycle Time (s): 76
C2 - Westside Controller	Stream: 3 PRC for Signalled Lanes (%):	6.4	Total Delay for Signalled Lanes (pcuHr):	11.23	Cycle Time (s): 76
C2 - Westside Controller	Stream: 4 PRC for Signalled Lanes (%):	81.5	Total Delay for Signalled Lanes (pcuHr):	5.73	Cycle Time (s): 76
C3 - Watering Lane	PRC for Signalled Lanes (%):	-3.6	Total Delay for Signalled Lanes (pcuHr):	28.23	Cycle Time (s): 76
	PRC Over All Lanes (%):	-3.6	Total Delay Over All Lanes(pcuHr):	137.50	

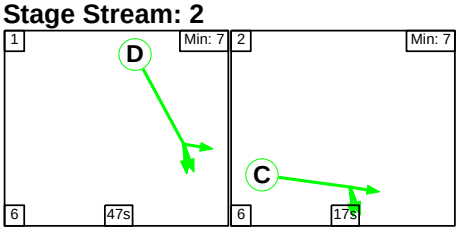
Full Input Data And Results
Scenario 14: '2021 DS5 PM' (FG12: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')
C1 - Eastside Controller

Stage Sequence Diagram

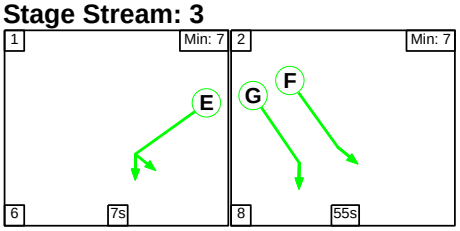
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	20	44
Change Point	0	26

Stage Stream: 2

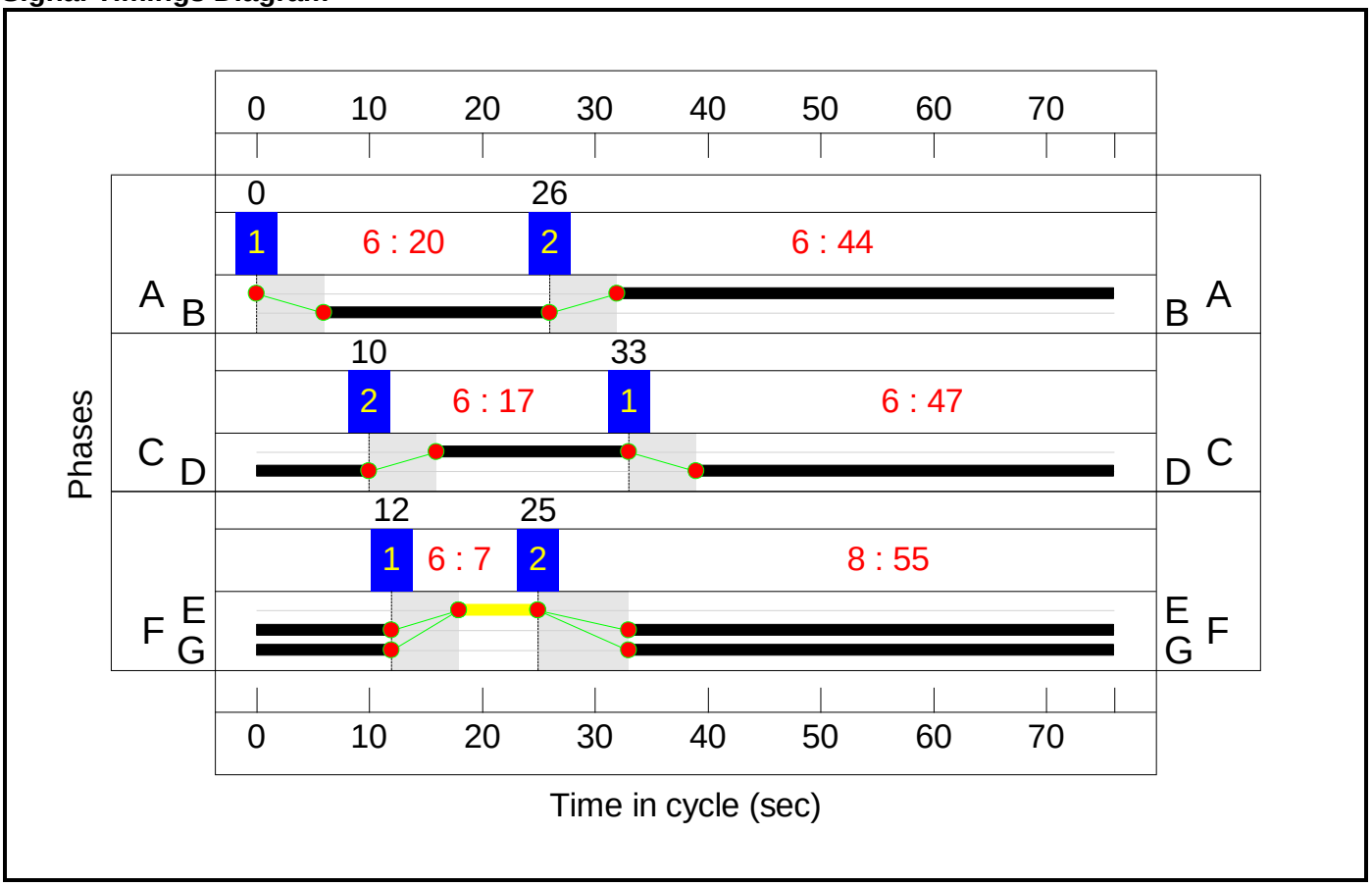
Stage	1	2
Duration	47	17
Change Point	33	10

Stage Stream: 3

Stage	1	2
Duration	7	55
Change Point	12	25

Full Input Data And Results

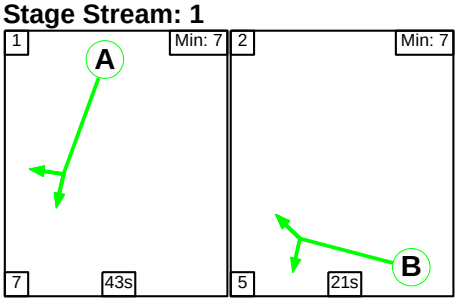
Signal Timings Diagram



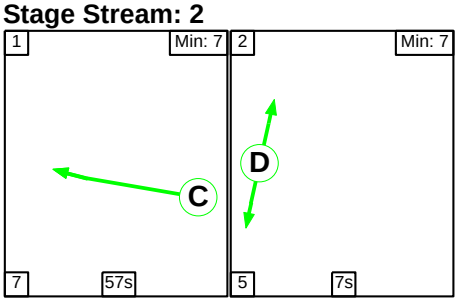
C2 - Westside Controller

Stage Sequence Diagram

Stage Stream: 1

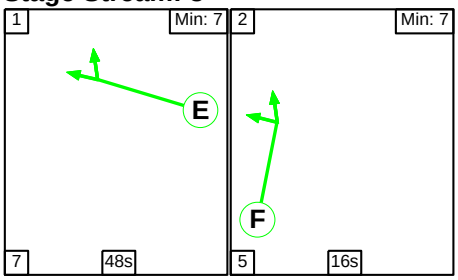


Stage Stream: 2

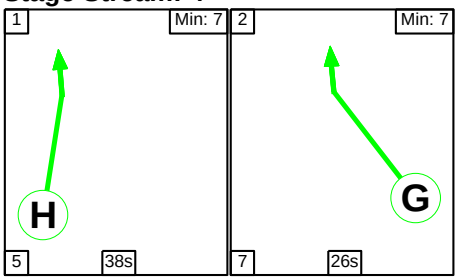


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	43	21
Change Point	37	11

Stage Stream: 2

Stage	1	2
Duration	57	7
Change Point	54	42

Stage Stream: 3

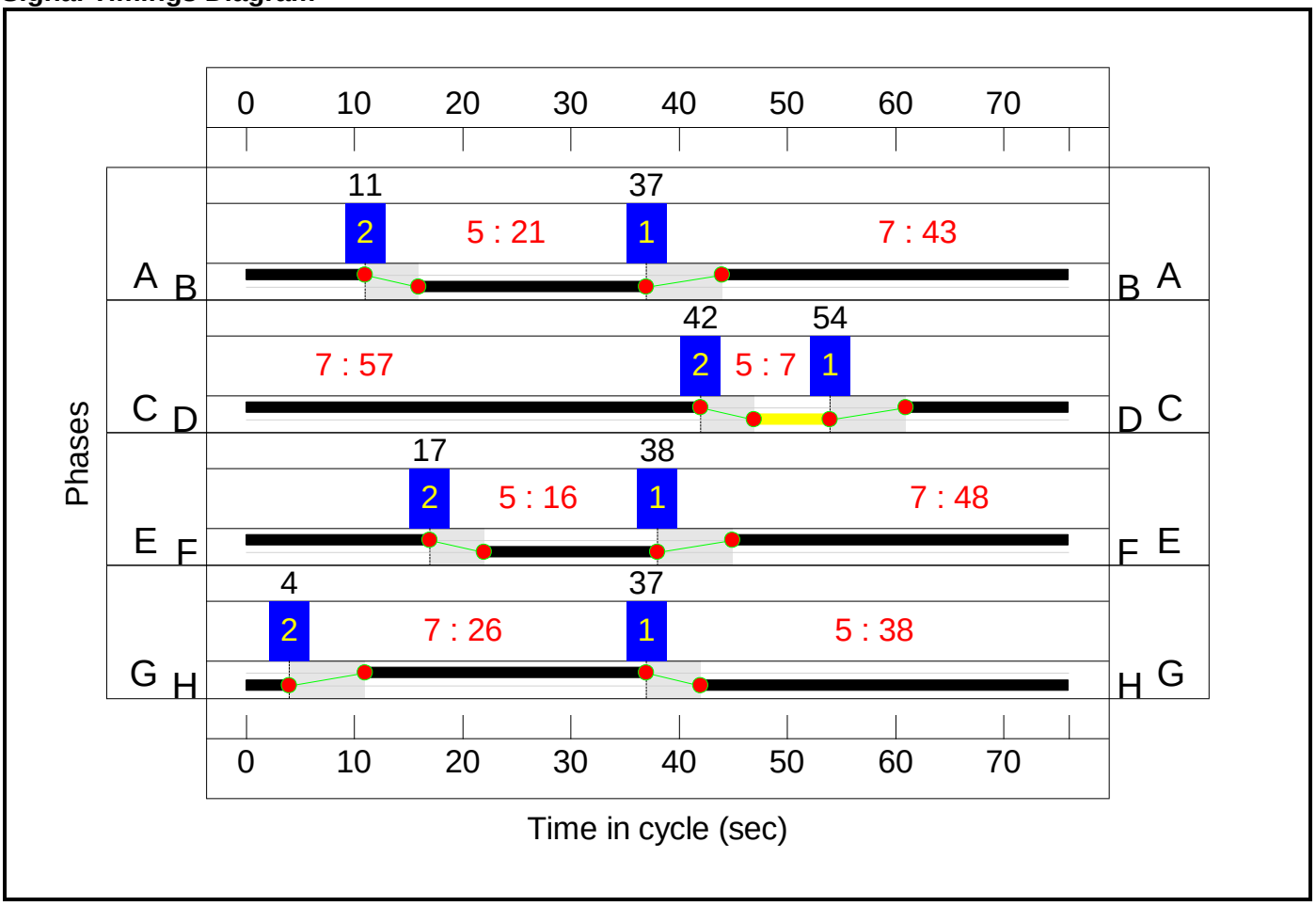
Stage	1	2
Duration	48	16
Change Point	38	17

Stage Stream: 4

Stage	1	2
Duration	38	26
Change Point	37	4

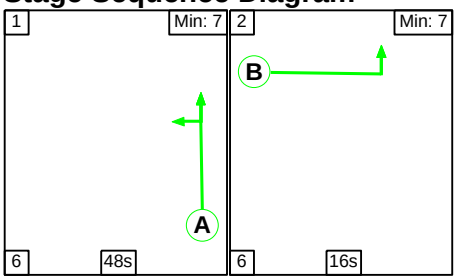
Full Input Data And Results

Signal Timings Diagram



C3 - Watering Lane

Stage Sequence Diagram

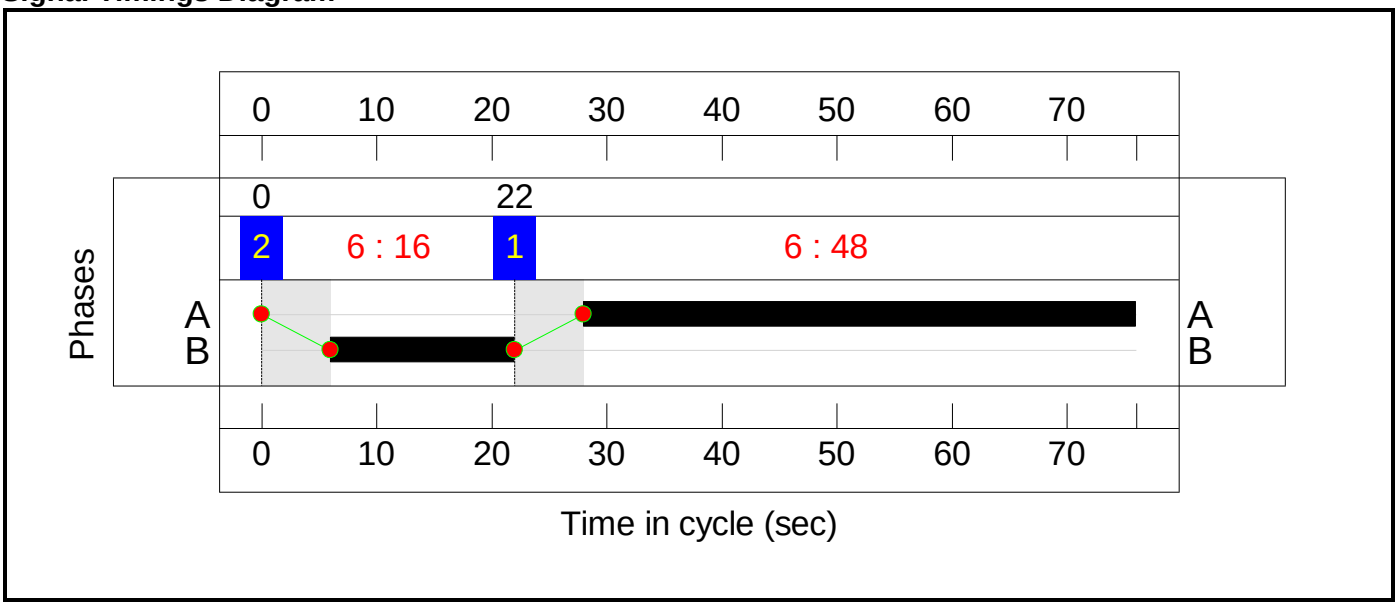


Stage Timings

Stage	1	2
Duration	48	16
Change Point	22	0

Full Input Data And Results

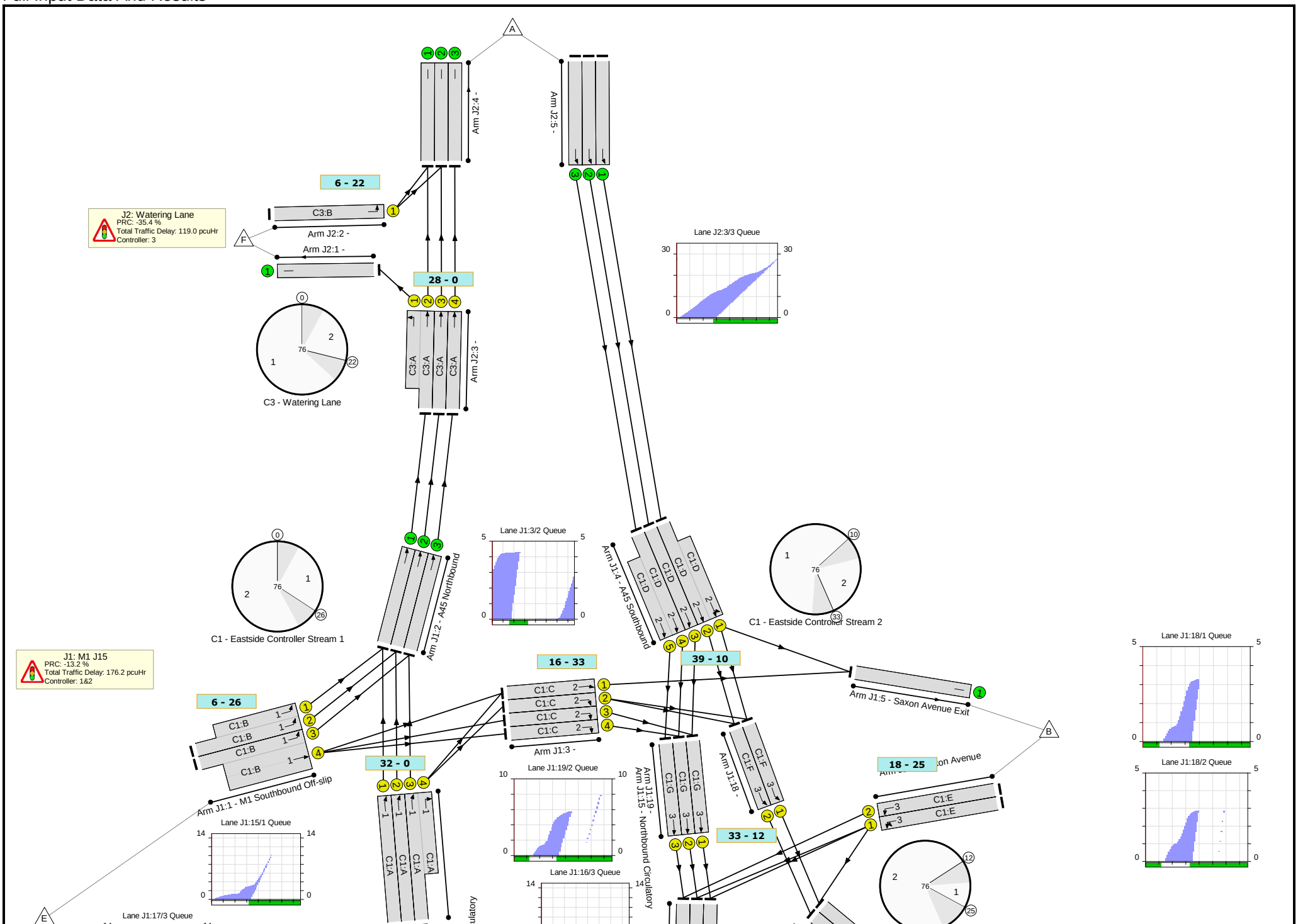
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**121.8%**
J1: M1 J15	-	-	**N/A**	-	-		-	-	-	-	-	-	**101.9%**
1/2+1/1	M1 Southbound Off-slip Left	U	1:1	N/A	C1:B		1	20	-	776	2120:1980	586+547	61.6 : 75.9%
1/3+1/4	M1 Southbound Off-slip Left Ahead	U	1:1	N/A	C1:B		1	20	-	970	2120:4000	586+628	79.9 : 79.9%
2/1	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1443	Inf	Inf	0.0%
2/2	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1368	Inf	Inf	0.0%
2/3	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1209	Inf	Inf	0.0%
3/1	Ahead	U	1:2	N/A	C1:C		1	17	-	222	1900	450	49.2%
3/2	Right	U	1:2	N/A	C1:C		1	17	-	206	1900	450	44.9%
3/3	Right	U	1:2	N/A	C1:C		1	17	-	179	1900	450	39.8%
3/4	Right	U	1:2	N/A	C1:C		1	17	-	205	1900	450	45.6%
4/2+4/1	A45 Southbound Left Ahead	U	1:2	N/A	C1:D		1	47	-	1293	2120:1980	1010+1037	63.2 : 63.2%
4/3	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	47	-	919	2120	1339	68.6%
4/4+4/5	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	47	-	1823	2120:2120	1006+1114	86.0 : 86.0%
5/1	Saxon Avenue Exit	U	N/A	N/A	-		-	-	-	376	Inf	Inf	0.0%
6/1	Southbound Circulatory Ahead	U	2:1	N/A	C2:A		1	43	-	1107	2000	1158	95.6%
6/2	Southbound Circulatory Ahead Right	U	2:1	N/A	C2:A		1	43	-	1103	2000	1158	95.3%
6/3	Southbound Circulatory Right	U	2:1	N/A	C2:A		1	43	-	1081	2000	1158	93.4%

Full Input Data And Results

7/1	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	685	Inf	Inf	0.0%
7/2	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	725	Inf	Inf	0.0%
8/1	Saxon Avenue Left Left2	U	1:3	N/A	C1:E		1	7	-	107	1907	201	53.3%
8/2	Saxon Avenue Left	U	1:3	N/A	C1:E		1	7	-	123	2105	222	55.5%
9/2+9/1	M1 Northbound Off-Slip Left Ahead	U	2:1	N/A	C2:B		1	21	-	653	2120:1980	608+240	77.0 : 77.0%
9/3+9/4	M1 Northbound Off-Slip Ahead	U	2:1	N/A	C2:B		1	21	-	998	2120:2120	614+614	79.8 : 82.8%
10/1	A508 Exit	U	N/A	N/A	-		-	-	-	1292	Inf	Inf	0.0%
10/2	A508 Exit	U	N/A	N/A	-		-	-	-	254	Inf	Inf	0.0%
11/1	Ahead	U	2:3	N/A	C2:E		1	48	-	849	1900	1225	69.3%
11/2	Ahead Right	U	2:3	N/A	C2:E		1	48	-	1081	1900	1225	88.2%
12/1	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	1221	1995	1523	80.2%
12/2	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	1255	1995	1523	82.4%
13/2+13/1	A508 Northampton Road Left	U	2:3	N/A	C2:F		1	16	-	724	1980:1980	424+443	82.9 : 84.0%
13/3	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	16	-	476	2120	474	100.4%
13/4+13/5	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	16	-	966	2120:2120	474+474	101.9 : 101.9%
14/1		U	N/A	N/A	-		-	-	-	1221	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1255	Inf	Inf	0.0%
15/1	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	44	-	1028	2000	1184	86.7%
15/2	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	44	-	1007	2000	1184	84.3%

Full Input Data And Results

15/3+15/4	Northbound Circulatory Ahead Right	U	1:1	N/A	C1:A		1	44	-	1051	2000:2000	964+403	76.4 : 75.7%
16/1	Ahead	U	2:4	N/A	C2:G		1	26	-	468	2000	711	65.9%
16/2	Ahead	U	2:4	N/A	C2:G		1	26	-	490	2000	711	69.0%
16/3	Ahead	U	2:4	N/A	C2:G		1	26	-	508	2000	711	71.5%
17/1	Ahead	U	2:4	N/A	C2:H		1	38	-	560	2000	1026	54.4%
17/2	Ahead	U	2:4	N/A	C2:H		1	38	-	517	2000	1026	49.5%
17/3	Ahead	U	2:4	N/A	C2:H		1	38	-	543	2000	1026	52.1%
18/1	Ahead	U	1:3	N/A	C1:F		1	55	-	620	2000	1474	41.9%
18/2	Ahead	U	1:3	N/A	C1:F		1	55	-	725	2000	1474	49.1%
19/1	Ahead	U	1:3	N/A	C1:G		1	55	-	1098	2000	1474	74.5%
19/2	Ahead	U	1:3	N/A	C1:G		1	55	-	1070	2000	1474	72.6%
19/3	Ahead	U	1:3	N/A	C1:G		1	55	-	958	2000	1474	65.0%
J2: Watering Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**121.8%**
1/1		U	N/A	N/A	-		-	-	-	266	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	C3:B		1	16	-	518	1901	425	121.8%
3/2+3/1	Left Ahead	U	N/A	N/A	C3:A		1	48	-	1443	2120:1800	1179+266	99.7 : 99.8%
3/3	Ahead	U	N/A	N/A	C3:A		1	48	-	1368	2120	1367	99.4%
3/4	Ahead	U	N/A	N/A	C3:A		1	48	-	1209	1900	1225	98.3%
4/1		U	N/A	N/A	-		-	-	-	1436	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	1627	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	1209	Inf	Inf	0.0%
5/1	Ahead	U	N/A	N/A	-		-	-	-	1293	Inf	Inf	0.0%
5/2	Ahead	U	N/A	N/A	-		-	-	-	919	Inf	Inf	0.0%
5/3	Ahead	U	N/A	N/A	-		-	-	-	1823	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**101.7**	**193.5**	**0.0**	**295.2**	**-**	**-**	**-**	**-**
J1: M1 J15	**-**	**-**	**0**	**0**	**0**	**79.4**	**96.8**	**0.0**	**176.2**	**-**	**-**	**-**	**-**
1/2+1/1	776	776	-	-	-	5.3	1.1	-	6.4	29.6	8.0	1.1	9.0
1/3+1/4	970	970	-	-	-	6.5	2.0	-	8.5	31.4	9.1	2.0	11.1
2/1	1441	1441	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	1359	1359	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/3	1205	1205	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	221	221	-	-	-	1.2	0.5	-	1.7	27.1	4.3	0.5	4.7
3/2	202	202	-	-	-	1.4	0.4	-	1.8	31.9	4.3	0.4	4.7
3/3	179	179	-	-	-	0.1	0.3	-	0.4	8.9	2.7	0.3	3.0
3/4	205	205	-	-	-	0.1	0.4	-	0.6	9.9	3.3	0.4	3.7
4/2+4/1	1293	1293	-	-	-	2.7	0.9	-	3.6	9.9	7.5	0.9	8.3
4/3	919	919	-	-	-	2.3	1.1	-	3.4	13.4	12.5	1.1	13.6
4/4+4/5	1823	1823	-	-	-	4.6	3.0	-	7.6	15.0	13.6	3.0	16.6
5/1	375	375	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1107	1107	-	-	-	2.0	8.2	-	10.2	33.2	21.7	8.2	29.9
6/2	1103	1103	-	-	-	2.2	7.8	-	10.0	32.7	21.8	7.8	29.7
6/3	1081	1081	-	-	-	2.4	6.1	-	8.5	28.3	9.5	6.1	15.6
7/1	683	683	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	723	723	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	107	107	-	-	-	1.0	0.6	-	1.5	51.2	2.1	0.6	2.7
8/2	123	123	-	-	-	1.1	0.6	-	1.7	50.4	2.5	0.6	3.1
9/2+9/1	653	653	-	-	-	4.3	1.6	-	5.9	32.7	9.0	1.6	10.6
9/3+9/4	998	998	-	-	-	7.0	2.1	-	9.1	32.8	10.0	2.1	12.2
10/1	1292	1292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	254	254	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	849	849	-	-	-	0.2	1.1	-	1.3	5.7	1.6	1.1	2.7

Full Input Data And Results

11/2	1081	1081	-	-	-	0.3	3.6	-	3.9	12.9	8.5	3.6	12.0
12/1	1221	1221	-	-	-	0.5	2.0	-	2.5	7.5	6.3	2.0	8.3
12/2	1255	1255	-	-	-	0.4	2.3	-	2.8	7.9	5.6	2.3	7.9
13/2+13/1	724	724	-	-	-	5.6	2.4	-	8.1	40.2	7.4	2.4	9.9
13/3	476	474	-	-	-	4.0	11.4	-	15.3	115.9	10.1	11.4	21.5
13/4+13/5	966	948	-	-	-	8.5	20.5	-	29.0	108.2	10.4	20.5	30.9
14/1	1221	1221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1255	1255	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	1026	1026	-	-	-	0.8	3.1	-	3.9	13.8	10.0	3.1	13.2
15/2	998	998	-	-	-	0.8	2.6	-	3.4	12.2	10.2	2.6	12.8
15/3+15/4	1042	1042	-	-	-	0.9	1.6	-	2.5	8.7	11.0	1.6	12.6
16/1	468	468	-	-	-	1.2	1.0	-	2.2	16.6	5.1	1.0	6.1
16/2	490	490	-	-	-	1.5	1.1	-	2.6	19.2	5.2	1.1	6.3
16/3	508	508	-	-	-	1.8	1.2	-	3.0	21.3	5.2	1.2	6.5
17/1	558	558	-	-	-	2.1	0.6	-	2.7	17.2	10.9	0.6	11.5
17/2	508	508	-	-	-	1.6	0.5	-	2.1	15.1	10.0	0.5	10.5
17/3	534	534	-	-	-	1.6	0.5	-	2.2	14.8	10.0	0.5	10.6
18/1	618	618	-	-	-	0.5	0.4	-	0.8	4.9	3.3	0.4	3.6
18/2	723	723	-	-	-	0.5	0.5	-	0.9	4.6	3.3	0.5	3.8
19/1	1098	1098	-	-	-	0.9	1.5	-	2.4	7.8	9.5	1.5	11.0
19/2	1070	1070	-	-	-	1.0	1.3	-	2.3	7.7	7.9	1.3	9.2
19/3	958	958	-	-	-	0.4	0.9	-	1.4	5.1	10.6	0.9	11.6
J2: Watering Lane	**-**	**-**	**0**	**0**	**0**	**22.3**	**96.7**	**0.0**	**119.0**	**-**	**-**	**-**	**-**
1/1	263	263	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	518	425	-	-	-	7.7	49.0	-	56.8	394.6	12.9	49.0	61.9
3/2+3/1	1441	1428	-	-	-	5.6	18.0	-	23.7	59.1	30.0	18.0	48.0
3/3	1359	1359	-	-	-	5.6	16.6	-	22.3	59.0	27.7	16.6	44.3
3/4	1205	1205	-	-	-	3.3	13.0	-	16.3	48.7	20.1	13.0	33.1
4/1	1377	1377	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

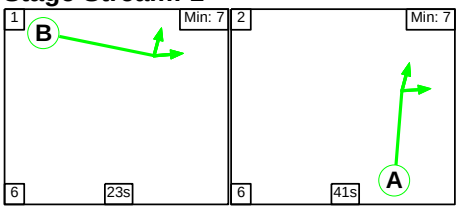
4/2	1572	1572	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	1205	1205	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1293	1293	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	919	919	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	1823	1823	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - Eastside Controller	Stream: 1 PRC for Signalled Lanes (%):	3.9	Total Delay for Signalled Lanes (pcuHr):	24.66	Cycle Time (s):	76
C1 - Eastside Controller	Stream: 2 PRC for Signalled Lanes (%):	4.7	Total Delay for Signalled Lanes (pcuHr):	19.05	Cycle Time (s):	76
C1 - Eastside Controller	Stream: 3 PRC for Signalled Lanes (%):	20.8	Total Delay for Signalled Lanes (pcuHr):	11.04	Cycle Time (s):	76
C2 - Westside Controller	Stream: 1 PRC for Signalled Lanes (%):	-6.2	Total Delay for Signalled Lanes (pcuHr):	43.76	Cycle Time (s):	76
C2 - Westside Controller	Stream: 2 PRC for Signalled Lanes (%):	9.2	Total Delay for Signalled Lanes (pcuHr):	5.28	Cycle Time (s):	76
C2 - Westside Controller	Stream: 3 PRC for Signalled Lanes (%):	-13.2	Total Delay for Signalled Lanes (pcuHr):	57.68	Cycle Time (s):	76
C2 - Westside Controller	Stream: 4 PRC for Signalled Lanes (%):	25.9	Total Delay for Signalled Lanes (pcuHr):	14.77	Cycle Time (s):	76
C3 - Watering Lane	PRC for Signalled Lanes (%):	-35.4	Total Delay for Signalled Lanes (pcuHr):	119.00	Cycle Time (s):	76
	PRC Over All Lanes (%):	-35.4	Total Delay Over All Lanes(pcuHr):	295.23		

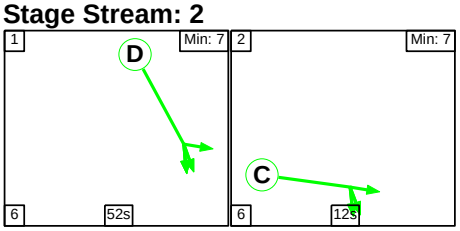
Full Input Data And Results
Scenario 15: '2031 DS5 AM' (FG13: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')
C1 - Eastside Controller

Stage Sequence Diagram

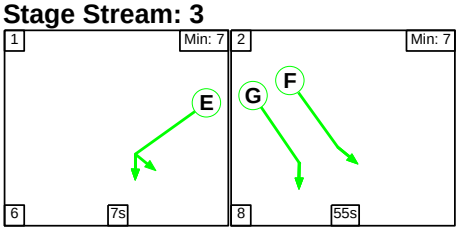
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	23	41
Change Point	0	29

Stage Stream: 2

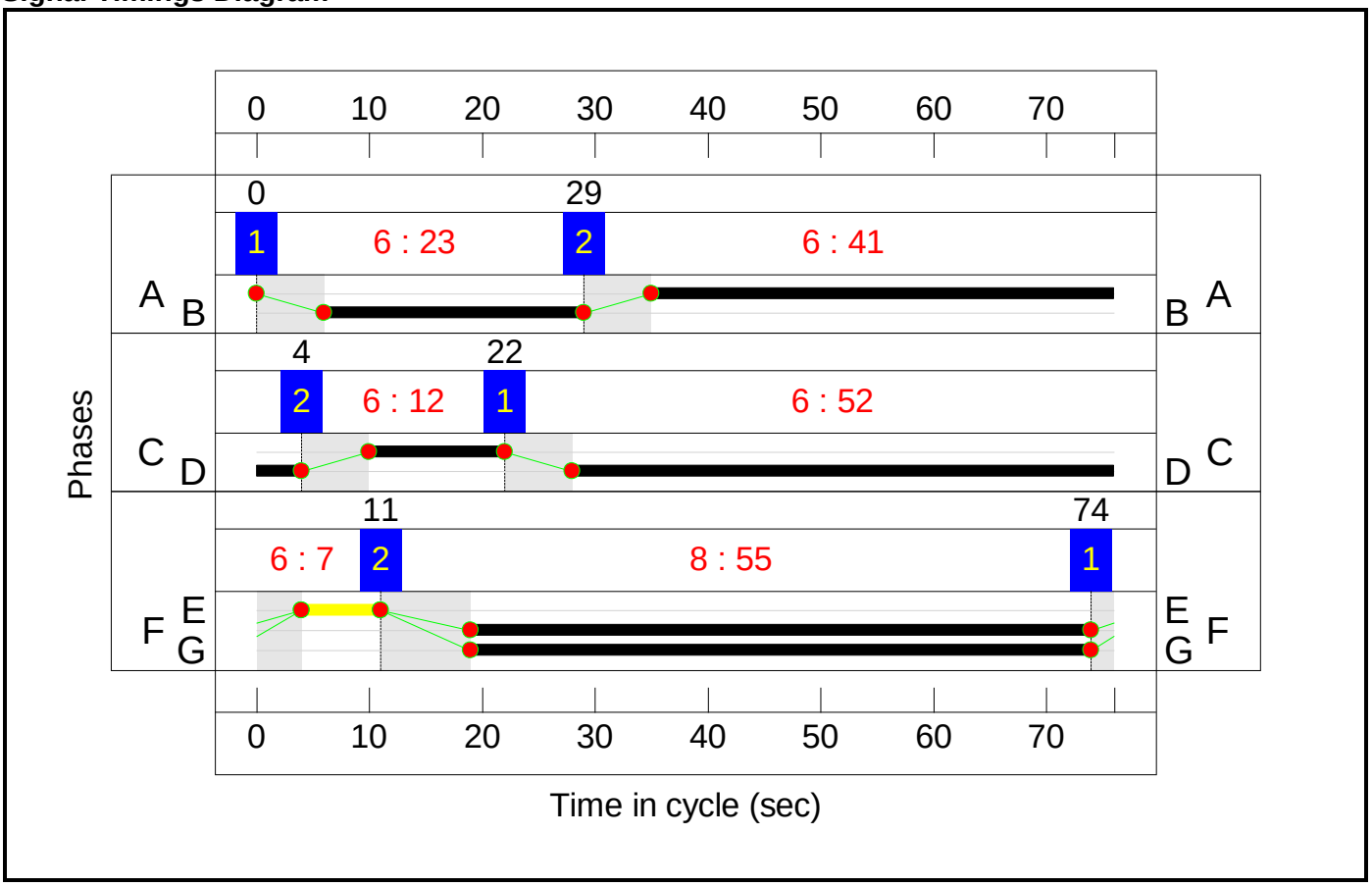
Stage	1	2
Duration	52	12
Change Point	22	4

Stage Stream: 3

Stage	1	2
Duration	7	55
Change Point	74	11

Full Input Data And Results

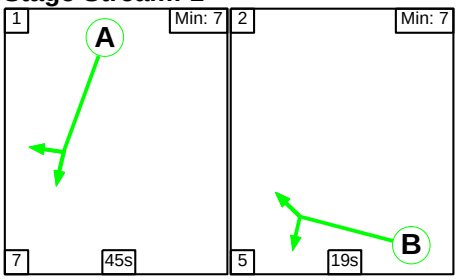
Signal Timings Diagram



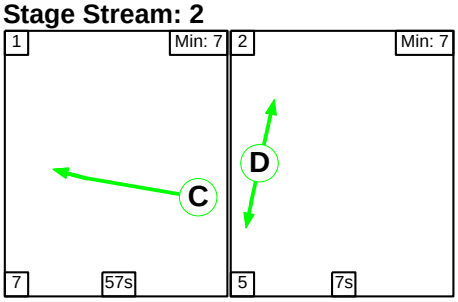
C2 - Westside Controller

Stage Sequence Diagram

Stage Stream: 1

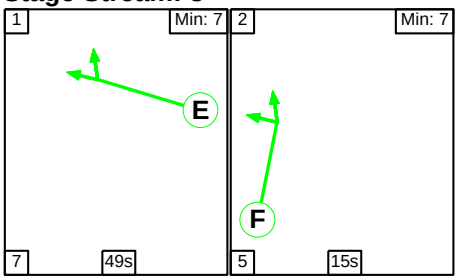


Stage Stream: 2

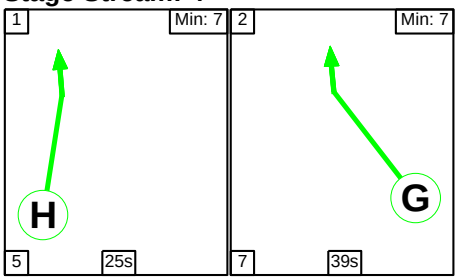


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	45	19
Change Point	17	69

Stage Stream: 2

Stage	1	2
Duration	57	7
Change Point	31	19

Stage Stream: 3

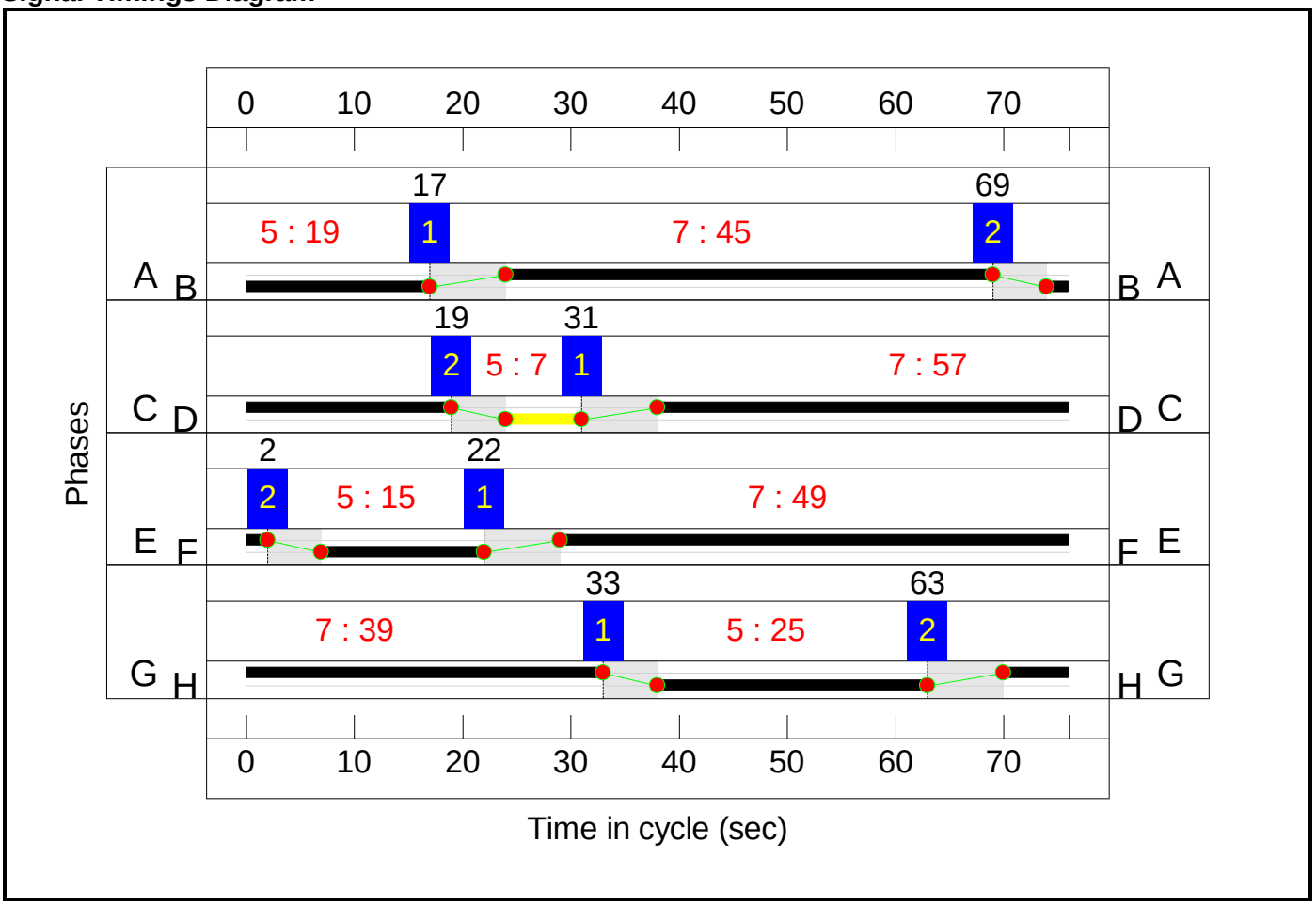
Stage	1	2
Duration	49	15
Change Point	22	2

Stage Stream: 4

Stage	1	2
Duration	25	39
Change Point	33	63

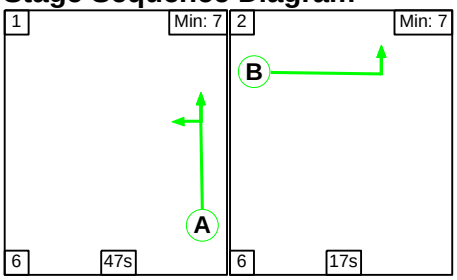
Full Input Data And Results

Signal Timings Diagram



C3 - Watering Lane

Stage Sequence Diagram

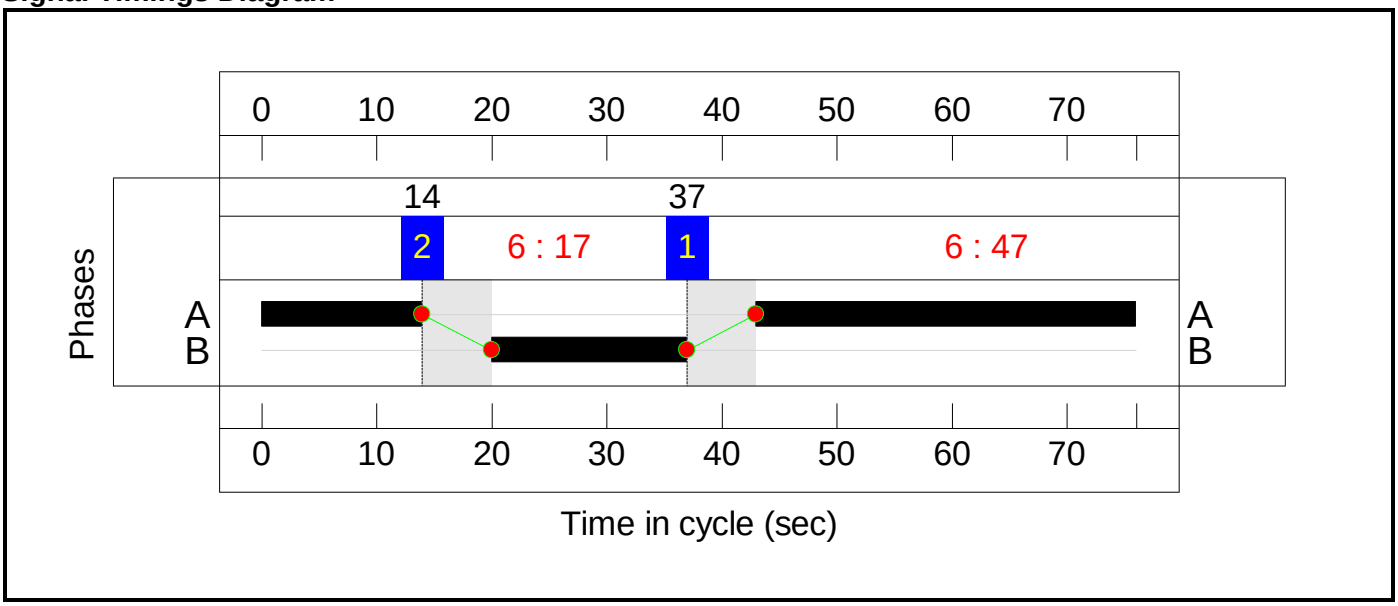


Stage Timings

Stage	1	2
Duration	47	17
Change Point	37	14

Full Input Data And Results

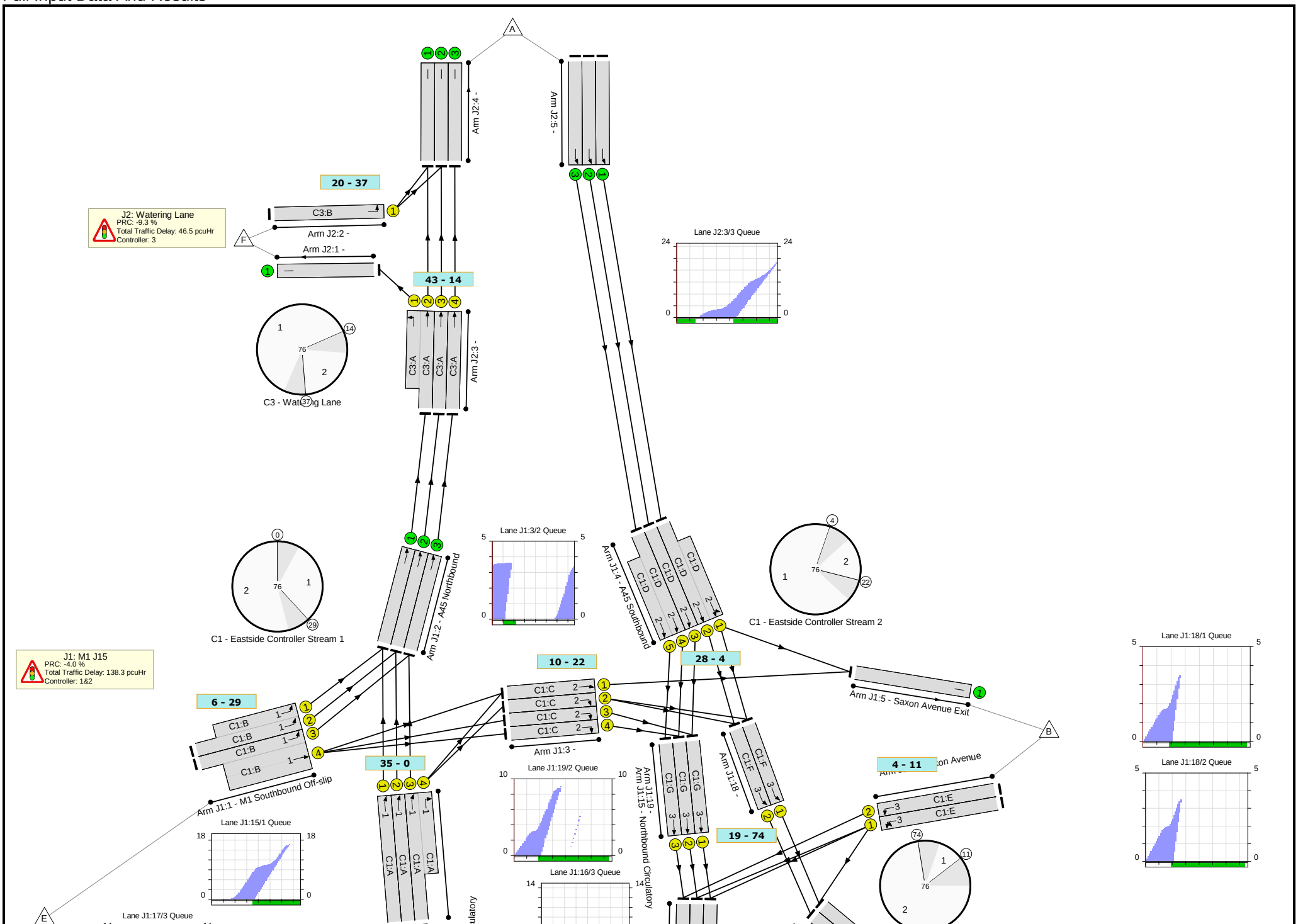
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.4%**
J1: M1 J15	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.6%**
1/2+1/1	M1 Southbound Off-slip Left	U	1:1	N/A	C1:B		1	23	-	1082	2120:1980	669+625	79.2 : 88.3%
1/3+1/4	M1 Southbound Off-slip Left Ahead	U	1:1	N/A	C1:B		1	23	-	1243	2120:4000	669+817	83.6 : 83.6%
2/1	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1377	Inf	Inf	0.0%
2/2	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1289	Inf	Inf	0.0%
2/3	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1147	Inf	Inf	0.0%
3/1	Ahead	U	1:2	N/A	C1:C		1	12	-	288	1900	325	88.6%
3/2	Right	U	1:2	N/A	C1:C		1	12	-	170	1900	325	52.3%
3/3	Right	U	1:2	N/A	C1:C		1	12	-	251	1900	325	77.2%
3/4	Right	U	1:2	N/A	C1:C		1	12	-	266	1900	325	81.8%
4/2+4/1	A45 Southbound Left Ahead	U	1:2	N/A	C1:D		1	52	-	1046	2120:1980	1022+1026	51.1 : 51.1%
4/3	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	52	-	872	2120	1478	59.0%
4/4+4/5	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	52	-	1899	2120:2120	946+1174	89.6 : 89.6%
5/1	Saxon Avenue Exit	U	N/A	N/A	-		-	-	-	361	Inf	Inf	0.0%
6/1	Southbound Circulatory Ahead	U	2:1	N/A	C2:A		1	45	-	1133	2000	1211	93.6%
6/2	Southbound Circulatory Ahead Right	U	2:1	N/A	C2:A		1	45	-	1128	2000	1211	93.2%
6/3	Southbound Circulatory Right	U	2:1	N/A	C2:A		1	45	-	1091	2000	1211	90.1%

Full Input Data And Results

7/1	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	629	Inf	Inf	0.0%
7/2	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	600	Inf	Inf	0.0%
8/1	Saxon Avenue Left Left2	U	1:3	N/A	C1:E		1	7	-	111	1892	199	55.7%
8/2	Saxon Avenue Left	U	1:3	N/A	C1:E		1	7	-	39	2105	222	17.6%
9/2+9/1	M1 Northbound Off-Slip Left Ahead	U	2:1	N/A	C2:B		1	19	-	758	2120:1980	558+286	89.8 : 89.8%
9/3+9/4	M1 Northbound Off-Slip Ahead	U	2:1	N/A	C2:B		1	19	-	997	2120:2120	558+558	89.4 : 89.3%
10/1	A508 Exit	U	N/A	N/A	-		-	-	-	1390	Inf	Inf	0.0%
10/2	A508 Exit	U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
11/1	Ahead	U	2:3	N/A	C2:E		1	49	-	658	1900	1250	52.6%
11/2	Ahead Right	U	2:3	N/A	C2:E		1	49	-	1091	1900	1250	87.3%
12/1	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	853	1995	1523	56.0%
12/2	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	1171	1995	1523	76.9%
13/2+13/1	A508 Northampton Road Left	U	2:3	N/A	C2:F		1	15	-	292	1980:1980	207+417	46.8 : 46.8%
13/3	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	15	-	307	2120	446	68.8%
13/4+13/5	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	15	-	641	2120:2120	446+446	58.3 : 85.4%
14/1		U	N/A	N/A	-		-	-	-	853	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1171	Inf	Inf	0.0%
15/1	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	41	-	825	2000	1105	74.6%
15/2	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	41	-	759	2000	1105	68.7%

Full Input Data And Results

15/3+15/4	Northbound Circulatory Ahead Right	U	1:1	N/A	C1:A		1	41	-	879	2000:2000	883+439	66.5 : 66.5%
16/1	Ahead	U	2:4	N/A	C2:G		1	39	-	501	2000	1053	47.6%
16/2	Ahead	U	2:4	N/A	C2:G		1	39	-	499	2000	1053	47.4%
16/3	Ahead	U	2:4	N/A	C2:G		1	39	-	498	2000	1053	47.3%
17/1	Ahead	U	2:4	N/A	C2:H		1	25	-	324	2000	684	47.4%
17/2	Ahead	U	2:4	N/A	C2:H		1	25	-	260	2000	684	38.0%
17/3	Ahead	U	2:4	N/A	C2:H		1	25	-	381	2000	684	55.7%
18/1	Ahead	U	1:3	N/A	C1:F		1	55	-	543	2000	1474	36.8%
18/2	Ahead	U	1:3	N/A	C1:F		1	55	-	600	2000	1474	40.7%
19/1	Ahead	U	1:3	N/A	C1:G		1	55	-	1123	2000	1474	76.2%
19/2	Ahead	U	1:3	N/A	C1:G		1	55	-	1113	2000	1474	75.5%
19/3	Ahead	U	1:3	N/A	C1:G		1	55	-	1052	2000	1474	71.4%
J2: Watering Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**98.4%**
1/1		U	N/A	N/A	-		-	-	-	292	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	C3:B		1	17	-	443	1901	450	98.4%
3/2+3/1	Left Ahead	U	N/A	N/A	C3:A		1	47	-	1377	2120:1800	1130+304	96.0 : 96.0%
3/3	Ahead	U	N/A	N/A	C3:A		1	47	-	1289	2120	1339	96.3%
3/4	Ahead	U	N/A	N/A	C3:A		1	47	-	1147	1900	1200	95.6%
4/1		U	N/A	N/A	-		-	-	-	1306	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	1511	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	1147	Inf	Inf	0.0%
5/1	Ahead	U	N/A	N/A	-		-	-	-	1046	Inf	Inf	0.0%
5/2	Ahead	U	N/A	N/A	-		-	-	-	872	Inf	Inf	0.0%
5/3	Ahead	U	N/A	N/A	-		-	-	-	1899	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**85.8**	**98.9**	**0.0**	**184.8**	**-**	**-**	**-**	**-**
J1: M1 J15	**-**	**-**	**0**	**0**	**0**	**74.9**	**63.3**	**0.0**	**138.3**	**-**	**-**	**-**	**-**
1/2+1/1	1082	1082	-	-	-	7.3	2.5	-	9.8	32.5	11.0	2.5	13.5
1/3+1/4	1243	1243	-	-	-	7.8	2.5	-	10.3	29.9	10.9	2.5	13.4
2/1	1377	1377	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	1289	1289	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/3	1147	1147	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	288	288	-	-	-	2.2	3.3	-	5.5	68.8	5.3	3.3	8.6
3/2	170	170	-	-	-	1.1	0.5	-	1.7	35.2	3.6	0.5	4.1
3/3	251	251	-	-	-	1.3	1.6	-	2.9	42.0	1.8	1.6	3.4
3/4	266	266	-	-	-	1.4	2.1	-	3.5	47.2	2.2	2.1	4.3
4/2+4/1	1046	1046	-	-	-	1.4	0.5	-	1.9	6.5	4.5	0.5	5.0
4/3	872	872	-	-	-	1.4	0.7	-	2.1	8.9	9.4	0.7	10.2
4/4+4/5	1899	1899	-	-	-	3.4	4.1	-	7.5	14.3	13.1	4.1	17.3
5/1	361	361	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1133	1133	-	-	-	1.7	6.3	-	8.0	25.3	13.3	6.3	19.6
6/2	1128	1128	-	-	-	1.6	6.0	-	7.6	24.2	13.9	6.0	19.9
6/3	1091	1091	-	-	-	2.8	4.3	-	7.0	23.2	11.2	4.3	15.5
7/1	629	629	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	600	600	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	111	111	-	-	-	1.0	0.6	-	1.6	52.5	2.2	0.6	2.8
8/2	39	39	-	-	-	0.3	0.1	-	0.4	40.9	0.7	0.1	0.9
9/2+9/1	758	758	-	-	-	5.5	4.0	-	9.5	45.0	10.2	4.0	14.2
9/3+9/4	997	997	-	-	-	7.5	3.9	-	11.4	41.2	10.1	3.9	14.1
10/1	1390	1390	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	658	658	-	-	-	0.1	0.6	-	0.6	3.3	0.2	0.6	0.7

Full Input Data And Results

11/2	1091	1091	-	-	-	0.1	3.3	-	3.4	11.4	7.9	3.3	11.2
12/1	853	853	-	-	-	0.3	0.6	-	1.0	4.1	3.4	0.6	4.0
12/2	1171	1171	-	-	-	0.1	1.7	-	1.8	5.4	2.2	1.7	3.9
13/2+13/1	292	292	-	-	-	2.1	0.4	-	2.5	31.2	3.6	0.4	4.0
13/3	307	307	-	-	-	2.4	1.1	-	3.4	40.4	6.0	1.1	7.1
13/4+13/5	641	641	-	-	-	5.0	1.3	-	6.3	35.2	7.7	1.3	9.0
14/1	853	853	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1171	1171	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	825	825	-	-	-	2.5	1.5	-	3.9	17.2	16.8	1.5	18.3
15/2	759	759	-	-	-	2.4	1.1	-	3.5	16.6	15.4	1.1	16.5
15/3+15/4	879	879	-	-	-	2.0	1.0	-	3.0	12.2	9.8	1.0	10.8
16/1	501	501	-	-	-	0.0	0.5	-	0.5	3.4	6.7	0.5	7.1
16/2	499	499	-	-	-	0.0	0.4	-	0.5	3.4	6.3	0.4	6.7
16/3	498	498	-	-	-	0.0	0.4	-	0.5	3.4	6.3	0.4	6.7
17/1	324	324	-	-	-	2.1	0.4	-	2.5	28.2	6.7	0.4	7.2
17/2	260	260	-	-	-	1.6	0.3	-	2.0	27.1	5.5	0.3	5.8
17/3	381	381	-	-	-	2.5	0.6	-	3.1	29.2	8.0	0.6	8.7
18/1	543	543	-	-	-	0.4	0.3	-	0.7	4.6	3.5	0.3	3.8
18/2	600	600	-	-	-	0.5	0.3	-	0.8	4.8	3.5	0.3	3.8
19/1	1123	1123	-	-	-	1.1	1.6	-	2.7	8.7	8.6	1.6	10.2
19/2	1113	1113	-	-	-	1.1	1.5	-	2.7	8.6	9.0	1.5	10.6
19/3	1052	1052	-	-	-	0.9	1.2	-	2.2	7.5	10.6	1.2	11.8
J2: Watering Lane	**-**	**-**	**0**	**0**	**0**	**10.9**	**35.6**	**0.0**	**46.5**	**-**	**-**	**-**	**-**
1/1	292	292	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	443	443	-	-	-	3.6	8.9	-	12.4	100.9	9.2	8.9	18.1
3/2+3/1	1377	1377	-	-	-	2.4	9.1	-	11.5	30.2	14.4	9.1	23.5
3/3	1289	1289	-	-	-	2.6	9.4	-	11.9	33.3	19.5	9.4	28.8
3/4	1147	1147	-	-	-	2.4	8.3	-	10.6	33.3	22.8	8.3	31.0
4/1	1306	1306	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

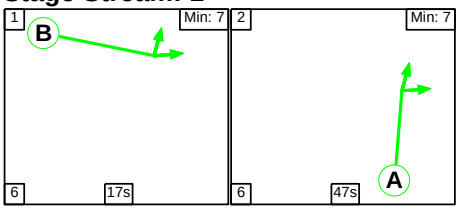
4/2	1511	1511	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	1147	1147	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1046	1046	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	872	872	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	1899	1899	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 - Eastside Controller	Stream: 1 PRC for Signalled Lanes (%):	1.9	Total Delay for Signalled Lanes (pcuHr):	30.51	Cycle Time (s):	76
C1 - Eastside Controller	Stream: 2 PRC for Signalled Lanes (%):	0.5	Total Delay for Signalled Lanes (pcuHr):	25.14	Cycle Time (s):	76
C1 - Eastside Controller	Stream: 3 PRC for Signalled Lanes (%):	18.1	Total Delay for Signalled Lanes (pcuHr):	11.11	Cycle Time (s):	76
C2 - Westside Controller	Stream: 1 PRC for Signalled Lanes (%):	-4.0	Total Delay for Signalled Lanes (pcuHr):	43.47	Cycle Time (s):	76
C2 - Westside Controller	Stream: 2 PRC for Signalled Lanes (%):	17.0	Total Delay for Signalled Lanes (pcuHr):	2.73	Cycle Time (s):	76
C2 - Westside Controller	Stream: 3 PRC for Signalled Lanes (%):	3.1	Total Delay for Signalled Lanes (pcuHr):	16.30	Cycle Time (s):	76
C2 - Westside Controller	Stream: 4 PRC for Signalled Lanes (%):	61.6	Total Delay for Signalled Lanes (pcuHr):	9.00	Cycle Time (s):	76
C3 - Watering Lane	PRC for Signalled Lanes (%):	-9.3	Total Delay for Signalled Lanes (pcuHr):	46.51	Cycle Time (s):	76
	PRC Over All Lanes (%):	-9.3	Total Delay Over All Lanes(pcuHr):	184.77		

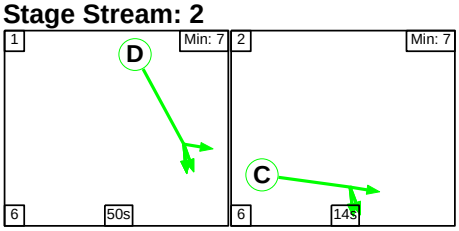
Full Input Data And Results
Scenario 16: '2031 DS5 PM' (FG14: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')
C1 - Eastside Controller

Stage Sequence Diagram

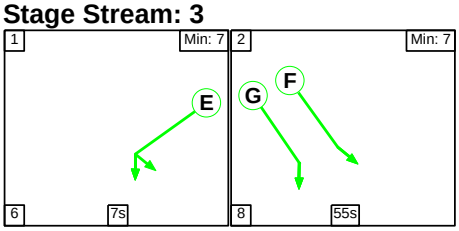
Stage Stream: 1



Stage Stream: 2



Stage Stream: 3



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	17	47
Change Point	0	23

Stage Stream: 2

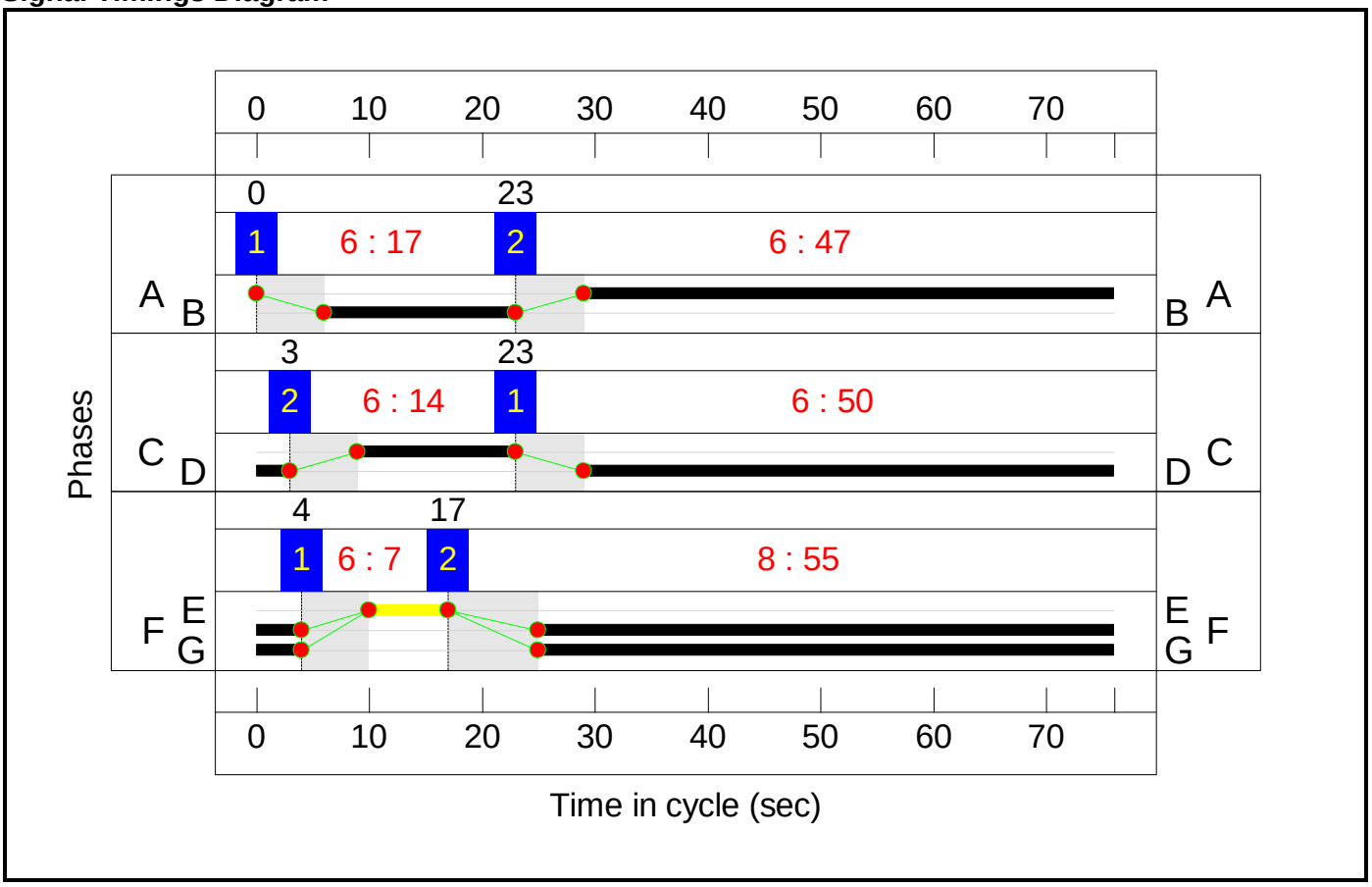
Stage	1	2
Duration	50	14
Change Point	23	3

Stage Stream: 3

Stage	1	2
Duration	7	55
Change Point	4	17

Full Input Data And Results

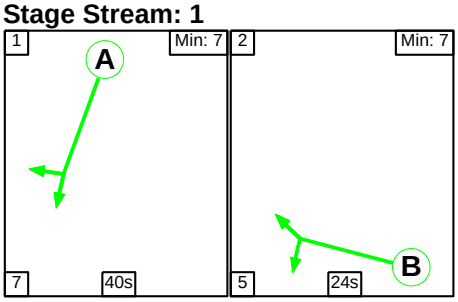
Signal Timings Diagram



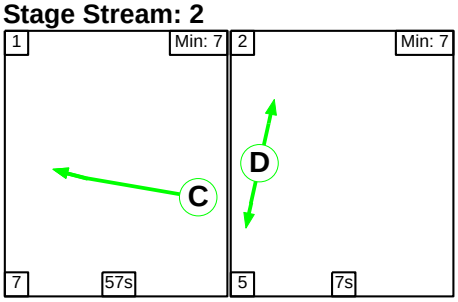
C2 - Westside Controller

Stage Sequence Diagram

Stage Stream: 1

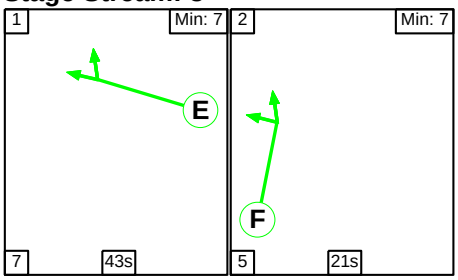


Stage Stream: 2

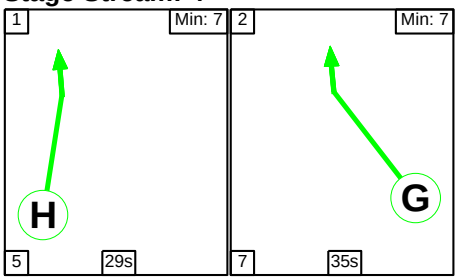


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	40	24
Change Point	8	55

Stage Stream: 2

Stage	1	2
Duration	57	7
Change Point	4	68

Stage Stream: 3

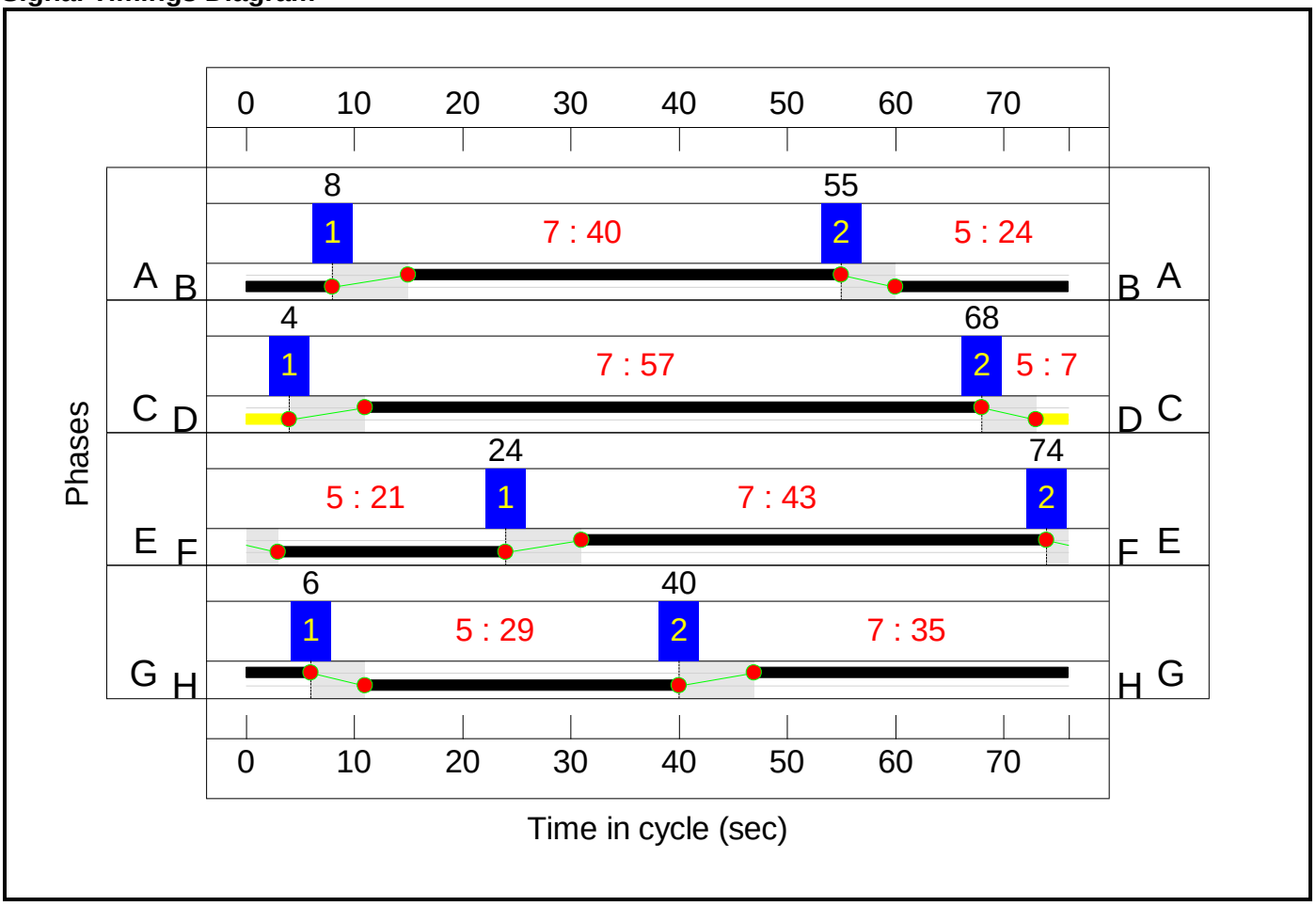
Stage	1	2
Duration	43	21
Change Point	24	74

Stage Stream: 4

Stage	1	2
Duration	29	35
Change Point	6	40

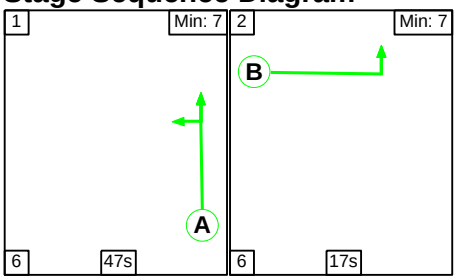
Full Input Data And Results

Signal Timings Diagram



C3 - Watering Lane

Stage Sequence Diagram

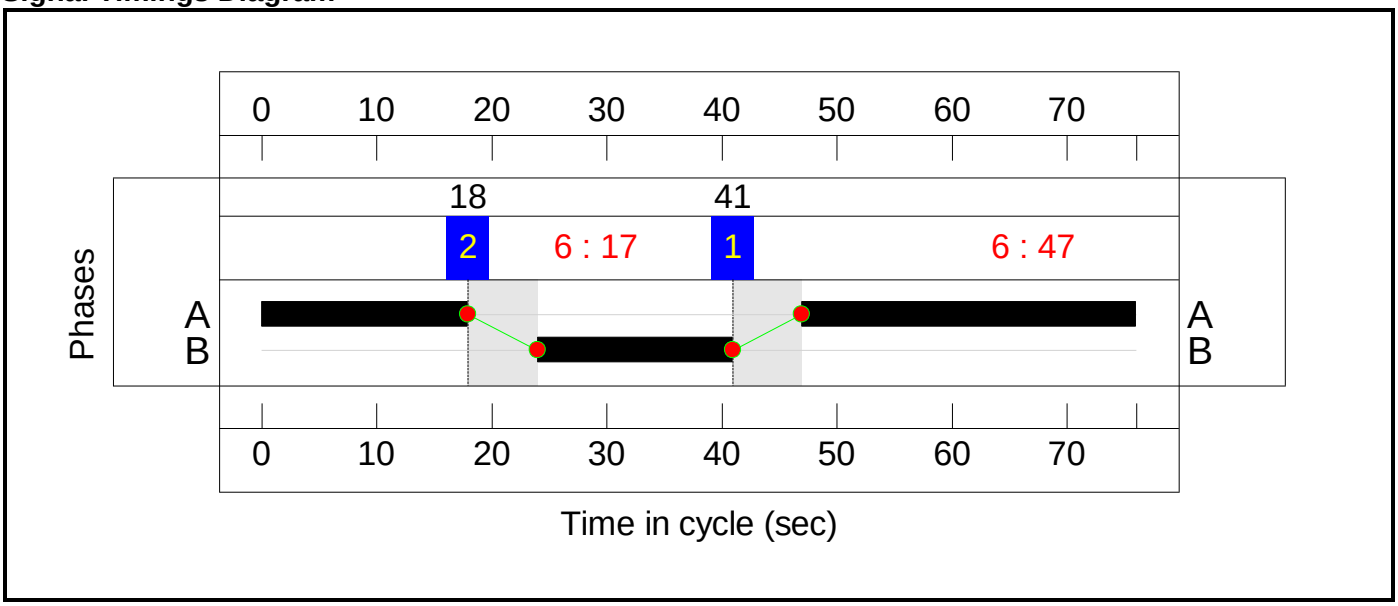


Stage Timings

Stage	1	2
Duration	47	17
Change Point	41	18

Full Input Data And Results

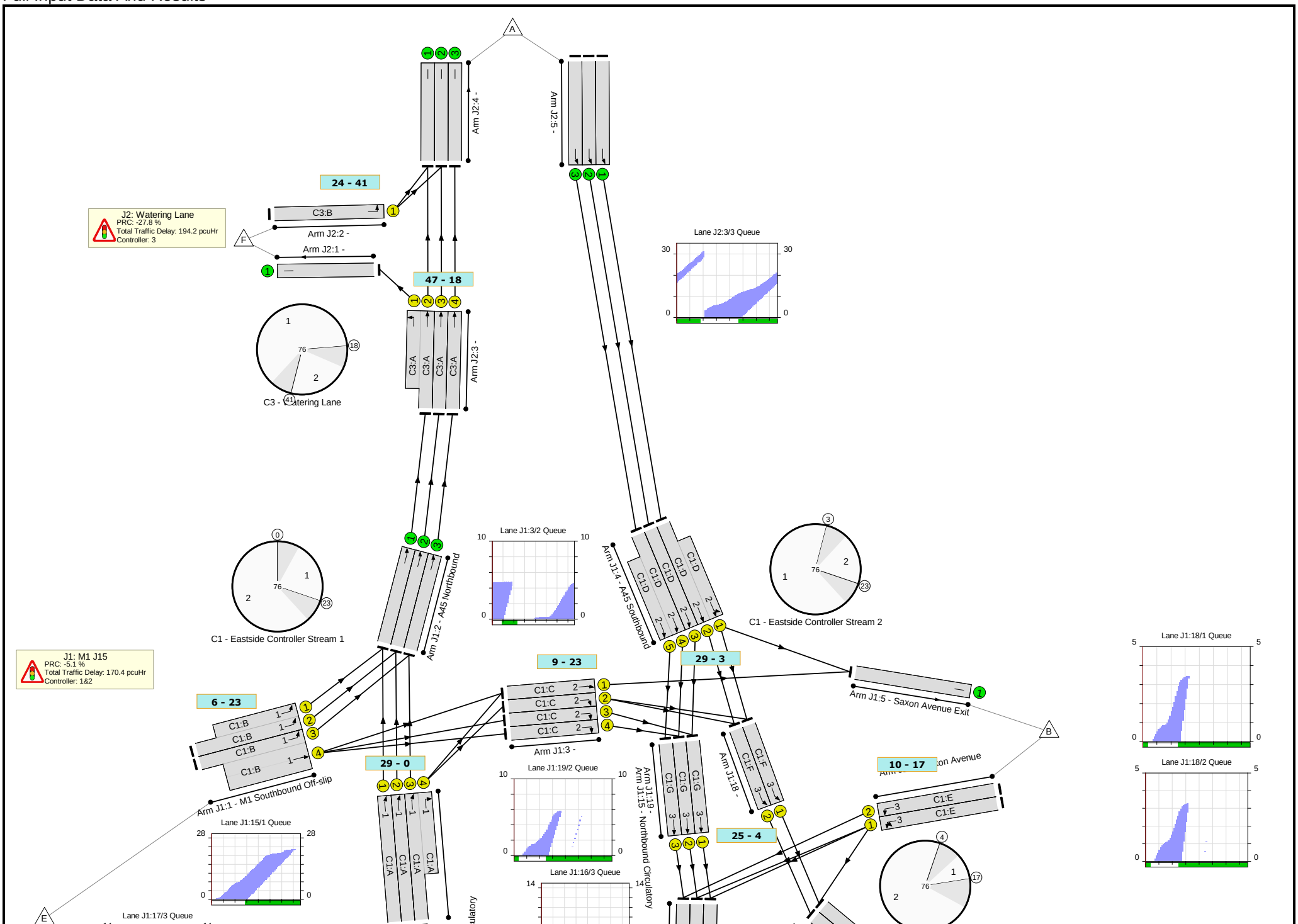
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**115.1%**
J1: M1 J15	-	-	**N/A**	-	-		-	-	-	-	-	-	**94.6%**
1/2+1/1	M1 Southbound Off-slip Left	U	1:1	N/A	C1:B		1	17	-	734	2120:1980	502+469	64.1 : 87.9%
1/3+1/4	M1 Southbound Off-slip Left Ahead	U	1:1	N/A	C1:B		1	17	-	945	2120:4000	502+947	77.3 : 58.8%
2/1	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1500	Inf	Inf	0.0%
2/2	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1407	Inf	Inf	0.0%
2/3	A45 Northbound Ahead	U	N/A	N/A	-		-	-	-	1261	Inf	Inf	0.0%
3/1	Ahead	U	1:2	N/A	C1:C		1	14	-	260	1900	375	69.3%
3/2	Right	U	1:2	N/A	C1:C		1	14	-	225	1900	375	60.0%
3/3	Right	U	1:2	N/A	C1:C		1	14	-	212	1900	375	56.5%
3/4	Right	U	1:2	N/A	C1:C		1	14	-	206	1900	375	54.9%
4/2+4/1	A45 Southbound Left Ahead	U	1:2	N/A	C1:D		1	50	-	1190	2120:1980	995+1050	58.2 : 58.2%
4/3	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	50	-	790	2120	1423	55.5%
4/4+4/5	A45 Southbound Ahead	U	1:2	N/A	C1:D		1	50	-	1667	2120:2120	1005+1115	78.6 : 78.6%
5/1	Saxon Avenue Exit	U	N/A	N/A	-		-	-	-	407	Inf	Inf	0.0%
6/1	Southbound Circulatory Ahead	U	2:1	N/A	C2:A		1	40	-	1020	2000	1079	94.5%
6/2	Southbound Circulatory Ahead Right	U	2:1	N/A	C2:A		1	40	-	1021	2000	1079	94.6%
6/3	Southbound Circulatory Right	U	2:1	N/A	C2:A		1	40	-	1008	2000	1079	93.4%

Full Input Data And Results

7/1	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
7/2	M1 Southbound On-Slip	U	N/A	N/A	-		-	-	-	682	Inf	Inf	0.0%
8/1	Saxon Avenue Left Left2	U	1:3	N/A	C1:E		1	7	-	102	1910	201	50.7%
8/2	Saxon Avenue Left	U	1:3	N/A	C1:E		1	7	-	131	2105	222	59.1%
9/2+9/1	M1 Northbound Off-Slip Left Ahead	U	2:1	N/A	C2:B		1	24	-	655	2120:1980	669+240	72.0 : 72.0%
9/3+9/4	M1 Northbound Off-Slip Ahead	U	2:1	N/A	C2:B		1	24	-	1149	2120:2120	697+697	74.9 : 89.9%
10/1	A508 Exit	U	N/A	N/A	-		-	-	-	1193	Inf	Inf	0.0%
10/2	A508 Exit	U	N/A	N/A	-		-	-	-	233	Inf	Inf	0.0%
11/1	Ahead	U	2:3	N/A	C2:E		1	43	-	788	1900	1100	71.6%
11/2	Ahead Right	U	2:3	N/A	C2:E		1	43	-	1008	1900	1100	91.6%
12/1	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	1157	1995	1523	76.0%
12/2	Toucan Crossing Ahead	U	2:2	N/A	C2:C		1	57	-	1172	1995	1523	77.0%
13/2+13/1	A508 Northampton Road Left	U	2:3	N/A	C2:F		1	21	-	734	1980:1980	520+526	70.1 : 70.1%
13/3	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	21	-	504	2120	614	82.1%
13/4+13/5	A508 Northampton Road Ahead	U	2:3	N/A	C2:F		1	21	-	1056	2120:2120	614+614	85.4 : 86.7%
14/1		U	N/A	N/A	-		-	-	-	1157	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1172	Inf	Inf	0.0%
15/1	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	47	-	1088	2000	1263	86.1%
15/2	Northbound Circulatory Ahead	U	1:1	N/A	C1:A		1	47	-	1085	2000	1263	85.9%

Full Input Data And Results

15/3+15/4	Northbound Circulatory Ahead Right	U	1:1	N/A	C1:A		1	47	-	1219	2000:2000	1029+408	84.8 : 84.8%
16/1	Ahead	U	2:4	N/A	C2:G		1	35	-	482	2000	947	50.9%
16/2	Ahead	U	2:4	N/A	C2:G		1	35	-	522	2000	947	55.1%
16/3	Ahead	U	2:4	N/A	C2:G		1	35	-	627	2000	947	66.2%
17/1	Ahead	U	2:4	N/A	C2:H		1	29	-	606	2000	789	76.8%
17/2	Ahead	U	2:4	N/A	C2:H		1	29	-	563	2000	789	71.3%
17/3	Ahead	U	2:4	N/A	C2:H		1	29	-	592	2000	789	75.0%
18/1	Ahead	U	1:3	N/A	C1:F		1	55	-	586	2000	1474	39.8%
18/2	Ahead	U	1:3	N/A	C1:F		1	55	-	682	2000	1474	46.3%
19/1	Ahead	U	1:3	N/A	C1:G		1	55	-	1002	2000	1474	68.0%
19/2	Ahead	U	1:3	N/A	C1:G		1	55	-	996	2000	1474	67.6%
19/3	Ahead	U	1:3	N/A	C1:G		1	55	-	877	2000	1474	59.5%
J2: Watering Lane	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**115.1%**
1/1		U	N/A	N/A	-		-	-	-	276	Inf	Inf	0.0%
2/1	Left	U	N/A	N/A	C3:B		1	17	-	518	1901	450	115.1%
3/2+3/1	Left Ahead	U	N/A	N/A	C3:A		1	47	-	1500	2120:1800	1157+261	105.8 : 105.8%
3/3	Ahead	U	N/A	N/A	C3:A		1	47	-	1407	2120	1339	105.1%
3/4	Ahead	U	N/A	N/A	C3:A		1	47	-	1261	1900	1200	105.1%
4/1		U	N/A	N/A	-		-	-	-	1483	Inf	Inf	0.0%
4/2		U	N/A	N/A	-		-	-	-	1666	Inf	Inf	0.0%
4/3		U	N/A	N/A	-		-	-	-	1261	Inf	Inf	0.0%
5/1	Ahead	U	N/A	N/A	-		-	-	-	1190	Inf	Inf	0.0%
5/2	Ahead	U	N/A	N/A	-		-	-	-	790	Inf	Inf	0.0%
5/3	Ahead	U	N/A	N/A	-		-	-	-	1667	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**129.4**	**235.2**	**0.0**	**364.6**	**-**	**-**	**-**	**-**
J1: M1 J15	**-**	**-**	**0**	**0**	**0**	**102.3**	**68.1**	**0.0**	**170.4**	**-**	**-**	**-**	**-**
1/2+1/1	734	734	-	-	-	5.5	1.5	-	7.1	34.6	8.4	1.5	9.9
1/3+1/4	945	945	-	-	-	6.9	0.9	-	7.8	29.8	7.5	0.9	8.5
2/1	1500	1500	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/2	1407	1407	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/3	1261	1261	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	260	260	-	-	-	1.5	1.1	-	2.6	35.7	3.7	1.1	4.8
3/2	225	225	-	-	-	1.8	0.7	-	2.5	40.0	4.7	0.7	5.5
3/3	212	212	-	-	-	0.6	0.6	-	1.2	20.7	0.7	0.6	1.4
3/4	206	206	-	-	-	0.6	0.6	-	1.2	20.3	0.7	0.6	1.3
4/2+4/1	1190	1190	-	-	-	1.9	0.7	-	2.6	7.9	6.1	0.7	6.8
4/3	790	790	-	-	-	1.4	0.6	-	2.1	9.4	8.6	0.6	9.2
4/4+4/5	1667	1667	-	-	-	3.1	1.8	-	5.0	10.7	10.2	1.8	12.1
5/1	407	407	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1020	1020	-	-	-	4.7	7.0	-	11.7	41.4	12.8	7.0	19.8
6/2	1021	1021	-	-	-	4.7	7.1	-	11.8	41.7	13.0	7.1	20.0
6/3	1008	1008	-	-	-	6.2	6.1	-	12.2	43.7	17.9	6.1	23.9
7/1	645	645	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/2	682	682	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	102	102	-	-	-	0.9	0.5	-	1.4	50.1	2.0	0.5	2.5
8/2	131	131	-	-	-	1.2	0.7	-	1.9	52.0	2.6	0.7	3.3
9/2+9/1	655	655	-	-	-	3.9	1.3	-	5.1	28.3	8.8	1.3	10.1
9/3+9/4	1149	1149	-	-	-	7.5	2.3	-	9.8	30.8	12.5	2.3	14.8
10/1	1193	1193	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/2	233	233	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	788	788	-	-	-	1.4	1.3	-	2.6	12.0	13.9	1.3	15.2

Full Input Data And Results

11/2	1008	1008	-	-	-	2.4	4.9	-	7.4	26.3	21.3	4.9	26.2
12/1	1157	1157	-	-	-	0.5	1.6	-	2.1	6.5	8.1	1.6	9.7
12/2	1172	1172	-	-	-	1.7	1.7	-	3.3	10.2	12.0	1.7	13.6
13/2+13/1	734	734	-	-	-	4.8	1.2	-	6.0	29.3	6.8	1.2	7.9
13/3	504	504	-	-	-	3.5	2.2	-	5.7	40.9	9.8	2.2	12.0
13/4+13/5	1056	1056	-	-	-	7.5	3.0	-	10.5	35.7	10.6	3.0	13.6
14/1	1157	1157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1172	1172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15/1	1088	1088	-	-	-	6.1	3.0	-	9.1	30.0	22.8	3.0	25.8
15/2	1085	1085	-	-	-	5.9	2.9	-	8.9	29.5	22.7	2.9	25.6
15/3+15/4	1219	1219	-	-	-	5.9	2.7	-	8.6	25.5	24.4	2.7	27.1
16/1	482	482	-	-	-	0.9	0.5	-	1.4	10.4	5.1	0.5	5.6
16/2	522	522	-	-	-	1.3	0.6	-	1.9	13.0	5.8	0.6	6.4
16/3	627	627	-	-	-	2.5	1.0	-	3.5	19.9	5.8	1.0	6.8
17/1	606	606	-	-	-	1.3	1.6	-	2.9	17.4	12.5	1.6	14.1
17/2	563	563	-	-	-	0.5	1.2	-	1.7	11.2	11.4	1.2	12.6
17/3	592	592	-	-	-	0.8	1.5	-	2.2	13.6	12.3	1.5	13.7
18/1	586	586	-	-	-	0.5	0.3	-	0.8	4.8	3.5	0.3	3.8
18/2	682	682	-	-	-	0.5	0.4	-	0.9	4.8	3.3	0.4	3.7
19/1	1002	1002	-	-	-	0.8	1.1	-	1.8	6.6	6.2	1.1	7.2
19/2	996	996	-	-	-	0.8	1.0	-	1.8	6.5	5.8	1.0	6.9
19/3	877	877	-	-	-	0.4	0.7	-	1.2	4.7	6.8	0.7	7.5
J2: Watering Lane	**-**	**-**	**0**	**0**	**0**	**27.1**	**167.1**	**0.0**	**194.2**	**-**	**-**	**-**	**-**
1/1	253	253	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1	518	450	-	-	-	6.4	37.3	-	43.7	303.9	12.4	37.3	49.7
3/2+3/1	1500	1392	-	-	-	7.4	48.8	-	56.2	134.8	34.5	48.8	83.3
3/3	1407	1339	-	-	-	6.2	42.3	-	48.6	124.3	31.1	42.3	73.5
3/4	1261	1200	-	-	-	7.1	38.7	-	45.8	130.7	27.9	38.7	66.6
4/1	1364	1364	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

4/2	1564	1564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/3	1200	1200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	1190	1190	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	790	790	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	1667	1667	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

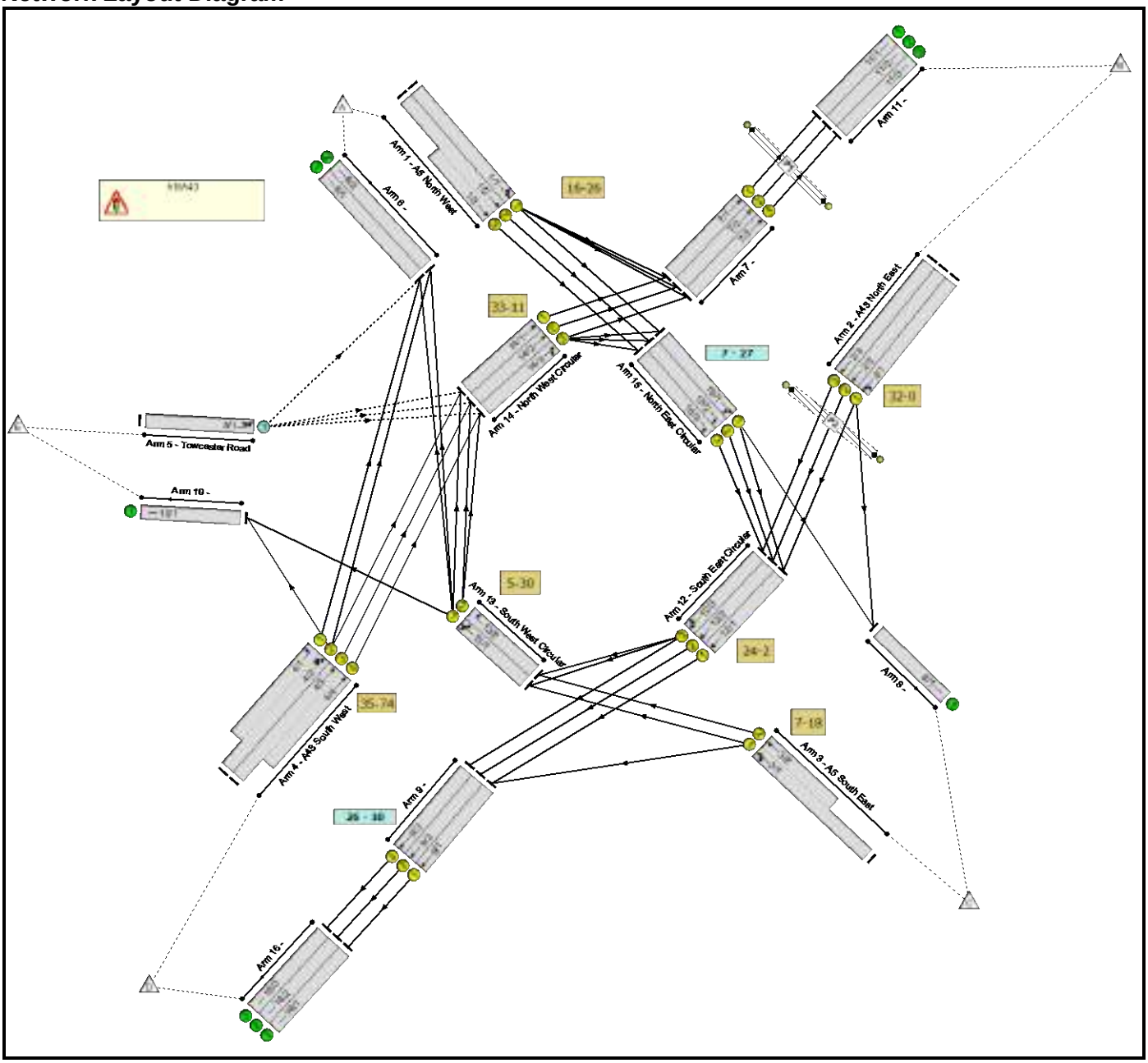
C1 - Eastside Controller	Stream: 1 PRC for Signalled Lanes (%):	2.4	Total Delay for Signalled Lanes (pcuHr):	41.49	Cycle Time (s):	76
C1 - Eastside Controller	Stream: 2 PRC for Signalled Lanes (%):	14.5	Total Delay for Signalled Lanes (pcuHr):	17.11	Cycle Time (s):	76
C1 - Eastside Controller	Stream: 3 PRC for Signalled Lanes (%):	32.4	Total Delay for Signalled Lanes (pcuHr):	9.79	Cycle Time (s):	76
C2 - Westside Controller	Stream: 1 PRC for Signalled Lanes (%):	-5.1	Total Delay for Signalled Lanes (pcuHr):	50.72	Cycle Time (s):	76
C2 - Westside Controller	Stream: 2 PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	5.42	Cycle Time (s):	76
C2 - Westside Controller	Stream: 3 PRC for Signalled Lanes (%):	-1.8	Total Delay for Signalled Lanes (pcuHr):	32.16	Cycle Time (s):	76
C2 - Westside Controller	Stream: 4 PRC for Signalled Lanes (%):	17.2	Total Delay for Signalled Lanes (pcuHr):	13.67	Cycle Time (s):	76
C3 - Watering Lane	PRC for Signalled Lanes (%):	-27.8	Total Delay for Signalled Lanes (pcuHr):	194.24	Cycle Time (s):	76
	PRC Over All Lanes (%):	-27.8	Total Delay Over All Lanes(pcuHr):	364.59		

Full Input Data And Results

User and Project Details

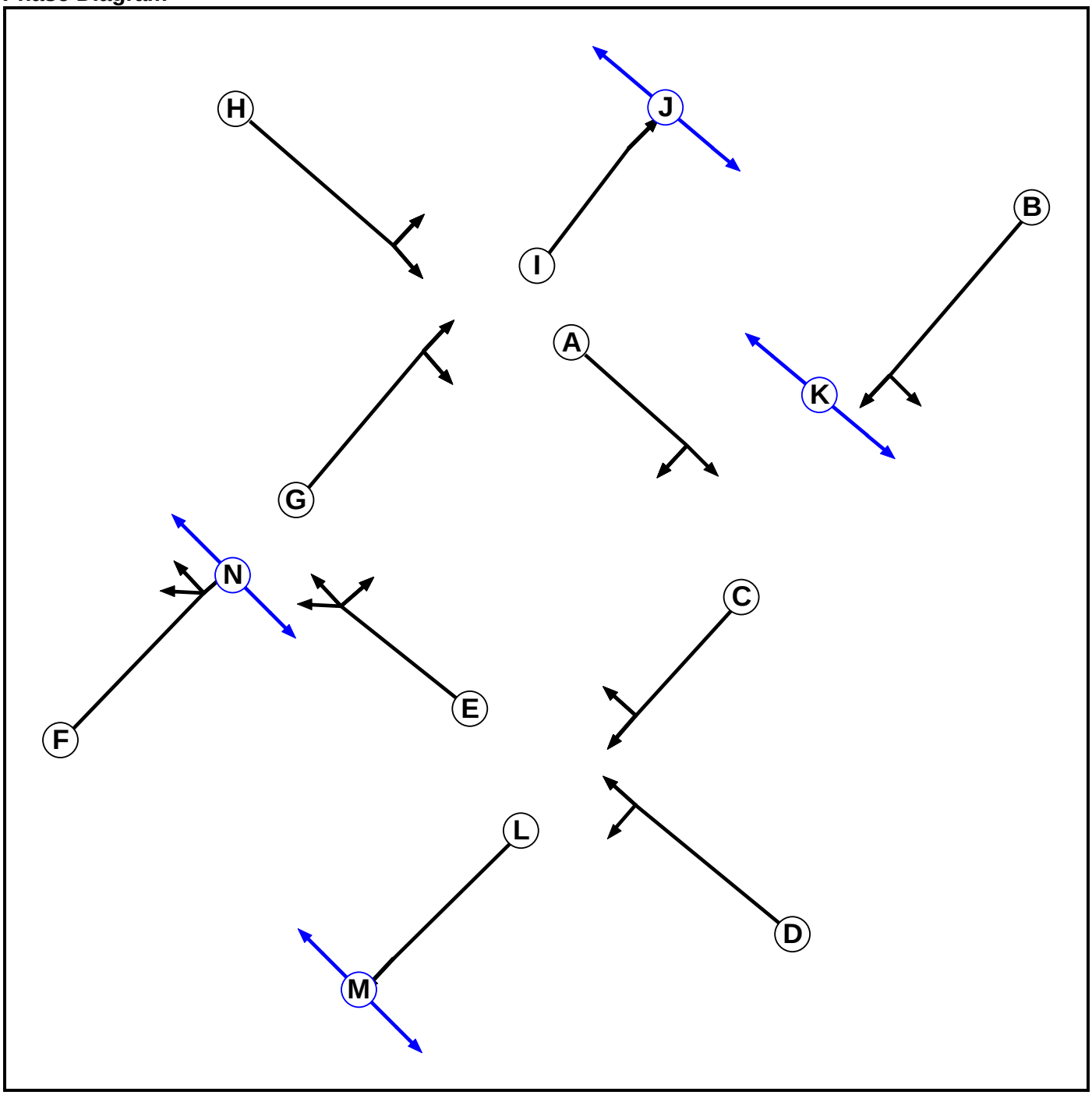
Project:	Rail Central
Title:	Junction 14
Location:	A43, Towcester Bypass (southwest)/ Towcester Road / A5, (north) / A43, (northeast) / A5, Watling Street (southeast)
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	3
B	Traffic	1		7	7
C	Traffic	2		7	2
D	Traffic	2		7	7
E	Traffic	3		7	2
F	Traffic	3		7	7
G	Traffic	4		7	1
H	Traffic	4		7	7
I	Traffic	5		7	7
J	Pedestrian	5		6	6
K	Pedestrian	1		6	6
L	Traffic	6		7	7
M	Pedestrian	6		6	6
N	Pedestrian	3		6	6

Full Input Data And Results

Phase Intergreens Matrix

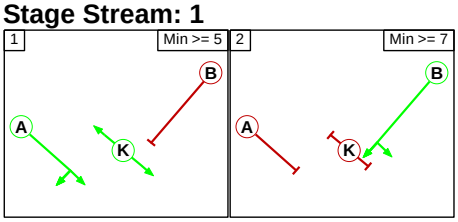
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A		5	-	-	-	-	-	-	-	-	-	-	-	-
B	7		-	-	-	-	-	-	-	-	6	-	-	-
C	-	-		5	-	-	-	-	-	-	-	-	-	-
D	-	-	6		-	-	-	-	-	-	-	-	-	-
E	-	-	-	-		5	-	-	-	-	-	-	-	-
F	-	-	-	-	7		-	-	-	-	-	-	-	6
G	-	-	-	-	-	-		5	-	-	-	-	-	-
H	-	-	-	-	-	-	7		-	-	-	-	-	-
I	-	-	-	-	-	-	-	-		6	-	-	-	-
J	-	-	-	-	-	-	-	-	4		-	-	-	-
K	-	4	-	-	-	-	-	-	-	-		-	-	-
L	-	-	-	-	-	-	-	-	-	-	-		4	-
M	-	-	-	-	-	-	-	-	-	-	-	6		-
N	-	-	-	-	-	4	-	-	-	-	-	-	-	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A K
1	2	B
2	1	C
2	2	D
3	1	E N
3	2	F
4	1	G
4	2	H
5	1	I
5	2	J
6	1	L
6	2	M

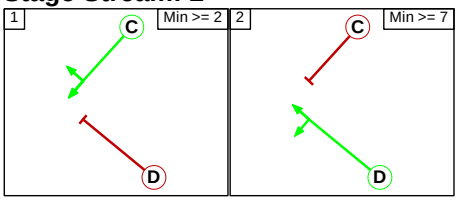
Stage Diagram

Stage Stream: 1

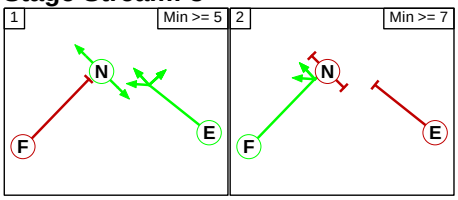


Full Input Data And Results

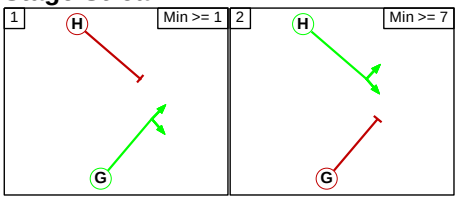
Stage Stream: 2



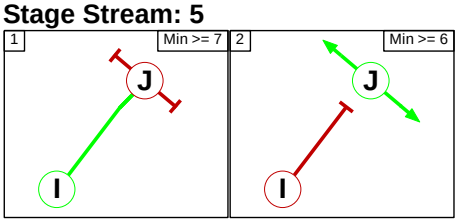
Stage Stream: 3



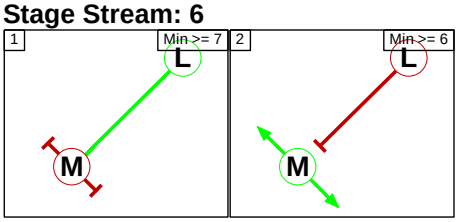
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	A	Losing	4	4

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	5	5

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	E	Losing	5	5
1	2	F	Gaining absolute	2	2
2	1	E	Gaining absolute	2	2

Full Input Data And Results

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	G	Losing	6	6

Stage Stream: 5

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 6

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2
1		9
2	7	

Stage Stream: 2

From Stage \ To Stage	1	2
1		10
2	6	

Stage Stream: 3

From Stage \ To Stage	1	2
1		10
2	7	

Stage Stream: 4

From Stage \ To Stage	1	2
1		11
2	7	

Stage Stream: 5

From Stage \ To Stage	1	2
1		6
2	4	

Full Input Data And Results

Stage Stream: 6

	To Stage		
From Stage		1	2
	1		4
	2	6	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A5/A43

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
5/1 (Towcester Road)	6/1 (U-Turn)	1000	0	13/1	0.33	To 6/1 (Ahead)	-	-	-	-	-
				4/2	0.33	None					
	14/1 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				4/2	0.33	To 14/1 (Ahead)					
	14/2 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				4/2	0.33	To 14/1 (Ahead)					
				4/3	0.33	All					
				13/2	0.33	To 14/2 (Right) To 14/3 (Right)					
	14/3 (Left)	1000	0	13/1	0.33	To 6/1 (Ahead) To 14/1 (Right)					
				13/2	0.33	All					
				4/2	0.33	To 14/1 (Ahead)					
				4/3	0.33	All					
				4/4	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A5/A43

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A5 North West)	U	H	2	3	60.0	User	1800	-	-	-	-	-
1/2 (A5 North West)	U	H	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A5 North West)	U	H	2	3	8.9	User	1800	-	-	-	-	-
2/1 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/2 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/3 (A43 North East)	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/1 (A5 South East)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/2 (A5 South East)	U	D	2	3	9.6	User	1800	-	-	-	-	-
4/1 (A43 South West)	U	F	2	3	13.0	User	1800	-	-	-	-	-
4/2 (A43 South West)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/3 (A43 South West)	U	F	2	3	60.0	User	1800	-	-	-	-	-
4/4 (A43 South West)	U	F	2	3	17.4	User	1800	-	-	-	-	-
5/1 (Towcester Road)	O		2	3	60.0	Geom	-	5.00	0.00	Y	Arm 6 U-Turn	17.50
											Arm 14 Left	Inf
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U	I	2	3	3.5	User	1900	-	-	-	-	-
7/2	U	I	2	3	3.1	User	1900	-	-	-	-	-
7/3	U	I	2	3	2.8	User	1900	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1	U	L	2	3	3.5	User	1900	-	-	-	-	-
9/2	U	L	2	3	3.5	User	1900	-	-	-	-	-

Full Input Data And Results

9/3	U	L	2	3	3.5	User	1900	-	-	-	-	-
10/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/1	U		2	3	60.0	Inf	-	-	-	-	-	-
11/2	U		2	3	60.0	Inf	-	-	-	-	-	-
11/3	U		2	3	60.0	Inf	-	-	-	-	-	-
12/1 (South East Circular)	U	C	2	3	2.1	User	1900	-	-	-	-	-
12/2 (South East Circular)	U	C	2	3	2.8	User	1900	-	-	-	-	-
12/3 (South East Circular)	U	C	2	3	7.5	User	1900	-	-	-	-	-
13/1 (South West Circular)	U	E	2	3	3.1	User	1900	-	-	-	-	-
13/2 (South West Circular)	U	E	2	3	3.8	User	1900	-	-	-	-	-
14/1 (North West Circular)	U	G	2	3	3.1	User	1900	-	-	-	-	-
14/2 (North West Circular)	U	G	2	3	4.5	User	1900	-	-	-	-	-
14/3 (North West Circular)	U	G	2	3	6.1	User	1900	-	-	-	-	-
15/1 (North East Circular)	U	A	2	3	3.5	User	1900	-	-	-	-	-
15/2 (North East Circular)	U	A	2	3	4.0	User	1900	-	-	-	-	-
15/3 (North East Circular)	U	A	2	3	4.5	User	1900	-	-	-	-	-
16/1	U		2	3	60.0	Inf	-	-	-	-	-	-
16/2	U		2	3	60.0	Inf	-	-	-	-	-	-
16/3	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DS AM'	08:00	09:00	01:00	
2: '2021 DS PM'	17:00	18:00	01:00	
3: '2031 DS AM'	08:00	09:00	01:00	
4: '2031 DS PM'	17:00	18:00	01:00	
5: '2021 DS5 AM'	08:00	09:00	01:00	
6: '2021 DS5 PM'	17:00	18:00	01:00	
7: '2031 DS5 AM'	08:00	09:00	01:00	
8: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 5: '2021 DS5 AM' (FG5: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	63	173	610	5	851
	B	73	0	0	2246	17	2336
	C	154	102	0	0	0	256
	D	559	1424	220	5	156	2364
	E	17	128	24	139	0	308
	Tot.	803	1717	417	3000	178	6115

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 5: 2021 DS5 AM
Junction: A5/A43	
1/1	281
1/2 (with short)	570(In) 285(Out)
1/3 (short)	285
2/1	779
2/2	778
2/3	779
3/1 (with short)	256(In) 166(Out)
3/2 (short)	90
4/1 (short)	559
4/2 (with short)	1133(In) 574(Out)
4/3 (with short)	1231(In) 620(Out)
4/4 (short)	611
5/1	308
6/1	690
6/2	113
7/1	558
7/2	683
7/3	476
8/1	417
9/1	963
9/2	1065
9/3	972
10/1	178
11/1	558
11/2	683
11/3	476
12/1	963
12/2	1065
12/3	1067
13/1	261
13/2	90
14/1	558
14/2	683
14/3	801
15/1	601

Full Input Data And Results

15/2	287
15/3	288
16/1	963
16/2	1065
16/3	972

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.5 %	2105	2105
				Arm 14 Left	Inf	94.5 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 6: '2021 DS5 PM' (FG6: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	0	187	260	8	455
	B	90	1	225	2580	59	2955
	C	308	156	0	0	0	464
	D	730	2211	101	0	162	3204
	E	11	150	14	64	0	239
	Tot.	1139	2518	527	2904	229	7317

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 6: 2021 DS5 PM
Junction: A5/A43	
1/1	187
1/2 (with short)	268(In) 165(Out)
1/3 (short)	103
2/1	988
2/2	983
2/3	984
3/1 (with short)	464(In) 308(Out)
3/2 (short)	156
4/1 (short)	726
4/2 (with short)	1560(In) 834(Out)
4/3 (with short)	1644(In) 820(Out)
4/4 (short)	824
5/1	239
6/1	936
6/2	203
7/1	811
7/2	943
7/3	764
8/1	527
9/1	799
9/2	1153
9/3	952
10/1	229
11/1	811
11/2	943
11/3	764
12/1	799
12/2	1153
12/3	1110
13/1	465
13/2	157
14/1	811
14/2	943
14/3	943
15/1	338

Full Input Data And Results

15/2	170
15/3	126
16/1	799
16/2	1153
16/3	952

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	4.6 %	2107	2107
				Arm 14 Left	Inf	95.4 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 7: '2031 DS5 AM' (FG7: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	135	241	689	5	1070
	B	66	0	0	2715	16	2797
	C	366	333	0	19	0	718
	D	525	1344	205	6	156	2236
	E	17	128	0	67	0	212
	Tot.	974	1940	446	3496	177	7033

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2031 DS5 AM
Junction: A5/A43	
1/1	376
1/2 (with short)	694(In) 347(Out)
1/3 (short)	347
2/1	933
2/2	932
2/3	932
3/1 (with short)	718(In) 385(Out)
3/2 (short)	333
4/1 (short)	525
4/2 (with short)	1092(In) 567(Out)
4/3 (with short)	1144(In) 547(Out)
4/4 (short)	597
5/1	212
6/1	758
6/2	216
7/1	582
7/2	825
7/3	533
8/1	446
9/1	1013
9/2	1286
9/3	1197
10/1	177
11/1	582
11/2	825
11/3	533
12/1	994
12/2	1286
12/3	1284
13/1	453
13/2	333
14/1	539
14/2	814
14/3	730
15/1	507

Full Input Data And Results

15/2	354
15/3	352
16/1	1013
16/2	1286
16/3	1197

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	8.0 %	2101	2101
				Arm 14 Left	Inf	92.0 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

Scenario 8: '2031 DS5 PM' (FG8: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination					
		A	B	C	D	E	Tot.
Origin	A	0	0	337	238	8	583
	B	86	0	409	2806	50	3351
	C	378	200	0	69	0	647
	D	739	2185	102	0	196	3222
	E	11	142	31	19	0	203
	Tot.	1214	2527	879	3132	254	8006

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 8: 2031 DS5 PM
Junction: A5/A43	
1/1	337
1/2 (with short)	246(In) 152(Out)
1/3 (short)	94
2/1	1122
2/2	1114
2/3	1115
3/1 (with short)	647(In) 447(Out)
3/2 (short)	200
4/1 (short)	734
4/2 (with short)	1582(In) 848(Out)
4/3 (with short)	1640(In) 820(Out)
4/4 (short)	820
5/1	203
6/1	977
6/2	237
7/1	783
7/2	1009
7/3	735
8/1	879
9/1	793
9/2	1268
9/3	1071
10/1	254
11/1	783
11/2	1009
11/3	735
12/1	724
12/2	1268
12/3	1215
13/1	522
13/2	200
14/1	783
14/2	1009
14/3	887
15/1	481

Full Input Data And Results

15/2	154
15/3	100
16/1	793
16/2	1268
16/3	1071

Full Input Data And Results

Lane Saturation Flows

Junction: A5/A43								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A5 North West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A5 North West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A5 North West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (A43 North East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (A43 North East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (A43 North East Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (A5 South East Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (A5 South East Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (A43 South West Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (A43 South West Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (A43 South West Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/4 (A43 South West Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towcester Road)	5.00	0.00	Y	Arm 6 U-Turn	17.50	5.4 %	2105	2105
				Arm 14 Left	Inf	94.6 %		
6/1	Infinite Saturation Flow						Inf	Inf
6/2	Infinite Saturation Flow						Inf	Inf
7/1	This lane uses a directly entered Saturation Flow						1900	1900
7/2	This lane uses a directly entered Saturation Flow						1900	1900
7/3	This lane uses a directly entered Saturation Flow						1900	1900
8/1	Infinite Saturation Flow						Inf	Inf
9/1	This lane uses a directly entered Saturation Flow						1900	1900
9/2	This lane uses a directly entered Saturation Flow						1900	1900
9/3	This lane uses a directly entered Saturation Flow						1900	1900
10/1	Infinite Saturation Flow						Inf	Inf
11/1	Infinite Saturation Flow						Inf	Inf
11/2	Infinite Saturation Flow						Inf	Inf
11/3	Infinite Saturation Flow						Inf	Inf
12/1 (South East Circular Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
12/2 (South East Circular Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900

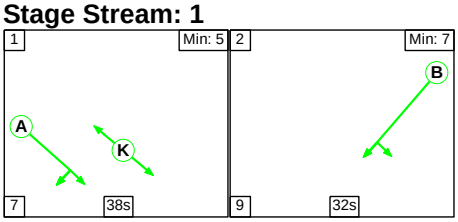
Full Input Data And Results

12/3 (South East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
13/1 (South West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
13/2 (South West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/1 (North West Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
14/2 (North West Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
14/3 (North West Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
15/1 (North East Circular Lane 1)	This lane uses a directly entered Saturation Flow	1900	1900
15/2 (North East Circular Lane 2)	This lane uses a directly entered Saturation Flow	1900	1900
15/3 (North East Circular Lane 3)	This lane uses a directly entered Saturation Flow	1900	1900
16/1	Infinite Saturation Flow	Inf	Inf
16/2	Infinite Saturation Flow	Inf	Inf
16/3	Infinite Saturation Flow	Inf	Inf

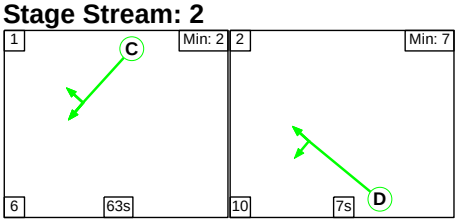
Scenario 5: '2021 DS5 AM' (FG5: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

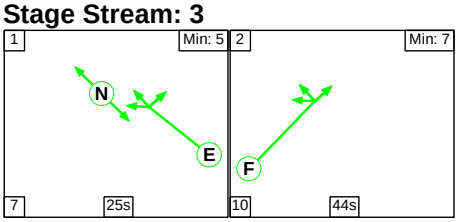
Stage Stream: 1



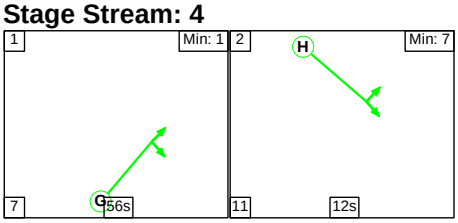
Stage Stream: 2



Stage Stream: 3

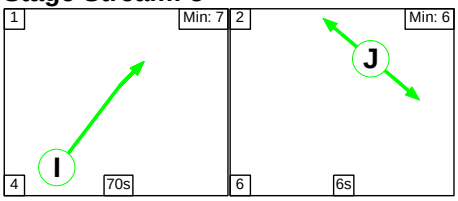


Stage Stream: 4

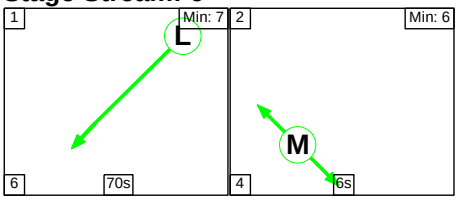


Full Input Data And Results

Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	38	32
Change Point	15	60

Stage Stream: 2

Stage	1	2
Duration	63	7
Change Point	16	85

Stage Stream: 3

Stage	1	2
Duration	25	44
Change Point	77	23

Stage Stream: 4

Stage	1	2
Duration	56	12
Change Point	26	3

Stage Stream: 5

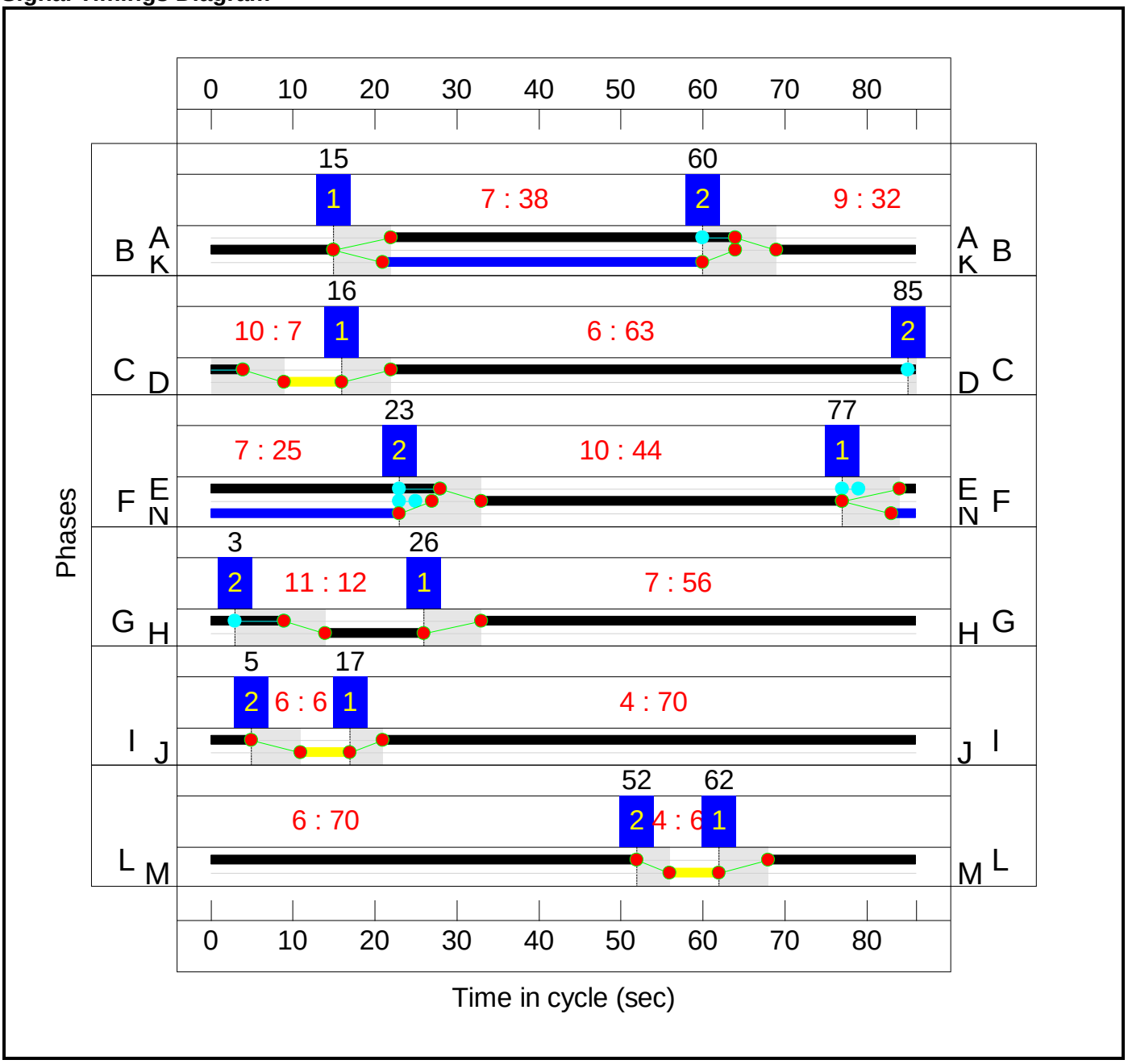
Stage	1	2
Duration	70	6
Change Point	17	5

Stage Stream: 6

Stage	1	2
Duration	70	6
Change Point	62	52

Full Input Data And Results

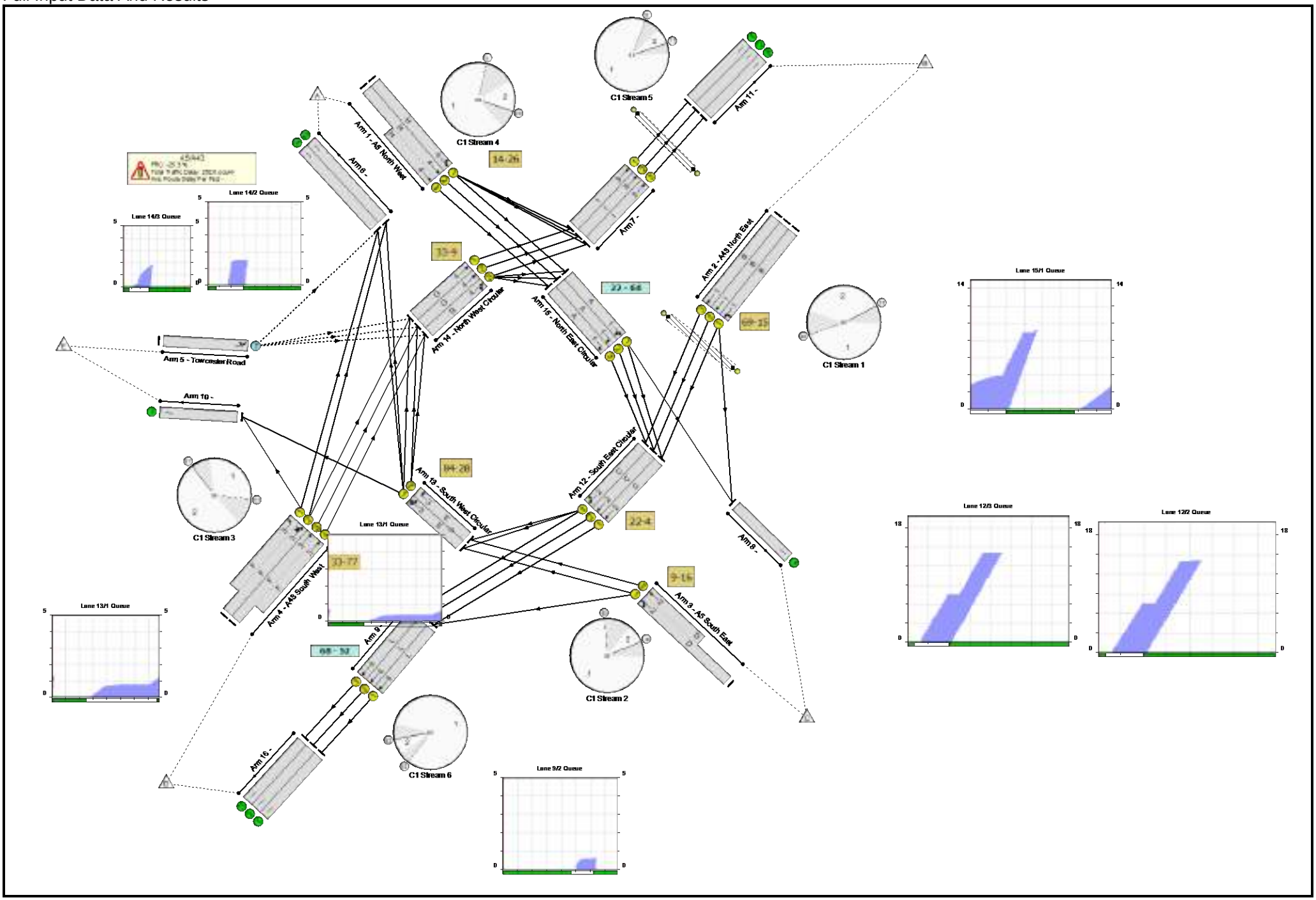
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.8%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**112.8%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	12	-	281	1800	272	103.3%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	12	-	570	1800:1800	272+272	104.7 : 104.7%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	32	-	779	1800	691	112.8%
2/2	A43 North East Ahead	U	1	N/A	B		1	32	-	778	1800	691	112.6%
2/3	A43 North East Ahead	U	1	N/A	B		1	32	-	779	1800	691	112.8%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	7	-	256	1800:1800	167+141	99.1 : 63.7%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	44	-	1133	1800:1800	746+726	77.0 : 77.0%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	44	-	1231	1800:1800	842+829	73.7 : 73.7%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	308	2105	572	53.9%
6/1		U	N/A	N/A	-		-	-	-	690	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	113	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	70	-	558	1900	1569	35.6%
7/2	Ahead	U	5	N/A	I		1	70	-	683	1900	1569	43.5%
7/3	Ahead	U	5	N/A	I		1	70	-	476	1900	1569	30.2%
8/1		U	N/A	N/A	-		-	-	-	417	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	70	-	963	1900	1569	55.7%
9/2	Ahead	U	6	N/A	L		1	70	-	1065	1900	1569	61.5%
9/3	Ahead	U	6	N/A	L		1	70	-	972	1900	1569	56.2%
10/1		U	N/A	N/A	-		-	-	-	178	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	683	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	476	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	68	-	963	1900	1524	57.3%
12/2	South East Circular Ahead	U	2	N/A	C		1	68	-	1065	1900	1524	63.3%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	68	-	1067	1900	1524	63.4%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	30	-	261	1900	685	36.6%
13/2	South West Circular Right	U	3	N/A	E		1	30	-	90	1900	685	13.1%
14/1	North West Circular Ahead	U	4	N/A	G		1	62	-	558	1900	1392	40.1%
14/2	North West Circular Ahead	U	4	N/A	G		1	62	-	683	1900	1392	49.1%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	62	-	801	1900	1392	57.5%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	42	-	601	1900	950	62.5%
15/2	North East Circular Right	U	1	N/A	A		1	42	-	287	1900	950	28.9%
15/3	North East Circular Right	U	1	N/A	A		1	42	-	288	1900	950	29.0%
16/1		U	N/A	N/A	-		-	-	-	963	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1065	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	972	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	39	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**263**	**45**	**0**	**62.6**	**189.3**	**0.0**	**252.0**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**263**	**45**	**0**	**62.6**	**189.3**	**0.0**	**252.0**	**-**	**-**	**-**	**-**
1/1	281	272	-	-	-	3.2	10.9	-	14.1	180.9	6.9	10.9	17.8
1/2+1/3	570	544	-	-	-	6.9	20.0	-	26.9	169.8	7.1	20.0	27.1
2/1	779	691	-	-	-	9.9	48.2	-	58.1	268.6	20.7	48.2	68.9
2/2	778	691	-	-	-	9.9	47.7	-	57.6	266.5	20.7	47.7	68.4
2/3	779	691	-	-	-	9.9	48.2	-	58.1	268.6	20.7	48.2	68.9
3/1+3/2	256	256	-	-	-	2.7	2.2	-	5.0	69.9	3.9	2.2	6.2
4/2+4/1	1133	1133	-	-	-	4.5	1.7	-	6.1	19.5	9.6	1.7	11.2
4/3+4/4	1231	1231	-	-	-	5.1	1.4	-	6.5	18.9	10.7	1.4	12.1
5/1	308	308	263	45	0	0.5	0.6	-	1.1	12.5	3.8	0.6	4.3
6/1	686	686	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	109	109	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	558	558	-	-	-	0.0	0.3	-	0.3	2.1	0.4	0.3	0.6
7/2	683	683	-	-	-	0.0	0.4	-	0.4	2.0	0.0	0.4	0.4
7/3	474	474	-	-	-	0.0	0.2	-	0.2	1.7	0.2	0.2	0.4
8/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	873	873	-	-	-	0.1	0.6	-	0.7	2.8	0.4	0.6	1.0
9/2	965	965	-	-	-	0.1	0.8	-	0.9	3.3	0.6	0.8	1.4
9/3	881	881	-	-	-	0.1	0.6	-	0.7	3.0	0.6	0.6	1.3
10/1	176	176	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	683	683	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	474	474	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	873	873	-	-	-	1.6	0.7	-	2.3	9.5	10.3	0.7	11.0
12/2	965	965	-	-	-	2.2	0.9	-	3.1	11.5	14.0	0.9	14.9
12/3	966	966	-	-	-	2.2	0.9	-	3.1	11.5	14.0	0.9	14.9

Full Input Data And Results

13/1	251	251	-	-	-	0.5	0.3	-	0.8	11.0	1.3	0.3	1.6
13/2	90	90	-	-	-	0.0	0.1	-	0.1	3.0	0.0	0.1	0.1
14/1	558	558	-	-	-	0.2	0.3	-	0.5	3.2	1.2	0.3	1.5
14/2	683	683	-	-	-	0.3	0.5	-	0.7	3.9	1.5	0.5	2.0
14/3	801	801	-	-	-	0.3	0.7	-	1.0	4.3	2.6	0.7	3.3
15/1	594	594	-	-	-	2.0	0.8	-	2.8	17.2	9.2	0.8	10.1
15/2	274	274	-	-	-	0.2	0.2	-	0.4	5.0	6.4	0.2	6.6
15/3	275	275	-	-	-	0.3	0.2	-	0.5	6.5	6.5	0.2	6.7
16/1	873	873	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	965	965	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	881	881	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

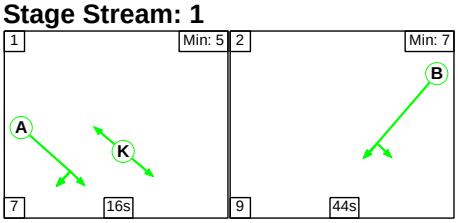
C1	Stream: 1 PRC for Signalled Lanes (%):	-25.3	Total Delay for Signalled Lanes (pcuHr):	177.56	Cycle Time (s):	86
C1	Stream: 2 PRC for Signalled Lanes (%):	-10.2	Total Delay for Signalled Lanes (pcuHr):	13.44	Cycle Time (s):	86
C1	Stream: 3 PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	13.46	Cycle Time (s):	86
C1	Stream: 4 PRC for Signalled Lanes (%):	-16.4	Total Delay for Signalled Lanes (pcuHr):	43.19	Cycle Time (s):	86
C1	Stream: 5 PRC for Signalled Lanes (%):	106.7	Total Delay for Signalled Lanes (pcuHr):	0.93	Cycle Time (s):	86
C1	Stream: 6 PRC for Signalled Lanes (%):	46.3	Total Delay for Signalled Lanes (pcuHr):	2.32	Cycle Time (s):	86
	PRC Over All Lanes (%):	-25.3	Total Delay Over All Lanes(pcuHr):	251.96		

Full Input Data And Results

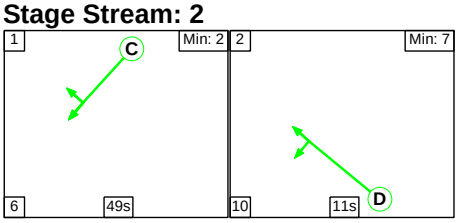
Scenario 6: '2021 DS5 PM' (FG6: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

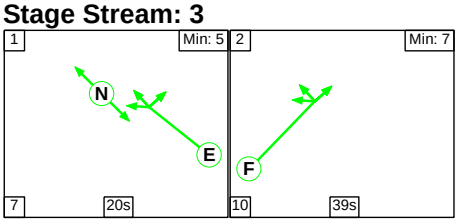
Stage Stream: 1



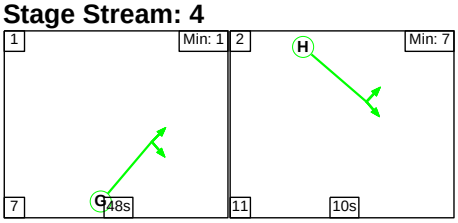
Stage Stream: 2



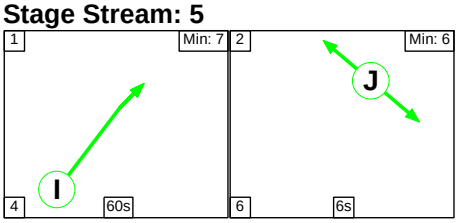
Stage Stream: 3



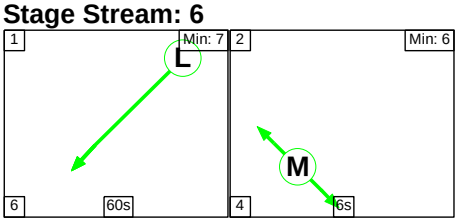
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	16	44
Change Point	0	23

Full Input Data And Results

Stage Stream: 2

Stage	1	2
Duration	49	11
Change Point	18	73

Stage Stream: 3

Stage	1	2
Duration	20	39
Change Point	74	25

Stage Stream: 4

Stage	1	2
Duration	48	10
Change Point	26	5

Stage Stream: 5

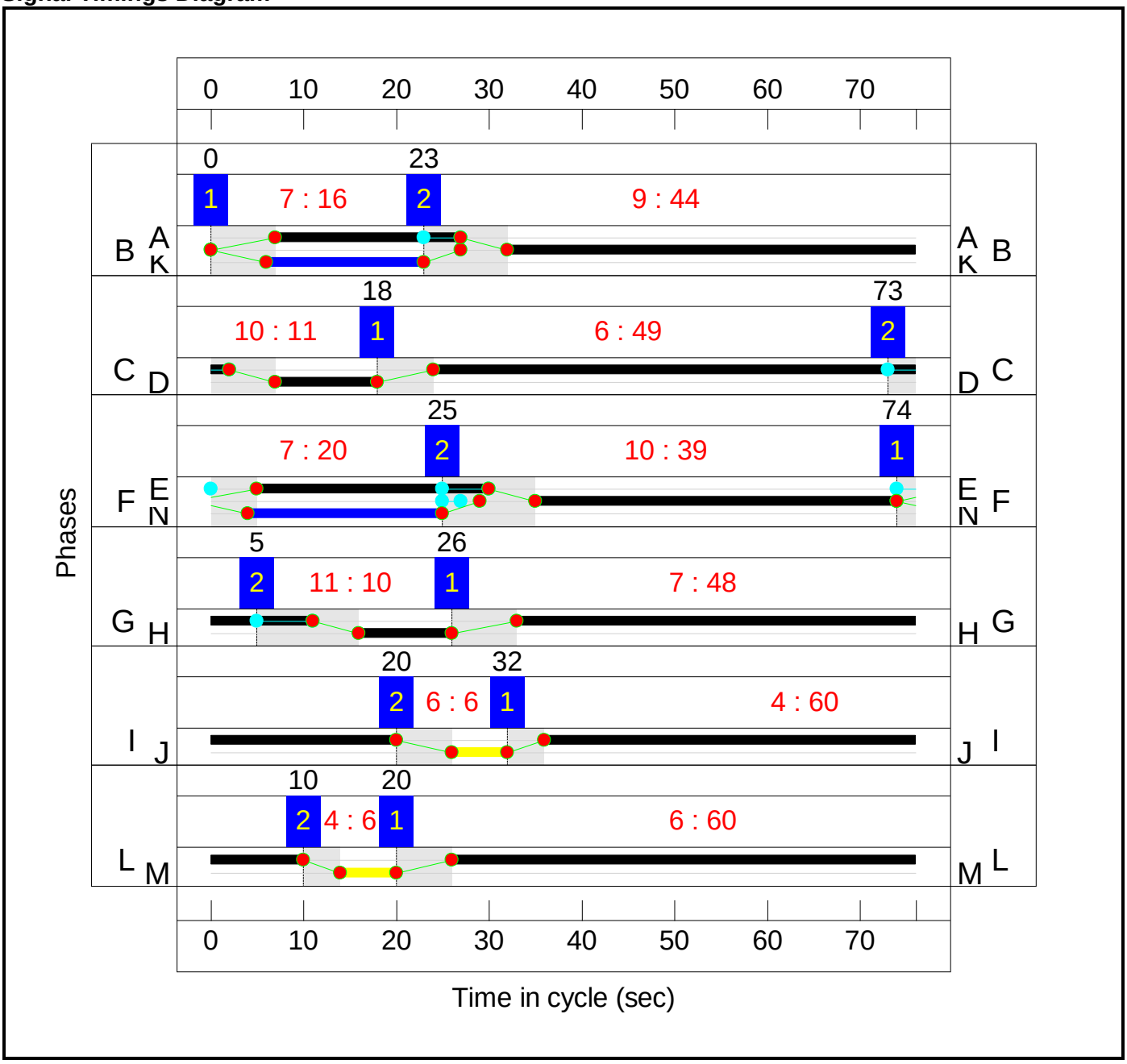
Stage	1	2
Duration	60	6
Change Point	32	20

Stage Stream: 6

Stage	1	2
Duration	60	6
Change Point	20	10

Full Input Data And Results

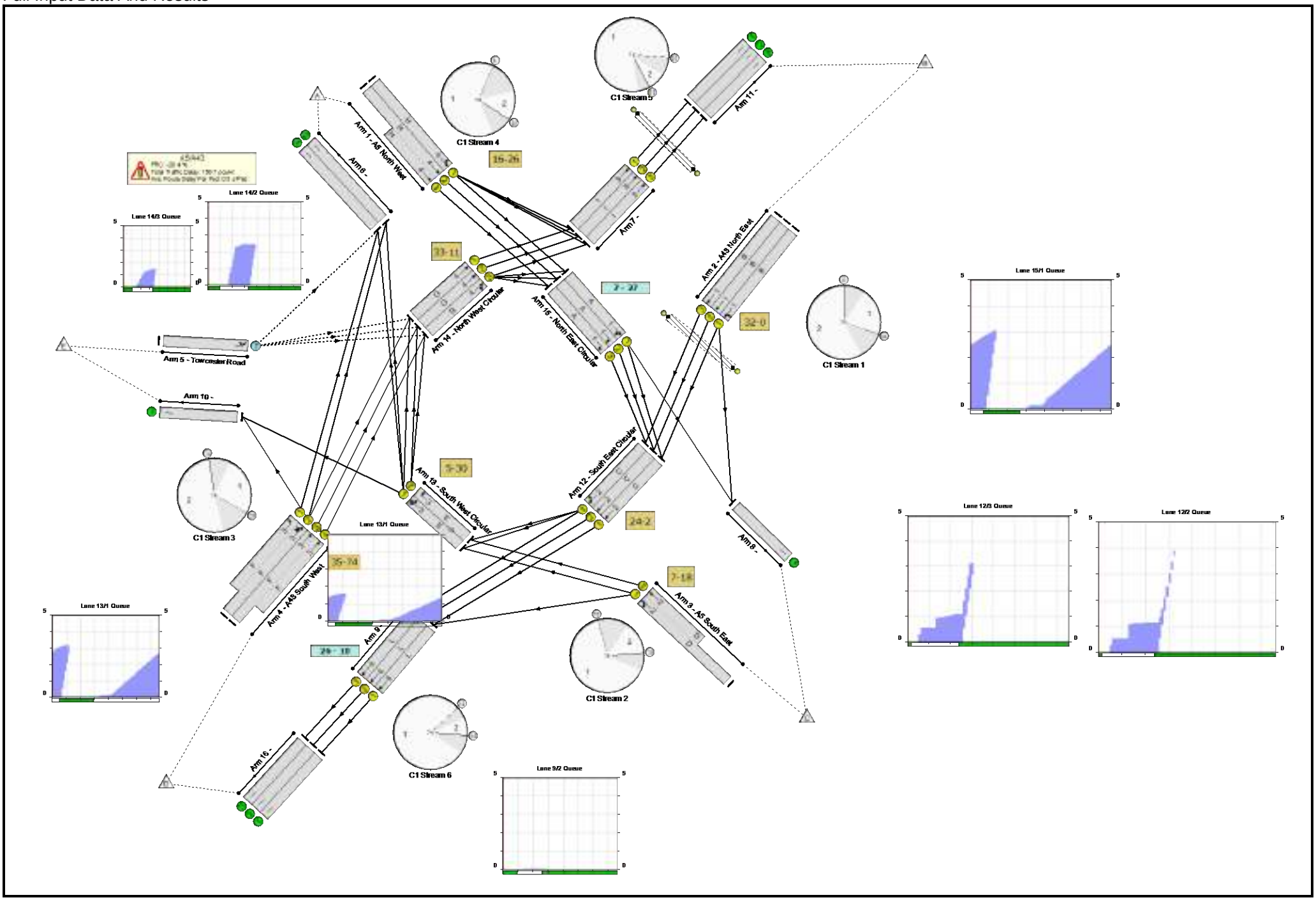
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**108.4%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**108.4%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	10	-	187	1800	261	71.8%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	10	-	268	1800:1800	261+163	63.3 : 63.3%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	44	-	988	1800	1066	92.7%
2/2	A43 North East Ahead	U	1	N/A	B		1	44	-	983	1800	1066	92.2%
2/3	A43 North East Ahead	U	1	N/A	B		1	44	-	984	1800	1066	92.3%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	11	-	464	1800:1800	284+144	108.4 : 108.4%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	39	-	1560	1800:1800	793+690	105.2 : 105.2%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	39	-	1644	1800:1800	887+891	92.5 : 92.5%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	239	2107	422	56.7%
6/1		U	N/A	N/A	-		-	-	-	936	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	203	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	60	-	811	1900	1525	51.0%
7/2	Ahead	U	5	N/A	I		1	60	-	943	1900	1525	61.8%
7/3	Ahead	U	5	N/A	I		1	60	-	764	1900	1525	50.1%
8/1		U	N/A	N/A	-		-	-	-	527	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	60	-	799	1900	1525	52.4%
9/2	Ahead	U	6	N/A	L		1	60	-	1153	1900	1525	75.6%
9/3	Ahead	U	6	N/A	L		1	60	-	952	1900	1525	62.4%
10/1		U	N/A	N/A	-		-	-	-	229	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	811	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	943	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	764	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	54	-	799	1900	1375	58.1%
12/2	South East Circular Ahead	U	2	N/A	C		1	54	-	1153	1900	1375	83.9%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	54	-	1110	1900	1375	80.7%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	25	-	465	1900	650	67.9%
13/2	South West Circular Right	U	3	N/A	E		1	25	-	157	1900	650	24.2%
14/1	North West Circular Ahead	U	4	N/A	G		1	54	-	811	1900	1375	56.6%
14/2	North West Circular Ahead	U	4	N/A	G		1	54	-	943	1900	1375	68.6%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	54	-	943	1900	1375	68.6%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	20	-	338	1900	525	64.4%
15/2	North East Circular Right	U	1	N/A	A		1	20	-	170	1900	525	32.4%
15/3	North East Circular Right	U	1	N/A	A		1	20	-	126	1900	525	24.0%
16/1		U	N/A	N/A	-		-	-	-	799	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1153	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	952	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	17	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**145**	**94**	**0**	**41.2**	**109.5**	**0.0**	**150.7**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**145**	**94**	**0**	**41.2**	**109.5**	**0.0**	**150.7**	**-**	**-**	**-**	**-**
1/1	187	187	-	-	-	1.6	1.2	-	2.8	54.7	3.7	1.2	5.0
1/2+1/3	268	268	-	-	-	2.2	0.9	-	3.1	41.7	3.3	0.9	4.1
2/1	988	988	-	-	-	3.8	5.6	-	9.4	34.3	18.7	5.6	24.2
2/2	983	983	-	-	-	3.8	5.3	-	9.1	33.2	18.6	5.3	23.8
2/3	984	984	-	-	-	3.8	5.3	-	9.1	33.4	18.6	5.3	23.9
3/1+3/2	464	440	-	-	-	4.9	23.0	-	27.9	216.4	7.0	23.0	30.0
4/2+4/1	1560	1483	-	-	-	8.5	46.7	-	55.2	127.3	27.7	46.7	74.4
4/3+4/4	1644	1644	-	-	-	7.2	5.7	-	12.8	28.1	15.1	5.7	20.8
5/1	239	239	145	94	0	0.7	0.6	-	1.4	20.7	3.2	0.6	3.8
6/1	888	888	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	191	191	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	778	778	-	-	-	0.0	0.5	-	0.5	2.4	0.0	0.5	0.5
7/2	943	943	-	-	-	0.0	0.8	-	0.8	3.1	0.0	0.8	0.8
7/3	764	764	-	-	-	0.0	0.5	-	0.5	2.4	0.0	0.5	0.5
8/1	527	527	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	799	799	-	-	-	0.0	0.5	-	0.6	2.5	0.0	0.5	0.6
9/2	1153	1153	-	-	-	0.0	1.5	-	1.5	4.8	0.0	1.5	1.6
9/3	952	952	-	-	-	0.0	0.8	-	0.8	3.2	0.0	0.8	0.9
10/1	221	221	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	778	778	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	943	943	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	764	764	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	799	799	-	-	-	0.2	0.7	-	0.9	4.1	1.2	0.7	1.9
12/2	1153	1153	-	-	-	0.3	2.5	-	2.8	8.8	3.9	2.5	6.4
12/3	1110	1110	-	-	-	0.3	2.1	-	2.4	7.6	3.1	2.1	5.2

Full Input Data And Results

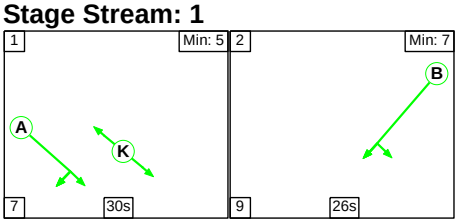
13/1	441	441	-	-	-	1.0	1.0	-	2.1	17.0	3.2	1.0	4.2
13/2	157	157	-	-	-	0.0	0.2	-	0.2	3.8	0.0	0.2	0.2
14/1	778	778	-	-	-	0.2	0.7	-	0.9	3.9	1.2	0.7	1.8
14/2	943	943	-	-	-	0.5	1.1	-	1.6	6.2	2.5	1.1	3.6
14/3	943	943	-	-	-	0.3	1.1	-	1.4	5.3	1.5	1.1	2.6
15/1	338	338	-	-	-	1.1	0.9	-	2.0	21.2	3.1	0.9	4.0
15/2	170	170	-	-	-	0.4	0.2	-	0.6	13.1	0.6	0.2	0.8
15/3	126	126	-	-	-	0.2	0.2	-	0.4	10.1	0.4	0.2	0.5
16/1	799	799	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1153	1153	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	952	952	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-3.0	Total Delay for Signalled Lanes (pcuHr):	30.58	Cycle Time (s):	76		
C1	Stream: 2 PRC for Signalled Lanes (%):	-20.4	Total Delay for Signalled Lanes (pcuHr):	33.98	Cycle Time (s):	76		
C1	Stream: 3 PRC for Signalled Lanes (%):	-16.8	Total Delay for Signalled Lanes (pcuHr):	70.24	Cycle Time (s):	76		
C1	Stream: 4 PRC for Signalled Lanes (%):	25.4	Total Delay for Signalled Lanes (pcuHr):	9.81	Cycle Time (s):	76		
C1	Stream: 5 PRC for Signalled Lanes (%):	45.5	Total Delay for Signalled Lanes (pcuHr):	1.83	Cycle Time (s):	76		
C1	Stream: 6 PRC for Signalled Lanes (%):	19.0	Total Delay for Signalled Lanes (pcuHr):	2.94	Cycle Time (s):	76		
	PRC Over All Lanes (%):	-20.4	Total Delay Over All Lanes(pcuHr):	150.74				

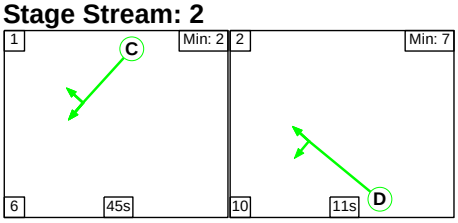
Full Input Data And Results
Scenario 7: '2031 DS5 AM' (FG7: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

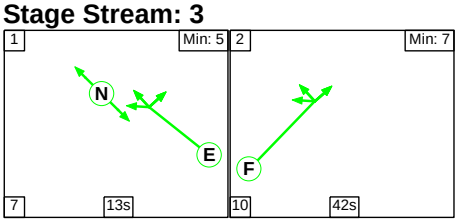
Stage Stream: 1



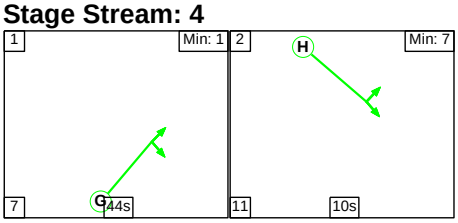
Stage Stream: 2



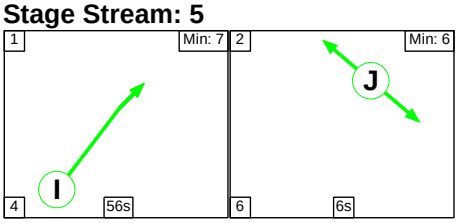
Stage Stream: 3



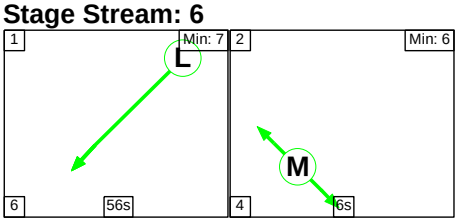
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	30	26
Change Point	0	37

Full Input Data And Results

Stage Stream: 2

Stage	1	2
Duration	45	11
Change Point	39	18

Stage Stream: 3

Stage	1	2
Duration	13	42
Change Point	18	38

Stage Stream: 4

Stage	1	2
Duration	44	10
Change Point	19	70

Stage Stream: 5

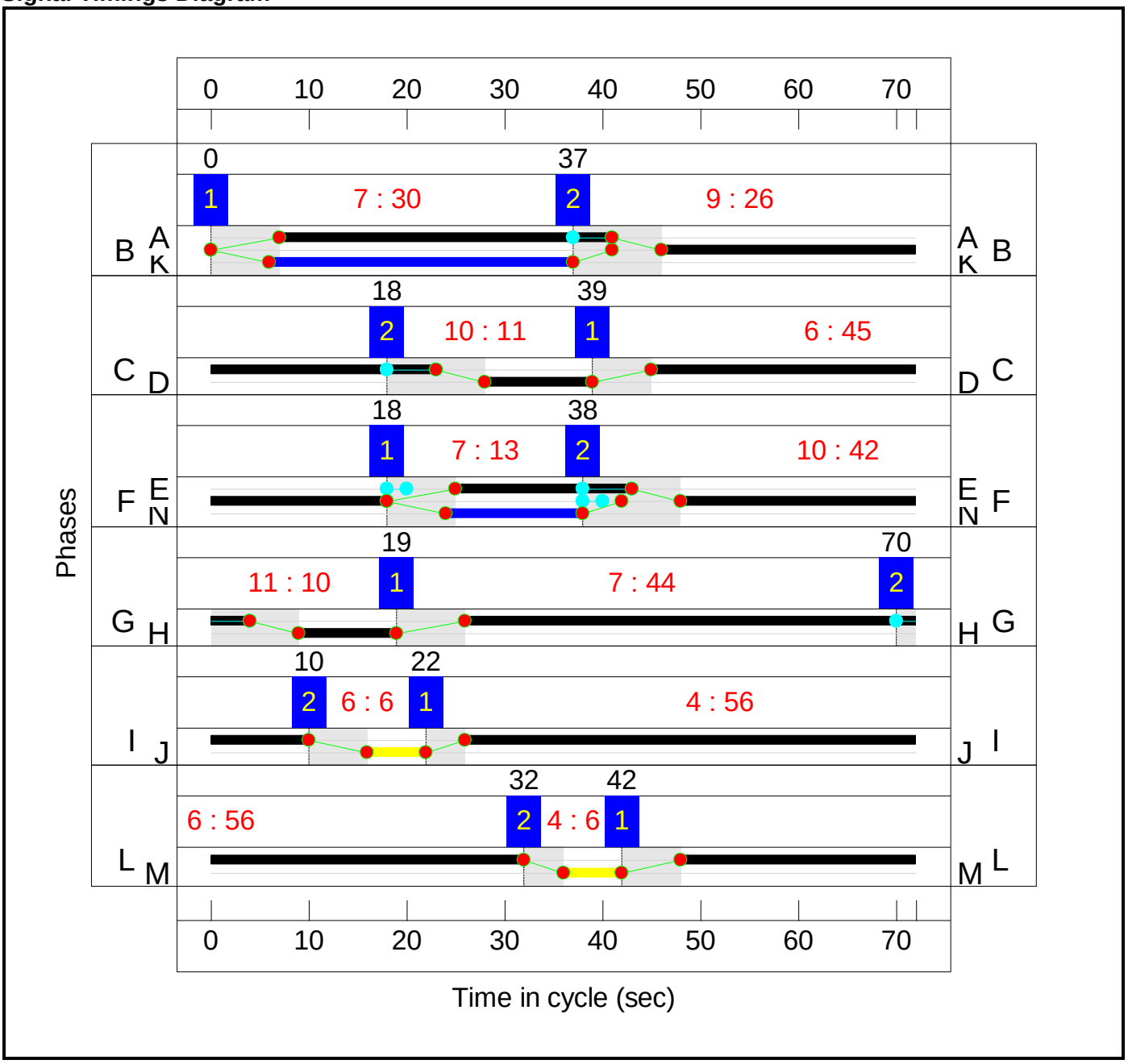
Stage	1	2
Duration	56	6
Change Point	22	10

Stage Stream: 6

Stage	1	2
Duration	56	6
Change Point	42	32

Full Input Data And Results

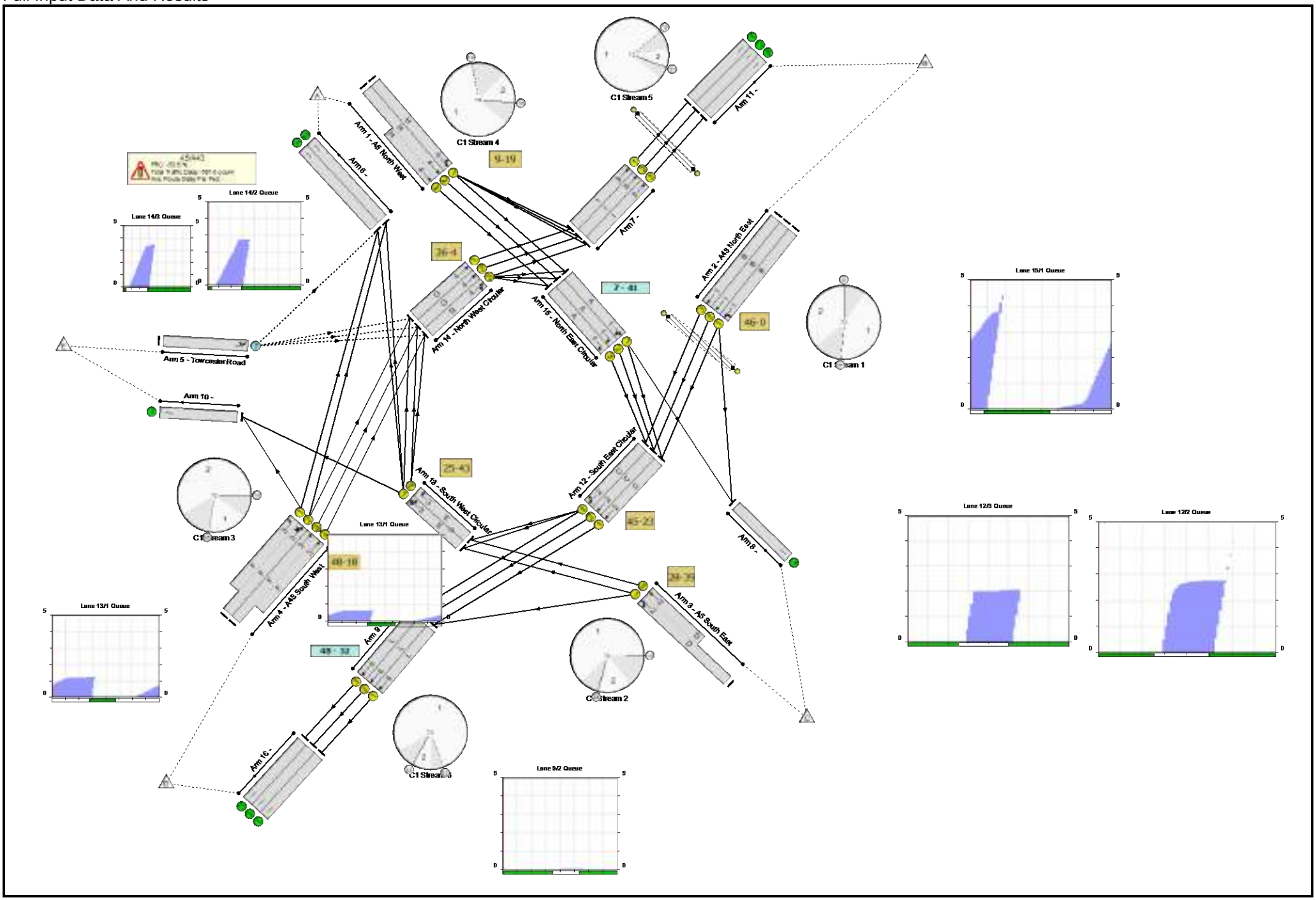
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.2%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**138.2%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	10	-	376	1800	275	136.7%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	10	-	694	1800:1800	275+275	126.2 : 126.2%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	26	-	933	1800	675	138.2%
2/2	A43 North East Ahead	U	1	N/A	B		1	26	-	932	1800	675	138.1%
2/3	A43 North East Ahead	U	1	N/A	B		1	26	-	932	1800	675	138.1%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	11	-	718	1800:1800	300+300	128.3 : 111.0%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	42	-	1092	1800:1800	871+806	65.1 : 65.1%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	42	-	1144	1800:1800	861+939	63.6 : 63.6%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	212	2101	556	38.1%
6/1		U	N/A	N/A	-		-	-	-	758	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	216	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	56	-	582	1900	1504	37.9%
7/2	Ahead	U	5	N/A	I		1	56	-	825	1900	1504	52.9%
7/3	Ahead	U	5	N/A	I		1	56	-	533	1900	1504	33.6%
8/1		U	N/A	N/A	-		-	-	-	446	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	56	-	1013	1900	1504	49.9%
9/2	Ahead	U	6	N/A	L		1	56	-	1286	1900	1504	63.6%
9/3	Ahead	U	6	N/A	L		1	56	-	1197	1900	1504	59.3%
10/1		U	N/A	N/A	-		-	-	-	177	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	582	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	825	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	533	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	50	-	994	1900	1346	54.7%
12/2	South East Circular Ahead	U	2	N/A	C		1	50	-	1286	1900	1346	71.1%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	50	-	1284	1900	1346	71.0%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	18	-	453	1900	501	69.5%
13/2	South West Circular Right	U	3	N/A	E		1	18	-	333	1900	501	59.8%
14/1	North West Circular Ahead	U	4	N/A	G		1	50	-	539	1900	1346	40.0%
14/2	North West Circular Ahead	U	4	N/A	G		1	50	-	814	1900	1346	58.5%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	50	-	730	1900	1346	53.8%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	34	-	507	1900	924	47.9%
15/2	North East Circular Right	U	1	N/A	A		1	34	-	354	1900	924	30.5%
15/3	North East Circular Right	U	1	N/A	A		1	34	-	352	1900	924	30.3%
16/1		U	N/A	N/A	-		-	-	-	1013	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1286	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	1197	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	6	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	31	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**172**	**40**	**0**	**88.4**	**592.6**	**0.0**	**681.0**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**172**	**40**	**0**	**88.4**	**592.6**	**0.0**	**681.0**	**-**	**-**	**-**	**-**
1/1	376	275	-	-	-	6.8	52.3	-	59.1	565.6	9.5	52.3	61.8
1/2+1/3	694	550	-	-	-	11.0	74.3	-	85.3	442.7	9.3	74.3	83.6
2/1	933	675	-	-	-	16.9	130.8	-	147.7	570.0	28.2	130.8	159.0
2/2	932	675	-	-	-	16.9	130.3	-	147.2	568.5	28.1	130.3	158.4
2/3	932	675	-	-	-	16.9	130.3	-	147.2	568.5	28.1	130.3	158.4
3/1+3/2	718	600	-	-	-	9.5	61.9	-	71.4	358.2	11.2	61.9	73.1
4/2+4/1	1092	1092	-	-	-	2.5	0.9	-	3.5	11.5	6.6	0.9	7.5
4/3+4/4	1144	1144	-	-	-	2.7	0.9	-	3.6	11.3	7.1	0.9	8.0
5/1	212	212	172	40	0	0.1	0.3	-	0.4	7.2	1.2	0.3	1.5
6/1	708	708	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	166	166	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	570	570	-	-	-	0.1	0.3	-	0.4	2.4	0.7	0.3	1.0
7/2	796	796	-	-	-	0.0	0.6	-	0.6	2.7	0.2	0.6	0.8
7/3	505	505	-	-	-	0.1	0.3	-	0.4	2.7	1.2	0.3	1.5
8/1	381	381	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	751	751	-	-	-	0.0	0.5	-	0.5	2.6	0.3	0.5	0.8
9/2	957	957	-	-	-	0.0	0.9	-	0.9	3.3	0.0	0.9	0.9
9/3	892	892	-	-	-	0.0	0.7	-	0.7	3.0	0.0	0.7	0.8
10/1	172	172	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	570	570	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	796	796	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	505	505	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	736	736	-	-	-	0.0	0.6	-	0.6	3.1	0.5	0.6	1.1
12/2	957	957	-	-	-	0.8	1.2	-	2.0	7.5	4.2	1.2	5.5
12/3	955	955	-	-	-	0.6	1.2	-	1.8	6.8	2.0	1.2	3.3

Full Input Data And Results

13/1	349	349	-	-	-	0.5	1.1	-	1.7	17.1	1.3	1.1	2.4
13/2	300	300	-	-	-	0.0	0.7	-	0.7	8.9	0.0	0.7	0.7
14/1	539	539	-	-	-	0.6	0.3	-	0.9	6.0	3.0	0.3	3.3
14/2	788	788	-	-	-	0.6	0.7	-	1.3	5.8	2.7	0.7	3.4
14/3	723	723	-	-	-	0.7	0.6	-	1.3	6.4	3.5	0.6	4.1
15/1	442	442	-	-	-	0.8	0.5	-	1.3	10.6	4.4	0.5	4.9
15/2	282	282	-	-	-	0.0	0.2	-	0.2	3.0	0.1	0.2	0.3
15/3	280	280	-	-	-	0.0	0.2	-	0.2	2.9	0.0	0.2	0.3
16/1	751	751	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	957	957	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	892	892	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

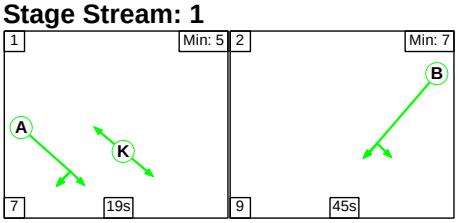
C1	Stream: 1 PRC for Signalled Lanes (%):	-53.6	Total Delay for Signalled Lanes (pcuHr):	443.85	Cycle Time (s):	72
C1	Stream: 2 PRC for Signalled Lanes (%):	-42.6	Total Delay for Signalled Lanes (pcuHr):	75.88	Cycle Time (s):	72
C1	Stream: 3 PRC for Signalled Lanes (%):	29.5	Total Delay for Signalled Lanes (pcuHr):	9.46	Cycle Time (s):	72
C1	Stream: 4 PRC for Signalled Lanes (%):	-51.9	Total Delay for Signalled Lanes (pcuHr):	147.87	Cycle Time (s):	72
C1	Stream: 5 PRC for Signalled Lanes (%):	70.2	Total Delay for Signalled Lanes (pcuHr):	1.36	Cycle Time (s):	72
C1	Stream: 6 PRC for Signalled Lanes (%):	41.5	Total Delay for Signalled Lanes (pcuHr):	2.15	Cycle Time (s):	72
	PRC Over All Lanes (%):	-53.6	Total Delay Over All Lanes(pcuHr):	680.98		

Full Input Data And Results

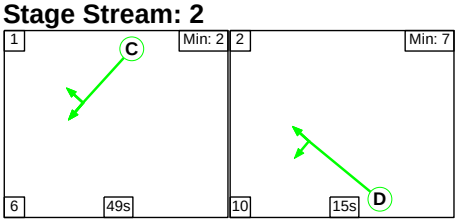
Scenario 8: '2031 DS5 PM' (FG8: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

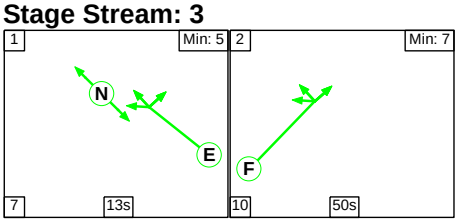
Stage Stream: 1



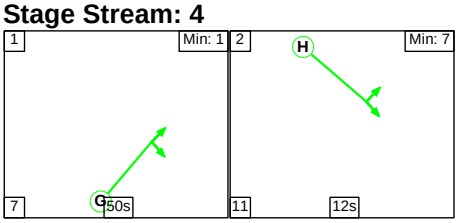
Stage Stream: 2



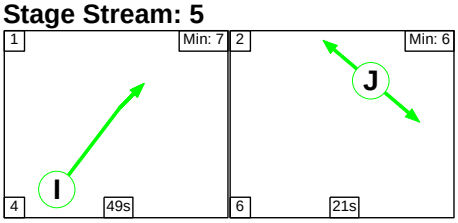
Stage Stream: 3



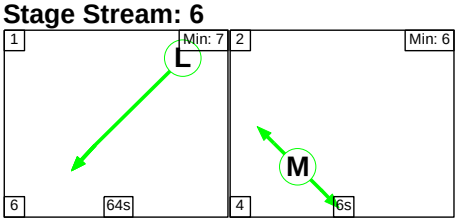
Stage Stream: 4



Stage Stream: 5



Stage Stream: 6



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	45
Change Point	0	26

Full Input Data And Results

Stage Stream: 2

Stage	1	2
Duration	49	15
Change Point	22	77

Stage Stream: 3

Stage	1	2
Duration	13	50
Change Point	0	20

Stage Stream: 4

Stage	1	2
Duration	50	12
Change Point	32	9

Stage Stream: 5

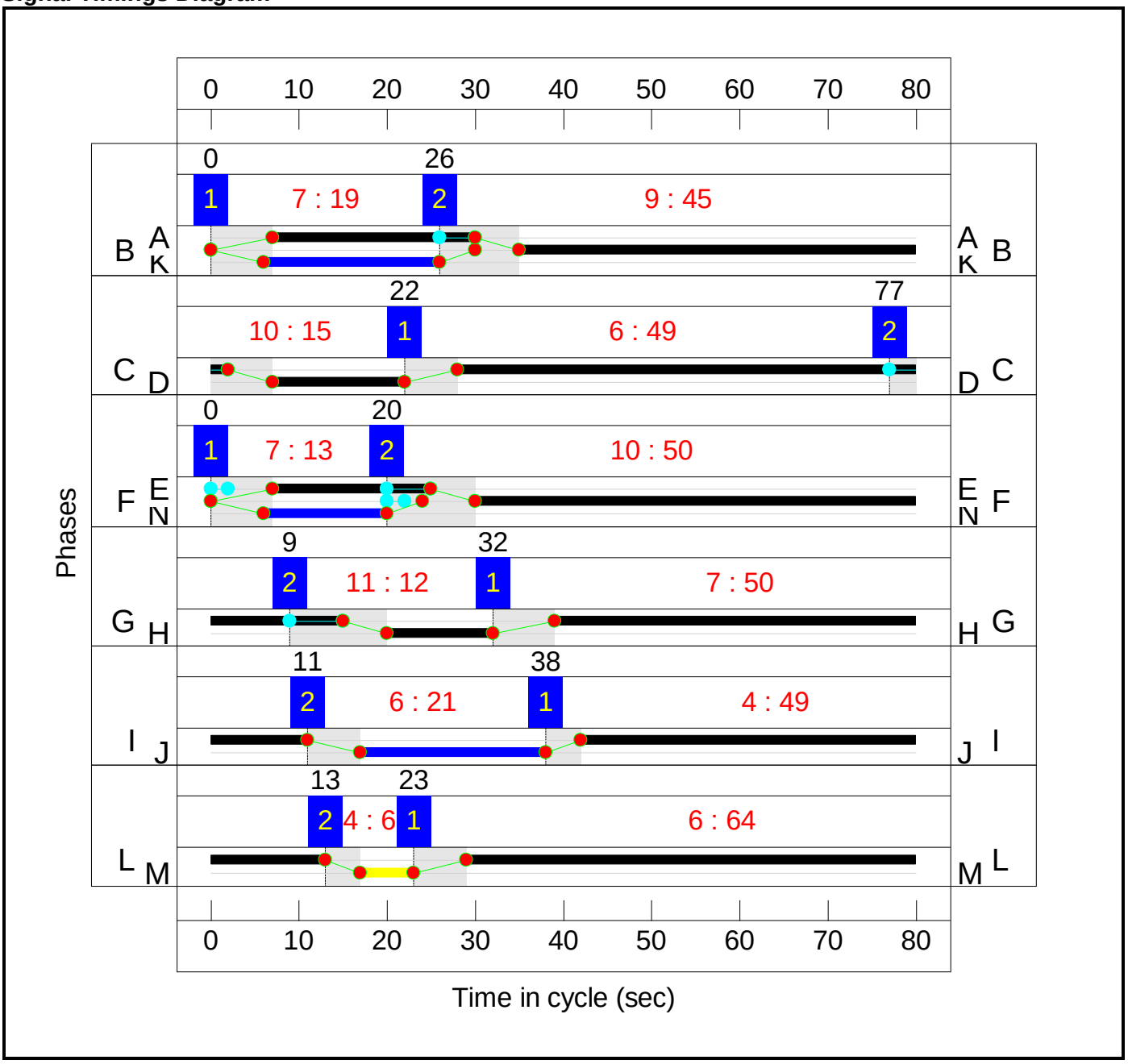
Stage	1	2
Duration	49	21
Change Point	38	11

Stage Stream: 6

Stage	1	2
Duration	64	6
Change Point	23	13

Full Input Data And Results

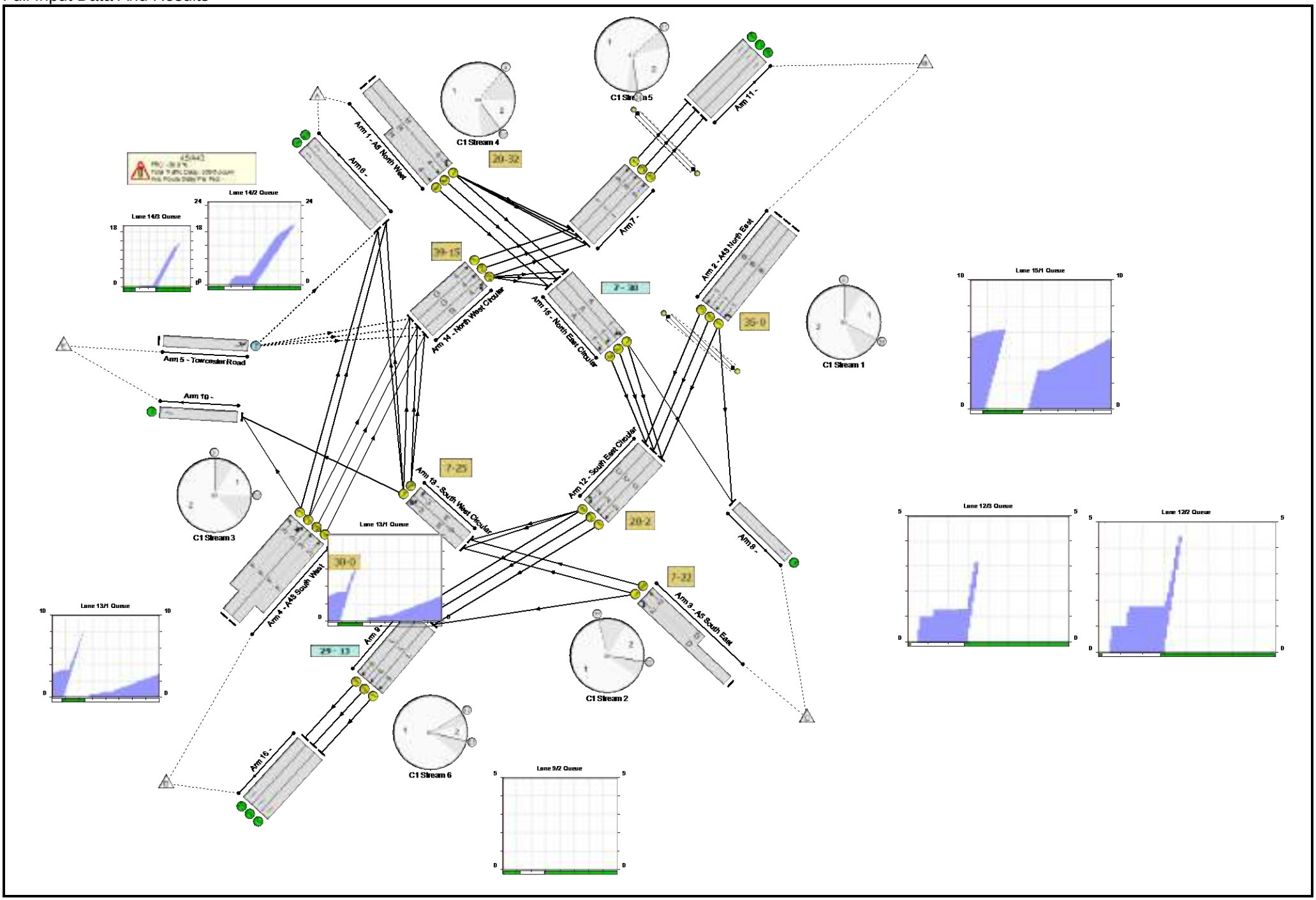
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**124.2%**
A5/A43	-	-	**N/A**	-	-		-	-	-	-	-	-	**124.2%**
1/1	A5 North West Left Ahead	U	4	N/A	H		1	12	-	337	1800	293	115.2%
1/2+1/3	A5 North West Ahead	U	4	N/A	H		1	12	-	246	1800:1800	293+181	52.0 : 52.0%
2/1	A43 North East Left Ahead	U	1	N/A	B		1	45	-	1122	1800	1035	108.4%
2/2	A43 North East Ahead	U	1	N/A	B		1	45	-	1114	1800	1035	107.6%
2/3	A43 North East Ahead	U	1	N/A	B		1	45	-	1115	1800	1035	107.7%
3/1+3/2	A5 South East Left Ahead	U	2	N/A	D		1	15	-	647	1800:1800	360+161	124.2 : 124.2%
4/2+4/1	A43 South West Left Left2 Ahead	U	3	N/A	F		1	50	-	1582	1800:1800	887+767	95.7 : 95.7%
4/3+4/4	A43 South West Ahead	U	3	N/A	F		1	50	-	1640	1800:1800	900+900	91.1 : 91.1%
5/1	Towcester Road U-Turn Left	O	N/A	N/A	-		-	-	-	203	2105	424	47.9%
6/1		U	N/A	N/A	-		-	-	-	977	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	237	Inf	Inf	0.0%
7/1	Ahead	U	5	N/A	I		1	49	-	783	1900	1187	65.9%
7/2	Ahead	U	5	N/A	I		1	49	-	1009	1900	1187	82.0%
7/3	Ahead	U	5	N/A	I		1	49	-	735	1900	1187	61.6%
8/1		U	N/A	N/A	-		-	-	-	879	Inf	Inf	0.0%
9/1	Ahead	U	6	N/A	L		1	64	-	793	1900	1544	46.9%
9/2	Ahead	U	6	N/A	L		1	64	-	1268	1900	1544	77.0%
9/3	Ahead	U	6	N/A	L		1	64	-	1071	1900	1544	64.8%
10/1		U	N/A	N/A	-		-	-	-	254	Inf	Inf	0.0%
11/1		U	N/A	N/A	-		-	-	-	783	Inf	Inf	0.0%

Full Input Data And Results

11/2		U	N/A	N/A	-		-	-	-	1009	Inf	Inf	0.0%
11/3		U	N/A	N/A	-		-	-	-	735	Inf	Inf	0.0%
12/1	South East Circular Ahead	U	2	N/A	C		1	54	-	724	1900	1306	51.2%
12/2	South East Circular Ahead	U	2	N/A	C		1	54	-	1268	1900	1306	91.0%
12/3	South East Circular Ahead Right	U	2	N/A	C		1	54	-	1215	1900	1306	86.9%
13/1	South West Circular Ahead Ahead2 Right	U	3	N/A	E		1	18	-	522	1900	451	97.2%
13/2	South West Circular Right	U	3	N/A	E		1	18	-	200	1900	451	35.7%
14/1	North West Circular Ahead	U	4	N/A	G		1	56	-	783	1900	1354	57.8%
14/2	North West Circular Ahead	U	4	N/A	G		1	56	-	1009	1900	1354	71.9%
14/3	North West Circular Ahead Right	U	4	N/A	G		1	56	-	887	1900	1354	65.3%
15/1	North East Circular Ahead Right	U	1	N/A	A		1	23	-	481	1900	570	76.6%
15/2	North East Circular Right	U	1	N/A	A		1	23	-	154	1900	570	27.0%
15/3	North East Circular Right	U	1	N/A	A		1	23	-	100	1900	570	17.5%
16/1		U	N/A	N/A	-		-	-	-	793	Inf	Inf	0.0%
16/2		U	N/A	N/A	-		-	-	-	1268	Inf	Inf	0.0%
16/3		U	N/A	N/A	-		-	-	-	1071	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	5	-	J		1	21	-	0	-	0	0.0%
Ped Link: P2	Unnamed Ped Link	-	1	-	K		1	20	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**171**	**32**	**0**	**64.8**	**274.8**	**0.0**	**339.6**	**-**	**-**	**-**	**-**
A5/A43	**-**	**-**	**171**	**32**	**0**	**64.8**	**274.8**	**0.0**	**339.6**	**-**	**-**	**-**	**-**
1/1	337	293	-	-	-	4.8	25.5	-	30.3	323.8	8.5	25.5	34.0
1/2+1/3	246	246	-	-	-	2.1	0.5	-	2.6	38.1	3.1	0.5	3.6
2/1	1122	1035	-	-	-	9.7	49.2	-	58.9	188.9	27.9	49.2	77.1
2/2	1114	1035	-	-	-	9.2	45.6	-	54.8	177.2	27.3	45.6	72.9
2/3	1115	1035	-	-	-	9.3	46.1	-	55.3	178.6	27.4	46.1	73.5
3/1+3/2	647	521	-	-	-	9.9	65.4	-	75.3	418.9	14.5	65.4	79.9
4/2+4/1	1582	1582	-	-	-	4.2	8.8	-	13.0	29.6	12.7	8.8	21.6
4/3+4/4	1640	1640	-	-	-	4.4	4.8	-	9.2	20.3	12.1	4.8	16.9
5/1	203	203	171	32	0	0.4	0.5	-	0.8	15.0	2.4	0.5	2.8
6/1	937	937	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	197	197	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	783	783	-	-	-	0.1	1.0	-	1.1	5.0	0.4	1.0	1.4
7/2	973	973	-	-	-	0.2	2.2	-	2.4	8.8	0.5	2.2	2.8
7/3	732	732	-	-	-	0.0	0.8	-	0.8	4.1	0.1	0.8	0.9
8/1	803	803	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	724	724	-	-	-	0.1	0.4	-	0.6	2.8	1.1	0.4	1.5
9/2	1189	1189	-	-	-	0.0	1.7	-	1.7	5.0	0.0	1.7	1.7
9/3	1001	1001	-	-	-	0.0	0.9	-	0.9	3.3	0.0	0.9	0.9
10/1	250	250	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/1	783	783	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/2	973	973	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11/3	732	732	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12/1	669	669	-	-	-	0.2	0.5	-	0.7	4.0	0.9	0.5	1.4
12/2	1189	1189	-	-	-	0.6	4.7	-	5.3	15.9	4.4	4.7	9.1
12/3	1135	1135	-	-	-	0.4	3.2	-	3.6	11.5	3.2	3.2	6.4

Full Input Data And Results

13/1	439	439	-	-	-	1.5	7.8	-	9.3	76.0	8.5	7.8	16.3
13/2	161	161	-	-	-	0.0	0.3	-	0.3	6.2	0.0	0.3	0.3
14/1	783	783	-	-	-	0.5	0.7	-	1.2	5.4	9.6	0.7	10.3
14/2	973	973	-	-	-	2.5	1.3	-	3.8	13.9	18.6	1.3	19.9
14/3	884	884	-	-	-	1.0	0.9	-	1.9	7.9	14.8	0.9	15.8
15/1	437	437	-	-	-	3.3	1.6	-	4.9	40.2	6.2	1.6	7.8
15/2	154	154	-	-	-	0.5	0.2	-	0.7	15.9	0.8	0.2	0.9
15/3	100	100	-	-	-	0.1	0.1	-	0.2	8.6	0.3	0.1	0.4
16/1	724	724	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/2	1189	1189	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
16/3	1001	1001	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
Ped Link: P2	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-20.5	Total Delay for Signalled Lanes (pcuHr):	174.81	Cycle Time (s):	80
C1	Stream: 2 PRC for Signalled Lanes (%):	-38.0	Total Delay for Signalled Lanes (pcuHr):	84.92	Cycle Time (s):	80
C1	Stream: 3 PRC for Signalled Lanes (%):	-8.0	Total Delay for Signalled Lanes (pcuHr):	31.76	Cycle Time (s):	80
C1	Stream: 4 PRC for Signalled Lanes (%):	-28.0	Total Delay for Signalled Lanes (pcuHr):	39.81	Cycle Time (s):	80
C1	Stream: 5 PRC for Signalled Lanes (%):	9.8	Total Delay for Signalled Lanes (pcuHr):	4.31	Cycle Time (s):	80
C1	Stream: 6 PRC for Signalled Lanes (%):	16.9	Total Delay for Signalled Lanes (pcuHr):	3.15	Cycle Time (s):	80
	PRC Over All Lanes (%):	-38.0	Total Delay Over All Lanes(pcuHr):	339.58		

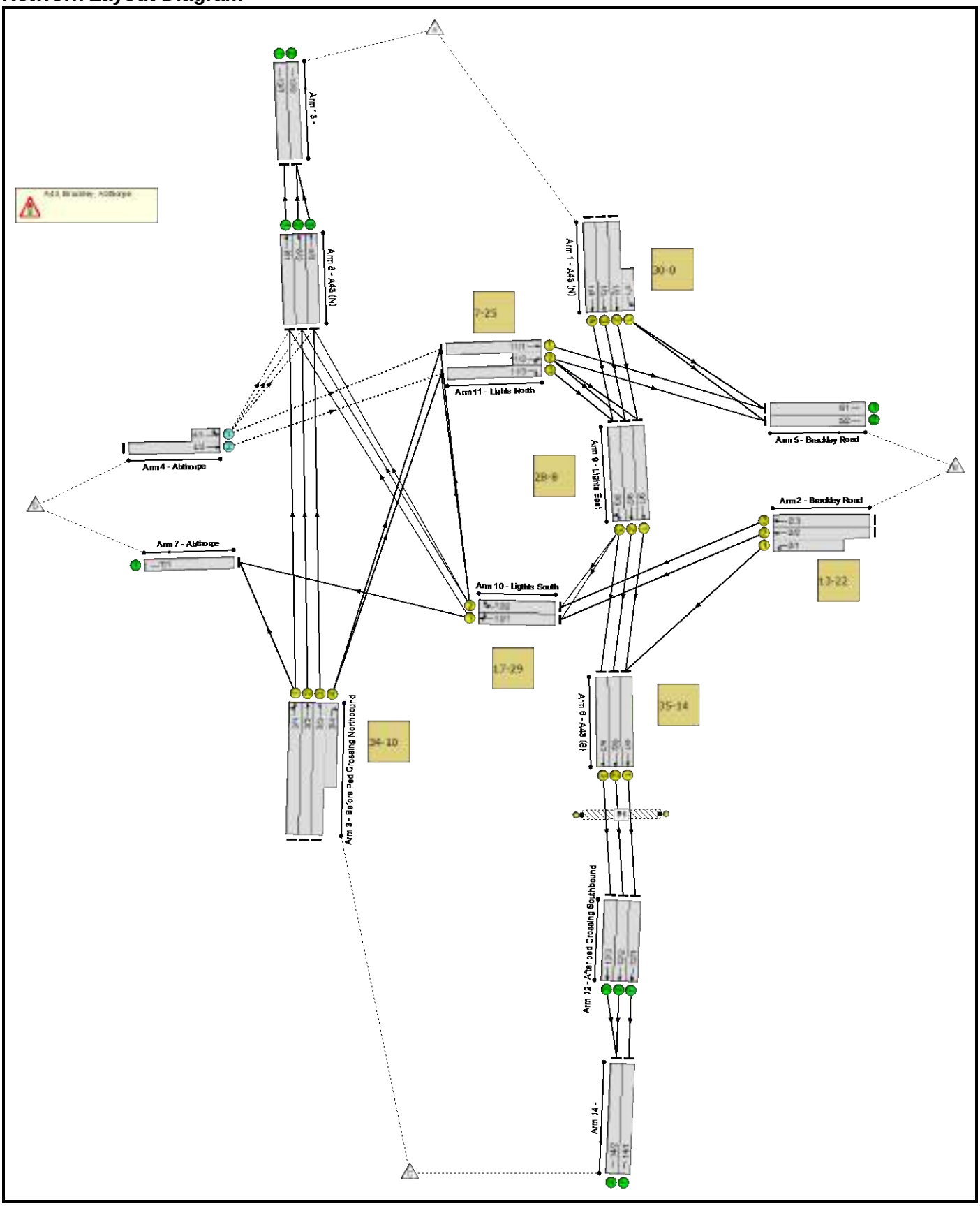
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 15
Location:	Abthorpe Road / A43, Towcester Bypass (north) / Brackley Road / A43, Towcester Bypass (south)
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

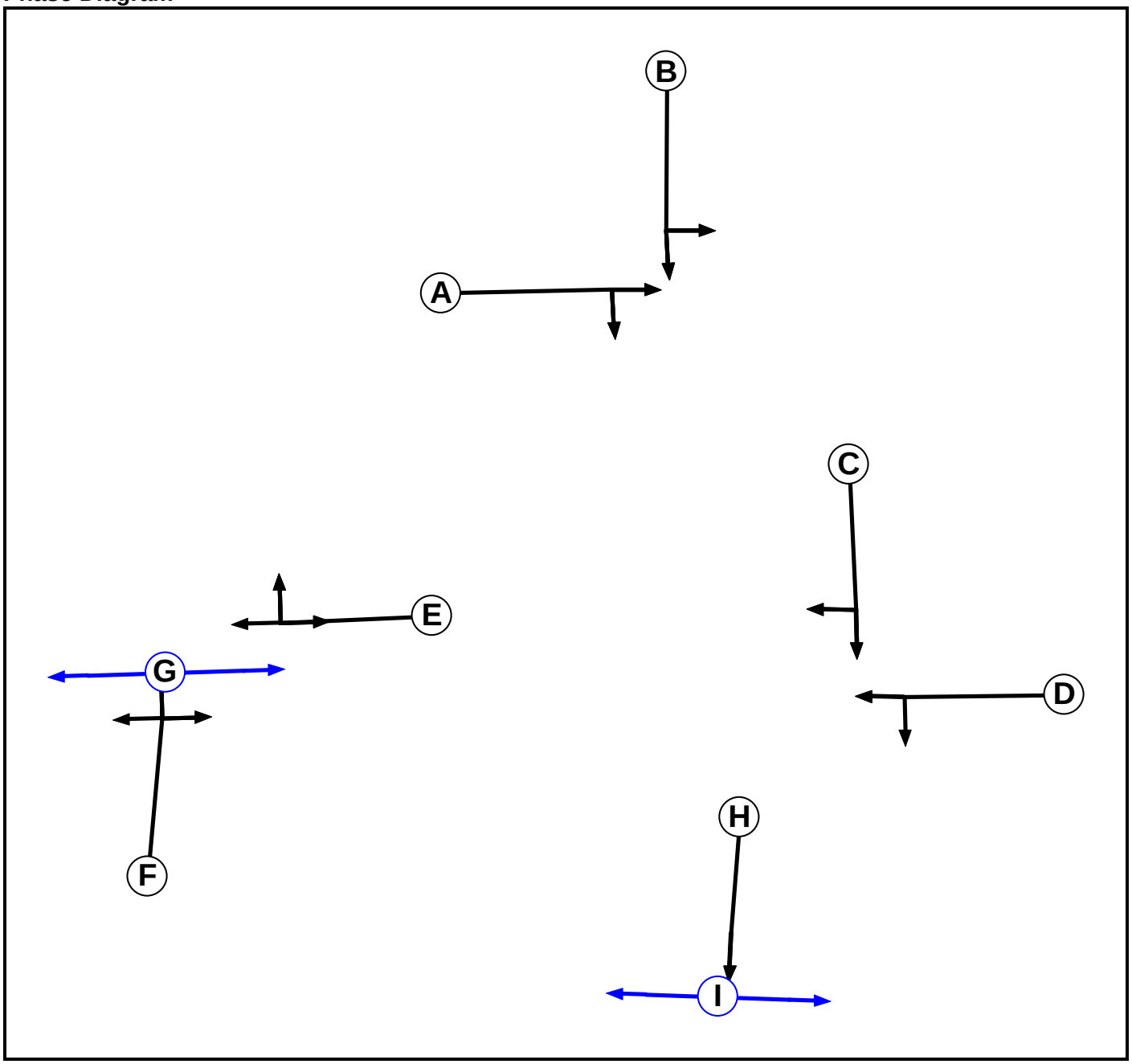
Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	2		7	4
D	Traffic	2		7	7
E	Traffic	3		7	2
F	Traffic	3		7	7
G	Pedestrian	3		7	7
H	Traffic	4		7	7
I	Pedestrian	4		7	7

Full Input Data And Results

Phase Intergreens Matrix

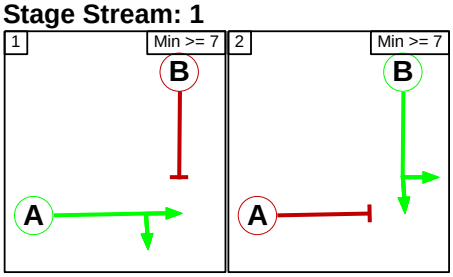
Terminating Phase	Starting Phase								
	A	B	C	D	E	F	G	H	I
A		5	-	-	-	-	-	-	-
B	7		-	-	-	-	-	-	-
C	-	-		5	-	-	-	-	-
D	-	-	6		-	-	-	-	-
E	-	-	-	-		5	-	-	-
F	-	-	-	-	7		7	-	-
G	-	-	-	-	-	7		-	-
H	-	-	-	-	-	-	-		7
I	-	-	-	-	-	-	-	7	

Phases in Stage

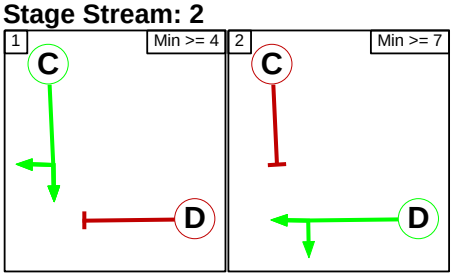
Stream	Stage No.	Phases in Stage
1	1	A
1	2	B
2	1	C
2	2	D
3	1	E G
3	2	F
4	1	H
4	2	I

Stage Diagram

Stage Stream: 1

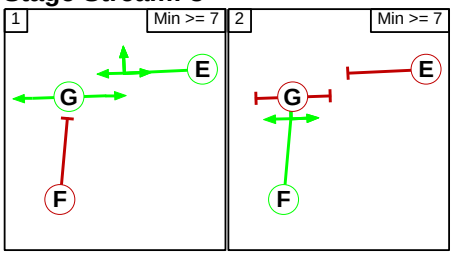


Stage Stream: 2

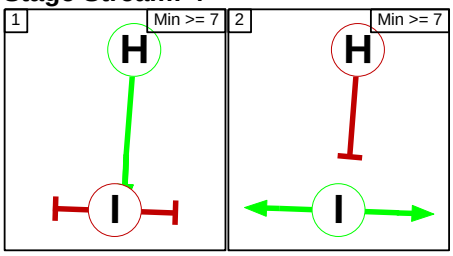


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	C	Losing	3	3

Stage Stream: 3

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	2	E	Losing	5	5

Stage Stream: 4

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

	To Stage		
		1	2
From Stage	1		5
	2	7	

Stage Stream: 2

	To Stage		
		1	2
From Stage	1		8
	2	6	

Full Input Data And Results

Stage Stream: 3

	To Stage		
		1	2
From Stage	1		10
	2	7	

Stage Stream: 4

	To Stage		
		1	2
From Stage	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A43, Brackley, Abthorpe

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
4/1 (Abthorpe)	8/1 (Left)	1000	0	3/1	0.33	To 8/1 (Ahead)	-	-	-	-	-
				3/2	0.33	All					
				3/3	0.33	All					
				10/2	0.33	To 8/3 (Right)					
	8/2 (Left)	1000	0	10/2	0.33	To 8/3 (Right)					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
	8/3 (Left)	1000	0	10/2	0.33	To 8/3 (Right)					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
	11/1 (Ahead)	1000	0	10/2	0.33	All					
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
				3/4	0.33	All					
4/2 (Abthorpe)	11/3 (Ahead)	1000	0	10/2	0.33	All	-	-	-	-	-
				3/1	0.33	To 8/1 (Ahead)					
				3/2	0.33	All					
				3/3	0.33	All					
				3/4	0.33	All					

Full Input Data And Results

Lane Input Data

Junction: A43, Brackley, Abthorpe												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A43 (N))	U	B	2	3	5.2	User	1800	-	-	-	-	-
1/2 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/3 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
1/4 (A43 (N))	U	B	2	3	60.0	User	1800	-	-	-	-	-
2/1 (Brackley Road)	U	D	2	3	8.7	User	1800	-	-	-	-	-
2/2 (Brackley Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
2/3 (Brackley Road)	U	D	2	3	60.0	User	1800	-	-	-	-	-
3/1 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/2 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/3 (Before Ped Crossing Northbound)	U	F	2	3	60.0	User	1800	-	-	-	-	-
3/4 (Before Ped Crossing Northbound)	U	F	2	3	10.4	User	1800	-	-	-	-	-
4/1 (Abthorpe)	O		2	3	3.5	Geom	-	3.75	0.00	Y	Arm 8 Left Arm 11 Ahead	28.00 78.00
4/2 (Abthorpe)	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 11 Ahead	78.00
5/1 (Brackley Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2 (Brackley Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (A43 (S))	U	H	2	3	60.0	Geom	-	3.75	0.00	Y	Arm 12 Ahead	Inf
6/2 (A43 (S))	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	Inf
6/3 (A43 (S))	U	H	2	3	60.0	Geom	-	3.50	0.00	N	Arm 12 Ahead	Inf
7/1 (Abthorpe)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

8/1 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
8/2 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
8/3 (A43 (N))	U		2	3	60.0	Geom	-	3.75	0.00	Y	Arm 13 Ahead	Inf
9/1 (Lights East)	U	C	2	3	1.0	User	1900	-	-	-	-	-
9/2 (Lights East)	U	C	2	3	1.0	User	1900	-	-	-	-	-
9/3 (Lights East)	U	C	2	3	1.0	User	1900	-	-	-	-	-
10/1 (Ligthts South)	U	E	2	3	3.5	User	1800	-	-	-	-	-
10/2 (Ligthts South)	U	E	2	3	3.5	User	1900	-	-	-	-	-
11/1 (Lights North)	U	A	2	3	5.2	User	1900	-	-	-	-	-
11/2 (Lights North)	U	A	2	3	3.5	User	1900	-	-	-	-	-
11/3 (Lights North)	U	A	2	3	5.2	User	1900	-	-	-	-	-
12/1 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
12/2 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
12/3 (After ped Crossing Southbound)	U		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 14 Ahead	Inf
13/1	U		2	3	60.0	Inf	-	-	-	-	-	-
13/2	U		2	3	60.0	Inf	-	-	-	-	-	-
14/1	U		2	3	60.0	Inf	-	-	-	-	-	-
14/2	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	158	2890	96	3144
	B	261	0	115	67	443
	C	1909	176	6	136	2227
	D	153	0	250	0	403
	Tot.	2323	334	3261	299	6217

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2021 DS5 AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	158
1/2 (with short)	1158(In) 1000(Out)
1/3	993
1/4	993
2/1 (short)	115
2/2 (with short)	277(In) 162(Out)
2/3	166
3/1	678
3/2	678
3/3 (with short)	865(In) 689(Out)
3/4 (short)	176
4/1 (short)	287
4/2 (with short)	403(In) 116(Out)
5/1	171
5/2	163
6/1	1150
6/2	1092
6/3	1013
7/1	299
8/1	716
8/2	791
8/3	816
9/1	1035
9/2	1092
9/3	1109
10/1	258
10/2	166
11/1 (with short)	310(In) 92(Out)
11/2 (short)	218
11/3	116
12/1	1150
12/2	1092
12/3	1013
13/1	716
13/2	1607

Full Input Data And Results

14/1	1150
14/2	2105

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	53.3 %	1918	1918
				Arm 11 Ahead	78.00	46.7 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	207	2533	29	2769
	B	0	0	115	132	247
	C	3262	247	6	345	3860
	D	1	26	112	0	139
	Tot.	3263	480	2766	506	7015

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2021 DS5 PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	207
1/2 (with short)	1065(In) 858(Out)
1/3	852
1/4	852
2/1 (short)	115
2/2 (with short)	247(In) 132(Out)
2/3	0
3/1	1190
3/2	1190
3/3 (with short)	1474(In) 1227(Out)
3/4 (short)	247
4/1 (short)	92
4/2 (with short)	139(In) 47(Out)
5/1	241
5/2	239
6/1	986
6/2	904
6/3	870
7/1	506
8/1	846
8/2	1190
8/3	1227
9/1	871
9/2	904
9/3	899
10/1	161
10/2	0
11/1 (with short)	338(In) 137(Out)
11/2 (short)	201
11/3	47
12/1	986
12/2	904
12/3	870
13/1	846
13/2	2417

Full Input Data And Results

14/1	986
14/2	1774

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	1.1 %	1952	1952
				Arm 11 Ahead	78.00	98.9 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	1	311	3377	91	3780
	B	195	0	105	64	364
	C	1838	229	6	197	2270
	D	133	0	264	0	397
	Tot.	2167	540	3752	352	6811

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS5 AM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	311
1/2 (with short)	1319(In) 1008(Out)
1/3	1230
1/4	1230
2/1 (short)	105
2/2 (with short)	252(In) 147(Out)
2/3	112
3/1	694
3/2	689
3/3 (with short)	881(In) 652(Out)
3/4 (short)	229
4/1 (short)	239
4/2 (with short)	397(In) 158(Out)
5/1	316
5/2	224
6/1	1196
6/2	1253
6/3	1297
7/1	352
8/1	691
8/2	740
8/3	735
9/1	1091
9/2	1253
9/3	1388
10/1	238
10/2	112
11/1 (with short)	335(In) 160(Out)
11/2 (short)	175
11/3	158
12/1	1196
12/2	1253
12/3	1297
13/1	691
13/2	1475

Full Input Data And Results

14/1	1196
14/2	2550

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	55.6 %	1917	1917
				Arm 11 Ahead	78.00	44.4 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	2	441	2630	24	3097
	B	0	0	118	178	296
	C	3202	251	6	293	3752
	D	10	81	56	0	147
	Tot.	3214	773	2810	495	7292

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS5 PM
Junction: A43, Brackley, Abthorpe	
1/1 (short)	441
1/2 (with short)	1180(In) 739(Out)
1/3	965
1/4	950
2/1 (short)	118
2/2 (with short)	296(In) 178(Out)
2/3	0
3/1	1212
3/2	1205
3/3 (with short)	1329(In) 1078(Out)
3/4 (short)	251
4/1 (short)	94
4/2 (with short)	147(In) 53(Out)
5/1	388
5/2	385
6/1	859
6/2	966
6/3	979
7/1	495
8/1	927
8/2	1205
8/3	1080
9/1	741
9/2	966
9/3	1003
10/1	202
10/2	0
11/1 (with short)	335(In) 167(Out)
11/2 (short)	168
11/3	53
12/1	859
12/2	966
12/3	979
13/1	927
13/2	2285

Full Input Data And Results

14/1	859
14/2	1945

Full Input Data And Results

Lane Saturation Flows

Junction: A43, Brackley, Abthorpe								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A43 (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (A43 (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (A43 (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
1/4 (A43 (N) Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Brackley Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Brackley Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Brackley Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Before Ped Crossing Northbound Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Before Ped Crossing Northbound Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Before Ped Crossing Northbound Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/4 (Before Ped Crossing Northbound Lane 4)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Abthorpe)	3.75	0.00	Y	Arm 8 Left	28.00	10.6 %	1945	1945
				Arm 11 Ahead	78.00	89.4 %		
4/2 (Abthorpe)	4.00	0.00	Y	Arm 11 Ahead	78.00	100.0 %	1977	1977
5/1 (Brackley Road Lane 1)	Infinite Saturation Flow						Inf	Inf
5/2 (Brackley Road Lane 2)	Infinite Saturation Flow						Inf	Inf
6/1 (A43 (S))	3.75	0.00	Y	Arm 12 Ahead	Inf	100.0 %	1990	1990
6/2 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
6/3 (A43 (S))	3.50	0.00	N	Arm 12 Ahead	Inf	100.0 %	2105	2105
7/1 (Abthorpe Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
8/2 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990

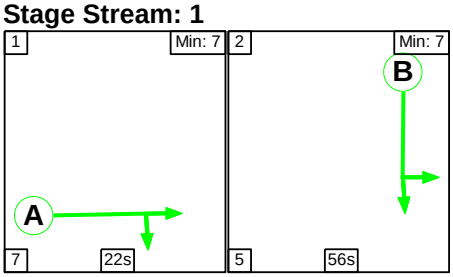
Full Input Data And Results

8/3 (A43 (N))	3.75	0.00	Y	Arm 13 Ahead	Inf	100.0 %	1990	1990
9/1 (Lights East Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
9/2 (Lights East Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
9/3 (Lights East Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
10/1 (Ligthts South Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
10/2 (Ligthts South Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/1 (Lights North Lane 1)	This lane uses a directly entered Saturation Flow						1900	1900
11/2 (Lights North Lane 2)	This lane uses a directly entered Saturation Flow						1900	1900
11/3 (Lights North Lane 3)	This lane uses a directly entered Saturation Flow						1900	1900
12/1 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/2 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
12/3 (After ped Crossing Southbound)	3.50	0.00	Y	Arm 14 Ahead	Inf	100.0 %	1965	1965
13/1	Infinite Saturation Flow						Inf	Inf
13/2	Infinite Saturation Flow						Inf	Inf
14/1	Infinite Saturation Flow						Inf	Inf
14/2	Infinite Saturation Flow						Inf	Inf

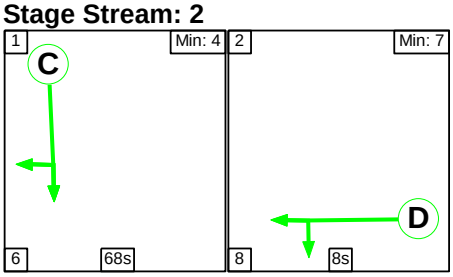
Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

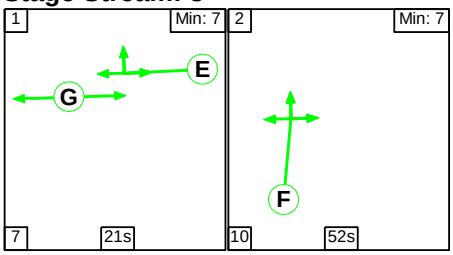


Stage Stream: 2

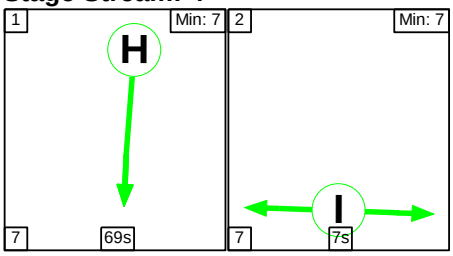


Full Input Data And Results

Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	22	56
Change Point	0	29

Stage Stream: 2

Stage	1	2
Duration	68	8
Change Point	32	16

Stage Stream: 3

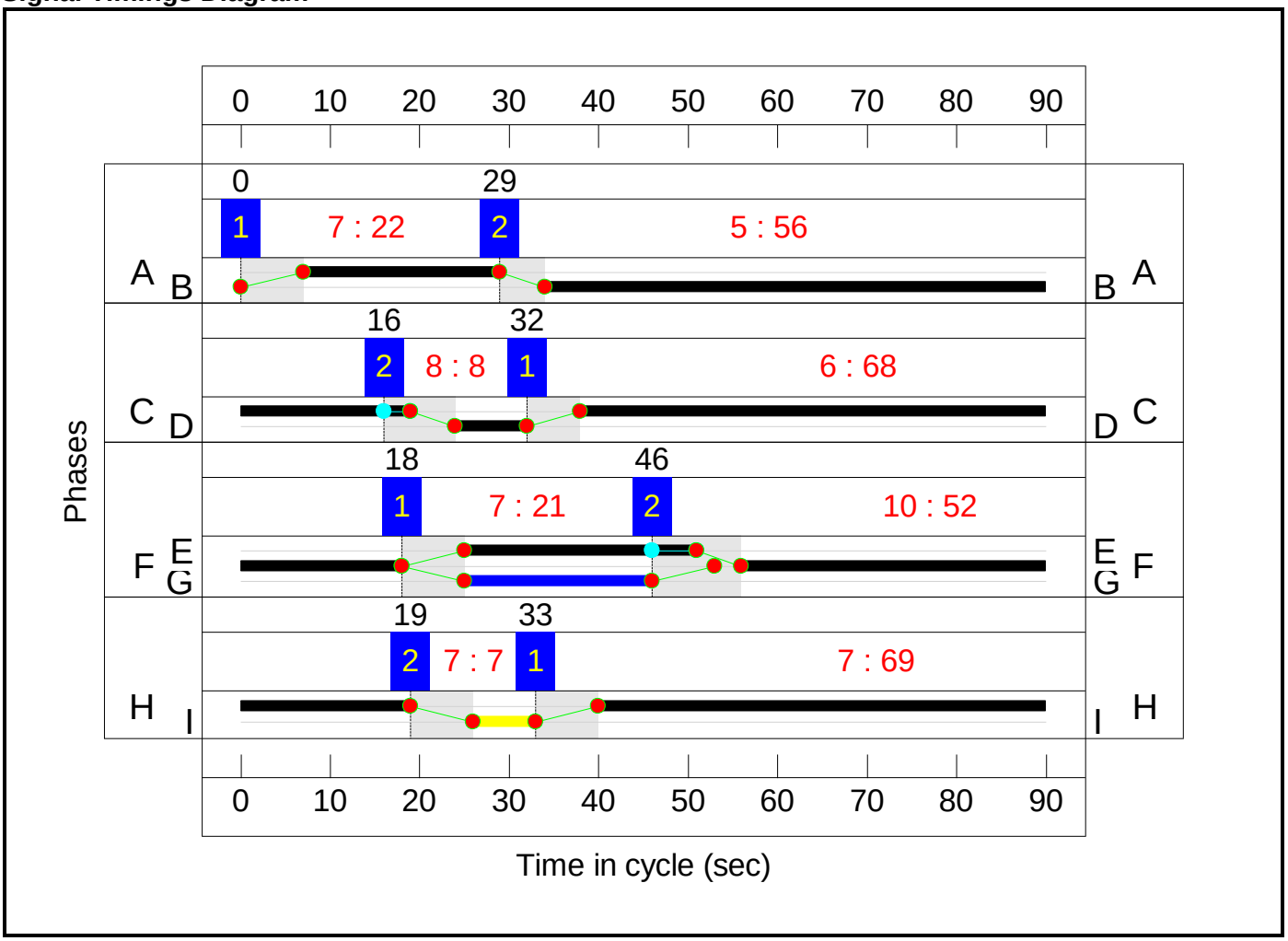
Stage	1	2
Duration	21	52
Change Point	18	46

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	33	19

Full Input Data And Results

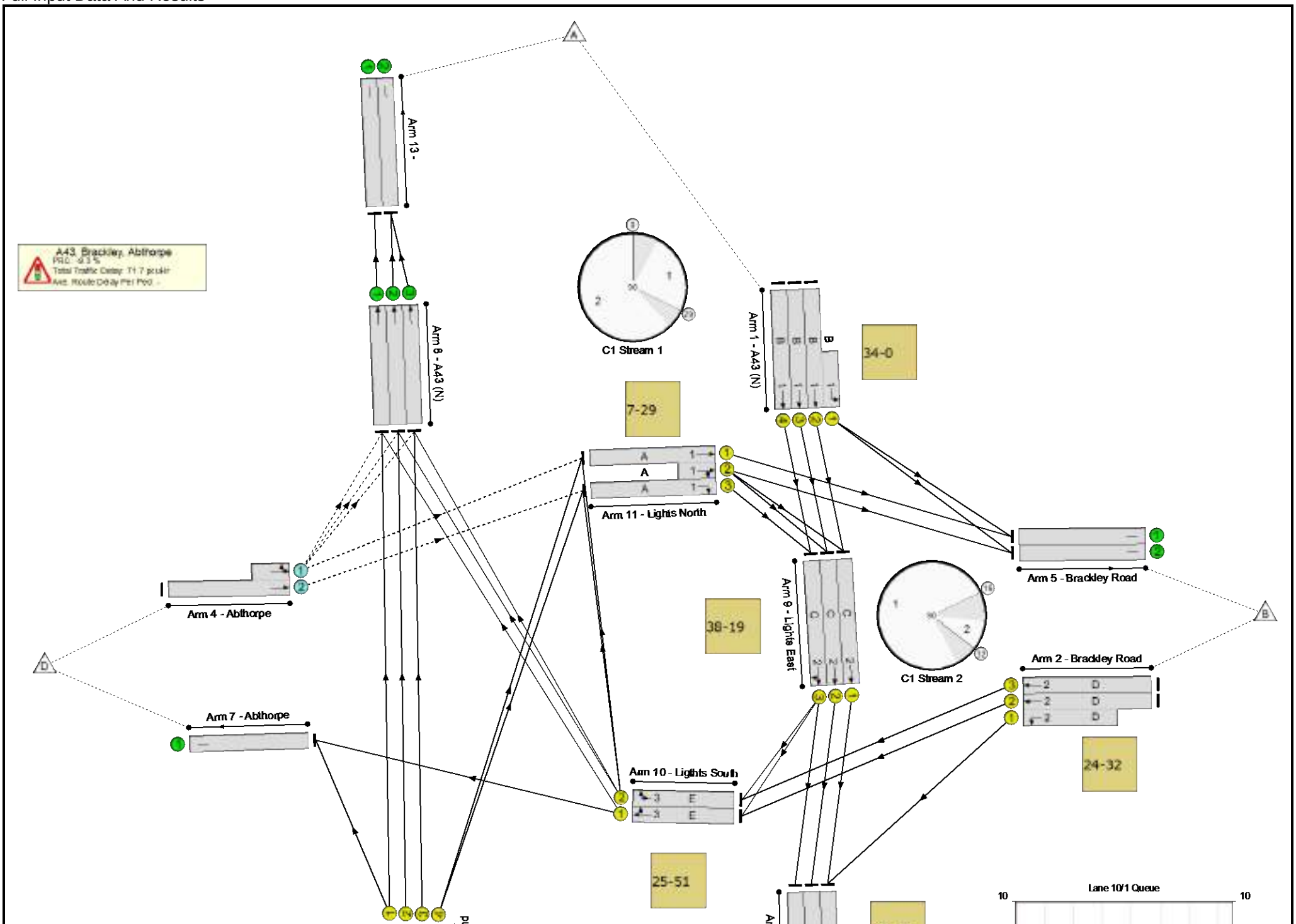
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.4%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.4%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	56	-	1158	1800:1800	1017+161	98.4 : 98.4%
1/3	A43 (N) Ahead	U	1	N/A	B		1	56	-	993	1800	1140	87.1%
1/4	A43 (N) Ahead	U	1	N/A	B		1	56	-	993	1800	1140	87.1%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	8	-	277	1800:1800	180+143	90.0 : 80.6%
2/3	Brackley Road Ahead	U	2	N/A	D		1	8	-	166	1800	180	92.2%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	52	-	678	1800	1060	64.0%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	52	-	678	1800	1060	64.0%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	52	-	865	1800:1800	936+239	73.6 : 73.6%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	403	1977:1918	195+482	59.5 : 59.5%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	171	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	163	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1150	1990	1548	74.3%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1092	2105	1637	66.7%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1013	2105	1637	61.9%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	299	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	716	1990	1990	36.0%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	791	1990	1990	39.7%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	816	1990	1990	41.0%
9/1	Lights East Ahead	U	2	N/A	C		1	71	-	1035	1900	1520	68.1%
9/2	Lights East Ahead	U	2	N/A	C		1	71	-	1092	1900	1520	71.8%
9/3	Lights East Ahead Right	U	2	N/A	C		1	71	-	1109	1900	1520	73.0%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	26	-	258	1800	540	47.8%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	26	-	166	1900	570	29.1%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	22	-	310	1900:1900	163+386	56.4 : 56.4%
11/3	Lights North Right	U	1	N/A	A		1	22	-	116	1900	486	23.9%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1150	1965	1965	58.5%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1092	1965	1965	55.6%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1013	1965	1965	51.6%
13/1		U	N/A	N/A	-		-	-	-	716	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1607	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1150	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2105	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**621**	**185**	**0**	**30.7**	**40.9**	**0.0**	**71.7**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**621**	**185**	**0**	**30.7**	**40.9**	**0.0**	**71.7**	**-**	**-**	**-**	**-**
1/2+1/1	1158	1158	-	-	-	4.9	12.9	-	17.7	55.2	27.2	12.9	40.0
1/3	993	993	-	-	-	3.7	3.2	-	7.0	25.2	20.1	3.2	23.4
1/4	993	993	-	-	-	3.7	3.2	-	7.0	25.2	20.1	3.2	23.4
2/2+2/1	277	277	-	-	-	3.0	2.7	-	5.8	74.9	4.0	2.7	6.7
2/3	166	166	-	-	-	1.9	3.8	-	5.7	123.3	4.1	3.8	7.9
3/1	678	678	-	-	-	2.3	0.9	-	3.2	16.9	11.1	0.9	12.0
3/2	678	678	-	-	-	2.3	0.9	-	3.2	16.9	11.1	0.9	12.0
3/3+3/4	865	865	-	-	-	2.8	1.4	-	4.2	17.3	11.8	1.4	13.2
4/2+4/1	403	403	621	185	0	1.0	0.7	-	1.7	15.3	4.8	0.7	5.5
5/1	171	171	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	163	163	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1150	1150	-	-	-	0.4	1.4	-	1.8	5.7	4.1	1.4	5.5
6/2	1092	1092	-	-	-	0.2	1.0	-	1.2	4.0	1.1	1.0	2.1
6/3	1013	1013	-	-	-	0.4	0.8	-	1.2	4.1	1.8	0.8	2.6
7/1	299	299	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	716	716	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	791	791	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
8/3	816	816	-	-	-	0.0	0.3	-	0.3	1.5	0.0	0.3	0.3
9/1	1035	1035	-	-	-	0.0	1.1	-	1.1	3.9	0.4	1.1	1.4
9/2	1092	1092	-	-	-	0.1	1.3	-	1.4	4.6	1.3	1.3	2.5
9/3	1109	1109	-	-	-	0.1	1.3	-	1.4	4.6	0.7	1.3	2.0
10/1	258	258	-	-	-	1.0	0.5	-	1.5	20.4	2.2	0.5	2.6
10/2	166	166	-	-	-	0.0	0.2	-	0.2	4.5	0.0	0.2	0.2

Full Input Data And Results

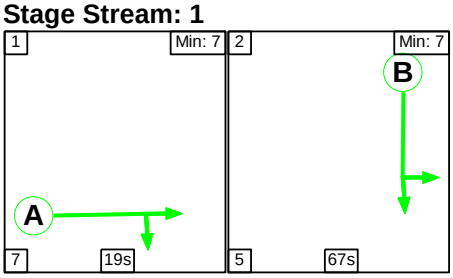
11/1+11/2	310	310	-	-	-	2.2	0.6	-	2.8	33.0	4.6	0.6	5.2
11/3	116	116	-	-	-	0.7	0.2	-	0.9	26.7	2.2	0.2	2.4
12/1	1150	1150	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
12/2	1092	1092	-	-	-	0.0	0.6	-	0.6	2.1	0.0	0.6	0.6
12/3	1013	1013	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5
13/1	716	716	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1607	1607	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	1150	1150	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2105	2105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-9.3	Total Delay for Signalled Lanes (pcuHr):	35.37	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-2.5	Total Delay for Signalled Lanes (pcuHr):	15.39	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	22.3	Total Delay for Signalled Lanes (pcuHr):	12.19	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	21.1	Total Delay for Signalled Lanes (pcuHr):	4.21	Cycle Time (s):	90
	PRC Over All Lanes (%):	-9.3	Total Delay Over All Lanes(pcuHr):	71.69		

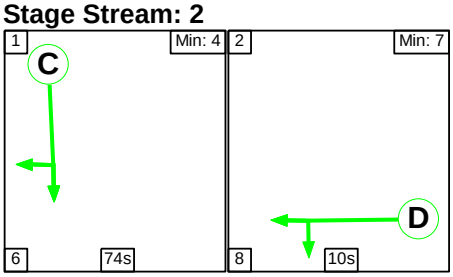
Full Input Data And Results
Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

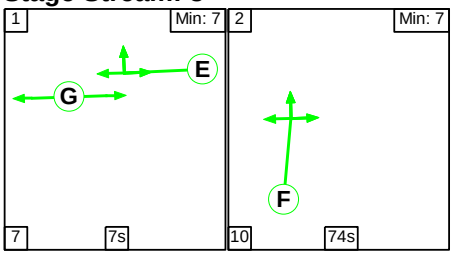
Stage Stream: 1



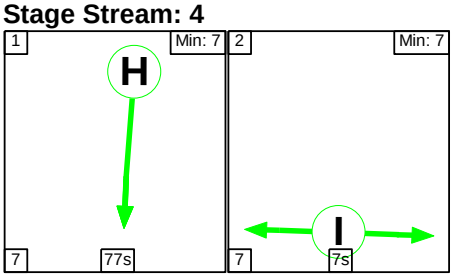
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	19	67
Change Point	0	26

Stage Stream: 2

Stage	1	2
Duration	74	10
Change Point	23	5

Stage Stream: 3

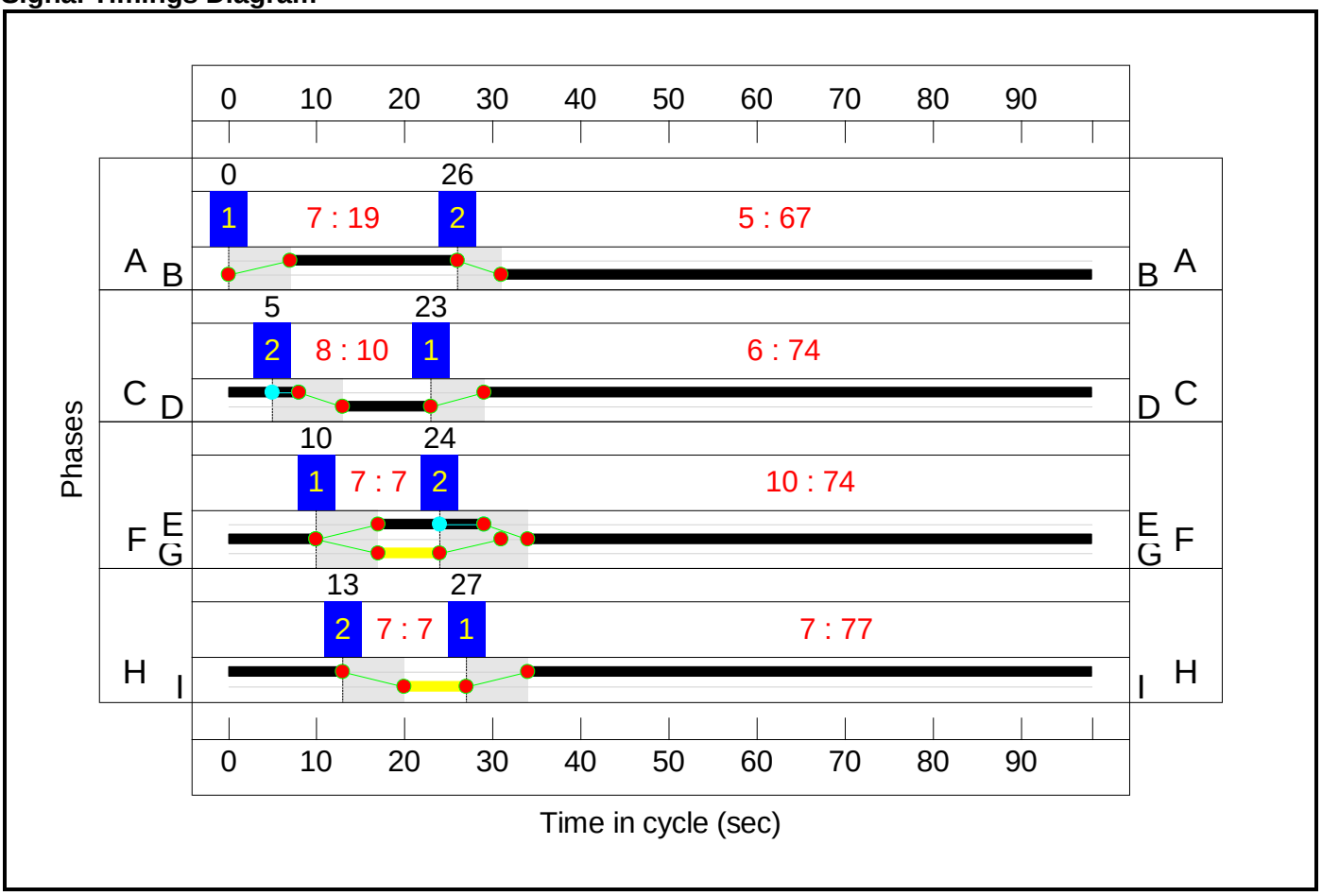
Stage	1	2
Duration	7	74
Change Point	10	24

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	77	7
Change Point	27	13

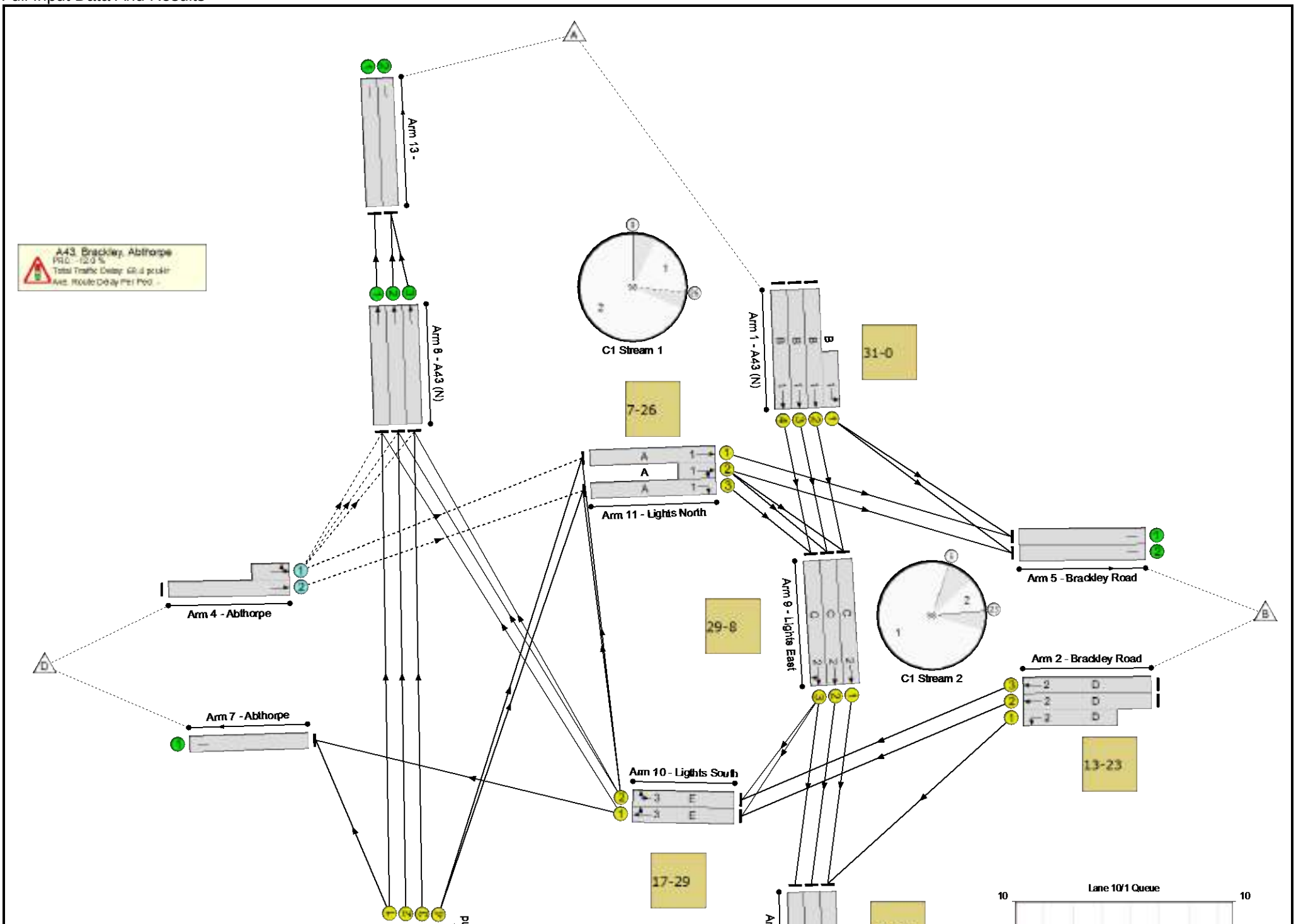
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.8%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**100.8%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	67	-	1065	1800:1800	1047+253	82.0 : 82.0%
1/3	A43 (N) Ahead	U	1	N/A	B		1	67	-	852	1800	1249	68.2%
1/4	A43 (N) Ahead	U	1	N/A	B		1	67	-	852	1800	1249	68.2%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	10	-	247	1800:1800	202+202	65.3 : 56.9%
2/3	Brackley Road Ahead	U	2	N/A	D		1	10	-	0	1800	202	0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	74	-	1190	1800	1378	86.4%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	74	-	1190	1800	1378	86.4%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	74	-	1474	1800:1800	1218+245	100.8 : 100.8%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	139	1977:1952	120+235	39.2 : 39.2%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	241	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	239	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	77	-	986	1990	1584	62.3%
6/2	A43 (S) Ahead	U	4	N/A	H		1	77	-	904	2105	1675	54.0%
6/3	A43 (S) Ahead	U	4	N/A	H		1	77	-	870	2105	1675	51.9%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	506	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	846	1990	1990	42.5%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1190	1990	1990	59.8%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1227	1990	1990	61.2%
9/1	Lights East Ahead	U	2	N/A	C		1	77	-	871	1900	1512	57.6%
9/2	Lights East Ahead	U	2	N/A	C		1	77	-	904	1900	1512	59.8%
9/3	Lights East Ahead Right	U	2	N/A	C		1	77	-	899	1900	1512	59.4%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	12	-	161	1800	239	67.4%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	12	-	0	1900	252	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	19	-	338	1900:1900	195+286	69.9 : 70.0%
11/3	Lights North Right	U	1	N/A	A		1	19	-	47	1900	388	12.1%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	986	1965	1965	50.2%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	904	1965	1965	46.0%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	870	1965	1965	44.3%
13/1		U	N/A	N/A	-		-	-	-	846	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2417	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	986	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1774	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**67**	**211**	**0**	**25.0**	**43.4**	**0.0**	**68.4**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**67**	**211**	**0**	**25.0**	**43.4**	**0.0**	**68.4**	**-**	**-**	**-**	**-**
1/2+1/1	1065	1065	-	-	-	2.8	2.2	-	5.0	17.0	18.3	2.2	20.5
1/3	852	852	-	-	-	2.1	1.1	-	3.1	13.2	13.3	1.1	14.3
1/4	852	852	-	-	-	2.1	1.1	-	3.1	13.2	13.3	1.1	14.3
2/2+2/1	247	247	-	-	-	2.8	0.8	-	3.6	52.8	3.4	0.8	4.2
2/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	1190	1190	-	-	-	2.6	3.1	-	5.7	17.3	22.1	3.1	25.2
3/2	1190	1190	-	-	-	2.6	3.1	-	5.7	17.3	22.1	3.1	25.2
3/3+3/4	1474	1463	-	-	-	4.6	22.3	-	26.9	65.6	40.8	22.3	63.1
4/2+4/1	139	139	67	211	0	1.2	0.3	-	1.5	39.4	2.1	0.3	2.4
5/1	240	240	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	238	238	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	986	986	-	-	-	0.5	0.8	-	1.3	4.9	3.8	0.8	4.6
6/2	904	904	-	-	-	0.0	0.6	-	0.6	2.5	0.2	0.6	0.8
6/3	870	870	-	-	-	0.0	0.5	-	0.6	2.4	0.2	0.5	0.8
7/1	506	506	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	846	846	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
8/2	1190	1190	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
8/3	1218	1218	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
9/1	871	871	-	-	-	0.0	0.7	-	0.7	2.9	0.3	0.7	1.0
9/2	904	904	-	-	-	0.1	0.7	-	0.8	3.3	1.2	0.7	2.0
9/3	899	899	-	-	-	0.1	0.7	-	0.8	3.3	1.2	0.7	1.9
10/1	161	161	-	-	-	0.5	1.0	-	1.5	32.8	1.1	1.0	2.1
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

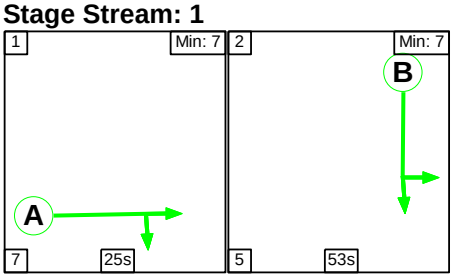
11/1+11/2	336	336	-	-	-	2.7	1.1	-	3.9	41.5	3.6	1.1	4.7
11/3	47	47	-	-	-	0.2	0.1	-	0.2	18.7	0.2	0.1	0.3
12/1	986	986	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
12/2	904	904	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
12/3	870	870	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
13/1	846	846	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2408	2408	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	986	986	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1774	1774	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	9.8	Total Delay for Signalled Lanes (pcuHr):	15.41	Cycle Time (s):	98
C1	Stream: 2 PRC for Signalled Lanes (%):	37.8	Total Delay for Signalled Lanes (pcuHr):	5.98	Cycle Time (s):	98
C1	Stream: 3 PRC for Signalled Lanes (%):	-12.0	Total Delay for Signalled Lanes (pcuHr):	39.75	Cycle Time (s):	98
C1	Stream: 4 PRC for Signalled Lanes (%):	44.6	Total Delay for Signalled Lanes (pcuHr):	2.54	Cycle Time (s):	98
	PRC Over All Lanes (%):	-12.0	Total Delay Over All Lanes(pcuHr):	68.43		

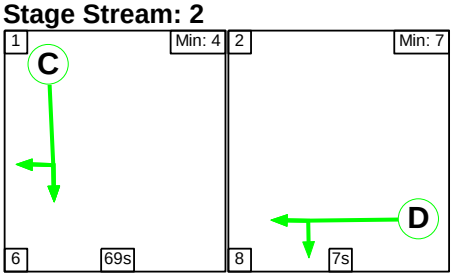
Full Input Data And Results
Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

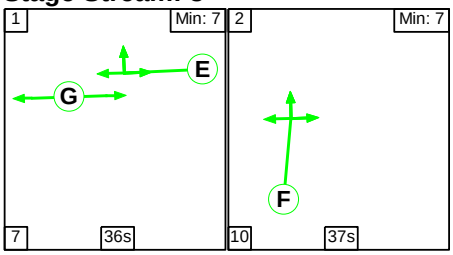
Stage Stream: 1



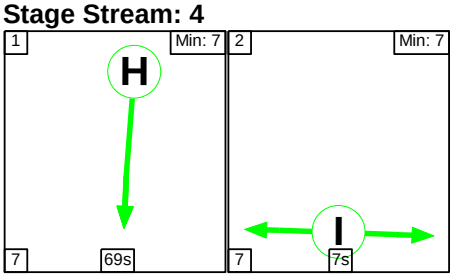
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	25	53
Change Point	0	32

Stage Stream: 2

Stage	1	2
Duration	69	7
Change Point	36	21

Stage Stream: 3

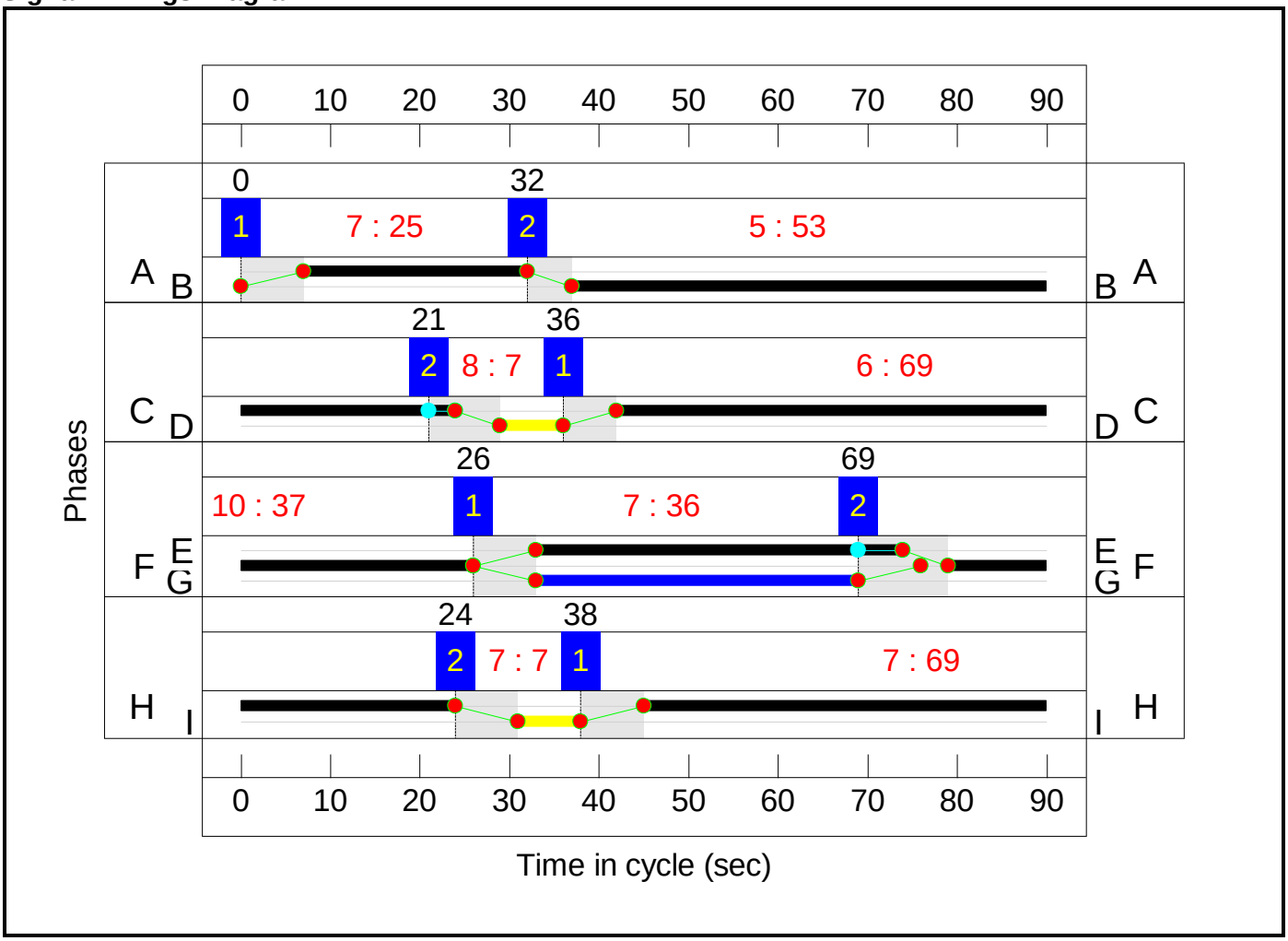
Stage	1	2
Duration	36	37
Change Point	26	69

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	38	24

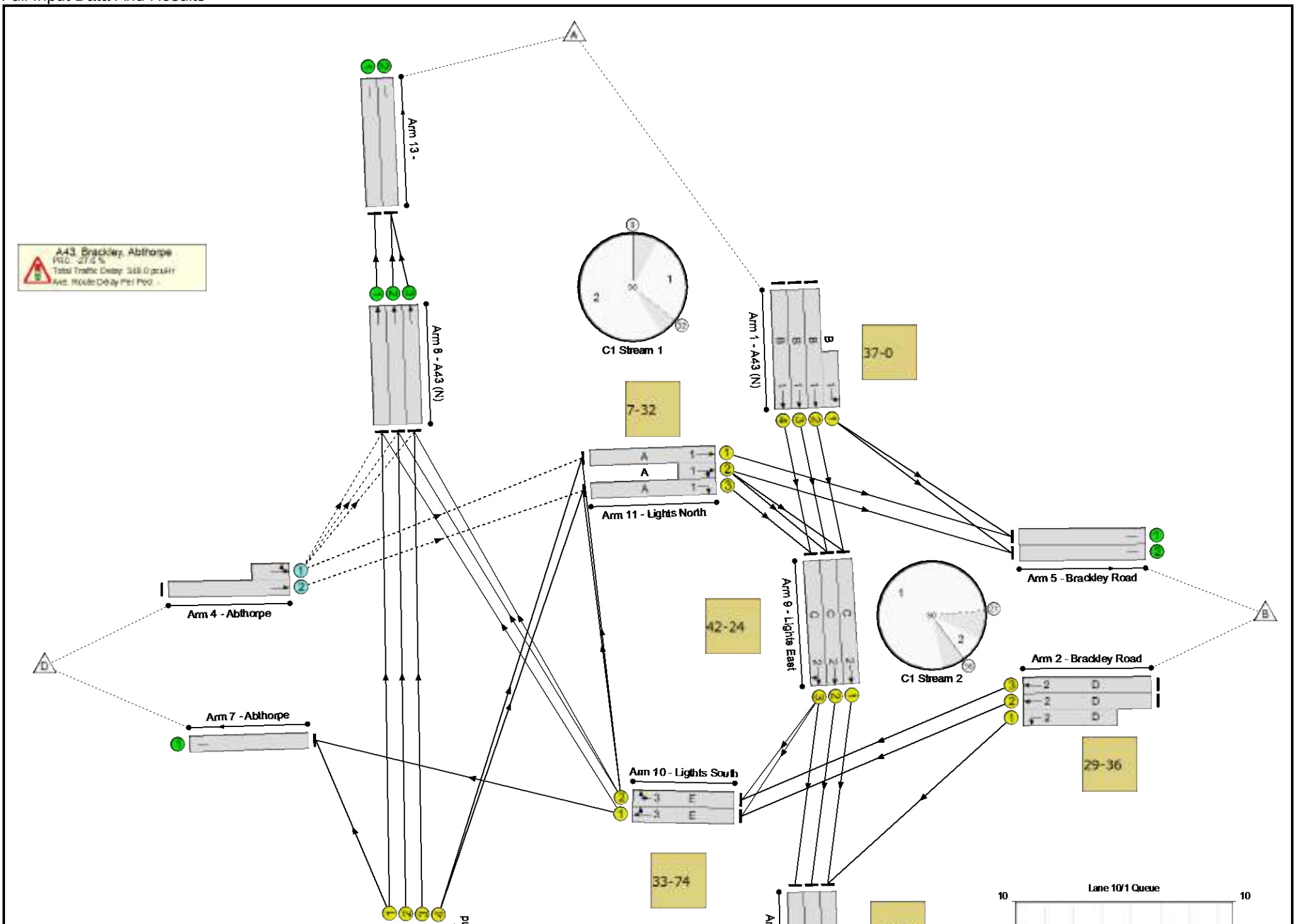
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.8%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.8%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	53	-	1319	1800:1800	878+271	114.8 : 114.8%
1/3	A43 (N) Ahead	U	1	N/A	B		1	53	-	1230	1800	1080	113.9%
1/4	A43 (N) Ahead	U	1	N/A	B		1	53	-	1230	1800	1080	113.9%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	7	-	252	1800:1800	160+157	91.9 : 66.8%
2/3	Brackley Road Ahead	U	2	N/A	D		1	7	-	112	1800	160	70.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	37	-	694	1800	760	91.3%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	37	-	689	1800	760	90.7%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	37	-	881	1800:1800	678+238	96.2 : 96.2%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	397	1977:1917	372+563	42.5 : 42.5%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	316	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	224	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	1196	1990	1548	68.9%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	1253	2105	1637	67.4%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	1297	2105	1637	70.7%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	352	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	691	1990	1990	34.7%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	740	1990	1990	37.2%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	735	1990	1990	36.9%
9/1	Lights East Ahead	U	2	N/A	C		1	72	-	1091	1900	1541	62.4%
9/2	Lights East Ahead	U	2	N/A	C		1	72	-	1253	1900	1541	71.6%
9/3	Lights East Ahead Right	U	2	N/A	C		1	72	-	1388	1900	1541	80.3%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	41	-	238	1800	840	27.0%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	41	-	112	1900	887	12.6%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	25	-	335	1900:1900	326+357	49.0 : 49.0%
11/3	Lights North Right	U	1	N/A	A		1	25	-	158	1900	549	28.8%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1196	1965	1965	54.3%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1253	1965	1965	56.1%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	1297	1965	1965	58.9%
13/1		U	N/A	N/A	-		-	-	-	691	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	1475	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	1196	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	2550	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**495**	**299**	**0**	**69.5**	**278.5**	**0.0**	**348.0**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**495**	**299**	**0**	**69.5**	**278.5**	**0.0**	**348.0**	**-**	**-**	**-**	**-**
1/2+1/1	1319	1149	-	-	-	15.0	88.7	-	103.8	283.3	38.0	88.7	126.8
1/3	1230	1080	-	-	-	14.7	78.9	-	93.6	273.9	37.2	78.9	116.1
1/4	1230	1080	-	-	-	14.7	78.9	-	93.6	273.9	37.2	78.9	116.1
2/2+2/1	252	252	-	-	-	2.8	1.8	-	4.7	66.4	3.6	1.8	5.5
2/3	112	112	-	-	-	1.2	1.1	-	2.4	75.7	2.7	1.1	3.8
3/1	694	694	-	-	-	4.7	4.6	-	9.3	48.4	16.2	4.6	20.8
3/2	689	689	-	-	-	4.7	4.3	-	9.0	46.9	16.1	4.3	20.4
3/3+3/4	881	881	-	-	-	5.6	8.5	-	14.1	57.7	17.4	8.5	25.9
4/2+4/1	397	397	495	299	0	1.0	0.4	-	1.4	12.8	3.3	0.4	3.7
5/1	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	204	204	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1066	1066	-	-	-	0.4	1.1	-	1.5	5.1	5.1	1.1	6.2
6/2	1103	1103	-	-	-	0.0	1.0	-	1.1	3.4	0.1	1.0	1.2
6/3	1158	1158	-	-	-	0.3	1.2	-	1.5	4.6	1.3	1.2	2.5
7/1	341	341	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	691	691	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/2	740	740	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
8/3	735	735	-	-	-	0.0	0.3	-	0.3	1.4	0.0	0.3	0.3
9/1	961	961	-	-	-	0.0	0.8	-	0.8	3.1	0.1	0.8	0.9
9/2	1103	1103	-	-	-	0.0	1.3	-	1.3	4.1	0.0	1.3	1.3
9/3	1238	1238	-	-	-	0.0	2.0	-	2.0	5.9	0.2	2.0	2.2
10/1	227	227	-	-	-	0.4	0.2	-	0.6	9.6	1.6	0.2	1.8
10/2	112	112	-	-	-	0.0	0.1	-	0.1	2.3	0.0	0.1	0.1

Full Input Data And Results

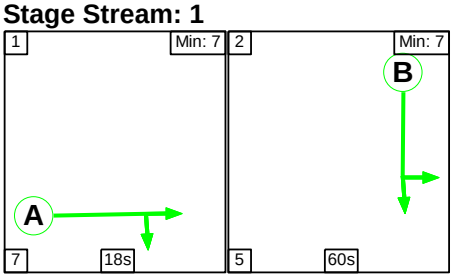
11/1+11/2	335	335	-	-	-	1.9	0.5	-	2.3	25.2	4.1	0.5	4.5
11/3	158	158	-	-	-	2.1	0.2	-	2.3	51.6	3.8	0.2	4.0
12/1	1066	1066	-	-	-	0.0	0.6	-	0.6	2.0	1.1	0.6	1.7
12/2	1103	1103	-	-	-	0.0	0.6	-	0.6	2.1	0.0	0.6	0.6
12/3	1158	1158	-	-	-	0.0	0.7	-	0.7	2.2	0.0	0.7	0.7
13/1	691	691	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	1475	1475	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	1066	1066	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	2261	2261	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	-27.6	Total Delay for Signalled Lanes (pcuHr):	295.52	Cycle Time (s):	90
C1	Stream: 2 PRC for Signalled Lanes (%):	-2.1	Total Delay for Signalled Lanes (pcuHr):	11.12	Cycle Time (s):	90
C1	Stream: 3 PRC for Signalled Lanes (%):	-6.9	Total Delay for Signalled Lanes (pcuHr):	33.11	Cycle Time (s):	90
C1	Stream: 4 PRC for Signalled Lanes (%):	27.2	Total Delay for Signalled Lanes (pcuHr):	4.03	Cycle Time (s):	90
	PRC Over All Lanes (%):	-27.6	Total Delay Over All Lanes(pcuHr):	348.00		

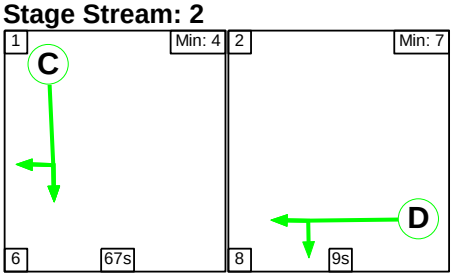
Full Input Data And Results
Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

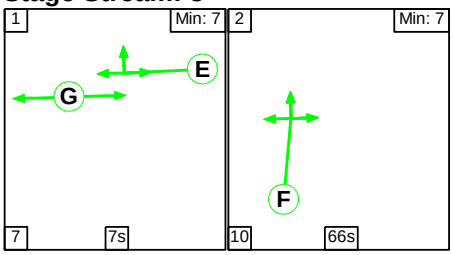
Stage Stream: 1



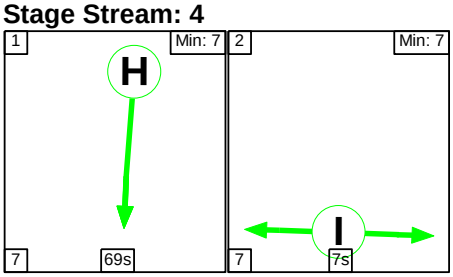
Stage Stream: 2



Stage Stream: 3



Stage Stream: 4



Stage Timings

Stage Stream: 1

Stage	1	2
Duration	18	60
Change Point	0	25

Stage Stream: 2

Stage	1	2
Duration	67	9
Change Point	22	5

Stage Stream: 3

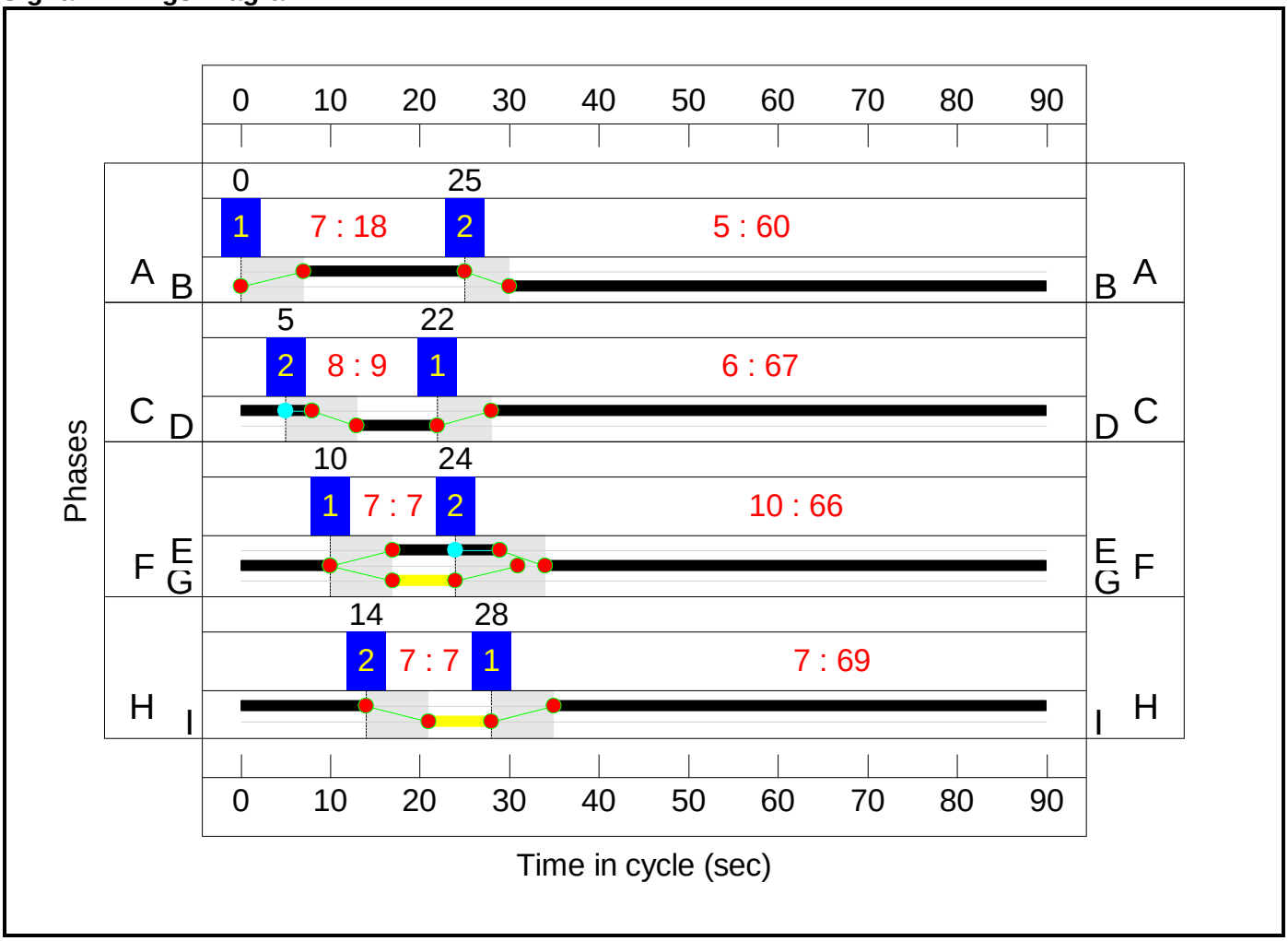
Stage	1	2
Duration	7	66
Change Point	10	24

Full Input Data And Results

Stage Stream: 4

Stage	1	2
Duration	69	7
Change Point	28	14

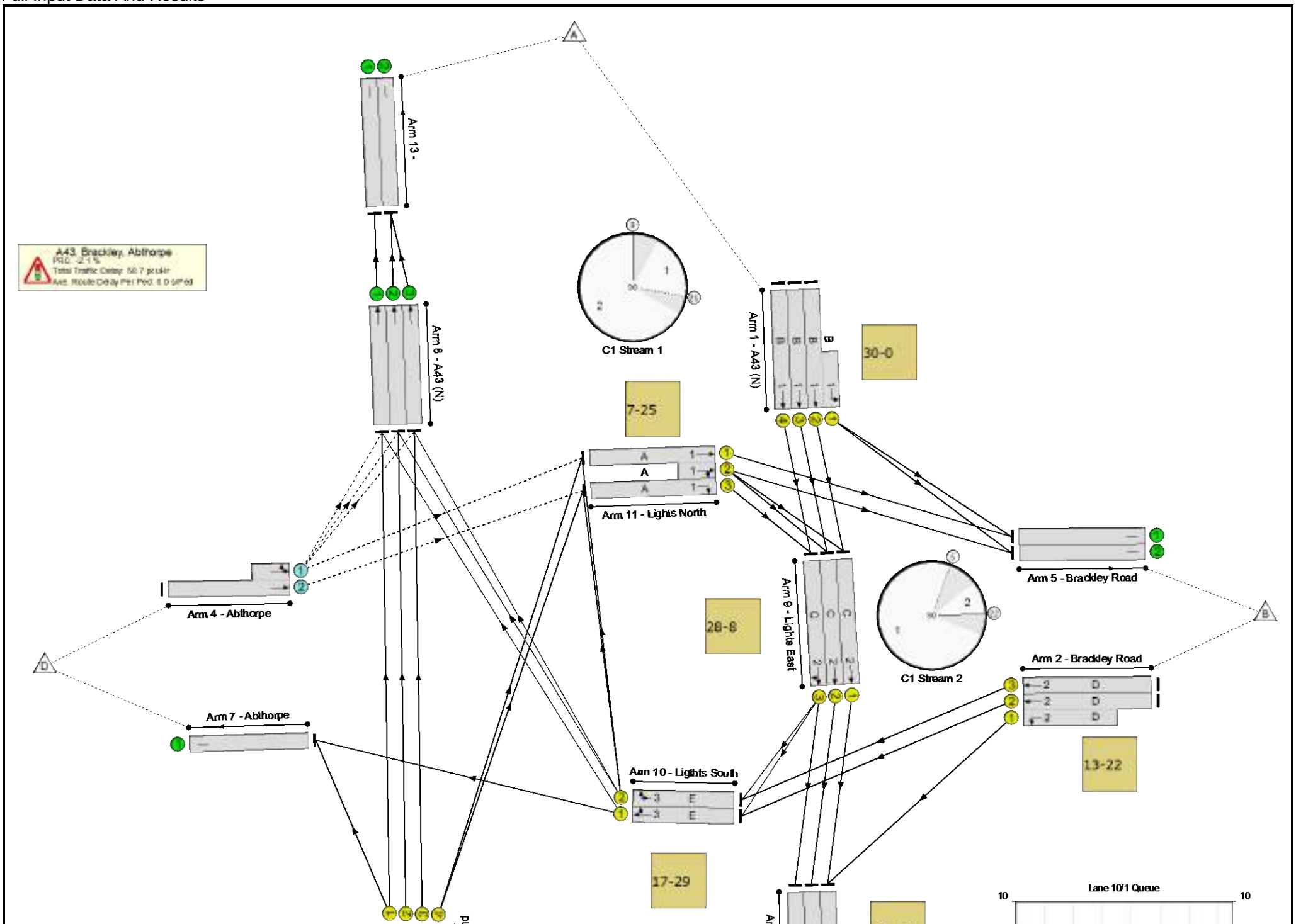
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Abthrope roundabout	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.9%**
A43, Brackley, Abthorpe	-	-	**N/A**	-	-		-	-	-	-	-	-	**91.9%**
1/2+1/1	A43 (N) Left Ahead	U	1	N/A	B		1	60	-	1180	1800:1800	845+504	87.4 : 87.4%
1/3	A43 (N) Ahead	U	1	N/A	B		1	60	-	965	1800	1220	79.1%
1/4	A43 (N) Ahead	U	1	N/A	B		1	60	-	950	1800	1220	77.9%
2/2+2/1	Brackley Road Left Ahead	U	2	N/A	D		1	9	-	296	1800:1800	200+160	89.0 : 73.6%
2/3	Brackley Road Ahead	U	2	N/A	D		1	9	-	0	1800	200	0.0%
3/1	Before Ped Crossing Northbound Left Ahead	U	3	N/A	F		1	66	-	1212	1800	1340	90.4%
3/2	Before Ped Crossing Northbound Ahead	U	3	N/A	F		1	66	-	1205	1800	1340	89.9%
3/3+3/4	Before Ped Crossing Northbound Ahead Right	U	3	N/A	F		1	66	-	1329	1800:1800	1173+273	91.9 : 91.9%
4/2+4/1	Abthorpe Left Ahead	O	N/A	N/A	-		-	-	-	147	1977:1945	144+256	36.8 : 36.8%
5/1	Brackley Road	U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
5/2	Brackley Road	U	N/A	N/A	-		-	-	-	385	Inf	Inf	0.0%
6/1	A43 (S) Ahead	U	4	N/A	H		1	69	-	859	1990	1548	55.5%
6/2	A43 (S) Ahead	U	4	N/A	H		1	69	-	966	2105	1637	59.0%
6/3	A43 (S) Ahead	U	4	N/A	H		1	69	-	979	2105	1637	59.8%
7/1	Abthorpe	U	N/A	N/A	-		-	-	-	495	Inf	Inf	0.0%
8/1	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	927	1990	1990	46.6%

Full Input Data And Results

8/2	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1205	1990	1990	60.6%
8/3	A43 (N) Ahead	U	N/A	N/A	-		-	-	-	1080	1990	1990	54.3%
9/1	Lights East Ahead	U	2	N/A	C		1	70	-	741	1900	1499	49.4%
9/2	Lights East Ahead	U	2	N/A	C		1	70	-	966	1900	1499	64.4%
9/3	Lights East Ahead Right	U	2	N/A	C		1	70	-	1003	1900	1499	66.9%
10/1	Ligthts South Ahead Right	U	3	N/A	E		1	12	-	202	1800	260	77.7%
10/2	Ligthts South Right U-Turn	U	3	N/A	E		1	12	-	0	1900	274	0.0%
11/1+11/2	Lights North Ahead Right	U	1	N/A	A		1	18	-	335	1900:1900	271+273	61.6 : 61.6%
11/3	Lights North Right	U	1	N/A	A		1	18	-	53	1900	401	13.2%
12/1	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	859	1965	1965	43.7%
12/2	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	966	1965	1965	49.2%
12/3	After ped Crossing Southbound Ahead	U	N/A	N/A	-		-	-	-	979	1965	1965	49.8%
13/1		U	N/A	N/A	-		-	-	-	927	Inf	Inf	0.0%
13/2		U	N/A	N/A	-		-	-	-	2285	Inf	Inf	0.0%
14/1		U	N/A	N/A	-		-	-	-	859	Inf	Inf	0.0%
14/2		U	N/A	N/A	-		-	-	-	1945	Inf	Inf	0.0%
Ped Link: P1	Unnamed Ped Link	-	4	-	I		1	7	-	0	-	0	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Abthrope roundabout	**-**	**-**	**62**	**232**	**0**	**25.3**	**33.4**	**0.0**	**58.7**	**-**	**-**	**-**	**-**
A43, Brackley, Abthorpe	**-**	**-**	**62**	**232**	**0**	**25.3**	**33.4**	**0.0**	**58.7**	**-**	**-**	**-**	**-**
1/2+1/1	1180	1180	-	-	-	2.9	3.4	-	6.3	19.1	18.2	3.4	21.6
1/3	965	965	-	-	-	2.7	1.9	-	4.6	17.0	16.6	1.9	18.5
1/4	950	950	-	-	-	2.6	1.7	-	4.3	16.5	16.1	1.7	17.8
2/2+2/1	296	296	-	-	-	3.2	2.2	-	5.4	65.1	4.4	2.2	6.5
2/3	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	1212	1212	-	-	-	3.0	4.4	-	7.5	22.1	23.6	4.4	28.0
3/2	1205	1205	-	-	-	3.0	4.2	-	7.2	21.4	23.1	4.2	27.3
3/3+3/4	1329	1329	-	-	-	2.7	5.2	-	7.9	21.4	22.6	5.2	27.8
4/2+4/1	147	147	62	232	0	1.1	0.3	-	1.4	34.2	1.9	0.3	2.2
5/1	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	385	385	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	859	859	-	-	-	0.5	0.6	-	1.1	4.8	3.2	0.6	3.8
6/2	966	966	-	-	-	0.0	0.7	-	0.8	2.8	0.2	0.7	1.0
6/3	979	979	-	-	-	0.0	0.7	-	0.8	2.9	0.9	0.7	1.7
7/1	495	495	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	927	927	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4
8/2	1205	1205	-	-	-	0.0	0.8	-	0.8	2.3	0.0	0.8	0.8
8/3	1080	1080	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6
9/1	741	741	-	-	-	0.0	0.5	-	0.5	2.5	0.1	0.5	0.6
9/2	966	966	-	-	-	0.0	0.9	-	0.9	3.5	0.1	0.9	1.0
9/3	1003	1003	-	-	-	0.1	1.0	-	1.1	4.0	1.2	1.0	2.2
10/1	202	202	-	-	-	0.4	1.6	-	2.1	37.2	0.8	1.6	2.5
10/2	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

11/1+11/2	335	335	-	-	-	2.7	0.8	-	3.5	37.2	3.2	0.8	4.0
11/3	53	53	-	-	-	0.2	0.1	-	0.3	19.8	0.3	0.1	0.4
12/1	859	859	-	-	-	0.0	0.4	-	0.4	1.6	0.0	0.4	0.4
12/2	966	966	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
12/3	979	979	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5
13/1	927	927	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13/2	2285	2285	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/1	859	859	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14/2	1945	1945	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-

C1	Stream: 1 PRC for Signalled Lanes (%):	2.9	Total Delay for Signalled Lanes (pcuHr):	18.93	Cycle Time (s): 90
C1	Stream: 2 PRC for Signalled Lanes (%):	1.1	Total Delay for Signalled Lanes (pcuHr):	7.89	Cycle Time (s): 90
C1	Stream: 3 PRC for Signalled Lanes (%):	-2.1	Total Delay for Signalled Lanes (pcuHr):	24.62	Cycle Time (s): 90
C1	Stream: 4 PRC for Signalled Lanes (%):	50.5	Total Delay for Signalled Lanes (pcuHr):	2.69	Cycle Time (s): 90
	PRC Over All Lanes (%):	-2.1	Total Delay Over All Lanes(pcuHr):	58.69	

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 19 - Upton Way Telford Way Cumulative.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J19 - Upton Way - Telford Way
Report generation date: 29/01/2018 10:04:00

»2021 DS5, AM
»2021 DS5, PM
»2031 DS5, AM
»2031 DS5, PM

Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
2021 DS5										
1 - Edgare Mobbs Way	0.8	5.87	0.42	A	24 % [5 - A5076 North]	1.3	6.12	0.57	A	32 % [1 - Edgare Mobbs Way]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	1.7	3.70	0.62	A		2.1	4.21	0.67	A	
4 - Telford Way	0.5	7.69	0.34	A		0.1	5.97	0.11	A	
5 - A5076 North	3.1	6.02	0.75	A		1.3	3.25	0.56	A	
2031 DS5										
1 - Edgare Mobbs Way	0.9	6.38	0.43	A	17 % [5 - A5076 North]	1.9	8.47	0.65	A	19 % [1 - Edgare Mobbs Way]
2 - Duston Mill Lane	0.0	0.00	0.00	A		0.0	0.00	0.00	A	
3 - A5076 Upton Way South	1.8	3.86	0.64	A		3.1	5.84	0.75	A	
4 - Telford Way	0.8	8.95	0.44	A		0.2	7.40	0.20	A	
5 - A5076 North	4.3	7.84	0.81	A		1.9	4.14	0.65	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Upton Way / Telford Wat
Location	
Site number	
Date	01/06/2017

Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\sam.maloney
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2021 DS5	AM	ONE HOUR	08:00	09:30	15	✓
D12	2021 DS5	PM	ONE HOUR	17:00	18:30	15	✓
D13	2031 DS5	AM	ONE HOUR	08:00	09:30	15	✓
D14	2031 DS5	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2021 DS5, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	5.19	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	24	5 - A5076 North

Arms

Arms

Arm	Name	Description

1	Edgare Mobbs Way	
2	Duston Mill Lane	
3	A5076 Upton Way South	
4	Telford Way	
5	A5076 North	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Edgare Mobbs Way	7.50	7.50	0.0	34.0	70.0	45.0	
2 - Duston Mill Lane	2.00	5.00	10.0	7.0	70.0	52.0	
3 - A5076 Upton Way South	7.50	11.00	20.0	39.0	70.0	40.0	
4 - Telford Way	3.75	6.50	8.5	38.0	70.0	23.0	
5 - A5076 North	7.50	11.00	18.0	31.0	70.0	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Edgare Mobbs Way	0.577	2200
2 - Duston Mill Lane	0.339	891
3 - A5076 Upton Way South	0.695	2920
4 - Telford Way	0.504	1619
5 - A5076 North	0.696	2916

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2021 DS5	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	462	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1539	100.000
4 - Telford Way		ONE HOUR	✓	222	100.000
5 - A5076 North		ONE HOUR	✓	1712	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	345	16	101
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	428	0	0	16	1095
	4 - Telford Way	34	0	70	0	118
	5 - A5076 North	217	0	1348	147	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.42	5.87	0.8	A	424	636
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.62	3.70	1.7	A	1412	2118
4 - Telford Way	0.34	7.69	0.5	A	204	306
5 - A5076 North	0.75	6.02	3.1	A	1571	2356

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1175	1523	0.228	346	510	0.0	0.3	3.480	A
2 - Duston Mill Lane	0	0	1521	376	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1159	290	198	2783	0.416	1156	1323	0.0	0.7	2.324	A
4 - Telford Way	167	42	1219	1004	0.166	166	134	0.0	0.2	4.339	A

5 - A5076 North	1289	322	399	2638	0.489	1285	986	0.0	1.0	2.766	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1405	1390	0.299	415	610	0.3	0.5	4.199	A
2 - Duston Mill Lane	0	0	1820	275	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1384	346	237	2756	0.502	1382	1583	0.7	1.1	2.756	A
4 - Telford Way	200	50	1459	884	0.226	199	161	0.2	0.3	5.314	A
5 - A5076 North	1539	385	478	2584	0.596	1537	1180	1.0	1.5	3.579	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1717	1210	0.420	507	746	0.5	0.8	5.823	A
2 - Duston Mill Lane	0	0	2225	138	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1694	424	290	2719	0.623	1692	1935	1.1	1.7	3.679	A
4 - Telford Way	244	61	1785	719	0.340	244	196	0.3	0.5	7.638	A
5 - A5076 North	1885	471	585	2509	0.751	1879	1444	1.5	3.1	5.898	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	509	127	1723	1207	0.422	509	748	0.8	0.8	5.870	A
2 - Duston Mill Lane	0	0	2232	136	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1694	424	291	2718	0.623	1694	1941	1.7	1.7	3.699	A
4 - Telford Way	244	61	1788	718	0.341	244	197	0.5	0.5	7.690	A
5 - A5076 North	1885	471	586	2508	0.751	1885	1447	3.1	3.1	6.016	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	415	104	1413	1385	0.300	417	612	0.8	0.5	4.236	A
2 - Duston Mill Lane	0	0	1829	272	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1384	346	238	2755	0.502	1386	1591	1.7	1.1	2.774	A

4 - Telford Way	200	50	1463	882	0.226	200	162	0.5	0.3	5.349	A
5 - A5076 North	1539	385	479	2582	0.596	1545	1184	3.1	1.6	3.640	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	348	87	1180	1519	0.229	348	512	0.5	0.3	3.499	A
2 - Duston Mill Lane	0	0	1529	373	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1159	290	199	2782	0.417	1160	1330	1.1	0.8	2.336	A
4 - Telford Way	167	42	1224	1002	0.167	168	135	0.3	0.2	4.362	A
5 - A5076 North	1289	322	401	2637	0.489	1291	990	1.6	1.0	2.793	A

2021 DS5, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	4.27	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	32	1 - Edgare Mobbs Way

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2021 DS5	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	719	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1636	100.000
4 - Telford Way		ONE HOUR	✓	68	100.000
5 - A5076 North		ONE HOUR	✓	1327	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	574	26	119
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	374	0	0	60	1202
	4 - Telford Way	14	0	26	0	28
	5 - A5076 North	79	0	1086	162	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.57	6.12	1.3	A	660	990
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.67	4.21	2.1	A	1501	2252
4 - Telford Way	0.11	5.97	0.1	A	62	94
5 - A5076 North	0.56	3.25	1.3	A	1218	1827

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	541	135	957	1648	0.328	539	351	0.0	0.5	3.303	A
2 - Duston Mill Lane	0	0	1496	384	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1232	308	230	2760	0.446	1228	1266	0.0	0.8	2.424	A

4 - Telford Way	51	13	1273	977	0.052	51	186	0.0	0.1	3.884	A
5 - A5076 North	999	250	311	2700	0.370	997	1013	0.0	0.6	2.172	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	646	162	1144	1540	0.420	645	419	0.5	0.7	4.097	A
2 - Duston Mill Lane	0	0	1790	285	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1471	368	276	2729	0.539	1469	1514	0.8	1.2	2.949	A
4 - Telford Way	61	15	1522	852	0.072	61	223	0.1	0.1	4.553	A
5 - A5076 North	1193	298	372	2657	0.449	1192	1211	0.6	0.8	2.526	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	792	198	1401	1392	0.569	789	513	0.7	1.3	6.060	A
2 - Duston Mill Lane	0	0	2190	150	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1801	450	337	2686	0.671	1798	1853	1.2	2.1	4.172	A
4 - Telford Way	75	19	1862	680	0.110	75	273	0.1	0.1	5.945	A
5 - A5076 North	1461	365	455	2599	0.562	1459	1482	0.8	1.3	3.242	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	792	198	1403	1391	0.569	792	514	1.3	1.3	6.119	A
2 - Duston Mill Lane	0	0	2194	148	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1801	450	338	2685	0.671	1801	1856	2.1	2.1	4.207	A
4 - Telford Way	75	19	1866	678	0.110	75	273	0.1	0.1	5.966	A
5 - A5076 North	1461	365	456	2599	0.562	1461	1485	1.3	1.3	3.254	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	646	162	1147	1539	0.420	649	421	1.3	0.7	4.134	A
2 - Duston Mill Lane	0	0	1796	283	0.000	0	0	0.0	0.0	0.000	A

3 - A5076 Upton Way South	1471	368	277	2728	0.539	1474	1519	2.1	1.2	2.977	A
4 - Telford Way	61	15	1528	849	0.072	61	223	0.1	0.1	4.571	A
5 - A5076 North	1193	298	373	2656	0.449	1195	1216	1.3	0.8	2.536	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	541	135	960	1646	0.329	542	352	0.7	0.5	3.325	A
2 - Duston Mill Lane	0	0	1502	382	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1232	308	231	2759	0.446	1233	1271	1.2	0.8	2.441	A
4 - Telford Way	51	13	1278	975	0.053	51	187	0.1	0.1	3.898	A
5 - A5076 North	999	250	312	2699	0.370	1000	1017	0.8	0.6	2.182	A

2031 DS5, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	6.24	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	17	5 - A5076 North

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2031 DS5	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Edgare Mobbs Way		ONE HOUR	✓	440	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1572	100.000

4 - Telford Way		ONE HOUR	✓	287	100.000
5 - A5076 North		ONE HOUR	✓	1825	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	**2 - Duston Mill Lane**	**3 - A5076 Upton Way South**	**4 - Telford Way**	**5 - A5076 North**
From	**1 - Edgare Mobbs Way**	0	0	362	17	61
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	434	0	0	17	1121
	4 - Telford Way	36	0	90	0	161
	5 - A5076 North	217	0	1414	194	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	**2 - Duston Mill Lane**	**3 - A5076 Upton Way South**	**4 - Telford Way**	**5 - A5076 North**
From	**1 - Edgare Mobbs Way**	0	0	12	6	22
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	6	0	0	0	5
	4 - Telford Way	3	0	2	0	0
	5 - A5076 North	5	0	4	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.43	6.38	0.9	A	404	606
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.64	3.86	1.8	A	1442	2164
4 - Telford Way	0.44	8.95	0.8	A	263	395
5 - A5076 North	0.81	7.84	4.3	A	1675	2512

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	331	83	1274	1465	0.226	330	516	0.0	0.3	3.581	A

2 - Duston Mill Lane	0	0	1604	348	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1183	296	204	2778	0.426	1180	1400	0.0	0.8	2.367	A
4 - Telford Way	216	54	1213	1007	0.215	215	171	0.0	0.3	4.581	A
5 - A5076 North	1374	343	420	2624	0.524	1369	1008	0.0	1.1	2.983	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	396	99	1524	1321	0.299	395	617	0.3	0.5	4.390	A
2 - Duston Mill Lane	0	0	1919	241	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1413	353	244	2751	0.514	1412	1675	0.8	1.1	2.827	A
4 - Telford Way	258	65	1451	887	0.291	257	205	0.3	0.4	5.767	A
5 - A5076 North	1641	410	503	2566	0.639	1638	1206	1.1	1.8	4.034	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	484	121	1861	1127	0.430	483	754	0.5	0.8	6.304	A
2 - Duston Mill Lane	0	0	2344	98	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1731	433	298	2713	0.638	1728	2046	1.1	1.8	3.833	A
4 - Telford Way	316	79	1776	724	0.437	315	250	0.4	0.8	8.859	A
5 - A5076 North	2009	502	615	2488	0.808	2000	1476	1.8	4.2	7.551	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	484	121	1869	1122	0.432	484	756	0.8	0.9	6.379	A
2 - Duston Mill Lane	0	0	2354	94	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1731	433	299	2712	0.638	1731	2054	1.8	1.8	3.859	A
4 - Telford Way	316	79	1779	722	0.438	316	251	0.8	0.8	8.951	A
5 - A5076 North	2009	502	617	2487	0.808	2009	1479	4.2	4.3	7.841	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS

1 - Edgare Mobbs Way	396	99	1535	1315	0.301	397	620	0.9	0.5	4.442	A
2 - Duston Mill Lane	0	0	1932	237	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1413	353	246	2749	0.514	1416	1687	1.8	1.1	2.846	A
4 - Telford Way	258	65	1456	885	0.292	259	206	0.8	0.4	5.826	A
5 - A5076 North	1641	410	505	2565	0.640	1650	1210	4.3	1.9	4.149	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	331	83	1281	1461	0.227	332	518	0.5	0.3	3.604	A
2 - Duston Mill Lane	0	0	1613	345	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1183	296	205	2778	0.426	1185	1408	1.1	0.8	2.379	A
4 - Telford Way	216	54	1218	1005	0.215	217	172	0.4	0.3	4.614	A
5 - A5076 North	1374	343	422	2622	0.524	1377	1012	1.9	1.2	3.024	A

2031 DS5, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	Upton Way / Telford Way	Standard Roundabout	1, 2, 3, 4, 5	5.72	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	19	1 - Edgare Mobbs Way

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2031 DS5	PM	ONE HOUR	17:00	18:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)

1 - Edgare Mobbs Way		ONE HOUR	✓	729	100.000
2 - Duston Mill Lane		ONE HOUR	✓	0	100.000
3 - A5076 Upton Way South		ONE HOUR	✓	1749	100.000
4 - Telford Way		ONE HOUR	✓	110	100.000
5 - A5076 North		ONE HOUR	✓	1503	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	580	26	123
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	369	0	0	49	1331
	4 - Telford Way	15	0	21	74	0
	5 - A5076 North	79	0	1179	245	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Edgare Mobbs Way	2 - Duston Mill Lane	3 - A5076 Upton Way South	4 - Telford Way	5 - A5076 North
From	1 - Edgare Mobbs Way	0	0	2	0	2
	2 - Duston Mill Lane	0	0	0	0	0
	3 - A5076 Upton Way South	5	0	0	0	3
	4 - Telford Way	0	0	0	0	0
	5 - A5076 North	3	0	3	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Edgare Mobbs Way	0.65	8.47	1.9	A	669	1003
2 - Duston Mill Lane	0.00	0.00	0.0	A	0	0
3 - A5076 Upton Way South	0.75	5.84	3.1	A	1605	2407
4 - Telford Way	0.20	7.40	0.2	A	101	151
5 - A5076 North	0.65	4.14	1.9	A	1379	2069

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand	Junction	Circulating flow (PCU/hr)	Capacity	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queu	End queu	Delay (s)	LOS

	(PCU/hr)	Arrivals (PCU)		(PCU/hr)				e (PCU)	e (PCU)		
1 - Edgare Mobbs Way	549	137	1140	1542	0.356	547	348	0.0	0.6	3.677	A
2 - Duston Mill Lane	0	0	1687	320	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1317	329	351	2676	0.492	1313	1336	0.0	1.0	2.720	A
4 - Telford Way	83	21	1368	929	0.089	82	296	0.0	0.1	4.249	A
5 - A5076 North	1132	283	359	2666	0.424	1129	1091	0.0	0.8	2.404	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	655	164	1364	1413	0.464	654	416	0.6	0.9	4.824	A
2 - Duston Mill Lane	0	0	2018	208	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1572	393	420	2628	0.598	1570	1598	1.0	1.5	3.508	A
4 - Telford Way	99	25	1637	794	0.125	99	354	0.1	0.1	5.176	A
5 - A5076 North	1351	338	430	2617	0.516	1350	1305	0.8	1.1	2.919	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	803	201	1669	1238	0.649	799	508	0.9	1.8	8.291	A
2 - Duston Mill Lane	0	0	2468	56	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1926	481	514	2563	0.751	1920	1954	1.5	3.0	5.726	A
4 - Telford Way	121	30	2001	610	0.198	121	433	0.1	0.2	7.345	A
5 - A5076 North	1655	414	526	2550	0.649	1652	1596	1.1	1.9	4.106	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	803	201	1672	1236	0.650	803	510	1.8	1.9	8.466	A
2 - Duston Mill Lane	0	0	2475	53	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1926	481	515	2562	0.752	1926	1960	3.0	3.1	5.839	A
4 - Telford Way	121	30	2007	607	0.199	121	434	0.2	0.2	7.405	A
5 - A5076 North	1655	414	527	2549	0.649	1655	1601	1.9	1.9	4.139	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	655	164	1369	1411	0.465	659	418	1.9	0.9	4.909	A
2 - Duston Mill Lane	0	0	2028	204	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1572	393	422	2627	0.599	1578	1606	3.1	1.6	3.567	A
4 - Telford Way	99	25	1645	789	0.125	99	355	0.2	0.1	5.220	A
5 - A5076 North	1351	338	432	2615	0.517	1354	1312	1.9	1.1	2.944	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
1 - Edgare Mobbs Way	549	137	1145	1540	0.356	550	349	0.9	0.6	3.714	A
2 - Duston Mill Lane	0	0	1695	317	0.000	0	0	0.0	0.0	0.000	A
3 - A5076 Upton Way South	1317	329	353	2675	0.492	1319	1342	1.6	1.0	2.747	A
4 - Telford Way	83	21	1375	926	0.089	83	297	0.1	0.1	4.273	A
5 - A5076 North	1132	283	361	2665	0.425	1133	1097	1.1	0.8	2.418	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.0.2.5947
© Copyright TRL Limited, 2017

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 20 - Upton Way High Street Cumulative.j9
Path: P:\Projects\2012-\1211-80 Rail Central\08 Calculations and Technical Data\Junction analysis\Arcady\J20 - Upton Way - High Street
Report generation date: 29/01/2018 10:11:41

»2021 DS5, AM
»2021 DS5, PM
»2031 DS5, AM
»2031 DS5, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2021 DS5							
1 - Upton Way North	5.0	8.90	0.82	A	2.2	4.27	0.67	A
2 - Upton Way South	1.2	2.60	0.52	A	3.7	5.47	0.77	A
3 - High Street	1.5	7.88	0.57	A	0.4	6.08	0.25	A
	2031 DS5							
1 - Upton Way North	6.7	11.82	0.87	B	2.6	4.72	0.70	A
2 - Upton Way South	1.6	3.07	0.60	A	4.2	6.10	0.80	A
3 - High Street	2.0	9.77	0.64	A	0.3	6.92	0.24	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	01/06/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	TPA\simon.moody
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D11	2021 DS5	AM	ONE HOUR	08:00	09:30	15
D12	2021 DS5	PM	ONE HOUR	17:00	18:30	15
D13	2031 DS5	AM	ONE HOUR	08:00	09:30	15
D14	2031 DS5	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2021 DS5, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	6.36	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Upton Way North	
2	Upton Way South	
3	High Street	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Upton Way North	7.00	11.50	17.0	25.0	70.0	27.0	
2 - Upton Way South	7.50	11.50	20.0	33.5	70.0	15.0	
3 - High Street	3.00	9.00	24.0	19.0	70.0	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Upton Way North	0.702	2917
2 - Upton Way South	0.763	3228
3 - High Street	0.548	1947

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D11	2021 DS5	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1877	100.000
2 - Upton Way South		✓	1515	100.000
3 - High Street		✓	608	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	1	1836	40
	2 - Upton Way South	1282	3	230
	3 - High Street	84	524	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.82	8.90	5.0	A

2 - Upton Way South	0.52	2.60	1.2	A
3 - High Street	0.57	7.88	1.5	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1413	395	2640	0.535	1408	1.3	3.202	A
2 - Upton Way South	1141	31	3204	0.356	1138	0.6	1.914	A
3 - High Street	458	966	1418	0.323	456	0.5	4.107	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1687	473	2585	0.653	1684	2.0	4.381	A
2 - Upton Way South	1362	37	3200	0.426	1361	0.8	2.152	A
3 - High Street	547	1155	1314	0.416	546	0.8	5.146	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2067	578	2511	0.823	2055	4.9	8.481	A
2 - Upton Way South	1668	45	3193	0.522	1667	1.2	2.591	A
3 - High Street	669	1415	1172	0.571	667	1.4	7.794	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2067	580	2510	0.823	2066	5.0	8.896	A
2 - Upton Way South	1668	45	3193	0.522	1668	1.2	2.595	A
3 - High Street	669	1416	1171	0.571	669	1.5	7.884	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1687	476	2583	0.653	1699	2.1	4.536	A
2 - Upton Way South	1362	37	3199	0.426	1363	0.8	2.158	A
3 - High Street	547	1157	1313	0.416	549	0.8	5.203	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1413	398	2638	0.536	1416	1.3	3.249	A
2 - Upton Way South	1141	31	3204	0.356	1141	0.6	1.921	A
3 - High Street	458	969	1416	0.323	459	0.5	4.139	A

2021 DS5, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	5.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D12	2021 DS5	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1709	100.000
2 - Upton Way South		✓	2216	100.000
3 - High Street		✓	193	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1632	77
	2 - Upton Way South	1795	2	419
	3 - High Street	56	137	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.67	4.27	2.2	A
2 - Upton Way South	0.77	5.47	3.7	A
3 - High Street	0.25	6.08	0.4	A

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1287	104	2844	0.452	1283	0.9	2.532	A
2 - Upton Way South	1668	58	3184	0.524	1664	1.2	2.596	A
3 - High Street	145	1349	1208	0.120	145	0.1	3.722	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1536	125	2829	0.543	1535	1.3	3.054	A
2 - Upton Way South	1992	69	3175	0.627	1990	1.8	3.334	A
3 - High Street	174	1613	1063	0.163	173	0.2	4.448	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1882	153	2810	0.670	1878	2.2	4.234	A
2 - Upton Way South	2440	85	3163	0.771	2433	3.6	5.370	A
3 - High Street	212	1973	866	0.245	212	0.4	6.046	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1882	153	2810	0.670	1882	2.2	4.267	A
2 - Upton Way South	2440	85	3163	0.771	2440	3.7	5.471	A
3 - High Street	212	1978	863	0.246	212	0.4	6.084	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1536	125	2829	0.543	1540	1.3	3.079	A
2 - Upton Way South	1992	69	3175	0.628	1999	1.9	3.388	A
3 - High Street	174	1621	1059	0.164	174	0.2	4.479	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS

1 - Upton Way North	1287	105	2843	0.453	1288	0.9	2.548	A
2 - Upton Way South	1668	58	3183	0.524	1671	1.2	2.622	A
3 - High Street	145	1355	1205	0.121	146	0.2	3.741	A

2031 DS5, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	8.00	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D13	2031 DS5	AM	ONE HOUR	08:00	09:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1930	100.000
2 - Upton Way South		✓	1738	100.000
3 - High Street		✓	664	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	**2 - Upton Way South**	**3 - High Street**
From	**1 - Upton Way North**	1	1902	27
	2 - Upton Way South	1341	3	394
	3 - High Street	70	594	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.87	11.82	6.7	B
2 - Upton Way South	0.60	3.07	1.6	A
3 - High Street	0.64	9.77	2.0	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1453	447	2603	0.558	1447	1.4	3.410	A
2 - Upton Way South	1308	21	3212	0.407	1305	0.8	2.073	A
3 - High Street	500	1010	1394	0.359	497	0.6	4.407	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1735	535	2541	0.683	1731	2.3	4.865	A
2 - Upton Way South	1562	25	3208	0.487	1561	1.0	2.403	A
3 - High Street	597	1208	1285	0.464	596	0.9	5.732	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2125	654	2458	0.864	2109	6.4	10.850	B
2 - Upton Way South	1914	31	3204	0.597	1911	1.6	3.057	A
3 - High Street	731	1479	1137	0.643	727	1.9	9.574	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	2125	657	2456	0.865	2124	6.7	11.824	B
2 - Upton Way South	1914	31	3204	0.597	1914	1.6	3.067	A
3 - High Street	731	1481	1136	0.644	731	2.0	9.772	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1735	540	2538	0.684	1752	2.4	5.148	A
2 - Upton Way South	1562	25	3208	0.487	1565	1.0	2.414	A
3 - High Street	597	1211	1284	0.465	601	1.0	5.831	A

09:15 - 09:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1453	451	2601	0.559	1457	1.4	3.476	A
2 - Upton Way South	1308	21	3211	0.407	1310	0.8	2.083	A
3 - High Street	500	1013	1392	0.359	501	0.6	4.452	A

2031 DS5, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout	1, 2, 3	5.55	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D14	2031 DS5	PM	ONE HOUR	17:00	18:30	15

Default vehicle mix	Vehicle mix source	PCU Factor for a HV (PCU)
✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Upton Way North		✓	1802	100.000
2 - Upton Way South		✓	2308	100.000
3 - High Street		✓	165	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	0	1757	45
	2 - Upton Way South	1977	2	329
	3 - High Street	45	120	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Upton Way North	2 - Upton Way South	3 - High Street
From	1 - Upton Way North	10	10	10
	2 - Upton Way South	10	10	10
	3 - High Street	10	10	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
1 - Upton Way North	0.70	4.72	2.6	A
2 - Upton Way South	0.80	6.10	4.2	A
3 - High Street	0.24	6.92	0.3	A

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1357	91	2853	0.476	1353	1.0	2.633	A
2 - Upton Way South	1738	34	3202	0.543	1732	1.3	2.686	A
3 - High Street	124	1485	1133	0.110	124	0.1	3.920	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1620	109	2840	0.570	1618	1.4	3.237	A
2 - Upton Way South	2075	40	3197	0.649	2072	2.0	3.512	A
3 - High Street	148	1777	974	0.152	148	0.2	4.795	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1984	134	2823	0.703	1980	2.6	4.671	A
2 - Upton Way South	2541	49	3190	0.797	2533	4.2	5.945	A

3 - High Street	182	2172	757	0.240	181	0.3	6.863	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1984	134	2823	0.703	1984	2.6	4.719	A
2 - Upton Way South	2541	50	3190	0.797	2541	4.2	6.096	A
3 - High Street	182	2179	753	0.241	182	0.3	6.924	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1620	110	2840	0.570	1624	1.5	3.272	A
2 - Upton Way South	2075	41	3197	0.649	2084	2.1	3.586	A
3 - High Street	148	1787	968	0.153	149	0.2	4.837	A

18:15 - 18:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1 - Upton Way North	1357	92	2852	0.476	1359	1.0	2.653	A
2 - Upton Way South	1738	34	3202	0.543	1741	1.3	2.717	A
3 - High Street	124	1492	1130	0.110	124	0.1	3.942	A

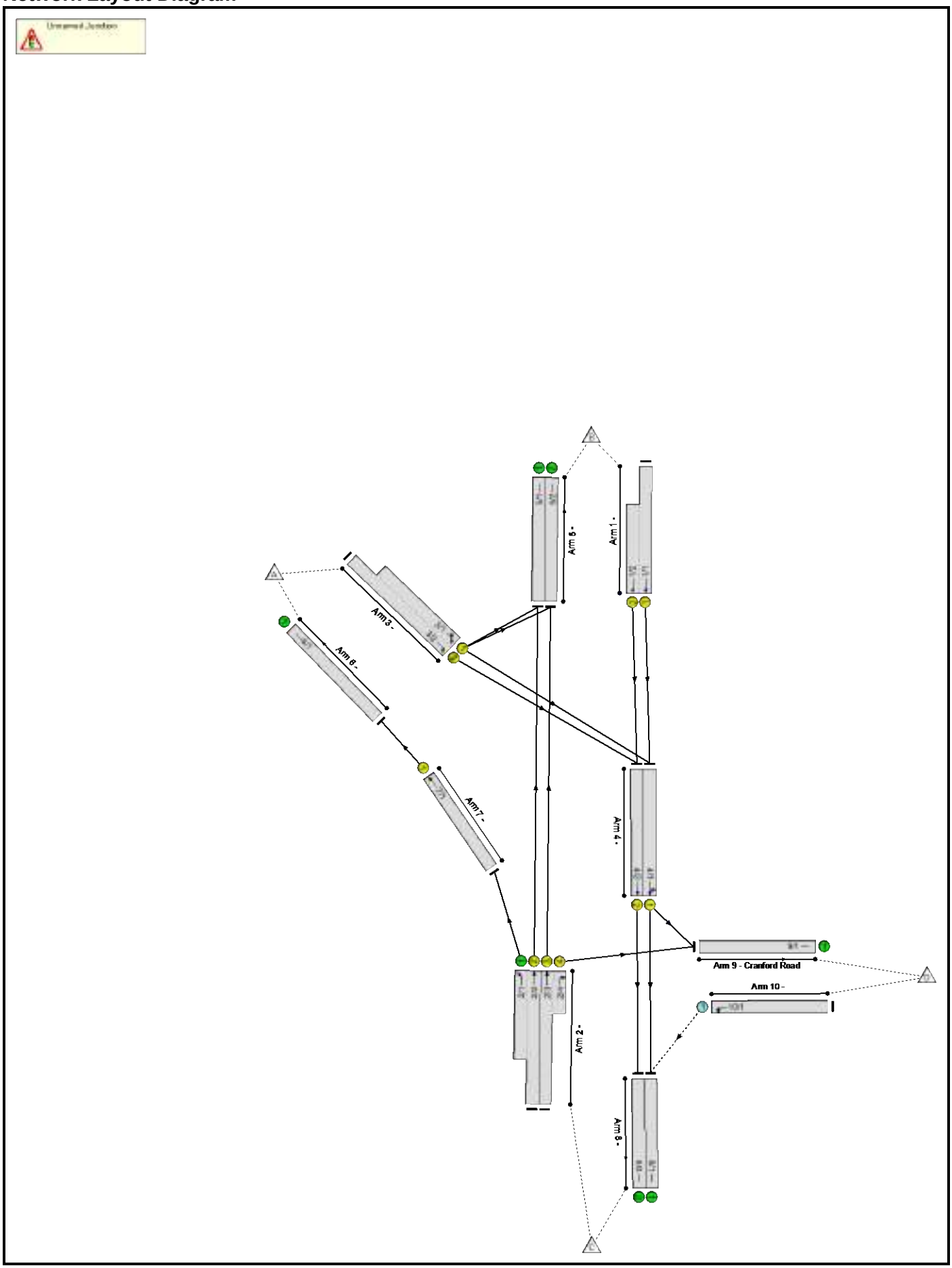
Full Input Data And Results

User and Project Details

Project:	Rail Central
Title:	Junction 25
Location:	A508, Harborough Road (south)/ A5199, Welford Road/ A508, Harborough Road (north)/ Cranford Road/ Kingsland Avenue
Additional detail:	Cumulative
Company:	Transport Planning Associates
Address:	25 King Street, Bristol, BS1 4PB

Full Input Data And Results

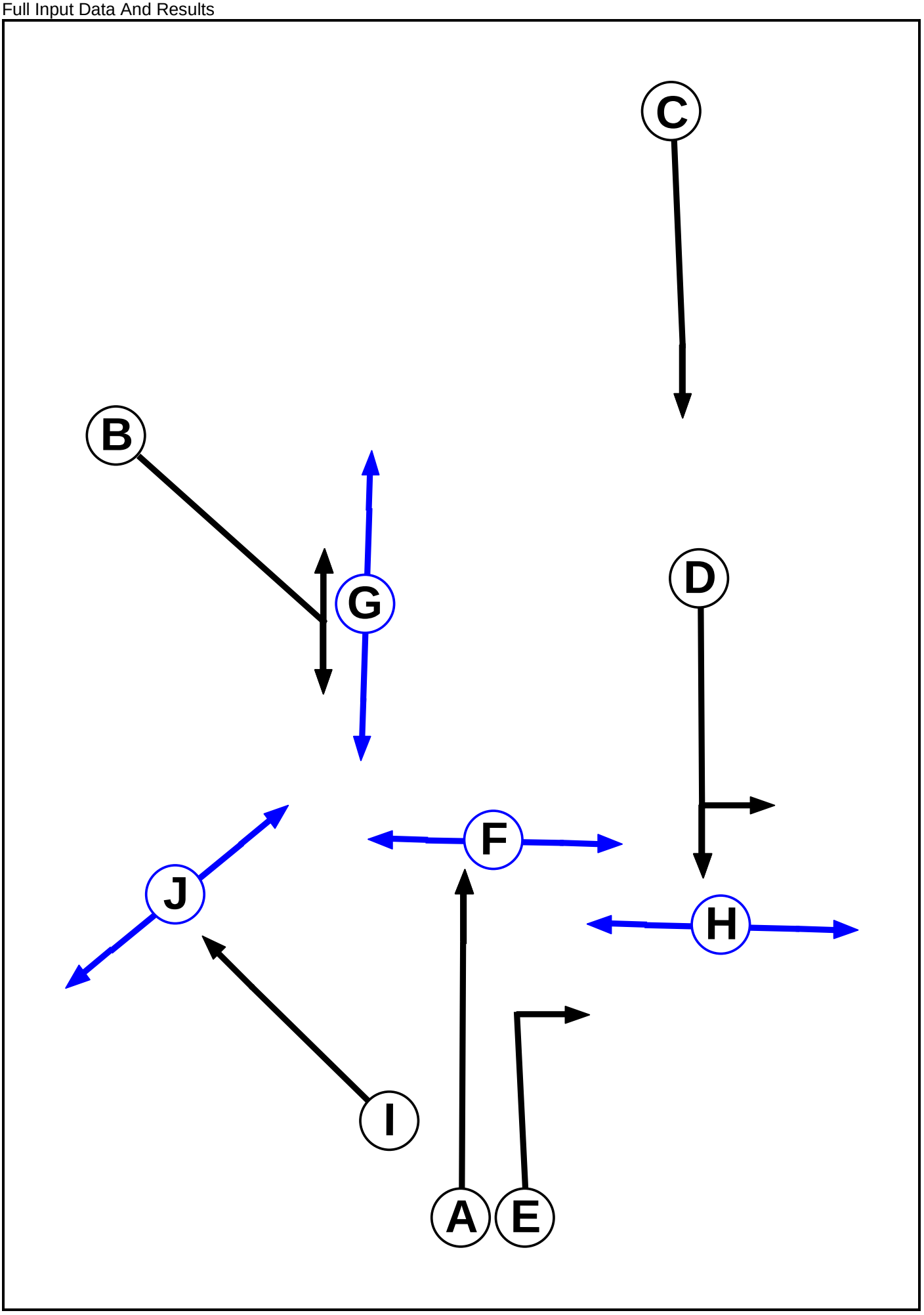
Network Layout Diagram



Full Input Data And Results

Phase Diagram

Full Input Data And Results



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Traffic	1		7	7
F	Pedestrian	1		7	7
G	Pedestrian	1		7	7
H	Pedestrian	1		7	7
I	Traffic	2		7	7
J	Pedestrian	2		7	7

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J
A		8	-	-	-	5	-	-	-	-
B	6		6	-	-	-	5	-	-	-
C	-	5		-	-	-	-	-	-	-
D	-	-	-		6	-	-	5	-	-
E	-	-	-	5		-	-	-	-	-
F	7	-	-	-	-		-	-	-	-
G	-	12	-	-	-	-		-	-	-
H	-	-	-	8	-	-	-		-	-
I	-	-	-	-	-	-	-	-		5
J	-	-	-	-	-	-	-	-	5	

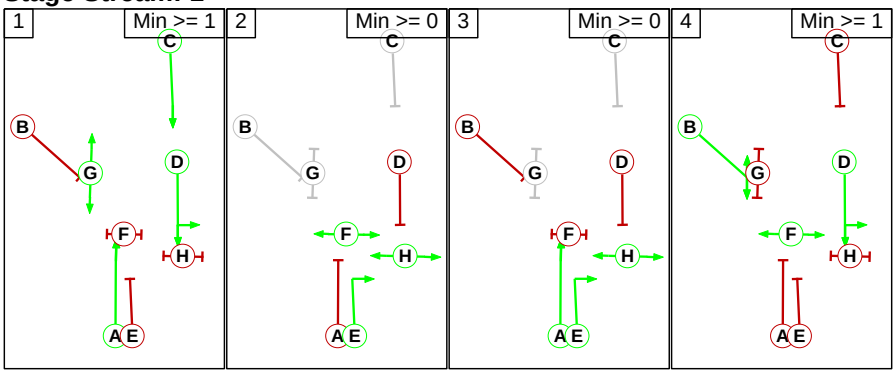
Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A C D G
1	2	E F H
1	3	A E H
1	4	B D F
2	1	I
2	2	J

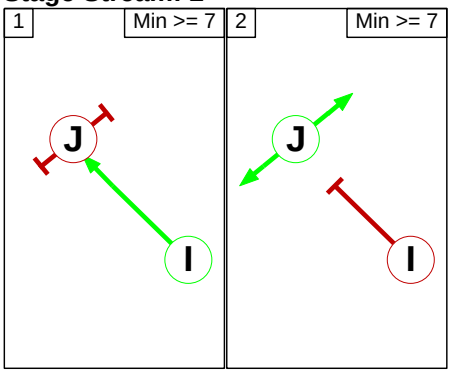
Full Input Data And Results

Stage Diagram

Stage Stream: 1



Stage Stream: 2



Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Stage Stream: 2

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage			
		1	2	3	4
From Stage	1		6	6	12
	2	8		7	8
	3	8	5		8
	4	7	6	7	

Stage Stream: 2

		To Stage	
		1	2
From Stage	1		5
	2	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
10/1	8/1 (Left)	715	0	4/1	0.22	To 8/1 (Ahead)	-	-	-	-	-

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1	U	C	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Ahead	Inf
1/2	U	C	2	3	10.4	Geom	-	3.00	0.00	Y	Arm 4 Ahead	Inf
2/1	U		2	3	10.4	Geom	-	3.00	0.00	Y	Arm 7 Ahead	50.00
2/2	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
2/3	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
2/4	U	E	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 9 Right	7.50
3/1	U	B	2	3	12.2	Geom	-	4.00	0.00	Y	Arm 4 Right	20.00
											Arm 5 Left	10.00
3/2	U	B	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 4 Right	20.00
4/1	U	D	2	3	4.9	Geom	-	3.00	0.00	Y	Arm 8 Ahead	Inf
											Arm 9 Left	Inf
4/2	U	D	2	3	4.9	Geom	-	3.00	0.00	Y	Arm 8 Ahead	Inf
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U	I	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/2	U		2	3	60.0	Inf	-	-	-	-	-	-
9/1 (Cranford Road)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1	O		2	3	60.0	Geom	-	4.00	0.00	Y	Arm 8 Left	7.50

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2021 DM AM'	08:00	09:00	01:00	
2: '2021 DM PM'	17:00	18:00	01:00	
3: '2021 DS2 AM'	08:00	09:00	01:00	
4: '2021 DS2 PM'	17:00	18:00	01:00	
5: '2031 DM AM'	08:00	09:00	01:00	
6: '2031 DM PM'	17:00	18:00	01:00	
7: '2031 DS2 AM'	08:00	09:00	01:00	
8: '2031 DS2 PM'	17:00	18:00	01:00	
9: '2021 DS5 AM'	08:00	09:00	01:00	
10: '2021 DS5 PM'	17:00	18:00	01:00	
11: '2031 DS5 AM'	08:00	09:00	01:00	
12: '2031 DS5 PM'	17:00	18:00	01:00	

Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	41	781	0	822
	B	0	0	991	0	991
	C	359	1129	0	0	1488
	D	0	0	0	0	0
	Tot.	359	1170	1772	0	3301

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 9: 2021 DS5 AM
Junction: Unnamed Junction	
1/1 (with short)	991(In) 497(Out)
1/2 (short)	494
2/1 (short)	359
2/2 (with short)	911(In) 552(Out)
2/3 (with short)	577(In) 577(Out)
2/4 (short)	0
3/1 (short)	410
3/2 (with short)	822(In) 412(Out)
4/1	866
4/2	906
5/1	572
5/2	598
6/1	359
7/1	359
8/1	866
8/2	906
9/1	0
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	90.0 %	1861	1861
				Arm 5 Left	10.00	10.0 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	49	383	0	432
	B	0	0	873	0	873
	C	793	1300	0	0	2093
	D	0	0	0	0	0
	Tot.	793	1349	1256	0	3398

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 10: 2021 DS5 PM
Junction: Unnamed Junction	
1/1 (with short)	873(In) 440(Out)
1/2 (short)	433
2/1 (short)	793
2/2 (with short)	1405(In) 612(Out)
2/3 (with short)	688(In) 688(Out)
2/4 (short)	0
3/1 (short)	214
3/2 (with short)	432(In) 218(Out)
4/1	605
4/2	651
5/1	636
5/2	713
6/1	793
7/1	793
8/1	605
8/2	651
9/1	0
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	77.1 %	1845	1845
				Arm 5 Left	10.00	22.9 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	41	969	0	1010
	B	0	0	1178	0	1178
	C	418	1116	0	0	1534
	D	0	0	0	0	0
	Tot.	418	1157	2147	0	3722

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 11: 2031 DS5 AM
Junction: Unnamed Junction	
1/1 (with short)	1178(In) 598(Out)
1/2 (short)	580
2/1 (short)	418
2/2 (with short)	951(In) 533(Out)
2/3 (with short)	583(In) 583(Out)
2/4 (short)	0
3/1 (short)	508
3/2 (with short)	1010(In) 502(Out)
4/1	1065
4/2	1082
5/1	553
5/2	604
6/1	418
7/1	418
8/1	1065
8/2	1082
9/1	0
10/1	0

Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	91.9 %	1864	1864
				Arm 5 Left	10.00	8.1 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	51	385	0	436
	B	0	0	942	0	942
	C	853	1342	0	0	2195
	D	0	0	0	0	0
	Tot.	853	1393	1327	0	3573

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 12: 2031 DS5 PM
Junction: Unnamed Junction	
1/1 (with short)	942(In) 475(Out)
1/2 (short)	467
2/1 (short)	853
2/2 (with short)	1477(In) 624(Out)
2/3 (with short)	718(In) 718(Out)
2/4 (short)	0
3/1 (short)	216
3/2 (with short)	436(In) 220(Out)
4/1	640
4/2	687
5/1	649
5/2	744
6/1	853
7/1	853
8/1	640
8/2	687
9/1	0
10/1	0

Full Input Data And Results

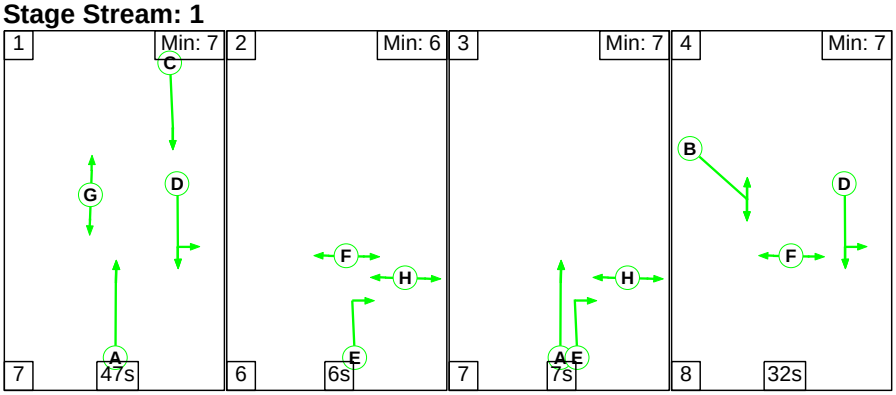
Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
2/1	3.00	0.00	Y	Arm 7 Ahead	50.00	100.0 %	1859	1859
2/2	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/3	3.00	0.00	Y	Arm 5 Ahead	Inf	100.0 %	1915	1915
2/4	3.00	0.00	Y	Arm 9 Right	7.50	0.0 %	1915	1915
3/1	4.00	0.00	Y	Arm 4 Right	20.00	76.4 %	1844	1844
				Arm 5 Left	10.00	23.6 %		
3/2	4.00	0.00	Y	Arm 4 Right	20.00	100.0 %	1874	1874
4/1	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
				Arm 9 Left	Inf	0.0 %		
4/2	3.00	0.00	Y	Arm 8 Ahead	Inf	100.0 %	1915	1915
5/1	Infinite Saturation Flow						Inf	Inf
5/2	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
8/1	Infinite Saturation Flow						Inf	Inf
8/2	Infinite Saturation Flow						Inf	Inf
9/1 (Cranford Road Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1	4.00	0.00	Y	Arm 8 Left	7.50	0.0 %	2015	2015

Scenario 1: '2021 DM AM' (FG1: '2021 DM AM', Plan 1: 'Network Control Plan 1')

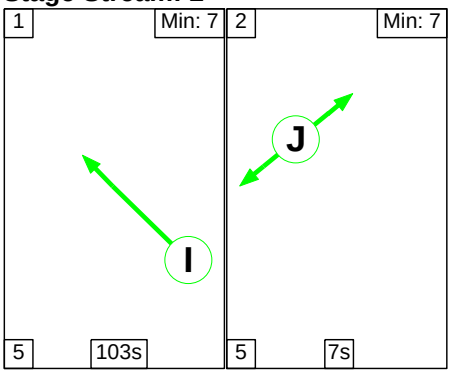
Stage Sequence Diagram

Stage Stream: 1



Full Input Data And Results

Stage Stream: 2



Stage Timings

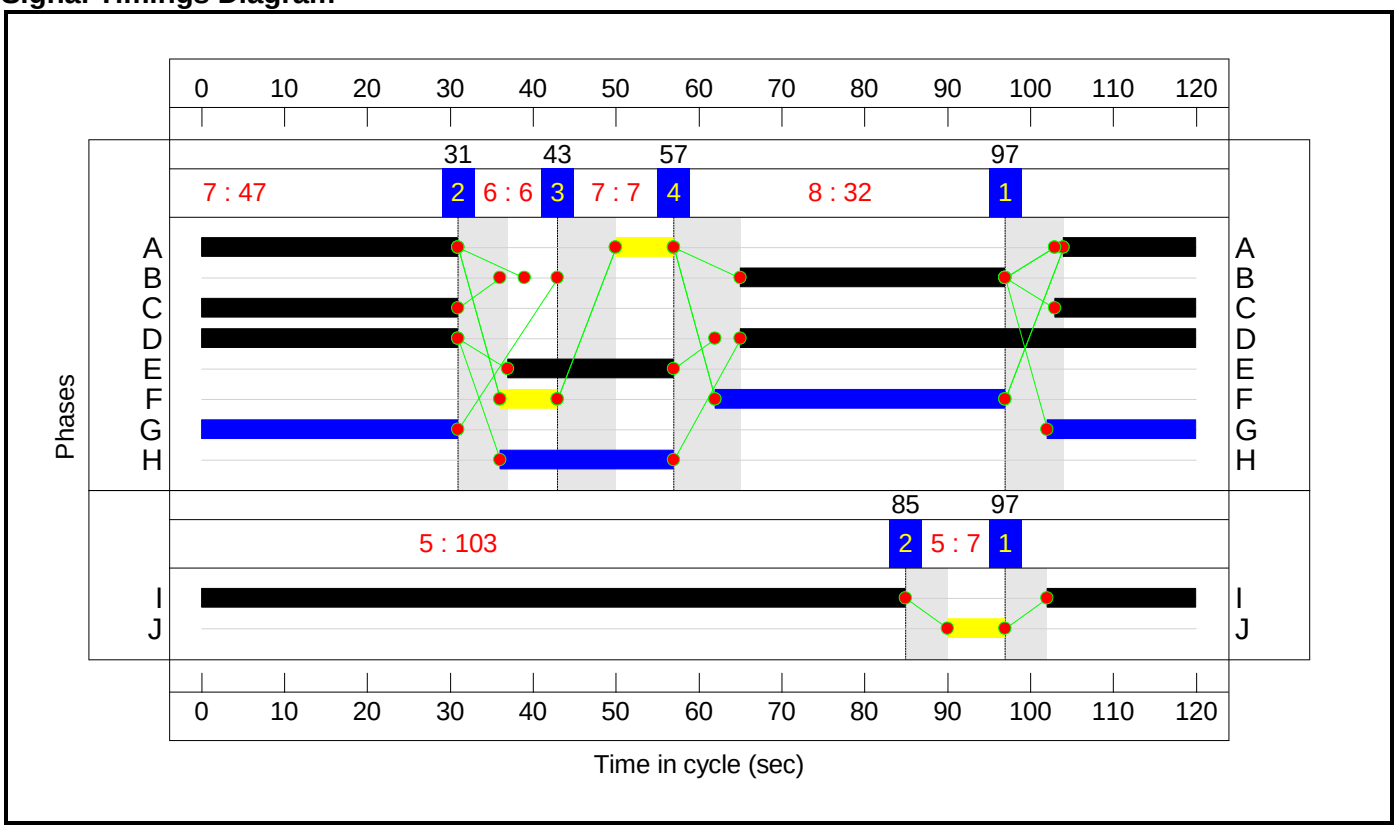
Stage Stream: 1

Stage	1	2	3	4
Duration	47	6	7	32
Change Point	97	31	43	57

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	97	85

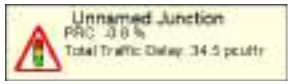
Signal Timings Diagram

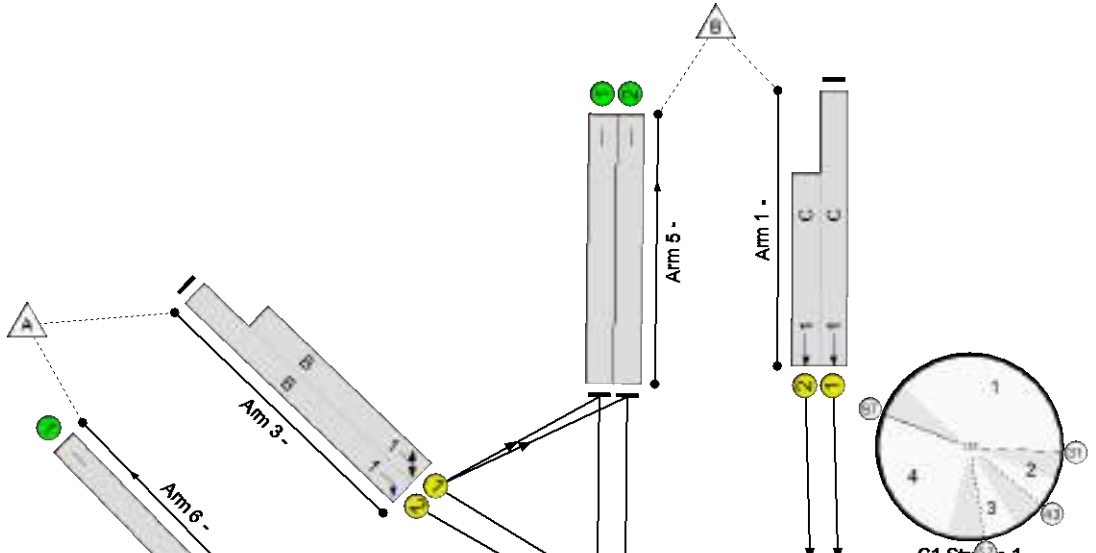


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.7%**
1/1+1/2	Ahead	U	1	N/A	C		1	48	-	979	1915:1915	553+538	89.8 : 89.8%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	54	-	883	1915:1859	716+457	75.3 : 75.3%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	54:20	-	582	1915:1915	894+0	65.1 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	32	-	801	1874:1862	440+443	90.7 : 90.7%
4/1	Ahead Left	U	1	N/A	D		1	86	-	859	1915	1388	61.9%
4/2	Ahead	U	1	N/A	D		1	86	-	882	1915	1388	63.5%
5/1		U	N/A	N/A	-		-	-	-	558	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	602	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	344	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	344	1915	1660	20.7%
8/1		U	N/A	N/A	-		-	-	-	859	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	882	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	821	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**21.8**	**12.7**	**0.0**	**34.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**21.8**	**12.7**	**0.0**	**34.5**	**-**	**-**	**-**	**-**
1/1+1/2	979	979	-	-	-	7.8	4.1	-	11.9	43.9	18.4	4.1	22.5
2/2+2/1	883	883	-	-	-	2.1	1.5	-	3.6	14.8	9.6	1.5	11.1
2/3+2/4	582	582	-	-	-	2.4	0.9	-	3.3	20.3	10.7	0.9	11.6
3/2+3/1	801	801	-	-	-	8.9	4.4	-	13.3	59.9	12.6	4.4	17.0
4/1	859	859	-	-	-	0.2	0.8	-	1.0	4.2	0.7	0.8	1.6
4/2	882	882	-	-	-	0.2	0.9	-	1.1	4.3	0.7	0.9	1.6
5/1	558	558	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	602	602	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	344	344	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	344	344	-	-	-	0.1	0.1	-	0.3	2.7	1.8	0.1	1.9
8/1	859	859	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	882	882	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

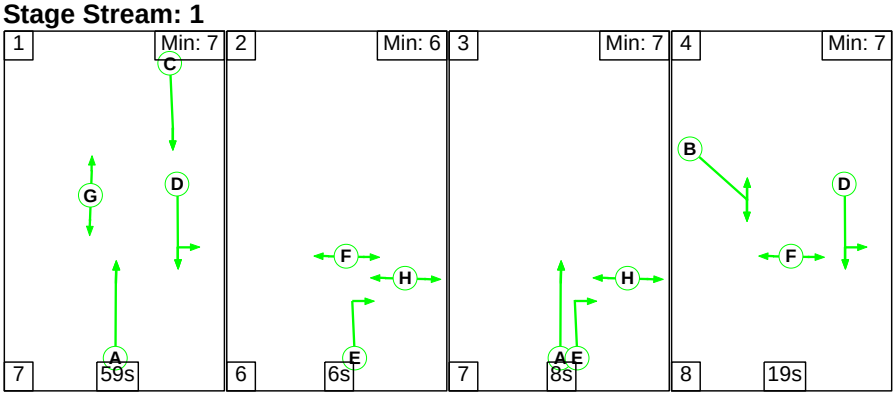
C1 Stream: 1 PRC for Signalled Lanes (%): -0.8 Total Delay for Signalled Lanes (pcuHr): 34.24 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 334.2 Total Delay for Signalled Lanes (pcuHr): 0.26 Cycle Time (s): 120
PRC Over All Lanes (%): -0.8 Total Delay Over All Lanes(pcuHr): 34.49

Full Input Data And Results

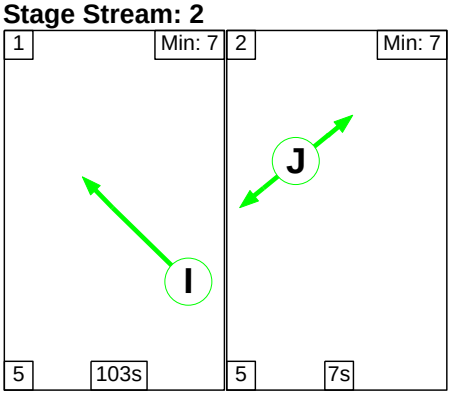
Scenario 2: '2021 DM PM' (FG2: '2021 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

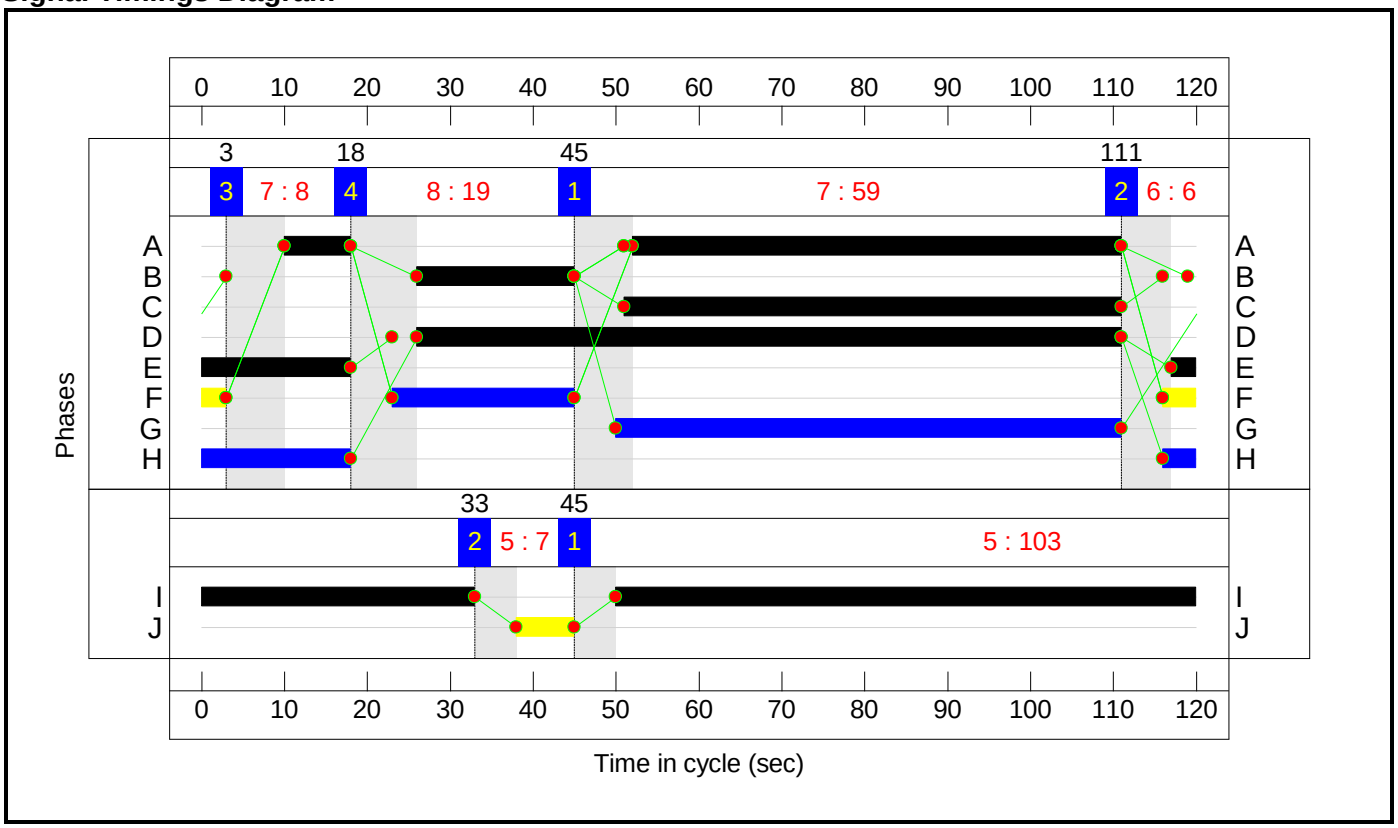
Stage	1	2	3	4
Duration	59	6	8	19
Change Point	45	111	3	18

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	45	33

Full Input Data And Results

Signal Timings Diagram

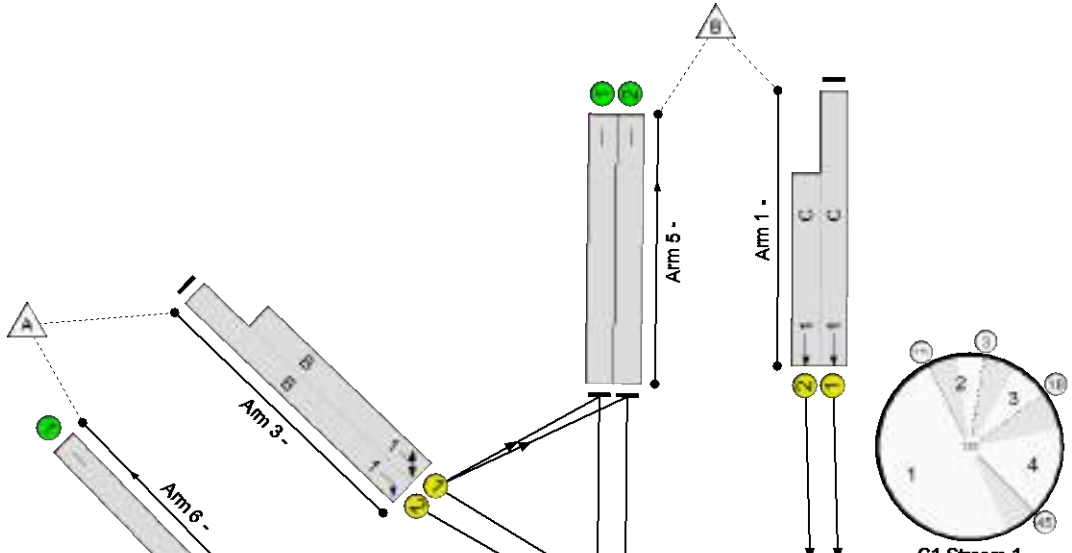


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**
1/1+1/2	Ahead	U	1	N/A	C		1	60	-	888	1915:1915	649+634	69.2 : 69.2%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	67	-	1341	1915:1859	742+914	80.9 : 80.9%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	67:21	-	690	1915:1915	1101+0	62.7 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	19	-	478	1874:1852	312+309	76.2 : 77.8%
4/1	Ahead Left	U	1	N/A	D		1	85	-	648	1915	1372	47.2%
4/2	Ahead	U	1	N/A	D		1	85	-	677	1915	1372	49.3%
5/1		U	N/A	N/A	-		-	-	-	621	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	711	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	740	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	740	1915	1660	44.6%
8/1		U	N/A	N/A	-		-	-	-	648	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	677	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	572	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**15.1**	**7.0**	**0.0**	**22.1**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**15.1**	**7.0**	**0.0**	**22.1**	**-**	**-**	**-**	**-**
1/1+1/2	888	888	-	-	-	4.7	1.1	-	5.8	23.4	9.6	1.1	10.7
2/2+2/1	1341	1341	-	-	-	1.4	2.1	-	3.5	9.5	8.0	2.1	10.1
2/3+2/4	690	690	-	-	-	1.9	0.8	-	2.8	14.4	10.4	0.8	11.2
3/2+3/1	478	478	-	-	-	6.3	1.6	-	8.0	60.1	7.6	1.6	9.2
4/1	648	648	-	-	-	0.2	0.4	-	0.6	3.5	0.7	0.4	1.1
4/2	677	677	-	-	-	0.2	0.5	-	0.7	3.5	0.7	0.5	1.1
5/1	621	621	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	711	711	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	740	740	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	740	740	-	-	-	0.4	0.4	-	0.8	3.7	5.3	0.4	5.7
8/1	648	648	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	677	677	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

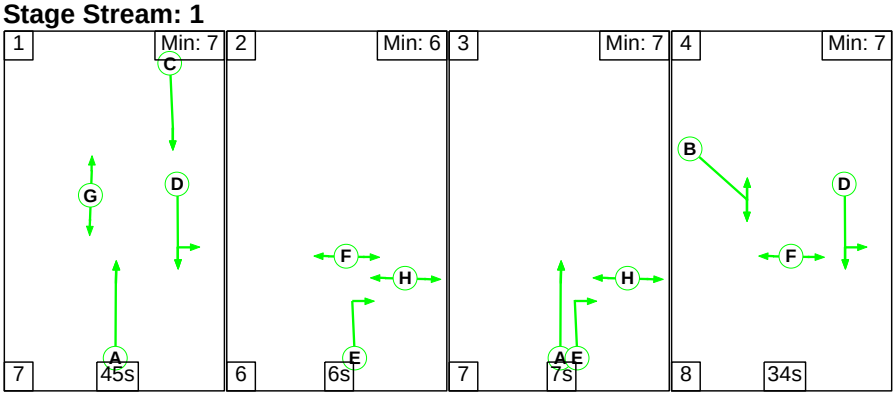
C1 Stream: 1 PRC for Signalled Lanes (%): 11.2 Total Delay for Signalled Lanes (pcuHr): 21.34 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 101.9 Total Delay for Signalled Lanes (pcuHr): 0.76 Cycle Time (s): 120
PRC Over All Lanes (%): 11.2 Total Delay Over All Lanes(pcuHr): 22.10

Full Input Data And Results

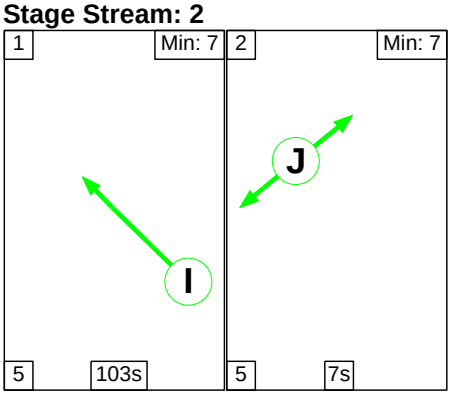
Scenario 3: '2021 DS2 AM' (FG3: '2021 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

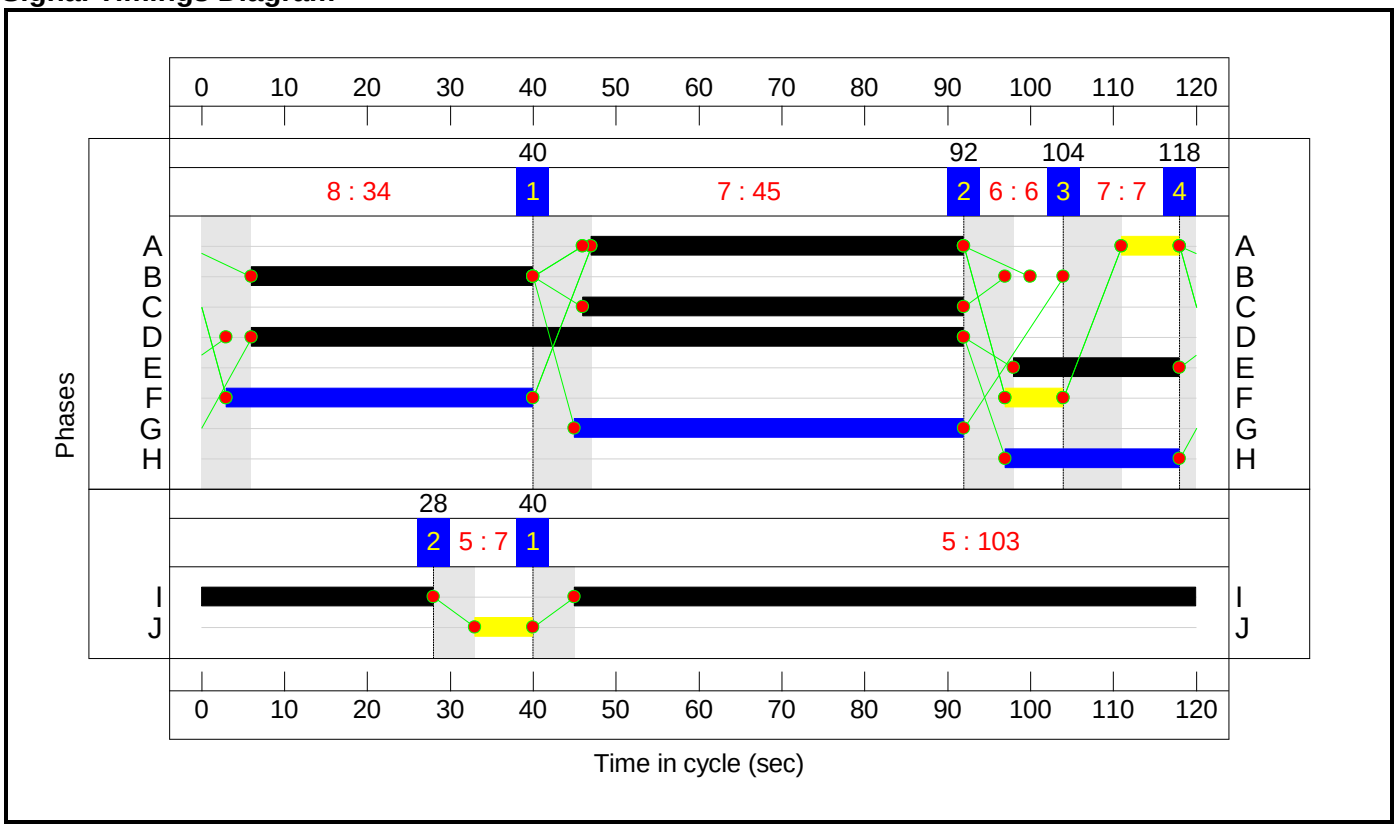
Stage	1	2	3	4
Duration	45	6	7	34
Change Point	40	92	104	118

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	40	28

Full Input Data And Results

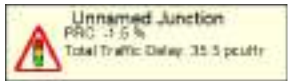
Signal Timings Diagram

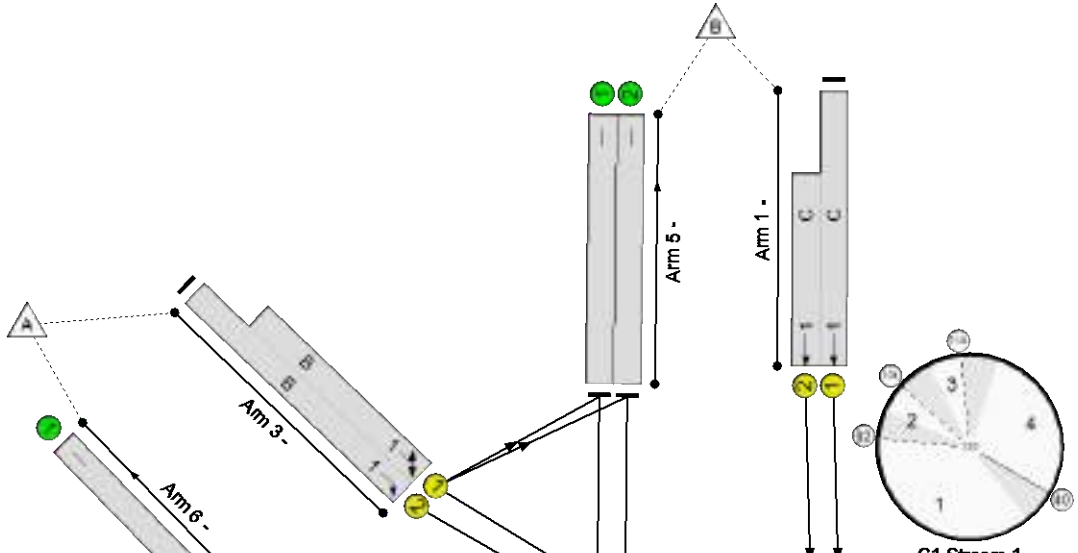


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	46	-	967	1915:1915	536+522	91.4 : 91.4%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	52	-	889	1915:1859	690+470	76.6 : 76.6%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	52:20	-	569	1915:1915	862+0	66.0 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	34	-	822	1874:1862	455+459	90.0 : 90.0%
4/1	Ahead Left	U	1	N/A	D		1	86	-	862	1915	1388	62.1%
4/2	Ahead	U	1	N/A	D		1	86	-	886	1915	1388	63.8%
5/1		U	N/A	N/A	-		-	-	-	549	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	590	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	360	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	360	1915	1660	21.7%
8/1		U	N/A	N/A	-		-	-	-	862	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	886	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	525	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.2**	**13.3**	**0.0**	**35.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**22.2**	**13.3**	**0.0**	**35.5**	**-**	**-**	**-**	**-**
1/1+1/2	967	967	-	-	-	8.2	4.8	-	13.0	48.2	18.9	4.8	23.7
2/2+2/1	889	889	-	-	-	2.2	1.6	-	3.8	15.6	9.7	1.6	11.3
2/3+2/4	569	569	-	-	-	2.5	1.0	-	3.4	21.7	10.7	1.0	11.7
3/2+3/1	822	822	-	-	-	8.8	4.1	-	12.9	56.6	13.1	4.1	17.2
4/1	862	862	-	-	-	0.2	0.8	-	1.0	4.2	0.7	0.8	1.6
4/2	886	886	-	-	-	0.2	0.9	-	1.1	4.3	0.7	0.9	1.6
5/1	549	549	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	590	590	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	360	360	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	360	360	-	-	-	0.1	0.1	-	0.3	2.7	1.9	0.1	2.0
8/1	862	862	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	886	886	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

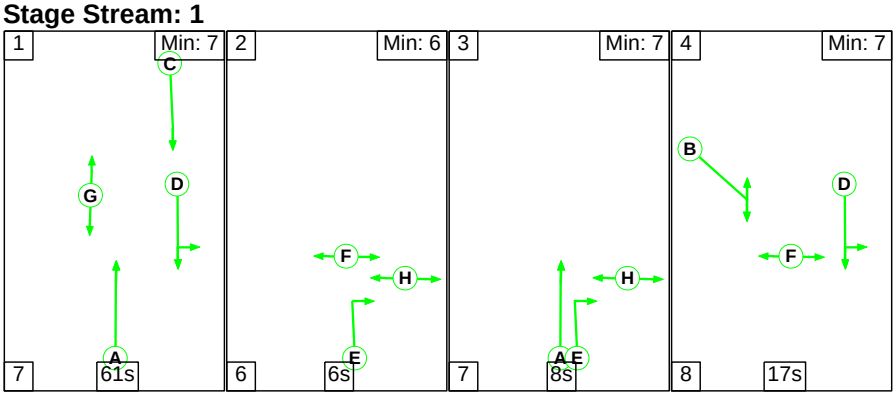
C1 Stream: 1 PRC for Signalled Lanes (%): -1.5 Total Delay for Signalled Lanes (pcuHr): 35.23 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 314.9 Total Delay for Signalled Lanes (pcuHr): 0.27 Cycle Time (s): 120
PRC Over All Lanes (%): -1.5 Total Delay Over All Lanes(pcuHr): 35.50

Full Input Data And Results

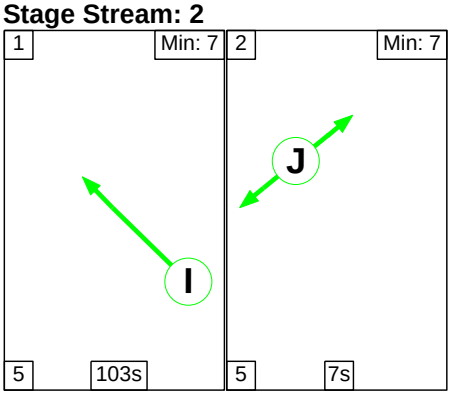
Scenario 4: '2021 DS2 PM' (FG4: '2021 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

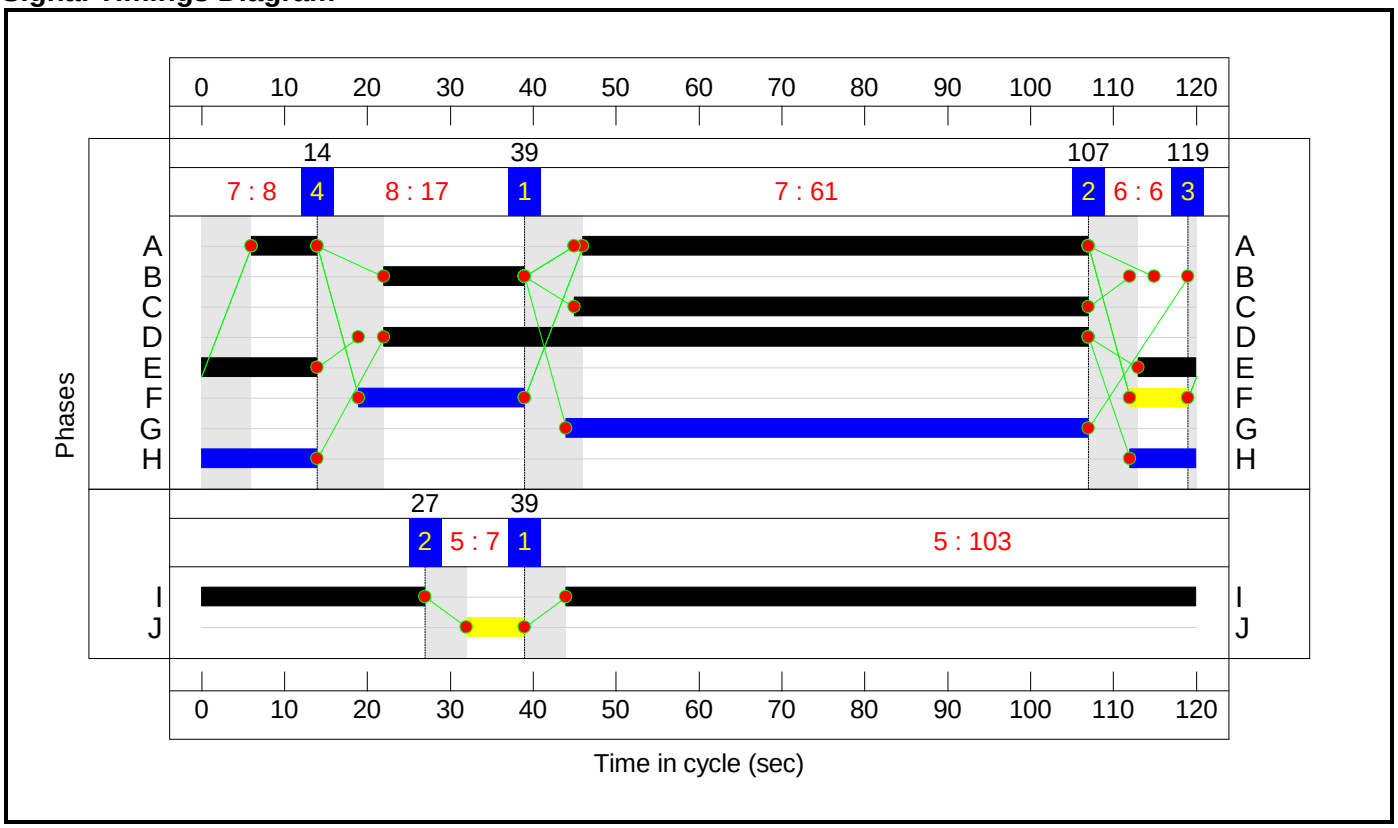
Stage	1	2	3	4
Duration	61	6	8	17
Change Point	39	107	119	14

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	39	27

Full Input Data And Results

Signal Timings Diagram

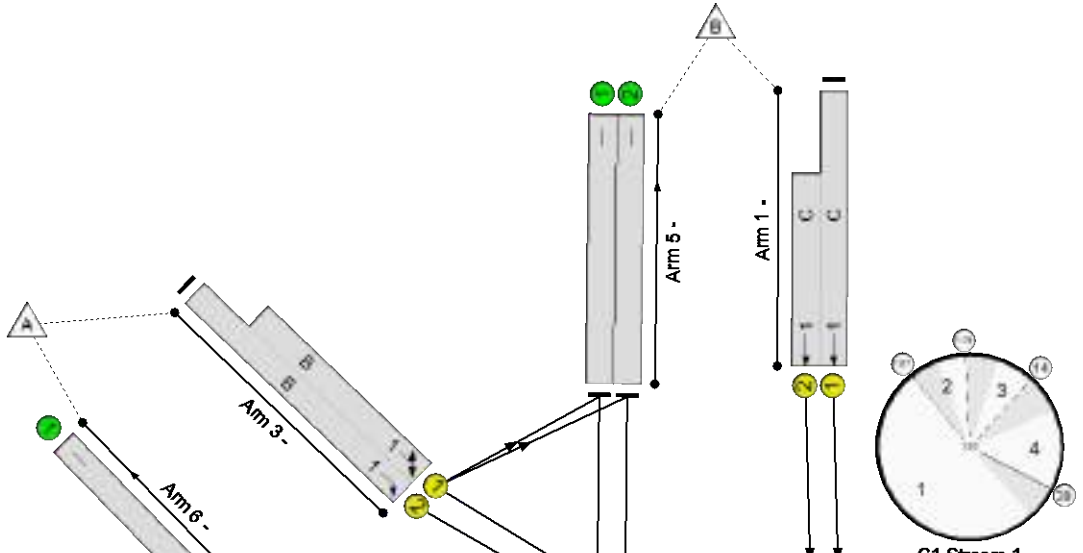


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.7%**
1/1+1/2	Ahead	U	1	N/A	C		1	62	-	875	1915:1915	667+645	66.7 : 66.7%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	69	-	1375	1915:1859	744+987	79.4 : 79.4%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	69:21	-	674	1915:1915	1133+0	59.5 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	17	-	443	1874:1835	281+275	78.6 : 80.7%
4/1	Ahead Left	U	1	N/A	D		1	85	-	598	1915	1372	43.6%
4/2	Ahead	U	1	N/A	D		1	85	-	651	1915	1372	47.4%
5/1		U	N/A	N/A	-		-	-	-	625	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	709	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	784	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	784	1915	1660	47.2%
8/1		U	N/A	N/A	-		-	-	-	598	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	896	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**14.0**	**6.8**	**0.0**	**20.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**14.0**	**6.8**	**0.0**	**20.8**	**-**	**-**	**-**	**-**
1/1+1/2	875	875	-	-	-	4.3	1.0	-	5.3	21.7	9.1	1.0	10.1
2/2+2/1	1375	1375	-	-	-	1.3	1.9	-	3.2	8.3	7.2	1.9	9.1
2/3+2/4	674	674	-	-	-	1.7	0.7	-	2.4	12.7	9.3	0.7	10.0
3/2+3/1	443	443	-	-	-	6.1	1.9	-	7.9	64.6	7.2	1.9	9.0
4/1	598	598	-	-	-	0.2	0.4	-	0.6	3.4	0.7	0.4	1.1
4/2	651	651	-	-	-	0.2	0.5	-	0.6	3.4	0.6	0.5	1.1
5/1	625	625	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	709	709	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	784	784	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	784	784	-	-	-	0.4	0.4	-	0.8	3.9	5.9	0.4	6.3
8/1	598	598	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

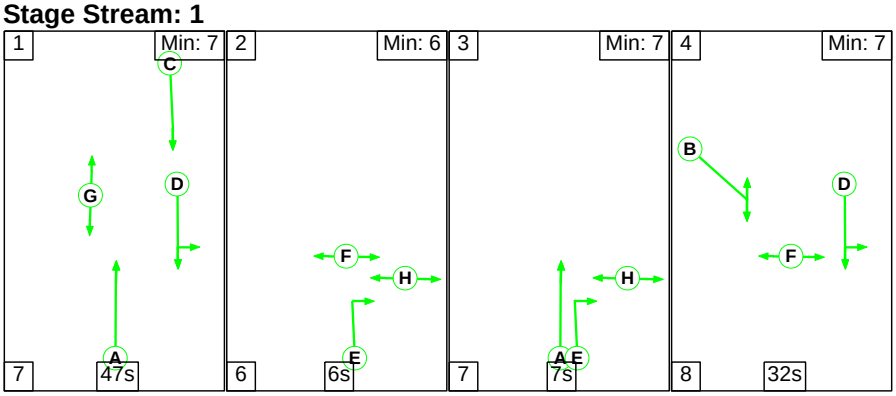
C1 Stream: 1 PRC for Signalled Lanes (%): 11.6 Total Delay for Signalled Lanes (pcuHr): 19.96 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 90.5 Total Delay for Signalled Lanes (pcuHr): 0.84 Cycle Time (s): 120
PRC Over All Lanes (%): 11.6 Total Delay Over All Lanes(pcuHr): 20.80

Full Input Data And Results

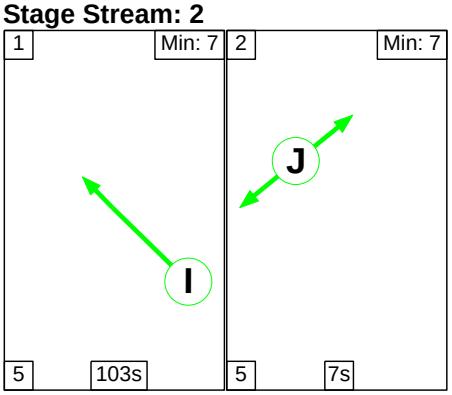
Scenario 5: '2031 DM AM' (FG5: '2031 DM AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

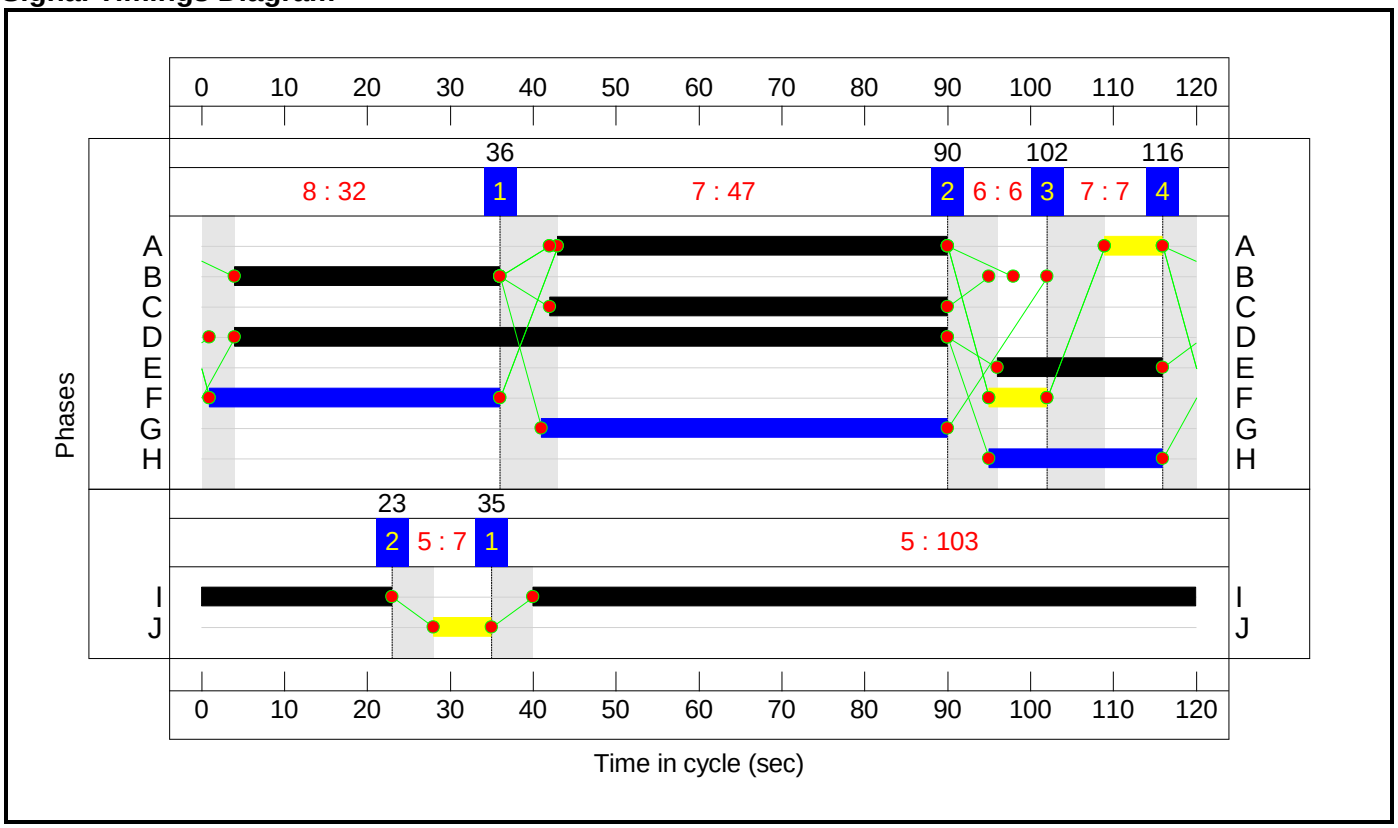
Stage	1	2	3	4
Duration	47	6	7	32
Change Point	36	90	102	116

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	35	23

Full Input Data And Results

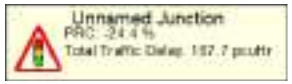
Signal Timings Diagram

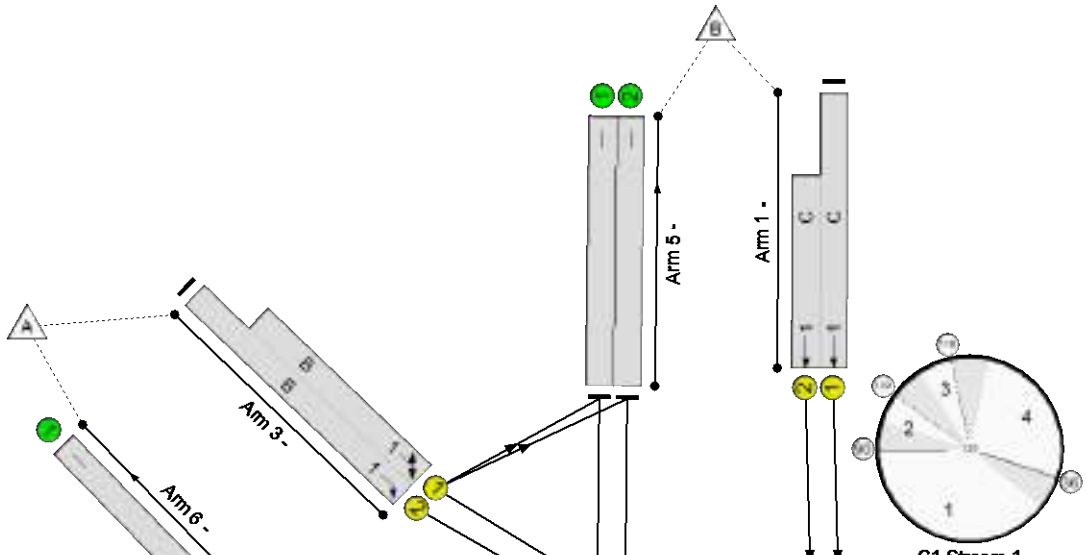


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**112.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**112.0%**
1/1+1/2	Ahead	U	1	N/A	C		1	48	-	1221	1915:1915	553+537	112.0 : 112.0%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	54	-	959	1915:1859	698+526	78.4 : 78.4%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	54:20	-	597	1915:1915	894+0	66.8 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	32	-	978	1874:1864	438+443	110.9 : 110.9%
4/1	Ahead Left	U	1	N/A	D		1	86	-	1072	1915	1388	69.2%
4/2	Ahead	U	1	N/A	D		1	86	-	1088	1915	1388	70.3%
5/1		U	N/A	N/A	-		-	-	-	566	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	617	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	412	1915	1660	24.8%
8/1		U	N/A	N/A	-		-	-	-	1072	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1088	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	504	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**39.8**	**127.9**	**0.0**	**167.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**39.8**	**127.9**	**0.0**	**167.7**	**-**	**-**	**-**	**-**
1/1+1/2	1221	1090	-	-	-	17.0	69.8	-	86.8	256.0	38.0	69.8	107.8
2/2+2/1	959	959	-	-	-	2.2	1.8	-	4.0	14.8	9.7	1.8	11.5
2/3+2/4	597	597	-	-	-	2.5	1.0	-	3.5	21.0	11.0	1.0	12.0
3/2+3/1	978	882	-	-	-	17.2	52.9	-	70.0	257.8	26.8	52.9	79.6
4/1	961	961	-	-	-	0.4	1.1	-	1.5	5.6	1.5	1.1	2.6
4/2	976	976	-	-	-	0.4	1.2	-	1.5	5.7	1.4	1.2	2.6
5/1	564	564	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	615	615	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	412	412	-	-	-	0.2	0.2	-	0.3	2.8	2.3	0.2	2.5
8/1	961	961	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	976	976	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

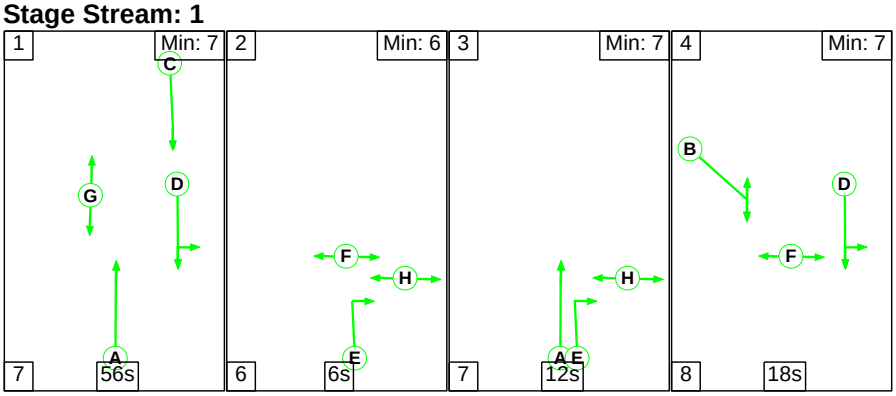
C1 Stream: 1 PRC for Signalled Lanes (%): -24.4 Total Delay for Signalled Lanes (pcuHr): 167.33 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 262.5 Total Delay for Signalled Lanes (pcuHr): 0.32 Cycle Time (s): 120
PRC Over All Lanes (%): -24.4 Total Delay Over All Lanes(pcuHr): 167.65

Full Input Data And Results

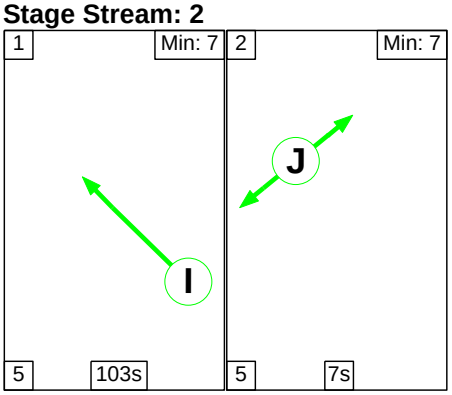
Scenario 6: '2031 DM PM' (FG6: '2031 DM PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

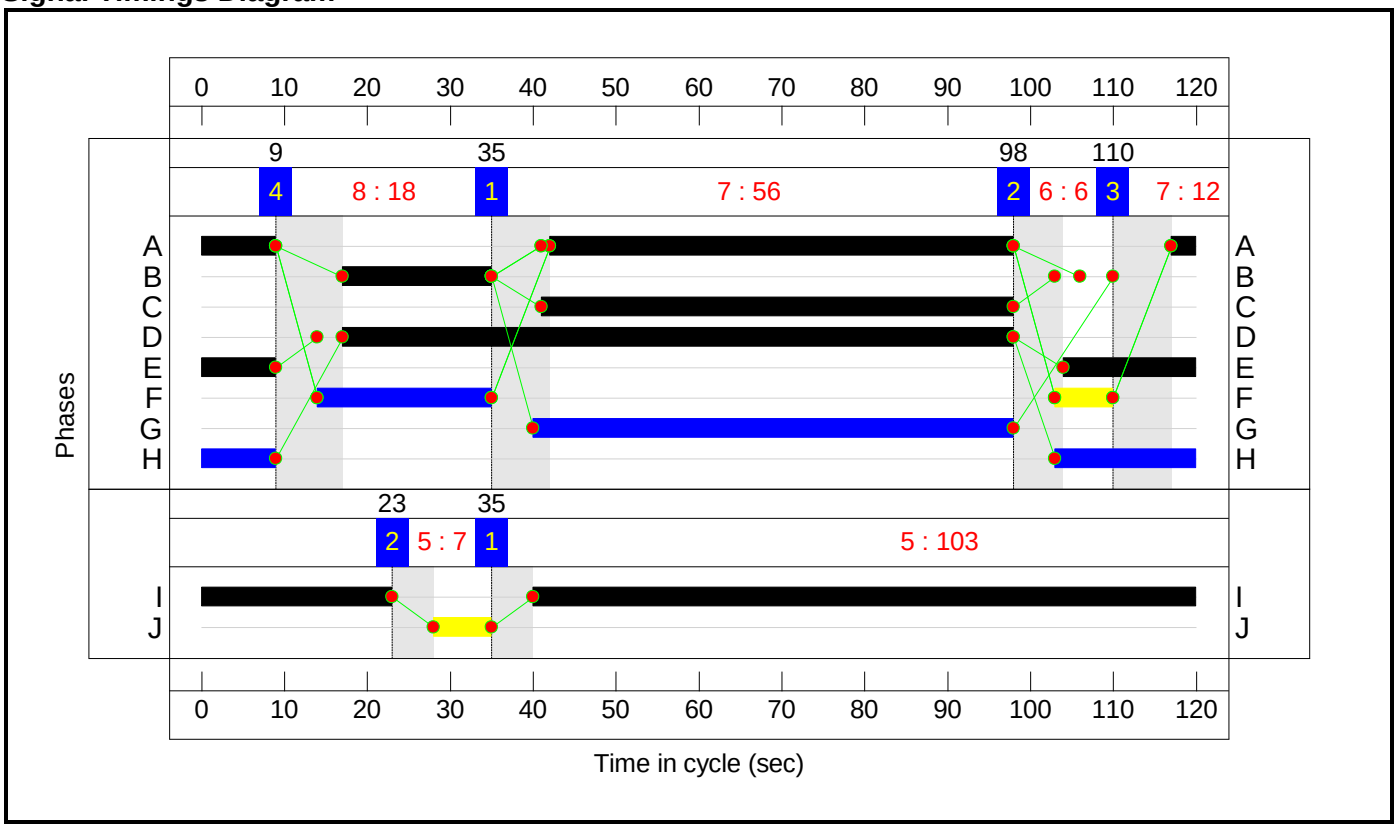
Stage	1	2	3	4
Duration	56	6	12	18
Change Point	35	98	110	9

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	35	23

Full Input Data And Results

Signal Timings Diagram

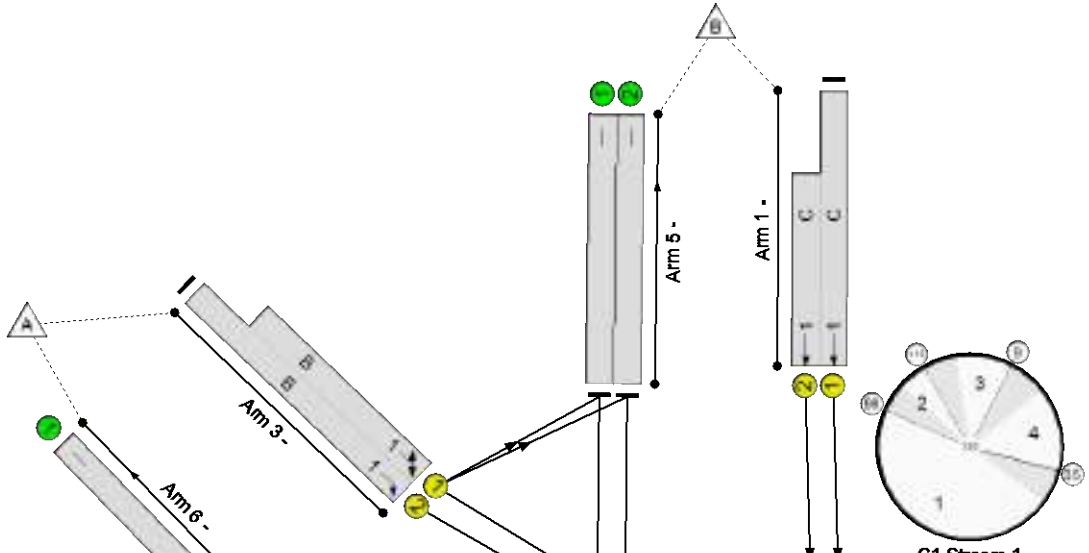


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.2%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.2%**
1/1+1/2	Ahead	U	1	N/A	C		1	57	-	955	1915:1915	625+611	77.3 : 77.3%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	68	-	1497	1915:1859	765+1056	82.2 : 82.2%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	68:25	-	736	1915:1915	1117+0	65.9 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	18	-	492	1874:1853	297+293	82.6 : 84.2%
4/1	Ahead Left	U	1	N/A	D		1	81	-	689	1915	1309	52.7%
4/2	Ahead	U	1	N/A	D		1	81	-	717	1915	1309	54.8%
5/1		U	N/A	N/A	-		-	-	-	649	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	757	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	868	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	868	1915	1660	52.3%
8/1		U	N/A	N/A	-		-	-	-	689	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	563	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**16.6**	**9.0**	**0.0**	**25.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**16.6**	**9.0**	**0.0**	**25.6**	**-**	**-**	**-**	**-**
1/1+1/2	955	955	-	-	-	5.7	1.7	-	7.4	27.7	12.3	1.7	13.9
2/2+2/1	1497	1497	-	-	-	1.5	2.3	-	3.7	9.0	8.2	2.3	10.5
2/3+2/4	736	736	-	-	-	1.9	1.0	-	2.8	13.8	10.4	1.0	11.4
3/2+3/1	492	492	-	-	-	6.7	2.4	-	9.1	66.5	8.0	2.4	10.3
4/1	689	689	-	-	-	0.2	0.6	-	0.8	4.0	0.7	0.6	1.3
4/2	717	717	-	-	-	0.2	0.6	-	0.8	4.1	0.7	0.6	1.3
5/1	649	649	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	757	757	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	868	868	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	868	868	-	-	-	0.5	0.5	-	1.0	4.2	7.0	0.5	7.5
8/1	689	689	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

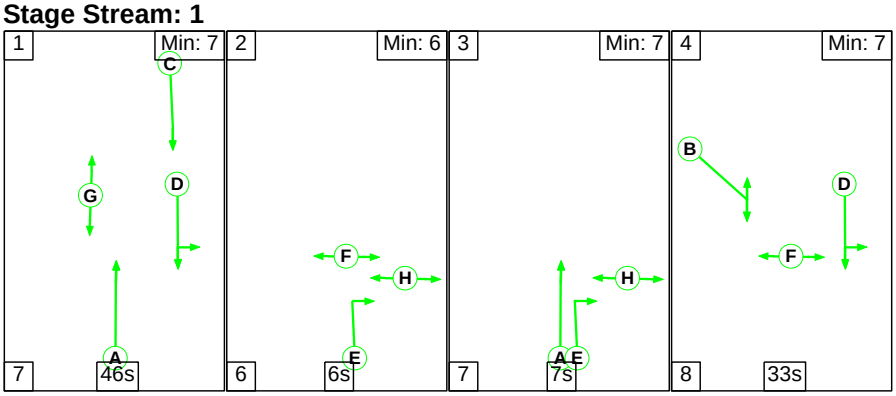
C1 Stream: 1 PRC for Signalled Lanes (%): 6.9 Total Delay for Signalled Lanes (pcuHr): 24.59 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 72.1 Total Delay for Signalled Lanes (pcuHr): 1.02 Cycle Time (s): 120
PRC Over All Lanes (%): 6.9 Total Delay Over All Lanes(pcuHr): 25.61

Full Input Data And Results

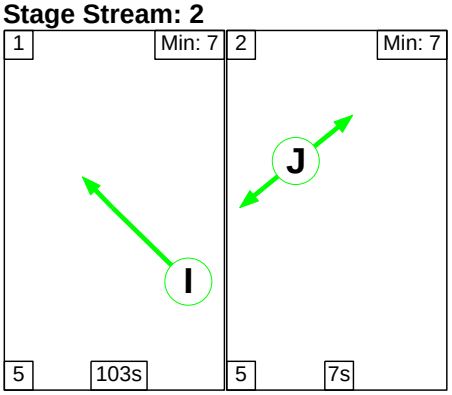
Scenario 7: '2031 DS2 AM' (FG7: '2031 DS2 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

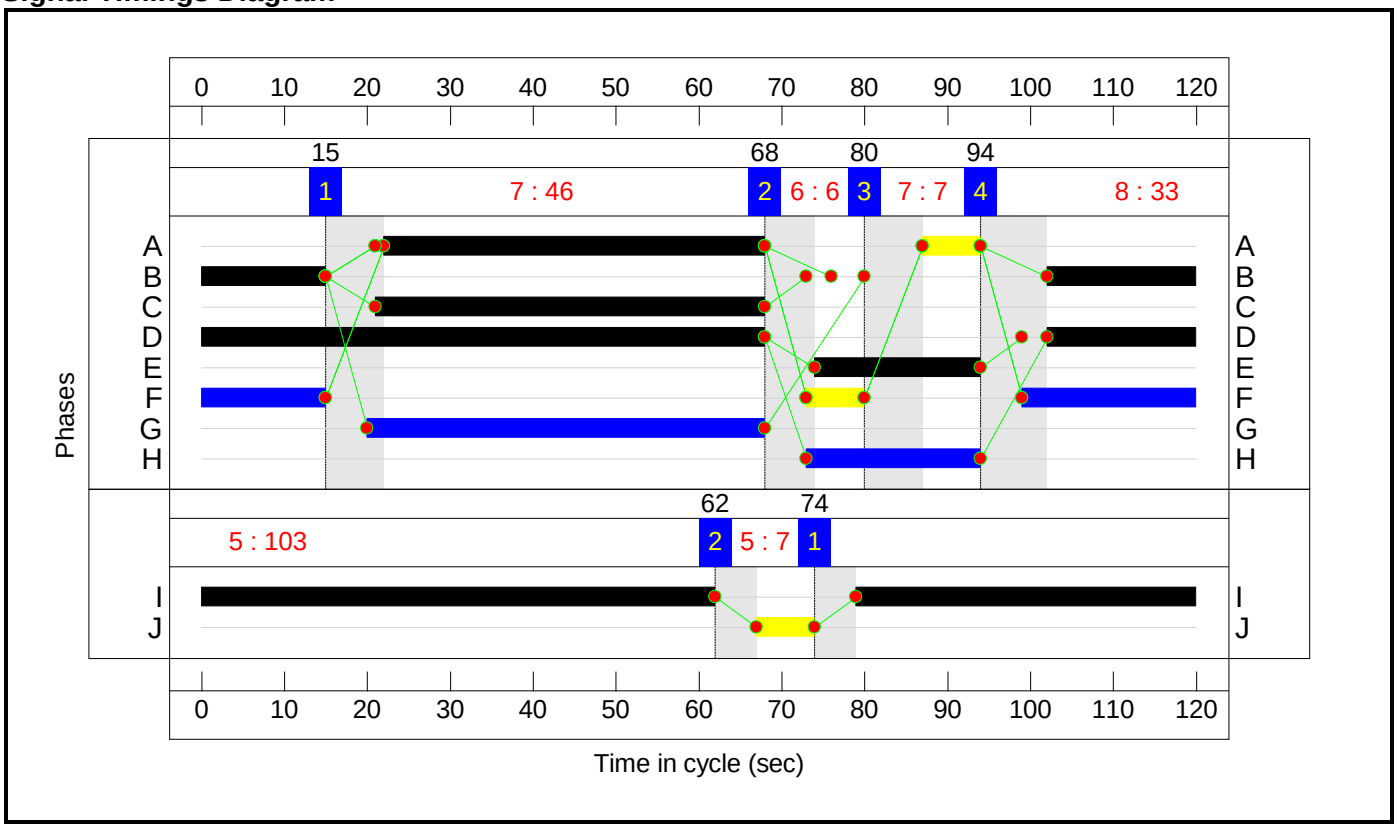
Stage	1	2	3	4
Duration	46	6	7	33
Change Point	15	68	80	94

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	74	62

Full Input Data And Results

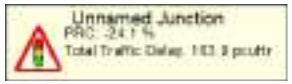
Signal Timings Diagram

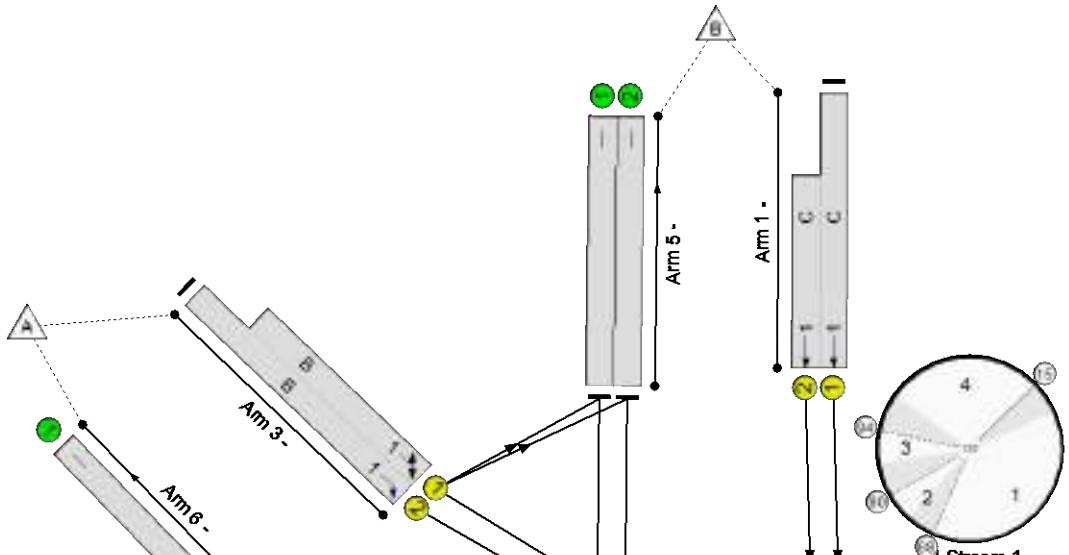


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.7%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.7%**
1/1+1/2	Ahead	U	1	N/A	C		1	47	-	1185	1915:1915	546+525	110.7 : 110.7%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	53	-	1002	1915:1859	663+634	77.3 : 77.3%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	53:20	-	555	1915:1915	878+0	63.2 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	33	-	1000	1874:1860	444+451	111.7 : 111.7%
4/1	Ahead Left	U	1	N/A	D		1	86	-	1053	1915	1388	68.3%
4/2	Ahead	U	1	N/A	D		1	86	-	1077	1915	1388	69.8%
5/1		U	N/A	N/A	-		-	-	-	539	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	583	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	490	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	490	1915	1660	29.5%
8/1		U	N/A	N/A	-		-	-	-	1053	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1077	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	506	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**40.4**	**123.4**	**0.0**	**163.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**40.4**	**123.4**	**0.0**	**163.9**	**-**	**-**	**-**	**-**
1/1+1/2	1185	1071	-	-	-	16.8	61.9	-	78.6	238.8	36.3	61.9	98.1
2/2+2/1	1002	1002	-	-	-	2.0	1.7	-	3.7	13.4	9.1	1.7	10.8
2/3+2/4	555	555	-	-	-	2.3	0.9	-	3.1	20.4	10.2	0.9	11.0
3/2+3/1	1000	896	-	-	-	18.4	56.6	-	75.0	270.0	27.9	56.6	84.5
4/1	948	948	-	-	-	0.4	1.1	-	1.5	5.5	1.5	1.1	2.5
4/2	969	969	-	-	-	0.4	1.1	-	1.5	5.6	1.4	1.1	2.6
5/1	536	536	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	580	580	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	490	490	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	490	490	-	-	-	0.2	0.2	-	0.4	3.0	2.9	0.2	3.1
8/1	948	948	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	969	969	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): -24.1
C1 Stream: 2 PRC for Signalled Lanes (%): 204.8
PRC Over All Lanes (%): -24.1

Total Delay for Signalled Lanes (pcuHr): 163.46
Total Delay for Signalled Lanes (pcuHr): 0.40
Total Delay Over All Lanes(pcuHr): 163.86

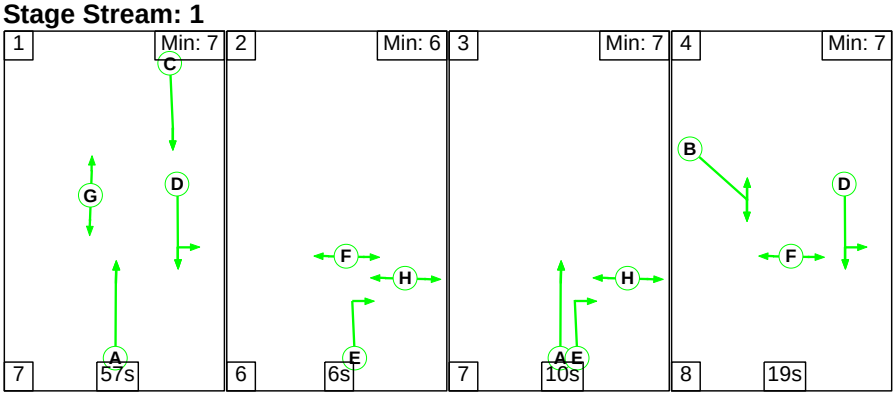
Cycle Time (s): 120
Cycle Time (s): 120

Full Input Data And Results

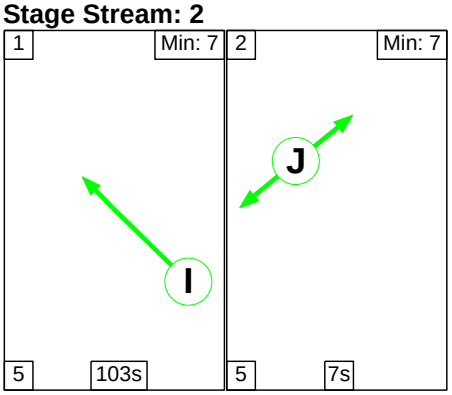
Scenario 8: '2031 DS2 PM' (FG8: '2031 DS2 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

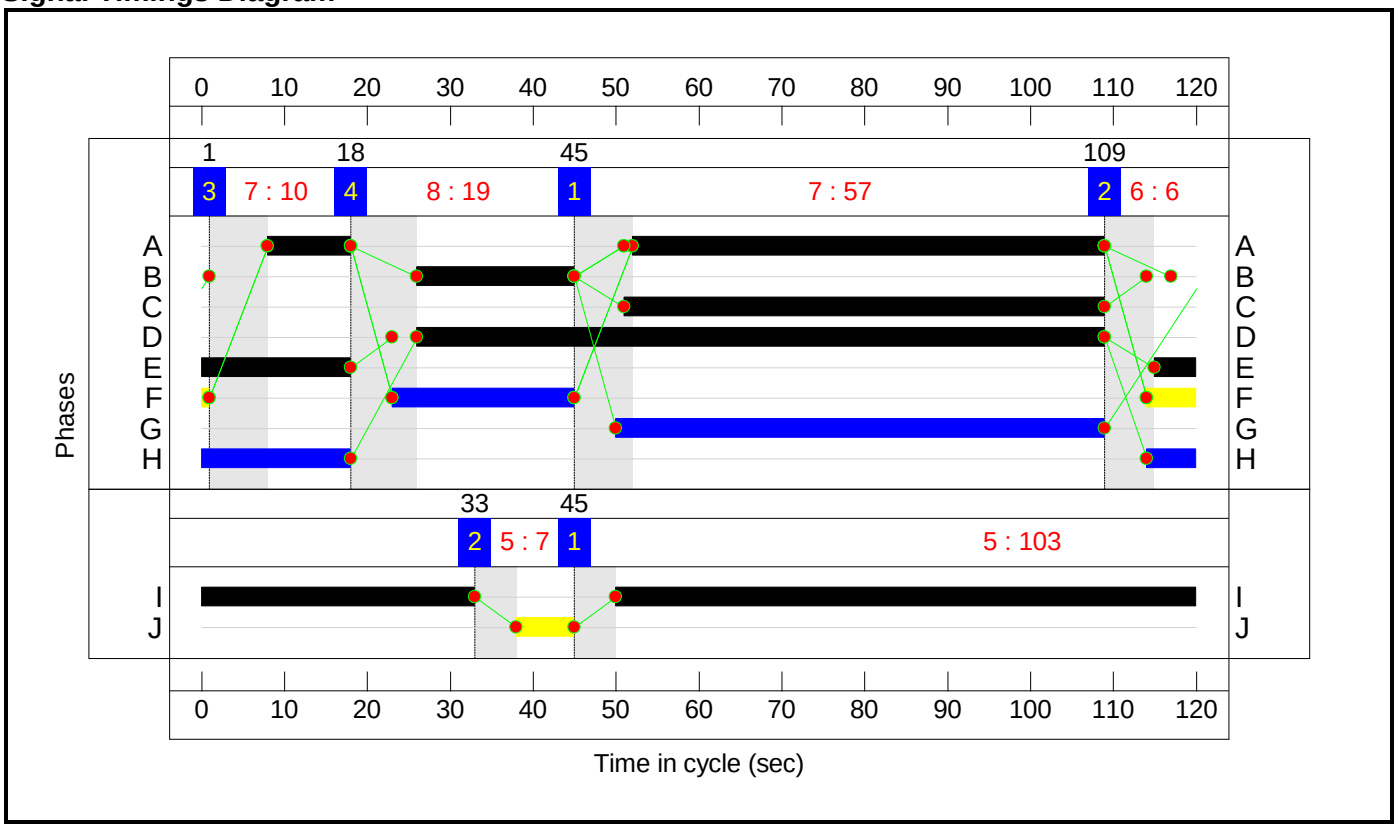
Stage	1	2	3	4
Duration	57	6	10	19
Change Point	45	109	1	18

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	45	33

Full Input Data And Results

Signal Timings Diagram

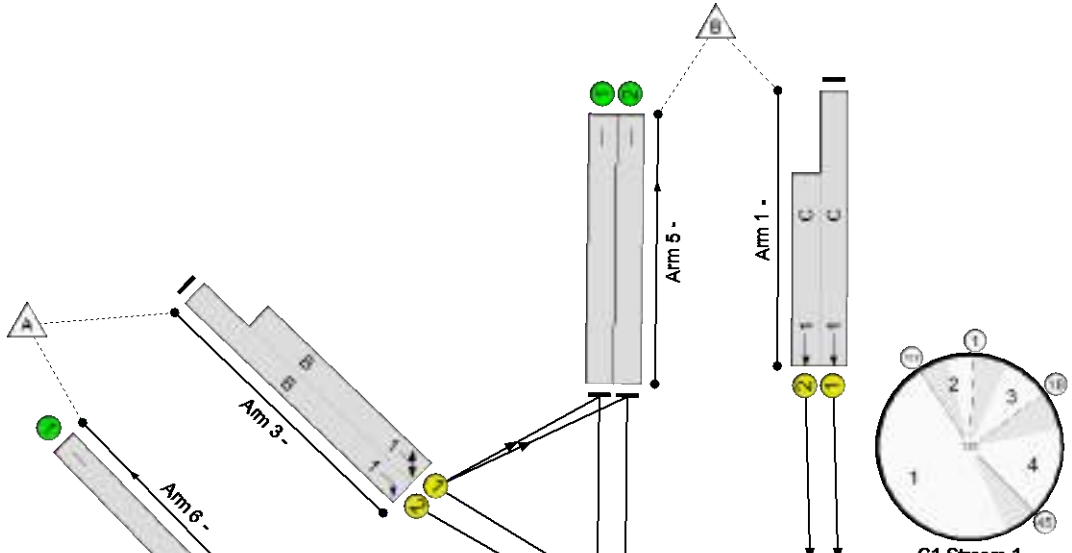


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	58	-	903	1915:1915	634+616	72.3 : 72.3%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	67	-	1459	1915:1859	745+1014	82.9 : 82.9%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	67:23	-	734	1915:1915	1101+0	66.7 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	19	-	509	1874:1842	312+307	81.0 : 83.4%
4/1	Ahead Left	U	1	N/A	D		1	83	-	650	1915	1340	48.5%
4/2	Ahead	U	1	N/A	D		1	83	-	698	1915	1340	52.1%
5/1		U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	841	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	841	1915	1660	50.7%
8/1		U	N/A	N/A	-		-	-	-	650	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	698	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	880	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**16.2**	**8.4**	**0.0**	**24.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**16.2**	**8.4**	**0.0**	**24.6**	**-**	**-**	**-**	**-**
1/1+1/2	903	903	-	-	-	5.1	1.3	-	6.4	25.4	10.2	1.3	11.5
2/2+2/1	1459	1459	-	-	-	1.5	2.4	-	3.9	9.6	8.2	2.4	10.6
2/3+2/4	734	734	-	-	-	2.0	1.0	-	3.0	14.6	10.9	1.0	11.9
3/2+3/1	509	509	-	-	-	6.8	2.2	-	9.0	64.0	8.2	2.2	10.5
4/1	650	650	-	-	-	0.2	0.5	-	0.7	3.7	0.7	0.5	1.2
4/2	698	698	-	-	-	0.2	0.5	-	0.7	3.8	0.7	0.5	1.2
5/1	650	650	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	841	841	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	841	841	-	-	-	0.4	0.5	-	1.0	4.1	6.5	0.5	7.1
8/1	650	650	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	698	698	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

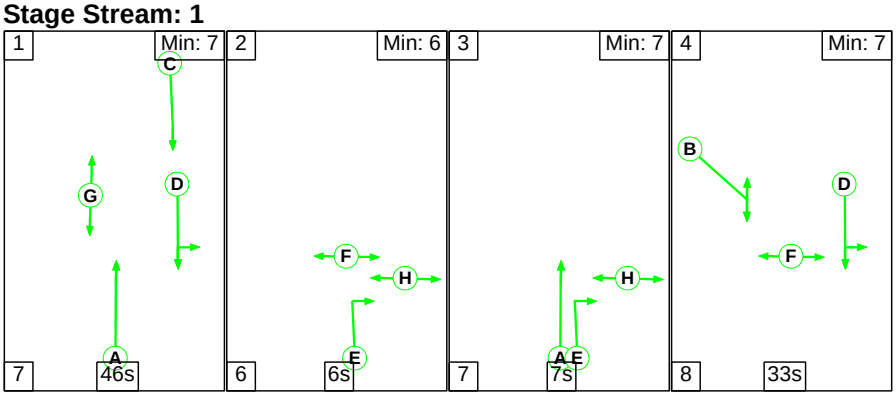
C1 Stream: 1 PRC for Signalled Lanes (%): 7.9 Total Delay for Signalled Lanes (pcuHr): 23.67 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 77.6 Total Delay for Signalled Lanes (pcuHr): 0.96 Cycle Time (s): 120
PRC Over All Lanes (%): 7.9 Total Delay Over All Lanes(pcuHr): 24.63

Full Input Data And Results

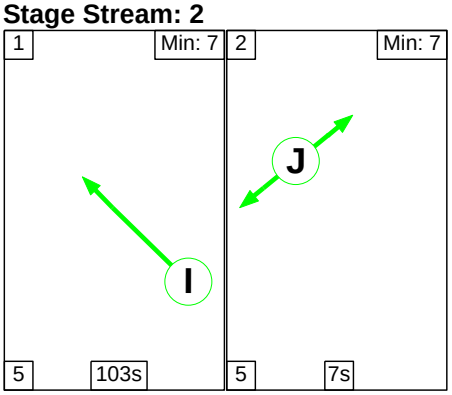
Scenario 9: '2021 DS5 AM' (FG9: '2021 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

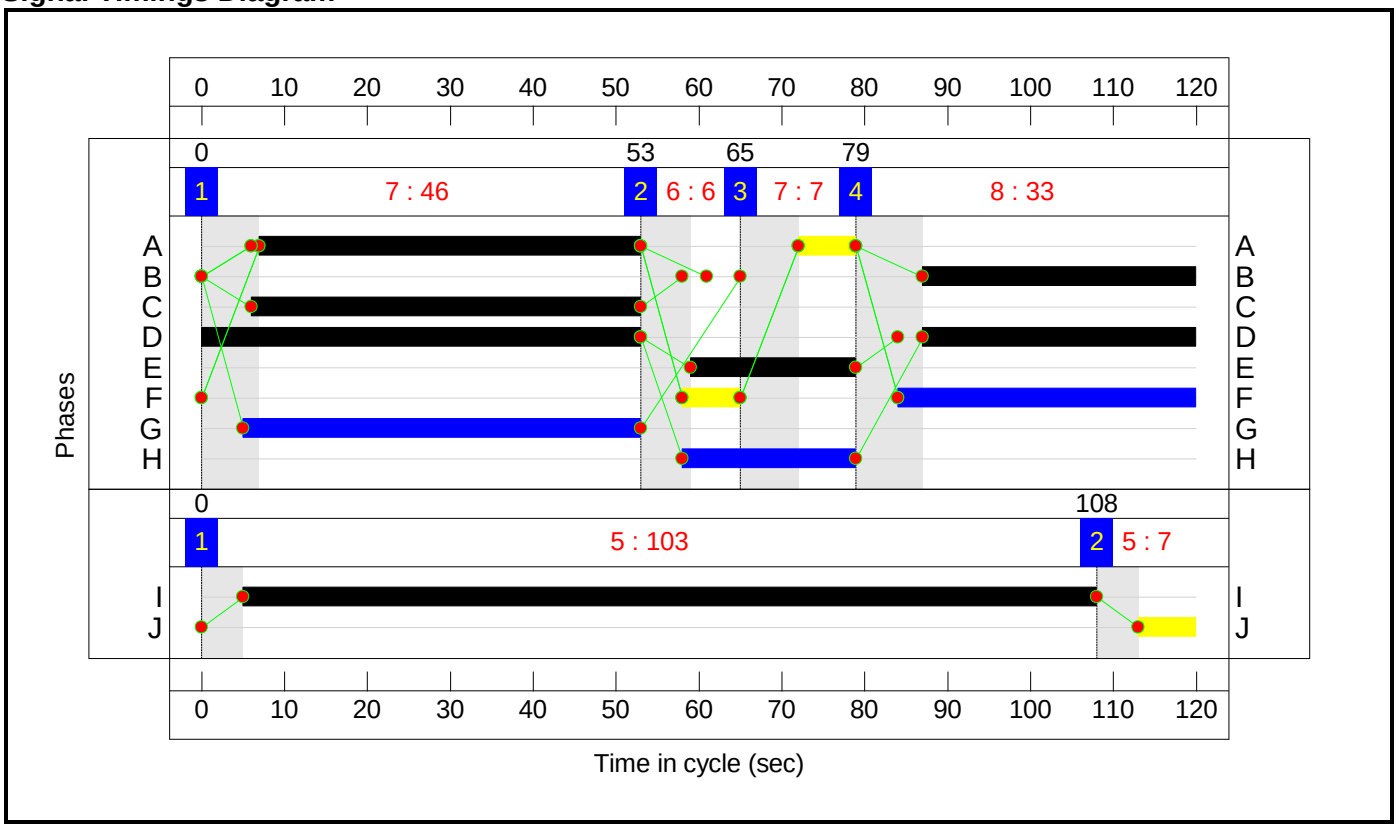
Stage	1	2	3	4
Duration	46	6	7	33
Change Point	0	53	65	79

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	0	108

Full Input Data And Results

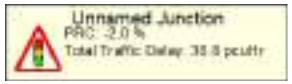
Signal Timings Diagram

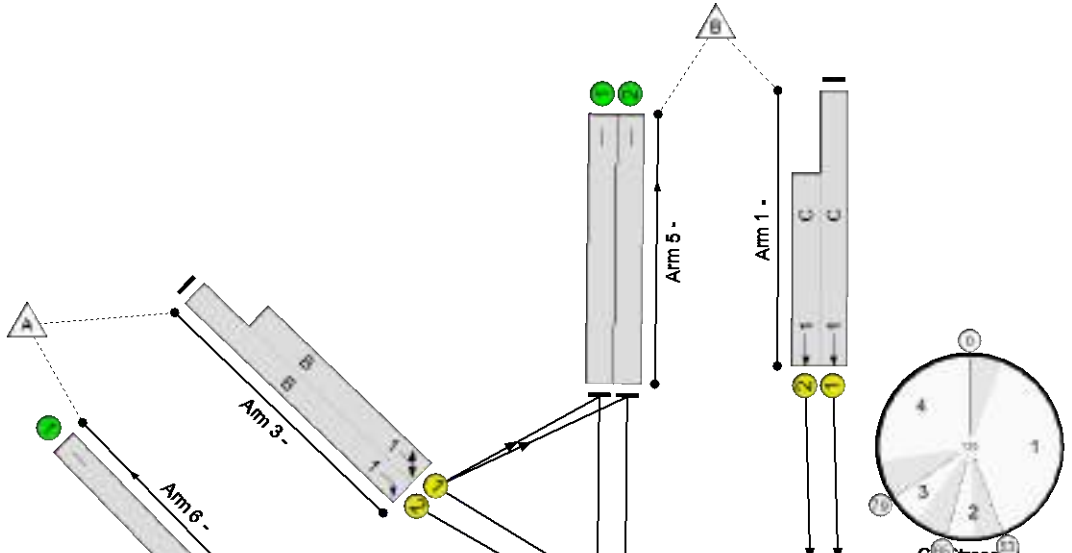


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.8%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.8%**
1/1+1/2	Ahead	U	1	N/A	C		1	47	-	991	1915:1915	542+538	91.8 : 91.8%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	53	-	911	1915:1859	705+458	78.4 : 78.4%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	53:20	-	577	1915:1915	878+0	65.7 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	33	-	822	1874:1861	451+449	91.4 : 91.4%
4/1	Ahead Left	U	1	N/A	D		1	86	-	866	1915	1388	62.4%
4/2	Ahead	U	1	N/A	D		1	86	-	906	1915	1388	65.3%
5/1		U	N/A	N/A	-		-	-	-	572	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	598	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	359	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	359	1915	1660	21.6%
8/1		U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	906	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	524	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.5**	**14.4**	**0.0**	**36.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**22.5**	**14.4**	**0.0**	**36.8**	**-**	**-**	**-**	**-**
1/1+1/2	991	991	-	-	-	8.2	5.0	-	13.2	48.1	19.4	5.0	24.4
2/2+2/1	911	911	-	-	-	2.3	1.8	-	4.1	16.0	10.1	1.8	11.9
2/3+2/4	577	577	-	-	-	2.4	1.0	-	3.4	21.1	10.7	1.0	11.7
3/2+3/1	822	822	-	-	-	9.0	4.7	-	13.7	60.2	13.6	4.7	18.3
4/1	866	866	-	-	-	0.2	0.8	-	1.0	4.2	0.7	0.8	1.6
4/2	906	906	-	-	-	0.2	0.9	-	1.1	4.5	0.7	0.9	1.7
5/1	572	572	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	598	598	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	359	359	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	359	359	-	-	-	0.1	0.1	-	0.3	2.7	1.9	0.1	2.0
8/1	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	906	906	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

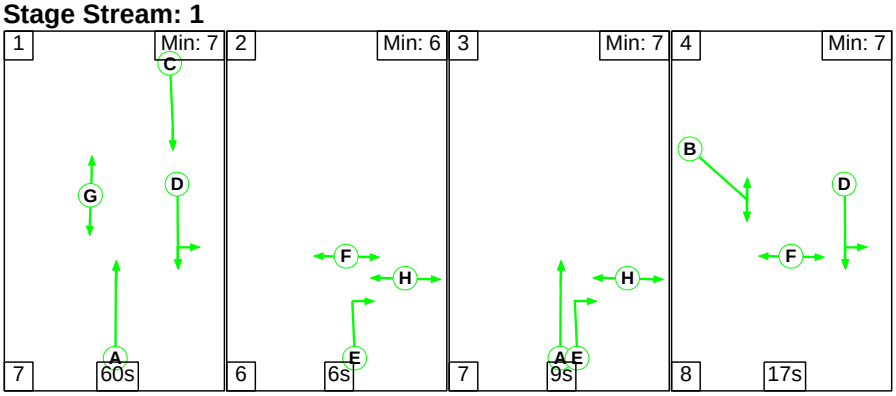
C1 Stream: 1 PRC for Signalled Lanes (%): -2.0 Total Delay for Signalled Lanes (pcuHr): 36.57 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 316.1 Total Delay for Signalled Lanes (pcuHr): 0.27 Cycle Time (s): 120
PRC Over All Lanes (%): -2.0 Total Delay Over All Lanes(pcuHr): 36.84

Full Input Data And Results

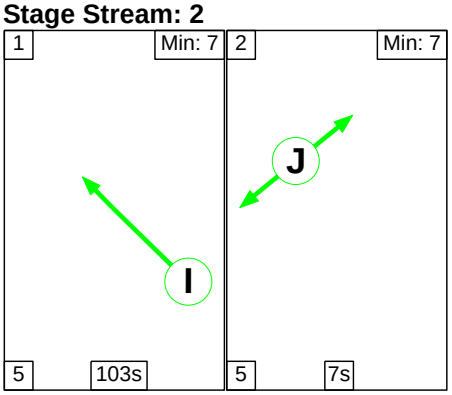
Scenario 10: '2021 DS5 PM' (FG10: '2021 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

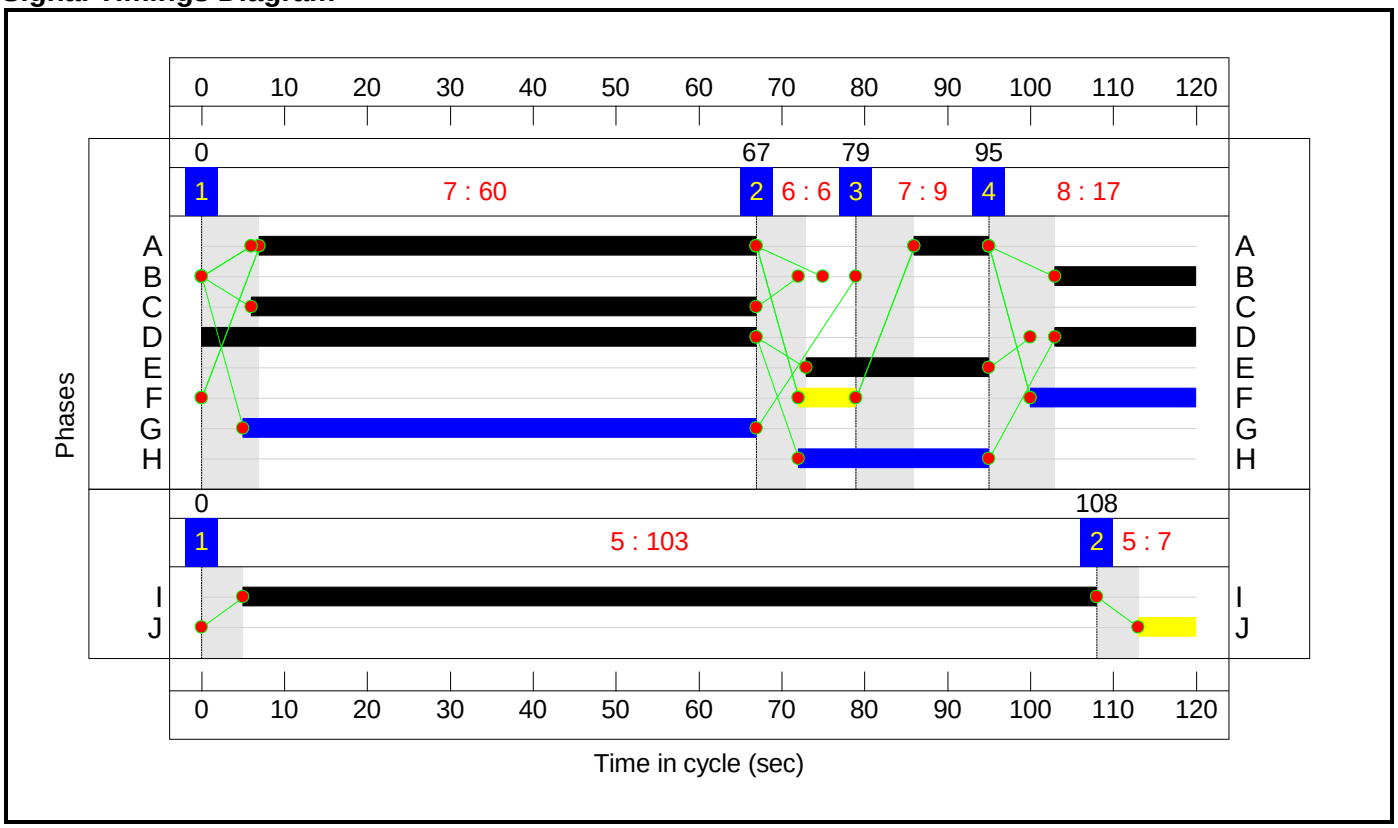
Stage	1	2	3	4
Duration	60	6	9	17
Change Point	0	67	79	95

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	0	108

Full Input Data And Results

Signal Timings Diagram

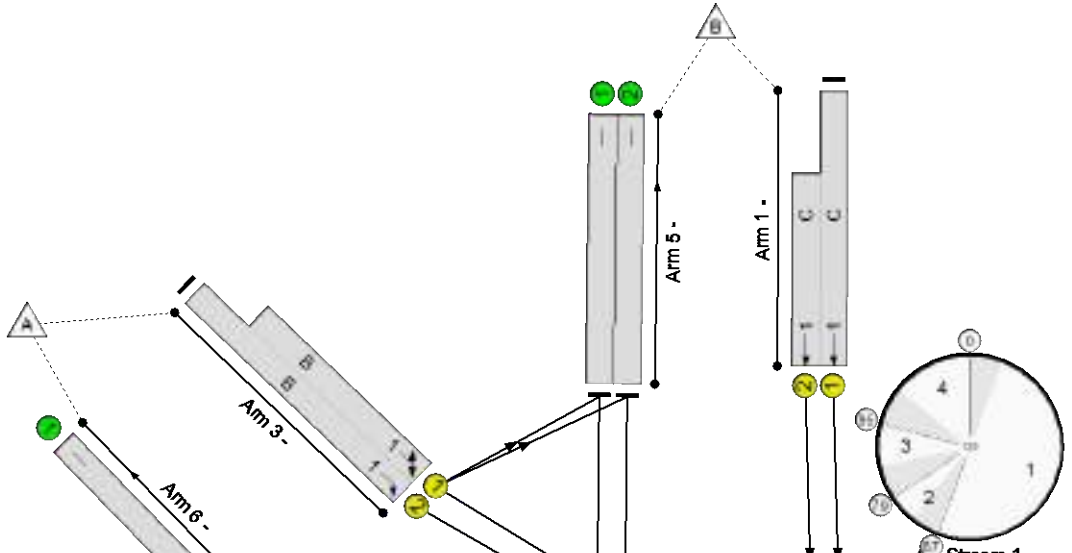


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.8%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.8%**
1/1+1/2	Ahead	U	1	N/A	C		1	61	-	873	1915:1915	656+645	67.1 : 67.1%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	69	-	1405	1915:1859	757+981	80.8 : 80.8%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	69:22	-	688	1915:1915	1133+0	60.7 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	17	-	432	1874:1845	281+277	77.6 : 77.3%
4/1	Ahead Left	U	1	N/A	D		1	84	-	605	1915	1356	44.6%
4/2	Ahead	U	1	N/A	D		1	84	-	651	1915	1356	48.0%
5/1		U	N/A	N/A	-		-	-	-	636	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	713	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	793	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	793	1915	1660	47.8%
8/1		U	N/A	N/A	-		-	-	-	605	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	651	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	582	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**14.0**	**6.9**	**0.0**	**20.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**14.0**	**6.9**	**0.0**	**20.9**	**-**	**-**	**-**	**-**
1/1+1/2	873	873	-	-	-	4.4	1.0	-	5.4	22.3	9.2	1.0	10.2
2/2+2/1	1405	1405	-	-	-	1.3	2.1	-	3.4	8.8	7.7	2.1	9.7
2/3+2/4	688	688	-	-	-	1.6	0.8	-	2.4	12.5	9.2	0.8	10.0
3/2+3/1	432	432	-	-	-	5.9	1.7	-	7.6	63.0	7.0	1.7	8.6
4/1	605	605	-	-	-	0.2	0.4	-	0.6	3.5	0.7	0.4	1.1
4/2	651	651	-	-	-	0.2	0.5	-	0.6	3.5	0.6	0.5	1.1
5/1	636	636	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	713	713	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	793	793	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	793	793	-	-	-	0.4	0.5	-	0.9	3.9	5.9	0.5	6.4
8/1	605	605	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	651	651	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

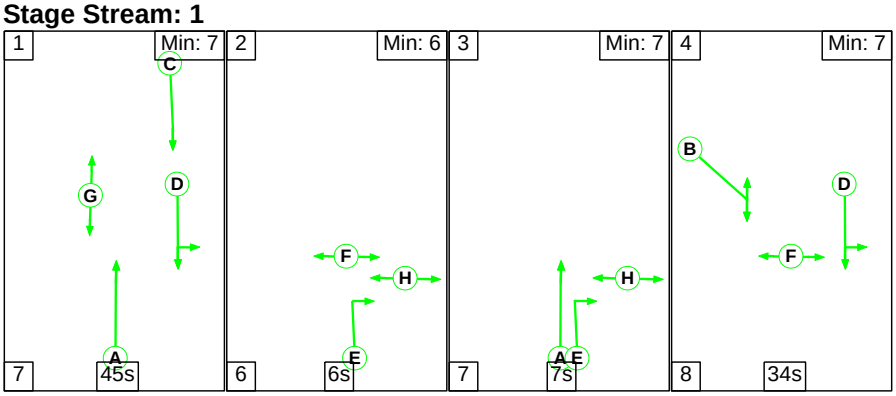
C1	Stream: 1 PRC for Signalled Lanes (%):	11.3	Total Delay for Signalled Lanes (pcuHr):	20.00	Cycle Time (s): 120
C1	Stream: 2 PRC for Signalled Lanes (%):	88.4	Total Delay for Signalled Lanes (pcuHr):	0.86	Cycle Time (s): 120
	PRC Over All Lanes (%):	11.3	Total Delay Over All Lanes(pcuHr):	20.86	

Full Input Data And Results

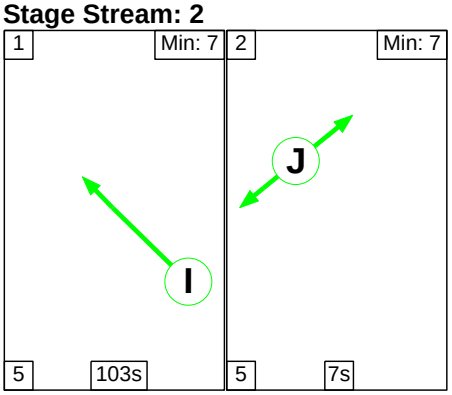
Scenario 11: '2031 DS5 AM' (FG11: '2031 DS5 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

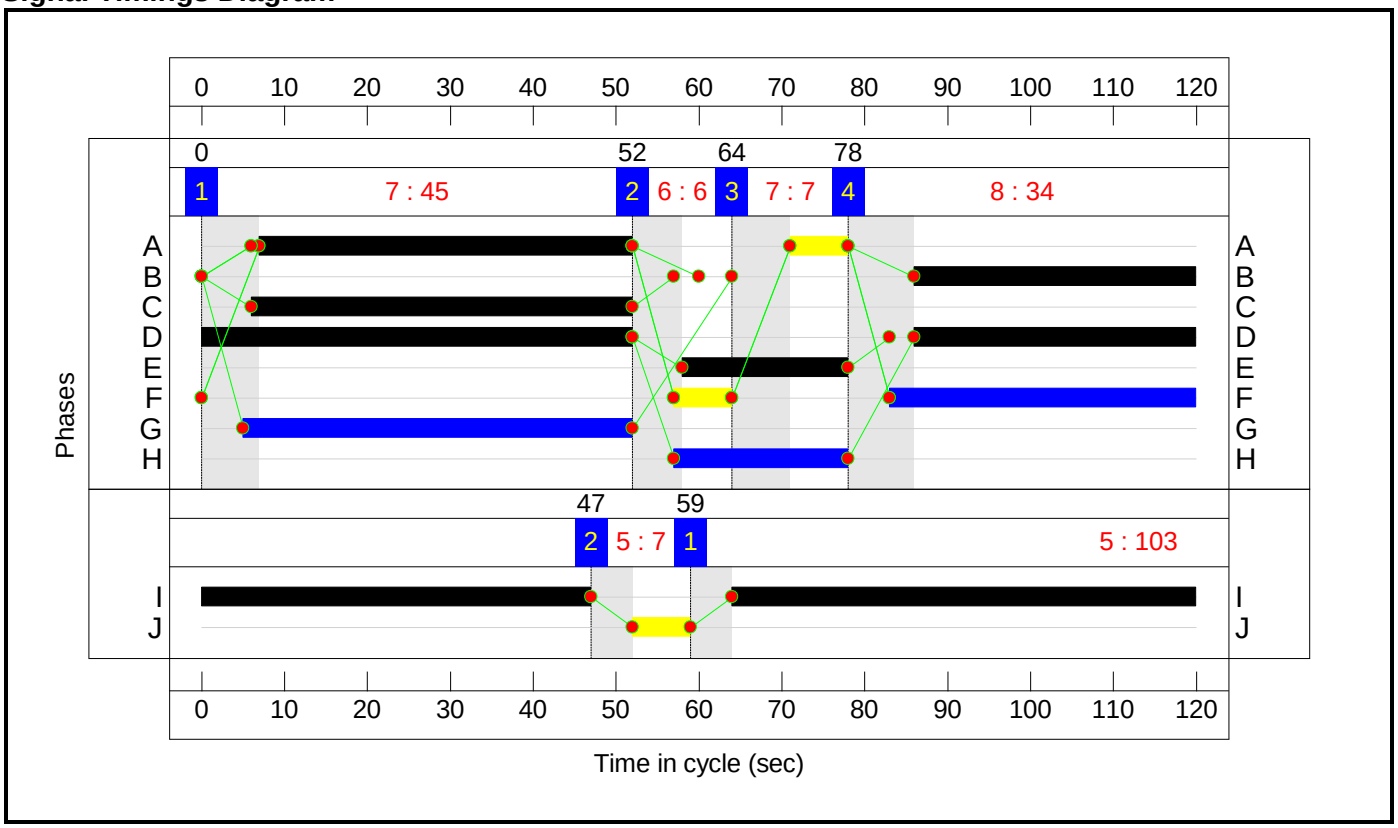
Stage	1	2	3	4
Duration	45	6	7	34
Change Point	0	52	64	78

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	59	47

Full Input Data And Results

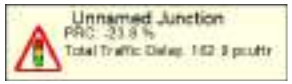
Signal Timings Diagram

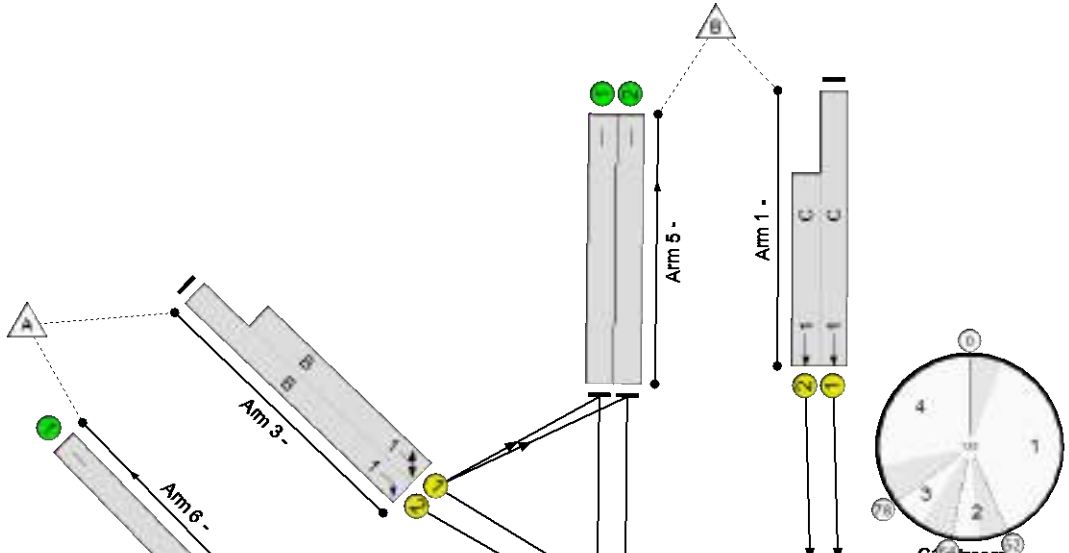


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**111.4%**
1/1+1/2	Ahead	U	1	N/A	C		1	46	-	1178	1915:1915	537+521	111.4 : 111.4%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	52	-	951	1915:1859	676+530	78.9 : 78.9%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	52:20	-	583	1915:1915	862+0	67.7 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	34	-	1010	1874:1864	454+459	110.6 : 110.6%
4/1	Ahead Left	U	1	N/A	D		1	86	-	1065	1915	1388	69.1%
4/2	Ahead	U	1	N/A	D		1	86	-	1082	1915	1388	70.2%
5/1		U	N/A	N/A	-		-	-	-	553	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	604	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	418	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	418	1915	1660	25.2%
8/1		U	N/A	N/A	-		-	-	-	1065	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	1082	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	504	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**39.4**	**123.5**	**0.0**	**162.9**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**39.4**	**123.5**	**0.0**	**162.9**	**-**	**-**	**-**	**-**
1/1+1/2	1178	1057	-	-	-	17.8	64.8	-	82.6	252.4	36.1	64.8	101.0
2/2+2/1	951	951	-	-	-	2.2	1.8	-	4.1	15.5	9.8	1.8	11.6
2/3+2/4	583	583	-	-	-	2.5	1.0	-	3.6	22.2	11.2	1.0	12.2
3/2+3/1	1010	913	-	-	-	16.0	53.3	-	69.3	247.0	25.7	53.3	79.0
4/1	959	959	-	-	-	0.4	1.1	-	1.5	5.6	1.5	1.1	2.6
4/2	974	974	-	-	-	0.4	1.2	-	1.5	5.7	1.4	1.2	2.6
5/1	551	551	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	602	602	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	418	418	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	418	418	-	-	-	0.2	0.2	-	0.3	2.8	2.3	0.2	2.5
8/1	959	959	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	974	974	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

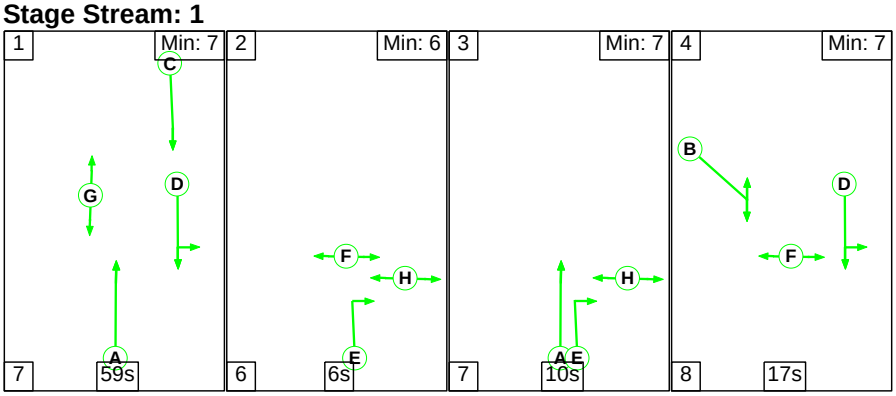
C1 Stream: 1 PRC for Signalled Lanes (%): -23.8 Total Delay for Signalled Lanes (pcuHr): 162.61 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 257.3 Total Delay for Signalled Lanes (pcuHr): 0.33 Cycle Time (s): 120
PRC Over All Lanes (%): -23.8 Total Delay Over All Lanes(pcuHr): 162.94

Full Input Data And Results

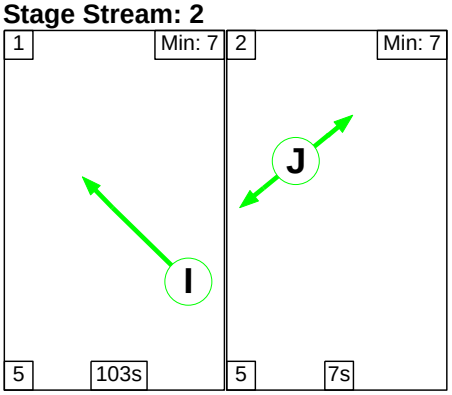
Scenario 12: '2031 DS5 PM' (FG12: '2031 DS5 PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



Stage Stream: 2



Stage Timings

Stage Stream: 1

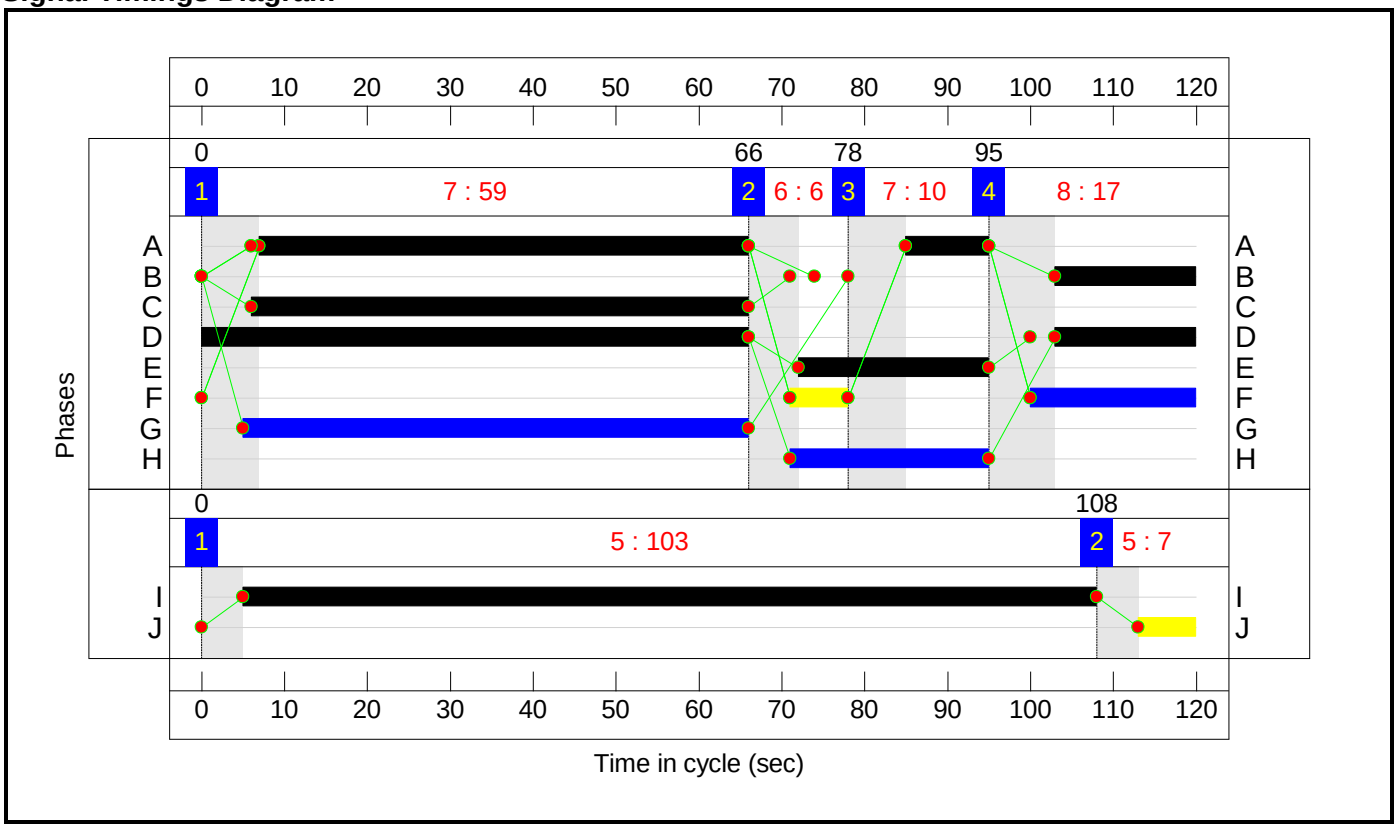
Stage	1	2	3	4
Duration	59	6	10	17
Change Point	0	66	78	95

Stage Stream: 2

Stage	1	2
Duration	103	7
Change Point	0	108

Full Input Data And Results

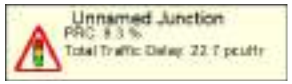
Signal Timings Diagram

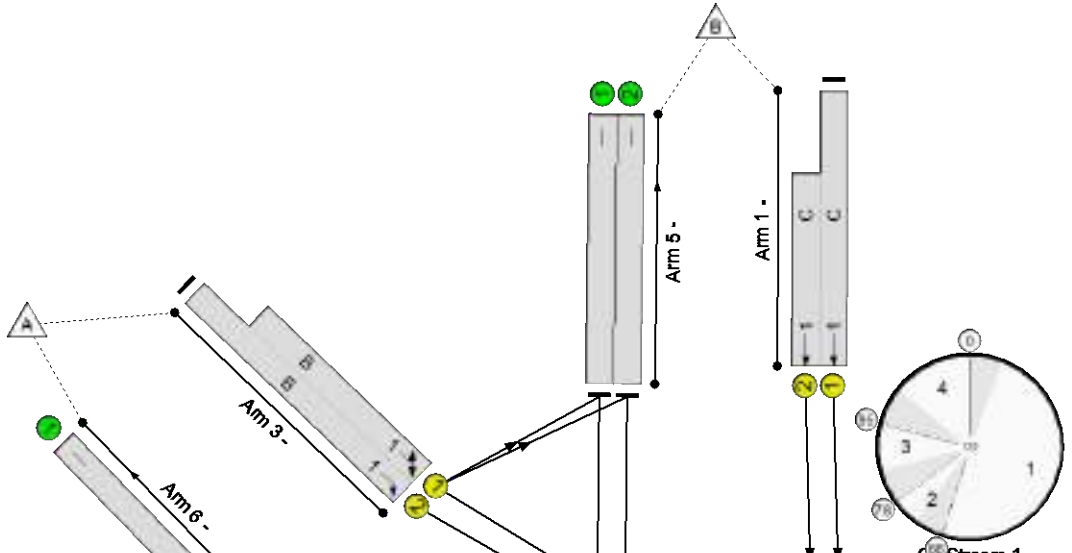


Full Input Data And Results

Network Layout Diagram

Full Input Data And Results





Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.3%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.3%**
1/1+1/2	Ahead	U	1	N/A	C		1	60	-	942	1915:1915	648+637	73.3 : 73.3%
2/2+2/1	Ahead Ahead2	U	1	N/A	A -		2	69	-	1477	1915:1859	758+1036	82.3 : 82.3%
2/3+2/4	Ahead Right	U	1	N/A	A E		2:1	69:23	-	718	1915:1915	1133+0	63.4 : 0.0%
3/2+3/1	Right Left	U	1	N/A	B		1	17	-	436	1874:1844	281+277	78.3 : 78.1%
4/1	Ahead Left	U	1	N/A	D		1	83	-	640	1915	1340	47.7%
4/2	Ahead	U	1	N/A	D		1	83	-	687	1915	1340	51.2%
5/1		U	N/A	N/A	-		-	-	-	649	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	744	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	853	Inf	Inf	0.0%
7/1	Ahead	U	2	N/A	I		1	103	-	853	1915	1660	51.4%
8/1		U	N/A	N/A	-		-	-	-	640	Inf	Inf	0.0%
8/2		U	N/A	N/A	-		-	-	-	687	Inf	Inf	0.0%
9/1	Cranford Road	U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%
10/1	Left	O	N/A	N/A	-		-	-	-	0	2015	574	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**14.9**	**7.8**	**0.0**	**22.7**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**14.9**	**7.8**	**0.0**	**22.7**	**-**	**-**	**-**	**-**
1/1+1/2	942	942	-	-	-	5.0	1.4	-	6.4	24.4	10.3	1.4	11.7
2/2+2/1	1477	1477	-	-	-	1.4	2.3	-	3.7	9.0	7.8	2.3	10.1
2/3+2/4	718	718	-	-	-	1.7	0.9	-	2.6	12.9	9.8	0.9	10.6
3/2+3/1	436	436	-	-	-	5.9	1.7	-	7.7	63.5	7.0	1.7	8.8
4/1	640	640	-	-	-	0.2	0.5	-	0.7	3.7	0.7	0.5	1.2
4/2	687	687	-	-	-	0.2	0.5	-	0.7	3.8	0.7	0.5	1.2
5/1	649	649	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	744	744	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	853	853	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	853	853	-	-	-	0.5	0.5	-	1.0	4.2	6.6	0.5	7.2
8/1	640	640	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/2	687	687	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	0	0	0	0	0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 9.3 Total Delay for Signalled Lanes (pcuHr): 21.71 Cycle Time (s): 120
C1 Stream: 2 PRC for Signalled Lanes (%): 75.1 Total Delay for Signalled Lanes (pcuHr): 0.98 Cycle Time (s): 120
PRC Over All Lanes (%): 9.3 Total Delay Over All Lanes(pcuHr): 22.69