19. Highways and Transportation

Purpose of the Assessment

19.1 This chapter of the PEIR assesses the likely significant effects of the Proposed Development on the environment in respect of highways and transportation.

19.2 The chapter describes:

- The legislative and policy framework;
- A summary of scoping and consultation;
- The study area;
- Baseline surveys and data;
- Baseline conditions;
- Method of assessment;
- Embedded mitigation;
- Assessment of Construction Phase Effects;
- Assessment of Operational Phase Effects;
- Assessment of Decommissioning Phase Effects;
- Cumulative Effects;
- Adaptive Mitigation;
- Residual Effects;
- Monitoring; and
- Limitations and Assumptions.

19.3 This chapter is not intended to be read as a standalone assessment and reference should be made to the other chapters within the PEIR. Potential effects relating to air quality and noise and vibration are considered in **Chapters 9: Air Quality** and **18: Noise and Vibration** respectively.

19.4 This chapter of the PEIR should be read in conjunction with the Transport Assessment (TA), Travel Plan (TP), Construction Traffic Management Plan (CTMP) and Operational Traffic Management Plan (OTMP) which are included at **Appendix 19.1** to **Appendix 19.4** of the PEIR respectively.

19.5 The TA provides further details of the work undertaken to assess the impact of the Proposed Development on the surrounding highway network, taking into account aspects including

operational capacity, road safety and the opportunities for sustainable travel. It also sets out the proposed mitigation to address these impacts. Whilst this chapter of the PEIR provides an overview of this, based on forecast changes in traffic flows, the TA provides a full assessment that gives consideration to other variables. Given the nature of the assessment of transport effects, it is not possible to address effects arising purely from development at the Main Strategic Rail Freight Interchange (SRFI) Site, Junction 15a of the M1 (J15a) and other highway works separately. However, for consistency with the other technical assessments within this PEIR, the chapter is divided into these three aspects of the Proposed Development, with traffic flows at individual arms of each junction assessed. However, the traffic assessed at each junction arises from all development within the Order Limits.

19.6 The assessments contained within this PEIR, and the accompanying TA, are carried out for forecast baseline years of 2021 and 2031. 2021 comprises the anticipated opening year of the Proposed Development, whilst 2031 comprises the end of the plan period for the West Northamptonshire Joint Core Strategy, and the Proposed Development is anticipated to be fully built out by this point. Further details of the method of assessment are included later within this chapter.

19.7 The rail freight strategy is considered in a separate report (**Appendix 8.1** in **Chapter 8: Rail**). However, the relationship between road and rail is an important consideration for the purpose of this assessment because the SRFI will provide the infrastructure to move road-based freight onto the rail network. The number of Heavy Goods Vehicle (HGV) movements accessing the site is therefore a key consideration.

Legislative and Policy Framework and Best Practice

19.8 A summary of the legislation and policies of relevance to the Proposed Development are contained within **Chapter 6** of this PEIR.

19.9 The assessment has been carried out in accordance with the principles contained within the policies, best practice standards and guidance set out in **Table 19.1**.

Table 19.1: Relevant legislation and policy and guidance

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
National Networks National Policy Statement (NN NPS) (Ref 19.1)		
2.2	There is a critical need to improve the national networks to address road congestion and crowding on the railways to provide safe, expeditious and resilient networks that better support social and economic activity; and to provide a transport network that is capable of simulating and supporting economic growth.	The Proposed Development will improve national networks by removing freight traffic on the wider highway network and support a safer, more expeditious and resilient way to move freight. This in turn will better support social and economic activity and enhance the wider transport network.
2.6	There is a need for development on the national networks to support	This is addressed at **Chapter 20: Socioeconomics** of the PEIR.

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	national and local economic growth and regeneration.	
2.8	There is a need to improve the integration between the transport modes, including the linkages to ports and airports. Improved integration can reduce end-to-end journey times and provide users of the networks with a wider range of transport choices.	The main premise of the Proposed Development is to improve the integration between the transport modes (rail and road). This improved integration will reduce end-to-end journey times and provide freight operators and distributors a wider range of transport choices.
2.29	In the context of the Government's vision for the transport system as a driver of economic growth and social development, the railway must….. Provide for the transport of freight across the country, and to and from ports, in order to help meet environmental goals and improve quality of life	The Proposed Development will provide a new facility for the transport of freight across the country, utilising the railway to provide new connections to ports, helping to meet environmental goals and therefore improving quality of life.
2.40	The Government seeks to accommodate an increase in rail travel and rail freight where it is practical and affordable by providing extra capacity.	The main premise of the Proposed Development is to increase the use of rail freight in a strategically suitable location. This is addressed further in Chapter 8 of the PEIR.
2.47	A network of SRFIs is a key element in aiding the transfer of freight from road to rail, supporting sustainable distribution and rail freight growth and meeting the changing needs of the logistics industry, especially the ports and retail sector. SRFIs also play an important role in reducing trip mileage of freight movements on the national and local road networks.	The Proposed Development will aid the transfer of freight from road to rail, supporting sustainable distribution and rail freight growth and meeting the changing needs of the logistics industry, especially the ports and retail sector. The development will also play an important role in reducing trip mileage of freight movements on the national and local road networks.
2.50	New rail freight interchanges, especially in areas poorly served by such facilities at present, are likely to attract substantial business, generally new to rail.	This is addressed at **Chapter 20: Socioeconomics** of the PEIR.
2.51	For development such as SRFIs, it is likely that there will be local impacts in terms of land use and increased road and rail movements, and it is	The local impacts of road movements associated with the Proposed Development has been addressed throughout this chapter and in

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	important for the environmental impacts at these locations to be minimised.	chapters 8 and 9 of the Transport Assessment at Appendix 19.1. The environmental impacts of the increased traffic flow (in terms of safety implications, severance etc.) have been minimised as addressed in the Residual Impacts assessment of this chapter.
2.53	The Government's vision for transport is for a low carbon sustainable transport system that is an engine for economic growth, but is also safer and improves the quality of life in our communities. The Government therefore believes it is important to facilitate the development of the intermodal rail freight industry. The transfer of freight from road to rail has an important part to play in a low carbon economy and in helping to address climate change.	The Proposed Development will facilitate the development of the intermodal rail freight industry. Further information on air quality is provided at **Chapter 9: Air Quality** and the carbon benefits in **Chapter 23: Climate Change Mitigation & Adaptation.**
Table 4	Modal shift to rail [therefore] needs to be encouraged.	It is considered that the Proposed Development will inherently encourage a shift to rail.
2.56	It is important that SRFIs are located near the business markets they will serve – major urban centres, or groups of centres – and are linked to key supply chain routes.	This is addressed at Chapter 20 of the PEIR.
3.10	Scheme promoters are expected to take opportunities to improve road safety, including introducing the most modern and effective safety measures where proportionate.	Road safety is addressed throughout this chapter and in **Table 19.48**. Further information on road safety is provided at chapter 4 of the TA.
3.17	The Government expects applicants to use reasonable endeavours to address the needs of cyclists and pedestrians in the design of new schemes. The Government also expects applicants to identify opportunities to invest in infrastructure in locations where the national road network severs	The Proposed Development will include for mitigation to encourage the update of walking and cycling through the provision of appropriate infrastructure and mitigation. This is explained in further detail throughout this chapter and in **Table 19.47**. Further information is also provided in **Appendix 19.1** (TA) and **19.2** (FTP).

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	communities and acts as a barrier to cycling and walking, by correcting historic problems, retrofitting the latest solutions and ensuring that it is easy and safe for cyclist to use junctions.	
3.20	The Government expects applicants to improve access, wherever possible, on and around the national networks by designing and delivering schemes that take account of the accessibility requirements of all those who use, or are affected by, national networks infrastructure, including disabled users.	The Proposed Development will include mitigation to encourage the uptake of walking and cycling through the provision of appropriate infrastructure and mitigation. This is explained in throughout this chapter and in **Table 19.47**. Further information is also provided in **Appendix 19.1** (TA) and **19.2** (FTP).
3.22	Severance can be a problem in some locations. Where appropriate, applicants should seek to deliver improvements that reduce community severance and improve accessibility.	Severance has been addressed throughout this chapter and within the assessment for each area of the Proposed Development.
4.16	When considering significant cumulative effects, any environmental statement should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been granted, as well as those already in existence).	The traffic associated with the cumulative sites suggested by South Northamptonshire Council (SNC) in their Scoping Response are included within the NSTM assessments. The cumulative effect has therefore already considered throughout chapter and in Appendix 19.1 (TA).
4.43	The applicant should demonstrate that there are no critical features of the design of new national networks infrastructure which may be seriously affected by more radical changes to the climate beyond that projected in the latest set of UK climate projections.	Further information is provided at **Chapter 9: Air Quality** and **Chapter 23: Climate Change Mitigation & Adaptation.** of the PEIR.
4.61	The applicant should undertake an objective assessment of the impact of the proposed development on safety including the impact of any mitigation	A review of the impact of the proposed development on safety including the impact of any mitigation measures is addressed throughout this chapter and

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	measures. This should use the methodology outlined in the guidance from DfT (WebTAG) and from the Highways Agency.	in **Appendix 19.1** (TA).
4.62	They should also put in place arrangements for undertaking the road safety audit process.	Road safety audits will be undertaken in advance of the DCO submission, and any issues raised will be addressed within the final scheme designs.
4.64	The applicant should be able to demonstrate that their scheme is consistent with the Highways Agency's Safety Framework for the Strategic Road Network and with the national Strategic Framework for Road Safety.	Road safety audits and Walking, Cycling and Horse Riding Assessments will be undertaken in advance of the DCO submission, to meet the requirements of the Safety Framework for the Strategic Road Network. A further review of accidents and safety is addressed throughout this chapter and in **Appendix 19.1** (TA).
4.71	The SoS should expect the safety assessment to have considered the safety implications during the construction, commissioning and operational phases of the development (safety on the railways)	A review of accidents and safety throughout the various stages of the development has been addressed within this chapter and in **Appendix 19.1** (TA).
4.84	Because the vast majority of freight on the UK is moved by road, proposed new rail fright interchanges should have good road access as this will allow rail to effectively compete with, and work alongside, road freight to achieve a modal shift to rail.	The Proposed Development provides strategic access to the motorway and trunk road network via the A43(T), M1 and M40.
4.89	As a minimum, a SRFI should be capable of handling four trains per day and, where possible, be capable of increasing the number of trains handled. SRFIs should, where possible, have the capability to handle 775 metre trains with appropriately configured on-site infrastructure and layout. This should seek to minimise the need for on-site rail shunting and provide for a configuration which, ideally, will	Further information is provided at **Chapter 8: Rail** and its associated **Appendix 8.1** of the PEIR.

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	allow main line access for trains from either direction.	
5.83	Where the development is subject to an Environmental Impact Assessment, the applicant should assess any likely significant effects on amenity from emissions of odour, dust, steam, smoke and artificial light and describe these in the Environmental Statement.	The environmental impacts of road traffic has been assessed within this chapter and in relation to air quality and lighting at **Chapters 9: Air Quality** and **21: Lighting** respectively.
5.203	Applicant should have regard to the policies set out in local plans, for example, polices on demand management being undertaken at the local level.	Policies set out in local plans and how the proposed development relates to these policies has been considered within **Table 19.1** and **Appendix 19.1** (TA).
5.204	Applicants should consult the relevant highway authority, and local planning authority, as appropriate, on the assessment of transport impacts.	Highways England (HE) and Northamptonshire County Council (NCC) have been consulted on the assessment of transport impacts and is addressed throughout this chapter and **Appendix 19.1** (TA).
5.205	Applicants should consider reasonable opportunities to support other transport modes ….. the applicant should provide evidence that as part of the project they have used reasonable endeavours to address any existing severance issues that act as a barrier to non-motorised travel.	The Proposed Development will inherently support other transport modes by supporting the intermodal transport of freight. In addition the Public Transport Strategy and Framework Travel Plan seek to support the uptake of sustainable modes of transport. This has been addressed throughout this chapter at **Appendix 19.1** (TA) and **Appendix 19.2** (FTP).
5.207	If a project is likely to have significant transport impacts it should include a Transport Assessment using the WebTAG methodology stipulated in Department for Transport guidance, or any successor to such methodology. If a development is subject to EIA and is likely to have significant environmental impacts arising from impacts on transport networks, the applicant's environmental statement should	Transport modelling work has been carried out in accordance with WebTAG guidance and the methodology agreed as appropriate with HE and NCC. Further details are contained within this chapter and in Chapter 5 of the TA at **Appendix 19.1**.

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	describe those impacts.	
5.208	Where appropriate, the applicant should prepare a travel plan including management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport and sustainable modes where relevant, to reduce the need for any parking associate with the proposal and to mitigate transport impacts.	A Framework Travel Plan is provided at **Appendix 19.2**, and the development is also supported by a public transport strategy and pedestrian and cycle improvements to seek to encourage sustainable modes of transport, as set out in the Transport Assessment at **Appendix 19.1**.
5.209	For schemes impacting on the Strategic Road Network, applicants should have regard to DfT Circular 02/2013 *The Strategic Road Network and the delivery of sustainable development* (or prevailing policy)	Transport modelling work has been carried out in accordance with the Circular and the methodology agreed as appropriate with HE, as set out in the Transport Assessment at **Appendix 19.1**.
5.215	Mitigation measures for schemes should be proportionate and reasonable, focussed on promoting sustainable development.	The Proposed Development includes J15a and Other Highway Works schemes that are proportionate and reasonable to mitigate the impact of the Main SRFI Site, and include public transport and pedestrian and cycle improvements to encourage sustainable transport. The schemes are set out within this chapter and in **Appendix 19.1** (TA).
5.216	Where development would worsen accessibility such impacts should be mitigated so far as reasonably possible. There is a very strong expectation that impacts on accessibility for non-motorised users should be mitigated.	Existing public rights of way that cross the site will be diverted and additional pedestrian and cycle infrastructure is proposed as part of the development to improve accessibility for non-motorised users. This is set out in further detail within this chapter and in **Appendix 19.1** (TA).
National Planning Policy Framework (NPPF) (Ref 19.2)		
14	Presumption in favour of sustainable development.	The accessibility of the Proposed Development is assessed within this chapter and in **Appendix 19.1** (TA), and measures to encourage sustainable transport are set out in the Framework Travel Plan at **Appendix 19.2**.

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
17	Planning should….actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable.	The accessibility of the site is assessed within this chapter and in **Appendix 19.1** (TA), and measures to encourage sustainable transport are set out in the Framework Travel Plan at **Appendix 19.2**.
29	Smarter use of technologies can reduce the need to travel. The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel.	Measures to encourage sustainable travel are set out in **Appendix 19.2** (FTP).
30	Encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion.	The Proposed Development includes Junction improvement schemes, as set out in this chapter and **Chapter 5: The Proposed Development**, in order to mitigate the impact of the Main SRFI Site on the junction operation. In addition, the Framework Travel Plan at **Appendix 19.2** includes measures to encourage sustainable modes of transport and therefore reduce greenhouse gas emissions.
32	All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment.	A Transport Assessment (**Appendix 19.1**) and Framework Travel Plan have been prepared (**Appendix 19.2**).
32	Plans should take account of whether: The opportunities for sustainable transport modes have been taken depending on the nature and location of the site, to reduce the need for major transport infrastructure; Safe and suitable access to the site can be achieved for all people; and Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be refused on transport grounds where the	A Framework Travel Plan has been prepared (**Appendix 19.2**) which includes measures to encourage sustainable modes of transport. The proposed access points to the site for all modes of travel are set out in detail within the Transport Assessment (**Appendix 19.1**). Junction improvement schemes have been developed within the Proposed Development to mitigate the impact of the Main SRFI Site and ensure that the residual cumulative impacts are not severe. These are set out within this chapter and in the Transport

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	residual cumulative impacts of development are severe.	Assessment.
34	Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable modes can be maximised. However, this needs to take account of policies set out elsewhere in the Framework, particularly in rural area.	With consideration of the site's location, the Framework Travel Plan at **Appendix 19.2** provides measures to maximise the use of sustainable modes of transport.
35	Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to accommodate the efficient delivery of goods and supplies; give priority to pedestrian and cycle movements, and have access to high quality public transport facilities; create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones; incorporate facilities for charging plug-in and other ultra-low emission vehicles; and consider the needs of people with disabilities by all modes of transport	A Framework Travel Plan has been prepared (**Appendix 19.2)** which includes measures to encourage use of sustainable modes of transport to access the site. Also, the nature of the development inherently encourages the use of rail freight as opposed to road freight for the movement of goods.
36	All developments which generate significant amounts of movements should be required to provide a Travel Plan.	A Framework Travel Plan is included at **Appendix 19.2.**
IEA Guidelines for the Environmental Assessment of Road Traffic (Ref 19.4)		
1.11	The Guidelines are intended to complement professional judgement and the experience of trained assessors. The environmental impact	The environmental impact of the Proposed Development in terms of traffic impact has been assessed throughout this chapter by experienced

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	of traffic will vary project by project and case by case. The experience of and expertise of the assessor will remain of prime importance in conducting an environmental assessment.	transport professionals.
1.16	The Environmental Statement should be a detailed statement of the significant effects of how the final design for the development will interact with the environment.	The effects of the Proposed Development are assessed within this chapter, with an assessment of how the final design, allowing for the proposed mitigation, will interact with the environment contained in the Residual Effects section.
2.5	At an early stage, it is useful to identify particular groups or locations which may be sensitive to changes in traffic conditions.	Locations where assessment of the transport impact has been required were discussed and agreed with HE and NCC. The agreed study area is set out within the Study Area section of this chapter, and within the Transport Assessment at **Appendix 19.1**.
2.6	In drawing up a list of key interests, it is recommended that the assessor should consult widely with the Local Planning and Highway/Road authorities, representative bodies and affected groups.	The study area has been agreed as appropriate with HE and NCC (Scoping and Consultation).
2.8	In preparing an Environmental Statement it is considered that the documentation should enable significantly affected people, parties or interests to be able to identify the "worst" (i.e. greatest change / highest impact) environmental impact that might reasonably be expected, in addition to how they would be affected by the average or typical condition.	The effects of the Proposed Development are assessed within this chapter, including an assessment of the impact on a range of sensitive receptors.
2.9	The Environmental Statement should indicate how frequently the "worst" conditions are likely to occur, and be locationally defined and be specific in terms of effect.	The effects of the Proposed Development are assessed within this chapter, and this accounts for the duration of effect, as set out in the Method of Assessment section.
3.4	The assessment of the environmental	These stages have been applied in

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
	impacts of traffic requires a number of stages, namely: determination of existing and forecast traffic levels and characteristics determining the time period suitable for assessment determining the year of assessment identifying the geographical boundaries of assessment.	assessing the environmental impacts of traffic, as set out within this chapter.
3.6	The traffic impact assessment should produce estimates, not only of the traffic being attracted to the development, but also the projection of traffic volumes along key routes leading to the site. Estimates of HGV movements should be provided separately.	These are provided within this chapter and in the Transport Assessment at **Appendix 19.1**.
3.13	It is recommended that the environmental assessment should be undertaken at the year of opening of the development or the first full year of its operation.	The environmental assessment is carried out for design years of 2021 (Opening Year) and 2031 (End of Plan Period). This is set out in further detail within this chapter and at **Appendix 19.1** (TA).
3.14	An important prerequisite of the environmental assessment is to determine the geographical boundaries of the assessment.	Locations where assessment of the transport impact has been required were discussed and agreed with HE and NCC (Scoping and Consultation section). The agreed study area is set out within the Study Area section of this chapter, and within the Transport Assessment at **Appendix 19.1**.
4.3	The assessment will need to determine both the change in magnitude of the impacts as well as their absolute levels. Detailed environmental impact studies will normally only be triggered were road links experience a change in traffic of greater than 30%.	Impact magnitudes and detailed environmental impact assessments are included within this chapter.
Design Manual for Roads and	Requirements and advice relating to works on motorway and all-purpose trunk roads. It covers a number of	This has been applied in the design of J15a works, and other highway works which are set out in the embedded

Legislation / policy / guidance	Key provision	How key provision is addressed/ relevant section of chapter where key provisions are addressed
Bridges (DMRB)	topics, such as: a) technical and other procedures and methods to be employed; b) analytical criteria to be used; c) appraisal and assessment requirements; d) dimensional requirements; and e) numerical and statistical data.	mitigation section of this chapter, and in the TA at **Appendix 19.1**, and in **Chapter 3: Reasonable Alternatives**.
DfT Guidance on Transport Assessment	To reduce the need to travel, especially by car	The accessibility of the site for all modes of travel is assessed within this chapter and in **Appendix 19.1** (TA), and measures to encourage sustainable transport are set out in the Framework Travel Plan at **Appendix 19.2**.
Northamptonshire Transportation Plan	To make the area more sustainable by reducing carbon emissions and encouraging the use of more sustainable transport that is relatively fast and accessible to everyone	A Framework Travel Plan has been prepared (**Appendix 19.2**) which includes measures to encourage use of sustainable modes of transport to access the site.
West Northamptonshire Joint Core Strategy Local Plan (Part 1)	Identifies specific locations for transport infrastructure and ensuring that new developments are well connected by public transport, walking and cycling. Development is required to mitigate its effects on the highway network and be supported by a Transport Assessment and Travel Plan.	A Framework Travel Plan has been prepared (**Appendix 19.2**) which includes measures to encourage sustainable modes of transport. The Proposed Development includes Junction improvement schemes developed to mitigate the impact of the Main SRFI Site and ensure that the residual cumulative impacts are not severe. These are set out within this chapter and in the Transport Assessment at **Appendix 19.1**.
The Strategic Road Network and the Delivery of Sustainable Development (Circular 02/2013)	Places emphasis on the role of sustainable travel modes and travel planning as a means of managing the impact of development on the road network, with reference to area wide travel planning and alternative mitigation	A Framework Travel Plan has been prepared (**Appendix 19.2**) which includes measures to encourage sustainable modes of transport.

19.10 There are no licences and permits required to construct, operate or maintain the SRFI in relation to its transport effect. The DCO process enables the Applicant to complete works within the adopted highway to construct the site access point from the A43(T) and to implement mitigation at off site junction locations, without the need to enter into separate Section 278 agreements with NCC and HE.

Scoping and Consultation

19.11 Account has been taken of the scoping responses and other consultation undertaken, as set out in **Table 19.2**.

Table 19.2: Summary of Scoping Opinion

Scoping Opinion section / paragraph SoS Comments	Summary of issues raised	Where in the PEIR is this addressed?
2.24	The SoS confirms that detailed baseline information should be provided within topic specific chapters of the ES	Details of the baseline situation on the local and strategic highway networks is set out in the Baseline Conditions section of this chapter, and in Chapters 4 and 5 of the Transport Assessment at Appendix 19.1.
2.33	The SoS considers that information on construction should be provided including: access routes; location of any stopped up or diverted highways, footpaths or other rights of way; the number, movements and parking of construction vehicles	This is set out in the Construction Traffic Management Plan (CTMP), at Appendix 19.3 and in Chapter 6 of the Transport Assessment at Appendix 19.1.
2.34	The SoS expects that information on the operation and maintenance activities is provided including; operational activities (i.e. number of traffic movements), and the location of any stopped up or diverted highways, footpaths or other rights of way (if permanent)	This is set out in the Operational Traffic Management Plan (OTMP) at Appendix 19.4 and at Chapter 6 of the Transport Assessment at Appendix 19.1.
2.37	The SoS requires information on the road works including phasing of their completion	This is set out in Chapter 6 of the TA, included at Appendix 19.1.
2.39	The SoS confirms that how the application site would be accessed during the construction phase should be included	This is confirmed in the CTMP, submitted as Appendix 19.3 and at Chapter 6 of the TA at Appendix 19.1.

Scoping Opinion section / paragraph	Summary of issues raised	Where in the PEIR is this addressed?
3.9	The SoS confirms that the study areas should be agreed with the relevant consultees	The Study Area has been agreed with NCC and HE, as set out at in the Study Area section of this Chapter.
3.34	The SoS confirms that cross reference should be made between the Air Quality and the Highways and Transportation chapters in relation to dust and dirt arising from traffic movements	An assessment of the impact of dust and dirt arising from traffic movements is included in Chapter 9: Air Quality of this PEIR.
3.110	The SoS recommends that the assessment should take account of the location of footpaths and any PROW including bridleways and byways and clearly set out potential impacts	The locations of public rights of way (PROWs) in the vicinity of the site, along with any proposed diversions and proposed new PROWs, are set out in chapters 4 and 6 of the TA at Appendix 19.1.
3.111	The SoS suggests that residential areas should be considered as a sensitive receptor	The sensitive receptors, which include residential areas, are set out in Tables 19.24 to 19.27 of this Chapter.
3.112	The SoS confirms that the 'key corridors' referred to in paragraph 17.24 of the Scoping Report should be agreed with HE and NCC	The Study Area has been agreed with NCC and HE, as set out at in the Study Area section of this Chapter.
3.114	The SoS expects that information on the duration and programming of works and the activities that would take place in each phase is provided	This is set out in Chapter 6 of the TA, included at Appendix 19.1, and in the CTMP at Appendix 19.3.
3.115	The SoS confirms that the PEIR should provide criteria definitions for the sensitivity of receptors	The sensitivity criteria is set out in Table 19.24 of this Chapter.
3.116	The SoS confirms that an outline CTMP should be provided	A CTMP has been prepared and submitted as Appendix 19.3.
3.117	The SoS requires details of likely vehicle movements, including those associated with the removal of waste during construction and operation, to be provided in the PEIR and used to inform the highways and transportation assessment	A CTMP has been prepared, which sets out details of construction traffic movements, and has been submitted as Appendix 19.3. Operational vehicle movements are set out in detail at chapter 7 of the TA at Appendix 19.1.

Scoping Opinion section / paragraph	Summary of issues raised	Where in the PEIR is this addressed?
3.121	The SoS advises that comments made by HE, Milton Keynes Council, NCC, South Northamptonshire Council, Blisworth Parish Council and Milton Malsor Parish Council are taken in to account	Comments (set out below) have been taken in to account and are addressed throughout this chapter, and within the TA, TP and CTMP.
Consultee Comments		
Blisworth Parish Council	"Inevitable increase in traffic through Blisworth" is "untenable"	The Proposed Development is not forecast to result in any material increase in traffic through Blisworth, as set out in detail within chapter 8 of the TA at Appendix 19.1.
	Blisworth is already a rat-run for commuters	The existing traffic flows are being assessed using the Northamptonshire Strategic Transport Model (NSTM) as set out in the 'Baseline Surveys and Data' section of this chapter, and in chapter 5 of the TA at Appendix 19.1.
	A43 is at capacity	The existing traffic flows are being assessed using the NSTM as set out in chapter 5 of the Transport Assessment at Appendix 19.1.
	Traffic modelling should be undertaken using realistic projections in 10, 20 and 30 years' time	The method and approach to traffic assessment is set out in chapters 5 and 8 of the Transport Assessment at Appendix 19.1, and has been agreed as appropriate with NCC and HE.
	Confirmation required of what mitigation is being proposed	The proposed mitigation is set out in chapter 6 of the TA at Appendix 19.1, and in the Embedded Mitigation and Adaptive Mitigation section of this chapter.
	It is unacceptable for HGVs to pass through nearby settlements	There will be no access for site traffic from Northampton Road and therefore no desire line for HGVs to pass through nearby settlements. Further details of the routing of HGVs during the site's operation are set out in the OTMP at Appendix 19.4.
	Requests evidence of success of Travel Planning elsewhere in	This is set out in the Framework Travel Plan at Appendix 19.2.

Scoping Opinion section / paragraph	Summary of issues raised	Where in the PEIR is this addressed?
	reducing car use	
	Requests projections for expected road to rail switch over 5, 10, 20 and 30 year period	Road to rail freight mode shift is considered within the 'Mode Shift and Greenhouse Gas Emissions Benefits at Rail Central Technical Note' contained at Appendix 23.2 (Annex F).
	Requests proportion of freight still expected to be delivered to the development by road freight	HGV forecasts are included within the Site Traffic Forecasts technical note, included at Appendix O of the Transport Assessment.
	How will development be linked to surrounding area?	The existing and proposed vehicular, pedestrian, cycle and public transport connections to the surrounding area are set out in chapters 4 and 6 of the TA at Appendix 19.1.
Canal and River Trust	Canals conservation area status should be acknowledged as a sensitive receptor	This is acknowledged in Table 19.24 of this Chapter.
Highways England	Use Guidance on Transport Assessment, even though archived	This document has been referred to (Ref 19.6) in the preparation of this Chapter and the TA at Appendix 19.1.
	Construction, traffic volume, composition or routing change and transport infrastructure impact to be fully assessed and reported	The environmental impact is assessed within this chapter, with a detailed assessment of the operation of the highway network contained in chapters 8 and 9 of the TA at Appendix 19.1. Details of construction traffic movements are contained in the CTMP at Appendix 19.3.
	Individual junction assessments at M1 Junction 15a, Tove roundabout and Abthorpe roundabout	These are included at chapter 9 of the TA at Appendix 19.1 and in the assessments for Junction 5 (J15a), Junction 14 (Tove) and Junction 15 (Abthorpe) in this chapter.
Milton Keynes Council	Comprehensive assessment of impact on local and national road network including M1 and major junctions is needed	An assessment of the impact on the local and national road network, including the M1 and other junctions within the agreed study area is contained within chapters 8 and 9 of the TA at Appendix 19.1.
	Wish to see assessment of J13-15a of M1 and effects on A5, A43	An assessment of the junctions and corridors as agreed with HE and NCC, is

Scoping Opinion section / paragraph	Summary of issues raised	Where in the PEIR is this addressed?
	and A508 and A508 at Old Stratford	set out in chapters 8 and 9 of the TA at Appendix 19.1. The agreed study area is set out within the 'Study Area' section of this PEIR Chapter.
	Effects of commuting flows to and from the development required and assessment of likely effect of scheme on commuting flows to neighbouring local authorities	The method and extent of assessment has been agreed with NCC and HE and this is set out in chapters 5 and 8 of the TA at Appendix 19.1.
	Impact on passenger services on the WCML to and from stations in Milton Keynes	An assessment of the rail network capacity and the impact of Rail Central is contained at Chapter 3 of the Rail Operations Report (Appendix 8.1).
	Impact on services operating on the East-West railway line between Oxford, Aylesbury, Milton Keynes Central and Bedford	An assessment of the rail network capacity and the impact of Rail Central is contained at Chapter 3 of the Rail Operations Report. (Appendix 8.1).
Milton Malsor Parish Council	There is already a major problem at J15	The existing and forecast traffic conditions at M1 J15 are set out in this Chapter and in chapters 5, 8 and 9 of the TA at Appendix 19.1.
	Collingtree village currently being used as rat-run	The existing traffic flows are being assessed using the NSTM and set out in chapter 5 of the TA at Appendix 19.1.
	Construction traffic will add problems to the local road system	A CTMP has been prepared to manage and mitigate the impacts of the construction phase, as set out in the 'Adaptive Mitigation' section of this Chapter. This includes restricting routes for construction vehicles.
Network Rail	Scoping document is silent on rail network	The work undertaken with Network Rail on a number of technical workstreams related to railway access and operations is reviewed in Chapters 3 and 4 of the Rail Operations Report. (Appendix 8.1).
	Chapter should consider the full impact of the proposal on the existing and future rail network both in terms of capacity and	The GRIP2 workstreams and outputs have considered these issues through a jointly agreed scope, the scheme being capable of evolving in line with wider

Scoping Opinion section / paragraph	Summary of issues raised	Where in the PEIR is this addressed?
	timetabling, with detailed study scope to be agreed with Network Rail	network capacity as required, as with all other SRFI developed to date. This is considered further in the Rail Operations Report. (Appendix 8.1).
Northamptonshire County Council - Highways	Scoping makes no reference to rail capacity and access issues	An assessment of the rail network capacity and the impact of Rail Central is contained at Chapter 3 of the Rail Operations Report. The work undertaken with Network Rail on a number of technical workstreams related to railway access and operations is reviewed in Chapters 3 and 4 of the Rail Operations Report. (Appendix 8.1).
	Analysis should take account of the emerging consultations Network Rail is undertaking on HS2, looking at capacity and usage of the southern section of the West Coast Main Line once HS2 open	The Network Rail Commercial Scheme Sponsor has informed the GRIP2 process with input from other internal stakeholders in London North Western Route (LNW) and the Freight & National Passenger Operators Route (FNPO). The outputs from the GRIP2 process will, in turn, inform the ongoing workstreams within NR looking at future network capability pre- and post-HS2.
Northamptonshire County Council – Prevention and Community Protection	ES should include impact on diversionary routes such as the A5 and impact of the interlinkage with existing and proposed industrial estates	The method and extent of assessment has been agreed with NCC and HE and this is set out in chapters 5, 8 and 9 of the TA at Appendix 19.1. This includes the impact on junctions along the A5.
	Impact of cumulative traffic plus events at Silverstone should be included and potential area of assessment should be widened	Cumulative traffic is considered in Chapter 10 of the TA and road closures associated with Silverstone are addressed in the Operational Traffic Management Plan (OTMP) (Appendix 19.4).
	Show how impact of additional traffic on existing road network will be mitigated	The proposed mitigation measures are set out in chapter 6 of the TA at Appendix 19.1.
South Northamptonshire Council	Scoping does not include reference to A508 and this should be included in assessment	The method and extent of assessment has been agreed with NCC and HE and this is set out in chapters 5, 8 and 9 of the TA at Appendix 19.1.

Scoping Opinion section / paragraph	Summary of issues raised	Where in the PEIR is this addressed?
	ES should include an assessment of effects of increased traffic at Tove and MacDonald's roundabouts	The method and extent of assessment has been agreed with NCC and HE and this is set out in chapters 5, 8 and 9 of the TA at Appendix 19.1. This includes assessments of the Tove and Abthorpe (McDonald's) roundabouts (Junction 14 and 15 respectively in this chapter).
	Seeks assurances that HGV traffic will not access from A508	There will be no access for site traffic from Northampton Road and therefore no desire line for HGVs from/to the A508.
Roade Parish Council January 2016	Traffic from the south, east and west will impact on the A508 which is a major commuter and business traffic route between Northampton and Milton Keynes as well as a relief road for the M1. "It is already deemed to be at or near capacity"	The method and extent of assessment has been agreed with NCC and HE and this is set out in chapters 5, 8 and 9 of the TA at Appendix 19.1.
Collingtree Parish Council January 2016	"would totally disrupt the local infrastructure including the detrunked A43, now known as the Northampton Road"	The existing and forecast traffic conditions are set out in this Chapter and in chapters 5 and 8 of the TA.

19.12 The assessment of the transport impacts of the development has been carried out further to extensive pre-application scoping discussions with a Transport Working Group (TWG), comprising Transport Planning Associates (TPA), highway officers at Northamptonshire County Council (NCC) and Highways England (HE), as well as HE's consultants AECOM. The TWG has met monthly since October 2015 and meetings with NCC and HE were carried out prior to this. Minutes of all of these meetings are included in the Transport Assessment.

19.13 A summary of the consultation undertaken with the TWG is set out in **Table 19.3**.

Table 19.3: Summary of consultations undertaken

Consultation and date	Summary of consultation	Where in the PEIR is this addressed?
Transport Working Group (Highways England and Northamptonshire County Council)	A number of matters have been agreed with the TWG through the preparation of a number of technical notes and drawings, email correspondence, and during the monthly TWG meetings. These include:	Chapter 3 of the TA at **Appendix 19.1**.
	person trip attraction associated with the	Chapter 7 of the TA at

Consultation and date	Summary of consultation	Where in the PEIR is this addressed?
October 2015-July 2017	proposed warehousing;	**Appendix 19.1.**
	person trip attraction associated with ancillary uses (non-warehousing);	Chapter 7 of the TA at **Appendix 19.1.**
	baseline mode share during network peak hours (including total number of vehicle trips);	Chapter 7 of the TA at **Appendix 19.1.**
	overall HGV trip attraction;	Chapter 7 of the TA at **Appendix 19.1.**
	methodology for modelling work to include use of Northamptonshire Strategic Transport [SATURN] Model (NSTM), with detailed capacity assessments at junctions to be identified by the SATURN model;	Chapters 5 and 8 of the TA at **Appendix 19.1**.
	local area validation of the SATURN model specifically for use in assessing the impact of Rail Central;	Chapter 5 of the TA at **Appendix 19.1.**
	assessment scenarios and time periods required for modelling;	Chapters 5 and 8 of the TA at **Appendix 19.1.**
	VISSIM model to be used to assess the impact at M1 J15 and J15a;	Chapter 9 of the TA at **Appendix 19.1.**
	study area of junctions to be examined in detail following results from SATURN model;	Chapter 8 of the TA at **Appendix 19.1.**
	principle of access strategy, with access taken from A43 and emergency access only onto Northampton Road, along with pedestrian and cycle access onto Northampton Road;	Chapter 6 of the TA at **Appendix 19.1.**
	general approach to public transport strategy, including potential for bespoke service into the site, subject to modelling; and	Chapter 6 of the TA at **Appendix 19.1.**
	principle and suitability of initial design of environmental enhancement schemes in Milton Malsor and Blisworth to be taken forward for further consultation and subsequent detailed design.	Chapter 6 of the TA at **Appendix 19.1.**
	principle of the site access design onto the A43 (detailed design issues to be agreed in due course)	Chapter 6 of the TA at **Appendix 19.1.**
	principle of the construction access arrangements, including initial use of the existing left-in, left-out access on the A43 and construction of a temporary left-in, left-out access to the north of this on the A43;	Chapter 6 of the TA at **Appendix 19.1** and in the CTMP at **Appendix 19.3.**

Consultation and date	Summary of consultation	Where in the PEIR is this addressed?
	principle of providing a lorry park facility within the site;	Chapter 6 of the TA at **Appendix 19.1.**
	geometry and capacity of the proposed improvement scheme at M1 J15a	Chapters 6 and 9 of the TA at **Appendix 19.1.**
	principle and general scope of a proposed foot and cycleway along Northampton Road	Chapter 6 of the TA at **Appendix 19.1**.

19.14 The table above sets out the key matters of agreement reached between HE and NCC. It should be noted that this has occurred as a result of an extensive consultation process that has taken place with the highway authorities over a period in excess of two years (as outlined in **Chapter 3: Reasonable Alternatives**). Each element of agreement set out above was subject to discussion over multiple TWG meetings, along with separate correspondence between the relevant parties and preparation of multiple iterations of the associated documents and drawings, before a consensus was reached.

19.15 The general approach to the assessment work contained within this chapter, being carried out with reference to IEA guidelines, has been agreed as appropriate with HE and NCC.

Study Area

19.16 In accordance with the IEA guidelines (Ref 19.4) the study area has been defined by identifying any link or junction where the environmental impacts of the Proposed Development are significant.

19.17 In order to determine the baseline traffic on the strategic and local highway networks and the distribution of development traffic, the Northamptonshire Strategic Transport Model (NSTM) has been used. This provides an initial indication of junctions and links where the vehicular traffic associated with the Proposed Development may have a significant impact. This approach has been used to define and agree the Study Area with NCC and HE.

19.18 An extensive list of junctions was compiled where further assessment was considered necessary. This was refined following a more detailed review of flow differences, volume over capacity and development flows to determine the final study area for the Proposed Development, with a number of junctions and associated links being excluded from further assessment due to the immaterial impact of Rail Central at those locations. This has been agreed as appropriate with HE and NCC

19.19 The full study area agreed with HE and NCC, along with its status in terms of the assessments carried out, is shown in **Table 19.4** below, and the full study area is illustrated on **Figure 19.1**. Not all junctions shown in Figure 19.1 are considered within this PEIR (which addresses potentially significant environmental effects) as the TA (and the traffic flow modelling undertaken) indicates transport effects at the majority of junctions are not considered significant. The impact of the Proposed Development (in terms of traffic flows) at junctions where highway mitigation is not proposed is considered within the TA at **Appendix 19.1**.

19.20 For the purpose of this PEIR chapter, the impact of the Proposed Development has been considered for the links of junctions where highway mitigation is proposed, as shown on **Figure 19.2**.

Table 19.4: Agreed Study Area

Junction Number	Junction Name / Intersection Description	Assessment Status
1	M1 Junction 16 - M1 / A4500 / A45	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
2	A4500 / Sandy Lane Relief Road	This is assessed within the TA at **Appendix 19.1**. Mitigation is not proposed at this location and is therefore not considered further within this chapter of the PEIR.
3	A4500 / Upton Way / Tollgate Way	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
4	A5076 / A5123 / Upton Way	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
5	M1 Junction 15a - M1 / A43 / A5123	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
6	A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
7	Towcester Road / A5076 / A5123 / Tesco	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
8	Queen Eleanor Interchange - A5076 / A508 / A45 / Hardingstone Lane / Newport Pagnell Road	Agreed with HE and NCC that further assessment is not necessary
9	A45 / Eagle Drive / Caswell Road	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
10	Barnes Meadow Interchange - A45 / A428 / Bedford Road / A5095	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
11	A45 / A43 / Ferris Row	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and

Junction Number	Junction Name / Intersection Description	Assessment Status
		within the TA at **Appendix 19.1**.
12	M1 Junction 15 - M1 / A45 / Saxon Avenue / A508	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
13	Site Access - A43 / Site Access	The impact of the Proposed Development on the A43(T) adjacent to the site is assessed within this PEIR chapter and within the TA at **Appendix 19.1**.
14	Tove Roundabout - A43 / Towcester Road / A5	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
15	Abthorpe Roundabout - Abthorpe Road / A43 / Brackley Road	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
16	Old Stratford Roundabout - Deans Hanger Road / A5 / A508 / Towcester Road	Agreed with HE and NCC that further assessment is not necessary
17	A5 / Daventry Road / Unnamed Road	Agreed with HE and NCC that further assessment is not necessary
18	A5 / A45	Agreed with HE and NCC that further assessment is not necessary
19	A5076 / Telford Way / Walter Tull Way / Duston Mill Lane	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
20	A5076 / High Street / Duston Mill	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
21	A4500 / Duston Road / Montfort Close / Peverel's Way	Agreed with HE and NCC that further assessment is not necessary
22	A4500 / A428	Agreed with HE and NCC that further assessment is not necessary
23	Nunn Mills Road / A428 / Beckett's View	This is assessed within the TA at **Appendix 19.1**. Mitigation is not proposed at this location and is therefore not considered further within this chapter of the PEIR.
24	The Cock Hotel Junction - A508 / Mill Lane / A5095	This is assessed within the TA at **Appendix 19.1**. Mitigation is not proposed at this location and is therefore not considered further within this chapter of the PEIR.

Junction Number	Junction Name / Intersection Description	Assessment Status
25	A508 / A5199	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
26	A508 / Holly Lodge Drive	This is assessed within the TA at **Appendix 19.1**. Mitigation is not proposed at this location and is therefore not considered further within this chapter of the PEIR.
27	A43 / A5123 / A5076 / Stone Circle Road	This is assessed within the TA at **Appendix 19.1**. Mitigation is not proposed at this location and is therefore not considered further within this chapter of the PEIR.
28	Blisworth turn - A43 / Towcester Road	This is assessed within the TA at **Appendix 19.1**. Mitigation is not proposed at this location and is therefore not considered further within this chapter of the PEIR.
29	Tiffield turn - A43 / St John's Road	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
30	A43 / Donkey Lane	Agreed with HE and NCC that further assessment is not necessary
31	A43 / Northampton Road	Mitigation is proposed at this location and is therefore considered within this PEIR chapter and within the TA at **Appendix 19.1**.
32	A45 / B4037	Agreed with HE and NCC that further assessment is not necessary
33	A508 / Northampton Road	Agreed with HE and NCC that further assessment is not necessary
34	A4500 / A5095	Agreed with HE and NCC that further assessment is not necessary
35	A5095 / Mare Fair	Agreed with HE and NCC that further assessment is not necessary
36	Pitsford Road / Boughton Fair Lane	Agreed with HE and NCC that further assessment is not necessary
37	Billing Road / Alfred Street / Cliftonville Road	Agreed with HE and NCC that further assessment is not necessary
38	A5 / Brackley Road / Northampton Road	This is assessed within the TA at **Appendix 19.1**. Mitigation is not proposed at this location and is therefore not considered further within this chapter of the PEIR.

19.21 The Study Area includes junctions that fall within the boundaries of both Northampton Borough Council and South Northamptonshire Council. Further detailed assessment of the wider local and strategic highway network is set out in the Transport Assessment (**Appendix 19.1**).

Baseline Surveys and Data

Baseline Traffic Flows

19.22 In order to determine the baseline traffic on the strategic and local highway network and the distribution of development traffic, the Northamptonshire Strategic Transport Model (NSTM) has been used. This approach and the suitability of the NSTM has been agreed as appropriate with HE and NCC. The forecast baseline years of 2021 and 2031 have been developed within the NSTM using traffic forecasts from all committed and allocated developments in the area, as set out in the Scoping Opinion. It also includes any committed or planned highway improvement schemes.

19.23 An independent traffic surveyor conducted automatic traffic count (ATC) surveys in July 2016, and Automatic Number Plate Recognition (ANPR) surveys between June and July 2016 in the vicinity of the Main SRFI Site. This data was input into the NSTM to validate the base model for the junctions within the study area.

19.24 Baseline traffic flows have been assessed for 2015 (as the modelled base year), 2021 (as forecast opening year), and 2031 (the end of the plan period – and full operation, allowing for the approximate 10-year construction period until 2029, as outlined in **Chapter 5: The Proposed Development**). The 2021 and 2031 flows have been derived using the NSTM model including traffic growth associated with committed and allocated developments and committed infrastructure improvements set out in the West Northamptonshire Joint Core Strategy (JCS) that are reasonably expected to be delivered by either 2021 or 2031.

19.25 The baseline traffic flows provide a summary of the 'do nothing' scenario. The 'do nothing' scenario includes background traffic growth on the highway network, but does not include any traffic associated with the Main SRFI site. The NSTM includes a number of large scale committed and proposed development and infrastructure schemes. The model also includes a number of smaller committed schemes (less than 10 dwellings) so these are also accounted for in the wider assessment of the Proposed Development and should be considered as the predicted future baseline scenario.

Accidents and Safety

19.26 Personal Injury Accident (PIA) data for the most recent five year period between January 2012 and December 2016 has been obtained from NCC for the study area. Generally, the most recent three year period is sufficient to assess the highway safety record of the highway network, as set out in Guidance on Transport Assessment (Ref 19.6). However, due to the scale of the Proposed Development and proximity to the A43 and M1, a five year period has been obtained to consider the potential impact of the development over this period.

Sources of Baseline Information

19.27 The sources of baseline information used to inform this chapter and the assessments included within the accompanying TA at **Appendix 19.1** are outlined in **Table 19.5**.

Table 19.5: Sources of Baseline Information

Baseline Topic	Data Source	Date
Northamptonshire Strategic Transport Model (NSTM)	NCC	2015 Base
Automatic traffic count (ATC) Surveys	PCC Traffic Information Consultancy	June – July 2016
Automatic number plate recognition (ANPR) surveys	PCC Traffic Information Consultancy	July 2016
Records of highway maintained at public expense	HE and NCC	September 2015 – July 2017
Public rights of way	NCC (online mapping)	January 2018
Personal injury accident records	NCC	August 2016 – June 2017
Signal timing information	HE and NCC	March 2016 – June 2017
Public transport information	Local bus operator website	January 2018
Pedestrian and cycle information	NCC and SUSTRANS	January 2018
Base mapping	Ordnance Survey	March 2013 – January 2018
Topographical survey	mksurveys	May 2016 – July 2017

Baseline Conditions

Main SRFI Site

19.28 A full description of the local and strategic highway network, pedestrian and cycle network and public transport opportunities are set out in the Transport Assessment at **Appendix 19.1** and summarised below.

Highway Network

19.29 The A43(T) lies to the west of the Main SRFI Site. The A43(T) is designated as a trunk road and is a dual-carriageway connecting the M40 at Ardley, Oxfordshire, to Stamford, Lincolnshire. A former petrol station is located on the A43(T) to the east of the site. This was accessed via a left in, left out junction arrangement with the A43(T) southbound, but this is now closed. Approximately seven kilometres south of the site the A43(T) bypasses Towcester where it meets the A5 at a signalised roundabout junction, known locally as Tove Roundabout. A further 1.3 kilometres south the A43(T) forms part of another signalised roundabout junction known as Abthorpe Roundabout.

19.30 The M1 Motorway can be accessed at Junction 15a (J15a) via the A43(T), approximately two kilometres to the north of the site, where Northampton Services are located. J15a comprises a pair of dumbbell roundabouts with a bridge under the M1 and associated slip roads.

19.31 Junction 15 of the M1, which comprises a gyratory grade separated junction, is located approximately four kilometres south east of J15a, and provides access to the A45(T) and A508. Junction 16 of the M1, which comprises a grade separated roundabout junction, is located approximately 5.4 kilometres north west of J15a, and provides access to the A4500 and the A45.

19.32 The A45 is a designated trunk road where it connects to Junction 15 of the M1. From Junction 15, the A45 comprises a dual carriageway and meets the A428 at a signalised roundabout junction, known locally as the Barnes Meadow Interchange, approximately 5.3 kilometres north east of Junction 15.

19.33 The A5 is a designated trunk road which connects to the A43(T) at Tove Roundabout approximately seven kilometres to the south of the site. It comprises a single carriageway and is subject to a 60mph speed limit outside of residential areas. The A5 is subject to a 30mph speed limit where it passes through Towcester town centre to the south east of Tove Roundabout.

19.34 The Main SRFI Site can currently be accessed from Towcester Road/Northampton Road only, which dissects the site and provides access to Milton Malsor village and Northampton to the north and Blisworth village to the south. In the vicinity of the Main SRFI Site the Northampton Road carriageway is approximately seven metres wide with a 40mph speed limit, and is generally straight where it passes the site.

19.35 Barn Lane is a rural lane leading south from Rectory Lane in Milton Malsor village. It passes through the site around 550 metres to the east of Northampton Road and serves a number of residential properties and farms. It measures around three metres wide with passing places and is subject to a 30mph speed limit.

Pedestrian and Cycle Network

19.36 There is a continuous footway measuring between 1.2 and two metres wide provided on the western side of Towcester Road/Northampton Road from Northampton in the north to Blisworth in the south. To the north, footways are provided on both sides of the carriageway from the access road to The Greyhound public house at Milton Malsor to the junction with Lower Road. Upon entering Blisworth village to the south, footways are provided on both sides.

19.37 There is a comprehensive network of Public Rights of Way (PROWs) in the vicinity of the site. These include the canal towpath (PROW BG1 and HW17) that runs alongside the Grand Union Canal and public footpaths KX16, RD12, KX15 and KX13 which cross the Potential Development Area, along with other PROWs that provide connections to the surrounding area including Milton Malsor to the north and Blisworth to the south.

19.38 There are no dedicated facilities for cyclists in the immediate vicinity of the site, although the local highway network is generally flat or of a shallow gradient, and is considered suitable for use by cyclists.

Bus Network

19.39 The closest bus stops are located on Northampton Road towards the centre of the Main SRFI Site. This bus stop comprises of a flag, pole, sheltered seating area and timetable information.

19.40 The bus service providers are Uno and Stagecoach Northamptonshire. The bus stop is served by bus services 86, 88, 89 and X89 which provide services to Northampton, Milton Keynes, Towcester and Silverstone.

Rail Network

19.41 The Main SRFI Site is bound by the Northampton Loop Line (NLL) to the east and the West Coast Main Line (WCML) to the south. These lines are currently served by passenger services between Northampton and London Euston, as well as freight traffic; some of which serves the Daventry International Rail Freight Terminal (DIRFT).

Traffic Flows

19.42 **Table 19.6** sets out the base 2015 traffic flows, 2021 and 2031 forecast base traffic flows on the A43(T) adjacent to the Main SRFI Site (i.e. without the Proposed Development).

Table 19.6: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows on the A43(T)

Link	Peak Hour	2015 Baseline Total traffic*	2021 Forecast Baseline Total traffic*	2031 Forecast Baseline Total traffic*
A43(N)	AM	3,616	4,041	4,563
	PM	2,958	3,804	4,213
A43(S)	AM	3,554	4,163	4,915
	PM	3,034	4,785	5,130

***** Passenger car units (PCUs)

Accidents and Safety

19.43 There have been a total of three personal injury accidents on the A43(T) in the vicinity of the Proposed Development in the most recent five year period, comprising three slight incidents. None of the incidents involved vulnerable road users.

J15a Works

19.44 A full description of the local and strategic highway network, pedestrian and cycle network and public transport opportunities in the vicinity of the J15a works are set out in the Transport Assessment (**Appendix 19.1**) and summarised below.

Highway Network

19.45 The M1 is located approximately 2.0 kilometres to the north of the Main SRFI Site and forms a strategic route between London and Leeds. It connects to the A43(T) at J15a via four grade separated 'double dumbbell' roundabouts.

Pedestrian and Cycle Network

19.46 There are no existing pedestrian or dedicated cycle provisions in the vicinity of J15a.

Bus Network

19.47 The nearest bus stops are located on Swan Valley Way around 250 metres north of the A43(T) roundabout with the motorway service area. The bus stops consist of a flag, pole and timetable information and are served by the number 50 bus to and from Northampton.

Rail Network

19.48 Northampton Railway Station is located around five kilometres to the north east of J15a via the A5123, A5076 Upton Way, Edgar Mobbs Way and the A4500 St James' Road. Trains between London Euston and Birmingham New Street serve Northampton Station, calling at local destinations including Long Buckby, Rugby and Milton Keynes.

Traffic Flows

19.49 **Table 19.7** sets out the base 2015 traffic flows, 2021 and 2031 forecast baseline traffic flows at M1 Junction 15a.

Table 19.7: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Five – M1 Junction 15a

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic	Total traffic
Service Station SB	AM	282	297	311
	PM	216	223	233
Service Station NB	AM	27	29	31
	PM	51	56	61
A5123	AM	3,005	3,429	3,865
	PM	2,872	4,120	4,212
Travis Perkins Site	AM	0	109	103
	PM	0	89	88
M1 SB OUT	AM	808	951	1,089
	PM	756	1,011	1,060
M1 NB IN	AM	564	456	462
	PM	703	626	537
A43 S	AM	3,616	4,041	4,563
	PM	2,958	3,804	4,213
M1 NB OUT	AM	638	752	616
	PM	648	878	779
M1 SB IN	AM	817	939	896

	PM	827	931	1,082
Swan Valley Way	AM	525	775	1,109
	PM	547	788	1,180

* Passenger Car Units (PCUs)

Accidents and Safety

19.50 There have been a total of 24 personal injury accidents at J15a in the most recent five year period, comprising 18 slight, five serious and two fatal incidents. Four of the incidents involved vulnerable road users, resulting in three serious injuries and one fatality.

Minor Highway Works

19.51 A full description of the local and strategic highway network, pedestrian and cycle network and public transport opportunities in the vicinity of other minor highway works is set out in the Transport Assessment and summarised below.

19.52 As part of the Proposed Development, other highway works are proposed in the locations shown indicatively on **Figure 19.2** and summarised as follows:

- Junction 1 - M1 Junction 16 – M1 / A4500 / A45;
- Junction 3 - A4500 / Upton Way / Tollgate Way;
- Junction 4 - A5076 / A5123 / Upton Way;
- Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road;
- Junction 7 - Towcester Road / A5076 / Tesco;
- Junction 9 - A45 / Eagle Drive / Caswell Road;
- Junction 10 – Barnes Meadow Interchange - A45 / A428 Bedford Road / A5095;
- Junction 11 - A45 / A43 / Ferris Row;
- Junction 12 - M1 Junction 15 – M1 / A45 Saxon Avenue / A508;
- Junction 14 – Tove Roundabout - A43 / Towcester Road / A5;
- Junction 15 - Abthorpe Roundabout – Abthorpe Road / A43 / Brackley Road;
- Junction 19 – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane;
- Junction 20 – A5076 / High Street / Duston Mill; and
- Junction 25 - A508 / A5199.

19.53 Additional minor highway works are proposed at:

- Junction 29 – A43/St John's Road (signage and road surfacing scheme on the A43),
- Junction 31 – A43 Northampton Road (signage scheme); and,
- Pedestrian/Cycle Way along Northampton Road and between Barn Lane to the junction of Collingtree Road (widening of existing footpaths, provision of new footpath and dropped kerbs, and realignment of the carriageway).

19.54 These are shown within the Order Limits for this S42 consultation. However, for the purpose of this PEIR chapter they are addressed as "adaptive mitigation" (effectively off-site mitigation) and have not be addressed as part of the Proposed Development and therefore specific baseline numbers are not provided. In the final DCO application (and the associated ES) they will be included as embedded mitigation, and therefore a similar short description will also be provided in the baseline section of the ES at that time.

Junction One - M1 Junction 16 – M1 / A4500 /A45

19.55 M1 Junction 16 is a grade separated roundabout junction located approximately 5.4km to the north west of the J15a works. It connects with the A4500 (towards Northampton town centre) to the north east and the A45 (towards Daventry) to the south west.

19.56 **Table 19.8** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at M1 Junction 16.

Table 19.8: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction One - M1 Junction 16

Link	Peak Hour	2015 Baseline Total traffic*	2021 Forecast Baseline Total traffic*	2031 Forecast Baseline Total traffic*
A45	AM	1,991	3,925	3,957
	PM	1,951	3,807	4,203
M1 EB IN	AM	447	454	747
	PM	462	583	703
A4500	AM	1,606	2,536	3,346
	PM	1,586	2,485	3,030
M1 WB IN	AM	837	1,805	1,867
	PM	1,074	1,654	1,868
M1 WB OUT	AM	438	581	836

	PM	582	735	831
M1 EB OUT	AM	863	1,173	1,192
	PM	653	1,298	1,321

* Passenger Car Units (PCUs)

Accidents and Safety

19.57 There have been a total of eight personal injury accidents at Junction 16 in the most recent five year period, comprising six slight and two serious incidents. Two of the incidents involved vulnerable road users, resulting in two serious injuries.

Junction Three - A4500 / Upton Way / Tollgate Way

19.58 This is a signalised roundabout junction located to the west of Northampton town centre and approximately 3.2km north of the J15a works. It connects with the A5076 (towards M1 J15a) to the south and the A4500 (towards M1 Junction 16) to the west.

19.59 **Table 19.9** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the roundabout between the A4500, A5076 Upton Way and Tollgate Way.

Table 19.9: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Three - A4500 / Upton Way / Tollgate Way

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
A4500 WB	AM	2,677	2,560	2,891
	PM	2,362	2,405	2,606
Tollgate Way	AM	1,869	2,064	2,490
	PM	1,815	1,625	2,109
A4500 EB	AM	2,117	2,186	2,860
	PM	2,297	2,737	3,060
A5076	AM	3,423	3,351	3,671
	PM	3,210	3,084	3,503

* Passenger Car Units (PCUs)

Accidents and Safety

19.60 There have been a total of 10 personal injury accidents at the A4500 Weedon Road / Tollgate Way / A5076 Upton Way roundabout in the most recent five year period, comprising 10 slight incidents. Four of the incidents involved vulnerable road users, resulting in four slight injuries.

Junction Four - A5076 / A5123 / Upton Way

19.61 This is a signalised roundabout junction located at the western end of the A5076, south west of Northampton town centre, and approximately 1.5km north of the J15a works; It connects with the A5123 (towards M1 J15a) to the south and Upton Valley Way East (towards Pineham Industrial Estate) to the west.

19.62 **Table 19.10** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the roundabout between the A5076, A5123 and Upton Way.

Table 19.10: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Four - A5076 / A5123 / Upton Way

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
Upton Valley Way East	AM	913	1,030	1,565
	PM	1,184	961	1,518
A5076 N	AM	4,012	4,010	4,424
	PM	4,521	4,526	4,631
A5076 E	AM	4,876	5,295	5,625
	PM	4,070	4,877	5,511
A5123 S	AM	2,996	3,416	3,751
	PM	2,795	3,876	3,913

* Passenger Car Units (PCUs)

Accidents and Safety

19.63 There have been a total of 19 personal injury accidents at the roundabout between the A5076, A5123 and Upton Way in the most recent five year period, comprising 17 slight and two serious incidents. Three of the incidents involved vulnerable road users resulting in two slight and one serious injury.

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

19.64 This is a roundabout junction located on the A5076, south of Northampton town centre, and approximately 0.7km east of Junction 4 - A5076 / A5123 / Upton Way. It serves a number of surrounding residential areas and provides a connection to Mere Way and Towcester Road to the east and the A5123 to the west.

19.65 **Table 19.11** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the roundabout between the A5076, Hunsbury Hill Avenue, Hunsbarrow Road and Hunsbury Hill Road.

Table 19.11: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Six - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road

Link	Peak Hour	2015 Baseline Total traffic*	2021 Forecast Baseline Total traffic*	2031 Forecast Baseline Total traffic*
A5076 W	AM	4,885	5,162	5,389
	PM	4,024	4,887	5,293
Hunsbury Hill Avenue	AM	619	685	708
	PM	813	842	894
Hunsbarrow Road	AM	366	391	412
	PM	584	992	1,038
A5076 (East)	AM	4,107	4,441	4,784
	PM	3,668	3,947	3,901
Hunsbury Hill Road	AM	1,165	1,217	1,023
	PM	847	942	1,000

* Passenger Car Units (PCUs)

Accidents and Safety

19.66 A total of 19 PICs resulting in 23 recorded injuries were reported to have occurred at Junction Six - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road. A total of 18 of the incidents recorded in the study period was classified as slight with one being classified as serious.

Junction Seven - Towcester Road / A5076 / A5123 / Tesco

19.67 This is a signalised roundabout junction on the A5076, south of Northampton town centre, and approximately 1.2km east of Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road.

19.68 **Table 19.12** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the A5076 / Towcester Road / Tesco roundabout.

Table 19.12: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Seven - Towcester Road / A5076 / A5123 / Tesco

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
Tesco	AM	128	136	143
	PM	148	153	159
Towcester Road S	AM	1,370	1,404	1,787
	PM	1,683	1,892	2,116
A5076 W	AM	3,595	3,951	4,161
	PM	3,333	3,662	3,688
Towcester Road N	AM	1,464	1,214	1,412
	PM	1,888	1,774	2,001
Mere Way	AM	3,665	4,420	4,875
	PM	4,266	4,734	4,837

* Passenger Car Units (PCUs)

Accidents and Safety

19.69 There have been a total of 20 personal injury accidents at the A5076 / Towcester Road / Tesco roundabout in the most recent five year period, comprising 18 slight incidents, one serious incident and one fatality. A total of seven incidents involved vulnerable road users, resulting in six slight injuries and one fatality.

Junction Nine –A45 / Eagle Drive / Caswell Road

19.70 This is a grade separated signalised roundabout junction on the A45, to the south east of Northampton town centre, and approximately 4.7km north east of M1 Junction 15. Caswell Road provides access into the Brackmills Industrial Estate.

19.71 **Table 19.13** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the A45 / Eagle Drive / Caswell Road roundabout.

Table 19.13: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Nine –A45 / Eagle Drive / Caswell Road

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
A45 NB OUT	AM	174	541	506
	PM	580	1,753	1,492
A45 Slip IN	AM	772	1,122	1,094
	PM	270	211	523
Caswell Road	AM	2,601	2,844	3,006
	PM	2,103	3,324	3,202
A45 SB OUT	AM	367	240	621
	PM	1,145	697	1,058
A45 NB IN	AM	1,346	987	1,074
	PM	744	896	823
Eagle Drive	AM	53	58	64
	PM	269	282	306

* Passenger Car Units (PCUs)

Accidents and Safety

19.72 There have been a total of 66 personal injury accidents at the Brackmills roundabout in the most recent five year period, comprising 57 slight incidents and six serious incident. A total of 12 incidents involved vulnerable road users, resulting in eight slight injuries and four serious injuries.

Junction Ten – Barnes Meadow Interchange - A45 / A428 Bedford Road / A5095

19.73 This is a grade separated signalised roundabout junction on the A45, to the east of Northampton town centre, and approximately 1km north east of Junction 9 - A45 / Eagle Drive / Caswell Road; It connects to the A428 Bedford Road which provides access to Northampton Town Centre to the west.

19.74 **Table 19.14** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the Barnes Meadow Roundabout.

Table 19.14: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Ten – Barnes Meadow Interchange - A45 / A428 Bedford Road / A5095

Link	Peak Hour	2015 Baseline	2021 Forecast	2031 Forecast

			Baseline	Baseline
		Total traffic*	Total traffic*	Total traffic*
A428 E	AM	3,299	3,858	4,133
	PM	3,256	3,855	4,259
A5095	AM	1,452	1,282	1,555
	PM	1,363	1,408	1,848
A45 NB OUT	AM	648	718	1,145
	PM	1,777	1,692	2,650
A45 SB IN	AM	1,954	1,744	1,772
	PM	923	1,186	1,351
A428 W	AM	2,518	2,424	2,452
	PM	2,363	2,458	2,534
A45 S	AM	1,629	1,785	1,362
	PM	1,446	1,479	1,233

* Passenger Car Units (PCUs)

Accidents and Safety

19.75 There have been a total of 10 personal injury accidents at the Barnes Meadow roundabout in the most recent five year period, comprising nine slight incidents and one serious incident. One of the incidents involved a vulnerable road user, resulting in one serious injury.

Junction Eleven - A45 / A43(T) Ferris Row

Traffic Flows

19.76 This is a grade separated signalised roundabout junction on the A45, to the north east of Northampton town centre, and approximately 2.6km north east of Junction Ten – Barnes Meadow Interchange.

19.77 **Table 19.15** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the A45 / A43(T) roundabout.

Table 19.15: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Eleven - A45 / A43(T) Ferris Row

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*

A43 SB IN	AM	2,693	3,015	3,362
	PM	2,196	2,833	2,637
A45 EB OUT	AM	474	532	617
	PM	375	567	365
A45 WB IN	AM	583	479	359
	PM	876	632	672
Ferris Row Out	AM	213	228	175
	PM	385	233	432
Ferris Row In	AM	178	198	165
	PM	607	457	685
A45 EB IN	AM	1,700	2,136	1,723
	PM	2,034	2,575	2,405
A45 WB OUT	AM	2,190	2,401	2,564
	PM	1,907	2,336	2,429
A43 NB OUT	AM	2,277	2,667	2,253
	PM	3,015	3,362	3,173

* Passenger Car Units (PCUs)

Accidents and Safety

19.78 There have been a total of 27 personal injury accidents at the A45 / A43 roundabout in the most recent five year period, comprising 23 slight incidents and four serious incidents. Four of the incidents involved vulnerable road users, resulting in four serious injuries.

Junction Twelve – M1 Junction 15 – M1 / A45 / Saxon Avenue / A508

Traffic Flows

19.79 This is a grade separated signalised gyratory junction, located approximately 4km south east of the J15a Works.

19.80 **Table 19.16** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at M1 Junction 15.

Table 19.16: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction 12 – M1 Junction 15 – M1 / A45 / Saxon Avenue / A508

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
M1 SB IN	AM	1,785	2,044	2,321
	PM	1,193	1,380	1,474
A45	AM	5,646	7,132	7,323
	PM	5,415	6,708	6,931
Saxon Avenue	AM	605	457	518
	PM	425	337	401
M1 NB IN	AM	1,075	1,456	1,261
	PM	1,127	1,620	1,902
A508	AM	1,821	2,082	2,450
	PM	1,777	2,165	2,105
M1 NB OUT	AM	1,006	1,694	1,952
	PM	1,300	1,925	2,023
M1 SB OUT	AM	1,368	1,617	1,388
	PM	1,035	1,311	1,238

* Passenger Car Units (PCUs)

Accidents and Safety

19.81 There have been a total of 24 personal injury collisions at Junction 15 in the most recent five year period, comprising 13 slight, six serious and one fatal incident. Two of the incidents involved vulnerable road users, resulting in two slight injuries.

Junction Fourteen - A43(T) / Towcester Road / A5 - Tove Roundabout

Traffic Flows

19.82 This is a signalised roundabout junction on the A43(T), located approximately 7km to the south west of the Main SRFI site, and to the north west of Towcester town centre;

19.83 **Table 19.17** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the A43(T) / Towcester Road / A5 roundabout

Table 19.17: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Fourteen - Tove Roundabout – A43(T) / Towcester Road / A5

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
A43 S	AM	3,573	5,040	6,011
	PM	3,641	5,709	6,104
Towcester Road	AM	279	298	213
	PM	223	214	221
A5 N	AM	1,546	1,555	2,072
	PM	1,848	1,760	2,028
A43 E	AM	3,554	4,163	4,915
	PM	3,034	4,785	5,131
A5 S	AM	2,022	831	1,097
	PM	1,434	834	1,271

* Passenger Car Units (PCUs)

Accidents and Safety

19.84 There have been a total of 25 personal injury accidents at the Tove roundabout in the most recent five year period, comprising 22 slight incidents and one serious incidents. A total of six incidents involved vulnerable road users, resulting in five slight injuries.

Junction Fifteen - Abthorpe Road / A43 / Brackley Road

Traffic Flows

19.85 This is a signalised roundabout junction on the A43(T), west of Towcester town centre, and approximately 1.3km south of Junction 14 - A43(T) / Towcester Road / A5.

19.86 **Table 19.18** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the Abthorpe roundabout.

Table 19.18: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Fifteen - Abthorpe Road / A43 / Brackley Road

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline

		Total traffic*	Total traffic*	Total traffic*
Brackley Road W	AM	909	775	768
	PM	683	717	682
Towcester Bypass N	AM	3,421	5,042	6,013
	PM	3,961	5,811	6,207
Brackley Road E	AM	861	362	740
	PM	985	473	676
A43 S	AM	3,501	5,191	5,809
	PM	3,199	5,877	6,027

* Passenger Car Units (PCUs)

Accidents and Safety

19.87 There have been a total of 13 personal injury accidents at the Abthorpe roundabout in the most recent five year period, comprising 11 slight incidents and two serious incidents. Seven of the incidents involved vulnerable road users, resulting in seven slight injuries.

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

Traffic Flows

19.88 This is a roundabout junction situated on the A5076 between Junction 3 - A4500 / Upton Way / Tollgate Way and Junction 20 - A5076 / High Street / Duston Mill, approximately 2.7km north of the J15a Works;

19.89 **Table 19.19** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the Telford Way roundabout.

Table 19.19: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Nineteen – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
Telford Way	AM	81	143	221
	PM	271	320	389
A5076 (North)	AM	3,505	3,344	3,627
	PM	3,102	2,996	3,338

Edgar Mobbs Way	AM	604	632	659
	PM	340	323	317
A5076 (South)	AM	3,840	3,641	3,819
	PM	3,453	3,351	3,570

* Passenger Car Units (PCUs)

Accidents and Safety

19.90 There has been a total of one personal injury accident at the Upton Way / Telford Way roundabout in the most recent five year period, comprising one serious incident. The incident involved a vulnerable road user, resulting in a serious injury.

Junction Twenty – A5076 / High Street / Duston Mill

Traffic Flows

19.91 This is a roundabout junction situated on the A5076 between Junction 19 - A5076 / Telford Way / Walter Trull Way / Duston Mill Lane and Junction 4 - A5076 / A5123 / Upton Way, approximately 2.4km north of the J15a Works;

19.92 **Table 19.20** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the A5076 / High Street roundabout.

Table 19.20: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Twenty – A5076 / High Street / Duston Mill

Link	Peak Hour	2015 Baseline Total traffic*	2021 Forecast Baseline Total traffic*	2031 Forecast Baseline Total traffic*
High Street	AM	243	454	659
	PM	1,008	1,122	922
A5076 (North)	AM	3,831	3,641	3,787
	PM	3,430	3,321	3,512
A5076 (South)	AM	4,062	4,025	4,412
	PM	4,426	4,423	4,424

* Passenger Car Units (PCUs)

Accidents and Safety

19.93 There has been one personal injury accident at the A5076 / High Street roundabout in the most recent five year period, comprising one slight incident. None of the incidents involved a vulnerable road user.

Junction Twenty-Five - A508 / A5199

Traffic Flows

19.94 This is a signalised T-Junction situated to the north of Northampton town centre on the A508, approximately 7.6km north east of the J15a Works;

19.95 **Table 19.21** sets out the 2015 baseline traffic flows, 2021 forecast baseline traffic flows (forecast opening year) and 2031 forecast baseline traffic flows (end of plan period) at the A508 / A5199 junction.

Table 19.21: 2015 Baseline, 2021 and 2031 Forecast Baseline Two-Way Traffic Flows at Junction Twenty-Five - A508 / A5199

Link	Peak Hour	2015 Baseline	2021 Forecast Baseline	2031 Forecast Baseline
		Total traffic*	Total traffic*	Total traffic*
A508 N	AM	1,714	1,988	2,253
	PM	1,956	2,223	2,364
A508 S	AM	2,768	2,991	3,501
	PM	2,983	3,206	3,604
Welford Road	AM	1,058	1,003	1,248
	PM	1,047	1,098	1,240

* Passenger Car Units (PCUs)

Accidents and Safety

19.96 There have been a total of six personal injury accidents at the A508 / A5199 junction in the most recent five year period, comprising six slight incidents. Four of the incidents involved vulnerable road users, resulting in four slight injuries.

All Development within Order Limits

19.97 The baseline conditions for all development within the Order Limits will be in accordance with the above analysis outlined within this section. As indicated in the Purpose of the Assessment section, the road network within the Order Limits does not operate separately at each junction, so the baseline has assessed the entire operation of the baseline road network.

Method of Assessment

Overview

19.98 As set out in the Scoping Opinion, the SoS recommended that "reference should be made to best practice and any standards, guidelines and legislation that have been used to inform the assessment". As set out in the Scoping Report, the assessment has been prepared with reference to the IEA document 'Guidelines for the Environmental Assessment of Road Traffic' (Ref 19.4) and has been carried out for the following forecast years:

- 2021 – anticipated opening year/ first operation; and
- 2031 – full Core Strategy Assessment.

19.99 By 2021, it is estimated that there could be 129,790 sq.m gross floor area (GFA) completed and occupied, with the Proposed Development fully occupied and operational by the 2031 assessment year. This is reflected in the assessments within this chapter to accord with the assessments carried out in other chapters of this PEIR and with the IEA guidelines. However, the assessments contained within the TA at **Appendix 19.1** are based on an assessment with a full development build-out at 2021 (the opening year), in order to provide an assessment which accords with DfT Circular 02/2013, as required by HE. Further details of this assessment are included within the TA.

19.100 The assessments for each scenario have been carried out using the NSTM for the peak hours of the local highway network (08:00-09:00 and 17:00-18:00), which has been agreed as appropriate with HE and NCC.

19.101 A Model Methodology Specification Report was prepared in 2016 and agreed with NCC and HE in advance of assessment.

19.102 As set out earlier in this chapter, the forecast assessment years of 2021 and 2031 have been developed within the NSTM using traffic attraction forecasts from all committed and allocated developments in the area, as set out in the Scoping Opinion (**Appendix 4.1**). It also includes any committed or planned highway improvement schemes (i.e. J15a and the minor highway works identified). Details of the land use and infrastructure proposals to be included in the models have been obtained from NCC, HE and the local planning departments.

19.103 The forecast trip attraction and modal share associated with the Proposed Development has been determined further to a series of Technical Notes that considered various methodologies for calculating these. The Technical Notes and the final methodology used, which are set out in further detail within the TA, were subject to detailed discussions with the Transport Working Group and subsequently agreed as appropriate to form the basis of traffic assessment work.

19.104 The forecast HGV trip attraction associated with the Proposed Development has been calculated by MDS Transmodal using the GB Freight Model, and is agreed with the Transport Working Group to provide a realistic and robust representation of the development proposals. This is set out in more detail in the TA.

Assessing Potential Effects

19.105 The assessment of potential impacts as a result of the Potential Development has taken into account both the construction and operational phases. The significance level attributed to each impact has been assessed based on the magnitude of change due to the Proposed Development, and the sensitivity of the affected receptor to change.

19.106 There are four categories of impact significance considered: Negligible, Minor, Moderate and Major, which can be either beneficial or adverse, as shown in **Table 19.22** below. This has been derived based on the magnitude and sensitivity criteria set out in the following sections, along with the matrix in **Table 19.28**.

Table 19.22: Impact Significance Description

Impact Significance	Definition of Impact Significance
Major (Beneficial/Adverse)	where the development would cause a considerable improvement in or deterioration of the existing situation
Moderate (Beneficial/Adverse)	where the development would cause a noticeable improvement or deterioration of the existing situation
Minor (Beneficial/Adverse)	where the development would cause a barely perceptible improvement in or deterioration of the existing situation
Negligible	where the development would cause no discernible improvement in or deterioration of the existing situation

19.107 In general, categories described as 'Major' or 'Moderate' would be considered significant in EIA terms.

Magnitude of Effect

Traffic Flows

19.108 The Institute of Environmental Assessment's "Guidelines for the Environmental Assessment of Road Traffic" (Ref 19.4) states that there may be significant environmental impact when:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or where the number of HGVs will increase by more than 30%); and
- Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

19.109 It is worth noting that on roads where traffic flows are low, any increase in traffic flow may result in a predicted increase that would be higher than the IEA Guidelines. However, it is important to consider any overall increase in road traffic in relation to the capacity of the road. This is assessed fully within the Transport Assessment. In addition, as addressed in the "significance of effect" section below, traffic flows by themselves are not an "environmental" effect; other than by the effect they have on other environmental aspects. Therefore there should be no assumption that a large increase or decrease in traffic flows ("moderate or major adverse/beneficial impact magnitude" in Table 19.23) will result in a direct effect on environmental factors.

19.110 The Guidelines identify general thresholds for traffic flow increases of 10% and 30%. Where the predicted increase in traffic / HGV flow is lower than these thresholds then the significance of the effects can be considered to be low, or not significant, and further detailed assessment is not required. However, to ensure a relative assessment of the increase in traffic flows in environmental terms the criteria defined in **Table 19.23** is used to determine magnitude of change.

19.111 The definitions of magnitude used within this assessment have been based on these guidelines and are shown in **Table 19.24**. The impact of the development traffic at each area of assessment is considered in relation to each of the AM and PM peak hours of the local highway network, as this is considered to be when the overall impact of the scheme will be greatest in highway terms. However, as set out in the Transport Assessment, it is anticipated that construction traffic would not travel to or from the site during the AM and PM peak

hours. Construction traffic impact is therefore assessed across the daily period, and in each instance 'daily' is defined as Annual Average Daily Traffic (AADT).

19.112 Negligible, minor, moderate and major Impact Magnitudes can have either a beneficial or adverse Impact significance. The Impact Magnitudes which will be used are defined in **Table 19.23**.

Table 19.23: Impact Magnitude

Impact Magnitude	Construction Traffic	Development Traffic	Pedestrian & Cycle Journey Lengths
Major beneficial	300 vehicles below daily flow or more than 75 less HGVs daily	30% fewer vehicles	50% or more reduction in journey length
Moderate beneficial	160-300 vehicles below daily flow or 30-75 less daily HGVs	15-30% fewer vehicles	15-50% reduction in journey length
Minor beneficial	50-160 vehicles below daily flow or 5-30 less daily HGVs	5-15% fewer vehicles	5-15% reduction in journey length
Negligible	Within 50 vehicles daily flow or 5 daily HGVs	Within 5% change in vehicles	Within 5% change in journey length
Minor adverse	50 -160 vehicles above daily flow or 5-30 more daily HGVs	5-15% additional vehicles	5-15% increase in journey length
Moderate adverse	160-300 vehicles above daily flow or 30-75 more daily HGVs	15-30% additional vehicles	15-50% increase in journey length
Major adverse	Over 300 vehicles above daily flow or more than 75 more daily HGVs	Over 30% additional vehicles	Over 50% increase in journey length

Sensitivity of Receptor

19.113 The sensitivity of a receptor can be defined by its nature and the vulnerability of people (i.e. the elderly or children) who use it. **Table 19.24** provides a summary of the types of receptors and their sensitivity.

Table 19.24: Defining Sensitivity of Receptor

Sensitivity	Definition of Sensitivity
Very High	Receptors of greatest sensitivity to traffic flows, such as: schools; playgrounds; accident blackspots; retirement homes; and

	areas with no pedestrian facilities with high pedestrian footfall
High	Traffic flow sensitive receptors, congested junctions; hospitals; shopping areas with active frontages; narrow footways; parks; and recreational areas
Moderate	Receptors with some sensitivity to traffic flow, such as conservation areas (including Canals conservation area); listed buildings; tourist attractions; and residential areas
Low	Receptors with low sensitivity to traffic flows, such as lightly trafficked roads; and areas with wide and/or segregated pedestrian facilities
Negligible	Receptors with very limited sensitivity to traffic flows, such as sites distant from affected roads

19.114 Through a combination of site visits and an extensive desk top exercise, sensitive receptors have been identified in the study area, as set out in **Table 19.25** to **Table 19.27**. This has been based on the existing nearby receptors and the existing operation of the respective junctions and links, rather than any forecast changes.

Table 19.25: Main SRFI Site Receptors

Link	Sensitivity	Explanation of Sensitivity
A43 (T)	Moderate	Some sensitivity to traffic flows on A43(T) Adjacent to main SRFI site Adjacent to Grand Union Canal (Northampton Arm)

Table 19.26: J15a Works Receptors

Junction	Sensitivity	Explanation of Sensitivity
Junction 5 – M1 Junction 15a	High	Existing junction congestion Adjacent to Grand Union Canal (Northampton Arm) Adjacent to M1 Motorway and Northampton Motorway Services Proximity to Pineham Park Industrial Estate

Table 19.27: Other Minor Highway Works Receptors

Junction	Sensitivity	Explanation of Sensitivity
Junction 1 - M1 Junction 16 – M1 / A4500 / A45	Low	Adjacent to surrounding farmland Adjacent to M1 Motorway
Junction 3 - A4500 / Upton Way / Tollgate Way	Moderate	Adjacent Sixfields Leisure Park Adjacent to Westgate Industrial Estate Adjacent to Upton residential area
Junction 4 - A5076 / A5123 / Upton Way	High	Existing junction congestion Adjacent to Hunsbury Meadows residential area Adjacent to Grand Union Canal (Northampton Arm)
Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road	Moderate	Existing junction congestion. Adjacent to Camp Hill and Briar Hill residential areas
Junction 7 - Towcester Road / A5076 / Tesco	High	Existing junction congestion Adjacent to Hunsbury Hill Country Park Adjacent to Hunsbury Centre and Merefield Residential area
Junction 9 – A45 / Eagle Drive / Caswell Road	High	Existing junction congestion Serves Brackmills Industrial Estate
Junction 10 – Barnes Meadow Interchange - A45 / A428 Bedford Road / A5095	High	Existing junction congestion Serves Brackmills Industrial Estate Adjacent to the River Nene and Barnes Meadow Nature Reserve
Junction 11 - A45 / A43 / Ferris Row	High	Existing junction congestion Serves Riverside Retail Park Adjacent to Weston Favell and Little Billing residential areas
Junction 12 - M1 Junction 15 – M1 / A45 Saxon Avenue / A508	High	Existing junction congestion Adjacent to M1 Motorway Adjacent to Grange Park Industrial Estate
Junction 14 – Tove Roundabout - A43 / Towcester Road / A5	High	Existing junction congestion Adjacent to retail and industrial land uses
Junction 15 - Abthorpe Roundabout – Abthorpe Road / A43 / Brackley Road	High	Existing junction congestion Adjacent to Towcester residential area
Junction 19 – A5076 / Telford	Moderate	Adjacent Sixfields Leisure Park and Sixfields

Way / Walter Trull Way / Duston Mill Lane		Stadium Adjacent to Upton residential area Adjacent to Duston Mill Meadow Nature Reserve
Junction 20 – A5076 / High Street / Duston Mill	Moderate	Existing junction congestion Adjacent to Upton residential area Adjacent to Duston Mill Meadow Nature Reserve and the River Nene
Junction 25 - A508 / A5199	High	Existing junction congestion Adjacent to Kingsthorpe centre and residential area

Duration of effect

19.115 The duration of each effect will be considered as follows:

- Short-term: 0 to 5 years;
- Medium-term: 5 to 10 years; and
- Long-term: 10 years onwards.

Significance of effect

Traffic Flows

19.116 The magnitude of effect and receptor sensitivity have been compared to determine the overall significance of effect in traffic flows, as set out in **Table 19.28**.

19.117 **Table 19.28** presents a matrix of assessing the significance of effect based solely on the impact of traffic flow on the identified receptors. It therefore does not take into account the effects of junction works proposed to mitigate the impact of the development on junction capacity and delay. Further explanation of capacity assessments undertaken as part of the TA have therefore been referred to in addition to the respective result tables.

Table 19.28: Matrix of Assessing Significance of Effect

Assessing Significance of Effects					
	Sensitivity of Receptors				
Magnitude of Effect	**Very High**	**High**	**Moderate**	**Low**	**Negligible**
Major	Major	Major	Moderate	Moderate	Minor
Moderate	Major	Moderate	Moderate	Minor	Negligible
Minor	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

19.118 Negligible, minor, moderate and major significances as categorised can either be beneficial (positive, i.e. reduction in traffic flows) or adverse (negative, i.e. increase in traffic flows).

19.119 It should be noted that the IEA Guidance states that;

> "*For many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed up by data or quantified information wherever possible*", and "*those preparing the Environmental Statement will need to make it clear how they have defined whether a change is considered significant or not*" (paragraph 4.5).

19.120 It is considered that the traffic flow impact of the proposals will be considered to be "significant" in EIA terms if they meet the following criteria:

- Short term effects with a major significance;
- Medium term effects with a major or moderate significance; and
- Long term effects with a major or moderate significance.

19.121 All effects which are assessed as being of minor or negligible significance are not considered to be "significant" in EIA terms.

19.122 Where the traffic flow impact of the proposals is considered to be "significant", a further detailed assessment will be carried out to assess the impact of the proposals on other highways and transportation related elements.

19.123 The IEA guidelines indicate that the potential effects of the development should be assessed in terms of the following:

(i) noise;
(ii) vibration;
(iii) severance;
(iv) driver delay;
(v) pedestrian delay;
(vi) pedestrian amenity;
(vii) accidents and safety;
(viii) hazardous loads;
(ix) dust and dirt;
(x) visual impact;
(xi) air pollution;
(xii) ecological impact; and
(xiii) heritage and conservation areas.

19.124 The Guidelines note that developments may not impact on all of the areas outlined above, as this will be dependent on the nature of the proposals. However, where items have been excluded from detailed assessment, the reasons for this should be outlined.

19.125 This chapter considers the highways and transportation related effects (iii) to (viii) listed above. Potential effects relating to noise and vibration, visual impact, air quality, ecology and

heritage and conservation areas are considered in **Chapters 18: Noise and Vibration, 17: Landscape and Visual, 9: Air Quality, 16: Biodiversity** and **12: Built Heritage** respectively (however, any relevant intra-relationships are identified in this chapter).

19.126 It must be noted that the identification of a "significant" effect on traffic flow (moderate or major magnitude) does not imply the overall effect would be "significant" in environmental (and therefore EIA) terms. This depends on this further assessment which is based on professional judgement and the guidelines described in further detail below. Evidently traffic flow through a junction in itself does not have "environmental" implications other than its effect on the 13 measures listed above. It is possible for works on a highway to significantly increase traffic flow while improving issues such as severance, driver delay, accidents etc., and therefore to have a non-significant adverse, or even a beneficial effect overall. Indeed, in the case of the Proposed Development, works on J15a and the minor highway works have been incorporated into the Proposed Development to improve junctions where otherwise there was perceived to have been the potential for such adverse environmental effect – especially relating to insufficient capacity (driver and pedestrian delay, safety etc.).

Severance

19.127 IEA Guidance defines severance as "the perceived division that can occur within a community when it becomes separated by a major traffic artery that separates people from places and other people," for example difficulties crossing existing roads or the physical barrier of the road itself.

19.128 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively." However, it also notes that these figures were derived from studies of major changes in traffic flow, and that "the assessment of severance should pay full regard to specific local conditions". It is therefore clear that a level of professional judgement is required to be applied in determining the impact on severance.

Driver Delay

19.129 IEA Guidance states that "delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system". As such, the impact of the proposed development on driver delay will be considered in relation to background traffic, and existing conditions at the junctions. IEA guidance suggests that junction assessment modelling can be used to estimate increased vehicle delays.

Pedestrian Delay

19.130 IEA Guidance states that '*changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general increases in traffic levels are likely to lead to increases in delay*'.

19.131 There are a range of local factors that affect pedestrian delay including the level of pedestrian activity, visibility and general physical conditions of the site. However, IEA Guidance does not set out thresholds for judging the significance of changes in levels of delay, and suggests that the assessor uses their judgement to determine whether pedestrian delay is a significant impact.

Pedestrian Amenity (including Fear and Intimidation)

19.132 Pedestrian amenity is broadly described in the IEA Guidelines as 'the relative pleasantness of a journey' and can be affected by traffic flow, composition and footway widths. This definition includes pedestrian fear and intimidation and can be considered a much broader category when considering the overall relationship between pedestrians and traffic. The Guidelines suggest that a threshold for judging this would be '***where the traffic flows (or its lorry component) is halved or doubled'***.

Accidents and Safety

19.133 IEA Guidelines suggest that professional judgement is required to assess the implications of increased traffic flows and composition on accidents and safety. There is no definitive rule on how traffic flow increases or decreases will affect the number of accidents at a junction or on a link. For instance, an increase in traffic at an accident blackspot may proportionally increase the number of accidents, but equally a decrease in traffic flows at congested locations could allow higher vehicle speeds and lead to increased accidents. Therefore, a qualitative assessment has been made of the likely impact of the Proposed Development on road safety in the study area based on the likely changes in traffic flows, and the anticipated effect on existing accident patterns.

Hazardous Loads

19.134 IEA Guidelines state that the number and composition of hazardous loads should be identified as well as a risk analysis to illustrate the potential for an accident to happen.

Embedded Mitigation

Main SRFI Site

19.135 The Main SRFI site will be designed to include a number of features in order to minimise the occurrence of adverse environmental effects in terms of highways and transportation, as set out in **Chapter 5: The Proposed Development**. These features will include:

- A bus interchange and frequent bus stops within the site to facilitate enhanced bus services for employees from the A43(T) and Northampton Road;
- Provision of an appropriate number of car and cycle parking spaces, suitably designed (i.e. cycle parking spaces will be secure and covered) and well located to minimise the impact off the site;
- Walking and cycling routes to and within the site to encourage and facilitate employees access by modes other than the car;
- Provision of showers, lockers and changing areas within individual units to encourage travel by modes of transport other than the car; and
- Lighting throughout the site to enhance personal security and encourage walking and cycling to and through the site.

19.136 These features will be provided at the outset, upon construction of each individual unit.

J15a Works

19.137 Embedded mitigation associated with the Proposed Development will include for major highway works at M1 Junction 15a. The impact of the Proposed Development will be considered at the junction during the AM (0800-0900) and PM (1700-1800) peak hours of the highway network. This was agreed with HE and NCC to provide a worst case assessment of the impact of the Proposed Development, as these periods are when the highway network is under the most stress.

19.138 The majority of mitigation can be accommodated within the existing highway boundary, however, some third party land will also be required in order to accommodate the J15a works.

19.139 A summary of the proposed junction improvements at M1 Junction 15a is provided in **Table 19.29** below.

Minor Highway Works

19.140 In addition, embedded mitigation associated with the Proposed Development will include for a number of other minor highway works are proposed at junctions outlined earlier in this chapter. As with M1 Junction 15a, the impact of the Proposed Development is considered at each of the junctions during the AM (0800-0900) and PM (1700-1800) peak hours of the highway network. This was agreed with HE and NCC to provide a worst case assessment of the impact of the Proposed Development, as these periods are when the highway network is under the most stress.

19.141 The majority of improvements can be accommodated within the existing highway boundary and consist of widening on approaches and exits and the reconfiguration of road markings. However, third party land is required in order to provide mitigation at the Tove Roundabout and the Abthorpe roundabout.

19.142 Based on the phased build out of the Proposed Development, it is likely that the improvement works will be phased in line with the amount of development being constructed on the site at certain trigger points, as a requirement to the DCO. The phasing of the improvement works will be determined further to an extensive modelling exercise using the NSTM, which will be carried out in advance of the DCO application submission. For the purpose of this PEIR, 2021 assessments of air quality and noise at “first operation” (see **Chapters 9:Air Quality** and **18: Noise and Vibration** respectively) have made the assumption that only J15a will be in operation and the other highways works will not be constructed. This assessment assumes 2031 operation only.

19.143 Details of the mitigation and the implications of their implementation is set out in detail in the TA, with a summary set out in **Table 19.29** below.

Table 19.29: Summary of Mitigation Proposed

Junction Number	Junction Name	Proposed Junction Improvement Summary	DCO Drawing Reference[1]
1	M1 Junction 16	Provision of traffic signal control on both M1 off slips and the A45 approach, as well as three corresponding traffic signals on the circulatory carriageway; provision of an additional nearside lane on the M1 Eastbound off-slip approach; provision of an additional offside lane on the M1 Westbound off-slip approach; provision of an additional nearside lane on the A45 approach; and reconfiguration of the road markings to provide three lanes on circulatory carriageway, with the exception of the eastern section.	
3	A4500 / Upton Way / Tollgate Way	Provision of an additional nearside lane on the A4500 West approach; changing the existing nearside lane road marking to a straight ahead only on the A4500 West approach; and realignment of the footway/cycleway adjacent to the A4500 West approach.	
4	A5076 / A5123 / Upton Way	Extension to the offside right turn lane on the Upton Way approach; reconfiguration of the road markings on the Danes Camp Way approach; reconfiguration of the road markings on the circulatory carriageway; additional offside lane on the A5123 approach; additional lane on the circulatory carriageway; and additional lane on the Upton Way exit.	
5	M1 Junction 15a	*Southern Roundabout* Replacement of the existing roundabout with a signalised junction arrangement to facilitate all existing movements as well as a proposed left-in/left-out site access; provision of two through lanes in either direction for traffic travelling north and south on the A43(T);	

[1] References will be provide for the final DCO application submission

Junction Number	Junction Name	Proposed Junction Improvement Summary	DCO Drawing Reference[1]
		provision of a left turn lane for the A43(T) south approach; provision of two right turn lanes for the A43(T) north approach; provision of two right turn lanes for the A43(T) west approach; provision of a left turn lane for the A43(T) west approach; and provision of yellow box road markings. *Northern Roundabout* signalisation of both A43(T) approaches and the A5123 approach, as well as three corresponding traffic signals on the circulatory carriageway; widening of the circulatory carriageway and provision of road markings on the circulatory carriageway; additional lanes on the A43(T) south approach; additional nearside lane on the A43(T) west approach; additional offside lane on the A5123 approach; and additional off side lane on the A5123 exit.	
6	A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road	Provision of signal control on both arms of the A5076 Danes Camp Way approaches and two corresponding traffic signals on the circulatory carriageway; provision of an additional nearside lane on both of the A5076 Danes Camp Way approaches; provision of an additional merge lane on both of the A5076 Danes Camp Way exits; lengthening of the nearside lane on the Hunsbarrow Road approach; and reconfiguration of the road markings to provide extra connecters on the circulatory carriageway and entry arms.	
7	Towcester Road / A5076 / A5123 / Tesco	Provision of an additional lane and merge on Towcester Road south exit; provision of an additional offside lane on the A5076 Danes Camp Way approach; signalisation of the Towcester Road north approach and corresponding traffic signals on the circulatory	

Junction Number	Junction Name	Proposed Junction Improvement Summary	DCO Drawing Reference[1]
		carriageway; lengthening of the nearside lane on the Towcester Road north approach; provision of local widening on the circulatory carriageway; lengthening of the off side lane on the Mere Way approach; provision of a merge lane on the Mere Way exit; and provision of a merge lane on the Towcester Road south exit.	
9	A45 / Eagle Drive / Caswell Road	Provision of traffic signal control on Caswell Road approach (and circulatory carriageway).	
10	A45 / A428 / Bedford Road / A5095	Provision of an additional lane on the A428 West approach; Provision of an additional lane for right movements on the eastern circulatory approach; and Changing road markings for the existing two lanes to straight ahead and right lane and a right turn only lane on the southern circulatory.	
11	A45 / A43 / Ferris Row	Additional third lane on the western circulatory for right turning traffic; and changing the road markings for the existing two lanes to straight ahead only lane and an ahead and right turn only lane on the western circulatory.	
12	M1 / A45 / Saxon Avenue / A508	Provision of an additional nearside lane on the A45 approach; realignment of the footway/cycleway adjacent to the A45 approach; provision of an additional lane on the northern circulatory; provision of a merge lane on the A45 exit; and changing the road markings for the M1 Northbound off-slip and A508 approaches to allow three lanes towards the A45.	
14	A43 / Towcester	Reconfiguration of the roundabout and an increase in the size of the central island; lengthening of an existing lane and the provision of an additional lane on A43(T) south approach;	

Junction Number	Junction Name	Proposed Junction Improvement Summary	DCO Drawing Reference[1]
	Road / A5	reconfiguration and widening of the Towcester Road approach to accommodate an additional give way lane; lengthening of an existing lane and provision of an additional lane on the A5 (north) approach; widening of the circulatory carriageway between the A5 (north) and the A5 (south) to provide an additional lane; and provision of a merge lane on the A5 north exit.	
15	Abthorpe Road / A43 / Brackley Road	Provision of two additional offside lanes on the A43(T) north approach; realignment of the existing lanes on the Brackley Road approach; realignment of the A43(T) exit; and reconfiguration of the road markings on the circulatory carriageway.	
19	A5076 / Telford Way / Walter Tull Way / Duston Mill Lane	Provision of an additional nearside lane on the A5076 Upton Way north approach; realignment of the Edgar Mobbs Way approach; provision of a merge lane on the A5076 Upton Way south exit; provision of an additional nearside lane on the A5076 Upton Way south approach; realignment of the Telford Lane approach and exit; provision of a merge lane on the A5076 Upton Way north arm; and widening of the circulatory carriageway to accommodate three lanes on the east and west sections of the circulatory and two lanes on the north and south sections of the circulatory.	
20	A5076 / High Street / Duston Mill	Provision of an additional nearside lane on the A5076 Upton Way north approach; provision of a merge lane on the A5076 Upton Way south exit; provision of an additional nearside lane on the A5076 Upton Way south approach; provision of a merge lane on the A5076 Upton Way north exit; and widening of the circulatory carriageway to accommodate three lanes on the east and west sections of the circulatory and two lanes on the north and south sections of the circulatory.	
25	A508 / A5199	Lengthening of an existing lane on the A5199 approach.	

Assessment of Construction Phase Effects

Main SRFI Site

19.144 This section summarises the potential effects associated with the movement of construction traffic at the Main SRFI Site.

Traffic Flows

19.145 The Proposed Development is anticipated to be built out over a ten year period between 2019 and 2029, as set out in **Chapter 5: The Proposed Development**. During this time construction traffic will include the movement of workers associated with the construction of infrastructure and individual plots along with the movement of material in the form of importing or exporting material.

19.146 It is anticipated that the maximum size vehicle that will be accessing the site will be the maximum legal 16.5 metres articulated vehicle, weighing a maximum of 40 tonnes.

19.147 Should the situation arise that an abnormal load should need to access the site, permission will be sought from the relevant authorities. However, it is anticipated that the propensity for this will be low, as the anticipated construction works are not of the type that would typically necessitate abnormal loads, and the on-site contractor would typically seek to avoid these as far as possible.

19.148 There will be a number of construction vehicles that will be used onsite during the construction period, some of which will be driven to site (i.e. tractors and cranes) and others will be brought to site on the back of a low-loader. There will also be car and light goods vehicle movements associated with employees working at the site. The number of vehicles associated with the construction period are included in **Table 19.30** and in the CTMP (**Appendix 19.3**).

19.149 In order to determine the likely number of construction vehicle movements associated with the Proposed Development, it is assumed that the Proposed Development will be constructed in 11 phases as outlined in **Chapter 5: The Proposed Development (Table 5.4)** – though merging all rail-related works into one phase (Phase 5). Numbers of employees and vehicles have been calculated on the assumption that the site is built out in accordance with the Illustrative Masterplan in Appendix 5.2 and as outlined in **Chapter 20: Socioeconomics**. This is considered to be a reasonable assumption and provides a worst case scenario because the construction phase could in reality extend over a longer period of time and therefore result in less intensive daily vehicular movements.

19.150 Given the length of the construction phase, it is not considered that climate change will influence the baseline conditions or the impact of the construction traffic on the local and strategic highway network.

19.151 The construction vehicular access route to the Proposed Development will be via the A43(T) only and as such the impact of the construction traffic has been undertaken for the A43(T) only. Wider construction traffic routes will depend on the origin of the material being transported to the site and a wider assessment of the effects can therefore not be undertaken. The forecast number of employees and vehicle movements (including cars, LGVs and HGVS) associated with each of the construction phases is shown in **Table 19.30**.

Table 19.30: Forecast Construction Vehicle Movements

Phase	Description	FTE employees	No. vehicles per day (car/LGV)*	Construction vehicles per day (HGV)	Total Vehicles	Magnitude of Change	Sensitivity of receptor	Significance of effects
1, 2, 3, 4	New A43(T) junction	79	71	1	72	Minor adverse	Moderate	Minor adverse
2	Haul road from A43(T) to underpass	18	16	27	43	Negligible	Moderate	Negligible
2	Permanent road from A43(T) to underpass	77	69	27	97	Minor adverse	Moderate	Minor adverse
3	Underpass	11	10	27	37	Minor adverse	Moderate	Minor adverse
4	Haul road from underpass to intermodal area / terminal	48	43	27	70	Minor adverse	Moderate	Minor adverse
4	Permanent road from underpass to intermodal area / terminal	58	52	27	79	Minor adverse	Moderate	Minor adverse
5	Rail freight terminal and maintenance depot	292	263	32	295	Moderate adverse	Moderate	Moderate adverse
5	Express freight terminal	70	63	5	68	Minor adverse	Moderate	Minor adverse
6	Rail Connected Buildings (Zone 5)	401	361	49	410	Major adverse	Moderate	Moderate adverse
7	Buildings at A43 frontage (Zone 1 and 2 (western extent))	341	307	114	421	Major adverse	Moderate	Moderate adverse
8	Rail Connected Building (Zone 5a)	261	235	28	263	Moderate adverse	Moderate	Moderate adverse
9	Buildings east of Northampton Road (Zone 4)	360	324	54	378	Major	Moderate	Moderate

						adverse		adverse
10	Buildings at A43 frontage (Zone 1 and 2 (eastern extent))	482	434	226	660	Major adverse	Moderate	Moderate adverse
11	Buildings east of Northampton Road (Zone 3)	386	347	54	402	Major adverse	Moderate	Moderate adverse

* assumes 90 percent travelling by car, based on baseline mode share calculations contained at chapter 7 of the TA in Appendix 19.1.

19.152 **Table 19.30** demonstrates that there could be a maximum of 434 employee vehicles and 226 HGVs accessing the site per day during Phase 10 of the construction. This equates to a total of 1,320 two-way vehicles movements across the busiest day, 34 percent of which are HGVs. It should be noted that this is significantly fewer vehicles than are forecast to be associated with the operational phase of the development. This corresponds to a major impact magnitude (Table 19.23) on a receptor of moderate significance (Table 19.25).

19.153 The significance of effect during the construction phase is therefore forecast to be **moderate adverse** during the busiest period of construction. However, the phases of construction during which this significance is experienced are anticipated to be over a short term period (0-5 years), and are therefore not considered to be significant in EIA terms, as set out previously (i.e. short term traffic flow impact will be considered to be "significant" if a major impact magnitude is apparent).

J15a Works

19.154 This section summarises the potential effects associated with the movement of construction traffic for the J15a works.

19.155 The construction vehicular access route to the J15a works will be taken via the A43(T) and the M1 motorway. The wider construction traffic routes will depend on the origin of the material being transported to the site and the number of vehicle movements required will be subject to the detailed design of the junction. An assessment of the impact of the construction of the J15a works will therefore be carried out once this information is available, and in advance of the DCO submission. As outlined in Table 19.26, the sensitivity of J15a is high. However, the magnitude of impact during construction has not yet been determined.

Minor Highway Works

19.156 This section summarises the potential effects associated with the movement of construction traffic for the other minor highway works proposed as part of the scheme.

19.157 The construction traffic routes to the other minor highway works will depend on the origin of the material being transported to the sites and the number of vehicle movements required will be subject to the detailed design of the junctions. An assessment of the impact of the construction of the other minor highway works will therefore be carried out once this information is available, and in advance of the DCO submission.

Assessment of Operational Phase Effects

19.158 Once the Proposed Development has been completed the key potential effects to be considered are summarised below.

19.159 It should be noted that the NSTM, through which the impact of the Proposed Development has been assessed, includes growth in traffic flows as a result of JCS sites in Northamptonshire. In addition to this, the traffic associated with the Proposed Development has been added to the NSTM.

19.160 The NSTM automatically reassigns traffic on to the highway network when links and junctions become congested as drivers seek alternative routes, and as such negative numbers can be obtained when comparing different model scenarios.

19.161 As the Junction 15a works and the other minor highway works are embedded as part of the proposals for the main SFRI site, the following assessment of operational effects has been undertaken for all proposed development works.

All Development within Order Limits

A43(T) Link (Main SRFI Site)

Traffic Flows

19.162 **Table 19.31** sets out the magnitude of change of total traffic flow increases as a result of the Proposed Development for a forecast year of 2031.

Table 19.31: 2031 Traffic Flows with the Proposed Development (Main SRFI)

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A43(N)	AM	4,563	1,425	31.2%	Major Adverse	Moderate	Moderate Adverse
	PM	4,213	1,628	38.6%	Major Adverse	Moderate	Moderate Adverse
A43(S)	AM	4,915	155	3.2%	Negligible	Moderate	Negligible
	PM	5,130	202	3.9%	Negligible	Moderate	Negligible

Severance

19.163 IEA Guidance defines severance as "the perceived division that can occur within a community when it becomes separated by a major traffic artery that separates people from places and other people," for example difficulties crossing existing roads or the physical barrier of the road itself.

19.164 The A43(T) is already a nationally significant traffic artery managed by Highways England and is a significant barrier for people to cross. It is therefore considered that the additional traffic from the proposed development is unlikely to change the character of the road and further separate people from places and other people than is already the case. In addition, the Proposed Development will create an underpass beneath the new grade separated A43 junction (between the main body of the Main SRFI Site and the park at Arm Farm), which will ensure that the existing public right of way at this location does not experience any severance even though traffic flows on the road may increase. It is therefore concluded that the additional traffic associated with the Proposed Development will have at worst a **negligible** significance of effect on severance.

Driver Delay

19.165 It has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increase level of traffic attracted by the Proposed Development will not result in any significant vehicle delay on the A43(T) in the vicinity of the Potential Development Area.

19.166 The site will be accessed via a proposed grade separated junction, which will facilitate the through-flow of traffic on the A43(T). It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.167 Due to the proposed layout of the site (including an underpass and with no vehicular access from Northampton Road) and the position of the proposed access from the A43(T), pedestrian trips on the local road network will be unaffected by traffic associated with the Proposed Development. Although EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay it is considered that there will be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.168 The A43(T) does not have any existing pedestrian facilities and pedestrian activity is very infrequent. There will therefore be a **negligible** significance of effect on pedestrian amenity.

Accidents and Safety

19.169 A total of three Personal Injury Collisions (PICs) resulting in three recorded injuries were reported to have occurred on the A43(T) in the vicinity of the site during the most recent five year period. All three of the incidents recorded in the study period were classified as slight. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.170 Further to analysis of the data, it is considered that the incidents recorded on the A43(T) were due to driver error / misjudgement and none of the incidents involved vulnerable road users such as pedestrians or cyclists.

19.171 Overall, it is concluded that there is no obvious highway safety problem associated with the A43(T) in the vicinity of the site and it is considered that the increase in traffic associated with the proposed development will not lead to an accident pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

19.172 There will be no hazardous loads associated with the operation of the Proposed Development.

J15a

Junction 5 - M1 Junction 15a - M1 / A43 / A5123

Traffic Flows

19.173 **Table 19.32** sets out the magnitude of change of total traffic flow increases at Junction 15a as a result of the Proposed Development for a forecast year of 2031.

Table 19.32: 2031 Traffic Flows with the Proposed Development – Junction 5 – M1 Junction 15a – M1 / A43 / A5123

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
Service Station SB	AM	311	0	0.0%	Negligible	High	Minor Adverse
	PM	233	+1	+0.3%	Negligible	High	Minor Adverse
Service Station NB	AM	31	0	+1.1%	Negligible	High	Minor Adverse
	PM	61	0	+0.8%	Negligible	High	Minor Adverse
A5123	AM	3,865	+660	+17.1%	Moderate Adverse	High	Moderate Adverse
	PM	4,212	+403	+9.6%	Minor Adverse	High	Moderate Adverse
Travis Perkins Site	AM	103	0	+0.4%	Negligible	High	Minor Adverse
	PM	88	+1	+1.6%	Negligible	High	Minor Adverse
M1 SB OUT	AM	1,089	+69	+6.3%	Minor Adverse	High	Moderate Adverse
	PM	1,060	+105	+9.9%	Minor Adverse	High	Moderate Adverse
M1 NB IN	AM	462	+583	+126.3%	Major Adverse	High	Major Adverse
	PM	537	+1,021	+190.1%	Major Adverse	High	Major Adverse
A43 S	AM	4,563	+1,782	+39.0%	Major Adverse	High	Major Adverse
	PM	4,213	+2,152	+51.1%	Major Adverse	High	Major Adverse

M1 NB OUT	AM	616	+313	+50.8%	Major Adverse	High	Major Adverse
	PM	779	+691	+88.7%	Major Adverse	High	Major Adverse
M1 SB IN	AM	896	+367	+40.9%	Major Adverse	High	Major Adverse
	PM	1,082	+305	+28.2%	Moderate Adverse	High	Moderate Adverse
Swan Valley Way	AM	1,109	+129	+11.6%	Minor Adverse	High	Moderate Adverse
	PM	1,180	+143	+12.1%	Minor Adverse	High	Moderate Adverse
TOTAL	**AM**	**13,045**	**+3,903**	**+29.9%**	**Major Adverse**	**High**	**Major Adverse**
	PM	**13,445**	**+4,823**	**+35.9%**	**Major Adverse**	**High**	**Major Adverse**

19.174 The significance of effect at the junction is forecast to be **major adverse** as a result of a major increase in traffic flow on a high sensitivity junction. It should be noted that one of the reasons the sensitivity of the junction is high (Table 19.26) is because of existing junction congestion, which is why improvements form part of the Proposed Development.

19.175 As there is an increase in traffic flow of more than 10%, further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.176 IEA Guidance defines severance as "the perceived division that can occur within a community when it becomes separated by a major traffic artery that separates people from places and other people," for example difficulties crossing existing roads or the physical barrier of the road itself.

19.177 The A43(T) and M1 are already nationally significant traffic arteries managed by Highways England and are significant physical barriers for people to cross. It is therefore considered that the additional traffic from the proposed development is unlikely to change the character of the roads and further separate people from places and other people than is already the case. It is therefore concluded that the additional traffic associated with the proposed development will have a **negligible** significance of effect on severance.

Driver Delay

19.178 It has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material increase in vehicle delay at M1 Junction 15a as a result of the proposed highway mitigation works set out in **Table 19.29**. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.179 There is limited pedestrian activity at Junction 15a and therefore pedestrian trips on the local road network will be unaffected by traffic associated with the Proposed Development. There will therefore be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.180 Junction 15a does not have any existing pedestrian facilities and pedestrian activity is very infrequent. There will therefore be a negligible significance of effect on pedestrian amenity.

Accidents and Safety

19.181 A total of 24 PICs were reported to have occurred at junction 15a of the M1. A total of 18 of were classified as slight with five classified as serious with one being classified as a fatal. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.182 Further to analysis of the data, it is considered that the incidents recorded at M1 Junction 15a were due to driver error / misjudgement.

19.183 With consideration that M1 Junction 15a is a major highway junction, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with junction 15a of the M1 and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

19.184 There will be no hazardous loads associated with the operation of the Proposed Development.

Minor Highway Works

Junction One - M1 Junction 16 – M1 / A4500 / A45

Traffic Flows

19.185 **Table 19.33** sets out the magnitude of change of total traffic flow increases at M1 Junction 16 as a result of the Proposed Development for a forecast year of 2031.

Table 19.33: 2031 Traffic Flows with the Proposed Development - Junction One - M1 Junction 16

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A45	AM	3,957	+129	+3.3%	Negligible	Low	Negligible
	PM	4,203	-12	-0.3%	Negligible	Low	Negligible
M1 EB IN	AM	747	-88	-11.8%	Minor Beneficial	Low	Negligible
	PM	703	-69	-9.9%	Minor Beneficial	Low	Negligible
A4500	AM	3,346	-154	-4.6%	Negligible	Low	Negligible
	PM	3,030	+47	+1.5%	Negligible	Low	Negligible
M1 WB IN	AM	1,867	+77	+4.1%	Negligible	Low	Negligible
	PM	1,868	+13	+0.7%	Negligible	Low	Negligible
M1 WB OUT	AM	836	-29	-3.4%	Negligible	Low	Negligible
	PM	831	+11	+1.3%	Negligible	Low	Negligible
M1 EB OUT	AM	1,192	-78	-6.5%	Minor Beneficial	Low	Negligible
	PM	1,321	+68	+5.1%	Minor Adverse	Low	Negligible
TOTAL	**AM**	**11,945**	**-143**	**-1.2%**	**Negligible**	**Low**	**Negligible**
	PM	**11,958**	**+57**	**+0.5%**	**Negligible**	**Low**	**Negligible**

19.186 The significance of effect at the junction is forecast to be **negligible**. It has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that, as a result of the proposed highway mitigation works set out in **Table 19.27,** the increased level of traffic attracted by the Proposed Development will not result in any material impact to junction capacity or delay. It is therefore confirmed that the Proposed Development will have a **negligible** significance of effect on the junction.

19.187 **Table 19.33** demonstrates that the magnitude of change at the junction is forecast to be less than 30 percent. As such, no further environmental assessment is required in accordance with the IEA guidelines.

Junction Three - A4500 / Upton Way / Tollgate Way

Traffic Flows

19.188 **Table 19.34** sets out the magnitude of change of total traffic flow increases at the roundabout between the A4500 Weedon Road, Tollgate Way and A5076 Upton Way as a result of the Proposed Development for a forecast year of 2031.

Table 19.34: 2031 Traffic Flows with the Proposed Development - Junction Three - A4500 / Upton Way / Tollgate Way

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A4500 WB	AM	2,891	-36	-1.2%	Negligible	Moderate	Negligible
	PM	2,606	+70	+2.7%	Negligible	Moderate	Negligible
Tollgate Way	AM	2,490	+8	+0.3%	Negligible	Moderate	Negligible
	PM	2,109	-15	-0.7%	Negligible	Moderate	Negligible
A4500 EB	AM	2,860	+76	+2.6%	Negligible	Moderate	Negligible
	PM	3,060	+207	+6.8%	Minor Adverse	Moderate	Minor Adverse
A5076	AM	3,671	+29	+0.8%	Negligible	Moderate	Negligible
	PM	3,503	-49	-1.4%	Negligible	Moderate	Negligible
TOTAL	**AM**	**11,912**	**+77**	**+0.6%**	**Negligible**	**Moderate**	**Negligible**
	PM	**11,278**	**+212**	**+1.9%**	**Negligible**	**Moderate**	**Negligible**

19.189 The significance of effect at the junction is forecast to be **negligible** with the A4500 EB link to be **minor adverse** in the PM Peak hour. As a result of the proposed highway mitigation works set out in **Table 19.27,** it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on the junction.

19.190 As set out in Table 19.34, and as agreed in the Scoping Report and Screening Opinion, as the predicted increase in traffic flow is lower than 30 percent (and 10 percent for sensitive areas), then the significance of the effects can be considered to be low or not significant and further detailed assessment is not required.

Junction Four - A5076 / A5123 / Upton Way

Traffic Flows

19.191 **Table 19.35** sets out the magnitude of change of total traffic flow increases at the roundabout between the A5076, A5123 and Upton Way as a result of the Proposed Development for a forecast year of 2031.

Table 19.35: 2031 Traffic Flows with the Proposed Development - Junction Four - A5076 / A5123 / Upton Way

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
Upton Valley Way East	AM	1,565	-123	-7.9%	Minor Beneficial	High	Moderate Beneficial
	PM	1,518	-315	-20.8%	Moderate Beneficial	High	Moderate Beneficial
A5076 N	AM	4,424	-30	-0.7%	Negligible	High	Minor Beneficial
	PM	4,631	+68	+1.5%	Negligible	High	Minor Adverse
A5076 E	AM	5,625	+138	+2.5%	Negligible	High	Minor Adverse
	PM	5,511	-138	-2.5%	Negligible	High	Minor Adverse
A5123 S	AM	3,751	+751	+20.0%	Moderate Adverse	High	Moderate Adverse
	PM	3,913	+533	+13.6%	Minor Adverse	High	Minor Adverse
TOTAL	**AM**	**15,364**	**+736**	**+4.8%**	**Negligible**	**High**	**Minor Adverse**
	PM	**15,574**	**+147**	**+0.9%**	**Negligible**	**High**	**Minor Adverse**

19.192 The significance of effect at the junction is forecast to be **minor adverse** with the significance of effect ranging from **moderate beneficial** to **moderate adverse** on the associated links.

19.193 As set out in Table 19.27, Junction Four - A5076 / A5123 / Upton Way is considered to have a high receptor sensitivity and is located adjacent to a residential area. As part of the Scoping Report and Screening Opinion, residential areas were agreed to be considered as sensitive areas. Therefore, because the predicted increase in traffic flow is higher than 10 percent on any one of the links, then further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.194 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*."

19.195 As the increase in traffic flow on any one of the identified links is 20% at most, this is considered to result in a negligible change in severance. As the receptor is of high sensitivity, this would lead to **minor adverse** significance of effect.

Driver Delay

19.196 As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to overall junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.197 EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay. However, given that the junction does not include any existing pedestrian infrastructure or crossing facilities it is considered that there will be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.198 The junction does not have any existing pedestrian facilities and pedestrian activity is very infrequent. There will therefore be a negligible significance of effect on pedestrian amenity.

Accidents and Safety

19.199 A total of 19 PICs resulting in 21 recorded injuries were reported to have occurred at Junction Four - A5076 / A5123 / Upton Way. A total of 17 of the incidents recorded in the study period was classified as slight with two being classified as serious. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.200 Further to analysis of the data, it is considered that the incidents recorded on the roundabout were due to driver error / misjudgment, including disobeying traffic signals and temporary road conditions.

19.201 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the junction and it is considered that the traffic associated with the proposed development will not lead to an accident

pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

19.202 There will be no hazardous loads associated with the operation of the Proposed Development.

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

Traffic Flows

19.203 **Table 19.36** sets out the magnitude of change of total traffic flow increases at the roundabout between the A5076, Hunsbury Hill Avenue, Hunsbarrow Road and Hunsbury Hill Road as a result of the Proposed Development for a forecast year of 2031.

Table 19.36: 2031 Traffic Flows with the Proposed Development - Junction Six - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A5076 W	AM	5,389	+373	+6.9%	Minor Adverse	Moderate	Minor Adverse
	PM	5,293	+74	+1.4%	Negligible	Moderate	Negligible
Hunsbury Hill Avenue	AM	708	+11	+1.5%	Negligible	Moderate	Negligible
	PM	894	+15	+1.7%	Negligible	Moderate	Negligible
Hunsbarrow Road	AM	412	+16	+3.8%	Negligible	Moderate	Negligible
	PM	1,038	+4	+0.4%	Negligible	Moderate	Negligible
A5076 (East)	AM	4,784	+323	+6.7%	Minor Adverse	Moderate	Minor Adverse
	PM	3,901	+265	+6.8%	Minor Adverse	Moderate	Minor Adverse
Hunsbury Hill Road	AM	1,023	-47	-4.6%	Negligible	Moderate	Negligible
	PM	1,000	+267	+26.7%	Moderate Adverse	Moderate	Moderate Adverse
TOTAL	**AM**	**12,316**	**+675**	**+5.5%**	**Minor Adverse**	**Moderate**	**Minor Adverse**
	PM	**12,126**	**+627**	**+5.2%**	**Minor Adverse**	**Moderate**	**Minor Adverse**

19.204 The significance of effect at the junction is forecast to be **minor adverse** with the significance of effect ranging from **moderate beneficial** to **moderate adverse** on the associated links.

19.205 Junction Six - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road is located adjacent to residential areas. As part of the Scoping Report and Screening Opinion, residential areas were agreed to be considered as sensitive areas. Therefore, because the predicted increase in traffic flow is higher than 10 percent on any one of the links, then further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.206 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*."

19.207 As the increase in traffic flow on any one of the identified links is 26.7% at most, this is considered to result in a negligible change in severance. As the receptor is of moderate sensitivity, this would lead to **negligible** significance of effect.

Driver Delay

19.208 As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to overall junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.209 EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay. However, given that the junction does not include any existing pedestrian infrastructure or crossing facilities it is considered that there will be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.210 The junction does not have any existing pedestrian facilities and pedestrian activity is very infrequent. There will therefore be a **negligible** significance of effect on pedestrian amenity.

Accidents and Safety

19.211 A total of 19 PICs resulting in 23 recorded injuries were reported to have occurred at Junction Six - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road. A total of 18 of the incidents recorded in the study period was classified as slight with one being classified as serious. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.212 Further to analysis of the data, it is shown that the incidents recorded at the junction were due to driver error / misjudgment, including disobeying traffic signals and temporary road conditions.

19.213 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the junction and it is considered

that the traffic associated with the proposed development will not lead to an accident pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

There will be no hazardous loads associated with the operation of the Proposed Development.

Junction Seven – Towcester Road / A5076 / A5123 / Tesco

Traffic Flows

19.214 **Table 19.37** sets out the magnitude of change of total traffic flow increases at the roundabout between the A5076, Towcester Road and Tesco as a result of the Proposed Development for a forecast year of 2031.

Table 19.37: 2031 Traffic Flows with the Proposed Development - Junction Seven – Towcester Road / A5076 / A5123 / Tesco

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
Tesco	AM	143	+1	+0.4%	Negligible	High	Minor Adverse
	PM	159	+1	+0.7%	Negligible	High	Minor Adverse
Towcester Road S	AM	1,787	-45	-2.5%	Negligible	High	Minor Beneficial
	PM	2,116	-241	-11.4%	Minor Beneficial	High	Moderate Beneficial
A5076 W	AM	4,161	+85	+2.0%	Negligible	High	Minor Adverse
	PM	3,688	+7	+0.2%	Negligible	High	Minor Adverse
Towcester Road N	AM	1,412	-83	-5.9%	Minor Beneficial	High	Moderate Beneficial
	PM	2,001	-213	-10.6%	Minor Beneficial	High	Moderate Beneficial
Mere Way	AM	4,875	-67	-1.4%	Negligible	High	Minor Beneficial
	PM	4,837	-245	-5.1%	Minor Beneficial	High	Moderate Beneficial
TOTAL	**AM**	**12,377**	**-109**	**-0.9%**	**Negligible**	**High**	**Minor Beneficial**
	PM	**12,802**	**-690**	**-5.4%**	**Minor Beneficial**	**High**	**Moderate Beneficial**

19.215 The significance of effect at the junction is forecast to be **minor beneficial to moderate beneficial,** with the significance of effect ranging from **moderate beneficial** to **minor adverse** on the associated links. As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on the junction.

19.216 As set out in Table 19.37, and as agreed in the Scoping Report and Screening Opinion, as the predicted increase in traffic flow is lower than 30 percent (and 10 percent for sensitive areas), then the significance of the effects can be considered to be low or not significant and further detailed assessment is not required.

Junction Nine - A45 / Eagle Drive / Caswell Road

Traffic Flows

19.217 **Table 19.38** sets out the magnitude of change of total traffic flow increases at the A45 / Eagle Drive / Caswell Road junction as a result of the Proposed Development for a forecast year of 2031.

Table 19.38: 2031 Traffic Flows with the Proposed Development - Junction Nine - A45 / Eagle Drive / Caswell Road

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A45 NB OUT	AM	506	-10	-1.9%	Negligible	High	Minor Beneficial
	PM	1,492	-75	-5.0%	Negligible	High	Minor Beneficial
A45 Slip IN	AM	1,094	-141	-12.9%	Minor Beneficial	High	Moderate Beneficial
	PM	523	-132	-25.2%	Moderate Beneficial	High	Moderate Beneficial
Caswell Road	AM	3,006	-88	-2.9%	Negligible	High	Minor Beneficial
	PM	3,202	+129	+4.0%	Negligible	High	Minor Adverse
A45 SB OUT	AM	621	-43	-6.8%	Minor Beneficial	High	Moderate Beneficial
	PM	1,058	+68	+6.4%	Minor Adverse	High	Moderate Adverse
A45 NB IN	AM	1,074	+20	+1.8%	Negligible	High	Minor Adverse
	PM	823	-25	-3.1%	Negligible	High	Minor Beneficial
Eagle Drive	AM	64	0	+0.5%	Negligible	High	Minor Adverse
	PM	306	0	+0.1%	Negligible	High	Minor Adverse
TOTAL	**AM**	**6,366**	**-261**	**-4.1%**	**Negligible**	**High**	**Minor Beneficial**
	PM	**7,404**	**-35**	**-0.5%**	**Negligible**	**High**	**Minor Beneficial**

19.218 The significance of effect at the junction is forecast to be **minor beneficial**, with the significance of effect ranging from **moderate beneficial** to **minor adverse** on the associated links. As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on the junction.

19.219 As set out in Table 19.38, and as agreed in the Scoping Report and Screening Opinion, as the predicted increase in traffic flow is lower than 30 percent (and 10 percent for sensitive areas), then the significance of the effects can be considered to be low or not significance and further detailed assessment is not required.

Junction Ten –A45 / A428 Bedford Road / A5095

Traffic Flows

19.220 **Table 19.39** sets out the magnitude of change of total traffic flow increases at the A45 / A428 Bedford Road / A5095 roundabout as a result of the Proposed Development for a forecast year of 2031.

Table 19.39: 2031 Traffic Flows with the Proposed Development - Junction Ten – Barnes Meadow Interchange - A45 / A428 Bedford Road / A5095

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A428 E	AM	4,133	+17	+0.4	Negligible	High	Minor Adverse
	PM	4,259	+27	+0.6	Negligible	High	Minor Adverse
A5095	AM	1,555	+61	+3.9	Negligible	High	Minor Adverse
	PM	1,848	-33	-1.8	Negligible	High	Minor Beneficial
A45 NB OUT	AM	1,145	+63	+5.5	Minor Adverse	High	Moderate Adverse
	PM	2,650	-7	-0.2	Negligible	High	Minor Beneficial
A45 SB IN	AM	1,772	+53	+3.0	Negligible	High	Minor Adverse
	PM	1,351	-130	-9.6	Minor Beneficial	High	Moderate Beneficial
A428 W	AM	2,452	+26	+1.1	Negligible	High	Minor Adverse
	PM	2,534	+11	+0.4	Negligible	High	Minor Adverse
A45 S	AM	1,362	-39	-2.8	Negligible	High	Minor Beneficial
	PM	1,233	+11	+0.9	Negligible	High	Minor Adverse
TOTAL	**AM**	**12,420**	**+181**	**+1.5%**	**Negligible**	**High**	**Minor Adverse**
	PM	**13,875**	**-121**	**-0.9%**	**Negligible**	**High**	**Minor Beneficial**

19.221 The significance of effect at the junction is forecast to be **minor beneficial** to **minor adverse**, with the significance of effect ranging from **moderate beneficial** to **moderate adverse** on the associated links. As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on the junction.

19.222 As set out in Table 19.39, and as agreed in the Scoping Report and Screening Opinion, as the predicted increase in traffic flow is lower than 30 percent (and 10 percent for sensitive areas), then the significance of the effects can be considered to be low or not significance and further detailed assessment is not required.

Junction Eleven - A45 / A43(T) Ferris Row

Traffic Flows

19.223 **Table 19.40** sets out the magnitude of change of total traffic flow increases at the A45 / A43 junction as a result of the Proposed Development for a forecast year of 2031.

Table 19.40: 2031 Traffic Flows with the Proposed Development - Junction Eleven - A45 / A43(T) Ferris Row

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A43 SB IN	AM	3,362	-57	-1.7%	Negligible	High	Minor Beneficial
	PM	2,637	-71	-2.7%	Negligible	High	Minor Beneficial
A45 EB OUT	AM	617	-30	-4.9%	Negligible	High	Minor Beneficial
	PM	365	-30	-8.1%	Minor Beneficial	High	Moderate Beneficial
A45 WB IN	AM	359	-24	-6.6%	Minor Beneficial	High	Moderate Beneficial
	PM	672	+83	+12.3%	Minor Adverse	High	Moderate Adverse
Ferris Row Out	AM	175	-21	-12.1%	Minor Beneficial	High	Moderate Beneficial
	PM	432	-226	-52.3%	Major Beneficial	High	Major Beneficial
Ferris Row In	AM	165	-3	-1.7%	Negligible	High	Minor Beneficial
	PM	685	-233	-34.0%	Major Beneficial	High	Major Beneficial
A45 EB IN	AM	1,723	+59	+3.4%	Negligible	High	Minor Adverse
	PM	2,405	-113	-4.7%	Negligible	High	Minor Beneficial
A45 WB OUT	AM	2,564	+42	+1.7%	Negligible	High	Minor Adverse
	PM	2,429	-108	-4.5%	Negligible	High	Minor Beneficial
A43 NB OUT	AM	2,253	-16	-0.7%	Negligible	High	Minor Beneficial
	PM	3,173	+30	-0.9%	Negligible	High	Minor Beneficial
TOTAL	**AM**	**11,216**	**-50**	**-0.4%**	**Negligible**	**High**	**Minor Beneficial**
	PM	**12,798**	**-668**	**-5.2%**	**Minor Beneficial**	**High**	**Moderate Beneficial**

19.224 The significance of effect at the junction is forecast to be **moderate beneficial** to **minor beneficial**, with the significance of effect ranging from **moderate beneficial** to **moderate adverse** on the associated links.

19.225 As set out in Table 19.40, Junction Eleven - A45 / A43(T) Ferris Row is considered to have a high receptor sensitivity and is located adjacent to a residential area. As part of the Scoping Report and Screening Opinion, residential areas were agreed to be considered as sensitive areas. Therefore, because the predicted increase in traffic flow is higher than 10 percent on any one of the links, then further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.226 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*."

19.227 As the increase in traffic flow on any one of the identified links is 12.3% at most, this is considered to result in a negligible change in severance. As the receptor is of moderate sensitivity, this would lead to **negligible** significance of effect.

Driver Delay

19.228 As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to overall junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.229 EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay. However, given that the junction already accommodates appropriate signalised pedestrian crossing facilities, it is considered that there will be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.230 The overall level of traffic at the junction is expected to decrease. It is therefore considered that there will be a negligible significance of effect on pedestrian amenity.

Accidents and Safety

19.231 A total of 27 PICs resulting in 40 recorded injuries were reported to have occurred at the A45 / A43 roundabout junction. A total of 23 of the incidents recorded in the study period were classified as slight with four being classified as serious. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.232 Further to analysis of the data, it is considered that the incidents recorded were due to driver error / misjudgment, including disobeying traffic signals and temporary road conditions.

19.233 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the junction and it is considered that the traffic associated with the proposed development will not lead to an accident

pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

19.234 There will be no hazardous loads associated with the operation of the Proposed Development.

Junction Twelve – M1 Junction 15 – M1 / A45 / Saxon Avenue / A508

Traffic Flows

19.235 **Table 19.41** sets out the magnitude of change of total traffic flow increases at Junction 15 as a result of the Proposed Development for a forecast year of 2031.

Table 19.41: 2031 Traffic Flows with the Proposed Development - Junction Twelve – M1 Junction 15 – M1 / A45 / Saxon Avenue / A508

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
M1 SB IN	AM	2,321	-39	-1.7%	Negligible	High	Minor Beneficial
	PM	1,475	+87	+5.9%	Minor Adverse	High	Moderate Adverse
A45	AM	7,366	+236	+3.2%	Negligible	High	Minor Adverse
	PM	7,011	+75	+1.1%	Negligible	High	Minor Adverse
Saxon Avenue	AM	518	-17	-3.3%	Negligible	High	Minor Beneficial
	PM	401	-43	-10.8%	Minor Beneficial	High	Moderate Beneficial
M1 NB IN	AM	1,261	+78	+6.2%	Minor Adverse	High	Moderate Adverse
	PM	1,902	-243	-12.8%	Minor Beneficial	High	Moderate Beneficial
A508	AM	2,450	-62	-2.5%	Negligible	High	Minor Beneficial
	PM	2,105	+21	+1.0%	Negligible	High	Minor Adverse
M1 NB OUT	AM	1,952	+247	+12.7%	Minor Adverse	High	Moderate Adverse
	PM	2,023	+164	+8.1%	Minor Adverse	High	Moderate Adverse
M1 SB OUT	AM	1,388	+73	+5.2%	Minor Adverse	High	Moderate Adverse
	PM	1,238	-62	-5.0%	Negligible	High	Minor Beneficial
TOTAL	**AM**	**17,254**	**+515**	**+3.0%**	**Negligible**	**High**	**Minor Adverse**
	PM	**16,155**	**-2**	**-0.0%**	**Negligible**	**High**	**Minor Beneficial**

19.236 The significance of effect at the junction is forecast to be **minor beneficial** to **minor adverse**, with the significance of effect ranging from **moderate beneficial** to **moderate adverse** on the associated links.

19.237 As set out in **Table 19.41**, Junction Twelve – M1 Junction 15 is considered to have a high receptor sensitivity. Therefore, because the predicted increase in traffic flow is higher than 10 percent on any one of the links, then further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.238 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*."

19.239 As the increase in traffic flow on any one of the identified links is 12.7% at most, this is considered to result in a **negligible** change in severance.

19.240 It should be noted that Junction 15 of the M1 is already a nationally significant traffic artery managed by Highways England. It is therefore considered that the additional traffic from the proposed development is unlikely to change the character of the road and further separate people from places and other people than is already the case. Particularly as the main increase in traffic flow is on the M1 northbound on-slip.

Driver Delay

19.241 As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to overall junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.242 EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay. However, given that the junction already accommodates appropriate signalised pedestrian crossing facilities, it is considered that there will be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.243 The overall increase in traffic at the junction is not considered to be material. It is therefore considered that there will be a **negligible** significance of effect on pedestrian amenity.

Accidents and Safety

19.244 A total of 24 PICs resulting in 37 recorded injuries were reported to have occurred at Junction 15 of the M1. A total of 13 of the incidents recorded in the study period were classified as slight with six being classified as serious and one resulting in a fatality. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.245 Further to analysis of the data, it is considered that the incidents recorded at junction 15 of the M1 were due to driver error / misjudgment or temporary road conditions.

19.246 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with Junction 15 of the M1 and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

19.247 There will be no hazardous loads associated with the operation of the Proposed Development.

Junction Fourteen - A43 / Towcester Road / A5

Traffic Flows

19.248 **Table 19.42** sets out the magnitude of change of total traffic flow increases at the roundabout as a result of the Proposed Development for a forecast year of 2031.

Table 19.42: 2031 Traffic Flows with the Proposed Development - Junction Fourteen - A43 / Towcester Road / A5

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A43 S	AM	6,011	-98	-1.6%	Negligible	High	Minor Beneficial
	PM	6,104	+254	+4.2%	Negligible	High	Minor Adverse
Towcester Road	AM	213	+8	+3.5%	Negligible	High	Minor Adverse
	PM	221	+18	+8.0%	Minor Adverse	High	Moderate Adverse
A5 N	AM	2,072	-101	-4.9%	Negligible	High	Minor Beneficial
	PM	2,028	-71	-3.5%	Negligible	High	Minor Beneficial
A43 E	AM	4,915	+192	+3.9%	Negligible	High	Minor Adverse
	PM	5,131	+356	+6.9%	Minor Adverse	High	Moderate Adverse
A5 S	AM	1,097	+205	+18.6%	Moderate Adverse	High	Moderate Adverse
	PM	1,271	+6	+0.5%	Negligible	High	Minor Adverse
TOTAL	**AM**	**14,308**	**+205**	**+1.4%**	**Negligible**	**High**	**Minor Adverse**
	PM	**14,755**	**+563**	**+3.8%**	**Negligible**	**High**	**Minor Adverse**

19.249 The significance of effect at the junction is forecast to be **minor adverse**, with the significance of effect ranging from **minor beneficial** to **moderate adverse** on the associated links.

19.250 As set out in **Table 19.42**, Junction Fourteen - A43 / Towcester Road / A5 is considered to have a high receptor sensitivity and is located adjacent to a residential area. As part of the Scoping Report and Screening Opinion, residential areas were agreed to be considered as sensitive areas. Therefore, because the predicted increase in traffic flow is higher than 10 percent on any one of the links, then further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.251 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*."

19.252 As the increase in traffic flow on any one of the identified links is 18.6% at most, this is considered to result in a negligible change in severance. As the receptor is of high sensitivity, this would lead to **minor adverse** significance of effect.

Driver Delay

19.253 As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to overall junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.254 EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay. However, given that the junction already accommodates appropriate signalised pedestrian crossing facilities, it is considered that there will be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.255 The overall increase in traffic at the junction is not expected to be material and this is not expected to change the character of the existing pedestrian environment which is already designed in accordance with surrounding highway infrastructure. It is therefore considered that there will be a negligible significance of effect on pedestrian amenity.

Accidents and Safety

19.256 A total of 25 PICs resulting in 30 recorded injuries were reported to have occurred at Junction Fourteen - A43 / Towcester Road / A5. A total of 22 of the incidents recorded in the study period were classified as slight with three being classified as serious. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.257 Further to analysis of the data, it is considered that the incidents recorded were due to driver error / misjudgment, temporary weather / road conditions or a faulty vehicle.

19.258 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with Junction Fourteen - A43 / Towcester Road / A5 and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

There will be no hazardous loads associated with the operation of the Proposed Development.

Junction Fifteen – Abthorpe Road / A43 / Brackley Road

Traffic Flows

19.259 **Table 19.43** sets out the magnitude of change of total traffic flow increases at the Abthorpe roundabout as a result of the Proposed Development for a forecast year of 2031.

Table 19.43: 2031 Traffic Flows with the Proposed Development - Junction Fifteen – Abthorpe Road / A43 / Brackley Road

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
Brackley Road W	AM	768	+71	+9.2%	Minor Adverse	High	Moderate Adverse
	PM	682	+7	+1.0%	Negligible	High	Minor Adverse
Towcester Bypass N	AM	6,013	-154	-2.6%	Negligible	High	Minor Beneficial
	PM	6,207	+259	+4.2%	Negligible	High	Minor Adverse
Brackley Road E	AM	740	+70	+9.5%	Minor Adverse	High	Moderate Adverse
	PM	676	+1	+0.1%	Negligible	High	Minor Adverse
A43 S	AM	5,809	-49	-0.8%	Negligible	High	Minor Beneficial
	PM	6,027	+277	+4.6%	Negligible	High	Minor Adverse
TOTAL	**AM**	**13,330**	**-62**	**-0.5%**	**Negligible**	**High**	**Minor Beneficial**
	PM	**13,592**	**+544**	**+4.0%**	**Negligible**	**High**	**Minor Adverse**

19.260 The significance of effect at the junction is forecast to be **minor beneficial to minor adverse**, with the significance of effect ranging from **minor beneficial** to **moderate adverse** on the associated links. As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on the junction.

19.261 As set out in **Table 19.43**, and as agreed in the Scoping Report and Screening Opinion, as the predicted increase in traffic flow is lower than 30 percent (and 10 percent for sensitive areas), then the significance of the effects can be considered to be low or not significance and further detailed assessment is not required.

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

Traffic Flows

19.262 **Table 19.44** sets out the magnitude of change of total traffic flow increases at the Telford Way roundabout as a result of the Proposed Development for a forecast year of 2031.

Table 19.44: 2031 Traffic Flows with the Proposed Development - Junction Nineteen – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
Telford Way	AM	221	+9	+4.2%	Negligible	Moderate	Negligible
	PM	389	+217	+55.9%	Major Adverse	Moderate	Moderate Adverse
A5076 (North)	AM	3,627	+52	+1.4%	Negligible	Moderate	Negligible
	PM	3,338	+107	+3.2%	Negligible	Moderate	Negligible
Edgar Mobbs Way	AM	659	+32	+4.9%	Negligible	Moderate	Negligible
	PM	317	+14	+4.3%	Negligible	Moderate	Negligible
A5076 (South)	AM	3,819	+47	+1.2%	Negligible	Moderate	Negligible
	PM	3,570	+96	+2.7%	Negligible	Moderate	Negligible
TOTAL	**AM**	**8,326**	**+140**	**+1.7%**	**Negligible**	**Moderate**	**Negligible**
	PM	**7,614**	**+433**	**+5.7%**	**Minor Adverse**	**Moderate**	**Minor Adverse**

19.263 The significance of effect at the junction is forecast to be **negligible** and **minor adverse**, with the significance of effect ranging from **minor beneficial** to **moderate adverse** on the associated links.

19.264 As set out in **Table 19.44**, Junction Nineteen – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane is located adjacent to a residential area. As part of the Scoping Report and Screening Opinion, residential areas were agreed to be considered as sensitive areas. Therefore, because the predicted increase in traffic flow is higher than 10 percent on any one of the links, then further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.265 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*."

19.266 As the increase in traffic flow on Telford Way is 55.9%, this is considered to result in a slight change in severance. As the receptor is of high sensitivity, this would lead to **minor adverse** significance of effect on severance.

Driver Delay

19.267 As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to overall junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.268 EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay. The junction already accommodates appropriate signalised pedestrian crossing facilities and the increase in traffic levels on Telford Way are not anticipated to be of a level that will create a material change journey times for pedestrians. It is considered that there will be a **minor adverse** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.269 The increase in traffic on the Telford Way arm will result in more traffic routing through the Upton residential area. It is therefore considered that there will be a minor adverse significance of effect on pedestrian amenity.

Accidents and Safety

19.270 A total of one PIC resulting in one recorded injury was reported to have occurred at the Upton way / Telford Way roundabout junction and surrounds. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.271 Further to analysis of the data, it is considered that the incident recorded at the junction and surrounds was due to driver error / misjudgment.

19.272 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the junction and it is considered

that the traffic associated with the proposed development will not lead to an accident pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

19.273 There will be no hazardous loads associated with the operation of the Proposed Development.

Junction Twenty – A5076 / High Street / Duston Mill

Traffic Flows

19.274 **Table 19.45** sets out the magnitude of change of total traffic flow increases at the High Street roundabout as a result of the Proposed Development for a forecast year of 2031.

Table 19.45: 2031 Traffic Flows with the Proposed Development - Junction Twenty – A5076 / High Street / Duston Mill

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
High Street	AM	659	-15	-2.3%	Negligible	Moderate	Negligible
	PM	922	+27	+2.9%	Negligible	Moderate	Negligible
A5076 (North)	AM	3,787	+117	+3.1%	Negligible	Moderate	Negligible
	PM	3,512	+360	+10.3%	Minor Adverse	Moderate	Minor Adverse
A5076 (South)	AM	4,412	+64	+1.5%	Negligible	Moderate	Negligible
	PM	4,424	+343	+7.8%	Minor Adverse	Moderate	Minor Adverse
TOTAL	**AM**	**8,858**	**+166**	**+1.9%**	**Negligible**	**Moderate**	**Negligible**
	PM	**8,858**	**+730**	**+8.2%**	**Minor Adverse**	**Moderate**	**Minor Adverse**

19.275 The significance of effect at the junction is forecast to be **negligible** and **minor adverse**, with the significance of effect ranging from **negligible** to **minor adverse** on the associated links.

19.276 As set out in **Table 19.45**, Junction Twenty – A5076 / High Street / Duston Mill is located adjacent to a residential area. As part of the Scoping Report and Screening Opinion, residential areas were agreed to be considered as sensitive areas. Therefore, because the predicted increase in traffic flow is higher than 10 percent on any one of the links, then further environmental assessment has been provided below in accordance with the IEA guidelines.

Severance

19.277 There are no predictive formulae which give simple relationships between traffic factors and levels of significance. Nevertheless, there are a range of indicators for determining significance of the relief from severance. IEA guidance suggests that "*changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively*."

19.278 As the increase in traffic flow on any one of the identified links is 10.3% at most, this is considered to result in a **negligible** significance of effect on severance.

Driver Delay

19.279 As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to overall junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on driver delay.

Pedestrian Delay

19.280 EIA guidance does not set thresholds for judging the significance of changes in levels of pedestrian delay. However, given that the junction does not include any existing pedestrian infrastructure or crossing facilities it is considered that there will be a **negligible** significance of effect on pedestrian delay.

Pedestrian Amenity (including fear and intimidation)

19.281 The junction does not have any existing pedestrian facilities and pedestrian activity is very infrequent. There will therefore be a negligible significance of effect on pedestrian amenity.

Accidents and Safety

19.282 A total of one PIC resulting in three recorded injuries were reported to have occurred at the Upton way / High Street roundabout junction and surrounds. The incident recorded in the study period was classified as slight. A summary of the data is provided in Appendix D of the TA provided at **Appendix 19.1.**

19.283 Further to analysis of the data, it is considered that the incident recorded on the Upton Way / High Street roundabout was due to driver error / misjudgement.

19.284 Overall, it is concluded that the local PIC records over a five year period do not indicate that there is an obvious highway safety problem associated with the junction and it is considered that the traffic associated with the proposed development will not lead to an accident pattern or problem. It is therefore concluded that there will be a **negligible** significance of effect on accidents and safety.

Hazardous Loads

19.285 There will be no hazardous loads associated with the operation of the Proposed Development.

Junction Twenty-Five - A508 / A5199

Traffic Flows

19.286 **Table 19.46** sets out the magnitude of change of total traffic flow increases at the A508 / A5199 junction as a result of the Proposed Development for a forecast year of 2031.

Table 19.46: 2031 Traffic Flows with the Proposed Development - Junction Twenty-Five - A508 / A5199

Link	Peak Hour	Base total traffic flow	Change in traffic flow	% change / impact	Magnitude of change	Sensitivity of receptor	Significance of effects
A508 N	AM	2,253	-84	-3.7	Negligible	High	Minor Beneficial
	PM	2,364	-42	-1.8	Negligible	High	Minor Beneficial
A508 S	AM	3,501	-5	-0.1	Negligible	High	Minor Beneficial
	PM	3,604	-98	-2.7	Negligible	High	Minor Beneficial
Welford Road	AM	1,248	+111	+8.9	Minor Adverse	High	Moderate Adverse
	PM	1,240	-10	-0.8	Negligible	High	Minor Beneficial
TOTAL	**AM**	**7,002**	**+22**	**+0.3%**	**Negligible**	**High**	**Minor Adverse**
	PM	**7,208**	**-150**	**-2.1%**	**Negligible**	**High**	**Minor Beneficial**

19.287 The significance of effect at the junction is forecast to be **minor beneficial** and **minor adverse**, with the significance of effect ranging from **minor beneficial** to **moderate adverse** on the associated links. As a result of the proposed highway mitigation works set out in **Table 19.29**, it has been demonstrated in Chapter 9 of the Transport Assessment included at **Appendix 19.1** that the increased level of traffic attracted by the Proposed Development will not result in any material impact to junction capacity or delay. It is therefore considered that the Proposed Development will have a **negligible** significance of effect on the junction.

19.288 As set out in **Table 19.46**, and as agreed in the Scoping Report and Screening Opinion, as the predicted increase in traffic flow is lower than 30 percent (and 10 percent for sensitive areas), then the significance of the effects can be considered to be low or not significance and further detailed assessment is not required.

Assessment of Decommissioning Phase Effects

Main SFRI Site

19.289 It is not known when there will no longer be a need for the Proposed Development and many elements of the development are unlikely to be decommissioned at all. The design life of the warehouse buildings will be in the order of 60+ years (approximately), and the rail infrastructure and civil engineering works are likely to be significantly longer than this. Once the warehouses reach their design life, it is entirely feasible that they will be re-provided in a modern form. Should that occur it would be subject to its own assessment of effects at the relevant time.

19.290 When and if the development is decommissioned, the appropriate environmental assessments and mitigation will be identified. However, for the purpose of this assessment, it is assumed that effects will be similar to those during the construction phase, with *the movement of workers associated with the decommissioning of individual plots along with the movement of material in the form of exporting material.*

Traffic Flows

19.291 It is anticipated that traffic movements associated with the decommissioning phase would be no higher than the construction phase. By the time of decommissioning, it is likely that technological advances would be such that operations would be much more efficient and traffic movements would be reduced. The rail infrastructure would also be in place to enable construction materials to be transported by rail rather than by road, further reducing vehicle movements. As such, in accordance with the construction phase, it is anticipated that the significance of effect during the construction phase could be up to **moderate adverse**, but as this would be experienced over a short term period, it is not considered to be significant, as set out previously.

J15a Works

19.292 This section summarises the potential effects associated with the movement of decommissioning traffic for the J15a works.

19.293 It is not known when there will no longer be a need for the J15a and many elements are unlikely to be decommissioned at all. Instead, it is likely that the junction would be subject to further improvements by the highway authority or third party developers to address future forecast changes in traffic flows.

19.294 When and if the works are decommissioned, the appropriate environmental assessments and mitigation will be identified. However, for the purpose of this assessment, it is assumed that effects will be similar to those during the construction phase. As set out previously, the number of vehicle movements required will be subject to the detailed design of the junction. As such, an assessment of the impact of the decommissioning phase of the J15a works will therefore be carried out once this information is available, and in advance of the DCO submission.

Minor Highway Works

19.295 This section summarises the potential effects associated with the movement of construction traffic for the other minor highway works proposed as part of the scheme.

19.296 It is not known when there will no longer be a need for the highway works and many elements are unlikely to be decommissioned at all. Instead, it is likely that the works would be subject to further improvements by the highway authority or third party developers to address future forecast changes in traffic flows.

19.297 When and if the works are decommissioned, the appropriate environmental assessments and mitigation will be identified. However, for the purpose of this assessment, it is assumed that effects will be similar to those during the construction phase. As set out previously, the number of vehicle movements required will be subject to the detailed design of the schemes. As such, an assessment of the impact of the decommissioning phase of the Other Minor Highway Works will therefore be carried out once this information is available, and in advance of the DCO submission.

Cumulative Effects

Cumulative Effects – Highways

19.298 The traffic associated with the following sites suggested by South Northamptonshire Council in their Scoping Report are included within the NSTM assessments:

- Northampton M1 Junction 16 Strategic Employment Site (Policy E8 of the West Northamptonshire Joint Core Strategy (JCS));
- Daventry International Rail Freight Terminal (DIRFT) (Policy E4 of the JCS);
- Northampton South of Brackmills SUE (Policy N6 of the JCS)
- Towcester South SUE (Policy T3 of the JCS)
- Silverstone Circuit (Policy E5 of the JCS)
- Northampton West SUE (Policy N4 of the JCS)
- Northampton Upton Park SUE (Policy N9 of the JCS)
- Northampton Norwoodd Farm/Upton Lodge SUE (Policy N9A of the JCS)
- East Midlands Gateway Strategic Rail Freight Interchange
- East Midlands Intermodal Park

19.299 The NSTM also includes a number of large scale committed and proposed development and infrastructure schemes. In addition the model includes a number of smaller committed schemes (less than 10 dwellings) so these are also accounted for in the wider assessment of the Proposed Development. These account for all planned Local Plan developments, as such the assessment included previously in this chapter already includes a cumulative assessment. A copy of the schedule of schemes included in the NSTM is included within the Transport Assessment at Appendix 19.1.

Cumulative Assessment – Intra-Project Effects

19.300 It is acknowledged that highways and transportation projects can effect different environmental topics, including air, noise, utilities and heritage. Theses impacts have all been addressed within the relevant chapters of this PEIR, and further assessment will be provided with the DCO Application.

Cumulative Assessment – Inter-Project Effects

19.301 The traffic associated with the sites suggested by South Northamptonshire Council in their Scoping Report are included within the NSTM assessments. The cumulative effect in relation to the topic areas considered within this chapter has therefore already been considered.

Cumulative Assessment – Northampton Gateway

19.302 Northampton Gateway is a proposed Strategic Rail Freight Interchange being proposed by Roxhill Developments and is located immediately east of the site, adjacent to M1 Junction 15. The proposed development will consist of up to 468,000 sq.m (approx. 5 million sq. ft) Gross Internal Area (GIA) of B8 warehousing, an intermodal freight terminal including

container storage and HGV parking with associated highway works and ancillary development. It is acknowledged that the Northampton Gateway site could come forward in the future.

19.303 To assess cumulative effects of the Northampton Gateway scheme, a full cumulative assessment will be carried out, providing a comparison with the 2031 baseline. This will be undertaken using traffic flows obtained from the NSTM.

19.304 The 2031 base line scenario will include all committed and allocated developments and infrastructure within the NSTM.

19.305 The cumulative assessment scenario will include the following:

- all committed and allocated development and infrastructure included within the DM scenario;
- the Rail Central development and its proposed package of mitigation;
- the Northampton Gateway development and its proposed package of mitigation; and
- any mitigation schemes required to address the cumulative impact of Rail Central and Northampton Gateway, not provided by either development in isolation.

19.306 At this stage, the relevant information for the Northampton Gateway development which is required for the assessment is not available. Therefore, it is not possible to carry out a cumulative assessment for the purpose of this PEIR.

19.307 However, initial NSTM runs have been carried out including the following:

- all committed and allocated development and infrastructure included within the DM scenario;
- the Rail Central development and the proposed mitigation scheme at M1 Junction 15a; and
- the Northampton Gateway development and the associated mitigation schemes at M1 Junction 15 and the Roade Bypass.

19.308 An initial assessment of this scenario has been carried out within the Transport Assessment (**Appendix 19.1**) which seeks to confirm whether the mitigation schemes proposed as part of the Rail Central development are appropriate to accommodate the cumulative development scenario. Further work will be carried out in advance of the final submission to determine the full cumulative impact as outlined above.

Adaptive Mitigation

19.309 Adaptive mitigation measures will be implemented during the construction and operational phases to prevent, reduce and offset any likely significant environmental effects.

Construction Phase

The Main SFRI Site

19.310 A Construction Traffic Management Plan (CTMP) will be implemented during the construction phase of the Main SFRI site and is contained at **Appendix 19.3**. The aim of the CTMP is to minimise the effect of the construction phase on local residents, businesses and the highway network. It will contain a package of agreed mitigation measures which could include:

- identification of a construction traffic route to the site, using the A43(T) only;
- encouraging site operatives to use sustainable forms of travel, such as walking, cycling, public transport or car sharing, where possible;
- provide appropriate car parking facilities onsite for site operatives, to avoid uncontrolled car parking on the local highway network;
- an obligation could be introduced to ensure that the site will operate in line with an approved Health and Safety Plan, which will comply with requirements of the Construction (Design and Management) Regulations 2015. Furthermore the main contractor will be expected to join the Considerate Contractors Scheme;
- details limiting the hours of site operation and the routing of construction traffic to protect local residential districts from construction traffic, especially from HGVs where possible; and
- wheel washing facilities will be provided at the site to ensure no mud is taken onto the local highway network and a road sweeper will be deployed by the applicant should this become necessary. Wheel wash facilities will be provided in the form of a portable automated high pressure washer with motion sensors to conserve water. The wheel washer will be located on the proposed construction access road. All construction vehicles will therefore have to exit through the wheel wash area and as such will reduce the spread of mud and dirt onto the local highway network. In addition, a road sweeping vehicle could be available to remove any site residue upon the local roads. The roads and sewers for the development will be installed in the early phases of the development in order to keep the amount of mud overspill on to the highway network to a minimum.
- a requirement for engines to be switched off on-site when not in use;
- spraying of areas with water as and when conditions dictate;
- vehicles carrying waste material off-site to be sheeted;
- the use of the railway, where possible; and
- road closures outside of peak hours;

J15a Works

19.311 The CTMP will be implemented during the construction phase of the Proposed Development and the J15a works. The CTMP outlined above will be tailored to the J15a works to establish appropriate vehicle routing and measures. The aim of the CTMP is to minimise the effect of the construction phase on local residents, businesses and the highway network.

Minor Highway Works

19.312 A CTMP set out above will be implemented during the construction phase of the proposed development and the other minor highway works. The CTMP outlined above will be tailored to each individual site to establish appropriate vehicle routing and measures. The aim of the CTMP is to minimise the effect of the construction phase on local residents, businesses and the highway network.

Operational Phase

19.313 In addition to the embedded mitigation and highway works set out in **Table 19.29**, the Proposed Development will provide a comprehensive scheme of mitigation measures. These will apply to all development proposed in the Order Limits.

Framework Travel Plan (FTP)

19.314 The FTP will be agreed with HE and NCC in advance of occupation and implemented at the Proposed Development to promote the use of modes of transport other than the single occupied private car. A summary of measures suggested in the FTP are set out below:

- appointment of a site-wide Travel Plan Coordinator (TPC);
- appointment of individual TPCs;
- set up a site-wide Steering Group;
- conveniently located bus stops / drop off points;
- employees given a 'sustainable Travel Pack' during staff inductions;
- provision of a site-wide Travel Plan website;
- provision of site-wide notice boards detailing sustainable travel options;
- provision of showers, changing facilities and lockers in each unit suitable for pedestrians, cyclists and motorcyclists;
- cycle to work scheme;
- adequate provision of secure covered cycle spaces;
- adequate provision of secure covered motorcycle spaces;
- potential internal shuttle bus;
- potential to divert an existing bus service through the site;
- potential to provide an evening or a Sunday bus service;

- public transport vouchers / taster tickets;
- provision of Real Time Information (RTI) boards for bus services;
- provision of electric vehicle charging points in preferred locations;
- the designation of parking spaces in preferred locations for those employees actively involved in the Car Sharer/ Guaranteed Journey Home scheme only;
- implementation of a permit-only parking system for staff; and
- priority provision of parking permits to car sharers rather than lone drivers.

19.315 The FTP sets targets with a monitoring regime in place over a ten year implementation period, with the primary intention to reduce single occupancy vehicles trips. The FTP has the key target to reduce the vehicular traffic flows associated with employee trips by 10 to 20 percent.

19.316 The traffic flows assessed within the TA and used within this assessment do not account for any reductions in traffic associated with the successful delivery of the FTP and are therefore considered to be robust.

19.317 A copy of the FTP is included at **Appendix 19.2.**

Operational Traffic Management Plan (OTMP)

19.318 A copy of the OTMP is included at **Appendix 19.4**.

19.319 The recommended route for operational traffic will be from the A43(T). Once operational, vehicular access to Rail Central will be taken solely via a Grade Separated Junction from the A43(T).

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

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

19.321 It will be important to ensure that should monitoring indicate that measures are required to be introduced, that they are enforceable. There are a number of ways in which enforcement can be carried out, including:

- Traffic Regulation Orders (TRO's);
- planning enforcement (including use of ANPR and penalties to the developer / operators); and
- GPS tracking.

Public Transport Strategy

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

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

Pedestrian and Cycle Improvements

19.323 To encourage the uptake of walking and cycling, proposed infrastructure improvements will be provide as part of the development proposals. These will provide suitable pedestrian and cycling infrastructure between the Main SFRI Site, the surrounding villages and the southern residential areas of Northampton.

Table 19:47: Proposed Pedestrian and Cycle Improvements

Sch**eme**	Proposed Improvement Summary	TPA Drawing Number
Towcester Road Footway/ Cycleway Improvements	Existing footway on the west side of Towcester Road will be widened to accommodate a suitable footway/cycleway. The proposed footway/cycleway will measure 3.0 metres in width The carriageway of Towcester Road/Northampton Road will be realigned in sections with a minimum width of 6.5m Towcester Road will provide the main link for pedestrians and cyclists accessing the site from the southern residential areas of Northampton	Figure 6.6 of TA at **Appendix 19.1**
Pedestrian Crossing points at Towcester Road/ Rectory Lane Priority Junction	A two metre wide footway will be provided on the nearside corner of the junction A dropped kerb crossing point with tactile paving will be provided on Towcester Road immediately south of the junction with Rectory Lane A dropped kerb crossing with tactile paving will be	Figure 6.6 of TA at **Appendix 19.1**

Scheme	Proposed Improvement Summary	TPA Drawing Number
	provided on Rectory Lane immediately east of the junction with Towcester Road.	
Barn Lane Pedestrian Link	Pedestrian route provided within the site will provide a link to an existing Public Rights of Way which emerges onto Barn Lane and links to a footway on the eastern side of the carriageway The footway is to be widened from 1.0 metres to approximately 2.0 metres to accommodate pedestrian movements.	Proposed Site Masterplan

19.324 The pedestrian and cycle improvements set out in **Table 19.47** are provided within the order limits which form part of the Section 42 consultation process and will be considered as embedded mitigation within the PEIR for the final submission.

Road Safety Schemes

19.325 Further to the review of accident data provided within the TA at **Appendix 19.1**, offsite highway safety schemes will be implemented to mitigate against any potential impact that the development proposals may have. The junctions and schemes set out in **Table 19.48** below were specifically identified by HE and NCC as existing road safety problem sites. It was agreed with HE and NCC that improvements at these locations would be for safety reasons only, and improving capacity would not be appropriate as that would encourage a higher usage of them.

Table 19.48: Proposed Road Safety Schemes

Scheme	Proposed Improvement Summary	DCO Drawing Reference
Junction 28 – A43(T) / Towcester Road	HE have recently introduced a number of safety improvement measures at the junction including 'Junction Ahead' warning signs and the provision of an advance direction sign. The applicant will provide reasonable financial contribution towards further improvements at this location if required further to monitoring.	N/A
Junction 29 – A43(T) / St John's Road	HE have recently introduced a number of safety improvement measures at the junction Mitigation will include the provision of junction ahead and warning signs and countdown markers as well as high friction surfacing for northbound vehicles on the A43(T)	Regulation 5(2)(o) Drawing 1211-80/HWP/04
Junction 31 – A43(T) / Northampton Road	A signage scheme is proposed to be provided to include junction ahead warning signs with associated countdown markers	Regulation 5(2)(o) Drawing 1211-80/HWP/04

19.326 The road safety schemes set out in **Table 19.48** are provided within the order limits which form part of the Section 42 consultation process and will be considered as embedded mitigation as part of the final submission.

Adaptive Mitigation of Cumulative Effects

19.327 Once the required NSTM data has been provided and the cumulative assessment has been undertaken, this section will provide a summary of additional adaptive mitigation to be provided should the proposed Northampton Gateway site come forward together with the Proposed Development.

Schedule of Adaptive Mitigation Measures

19.328 A schedule of the proposed adaptive mitigation measures for all proposed development works has been included in Table 19.49 below. This also summarised the mechanism used to secure each mitigation measure and the relevant DCO reference where applicable.

Table 19:49: Schedule of Adaptive Mitigation Measures

Potential effect	Proposed mitigation	Means of implementation	Mechanism for securing mitigation and DCO reference (where applicable)
Construction			
Increase in traffic flows and driver delay	Management of construction traffic	Implementation of CTMP	Regulation 5(2)(q) – requirement of DCO
Accidents and safety	Management of construction traffic	Implementation of CTMP	Regulation 5(2)(q) – requirement of DCO
Operation			
Increase in traffic flows	Management of operational traffic	Implementation of OTMP	Regulation 5(2)(q) – requirement of DCO
	Promotion of sustainable transport modes	Implementation of FTP	Regulation 5(2)(q) – requirement of DCO
		Implementation of Public Transport Strategy	To form part of FTP, secured by Regulation 5(2)(q) – requirement of DCO
		Provision of Pedestrian and Cycling Infrastructure in Table **19.47**	Regulation 5(2)(o) – requirement of DCO
Accidents and safety	Management of operational traffic	Implementation of OTMP	Regulation 5(2)(q) – requirement of DCO
	Provision of appropriate infrastructure	Provision of Pedestrian and Cycling Improvements	Regulation 5(2)(o) – requirement of DCO

	improvements	in Table **19.47**	
		Provision of Road Safety schemes in **Table 19.48**	Regulation 5(2)(o) – requirement of DCO
Hazardous Loads	Management of operational traffic	Implementation of OTMP	Regulation 5(2)(q) – requirement of DCO
Severance	Promotion of sustainable transport modes	Implementation of FTP	Regulation 5(2)(q) – requirement of DCO
		Implementation of Public Transport Strategy	To form part of FTP, secured by Regulation 5(2)(q) – requirement of DCO
		Provision of Pedestrian and Cycling Infrastructure in Table **19.47**	Regulation 5(2)(o) – requirement of DCO
Driver Delay	Promotion of sustainable transport modes	Implementation of FTP	Regulation 5(2)(q) – requirement of DCO
		Implementation of Public Transport Strategy	To form part of FTP, secured by Regulation 5(2)(q) – requirement of DCO
		Provision of Pedestrian and Cycling Infrastructure in Table **19.47**	Regulation 5(2)(o) – requirement of DCO
Pedestrian Delay	Promotion of sustainable transport modes	Implementation of FTP	Regulation 5(2)(q) – requirement of DCO
		Implementation of Public Transport Strategy	To form part of FTP, secured by Regulation 5(2)(q) – requirement of DCO
		Provision of Pedestrian and Cycling Infrastructure in Table **19.47**	Regulation 5(2)(o) – requirement of DCO
Pedestrian Amenity	Promotion of sustainable transport modes	Implementation of FTP	Regulation 5(2)(q) – requirement of DCO
		Implementation	To form part of FTP, secured

	and provision of appropriate infrastructure improvements.	of Public Transport Strategy	by Regulation 5(2)(q) – requirement of DCO
		Provision of Pedestrian and Cycling Infrastructure in Table **19.47**	Regulation 5(2)(o) – requirement of DCO
Decommissioning			
Increase in traffic flows and driver delay	Management of traffic associated with decommissioning	Implementation of TMP	Regulation 5(2)(q) – requirement of DCO
Accidents and safety	Management of traffic associated with decommissioning	Implementation of TMP	Regulation 5(2)(q) – requirement of DCO
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

Residual Effects

Main SRFI Site

19.329 Table 19.50 identifies any residual environmental effects and their significance for the main SFRI site, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.50: Summary of Residual Effects – Main SRFI Site – A43(T)

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	Moderate Adverse (Short-term)	Implementation of CTMP	Minor Adverse (Short-term)
Operation			
Traffic flows	Moderate Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Adverse
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and	Negligible

		Cycling Infrastructure	
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible
Decommissioning			
Traffic flows	Moderate Adverse (Short-term)	Implementation of TMP	Minor Adverse (Short-term)
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.330 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to the main SFRI site and the A43(T), with any existing adverse effects reduced to one step below the initial assessment of effects.

J15a Works

19.331 Table 19.51 identifies any residual environmental effects and their significance for the J15a works, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.51: Summary of Residual Effects - Junction Five - M1 Junction 15a - M1 / A43 / A5123

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			

Traffic flows	Major Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Moderate Adverse (though not an environmental effect in itself)
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial
Pedestrian Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible
Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.332 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction Five - M1 Junction 15a, with any existing adverse effects reduced to one step below the initial assessment of effects. As justified in the text around the assessment of operational effects, the presence of a residual moderate adverse effect on traffic flows at J15a does not imply that the effect on the junction as a whole is moderate adverse. The works proposed will improve the capacity of the junction, meaning that the environmental effects that could arise from the inevitable increase in traffic (accidents, driver delay etc.) will be non-significant in EIA terms.

Minor Highway Works

19.333 This section sets out the residual effect associated with the Minor Highway Works, where the impact on traffic flows during the construction, operation or decommissioning has been identified as being "significant" in EIA terms (i.e. moderate or major), or where further assessment was required because traffic flows increased more than 30% (or 10% in a sensitive area).

Junction 4 - A5076 / A5123 / Upton Way

19.334 **Table 19.52** identifies any residual environmental effects and their significance for Junction 4 - A5076 / A5123 / Upton Way, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.52: Summary of Residual Effects - Junction 4 - A5076 / A5123 / Upton Way;

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			
Traffic Flows	Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial
Pedestrian Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling	Negligible

		Infrastructure	
Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.335 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction 4 - A5076 / A5123 / Upton Way, with any existing adverse effects reduced to one step below the initial assessment of effects.

Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road

19.336 **Table 19.53** identifies any residual environmental effects and their significance for Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.53: Summary of Residual Effects - Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road;

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			
Traffic Flows	Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP,	Minor Beneficial

		Public Transport Strategy and Pedestrian and Cycling Infrastructure	
Pedestrian Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible
Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.337 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction 6 - A5076 / Hunsbury Hill Avenue / Hunsbarrow Road / Hunsbury Hill Road, with any existing adverse effects reduced to one step below the initial assessment of effects.

Junction 11 - A45 / A43 / Ferris Row

19.338 **Table 19.54** identifies any residual environmental effects and their significance for Junction 11 - A45 / A43 / Ferris Row, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.54: Summary of Residual Effects - Junction 11 - A45 / A43 / Ferris Row;

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			
Traffic Flows	Moderate to minor beneficial	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Moderate beneficial
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible

Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial
Pedestrian Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible
Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.339 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction 11 - A45 / A43 / Ferris Row, with any existing adverse effects reduced to one step below the initial assessment of effects.

Junction 12 - M1 Junction 15 – M1 / A45 Saxon Avenue / A508

19.340 **Table 19.55** identifies any residual environmental effects and their significance for Junction 12 - M1 Junction 15 – M1 / A45 Saxon Avenue / A508, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.55: Summary of Residual Effects - Junction 12 - M1 Junction 15 – M1 / A45 Saxon Avenue / A508

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			
Traffic Flows	Minor Beneficial to	Implementation of OTMP,	Minor Beneficial

	Minor Adverse	FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	to Negligible
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial
Pedestrian Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible
Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.341 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction 12 - M1 Junction 15 – M1 / A45 Saxon Avenue / A508, with any existing adverse effects reduced to one step below the initial assessment of effects.

Junction 14 – Tove Roundabout - A43 / Towcester Road / A5

19.342 **Table 19.56** identifies any residual environmental effects and their significance for Junction 14 – Tove Roundabout - A43 / Towcester Road / A5, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.56: Summary of Residual Effects - Junction 14 – Tove Roundabout - A43 / Towcester Road / A5

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			
Traffic Flows	Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial
Pedestrian Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible
Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.343 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction 14 – Tove Roundabout - A43 / Towcester Road / A5, with any existing adverse effects reduced to one step below the initial assessment of effects.

Junction 19 – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane

19.344 **Table 19.57** identifies any residual environmental effects and their significance for Junction 19 – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.57: Summary of Residual Effects - Junction 19 – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane;

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			
Traffic Flows	Negligible to Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial to Negligible
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial
Pedestrian Delay	Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Pedestrian Amenity	Minor Adverse	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible

Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.345 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction 19 – A5076 / Telford Way / Walter Trull Way / Duston Mill Lane, with any existing adverse effects reduced to one step below the initial assessment of effects.

Junction 20 – A5076 / High Street / Duston Mill

19.346 **Table 19.58** identifies any residual environmental effects and their significance for Junction 20 – A5076 / High Street / Duston Mill, taking account of the application of adaptive mitigation measures outlined above and the significance of effect derived from analysis provided within the Assessment of Operational Effects section of this chapter.

Table 19.58: Summary of Residual Effects - Junction 20 – A5076 / High Street / Duston Mill

Description of Impact	Significance of Effect	Possible Mitigation Measures	Residual Effect
Construction			
Traffic flows	TBC following detailed design	Implementation of CTMP	TBC following detailed design
Operation			
Traffic Flows	Negligible to Minor Adverse	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial to Negligible
Accidents and Safety	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Hazardous Loads	Negligible	Implementation of OTMP	Negligible
Severance	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Negligible
Driver Delay	Negligible	Implementation of OTMP, FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	Minor Beneficial
Pedestrian Delay	Negligible	Implementation of OTMP,	Negligible

		FTP, Public Transport Strategy and Pedestrian and Cycling Infrastructure	
Pedestrian Amenity	Negligible	Implementation of FTP, and Pedestrian and Cycling Infrastructure	Negligible
Decommissioning			
Traffic flows	TBC following detailed design	Implementation of TMP	TBC following detailed design
Cumulative			
TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission	TBC in advance of application submission

19.347 It is considered that the implementation of adaptive mitigation measures summarised within this chapter will be beneficial to Junction 20 – A5076 / High Street / Duston Mill, with any existing adverse effects reduced to one step below the initial assessment of effects.

Monitoring

19.348 The FTP (**Appendix 19.2**) will be monitored for a period of ten years from the first occupation at the site. The success of the FTP will be monitored and reviewed by the appointed Travel Plan Coordinator (TPC) and NCC every two years.

19.349 Should the FTP measures and initiatives be unsuccessful then these may be adjusted or alternative measures could be implemented to meet encourage travel by sustainable modes.

Limitations and Assumptions

19.350 As set out earlier in this chapter, the NSTM has been used to determine the baseline and future year traffic flows as well as modelled mitigation scenarios.

19.351 It should be noted that, at this stage, the NSTM runs for the full mitigation scenario (i.e. all of off-site highway improvement schemes proposed) are not yet available. As such, the residual effects of the development have been considered with reference to mitigation being provided at Junction 15a only at this stage. Once the updated model runs are available, the residual effects of the traffic flows associated with the Proposed Development will be considered in detail.

References

Ref 19.1. Department for Transport, 2014, '*National Networks National Policy Statement (NN NPS)'*

Ref 19.2. Department for Communities and Local Government, 2012, *National Planning Policy Framework (NPPF)*

Ref 19.3. Ministry of Housing, Communities and Local Government, 2017, *National Planning Practice Guidance (NPPG)*

Ref 19.4. Institute of Environmental Assessment (IEA) (now Institute of Environmental Management and Assessment (IEMA)), 1993, *'Guidelines for the Environmental Assessment of Road Traffic*'

Ref 19.5. Highways Agency, Various, *'Design Manual for Roads and Bridges (DMRB)'*

Ref 19.6. Department for Transport, 2007*,* 'Guidance on Transport Assessment'

Ref 19.7. Northamptonshire County Council, 2012, *Northamptonshire Transportation Plan*

Ref 19.8. West Northamptonshire Joint Planning Unit, 2014, *West Northamptonshire Joint Core Strategy Local Plan (Part 1)*

Ref 19.9. Highways England and Department for Transport, 2013, '*The Strategic Road Network and the Delivery of Sustainable Development (Circular 02/2013*)'