15. Utilities

Purpose of the Assessment

15.1 The purpose of this chapter in the Preliminary Environmental Information Report (PEIR) is to:

- identify the legislative and policy context for the assessment;
- describe consultation undertaken, including the scoping exercise;
- outline the extent and location of existing utility services within the Order Limits and surrounding environment (Study Area and Baseline);
- describe the "embedded mitigation" in the proposal – i.e. establish the required utility provisions associated with the Main Strategic Rail Freight Interchange (SRFI) Site, determine diversion requirements across the Proposed Development and detail the required off-site enabling works; and
- undertake the utility impact assessment.

15.2 The chapter sets out the utility impact assessment methodology and relevant information used to perform impact analysis. The impact assessment is based on overall disruption and visual effects of utility services across the development phases (construction, operation and decommissioning). The chapter includes consultation with utility providers, describing the subsequent results of the impact analysis on the relevant receptor locations and assesses the associated risks and their potential impact on both the Proposed Development and surrounding area. The outline mitigation methods applied to prevent, reduce, or offset any significant adverse effects are described, as well as the associated resulting residual effects.

15.3 The Proposed Development includes the: Main SRFI Site, Junction 15a of the M1 (J15a) and a number of Minor Highway Works. These are described in **Chapter 5: The Proposed Development**. In addition to consideration of the individual aspects of the Proposed Development the assessment addressed environmental impact arising from all development within the Order Limits as a whole.

15.4 There are three aspects of the Minor Highway Works described in Chapter 5 which have not been included in this assessment, due to their late identification as appropriate mitigation for the Proposed Development. These are: 1) PL29 – A43/St John's Road (signage and road surfacing scheme on the A43), 2) PL 31 – A43 Northampton Road (signage scheme) and 3) 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). These aspects are highly unlikely to affect the conclusions reached in this chapter of the PEIR in terms of environmental significance of the Proposed Development. Items 1 and 2 require no physical works to alter the footprint of the road, and Item 3 is located within Highways land and will involve minimal disturbance of existing verges. Assessment of these three aspects will be included in the assessment undertaken for the final DCO submission.

15.5 The minor highway works have been assessed for existing services as part of this chapter but are identified separately from the Main SRFI Site. The assessments of surface, foul and recycled water are also not contained within this chapter (see **Chapter 14: Hydrology, Drainage and Flood Risk**).

15.6 This Chapter describes, but does not include an impact assessment of the work to be undertaken for grid connections, as this would be undertaken by the statutory undertaker. These works are assessed as a cumulative project (see the list of cumulative sites in **Chapter 7: EIA Methodology**).

Legislation, Policy and Best Practice

15.7 This section details legislation, policy and best practice guidance relevant to utility infrastructure. **Table 15.1** the tabulated information presented in this section and **Table 15.2** identifies any licences or permits that would be required to facilitate the project.

Table 15.1 Relevant legislation, policy and guidance

Legislation/policy/ guidance	Key provisions	Relevant section of chapter where key provisions are addressed
Policy	The National Policy Statement for National Networks (NN NPS), Section 4: States the importance of good design being an inherent part of national network infrastructure projects (**Reference 15.1**). The policy section highlights key design considerations to be adhered to from the outset, such as: functionality, the environment; safety; sustainability; aesthetics and technology.	Chapter 15, Section: Assessment of Construction Phase Effects, Assessment of Operational Phase Effects and Mitigation.
Policy	National Planning Policy Framework (NPPF), Section 162 outlines the need for utility providers, in conjunction with the relevant Local Planning Authority (LPA), to ensure local and national infrastructure quality and network capacity is able to meet forecasted demands (**Reference 15.2**). Special account should be given to a Nationally Significant Infrastructure Project (NSIP), such as the SRFI.	Chapter 15, Section: Assessment of Construction Phase Effects, Assessment of Operational Phase Effects.

Policy	South Northamptonshire Council (SNC), Local Development scheme, November 2015 (**Ref 15.3**). Policy EV31 relates directly to overhead lines, public utilities and telecommunications equipment. The policy seeks to promote the minimisation of environmental and visual impacts associated with utility installations, as well as deny permissions to developments which fail to do so through poor design. The policy states consideration will be given to projects where visual intrusion cannot be avoided.	Chapter 15, Section: Assessment of Construction Phase Effects, Assessment of Operational Phase Effects, Mitigation and Residual Effects.
Legislation	New Roads and Street Works Act 1991 (NRSWA), (**Reference 15.4**). This Act, as amended by the Transport Act 2000 and the Traffic Management Act 2004 (TMA), outlines the legislative requirements to be adhered to during the installation, repair and maintenance of apparatus in roads and streets. The NRSWA requires all works promoters to notify or apply for permits for all works in the public highway.	Chapter 15, Section: Assessment of Operational Phase Effects.
Legislation	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (**Reference 15.5).** The regulations detail information that should be gathered by the applicant and submitted to the authority in support of an Environmental Impact Assessment (EIA).	Chapter 15
Guidance	Health and Safety Executive guidelines, HSG47 (**Reference 15.6**). These documents offer guidance aimed at all those involved in commissioning, planning, managing and carrying out work on or near underground services. The guidance states apparatus records must be obtained from asset owners prior to any construction activity.	Chapter 15, Section: Assessment of Construction Phase Effects.

Guidance	PAS 128: 2014, Specification for underground utility detection, verification and location' (**Reference 15.7**). This is a Publicly Available Specification (PAS) sponsored by the Institute of Civil Engineers; recommended by the Department for Transport. The document provides a methodology for delivering utility surveys. The document provides four levels of quality associated with the data to be acquired during the survey: A (highest) to D (lowest). The level of quality proposed for the EIA will be Type C (Site Reconnaissance). In specific locations where services are very close to the Potential Development Area, it has been increased to Type B (Detection).	Chapter 15, Section: Baseline Surveys and Data.
Guidance	National Joint Utilities Group Ltd (NJUG) Guidelines: The guidelines set out useful utility related information across 6 volumes: Vol 1: NJUG Guidelines on the Positioning and Colour Coding of Underground Utilities' Apparatus (**Reference 15.8**); Vol 2: NJUG Guidelines on the Positioning of Underground Utilities Apparatus for New Development Sites (**Reference 15.9**); Vol 3: NJUG Guidelines on the Management of Third Party Cable Ducting (**Reference 15.10**); Vol 4: NJUG Guidelines on the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Tree (**Reference 15.11**); Vol 5: NJUG Guidelines on the On-Site Environmental Good Practice Guidelines (**Reference 15.12**); Vol 6: NJUG Guidelines on Co-ordination, Co-operation & Communication (**Reference 15.13**).	Chapter 15, Section: Assessment of Construction Phase Effects, Assessment of Operational Phase Effects.

Table 15.2 Relevant licences and permits required

License or permit	
Permit	The NRSWA requires all works promoters to notify or apply for permits for all works in the public highway (**Ref 15.4**).
Permit	Wayleaves from land owners are required by utility providers to grant access to land, allowing for installation, maintenance and decommissioning of plant equipment owned by the provider to be carried out.

Scoping and Consultation

15.8 A response directory for the Scoping Opinion comments pertaining to utility services can be found in **Table 15.3**. Consultations with external bodies related to the Main SRFI Site are detailed below, and summarised in **Table 15.4.** Asset plans for the Main SRFI Site, J15a Works and Minor Highway Works were sought, as outlined in Tables 15.5 and 15.6 in addition to this consultation.

15.9 Statutory utility undertakers, or District Network Operators (DNOs), were consulted to:

- establish locations of existing plant equipment;
- inform providers of layout plans for the Main SRFI Site and the required utility provisions during the construction and operational phase;
- confirm predicted capacity requirements;
- request connection offers and associated network designs; and
- discuss construction phase works, in terms of diversionary works and Protective Provisions (PP).

15.10 The DNOs for electricity, telecoms, gas and water operating in the local area are respectively: Western Power Distribution (WPD), BT Openreach, National Grid Ltd (National Grid) and Anglian Water Ltd (Anglian Water).

15.11 Information ascertained during the consultations with the statutory providers is presented throughout this chapter and forms a major part of the supporting evidence for the utility impact assessment.

Table 15.3 Summary of Scoping Opinion

Scoping Opinion (Section/ Paragraph)	Summary of issues raised	Where in the PEIR is this addressed?
3.69	Lack of justification for concluding with the statement: *"it is not anticipated that diversion of existing utility services or the provision of new utility services will have an environmental effect on any identified."*	Chapter 15, Section: Method of Assessment.
3.70	The extent of the Study Area should be clearly defined.	Chapter 15, Section: Study Area. Figure 15.1
3.71	Greater level of assessment methodology detail.	Chapter 15, Section: Method of Assessment.
3.72	Consultation with relevant utility providers should be undertaken in order to accurately define existing baseline conditions.	Chapter 15, Sections: Consultation, Baseline Surveys and Data and Baseline Conditions.
3.73	Clearly define assessment criteria source.	Chapter 15, Section: Method of Assessment.
3.74	Consider whether the definition of a significant effect should encompass moderate effects.	Chapter 15, Section: Method of Assessment.
3.75	Greater distinction required between cumulative effects as a result of the Proposed Development together with other schemes, and inter-related effects of as a result of the combined effects of the Proposed Development on particular receptors.	Chapter 15, Sections: Cumulative Effects and Residual Effects.
3.76	Account should be taken of comments from National Grid and consideration to the potential need for Hazardous Substances Consent.	Chapter 15, Sections: Legislation, Policy and Best Practice, Study Area, Baseline Surveys and Data and Baseline Conditions.
3.77	Considerations of the Main SRFI Site water supply and foul water.	Chapters 14 (Hydrology, Drainage & Flood Risk) and 15.
Appendix 3: Anglian Water	Considerations of the Main SRFI Site water supply and foul water.	Chapters 14 (Hydrology, Drainage & Flood Risk) and 15.

Appendix 3: Canal and River Trust	Sky Networks is present within the towpath along the canal.	Chapter 15, Sections: Consultation.
Appendix 3: Health and Safety Executive	Consideration for the hazardous nature of the oil pipelines intersecting the Potential Development Area.	Chapter 15, Sections: Legislation, Policy and Best Practice, Study Area, Baseline Surveys and Data and Baseline Conditions.
Appendix 3: Milton Malsor Parish Council	Consideration for the major oil pipelines intersecting the Potential Development Area.	Chapter 15, Sections: Legislation, Policy and Best Practice, Study Area, Baseline Surveys and Data and Baseline Conditions.
Appendix 3: National Grid	Best practice and National Grid requirements should be adhered to where applicable.	Chapter 15, Sections: Legislation, Policy and Best Practice, Study Area, Baseline Surveys and Data and Baseline Conditions

Table 15.4 Summary of Consultations Undertaken

Consultation and date	Summary of consultation	Where in the PEIR is this addressed?
WPD	Utility asset plans were obtained. Overground and underground High Voltage (HV) and Low Voltage (LV) cables intersect the Potential Development Area in a number of locations. Diversionary works will be required. WPD have informed, through a formal connection offer, that network capacity can become available for the Main SRFI Site and have indicated major off-site enabling and reinforcement works will be required to the Northampton west primary.	Chapter 15: Appendix 15.1, Appendix 15.2.1, Figure 15.2, Figure 15.3
BT Openreach	Overground BT Openreach cable currently serves a number of dwellings on site. BT Openreach have indicated in a formal connection offer that existing cables will be removed and that diversionary works would be required to accommodate the Main SRFI Site underpass, routed under the A43.	Chapter 15: Appendix 15.1, Appendix 15.2.2, Figure 15.2, Figure 15.3

National Grid	A formal connection offer, proposed connection strategy and design study has been received from National Grid detailing the required works for servicing the Main SRFI Site. This was informed by the illustrative masterplan (**Appendix 5.2**) and calculated anticipated loadings provided by Hydrock. These works include; laying of new on-site and off-site mains (up to the second stage regulator / PoC) and testing and commissioning of installation.	Chapter 15: Appendix 15.1, Appendix 15.2.3, Figure 15.2, Figure 15.3
Anglian Water	A formal consultation meeting with Anglian Water was held on 25 April 2017, to discuss the anticipated water connections offer and associated designs. A formal connection offer has been received from Anglian water (**Appendix 15.3.4**) following this meeting, detailing the required works for servicing the Main SRFI Site. These works include; disconnection and subsequent abandonment of current site services, laying of new on-site and off-site mains (up to the PoC) and testing and commissioning of installation.	Chapter 15: Appendix 15.1, Appendix 15.2.4, Figure 15.2, Figure 15.3
BPA	Consultation was held with the British Pipeline Agency Ltd (BPA) to confirm on site pipeline locations and identify relevant regulations and guidelines pertaining to acceptable structure proximity to existing pipelines. BPA identified that 2 oil pipelines are directly affected by the Main SRFI Site. BPA have provided details of the exact location of these within the site, along with details of required easements for their assets. The information obtained was used to inform the Main SRFI Site design.	Chapter 15: Appendix 15.1, Appendix 15.5, Figure 15.2, Figure 15.3
Instalcom (Level3)	Instalcom were consulted in relation to a local diversion of their duct routes to enable the new bridge / underpass to be built on Northampton Road A proposed route was offered, but installation details to be agreed at a future date.	Chapter 15 Appendix 15.1
Sky	Consultation with Sky UK Limited (Sky) was undertaken to determine the accuracy of Sky plant equipment drawings, indicating that a Sky telecoms cable was in close proximity to the Order Limits. Sky have confirmed, through Type B survey work, that the underground cable owned by Sky is located outside the Main SRFI Site within the Grand Junction Canal tow path.	Chapter 15: Appendix 15.1, Appendix 15.2.1, Figure 15.2, Figure 15.3

Network Rail	Network Rail own apparatus along the southern and eastern boundaries of the Main SRFI Site. Network Rail was consulted in relation to integration with existing Network Rail infrastructure and establish Network Rail utility requirements. Results of consultation are provided in the Rail Report provided as Appendix 8.1, and are not addressed in this chapter.

Study Area

15.12 The overall Study Area for utilities is not limited to the Main SRFI Site, or the Order Limits (including highway works as outlined in Chapter 5), illustrated within Appendix 5.1. The Study Area also includes the extent of any off-site enabling utility works which may be required to serve the site.

15.13 Figure 15.1 details the approximate Study Area to date, showing the locations of the identified highways works and the Main SRFI Site. The extent of the Study Area is likely to contract when WPD confirm their preferred service route to the site (currently withheld for commercial reasons). This grid connection will be addressed as a cumulative development.

Main SFRI site

Electrical

15.14 WPD have identified in a formal connection offer that the Main SRFI Site's electrical supply would require enabling and upstream reinforcement works, which would take the form of upgrades to WPDs Northampton west primary network infrastructure. This results in the electrical Study Area covering the Main SRFI Site, and areas impacted by the enabling works between the Main SRFI Site and the Northampton west primary substation, located south of Tintern Avenue, Northampton. The connection offer and illustrations detailing the required works are held within **Appendix 15.2.1**, though the preferred route and costs are withheld for commercial reasons.

Telecoms

15.15 BT Openreach at the preliminary design and offer stage have indicated no upstream reinforcement work would be required. A detailed design review conducted by BT Openreach will definitively highlight any required enabling works at the time of proposed connection. Connection to the nearest BT Openreach telecoms box, which is situated along Northampton Road has been proposed (**Appendix 15.2.2)**. Therefore, at this stage, the telecoms Study Area covers the Main SRFI Site and the area between the Main SRFI Site and the BT Openreach box.

Gas

15.16 National Grid has identified, in a formal connection offer (**Appendix 15.2.3)**, that the Main SRFI Site supply would require no enabling or upstream reinforcement works. The Main SRFI

site will be serviced from an existing 250mm medium pressure main within Northampton Road/Towcester Road. This will include the laying of two new medium density polyethylene (MDPE) medium pressure mains; one 180mm running eastwards into the site and one 125mm running westwards. The design study carried out by National Grid is inclusive of the design Study Area as set forth in this Chapter.

Water

15.17 Anglian Water has identified, in a formal connection offer (**Appendix 15.2.4)**, that the Main SRFI Site supply would require no enabling or upstream reinforcement works. The Main SRFI site will be serviced from an existing main within Rectory Lane, to the north of the site which will be laid along Rectory lane and Towcester Road. The design study carried out by Anglian Water is inclusive of the design Study Area as set forth in this Chapter.

J15a Works and Minor Highway Works

15.18 The Study Area covers J15a and each of the fourteen additional traffic junctions that form part of the Proposed Development to mitigate anticipated traffic flows. These junctions are included within the Order Limits, as included in Appendix 5.1.

Baseline Surveys and Data

15.19 Hydrock has utilised the online asset protection and asset location software platform: Linesearch (**Reference 15.4**). They also have direct consultation with all relevant utility providers, in order to obtain asset maps and indicative asset protection information as outlined in the Scoping and Consultation section. Details of the affected providers are presented within **Table 15.5 and 15.6**. Affected providers include utility providers who own plant within, or close to the Order Limits.

Main SRFI Site

15.20 Hydrock conducted a non-invasive, site survey on 13 September 2016. The applicable methodology for such surveys is PAS 128: 2014, Specification for underground utility detection, verification and location' (**Reference 15.7**). This is a Publicly Available Specification (PAS) sponsored by the Institute of Civil Engineers; recommended by the Department for Transport. The document provides a methodology for delivering utility surveys. The document provides four levels of quality associated with the data to be acquired during the survey: A (highest) to D (lowest). The level of quality proposed for the purposes of the EIA was Type C (Site Reconnaissance) as the purpose was only to validate utility asset plans in a non-intrusive manner. Details of affected services is provided in **Table 15.5**.

Table 15.5 Summary of Affected Utility Providers (Main SRFI Site)

Location within the Study Area	Utility	Category	Date of Enquiry	Response Issue Date
Main SRFI Site	WPD	Electric	24/06/2016	24/06/2016
	BPA	Oil/Gas	24/06/2016	21/07/2016
	Sky	Telecoms	24/06/2016	26/06/2016
	BT Openreach	Telecoms	26/06/2016	26/06/2016
	Instalcom	Telecoms	24/06/2016	27/07/2016
	National Grid Gas Distribution (below 2 bar)	Gas	24/06/2016	30/06/2016
	Network Rail	Misc.	13/07/2016	18/08/2016
	Anglian Water	Water	24/06/2016	22/07/2016

J15a and Minor Highway Works

15.21 Asset plans have been secured for the fifteen areas where highway works will be required in response to anticipated traffic flows. Details of affected services are provided in **Table 15.6.** Junction numbers are as shown on the Study Area plan in **Figure 15.1**.

Table 15.6 Summary of Affected Utility Providers (J15a and Minor Highway Works)

Location within the Study Area		Utility	Category	Date of Enquiry	Response Issue Date
JUNCTION 5 M1 J15a	Roundabout & slip roads	WPD	Electric	03/05/2017	11/05/2017
		BT Openreach	Telecoms	26/06/2016	26/06/2016
		BPA	Oil/Gas	03/05/2017	18/05/2017
		Cemex	Gas	03/05/2017	04/05/2017
		National Grid (below 2 bar)	Gas	14/06/2017	14/06/2017
		Virgin Media	Telecoms	11/05/2017	11/05/2017
JUNCTION 1 M1 J16	Roundabout & slip roads	WPD	Electric	24/01/2018	24/01/2018
		Vodafone	Telecoms	24/01/2018	25/01/2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018

		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 3 A4500	Upton Way / Tollgate Way Roundabout	WPD	Electric	24/01/2018	24/01/2018
		Vodafone	Telecoms	24/01/2018	25/01/2018
		Colt	Telecoms	24/01/2018	30/01.2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 4 5076/ A5123	Upton Way Roundabout	WPD	Electric	24/01/2018	24/01/2018
		Colt	Telecoms	24/01/2018	30/01.2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 6 A5076	Hunsbury Hill Road Roundabout	WPD	Electric	24/01/2018	24/01/2018
		Colt	Telecoms	24/01/2018	30/01.2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 7 A5076	Towcester Road/ Tesco Roundabout	WPD	Electric	24/01/2018	24/01/2018
		Colt	Telecoms	24/01/2018	30/01.2018
		Zayo	Telecoms	24/01/2018	22/01/2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 9 A45	Brackmills Roundabout	WPD	Electric	24/01/2018	24/01/2018
JUNCTION 10 A45	Barnes Meadow Interchange	WPD	Electric	24/01/2018	24/01/2018
		Vodafone	Telecoms	24/01/2018	25/01/2018

		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 11 45/A43	Lumbertubs Roundabout	WPD	Electric	24/01/2018	24/01/2018
		National Grid (below 2	Gas	24/01/2018	25/01/2018
JUNCTION 12 M1 J15	A45 & A508 slip roads	WPD	Electric	24/01/2018	24/01/2018
		ESP Utilities	Gas	24/01/2018	25/01/2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
JUNCTION 14 A43/A5	Tove Roundabout	WPD	Electric	24/01/2018	24/01/2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 15 A43	Abthorpe Roundabout	WPD	Electric	24/01/2018	24/01/2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 19 A5076	Upton Way / Telford Way	WPD	Electric	24/01/2018	24/01/2018
		Colt	Telecoms	24/01/2018	30/01.2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 20 A5076	Upton Way / High Street Roundabout	WPD	Electric	24/01/2018	24/01/2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018
		Anglian Water	Water	24/01/2018	25/01/2018
JUNCTION 25 A508 / A5199	Road junction	WPD	Electric	24/01/2018	24/01/2018
		National Grid (below 2 bar)	Gas	24/01/2018	25/01/2018

	Anglian Water	Water	24/01/2018	25/01/2018

All Development within Order Limits

15.22 There are no further development works beyond the Main SRFI site, J15a and the fourteen minor highway works identified above. Therefore the baseline studies undertaken have addressed all relevant utilities to be affected as part of the Proposed Development.

Baseline Conditions

The baseline conditions of the Proposed Development are outlined below. This information will form the basis of the formal utilities assessment and will be presented in terms of impact to receptor locations, at the construction, operational and decommissioning phases.

15.23 The baseline condition of each utility service for the Main SRFI Site are presented as utility asset plans within **Appendix 15.1.** Similarly the highways works (J15a and Minor Highways Works) are presented as utility asset plans within **Appendix 15.2.**

2016-17 Baseline

Main SRFI Site

15.24 The combined utility services baseline condition for the Main SRFI Site is illustrated within **Figure 15.2.** The existing onsite condition for each utility service is described below.

Electrical

15.25 HV and LV cable owned by WPD intersects the Main SRFI Site in a number of locations, serving existing dwellings, farms and business units on the JBJ Business Park. The HV and LV cable is predominantly above ground, however, some sections are routed underground. A number of pole mounted transformer units exist along the cable routes. The JBJ Business park is in close proximity to the Main SRFI Site and is supplied from electrical infrastructure located on the Main SRFI Site, as such will be considered as an additional receptor site.

Telecoms

15.26 Overground BT Openreach cable currently serves a number of dwellings on the Main SRFI Site, including: Manor Farm, Lodge Farm and the buildings around the A43 (**Figure 15.2**). BT Openreach own copper and fibre cable routed along the A43 and Northampton/Towcester Road.

Oil and Gas

15.27 The Main SRFI Site is currently well serviced with gas. The local towns of Blisworth and Milton Malsor are served by a combination of medium and low-pressure mains and are connected by a medium pressure main running through Towcester Road, which dissects the middle of the Main SRFI Site (**Figure 15.2**).

15.28 There are no other gas service providers with plant equipment in the immediate local area.

15.29 There are currently two major oil pipelines running through the south-west corner of the Main SRFI Site, owned by BPA. This is a buried service with regular marker posts at property and road boundaries. The pipes rise from beneath the ground to cross the river at the western boundary of the site (**Figure 15.2**).

Water

15.30 The Main SRFI Site is currently well serviced with potable water. (Foul water is addressed within **Chapter 14: Hydrology, Drainage and Flood Risk**). There is currently a 90mm MDPE water service to an existing farm in the north-east section of the site. This main is fed from a 10" AC (Asbestos Cement) main which lies within Rectory Lane to the north of the site (**Figure 15.2**).

15.31 There are no other water service providers with plant equipment in the immediate local area.

J15a Works

Electrical

15.32 WPD have underground 11kV HV assets along the north side of the A43 leading to the northern roundabout which then head north along the A5123.

Telecoms

15.33 BT Openreach have both over ground and underground assets to the north of the roundabouts off the southbound carriageway of the M1 at J15a.

15.34 Virgin Media have underground assets on the northern boundary of the A43 running between Swan Valley Way and the A5123.

Oil and Gas

15.35 National Grid owns an underground medium pressure gas main. The main is serving the northern section of the service station.

15.36 BPA own a major oil pipeline which currently intersects J15a in between the service station access roundabouts. The pipeline is routed underground.

Water

15.37 Anglian Water serves the service station with potable water through an underground 4" PVCu pipeline routed along the M1, entering J15a to the west of the southern section. The pipeline is then routed under the M1 to serve the northern section.

Minor Highway Works

JUNCTION 1 - M1 Junction 16

Electrical

15.38 WPD have underground 11kV HV assets along the north side of the A45 which pass under the M1 to run on the north side of the A4500.

Telecoms

15.39 Vodafone have underground assets along the western side of the roundabout on J16 of the M1.

Oil and Gas

15.40 National Grid has a 12" SI Medium pressure main to the north of the roundabout which crosses the A4500.

Water

15.41 Anglian Water has a 15" SI main and a 400mm DI main to the north of the roundabout with a hydrant located off the highway.

JUNCTION 3 - A4500 Upton Way/ Tollgate Way Roundabout

Electrical

15.42 WPD have underground 33kV HV assets along the north side of the A4500 at the point where the roundabout approach is expected to be widened.

Telecoms

15.43 Vodafone have underground assets on the north side of the A4500 at the tollgate roundabout.

15.44 Colt have underground assets along Upton Way and Tollgate Way running across the roundabout.

Oil and Gas

15.45 National Grid has medium pressure and low pressure mains in the vicinity of the roundabout. There are two mains which cross Weedon Road in close proximity to the zone of interest; one low pressure 150mm ST UN main and one 200mm ST Medium pressure mains.

Water

15.46 Anglian Water has potable and RAW water close to the roundabout. There are two mains which cross Weedon Road in proximity to the zone of interest; one RAW water main of unknown size and one 21" CI potable water main.

JUNCTION 4 - A5076 / A5123 Upton Way Roundabout

Electrical

15.47 WPD has underground HV assets along either side of the A5076 as it approaches the roundabout.

Telecoms

15.48 Colt has underground assets along Upton Way and Danes Camp Way.

Water

15.49 Anglian water has potable water services in the area. There is a 225mm MDPE/PE80 main which crosses Upton Valley Way to the east of the roundabout and 2no. 450mm DI mains which cross Upton Way to the North. There is a hydrant to the Northwest of the roundabout.

JUNCTION 6 - A5076 Hunsbury Hill Road Roundabout

Electrical

15.50 WPD have underground 11kV HV assets along the western side of Hunsbury Hill Road crossing the A5076 and Hunsbury Hill Avenue before running north on the western side of Hunsbarrow Hill.

15.51 WPD have underground LV assets along both sides of the A5076 East Danes Camp Way serving street lighting and illuminated signage.

Telecoms

15.52 Colt have underground assets along Danes Camp Way running across the roundabout.

Oil and Gas

15.53 National Grid has low pressure mains around the roundabout. There is a 3" PE low pressure main which contours the northern/north-western section of the roundabout, crossing both Hunsbarrow Road and Hunsbury Hill Avenue.

Water

15.54 Anglian Water has potable mains in the vicinity. There is an 18" CI main which runs along Hunsbury Hill Road, around the roundabout in the highway and exits to the northwest. This then feeds a 450mm DI potable water main and 8no. Hydrants.

JUNCTION 7 - A5076 Towcester Road / Tesco Roundabout

Electrical

15.55 WPD have underground 33kV HV assets along the western side of Towcester Road North.

15.56 WPD have underground 11kV HV assets along the southern side of the A5076 approach, which cross the A5076 to run north up Towcester Road North.

15.57 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage.

Telecoms

15.58 Zayo have buried ducts north of the A5076 Towcester Road / Tesco Roundabout.

15.59 Colt have underground assets along Danes Camp Way and Mere Way running across the roundabout.

Oil and Gas

15.60 National Grid has medium and low pressure mains around the roundabout. There is a 250mm PE low pressure main which crosses Mere Way to the east and navigates the roundabout to the south. It then follows Towcester Road to the south in the footway. There is a 125mm PE medium pressure main which crosses Towcester Road South on the approach to the roundabout.

Water

15.61 Anglian water has live and abandoned potable services around the roundabout. The abandoned main dissects the roundabout from northwest to east and there is a 450mm DI main which crosses Towcester Road to the south. There are 2 hydrants, one to the east of the roundabout and one in the northern footway of Towcester Road South.

JUNCTION 9 - A45 Brackmills Roundabout

Electrical

15.62 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage.

JUNCTION 10 - A45 Barnes Meadow Interchange

Electrical

15.63 WPD have underground 11kV HV assets along the southern side of the A428 approach, which cross the roundabout to head north on the west side of the A428.

Telecoms

15.64 Vodafone have underground assets along the southern side of the A428 at the Barnes Meadow Interchange.

Oil and Gas

15.65 National Grid has medium pressure mains in the vicinity of the roundabout. There is a 12" ST medium pressure main which runs along the western side of the roundabout crossing Nene Valley Way and running along; the northern footway of Bedford Road (East), the eastern footway of Bedford Road (West) and the southern footway of Rushmere Road.

Water

15.66 Anglian Water has live and abandoned mains around the roundabout. The abandoned service runs within the carriageway from Bedford Road (West) southwards to cross Nene Valley Way to the south. There is a live 335mm HPPE/PE100 main which follows a similar root but in the southwest verge adjacent to the footpath. This then changes to 300mm DI upon crossing the road.

JUNCTION 11 - A45 / A43 Lumbertubs Roundabout

Electrical

15.67 WPD have underground 33kV HV assets along the south side of the roundabout, running along Ferris Row, across the A45 South before heading north on the western side of the A43.

15.68 WPD have underground 11kV HV assets along the south side of the roundabout, running along Ferris Row, across the A45 South before heading north on the western side of the A43

15.69 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage

Oil and Gas

15.70 National Grid has low and medium pressure services in the area of the roundabout. The only main that crosses the roundabout is a 25mm PE medium pressure service branch to the fast food establishment to the south of the roundabout.

Water

15.71 Anglian water has a 150mm DI potable water mains to the south of the roundabout.

JUNCTION 12 - M1 Junction 15

Electrical

15.72 WPD have underground 11kV HV assets along the east side of the A508, which cross the M1 before looping into the industrial estate off Saxon Avenue.

Oil and Gas

15.73 ESP Utilities have buried gas pipes north of Saxon Avenue off the northern roundabout at Junction 15 of the M1. These will not be affected by the proposed works.

15.74 National Grid has medium pressure mains in the area of the junction. There is a 315mm PE Medium pressure main to the west of London Road (North). It is not clear from the information provided whether this main is in the carriageway or the footway.

JUNCTION 14 - A43 / A5 Tove Roundabout

Electrical

15.75 WPD have underground LV assets along both sides of the A43 South and on the western side of the A5 South approach serving street lighting and illuminated signage.

Oil and Gas

15.76 National Grid has both medium and low pressure mains in the vicinity of the roundabout. There is a 32mm PE medium pressure main in the verge behind the garage which feeds a 125mm PE low pressure service. This 125mm main crosses Towcester Road (West) and runs northwards in the western footway of the A5 north.

Water

15.77 Anglian Water has potable mains in the roundabout. There is a 7" AC main which runs in the A5 and dissects the roundabout, north to south. There is a main of unknown size in the southern verge of the A43 south.

JUNCTION 15 - A43 Abthorpe Roundabout

Electrical

15.78 WPD have underground 11kV HV assets that cross the existing roundabout from Springfields to the east and Wappenham Road to the west.

15.79 WPD have underground LV assets along both sides of the Brackley Road.

Oil and Gas

15.80 National Grid has medium and low pressure mains around the roundabout. There is a 180mm PE medium pressure main in the eastern footway of the A43 (North) which contours the roundabout and crosses Brackley road and the verge to the south. There is a 180mm PE low pressure main running southwards in the same verge.

Water

15.81 Anglian Water has abandoned and live mains around the roundabout. There is an abandoned service which dissects the roundabout from northeast to southwest which runs adjacent to a live 180mm HPPE/PE100 main. There are hydrants located at either end of this service. There is a 200mm DI live potable water main which crosses Brackley Road and abandoned mains in the verge to the southeast of the roundabout.

JUNCTION 19 - A5076 Upton Way / Telford Way Roundabout

Electrical

15.82 WPD have underground 33kV HV assets along both sides of the A5076 South Upton Way. The eastern branch turns east towards the stadium and appears to be unaffected by the works. The western branch continues north over Telford Way and up the western side of the A5076 North Upton Way.

15.83 WPD have underground 11kV HV assets along both sides of the A5076 South Upton Way. The eastern branch turns east towards the stadium and appears to be unaffected by the works. The western branch continues north over Telford Way and up the western side of the A5076 North Upton Way.

15.84 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage.

Telecoms

15.85 Colt have underground assets along the A5076 running across the roundabout.

Oil and Gas

15.86 National Grid has medium and low pressure mains in the vicinity of the roundabout. There is a 125mm PE medium pressure service to the west of the roundabout which crosses Telford Lane. There is also a 63mm PE medium pressure main which serves two 63mm PE low pressure service mains to commercial properties to the east of Upton Way (North).

Water

15.87 Anglian water has potable and RAW mains in the vicinity of the roundabout. The RAW water service crosses the carriageway of Upton Way (North) and dissects the roundabouts. It then runs in the verge between Upton Way (South) and Dunston Mill Lane. There are 280mm HPPE/PE100, 225mm HPPE/PE100 and 180mm PE live potable water mains which surround the roundabout and a 21" CI main which crosses the link road between the two roundabouts.

JUNCTION 20 - A5076 Upton Way / High Street Roundabout

Electrical

15.88 WPD have underground 33kV HV assets running south along both sides of the A5076 North Upton Way. The eastern branch crosses the High Street before heading west across Upton Country Park. The western branch continues south down the eastern side of the A5076 South Upton Way.

15.89 WPD have underground 11kV HV assets running south along both sides of the A5076 North Upton Way. The eastern branch turns east at the roundabout towards Dunston Mill. The western branch comprising two circuits continues south over the High Street, one circuit

then follows the 33kV cable into Upton Country Park, the other heading south down the western side of the A5076 South Upton Way.

15.90 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage.

Oil and Gas

15.91 National gird had medium and low pressure mains in the area around the roundabout. There is a 125mm PE medium pressure main which crosses High Street and runs in the western verge of Upton Way (North.

Water

15.92 Anglian water has a 225mm HPPE/PE100 potable service to the north of High Street. This main contours the roundabout and crosses Upton Way (North) before branching; southwards, to a hydrant and northwards in the footpath adjacent to Upton Way (North).

JUNCTION 25 - A508 / A5199 Harborough Road / Welford Road

Electrical

15.93 WPD have underground 33kV HV assets running north on the western side of the A5199 Welford Road.

15.94 WPD have underground 11kV HV assets running north on the western side of the A5199 Welford Road.

15.95 WPD have underground LV assets running north on the western side of the A5199 Welford Road. A ducted cable crossing is made to the ice cream factory where the existing carriageway is to be widened.

Oil and Gas

15.96 National Grid has a low pressure network in the vicinity of the junction. There is a 12" CI low pressure main in the western footway of Welford Road with a 63mm PE service crossing the road to the north of the zone of interest.

Water

15.97 Anglian Water has 3", 15" and 16" CI potable water mains in the carriageway of Welford Road. There is a hydrant at the junction between Welford Road and Harbourough Road.

All Development within Order Limits

15.98 There are no further development works beyond the Main SRFI Site; J15a of the M1 and the fourteen Minor Highway Works identified above.

Predicted Future Baseline Scenario

15.99 Committed developments which could form part of the future baseline, would result in reduced capacity in each of the utility networks. The Cumulative Effects section below offers clarity as to how DNOs manage capacity.

Climate Change Influenced Baseline Conditions

15.100 Factors related to utility service material production and installation which could be linked to causing adverse impacts on climate change can be associated with the development.

15.101 Copper used in cable and other metals used in service enclosures are mined resources, which use high levels of fossil fuel in mining and metal purification. Additionally, plastics used in cable sheath and pipelines also intensively use fossil fuels in fabrication.

15.102 The added electrical and gas demands on the grid would require there to be an increase in electrical energy generation and gas production, both are linked to significant adverse impacts to the climate.

Method of Assessment

Overview

15.103 To accurately assess significant environmental impact of the works associated with removing or diverting existing utility infrastructure and installing new utility infrastructure required for the Proposed Development on the Order Limits and the surrounding area, information was gathered as described above.

15.104 The approach to determine the environmental impact using the assembled information involved: establishing the baseline condition of the site; selection of appropriate locations to assess (receptor sites identified in the section below); assigning an environmental value and magnitude of effect to each receptor site; calculating the significance of effect, determining the significance of impact and finally, assessing the Cumulative Effects. Cumulative Effects are considered in relation to the Proposed Development as a whole and with regard to other developments.

Selection of Receptor Sites

15.105 Receptor sites identified by this utilities assessment are defined by geographical locations, which encompass the visual extent of the location's utility services; relationship of the plant equipment with the environment; the utility network capacity of services associated with the site and the implication of installation and maintenance work on transport and utility service users within the approximate receptor site boundaries.

15.106 The proposed receptors are those likely to be affected by the Proposed Development and are as follows:

- the Main SRFI Site, J15a and the Minor Highway Works;

- A43 (beyond the identified junctions);
- the Rail Infrastructure (south and east of the Main SRFI Site);
- JBJ Business Park (adjacent to the Main SRFI Site);
- Milton Malsor;
- Blisworth; and
- Northampton/Towcester Road.

Assessing Significance of Effect

15.107 **Tables 15.7 to 15.12** detail the framework for assessing the significance of effect: Magnitude of Impact; Sensitivity of Receptor; Duration of Effect; Significance of Impact and Cumulative Effects. The tables are broadly based upon Highways Agency advice DMRB Volume 11, Section 2 Part 5 HA205/08) "Assessment and Management of Environmental Effects" (**Reference 15.5**).

Magnitude of Effect

15.108 The categories for Magnitude of Impact are defined in **Table 15.7** below. These are taken from Table 2.2 within **Reference 15.5**.

Table 15.7 Defining the Magnitude of Impact

Value (Magnitude)	Definition
Major	Existing utility services disrupted for prolonged periods (hours) of time. Major traffic disruption for prolonged periods of time (days). Destruction of wildlife habitat. New above ground utility services (high level - e.g. pylons) at close proximity.
Moderate	Existing utility services disrupted for short periods (tens of minutes) of time Major traffic disruption for short periods of time. Long term effect (15 years +) on wildlife habitats. New above ground utility services (high level - e.g. pylons) at a distance.
Minor	Existing utility services disrupted for very short periods (< ten minutes) of time. Minor traffic disruption for prolonged periods of time. Medium term effect on wildlife habitat. New above ground utility services (low level – e.g. telegraph poles) at close proximity.

Negligible	Existing utility services disrupted with negligible effect. Minor traffic disruption for short periods of time. Short term effect (< 5 years) on wildlife habitat. New above ground utility services (low level – e.g. telegraph poles) at a distance, and cabinets at street level.
No change	No disruption of existing utility services. No traffic disruption. No effect on wildlife habitats. No new above ground services.

Sensitivity of Receptor

15.109 The categories for sensitivity of receptor sites are defined in **Table 15.8** below. These are taken from Table 2.1 within **Reference 15.5.**

Table 15.8 Defining the Sensitivity of Receptor Sites

(Value) Sensitivity	Definition
Very High	Locations where viewers are highly attuned to their surroundings and are presented with new above ground services in close proximity. Utility service disruption caused by outages/ installation/maintenance would be catastrophic to end users and/or the environment.
High	Locations where viewers are highly attuned to their surroundings and are presented with new above ground services at a distance. Utility service disruption caused by outages/ installation/maintenance would be damaging to end users and/or the environment.
Moderate	Locations where viewers have a moderate awareness of their surroundings such as motorists on rural roads and local rail passengers who are presented with views of new above ground services. Utility service disruption caused by outages/installation/maintenance would significantly inconvenience to individuals/end users and/or the environment.
Low	Locations where viewers have a passing awareness of their surroundings such as motorists on motorways and mainline rail passengers who are presented with views of new above ground services. Utility service disruption caused by outages/ installation/maintenance would result in slight inconvenience to individuals/end users and/or the environment.
Negligible	No direct views of new services either buried services or shielded views of new above ground services. Utility service disruption caused by outages/installation/maintenance would result in unnoticeable disruption to individuals/end users and/or the environment.

Duration of Effect

15.22. The Duration of Effect used in the assessment are defined in **Table 15.9.** These are taken from **Reference 15.5.** Construction is defined as short term even though it could potentially last in the region of ten years overall, as the impacts arising as a result of the process at any particular receptor will be short term and sporadic. Operational effects, however, would be continuous.

Table 15.9 Defining the Duration of Effect

Term	Length of Time
Short	0 to 5 years, including construction.
Medium	5 to 15 years.
Long	15 years onwards for the life of the development.

Significance of Effect

15.110 The definition for each of the five significance of effect categories are outlined in **Table 15.10** below. The significance of effect category is formulated using the matrix set out in **Table 15.11** determined through receptor sensitivity and magnitude of impact. A moderate or larger significance of effect is considered to be "significant" in terms of the EIA Regulations. It is important to determine whether the effect arrived at creates a positive (beneficial), neutral or negative (adverse) effect on the environment, as set out in **Table 15.12**.

Table 15.10 Defining the Significance of Effect

Significance of Effect	Definition
Very Large	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
Large	These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
Moderate	These beneficial or adverse effects may be important and are likely to influence decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
Slight	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.

Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Table 15.11: Matrix for Assessing Significance of Effect

Magnitude of Effect	Sensitivity of Receptors				
	Very High	**High**	**Moderate**	**Low**	**Negligible**
Major	Very Large	Large or Very Large	Moderate or Large	Slight or Moderate	Slight
Moderate	Large or Very Large	Moderate or Large	Moderate	Slight	Neutral or Slight
Minor	Moderate or Large	Slight or Moderate	Slight	Neutral or Slight	Neutral or Slight
Negligible	Slight	Slight	Neutral or Slight	Neutral or Slight	Neutral
No change	Neutral	Neutral	Neutral	Neutral	Neutral

15.23. For the purposes of the EIA Regulations, only Moderate and above are considered significant.

Table 15.12: Defining Nature of Impact

Value	Definition
Beneficial	Changes to utility infrastructure improves the quality and value of the view and/or the utility service.
Neutral	The value and quality of the baseline condition or view is low such that a high level of change and expansion of areas can be undertaken without detriment to the view and/or the utility service.
Adverse	Changes to utility infrastructure as a result of the development actively reduce the quality and value of views and/or causes general disruption to transport networks and/or utility services from a receptor location.

Cumulative Effects

15.111 The assessment of inter-project cumulative effects considers how the Proposed Development will combine and interact with the effects of other major developments in the context of utilities. The assessment examines potentially significant effects, broadly following the cumulative assessment approaches set out in Highways Agency advice (**Reference 15.5**) and the Planning Inspectorate advice note (**Reference 15.15**). The definition of sensitivity and magnitude for the cumulative projects are as described in **Tables 15.13.** Intra-project cumulative effects (how particular receptors are affected by different aspects of the Proposed Development) are addressed according to the methodology already identified

in the relevant technical assessments, and are addressed in the relevant section later in this chapter.

Table 15.13 Defining the Significance of Cumulative Effect

Significance of effect	Definition
Severe	Effects that the decision-maker must take into account as the receptor/resource is irretrievably compromised.
Major	Effects that may become key decision-making issue.
Moderate	Effects that are unlikely to become issues on whether the project design should be selected, but where future work may be needed to improve on current performance.
Minor	Effects that are locally significant.
Not Significant	Effects that are beyond the current forecasting ability or are within the ability of the resource to absorb such change.

Embedded Mitigation

All Development within Order Limits

15.112 Embedded mitigation has been incorporated within the Proposed Development, by ensuring that all utilities works will be undertaken by DNOs, according to relevant regulations and their statutory obligations. Protective provisions will be put in place as part of the DCO. All works will be carried out in accordance with the conditions attached to any granted DCO (including the submissions made to discharge the requirements of) and applicable law. There is no difference between work undertaken at the Main SRFI Site or at the highway works, as these protections will apply to all of the Proposed Development.

15.113 The next steps in the design of the utilities infrastructure will be to facilitate DNO connection offer designs with site specific information, and to collate the connection offers and designs. Therefore, for the purposes of this assessment, although a "reasonable worst case" assessment is assumed (i.e. use of the indicative masterplan as shown in **Appendix 5.2)**, certain mitigation is embedded into the assumptions, to minimise environmental impacts.

15.114 Utility companies will operate in accordance with the New Roads and Street Works Act (NRSWA) 1991 (**Reference 15.4**) which provides a legislative framework for any utility works including those associated with the Proposed Development. Under this framework the utility companies will have to: agree the timing of the works with the local authority; agree the location of any apparatus or equipment with the local authority and cooperate in coordinating their works with the local authority and other utility providers.

15.115 The objectives are to ensure safety; minimise inconvenience to people (especially those with a disability) and to protect the structure of the street and any apparatus in it. In addition the

NRSWA seeks to avoid: serious traffic disruption; works on recently re-surfaced or reconstructed street and panned works within a short time of earlier works.

15.116 Utility designers are responsible for following best practice in utility infrastructure design. NJUG: Volume 5 (**Reference 15.13**) outlines key practices which ensure the reduction in the impact upon the environment; the use of unsustainable resources and the disturbance to people and wildlife in the vicinity of their activities. This has been designed into the Proposed Development and aids in mitigating adverse effects on the environment. In addition a Construction Environmental Management Plan (CEMP) will be followed. Principles of this (a draft of which is included as **Appendix 13.4**) are included as embedded mitigation.

15.117 The utility infrastructure where possible will route services underground and locate above ground equipment in naturally screened locations where possible. Where this is not possible the Applicant would facilitate screening of equipment. In addition, the utility service installation shall seek to minimise waste during the construction, operational and decommissioning phases through the recycling and re-use of equipment. This is outlined in the Construction Environmental Management Plan (CEMP) and Site Waste Management Plan (see **Chapter 22: Waste and Resource Efficiency**).

Assessment of Construction Phase Effects

15.118 The construction phase will see the diversion of existing utilities infrastructure within the Order Limits, as well as the complete installation of the proposed utility works. Diversion requirements are highlighted below. A summary of the works to be carried out for each service and the subsequent tabulated impact assessment shown in **Table 15.14** are below. **Figure 15.3** indicatively shows the proposed utility layout on the Main SRFI Site. For J15a and the Minor Highway Works, it is of key importance to note that, without detailed information pertaining to levels of cover and other detailed design information, buried services diversion requirements are only speculatively outlined herein. It is assumed that utility diversion would only be required if there was a requirement to physically widen the road carriageway or amend the road layout in some way, and not for signalisation or other safety changes. If required, it is assumed the works would take place at the same time as the rest of the roadworks and would therefore not generate any additional disturbance.

15.119 Further information on requirements will need to be sought at a detailed design stage. As indicated above, a "reasonable worst case" as outlined in the illustrative masterplan in Appendix 5.2 is assumed, with the embedded mitigation outlined above included.

Main SRFI Site

Electrical

15.120 The WPD works on the Main SRFI Site would include: enabling works to divert existing on-site utility assets; complete decommissioning of equipment serving on-site buildings; installation of a Main SRFI Site primary substation; construction of a Main SRFI Site ring main; installation of fourteen 11kV substations and metering, one 11kV substation per unit and final connection work from 11kV substations to internal unit distribution switchgear **(Appendix 15.2.1)**.

15.121 It is proposed the Main SRFI Site will be served electrically via underground cabling combined with discrete substation locations. This approach would improve upon the Main SRFI Sites baseline condition of highly visible overhead cabling.

15.122 WPD have approximated an installation timescale of 3 years for the enabling and upstream works (discussed in Cumulative effects) and 2 years for the Main SRFI Site installation.

Telecoms

15.123 The construction phase works are to include; complete decommissioning of equipment serving on site buildings; the diversion of services along the A43 for the duration of the construction phase; the servicing of each unit with via underground ducting and final connection work from each dedicated external services unit to the respective unit. The Main SRFI Site telecoms point of connection would be from the nearest BT Openreach connections box, located on the A43 (**Appendix 15.3.2)**.

15.124 It is proposed the site will be served via underground telecoms cables, again reducing the site's visible overhead cabling.

15.125 BT Openreach has advised a timescale of 1 year to complete the enabling and installation works.

15.126 BT Openreachs' diversion team have indicated the adverse effects to end users as a result of diversion of equipment would be limited. Copper cable service diversions can be achieved in a no-break change over. End users at the Blisworth and Milton Malsor would not notice any network outages.

Gas

15.127 The National Grid works on the Main SRFI Site would include laying of 300m of 125mm high density polyethylene (HDPE) medium pressure main to the west of Towcester Road; installation of new valve and laying a further 364m of 125mm MDPE to the west of the new valve.

15.128 To the east of Towcester Road this includes laying 82m of 180 HDPE medium pressure mains; 625m of 180mm MDPE medium pressure mains; 1006m of 125mm MDPE medium pressure mains; 920m of 90mm MDPE medium pressure mains and installation of any relevant valves.

15.129 Site services will be below ground, with the proposed meter housing locations being effectively screened each plot. Ventilation of the housings associated with each plot will be in accordance with relevant gas safe regulations and will be responsibility of the applicant in each case.

15.130 National Grid have provided within their response a wireframe diagram and subsequent details relating to their anticipated works which is an elaboration on the above (**Appendix 15.2.3)**.

Water

15.131 The Anglian Water works on the Main SRFI Site would include disconnection and capping of existing site mains (which are to be registered abandoned); installation of a new valve at the connection point within the existing main in Rectory Lane, laying of proposed underground off-site mains from the proposed connection point to the site via Rectory Lane and Towcester Road; installation of proposed on-site spurs to each plot including relevant valves, fittings and fire hydrants.

15.132 Site services will be below ground and the proposed meter housings will be discretely located.

15.133 Anglian Water does not indicate any off-site reinforcement requirement. The only stated off-site work is for the connection to the site which includes laying of approximately 640m of 225mm diameter aluminium lined polyethylene pipe (ALPE) water main.

15.134 Anglian Water anticipate within the terms and conditions of the connection offer that, assuming the terms and conditions are met, a timescale of no longer than 3 months, from the acceptance of the offer and receipt of payment, to complete the works (**Appendix 15.2.4)**.

Assessment

15.135 The sensitivity of the receptor is **low** as the site is a location without existing utility users, and therefore utility service disruption would result in slight inconvenience to individuals/end users at the receptor.

15.136 The magnitude of the effect would be **major**, as there is potential for existing utility services to be disrupted for prolonged periods of time due to the required works. There would also be traffic disruption and wildlife habitat loss, though these would be a result of the overall development and not specifically utilities works. However, the works would involve undergrounding existing over ground utilities. The duration of the effect during construction would be **short** (<5 years).

15.137 Overall the effect is considered **moderate** – though beneficial – due to the reduction in overhead utilities in the long term despite slight short term disruption. This is a significant (positive) effect in terms of the EIA regulations.

J15a Works

Electrical

15.138 WPD have underground 11kV HV assets along the north side of the A43 leading to the northern roundabout which then head north along the A5123. Isolated sections of cable from the northern roundabout and the A5123 approach are anticipated to require local diversion or additional protection to suit the widening of the carriageway

15.139 Additional LV unmetered connections will be required for the additional traffic controls on both the northern and southern roundabouts (signalised T-junction in the south as amended).

Telecoms

15.140 BT Openreach have both over ground and underground assets to the north of the roundabouts off the southbound carriageway of the M1 at J15a. The assets north of the A43 roundabout are anticipated to require local diversion to facilitate the works.

15.141 Virgin Media have underground assets on the northern boundary of the A43 from running between Swan Valley Way and the A5123. The assets along the northern stretch of the A43 are anticipated to require local diversion to facilitate the works.

Oil and Gas

15.142 National Grid owns an underground medium pressure gas main. The main is serving the northern section of the service station. This main will be unaffected by the proposed works.

15.143 BPA own a major oil pipeline which currently intersects J15a in between the service station access roundabouts. The pipeline is routed underground. The pipeline is unlikely to require diversion, subject to further consultation with BPA during later stages of design. Protective measures should be employed in relation to this pipeline during the construction of the junction.

Water

15.144 Anglian Water serves the service station with potable water through an underground 4" PVCu pipeline routed along the M1, entering J15a to the west of the southern section. The pipeline is then routed under the M1 to serve the northern section. It is not anticipated that these services will require diversions in order to commence the works but protective measures during construction may need to be considered once the exact location of the services is determined.

Assessment

15.145 The sensitivity of the receptor is **low** as the site is a location where viewers have a passing awareness of their surroundings (such as motorists on motorways) and there would be slight inconvenience to individuals/end users and/or the environment.

15.146 The magnitude of the effect would be **negligible**, as there would be negligible effect on existing utility services (such as at the service station), no additional above ground infrastructure and no discernible traffic disruption or wildlife habitat loss as a result of the utilities works alone. The duration of the effect for construction would be **short** (<5 years).

15.147 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

Minor Highway Works

JUNCTION 1 - M1 Junction 16

Electrical

15.148 WPD have underground 11kV HV assets along the north side of the A45 which pass under the M1 to run on the north side of the A4500. An isolated section of cable to the north of the roundabout on the M1 westbound slip road is anticipated to require local diversion or additional protection to suit the widening of the carriageway.

15.149 Additional LV unmetered connections will be required for the additional traffic controls

Telecoms

15.150 Vodafone have underground assets along the western side of the roundabout on J16 of the M1. These assets are currently anticipated to require local diversion to facilitate the works.

Oil and Gas

15.151 National Grid has a 12" SI Medium pressure main to the north of the roundabout which crosses the A4500. This will not be affected by the proposed works.

Water

15.152 Anglian Water has a 15" SI main and a 400mm DI main to the north of the roundabout with a hydrant located off the highway. These services will not be affected by the works.

Assessment

15.153 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.154 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect for construction would be **short** (<5 years).

15.155 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 3 - A4500 Upton Way / Tollgate Way Roundabout

Electrical

15.156 WPD have underground 33kV HV assets along the north side of the A4500 at the point where the roundabout approach is expected to be widened. An isolated section of cable to the

northwest of the roundabout is anticipated to require local diversion or additional protection to suit the widening of the carriageway

Telecoms

15.157 Vodafone have underground assets on the north side of the A4500 at the tollgate roundabout, however these would not be affected by the proposed works.

15.158 Colt have underground assets along Upton Way and Tollgate Way running across the roundabout, however these would not be affected by the proposed works.

Oil and Gas

15.159 National Grid has medium pressure and low pressure mains in the vicinity of the roundabout. There are two mains which cross Weedon Road in close proximity to the zone of interest; one low pressure 150mm ST UN main and one 200mm ST Medium pressure mains. These mains will require local diversion or protective measures in order to suit the widening of the carriageway.

Water

15.160 Anglian Water has potable and RAW water close to the roundabout. There are two mains which cross Weedon Road in proximity to the zone of interest; one RAW water main of unknown size and one 21" CI potable water main. These mains will require local diversion or protective measures in order to suit the widening of the carriageway.

Assessment

15.161 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.162 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.163 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 4 - A5076 / A5123 Upton Way Roundabout

Electrical

15.164 WPD have underground HV assets along either side of the A5076 as it approaches the roundabout. As the existing kerb lines are expected to be unaffected, these assets would not be affected by the proposed works.

Telecoms

15.165 Colt have underground assets along Upton Way and Danes Camp Way. These assets are currently anticipated to require local diversion to facilitate the works, as a worst-case assumption.

Water

15.166 Anglian water has potable water services in the area. There is a 225mm MDPE/PE80 main which crosses Upton Valley Way to the east of the roundabout and 2no. 450mm DI mains which cross Upton Way to the North. There is a hydrant to the Northwest of the roundabout. It is unlikely that these services will require diversions but protective measures will need to be considered for these services when undertaking the works.

Assessment

15.167 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.168 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.169 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 6 - A5076 Hunsbury Hill Road Roundabout

Electrical

15.170 WPD have underground 11kV HV assets along the western side of Hunsbury Hill Road crossing the A5076 and Hunsbury Hill Avenue before running north on the western side of Hunsbarrow Hill. The road widening on the A5076 West Danes Camp Way is anticipated to require local diversion or additional protection to a short section of the existing cable.

15.171 WPD have underground LV assets along both sides of the A5076 East Danes Camp Way serving street lighting and illuminated signage. A minor diversion of the cable on the south side of the road will be required to facilitate the road widening at this point.

15.172 Additional LV unmetered connections will be required for the additional traffic controls.

Telecoms

15.173 Colt have underground assets along Danes Camp Way running across the roundabout. These assets are currently anticipated to require local diversion to facilitate the works.

Oil and Gas

15.174 National Grid has low pressure mains around the roundabout. There is a 3" PE low pressure main which contours the northern/north-western section of the roundabout, crossing both Hunsbarrow Road and Hunsbury Hill Avenue. This main will require local diversion in multiple places to facilitate the works.

Water

15.175 Anglian Water has potable mains in the vicinity. There is an 18" CI main which runs along Hunsbury Hill Road, around the roundabout in the highway and exits to the northwest. This then feeds a 450mm DI potable water main and 8no. Hydrants. The hydrants will require relocation and associated diversions to facilitate the works.

Assessment

15.176 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.177 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.178 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 7 - A5076 Towcester Road / Tesco Roundabout

Electrical

15.179 WPD have underground 33kV HV assets along the western side of Towcester Road North, however their route is beyond the boundary of proposed works so these assets would not be affected.

15.180 WPD have underground 11kV HV assets along the southern side of the A5076 approach, which cross the A5076 to run north up Towcester Road North. As the existing kerb lines are expected to be unaffected, these assets would not be affected by the proposed works.

15.181 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage. Minor local diversion of the cables will be required to facilitate the road widening at this point.

15.182 Additional LV unmetered connections will be required for the additional traffic controls.

Telecoms

15.183 Zayo have buried ducts north of the A5076 Towcester Road / Tesco Roundabout, however these would not be affected by the proposed works.

15.184 Colt have underground assets along Danes Camp Way and Mere Way running across the roundabout. These assets are currently anticipated to require local diversion to facilitate the works.

Oil and Gas

15.185 National Grid has medium and low pressure mains around the roundabout. There is a 250mm PE low pressure main which crosses Mere Way to the east and navigates the roundabout to the south. It then follows Towcester Road to the south in the footway. There is a 125mm PE medium pressure main which crosses Towcester Road South on the approach to the roundabout. These services are unlikely to require diversion but protective measures will need to be considered before the works are completed.

Water

15.186 Anglian Water has live and abandoned potable services around the roundabout. The abandoned main dissects the roundabout from northwest to east and there is a 450mm DI main which crosses Towcester Road to the south. There are 2 hydrants, one to the east of the roundabout and one in the northern footway of Towcester Road South. These services are unlikely to require diversion but protective measures will need to be considered before the works are completed.

Assessment

15.187 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.188 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.189 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 9 - A45 Brackmills Roundabout

Electrical

15.190 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage. As mitigation is limited to additional traffic signal controls, no

diversions are anticipated, however a new unmetered supply will be required for the traffic controls.

Assessment

15.191 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.192 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.193 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 10 - A45 Barnes Meadow Interchange

Electrical

15.194 WPD have underground 11kV HV assets along the southern side of the A428 approach, which cross the roundabout to head north on the west side of the A428. The addition of a sixth lane on the western circulatory for right turning traffic suggests a local diversion of, or additional protection to, the existing asset where it crosses the roundabout may be required.

Telecoms

15.195 Vodafone have underground assets along the southern side of the A428 at the Barnes Meadow Interchange. These assets are currently anticipated to require local diversion to facilitate the works.

Oil and Gas

15.196 National Grid has medium pressure mains in the vicinity of the roundabout. There is a 12" ST medium pressure main which runs along the western side of the roundabout crossing Nene Valley Way and running along; the northern footway of Bedford Road (East), the eastern footway of Bedford Road (West) and the southern footway of Rushmere Road. These services will not require diversions.

Water

15.197 Anglian Water has live and abandoned mains around the roundabout. The abandoned service runs within the carriageway from Bedford Road (West) southwards to cross Nene Valley Way to the south. There is a live 335mm HPPE/PE100 main which follows a similar root but in the southwest verge adjacent to the footpath. This then changes to 300mm DI upon crossing the road. These services will not require diversions.

Assessment

15.198 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.199 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.200 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 11 - A45 / A43 Lumbertubs Roundabout

Electrical

15.201 WPD have underground 33kV HV assets along the south side of the roundabout, running along Ferris Row, across the A45 South before heading north on the western side of the A43, however their route is beyond the boundary of proposed works so these assets would not be affected.

15.202 WPD have underground 11kV HV assets along the south side of the roundabout, running along Ferris Row, across the A45 South before heading north on the western side of the A43, however their route is beyond the boundary of proposed works so these assets would not be affected.

15.203 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage, however since the road is not to be widened it is not anticipated any diversion will be required.

Oil and Gas

15.204 National Grid has low and medium pressure services in the area of the roundabout. The only main that crosses the roundabout is a 25mm PE medium pressure service branch to the fast food establishment to the south of the roundabout. This service will be unaffected by these works.

Water

15.205 Anglian Water has a 150mm DI potable water mains to the south of the roundabout which will be unaffected by these works.

Assessment

15.206 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.207 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.208 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 12 - M1 Junction 15

Electrical

15.209 WPD have underground 11kV HV assets along the east side of the A508, which cross the M1 before looping into the industrial estate off Saxon Avenue. The cable route is outside the area of proposed road widening on the A45 London Road so should be unaffected.

Oil and Gas

15.210 ESP Utilities have buried gas pipes north of Saxon Avenue off the northern roundabout at Junction 15 of the M1. These will not be affected by the proposed works. This main will remain unaffected by the proposed works.

15.211 National Grid has medium pressure mains in the area of the junction. There is a 315mm PE Medium pressure main to the west of London Road (North). It is not clear from the information provided whether this main is in the carriageway or the footway. This main will remain unaffected by the proposed works.

Assessment

15.212 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.213 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.214 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 14 - A43 / A5 Tove Roundabout

Electrical

15.215 WPD have underground LV assets along both sides of the A43 South and on the western side of the A5 South approach serving street lighting and illuminated signage. Existing services are outside the area of propose works and therefore expected to be unaffected by the works.

Oil and Gas

15.216 National Grid has both medium and low pressure mains in the vicinity of the roundabout. There is a 32mm PE medium pressure main in the verge behind the garage which feeds a 125mm PE low pressure service. This 125mm main crosses Towcester Road (West) and runs northwards in the western footway of the A5 north. Diversions will be required in order to facilitate these works and protective measures should be considered for all services in the vicinity before works are completed.

Water

15.217 Anglian Water has potable mains in the roundabout. There is a 7" AC main which runs in the A5 and dissects the roundabout, north to south. There is a main of unknown size in the southern verge of the A43 south. Diversions are likely to be required to these services to facilitate these works.

Assessment

15.218 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.219 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.220 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 15 - A43 Abthorpe Roundabout

Electrical

15.221 WPD have underground 11kV HV assets that cross the existing roundabout from Springfields to the east and Wappenham Road to the west. The cable route is not anticipated to be affected by the improvement works to the roundabout.

15.222 WPD have underground LV assets along both sides of the Brackley Road. A local diversion is anticipated where the footpath on the south side of the Brackley Road is realigned to suit the additional traffic lane.

Oil and Gas

15.223 National Grid has medium and low pressure mains around the roundabout. There is a 180mm PE medium pressure main in the eastern footway of the A43 (North) which contours the roundabout and crosses Brackley road and the verge to the south. There is a 180mm PE low pressure main running southwards in the same verge. Diversionary works will be required in order to facilitate the proposed carriageway alterations.

Water

15.224 Anglian Water has abandoned and live mains around the roundabout. There is an abandoned service which dissects the roundabout from northeast to southwest which runs adjacent to a live 180mm HPPE/PE100 main. There are hydrants located at either end of this service. There is a 200mm DI live potable water main which crosses Brackley Road and abandoned mains in the verge to the southeast of the roundabout. No diversions are anticipated to facilitate the proposed works.

Assessment

15.225 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.226 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.227 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 19 - A5076 Upton Way / Telford Way Roundabout

Electrical

15.228 WPD have underground 33kV HV assets along both sides of the A5076 South Upton Way. The eastern branch turns east towards the stadium and appears to be unaffected by the works. The western branch continues north over Telford Way and up the western side of the A5076 North Upton Way. A section of the western cable runs under the carriageway of the existing roundabout so the extent of any diversion or additional protective measures to suit the realignment of the approach roads would require further discussion with WPD

15.229 WPD have underground 11kV HV assets along both sides of the A5076 South Upton Way. The eastern branch turns east towards the stadium and appears to be unaffected by the works.

The western branch continues north over Telford Way and up the western side of the A5076 North Upton Way. The cable crossing Telford Way appears outside the proposed works and therefore should be unaffected.

15.230 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage. These are likely to require local minor diversions to suit the proposed works.

Telecoms

15.231 Colt have underground assets along the A5076 running across the roundabout. These assets are currently anticipated to require local diversion to facilitate the works.

Oil and Gas

15.232 National Grid has medium and low pressure mains in the vicinity of the roundabout. There is a 125mm PE medium pressure service to the west of the roundabout which crosses Telford Lane. There is also a 63mm PE medium pressure main which serves two 63mm PE low pressure service mains to commercial properties to the east of Upton Way (North). Diversions and protective measures are anticipated to be necessary in order to facilitate the proposed works.

Water

15.233 Anglian Water has potable and RAW mains in the vicinity of the roundabout. The RAW water service crosses the carriageway of Upton Way (North) and dissects the roundabouts. It then runs in the verge between Upton Way (South) and Dunston Mill Lane. There are 280mm HPPE/PE100, 225mm HPPE/PE100 and 180mm PE live potable water mains which surround the roundabout and a 21" CI main which crosses the link road between the two roundabouts. Diversions and protective measures are anticipated to be necessary in order to facilitate the proposed works.

Assessment

15.234 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.235 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.236 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 20 - A5076 Upton Way / High Street Roundabout

Electrical

15.237 WPD have underground 33kV HV assets running south along both sides of the A5076 North Upton Way. The eastern branch crosses the High Street before heading west across Upton Country Park and appears unaffected by the works. The western branch continues south down the eastern side of the A5076 South Upton Way and also appears to be unaffected by the works.

15.238 WPD have underground 11kV HV assets running south along both sides of the A5076 North Upton Way. The eastern branch turns east at the roundabout towards Dunston Mill and is unaffected by the works. The western branch comprising two circuits continues south over the High Street, one circuit then following the 33kV cable into Upton Country Park, the other heading south down the western side of the A5076 South Upton Way. Both circuits appear unaffected by the works.

15.239 WPD have underground LV assets at all approaches to the roundabout serving street lighting and illuminated signage. These are likely to require local minor diversions to suit the widening of the circulatory carriageway.

Oil and Gas

15.240 National grid has medium and low pressure mains in the area around the roundabout. There is a 125mm PE medium pressure main which crosses High Street and runs in the western verge of Upton Way (North). These services will be unaffected by the proposed works.

Water

15.241 Anglian water has a 225mm HPPE/PE100 potable service to the north of High Street. This main contours the roundabout and crosses Upton Way (North) before branching; southwards, to a hydrant and northwards in the footpath adjacent to Upton Way (North). There will be no diversionary works associated with the proposed junction alterations but protective measures should be considered

Assessment

15.242 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.243 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.244 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

JUNCTION 25 - A508 / A5199 Harborough Road / Welfare Road

Electrical

15.245 WPD have underground 33kV HV assets running north on the western side of the A5199 Welford Road. This route is unaffected by the proposed works.

15.246 WPD have underground 11kV HV assets running north on the western side of the A5199 Welford Road. This route is unaffected by the proposed works.

15.247 WPD have underground LV assets running north on the western side of the A5199 Welford Road. A ducted cable crossing is made to the ice cream factory where the existing carriageway is to be widened. A minor diversion or additional protection is anticipated for this cable.

Oil and Gas

15.248 National Grid has a low pressure network in the vicinity of the junction. There is a 12" CI low pressure main in the western footway of Welford Road with a 63mm PE service crossing the road to the north of the zone of interest. There will be no diversions required to facilitate the proposed works.

Water

15.249 Anglian Water has 3", 15" and 16" CI potable water mains in the carriageway of Welford Road. There is a hydrant at the junction between Welford Road and Harbourough Road. The 15" main will be required to be diverted to facilitate the proposed works.

Assessment

15.250 The sensitivity of the receptor is **negligible** as the site is a location where there will be no direct views of new services and unnoticeable disruption beyond that caused by the roadworks.

15.251 The magnitude of the effect would be **no change**, as there would be no disruption of existing services, no traffic disruption as a result of utility works (beyond overall roadwork disruption), no effects on wildlife habitats and no new above-ground services. The duration of the effect would be **short** (<5 years).

15.252 Overall the effect is considered **neutral** as the value and quality of the baseline condition is low and there will be no discernible disruption as a result of the utilities works. This is a non-significant effect in terms of the EIA regulations.

All Development within Order Limits

15.253 There are no further development works beyond the Main SRFI Site; J15a of the M1 and the minor highway works identified above, and all anticipated effects have been addressed above. Given the proposed phasing of development as described in Chapter 5, there are unlikely to be additional construction effects at different locations within the Order Limits

that would affect the same receptors, so there would be no additional effects arising from an assessment of the whole Order Limits.

Effects on additional receptors

15.254 The A43 as a whole (beyond the effects on the identified J15a, and Junctions 14 (Tove roundabout) and 15 (Abthorpe Roundabout) is of **low** sensitivity as users of the road will have a passing awareness of their surroundings, and residents along the road could be adversely affected by utility service disturbances.

15.255 The magnitude of the effect would be **moderate** as there could be traffic disruption (partial road closures) if there is a requirement for utility diversion beyond the junctions identified for improvement works, and this could lead to habitat loss. The duration of the effect for construction would be **short** (<5 years). Overall this could result in a **slight** (adverse) effect. This would be significant in terms of the EIA Regulations.

15.256 Rail infrastructure is of **low** sensitivity as users will have only a passing awareness of their surroundings, and would not be greatly inconvenienced by any utility service disruption. The magnitude of the effect would be **minor** as there could be some short term disruption/ outages to railway utilities, though there would be no additional traffic or habitat loss or above ground infrastructure. The duration of the effect for construction would be **short** (<5 years). Overall this could result in a **neutral** effect which would be not significant in terms of the EIA Regulations.

15.257 The JBJ Business Park is **high** sensitivity as utility service disruption could cause disturbance to businesses on the park. The magnitude of the effect would be **moderate** as there could be some short term disruption/ outages to existing utilities for the businesses present, and possible road closures, though there would be no additional habitat loss or above ground infrastructure. The duration of the effect for construction would be **short** (<5 years). Overall this could result in a **moderate** (adverse) effect. This would be significant in terms of the EIA Regulations.

15.258 Milton Malsor is **high** sensitivity as residents will be sensitive to changes in the environment. The magnitude of the effect would be **negligible** as there would be negligible disruption/ outages to existing utilities for the residents, and there would be no additional traffic or habitat loss or above ground infrastructure due to the nature of works proposed. The duration of the effect for construction would be **short** (<5 years). Overall this could result in a **slight** (neutral) effect which would be not significant in terms of the EIA Regulations.

15.259 Blisworth is **high** sensitivity as residents will be sensitive to changes in the environment. The magnitude of the effect would be **no change** as there would be no disruption of existing utility services, traffic disruption, effect on wildlife habitats or above ground services, as there will be no requirement to affect utilities in the settlement. The duration of the effect for construction would be **short** (<5 years). Overall this could result in a **neutral** effect which would not be significant in terms of the EIA Regulations.

15.260 Northampton Road/ Towcester Road is **moderate** sensitivity as users of the road will have a moderate awareness of their surroundings, and residents along the road could be adversely

affected by utility service disturbances. The magnitude of effect would be **major**, as there could be disruption of services and traffic disruption (partial road closures) for residences along the road. Where there is a requirement for utility diversion and this could lead to habitat loss. However, the works would involve undergrounding existing over ground utilities. The duration of the effect for construction would be **short** (<5 years). Overall this could result in a **moderate** (adverse) effect which would be significant in terms of the EIA Regulations.

Table 15.14: Tabulated Impact Assessment for the Construction Phase

Receptor Location	Sensitivity	Duration	Magnitude	Significance of Effect
ORDER LIMITS				
Main SRFI Site	Low	Short	Major	Moderate (Beneficial)
J15A	Low	Short	Negligible	Neutral (Neutral)
JUNCTION 1 M1 J16	Negligible	Short	No change	Neutral
JUNCTION 3 A4500 Tollgate Way Roundabout	Negligible	Short	No change	Neutral
JUNCTION 4 A5076 Upton Way Roundabout	Negligible	Short	No change	Neutral
JUNCTION 6 A5076 Hunsbury Hill Road Roundabout	Negligible	Short	No change	Neutral
JUNCTION 7 A5076 Towcester Road Roundabout	Negligible	Short	No change	Neutral
JUNCTION 9 A45 Brackmills Roundabout	Negligible	Short	No change	Neutral
JUNCTION 10 A45 Barnes Meadow Interchange	Negligible	Short	No change	Neutral
JUNCTION 11 A45 Lumbertubs Roundabout	Negligible	Short	No change	Neutral
JUNCTION 12 M1 J15	Negligible	Short	No change	Neutral

JUNCTION 14 A43 / A5 Tove Roundabout	Negligible	Short	No change	Neutral
JUNCTION 15 A43 Abthorpe Roundabout	Negligible	Short	No change	Neutral
JUNCTION 19 A5076 Telford Way Roundabout	Negligible	Short	No change	Neutral
JUNCTION 20 A5076 High Street Roundabout	Negligible	Short	No change	Neutral
JUNCTION 25 A508/A5199 Junction	Negligible	Short	No change	Neutral
OTHER RECEPTORS				
A43	Low	Short	Moderate	Slight (Adverse)
Rail Infrastructure (south and east of Potential Development Area boundary)	Low	Short	Minor	Neutral
JBJ Business Park	High	Short	Moderate	Moderate (Adverse)
Milton Malsor	High	Short	Negligible	Slight (Neutral)
Blisworth	High	Short	No change	Neutral (Neutral)
Northampton/Towcester Road	Moderate	Short	Major	Moderate (Adverse)

15.261 The Main SRFI Site has 'moderate' yet 'beneficial' effect. This is because of the removal of over ground electrical services and underground diversion is deemed to improve the visual appearance. The EIA guidelines consider the impact to the A43, JBJ Business Park and Northampton/Towcester Road receptor sites as 'significant'. This can be attributed to the anticipated partial road closures required for installation.

15.262 It is anticipated that the enabling works and the installation of new utility services will not have a lasting environmental effect on identified receptors during the construction phase, as the tabulated assessment indicates, with the 'short' duration of effect at each receptor site. However, there would be a 'large' and 'adverse' effect to the A43 receptor, this can be attributed to all DNO's proposing to use the A43 as a means of routing new connections to serve the Main SRFI site.

Assessment of Operational Phase Effects

15.263 The operational phase will see the general maintenance of the complete installation of the proposed utility works. It is anticipated routine maintenance would be carried out and some equipment may need replacing. In general, though it is not expected any major works would

be required during this phase. **Figure 15.3** indicatively shows the Main SRFI Site proposed utility layout. The tabulated impact assessment for this phase is set out in **Table 15.15.**

Main SRFI Site

Electrical

15.264 Operationally, the electrical network would be subject to routine maintenance. The substations on site will require 24-hour vehicular access, allowing for maintenance to be carried out unimpeded. There would be no foreseeable operational phase effects beyond the visual impacts of maintenance work and visible plant equipment, such as substation housing and cable pits.

Telecoms

15.265 BT Openreach would carry out routine maintenance on their network. Joint boxes would be visible along underground duct routes. It is expected typical maintenance works would cause negligible disruption to road users or service users.

Oil and Gas

15.266 Routine maintenance would be required to ensure proper operation of the oil and gas networks. The gas meter housings located at the point of connection to the respective on-site units will need to be accessible during normal operating hours in order for National Grid to conduct meter readings unless the Applicant wishes to incur added cost to include smart metering.

Water

15.267 Routine maintenance would be required to ensure proper operation of the water network. The meter housings located at the point of connection to the respective on-site units will need to be accessible during normal operating hours in order for Anglian Water to conduct meter readings.

Assessment

15.268 The Main Site is of **high** sensitivity as occupiers of the site would be highly attuned to their surroundings. The magnitude of the effect would be **minor** as there could be some short term disruption/ outages to existing utilities for the businesses present, and possible road closures, though there would be no additional habitat loss or above ground infrastructure. The duration of the effect for any outages would be **short** (<5 years). Overall this could result in a **slight** (adverse) effect. This would not be significant in terms of the EIA Regulations.

J15a

15.269 No operational phase effects are anticipated at J15a beyond routine monitoring and maintenance of utility assets.

Assessment

15.270 Junction 15a is **low** sensitivity as users would have a passing awareness of their surroundings. The magnitude of the effect of maintenance works would be **minor** as there

could be some short term disruption/ outages to existing utilities, and possible road closures, though there would be no additional habitat loss or above ground infrastructure. The duration of the effect for any maintenance/ outages during the operational period would be **short** (<5 years). Overall this could result in a **neutral** effect. This would not be significant in terms of the EIA Regulations.

Minor Highway Works

15.271 No operational phase effects are anticipated on minor highway works beyond routine monitoring and maintenance of utility assets.

Assessment

15.272 The sensitivity of the Minor Highway Works is **low** as users would have a passing awareness of their surroundings. The magnitude of the effect would be **minor** as there could be some short term disruption/ outages to existing utilities for the businesses present, and possible road closures, though there would be no additional habitat loss or above ground infrastructure. The duration of the effect for any maintenance/ outages during the operational period would be **short** (<5 years). Overall this could result in a **neutral** effect. This would not be significant in terms of the EIA Regulations.

15.273 **All Development within Order Limits**

15.274 No further operational phase effects are anticipated beyond what has been described. Given the proposed network, it is unlikely that the same utilities would be affected at the same time at different locations within the Order Limits during the operation of the Proposed Development. Therefore the impacts as assessed would apply to the areas (Main SRFI Site, J15a, Other Highway Works) and there would be no additional effects arising from consideration of all development within the Order Limits.

Effects on additional receptors

15.275 The sensitivity of the A43 as a whole (beyond the effects on the identified junctions J15a, Junction 14 (Tove Roundabout) and Junction 15 (Abthorpe Roundabout)) is of **moderate** sensitivity as users of the road will have a passing awareness of their surroundings, and residents along the road could be adversely affected by utility service disturbances The magnitude of the effect is **no change** as this would relate to maintenance works only. The duration of any maintenance operation would be **short** (<5 years). Overall this could result in a **neutral** effect. This would not be significant in terms of the EIA Regulations.

15.276 Rail infrastructure is of **low** sensitivity as users will have only a passing awareness of their surroundings, and would not be greatly inconvenienced by any utility service disruption. The magnitude of the effect would be **no change** as this would relate to maintenance works only. The duration of the effect for any maintenance/ outages during the operational period would be **short** (<5 years). Overall this could result in a **neutral** effect which would be not significant in terms of the EIA Regulations.

15.277 The JBJ Business Park is **high** sensitivity as users will have a high awareness of their surroundings. The magnitude of the effect would be **no change** as this would relate to maintenance works only. The duration of the effect for any maintenance/ outages during the

operational period would be **short** (<5 years). Overall this could result in a **neutral** effect which would be not significant in terms of the EIA Regulations.

15.278 Milton Malsor is **moderate** sensitivity as residents will be sensitive to changes in the environment. The magnitude of the effect would be **no change** as this would relate to maintenance works only. The duration of the effect for any maintenance/ outages during the operational period would be **short** (<5 years). Overall this could result in a **neutral** effect which would be not significant in terms of the EIA Regulations.

15.279 Blisworth is **high** sensitivity as residents will be sensitive to changes in the environment. The magnitude of the effect would be **no change** as this would relate to maintenance works only. The duration of the effect for any maintenance/ outages during the operational period would be **short** (<5 years). Overall this could result in a **neutral** effect which would be not significant in terms of the EIA Regulations.

15.280 Northampton Road/ Towcester Road is **moderate** sensitivity as users of the road will have a moderate awareness of their surroundings, and residents along the road could be adversely affected by utility service disturbances. The magnitude of effect would be **no change** as this would relate to maintenance works only. The duration of the effect for any maintenance/ outages during the operational period would be **short** (<5 years). Overall this could result in a **neutral** effect which would be not significant in terms of the EIA Regulations.

Table 15.15: Tabulated Impact Assessment for the Operational Phase

Receptor Location	Sensitivity	Duration	Magnitude	Significance of Effect
ORDER LIMITS				
Main SRFI Site	High	Short	Negligible	Slight (Neutral)
J15a	Low	Short	No change	Neutral (Neutral)
M1 J16	Negligible	Short	No change	Neutral
A4500 Tollgate Way Roundabout	Negligible	Short	No change	Neutral
A5076 Upton Way Roundabout	Negligible	Short	No change	Neutral
A5076 Towcester Road Roundabout	Negligible	Short	No change	Neutral
A45 Brackmills Roundabout	Negligible	Short	No change	Neutral
A45 Barnes Meadow Interchange	Negligible	Short	No change	Neutral
A45 Lumbertubs Roundabout	Negligible	Short	No change	Neutral
M1 J15	Negligible	Short	No change	Neutral

A43 / A5 Tove Roundabout	Negligible	Short	No change	Neutral
A43 Abthorpe Roundabout	Negligible	Short	No change	Neutral
A5076 Telford Way Roundabout	Negligible	Short	No change	Neutral
A5076 High Street Roundabout	Negligible	Short	No change	Neutral
A508/A5199 Junction	Negligible	Short	No change	Neutral
OTHER RECEPTORS				
A43	Moderate	Short	No change	Neutral (Neutral)
Rail Infrastructure (south and east of Potential Development Area boundary)	Low	Short	No change	Neutral (Neutral)
JBJ Business Park	High	Short	No change	Neutral (Neutral)
Milton Malsor	Moderate	Short	No change	Neutral (Neutral)
Blisworth	High	Short	No change	Neutral (Neutral)
Northampton/Towcester Road	Moderate	Short	No change	Neutral (Neutral)

15.281 It is anticipated operational phase effects as a result of the utility installation would be reduced to 'slight' visual impacts only. This would be due to the Main SRFI services requiring only minor maintenance and monitoring works for the duration of the operational phase.

Assessment of Decommissioning Phase Effects

15.282 Decommissioning phase effects are the effects resulting from the activities associated with the removal of the Proposed Development if it is removed once it is no longer required.

15.283 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 warehousing buildings is anticipated to be in excess of 60 years, and the rail infrastructure and civil engineering works will 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.

15.284 Predicting the baseline so far into the future to enable a meaningful assessment of the sensitivity of the environment, and the significance of effects from the decommissioning of the Proposed Development is problematic.

15.285 When and if the development is decommissioned, the appropriate environmental assessments will be undertaken to identify any significant environmental effects and propose suitable mitigation methods. Notwithstanding this, we have taken the view that it is likely that the effects will be similar to, or less than, those experienced during the construction phase. This assessment therefore does not identify and assess the effects during the decommissioning phase of the project, but assumes effects will be similar to those during the construction phase (as outlined in **Table 15.15**).

15.286 The decommissioning of the Main SRFI Site utility services would involve the disconnection of onsite services from the utility providers' main service routes. The decommissioning process for each service is described below.

Main SRFI Site

Electrical

15.287 The electrical infrastructure onsite would involve each unit being served by a dedicated substation connected to a site wide ring main circuit, which in turn would be connected to the onsite primary substation. Decommissioning could take two forms as a result of this design. In the first instance, individual unit substations could be disconnected from the ring main, leaving the ring main energised. This would allow for quick recommissioning or repurposing of the electrical services for a site change of use. The second, would involve a complete disconnection of the ring main from the primary substation, the primary substation would be retained in WPDs network infrastructure. Plant equipment recovery would be subject to a review at the time in each instance (Western Power Distribution, 2005).

Telecoms

15.288 BT Openreach would perform a site wide disconnect from the main off-site telecoms box. BT Openreach has stated they would aim to recover all reusable equipment in the event of site decommissioning.

Gas

15.289 National Grid would isolate and disconnect the current site connection from the main medium pressure system and register the disconnected pipework as abandoned. In the case of site change of use, it would be a plausible scenario for National Grid to reassess proposed site loads and re-use the site infrastructure.

Water

15.290 Anglian Water would disconnect the current site connection from the main water pipeline and register the disconnected pipework as abandoned. In the case of site change of use, it would be a plausible scenario for Anglian Water to reassess proposed site loads and re-use the site infrastructure.

J15a and Minor Highway Works

15.291 The decommissioning of services run under the public highway is not considered, but would be in accordance with statutory requirements imposed on the utility providers at the time.

All Development within Order Limits

15.292 No further decommissioning phase effects are anticipated beyond what has been described. Given the proposed network, it is unlikely that the same utilities would be affected at the same time at different locations within the Order Limits during the decommissioning of the Proposed Development. Therefore the impacts as assessed would apply to the areas (Main SRFI Site, J15a, Other Highway Works) and there would be no additional effects arising from consideration of all development within the Order Limits.

Cumulative Effects

Cumulative Assessment: Intra-Project Effects

15.293 A number of intra-project effects pertaining to utility infrastructure exist within the Proposed Development. The effects are discussed below, with reference to the appropriate Chapters where the effects are addressed. These will be further addressed in relation to relevant receptors in the final ES.

15.294 The Main SRFI Site requires a primary substation and a number of 11kV substations in order to meet the Proposed Developments' electricity demands. Noise and access requirements are key effects associated with substations. These effects are addressed within **Chapters 18: Noise and Vibration and 19: Highways and Transportation** respectively.

15.295 The landscape and visual impact of visible service equipment is discussed in **Chapter 17: Landscape and Visual**. Ecological impacts arising from the requirement to underground cabling and pipes are discussed in **Chapter 16: Biodiversity**.

15.296 WPD require a primary substation to be situated above the 1000-year flood plain. The effect of this on the Main SRFI site is discussed in **Chapters 13: Ground Conditions and 14: Hydrology Drainage and Flood Risk**.

15.297 There is potential for severe effects caused by unforeseen events, such as: natural disaster, catastrophic plant equipment failure and damage to plant equipment as addressed in **Chapter 23 Chapter 25 Major Accidents and Disasters**. In addition, climate change effects could impact on utilities, for example, as a result of increased extreme weather events or flooding (as addressed in **Chapter 23 Climate Change**).

15.298 The DNOs have not indicated any adverse intra-project effects that would hinder servicing the Main SRFI Site.

15.299 The potential for adverse events occurring is applicable to all services across the country and not unique to this development. Ensuring best design practices would minimise the adverse effects of such events. These are embedded in the Proposed Development design, with adaptive mitigation employed as appropriate (see Adaptive Mitigation section for additional adaptive mitigation).

Cumulative Assessment: Inter-Project Effects

15.300 The inter-project cumulative effects assessment considers how the Proposed Development will combine and interact with the effects of other developments in the context of utilities.

15.301 It is anticipated the combined effects of other developments and the Proposed Development could result in adverse cumulative effects on the identified receptors. It would be the responsibility of the DNOs to manage the risks associated with network demand and ensure networks have adequate future proofing so as to maintain a high-quality utilities infrastructure.

15.302 Consideration has been given to the 'long-list' of projects set out in **Chapter 7: EIA Methodology**. The projects below are considered to have some potential for inter-project effects given their proximity.

Northampton Gateway

15.303 The Northampton Gateway (**Reference 15.19**) presents potential for cumulative effects in terms of service network infrastructure and capacity because the Potential Development Area for the Gateway site is within the immediate vicinity of the Main SRFI Site. The Northampton Gateway project has not published a Utility Assessment and therefore the assessment of cumulative effect is limited to informal discussions with the utility providers.

15.304 Adverse effects on the electrical grid would occur if the Main SRFI Site and the Northampton Gateway project were to share the same primary ring main. **Appendix 15.5** details the East Midlands electrical network infrastructure. Northampton has three primary ring mains, identified as: Northampton West, Northampton and Northampton East. WPD have indicated the Main SRFI project would be served from the Northampton west primary ring main and that the Northamptonshire Gateway site would be served from the Northampton east primary ring main. Combined with the previously described added primary network capacity from upstream reinforcement works, the potential adverse cumulative effect on the electrical grid is mitigated.

15.305 BT Openreach has not presented Hydrock with any cumulative effect concerns on the area's telecom networks.

15.306 Anglian Water acknowledged the Northampton Gateway site in their consultation response, and did not highlight potential cumulative effects. Further correspondence with Anglian Water states that water is distributed on a site-by-site basis and their reinforcement works are sufficient to serve the proposed development, regardless of draw off by other sites. It is the responsibility of Anglian water to provide a design that is sufficient to meet demand. They also state that they will not hold or reserve capacity and their systems are designed based upon information current to them at the time of design. This suggests that a first-come, first-served process would be in effect with potential additional reinforcement being required if other, larger developments were to require demand at similar times.

15.307 National Grid makes no reference to the Northampton Gateway site in their consultation response, and did not highlight potential cumulative effects. Further correspondence with National Grid states that the proposed gas loading at the time of application is analysed in respect of existing gas users and that if there is a foreseen impact, reinforcement will be required. This process is undertaken on a site by site basis and it is the responsibility of

National Grid to provide suitable reinforcement strategies, as required, for a proposed site capacity. In the case of Northampton Gateway, the two sites would be assessed by National Grid individually and it is the responsibility of National Grid to provide a reinforcement strategy that would allow each site to operate individually or simultaneously based on their proposed loads. The nature and cost of requirement will be subject to change based upon a first-come, first-served basis as National Grid do not reserve capacity before a job is accepted and paid for in full. This correspondence, therefore, would suggest minimal cumulative impacts with regards to the availability of gas supply.

15.308 A study of the cumulative effect of the Proposed Development and the Northampton Gateway on the transport infrastructure will be undertaken within **Chapter 19: Highways and Transportation** in the final DCO submission. A preliminary assessment has been undertaken which indicates that the cumulative assessment of highway modifications proposed by Northampton Gateway and Rail Central (J15a and J15 of the M1 and the A45 Barnes Meadow Interchange) will be sufficient to address cumulative traffic. Therefore (subject to additional assessments underway) the assessment of the impact on utilities at these highway locations is similarly sound with the exception of the three junctions noted.

Electrical Grid Connection

15.309 Upstream enabling works are required in order to connect the Main SRFI Site to the electrical grid to meet the site's operational phase electrical demand. The works required to facilitate a new connection and enable the grid to meet the new demand involve: the upgrade of the Northampton West primary substation with a modern equivalent; new underground HV cable route from the proposed point of connection, which is Northampton West primary substation (located south of Tintern Avenue, Northampton) to the Main SRFI Site primary substation.

15.310 WPD have presented three viable cable routes from WPD's network point of connection to the Main SRFI Site. The routes have been indicatively detailed in **Appendix 15.3.1.** The proposed routes all follow roads, as such the cable would be laid parallel to the road with a route being chosen to minimise road crossings and overall disruption caused by road closures.

15.311 As previously stated, WPD have approximated an installation timescale of 3 years for the enabling and upstream works.

Highways

15.312 The A43 would be subject to potential cumulative effects as a result of WPD and BT Openreach using the road as a route to serve the Main SRFI Site and also, potentially, to reroute diverted services. A subsequent BT Openreach diversion report will detail BT Openreach plant diversion plans.

15.313 Based upon the information provided to Anglian Water, they have not commented on any services which would be routed in, or require reinforcement in, the A43 in order to serve the Main SRFI Site.

15.314 Based upon the information provided to National Grid, they have not commented on any services which would be routed in the A43, nor any reinforcements required there, in order to serve the Main SRFI Site.

Other developments

15.315 The other large scale developments (in addition to the Northamptonshire Gateway - CI.2) within a 5km zone of influence of the Propose Development that would need to be managed by DNOs to avoid adverse cumulative effects on the utility networks, are currently identified as:

- CI.4 Northampton South SUE (Policy N5 of the JCS);
- CI.5 Northampton South of Brackmills SUE (Policy N6 of the JCS);
- CI.9 Northampton Upton Park SUE (Policy N9 of the JCS);
- CI.10 Northampton Norwood Farm/Upton Lodge SUE (Policy N9A of the JCS);
- CI.80 Upton Valley Way Pineham Business Park
- CI.98 Nectar Way Zone E

15.316 The DNOs undertake a lengthy design process, factoring in multiple proposed development projects and future requirements, in order to safeguard the utility networks. In presenting an applicant with a formal connection offer the DNO is confirming: the requested connection can be physically achieved; the connection will not result in any long term adverse impacts to other network users and that adequate capacity will be available for the applicant's site. However, capacity may not come available on the requested date, as discussed below.

15.317 At this stage, WPD is the only DNO to indicate potential adverse inter-project cumulative effects could occur as a result of other developments in the area. However, the adverse impact would not be to the works associated with the grid connection or the Proposed Developments installation, but to the available network capacity.

15.318 WPD have presented the Rail Central project with an interactivity notice, which informs the Applicant of the capacity allocation process and the project's position in the process (**Appendix 15.4**). Principally, capacity is allocated on a "first come, first served" basis. In the event a number of high electrical demand developments require energising, available capacity would be given to developments who formally accept WPD's connection offer, with priority given to developments in order of application legacy. WPD have indicated once all available existing capacity in Northampton is allocated, projects with no allocation would be required to wait for network upgrades to the 132kV station at Grendon (**Appendix 15.4**) which could take up to 5 years.

15.319 The Main SRFI Site's construction phase is nearly double that (circa 10 years) predicted for the 'worst case' 132kV network upgrade (**Appendix 15. 2**). This means, capacity upgrades could be carried out whilst works associated with the grid connection and the Proposed Developments installation are being undertaken. Capacity would then be available when the Main SRFI Site requires final connection and energising.

Adaptive Mitigation

Main SRFI Site

15.320 Mitigation methods would be incorporated from the early design stages for the Proposed Development, "embedded" in the design. This includes undergrounding infrastructure to minimise visual impact, and screening infrastructure such as substations. This is addressed in the Embedded Mitigation section above. As indicated, in **Table 15.14** and **Table 15.15**, this has reduced the significance of environmental impact at the receptors to non-significant levels during operation, so no further mitigation would be required.

15.321 During construction (and potentially decommissioning), there would be a 'significant' impact at the A43, JBJ Business Park and Northampton/Towcester Road. These would be mitigated by following best practice during construction (such as outlined in the CEMP document – though here considered as adaptive mitigation), ensuring local residents were informed of interruptions to services, and timing works to avoid peak hours on the local road network, and avoid traffic congestion.

J15a and Minor Highway Works

15.322 Where necessitated by the works, diversions of existing buried utility assets will be made. These will be undertaken by the asset owners or their representatives in accordance with the New Roads and Street Works Act 1991 which seeks to provide a legislative frame work under which highway works are undertaken safely, with the minimum of inconvenience to users and the protection of structure of street affected.

All Development within Order limits

15.323 No further mitigation is necessary beyond what has already been discussed.

Table 15.16: Proposed Mitigation Measures

Potential effect	Proposed mitigation	Means of implementation	Mechanism for securing mitigation and DCO reference (where applicable)
Construction			
Network Outages at A43, JBJ Business Park and Northampton/ Towcester Rd	Connection/disconnection works to be conducted at periods of low service network usage	Work to be carried out at night	CEMP/ requirement of DCO
Road Closures at A43, JBJ Business Park and Northampton/ Towcester Rd	Where possible limit adverse effects of road closures	Works in accordance with New Roads and Streets Act 1991	Accordance with NRSA 1991

Visually obtrusive plant equipment	Consider least obtrusive location. Natural or artificial screening	Use of natural or artificial screening	Requirement of DCO
Operation			
Significant maintenance works at A43, JBJ Business Park and Northampton/ Towcester Rd	Effectively maintain and monitor the installation so as to mitigate severe equipment failures	A dedicated site maintenance team	Operational Management Plan/ requirement of DCO
Decommissioning			
Waste	Disposal of assets in accordance with prevailing regulations	The Waste Electrical and Electronic Equipment Directive (WEEE Directive)	Accordance with Regulations
Cumulative			
Road Closures	Works in accordance with New Roads and Streets Act 1991	Street Authority and Highways Agency	Accordance with NRSA 1991

15.324 The specific locations identified within the potential effects column of Table 15.16 are those considered to be significant, however the mitigation measures would be applicable to all utility works.

Residual Effects

Electrical

15.325 Residual effects related to the electrical installation would include the visible above ground substations and any maintenance related works. Maintenance work could result in environmental disruption where underground services require accessing.

Telecoms

15.326 Visible connection and joint boxes, as well as maintenance works would be the residual effects of the telecoms installations.

Gas

15.327 Residual effects with regard to the National Grid installation would include the visible above ground meter housings, relevant health and safety or asset location signage and any maintenance related works; whereby workers and equipment may temporarily cause inconvenience or require access to meter housings.

Water

15.328 Residual effects with regard to the Anglian Water installation would include the visible above ground meter housings, relevant signage and any maintenance related works, whereby workers and equipment may temporarily cause inconvenience or require access to meter housings.

Table 15.17: Summary of Residual Effects

Description of impact	Significance of effect	Possible mitigation measures	Residual effect
Construction			
Visually obtrusive plant equipment.	Moderate, adverse.	Natural or artificial screening.	Minor, not significant.
Operation			
Maintenance works.	Moderate, adverse.	Regular underground service access points.	Minor, not significant.
Decommissioning			
Soil disturbance from retrieving underground service equipment.	Moderate, adverse.	Abandon non-essential equipment.	Minor, not significant.
Cumulative			
No effects	None	None	Neutral

Monitoring

Electrical

15.329 WPD use a formalised process to monitor and maintain their equipment using line fault technology. The Applicant would be responsible for maintaining the electrical installation from the point of connection (PoC). PoC is defined in this instance as the location of the statutory supplier meter to each unit. Individual meters would be located within the new dedicated 11kV unit substations.

Telecoms

15.330 BT Openreach would take responsibility for maintaining BT Openreach owned plant equipment and would monitor for line faults.

Gas

15.331 National Grid has the potential to utilise an automatic leak detection system within their adopted assets but would only be responsible for the infrastructure up to the PoC (second stage regulator) in the meter housings. Henceforth, the pipework to each unit will be the responsibility of the Applicant. National Grid has not confirmed the necessity or the intention to utilise such a system and this will be anticipated to be confirmed at a later stage of design.

Water

15.332 Anglian Water uses an automatic leak detection process to monitor the water infrastructure. Anglian Water will be responsible for this up to the PoC at the meter and henceforth it shall be the Applicants responsibility to maintain the respective water supplies.

Limitations and Assumptions

Electrical

15.333 WPD will not release definitive contestable works network designs from the offsite PoC to the Main SRFI Site due to commercial reasons. Therefore, the actual proposed route between the PoC, in Northampton, and the Main SRFI Site is not known at this time. Assumptions have been made based on inference from the WPD connections offer and informal discussion with WPD, in relation to substation locations and approximate cable routes.

Telecoms

15.334 BT Openreach has yet to confirm whether diversionary works would result in network disruption to end users or not.

Gas

15.335 National Grid and Hydrock have collaborated in order to determine an acceptable level of loadings in which to be assumed for the site. This is based upon previous work that both companies have undertaken for similar projects and using relevant guidelines. This will need to be clarified when the actual usage of each unit is known. National grid state, within their response; “any subsequent pre-construction information that was not available at the time of their design proposal, that affects their design, should be issued to them for their review and confirmation of suitability.

Water

15.336 Anglian Water and Hydrock have collaborated in order to determine an acceptable level of loadings in which to be assumed for the site. This is based upon previous work that both companies have undertaken for similar projects and using relevant guidelines. This will need to be clarified when the actual usage of each unit is known.

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