

Luas Finglas

Environmental Impact Assessment Report 2024

Chapter 17: Material Assets: Infrastructure and Utilities

Table of Contents

GLOSSARY OF FREQUENTLY USED TERMS	ii
SECTION 17: Material Assets: Infrastructure and Utilities	1
17.1 Introduction	1
17.1.1 Purpose of this Report	1
17.1.2 Outline Scheme Description	1
17.2 Methodology	3
17.2.1 Study Area	4
17.2.2 Relevant Guidelines, Policy and Legislation	4
17.2.3 Data Collection and Collation	4
17.2.4 Methodology for the Assessment of Impacts	4
17.3 Baseline Environment	9
17.3.1 Major Infrastructure and Existing Utilities	9
17.4 Potential Impacts	10
17.4.1 Characteristics of the Proposed Scheme	10
17.4.2 'Do Nothing' Scenario	10
17.4.3 Construction Phase	11
17.4.4 Operational Phase	40
17.5 Mitigation and Monitoring Measures	41
17.5.1 Construction Phase	41
17.5.2 Operational Phase	42
17.6 Residual Impacts	42
17.6.1 Construction Phase	42
17.6.2 Operational Phase	42
17.7 Cumulative Impacts	42
17.8 Difficulties Encountered in Compiling Information	43
17.9 References	43

List of Tables

Table 17-1: Overview of the Key Features of the proposed Scheme	2
Table 17-2: Summary of New Bridges of the proposed Scheme	3
Table 17-3: Criteria for baseline categorisation of infrastructure and utilities	6
Table 17-4: Main Consultations with Service Providers	6
Table 17-5: Criteria for assessment of infrastructure and utilities impact magnitude developed, based on EPA guidelines	7
Table 17-6: Significance of Effects	8
Table 17-7: Utilities within the proposed Scheme Study Area	9
Table 17-8: Potential Major Electricity Infrastructure Diversions	12
Table 17-9: Potential Major Water Infrastructure Diversions	14
Table 17-10: Potential Major Wastewater Infrastructure Diversions	17
Table 17-11: Potential Major Gas Infrastructure Diversions	17
Table 17-12: Potential Telecommunications Infrastructure Diversions	18
Table 17-13: Summary of Utility Diversions – Electricity Infrastructure Diversions	23
Table 17-14: Summary of Utility Diversions – UÉ Water Infrastructure Diversions	27
Table 17-15: Summary of Utility Diversions – UÉ Wastewater Infrastructure Diversions	30
Table 17-16: Summary of Utility Diversions – Gas Infrastructure Diversions	31
Table 17-17: Summary of Utility Diversions – Telecommunication Infrastructure Diversions	33
Table 17-18: Summary of Potential Operational Phase Impacts	41

GLOSSARY OF FREQUENTLY USED TERMS

Term	Definition
DCC	Dublin City Council
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ESBN	Electricity Supply Board Networks Ltd
FCC	Fingal County Council
IEMA	Institute of Environmental Management and Assessment
LCC	Luas Cross City
LRT	Light Rail Transit
LRV	Light Rail Vehicle
NTA	National Transport Authority
OCS	Overhead Contact System
RO	Railway Order
RTPI	Real Time Passenger Information
TII	Transport Infrastructure Ireland
UÉ	Uisce Éireann (formerly Irish Water)

SECTION 17: MATERIAL ASSETS: INFRASTRUCTURE AND UTILITIES

17.1 Introduction

17.1.1 Purpose of this Report

This Chapter of the Environmental Impact Assessment Report (EIAR) deals with the potential impacts on Material Assets (Infrastructure and Utilities) associated with the Construction and Operational Phases of Luas Finglas (hereinafter referred to as the “proposed Scheme”). It brings together the existing utility information and the construction and operational characteristics of the proposed Scheme, with the aim of ensuring that all likely significant impacts (positive or negative) are identified and mitigated. Interfacing infrastructure such as the Royal Canal and Iarnród Éireann railway line are considered in this Chapter while consideration of the road infrastructure is assessed separately in Chapter 18 (Material Assets: Traffic and Transport).

The design has been developed to a stage where the likely construction and operational characteristics have been identified and so that the likely significant impacts can be assessed. The existing utilities have been identified and associated proposed works to these designed and the impacts assessed. Refer to Utility Drawings provided in the Railway Order (RO) Drawing Pack. In order to avail of opportunities to improve the design in the light of experience on the ground or advancements in technology, minor modifications may be made to the current design at the detailed design stage. However, any such minor modifications, will be such that they will not give rise to any impacts which are more significant than those already identified and assessed in this EIAR. It is intended that utility diversion works will be progressed both as advanced works and as part of the main contract, where considered appropriate.

17.1.2 Outline Scheme Description

The proposed Scheme comprises a high-capacity, high-frequency light rail running from Broombridge to Charlestown, connecting Finglas and the surrounding areas with Dublin’s wider public transport network by providing a reliable, and efficient public transport service to the city centre via Broombridge.

As shown in Volume 4 - Map Figure 1-1, starting from Broombridge, the proposed Scheme travels northwards, crossing the Royal Canal and the Maynooth railway line adjacent to Broome Bridge. It then runs adjacent to the east of Broombridge Road and the Dublin Industrial Estate. It then crosses the Tolka Valley Park before reaching the proposed St Helena’s Stop and then proceeds northwards towards the proposed Luas Finglas Village Stop. From here, the route passes through a new corridor created within the Finglas Garda Station car park, making its eastern turn onto Mellows Road. The route then proceeds through Mellows Park, crossing Finglas Road, towards the proposed St Margaret’s Road Stop. Thereafter, the proposed line continues along St Margaret’s Road before reaching the terminus Stop proposed at Charlestown.

The proposed Scheme has been designed to interchange with existing and future elements of the transport network including interchange opportunities with bus networks at all the new Stops and with mainline rail services at Broombridge. In addition, the proposed Scheme through the inclusion of integrated cycle lanes and cycling infrastructure sets out to facilitate multimodal “cycle-LRT trips” as a key aspect of the Luas Finglas scheme.

The proposed Scheme will comprise a number of principal elements as outlined in Table 17-1 and Table 17-2. A full description of the proposed Scheme is provided in the following chapters of this EIAR:

- Chapter 1 (Introduction);
- Chapter 5 (Description of the proposed Scheme); and
- Chapter 6 (Construction Activities).

Table 17-1: Overview of the Key Features of the proposed Scheme

Scheme Key Features	Outline Description
Permanent Scheme Elements	
Light Rail track	3.9km extension to the Luas Green Line track from Broombridge to Finglas (2.8km of grass track, 700m of embedded track and 360m of structure track)
Depot Stabling facility	A new stabling facility (with stabling for eight additional LRVs) will be located just south of the existing Broombridge terminus, as an extension of the Hamilton depot area.
Luas Stops	Four Stops located at: St Helena's, Finglas Village, St Margaret's Road and Charlestown to maximise access from the catchment area including the recently re-zoned Jamestown Industrial Estate.
Main structures	<p>Two new Light Rail Transit (LRT) bridges will be constructed as part of the proposed Scheme: a bridge over the River Tolka within the Tolka Valley Park and a bridge over the Royal Canal and the Iarnród Éireann (ÍÉ) railway line at Broombridge.</p> <p>A number of existing non-residential buildings shall be demolished to facilitate the proposed Scheme. In addition, the existing overbridge at Mellows Park will be demolished.</p>
At grade signalised junctions	10 at grade signalised junctions will be created at: Lagan Road, Ballyboggan Road, Tolka Valley Road, St. Helena's Road, Wellmount Road, Cappagh Road, Mellows Road, North Road (N2), McKee Avenue, Jamestown Business Park entrance. Note: The junction at Charlestown will be reconfigured but does not have a LRT crossing.
Uncontrolled crossings	13 at grade uncontrolled crossings (11 pedestrian / cycle crossings and two local accesses located at: Tolka Valley Park, St Helena's, Farnham pitches, Patrickswell Place, Cardiff Castle Road, Mellows Park, St Margaret's Road, and ESB Networks.
Cycle facilities	Cycle lanes are a core part of the proposed Scheme in order to facilitate multimodal "cycle-LRV trips". Approximately 3km of segregated cycle lanes and 100m of non-segregated cycle lanes along the route. Covered cycle storage facilities will be provided at Broombridge Terminus, Finglas Village Stop and St Margaret's Road Stop and within the Park & Ride facility. "Sheffield" type cycle stands will be provided at all stop locations.
Power substations	<p>Two new traction power substations for the proposed Scheme will be located near Finglas Village Stop behind the existing Fire Station, and near the N2 junction before St Margaret's Road Stop where the current spiral access ramp to the pedestrian overbridge is located.</p> <p>A third substation is required for the Park & Ride facility.</p>
Park & Ride facility	<p>A new Park & Ride facility, with e-charging substation, located just off the M50 at St Margaret's Road Stop will be provided with provision for 350 parking spaces and secure cycle storage. The building will feature photovoltaic (PV) panel roofing and is the location for an additional radio antenna.</p> <p>This strategic Park & Ride connecting the N2 / M50 to the city centre will increase the catchment area of the proposed Scheme.</p>
Temporary Scheme Elements	
Construction compounds	<p>There will be three principal construction compounds, two located west of Broombridge Road and one located at the northern extents of Mellows Park. In addition, there are other secondary site compound locations for small works/storage. Details can be found in Chapter 6 (Construction Activities) of this EIAR.</p>

Table 17-2: Summary of New Bridges of the proposed Scheme

Identity	Location	Description
Royal Canal and Rail Bridge	Approximately 10m east of the existing Broome Bridge and then continuing north, parallel with Broombridge Road on its east side	The proposed bridge is an eight-span structure consisting of two main parts: a variable depth weathering steel composite box girder followed by a constant depth solid concrete slab. The bridge has the following span arrangement: 35 + 47.5 + 30 + 17 + 3x22 + 17m. Steel superstructure extends over the first three spans. The bridge deck is continuous over the full length of 212.5m and has solid approach ramps at both ends.
Tolka Valley Park Bridge	Approximately 30m west of the existing Finglaswood Bridge	A three-span structure with buried end spans, thus appearing as a single span bridge. End spans as well as part of the main span consist of post-tensioned concrete variable depth girder, the central section of the main span is a suspended weathering steel composite box girder. The overall length of the bridge is 65m with spans 10m, 45m, 10m.

17.2 Methodology

Material assets are resources of both natural and human origin that have intrinsic value. The Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impacts Assessment Reports (hereafter referred to as the EPA EIAR Guidelines) (EPA, 2022) discuss material assets as follows:

‘The meaning of this factor is less clear than others. In Directive 2011/92/EU it included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.’

The EPA EIAR Guidelines specifically list built services, roads and traffic, and waste management as topics which fall into the category of material assets. Further to this, the Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017) references buildings, other structures, mineral resources, and water resources as material assets. This EIAR includes separate chapters covering a number of those listed material assets and other material assets as follows:

- Employment and land-use assets – Chapter 8 (Population);
- Ecological assets – Chapter 9 (Biodiversity);
- Waterways, rivers, and streams – Chapter 10 (Water);
- Soils, lands, and mining or quarrying potential – Chapter 11 (Land and Soils: Soils, Geology and Hydrogeology);
- Buildings and other Structures – Chapter 12 (Land Take);
- Roads and traffic – Chapter 18 (Material Assets: Traffic and Transport);
- Waste management – Chapter 19 (Material Assets: Resource and Waste Management);
- Cultural heritage assets – Chapter 20 (Cultural Heritage); and
- Visual amenity assets – Chapter 21 (Landscape and Visual amenity).

The focus of this Chapter is on built services, specifically major infrastructure and utilities.

The source and type of all potential impacts is described in this Chapter. Mitigation measures to be put in place are also identified and set out. Given that what is involved is the moving of utilities, some of the mitigation measures may be very similar in nature for the majority of proposed service diversions, with more detailed mitigation developed on a case-by-case basis as required. At a minimum, mitigation measures are required for any adverse impacts that are deemed to be of Moderate or greater significance prior to mitigation. The extent to which mitigation is needed increases as the significance of the impact increases. Any significant residual impacts are then evaluated in either in the Construction or Operational Phases of the proposed Scheme.

Existing utility information has been collated from the utility service providers and utility investigations have been carried out. In addition, as part of the design development, required diversions and changes to existing utilities infrastructure have been considered and assessed so as to facilitate both the construction and operational activities and also the accessibility to the utilities post-construction, thereby ensuring uninterrupted operation of the LRT system. This has taken consideration of the restrictions that a fixed rail system and its rolling-stock will have on access to future works on conflicting utilities during the LRT system's operation.

17.2.1 Study Area

The study area with regard to major infrastructure and utilities comprises only assets which enter within work areas within the proposed Scheme, including both permanent and temporary land take boundaries. Further information on the study area is included in the Utility Drawings provided as part of RO Drawing Pack.

17.2.2 Relevant Guidelines, Policy and Legislation

This Chapter has been prepared in accordance with the following guidance:

- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017);
- Guidelines on the Information to be Contained in Environmental Impacts Assessment Reports (EPA 2022); and
- Institute of Environmental Management and Assessment (IEMA) Guide to: Materials and Waste in Environmental Impact Assessment – Guidance for a Proportionate Approach (IEMA 2020).

17.2.3 Data Collection and Collation

Existing utility information was requested from utility companies and service providers. The following service providers provided utility information for the study area of the proposed Scheme:

- Alt Comms Companies: Colt, ENET(Verizon), Smart, Vodafone, and EU Networks;
- BT Ireland: Communications network;
- Eir: Communications network;
- Electricity Supply Board Networks (ESBN): High voltage and Medium / Low voltage overhead and undergrounded network. Also including ESBN Telecoms: Communications network;
- Gas Networks Ireland: High pressure. Medium and low-pressure mains. Including also Aurora Communications ducting and cables;
- Local authorities: Dublin City Council (DCC) and Fingal County Council (FCC). Asset owners of: Public Lighting, Traffic, Local CCTV Fibre, and surface drainage;
- Uisce Éireann: asset owners for potable water, foul drainage and combined drainage; and
- Virgin media Ireland: Communications network.

Information obtained was collected to allow the determination of potential clashes between existing utilities and assets and the permanent and temporary works required for the proposed Scheme with reference to:

- Track-bed – referencing the footprint of the alignment including the outer extents, structures etc.;
- Network – which includes the overhead contact system (OCS), the multi-tubular design for the Luas system power and cabling system;
- Carriageway – the realigned kerbs and carriageways;
- Interfacing infrastructure such as the Royal Canal and Iarnród Éireann railway line; and
- Construction compounds and temporary works.

17.2.4 Methodology for the Assessment of Impacts

The assessment of the potential impact of the proposed Scheme on Material Assets (Infrastructure and Utilities) has been undertaken having regard to the EPA EIAR Guidelines (EPA, 2022). The following have been considered as part of the assessment of impacts:

- Potential for impacts on major infrastructure and public utilities and the need for proposed works to them during the Construction Phase; and
- Requirement for connections to public utilities by the proposed Scheme during both the Construction and Operational Phases.

Each impact has been categorised based on:

- Magnitude of the impact; and
- Significance of the impact;

The definition of these impact characteristics is per the EPA Guidelines (EPA, 2022) and is provided in Chapter 1 (Introduction). These characteristics have been used to assess the quality and duration of all impacts.

17.2.4.1 Baseline Assessment Methodology

The baseline environment is defined as the existing environment against which future changes can be measured. The baseline infrastructure and utilities environment has been defined through a desktop study, consultation with relevant stakeholders and field surveys. The baseline environment is then categorised using the criteria outlined in section 17.2.4.1 and baseline ratings are assigned. These baseline ratings are then used to inform the assessment of impact significance.

Baseline Categorisation Criteria

The baseline environment is assigned to a baseline rating based on importance and sensitivity of the receiving environment. For the purposes of this chapter, the importance of infrastructure and utilities has been based on their functionality. The baseline rating is subsequently used in the impact assessment to determine the likely significance of impacts which is discussed in section 17.4.

Importance of the baseline environment: Infrastructure and utilities ensure that transportation, power (electricity / gas), water and other services are provided in a reliable, consistent manner. The day-to-day lives of individuals and the commercial health of the region are dependent on this provision of service.

The importance of a utility is determined, considering the function, strategic nature and capacity of the utility. These are categorised as:

- Transmission networks: these are of national or regional importance and there can be a contingency to continue supply from other sources;
- Distribution networks: these are of local importance and usually there is no contingency available to maintain continuity of supply from other sources (e.g., Uisce Éireann water mains supply; ESBN supply); and
- Local connection: these are of local importance (i.e. connection from distribution networks to private properties).

Sensitivity of the baseline environment: Disruption of utilities at single point locations can often affect the functionality of the infrastructure over a large area. Therefore, all utilities are considered sensitive to change.

The disruption of rail lines at a single location can affect the functionality of the infrastructure over a large area. Therefore, all rail lines are also considered sensitive to change. Effects of the proposed Scheme on rail operations are assessed in Chapter 18 (Material Assets: Traffic and Transport).

Similarly, the capacity of the adjacent Royal Canal to accommodate change is limited and therefore considered sensitive.

The proposed Scheme is within the city and may impact on utilities which serve residential, retail and business areas, which also include highly sensitive locations such as medical centres and hospitals.

Baseline Rating: The baseline rating of the existing infrastructure and utilities environment is determined by having regard to the range of criteria which reflect the importance and sensitivity of service/supply. These criteria have been developed and defined as outlined in this section based on EPA guidelines and are shown in Table 17-3.

Table 17-3: Criteria for baseline categorisation of infrastructure and utilities

Criteria	Baseline Rating
Gas transmission / high pressure pipework (greater than or equal to 4bar); Potable (drinking) water trunk mains and trunk foul or combined sewers, greater than or equal to 600mm diameter; Surface water sewers of greater than or equal to 300mm diameter; Electricity (transmission) cables including underground cables and overhead lines; Fibre telecommunications (including cables such as telephone and internet, cable television networks, signalling and traffic cables and other control cables (e.g. other private services); Railway infrastructure; and Navigable waterways (canals).	Very High
Gas distribution pipework (less than 4bar); Water pipes (arterial) for drinking water, combined surface water sewers, foul sewers; Surface water sewers of less than 300mm diameter; and Electricity (distribution) high voltage cables including underground cables and overhead lines.	High
Not Applicable	Medium
Not Applicable	Low
Not Applicable	Very Low

For the purposes of the EIAR, the baseline rating for navigable canal waterways has been considered to be Very High, given their sensitivity to disruption and limited capacity to accommodate change by diversion/realignment or closure.

Impacts during the Construction Phase and Operational Phase which the proposed Scheme may have on the material assets are examined and assessed, and the mitigation measures required to minimise any adverse impacts of the proposed Scheme are identified and will be implemented.

17.2.4.2 Consultation

From the outset of the proposed Scheme, close liaison with all the service providers has been undertaken. In the first instance to ensure that all of their assets had been captured within the existing utility drawings, and then on an ongoing basis during the preliminary design phase.

This process ensures that the proposed designs are being completed within the requirements of each of the service providers. Periodic updates have been issued to the service providers representatives always highlighting any areas where there had been minor changes. Where there have been significant changes to the design, interim updates have been issued to the service providers, clearly outlining what the changes were, and the rationale for the change being required. This continued liaison facilitated early warnings of pinch-points and any potential design derogations that needed to be formally requested. The main consultations undertaken are identified in Table 17-4 below.

Table 17-4: Main Consultations with Service Providers

Service Providers	Consultations
ESB Distribution	26 / 05 / 21 – Presentation of Rev P01 – Preliminary agreement reached. 28 / 05 / 21 – Presentation of Rev P01 – Preliminary agreement reached. 24 / 11 / 22 – Presentation of Rev P02 (updated alignment)

Service Providers	Consultations
ESB Transmission	01 / 06 / 21 – Presentation of Rev P01 – Further discussions required. 14 / 07 / 21 – Presentation of Rev P01 – Further discussions required.
EIR	18 / 06 / 21 – Presentation of Rev P01 – Preliminary agreement reached. 19 / 10 / 22 – Presentation of Rev P02 (updated alignment)
GNI Distribution	22 / 06 / 21 – Presentation of Rev P01 – Preliminary agreement reached. 21 / 10 / 22 – Presentation of Rev P02 (updated alignment)
Uisce Éireann	14 / 07 / 21 – Presentation of Rev P01 01 / 06 / 23 – Discussing Rev P02 (updated alignment)
Aurora	10 / 05 / 21 – Presentation of Rev P01 – No objection. 05 / 10 / 22 – Presentation of Rev P02 (updated alignment)
BT	19 / 05 / 21 – Presentation of Rev P01 – Preliminary agreement reached.
Virgin Media	17 / 05 / 21 – Presentation of Rev P01 – Preliminary agreement reached. 19 / 10 / 22 – Presentation of Rev P02 (updated alignment)

17.2.4.3 Utility impact magnitude

The criteria used to assess the different impacts associated with infrastructure and utilities under the proposed Scheme are shown in Table 17-5. This table is based on the 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2022) and informed by consultation with the relevant public and private utility companies.

The impacts will be predominantly during the Construction Phase. This may involve the realignment or replacement of existing infrastructure and utilities.

For the purpose of this assessment, the magnitude of impact for infrastructure and utilities has been considered in terms of the duration of service interruption (outage). The outage duration will be finalised with the relevant utility provider or consumer (in the case of private utilities), in accordance with their service level / business interruption requirements. Whilst this assessment is based upon consultation undertaken for the purpose of RO design with stakeholders and although durations may be subject to some changes, the assumed duration of potential outages / service disruption is considered to be reliable, and the worst-case scenario has been assessed in this EIAR.

Table 17-5: Criteria for assessment of infrastructure and utilities impact magnitude developed, based on EPA guidelines

Impact magnitude	Criteria
Very high	Disruption of service for more than one week. Where additional demand on a utility would consume all remaining capacity. Relevant stakeholders are notified at short notice or not at all prior to disruption taking place. The level of service provided by the original utilities or infrastructure is not reinstated.
High	Disruption of service for up to one week. Where there is significant additional demand on a utility. Relevant stakeholders are notified at short notice prior to disruption taking place. The level of service provided by the original utilities or infrastructure is reinstated.
Medium	Disruption of service for up to two days. Where the additional demand on a utility is relatively large. Relevant stakeholders are notified prior to disruption taking place. The level of service provided by the original utilities or infrastructure is reinstated or

Impact magnitude	Criteria
	improved.
Low	<p>Disruption of service for several hours.</p> <p>Where additional demand on a utility is relatively small.</p> <p>Relevant stakeholders are notified prior to disruption taking place.</p> <p>The level of service provided by the original utilities or infrastructure is reinstated or improved.</p>
Negligible	Not applicable.

17.2.4.4 Utility impact significance

The significance of all impacts/effects was assessed having regard to the magnitude of the impact and the sensitivity of the receptor of the infrastructure and utilities, based on EPA guidelines. For the purposes of this assessment, baseline ratings for utilities scored from High to Very High and railway infrastructure / canal waterways scored Very High.

Table 17-6 shows how the sensitivity of the baseline rating and the impact magnitude are combined to give the likely significance of the effect prior to any mitigation measures being implemented. The significance of effect ranges is then defined using the following categories: Imperceptible; Not Significant; Slight; Moderate; Significant; Very Significant; and Profound.

Table 17-6: Significance of Effects

Significance of Effects					
Impact Magnitude	Baseline Rating				
	Very Low	Low	Medium	High	Very High
Negligible	Imperceptible	Imperceptible	Not Significant	Not Significant	Not Significant
Low	Not Significant	Not Significant	Slight	Slight	Moderate
Medium	Slight	Slight	Moderate	Moderate	Significant
High	Slight	Moderate	Significant	Significant	Very Significant
Very High	Moderate	Significant	Very Significant	Profound	Profound

Following assessment of the potential effects, the proposed Scheme was reviewed so that mitigation measures could be implemented that will avoid, prevent or reduce any adverse impacts as a result of the proposed Scheme. These are described in further detail in section 17.4.

With the implementation of the mitigation measures outlined in section 17.5, the residual impacts are summarised in section 17.6.

The impact evaluation is based on the understanding that existing best practices in design, construction and operation are employed for the proposed Scheme, as set out in this EIAR.

17.3 Baseline Environment

The baseline environment is defined as the existing environment against which future changes can be measured. The baseline infrastructure and utilities environment has been defined through a desktop study, consultation with relevant stakeholders and field surveys. The baseline environment is then categorised using the criteria outlined in section 17.2.4.1 and baseline ratings are assigned. These baseline ratings are then used to inform the assessment of impact significance.

Of the utilities in place alongside and crossing the proposed Scheme, the majority are buried within and along the roadways. These utilities include:

- ESBN transmission and electricity lines (high, medium and low voltage) and associated infrastructure;
- Gas Networks Ireland transmission and distribution gas mains (high, medium and low pressure) and associated infrastructure;
- Uisce Éireann potable water mains and associated infrastructure;
- Uisce Éireann sewer lines (foul and combined sewers) and associated infrastructure;
- Local Authority surface water drainage network and associated infrastructure;
- Eir, Enet, BT and Virgin Media telecommunications lines and associated infrastructure; and
- Local Authority traffic signal and public lighting ducting and associated infrastructure.

The following outlines the baseline environment with respect to material assets.

17.3.1 Major Infrastructure and Existing Utilities

Table 17-7 gives a summary of the types of utilities within the study area. Most utilities are underground beneath the roads, paved areas and green areas with some overhead cables also along the route. Refer to Utility Drawings provided in the RO Drawing Pack.

Table 17-7: Utilities within the proposed Scheme Study Area

Utility Provider	Service Type	Description
ESBN	ESBN Transmission	Underground 220kV; 110kV
		Various kV underground duct banks
	ESBN Distribution (LV and MV)	MV underground duct banks
		LV underground duct banks
Gas Networks Ireland	Gas Transmission	63mm to 500mm diameter underground gas mains and associated infrastructure.
	Gas Distribution	Distribution underground gas mains and associated infrastructure.
Uisce Éireann	Potable Water	Trunk and distribution mains of various diameters and materials, with supporting infrastructure such as valves and Hydrants
	Sewer Lines	Foul sewer lines, combined sewers and associated infrastructure
Local Authorities (DCC and FCC)	Surface Water Sewer Networks	Surface water sewer network and associated infrastructure
	Traffic Signals	Traffic ducting / cables, access chambers and associated infrastructure
Telecommunications (Various)	Virgin Media	Underground ducting / cables and associated infrastructure
	Eir	Underground ducting / cables and associated infrastructure
	BT and other	Underground ducting / cables and associated infrastructure

The proposed Scheme will interact with the Royal Canal at one location (Broombridge). The Royal Canal is a navigable waterway that connects the River Liffey in Dublin to the River Shannon 146km to the west, near Longford. The Royal Canal is mainly used for leisure activities, namely boating and angling within the waterway, and walking and cycling along the towpath and pathways running alongside it. In this chapter, the importance of the canal has been considered in context of its use as a navigation corridor for boats, walkers and cyclists.

The adjacent Broombridge railway station lies on the southern bank of the Royal Canal and is an Iarnród Éireann station on the Western Commuter service. It is the last station approaching Dublin served by both branches of the Western Commuter line before the line divides for trains heading to Connolly Station and those going to the Docklands. In December 2017, passenger services commenced on the Luas Green Line between St. Stephen's Green and Broombridge (Luas Cross City). This had the effect of introducing an interchange at Broombridge between the Rail (Maynooth line) and Luas Green line.

The most recent NTA National Rail Census Report 2019 (July 2020) detailed how the year 2018 daily throughput at Broombridge station almost doubled (up 90%) in 2017. In 2019, daily throughput increased by a further 27% and it was reported as just under 2,500, possibly reflecting the introduction of a connection to the Luas Green Line at Broombridge.

17.4 Potential Impacts

This section presents potential impacts that may occur due to the proposed Scheme. This informs the need for mitigation measures to be implemented (refer to section 17.5).

Predicted residual impacts, taking into account any of the mitigation measures that will be implemented, are presented in section 17.6.

17.4.1 Characteristics of the Proposed Scheme

17.4.1.1 Major Infrastructure and Utilities

During the Construction Phase, there will potentially be an impact on existing infrastructure and utilities in order to accommodate the works. Where retention or protection of utilities in place is not an option, this will involve realignment, upgrade, or replacement of this infrastructure as part of works within those areas. Each proposed modification to the existing infrastructure or utilities is outlined in this Chapter. Where utility diversions are proposed, the approximate length of the diversions is provided in Table 17-8 to Table 17-12. Utilities which are made redundant due to the works will be decommissioned. Potential impacts would occur predominantly during the Construction Phase.

During the Operational Phase, utility maintenance and upgrades will be required for the proposed Scheme. This will include electricity connections for such elements as new street lighting, junction signalling, and other information systems. There will also be some amendments to existing surface water drainage to control and / or attenuate surface water runoff from any additional paved surfaces.

During the Operational Phase, where utilities are located in whole or in part within the footprint of the proposed Scheme, the ability to undertake future utility maintenance or diversion activities would be affected by the presence of a live LRT. Similarly, future utility maintenance or diversion activities could affect LRT operations. During the Operational Phase, the impacts on utility services without mitigation could have an Impact Magnitude as the timings for repair to the damaged utility may be affected resulting in increased durations of service disruptions.

17.4.2 'Do Nothing' Scenario

In the Do Nothing scenario, the proposed Scheme would not be implemented and there would be no changes to existing infrastructure or utilities as a result of the proposed Scheme. Therefore, there would be a Negligible impact on infrastructure and utilities under the 'Do Nothing' scenario.

17.4.3 Construction Phase

17.4.3.1 Major Infrastructure and Utilities

The following outlines the key potential impacts on major infrastructure and utilities as a result of the Construction Phase. Activities related to construction and installation of the following components of the proposed Scheme will particularly have impacts on utility services:

- Stops, tracks, substations, ancillary roadworks and paved areas;
- Structures;
- Park & Ride facility;
- Earthworks; and
- Construction compounds (e.g. Broombridge).

The main Construction Phase impacts will arise from the requirement to divert existing utilities. The proposed utility diversions are listed in Table 17-8 to Table 17-12. These have been identified to the best of the engineering experience and judgement available and based on the available records, consultations and site investigations. Following initial identification of which services were impacted by the proposed alignment, the proposed works were developed further in conjunction with the utility providers requirements and agreements.

In the event that minor modifications to these proposed works are required at the detailed design / construction stage in order to avail of opportunities to improve the design in the light of experience on the ground or advancement in technology, any such minor modifications (if required) will not give rise to any impacts which are any more significant than those already identified and assessed in this Chapter and will not alter the summary of potential Construction Phase impacts.

Additionally, there will be some demand on existing utilities due to construction activities.

The Existing Royal Canal and Iarnród Éireann Railway Line

The proposed Scheme passes over the existing Royal Canal at Broombridge (RPS 909) and the existing Iarnród Éireann Maynooth railway line at Broombridge.

The proposed Broombridge structure will cross over both the Canal and the railway line. Additionally, there are utility diversions required crossing both the Canal and railway line which will be completed by directional drilling. Refer to Table 17-12 to Table 17-17 for further details.

The proposed works will not impact on the usability of the canal. However, there will be a requirement to temporarily restrict access along the towpath of the canal during construction. Due to the need for construction works adjacent to the Royal Canal and the need to temporarily close the section of towpath, the potential impact on the Royal Canal will be Very High.

Electricity Supply

The construction compounds will require electricity to power temporary office and welfare facilities during the Construction Phase. Power for the construction compounds will be supplied through a connection into the electricity network, or where this is unavailable, via generators. Temporary electricity provision for works areas along the proposed Scheme to power items such as temporary lighting, temporary traffic signals and other construction equipment will be provided through generators, as required. Testing will be carried out using permanent installations.

The electricity demand during the Construction Phase is considered to be Low significance.

A number of interfaces with the existing electricity infrastructure have been identified, some of which will require diversion of the infrastructure as outlined in Table 17-8 and shown in the Utility Drawings provided as part of the RO Drawing Pack. As a result of these diversions, there may be temporary local interruptions to the electricity provision during works on that infrastructure.

Table 17-8: Potential Major Electricity Infrastructure Diversions

Reference Number	Quantity	Pipe Size [note: the associated chambers / joint bays etc. are as identified on the drawings]	Length of Utility	Figure Sheet Reference of the Utility RO Drawing Pack
ESBN Transmission				
ET004	5	5x125mm + 5 Spare at Crossing	33m	3 of 20
ET011	5	125mm	533m	15 of 20
ET016	5	5x125mm + 5 Spare at Crossing	76m	15 / 16 of 20
ET019	5	5x125mm + 5 Spare at Crossing	94m	15 / 16 of 20
ET030	5	5x125mm + 5 Spare at Crossing	65m	16 of 20
ET032	5	5x125mm + 5 Spare at Crossing	27m	16 of 20
ET050	5	125mm	39m	18 of 20
ET060	5	125mm	34m	18 of 20
ET065	5	5x125mm + 5 Spare at Crossing	32m	20 of 20
Various	N/A	Various	Various	Various
ESBN Distribution				
ED002	2	1 x 125mm + 1 x 125mm Spare	36m	1 of 20
ED008	2	1 x 125mm + 1 x 125mm Spare	26m	1 of 20
ED012	1	125mm	36m	1 / 2 of 20
ED016	2	125mm	176m	2 of 20
ED020	1	125mm	48m	2 of 20
ED021	2	1 x 125mm + 1 x 125mm Spare	28m	2 of 20
ED022	2	1 x 125mm + 1 x 125mm Spare	32m	2 of 20
ED023	1	125mm	12m	2 of 20
ED025	6	3 x 125mm + 3 x 125mm Spare	36m	2 of 20
ED029	6	3 x 125mm + 3 x 125mm Spare	19m	2 of 20
ED034	2	1 x 125mm + 1 x 125mm Spare	15m	2 of 20
ED039	2	1 x 125mm + 1 x 125mm Spare	117m	4 of 20
ED048	2	1 x 125mm + 1 x 125mm Spare	16m	5 of 20
ED052	2	1 x 125mm + 1 x 125mm Spare	16m	6 / 7 of 20
ED057	2	1 x 125mm + 1 x 125mm Spare	25m	8 of 20
ED059	4	2 x 125mm + 2 x 125mm Spare	30m	10 of 20
ED065	6	125mm	68m	10 of 20
ED083	4	2 x 125mm + 2 x 125mm Spare	37m	12 of 20
ED097	2	2 x 125mm + 2 x 125mm Spare	22m	16 of 20
ED102	2	125mm	28m	16 of 20
ED109	6	125mm	135m	16 / 17 of 20
ED122	2	125mm	59m	17 of 20

Reference Number	Quantity	Pipe Size [note: the associated chambers / joint bays etc. are as identified on the drawings]	Length of Utility	Figure Sheet Reference of the Utility RO Drawing Pack
ED126	2	1 x 125mm + 1 x 125mm Spare	24m	17 of 20
ED130	6	125mm	26m	17 of 20
ED131	6	3 x 125mm + 3 x 125mm Spare	19m	17 of 20
ED136	4	2 x 125mm + 2 x 125mm Spare	76m	17 of 20
ED140	1	125mm	17m	17 of 20
ED146	4	2 x 125mm + 2 x 125mm Spare	36m	18 of 20
ED150	-	Overhead (O/H) cable	44m	18 of 20
ED151	-	O/H cable	30m	18 of 20
ED156	-	O/H cable	38m	18 of 20
ED159	2	125mm	49m	18 of 20
ED163	4	2 x 125mm + 2 x 125mm Spare	47m	18 of 20
ED166	8	2 x 125mm + 2 x 125mm Spare	35m	18 of 20
ED172	4	1 x 125mm + 1 x 125mm Spare	24m	18 of 20
ED179	1	1 x 125mm + 1 x 125mm Spare	102m	19 of 20
ED180	4	2 x 125mm + 2 x 125mm Spare	30m	19 of 20
ED184	2	1 x 125mm + 1 x 125mm Spare	36m	20 of 20
ED190	2	1 x 125mm + 1 x 125mm Spare	38m	20 of 20
ED193	4	1 x 125mm + 1 x 125mm Spare	18m	16 of 20
ED194	2	125mm	69m	1 of 20
ED199	2	125mm	22m	11 of 20
ED201	2	1x125mm + 1 Spare	22m	11 of 20
ED205	4	125mm	9m	16 of 20
ED209	1	125mm	31m	11 of 20
ED212	1	125mm	10m	11 of 20
ED213	2	125mm	75m	11 of 20
ED223		O/H Cables	5m	18 of 20
ED226	2	125mm	25m	2 of 20
ED227	2	125mm	3m	18 of 20
ED228	2	125mm	57m	10 of 20
ED231	TBC	O/H Power + Comms	17m	10 of 20
ED236	1	125mm	32m	16 of 20
ED237	1	125mm	13m	16 of 20
ED238	2	125mm	301m	16/17 of 20
ED240	1	50mm	15m	16 of 20
ED242	1	50mm	17m	16 of 20

Reference Number	Quantity	Pipe Size [note: the associated chambers / joint bays etc. are as identified on the drawings]	Length of Utility	Figure Sheet Reference of the Utility RO Drawing Pack
ED244	6	O/H cable	35m	17 of 20
ED247	6	O/H cable	35m	17 of 20
ED249	6	O/H cable	35m	17 of 20
ED251	6	O/H cable	39m	17 of 20
ED254	1	110mm	10m	17 of 20
ED255	1	110mm	15m	17 of 20
ED256	1	110mm	16m	17 of 20
ED257	1	110mm	22m	17 of 20
ED259	2	125mm	22m	17 of 20
ED260	6	O/H cable	25m	18 of 20
ED261	1	O/H cable	22m	18 of 20
ED263	1	O/H cable	20m	18 of 20
ED264	1	O/H cable	16m	18 of 20
ED267	2	125mm	51m	19 of 20
Various	N/A	Various	Various	Various

While electricity interruptions, if required, will generally only occur for a set number of hours per day (no more than eight hours where reasonably practicable), the exact number of interruption days for particular customers for each diversion cannot be ascertained at this stage, so a worst-case scenario of up to a week has been assessed.

Water

The construction compounds and construction areas will require a water supply for welfare facilities, as well as for dust suppression at certain construction areas where the conditions require it. The construction compounds will be connected into the UÉ local mains water supply where possible.

Where a connection is not possible, water tankers will be used. The potable water demand during the Construction Phase is considered to be Low significance.

A number of interfaces with the existing water infrastructure have been identified, some of which will require diversion of the infrastructure as outlined in Table 17-9. Refer to Utilities Drawings provided in the RO Drawing Pack. As a result of these diversions, there may be temporary local interruptions to water provision during works on that infrastructure.

Table 17-9: Potential Major Water Infrastructure Diversions

Reference Number	Quantity	Pipe Size [note: includes associated chambers / valves, etc.]	Proposed Length of Utility	Figure Sheet Reference
DW005	1 / 5	600mm ID + 5 Valves	440m	1 / 2 of 20
DW009	1 / 2 / 1	158mm ID + 2 Valves + Hyd	39m	1 of 20
158mm ID + Hyd + 5 Valves 38mDW014	1 / 1 / 5	395mm ID + 6 Valves	38m	1 of 20
DW015	1 / 6	158mm ID + 1 Valve	56m	1 of 20

Reference Number	Quantity	Pipe Size [note: includes associated chambers / valves, etc.]	Proposed Length of Utility	Figure Sheet Reference
DW016	1 / 1	158mm ID	6m	1 of 20
DW018	1	158mm ID + 2 Valves + Meter	8m	1 of 20
DW023	1 / 2 / 1	158mm ID + 2 Valves + Hyd	7m	1 of 20
DW026	1 / 2 / 1	600mm ID + 5 Valves	19m	2 of 20
DW030	1 / 2 / 1	158mm ID + 2 Valves + Hyd	28m	2 of 20
DW032	1 / 4	110mm ID + 4 Valves	26m	2 of 20
DW034	1 / 2	110mm ID + 2 Valves	11m	2 of 20
DW038	1 / 1 / 1	79mm ID + Valve + Hyd	4m	3 of 20
DW039	1 / 1	158mm ID + 1 Valve	2m	3 of 20
DW040	1 / 3 / 1	158mm ID + 3 Valves + Hyd	17m	3 of 20
1 / 190mm + Hyd1mDW042	1 / 11	158mm ID + 11 Valves	1m	3 of 20
DW043	1 / 2	494mm ID + 2 Valves	36m	3 of 20
DW050	1 / 1 / 6	158mm ID + 2 Valves + Hyd	69m	6 of 20
DW053	1 / 6	220mm ID + Hyd + 6 Valves	31m	7 of 20
DW057	1 / 5	110mm ID + 6 Valves	18m	9 of 20
DW061	1 / 6	110mm ID + 5 Valves	14m	9 / 10 of 20
DW063	1 / 6	110mm ID + 6 Valves	42m	9 / 10 of 20
DW066	1 / 2 / 1	158mm ID + 6 Valves	18m	10 of 20
1 / 7110mm ID + 2 Valves + Meter7mDW071	1 / 1	312mm ID + 7 Valves	7m	10 of 20
1 / 1 / 1110mm ID + 1 Valve69m1 / 590mm ID + 1 Valve + Hyd31m1 / 6220mm ID + Hyd + 6 Valves18mDW086	1 / 6	110mm ID + 6 Valves	36m	12 of 20
1 / 6110mm ID + 5 Valves26mDW091	1 / 4 / 1	110mm ID + 6 Valves	144m	12 of 20
DW092	1	158mm ID + 6 Valves	2m	12 of 20
DW103	1 / 7	110mm ID + 5 Valves	69m	16 of 20
DW107	1	110mm ID + 6 Valves	32m	16 of 20
DW109	1	219mm ID + 6 Valves	27m	16 of 20
DW118	1	110mm ID + 6 Valves	30m	17 of 20
DW120	1 / 9	158mm ID + 4 Valves + Hyd	26m	17 of 20
DW122	1 / 3	Building Connection	1m	17 of 20
DW123	1 / 1 / 1	110mm ID + 7 Valves	37m	17 of 20
DW124	1 / 2	Building Connection	1m	17 of 20
DW126	1	Building Connection	1m	17 of 20
DW127	1	Building Connection	1m	17 of 20

Reference Number	Quantity	Pipe Size [note: includes associated chambers / valves, etc.]	Proposed Length of Utility	Figure Sheet Reference
1395mm ID + 9 Valves 84m 1110mm ID + 3 Valves 144m DW139	1	110mm ID + Valve + Hyd	84m	18 of 20
DW145	1	800mm ID + 2 Valves	255m	19 / 20 of 20
DW146	1	100mm	5m	19 of 20
DW148	1	100mm	36m	19 of 20
DW160	1 / 13	100mm	2m	1 of 20
DW162	1 / 4	100mm	2m	1 of 20
DW164	1 / 2 / 1	Building Connection	2m	3 of 20
DW166	1 / 4	395mm ID + 9 Valves	4m	3 of 20
DW168	1 / 1 / 1	100mm	2m	6 of 20
DW170	1 / 6	100mm	2m	6 of 20
DW172	1 / 3 / 1	100mm	5m	20 of 20
DW174	3	100mm	4m	20 of 20
DW175	3	158mm ID + 13 Valves	284m	1 / 2 of 20
DW177	1 / 1 / 1	110mm ID + 4 Valves	16m	17 of 20
DW181	1 / 4	110mm ID + 2 Valves + Meter	7m	12 of 20
DW183	1 / 1 / 5	312mm ID + 4 Valves	71m	11 of 20
DW184	1 / 6	79mm ID + 1 Valve + Hyd	2m	12 of 20
DW186	1 / 1	110mm ID + 6 Valves	22m	11 of 20
DW188	1	110mm ID + 3 Valves + Hyd	23m	11 of 20
DW195	1 / 2 / 1	100mm	TBC	17 of 20
DW196	1 / 2 / 1	100mm	TBC	17 of 20
DW197	1 / 2 / 1	110mm ID + Valve + Meter	6m	19 of 20
DW198	1 / 4	110mm ID + 4 Valves	49m	10 of 20
Various	N / A	Various	Various	Various

Note: Hyd refers to a hydrant; ID is internal diameter.
DW005 will be pipe jacked under the Royal Canal and railway crossing.

While water interruptions, if required, will generally only occur for a set number of hours per day (no more than eight hours where reasonably practicable), the total number of interruption days for particular customers for each diversion cannot be ascertained at this stage, so a worst-case scenario of up to a week has been assessed.

Wastewater and Surface Water Runoff

There will be wastewater and surface water runoff created by the construction compounds and construction areas. Wastewater will be created by welfare facilities within the construction compounds and construction areas, and surface water run-off will emanate from any areas of the construction compounds and construction areas which are paved. The construction compounds will be connected into the local foul / combined sewers where possible, or where not possible, will have on-site tanks for the collection of foul water which will be emptied by means of a suction tanker and the wastewater shall be disposed of to a licensed wastewater treatment plant. Where required, temporary welfare facilities (for example portable

toilets) will be used, which will be collected as required for offsite disposal of the wastewater to a suitably licensed facility.

The potential impact as a result of the demand on the foul water network during the Construction Phase will be Low significance.

A number of interfaces between the existing waste water infrastructure and the proposed Scheme have been identified, some of which will require diversion of the infrastructure as outlined in Table 17-10. Refer to Utilities Drawings provided in the RO Drawing Pack. As a result of these diversions, there may be temporary local interruptions to wastewater collection during works on that infrastructure.

Table 17-10: Potential Major Wastewater Infrastructure Diversions

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
WW011	1	225mm	10m	3 of 20
WW013	1	225mm	45m	3 of 20
WW048	1	375mm	42m	10 / 11 of 20
WW053	1	375mm	19m	11 of 20
WW104	1	300mm	44m	17 of 20
WW106	1	300mm	50m	17 of 20
Various	N / A	Various	Various	Various

While wastewater interruptions, if required, will generally only occur for a set number of hours per day (no more than eight hours where reasonably practicable), the total number of interruption days for particular customers for each diversion cannot be ascertained at this stage, so a worst-case scenario of up to a week has been assessed.

Gas

There will be no requirement for a connection to existing gas infrastructure during the Construction Phase of the proposed Scheme. Therefore, it is predicted that there will be no significant impact associated with gas demand during the Construction Phase.

A number of interfaces between the existing gas infrastructure and the proposed Scheme have been identified, some of which will require diversion of the infrastructure as outlined in Table 17-11. Refer to Utilities Drawings provided in the RO Drawing Pack. As a result of these diversions, there may be temporary local interruptions to the gas provision during works on that infrastructure.

Table 17-11: Potential Major Gas Infrastructure Diversions

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
GT003	½	500mm + Spare + 2 Valves	26m	4 of 20
GT007	½	250mm + Spare + 2 Valves at Crossing	17m	20 of 20
GT010	1	100mm	2m	4 of 20
GT012	1	100mm	2m	4 of 20
Various	N / A	Various	Various	Various
GD004	½	90mm + 2 Valves	190m	2 of 20
GD008	1 / 1	90mm + Spare + 1 Valve	18m	2 of 20

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
GD010	½	90mm + Spare + 2 Valves at Crossing	23m	2 of 20
GD015	½	250mm + Spare + 2 Valves	21m	5 of 20
GD021	½	250mm + Spare + 2 Valves at Crossing	49m	9 of 20
GD023	1/1	250mm + 1 Valve	5m	9 of 20
GD026	1 / 3	250mm + 3 Valves + Spare at Crossing	237m	9 / 10 of 20
GD028	1	250mm	38m	9 of 20
GD032	½	250mm + 2 Valves + Spare at Crossing	21m	10 of 20
GD035	½	125mm + 2 Valves + Spare at Crossing	52m	10 of 20
GD050	½	250mm + 2 Valves + Spare	92m	12 of 20
GD056	½	180mm + 2 Valves + Spare at Crossing	84m	16 of 20
GD072	½	63mm + 2 Valves + Spare at Crossing	25m	16 of 20
GD074	½	90mm + 2 Valves + Spare at Crossing	56m	16 of 20
GD076	½	63mm + 2 Valves + Spare at Crossing	14m	16 of 20
GD078	½	125mm + 2 Valves + Spare	20m	16 of 20
GD089	½	90mm + 2 Valves + Spare at Crossing	13m	17 of 20
GD093	½	90mm + 2 Valves + Spare at Crossing	25m	17 of 20
GD096	1	63mm	31m	17 of 20
GD101	½	90mm + 2 Valves + Spare at Crossing	49m	19 of 20
GD117	1	32mm	2m	12 of 20
GD118	1	63mm	64m	11 of 20
Various	N / A	Various	Various	Various

While gas interruptions, if required, will generally only occur for a set number of hours per day (no more than eight hours where reasonably practicable), the total number of interruption days for particular customers for each diversion cannot be ascertained at this stage so a worst-case scenario of up to a week has been assessed.

Telecommunications

Telecommunications access will be required at the construction compounds. The potential impact as a result of the demand on the telecommunications network during the Construction Phase will be Medium.

A number of interfaces between the existing telecommunications infrastructure and the proposed Scheme have been identified, some of which will require diversion of the infrastructure as outlined in Table 17-12. Refer to Utilities Drawings provided in the RO Drawing Pack. As a result of these diversions, there may be temporary local interruptions to the telecommunications provision during works on that infrastructure.

Table 17-12: Potential Telecommunications Infrastructure Diversions

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
E002	2	100mm	54m	1 / 2 of 20
E004	2	1x100mm + 1 Spare	20m	1 of 20

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
E011	6	100mm	12m	2 of 20
E023	6	100mm	45m	2 of 20
E027	6	100mm	49m	2 of 20
E033	2	100mm	15m	2 of 20
E035	6	100mm	91m	2 of 20
E041	2	1x100mm + 1 Spare	27m	2 of 20
E045	8	6x100mm + 2 Spare	15m	2 of 20
E060	6	4x100mm + 2 Spare	15m	2/3 of 20
E067	4	100mm	27m	3 of 20
E071	1	100mm	14m	5 of 20
E072	1	100mm (Spare)	14m	5 of 20
E077	2	1x100mm + 1 Spare	18m	7 of 20
E081	2	1x100mm + 1 Spare	15m	7 of 20
E095	6	5x100mm + 1 Spare	19m	9 of 20
E103	2	1x100mm + 1 Spare	38m	10 of 20
E109	1	1x100mm	31m	10 of 20
E118	2	1x100mm + 1 Spare	29m	10 of 20
E163	9	100mm	14m	16 of 20
E164	9	100mm	13m	16 of 20
E166	9	100mm	24m	16 of 20
E170	2	100mm	14m	16 of 20
E173	2	100mm	13m	16 of 20
E174	8	100mm	49m	16/17 of 20
E180	20	13x100mm + 7 Spare	28m	16 of 20
E183	4	100mm	10m	16 of 20
E193	6	100mm	4m	16 of 20
E198	4	100mm	9m	16 of 20
E217	15	12x100mm + 3 Spare	22m	16 of 20
E220	2	100mm	20m	16 of 20
E227	5	100mm	40m	17 of 20
E234	5	100mm	2m	17 of 20
E236	7	6x00mm 1x00mm	8m	17 of 20
E239	1	50mm	2m	17 of 20
E241	5	100mm	49m	17 of 20

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
E242	1	100mm	36m	17 of 20
E247		TBC	10m	17 of 20
E248	10	100mm	26m	17 of 20
E251	TBC	TBC	10m	17 of 20
E254	10	100mm	32m	17 of 20
E260	2	1x100mm + 1 Spare	10m	17 of 20
E263	2	1x100mm + 1 Spare	9m	17 of 20
E268	10	100mm	51m	17 of 20
E276	2	1x100mm + 1 Spare	9m	17 of 20
E279	2	100mm	8m	17 of 20
E289	6	100mm	12m	17 of 20
E294	9	6x100mm + 3 Spare	14m	18 of 20
E321	12	100mm	74m	18 of 20
E323	2	100mm	19m	18 of 20
E326	6	100mm	10m	18 of 20
E329	1	100mm	11m	18 of 20
E322	6	100mm	73m	18 of 20
E325	2	1x100mm + 1 Spare	10m	18 of 20
E341	6	100mm	40m	18 of 20
E354	6	100mm	146m	19 of 20
E359	4	2x100mm + 2 Spare	10m	19 of 20
E470	9	100mm	30m	19 of 20
E372	4	100mm	34m	19 of 20
E390	6	100mm	45m	17/18 of 20
E397	2	100mm	22m	2 of 20
E403	1	100mm	36m	2 of 20
E406	2	100mm	8m	3 of 20
E411	2	100mm	49m	11 of 20
E419	1	100mm	15m	11 of 20
E421	1	100mm (Spare)	17m	11 of 20
E425	16	100mm	15m	16 of 20
E429	4	100mm	4m	16 of 20
E436	2	100mm	12m	16 of 20
E441	2	100mm	4m	17 of 20
E442	6	100mm	19m	17 of 20

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
E444	1	O/H Cable	10m	17 of 20
E445	1	O/H Cable	9m	17 of 20
E446	1	O/H Cable	13m	17 of 20
E450	6	100mm	3m	18 of 20
E458	2	100mm	22m	12 of 20
E469	1	100mm	85m	12 of 20
E470	6	100mm	85m	12 of 20
E471	1	100mm	85m	12 of 20
E478	10	100mm	41m	18 of 20
E480	1	100mm	3m	20 of 20
VM014	4	2x100mm + 2 Spare	19m	8 of 20
VM021	4	2x100mm + 2 Spare	13m	10 of 20
VM025	4	2x100mm + 2 Spare	21m	10 of 20
VM035	4	2x100mm + 2 Spare	35m	10 / 11 of 20
VM050	4	100mm	195m	12 / 13 of 20
VM053	4	100mm	195m	13 / 14 of 20
VM059	4	100mm	139m	14 / 15 of 20
VM070	4	2x100mm + 2 Spare	69m	16 of 20
VM079	4	2x100mm + 2 Spare	15m	17 of 20
VM088	2	100mm	24m	17 of 20
VM101	2	100mm	200m	18 / 19 of 20
VM103	2	100mm	21m	19 / 20 of 20
VM114	4	2x100mm + 2 Spare	37m	19 / 20 of 20
VM121	2	100mm	60m	20 of 20
VM127	2	100mm	38m	16 of 20
VM136	2	100mm	38m	18 of 20
VM138	2	100mm	14m	06 of 20
VM143	2	100mm	32m	10 of 20
VM146	2	100mm	115m	16 of 20
VM148	2	100mm	77m	16 / 17 of 20
VM150	2	100mm	102m	17 of 20
VM152	1	O/H cable	12m	17 of 20
VM153	1	O/H cable	10m	17 of 20
VM154	2	100mm	59m	17 / 18 of 20
VM156	1	O/H cable	10m	17 of 20
VM158	1	100mm	7m	17 of 20
BT003	2	110mm (Spare)	22m	11 / 12 of 20

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Figure Sheet Reference
BT004	4	110mm	22m	11 / 12 of 20
BT013	2	1x110mm + 1 Spare	20m	17 / 18 of 20
AC003	2	100mm	32m	2 of 20
AC010	2	100mm	11m	4 of 20
AC013	2	100mm	228m	16 / 18 of 20
AC017	2	100mm	57m	16 of 20
AC020	2	100mm	18m	17 / 18 of 20
AC030	2	100mm	109m	18 of 20
AC033	2	100mm	25m	18 of 20
AC040	6	100mm	50m	4 / 5 of 20
Various	Various	Traffic Ducting	Various	-
Various	Various	Luas MT power ducting	Various	-
Various	Various	Luas MT comms ducting	Various	-

While telecommunications interruptions, if required, will generally only occur for a set number of hours per day (no more than eight hours where reasonably practicable), the total number of interruption days for particular customers for each diversion cannot be ascertained at this stage so a worst-case scenario of up to a week has been assessed.

17.4.3.2 Construction Phase Impact Summary

The data compiled as part of the data collection and collation process detailed in section 17.3.1 was overlaid against the proposed temporary and permanent works required as part of the proposed Scheme. A “clash analysis” was undertaken to determine potential clashes between existing utilities and the proposed works. Potential diversions or alterations were discussed and agreed in principle with the utility providers during consultations. The impacts in relation to these diversions or alterations were assessed and are detailed below.

A summary of proposed diversions is outlined below in Table 17-13 through Table 17-17. The summary outlines the clashes that have been identified across the proposed Scheme. The type, size and material of each clash is identified where possible.

Table 17-13: Summary of Utility Diversions – Electricity Infrastructure Diversions

Reference Number	Quantity	Pipe Size [note: associated chambers / joint bays, etc. as identified on drawings]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
ESBN Transmission									
ET004	5	5x125mm + 5 Spare at Crossing	33m	Diversion	3 of 20	Very High	Low	Moderate	Adverse
ET011	5	125mm	533m	Diversion	15 of 20	Very High	Low	Moderate	Adverse
ET016	5	5x125mm + 5 Spare at Crossing	76m	Diversion	15 / 16 of 20	Very High	Low	Moderate	Adverse
ET019	5	5x125mm + 5 Spare at Crossing	94m	Diversion	15 / 16 of 20	Very High	Low	Moderate	Adverse
ET030	5	5x125mm + 5 Spare at Crossing	65m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
ET032	5	5x125mm + 5 Spare at Crossing	27m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
ET050	5	125mm	39m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
ET060	5	125mm	34m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
ET065	5	5x125mm + 5 Spare at Crossing	32m	Diversion	20 of 20	Very High	Low	Moderate	Adverse
Various	N / A	Various	Various	Various	Various	Various	Various	Various	Adverse
Various	N / A	Various	Various	Protect	Various	Very High	Low	Moderate	Adverse
ESBN Distribution									
ED002	2	1 x 125mm + 1 x 125mm at Crossing	36m	Diversion	1 of 20	High	Low	Slight	Adverse
ED008	2	1 x 125mm + 1 x 125mm Spare at	26m	Diversion	1 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size [note: associated chambers / joint bays, etc. as identified on drawings]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
		Crossing							
ED012	1	125mm	36m	Diversion	1 / 2 of 20	High	Low	Slight	Adverse
ED016	2	125mm	167m	Diversion	2 of 20	High	Low	Slight	Adverse
ED020	1	125mm	48m	Diversion	2 of 20	High	Low	Slight	Adverse
ED021	2	1 x 125mm + 1 x 125mm Spare at Crossing	28m	Diversion	2 of 20	High	Low	Slight	Adverse
ED023	1	125mm	12m	Diversion	2 of 20	High	Low	Slight	Adverse
ED025	6	3 x 125mm + 3 x 125mm Spare at Crossing	35m	Diversion	2 of 20	High	Low	Slight	Adverse
ED029	6	3 x 125mm + 3 x 125mm Spare at Crossing	19m	Diversion	2 of 20	High	Low	Slight	Adverse
ED034	2	1 x 125mm + 1 x 125mm Spare at Crossing	15m	Diversion	2 of 20	High	Low	Slight	Adverse
ED039	2	1 x 125mm + 1 x 125mm Spare at Crossing	21m	Diversion	4 of 20	High	Low	Slight	Adverse
ED044	2	1 x 125mm + 1 x 125mm Spare at Crossing	15m	Diversion	5 of 20	High	Low	Slight	Adverse
ED048	2	1 x 125mm + 1 x 125mm Spare at Crossing	16m	Diversion	5 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size [note: associated chambers / joint bays, etc. as identified on drawings]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
ED052	2	1 x 125mm + 1 x 125mm Spare at Crossing	16m	Diversion	6 / 7 of 20	High	Low	Slight	Adverse
ED057	2	1 x 125mm + 1 x 125mm Spare at Crossing	25m	Diversion	8 of 20	High	Low	Slight	Adverse
ED059	4	2 x 125mm + 2 x 125mm Spare at Crossing	15m	Diversion	10 of 20	High	Low	Slight	Adverse
ED065	6	125mm	39m	Diversion	10 of 20	High	Low	Slight	Adverse
ED073	4	2 x 125mm + 2 x 125mm Spare at Crossing	19m	Diversion	11 / 12 of 20	High	Low	Slight	Adverse
ED074	2	1 x 125mm + 1 x 125mm Spare at Crossing	60m	Diversion	11 / 12 of 20	High	Low	Slight	Adverse
ED083	4	2 x 125mm + 2 x 125mm Spare at Crossing	20m	Diversion	12 of 20	High	Low	Slight	Adverse
ED097	2	2 x 125mm + 2 x 125mm Spare at Crossing	17m	Diversion	16 of 20	High	Low	Slight	Adverse
ED102	2	125mm	31m	Diversion	16 of 20	High	Low	Slight	Adverse
ED109	6	125mm	74m	Diversion	16 / 17 of 20	High	Low	Slight	Adverse
ED115	6	125mm	28m	Diversion	17 of 20	High	Low	Slight	Adverse
ED119	6	125mm	31m	Diversion	17 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size [note: associated chambers / joint bays, etc. as identified on drawings]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
ED122	6	125mm	34m	Diversion	17 of 20	High	Low	Slight	Adverse
ED124	6	125mm	34m	Diversion	17 of 20	High	Low	Slight	Adverse
ED126	2	1 x 125mm + 1 x 125mm Spare at Crossing	20m	Diversion	17 of 20	High	Low	Slight	Adverse
ED130	6	125mm	25m	Diversion	17 of 20	High	Low	Slight	Adverse
ED131	6	3 x 125mm + 3 x 125mm Spare at Crossing	22m	Diversion	17 of 20	High	Low	Slight	Adverse
ED136	4	2 x 125mm + 2 x 125mm Spare at Crossing	74m	Diversion	17 of 20	High	Low	Slight	Adverse
ED140	1	125mm	17m	Diversion	17 of 20	High	Low	Slight	Adverse
ED146	4	2 x 125mm + 2 x 125mm Spare at Crossing	35m	Diversion	18 of 20	High	Low	Slight	Adverse
ED147	6	125mm	30m	Diversion	18 of 20	High	Low	Slight	Adverse
ED159	2	125mm	30m	Diversion	18 of 20	High	Low	Slight	Adverse
ED163	4	2 x 125mm + 2 x 125mm Spare at Crossing	46m	Diversion	18 of 20	High	Low	Slight	Adverse
ED166	4	2 x 125mm + 2 x 125mm Spare at Crossing	35m	Diversion	18 of 20	High	Low	Slight	Adverse
ED172	2	1 x 125mm + 1 x 125mm Spare at	24m	Diversion	18 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size [note: associated chambers / joint bays, etc. as identified on drawings]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
		Crossing							
ED179	2	1 x 125mm + 1 x 125mm Spare at Crossing	120m	Diversion	19 of 20	High	Low	Slight	Adverse
ED180	4	2 x 125mm + 2 x 125mm Spare at Crossing	32m	Diversion	19 of 20	High	Low	Slight	Adverse
ED184	2	1 x 125mm + 1 x 125mm Spare at Crossing	36m	Diversion	20 of 20	High	Low	Slight	Adverse
ED190	2	1 x 125mm + 1 x 125mm Spare at Crossing	38m	Diversion	20 of 20	High	Low	Slight	Adverse
ED193	2	1 x 125mm + 1 x 125mm Spare at Crossing	18m	Diversion	16 of 20	High	Low	Slight	Adverse
Various	N/A	Various	Various	Protect	Various	High	Low	Slight	Adverse

Table 17-14: Summary of Utility Diversions – UÉ Water Infrastructure Diversions

Reference Number	Quantity	Pipe Size [note: includes associated chambers/valves etc.]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
DW005	1+4	600mm ID + 4 Valves	345m	Diversion	1 / 2 of 20	Very High	Low	Moderate	Adverse
DW009	1+2	158mm ID + 2 Valves + Hydrant	35m	Diversion	1 of 20	High	Low	Slight	Adverse
DW012	1+3	600mm ID + 3 Valves	106m	Diversion	1 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size [note: includes associated chambers/valves etc.]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
DW014	1	158mm ID	38m	Diversion	1 of 20	High	Low	Slight	Adverse
DW015	1	395mm ID	56m	Diversion	1 of 20	High	Low	Slight	Adverse
DW016	1+1	158mm ID + 1 Valve	3m	Diversion	1 of 20	High	Low	Slight	Adverse
DW018	1	158mm ID	8m	Diversion	1 of 20	High	Low	Slight	Adverse
DW023	1+2	158mm ID + 2 Valves + Meter	23m	Diversion	1 of 20	High	Low	Slight	Adverse
DW026	1+4	158mm ID + 4 Valves + Hydrant	19m	Diversion	2 of 20	High	Low	Slight	Adverse
DW030	1+4	158mm ID + 4 Valves + Hydrant	24m	Diversion	2 of 20	High	Low	Slight	Adverse
DW032	1+6	110mm ID + 6 Valves	23m	Diversion	2 of 20	High	Low	Slight	Adverse
DW034	1+2	110mm ID + 2 Valves	11m	Diversion	2 of 20	High	Low	Slight	Adverse
DW038	1+1	79mm ID + Valve + Hydrant	4m	Diversion	3 of 20	High	Low	Slight	Adverse
DW039	1+1	158mm ID + 1 Valve	2	Diversion	3 of 20	High	Low	Slight	Adverse
DW040	1+3	158mm ID + 3 Valves + Hydrant	17m	Diversion	3 of 20	High	Low	Slight	Adverse
DW041	1	18"	13m	Diversion	3 of 20	High	Low	Slight	Adverse
DW042	1+1	90mm + Hydrant	1m	Diversion	3 of 20	High	Low	Slight	Adverse
DW043	1+11	158mm ID + 11 Valves	8m	Diversion	3 of 20	High	Low	Slight	Adverse
DW050	1+2	700mm ID + 2 Valves	69m	Diversion	6 of 20	Very High	Low	Moderate	Adverse
DW053	1+6	220mm ID + 6 Valves	38m	Diversion	7 of 20	High	Low	Slight	Adverse
DW057	1+6	110mm ID + 6 Valves	15m	Diversion	9 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size [note: includes associated chambers/valves etc.]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
DW061	1+8	110mm ID + 8 Valves	18m	Diversion	9 / 10 of 20	High	Low	Slight	Adverse
DW063	1+3	110mm ID + 3 Valves	42m	Diversion	9 / 10 of 20	High	Low	Slight	Adverse
DW066	1+6	158mm ID + 6 Valves	27m	Diversion	10 of 20	High	Low	Slight	Adverse
DW069	1+4	110mm ID + 4 Valves	14m	Diversion	10 of 20	High	Low	Slight	Adverse
DW071	1+1	110mm ID + 1 Valve	4m	Diversion	10 of 20	High	Low	Slight	Adverse
DW076	1+6	110mm ID + 6 Valves	20m	Diversion	11 /12 of 20	High	Low	Slight	Adverse
DW078	1+6	110mm ID + 6 Valves	85m	Diversion	11 of 20	High	Low	Slight	Adverse
DW083	1+6	110mm ID + 6 Valves	30m	Diversion	11 of 20	High	Low	Slight	Adverse
DW086	1+6	312mm ID + 6 Valves	18m	Diversion	12 of 20	High	Low	Slight	Adverse
DW089	1+8	110mm ID + 8 Valves	22m	Diversion	12 of 20	High	Low	Slight	Adverse
DW091	1+1	110mm ID + 1 Valve	144m	Diversion	12 of 20	High	Low	Slight	Adverse
DW092	1+1	90mm ID + 1 Valve + Hydrant	2m	Diversion	12 of 20	High	Low	Slight	Adverse
DW103	1+5	110mm ID + 5 Valves	69m	Diversion	16 of 20	High	Low	Slight	Adverse
DW107	1+6	110mm ID + 6 Valves	29m	Diversion	16 of 20	High	Low	Slight	Adverse
DW109	1+6	219mm ID + 6 Valves	24m	Diversion	16 of 20	High	Low	Slight	Adverse
DW118	1+6	110mm ID + 6 Valves	30m	Diversion	17 of 20	High	Low	Slight	Adverse
DW120	1+4	158mm ID + 4 Valves + Hydrant	26m	Diversion	17 of 20	High	Low	Slight	Adverse
DW122	1	Building Connection	1m	Diversion	17 of 20	High	Low	Slight	Adverse
DW123	1+6	110mm ID + 6 Valves	50m	Diversion	17 of 20	High	Low	Slight	Adverse
DW124	1	Building Connection	1m	Diversion	17 of 20	High	Low	Slight	Adverse
DW126	1	Building Connection	1m	Diversion	17 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size [note: includes associated chambers/valves etc.]	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
DW127	1	Building Connection	1m	Diversion	17 of 20	High	Low	Slight	Adverse
DW130	1+2	110mm ID + 2 Valves	7m	Diversion	17 / 18 of 20	High	Low	Slight	Adverse
DW132	1+6	110mmID + 6 Valves	28m	Diversion	18 of 20	High	Low	Slight	Adverse
DW139	1+9	395mm ID + 9 Valves	80m	Diversion	18 of 20	High	Low	Slight	Adverse
DW145	1+3	110mm ID + 3 Valves	241m	Diversion	19 / 20 of 20	High	Low	Slight	Adverse
DW146	1+1	110mm ID + Valve + Hydrant	5m	Diversion	19 of 20	High	Low	Slight	Adverse
DW148	1+2	800mm ID + 2 Valves	36m	Diversion	19 of 20	Very High	Low	Moderate	Adverse
DW160	1	160mm	2m	Diversion	1 of 20	High	Low	Slight	Adverse
DW162	1	160mm	2m	Diversion	1 of 20	High	Low	Slight	Adverse
DW164	1	160mm	2m	Diversion	3 of 20	High	Low	Slight	Adverse
DW166	1	160mm	4m	Diversion	3 of 20	High	Low	Slight	Adverse
DW168	1	160mm	2m	Diversion	6 of 20	High	Low	Slight	Adverse
DW170	1	160mm	2m	Diversion	6 of 20	High	Low	Slight	Adverse
DW172	1	160mm	5m	Diversion	20 of 20	High	Low	Slight	Adverse
DW174	1	160mm	4m	Diversion	20 of 20	High	Low	Slight	Adverse
Various	N / A	Various	Various	Protect	Various	High	Low	Slight	Adverse

Table 17-15: Summary of Utility Diversions – UÉ Wastewater Infrastructure Diversions

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
WW011	1	225mm	10m	Diversion	3 of 20	High	Low	Slight	Adverse
WW013	1	225mm	45m	Diversion	3 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
WW026	1	225mm – OPTION 1	76m	Diversion	4 / 5 of 20	High	Low	Slight	Adverse
WW028	1	225mm	20m	Diversion	4 of 20	High	Low	Slight	Adverse
WW034	1	300mm – OPTION 2	90m	Diversion	5 of 20	High	Low	Slight	Adverse
WW048	1	375mm	42m	Diversion	10 / 11 of 20	High	Low	Slight	Adverse
WW053	1	375mm	19m	Diversion	11 of 20	High	Low	Slight	Adverse
WW064	1	225mm	43m	Diversion	11 of 20	High	Low	Slight	Adverse
WW068	1	225mm	16m	Diversion	11 of 20	High	Low	Slight	Adverse
WW104	1	300mm	44m	Diversion	17 of 20	High	Low	Slight	Adverse
WW106	1	300mm	50m	Diversion	17 of 20	High	Low	Slight	Adverse
Various	N/A	Various	Various	Protect	Various	High	Low	Slight	Adverse

Table 17-16: Summary of Utility Diversions – Gas Infrastructure Diversions

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
Gas Transmission									
GT003	1+2	500mm + Spare + 2 Valves	26m	Diversion	4 of 20	Very High	Low	Moderate	Adverse
GT007	1+2	180mm + Spare + 2 Valves at Crossing	20m	Diversion	20 of 20	Very High	Low	Moderate	Adverse
GT010	1	100mm	5m	Diversion	4 of 20	Very High	Low	Moderate	Adverse
GT012	1	100mm	2m	Diversion	4 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
Various	N/A	Various	Various	Diversion	Various	Very High	Low	Moderate	Adverse
Gas Distribution									
GD004	1+2	90mm + 2 Valves	190m	Diversion	2 of 20	High	Low	Slight	Adverse
GD008	1+1	90mm + Spare + 1 Valve	16m	Diversion	2 of 20	High	Low	Slight	Adverse
GD010	1+2	90mm + Spare + 2 Valves at Crossing	25m	Diversion	2 of 20	High	Low	Slight	Adverse
GD015	1+2	250mm + Spare + 2 Valves	26m	Diversion	5 of 20	High	Low	Slight	Adverse
GD021	1+2	250mm + Spare + 2 Valves at Crossing	42m	Diversion	9 of 20	High	Low	Slight	Adverse
GD023	1+1	250mm + 1 Valve	7m	Diversion	9 of 20	High	Low	Slight	Adverse
GD026	1+3	250mm + 3 Valves + Spare at Crossing	290m	Diversion	9 / 10 of 20	High	Low	Slight	Adverse
GD028	1	250mm	6m	Diversion	9 of 20	High	Low	Slight	Adverse
GD032	1+2	250mm + 2 Valves + Spare at Crossing	30m	Diversion	10 of 20	High	Low	Slight	Adverse
GD035	1+2	125mm + 2 Valves + Spare at Crossing	59m	Diversion	10 of 20	High	Low	Slight	Adverse
GD038	1+2	63mm + 2 Valves + Spare at Crossing	23m	Diversion	11 of 20	High	Low	Slight	Adverse
GD041	1	90mm + 2 Valves + Spare at Crossing	19m	Diversion	11 of 20	High	Low	Slight	Adverse
GD043	1+2	90mm	15m	Diversion	11 of 20	High	Low	Slight	Adverse
GD045	1+2	90mm + 2 Valves + Spare	16m	Diversion	11 of 20	High	Low	Slight	Adverse
GD050	1+2	250mm + 2 Valves + Spare	16m	Diversion	12 of 20	High	Low	Slight	Adverse
GD053	1+2	63mm + 2 Valves + Spare at	17m	Diversion	12 of 20	High	Low	Slight	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
		Crossing							
GD056	1+2	180mm + 2 Valves + Spare at Crossing	84m	Diversion	16 of 20	High	Low	Slight	Adverse
GD072	1+2	63mm + 2 Valves + Spare at Crossing	14m	Diversion	16 of 20	High	Low	Slight	Adverse
GD074	1+2	90mm + 2 Valves + Spare at Crossing	56m	Diversion	16 of 20	High	Low	Slight	Adverse
GD076	1+2	63mm + 2 Valves + Spare at Crossing	17m	Diversion	16 of 20	High	Low	Slight	Adverse
GD078	1+2	125mm + 2 Valves + Spare	16m	Diversion	16 of 20	High	Low	Slight	Adverse
GD089	1+2	90mm + 2 Valves + Spare at Crossing	13m	Diversion	17 of 20	High	Low	Slight	Adverse
GD093	1+2	90mm + 2 Valves + Spare at Crossing	26m	Diversion	17 of 20	High	Low	Slight	Adverse
GD096	1	63mm	31m	Diversion	17 of 20	High	Low	Slight	Adverse
GD101	1+2	90mm + 2 Valves + Spare at Crossing	49m	Diversion	19 of 20	High	Low	Slight	Adverse
Various	N/A	Various	Various	Protect	Various	High	Low	Slight	Adverse

Table 17-17: Summary of Utility Diversions – Telecommunication Infrastructure Diversions

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
E002	2	100mm	54m	Diversion	1 / 2 of 20	Very High	Low	Moderate	Adverse
E004	2	1x100mm + 1 Spare	20m	Diversion	1 of 20	Very High	Low	Moderate	Adverse
E011	6	100mm	12m	Diversion	2 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
E023	6	100mm	45m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E027	6	100mm	49m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E033	2	100mm	15m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E035	6	100mm	91m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E041	2	1x100mm + 1 Spare	27m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E045	8	6x100mm + 2 Spare	15m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E060	6	4x100mm + 2 Spare	15m	Diversion	2 / 3 of 20	Very High	Low	Moderate	Adverse
E067	4	100mm	27m	Diversion	3 of 20	Very High	Low	Moderate	Adverse
E071	1	100mm	14m	Diversion	5 of 20	Very High	Low	Moderate	Adverse
E072	1	100mm (Spare)	14m	Diversion	5 of 20	Very High	Low	Moderate	Adverse
E077	2	1x100mm + 1 Spare	18m	Diversion	7 of 20	Very High	Low	Moderate	Adverse
E081	2	1x100mm + 1 Spare	15m	Diversion	7 of 20	Very High	Low	Moderate	Adverse
E095	6	5x100mm + 1 Spare	19m	Diversion	9 of 20	Very High	Low	Moderate	Adverse
E103	2	1x100mm + 1 Spare	38m	Diversion	10 of 20	Very High	Low	Moderate	Adverse
E109	1	1x100mm	31m	Diversion	10 of 20	Very High	Low	Moderate	Adverse
E118	2	1x100mm + 1 Spare	29m	Diversion	10 of 20	Very High	Low	Moderate	Adverse
E163	9	100mm	14m	Diversion	16 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
E164	9	100mm	13m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E166	9	100mm	24m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E170	2	100mm	14m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E173	2	100mm	13m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E174	8	100mm	49m	Diversion	16 / 17 of 20	Very High	Low	Moderate	Adverse
E180	20	13x100mm + 7 Spare	28m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E183	4	100mm	10m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E193	6	100mm	4m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E198	4	100mm	9m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E217	15	12x100mm + 3 Spare	22m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E220	2	100mm	20m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E227	5	100mm	40m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E234	5	100mm	2m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E236	7	6x00mm 1x00mm	8m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E239	1	50mm	2m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E241	5	100mm	49m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E242	1	100mm	36m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E247		TBC	10m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E248	10	100mm	26m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E251	TBC	TBC	10m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E254	10	100mm	32m	Diversion	17 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
E260	2	1x100mm + 1 Spare	10m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E263	2	1x100mm + 1 Spare	9m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E268	10	100mm	51m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E276	2	1x100mm + 1 Spare	9m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E279	2	100mm	8m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E289	6	100mm	12m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E294	9	6x100mm + 3 Spare	14m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E321	12	100mm	74m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E323	2	100mm	19m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E326	6	100mm	10m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E329	1	100mm	11m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E322	6	100mm	73m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E325	2	1x100mm + 1 Spare	10m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E341	6	100mm	40m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E354	6	100mm	146m	Diversion	19 of 20	Very High	Low	Moderate	Adverse
E359	4	2x100mm + 2 Spare	10m	Diversion	19 of 20	Very High	Low	Moderate	Adverse
E470	9	100mm	30m	Diversion	19 of 20	Very High	Low	Moderate	Adverse
E372	4	100mm	34m	Diversion	19 of 20	Very High	Low	Moderate	Adverse
E390	6	100mm	45m	Diversion	17 / 18 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
E397	2	100mm	22m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E403	1	100mm	36m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
E406	2	100mm	8m	Diversion	3 of 20	Very High	Low	Moderate	Adverse
E411	2	100mm	49m	Diversion	11 of 20	Very High	Low	Moderate	Adverse
E419	1	100mm	15m	Diversion	11 of 20	Very High	Low	Moderate	Adverse
E421	1	100mm (Spare)	17m	Diversion	11 of 20	Very High	Low	Moderate	Adverse
E425	16	100mm	15m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E429	4	100mm	4m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E436	2	100mm	12m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
E441	2	100mm	4m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E442	6	100mm	19m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E444	1	O/H Cable	10m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E445	1	O/H Cable	9m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E446	1	O/H Cable	13m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
E450	6	100mm	3m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E458	2	100mm	22m	Diversion	12 of 20	Very High	Low	Moderate	Adverse
E469	1	100mm	85m	Diversion	12 of 20	Very High	Low	Moderate	Adverse
E470	6	100mm	85m	Diversion	12 of 20	Very High	Low	Moderate	Adverse
E471	1	100mm	85m	Diversion	12 of 20	Very High	Low	Moderate	Adverse
E478	10	100mm	41m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
E480	1	100mm	3m	Diversion	20 of 20	Very High	Low	Moderate	Adverse
VM014	4	2x100mm + 2 Spare	19m	Diversion	8 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
VM021	4	2x100mm + 2 Spare	13m	Diversion	10 of 20	Very High	Low	Moderate	Adverse
VM025	4	2x100mm + 2 Spare	21m	Diversion	10 of 20	Very High	Low	Moderate	Adverse
VM035	4	2x100mm + 2 Spare	35m	Diversion	10 / 11 of 20	Very High	Low	Moderate	Adverse
VM050	4	100mm	195m	Diversion	12 / 13 of 20	Very High	Low	Moderate	Adverse
VM053	4	100mm	195m	Diversion	13 / 14 of 20	Very High	Low	Moderate	Adverse
VM059	4	100mm	139m	Diversion	14 / 15 of 20	Very High	Low	Moderate	Adverse
VM070	4	2x100mm + 2 Spare	69m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
VM079	4	2x100mm + 2 Spare	15m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
VM088	2	100mm	24m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
VM101	2	100mm	200m	Diversion	18 / 19 of 20	Very High	Low	Moderate	Adverse
VM103	2	100mm	21m	Diversion	19 / 20 of 20	Very High	Low	Moderate	Adverse
VM114	4	2x100mm + 2 Spare	37m	Diversion	19 / 20 of 20	Very High	Low	Moderate	Adverse
VM121	2	100mm	60m	Diversion	20 of 20	Very High	Low	Moderate	Adverse
VM127	2	100mm	38m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
VM136	2	100mm	38m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
VM138	2	100mm	14m	Diversion	06 of 20	Very High	Low	Moderate	Adverse
VM143	2	100mm	32m	Diversion	10 of 20	Very High	Low	Moderate	Adverse
VM146	2	100mm	115m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
VM148	2	100mm	77m	Diversion	16 / 17 of 20	Very High	Low	Moderate	Adverse

Reference Number	Quantity	Pipe Size	Proposed Length of Utility	Proposed Measures	Figure Sheet Reference	Baseline Rating	Impact Magnitude	Significance of Effects	Quality of Effects
VM150	2	100mm	102m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
VM152	1	O/H cable	12m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
VM153	1	O/H cable	10m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
VM154	2	100mm	59m	Diversion	17/18 of 20	Very High	Low	Moderate	Adverse
VM156	1	O/H cable	10m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
VM158	1	100mm	7m	Diversion	17 of 20	Very High	Low	Moderate	Adverse
BT003	2	110mm (Spare)	22m	Diversion	11 / 12 of 20	Very High	Low	Moderate	Adverse
BT004	4	110mm	22m	Diversion	11 / 12 of 20	Very High	Low	Moderate	Adverse
BT013	2	1x110mm + 1 Spare	20m	Diversion	17 / 18 of 20	Very High	Low	Moderate	Adverse
AC003	2	100mm	32m	Diversion	2 of 20	Very High	Low	Moderate	Adverse
AC010	2	100mm	11m	Diversion	4 of 20	Very High	Low	Moderate	Adverse
AC013	2	100mm	228m	Diversion	16 / 18 of 20	Very High	Low	Moderate	Adverse
AC017	2	100mm	57m	Diversion	16 of 20	Very High	Low	Moderate	Adverse
AC020	2	100mm	18m	Diversion	17 / 18 of 20	Very High	Low	Moderate	Adverse
AC030	2	100mm	109m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
AC033	2	100mm	25m	Diversion	18 of 20	Very High	Low	Moderate	Adverse
AC040	6	100mm	50m	Diversion	4 / 5 of 20	Very High	Low	Moderate	Adverse
Var	Var	Traffic Ducting	Var	Diversion	-	Very High	Low	Moderate	Adverse
Var	Var	Luas MT power ducting	Var	Diversion	-	Very High	Low	Moderate	Adverse
Var	Var	Luas MT comms ducting	Var	Diversion	-	Very High	Low	Moderate	Adverse

17.4.4 Operational Phase

17.4.4.1 Major Infrastructure and Utilities

The main impacts on major infrastructure and utilities will be associated with the Construction Phase. The potential impacts associated with the Operational Phase of the proposed Scheme have been assessed and are anticipated to be minimal.

However, there will be some demand on utilities by the proposed Scheme, once operational. Where utilities are located in whole or in part within the footprint of the proposed Scheme, the ability to undertake future utility maintenance or diversion activities would be affected by the presence of a live LRT. Similarly, future utility maintenance or diversion activities could affect LRT operations. During the Operational Phase, the impacts on utility services without mitigation will range from Medium to Very High magnitude as the timings for repair to a damaged utility may be affected, resulting in durations of service disruptions to increase. These impacts are outlined in the following sections.

The Royal Canal

Upon completion of the Construction Phase, there will be no interaction between the operation of the proposed Scheme and the Royal Canal. The potential impact on the towpath is defined in the EIAR and all impacts to access the structures have been assessed and mitigated. Minimum clearance height and width are provided to Waterways Ireland's requirements for the proposed bridge over the Royal Canal and Iarnród Éireann railway line. Therefore, there will be a Slight Operational Phase impact on this infrastructural asset as a result of the proposed Scheme.

Electricity

Once the proposed Scheme is operational, electricity will be supplied to Luas infrastructure via two new substations and allowances for the associated loading will be made. Power for operation of the proposed Scheme will be provided from the national grid (ESBN). Electricity will also be required to power such elements as street lighting, junction signalling and RTPI displays. Power for these types of equipment will be supplied via power cables which connect the equipment to existing electricity supplies. Electric charging facilities are to be provided at the Park & Ride facilities which will include solar panel provisions. There will be a Slight Operational Phase impact on electricity demand during the Operational Phase.

Water Usage

Permanent potable water supply is not proposed along the scheme after the Construction Phase is completed. Therefore, there will be an Imperceptible Operational Phase impact on this infrastructural asset as a result of the proposed Scheme.

Wastewater and Surface Water Runoff

The proposed Scheme will not require any foul sewer connection in order to operate. Therefore, there will be an Imperceptible Operational Phase impact anticipated on the foul sewer infrastructure as a result of the proposed Scheme.

Once the proposed Scheme is constructed, the hardstanding surface area will be larger in some places than before construction due to the construction of paved trackforms, Stops, larger paved areas, ancillary cycle infrastructure and footpaths. This larger surface area will result in additional surface water runoff. Impacts on water courses and water quality as a result of any potential increases in surface water runoff through existing outfalls are assessed in Chapter 10 (Water) of this EIAR. Drainage upgrades with SuDS measures allow a level of treatment and/or attenuation to be provided before discharge to the network, reducing the impact on water quality as well as preventing an increase in runoff rates. There will therefore be an Imperceptible Operational Phase impact anticipated on surface water drainage infrastructure.

Gas

The proposed Scheme will not require any gas connection to operate. Therefore, there will be an Imperceptible Operational Phase impact on this infrastructural asset as a result of the proposed Scheme.

Telecommunications

Once the proposed Scheme is operational, telecommunications links will be required for Luas infrastructure equipment and traffic signal controllers. Generally, this equipment will be connected to the local fibre optic cable network via ducting connected to fibre cabinets. This type of infrastructure is already in operation along the proposed Scheme route. Therefore, any additional telecommunications requirements by any new infrastructure will be minimal.

Therefore, the anticipated impact on telecommunications demand during the Operational Phase will be Slight.

17.4.4.2 Operational Phase Impact Summary

Table 17-18 provides a summary of the potential impacts on material assets associated with the Operational Phase of the proposed Scheme.

Table 17-18: Summary of Potential Operational Phase Impacts

Assessment Topic	Potential Impact
Major Infrastructure and Utilities	
Royal Canal	Slight
Electricity	Slight
Water Usage	Imperceptible
Wastewater	Imperceptible
Surface Water Runoff	Imperceptible
Gas	Imperceptible
Telecommunications	Slight

17.5 Mitigation and Monitoring Measures

This section outlines the measures which will be implemented / adhered to in order to ensure that there are no significant impacts on material assets as a result of the construction and operation of the proposed Scheme. The efficacy of these mitigation measures will be managed and monitored through the Construction Contract.

17.5.1 Construction Phase

17.5.1.1 Major Infrastructure and Utilities

Utilities infrastructure ensures reliable provision of power (electricity / gas), water and other services by service providers in accordance with service level agreements.

Reviews of relevant existing service networks and civil infrastructure have been carried out to identify potential impacts on existing service networks and the works have been designed to minimise the impact on major infrastructure. This includes, where possible, the avoidance of interactions with major utility infrastructure. However, where there are interfaces with existing utility infrastructure, and protection in place is not viable, diversion measures are proposed to prevent long-term interruption to the provision of the affected services. The proposals will ensure that efforts are made during construction so as to ensure disruption to any utility service is minimised and where necessary, subject to service level agreement, will take alternative measures to ensure continuity of the service whilst diverted.

Consultation have been undertaken with all the major utility companies regarding the design and consultations will continue through the design development.

All possible precautions will be taken by the appointed contractor to avoid unplanned interruptions to any services during the Construction Phase of the proposed Scheme. These measures will be outlined by the Contractor prior to excavation works being commenced. These will ensure the latest service records will be sought; service providers will be consulted and localised confirmatory surveys will be undertaken to verify the locations of services. Where works are required in and around known utility infrastructure, precautions will be implemented by the Contractor to protect the infrastructure from damage, in accordance with best practice methodologies and the requirements of the utility companies, where practicable. Protection measures during construction will include warning signs and markings indicating the location of utility infrastructure, safe digging techniques in the vicinity of known utilities, and in certain circumstances where possible, isolation of the section of infrastructure during works in the immediate vicinity.

Where diversions, or modifications, are required to utility infrastructure (as listed in Section 17.4), service interruptions and disturbance to the surrounding residential, commercial and/or community property may be unavoidable. Measures to minimise disruption will be planned in advance by the Contractor. These measures will ensure prior notification will be given to all impacted properties. Interruptions will be planned to be minimised with summer works preferred for electricity and a preference to avoid summer works involving water supply.

17.5.2 Operational Phase

During the Operational Phase, where utilities are located in whole or in part within the footprint of the proposed Scheme, the ability to undertake future utility maintenance or diversion activities would be affected by the presence of a live LRT. Similarly, future utility maintenance or diversion activities could affect LRT operations. Utilities infrastructure modifications during Construction will ensure reliable provision of power (electricity / gas), water and other services are provided across the live LRT in accordance with service level agreements which will mitigate impacts during the Operational Phase.

17.6 Residual Impacts

17.6.1 Construction Phase

During the Construction Phase, if mitigation measures were not put in place the impacts on utility services will range from Medium to Very High Impact Magnitude depending upon the type and duration of any disruption to a particular utility service. Therefore, if mitigation were not put in place, the significance of effects will range from Significant to Profound. However, with the mitigation measures as described being implemented, the impact magnitude will reduce to Low and the Significance of Effects decreases to Moderate to Slight.

17.6.2 Operational Phase

No significant residual impacts have been identified either in the Construction or Operational Phases of the proposed Scheme, whilst meeting the scheme objectives set out in Chapter 1 (Introduction).

17.7 Cumulative Impacts

The cumulative assessment of relevant plans and projects has been undertaken separately in Chapter 24 (Cumulative Impacts) of this EIAR.

17.8 Difficulties Encountered in Compiling Information

The information available for existing utilities is dependent on existing records and on selected site investigations. It may be expected that some of this information may have some errors or be incomplete. In order to avail of opportunities to improve the design in the light of experience on the ground or advancements in technology, minor modifications may be made to the current design at the detailed design stage. However, any such minor modifications, will be such that they will not give rise to any impacts which are more significant than those already identified and assessed in this EIAR.

17.9 References

Assessment, I. o. E. M. a., 2020. *Guide to: Materials and Waste in Environmental Impact Assessment - Guidance for a Proportionate Approach*, UK: Institute of Environmental Management and Assessment.

Commission, E., 2017. *Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report*, European Union: European Commission.

EPA, 2022. *Guidelines on the Information to be Contained in Environmental Impacts Assessment Reports*, Ireland: EPA.

European Union, 2011. *Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.*, European Union: European Union.

European Union, 2014. *Directive 2014/52/EU of 16 April 2014 on the assessment of the effect of certain public and private projects on the environment.* European Union: European Union.

Irish Concrete Federation, 2019. *Essential Aggregates Providing for Ireland's Needs to 2040*, Ireland: Irish Concrete Federation.

