



Chapter 18

Material Assets

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18 Material Assets

18.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) has considered the impacts on material assets associated with the Construction and Operational Phases of the Proposed Scheme.

During the Construction Phase, the potential material assets impacts associated with the development of the Proposed Scheme have been assessed. This has included both impacts on utilities and impacts arising from the importation of construction materials, which result from construction activities such as utility diversions, road resurfacing and road realignments.

During the Operational Phase, the potential material assets impacts associated with changes in utility demand from new infrastructure associated with the Proposed Scheme have been assessed. The assessment has been carried out according to best practice and guidelines relating to material asset assessment, and in the context of similar large-scale infrastructural projects.

The aim of the Proposed Scheme when in operation is to provide enhanced walking, cycling and bus infrastructure in Galway City, which will enable and deliver efficient, safe, and integrated sustainable transport movement. The objectives of the Proposed Scheme are described in Chapter 1 (Introduction) of this EIAR. The Proposed Scheme which is described in Chapter 4 (Proposed Scheme Description) of this EIAR has been designed to meet these objectives.

The design of the Proposed Scheme has evolved through the application of a comprehensive design iteration process with particular emphasis on minimising the potential for environmental impacts where practicable whilst ensuring the objectives of the Proposed Scheme are maintained. In addition, feedback received from the comprehensive consultation programme undertaken throughout the option selection and design development programme have been incorporated where appropriate.

18.2 Methodology

This Section presents the study area and appraisal method for the assessment of impacts on Material Assets.

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:

'In Directive 2011/92/EU this factor 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. Traffic is included because in effect traffic consumes transport infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.'

The EPA Guidelines specifically list built services, roads and traffic, and waste management as topics which fall into the category of material assets. This EIAR includes separate chapters for a number of those material assets as follows:

- Roads and traffic - Chapter 6 (Traffic & Transport); and
- Waste management - Chapter 17 (Waste & Resources).

Other items which may also be considered as material assets are included in their own respective chapters as follows:

- Employment and land-use assets - Chapter 10 (Population);
- Ecological assets - Chapter 12 (Biodiversity);
- Waterways, rivers and streams - Chapter 13 (Water);
- Soils, lands, and mining or quarrying potential - Chapter 14 (Land, Soils, Geology & Hydrogeology);
- Cultural heritage assets - Chapter 15 (Archaeological Cultural Heritage and Architectural Heritage); and
- Visual amenity assets - Chapter 16 (Landscape (Townscape) & Visual).

The focus of this Chapter is on built services, specifically:

- Major infrastructure and utilities; and
- Imported material, excluding the materials which will be covered in Chapter 17 (Waste & Resources).

Major infrastructure includes items such as canals, railway lines and Luas lines interacting with the Proposed Scheme. Existing utility information has been collated from the utility service providers and utility (ground penetrating radar (GPR)) surveys have been carried out, as required. In addition, as part of the design development, the diversions and changes required to existing utilities infrastructure have been considered.

Indicative estimates have been prepared of the quantities of materials that may be needed for construction in order to inform the impact assessment of the Proposed Scheme. For the purpose of this Chapter, imported materials includes materials which are sourced from outside the Proposed Scheme, namely the major construction materials (concrete granular fill / aggregate, asphalt and structural steel).

18.2.1 Study Area

The study area with regard to major infrastructure and utilities comprises all areas within the Proposed Scheme, including both permanent and temporary land take boundaries. All major infrastructure with which the Proposed Scheme interfaces have been identified.

The utility infrastructure, both above and below ground, have been identified within the study area of the Proposed Scheme through consultation with utility companies and service providers, complemented by utility surveys undertaken within the study area.

The volumes of major imported materials used in the construction of the Proposed Scheme will be considered in this assessment. The transportation of the material to the site has been considered within the assessment of construction traffic in Chapter 6 (Traffic and Transport) of this EIA.

18.2.2 Relevant Guidelines, Policy and Legislation

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

- EPA Guidelines (EPA 2022);
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017);
- National Roads Authority (NRA) Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA 2008); and
- Institute of Environmental Management and Assessment (IEMA) Guide to: Materials and Waste in Environmental Impact Assessment - Guidance for a Proportionate Approach (IEMA 2020).

18.2.3 Data Collection and Collation

Baseline data has been collected through carrying out a desk study, availing of the most up-to-date available data, at the time of writing. This comprises, the following sources:

- All major infrastructure and utilities which may be impacted by the Proposed Scheme including:
 - Electricity;
 - Water / Wastewater;
 - Surface Water Drainage;
 - Gas; and
 - Telecommunications.
- Existing utility information requested from utility companies and service providers:
 - Galway City Council;
 - Electricity Supply Board (ESB) Networks / EirGrid;
 - Gas Networks Ireland (GNI);

- Irish Water; and
- Telecommunications providers.
- The estimated type and quantity of the major materials which will need to be imported for the construction of the Proposed Scheme.

18.2.4 Appraisal Method for the Assessment of Impacts

The assessment of the potential impact of the Proposed Scheme on material assets has been undertaken having regard to the EPA Guidelines (EPA 2022). The following issues have been considered as part of the assessment of impacts:

- The potential for impacts on major infrastructure and public utilities and the need to adequately protect them during the Construction Phase;
- The requirement for connections to public utilities by the Proposed Scheme during both the Construction and Operational Phases; and
- The use of imported materials required for the construction of the Proposed Scheme.

Each impact has been categorised based on:

- The quality of the impact;
- The significance of the impact; and
- The duration of the impact.

The definition of these impact characteristics as per the EPA Guidelines is provided in Table 1.4 in Chapter 1 (Introduction) of this EIAR. These characteristics have been used to assess the quality and duration of all impacts.

Table 18.1 provides the significance criteria used to identify the significance of impacts on major infrastructure and utilities. For the purposes of assessing the impacts on major infrastructure and utilities, an impact is deemed to be not significant from a rating of Imperceptible to Moderate, and significant from Significant to Profound.

Table 18.1: Significance Criteria for Major Infrastructure and Utilities

| Significance Level | Criteria |
|--------------------|--|
| Profound | Where there is a continuous utility disruption* of more than a week; Where additional demand on a utility would consume all remaining capacity; or Where there is a permanent disruption* of a major piece of infrastructure. |
| Very Significant | Where there is a continuous utility disruption* of more than 48 hours; Where additional demand on a utility would significantly reduce the available capacity of that utility; or Where there is long-term disruption* of a major piece of infrastructure. |
| Significant | Where there is a continuous utility disruption* of more than 24 hours; Where there is significant additional demand on a utility; or Where there is a medium-term disruption* of a major piece of infrastructure. |

| Significance Level | Criteria |
|---|--|
| Moderate | Where there are discrete utility disruptions* of up to a number of hours for more than seven consecutive days; Where the additional demand on a utility is relatively large; or Where there is a short-term disruption* of a major piece of infrastructure. |
| Slight | Where there are discrete utility disruptions* of up to a number of hours for more than one day; Where additional demand on a utility is relatively small; or Where there is a temporary disruption* of a major piece of infrastructure. |
| Not Significant | Where there is a utility disruption* of up to a number of hours on a single day; Where additional demand on a utility is quantifiable but is too small to have any impact on capacity; or Where there is a brief disruption* of a major piece of infrastructure. |
| Imperceptible | Where there is no utility disruption* during diversion works; Where additional demand on a utility has no material change; or Where there are minor changes on a major piece of infrastructure which has no material impact on its usability. |
| *Disruption with respect to utilities refers to the shut-off of the service. Disruption with respect to major infrastructure refers to the closure or significant reduction in usability of the infrastructure. | |

For the significance of the impacts associated with imported materials, the IEMA Guide to: Materials and Waste in Environmental Impact Assessment (IEMA 2020) (hereafter referred to as the IEMA Guidance) has been used. For materials, the sensitivity of the receptor (Table 18.2) and the magnitude of the impact (Table 18.3) are assigned and used to determine the significance of the impact (Table 18.4).

Table 18.2: Sensitivity Criteria for Materials (IEMA 2020)

| Value | Description |
|-----------|--|
| | On balance, the key materials required for construction of a development ... |
| Very high | Are known to be insufficient in terms of production, supply and/or stock; and/or Comprise no sustainable features and benefits compared to industry-standard materials*. |
| High | Are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock; and/or Comprise little or no sustainable features and benefits compared to industry-standard materials*. |
| Medium | Are forecast (through trend analysis and other information) to suffer from some potential issues regarding supply and stock; and/or Are available comprising some sustainable features and benefits compared to industry-standard materials*. |
| Low | Are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock; and/or Are available comprising a high proportion of sustainable features and benefits compared to industry-standard materials*. |

| Value | Description |
|--|---|
| Negligible | Are forecast (through trend analysis and other information) to be free from known issues regarding supply and stock; and/or Are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials.* |
| *Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts. | |

Table 18.3: Assessing Magnitude for Materials (IEMA 2020)

| Value | Description |
|---------------------------------|---|
| | The assessment is made by determining whether through a development, the consumption of |
| Major | ...one or more materials is >10% by volume of the regional* baseline availability; |
| Moderate | ...one or more materials is between 6-10% by volume of the regional* baseline availability; |
| Minor | ...one or more materials is between 1-5% by volume of the regional* baseline availability |
| Negligible | ...no individual material type is equal to or greater than 1% by volume of the regional* baseline availability. |
| No change |no materials is required. |
| * or where justified, national. | |

Table 18.4: Determining Significance for Materials (IEMA 2020)

| Sensitivity (or Value) of Receptor | Magnitude of impact | | | | | |
|------------------------------------|---------------------|-----------|-------------------|--------------------|---------------------|---------------------|
| | | No change | Negligible | Minor | Moderate | Major |
| | Very High | Neutral | Slight | Moderate or Large | Large or Very Large | Very Large |
| | High | Neutral | Slight | Slight or Moderate | Moderate or Large | Large or Very Large |
| | Medium | Neutral | Neutral or Slight | Slight | Moderate | Moderate or Large |
| | Low | Neutral | Neutral or Slight | Neutral or Slight | Slight | Slight or Moderate |
| | Negligible | Neutral | Neutral | Neutral or Slight | Neutral or Slight | Slight |

In accordance with the IEMA Guidance an impact is deemed to be significant if it has a significance level of Moderate, Large or Very Large, while Neutral or Slight are deemed to be not significant.

18.3 Baseline Environment

18.3.1 Overview

There are a number of utilities in place along and crossing the Proposed Scheme, the majority of which are buried within and along the roadways. These utilities include:

- ESB electricity lines (high, medium and low voltage) and associated infrastructure;
- Gas Networks Ireland gas mains (high, medium and low pressure) and associated infrastructure;
- Irish Water potable water mains and associated infrastructure;
- Irish Water sewer lines (foul and combined sewers) and associated infrastructure;
- Local Authority surface water drainage network and associated infrastructure;
- Eir, ENET, BT and Virgin Media (VM) telecommunications lines and associated infrastructure;
- Local Authority traffic signal ducting.

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

18.3.2 Major Infrastructure and Existing Utilities

Table 18.5 lists the types of major infrastructure and utilities within the study area of the Proposed Scheme, along or crossing the Proposed Scheme. The majority of utilities are buried beneath the roads or footpaths, with a mixture of main trunk routes as well as branches off these main routes existing along the entire length of the Proposed Scheme. Aside from the listed utilities, there are no other major infrastructure items such as railway lines or canals within the Proposed Scheme.

Table 18.5: Utilities Within the Proposed Scheme Study Area

| Utility Provider | Service Type |
|----------------------|---|
| ESB | High voltage electricity (Underground and Overground) |
| | Medium voltage electricity (Underground and Overground) |
| | Low voltage electricity (Underground and Overground) |
| Gas Networks Ireland | High pressure gas |
| | Medium pressure gas |
| | Low pressure gas |
| Irish Water | Potable water and associated infrastructure |
| | Foul sewer lines |

| Utility Provider | Service Type |
|--------------------|--|
| | Combined sewer lines and associated infrastructure |
| | Storm water drainage and associated infrastructure |
| Telecommunications | Virgin Media |
| | Eir |
| | Enet |
| | BT |
| | Other Telecom and Fibre services |

18.3.3 Imported Material

The quantities of material which are currently imported to the area covered by the Proposed Scheme under baseline conditions are low. Currently material is only imported as part of maintenance activities which are undertaken on the existing roadways, cycle lanes, footpaths, utilities and verges. These activities would largely involve repair of road, cycle lane and footpath surfaces, repainting of road markings, drainage maintenance and repair, utility works, landscaping and winter maintenance.

A report entitled Essential Aggregates: Providing for Ireland's Needs to 2040 (Irish Concrete Federation 2019) was published in 2019 which details and quantifies Ireland's natural aggregate reserves. At the time of publication of that report, Ireland had approximately 500 active large commercial quarries, approximately 220 ready mixed concrete plants, 20 large scale precast concrete plants and 40 plants producing bitumen bound road surfacing materials.

The Irish Concrete Federation quantifies the annual production of these materials in Ireland on their website, with the 2019 figures (the most recent available) being as follows:

- Five million cubic metres of ready-mixed concrete;
- 135 million concrete blocks;
- 38 million tonnes of aggregates;
- Two million tonnes of bituminous road surfacing materials; and
- Two million square metres of paving products.

18.4 Potential Impacts

18.4.1 Major Infrastructure and Utilities

Construction of the Proposed Scheme has the potential to have an impact on existing infrastructure and utilities in order to accommodate changes to junction layouts or changes to carriageway widths. Where 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 18.6 to Table 18.9. The potential impacts would occur predominantly during the Construction Phase.

During the Operational Phase, some utilities will be required for the Proposed Scheme. This will include electricity connections for such elements as new street lighting, junction signalling and real time passengers information (RTPI) displays at bus stops. There will also be some amendments to existing surface water drainage to control and/or attenuate surface water runoff from any additional paved surfaces.

18.4.2 Imported Material

Material will be required to construct the Proposed Scheme. These materials will be comprised of standard construction materials, paving materials, landscaping materials, street furniture, paints, lighting, junction infrastructure materials and fill materials, as required. This Chapter covers the major materials needing to be imported to the site for the purposes of construction of the Proposed Scheme (i.e. concrete, granular fill / aggregate, asphalt and structural steel). Any materials arising from within the site which are to be reused within the Proposed Scheme (e.g. excavated soils) are assessed in Chapter 17 (Waste & Resources) of this EIAR.

18.4.3 ‘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 Neutral impact on infrastructure and utilities under the ‘Do Nothing’ scenario.

Similarly with respect to imported material, the ‘Do Nothing’ scenario means that there is no requirement to import material for the construction of the Proposed Scheme. Therefore, this material is not consumed by the Proposed Scheme, and the impact under the ‘Do Nothing’ scenario is Neutral.

18.4.4 Construction Phase

18.4.4.1 Utilities

The main Construction Phase impacts will arise from the requirement to divert utilities. The proposed utility diversions are listed in Table 18.6 to Table 18.9. To the best of the engineering experience and judgement available, and based on the available records and preliminary reasonable site investigations, it is expected that the utility diversion will be to the stated length. It is likely however that modifications to these proposed measures may be required at the detailed design / construction stage, and any such 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 presented in Table 18.13.

18.4.4.2 Electricity

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.

The electricity demand during the Construction Phase is considered to be a Negative, Not Significant and Short-Term impact.

A number of interfaces between the existing electricity infrastructure and the Proposed Scheme have been identified, some of which will require diversion of the infrastructure as outlined in Table 18.6 and shown in drawing series BCG-CCL__UTL-UL-00 to 13 in Volume 3 of this EIAR. As a result of these diversions there may be temporary local interruptions to the electricity provision during works on that infrastructure.

Table 18.6: Potential Major Electricity Infrastructure Diversions

| Reference No. | Asset/ Apparatus Impacted | Description of Works |
|---------------|--|--|
| G-UE-001 | ESB pole on Saint Francis Street. | Potential relocation of electric pole. |
| G-UE-002 | ESB box and a pole at the junction of Wood Quay and Walsh Terrace. | Potential relocation of the box and the pole. |
| G-UE-003 | Medium voltage underground duct on Dyke Road running north from Walsh's Terrace. | Potential diversion length of 62m for ESB utility |
| G-UE-004 | Low voltage overhead cable on intersection of St Brenda's Avenue & Bóthar Na mBan. | Potential diversion length of overhead cable to underground line of 38m. |
| G-UE-005 | Low voltage underground ducts on intersection of St Brenda's Avenue & Bóthar Na mBan. | Potential diversion length of 51m for ESB utility. |
| G-UE-006 | Electric pole and attached low voltage overhead line running north on Collage Road adjacent to Lough Atalia Road | Potential diversion length of 14m for ESB utility. |
| G-UE-007 | Electric pole on Collage Road | Potential diversion of electric pole and low voltage line. |
| G-UE-008 | Low voltage overhead line on Collage Road. | Potential diversion of electric pole. |
| G-UE-009 | Low voltage overhead line on College Road. | Potential diversion length of 20m for ESB utility |
| G-UE-010 | Low voltage underground cable on College Road. | Potential diversion length of 149m for ESB utility |

| Reference No. | Asset/ Apparatus Impacted | Description of Works |
|---------------|---|--|
| G-UE-011 | Medium voltage underground cable on College Road. | Potential diversion length of 192m for ESB utility |
| G-UE-012 | Medium voltage underground duct running east on Dublin Road | Potential diversion length of 202m for ESB utility |
| G-UE-013 | Medium voltage underground duct running east on Dublin Road | Potential diversion length of 134m for ESB utility |

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. Using the criteria as outlined in Section 18.2.4 and Table 18.1, where diversion of an electricity line is required which will result in the planned interruption of electricity provision, the worst-case potential impact will be Negative, Moderate and Temporary.

18.4.4.3 Water

The Construction Compounds and construction areas will require a water supply for welfare facilities within the Construction Compounds, as well as for dust suppression at certain construction areas where the conditions require it. The Construction Compounds will be connected into the 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 a Negative, Not Significant and Short-Term impact.

A number of interfaces between the existing water infrastructure and the Proposed Scheme have been identified, some of which will require diversion of the infrastructure as outlined in Table 18.7 and shown in drawing series BCG-CCL__UTL-UL-00 to 13 in Volume 3 of this EIAR. As a result of these diversions there may be temporary local interruptions to water provision during works on that infrastructure.

Table 18.7: Potential Major Water Infrastructure Diversions

| Reference No. | Asset/ Apparatus Impacted | Description of Works |
|---------------|--|--|
| G-UW-001 | 250mm diameter Asbestos Cement watermain on west side of Dyke Road. | Proposed diversion length of 57 m for watermain utility. |
| G-UW-002 | Watermain on Walsh's Terrence. | Propose protection measures for watermain utility. |
| G-UW-004 | Watermain on Merchants Road. | Proposed diversion length of 14m for watermain utility. |
| G-UW-005 | 76.2mm diameter Cast Iron and 152.4mm diameter Asbestos Concrete watermain on Dublin Road. | Proposed diversion length of 24m for both watermain utilities. |

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. Using the criteria as outlined in Section 18.2.4 and Table 18.1, where diversion of a watermain is required which will result in the planned interruption of water provision, the worst-case potential impact will be Negative, Moderate and Temporary.

18.4.4.4 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 runoff 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 will 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 demand on the wastewater network during the Construction Phase is considered to be a Negative, Not Significant and Short-Term impact.

A number of interfaces between the existing wastewater infrastructure and the Proposed Scheme have been identified, one of which will require diversion of the infrastructure as outlined in Table 18.8 and shown in drawing series BCG-CCL__UTL-UL-00 to 13 in Volume 3 of this EIAR. As a result of these diversions there may be temporary local interruptions to provision of wastewater services during works on that infrastructure.

Table 18.8: Potential Major Wastewater Infrastructure Diversions

| Reference No. | Asset/Apparatus Impacted | Description of Works |
|---------------|----------------------------|--|
| G-UF-001 | Manhole on University Road | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-002 | Manhole on Gaol Road | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-003 | Manhole on Corrib Terrace. | Proposed manhole cover adjustment to avoid clash with new kerb line. |

| Reference No. | Asset/Apparatus Impacted | Description of Works |
|---------------|-----------------------------|--|
| G-UF-004 | Manhole on Wood Quay. | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-005 | Manhole on Walsh's Terrace | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-006 | Manhole on Bóthar na mBan | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-007 | Manhole on Bóthar na mBan | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-008 | Manhole on Bóthar na mBan | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-009 | Manhole on Wood Quay. | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-010 | Manhole on Eglington Street | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-011 | Manhole on Rosemary Avenue. | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-012 | Manhole on Eyre Street | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-013 | Manhole on College Road | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-014 | Manhole on College Road | Proposed manhole cover adjustment to avoid clash with new kerb line. |
| G-UF-015 | Manhole on College Road | Proposed manhole cover adjustment to avoid clash with new kerb line. |

Wastewater utility diversions generally do not cause major interruption to customers using the infrastructure. Using the criteria as outlined in Section 18.2.4 and Table 18.1, where diversion of a sewer line is required which may result in some brief planned interruptions to the flow of wastewater, the potential impact will be Negative, Not Significant and Temporary.

There will be limited upgrade works required to the surface water drainage network in order to facilitate the changes to the road alignment and the impermeable surface area. The majority of this work will involve the construction of new road gullies to align with the new kerb line. There will also be a number of Sustainable Drainage System (SuDS) measures installed, namely rain gardens, bioretention areas, filter drains, swales, tree pits and permeable paving to control the flow of surface water. All surface water will continue to drain into existing networks and outfalls, apart from the proposed new outfall at Lough Atalia. Refer to Chapter 13 (Water) of this EIAR for further information on surface water drainage during the Construction Phase of the Proposed Scheme.

18.4.4.5 Gas

There will be no requirement for a connection to existing gas infrastructure during the Construction Phase of the Proposed Scheme and no impacts to gas mains have been identified. Therefore, it is predicted that there will be no significant impact associated with gas demand or supply during the Construction Phase.

18.4.4.6 Telecommunications

Telecommunications access will be required by the Construction Compounds.

The potential impact as a result of the demand on the telecommunications network during the Construction Phase is considered to be a Negative, Not Significant and Short-Term impact.

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 18.99 and shown in drawing series BCG-CCL__UTL-UL-00 to 13 in Volume 3 of this EIAR. As a result of these diversions there may be temporary local interruptions to the telecommunications provision during works on that infrastructure.

Table 18.9: Potential Major Telecommunications Infrastructure Diversions

| Reference No. | Utility Provider | Asset/Apparatus Impacted | Description of Works |
|---------------|------------------|--|---|
| G-UT-001 | EIR | EIR telecom Chamber on University Road. | Proposed relocation of EIR utility. |
| G-UT-003 | EIR | EIR duct on corner of Bóthar Na mBan and St Brendan's Avenue | Proposed diversion length of 21m for EIR utility |
| G-UT-004 | EIR | EIR telecom chamber on Eglinton Street. | Proposed relocation of EIR utility. |
| G-UT-005 | ENET | ENET telecom chambers on Rosemary Avenue. | Proposed relocation for ENET utility. |
| G-UT-006 | EIR | EIR telecom chamber and duct on corner of Prospect Hill and Bohemore Road. | Proposed diversion length of 16m and chamber relocation for EIR utility |

| Reference No. | Utility Provider | Asset/Apparatus Impacted | Description of Works |
|---------------|------------------|--|--|
| G-UT-007 | EIR | EIR chamber on Bohemore Road. | Proposed relocation of EIR utility. |
| G-UT-008 | ENET | ENET telecom chambers on Fairgreen road | Proposed relocation of ENET utility |
| G-UT-009 | EIR | EIR telecom chambers on Collage Road next to Galway City Hall. | Proposed relocation of EIR utility. |
| G-UT-010 | EIR | EIR telecom chambers on Collage Road. | Proposed relocation of EIR utility. |
| G-UT-011 | BT | BT telecom chamber on College Road. | Proposed relocation of BT utility. |
| G-UT-012 | VM | Virgin Media duct on Collage Road. | Proposed diversion of 63m for VM utility. |
| G-UT-013 | EIR | EIR ducts on Collage Road. | Proposed diversion length of 63m for EIR utility. |
| G-UT-014 | BT | BT ducts on Collage Road. | Proposed diversion length of 63m for BT utility. |
| G-UT-015 | EIR | EIR ducts on Collage Road. | Proposed diversion length of 190m for EIR utility. |
| G-UT-016 | VM | VM ducts on Collage Road. | Proposed diversion length of 214m for VM utility. |
| G-UT-017 | BT | BT ducts on Collage Road. | Proposed diversion length of 211m for BT utility. |
| G-UT-017 | EIR | EIR duct on north side of Dublin Road. | Proposed diversion of 30m Potential relocation of EIR utility |

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. Using the criteria as outlined in Section 18.2.4 and Table 18.1, where diversion of a telecommunications main is required which will result in the planned interruption of telecommunications provision, the worst-case potential impact will be Negative, Moderate and Temporary.

18.4.4.7 Imported Material

The Construction Phase will require the importation of a number of key construction materials for the Proposed Scheme works. This material will include items such as concrete, granular fill / aggregate, asphalt and structural steel. For a full description of the Construction Phase, refer to Chapter 5 (Construction) of this EIAR. An assessment of the climate impact from the carbon associated with these materials is included in Chapter 8 (Climate) of this EIAR. Table 18.10

provides a conservative estimate of the quantities of the major materials required to complete the Construction Phase of the Proposed Scheme.

Table 18.10: Conservative Quantity Estimates of Major Construction Materials Required by the Proposed Scheme

| Material | Estimated Quantity (tonnes) |
|-------------------|-----------------------------|
| Asphalt | 21,300 |
| Granular Material | 45,670 |
| Concrete | 34,000 |

The quantities of material listed in Table 18.10 represents a very small proportion of the Irish quantities manufactured per year as outlined in Section 18.2.4. The estimated quantity of concrete required represents less than one percent of the total quantity produced in Ireland per annum. Similarly, assuming the aggregate composition of asphalt is 90-95% and concrete is 60-80%, the estimated total aggregate quantity required by the Proposed Scheme represents less than one percent of the total aggregate quantity produced in Ireland per annum.

Importation of material to the Proposed Scheme site will be carried out throughout the Construction Phase, with different materials being required at different times. The main direct impacts associated with the importation of construction materials arises from the gathering / manufacture of the materials, as well as the fact that once the materials are used within the Proposed Scheme, they are no longer available for other uses. There will also be impacts associated with the importation of materials through the requirement of heavy goods vehicles (HGVs) for the delivery of the material and the use of materials.

Impacts are covered in more detail in Chapter 6 (Traffic & Transport), Chapter 7 (Air Quality), Chapter 8 (Climate), and Chapter 9 (Noise & Vibration) of this EIAR where relevant.

As the materials required for the Construction Phase of the Proposed Scheme are generally readily available, the sensitivity of the material will be Low. As the quantities of the materials required constitute less than one percent of the quantities produced per annum in Ireland, the magnitude of the impact will be Negligible. Therefore, the potential impact associated with the imported materials will be Negative, Slight and Long-Term.

18.4.4.8 Construction Phase Impact Summary

Table 18.11 provides a summary of the potential impacts on material assets associated with the Construction Phase of the Proposed Scheme.

Table 18.11: Summary of Potential Construction Phase Impacts

| Assessment Topic | Potential Impact |
|---|-----------------------|
| Major Infrastructure and Utilities | |
| Major Infrastructure | No significant impact |

| Assessment Topic | Potential Impact |
|---------------------------------|---------------------------------------|
| Electricity Demand | Negative, Not Significant, Short-Term |
| Electricity Interruption | Negative, Moderate, Temporary |
| Water Demand | Negative, Not Significant, Short-Term |
| Water Interruption | Negative, Moderate, Temporary |
| Wastewater Demand | Negative, Not Significant, Short-Term |
| Wastewater Interruption | Negative, Not Significant, Temporary |
| Gas Demand | No significant impact |
| Gas Interruption | No impact |
| Telecommunications Demand | Negative, Not Significant, Short-Term |
| Telecommunications Interruption | Negative, Moderate, Temporary |
| Imported Material | |
| Use of Imported Material | Negative, Slight, Long-Term |

18.5 Operational Phase

The main impacts on major infrastructure and utilities will be associated with the Construction Phase. However, there will be some demand on utilities by the Proposed Scheme once operational. These impacts are outlined in the following sections.

18.5.1 Electricity

Once the Proposed Scheme is operational, electricity will 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 an electricity supply cabinet.

The potential impact on electricity demand during the Operational Phase will be Negative, Not Significant and Long-Term.

18.5.2 Water Usage

The Proposed Scheme will not require any water to operate. Therefore, there is no significant Operational Phase impact anticipated on water infrastructure as a result of the Proposed Scheme.

18.5.3 Surface Water Runoff

Once the Proposed Scheme is constructed, the hardstanding surface area will be larger in some places than before construction due to the construction of wider carriageways, cycle infrastructure and footpaths. This larger surface area will result in additional surface water runoff. Drainage upgrades and SuDS measures have been included as part of the design of the Proposed Scheme to attenuate any additional run-off.

There will therefore be no significant Operational Phase impacts anticipated on surface water drainage infrastructure. Impacts on water courses and water quality as a result of any potential increases in surface water run-off through existing outfalls is assessed in Chapter 13 (Water) of this EIAR.

18.5.4 Gas

The Proposed Scheme will not require any gas connection to operate. Therefore, there is no significant Operational Phase impact anticipated on gas infrastructure as a result of the Proposed Scheme.

18.5.5 Telecommunications

Once the Proposed Scheme is operational, telecommunications links will be required for such equipment as traffic signal controllers, and for RPTI displays at bus stops and on bus information apps. Generally, this equipment will be connected to the local fibre optic cable network via ducting connected to fibre cabinets. In the case of the real time bus information, cellular communications (3G / 4G / 5G) will be provided. 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 Negative, Imperceptible and Long-Term.

18.5.6 Imported Material

Materials will be required during the Operational Phase for maintenance of the infrastructure. This will include repair of roadway, cycleway, and footway surfaces, as well as repair of street furniture (including bus shelters and poles), and landscaping. However, as the Proposed Scheme largely involves the upgrade and alteration of existing roadways, most of the material required for maintenance of the Proposed Scheme would have already been required for the maintenance of the existing roadways in the absence of the Proposed Scheme.

As the materials required for the Operational Phase of the Proposed Scheme are generally readily available, the sensitivity of the material will be Low. As the quantities of the material required for maintenance will be lower than the quantities required for the Construction Phase and therefore constitute less than one percent of the quantities produced per annum in Ireland, the magnitude of the impact will be Negligible. Therefore, the potential impact associated with the imported materials will be Neutral and Long-Term.

Operational Phase Impact Summary

Table 18.12 provides a summary of the potential impacts on material assets associated with the Operational Phase of the Proposed Scheme.

Table 18.12: Summary of Potential Operational Phase Impacts

| Assessment Topic | Potential Impact |
|---|--------------------------------------|
| Major Infrastructure and Utilities | |
| Major Infrastructure | No significant impact |
| Electricity | Negative, Not Significant, Long-Term |
| Water Usage | Negative, Not Significant, Long-Term |
| Wastewater | Negative, Not Significant, Long-Term |
| Surface Water Runoff | No significant impact |
| Gas | No significant impact |
| Telecommunications | Negative, Imperceptible, Long-Term |
| Imported Material | |
| Use of Imported Material | Neutral, Long-Term |

18.6 Mitigation and Monitoring Measures

The following outlines the measures which will be 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. No monitoring measures are considered to be required for material assets.

18.6.1 Construction Phase

The Proposed Scheme has been designed to minimise the impact on utility infrastructure as far as practicable.

Where there are interfaces with existing utility infrastructure, protection in place or diversion as necessary is proposed to prevent long-term interruption to the provision of the affected services.

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. This will include appropriate investigation by the appointed contractor to identify the precise location of all utility infrastructure within the working areas prior to the commencement of excavation works.

Where works are required in and around known utility infrastructure, precautions will be implemented by the appointed 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.

Consultation has been undertaken with the major utility companies regarding the design, potential interfaces and measures required to protect or divert the infrastructure which is interfacing with the Proposed Scheme design. All utility companies for which diversions are proposed will continue to be consulted when designing any diversions to ensure that proposed diversions conform to the utility provider's requirements, where practicable, and to ensure that service interruptions are kept to a minimum.

Where diversions, or modifications, are required to utility infrastructure (as listed in Section 18.4.4), service interruptions and disturbance to the surrounding residential, commercial and/or community property may be unavoidable. Where this is the case, it will be planned by the appointed contractor in consultation with each utility provider, as relevant. Required service interruptions will generally only occur for a set period of time per day (a set number of hours not exceeding eight hours where reasonably practicable) and will generally not be continuous for full days at a time. Prior notification will be given to all impacted properties. This notification will include information on when interruptions and works are scheduled to occur and the duration of such interruption. Any required works will be carefully planned by the appointed contractor to ensure that the duration of interruption is minimised in so far as is practicable.

18.6.2 Imported Materials

The Proposed Scheme has been designed to minimise the amount and extent of major construction works required, and therefore minimise the quantities of construction materials required. The majority of the Proposed Scheme will require minimal intervention, being comprised of lane reconfigurations, road marking layout changes, resurfacing works and construction of segregated cycle tracks.

Consideration will be given to the sustainability of material being sourced for the construction of the Proposed Scheme by the appointed contractor.

In so far as is reasonably practicable, materials required for the construction of the Proposed Scheme will be sourced locally to reduce the amount of travelling required to get the material to the site. Key issues to be considered when sourcing materials for the Construction Phase will include the source, the material specification, production and transport costs, and the availability of the material. Only quarries which are included in Local Authority quarry registers will be used by the appointed contractor to source any quarried material.

Construction materials will be managed on site by the appointed contractor in such a way as to prevent over-ordering and waste.

Materials will be stored in appropriate storage areas or receptacles to reduce the potential for damage requiring replacement. 'Just-In-Time' ordering principles will be implemented by the appointed contractor where practicable to reduce the potential for over-ordering.

18.6.3 Operational Phase

Due to the measures which are included within the design and the fact that impacts are anticipated to be minimal, there are no specific mitigation measures necessary during the Operational Phase. The predicted post mitigation impact is therefore unchanged as summarised in Table 18.14.

18.7 Residual Impacts

18.7.1 Construction Phase

Due to the fact that impacts are anticipated to be minimal and mitigation measures are largely inherent in the design of the Proposed Scheme, the predicted post mitigation impacts are unchanged as summarised in Table 18.13.

Table 18.13: Summary of Predicted Construction Phase Impacts Following the Implementation of Mitigation Measures

| Assessment Topic | Potential Impact (Pre-Mitigation) | Predicted Impact (Post Mitigation) |
|---|---------------------------------------|---------------------------------------|
| Major Infrastructure and Utilities | | |
| Major Infrastructure | No significant impact | No significant impact |
| Electricity Demand | Negative, Not Significant, Short-Term | Negative, Not Significant, Short-Term |
| Electricity Interruption | Negative, Moderate, Temporary | Negative, Moderate, Temporary |
| Water Demand | Negative, Not Significant, Short-Term | Negative, Not Significant, Short-Term |
| Water Interruption | Negative, Moderate, Temporary | Negative, Moderate, Temporary |
| Wastewater Demand | Negative, Not significant, Short-Term | Negative, Not significant, Short-Term |
| Wastewater Interruption | Negative, Not significant, Temporary | Negative, Not significant, Temporary |
| Gas Demand | No significant impact | No significant impact |
| Gas Interruption | No impact | No impact |
| Telecommunications Demand | Negative, Not Significant, Short-Term | Negative, Not Significant, Short-Term |
| Telecommunications Interruption | Negative, Moderate, Temporary | Negative, Moderate, Temporary |
| Imported Material | | |
| Use of Imported Material | Negative, Slight, Long-Term | Negative, Slight, Long-Term |

There will be no significant residual impacts on major infrastructure and utilities or as a result of imported material during the Construction Phase.

18.7.2 Operational Phase

Due to the measures which are included within the design and the fact that impacts are anticipated to be minimal, there are no specific mitigation measures necessary during the Operational Phase. The predicted post mitigation impact is therefore unchanged as summarised in Table 18.14.

Table 18.14: Summary of Predicted Operational Phase Impacts Following the Implementation of Mitigation Measures

| Assessment Topic | Potential Impact |
|---|--------------------------------------|
| Major Infrastructure and Utilities | |
| Major Infrastructure | No significant impact |
| Electricity | Negative, Not Significant, Long-Term |
| Water Usage | Negative, Not Significant, Long-Term |
| Wastewater | Negative, Not Significant, Long-Term |
| Surface Water Runoff | No significant impact |
| Gas | No significant impact |
| Telecommunications | Negative, Imperceptible, Long-Term |
| Imported Material | |
| Use of Imported Material | Neutral, Long-Term |

There will be no significant residual impacts on major infrastructure and utilities or as a result of imported material during the 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 of this EIAR.

18.8 References

Environmental Protection Agency (EPA) (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

National Roads Authority (NRA) Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA 2008)

European Commission (EC) (2017). Environmental Impact Assessment of Projects - Guidance on the Preparation of the Environmental Impact Assessment Report

Institute of Environmental Management and Assessment (IEMA) (2020). IEMA Guide to: Materials and Waste in Environmental Impact Assessment - Guidance for a Proportionate Approach

Irish Concrete Federation (2019). Essential Aggregates Providing for Ireland's Needs to 2040

Directives and Legislation

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

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment