

# **CLONASLEE FLOOD RELIEF SCHEME**

Environmental Impact Assessment Report Chapter 15: Material Assets - Waste and Utilities



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# Glossary

Term	Meaning
Environmental Impact Assessment	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive 2011/92/EU as amended by EIA Directive 2014/52/EU and European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018), including the publication of an Environmental Impact Assessment (EIA) Report.
High-Pressure Gas Network	Overland gas pipelines operating at pressure higher than 100 bar and in the range of 100 to 200 bar.
Low-Pressure Gas Network	Gas distribution pipeline designed to operate or intended to be operated at a pressure of not more than 700 kPa.
Mitigation Measures	Measures envisaged to avoid, prevent or reduce any identified significant adverse effects on the environment.
Overhead lines	A structure used in electric power transmission and distribution to transmit electrical energy along large distances.

# Acronyms

Term	Meaning
CDWMP	Construction and Demolition Waste Management Plan
CEMP	Construction Environmental Management Plan
CIA	Cumulative Impact Assessment
EC	European Commission
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
EU	European Union
FRS	Flood Relief Scheme
GNI	Gas Networks Ireland
HSA	Health and Safety Authority
ICW	Integrated Constructed Wetland
IEMA	Institute of Environmental Management and Assessment
LCC	Laois County Council
mBGL	Metres below ground level
kV	Kilovolt
OPW	Office of Public Works
OSi	Ordnance Survey Ireland
ТІІ	Transport Infrastructure Ireland
WMP	Waste Management Plan
Zol	Zone of Influence

# 15 MATERIAL ASSETS: WASTE & UTILITIES

# 15.1 Introduction

This chapter of the EIAR identifies, describes and presents an assessment of the likely significant effects of the Proposed Scheme on Material Assets Waste Management and Utilities. The assessment examines the potential impacts during the construction, operational and maintenance phases of the Proposed Scheme. A full description of the Proposed Scheme is detailed within **Chapter 5 – Project Description**.

Material Assets within the context of utilities and waste facilities are defined within the Environmental Protection Agency (EPA, 2015) "Draft Advice Notes for Preparing Environmental Impact Statements" as *'resources that are valued and that are intrinsic to specific places*. The (EPA, 2022) "Guidelines on the Information to be contained in Environmental Impact Assessment Reports" states *'material assets can now be taken to mean built services and infrastructure'* and lists built services and waste management as typical topics for consideration under material assets. This assessment investigates built services including electricity, telecommunications, gas, water supply, sewerage infrastructure and waste management. Of particular note in Clonaslee is the Potable Water Treatment Plant serving the locality and the town of Tullamore and an Integrated Constructed Wetland (ICW) Wastewater Treatment Plant.

This chapter also investigates waste likely to arise from the site enabling works, construction, operation, and maintenance works required for the Proposed Scheme. The chapter outlines how materials and waste arising from the Proposed Scheme will be managed in accordance with the principles of the waste hierarchy as outlined in the European Communities revised Waste Framework Directive i.e. prevention, reduction, preparing for reuse, recycling, other recoveries, and, as the least preferred option, disposal (which includes landfilling and incineration without energy recovery). Refer to **Appendix 15.1 Waste Management Plan** for details.

# 15.2 Legislation, Policy and Guidance

There is no specific legislation or guidance relating to the assessment of Material Assets: Waste and Utilities. The material assets: utilities and waste impact assessment has therefore followed the overall methodology and guidance relating to the process and preparation as set out in **Chapter 1: Introduction**. The impact of the Proposed Scheme on utilities has been assessed for the construction and operational phases by considering the impacts to electricity, telecommunications, gas, water supply and sewerage infrastructure.

Specific legislation relating to waste management which has been considered within this chapter of the EIAR includes:

- Waste Framework Directive (2008/98/EU), as amended by Directive (EU) 2018/851.
- Waste Management Acts 1996, as amended.
- European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), as amended.

It is noted that the Waste Directive Regulations 2011, as amended, set out the exclusions from the scope of the 2008 directive which includes the following under Article 3(1)(c):

"... uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which is was excavated".

Materials arising from the Proposed Scheme which fall within this provision are therefore not subject to the requirements of EU and national waste legislation.

Furthermore, Article 27 of the same regulations allows an economic operator to determine, under certain circumstances, that a material is a by-product and is not a waste. Article 27 was introduced into Irish law to implement Section 5 of the Waste Framework Directive (2008/98/EU), as amended. Excess soil and stone produced during construction activities will be classed as a by-product if it meets each of the four by-product conditions as follows:

- a. Further use of the substance or object is certain.
- b. The substance or object can be used directly without any further processing other than normal industrial practice.

- c. The substance or object is produced as an integral part of a production process.
- d. Further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

The key components of EU, national and local policy legislation and guidance which have influenced the Proposed Scheme are summarised as follows:

- Prevention of waste is the preferred option such that any surplus materials generated are reused within the Proposed Scheme. This means that products, materials, and resources are maintained at their highest value in the economy for as long as possible, the generation of waste is minimised, and the principles of circular economy are implemented.
- Where construction waste is generated, it should be source-separated to facilitate reuse, recycling and maximise diversion of waste from landfill.
- Where waste cannot be prevented, reused, or recycled, it should be transported and disposed of in accordance with the Waste Management Acts 1996 to 2016, as amended.
- Waste may only be transferred from site by a waste collection permit holder and delivered to an authorised waste facility i.e. a facility which holds a Certificate of Registration, Waste Facility Permit or Waste Licence.

The methodology and associated impact assessment has had regard to the general guidance regarding the undertaking of an EIA (as presented in **Chapter 1: Introduction**) and the following topic-specific guidance:

- EPA (2021) Best Practice Guidelines for the Preparation of Resources & Waste Management Plans for Construction and Demolition Projects.
- IEMA (March 2020) Guide to Materials and Waste in Environmental Impact Assessment.
- EPA (2020) Guidance on Waste Acceptance Criteria at Soil Recovery Facilities.
- EPA (2020) By-Product Guidance Note, A Guide to By-products and Submitting a By-product Notification Under Article 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011).
- EPA (2019) Guidance on Stone and Soil By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011.
- TII (2017) The Management of Waste from National Road Construction Projects, GE-ENV-01101.

# 15.3 Methodology

## **15.3.1 Zone of Influence**

There are no guidelines or criteria to define the size of the zone of influence (ZoI) for the assessment of material assets. The material assets study area has been defined by RPS for the purpose of this assessment as the area in which there is potential for direct and indirect impact on built services (including waste facilities) because of the Proposed Scheme. This includes the site of the Proposed Scheme where potential for direct impacts may occur and an area extending 500m from the site boundary where there is potential for indirect impacts on receptors as a result of disruption to built services. The ZoI, in terms of waste generation and treatment, will be the Eastern-Midland Waste Region.

The National Waste Management Plan for a Circular Economy outlines policies and objectives to enhance waste management practices in Ireland including the Eastern-Midland Waste Region, aiming for a more sustainable and circular approach.

The plan focuses on capturing valuable materials through recycling, reuse, and repair. It aims to optimize circularity by ensuring efficient resource use and minimizing waste disposal which is relevant for the Clonaslee FRS.

Local authorities, including Laois County Council, play a crucial role in implementing waste management policies and complying with relevant legislation. The plan provides guidance to align local practices with national objectives.



# **15.3.2** Sources of Information to Inform the Assessment

Information on material assets within the study area was collected through a detailed desktop review of available data, details of which are outlined in **Table 15-1**.

Table 15-1: Summary of key Desktop Reports

Title	Source / Author	Year
Laois County Development Plan 2021 – 2027	Laois County Council (LCC)	2022
National Waste Management Plan for a Circular Economy 2024 - 2030	Regional Waste Management Planning Offices	2024
Base mapping	OSi	2022
Base mapping	Google Earth imagery	2022
GeoDirectory	An Post	2024
Utility Providers existing assets data (to inform baseline mapping for the assessment)	Gas Networks Ireland (GNI), EirGrid, Electricity Supply Board (ESB), Irish Water	2024
Utilities and topographical surveys (including ground penetration radar [GPR] and associated scheme-specific reports prepared by third parties).	Supplied by Laois County Council (LCC)	2024
ComReg Site Viewer	ComReg	2024
EPA Website	EPA	2024
National Waste Statistics – Summary Report for 2020	EPA	2021
Construction and Demolition Waste Stone and Soil Recovery / Disposal Capacity	Dublin City Council (on behalf of the Regional Waste Management Offices)	2015
Construction and Demolition Waste Stone and Soil Recovery / Disposal Capacity Update Report	Regional Waste Management Planning Offices	2020
National Hazardous Waste Management Plan 2021- 2027	EPA	2021

## 15.3.3 Key Parameters for Assessment

The key parameters for assessment that have potential to result in likely significant effects on waste and utilities are outlined below:

- Degree of conflicts with built services including electricity networks, communication networks, water supplies, drainage, water abstraction/treatment and wastewater treatment;
- Level of temporary diversions / interruptions to service during construction;
- Requirements for alterations or permanent reinstatement of services e.g. relocation, provision of new or modified services, changes to maintenance access arrangements;
- Waste emissions arising from the Proposed Scheme which are considered in terms of the disposal route to recycling and/or recovery and/or landfill and/or energy recovery;
- Other material arising from the Proposed Scheme, i.e. soil and stone, is considered in terms of sustainable diversion from the disposal/recovery tier via by-product classification to other facilities as part of the Article 27 notification process.

## 15.3.4 Assessment Criteria and Significance

The following tables (**Table 15.2** to **15.5**) consider the sensitivity of the various utilities and waste facilities. The magnitude of the impacts that could arise as a result of the Proposed Scheme and the significance of impacts has also been considered. These assessments are broadly based on the requirements of the EPA Guidelines (2022).

Sensitivity	Definition
High	<ul> <li>Utilities: High importance, national scale and limited potential for substitution:</li> <li>High Pressure (HP) gas pipelines.</li> <li>Electricity overhead lines (OHL) and underground cables &gt;38 kV.</li> <li>Transmission pipelines (potable water).</li> <li>Large scale foul water infrastructure.</li> </ul>
	Waste: No or extremely limited capacity / outlets to accept waste in region.
Moderate	<ul> <li>Utilities: High or medium importance, regional scale, limited potential for substitution:</li> <li>Medium Pressure (MP) and Low Pressure (LP) gas pipelines.</li> <li>Electricity OHL and underground cables &lt;38 kV.</li> <li>Distribution pipelines (potable water).</li> <li>Small scale foul water infrastructure and local collection systems.</li> <li>Telecommunications infrastructure.</li> </ul>
	Waste: Limited capacity / outlets to accept waste in region.
Minor	<ul> <li>Utilities: Low or medium importance, local scale:</li> <li>Local connections for water.</li> <li>Electricity OHL and underground cables – low voltage.</li> <li>Waste: Capacity / outlets available to accept waste in region.</li> </ul>
Negligible	<ul> <li>Utilities: Low importance, local scale:</li> <li>Domestic connections for service.</li> <li>Small recreational vessels and associated infrastructure.</li> <li>Waste: No expected issues with capacity / available outlets to accept waste in region.</li> </ul>

#### Table 15-2: Definition of Terms Relating to the Sensitivity

#### Table 15-3: Definition of Terms Relating to the Magnitude of an Impact

Magnitude of impact	Definition
High	<b>Utilities:</b> Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).
	<b>Waste:</b> Waste generated by the development will reduce regional* landfill / incineration capacity by >10% for inert, non-hazardous waste.
	Waste generated by the development will reduce national landfill / incineration capacity by >1% for hazardous waste.
Moderate	<b>Utilities:</b> Loss of resource, but not adversely affecting integrity of resource; partial loss of/damage to key characteristics, features or elements (Adverse).
	<b>Waste:</b> Waste generated by the development will reduce regional* landfill / incineration capacity by 6-10% for inert, non-hazardous waste.
	Waste generated by the development will reduce national landfill / incineration capacity by <0.5-1 for hazardous waste.
Minor	<b>Utilities:</b> Some measurable change in attributes, quality or vulnerability, minor loss or, alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	<b>Waste:</b> Waste generated by the development will reduce regional* landfill / incineration capacity by 1-5% for inert, non-hazardous waste.
	Waste generated by the development will reduce national landfill / incineration capacity by <0.1- 0.5% for hazardous waste.
Negligible	<b>Utilities:</b> Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	<b>Waste:</b> Waste generated by the development will reduce regional landfill / incineration capacity by <1% for inert, non-hazardous material.

Waste generated by the development will reduce national landfill / incineration capacity by <0.1% for hazardous material.

The definitions for significance (of impacts) in Table 15.4 are defined as per the EPA Guidelines (2022).

#### Table 15-4: Definition of Terms relating to the Significance of Effect Levels

Significance of Impacts	EPA (2022) Guidelines Definition	Criteria for Utilities / Built Services
Imperceptible	An effect capable of measurement but without significant consequences	Minor works or works in proximity only to service which does not affect the quality, or lead to interruption of a service.
Slight	An effect which causes noticeable changes in the character of the environment but without significant consequences.	Local short-term temporary disruption/interruption to service or quality of service.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.	Planned outage or noticeable change to the quality of a service that affects a smaller number of residences and/or commercial/business properties; diversion of high voltage ESB network (38 kV or above).
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspects of the environment.	Planned outage to service that affects a large number of residences and/or commercial/business properties and/or of a longer term duration.
Profound	An effect which obliterates sensitive characteristics.	Unplanned and complete loss of service; where material asset of regional or national importance is permanently damaged or lost.

The significance of the effect upon built infrastructure is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The range of significance of effect is presented in **Table 15-5**. The final assessment for each effect is based upon expert judgement.

For the purposes of this assessment, any effects with a significance level of slight or less have been concluded to be not significant in terms of the EIA Regulations.

	Magnitude of impact				
Sensitivity of receptor		Negligible	Minor	Moderate	High
	Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight
	Minor	Imperceptible or slight	Imperceptible or slight	Slight	Slight or moderate
	Moderate	Imperceptible or slight	Slight	Moderate	Moderate or major
	High	Slight	Slight or moderate	Moderate or major	Major or profound

Table 15-5: Matrix used for the Assessment of the Significance of the Effect

## 15.3.5 Data Limitations

There were no difficulties or limitations encountered when carrying out this assessment.

## 15.3.6 Surveys

A Ground Penetrating Radar (GPR) Survey was carried out by McDonald Surveys (MCDS) in April 2024 to locate services in the proposed works areas and inform the scheme design. Of particular note are the following:

- **Brittas Wood:** Three watermains parallel to and in the line of the Brittas Wood access pathway. These pipelines have depths ranging from 0.60 m to 0.80 m. The pipelines are part of the water abstraction infrastructure of Uisce Éireann.
- **Chapel Street:** This road is contains services across its full width including two watermains supplying the Tullamore area and one local supply watermain; a foul gravity sewer running from south to north, leading to the Integrated Constructed Wetlands (ICW) wastewater treatment plant; a telecom duct; and two unidentified services.
- Tullamore Rd & The ICW: In this area there are foul sewers entering the ICW and the Tullamore watermains which run through the field to the east of the road.

## 15.3.7 Consultation

A utility data request was made to utility providers to gather the recorded information on built infrastructure in the area. Also, site visits were coordinated with the representatives of Offaly County Council and Uisce Éireann to discuss the water infrastructure. Note that Offaly County Council have historically operated the Potable Water Treatment Plant and abstraction boreholes as this is the main supply for Tullamore. There is a summary of Key Consultation to Suppliers and Stakeholders that RPS has contacted at this stage in **Table 15-6**.

Date	Consultee	Response/Action	Chapter
2023/2024	Uisce Eireann	Site visits had been carried out since 2023 to the ICW and the Wastewater Treatment Plant. Uisce Éireann have provided records regarding to the foul server running to the Wastewater Treatment Plant.	Identified areas are detailed in <b>Section 15.4.1.3</b>
November 2023	Offaly Co Co.	Offaly Co Co. water services provided information on water abstraction from boreholes and the river and the associated infrastructure and pipelines in Brittas Wood and Chapel Street.	Identified areas are detailed in Section 15.4.1.2.
February 2024	Gas Networks Ireland	No network within the area.	No action required.
February 2024	Eir	Services along Chapel Street on the opposite side of the proposed reinforced concrete flood defence wall. An Eircom Overhead route passes through the Tullamore Rd field where the Area 3 embankment is proposed.	Identified areas are detailed in <b>Section 15.5.1.1</b> .
February 2024	Enet	No network within the area.	No action required.
February 2024	ESB	Overhead ESB lines are present in Chapel Street and, at the entrance of Brittas Wood above proposed Compound A as part of the Proposed Scheme. Street lighting on Chapel St is fixed to ESB poles	Identified areas are detailed in Section 15.5.1.1
March 2024	Virgin Media	No network within the area.	No action required.

Table 15-6: Summary of Ke	y Consultation	Suppliers and	Stakeholders	contacted relevant	to Material	Assets
	,					

# **15.4 Description of the Existing Environment**

## 15.4.1 Baseline Environment Utilities

As mentioned above, a review of existing utilities and associated infrastructure was undertaken as part of the design development process. A utility data request was made to suppliers as the minimum first step. Additionally, a Ground Penetrating Radar (GPR) survey was conducted in April 2024 to confirm the existence of services and provide a more accurate location. The utilities identified within, or adjacent to, the footprint of the Proposed Scheme include:

- Electricity Supply: ESB Networks
- Local Authority Street Lighting: Laois County Council
- Water Mains and Foul Sewers: Uisce Éireann
- Telecommunications: Eir
- Surface Water Drainage: Laois County Council

The services within the Proposed Scheme Area are identified in the subsections below.

## **15.4.1.1 Electricity Supply**

The identified ESB power infrastructure consists of Medium Voltage (MV) and Low Voltage (LV) overhead lines (OHL) across two locations within the Proposed Scheme area. There is no indication of underground ESB cables within the Proposed Scheme Area.

**Area 1 - Brittas Wood:** An LV OHL is present above the proposed compound area and at the entrance of the Brittas Wood Path.



Figure 15-2 Area 1: ESB Services

**Area 2 - Chapel Street:** Adjacent to the existing stone wall along the Clodiagh River, there is an LV overhead line that serves the properties on the street as the public lighting on the street. Approximately 100 linear metres of this line are within the proposed works area. There is also an existing MV OHL that crosses above the works area.



Figure 15-3 Area 2: ESB Services

**Area 3 - Tullamore Rd:** Supply to the Integrated Constructed Wetlands Treatment plant is via a MV OHL that passes just north of the works area.



Figure 15-4 Area 3: ESB Services

## 15.4.1.2 Water Supply

#### 15.4.1.2.1 Area 1 - Brittas Wood

The water supply for the town of Tullamore, Co. Offaly is sourced in Brittas Wood in Clonaslee. Abstraction boreholes and raw water pipes are located within the proposed Works Area for the proposed embankment in Area 1. Three watermains run parallel to the wood path. These pipelines have depths ranging from 0.60 m. to 0.80 m, as measured during the GPR survey. The pipelines and abstraction boreholes are shown in **Figure 15-5**.



#### Figure 15-5: Area 1: Water abstraction pipelines

#### 15.4.1.3 Distribution Watermains

#### 15.4.1.3.1 Area 1 - Brittas Wood

There are three distribution watermains coming from the Water Treatment Plant; the main trunk main supply to Tullamore; a local supply main; and a raw 'untreated' water supply main that serves a distillery in Tullamore. **Figure 15-5** shows the locations of these watermains as per Uisce Éireann's records and confirmed by the GPR survey.

# 15.4.1.3.2 Area 2 – Chapel St

Each of the watermains mentioned in section 15.4.1.3.1 above are within the zone of influence of the Works in Area 2.



Figure 15-6 Area 2: Distribution Watermains

## 15.4.1.3.3 Area 3 - ICW

The trunk watermain that supplies Tullamore Town also passes through the Area 3 Works Area.



Figure 15-7 Area 3: Distribution Watermains

## 15.4.1.4 Foul Sewers

#### 15.4.1.4.1 Area 1 – Brittas Wood

There is no wastewater infrastructure within Brittas Wood

#### 15.4.1.4.2 Area 2 Chapel St, Area 3 – ICW

The foul sewer network within the Works Area based on Uisce Éireann records is shown in the figures below. Generally wastewater is collected in the village and is transferred north to the Integrated Constructed Wetlands Treatment Plant. There is no wastewater infrastructure within Brittas Wood.



Figure 15-8 Area 2: Wastewater Collection Network



Figure 15-9 Area 3: Wastewater Collection Network

### 15.4.1.5 Telecommunications

#### 15.4.1.5.1 Area 1 - Brittas Wood

There is no telecommunication infrastructure within Brittas Wood.

#### 15.4.1.5.2 Area 2 – Chapel St, Area 3 - ICW

Eir underground and overhead services are located along Chapel Street and the Tullamore Road.

**Chapel Street:** There is an existing Eircom underground line located on the opposite side of the stone wall (**Figure 15-10**); it is anticipated that these services will not be affected as it is outside of the Works Area.



Figure 15-10: Eir Records, Chapel Street.

**Tullamore Road**: The Eircom line from Chapel Street continues to Tullamore Road and transitions to an overhead line (OHL) (**Figure 15-9**). The OHL route crosses a portion of the Area 3 construction zone boundary. Overhead services protection 'goal posts' will be sufficient to avoid damage to these lines.



Figure 15-9: Eir Records, Tullamore Road.

## 15.4.1.6 Gas Networks

There is no Gas Networks Ireland infrastructure in Clonaslee and as such, gas infrastructure is not considered further in this assessment.

# 15.4.1.7 Ground Penetrating Radar Survey

In preparation for the Scheme a GPR survey was commissioned. This served to correlate the records from the various utility providers. It also has given a more accurate indication of the location and depth of each service, although this will be confirmed via trial excavations prior to construction.

The surveyed layout of services is shows in Figure 15-11 below.



Figure 15-11 Area 1 GPR Survey



Figure 15-12 Area 2 GPR Survey

The output from this survey has informed the design of the flood defence elements in Area 1 and Areas 2 in particular. Specific points of note are as follows:

- In Area 1, the GPR survey identified three separate watermain pipes, where Uisce Éireann (UÉ) records had shown only one;
- In Area 2 the GPR survey confirmed the spacing and distribution of the three watermains within Chapel St in contrast to the bunched layout as shown in the UÉ records.

Representative cross sections of the works in Areas 1 and 2 are shown in Figures 15-13 and 15-14 below. The design of the Proposed Scheme has been tailored to either avoid, or protect, the services in question. Consultation with UÉ is ongoing and agreement will be sought prior to the commencement of any works in the vicinity of UÉ assets.



Figure 15-13 Area 1 Embankment Design over Existing Watermains



Figure 15-14 Area 2 Wall Design adjacent to Existing Services

# 15.4.2 Baseline Environment Waste Facilities

**Table 15-7** shows licenced waste facilities within 30km of the Proposed Scheme, in Co. Laois that may be considered for the disposal of material and waste streams. These facilities include integrated waste management, soil recovery, waste transfer, and landfill facilities.

#### Table 15-7: Facilities Operating under Waste Licence in County Laois

Facility Name	License Code	Distance from Proposed Scheme (km)	Permitted Intake/ Total Capacity	,	Waste/ Material Authorised	Facility Type
Trifol Operations Ltd.	WFP-LS-19-0005-01	29	15,000 tonnes	•	Waste plastics (except packaging) Plastics	Waste management facility
A1 Metal Recycling Ltd.	WFP-LS-19-0006-01	16	40,000 tonnes	•	End-of-Life Vehicles Scrap metals	Storage & Recovery
Corcoran's Auto Body Works Limited	WFP-LS-19-0007-01	25		• • •	End-of-Life Vehicles Waste vehicles Scrap metals Waste electrical and electronic equipment	Storage & Recovery
Michael Costello	SSF/03	30	17,500 tonnes	•	Storage of treated sewage sludge	Waste management facility
Martin Byrne Car Dismantlers	WFP-LS-15-0005-02	30		• • •	End-of-Life Vehicles Waste vehicles Scrap metals Waste electrical and electronic equipment	Collection, Storage & Treatment of End-of-Life Vehicles
Kollect on Demand Limited	COR-LS-20-0002-01	27	900 tonnes	•	Mixed municipal waste	Waste management facility
Hinch Plant Hire	WFP-LS-16-0006-02	30	200,000 tonnes	•	Recovery of excavation or dredge spoil, natural materials of clay, silt, sand, gravel or stone	Waste management facility Land treatment
Dunne Brothers Limited	COR-LS-22-0001-01	28	20,000 tonnes	•	Recovery of excavation or dredge spoil, natural materials of clay, silt, sand, gravel, or stone	Waste management facility Land treatment
Whelan Auto Dismantlers	WFP-LS-15-0004-02	28	2,500 vehicles per annum 200 tonnes Metals (including their alloys)	• • •	End-of-Life Vehicles Waste vehicles Scrap metals Waste electrical and electronic equipment	Reception, Storage & Treatment of End-of-Life Vehicles
Alpacific Limited	WFP-LS-22-0001-01	25	25,000 tonnes	•	Recovery of excavation or dredge spoil, natural materials of clay, silt, sand, gravel, or stone	Waste management facility, Land treatment
CJ Sheeran Ltd	WFP-LS-23-0001-01	30	50,000 tonnes	•	Paper and cardboard packaging Plastic packaging Wooden packaging	Waste management facility

The Proposed Scheme will require a variety of construction methodologies resulting in the generation of various waste streams. The majority of the waste generated by the Proposed Scheme will be from excavations in Area 1, 2 and 3 and waste generated from the excavation of the road on Chapel Street. The potential waste streams generated by the Proposed Scheme and their potential for significant environmental impacts are discussed below.

## 15.4.3 Evolution of the Environment in the Absence of the Proposed Scheme

Should the Proposed Scheme not proceed, conditions relating to material assets identified within the Zol will continue in line with baseline trends. Some deterioration in the area may be experienced due to damage ensued during serious flooding events, which will be expected to escalate in line with climate change trends. There is also potential for flooding events to cause excess surface water entering the foul drainage system. This can lead to partially or untreated wastewater entering natural water courses.. These effects could be expected to be significant and long-term.

# **15.5 Description of the Likely Significant Effects**

The construction of the Proposed Scheme has the potential for impacts on existing operating utilities. The potential for impacts during construction stage include interruptions and diversions of built services, leading to planned brief loss of services such as access to fresh drinking water, heating, electrical power and foul waste management services; obstruction to communication assets such as fibre optic and telephone networks; and possible damage to utility assets during works. During the operation phase, impacts to utility services will be unlikely and limited to the rare occasion when flood defence infrastructure may need to be replaced. Impacts to utilities from routine maintenance and inspection is not foreseen.

The majority of waste materials arising from the Proposed Scheme are associated with the construction phase. During the operational phase, ongoing maintenance of the Scheme will also generate some limited material streams. The likely materials arising from the construction phases of the Proposed Scheme have been quantified and presented in **Section 15.5.1.2**.

**Sections 15.5.1 to 15.5.2** provide a description of the likely significant effects of the Proposed Scheme on Utilities and assesses the impact of Waste Materials generated.

## 15.5.1 Construction Phase

## 15.5.1.1 Utilities

Enabling works on utilities, i.e. utility relocation resulting in brief shut down periods, must be undertaken prior to any other works. This is to maintain connections and minimise downtimes to public and private customers. Construction, excavation and relocation of services will disrupt utility infrastructure – notably electricity, telecoms and water services. A summary of disruption to utilities is included in **Table 15-8 to Table 15-10**. Considering the definition of impacts as categorised in **Tables 15-2 to 15-5**, the potential Magnitude of Impact of utility clashes is considered **Minor** across services with a range of sensitivities. The Significant of Effects without mitigation (section 15.6) is determined to be **Slight or Moderate** in the case of water supply; and **Slight** and **Imperceptible or Slight** in the case of all other services.

Service	Area 1: B Description	rittas Wood Impacts	Sensitivity Table 15.2	Magnitude of Impact Table 15.3	Significance Matrix Table 15-5
Water Main	The construction of the embankment will take place along the existing path within the Brittas Wood. This path contains three raw water pipes that feed into the Water Treatment Plant. To form the embankment, earth fill and excavation works will be necessary.	<ul> <li>Increase Loading Over Pipelines: Retaining the watermains in the same location will result in additional stress on the pipelines caused by the extra material used to form the embankment. Concrete surround protection is designed</li> <li>Possible Diversions: Formation of the embankment may necessitate temporary or permanent diversions of the existing watermains.</li> <li>Risk of Accidental Damage to Pipelines: Excavation works or heavy machinery operations near the watermains could pose a risk of accidental damage.</li> </ul>	Minor	Minor	Imperceptible or Slight
Water Abstraction Boreholes	There is an existing Potable Water Abstraction Borehole within Brittas Wood. The Borehole is fenced for protection. The proposed embankment is adjacent to the borehole	<ul> <li>Risk of Contamination of Existing Water Abstraction Borehole: Excavation activities in close proximity to the borehole may increase the risk of contamination.</li> <li>Limited access to the Water Abstraction Borehole: Construction activities may obstruct or limit access to the borehole.</li> </ul>	Moderate	Minor	Slight
ESB OH (MV/LV)	There is an existing LV overhead line above proposed Compound A and at the entrance of the Brittas Wood Path. Heavy goods vehicles will access and egress Brittas Wood and the compound daily.	<ul> <li>Safety considerations: The proximity of the LV overhead line to Compound A poses safety risks to workers and occupants of the compound during construction and regular operation.</li> <li>Risk of Accidental Damage to overhead lines: Construction activity underneath power lines does represent a risk of damage and temporary local outage if standard safety procedures are not followed.</li> <li>Possible Diversions: Construction activities may necessitate temporary or permanent diversions of the LV overhead line.</li> </ul>	Minor	Minor	Imperceptible or slight

#### Table 15-8 Summary of Existing Services Affected by the Proposed Scheme, at Area 1:Brittas Wood

#### Sensitivity Magnitude of Significance Area 2: Chapel Street **Table 15.2** Impact Matrix Service Description Impacts **Table 15.3 Table 15-5** Telecommunications Along the existing footpath on Chapel Street, there No impacts to this telecommunication asset are anticipated. Minor Negligible Imperceptible (Eir UG) is an Eircom line and two unidentified underground lines from the GPR Survey. The depth of the underground lines varies from 0.80 m. to 0.45 m. No works are foreseen on this side of the street. ESB OH Adjacent to the Stone Wall along Clodiagh River: • Temporary Diversions: Construction activities will necessitate Moderate Minor Slight LV overhead line running parallel to the stone wall temporary or permanent diversions of the LV overhead lines (MV/LV) on Chapel Street serving as part of the public along the stone wall lighting and local supply. Operational limitations: The presence of the power line may Approximately 100 linear metres of this LV overhead impose operational limitations during construction on Compound line are in conflict with the B, such as restrictions on machinery dimensions, mobility within proposed works. the compound or the installation of certain equipment. Private Garden and Compound B: Risk of Accidental Damage to overhead lines: Construction An existing MV overhead line crosses activity underneath power lines does represent a risk of damage above a private garden where the flood defence wall and temporary local outage if standard safety procedures are not is proposed and Compound B is located. followed. Water Mains Watermains in Chapel Street: Possible Diversions: Formation of the stone wall may High Minor Slight or Of greatest significance is a 381 AC Potable necessitate temporary or permanent diversions of the existing Moderate Trunk supplying the town of Tullamore. It is the watermains. There is a potential that these will have to be briefly service closest to the proposed works shut off to facilitate diversions. Risk of Accidental Damage to Pipelines: Excavation works or heavy machinery operations near the watermains could pose a risk of accidental damage. Foul/Storm There is a 300mm foul gravity sewer running from Risk of Accidental Damage to Pipelines: Excavation works or Moderate Minor Slight south to north at the middle of Chapel Street. The heavy machinery operations near the foul sewers could pose a Water sewer leads to the wastewater treatment plant risk of accidental damage. located on the ICW of Uisce Éireann. It is approximately 5 metres away from the proposed flood stone wall and the average depth is 2.15 m. The sewer is in the middle of the road so it is expected that there will be no need for diversion

	Area 3: Tullamore Rd & T	he ICW	Sensitivity Table 15.2	Magnitude of Impact	Significance Matrix
Service	Description	Impacts		Table 15.3	Table 15-5
Tullamore Rd Foul/Storm Water	A 300m foul gravity sewer continues from Chapel Street along Tullamore Road and is directed towards the wastewater treatment plant situated in the Integrated Constructed Wetlands (ICW) of Uisce Éireann. The foul sewer crosses into Area 3 off the Tullamore Road and runs west to east through an agricultural field in the location of a proposed embankment. The proposed embankment will need to be built over the sewer.	<ul> <li>Increase Loading Over Pipelines: Retaining the foul sewer in the same location will result in additional stress on the pipelines cause by the extra material used to form the embankment.</li> <li>Risk of Accidental Damage to Pipelines: Excavation works or heavy machinery operations near the foul sewer pose a risk of accidental damage.</li> </ul>	Moderate	Minor	Slight
Tullamore Rd Telecommunications (Eir OH)	The Eircom line from Chapel Street continues along the Tullamore Rd and transitions from an underground line to an overhead route. A pole is present at the entrance of the field on Tullamore Road. The Eircom line crosses a small portion of the field where the embankment is proposed. Construction of the embankment in the vicinity of the Eircom line may have the potential to interact/damage the line.	<ul> <li>Possible Diversions: Access to the site construction may necessitate temporary or permanent diversion of the existing pole located within the field. The pole will have to be diverted to the other side of the road to avoid any risk or damage to the infrastructure.</li> </ul>	Minor	Minor	Imperceptible or slight

The ICW	There is a foul sewer running through the southern area of the ICW and parallel to the proposed flood wall, at approximately 3m towards the wastewater treatment plant situated in the Integrated Constructed Wetlands (ICW) of Uisce Éireann.	<ul> <li>Limited access to the Wastewater Treatment Plant: Construction activities may obstruct or limit access to the Plant.</li> <li>Possible Diversions: Formation of the flood wall may necessitate temporary or permanent diversions. It is expected</li> </ul>	Moderate	Minor	Slight
		conflicts. The foul sewer is located at a considerable distance from the work area. Through effective coordination and pipe detection on-site, the tasks can be executed smoothly.			

### 15.5.1.2 Waste

#### Site Clearance - Vegetation Removal:

The appointed contractor will conduct site clearance works including felling of trees and removal of vegetation from the working areas within the lands made available for the Proposed Scheme. Vegetation removal will include tree, shrub, invasive alien species (Refer **Chapter 9: Biodiversity** for details) and hedge removal to allow for construction activities to take place. Vegetation clearance will be kept to the minimum required to facilitate construction and its removal will be undertaken in accordance with the mitigation provided for the protection of biodiversity as detailed in **Chapter 9: Biodiversity**. Estimated quantity of vegetation removal is listed in **Table 15-11**.

Area	Clearance Works	No of Trees/Area of	Strategy		
		vegetation cleared	Dispose	Reuse	
Pritton Wood	Clearance - trees	9 no.	9 no.		
(Area 1)	Vegetation Clearance	800 m <sup>2</sup>	N/A	Reusing topsoil	
Chapel Street	Vegetation Clearance (garden topsoil strip)	2000 m <sup>2</sup>	N/A	Reusing topsoil	
(Area 2)	Clearance – trees (street)	10 no.	10 no.		
	Clearance – trees (garden)	11 no.	11 no.		
Tullamore Rd	Vegetation Clearance (topsoil strip)	4000 m <sup>2</sup>	N/A	Reusing topsoil	
(Area 3)	Clearance - trees	1 no.	1 no		
The ICW	Vegetation Clearance	300 m <sup>2</sup>	N/A	Reusing topsoil	
(Area 3)	Clearance - trees	0 no	0 no		

#### Table 15-11: Proposed Vegetation Clearance Quantity

The majority of this vegetation will be mulched for transport off-site to a licensed composting facility at another location. Where Invasive Alien Plant Species are recorded, these species will be excavated and sent to licenced landfill under appropriate control measures.

Topsoil will be stored on site and reinstated once works are complete. Embankments will be dressed with the original topsoil to allow natural vegetation renewal. Organic waste removed during site clearance will also be mulched for transport off-site to a licensed composting facility. As the organic waste will be either reused or recycled, and none will be consigned to incineration without energy recovery or landfill, it is not expected to reduce the regional landfill capacity at all.

Overall, since the envisaged waste comprising of a very small fraction of the regional waste capacity, the significance of the site clearance works has therefore been determined to be **short term imperceptible**.

#### Site Clearance - Road Demolitions:

In addition to vegetation removal, it is proposed to excavate the road along Chapel Street and the access road in the ICW to allow for the installation of new flood walls (See **Table 15-12**).

Watercourse	<b>Demolition Works</b>	Demolition	Strategy	
			Dispose	Reuse
Chapel Street	Demolition of road	1000 m <sup>2</sup>	1000 m <sup>2</sup>	0
		300 m <sup>3</sup>	300 m <sup>3</sup>	
	Demolition of road	300 m <sup>2</sup>	300 m <sup>2</sup>	0
		90 m <sup>3</sup>	90 m <sup>3</sup>	
	Demolition of existing	70 lin. m	70 lin. M	0
	concrete kerb	6 m <sup>3</sup>	6 m <sup>3</sup>	U

#### Table 15-12: Proposed Demolition Works

Demolition waste will include a combination of asphalt and concrete. The non-hazardous inert waste will be segregated for recycling or recovery purposes.

Hazardous waste materials encountered from demolition works, if any, will be segregated and stored in accordance with best practice for onward management (TII, 2017) (HSA, 2016).

Based on the current baseline of construction and demolition waste material, it is considered that the waste facilities within the region have a **negligible** sensitivity. The effect of this stream on regional landfill and incineration capacity would comprise very little reduction (<1%) in capacity and the magnitude of effect is therefore deemed to be **negligible**. Thus, the significance of effects (**Table 15.5**) with regards to both hazardous and non-hazardous materials on regional waste capacity are anticipated to be **imperceptible**.

#### **Excavation Waste:**

It is expected that approx. 7,500 m<sup>3</sup> of soil and stone material will arise as a result of the Proposed Scheme. Excavated material as part of the construction works will generally consist of:

- Class 5A Fill (Topsoil)
- Class 1 or 2 Fill (Soil)
- Class U1 (Soil)
- Class U1 (Pavement).

There will be some opportunities for reuse of materials on-site e.g. trench backfilling. Off-site reuse options for surplus clean and inert excavated material include reuse as a by-product on other construction sites subject to Article 27 notification to the EPA. Where reuse cannot be employed, there is option for recovery at suitable authorised waste facilities i.e. facilities which have been granted a Certificate of Registration, Waste Facility Permit or EPA licence. An estimated 2,070 m<sup>3</sup> of excavation waste is proposed to be disposed (26%) and 5,565 m<sup>3</sup> of material will be reused (74%). A summary of the estimated excavated and fill quantities associated with the Proposed Scheme is provided in **Table 15-13**.

Watercourse	Excavation Works	Excavation (approx. m <sup>3</sup> )	Disposal (m³)	Reuse (m <sup>3</sup> )
	Embankment cut off trench	340	340	0
Brittas Wood	Debris Trap foundation excavation	57	57	0
(Area 1)	Culvert excavation	32	32	0
	Compound A	275	0	275
Chapel Street	Flood wall excavation	1,400	1,200	200
(Area 2)	Compound B	2,500	0	2,500
Tullamore Rd (Area 3)	Embankment cut off trench	350	350	0
	Compound C	2,500	0	2,500
The ICW	Flood wall excavation	90	45	45
	Total	7,544	2,069	5,565

#### Table 15-13: Excavations Required as Part of Construction Works

Based on the National Waste Management Plan for a Circular Economy 2024 – 2030, the amount of waste generated during the construction phase is anticipated to be **negligible** compared to the baseline waste intake with an **imperceptible** significance of effect. It is envisaged that the total quantity of construction and excavation waste material will make less than the 1% of construction and all waste disposed of in the Eastern - Midlands waste region.

The suitability of material for reuse is made with reference to the ground investigations completed for the Proposed Scheme; refer to **Chapter 10: Land, Soils, Geology and Hydrogeology** for further information on ground investigations undertaken to date.

The excavated material to be reused on site will be tested to ensure compliance with the requirements of Class 1 or Class 2 general fill as defined in *Specification for Road Works Series 600 – Earthworks* (TII, 2013).

#### Individual Waste:

In the construction of the infrastructure necessary for the Proposed Scheme, a small amount of general waste will be generated by day-to-day activities of the construction staff during the construction phase. This will comprise food waste, foul waste and fuel waste generated by personal transport.

Individual waste from staff will be generated primarily through the construction phases of the Proposed Scheme. The sensitivity of this Proposed Scheme is envisaged to be **negligible**. The quantities of waste generated by individual staff is expected to be minimal where it will contribute <1% of waste to the regional landfill/ incineration. Therefore, the magnitude of the effect is determined to be **negligible**.

The significance of the effects from the generation of individual waste has therefore been determined to be **imperceptible**.

## 15.5.2 Operational Phase

#### 15.5.2.1 Utilities

During the operational phase, impacts to utility services will be unlikely and limited to the rare occasion when flood defence infrastructure may need to be replaced. Impacts to utilities from routine maintenance and inspection is not foreseen.

### 15.5.2.2 Waste

The waste hierarchy principles shall be fully implemented throughout the operational and maintenance phase to ensure that the circular economy approach is supported. Prevention, preparing for reuse, recycling and recovery will be enforced with appropriate waste management facilities chosen to accept disposed waste.

Any sediments or vegetation material for disposal during maintenance will be considered hazardous unless testing of material is available to prove otherwise and it must be (identified and treated if an invasive alien plant species) and disposed of accordingly in an appropriately licensed facility (as listed in **Table 15.7**). This can take place either as the material is extracted or at the landfill site itself.

Sediment and vegetation debris is likely to require pre-treatment prior to disposal at a landfill site, for example streaming of plastics and other artificial litter on site. This waste material includes the debris accumulations at the proposed Debris Trap and also any sediment deposited upstream of this trap.

All waste to be removed from the site will be required to be collected by valid waste collection permitholders. All facilities to which waste will be taken will have appropriate waste licenses or permits, under the Waste Management Act 1996 to 2016, as amended, and the regulations thereunder. Records will be kept on the quantity, nature/type and quality of all waste leaving the site. Refer to **Chapter 5: Project Description** (**Section 5.6**) for the operation phase maintenance activities of the Proposed Scheme.

Impacts on waste management are considered to be **negligible** with an **imperceptible significance of effects** during the operational and maintenance phase of the Proposed Scheme.

# 15.6 Mitigation Measures

#### **15.6.1** Construction Phase

### 15.6.1.1 Utilities

Mitigation measures are considered on an individual basis and each conflict location will be discussed with the relevant utility provider. However, there are a number of measures that will be implemented across the Proposed Scheme where required, and these are outlined as follows:

- All existing services will be confirmed prior to construction using service records and slit trenching to
  ensure that their position is accurately identified before excavation works commence across all sections
  of the Proposed Scheme.
- Enabling works shall be programmed to maintain connections, or at least minimise downtimes, to public and private customers where conflicts arise.

- Early consultation shall be undertaken with service providers to enable providers to reroute their service during non-peak periods to maintain connections to customers.
- For unknown utilities encountered during construction works, further liaison with utility providers will be undertaken to establish the preferred solution.
- Where diversions, or modifications are required to utility infrastructure:
  - The appointed contractor will ensure adequate notice (not less than 14 days) will be given to all impacted properties.
  - Notification shall 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 interruptions is minimised in so far as is practicable.
- Where works are required in and around known utility infrastructure, precautions will be implemented by the appointed contractor to protect the infrastructure from damage and avoid unplanned interruptions.
- Any damage to services during the construction phase shall be repaired / replaced by the Contractor.
- Safety procedures will be put in place to minimise the risk to utility provider personnel and the general
  public during works on services. 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.
- All proposed relocation / diversion works shall be delivered through the appropriate service provider processes e.g. Uisce Eireann Developer Services Diversion process.
- Site specific method statements and risk assessments detailing safe means of works for working in close proximity to existing underground and overground existing services shall be prepared at detailed design stage. Works effecting underground services shall be carried out strictly in accordance with the Health and Safety Authority Code of Practice for Avoiding Danger from Underground Services (HSA, 2016).
- Works affecting electricity services must also be carried out strictly in accordance with the *Code of Practice for Avoiding Danger from Overhead Electricity Lines* (ESB, 2019). Where construction equipment passes under lines, goalpost barriers will be established within a lateral distance of 6 m either side of the line, ensuring that tall vehicles will not come into contact with OHLs during construction. A no-tip zone will also be established within 10 m of power lines. All proposed poles will be placed at a sufficient distance from proposed earthworks.

#### 15.6.1.2 Waste

A preliminary Waste Management Plan (WMP) for the Proposed Scheme can be found in Appendix 15-1. Prior to the commencement of the construction phase, the WMP shall be updated by the appointed Contractor and in accordance with the Best Practice Guidelines for the Preparation of Resources & Waste Management Plans for Construction and Demolition Projects (EPA, 2021). The detailed WMP will be implemented by the Contractor. The Contractor will ensure that all hired waste contractors have the necessary permits/licenses and authorisations, and that the waste management hierarchy is adhered. The person nominated must have sufficient authority so that they can ensure everyone working on the Proposed Scheme adheres to the WMP.

The detailed WMP will, as a minimum address the following aspects of the Proposed Scheme:

- Analysis of the waste arising/material surpluses
- Methods proposed for the prevention, reuse, and recycling of wastes
- Material handling procedures
- Proposals for disposal of waste at appropriately licensed facilities only
- Proposals for education and a workforce and plan dissemination programme.

The WMP will provide systems that will enable all arisings, movements and treatments of construction waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

The contractor will be obliged to implement and maintain the measures and actions contained within in the EIAR during the construction phase. Measures to be implemented on site shall include:

- **Source Segregation:** Source separating wastes into dry mixed recyclables, biodegradable, and residual wastes. Clear labelling of waste bins, containers, skip containers and storage areas, including waste stream colour coding and photographs as appropriate.
- Waste Auditing: Good record keeping being conducted by the contractor including quantities (tonnes) and type of waste and materials leaving the site. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, and which is disposed.
- **Appropriate Storage:** Ensuring that all areas where liquids (including fuel) are stored, or cleaning is carried out, are in designated impermeable areas that are isolated from the surrounding area and within a secondary containment system, e.g., by a roll-over bund, raised kerb, ramps or stepped access. The location of any fuel storage facilities shall be considered in the design of the construction compounds. These are to be designed in accordance with relevant guidelines and codes of best practice and will be fully bunded. Good housekeeping at the site (daily site clean-ups, provision of recycling and compost, etc.) is to be conducted during the construction phase.
- Efficient Removal: Where possible the removal of topsoil will be avoided, and all topsoil shall be assessed for reuse within the Proposed Scheme ensuring appropriate handling, processing and segregation of material. The Construction Environmental Management Plan (CEMP) will detail that minimal excavations will be maintained using shoring or trench boxes. This plan will identify actions on site to minimise the loss of topsoil and soils. Soils removed during excavations will be reinstated as soon as possible and suitable inert material will be used as infill to protect the quality of the surrounding subsoil. The WMP will address the analysis of waste arisings, methods proposed for the prevention, reuse and recycling of wastes and material handling procedures.

If unforeseen waste or hazardous material is encountered during the course of the Proposed Scheme, the appropriate authorities will be notified, and the material will be deposited at an appropriate waste facility. There is a possibility that unforeseen or hazardous material is encountered during excavation works.

Concrete waste will be dealt with using an Article-28 notification. These notifications will allow the concrete waste to be fully recovered. By-product notifications (under Article 27 of the EC Waste Directive Regulations 2011) provide an opportunity for reuse of surplus clean soil & stone material arising from construction activity. At the time of construction, options for Article 27 by-product status will be reviewed, subject to waste management and planning requirements being fully met. Such opportunities offer potential to further reduce indirect effects of waste management resulting from the transport of materials from site, notably traffic, noise and air emissions from transport-related haulage.

### 15.6.2 Operational Phase

#### 15.6.2.1 Utilities

No potential for impacts have been identified for the operational phase and as such no mitigation measures are required during this phase.

#### 15.6.2.2 Waste

As discussed in section 15.5.2.2, the waste hierarchy principles shall be fully implemented throughout the operational and maintenance phase to ensure that the circular economy approach is supported. Prevention, preparing for reuse, recycling and recovery will be enforced with appropriate, licenced waste management facilities chosen to accept disposed waste. Hazardous materials will be treated and disposed of at licenced facilities. Therefore, no mitigation measures above these best practise measures are proposed.

# 15.7 Residual Impacts

## 15.7.1 Utilities

Effects during construction after the introduction of mitigation measures are expected to be **short term** in nature and **imperceptible** for all utilities.

The Proposed Scheme will protect the key utilities in Clonaslee from flooding events during the operational Phase. As a result of the Proposed Scheme, the area may become more attractive for residential and business purposes. This improved attractiveness will likely support improvements in key utilities established in Clonaslee in the future. The Proposed Scheme will also protect existing key utilities, thus reducing the disruptions to these facilities in the future. The residual effect of the operational phase is predicted to have a **slight positive**, long-term effect.

### 15.7.2 Waste

Following implementation of the mitigation measures as outlined in **Section 15.6**, most waste materials generated during the construction phase will be reused either within the Proposed Scheme or will be sent for recovery/recycling at authorised facilities. The residual effects of the Proposed Scheme in terms of waste management during the construction phase, following the implementation of mitigation measures, are considered to be but **short-term and imperceptible** in nature.

The predominant source of other material that will be generated from undertaking the proposed works arises from soil excavations. This material is not considered a waste and will be diverted through suitable sustainable routes; licensed waste facilities across the Eastern-Midlands Region have capacity to accept the estimated quantities which will be notified as a by-product (under Article 27 of the EC Waste Directive Regulations 2011, as amended).

The waste generated during operation and maintenance phases of the Proposed Scheme will mainly be associated with occasional maintenance works. The residual effect on resource and waste management is expected to be **imperceptible**.

# 15.8 Monitoring

### 15.8.1 Construction Phase

#### 15.8.1.1 Utilities

Construction best practice will be followed to avoid the risk of unintentionally impacting on an underground or overhead service during construction e.g. "dial before you dig"; use of a Cable Avoidance Tool by a CSCS qualified person in "Locating Underground Services"; set up exclusion zones around overhead lines with goalposts and bunting; with ongoing inspection of these protection measures.

Daily visual checks of the integrity of the overhead lines will be carried out at the start and end of each day during the construction phase.

#### 15.8.1.2 Waste

Monitoring will be undertaken and recorded by the contractor as follows:

- Records shall be kept of all truck movements relating to the removal of site clearance vegetation, topsoil
  and construction soil. The records shall include quantity, nature/ type and quality of the material, and the
  excavation and disposal locations.
- Records shall be kept on the quantity, nature/ type and quality of all waste leaving the construction site including individual waste and typical construction site waste.
- Segregation of construction site waste shall be carefully monitored with waste audits taking place at regular intervals.

#### **CHAPTER 15 - MATERIAL ASSETS: WASTE AND UTILITIES**

Any waste arising from the construction phase of the Proposed Scheme will be deposited at an appropriate facility (as listed in **Table 15-7**) in accordance with the current national waste policy. This is necessary so that all waste is disposed of to the best possible facility type in order to adhere to the circular economy and resource opportunity strategies.

All waste to be removed from the site will be required to be collected by valid waste collection permitholders. All facilities to which waste will be taken will have appropriate waste licenses or permits, under the Waste Management Act 1996 to 2016, as amended, and the regulations thereunder. Records will be kept on the quantity, nature/type and quality of all waste leaving the site.

## 15.8.2 Operational Phase

## 15.8.2.1 Utilities

No specific monitoring is proposed for utilities.

### 15.8.2.2 Waste

Similar to the Construction Stage, monitoring will also require to be undertaken and recorded by LCC or their appointed maintenance contractor during the operation stage as follows:

- Records shall be kept on the quantity, nature/ type and quality of all waste generated from the operation
  and maintenance activities of the scheme, for example, debris/trash trapped at the Debris Trap and
  Culvert inlets, sediments deposited at the Debris Trap and also waste generated from the scheme area
  vegetation controls.
- Segregation of waste shall be carefully monitored with waste audits taking place at regular intervals.
- Records shall be kept of all truck movements relating to the removal of the above-mentioned wastes generated during the operation stage of the scheme.

# **15.9** Interactions and Cumulative Effects

### 15.9.1 Interactions

Interactions between Waste and Utilities and environmental factors such as population, human health, water, biodiversity, are addressed in **Chapter 18: Interactions and Cumulative Effects**.

## **15.9.2 Cumulative Effects**

There is potential for cumulative effects on Waste and Utilities from the Proposed Scheme with other projects. A Zol of 5 km was chosen to conservatively capture any potential impacts to utility connections and overlapping demand from waste management outlets. Refer to **Chapter 18: Interactions and Cumulative Effects** for details.

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