

14 Material Assets

14.1 Introduction

Material Assets are as defined in the 'Advice Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022 as 'built services and infrastructure'). This can include roads and traffic, electricity, telecommunications, gas, water supply, sewerage, and waste management infrastructure.

This chapter of the EIAR addresses the likely significant effects of the Proposed Development on the existing services and Material Assets of the site and its surroundings. Material Assets discussed here are in relation to the built services and infrastructure within and surrounding the Proposed Development site. Traffic and Transportation is assessed separately within **Chapter 12** of this EIAR.

The EIA Directive requires that Architectural and Archaeological Heritage (Cultural Heritage) is assessed as part of Material Assets. However, such is the importance of this issue in Ireland, EIA best practice has established that it is important to address this issue separately and not as an adjunct to the Material Assets section in the EIAR document. Accordingly, Archaeology, Architectural and Cultural Heritage is assessed in **Chapter 13** of this EIAR.

14.2 Consultation

ORS have been commissioned to assess the potential impacts of the Proposed Development in terms of Material Assets during the construction and operational phases.

The principal members of the ORS EIA team involved in this assessment include the following persons:

- **Project Scientist & Lead Author:** Dominick Doherty – BSc. (Hons.) (Geography with Environmental Science), MSc. (Sustainable Energy and Green Technology). Dominick has 12 years' experience in environmental science and sustainable energy.
- **Project Lead & Reviewer:** Oisín Doherty – B.Sc. (Geography with Environmental Science), MSc. (Environmental Management), CEnv, MEnvSc. Current Role: Chartered Environmental Consultant. Experience ca. 15 years.

Consultation between the Applicant, ORS and members of the planning/design team was made in order to obtain information required to assess the potential construction and operational phase impacts on material assets.

14.2.1 Legislation, Policy & Guidance

This EIAR chapter and the assessment contained within has been carried out in accordance with the 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and the associated 'Advice Notes on Current Practice (in preparation of Environmental Impact Statements)' (EPA, 2003).

In addition, this chapter was carried out in accordance with best practice outlined in the following guidance documents:

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

- Government of Ireland (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.

The assessment methodology in accordance with the guidelines is described in detail the following section.

14.2.2 Scope

This EIAR chapter aims to identify the likely significant effects that the Proposed Development may have on Material Assets as defined in the legislation and guidance set out above. These are discussed under the following headings:

- Road Infrastructure.
- Foul Water Network.
- Surface Water Network.
- Public Water Network.
- Gas Network.
- Electricity Network.
- Telecommunications Network.
- Municipal Waste.

14.3 Assessment Methodology

The methodology used to produce this chapter included a review of relevant legislation and guidance, a desk study, a site walkover, an evaluation of potential effects, an evaluation of significance of the effect and an identification of measures to avoid and mitigate effects.

14.3.1 Desktop Study

A comprehensive desk study was undertaken to assess the Material Assets associated with the Proposed Development and their capacities. This study involved the collation and assessment of data from the following sources:

- Google Earth.
- Environmental Protection Agency (EPA) online mapping.
- OSI mapping.
- Irish Water Utility mapping.
- ESB Networks Utility mapping.
- Gas Networks Ireland Service mapping.
- Eir Telecommunications Network mapping.
- Road Infrastructure mapping.
- QGIS.
- Aerial Photography mapping.

14.3.2 Site Investigation

A site walkover was undertaken on the 28th of November 2024 to provide an accurate interpretation of the site location, existing infrastructure, and environs.

14.3.3 Prediction of Impacts and Effects Prior to Mitigation

This chapter of the EIAR describes the likely significant direct effects of the Proposed Development on the specified Material Assets within and surrounding the Proposed Development. The aim of establishing significance of impacts is to provide a measure of the risks of disturbance to, or undue burden on, existing built services.

14.3.4 Significance Criteria

The 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) have been followed in order to clearly identify how the significance of impacts has been assessed. This common framework follows a 'matrix approach' to environmental assessment which is based on the characteristics of the impact (magnitude and nature) and the value (sensitivity) of the receptor.

14.4 Receiving Environment

14.4.1 General

This section of the chapter provides the baseline information in relation to Material Assets that exists in the vicinity of the Proposed Development. The Proposed Development site is located within the townland of Ballyvass, Co. Kildare approximately 3.3km northwest of the town of Castledermot, Co. Kildare and approximately 11.3km northeast of Carlow town, Co. Carlow.

The site is currently used as agricultural pastureland and it is bounded to the north, south, east, and west by further agricultural pastureland. The M9 Motorway flanks the site to the immediate east, and there is a quarry to the south of the proposed site.

The site is ca. 30m south of a local road (L8050) and ca. 30m east of the M9 Motorway. An unmarked local road runs along the proposed site boundary to the north and east. The Proposed Development will be accessed via this road and, an entrance will be established to the north of the site along this road.

The Material Assets within the receiving environment of the Proposed Development are described below under the following headings:

- Road Infrastructure.
- Foul Water Network.
- Surface Water Network.
- Public Water Network.
- Gas Network.
- Electricity Network.
- Telecommunications Network.
- Municipal Waste.

14.4.2 Characteristics of the Proposed Development

The development will consist of the following:

- Construction of 2 no. primary digesters (with an overall height of c. 9.1m), a digestate storage tank (with a height of c. 11.3m), a pump house (with a gross floor area (GFA) of c. 362 sq.m),

- 2 no. post digester tanks (with an overall height of c. 9.1m), and a safety flare (c. 11.3m in height), located in the southeastern section of the site.
- Construction of 2 no. prepits (c. 4.3m in height), a pasteurisation buffer tank (c. 4.3m in height), and a pasteurisation unit (with a maximum height of c. 4.2m), located to the west of the primary digesters, within the southern section of the site.
 - Construction of digestate treatment and feedstock reception building and odour abatement system (with a GFA of c. 2,797 sq.m and a height of c. 12.1m and c. 16.2m to top of odour abatement stack) located within the southwestern section of the site.
 - Construction of roofed silage clamps (with a GFA of 2,424 sq.m and a height of c. 8.7m) and a fuel storage tank (c. 2m in height), located within the western section of the site.
 - Construction of a combined heat and power (CHP) unit (with a GFA of c. 39 sq.m and a height of c. 2.6m and c. 5.6m to top of flue), a biogas boiler (c. 2.6m in height and c. 5.6m in height to top of flue), a backup boiler (c. 2.6m in height), located within the northern section of the site.
 - Construction of a gas treatment unit (c. 4.2m in height), a grid injection unit (with a GFA of c. 22 sq.m and a height of c. 2.8m), and a CO₂ liquefactor (with an overall height of c. 10.7m to top of storage vessels) a propane tank compound accommodating 2 no. propane tanks (c. 1.6m in height), and an ESB substation (with a GFA of c. 24 sq.m and a height of c. 3.4m), located within the northern section of the site.
 - Construction of a two-storey ancillary administration building (with a GFA of c. 327 sq.m and a height of c. 11m) within the northern section of the site, adjacent to the site entrance.
 - Alterations to the adjacent local road and site access road, including junction improvement and widening and site entrance and access arrangements.
 - Associated and ancillary works including parking (9 no. standard, 2 no. EV and 1 no. accessible parking spaces, and bike storage for 10 no. bikes), site entrance and gate, a weighbridge, solar PV arrays at roof level, wastewater treatment equipment, bunding and surface treatments, boundary treatments, lighting, services, lightning protection masts, drainage, landscaping and tree planting, and all associated and ancillary works.

A further detailed description of the Proposed Development is provided in **Chapter 2: Project Description**.

14.4.3 Road Infrastructure

As outlined above, a Traffic and Transport chapter has been prepared by ORS and is submitted as a part of this EIAR. The impact that the Proposed Development would have on the Roads Infrastructure in the vicinity of the Proposed Development has been fully assessed in the Traffic and Transport chapter.

Vehicular access to the Proposed Development is via an existing access on the L8050 local road and through a new proposed priority T-junction off the existing access road which intersects the L8050 Local Road to the northwest of the site. 12 No. car parking bays are provided to the northeast of the office area, while the central circulation area (concrete apron) to the south of the office building will be used for articulated lorry turning and reversing.

The Proposed Development plans include providing vehicular access from the unnamed local road to the north of the site. The access to this road will be via the (L8050) local road located north of the site and traffic will utilize the junction when visiting the site. All traffic associated with the site is expected to use this junction for both arrivals and departures.

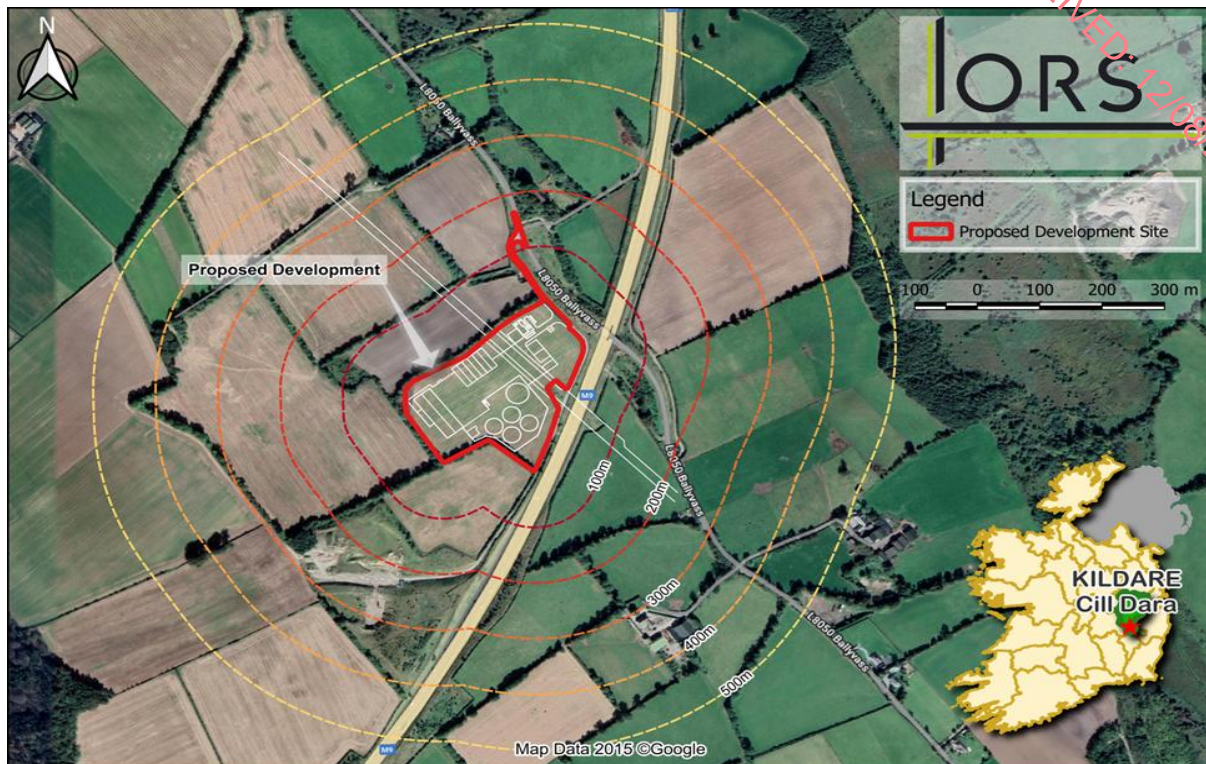


Figure 14.1: Site location and surrounding road infrastructure.

The Proposed Development plans include providing vehicular access from the L8050 to the northwest of the site. Arrivals and departures will be via the Regional Road R448, located southeast of the site, and all traffic will utilise the L8050/R448 priority T- junction to/from the proposed site.

The R448 is a two-way flow single carriageway road running in a north–south direction, providing connectivity between Naas to the north and Carlow Town to the south. The carriageway width varies along its length, measuring approximately 8m at its junction with the L8050. At this location, the R448 features continuous solid white double centreline, indicating no overtaking along this road section, and intermittent yellow edge road markings. The posted speed limit along this section of the R448 is 100 kph.

The L8050 is a single-lane carriageway, approximately 5-6 metres wide, that accommodates two-way traffic that gains access to the Regional Road R448 to the northwest, with an increasing width towards the mouth of the priority junction formed by the L8050 and the R448. At this junction, the road is equipped with road markings, which are essential for guiding vehicle drivers effectively, while a ‘STOP’ sign is in place.

The junction with the L8050 is a simple priority T-junction, with the minor road intersecting from the left (west) of the R448. Street lighting infrastructure is not available in the immediate vicinity.

At the junction with the R448, there are no dedicated right-turn lanes provided for vehicles turning onto the L8050. The surrounding environment consists of residential properties with front boundary walls, hedgerows, and green fields. Directional signage is located on the eastern side of the junction, providing wayfinding information for drivers. Additionally, the road is bordered by hedgerows on the southern side, restricting visibility at certain points. Street lighting infrastructure is not available in the immediate vicinity.

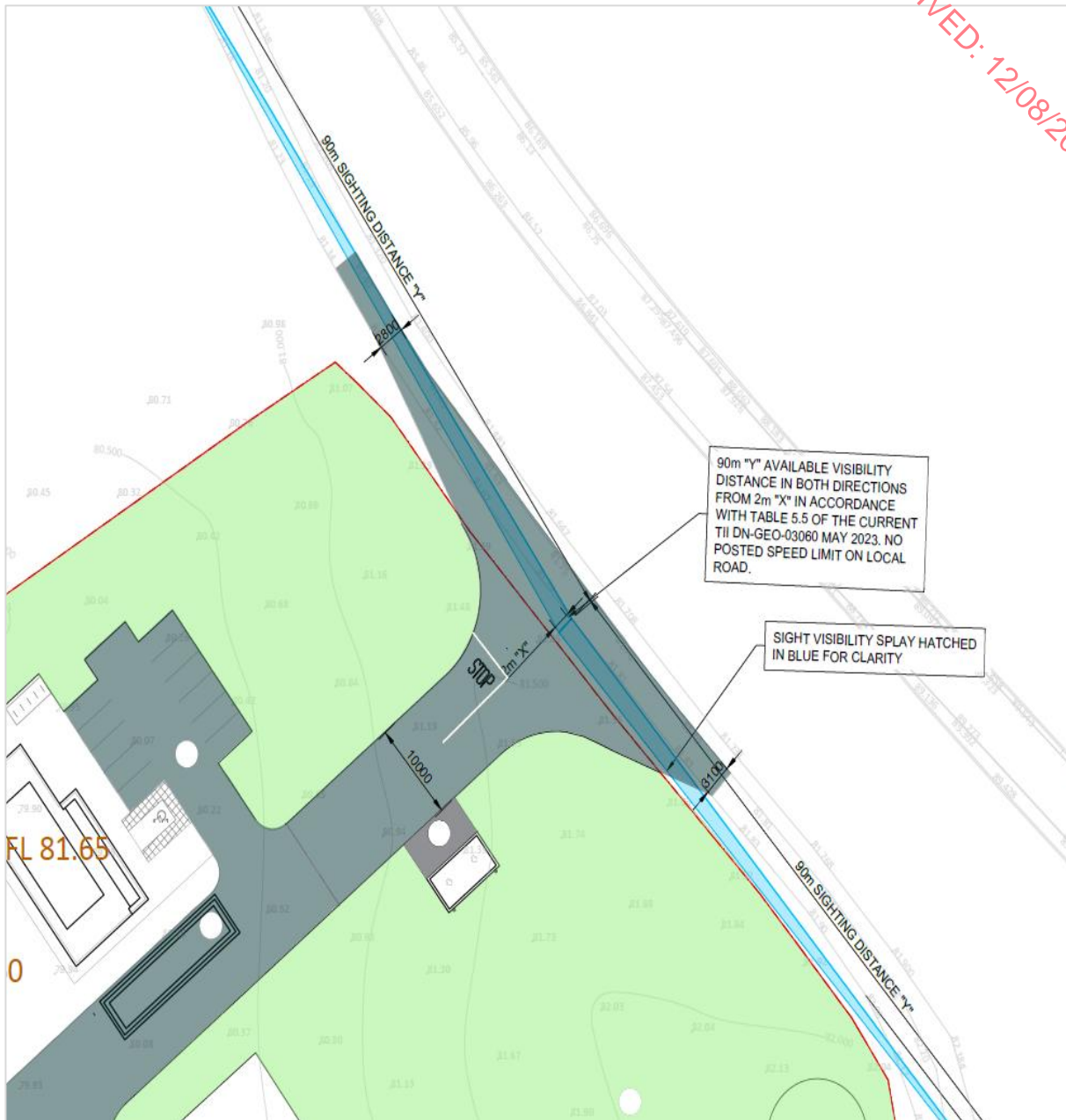
Furthermore, the L8050 is generally a narrow local road along the majority of its length, with some localised widening at the overbridge crossing the M9 motorway. In several sections, the road width is constrained, providing limited opportunity for two vehicles to pass safely. However, formal passing bays are to be provided at suitable locations along the L8050 where sufficient forward visibility exists. These works form part of the adjacent planning application for the extension of the existing sand and gravel pit (Planning Application Ref. 23/60256). As a condition of that planning permission - imposed in the interest of road safety - the developer is required to deliver seven passing bays between the development site and the R448. These bays must be generally in accordance with the standards set out in NRA TA 85/11, spaced no more than 250 metres apart, and inter-visible with adjacent bays.

There are no footpaths or cycle lanes provided along the R448 and the L8050, in the vicinity of the site access. Additionally, the R448 road does not provide sufficient space for pedestrian or cyclist access to the site without the provision of substantial development of active travel infrastructure in the surrounding area.

At present, Kildare County Council have no improvement schemes on the R448 or the L8050 that would affect the Proposed Development. An overview of the proposed access road is included in **Figures 14.2 and 14.3**.

Detailed drawings are included in EIAR Volume 2: Drawings (**Ref: 231239-ORS-ZZ-00-DR-TII-005_Sightlines_Layout**).

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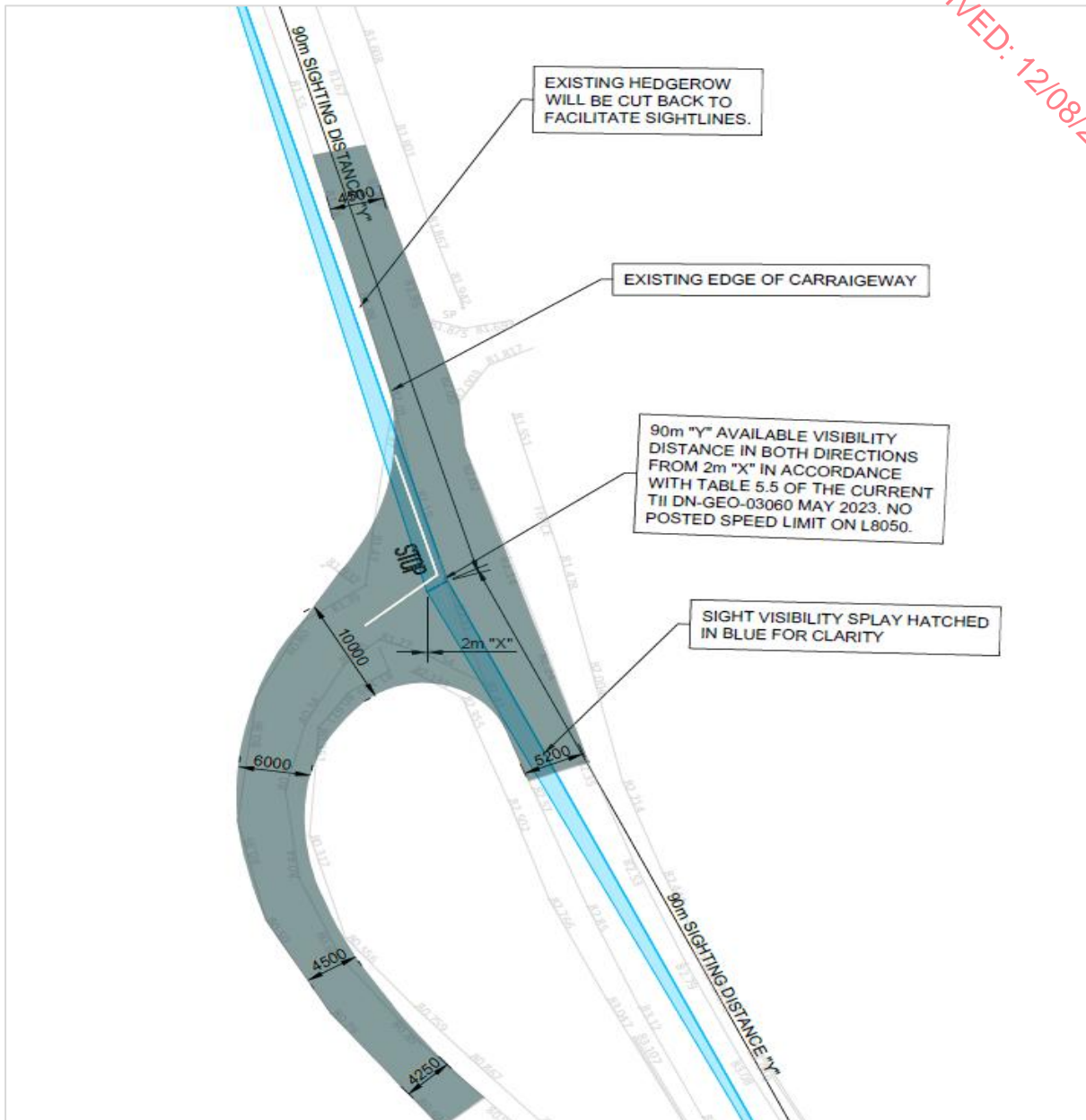


Figure 14.3: Access junction from unnamed road to local road L8050. Drawing Ref: 231239-ORS-ZZ-00-DR-TII-005_Sightlines_Layout.

14.4.4 Foul Water Network

The site does not feature access to the public foul water network at present. There is no existing foul sewerage within the site or within the vicinity of the site. As such it will be necessary to provide foul sewerage treatment within the boundary of the site.

The site is situated in an area of high groundwater vulnerability as per mapping produced from the Geological Survey of Ireland. A Site Characterisation Assessment was undertaken By Coyle Environmental in accordance with the EPA Code of Practice: Domestic Wastewater Treatment Systems (p.e.≤10) 2021 to establish the soil percolation rate. The assessment confirmed that this site is suitable to provide treatment for domestic sewage via discharge to groundwater.

The foul flows generated from the office unit will discharge to an inspection chamber adjacent to the building and then discharge to a proprietary water treatment system. From there, it will be transferred via pressurised pipe to a tertiary water treatment system/percolation area with 100m² of attenuation on 144m² of imported soil.

The rainwater harvesting tanks will provide water supply for use in sanitary facilities within the office unit. The rainwater will be pumped to a header tank within the office that will allow for the supply of water to a UV treatment and Reverse Osmosis system.

The proposed development will have a maximum design population of 2 no persons for Hydraulic and 3 for organic loading as per EPA Wastewater Treatment Manuals for Small Communities, Business, Leisure Centres and Hotels. With a total daily demand of 2 Hydraulic loading and 3 for organic loading we recommend a minimum PE 6 proprietary treatment system is proposed with discharge to a Ter3 packaged tertiary unit with a minimum 60m² attenuation layer.

The most suitable system for sewage treatment and percolation the site is the 6PE EuroTank BAF2 Wastewater Treatment System followed by the 6PE EuroTank TER3 Percolation Unit. The Site Characterisation Assessment can confirm that this site is suitable to provide treatment for domestic sewage via discharge to groundwater.

14.4.5 Surface Water Network

The site is comprised of two relatively flat areas falling towards a moderate valley at the centre of the site. The slope is generally from the northeast corner of the site to the north and from the southwest corner of the site to the north.

The site is bordered to the north by a drainage ditch that flows from west to east, the stream is not identified on EPA mapping but was noted during site visits and topographical surveying. The drainage ditch is likely a tributary of the Ballynamony stream 600m northeast which confluences with the Greese river, located approximately 1.75km to the north. There are existing drainage ditches around the proposed development footprint. The ditches appear to collect runoff from the existing agricultural site.

At present, the site does not feature dedicated surface water infrastructure. The proposed site will require the collection, attenuation and disposal of surface water accumulated during rainfall events. In developing the surface water design for the site, a range of surface water collection and SuDS measures were reviewed. Measures which were deemed suitable in controlling the quality and quantity of water being discharged from the development include:

- Collection of excess roof rainwater and runoff from impermeable surfaces and attenuating this runoff prior to discharge to an outfall location.
- The use of linear channels with sumps throughout the development.
- The implementation of above ground attenuation (detention basin) solution.
- The use of petrol interceptors.
- The use of rainwater harvesting tanks.

14.4.6 Public Water Network

There is currently no civil infrastructure within the vicinity of the proposed site. Foul sewerage, stormwater sewerage or potable water mains were not identified within the site during the survey nor in the vicinity on available infrastructure mapping services.

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The Proposed Development will not be connected to the public water network. The water supply for the Proposed Development is organised into three categories: Fire Water, Grey Water, and Potable Water.

- Fire Water: This supply is sourced from roof drain runoff, which is conveyed through underground piping and stored in an underground tank.
- Grey Water: This is produced from rainwater harvesting and the reverse osmosis process within the facility and will be used for toilet flushing.
- Potable Water: Clean water for drinking and cleaning will be delivered to the site.

The proposed rainwater harvesting tanks will supply the development with fire-fighting water capacity, washdown facility water capacity and for treatment via reverse osmosis and UV disinfection for potable water supply alongside grey-water for use within sanitary facilities.

It is proposed to collect the runoff generated from a substantial portion of the impermeable surfaces throughout the site, building roofs and service yards, to discharge to the rainwater harvesting tanks. The tanks will have an overflow facility to ensure that surcharging is limited and that flow through to the outfall can be maintained in high intensity precipitation events.

During construction, the existing piped water source for the livestock will be utilised, and potable water will be supplied for drinking and cleaning purposes.

14.4.7 Gas Network

Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) at the site, connecting to the existing medium pressure distribution gas pipeline located onsite. The GIU will be owned and operated by Gas Networks Ireland.

GNI has confirmed that the existing grid capacity is adequate to accommodate the production output of the Proposed Development. All works to the existing and proposed gas pipelines will be carried out by GNI in accordance with *Standard I.S. 328 2021 Gas transmission – Pipelines and pipeline installations*.

Figure 14.4 illustrates the existing gas networks in the area and the proposed pipeline connection point within the boundary of the Proposed Development.

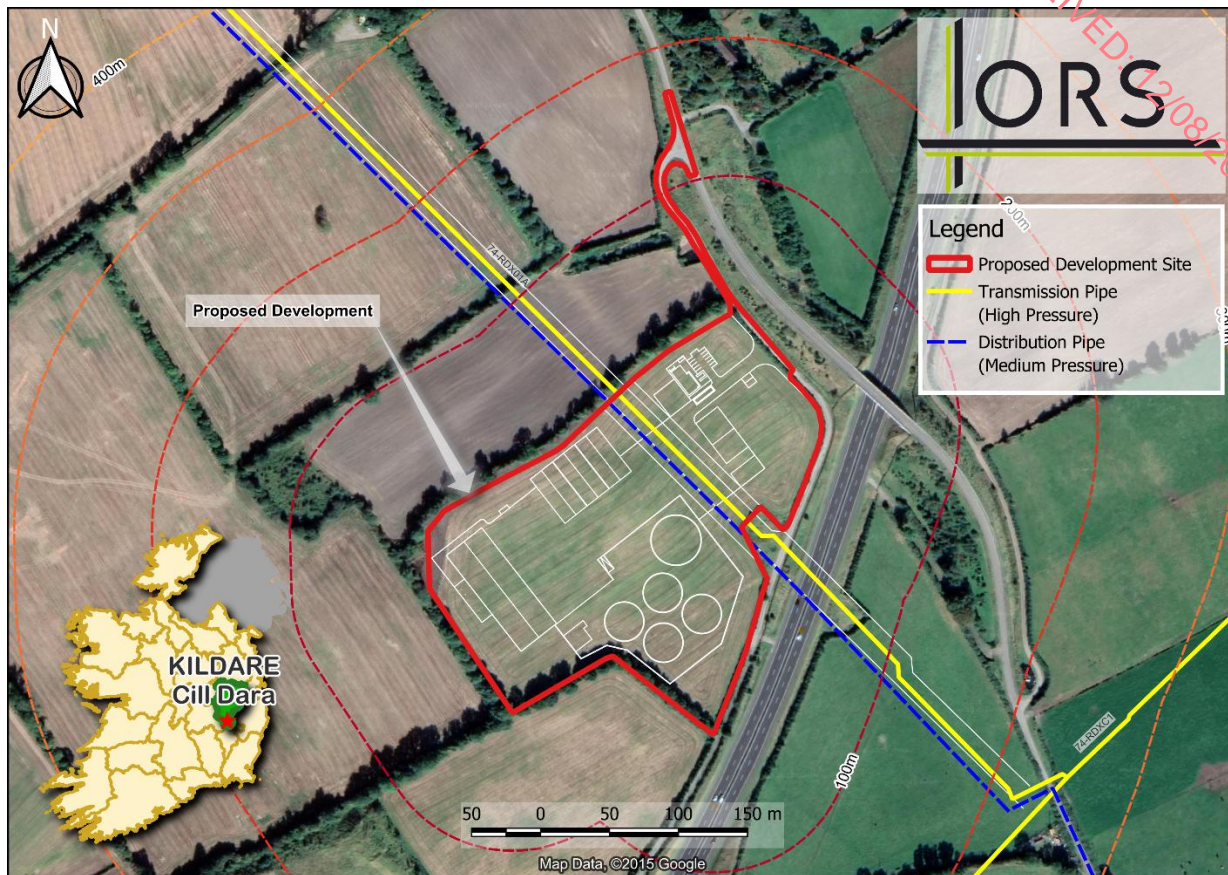


Figure 14.4: Proposed gas network connection point within the site boundary.

14.4.8 Electricity Network

There is no ESB network infrastructure within the proposed site boundary or where the proposed access to the site is. There are no power lines or poles within the site boundary. No ESB network infrastructure will have to be moved or relocated, there will be no requirement for relocation of utility poles or lines. See **Figure 14.5** below for an overview of the existing electricity network in the Ballyvass area.

An ESB substation will be installed within the Proposed Development. The substation will be designed and constructed in accordance with published ESB standard details and subject to ESB certification. A transformer will be incorporated into the substation to convert imported high voltage electricity to low voltage for use on site. Consultation with ESB is underway and a grid connection application has been submitted.

The Proposed Development will be powered by the onsite CHP unit and Solar PV during normal operation, with power supply from the grid provided only as a backup.

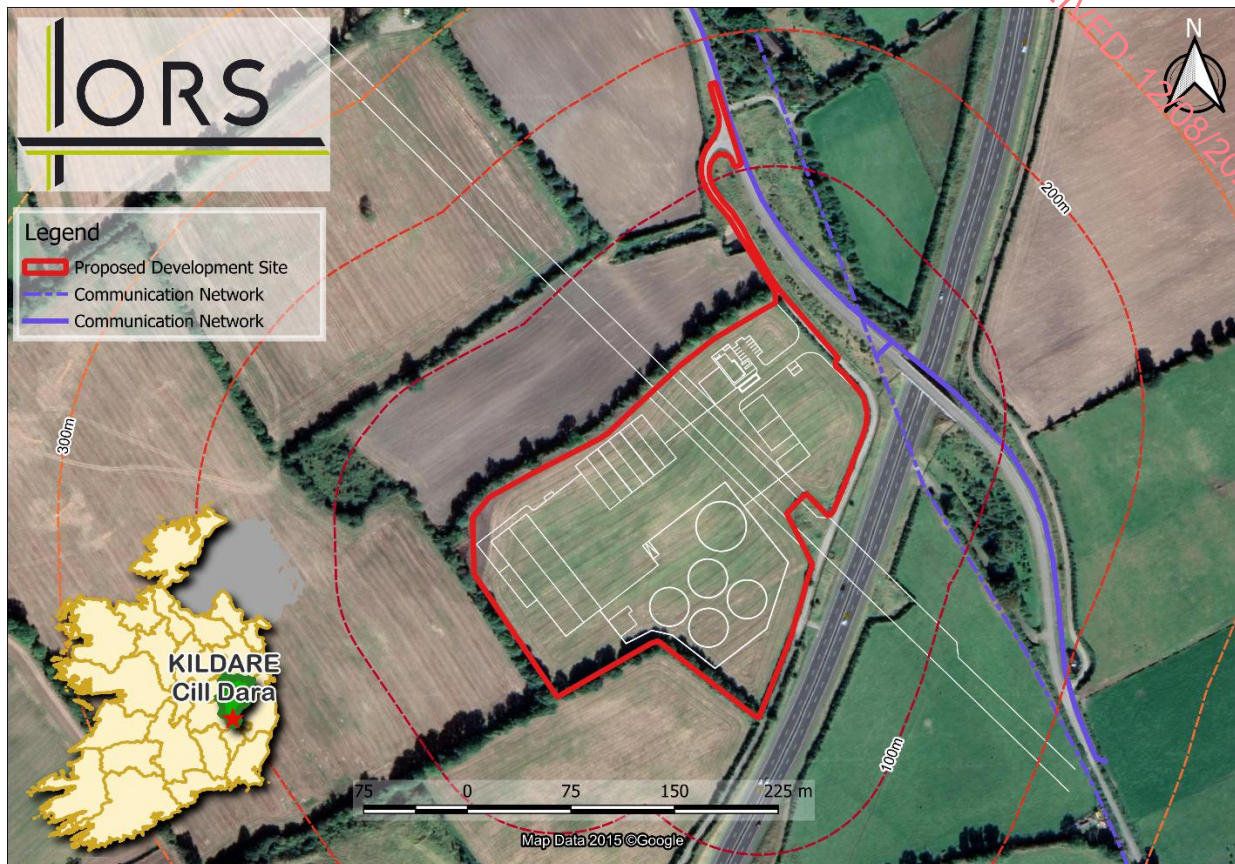


Figure 14.5: Existing Electricity Network (ESB). Medium Voltage (MV) (10KV/20KV) main overhead line indicated in green.

14.4.9 Telecommunications Infrastructure

The Proposed Development will feature an office and canteen facility which will require connections to telephone lines and Wi-Fi.

At present, telecommunication lines run along the L8050 Road along the access point of the Proposed Development. **Figure 14.6** below shows the overview of the existing telecommunication network and its proximity to the Proposed Development.

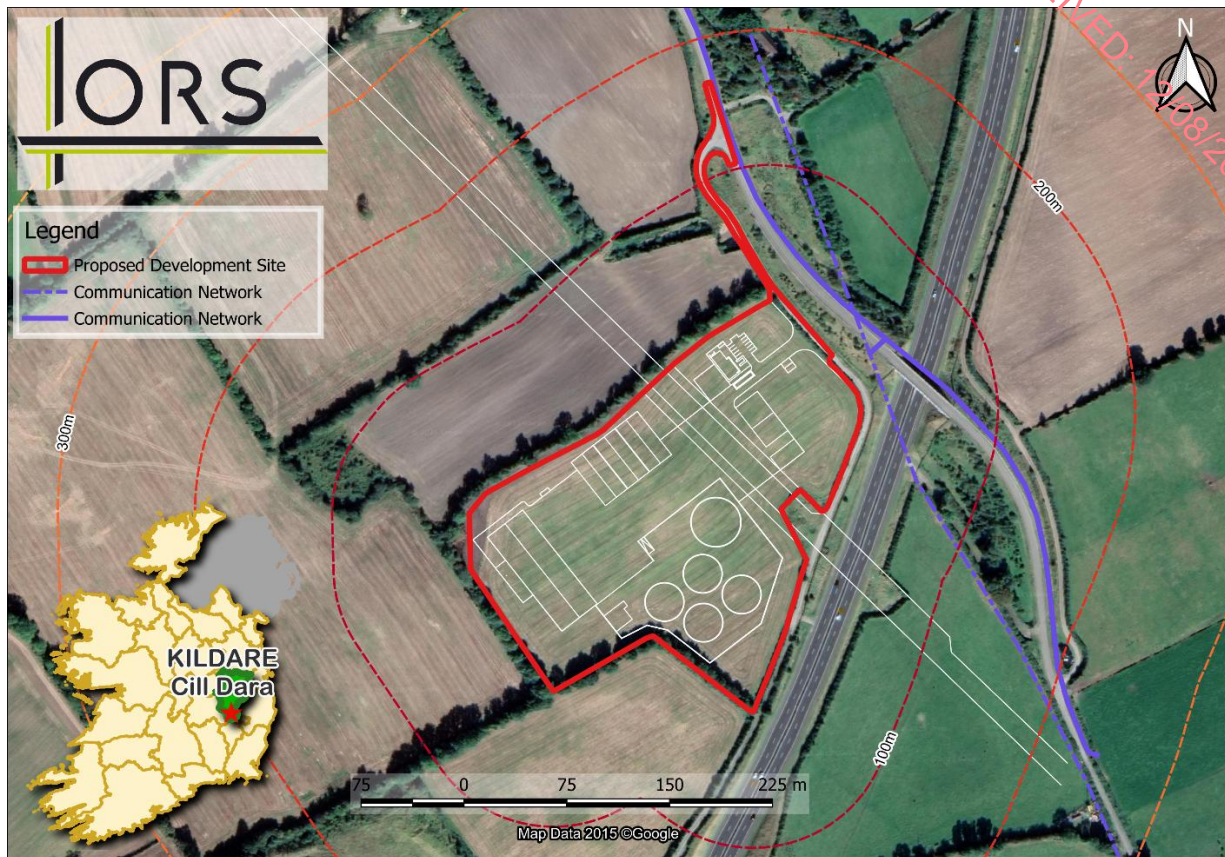


Figure 14.6: Existing telecommunication network (blue) around proposed site and surrounds (Eir). Proposed Development indicated in red.

14.4.10 Municipal Waste

There will be several waste streams generated during the construction phase of this project and these waste streams and the associated mitigation measures to limit their impact are discussed in more detail in the outline Construction Environmental Management Plan (CEMP) that accompanies this application.

Given the nature and scale of Proposed Development, significant volumes of waste during the operational phase are not anticipated. It is proposed that 3-5 no. full-time staff will occupy the premises once operational. Reference was given to British Standard Waste Management in Buildings – Code of Practice (BS 5906:2005) to provide an estimate volume of waste arising during the operational phase. Assuming a volume of 50l of waste arising per employee per week, it is estimated that weekly waste arisings will equate to approximately 250l per week.

14.5 Likely Significant Impacts

The assessment focuses on predicted effects in relation to the Material Assets. Based on the dataset obtained during the desk study, and evidence collected, the following risk assessment has been carried out. The assessment relates to effects occurring during both the construction and operational phases of the development.

This is provided with reference to both the characteristics of the receiving environment and the characteristics of the Proposed Development while also making references to the magnitude and intensity, duration, and probability of the impacts.

An impact assessment addresses direct, indirect, secondary, cumulative, short, medium, and long-term, temporary, permanent, positive, and negative effects as well as impact interactions.

14.5.1 Construction Phase

Potential construction phase effects are considered in detail below and summarised in **Table 14.1**.

Roads Infrastructure

During the construction phase, deliveries and construction personnel will access the site daily. The arrivals and departures are expected to be spread out throughout the day; however, it is expected that they will be arranged in a manner to avoid traffic peak hours in the surrounding road network.

The construction will operate within Kildare County Council's recommended hours, which are from 08:00 to 18:00 from Monday to Friday and between 08:00 to 14:00 on Saturdays. No works shall be carried out on Sundays and public holidays or outside the aforementioned hours.

Construction traffic associated with the Proposed Development will include:

- Construction personnel accessing the site by private vehicles and vans.
- Delivery of materials (here include what type of materials) by vans and HGVs.
- Earthworks machinery (excavators, rollers and dumper trucks) transported by HGVs.
- HGVs for the export surplus excavated material.

It is expected a maximum of 20No. to 30No. construction personnel to be at the site at the same time (typically 1.2 workers per car) that will arrive and depart outside the peak network times. Deliveries are expected to arrive at a steady rate throughout the day. It is anticipated that the generation of HGV traffic during the construction period will be evenly distributed throughout the day, ensuring minimal impact during peak traffic periods.

Haul routes for construction traffic are to be agreed upon with Kildare County Council during the preparation of the Construction Traffic Management Plan (CTMP).

Access Road

Vehicular access to the site is through a new proposed priority T-junction off the L8050 Local Road to the north of the site. During the construction phase, Traffic will use the unnamed access road to the northern boundary to connect the Proposed Development to the public road network L8050, R448 and onwards to the M9.

L8050

The current road alignment and capacity are deemed sufficient to support the development without any additional interventions to the existing road infrastructure. Landscaping works are proposed either side of the proposed access junction to facilitate sightline requirements. In the absence of mitigation, there is potential for there to be **negative, slight, and temporary** impacts on the the L8050 road during the construction phase as a result of the access junction works and traffic management measures.

R448

The current road alignment and capacity are deemed sufficient to support the development without any additional interventions. In the absence of mitigation, as a result of these works there is potential for there to be **neutral, slight** and **temporary** impacts on the R448 during the construction phase.

Foul Water Network

During the construction phase, welfare facilities for staff will be supplied via portable toilets and waste collected and tankered offsite.

Construction will involve installation of a 6PE EuroTank BAF2 EN12566/3 SR66 Certified Secondary Wastewater Treatment system with Tertiary Treatment using moving bed technology in a 3-stage biological aeration filtration process with an infiltration area of min 60m², as recommended in the Site Suitability Assessment.

Testing and assessment have been carried out in accordance with the requirements of EPA Code of Practice Wastewater Treatment Manuals Treatment Systems for Single Houses (p.e.< 10).

It is concluded that impacts on the local foul water network during the construction phase is **neutral, slight**, and **temporary**.

Surface Water Network

Impacts that may arise as a result of construction works include;

- Increased runoff and sediment loading reaching surface water receptors.
- Accidental spillages of harmful substances such as fuels, oil, chemicals and cement and subsequent migration to surface water receptors.

If best practice is not adhered to, there is the possibility of increased surface water runoff and sediment loading particularly during periods of heavy rainfall that may impact the local surface water receptors (Refer to **Chapter 8** for further details).

In the absence of mitigation, as a result of these works there is potential for there to be **negative, slight**, and **temporary** impacts on the local surface water network.

Public Water Network

The Proposed Development will not be connected to the public water network.

During construction, the existing piped water source for the livestock will be utilised, and potable water will be supplied for drinking and cleaning purposes.

In the absence of mitigation, as a result of these works there is potential for there to be **neutral, slight**, and **brief** impacts to the public water network supply during the construction phase.

Gas Infrastructure

Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) and a new connection point will be established within the site boundary to supply the existing medium pressure distribution gas pipeline that traverses the site. The GIU will be owned and operated by Gas Networks Ireland. There may be a brief disruption to the local gas supply to facilitate

the connection works during the construction phase.

All works proposed on the existing and proposed gas pipelines will be carried out by GNI under their statutory powers and completed in accordance with Standard I.S. 328 2021 Gas transmission – Pipelines and pipeline installations.

Installation of Gas Pipeline

Biomethane will be compressed and upgraded onsite and injected into the national grid via the onsite Grid Injection Facility. Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU). The GIU will be owned and operated by Gas Networks Ireland. There will be no disruption to the local gas supply during the construction or operational phase of the facility.

There will be a brief impact to the existing gas network during the construction phase while the connection to the grid is being established to the existing gas grid network. The development would have a positive impact on the gas network, with an opportunity to supply the national gas grid with a renewable source of biogas.

In the absence of mitigation, as a result of these works there is potential for there to be **negative, slight, and brief** impacts to the local gas network during the construction phase.

Electricity Network

Power supply for plant and machinery during the construction phase will be predominantly supplied by generators onsite. An ESB substation will be installed onsite for use during the operational stage. There may be partial disruption to the existing electricity network as connection to the grid via the substation is established.

In the absence of mitigation, as a result of these works there is potential for there to be **negative, slight, and temporary** impacts to the local electricity network during the construction phase.

Telecommunications

Fixed services telecommunication will not be operational during the construction phase.

Potential loss of connection to the telecommunications infrastructure while carrying out works to extend the existing network to service the Proposed Development could occur.

In the absence of mitigation, as a result of these works there is potential for there to be **negative, slight, and brief**, impacts on the telecommunication network during the construction phase.

Municipal Waste

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction. General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste.

Waste materials will be required to be temporarily stored on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or

pollution issues at the Development Site and in adjacent areas.

In the absence of mitigation, as a result of these works there is potential for there to be **negative, slight**, and **temporary** impacts to the local waste infrastructure during the construction phase.

Summary of Construction Phase Effects

Table 14.1: Construction Phase Effects (Unmitigated).

Asset	Potential Environmental Effects	Quality	Significance	Duration
Roads Infrastructure	Increased flow of construction-related traffic. Establishing the entrance to the site will require the implementation of temporary traffic management measures along the local access road to the north of the site.	Neutral to Negative	Slight	Brief to Temporary
Foul Water Network	During the construction phase, welfare facilities for staff will be supplied via portable toilets and waste collected and tankered offsite. A domestic scale wastewater treatment plant is proposed for installation during construction stage. It has been concluded that the soils at the Proposed Development have sufficient absorption capacity for the installation of a percolation area.	Neutral	Slight	Temporary
Surface Water Network	Contaminated runoff reaching surface water receptors. Spillage of contaminants such as fuels, oils, chemicals, and cement material and subsequent migration into surface water receptors.	Negative	Slight	Temporary
Public Water Network	The Proposed Development will not be connected to the public water network.	Neutral	Slight	Brief
Gas Infrastructure	Disruption to existing network while establishing connection. All works involved in establishing the pipeline connection to the existing gas network will all be contained within the site boundary and will not require the implementation of temporary traffic management measures along local roads.	Negative	Slight	Brief
Electricity Network	Power supply for plant and machinery during the construction	Negative	Slight	Brief

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	<p>phase will be predominantly supplied by generators onsite.</p> <p>There may be partial disruption to the existing electricity network as connection to the grid via the substation is established.</p>			
Telecommunications	Disruption to existing network while establishing connection.	Negative	Slight	Brief
Municipal Waste	<p>The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction.</p> <p>Waste materials will be required to be temporarily stored on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues.</p>	Negative	Slight	Temporary

14.5.2 Operational Phase

The site will be functional 24 hours a day for 7 days a week with staff onsite during normal working hours from 0700 and 1800 Monday to Friday, and 0700 to 1600 on Saturday. Outside of these hours, the process is monitored remotely. There are no shifts, and it is expected that ca. 2-5 staff members will be present at the premises during normal working hours. Potential operational phase effects are considered in detail below and summarised in **Table 14.2**.

Roads Infrastructure

The Proposed Development plans include providing vehicular access from the L8050 to the northwest of the site. Arrivals and departures will be via the Regional Road R448, located southeast of the site, and all traffic will utilise the L8050/R448 priority T- junction to/from the proposed site.

The L8050 is a single-lane carriageway, approximately 5-6 metres wide, that accommodates two-way traffic that gains access to the Regional Road R448 to the northwest, with an increasing width towards the mouth of the priority junction formed by the L8050 and the R448. At this junction, the road is equipped with road markings, which are essential for guiding vehicle drivers effectively, while a 'STOP' sign is in place.

The R448 is a two-way flow single carriageway road running in a north–south direction, providing connectivity between Naas to the north and Carlow Town to the south. The carriageway width varies along its length, measuring approximately 8m at its junction with the L8050. At this location, the R448 features continuous solid white double centreline, indicating no overtaking along this road section, and intermittent yellow edge road markings. The posted speed limit along this section of the R448 is 100 kph.

The proposed access was designed to accommodate the expected HGV traffic and was designed in accordance with the Transport Infrastructure Ireland (TII) publication DN-GEO-03060.

The operational phase of the development will generate a maximum of 60No. vehicle

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movements day, where 50No. are HGVs and 10No. are private vehicles and vans. The additional vehicles will represent a maximum of 13.5% increase in traffic under a very conservative scenario and will not generate queues and delays along the road network in the vicinity of the site, therefore, no mitigation measure is proposed for the operational phase of the development.

As a result of these works there is potential for there to be **neutral, slight, and long-term** impacts on the Road Infrastructure during the operational stage.

Foul Water Network

Connection to the public foul water network will not be required during the operational phase. The Proposed Development will have 3-5 workers on site each day with normal loadings of 30l/day and BOD of 20g/day. The wastewater from the toilet and canteen will be treated using a proprietary system as recommended in Site Suitability Assessment.

Testing and assessment have been carried in accordance with the requirements of EPA Code of Practice Wastewater Treatment Manuals Treatment Systems for Single Houses (p.e.< 10).

As a result of these works there is potential for there to be **neutral, imperceptible, and long-term** impacts to the foul water network.

Surface Water Network

The proposed development will require the collection, attenuation and disposal of surface water accumulated during rainfall events.

Given the variable water table and low permeability substrata observed alongside the proposed depth of construction it was not considered feasible to mobilise discharge to ground for the development.

Surface water runoff generated from the site will be contained within the attenuation structures proposed and discharged at greenfield runoff rates to the adjacent drainage ditch. It is proposed to collect the runoff generated from a substantial portion of the impermeable surfaces throughout the site, building roofs and service yards, to discharge to several rainwater harvesting tanks. The tanks will have an overflow facility to ensure that surcharging is limited and that flow through to the outfall can be maintained in high intensity precipitation events. Measures which were deemed suitable in controlling the quality and quantity of water being discharged from the development include:

- Collection of excess roof rainwater and runoff from impermeable surfaces and attenuating this runoff prior to discharge to an outfall location.
- The use of linear channels with sumps throughout the development.
- The implementation of above ground attenuation (detention basin) solution.
- The use of petrol interceptors.
- The use of rainwater harvesting tanks.

The rate of discharge to the stream will be restricted to a maximum permissible rate of:

- Western service yard: 3.1 l/s.
- Office and eastern service yard: 1.7 l/s.
- Sump/Lower Level: 2.3 l/s.
- Cumulative site discharge: 7.1 l/s.

This rate shall be achieved through attenuation in the attenuation pond and a variable head orifice in the outlet structure/manhole of the pond. This rate is calculated in accordance with criteria defined in the Greater Dublin Strategic Drainage Study ['GDSDS'] to ensure the proposed development will not affect the flow / flood regimes in the receiving environment.

During the operational phase, it should be noted that a risk of spillage / leakage is posed as a result of vehicle movements while carrying materials such as biobased fertiliser or feedstocks. Should spillage occur, surface water receptors may be impacted.

Taking the proposed surface water management systems into consideration, in the absence of mitigation there is potential for there to be **negative, slight, and long-term** impacts to the surrounding surface water network.

Public Water Network

The Proposed Development will not be connected to the public water network. The water supply for the Proposed Development is organised into three categories: Fire Water, Grey Water, and Potable Water.

- Fire Water: This supply is sourced from roof drain runoff, which is conveyed through underground piping and stored in an underground tank.
- Grey Water: This is produced from rainwater harvesting and the reverse osmosis process within the facility and will be used for toilet flushing.
- Potable Water: Clean water for drinking and cleaning will be delivered to the site.

As a result of these works there is potential for there to be **neutral, slight, and brief** impacts to demand on the public water network.

Gas Infrastructure

During the operation phase, biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) onsite, connecting the site to the existing medium pressure distribution gas pipeline which traverses the site. The GIU comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the gas network.

Based on the feedstock composition and design operating capacity, it is projected that the Proposed Development will produce 510-580 Nm³ of biomethane per hour, to be supplied to the existing gas network.

As a result, there will be **positive, significant, and long-term** impacts on gas infrastructure.

Electricity Network

Power will be produced on site by CHP generation and solar PV panels to supply the daily operation of the Proposed Development. An ESB substation will be constructed and will provide connection to the national grid, although this source of power will serve only as a backup.

As a result of these works there is potential for there to be **negative, slight, and long-term** impacts on the electricity network during the operational phase.

Telecommunications

Fixed services telecommunication will be required during the operational phase of this project. There will be an office/canteen/lab onsite that will require use of this asset. Connection to the existing telecommunications network to the north of the site will be established during the construction phase. The impact from the operational phase will see an increase in demand on the local telecommunications network. It is not envisaged that demand on the telecommunications network will be significant.

As a result of these works there is potential for there to be **negative, slight, and long-term** impacts.

Municipal Waste

It is proposed that 3-5 no. full-time staff will occupy the premises once operational. Reference was given to British Standard Waste Management in Buildings – Code of Practice (BS 5906:2005) to provide an estimate volume of waste arisings during the operational phase. Assuming a volume of 50l of waste arising per employee per week, it is estimated that weekly waste arisings will equate to approximately 250l per week.

Waste contractors will be required to service the Proposed Development on a regular basis to remove waste. It is essential that all waste materials are dealt with in accordance with regional and national legislation.

As a result of these works there is potential for there to be **negative, slight, long-term** impacts on Municipal Waste infrastructure.

Summary of Operational Phase Effects

Table 14.2: Operational Phase Effects (Unmitigated).

Asset	Potential Environmental Effects	Quality	Significance	Duration
Roads Infrastructure	A new entrance will be constructed and connected to the pre-existing road network.	Neutral	Slight	Long-Term
Foul Water Network	Wastewater from welfare facilities and canteen will be treated using a proprietary system as recommended in Site Suitability Assessment.	Neutral	Imperceptible	Long-Term
Surface Water Network	Establishment of clearly defined work areas which can be monitored and isolated if required, for example, the bunded area. Run-off from the buildings and yards collected in a sealed pipe network which will discharge to the stream. Rain falling on the bunded area will be collected in a separate sealed drainage network and discharged to a sump, from which it will be pumped to the surface water drainage system	Negative	Slight	Long-term

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	for the remaining areas of the Proposed Development. Leakage / spillage of biobased fertiliser or feedstocks via vehicle movements.			
Public Water Network	Potential contamination to the local aquifer/Potential risk to human health	Negligible	Slight	Long-term
Gas Infrastructure	<p>Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) onsite, connecting the site to the existing medium pressure distribution gas pipeline which traverses the site.</p> <p>The GIU comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the gas network.</p> <p>It is projected that the Proposed Development will produce 510-580 Nm³ of biomethane per hour, to be supplied to the existing gas network.</p>	Positive	Significant	Long-Term
Electricity Network	An ESB substation will be constructed and will provide connection to the national grid, although this source of power will serve only as a backup.	Negative	Slight	Long-Term
Telecommunications	Increased demand on existing network.	Negative	Slight	Long-Term
Municipal Waste	<p>Increased waste production of ca. 250l per week.</p> <p>Increased demand on waste collection services.</p>	Negative	Slight	Long-Term

14.6 Mitigation Measures

14.6.1 Construction Stage

Mitigation measures proposed in this section relate primarily to the prevention and mitigation of negative impacts to the surrounding environment during construction of the Proposed Development. A Construction Environmental Management Plan (CEMP) will be prepared and implemented by the Contractor during the construction phase. This document will outline best practice and site-specific mitigation measures to minimise disruption and impacts to receptors. Typical mitigation measures that are incorporated on a project such as this are outlined below.

Roads Infrastructure

Mitigation measures to lessen the impact on the local road network and regulate traffic flows during the construction phase include:

- A detailed Traffic Management Plan (TMP), produced in accordance with Chapter 8 of the

Traffic Signs Manual, will be finalised and agreed upon with the Local Authority prior to construction works commencement.

- Appointment of a Construction Project Manager to be responsible for the day-to-day implementation of measures outlined in the TMP
- Identify routes to be used in the delivery and export of materials to the site and routes that shall be avoided by HGVs
- Monitor the condition of the roads throughout the construction period and a truck-mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required
- Access to the site to be monitored at all times by a banksman who will direct traffic safely into the construction site and facilitate the safe navigation of larger construction vehicles.
- Traffic management measures will be implemented on a temporary basis while connections underground services (gas, telecommunications, water) are established.

Foul Water Network

Mitigation measures to prevent undue impacts to the foul network during the construction phase include:

- Excavations to be backfilled as soon as possible to prevent any infiltration of contaminants to the subsurface and the aquifer.
- All foul water infrastructure to be installed in accordance with the relevant industry standards.

Surface Water Network

Mitigation measures to minimise impacts to the surrounding surface water network and receptors during the construction phase will be included in the site-specific CEMP generated for this development. The primary mitigation measures typically implemented are summarised as follows:

- A temporary drainage system will be established complete with oil interceptors and settlement ponds to remove contaminants from run-off, prior to discharge off-site.
- Stockpile areas for sands and gravel should be kept to minimum size, well away from storm water drains and gullies leading off-site.
- Covers are to be provided over soil stockpiles when high wind and inclement weather are encountered, if required.
- Excavations to be backfilled as soon as possible to prevent any infiltration of contaminants to the subsurface and the aquifer.
- Landscaping to take place as soon as possible to reduce weathering.
- Harmful materials such as fuels, oils, greases, paints and hydraulic fluids must be stored in bunded compounds well away from storm water drains and gullies. Refuelling of machinery should be carried out using drip trays.

Public Water Network

The Proposed Development will not be connected to the public water network. Mitigation measures to prevent undue impacts to the public network during the construction phase include:

- Excavations to be backfilled as soon as possible to prevent any infiltration of contaminants to the subsurface and the aquifer.

Gas Infrastructure

Mitigation measures to prevent undue impact to the existing gas network during the construction phase include:

- All works to the existing and proposed gas pipelines will be carried out by GNI in accordance with Standard I.S. 328 2021 Gas transmission – Pipelines and pipeline installations.

Electricity Network

Mitigation measures to prevent undue impact to the existing electricity network during the construction phase include:

- Consultation with ESB and Dial-Before-You-Dig platforms prior to works on the existing electricity network.
- Implement best practice measures when working on electricity lines.
- Inform the public of when works are to be carried out to ensure they are aware of any temporary interruptions in power supply that may occur.

Telecommunications Infrastructure

Mitigation measures to prevent undue impact to the existing telecommunications network during the construction phase include:

- Consultation with Eir and Dial-Before-You-Dig platforms prior to works on the existing telecommunications network.
- Implement best practice measures when working on telecommunications lines.
- Inform the public of when works are to be carried out to ensure they are aware of any temporary telecommunications outages that may occur.

Municipal Waste

Mitigation measures to improve waste management practices and prevent excessive waste generation during the construction phase include:

- Inform staff through toolbox talks/training etc on the relevance and importance of correct waste segregation and management.
- Ensure waste receptacles available for the different identified waste streams to ensure proper and efficient segregation of waste onsite.
- Install signage to promote and encourage proper waste segregation, recycling etc.
- Ensure bins/skips are not allowed to overflow to prevent litter build-up onsite.
- Ensure all bins have lids and skips are covered when be removed offsite to prevent littering elsewhere.
- Ensure waste is collected by a registered vendor and disposed of at a facility licenced to take said waste.
- Maintain good waste records onsite to ensure all is accounted for.
- Concrete Washout Skip: Chutes of concrete trucks are only to be washed out into an impermeable lined (polythene) skip. The washout water is to be treated prior to discharge.
- The concrete washout skip is to be located to the east of the site, where the overburden is greater.
- Excavations lined with an impermeable liner are not permitted as concrete washout bays.

- Large excess loads of concrete are to be returned to the supplier or poured into concrete block modules (Betonblock or similar design) to minimise waste and reduce the risk of concrete being dumped throughout site.

14.6.2 Operational Stage

Mitigation measures proposed in this section relate primarily to the preservation and protection of the existing Material Assets near the Proposed Development. An Environmental Management System (EMS) to ISO 14001 standard will be prepared and implemented by the operator during the operational phase. This is a practical document which will include detailed procedures to address the main potential effects on the environment.

Having regard to current law and practice, the Proposed Development will require an application for an Industrial Emissions (IE) licence to the EPA. In the event of a grant of licence by the EPA to carry out activities that require such licence, it is expected that the licence will contain several conditions which the operator must remain in compliance with for the entire duration of the Anaerobic Digestion Facility's lifespan. Typical conditions relating to environmental management include:

- Emissions Limit Values for all emissions.
- Monitoring requirements.
- Resource use and energy efficiency.
- Waste management control and documentation.
- Storage and transfer of substances.
- Facility management.
- Accident prevention and emergency response.
- Operational Controls.

Mitigation measures aimed at minimising impacts to the Material Assets outlined above during the operational phase are listed below.

Roads Infrastructure

The operational phase of the development will generate a maximum of 60No. vehicle movements day, where 50No. are HGVs and 10No. are private vehicles and vans. The additional vehicles will represent a maximum of 13.5% increase in traffic under a very conservative scenario and will not generate queues and delays along the road network in the vicinity of the site, therefore, no mitigation measure is proposed for the operational phase of the development.

Strong lines of communication with hauliers, strict delivery schedules and just-in-time delivery methods will be in operation to ensure no more than two trucks will visit the site at any one time.

Foul Water Network

Mitigation measures to prevent undue impacts to the foul network during the operational phase include:

- A regular schedule of foul infrastructure inspection and maintenance will be carried out over the lifetime of the Proposed Development.
- The onsite WWTP will be subject to regular desludging and maintenance, subject to

manufacturer recommendations.

Surface Water Network

Surface water drainage measures onsite will be constructed in accordance with SUDs standards. Mitigation measures to ensure adequate usage of the surface water network during the operational phase include:

- Dedicated hard standing for off-loading areas will be established, with a minimum separation distance from adjacent water courses.
- Use of spill kits, bunded pallets and secondary containment units, as appropriate.
- All bunds sized to contain 110% of the volume of the primary storage vessel.
- All bunds and pipelines (foul & process) will be subject to integrity assessments every 3 years by a suitably qualified engineer.
- Surface water drainage features onsite will undergo routine inspection and maintenance to ensure absence of blockages or leaks.
- The site will be subject to annual inspections from the EPA which will assess compliance with conditions outlined in the IEL. Surface water outflows from the site will be assessed as part of these inspections to ensure emissions from the site are compliant with the license.

Public Water Network

The Proposed Development will not be connected to the public water network.

Mitigation measures for protection of the public water network are summarised as follows:

- Wash water will be supplied from rainwater harvesting or from treated process water. This water will undergo UV treatment and reverse osmosis prior to storage and use.

Gas Infrastructure

Mitigation measures to prevent undue impact to the existing gas network during the operational phase include:

- The onsite Grid Injection Unit (GIU) and related gas infrastructure will be installed and maintained by Gas Networks Ireland. All works to the existing and proposed gas pipelines will be carried out by GNI in accordance with Standard I.S. 328 2021 Gas transmission – Pipelines and pipeline installations.

Electricity Network

Mitigation measures to prevent undue impact to the existing electricity network during the operational phase include:

- Utilisation of power from the public grid will serve only as a backup. Power usage for the Proposed Development under normal operating conditions will be supplied by CHP and solar PV array onsite.

Telecommunications Network

No mitigation measures are proposed for the operational phase of the Proposed Development. The onsite office/canteen/staff welfare facility will require a constant telecommunications

connection meaning a slight negative impact due to increased demand on the existing network is unavoidable.

Municipal Waste

Mitigation measures to improve waste management and prevent excessive waste generation during the operational phase include:

- Inform staff through toolbox talks/training etc on the relevance and importance of correct waste segregation and management.
- Ensure waste receptacles available for the different identified waste streams to ensure proper and efficient segregation of waste onsite.
- Install signage to promote and encourage proper waste segregation, recycling etc.
- Ensure bins/skips are not allowed to overflow to prevent litter build-up onsite.
- Ensure all bins have lids and skips are covered when be removed offsite to prevent littering elsewhere.
- Ensure waste is collected by a registered waste collection permit holder and disposed of at a facility licenced to take said waste.
- Maintain good waste records onsite to ensure all waste is accounted for.

14.6.3 Do Nothing Scenario

If the Proposed Development does not proceed there will be no additional impact on the local Material Assets. The rate of demand on the road infrastructure, electrical, public water, foul water, surface water, and telecommunication networks would remain unchanged.

Under the 'Do Nothing' scenario there would be no change to the current land use of the site.

A breakdown of consequences for each material asset listed in this report is outlined below.

Roads Infrastructure

According to projections outlined in Chapter 12 – Traffic and Transport, traffic flow along the local road will increase in coming years. Under the 'Do Nothing' scenario, traffic volume and flow would increase on both roads.

Foul Water Network

Under the 'Do Nothing' scenario, there would be no further impacts on the local foul water network.

Surface Water Network

Under the 'Do Nothing' scenario, there would be no further impacts on the local surface water network. Surface water outflows from the site would remain at existing greenfield runoff rates.

Public Water Network

Under the 'Do Nothing' scenario, there would be no further impacts on the local public water network.

Gas Infrastructure

Under the 'Do Nothing' scenario, an opportunity to supply the national gas grid with a renewable source of biogas will be missed.

Electricity Network

Under the 'Do Nothing' scenario, there would be no further impacts on the local electricity network. The site would remain as greenfield and the need for a connection to the national power grid would not be required.

Telecommunications Network

Under the 'Do Nothing' scenario, there would be no further impacts on the local telecommunications network. Proposed connection to the telecommunications network would not be required and slight negative impacts to the network would not be established.

Municipal Waste

Under the 'Do Nothing' scenario, waste generated by the site would remain at existing levels. The slight negative impacts to local waste infrastructure associated with the Proposed Development would not be established.

14.7 Cumulative Effects

Within the European Commission - Guidelines for the Assessment of Indirect and Cumulative effects as well as Impact Interactions, dated May 1999, cumulative effects are described as "effects" that result from incremental changes caused by other development, plans, or projects together with the Proposed Development or developments".

The cumulative effects of the proposed construction and operation of an Anaerobic Digestion Facility at Ballyvass, Co. Kildare with other developments in the area is reviewed in this section with specific regard to the local Material Assets.

The site of the Proposed Development is situated in a reasonably underdeveloped region of Kildare. According to the Kildare County Council Planning Application Map. There is 1No. permitted planning application to the southwest of the proposed site for the extension to the existing sand and gravel pit with an extraction area of 4.890 hectares, under Ref. No. 23/60256. The entrance to the sand and gravel pit will be via the existing access road which intersects the L8050 Local Road, from which the proposed development will also be accessed. However, there is an absence of large-scale proposed developments in the vicinity of the Proposed Development for significant cumulative impacts to arise from neighbouring development.

The proposed construction and operational phase of the development will generate a minimal impact on the material assets in the vicinity of the site.

Material Assets are linked with multiple chapters outlined in this EIAR.

Material Assets are linked with Biodiversity as discussed in Chapter 5. Implementation of successful surface water mitigation measures onsite will ensure the likelihood and consequence of environmental incidents that could impact protected within the area.

Material Assets are linked with Populations and Human Health as discussed in Chapter 6. Links between these chapters mainly relate to onsite resource and waste management.

Implementing rigorous waste management and cleaning protocols onsite will ensure that hygiene is maintained across site and the risk of vermin infestation is minimal.

Material Assets are linked with Hydrology and Hydrogeology as discussed in Chapter 8. The proposed foul, surface, and public water infrastructure comprising part of the Proposed Development will lead to potential impacts on the surrounding networks.

Material Assets are linked with Traffic and Transport as discussed in Chapter 12. There are no proposed improvements to the public road network surrounding the site. Strict lines of communications and adherence to traffic management will ensure regular traffic flows along the Local Road and connecting roads.

The interactions between chapters and how different environmental factors influence each other are discussed in Chapter 15.

14.7.1 Potential Cumulative Impacts

Construction Phase

The construction phase of the project will involve an increased demand on the existing waste infrastructure, road infrastructure, public water network and surface water network. The mitigation measures outlined in the CEMP and above should be applied throughout the construction phase of the Proposed Development. This will ensure any significant cumulative impacts on Material Assets and the greater environment are prevented.

Operational Phase

The major cumulative impacts of significance on the Material Assets for the operational phase of the Proposed Development are mainly from an increased demand on services such as the road infrastructure/traffic, telecommunications network, and surface water network.

The mitigation measures outlined in this report will ensure that cumulative impacts on Material Assets arising during the operational phase are minimised.

14.8 Residual Effects

According to Environmental Protection Agency guidelines, Residual Impact is described as 'the degree of environmental change that will occur after the proposed mitigation measures have taken place.' The mitigation strategy above recommends actions which can be taken to reduce or offset the scale, significance, and duration of the effects on the surrounding Material Assets.

The purpose of this assessment is to specify mitigation measures where appropriate to minimise the 'risk factor' to all aspects of the Material Assets and surrounding environment such as to minimise the potential damage to the existing networks during excavation, reduce the overall demand on the systems by promoting sustainable use of resources, etc. This 'risk factor' is reduced or offset by recommending the implementation of a mitigation strategy in each area of the study. On the implementation of this mitigation strategy, the potential for impact will be lessened.

Construction Phase

A site-specific Construction Environmental Management Plan (CEMP) will be devised and implemented throughout the duration of the construction phase. This document will contain all

the necessary procedures required to prevent and minimise any environmental risks posed by the project to the surrounding environment.

A summary of the predicted effects associated with the construction phase in terms of quality, significance, and duration, along with the proposed mitigation measures and resulting residual effects are summarised in **Table 14.3**.

The overall impact anticipated by the construction phase of the project following the implementation of suitable mitigation measures is considered to be ***negligible to neutral, imperceptible to slight, and brief to temporary***.

Operational Phase

A summary of the predicted effects associated with the operational phase in terms of quality, significance, and duration, along with the proposed mitigation measures and resulting residual effects are summarised in **Table 14.4**.

The overall impact anticipated by the operational phase of the project following the implementation of suitable mitigation measures is considered to be ***negligible to positive, slight to significant, and long term***.

Table 14.3: Summary of predicted construction phase impacts, mitigation measures and residual impacts.

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
Roads Infrastructure	<p>Increased flow of construction-related traffic.</p> <p>A new access road will be constructed and connected to the pre-existing road network.</p> <p>Establishing the entrance to the site will require the implementation of temporary traffic management measures along the unnamed access road.</p>	Negative	Slight to Moderate	Temporary	<ul style="list-style-type: none"> A detailed Traffic Management Plan (TMP), produced in accordance with Chapter 8 of the Traffic Signs Manual, will be finalised and agreed upon with the Local Authority prior to construction works commencement. Appointment of a Construction Project Manager to be responsible for the day-to-day implementation of measures outlined in the TMP. Identify routes to be used in the delivery and export of materials to the site and routes that shall be avoided by HGVs. Monitor the condition of the roads throughout the construction period and a truck-mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required. Access to the site to be monitored at all times by a banksman who will direct traffic safely into the construction site and facilitate the safe navigation of larger construction vehicles. Traffic management measures will be implemented on a temporary basis while connections to services are being established. 	Negligible, Imperceptible, Temporary
Foul Water Network	<p>During the construction phase, welfare facilities for staff will be supplied via portable toilets and waste collected and tankered offsite.</p> <p>A domestic scale wastewater treatment plant is proposed for installation during construction stage. It has been concluded that the soils at the Proposed Development have sufficient absorption capacity for the installation of a percolation area.</p>	Negative	Slight	Temporary	<ul style="list-style-type: none"> Excavations to be backfilled as soon as possible to prevent any infiltration of contaminants to the subsurface and the aquifer. All foul water infrastructure to be installed in accordance with the relevant industry standards. 	Negligible, Imperceptible, Temporary
Surface Water Network	<p>Contaminated runoff reaching surface water receptors.</p> <p>Spillage of contaminants such as fuels, oils, chemicals, and cement material and</p>	Negative	Slight	Temporary	<ul style="list-style-type: none"> A temporary drainage system will be established complete with oil interceptors and settlement ponds to remove contaminants from run-off, prior to discharge off-site. Stockpile areas for sands and gravel should be kept to minimum size, well away from storm water drains and gullies leading off-site. 	Negligible, Imperceptible, Temporary

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
	subsequent migration into surface water receptors.				<ul style="list-style-type: none"> Covers are to be provided over soil stockpiles when high wind and inclement weather are encountered, if required. Excavations to be backfilled as soon as possible to prevent any infiltration of contaminants to the subsurface and the aquifer. Landscaping to take place as soon as possible to reduce weathering. Harmful materials such as fuels, oils, greases, paints and hydraulic fluids must be stored in bunded compounds well away from storm water drains and gullies. Refuelling of machinery should be carried out using drip trays. 	
Public Water Network	The Proposed Development will not be connected to the public water network.	Neutral	Slight	Brief	<ul style="list-style-type: none"> Excavations to be backfilled as soon as possible to prevent any infiltration of contaminants to the subsurface and the aquifer. 	Negligible, Imperceptible, Brief
Gas Network	Disruption to existing network while establishing connection.	Negative	Slight	Temporary	<ul style="list-style-type: none"> All works to the existing and proposed gas pipelines will be carried out by GNI in accordance with Standard I.S. 328 2021 Gas transmission – Pipelines and pipeline installations. 	Negligible, Slight, Brief
Electricity Network	<p>Power supply for plant and machinery during the construction phase will be predominantly supplied by generators onsite.</p> <p>There may be partial disruption to the existing electricity network as connection to the grid via the substation is established.</p> <p>There is no relocation of existing overhead power lines or poles.</p>	Negative	Slight	Temporary	<ul style="list-style-type: none"> Consultation with ESB and Dial-Before-You-Dig platforms prior to works on the existing electricity network. Implement best practice measures when working on electricity lines. Inform the public of when works are to be carried out to ensure they are aware of any temporary interruptions in power supply that may occur. 	Negligible, Slight, Brief
Telecommunications Network	Disruption to existing network while establishing connection.	Negative	Slight	Brief	<ul style="list-style-type: none"> Consultation with Eir and Dial-Before-You-Dig platforms prior to works on the existing telecommunications network. Implement best practice measures when working on telecommunications lines. 	Negligible, Imperceptible, Brief

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
					<ul style="list-style-type: none"> Inform the public of when works are to be carried out to ensure they are aware of any temporary telecommunications outages that may occur. 	
Municipal Waste	<p>The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction.</p> <p>Waste materials will be required to be temporarily stored on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues.</p>	Negative	Slight	Temporary	<ul style="list-style-type: none"> Inform staff through toolbox talks/training etc on the relevance and importance of correct waste segregation and management. Ensure waste receptacles available for the different identified waste streams to ensure proper and efficient segregation of waste onsite. Install signage to promote and encourage proper waste segregation, recycling etc. Ensure bins/skips are not allowed to overflow to prevent litter build-up onsite. Ensure all bins have lids and skips are covered when be removed offsite to prevent littering elsewhere. Ensure waste is collected by a registered vendor and disposed of at a facility licenced to take said waste. Maintain good waste records onsite to ensure all is accounted for. Concrete Washout Skip: Chutes of concrete trucks are only to be washed out into an impermeable lined (polythene) skip. The washout water is to be treated prior to discharge. The concrete washout skip is to be located to the east of the site, where the overburden is greater. Excavations lined with an impermeable liner are not permitted as concrete washout bays. Large excess loads of concrete are to be returned to the supplier or poured into concrete block modules (Betonblock or similar design) in order to minimise waste and reduce the risk of concrete being dumped throughout site. 	Negligible, Slight, Temporary

Table 14.4: Summary of predicted operational phase impacts, mitigation measures and residual impacts.

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
Roads Infrastructure	A new entrance will be constructed and connected to the pre-existing road network.	Neutral	Slight	Long-Term	<ul style="list-style-type: none"> The increase in traffic will not generate increased queues or delays along the road network in the vicinity of the site, therefore, no mitigation measures are proposed for the operational phase of the development. 	Neutral, Slight, Long-Term
Foul Water Network	Wastewater from welfare facilities and canteen will be treated using a proprietary system as recommended in Site Suitability Assessment.	Neutral	Imperceptible	Long-Term	<ul style="list-style-type: none"> A regular schedule of foul infrastructure inspection and maintenance will be carried out over the lifetime of the Proposed Development. The onsite WWTP will be subject to regular desludging and maintenance, subject to manufacturer recommendations. 	Neutral, Imperceptible, Long-Term
Surface Water Network	<p>Establishment of clearly defined work areas which can be monitored and isolated if required, for example, the bunded area.</p> <p>The Proposed Development includes attenuation ponds which will be used for attenuation of surface water and to control the rate of the discharge from the Proposed Development.</p> <p>Run-off will be channelled through sediment chambers, oil traps, drainage systems and attenuation pond.</p> <p>Leakage / spillage of biobased fertiliser or feedstocks via vehicle movements.</p>	Negative	Slight	Long-Term	<ul style="list-style-type: none"> Dedicated hard standing for off-loading areas will be established, with a minimum separation distance from adjacent water courses. Use of spill kits, bunded pallets and secondary containment units, as appropriate. All bunds sized to contain 110% of the volume of the primary storage vessel. All bunds and pipelines (foul & process) will be subject to integrity assessments every 3 years by a suitably qualified engineer. Surface water drainage features onsite will undergo routine inspection and maintenance to ensure absence of blockages or leaks. In the event of a grant of licence by the EPA to carry out activities that require such licence, it is expected that the site will be subject to annual inspections from the EPA which will assess compliance with conditions outlined in any licence. Surface water outflows from the site will be assessed as part of any inspections to ensure emissions from the site are compliant with any license. 	Negligible, Imperceptible, Long-Term
Public Water Network	Potential contamination to the local aquifer Potential risk to human health	Negligible	Slight	Long-Term	<ul style="list-style-type: none"> Wastewater, such as wash water, will be supplied from rainwater harvesting or from treated process water. This water will undergo UV treatment prior to use and storage. 	Negligible, Imperceptible, Long-Term

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Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
Gas Network	<p>Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) onsite, connecting the site to the existing medium pressure distribution gas pipeline which traverses the site.</p> <p>The GIU comprises equipment which will ensure that the biogas is compliant with all necessary standards and regulations before it enters the gas network.</p> <p>It is projected that the Proposed Development will produce 510-580 Nm³ of biomethane per hour, to be supplied to the existing gas network.</p>	Positive	Significant	Long-Term	<ul style="list-style-type: none"> The GUI and gas connection pipeline will be installed and maintained by Gas Networks Ireland. All works to the existing and proposed gas pipelines will be carried out by GNI in accordance with Standard I.S. 328 2021 Gas transmission – Pipelines and pipeline installations. 	Positive, Significant, Long-term
Electricity Network	An ESB substation will be constructed and will provide connection to the national grid, although this source of power will serve only as a backup.	Negative	Slight	Long-Term	<ul style="list-style-type: none"> Utilisation of power from the public grid will serve only as a backup. Power usage for the Proposed Development under normal operating conditions will be supplied by CHP and solar PV array onsite. 	Neutral, Imperceptible, Long-Term
Telecommunications Network	Increased demand on existing network.	Negative	Slight	Long-Term	<ul style="list-style-type: none"> No mitigation measures are proposed for the operational phase of the Proposed Development. The onsite office/canteen/staff welfare facility will require a constant telecommunications connection meaning slight impacts to the existing network is unavoidable. 	Negative, Slight, Long-Term
Municipal Waste	<p>Increased waste production of ca. 250l per week.</p> <p>Increased demand on waste collection services.</p>	Negative	Slight	Long-Term	<ul style="list-style-type: none"> Inform staff through toolbox talks/training etc on the relevance and importance of correct waste segregation and management. Ensure waste receptacles available for the different identified waste streams to ensure proper and efficient segregation of waste onsite. Install signage to promote and encourage proper waste segregation, recycling etc. 	Negligible, Imperceptible, Long-Term

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
					<ul style="list-style-type: none">• Ensure bins/skips are not allowed to overflow to prevent litter build-up onsite.• Ensure all bins have lids and skips are covered.• Ensure waste is collected by a registered waste collection permit holder and disposed of at a facility licenced to take said waste.• Maintain good waste records onsite to ensure all waste is accounted for.	

14.9 Monitoring

The Construction Environmental Management Plan (CEMP) will include provision for the monitoring of construction-related activities including the following:

- Water Quality Monitoring of the surface water receptors in the vicinity of the site.
- Daily inspections for housekeeping and site cleanliness.
- Dust Suppression on dry days or during concrete cutting.
- Risk assessment for the prevention of fuel spillages.
- Monitoring of stockpiles to determine if further measures are required to prevent erosion.
- Daily site inspections to ensure procedures outlined within the CEMP are adhered through throughout the site.

Once completed, the Proposed Development will be subject to annual inspection by the Environmental Protection Agency who will critically assess the site's compliance with the conditions of its IEL. Monitoring of daily activities will be carried out in line with measures outlined in the EMS and IEL.

14.10 Summary of Significant Effects

The receptors for this assessment are considered to be local Material Assets that includes Roads Infrastructure, Foul, Public, and Surface Water Networks, Gas Network, Electricity Network, Telecommunications Network and Municipal Waste. Whilst the development proposals have the potential to cause significant effects to the Material Assets identified, the recommended mitigation measures will ensure that the risk of potential effects are reduced to **negligible**.

14.11 Statement of Significance

The significance of impact upon all identified Material Assets have been assessed for both during the construction and operational phases. The results of the assessment are presented in **Table 14.3** and **Table 14.4**.

Where a potential impact has been identified, the significance of impact upon these receptors ranges from **slight to significant**.

Where a potential impact has been identified, mitigation measures have been provided which if implemented reduces the impact of significance to **negligible**. The mitigation for the Proposed Development is discussed in **Section 14.6** of this chapter.