14 Material Assets

14.1 Introduction

Material Assets are 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). Current Role: Senior Environmental Consultant. Dominick has 12 years' experience in environmental science and sustainable energy.
- **Project Lead & Reviewer:** Oisín Doherty – B.Sc. (Hons) (Geography with Environmental Science), MSc. (Environmental Management), CEnv, MIEnvSc. 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 1st 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 (herein referred to as 'the site') is found in the townlands of Moneylane, Arklow, Co. Wicklow. approximately 2.1km southeast of the town of Arklow, Co. Wicklow and approximately 23km southwest of Wicklow town, Co. Wicklow. The approximate grid reference location for the centre of the site is T 22113 72243, ITM: 722054, 672273.

The site is currently used as agricultural pastureland and it is bounded to the north, south, east, and west by further agricultural pastureland. The site is bordered to the south by Ballyduff South Road (L6187) which intersects with the Knockenrahen Road (L2190) 57m southeast of the proposed site. The Proposed Development will be accessed via Ballyduff South Road (L6187) with access developed 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 3 no. digesters (c. 15.5m in height), 2 no. digestate storage structures (c. 15.5m and c. 12m in height), a liquid feed tank (c. 4m in height) and 4 no. pump houses (with a GFA of 27 sq.m, 28 sq.m, 28 sq.m, and 14 sq.m, and each with a height of c. 2.6m), located in the northern section of the site.

- 4 no. pasteurisation tanks (each c. 6m in height), a post pasteurisation cooling tank (c. 4m in height) and a pre fertiliser manufacturing tank (c. 4m in height), located to the southeast of the digesters, in the centre of the site.
- A part single-storey and part two-storey reception hall (with a gross floor area (GFA) of c. 2,113 sq.m and an overall height of c. 16.5m) to accommodate a laboratory, panel room, tool store, workshop, and storage areas, with a liquid feed intake adjacent to the reception hall, located to the centre of the site.
- A single-storey solid digestate storage and a nutrient recovery building (with a GFA of c. 880 sq.m and an overall height of c. 12.4m) located to the east of the reception hall, in the central portion of the site.
- Odour abatement plant (with an overall height of c. 6m) and equipment and a digestate offtake area will be provided to the east of the solid digestate storage and nutrient recovery building.
- Construction of an ESB substation (with a GFA of c. 24 sq.m and a height of c. 3.4m), a fuel storage tank (c. 1.6m in height), a CNG compression unit (with a GFA of c. 20 sq.m and a height of c. 4.1m), 2 no. CO_2 tanks (c. 10.7m in height), a CO_2 loading pump (c. 2.6m in height), CO_2 auxiliaries (c. 2.6m in height), CO_2 liqueufactor (with an overall height of c. 8.2m), a CO_2 compressor (with an overall height of c. 5.9m and a GFA of c. 15 sq.m) and a CO_2 pre-treatment skid (c. 3.5m in height), located in the eastern portion of the site.
- Construction of an emergency biogas flare (c. 11.3m in height), a biogas treatment skid (with an overall height of c. 4.1m), a biogas compression system (with a maximum height of c. 5.8m in height), a biogas upgrading module (with a maximum height of c. 4.6m and a GFA of c. 28 sq.m), a combined heat and power unit and panel room (with a height of c. 5.8m) and a H2S washing tower (with an overall height of c. 7.8m), located within the eastern section of the site.
- Construction of a grid offtake skid, a biomethane boiler (c. 5.6m in height to flue stack), a grid injection unit (with a GFA of c. 22 sq.m and a height of c. 2.8m), and 2 no. propane tanks (c. 1.3m in height), located to the southeast of the CO_2 structures, within the eastern section of the site.
- Construction of a two-storey office and administration building (with an overall height of c. 8.6m and a GFA of c. 271.5 sq.m), located within the southeast section of the site, adjacent to the main site entrance.
- Associated works including parking (8 no. standard, 3 no. EV, and 1 no. accessible parking spaces; and bike storage), access arrangements (including new access point to the site from the adjacent road to the south), a weighbridge, provision of solar panels (roofed mounted solar array), wastewater treatment equipment, attenuation pond in the northern portion of the site, boundary treatments, lighting, services, lightning protection masts, drainage, landscaping, 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 Impact Assessment 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.

The Proposed Development plans include providing vehicular access from Ballyduff South Road (L6187) to the south of the site. This access will primarily be via the Local Road L6187, located south of the site, and will utilise the Ballyduff South Road (L6187) / Knockenrahen

Road (L2190) junction. Traffic will travel along Ballyduff South Road (L6187 towards the R772 and use exit 21 onto the M11 on all inward and outward-bound journeys. Most of the traffic associated with the site is expected to use this junction for both arrivals and departures as can be seen from (**Figure 14.1**) below.

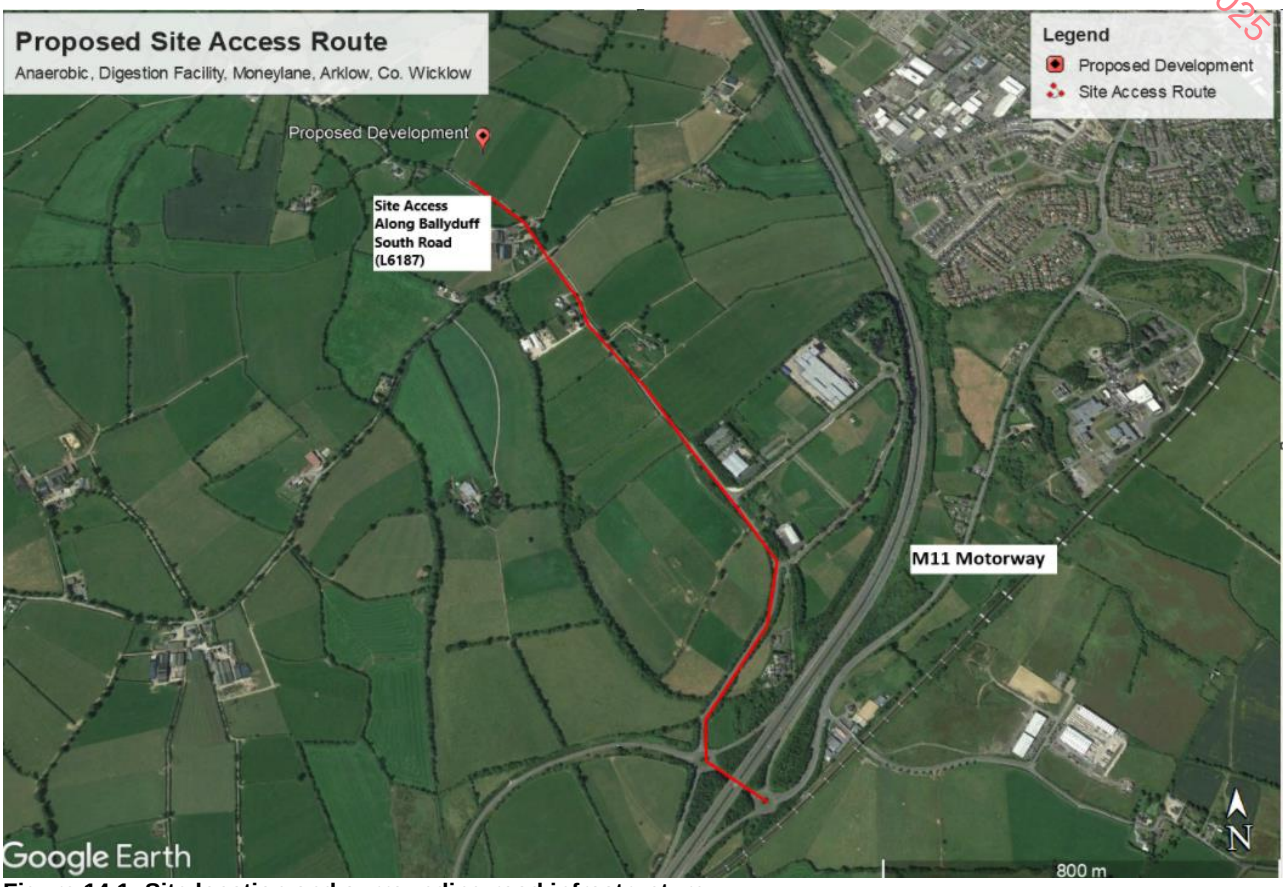

Figure 14.1: Site location and surrounding road infrastructure

The L6187 is a single lane carriageway of approximately 4m wide. The L6187, also known as Ballyduff South Road, primarily serves as a local access route for residents and agricultural activities in the Ballyduff South area. It is a rural road, with sections where the width allows for single-lane traffic and passing bays.

Traffic volumes on the L6187 are low, consistent with its use as a minor road serving a sparsely populated area. The alignment of the L6187 road in the area surrounding the Proposed Development site is relatively straight, with only minor curves. The L6187 road does not feature footpaths or cycle lanes along either side of the carriageway.

The Proposed Development site is located adjacent to the L2190 local road. The L2190, also referred to as Coolgreaney Road, is a local road to the southwest of Arklow town in County Wicklow. This road connects Arklow to the surrounding rural areas, including the village of Coolgreaney, where it meets the R742 regional road. Within Arklow, it serves as a key route for accessing residential areas and local amenities, while also facilitating travel between the town and the countryside.

Traffic volumes on the L2190 can be characterised as moderate closer to Arklow, particularly during peak commuting hours, with lighter volumes further into rural areas. The road is a single carriageway throughout, with a general width of approximately 5m near its junction with the

L6187.

There are no footpaths or cycle lanes provided along the L2190 road, in the vicinity of the site access. The posted speed limit on the L2190 is 80 km/h.

At present, Wicklow County Council have no improvement schemes on Ballyduff South Road (L6187), Knockenrahen Road (L2190), that would affect the Proposed Development.

An overview of the proposed site access is included in **Figures 14.2** and **14.3**. Detailed drawings are included in EIAR Volume 2: Drawings (**Drawings Ref: 24118-DR-01_0102_issue PL01** and **24118-DR-01-0103_issue PL01**).

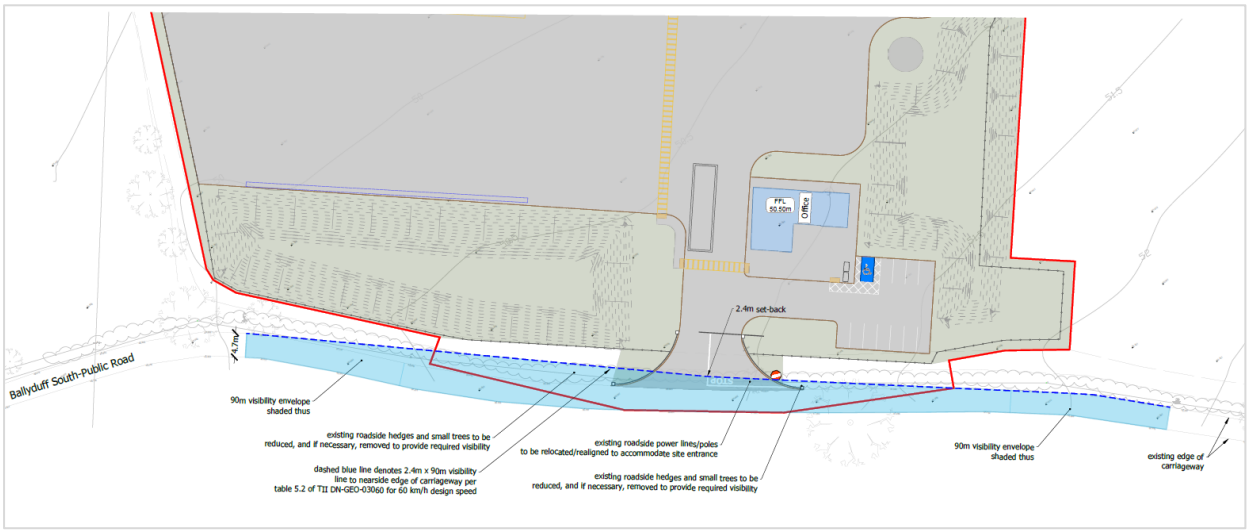

Figure 14.2: Access Road from Ballyduff South Road (L6187) to Proposed Development. (Cropped) Drawing Ref: 24118-DR_0102 issue PL01 – Kilgallen & Partners

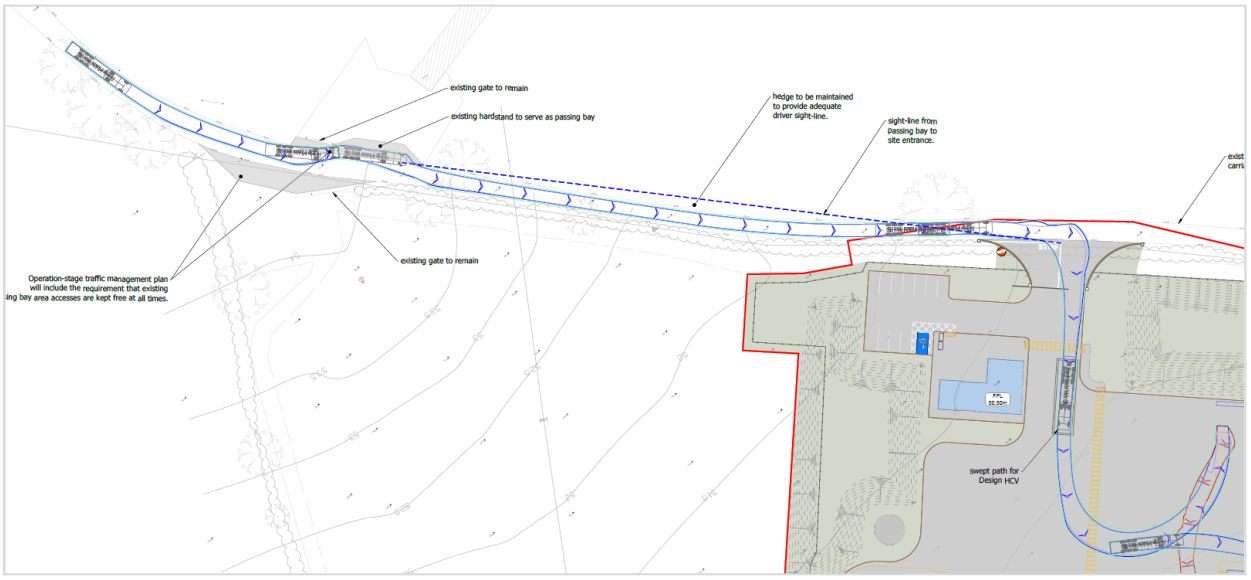

Figure 14.3: Sweep path and Passing Bay-Ballyduff South Road (L6187) which intersects with the Knockenrahen Road (L2190) showing proposed entrance and passing bays Drawing Ref: 24118-DR_0103_issue PL01 - Kilgallen & Partners

Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) and a new pipeline connecting the site to the existing medium pressure distribution gas pipeline located ca. 835m southeast from the site at the IDA Arklow Business Park. The existing medium pressure distribution gas pipeline network and the proposed route for the pipeline linking the site to the existing local gas network can be seen below. The pipeline will be installed along Ballyduff Road South (**Figure 14.4**).

Figure 14.4: Proposed gas network connection point and pipeline route from Proposed Development

14.4.4 Foul Water Network

The site does not feature access to the public foul water network at present.

The Proposed Development will have a maximum of 10 workers on site each day with normal loadings of 60L/day and BOD of 20g/day. The wastewater from the toilet and canteen will be treated using a proprietary system as recommended in the Site Suitability Assessment.

A minimum 4 pe wastewater treatment system (WWTS) and a 60m^2 partially raised soil polishing filter is proposed to serve the facility. The final effluent from the (WWTS) is to be pumped from a sump chamber to a distribution manifold connected to long lateral distribution pipes. The new sump/pump chamber will have a minimum volume capacity of 140 litres below the invert for the treatment system.

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).

14.4.5 Surface Water Network

At present, the site does not feature dedicated surface water infrastructure.

The site is characterised as being flat to gently undulating. A peak in the site topography, 52m Above Ordnance Datum (AOD), is situated along the southeast boundary of the site with a gradual decrease in gradient to the west. The site topography falls to 50m AOD in the centre of the site and falls to 46m AOD along the northern boundary. The proposed site entrance and access location has an existing topography of 50m AOD, sloping from east to west from 52m AOD to 46m AOD at the northwestern corner.

The Proposed Development will comprise two separate drainage networks:

- Run-off from the buildings and yards in the facility will be collected in a sealed pipe network which will discharge to the watercourse;

- 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 for the remaining areas of the facility.

SUDs Regime – Quantity

Discharge Rate

Ground conditions at the site are known to be relatively poor with low sub-soil permeability. While infiltration will be feasible when done in a linear manner, there is little scope for the concentration of run-off to discrete infiltration areas such as soakaways. Subsoils are unsuited to infiltration of all surface water run-off and so it will be necessary to discharge surface water run-off to an outfall that is positioned to maintain the natural drainage course as best as possible.

The rate of discharge to the stream will be restricted to a maximum permissible rate of 10.6 litres/sec. 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.

Storage of Attenuated Surface Water

The restriction on discharge will trigger the requirement for attenuation on-site whenever surface water run-off rates exceed the discharge rate to the stream from the site.

This attenuated water will be stored temporarily in an attenuation pond located in a grassed landscaped area to the North West of the site, close to the receiving watercourse.

14.4.6 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.

Any other water, for example wash water, will be supplied from rainwater harvesting or from treated process water. This water will go through UV treatment before storage and use.

14.4.7 Gas Network

Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) and a new pipeline connecting the site to the existing medium pressure distribution gas pipeline located ca. 835m southeast from the site at the IDA Arklow Business Park. The pipeline will be installed along Ballyduff Road and connect with the existing medium pressure distribution gas pipeline network. **Figure 14.5** illustrates the existing gas networks in the area and the proposed pipeline connection route from the Proposed Development.

The Grid Injection Unit (GUI) will be owned and operated by Gas Networks Ireland. 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*.

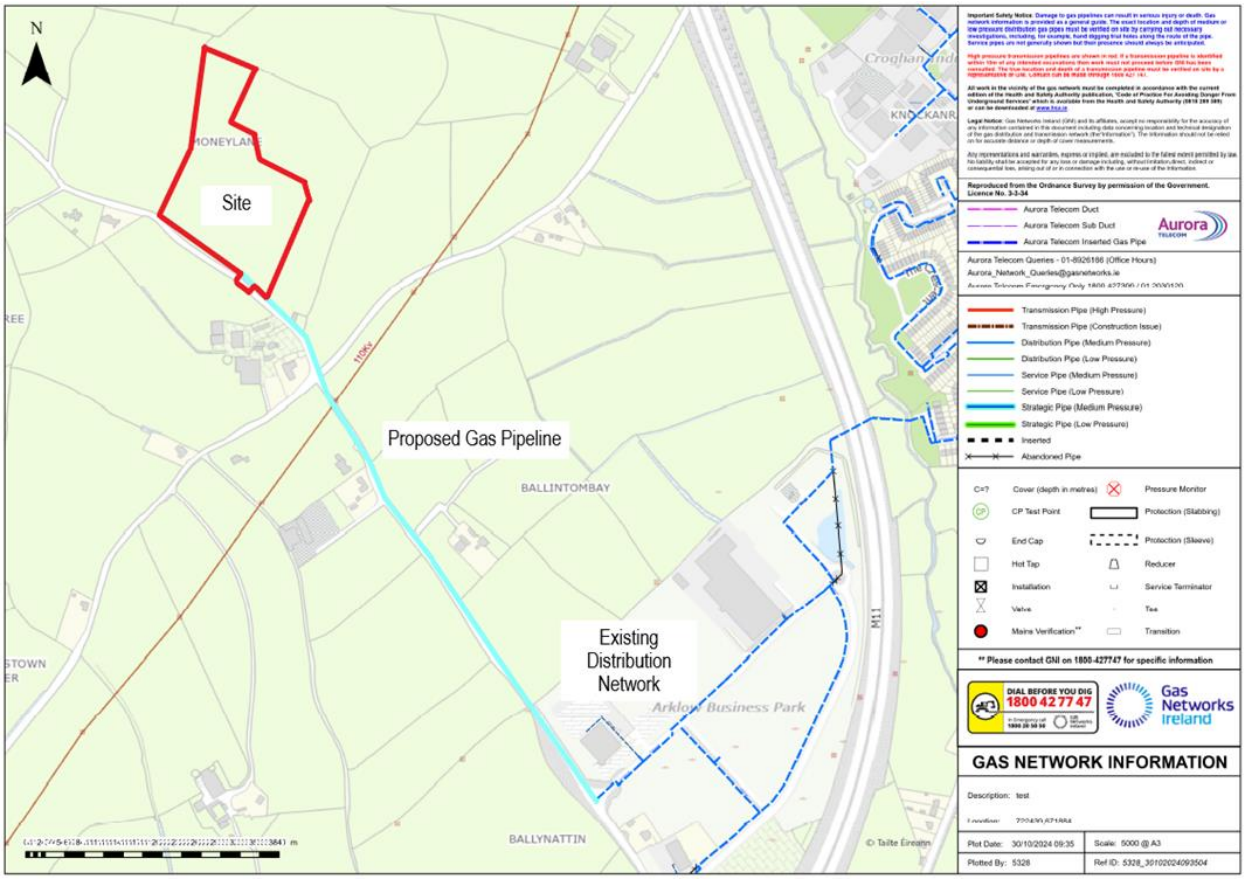

Figure 14.5: Existing gas networks in the area and the proposed pipeline connection route

14.4.8 Electricity Network

A Medium Voltage (MV) (10kV/20kV) overhead line crosses the site where the facility will be developed, running from the northwest to the southwest within the Proposed Development's boundary. Additionally, a Low Voltage (LV) (400V/230V) overhead line is located near the site entrance along Ballyduff South Road (L6187).

To enable construction of the Proposed Development, the existing overhead lines to the west of the site will need to be relocated. This work will require consultation with ESB, which must be completed before construction begins.

The Proposed Development will include an ESB substation, designed and constructed in compliance with ESB's published standards and subject to ESB certification. The substation will house a transformer to convert imported high-voltage electricity to low voltage for onsite use.

During normal operation, the facility will primarily be powered by an onsite combined heat and power (CHP) unit and Solar PV. Electricity from the grid will only be used as a backup supply.

Refer to **Figure 14.6** below for an overview of the existing electricity network in the Moneylane area.

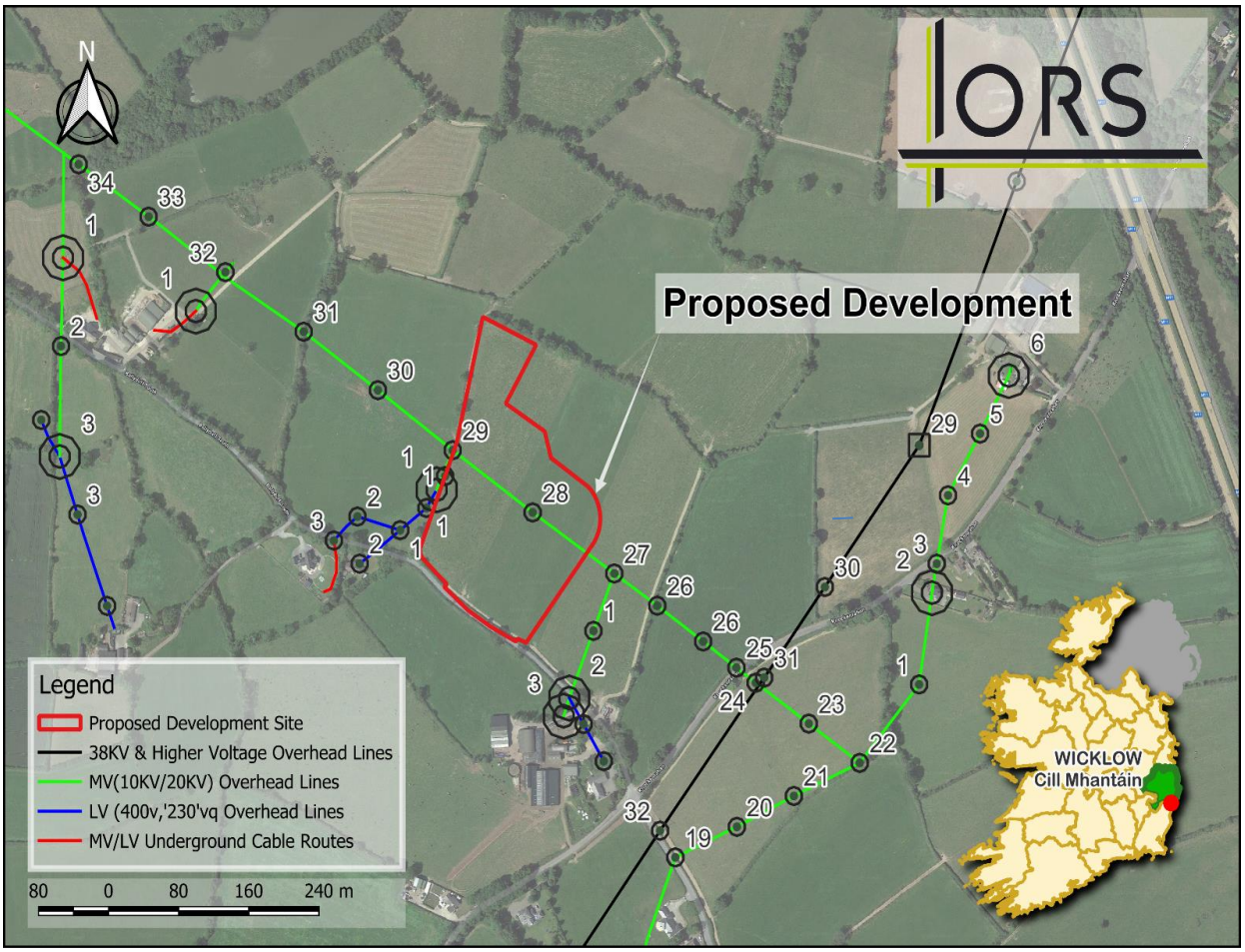

Figure 14.6: Existing Electricity Network (ESB). Medium Voltage (MV) (10KV/20KV) overhead line indicated in green. Low Voltage (400V/230V) main overhead line indicated in Blue.

14.4.9 Telecommunications Infrastructure

The Proposed Development will include an office and canteen facility that will require connections to telephone lines and Wi-Fi. Currently, telecommunication lines are located along Ballyduff South Road (L6187), adjacent to the Proposed Development.

Figure 14.7 below provides an overview of the existing telecommunication network and its proximity to the Proposed Development.

Figure 14.7: Existing telecommunication network (blue) with proposed site boundary and surrounds (Eir). Proposed Development indicated in red.

14.4.10 Municipal Waste

There will be a number of 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 7 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 350l 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 Wicklow County Council's recommended hours, which are typically from 07:00 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 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 8No. to 10No. construction personnel to be at the site at the same time and the deliveries to be arranged during off-peak hours.

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

Access Road

During the construction phase, an entrance will be constructed to connect the Proposed Development to the public road network (Ballyduff South Road (L6187).

Ballyduff South Road (L6187)

The current road alignment and capacity are deemed sufficient to support the development with

the improvement of 2No. existing passing bays to facilitate the simultaneous passage of two large vehicles on the Ballyduff South Road (L6187). This will ensure queuing of vehicles is not anticipated on the L6187.

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 Ballyduff South Road (L6187) during the construction phase as a result of the access junction works and traffic management measures.

Coolgreaney or Knockenrahen Road (L2190)

The current road alignment and capacity are deemed sufficient to support the development without any additional interventions with the additional traffic having a negligible impact on the surrounding road network.

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 Knockenrahen Road (L2190) during the construction phase. The current road alignment and capacity are deemed sufficient to support the development without any additional interventions.

Access to the site will be facilitated via local roads, excluding routes to the north of Knockenrahan (Coolgreaney Road), which will not be used for routing of construction traffic.

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 Ballyduff South Road and the Coolgreaney or Knockenrahen Road during the construction phase.

Installation of Gas Pipeline

The proposed pipeline will be owned, installed and operated by Gas Networks Ireland. 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.

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 surrounding environment, as a result of traffic management measures during the installation of the pipeline during the construction phase**.**

The effect on traffic and transport is assessed in further detail in **Chapter 12: Traffic and Transport**.

Foul Water Network

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

The Proposed Development does not have access to the public sewer, so installation of a private wastewater treatment system is proposed for the site. The office building will be the sole generator of wastewater and is designed for a max occupancy of 10 employees a day. A minimum 4 PE wastewater treatment system with a sump chamber and pump (min. 140 litres of volume below invert of system required) and a 60qm partially raised soils polishing filter is

proposed for the facility.

Refer to Appendix D of **24118-TN_SUDS_issue PL01 - Kilgallen & Partners** for a site-specific assessment report, testing results, and specifications.

The location is shown on **Drawing No. 24118-DR-0501_issue PL01** and is indicative and subject to change upon detailed design of the system.

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. 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

In the absence of mitigation, as a result of these works there is potential for there to be ***neutral, negligible,*** 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 gas pipeline connecting to the existing medium pressure distribution gas pipeline located ca. 835m southeast of the site at Ballynattin, Co. Wicklow. 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.

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 gas supply network during the construction phase.

Electricity Network

Power supply for plant and machinery during the construction phase will be predominantly supplied by generators onsite. Overhead transmission lines will have to be relocated to facilitate construction of the plant, an ESB substation will be installed onsite for use during the operational stage. There may be some partial disruption to the existing electricity network when transmission lines and poles are being relocated and when the 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* ***brief*** 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 materials are 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 site entrance and the pipeline connection to the existing gas network will require the implementation of temporary traffic management measures along the Ballyduff South Road (L6187) and Knockenrahen Road (L2190)	**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.	**Negative**	**Slight**	**Brief**
Electricity Network	Power supply for plant and machinery during the construction phase will be predominantly supplied by generators onsite. There will be partial disruption to the existing electricity network as transmission lines and poles will have to be moved and when connection to the grid via the substation is established.	**Negative**	**Slight**	**Brief**
Telecommunications	Disruption to existing network while establishing connection.	**Negative**	**Slight**	**Brief**
Municipal Waste	The Proposed Development will generate a range of non-hazardous during site excavation and construction.	**Negative**	**Slight**	**Temporary**

	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.			

14.5.2 Operational Phase

Potential operational phase effects are considered in detail below and summarised in **Table 14.2.**

Roads Infrastructure

The site will be accessed via a proposed access road along the Ballyduff South Road (L6187) and vehicles travelling between the proposed site access and the surrounding network will make use of the L6187 local road. Vehicular access to the site is through a new proposed priority T-junction off the L6187 to the west of the site.

Two existing passing bays will be improved along this road stretch, from the junction formed by the L2190 and the L6187 and northwards up to the site access, to facilitate the simultaneous passage of two large vehicles.

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.

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

The Proposed Development does not have access to the public sewer, so a private wastewater treatment system is proposed for the site.

The office building will be the sole generator of wastewater and is designed for a max occupancy of 10 employees a day.

A minimum 4 PE wastewater treatment system with a sump chamber and pump (min. 140 litres of volume below invert of system required) and a 60sqm partially raised soil polishing filter is proposed for the facility.

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 includes two separate drainage networks comprising:

- 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 sperate sealed drainage network and

discharged to a sump, from which it will be pumped to the surface water drainage system for the remaining areas of the Proposed Development.

- Subsoils are unsuited to infiltration of all surface water run-off and so it will be necessary to discharge surface water run-off to an outfall.
- The rate of discharge to the stream will be restricted to a maximum permissible rate of 10.6l/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 because of vehicle movements while carrying materials such as biobased fertiliser or feedstocks. All material will be transported in sealed trailers and vacuum tankers, by appropriately licensed hauliers. Should spillage occur, in the absence of mitigation, 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 ***brief*** 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*** 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) and a pipeline connecting the site to the existing medium pressure distribution gas pipeline located ca 835m Southeast of the site at Ballynattin, Co. Wicklow.

The Grid injection Unit (GIU) comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the 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 south 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 7 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 350L 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	Run-off from the buildings and yards collected in a sealed pipe network which will discharge to the stream, post attenuation. 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	**Negative**	**Slight**	**Brief**

	surface water drainage system for the remaining areas of the Proposed Development. During the operational phase, in the absence of mitigation it should be noted that a risk of spillage / leakage is posed because of vehicle movements while carrying materials such as biobased fertiliser or feedstocks.			
Public Water Network	Potential contamination to the local aquifer Potential risk to human health	**Negligible**	**Slight**	**Long-term**
Gas Infrastructure	Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) and a pipeline connecting the site to the existing medium pressure distribution gas pipeline located to the southeast of the Proposed Development. The GIU comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the gas network. It is projected that the Proposed Development will produce 810-960 Nm^3 of biomethane per hour, to be supplied to the existing gas network.	**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	Increased waste production of ca. 500L per week. Increased demand on waste collection services.	**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 to 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) in order 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 22 vehicles a day, where 17 are HGVs and 5 are private vehicles and vans. The additional vehicles will represent

a maximum of 3.0% increase in traffic and 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.

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 Grid Injection Unit (GIU) 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.

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, from a transportation planning perspective, the Proposed Development will not adversely impact the functionality of the M11 Motorway, the L2190 and L6187 Local Roads in the vicinity of the proposed site and the junctions will function well below capacity for all future design years. There will be no queues or delays formed along both roads due to the Proposed Development, therefore, it can be concluded that the Proposed Development will not result in a detrimental effect on the existing road network in the vicinity of the site.

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 Moneylane, Arklow, Co. Wicklow. 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 Wicklow. According to the Wicklow County Council Planning Application Map, 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.

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 sites downstream of the Avoca River remains low.

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 Ballyduff South Road (L6187) and connecting roads.

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	Increased flow of construction-related traffic. Establishing the pipeline connection to the existing gas network will require the implementation of temporary traffic management measures along the Ballyduff South Road (L6187) and the Knockenrahen Road (L2190),	**Negative**	**Slight to Moderate**	**Temporary**	• 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 underground services (gas, telecommunications, water) are established.	***Negligible, Imperceptible, 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 the operational stage. It has been concluded that the soils at the Proposed Development have sufficient absorption capacity for the installation of a percolation area.	**Negative**	**Slight**	**Temporary**	• 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	Contaminated runoff reaching surface water receptors. Spillage of contaminants such as fuels, oils, chemicals, and cement material and	**Negative**	**Slight**	**Temporary**	• 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.				• 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**	• 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**	• 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	Power supply for plant and machinery during the construction phase will be predominantly supplied by generators onsite. There may be partial disruption to the existing electricity network as connection to the grid via the substation is established. Relocation of existing overhead power lines, to be managed by ESB networks. Temporary disruption to the local power supply may occur while relocation is completed.	**Negative**	**Slight**	**Temporary**	• 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***

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
Telecommunications Network	Disruption to existing network while establishing connection.	**Negative**	**Slight**	**Brief**	• 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.	***Negligible, Imperceptible, Brief***
Municipal Waste	The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction. 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.	**Negative**	**Slight**	**Temporary**	• 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**	• 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**	• 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	Establishment of clearly defined work areas which can be monitored and isolated if required, for example, the bunded area. The Proposed Development includes two attenuation ponds which will be used for attenuation of surface water and to control the rate of the discharge from the Proposed Development. Run-off will be channelled through sediment chambers, oil traps, drainage systems and attenuation pond. Leakage / spillage of biobased fertiliser or feedstocks via vehicle movements.	**Negative**	**Slight**	**Long-Term**	• 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. • All delivery of feedstock material and export of digestate materials shall be undertaken by sealed tanker or covered trailer. • All delivery of waste feedstock material shall be undertaken by appropriately licenced haulier. • Vehicles on site will be submit to a traffic management plan and maximum speed limits within the site.	***Negligible, Imperceptible, Long-Term***
Public Water Network	Potential contamination to the local aquifer Potential risk to human	**Negligible**	**Slight**	**Long-Term**	• 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***

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
	health					
Gas Network	Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) and a pipeline connecting the site to the existing medium pressure distribution gas pipeline located to the north of the Proposed Development. The GIU comprises equipment which will ensure that the biogas is compliant with all necessary standards and regulations before it enters the gas network. It is projected that the Proposed Development will produce 1350-1600 Nm^3 of biomethane per hour, to be supplied to the existing gas network.	**Positive**	**Significant**	**Long-Term**	• 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**	• 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**	• 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	Increased waste production of ca. 300l per week. Increased demand on	**Negative**	**Slight**	**Long-Term**	• Inform staff through toolbox talks/training etc on the relevance and importance of correct waste segregation and management.	***Negligible, Imperceptible, Long-Term***

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
	waste collection services.				• 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. • 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 the Industrial Emissions Licence (IEL). Monitoring of daily activities will be carried out in line with measures outlined in the Environmental Management System (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.