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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.) in Geography with Environmental Science from Ulster University, 2008, and an MSc. (Hons) Sustainable Energy and Green Technology from University College Dublin, 2011. 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, 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.

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- 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 13th of November 2024 to provide an accurate interpretation of the site location, existing infrastructure, and environs.

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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.

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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 in the townlands of Cappanihane, Bruree, Co. Limerick approximately 13km west of Kilmallock, Co. Limerick, 20km east of Newcastle West, Co. Limerick and 25km southwest of Limerick City.

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 located along the R518 regional road which links O'Rourke's Cross and Lees Cross, Co. Limerick. A local road is located immediately west of the site. The Proposed Development will be accessed via the local road (L8658).

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 proposed development comprises the construction of an anaerobic digestion facility to produce renewable biomethane, CO_2 (which will be captured), and a bio-based fertiliser from organic material. The total proposed gross floor area of the development (including internal plant areas and ancillary structures) will be c. 5,903 sq.m

The development will consist of the following:

- Construction of 2 no. primary digesters (with an overall height of c. 9.1m), a pump house (with a gross floor area (GFA) of c. 279.8 sq.m), and 2 no. post digester tanks (with an overall height of c. 9.1m), located in the northeastern section of the site.
- Construction of 2 no. prepits (c. 4.8m in height), a pasteurisation buffer tank (c. 4.8m in height), and a pasteurisation unit (with a maximum height of c. 4.2m), located west of the primary digesters, within the northern section of the site.
- Construction of a digestate storage tank (c. 11.3 in height) located centrally on site, to the south of the primary and post digester tanks.
- Construction of a digestate treatment building and a feedstock reception building (with a height of c. 12m and a GFA of c. 2,797.2 sq.m) with odour abatement system (with a height of c. 11.0m to odour abatement stack), located in the northwestern section of site.
- Construction of combined heat and power (CHP) unit (c. 2.6m in height and c. 5.6m in height to flue, with a GFA of c. 38.53 sq.m), a biogas boiler (c. 2.6m in height and c. 5.6m in height to flue, with a GFA of c. 12.74 sq.m), a backup boiler (c. 2.6m in height), a gas treatment system (c. 4.2m in height), a biomethane compression system (c. 4.2m in

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height), and a safety flare (c. 11.3m in height), located south of the digestate storage tank, in the south-east section of the site.
- Construction of a CO_2 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. 23.5 sq.m and a height of c. 3.4m), located in the south-eastern section of the site.
- Construction of roofed silage clamps (with a GFA of c. 2,424 sq.m and a height of c. 8.7m) and a fuel storage tank (c. 2m in height), located in the western section of the site.
- Construction of a two storey office building (with a GFA of c. 327.4 sq.m and a height of c. 11m) within the western section of the site, adjacent to the site entrance.
- Alterations to the adjacent local road including a new site entrance and access arrangements, provision of a passing bay, boundary setbacks and replacement planting, and road improvements to allow for improved access and safety.
- Associated and ancillary works including parking (8 no. standard, 3 no. EV and 1 no. accessible parking spaces and bike storage for 10 no. bikes), a new site entrance and gate, a weighbridge, solar PV arrays at roof level, wastewater treatment equipment, bunding and surface treatments, attenuation pond, 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 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 road's 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 the L8658 to the west of the site. Arrivals and departures will be via the Regional Road R518, located south of the site, and all traffic will utilise the L8658/L8595/R518 priority crossroads junction when entering and leaving the proposed site. The site entrance is ca. 130m north of the R518 and the R518/ L8658/ L8595 junction. The Proposed Development will be accessed via the L8658 Local Road and a new internal access road leading east.

The R518 is a two-way flow single carriageway approximately 5-6 metres wide with no hard shoulders available on either side of the carriageway. The R518 has a posted speed limit of 80 km/h. The R518 connects to the N20 and O'Rourke's Cross to the east, approximately 4.2 km from the assessed junction, and to the R520 and Lees Cross to the northwest, *ca.* 4.7 km from the junction.

The L8658 is a single-lane carriageway, approximately 5-6 metres wide, that accommodates two-way traffic and provides access to the regional road R518 to the south, with an increasing width towards the priority junction formed by the L8658 and the R518. At this junction, the road lacks road markings, which are essential for guiding vehicle drivers effectively, while a 'STOP' sign is in place.

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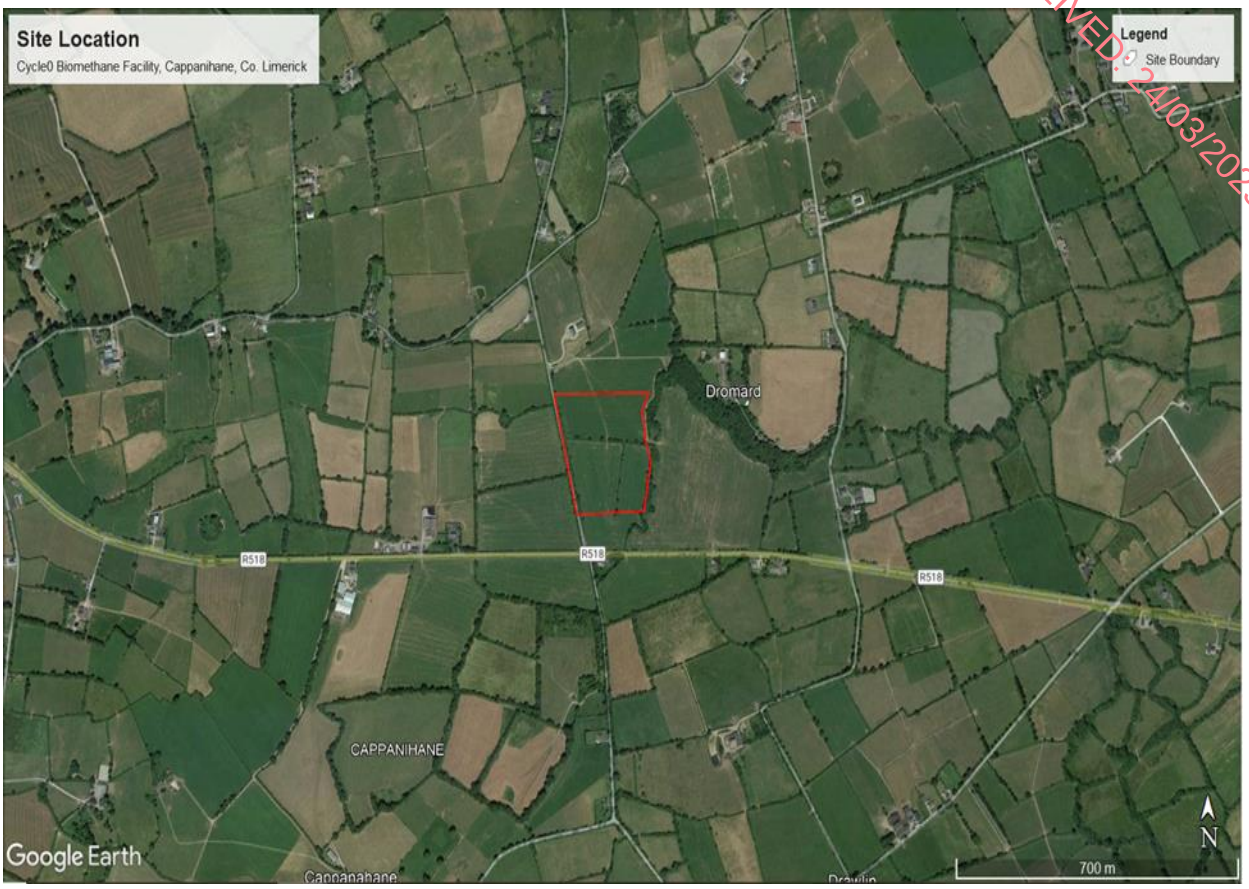

Figure 14.1: Site location and surrounding road infrastructure

On the southern side of the R518, a series of reflective bollards separate the main carriageway from a paved parking/driveway area serving adjacent residential properties. This delineation aims to prevent direct vehicle encroachment onto the main road. Additionally, the road is bordered by hedgerows on the northern side, restricting visibility at certain points. Street lighting infrastructure is not available in the immediate vicinity.

There are no footpaths or cycle lanes provided along the R518 and the L8658, in the vicinity of the site access. With a width of 6 metres, the R518 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, Limerick City and County Council have no improvement schemes on the R518 or the L8658 that would affect the Proposed Development.

An overview of the proposed entrance is included in **Figures 14.2** and **14.3**. Hedgerows will be removed to achieve sightlines, and a passing bay will be established on the L8658 to allow HGV meet and pass by.

Detailed drawings are included in EIAR Volume 2: Drawings (**Drawings Ref:** 231240-ORS-ZZ-00-DR-TII-003_Sightlines_Layout.

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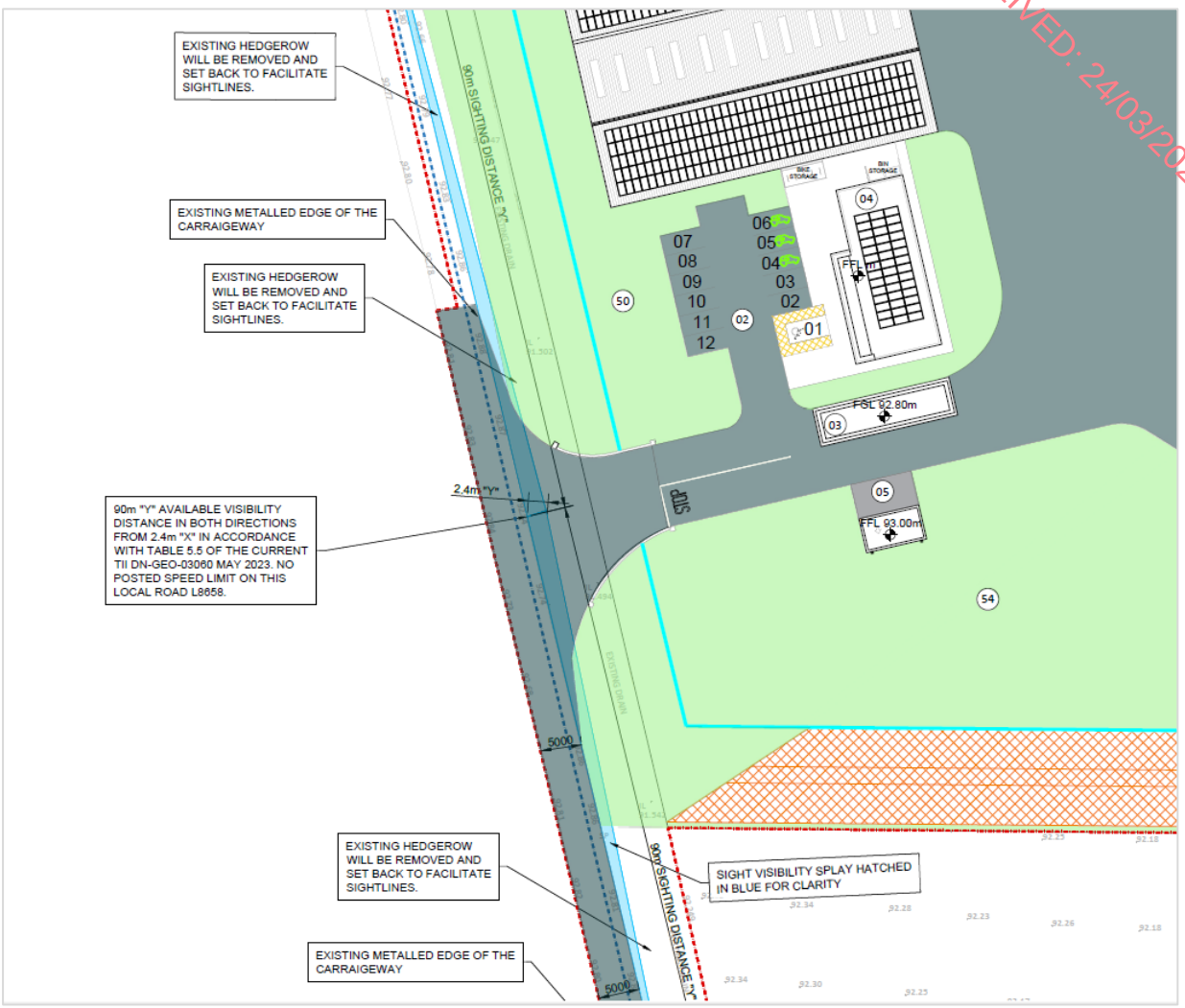

Figure 14.2: Entrance from Local Road L8658 to Proposed Development. (Cropped and rotated) Drawing Ref: 231240-ORS-ZZ-00-DR-TII-003_Sightlines_Layout.

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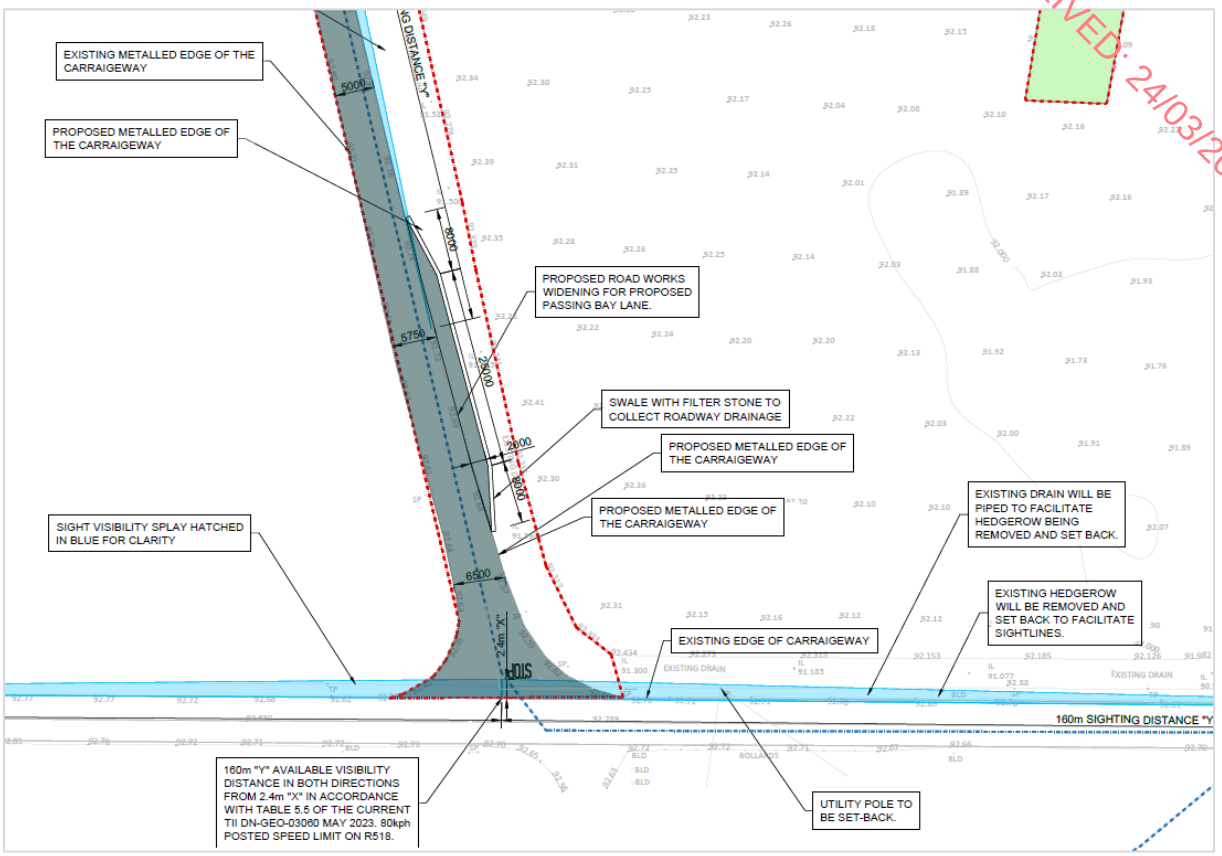

Figure 14.3: Access junction at the intersection of L8658 and R518 Roads. (Cropped and rotated) Drawing Ref: 231240-ORS-ZZ-00-DR-TII-003_Sightlines_Layout.

14.4.4 Foul Water Network

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 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 100m^2 of attenuation on 144m^2 of imported soil.

The site is situated in an area of moderate 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 proposed development will have a maximum design population of 1. 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 1 Hydraulic loading and 3 for organic loading, a PE 6 proprietary treatment system is proposed with discharge to a Ter3 packaged tertiary unit with a minimum 100m^2 attenuation layer. Distribution layer to be placed on 144m^2 of imported soil 300m depth with suitable percolation values. Imported soil to be tested for suitable percolation values as per EPA COP 2021.

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Based on the information provided within the Site Characterisation Assessment for the site and the requirements of the 2021 EPA Code of Practice, the most suitable system for sewage treatment and percolation onsite is the 6PE EuroTank BAF2 Wastewater Treatment System followed by the 6PE EuroTank TER3 Percolation Unit. All pipe runs must be vented. It would be recommended that the installation be supervised and certified by the Environmental Engineer who carried out the site characterisation assessment and proposed design.

14.4.5 Surface Water Network

The site is relatively flat with a gradual slope from the northeast corner (circa 92.50mAOD) to the southwest (circa 91.85mAOD). 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.

The soils encountered were impermeable and saturated and there was evidence of a fluctuating water table given the presence of mottling and gley soils which determined that the use of infiltration features would not be suitable for the site. Consequently, the proposed site will require the collection, attenuation and disposal of surface water accumulated during rainfall events. Surface water runoff generated from the site will be contained within the attenuation structures proposed and discharged at greenfield runoff rates to the adjacent stream.

The two drainage ditches identified during site investigations will require decommissioning and infilling within the proposed development boundary. Given the proximity of the river Maigue and the ground conditions encountered during the initial site investigation, it will be necessary to divert these drainage ditches and continue to provide an open channel for the collection of runoff from the undeveloped areas to the north of the proposed development.

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 a combined below ground (Pluvial Cube) and above ground attenuation (detention basin) solution.
- The use of petrol interceptors.
- The use of rainwater harvesting tanks.

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.

The proposed rainwater harvesting tanks will supply the development with fire-fighting water

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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 compressed onsite and transported offsite to a grid connection point and supplied to the existing gas network via the Grid Injection Unit (GIU). 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.

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. No relocation of utility poles or lines will be necessary. See **Figure 14.4** below for an overview of the existing Electricity Network in the Cappanihane 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.

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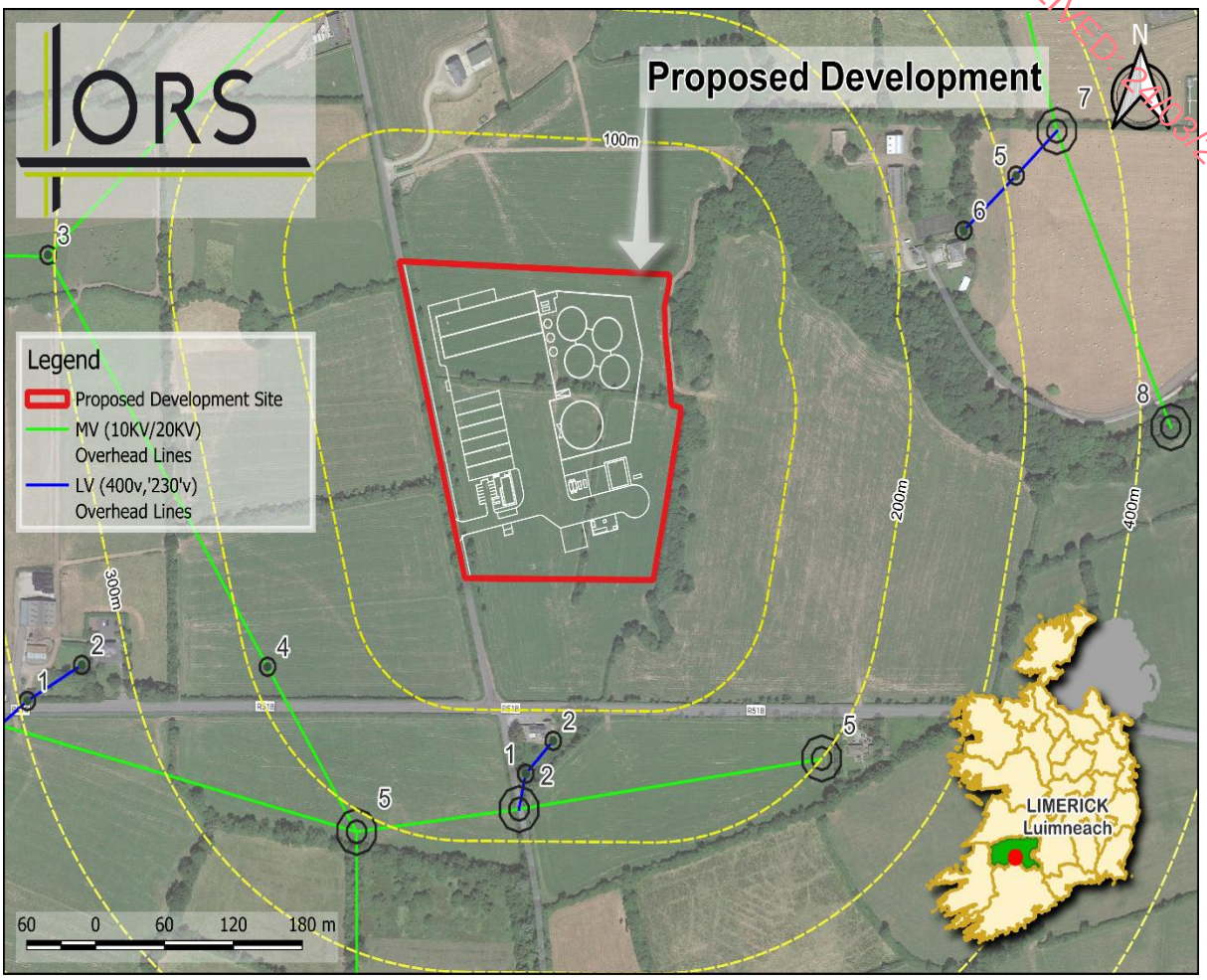

Figure 14.4: Existing Electricity Network (ESB). Medium Voltage (MV) (10KV/20KV) main overhead line indicated in green.

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, no telecommunication lines run along the R518 or the L8658, along the access point of the Proposed Development. **Figure 14.5** below shows the overview of the existing telecommunication network and its proximity to the Proposed Development.

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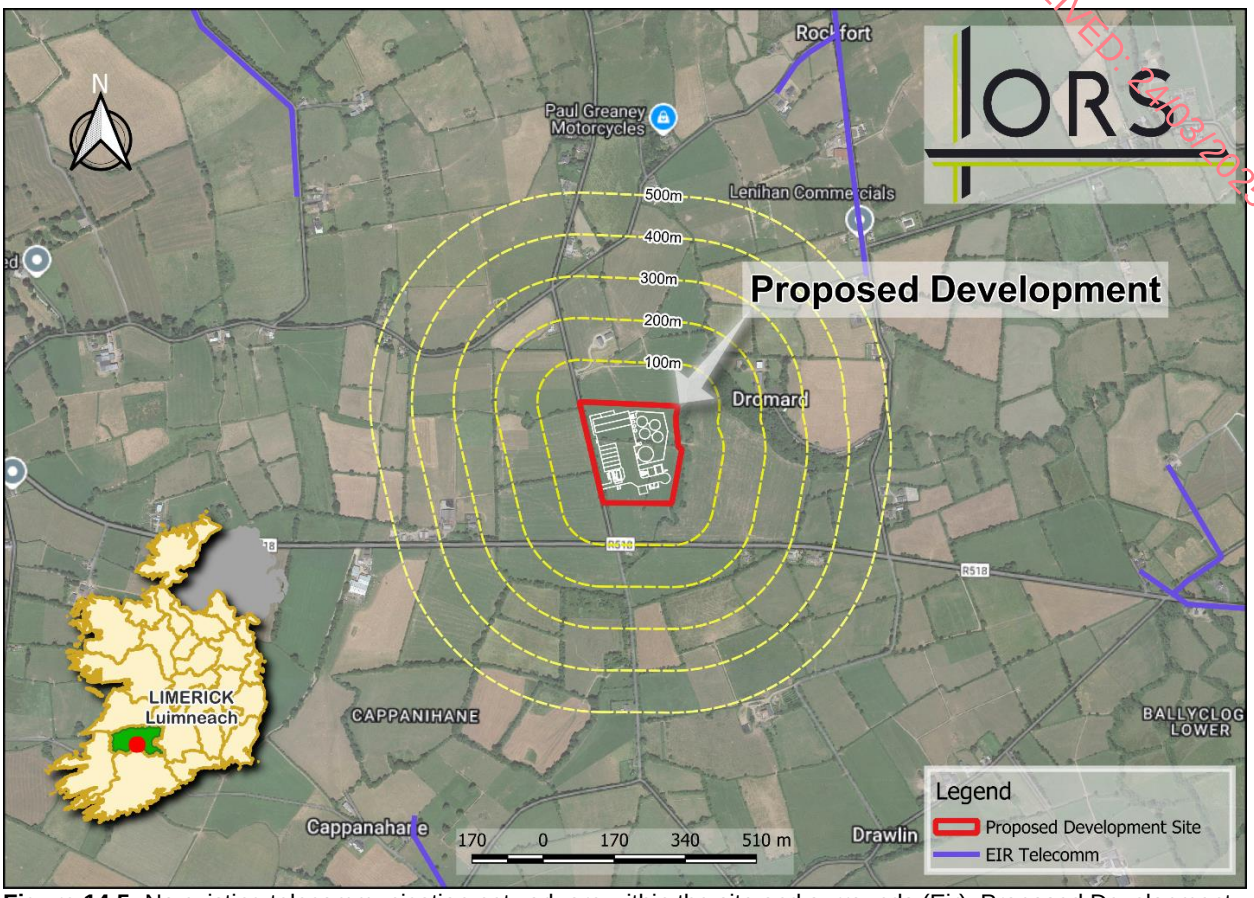

Figure 14.5: No existing telecommunication network are within the site and surrounds (Eir). Proposed Development indicated in red.

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 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.

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

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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, 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.

The construction will operate within Limerick City and 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 (various construction supplies) by vans and HGVs
- Earthworks machinery (excavators, rollers and dumper trucks) transported by HGVs
- HGVs for the export surplus excavated material

Haul routes for construction traffic are to be agreed upon with Limerick City and 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 L8658 Local Road to the west of the site. 12No. car parking bays are provided to the west of the office area, while the central circulation area (concrete apron) to the south of the digestate treatment building will be used for articulated lorry turning and reversing.

The L8658

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 L8658 road during the construction phase as a result of the access junction works and traffic management measures.

R518

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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 R518 during the construction phase.

N20

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 N20 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.

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 compressed onsite and tankered to a 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

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supply during the construction or operational phase of the facility.

No mitigation measures are required. There will be no impact to the existing gas network during the construction phase as there are no gas pipeline connections to be 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 ***neutral, 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. 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.

A utility pole will have to be relocated on the south side of the site to allow sightlines to be achieved at the entrance to the site. 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.

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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 L8658 road.	**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	No mitigation measures are required. There will be no impact to the existing gas network during the construction phase as there are no gas pipeline connections to be established to the existing gas grid network.	**Neutral**	**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.	**Negative**	**Slight**	**Temporary**
Telecommunications	Disruption to existing network while establishing connection.	**Negative**	**Slight**	**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**

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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. 3-5 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 L8658 to the west of the site. Arrivals and departures will be via the Regional Road R518, located south of the site, and all traffic will utilise the L8658/L8595/R518 priority crossroads junction to/from the proposed site.

The R518 is a two-way flow single carriageway approximately 6 metres wide with no hard shoulders available on either side of the carriageway. The R518 has a posted speed limit of 80 km/h. The R518 connects to the N20 and O'Rourke's Cross to the east, approximately 4.2 km from the assessed junction, and to the R520 and Lees Cross to the northwest, *ca.* 4.7 km from the junction.

The L8658 is a single-lane carriageway, approximately 5-6 metres wide, that accommodates two-way traffic and provides access to the regional road R518 to the south, with an increasing width towards the priority junction formed by the L8658 and the R518. At this junction, the road lacks road markings, which are essential for guiding vehicle drivers effectively, while a 'STOP' sign is in place.

On the southern side of the R518, a series of reflective bollards separate the main carriageway from a paved parking/driveway area serving adjacent residential properties. This delineation aims to prevent direct vehicle encroachment onto the main road. Additionally, the road is bordered by hedgerows on the northern side, restricting visibility at certain points. Street lighting infrastructure is not available in the immediate vicinity.

There are no footpaths or cycle lanes provided along the R518 and the L8658, in the vicinity of the site access. With a width of 6 metres, the R518 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.

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

Connection to the public foul water network will not be required during the operational phase. The wastewater from the toilet and canteen will be treated using a proprietary system as recommended in the Site Suitability Assessment. A domestic scale wastewater treatment plant is proposed.

As a result of these works there is potential for there to be ***neutral, imperceptible,*** and ***long-***

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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. Measures for controlling the quality and quantity of water being discharged from the development include

- Collection of the runoff generated from a substantial portion of the impermeable surfaces throughout the site, building roofs and service yards, to be discharged to the rainwater harvesting tanks.
- For the remaining impermeable surfaces e.g. bunded areas, and overflow from the rainwater harvesting tanks, collection by a surface water network which discharges to two proposed attenuation facilities. Class 1 petrol interceptors will also be installed along these collection lines.
- Two stream discharge points from these attenuation tanks, towards the northeast and southeast boundaries of the site will be created. The runoff will be discharged at the greenfield runoff rate calculated for each catchment (7.1L/s and 13.3L/s respectively) via means of a Hydrobrake or similar approved flow control device. This approach maintains the existing topographical discharge route from the site to the existing stream which traverses the Eastern boundary of the site. Attenuation and rainwater harvesting volumes have been sized based on a 95% runoff rate from all impermeable surfaces throughout the site.
- There are 2no. existing drainage ditches which bisect the proposed development footprint. These drains will require decommissioning and infilling within the proposed development boundary, and it will be necessary to divert these drainage ditches and continue to provide an open channel for the collection of runoff from the undeveloped areas to the north of the proposed development.

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.

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Gas Infrastructure

During the operational phase, Biomethane will be compressed onsite and tankered to a Grid Injection Facility. Biomethane will be supplied to the existing gas network via a Grid Injection Unit (GIU). The Biomethane will be 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 Nm^3 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 ***neutral, 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 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.

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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. Collection of run off by a surface water network which discharges to two proposed attenuation facilities. Runoff passed through petrol interceptors to ensure water quality before being discharged at the greenfield runoff rate calculated for each catchment to the adjacent stream Leakage / spillage of biobased fertiliser or feedstocks via vehicle movements.	**Negative**	**Slight**	**Long-term**
Public Water Network	Potential contamination to the local aquifer Potential risk to human health	**Negligible**	**Slight**	**Long-term**
Gas Infrastructure	Biomethane will be compressed onsite and tankered offsite to a Grid Injection Unit (GIU). 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 510-580 Nm3 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.	**Neutral**	**Slight**	**Long-Term**
Telecommunications	Increased demand on existing network.	**Negative**	**Slight**	**Long-Term**
Municipal Waste	Increased waste production of ca. 250l per week. Increased demand on waste collection services.	**Negative**	**Slight**	**Long-Term**

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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

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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

No mitigation measures are required. There will be no impact to the existing gas network during the construction phase as there are no gas pipeline connections to be established to the existing gas grid network.

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.

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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.

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Roads Infrastructure

The operational phase of the development will generate a maximum of 62No. vehicle movements day, where 52No. are HGVs and 10No. are private vehicles and vans. The additional vehicles will represent a maximum of 10% increase in traffic but will not generate increased 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

The gas will be compressed and tankered to a grid injection unit (GIU) and so no specific additional measures are proposed for the operational phase regarding gas infrastructure.

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Tankers will be maintained in good condition as per ADR and RSA requirements.

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 and regional road will increase in coming years. Under the ‘Do Nothing’ scenario, traffic volume and flow would increase on both roads.

Foul Water Network

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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 biomethane 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 Cappanihane, Co. Limerick 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 county Limerick. According to the Limerick 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

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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 Lower Ballyteige stream which connects to the River Maigue, 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 L8658 Road 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.

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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***.

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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 entrance to the site.	**Negligible**	**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 construction stage.	**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 subsequent migration into surface water receptors.	**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. • Covers are to be provided over soil stockpiles when high wind and inclement weather are encountered, if required.	***Negligible, Imperceptible, Temporary***

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Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
					• 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	No disruption to existing network as the gas will be compressed onsite and transported offsite to a grid injection point.	**Negligible**	**Imperceptible**	**Negligible**	• No works to be carried out to the existing gas pipelines.	***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. There will be no relocation of existing overhead power lines.	**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***
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***

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Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
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***

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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 tanks 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, and drainage systems. 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.	***Negligible, Imperceptible, Long-Term***
Public Water Network	Potential contamination to the local aquifer Potential risk to human health	**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***

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Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
Gas Network	Biomethane will be compressed, tankered offsite and supplied to the existing gas network via the Grid Injection Unit (GIU) 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 510-580 Nm^3 of biomethane per hour, to be supplied to the existing gas network.	**Positive**	**Significant**	***Brief***	• No works to be carried out to the existing gas pipelines.	***Positive, Significant, Brief***
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. 250L per week. Increased demand on waste collection services.	**Negative**	**Slight**	**Long-Term**	• 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.	***Negligible, Imperceptible, Long-Term***

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
					• 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.	

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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.