APPENDIX 7 – UPDATED EIAR CHAPTER 14 – MATERIAL ASSETS PREPARED BY ORS

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. The material assets discussed here relate to the built services and infrastructure within and surrounding the Proposed Development site. Traffic and Transportation are assessed separately within **Chapter 12** of this EIAR.

The EIA Directive requires that Architectural and Archaeological Heritage (Cultural Heritage) be 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:** Juliana Oliveski – Environmental Science. Current Role: Environmental Consultant. Experience *ca.* 7 years.
- **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 have 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 in 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 the 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 14th of July 2025 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 the 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 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 exist in the vicinity of the Proposed Development.

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:

- Demolition and site clearance works including the removal of an existing shed (with a GFA of c. 126.8 sq.m), and adjacent hard standing areas and tank structure, located centrally on the site.
- Construction of 2 no. primary digesters (with an overall height of c. 12.1m), a pump house (with a GFA of c. 115.3 sq.m), and 2 no. post digester tanks (with an overall height of c. 12.1m), located in the northwestern section of the site.
- Construction of 2 no. prepits (c. 4.3m in height), a pasteurisation buffer tank (c. 4.3m in height), and a pasteurisation unit (with a maximum height of c. 4.2m), located to south of the primary digesters, within the western section of the site.
- Construction of a digestate storage tank (c. 16.4m in height) located centrally on site, to the southeast of the primary and post digester tanks.
- Construction of a digestate treatment building and a feedstock reception building (with a height of c. 12.1m and a GFA of c. 1,703.7 sq.m) with an odour abatement system (with a height of c. 13m to top of odour abatement stack), located in the southwestern 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), and a gas treatment system (c. 4.2m in height), located in the southeast section of the site.
- Construction of a CO2 liquefactor (with an overall height of c. 10.7m to top of storage vessels), and an emergency/ safety flare (c. 11.3m in height), a grid injection unit (with a height of c. 2.8m and a GFA of c. 21.7 sq.m), a fuel storage tank (c. 2m in height), and a propane tank compound accommodating 2 no. propane tanks (c. 1.6m in height), located in the southern section of the site.
- Construction of roofed silage clamps (with a GFA of c. 665.7 sq.m and a height of c. 8.7m), located centrally on site.

- Construction of a two storey office building (with a GFA of c. 327.4 sq.m and a height of c. 11m) and an ESB substation (with a GFA of c. 23.5 sq.m and a height of c. 3.4m), within the eastern section of the site, adjacent to the site entrance.
- Alterations to the adjacent local road frontage including improved access arrangements and boundary setback 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 12 no. bikes), a weighbridge, solar PV arrays at roof level, wastewater treatment equipment, bunding and surface treatments, attenuation pond, boundary treatments, lighting, services, drainage, landscaping, and all associated and ancillary works.

A further detailed description of the Proposed Development is provided in **Chapter 2: Project Description,** and **Figure 14.1** shows the Proposed Development Site, based on Map 01 Character Assessment - Galway County Development Plan 2022-2028.

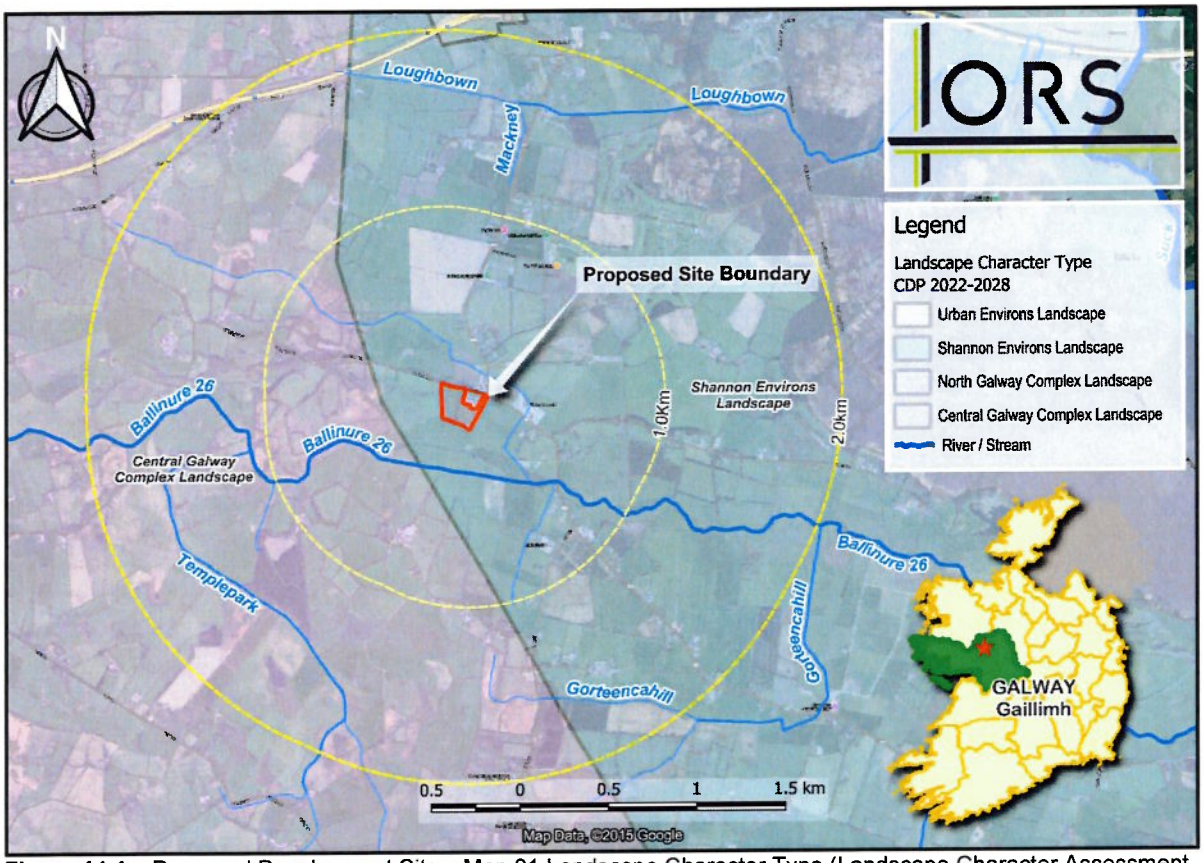

Figure 14.1 – Proposed Development Site x Map 01 Landscape Character Type (Landscape Character Assessment - Galway County Development Plan 2022-2028)

14.4.3 Road Infrastructure

A Traffic and Transport chapter has been prepared by ORS and is submitted as part of this EIAR as **Chapter 12: Traffic and Transport**. The impact that the Proposed Development would have on the road infrastructure in the vicinity of the Proposed Development has been fully assessed in the Traffic and Transport chapter.

Regarding existing network assets, the Proposed Development site is located adjacent to the

L8412 Local Road, which is connected to the R355 Regional Road via a priority T-junction. The R355 Regional Road is a two-way flow single carriageway that provides critical connections to the M6 Motorway and Ballinasloe to the north, and Portumna to the south. The carriageway width measures approximately 6m at its junction with the L-8412, and the posted speed limit is 80 km/h (kph). The road features a continuous solid white double centreline, indicating a no-overtaking zone, and intermittent yellow edge road markings. The L8412 Local Road is a single-lane carriageway, approximately 5-6 m wide. The junction with the R355 is a standard priority T-junction, controlled by a 'STOP' sign for traffic emanating from the L-8412. The surrounding environment is predominantly rural, and there is a notable absence of footpaths or cycle lanes along the R355 and L-8412 in the site's vicinity, as well as no street lighting infrastructure in the immediate area. No road improvement schemes by Galway County Council are currently planned that would affect the development.

With respect to the proposed road infrastructure, the site access to the Proposed Development will be facilitated by a new proposed T-junction alignment constructed off the existing access road, which connects to the L-8412 Local Road. This realigned junction has been specifically designed to accommodate the anticipated Heavy Goods Vehicle (HGV) traffic, ensuring compliance with Transport Infrastructure Ireland (TII) standards, particularly publication DN-GEO-03060. The internal road network features a central circulation area (concrete apron) engineered to allow articulated lorry turning and manoeuvring. Furthermore, sightlines at the proposed access will be fully compliant with TII standards, mandating a minimum of 90m of unobstructed visibility in both directions for a 60kph speed.

The assessment of the Proposed Development's impact on the existing road network focused on road capacity, congestion, and wear and tear. The development is predicted to generate a maximum of 64 total vehicle trips per day (32 incoming and 32 outgoing). This volume is minimal, corresponding to approximately 2.3% of the Annual Average Daily Traffic (AADT) observed at the R355/L-8412 junction. Notably, an estimated 54 of these daily trips will be associated with HGVs/Trailers/Tankers required for feedstock intake and biobased fertiliser export. Since HGVs are the vehicles that inflict the highest damage and wear and tear on road infrastructure, this increase in heavy goods vehicles will contribute to increased wear on the local and regional road network assets. However, a capacity assessment of the R355/L-8412 junction using TII-approved software determined that the junction will operate well below its theoretical capacity (Ratio of Flow to Capacity, or RFC, below 0.85) for all future design years. Consequently, no queues or delays are anticipated.

An overview of the proposed access road is included in **Figure 14.3**.

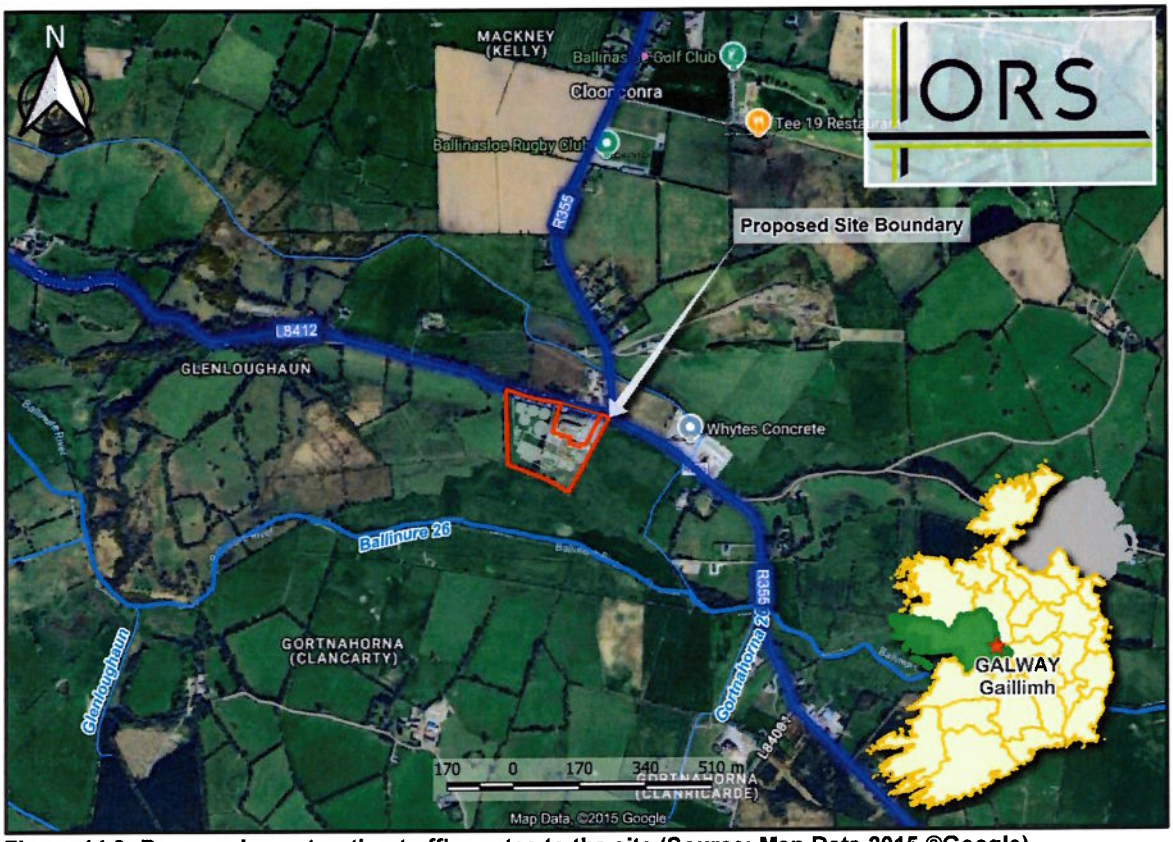

Figure 14.3: Proposed construction traffic routes to the site (Source: Map Data 2015 ©Google).

14.4.4 Foul Water Network

There is no existing foul sewer infrastructure within or in proximity to the proposed development site. These flows will be generated solely from the proposed ancillary office building, with no process-related foul water discharges expected from the biogas facility. Effluent from the office will initially discharge to an inspection chamber before being transferred to a proprietary wastewater treatment unit designed in accordance with EPA guidance and Irish Water standards.

The treated effluent will subsequently be conveyed via a pressurised pipe to a tertiary treatment/percolation area comprising approximately 60m² of attenuation. This will be constructed to 350mm depth using clean 20mm graded stone to ensure adequate dispersal and attenuation. This arrangement allows for effective treatment of sanitary wastewater at source and removes the requirement to connect to any external foul sewer network, which is not present in the area. It also ensures compliance with environmental regulations and provides sufficient mitigation against potential impacts on groundwater and nearby surface water receptors.

14.4.5 Surface Water Network

The proposed development incorporates a comprehensive surface water management system designed to align with best practice Sustainable Drainage Systems (SuDS) principles. The site drainage strategy includes rainwater harvesting tanks, swales, permeable paving, linear drains, a petrol interceptor, and an open attenuation pond. These features collectively manage surface water quality and quantity, ensuring attenuation of runoff prior to controlled discharge.

Rainwater harvesting will serve multiple functions, including supply for wash-down facilities, fire-fighting capacity, and potable/grey water for the office (following further treatment).

The attenuation facilities have been sized using Causeway Flow drainage software to accommodate a 1:100-year rainfall event plus a 20% climate change allowance. Given the presence of impermeable substrata and shallow groundwater, discharge to ground is not considered feasible, and therefore all surface water will be collected, tanked, and discharged at greenfield runoff rates via a hydrobrake or equivalent control device.

Runoff will ultimately outflow to the existing drainage ditch at the southern site boundary, which is hydraulically linked to the Ballinure River. This ensures that post-development flows mirror pre-development hydrological conditions, mitigating flood risk and protecting downstream receptors.

14.4.6 Public Water Network

An existing 300mm public water main runs along the R355 to the northeast of the site, supplying a hydrant and kiosk at Glenloughaun Road. The development will not require a connection to the public mains.

Instead, water supply for site operations, sanitary facilities, and fire-fighting will be provided primarily via harvested rainwater, supplemented by local treatment (reverse osmosis and UV disinfection) to ensure potable standards where required. In periods of low rainfall, supplementary potable water (bottled supply) may be required for office use.

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

Gas Networks Ireland (GNI) has confirmed that the existing grid capacity is sufficient to accommodate the full production output of the Proposed Development. All works associated with the connection to the existing and proposed gas pipelines will be undertaken directly by GNI in accordance with the requirements of Standard I.S. 328:2021 *Gas Transmission – Pipelines and Pipeline Installations*. This ensures that all infrastructure is designed, constructed and maintained to the highest safety and operational standards.

The establishment of a direct grid connection represents a key material asset, enabling the renewable biomethane produced on site to be exported to the national network and displace fossil fuel use.

The nearest existing gas infrastructure to the proposed facility is a medium-pressure distribution pipeline, located approximately 3.1 km north of the site. According to information received from GNI **(Ref ID: 8946_09072025105704)**, there are no existing local distribution pipelines within a 1:2500 scale of the proposed development. A dedicated pipeline will therefore be constructed to facilitate the connection between the site and the national grid.

Figure 14.5 illustrates the existing gas networks in the area and the proposed pipeline connection route from the Proposed Development.

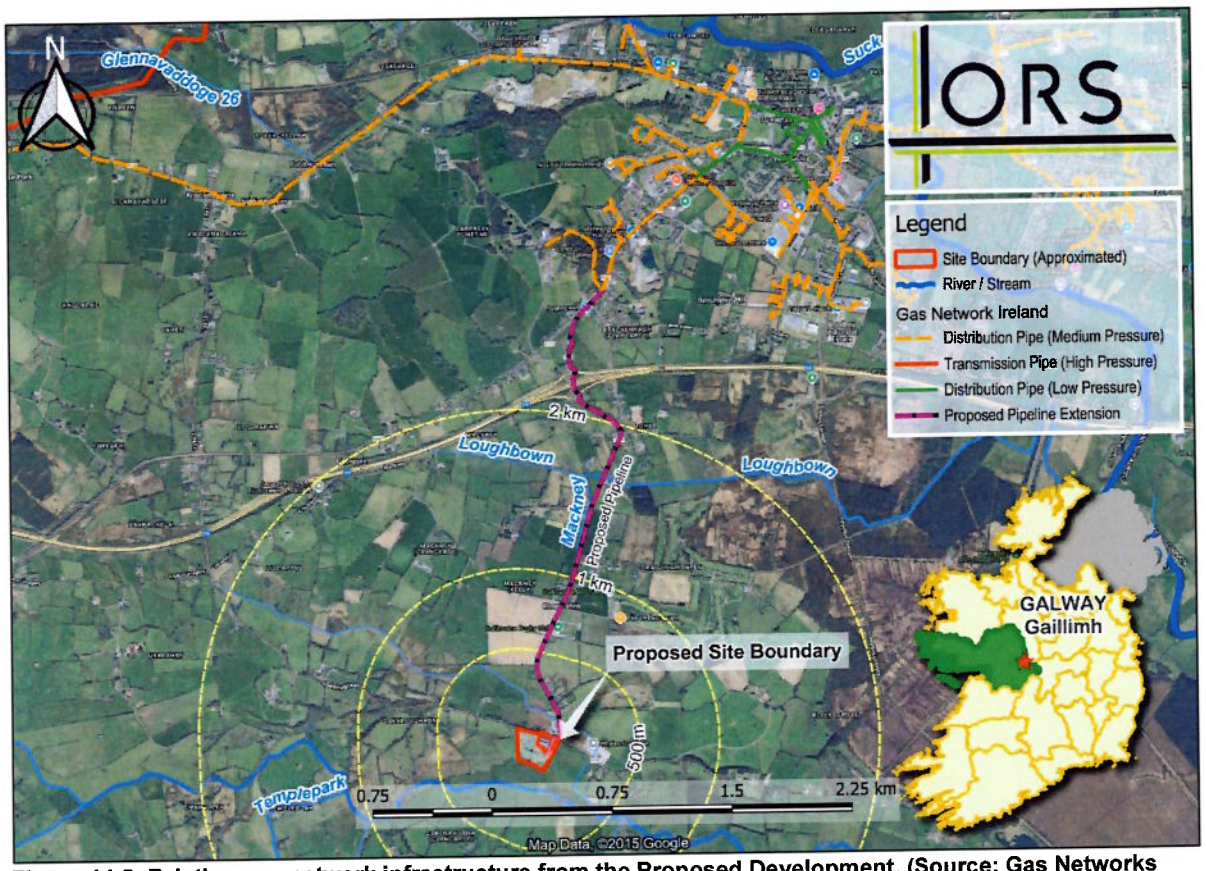

Figure 14.5: Existing gas network infrastructure from the Proposed Development. (Source: Gas Networks Ireland – Ref ID: 8946_09072025105704).

14.4.8 Electricity Network

A Medium Voltage (MV) (10KV/20KV) main overhead line traverses a field in which the access road will be developed. The MV overhead line runs from east to west across fields south of the Proposed Development.

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.

See **Figure 14.6** below for an overview of the existing Electricity Network in the site area.

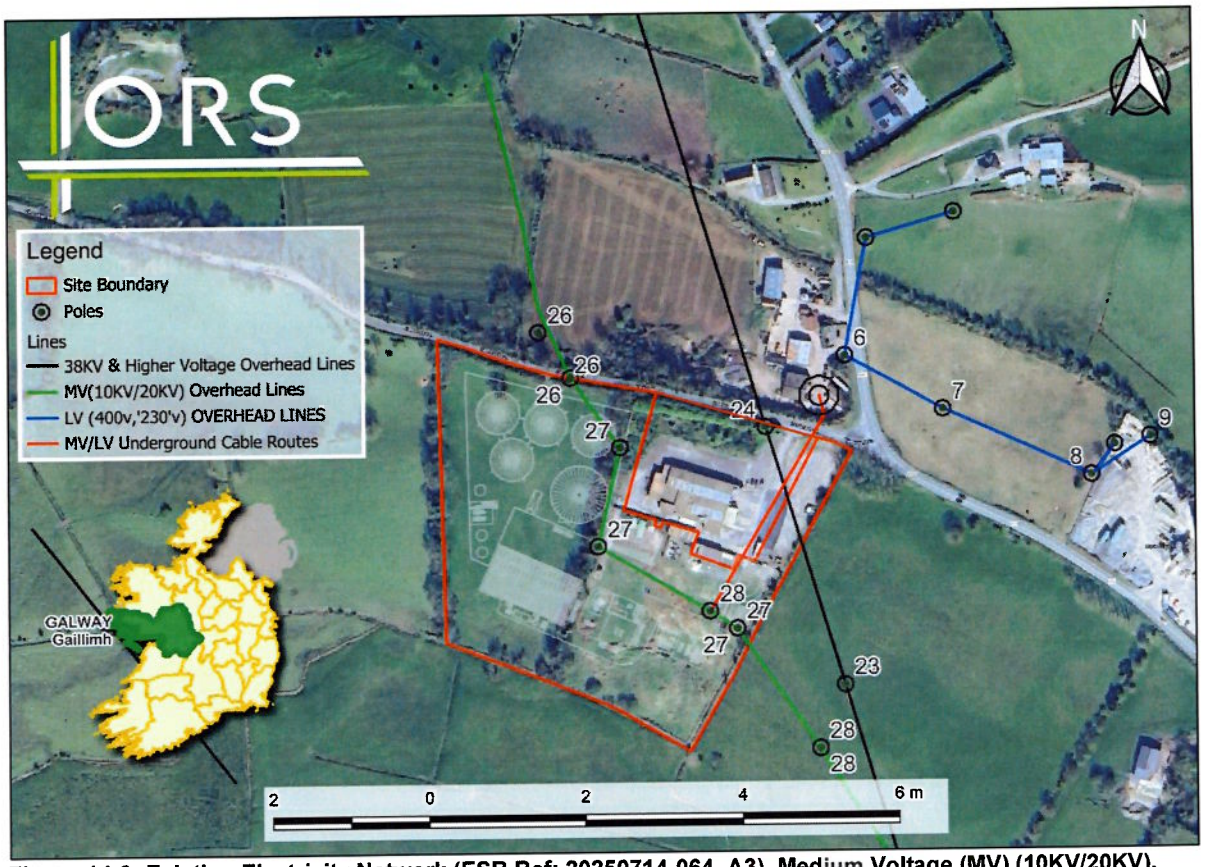

Figure 14.6: Existing Electricity Network (ESB Ref: 20250714-064_A3). Medium Voltage (MV) (10KV/20KV).

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.

This region benefits from a well-established telecommunications network, offering fibre-optic and broadband services. Ducting and cabling infrastructure extend through the area, providing a high-speed internet connection to the site. The existing telecom infrastructure supports advanced communication services, contributing to the area's digital integration.

Figure **14.7** presents broadband coverage maps that show 'Fair' 4G coverage in the proposed site development area.

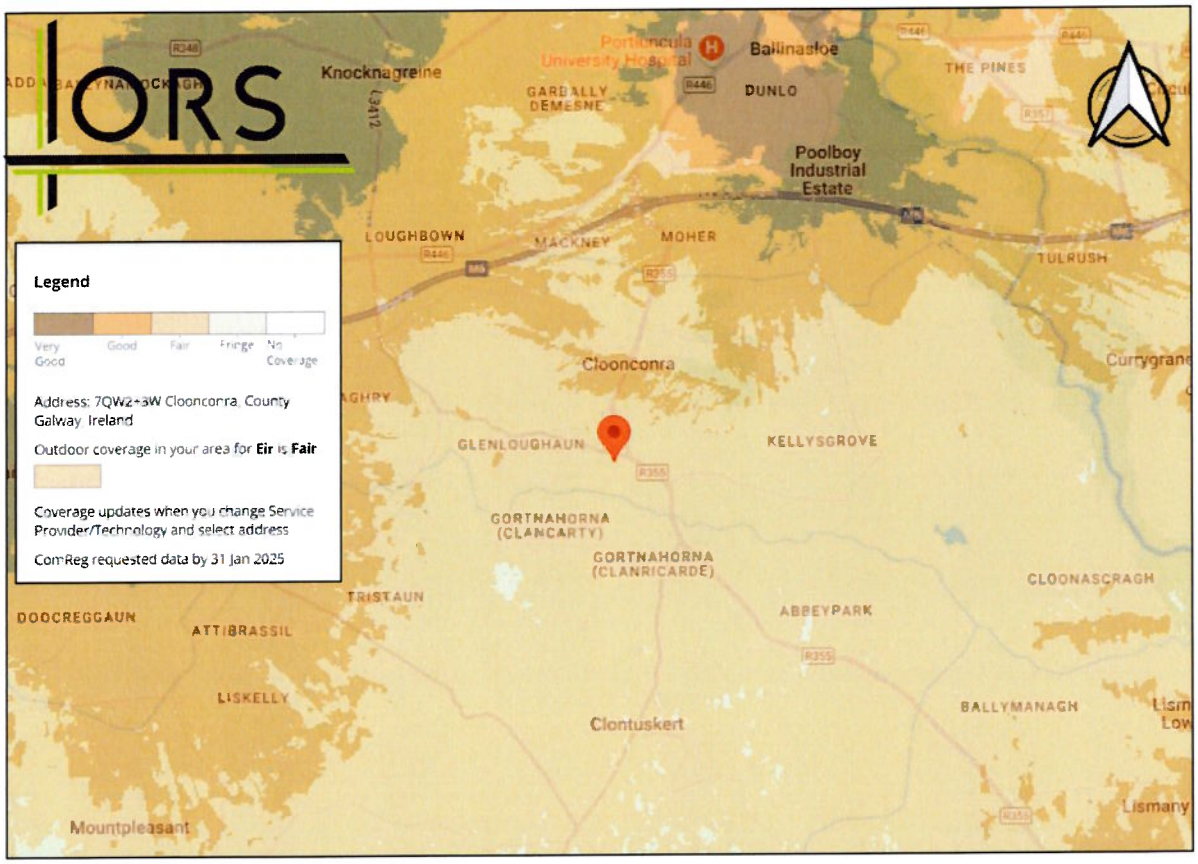

Figure 14.7: Telecommunications – Eir

14.4.10 Municipal Waste

There will be a number of waste streams generated during the construction phase of the Proposed Development. These include not only construction and demolition (C&D) wastes but also small volumes of municipal-type waste arising from staff welfare facilities and site offices, such as packaging, paper, cardboard, plastics, and food waste. While minor compared to C&D volumes, this stream will be managed in accordance with the waste hierarchy, with segregation at source to facilitate recycling and recovery.

Clearly marked receptacles will be provided on site, and all municipal waste will be collected by a permitted waste contractor and transferred to appropriately licensed/permitted facilities. Full records of waste arisings, contractors, and disposal/recovery routes will be maintained by the Construction Project Manager to ensure traceability and compliance with statutory requirements. Further details on construction waste streams and associated mitigation measures are presented in the accompanying Construction Environmental Management Plan – CEMP **(Ref: 231960-ORS-XX-XX-RP-EN-13d-010).**

Given the nature and scale of the proposed development, significant volumes of municipal waste during the operational phase are not anticipated. It is proposed that 3-5 no. full-time staff will occupy the premises once operational. Based on guidance set out in *British Standard Waste Management in Buildings – Code of Practice (BS 5906:2005),* and assuming a volume of 50 litres of municipal waste generated per employee per week, operational waste arisings are estimated to be approximately 300 litres per week. This will primarily comprise office-type waste such as paper, cardboard, plastics, and minor quantities of food waste. Waste

segregation will continue during the operational phase to maximise recycling, and all waste will be managed by a permitted contractor to ensure treatment or disposal at licensed/permitted facilities. The scale of municipal waste generated is considered minor and will not give rise to any significant impacts on local waste management infrastructure.

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 the evidence collected, a risk assessment has been carried out. The assessment pertains to the effects that occur 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. Arrivals and departures will be distributed throughout the day and, where practicable, programmed to avoid peak periods on the surrounding road network.

Construction activities will operate within Galway City and County Council's recommended hours, i.e. 08:00–18:00 Monday to Friday and 08:00–14:00 on Saturdays, with no works on Sundays or public holidays.

- 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; and
- HGVs for the export of surplus excavated material.

It is anticipated that a maximum of c. 20–30 construction personnel will be on site at any one time (typically 1.2 workers per car), with arrivals and departures occurring outside peak network times where practicable.

Access arrangement and routeing

Construction traffic will access the site via the R355 Regional Road and the Glenloughaun Local Road (LS-8412 / L-8412), using the established local road corridor in the vicinity of the site. A Construction Traffic Management Plan (CTMP) will be prepared and agreed with Galway County Council prior to commencement, setting out haul routes, delivery scheduling, driver protocols, temporary signage, banksman/marshal procedures (where required), and measures to prevent HGV waiting/reversing on the public road.

Proposed road access improvement measures (embedded mitigation)

The Proposed Development includes alterations to the adjacent local road frontage, including improved access arrangements and boundary setback to facilitate safer access and improved visibility.

The access improvement package (to be implemented subject to detailed design and agreement with Galway County Council) comprises the following core measures:

1) Enhanced junction geometry and speed management

The revised layout provides a more perpendicular (~90°) junction approach, improving driver alignment and visibility and reducing ambiguity at the junction.

Corner radii of R13m are proposed (in accordance with TII rural simple junction guidance) to accommodate HGV tracking while constraining turning speeds.

The junction radius is tightened in accordance with TII guidance to prevent high-speed entry from the south.

2) Local road widening in the junction influence area

The design includes local road widening (noted as 2m widening to be agreed with the Local Authority prior to construction), improving operability for construction vehicles and reducing the potential for "pinch-point" effects and verge overrun.

3) Visibility splays and vegetation management

Updated Sightlines Layout drawings demonstrate that the revised geometry and visibility provision is deliverable, including:

90m "Y" sighting distance to northbound and southbound on the R355 from the minor road setback;

Confirmation that vegetation within visibility splays will be cut back and maintained to ensure sightlines remain uninterrupted.

Road widening within the Appellant's ownership boundary, trimming and ongoing vegetation maintenance will ensure that full design sightlines are permanently available.

4) Traffic signs, road markings and delineation

A dedicated Traffic Signs and Road Markings Layout is provided, including:

STOP control at the relevant junction locations (STOP signs/markings referenced);

Advance warning signage including W016 (T-junction/major road ahead) and W168 (slow moving traffic) with stated minimum offsets from hazards/junctions;

Additional bend/side-road warning signage on approaches (W009L/W009R) to reinforce driver awareness on the R355 curvature.

Collectively, these measures provide a defined access arrangement with improved geometry,

formalised visibility management, and a signage/markings package to reduce collision risk and improve predictability for all road users.

Assessment of likely construction phase effects

With the proposed access improvement measures in place (junction geometry, local widening, visibility management, and signage/markings), and with the CTMP controlling construction logistics, the risk of construction traffic giving rise to a traffic hazard is materially reduced. The traffic design response confirms compliance against the relevant visibility and junction design requirements, with the updated sightline drawings demonstrating deliverable visibility subject to vegetation management and, where necessary, boundary/fencing adjustments.

In the absence of mitigation, construction-related traffic could give rise to neutral, slight and temporary impacts on the L-8412/LS-8412 and R355 due to increased vehicle movements. However, with the embedded access improvements and CTMP measures implemented, the residual effect on traffic and transport during construction is assessed as **neutral, temporary, and imperceptible to slight**.

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

Foul Water Network

During the construction phase, there will be no requirement to connect to any existing foul sewer network, as foul water flows from staff welfare facilities will be managed via temporary self-contained site systems. It is concluded that impacts on the local foul water network during the construction phase are ***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. Further information is shown in **Chapter 8**. Mitigation measures outlined in the Construction Environmental Management Plan (CEMP), including silt control, temporary drainage and pollution prevention practices, will ensure that no adverse effects arise.

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

Construction of the Proposed Development will not require connection to the public water main along the R355. Water for construction activities (e.g. dust suppression, concrete works, staff welfare) will be sourced and managed locally, with minimal reliance on public supply.

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

The nearest existing gas transmission infrastructure is located off site and will not be directly affected by construction activities. Works to establish the proposed connection pipeline will be undertaken under the control of Gas Networks Ireland (GNI) and in accordance with Standard I.S. 328:2021. During construction, minor short-term impacts may occur in the immediate vicinity of the proposed connection route due to excavation and installation works.

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 on-site. An ESB substation will be installed on site for use during the operational stage. There may be a 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 telecommunication services to the site will not be operational during the construction phase.

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

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

Municipal Waste

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

Waste materials will be required to be temporarily stored on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Development Site and in adjacent areas.

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

Summary of Construction Phase Effects

Table 14.1: Construction Phase Effects (Unmitigated)

Asset	Potential Environmental Effects	Quality	Significance	Duration
Roads Infrastructure	Increased flow of construction-related traffic. Establishing the pipeline connection to the existing gas network will require the implementation of temporary traffic management measures along the L8142 and R355.	**Neutral**	**Slight**	**Temporary**
Foul Water Network	During the construction phase, welfare facilities for staff will be supplied via portable toilets and waste will be collected and tankered offsite. Generation of foul effluent from welfare facilities requiring on-site management; potential risk of accidental spillage or leakage during handling.	**Neutral**	**Slight**	**Temporary**
Surface Water Network	Contaminated runoff reaches 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 the existing network while establishing a connection.	**Negative**	**Slight**	**Brief**
Electricity Network	Power supply for plant and machinery during the construction phase will be predominantly supplied by generators on-site. There may be a partial disruption to the existing electricity network as connection to the grid via the substation is established.	**Negative**	**Slight**	**Temporary**
Telecommunications	Disruption to the existing network while establishing a 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**

14.5.2 Operational Phase

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

Roads Infrastructure

During the operational phase, vehicular access to the Proposed Development will be provided via the L-8412 (Glenloughaun Road) from the R355, using only the short section of L-8412 between the R355 junction and the site entrance. HGV traffic will not use the L-8412 beyond the site access.

The operational phase traffic generation is low in absolute terms and will be distributed across the operating day. The EIAR/TTA evidence indicates a maximum of c. 64 vehicle movements per day (c. 54 HGV movements and c. 10 cars/vans) under a conservative assessment scenario; in practice, HGV movements equate to approximately 4.5 HGVs per hour on average over a 12-hour operational window (07:00–19:00), i.e. approximately one HGV every 10–15 minutes.

Embedded mitigation – upgraded access / road safety measures

In response to the Planning Authority's road safety concerns, the Proposed Development includes alterations to the adjacent local road frontage, including improved access arrangements and boundary setback to facilitate improved access and safety.

The operational access strategy is supported by a defined package of road improvement and traffic control measures at/around the R355 / L-8412 junction and the site access, including (inter alia):

Localised widening of the L-8412 carriageway by approximately 2m in the vicinity of the site entrance / junction influence area;

Revised junction/access geometry with defined corner radii and carriageway delineation, designed to accommodate articulated HGV movements while managing approach/turning speeds;

Provision of sightlines/visibility splays and a vegetation management strategy to ensure the required visibility is available and maintained;

Advance warning signage and road markings on the R355 and L-8412 (including junction warning signs and STOP control/markings as applicable) in accordance with TII/local authority standards;

On-site operational controls including weighbridge logging and delivery management, enabling scheduling and staggered arrivals to avoid clustering.

Assessment of effects

Having regard to (i) the low absolute frequency of operational HGV movements, (ii) their distribution across the day, and (iii) the embedded access improvement works (geometry, widening, sightlines/vegetation management, signage/markings), the alignment and capacity of the L-8412 and the R355 are considered adequate to accommodate operational traffic associated with the Proposed Development.

Accordingly, no further road upgrades beyond those included as part of the Proposed Development are required to support the operational phase.

With the above measures in place, the operational phase effect on roads infrastructure is assessed as **neutral, slight,** and **long-term**, noting that the upgraded access/safety measures represent a net improvement in road safety and junction definition compared to the existing baseline.

Foul Water Network

Connection to the public foul water network will not be required during the operational phase. The Proposed Development will have 10 workers on site each day with normal loadings of 30l/day and BOD of 20g/day. The wastewater from the toilet and canteen will be treated using a proprietary system as recommended in the Site Suitability Assessment, specifically a PE 7 proprietary treatment system with a Ter3 packaged tertiary unit and a minimum 60m² attenuation layer.

Testing and assessment have been carried out in accordance with the requirements of the EPA Code of Practice Wastewater Treatment Manuals for Treatment Systems for Single Houses (p.e. < 10). The chosen system is sized for the required waste loadings and sited so as to ensure sufficient separation distance from watercourses and groundwater sources.

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

During the operational phase, the Proposed Development will operate surface water drainage systems, designed to manage runoff quality and quantity. There is a risk of spillage or leakage associated with vehicle movements and handling of materials such as bio-based fertiliser and feedstocks within yard areas.

Embedded mitigation – containment, automated isolation

The site has been designed to be wholly impermeable, with surface/runoff water conveyed to specific containment structures and attenuation features. Catchpits/silt traps are present at inlets. A Class 1 bypass oil separator will be installed upstream of the attenuation pond for trafficked areas, providing hydrocarbon and fine sediment removal for rainfall events.

Silage effluent is collected via a segregated system i.e. (separate from stormwater).

The sump catchment is served by a sealed below-ground attenuation system equipped with an automated penstock in the final manhole upstream of discharge.

The site design contains designated manual penstocks and emergency pre-pond/outfall isolation valve allowing the operator to isolate the surface water network should an incident occur outside the sump catchment (e.g., yard spills, offloading incidents, fuel spills)

Assessment of effects

The drainage design prevents releases where practicable, contains liquids on impermeable and/or bunded surfaces and provides for rapid isolation of the surface water network. Given the detailed, multi-layer approach, no further engineered controls are proposed beyond those

included as part of the Proposed Development.

With the controls as listed above and in the absence of further mitigation, should a spill or leakage occur during the operational phase, there is potential for there to be ***negative, slight***, and ***temporary*** impacts to the surrounding surface water network.

Public Water Network

The Proposed Development will not require a connection to the public water main along the R355. Water for construction activities (e.g. dust suppression, concrete works, staff welfare) will be sourced and managed locally, with minimal reliance on public supply.

As a result of these works, there is potential for there to be ***neutral, slight,*** and ***long-term*** 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 approximately 3.1 km north of the site.

The GIU comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the gas network.

Based on the feedstock composition and design operating capacity, it is projected that the Proposed Development will produce 510-580Nm^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

An ESB substation will be installed on site for use during the operational stage. There may be a partial disruption to the existing electricity network as connection to the grid via the substation is established.

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 telecommunication services will be required during the operational phase of this project. There will be an office/canteen/lab onsite that will require the 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 of 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

During the operational phase, municipal waste will be generated by approximately 3-5 full-time staff and will consist mainly of office-type wastes such as paper, cardboard, packaging, and small amounts of food waste. Based on BS 5906:2005, operational waste arisings are estimated at c. 300 litres per week. Segregation and appropriate collection will ensure that recyclable fractions are recovered, with residual waste directed to licensed facilities.

As a result of these works, there is potential for there to be ***neutral, 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 proposed priority T-junction alignment. No road upgrades or additional interventions are required.	**Neutral**	**Slight**	**Long-Term**
Foul Water Network	Wastewater from welfare facilities and canteens will be treated using a proprietary system as recommended in the 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 sump catchment area. Run-off from the buildings and yards is collected in a sealed pipe network, which will discharge to the stream. Rain falling on the bunded area will be collected in a separate sealed drainage network and discharged to a sump, from which it will be pumped to the surface water drainage system for the remaining areas of the Proposed Development. Run-off from the access road and from the lands uphill of the road will be collected in filter drains; these will allow run-off to discharge to the ground insofar as the permeability of the subsoils allows. Not all run-off will infiltrate into the ground during intense rainfall events, and so this network will also discharge to the surface water drainage system for the remaining areas of the Proposed Development.	**Negative**	**Slight**	**Temporary**

	Leakage/spillage of biobased fertiliser or feedstocks via vehicle movements.			
Public Water Network	The Proposed Development will not be connected to the public water network.	**Neutral**	**Imperceptible**	**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. The GIU comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the gas network.	**Positive**	**Significant**	**Long-Term**
Electricity Network	An ESB substation will be constructed and will provide a connection to the national grid, although this source of power will serve only as a backup.	**Negative**	**Slight**	**Long-Term**
Telecommunications	Increased demand on the existing network.	**Negative**	**Slight**	**Long-Term**
Municipal Waste	Increased waste production of ca. 300L per week. Increased demand for waste collection services.	**Neutral**	**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 practices and site-specific mitigation measures to minimise disruption and impacts to receptors. Typical mitigation measures that are incorporated into 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.
- 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 temporarily 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 into the subsurface and the aquifer.
- All foul water infrastructure to be installed under 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:

- Harmful materials such as fuels, oils, greases, paints, and hydraulic fluids must be stored in bunded compounds well away from stormwater drains and gullies. Refuelling of machinery, if unfeasible to be carried out off-site as recommended as a default procedure, should be carried out using drip trays, to contain potential spills and prevent them from entering watercourses.
- Manholes, gullies, and drains receiving surface water runoff from the site and access routes shall be protected using silt fencing material and sandbags. This measure will mitigate the risk of silt and chemical runoff entering the surface water network by establishing a physical barrier to prevent pollutants from migrating into the drainage system.
- Refuelling will not be permitted within 50m of rivers and 10m of surface drains, with the exception of pumps for dewatering purposes, if needed, which are to be stored on portable spill bunds, to minimize the risk of direct contamination of water bodies from refuelling activities.
- Runoff from machine service and concrete/grout mixing areas must not enter stormwater drains and gullies leading off-site, to prevent the discharge of potentially polluting substances into the environment.
- Spill kits shall be available in each item of plant required, to enable immediate cleanup of spills and prevent further contamination.
- No direct discharges to be made to waters where there is potential for cement/ residues/ oils /chemicals in discharges, to avoid direct contamination of water bodies with harmful substances.
- Stockpile areas for sands and gravel should be kept to a minimum size, well away from stormwater drains and gullies leading off-site, to reduce the potential for sediment runoff into watercourses.
- Open excavations to be backfilled immediately following the installation of services etc., to minimize the time soil is exposed to erosion and potential runoff.

- Earthworks and the movement of plant on soil surfaces will be avoided during periods of extensive rainfall to limit silt-laden runoff and damage to soil structure, as saturated soils are more susceptible to erosion and compaction.

- Pre-cast concrete should be used wherever possible. When this is not possible, any works using cast-in-place (poured) concrete must be done in the dry and effectively isolated from any flowing water for a sufficient period to ensure no leachate from the concrete, to prevent concrete contaminants from entering water bodies

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 into the subsurface and the aquifer.

Gas Infrastructure

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

- Consultation with Eir, Vodafone 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 are 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 being removed off-site to prevent littering elsewhere.
- Ensure waste is collected by a registered vendor and disposed of at a facility licensed to take said waste.
- Maintain good waste records onsite to ensure all is accounted for.
- Concrete Washout Skip: Chutes of concrete trucks are only to be washed out into an impermeable lined (polythene) skip. The washout water is to be treated prior to discharge.
- The concrete washout skip is to be located to the east of the site, where the overburden is greater.
- Excavations lined with an impermeable liner are not permitted as concrete washout bays.
- Large excess loads of concrete are to be returned to the supplier or poured into concrete block modules (Betonblock or similar design) to minimise waste and reduce the risk of concrete being dumped throughout the 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 the 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 a 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:

- Emission 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 Proposed Development is expected to generate a maximum of 64No. vehicle movements a day during the operational phase, associated with the delivery of feedstock, the export of digestate and from private cars. Under a conservative scenario i.e. all haulage occurring at peak times, the development traffic would result in an increase to a maximum of 13% of the existing traffic along the low trafficked R355 during AM and PM peak periods, which is above the threshold set in Galway Development Plan to produce a detailed Traffic and Transport Assessment (TTA). In practice, traffic impact is minimal in absolute terms: 54 HGVs/day distributed over 12 hours resulting in junction RFC of 0.10 (90% residual capacity).

As described in Section 14.5.2 above, the revised road layout represents a net safety improvement at the LS-8412/R355 junction, with improved visibility splays, safer turning geometry and greater hazard indication through road markings.

Further reduced impacts are achieved through operational mitigation measures including weighbridge logging and delivery management, enabling scheduling and staggered arrivals to avoid clustering.

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 (non-feedstock related) 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 are 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 the 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.
- Specific operational controls are outlined in the Emergency Spill Response Plan, included in the appeal-stage application.

Public Water Network

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

Mitigation measures for the 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 on the existing gas network during the operational phase include:

- The 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 on 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 a 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 are 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 on-site.
- Ensure all bins have lids and skips are covered when being removed off-site to prevent littering elsewhere.
- Ensure waste is collected by a registered waste collection permit holder and disposed of at a facility licensed 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 regional and local road will increase in the coming years. Under the 'Do Nothing' scenario, traffic volume and flow would increase on both.

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 partially brownfield and 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 on 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 site of the Proposed Development is situated in a reasonably underdeveloped region of Galway. According to the Galway County Council Planning Application Map, there is an absence of large-scale proposed developments in the vicinity of the proposed development, which would result in significant cumulative impacts arising 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**. The implementation of successful surface water mitigation measures onsite will ensure the likelihood and consequences of environmental incidents that could impact protected sites around the proposed development.

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 the 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 communication and adherence to traffic management will ensure regular traffic flows along the L8142 and R355.

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, is 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, is 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 L8142 and R355.	**Neutral**	**Slight**	**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 before construction works. • 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 temporarily 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 will be collected and tankered offsite. The only foul flows proposed from the site are 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 60m^2 of attenuation, provided to 350mm depth using clean 20mm graded stone.	**Neutral**	**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***

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
Surface Water Network	Contaminated runoff reaches 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, before discharge off-site. • Stockpile areas for sands and gravel should be kept to a 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 into 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.	***Negligible, Imperceptible, Temporary***
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 into the subsurface and the aquifer.	***Negligible, Imperceptible, Brief***
Gas Network	Disruption to the existing network while establishing a connection.	**Negative**	**Slight**	**Brief**	• 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 on-site. There may be a partial disruption to the existing electricity network as connection to the grid via the substation is established.	**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 the existing network while establishing a connection.	**Negative**	**Slight**	**Brief**	• Consultation with Eir, Vodafone 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 proposed priority T-junction. No road upgrades or additional interventions are required.	**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 canteens will be treated using a proprietary system as recommended in the 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 discharge from the Proposed Development. Run-off will be channelled through sediment chambers, oil traps, drainage systems and an 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 are 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 the absence of blockages or leaks. • In the event of a grant of licence by the EPA to carry out activities that require such a 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***

Potential Source	Impact Description	Quality	Significance	Duration	Mitigation	Residual Impact
Public Water Network	The Proposed Development will not be connected to the public water network.	**Neutral**	**Slight**	**Long-Term**	• Water will be supplied from rainwater harvesting. This water will undergo UV treatment prior to use and storage.	***Negligible, Imperceptible, Long-Term***
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. The GIU comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the 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 a 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.	***Neutral, Imperceptible, Long-Term***
Telecommunications Network	Increased demand on the 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 usage are unavoidable.	***Negative, Slight, Long-Term***
Municipal Waste	Increased waste production of ca. 300L per week. Increased demand for 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 are 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.	***Neutral, 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.	

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 to throughout the site.

Once completed, the Proposed Development will be subject to annual inspection by the Environmental Protection Agency, which 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 include Road 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 is reduced to **negligible**.

14.11 Statement of Significance

The significance of impact upon all identified Material Assets has been assessed 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 the impact upon these receptors ranges from **slight to significant.**

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