

2 Project Description

2.1 Introduction

The Applicant, Mr. John Sheridan and Nephin Renewable Gas - Ballinrobe Limited, proposes to develop an Anaerobic Digestion Facility (herein referred to as the Proposed Development) on a site located in the townlands of Levally, Cappacurry, and Knocknadrinna, Ballinrobe, Co. Mayo.

This chapter will provide a detailed description of the Proposed Development and the key processes therein.

2.1.1 Description of the Proposed Development

The development will consist of the following:

- Construction of 3 no. digesters (c. 16m in height), 2 no. digestate storage structures (c. 16m and 10m in height), 2 no. pump houses (c. 2.6m and 1.9m in height), 2 no. liquid feed tanks (c. 4m in height), located in the eastern section of the site.
- 3 no. pasteurisation tanks (each c. 5m in height), a post pasteurisation cooling tank (c. 14m in height) and pre fertiliser manufacturing tank (c. 14m in height) located in the centre of the site.
- A part single-storey and part two-storey reception hall (with a gross floor area (GFA) of c. 2,113 sq.m and an overall height of c. 15.5m) to accommodate a laboratory, panel room, tool store, workshop, and storage areas, located to the centre of the site.
- A single-storey solid digestate storage and a nutrient recovery building (with a GFA of c. 880 sq.m and an overall height of c. 12.4m in height) located to the south of the reception hall, in the central portion of the site.
- Odour abatement plant and equipment and a fuel tank will be provided to the south of the solid digestate storage and nutrient recovery building.
- Construction of an ESB substation (c. 3.4m in height and with a GFA of c. 24 sq.m), 2 no. CO₂ tanks (c. 10.7m in height), a CO₂ loading pump, CO₂ auxiliaries, CO₂ liquefactor (c. 8.2m in height), a CO₂ compressor, a CO₂ pre-treatment skid, backup boiler and a Compressed Natural Gas compression unit located in the western portion of the site.
- Construction of a H₂S washing tower (c. 7.8m in height), a biogas treatment skid (c. 4.1m in height), a combined heat and power unit and panel room (c. 10m in height), a biogas compression system, a biogas upgrading module and an emergency biogas flare (c. 11.3m in height) located within the western portion of the site.
- A two-storey office and administration building with an overall height of c. 8m and a GFA of c. 272 sq.m., located within the western area of the site, adjacent to the main site access.
- Construction of an emergency biomethane flare (c. 11.3m in height), a grid injection unit (c. 7.8m in height) and 2 no. propane tanks located in the north-western portion of the site.
- Provision of set-backs along the R331 including the existing wall set-back 3.0m, relocation of an existing utility pole, and an existing hedgerow to be trimmed back to facilitate sightlines; and the repainting of existing road markings.
- Alterations to the existing public road from the R331 to the subject site including 3 no. new hardstanding passing bay areas including set-back of the existing stone wall to the west of the road, to allow for improved access and safety; and the provision of improved access arrangements including a new concrete island at the junction to the subject site.

Associated works including parking (7 no. standard, 2 no. EV and 1 no. disabled parking spaces;

and bike storage), access arrangements (including new access points to the site), a weighbridge, provision of solar panels (roofed mounted 480kw solar array), wastewater treatment equipment, attenuation ponds, boundary treatments, lighting, services, lightning protection masts, drainage, landscaping, and all associated and ancillary works.

2.1.2 Site Location

General

The Proposed Development site is located in the sparsely settled rural townlands of Levally, Cappacurry, and Knocknadrinna, on the northern side of the R331 regional road linking Ballinrobe and Claremorris. The grid reference location for the centre of the site is ITM 521709, 766687.

An overview of the site location is provided in **Figure 2.1**.

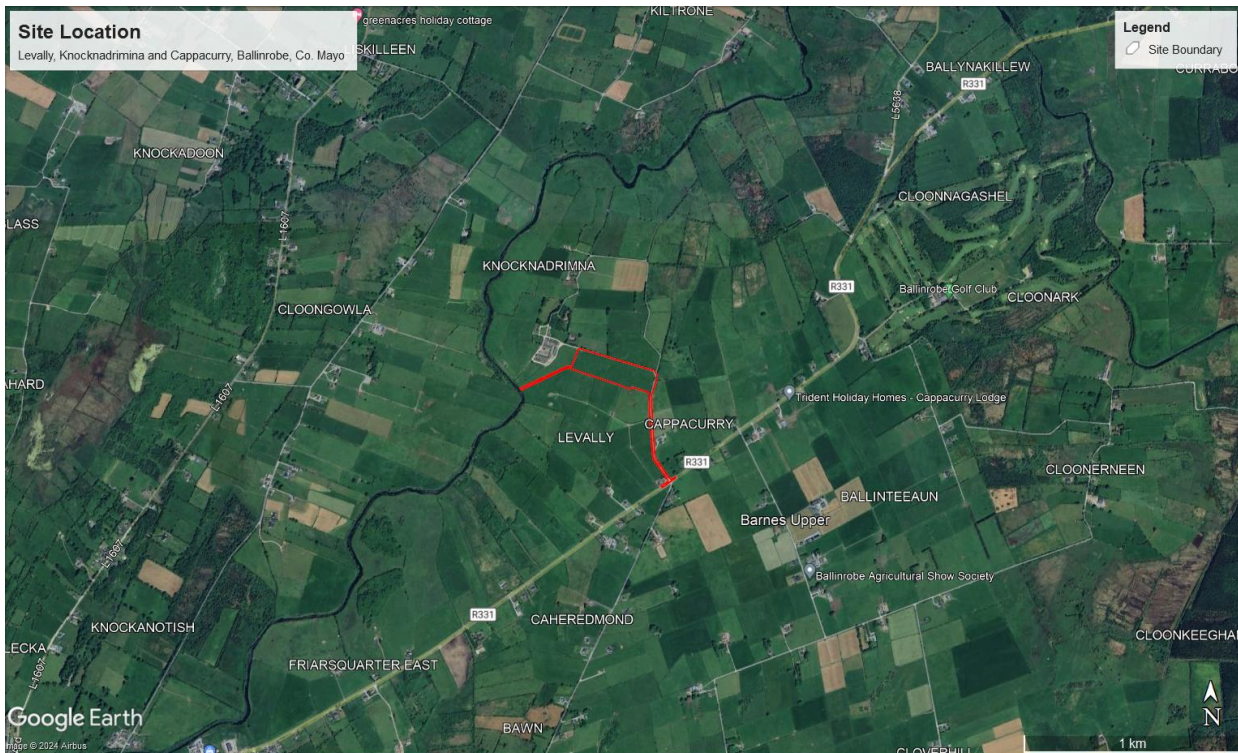


Figure 2.1: Site Location

The site is located approximately 4km northeast of Ballinrobe, in the townland of Levally. The total site area measures ca. 4.4 hectares. The site is currently used as agricultural pastureland and bounded to the north, south, east, and west by further agricultural pastureland. An existing operational piggery is located ca. 200m to the east.

The site is ca. 820m north of the R331 regional road corridor. The site is located approximately 1km (via access road) north of the R331 / L56391 / L5646 four arm crossroad junction. Vehicles travelling between the proposed site and the R331 corridor will use the L56391 local road.

Topography

The Proposed Development site is characterised as being gently undulating. A peak in the site topography, 32.5m OD, is situated west of centre of the site with a gradual gradient to 28.5m OD east of centre before rising to 31.5m OD along the eastern boundary. To the west of the peak the site contains characteristic small undulations in the land with a very gentle gradient to the west, with an elevation of 30.0m here.

The proposed approach road will be the existing local road off the R331 to the east of the site boundary. The existing local road has a ground level of 36.1mOD at the junction of the R331 and moderately slopes to a level of 31.1mOD as it approaches the entrance to the Proposed Development.

Proximity to Designated Sites

The Proposed Development site is not within or immediately adjacent to any site that has been designated as a Special Area of Conservation (SAC) or a Special Protection Area (SPA) under the EU Habitats or EU Birds Directive.

There are twenty European Designated sites within 15km of the Proposed Development, twelve of which are designated as Special Areas of Conservation (SACs), three of which are designated as a Special Protected Areas (SPAs) and five of which are designated as proposed or designated Natural Heritage Areas (NHA's) (Refer to **Chapter 5: Biodiversity**). These sites are illustrated in **Figure 2.1**.

An appraisal of the potential effects of the Proposed Development on the constitutive characteristics of European sites identified within 15km of the Proposed Development is set out in the Natura Impact Statement which accompanies the planning application.

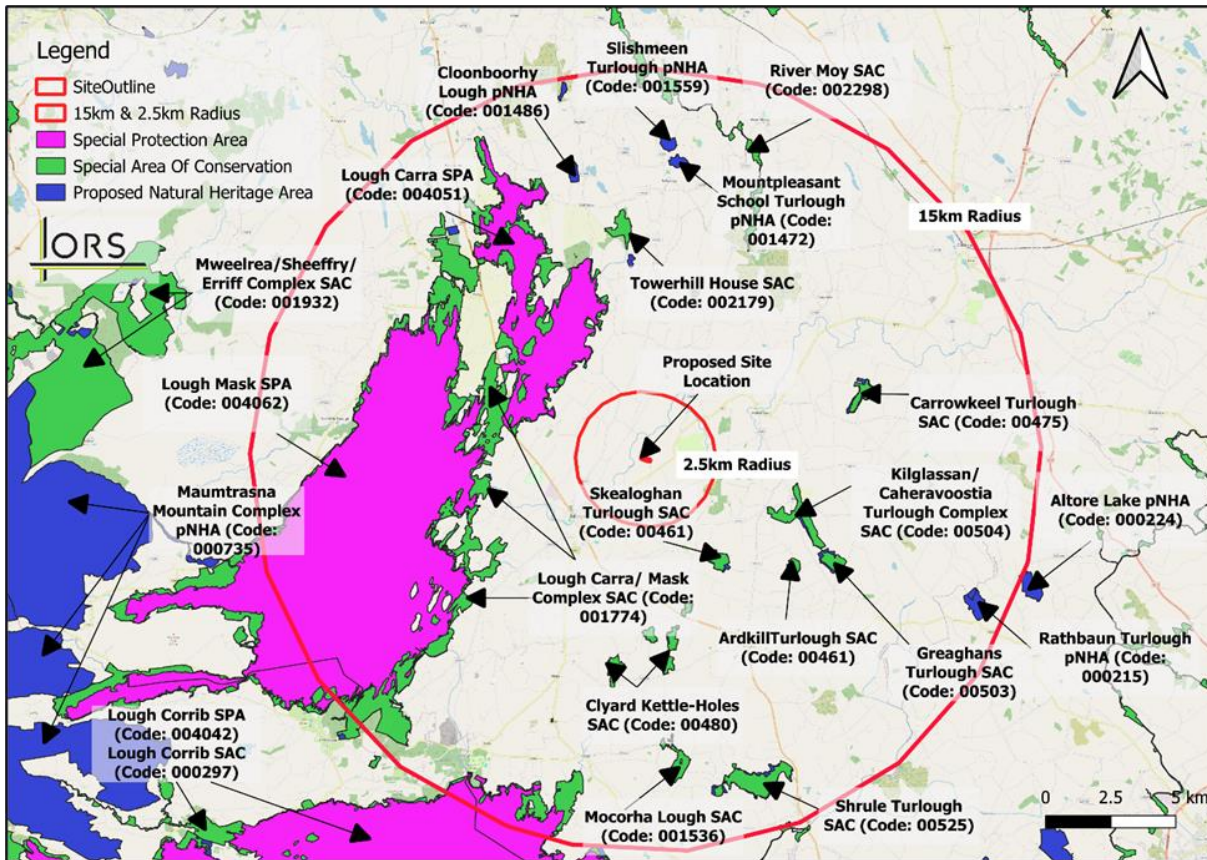


Figure 2.2: Map of Natura 2000 Sites within 15km of the Proposed Site

Habitat

No part of the site lies within nor is it immediately adjacent to any area that has been designated for nature conservation purposes. All proposed works within the site will take place in areas of low biodiversity value on a local level.

The site consists of one large field (proposed location of an anaerobic digestion facility) and this field will be accessed via an entrance that is just off the existing access road that serves an existing pig farm.

The dominant habitat within the site is highly modified Improved Agricultural Grassland (GA1). The sward is dominated by rye grasses (*Lolium sp*) and meadow grasses (*Poa sp.*), and there is a low proportion of broadleaved species in the grass sward. There are no wetland indicators within the grassland habitat, e.g., no rushes (*Juncus sp*), meadowsweet (*Filipendula ulmaria*) or Flag iris (*Iris pseudocorus*), and the site is well drained.

The site is rectangular, and the perimeters consist of low value hedgerows (WL1) and stone walls (BL1). There is a maintained, low hawthorn hedge (*Crataegus monogyna*) along the eastern (roadside) and northern boundaries. The southern and western boundaries consist of a low stone wall that co-exists with a gappy hedgerow in parts. Species noted along this feature included occasional hawthorn, ash (*Fraxinus excelsior*), elder (*Sambucus nigra*), bramble (*Rubus fruticosus agg*) and ivy (*Hedera helix*).

Surface Water

The main hydrological features in the vicinity of Ballinrobe town is the Robe River which runs in a generally southerly direction ca. 260m west of the Proposed Development.

The section of the Robe River adjacent to the site flows in a northwest to southeast direction towards Ballinrobe town centre, ca. 2.6km southwest of the Proposed Development.

One arterial drainage channel is located ca. 248m north of the northern site boundary and is hydrologically connected to the Robe River. The site is not hydrologically connected to this arterial drainage channel due to the natural drainage of the site following existing topography and discharging to the Robe river to the west of the site.

Proximity to Existing Gas Network

An existing medium pressure distribution pipeline is located ca. 420m from the site. The existing medium pressure distribution gas pipeline and the proposed route for the pipeline linking the site to the existing local gas network is shown in **Figure 2.2**.

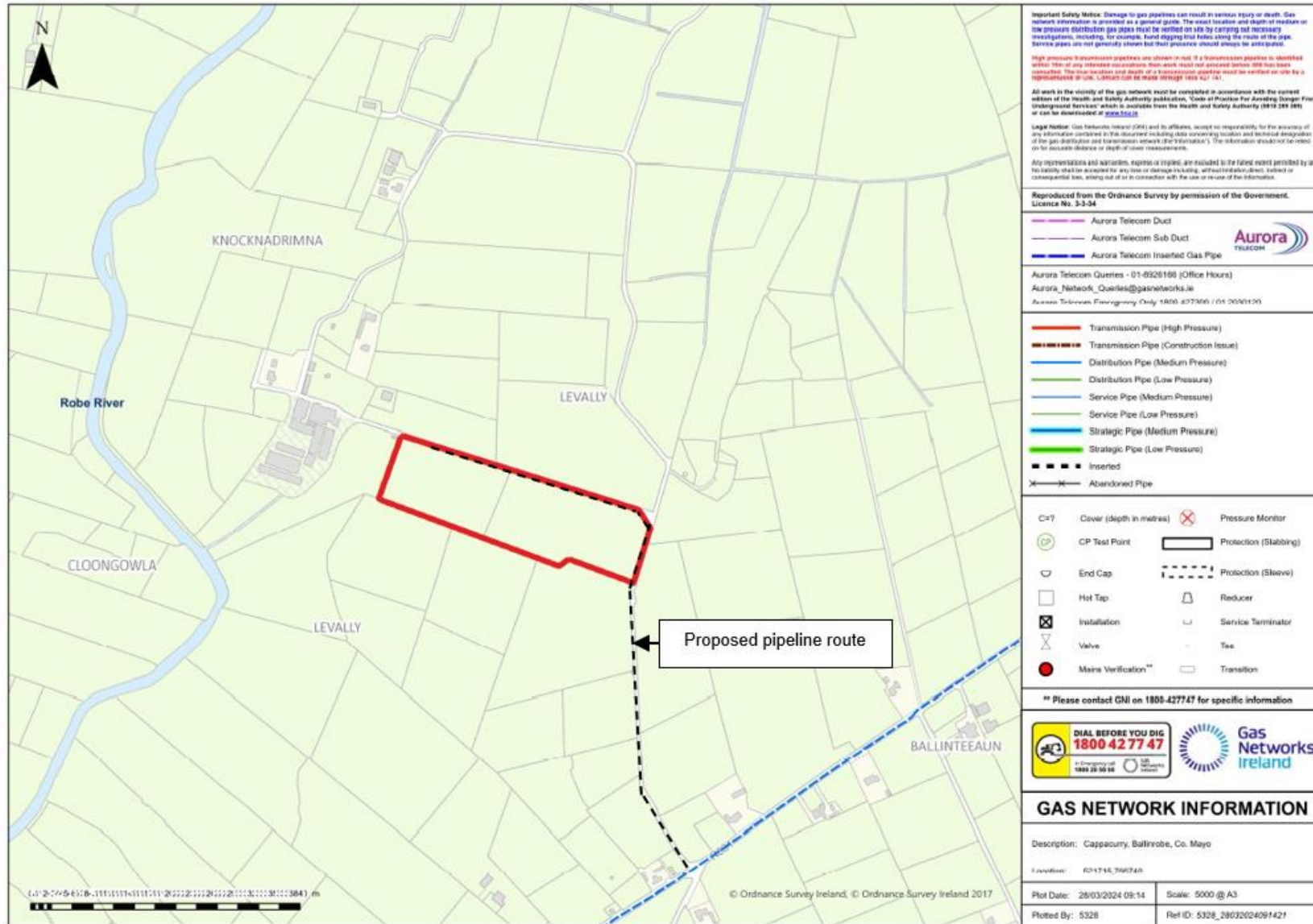


Figure 2.2: Local Existing Gas Network (Source: Gas Networks Ireland)

2.1.3 Site Layout

The site layout is displayed in **Figure 2.3**. Detailed site layout and structural drawings are included in **Volume IV: Drawings**.

Figure 2.3: Proposed Site Layout Plan



2.1.4 3D Image of the Site Layout

A 3D model image of the site layout is included in **Figure 2.4**.

Figure 2.4: 3D Image of Site Layout



2.2 Process and Design Description

The key processes and design details illustrated in **Figures 2.3** and **2.4** above are described in detail in the following sections.

2.2.1 Summary Process Flow Diagram

A summary process flow diagram is presented in **Figure 2.5**.

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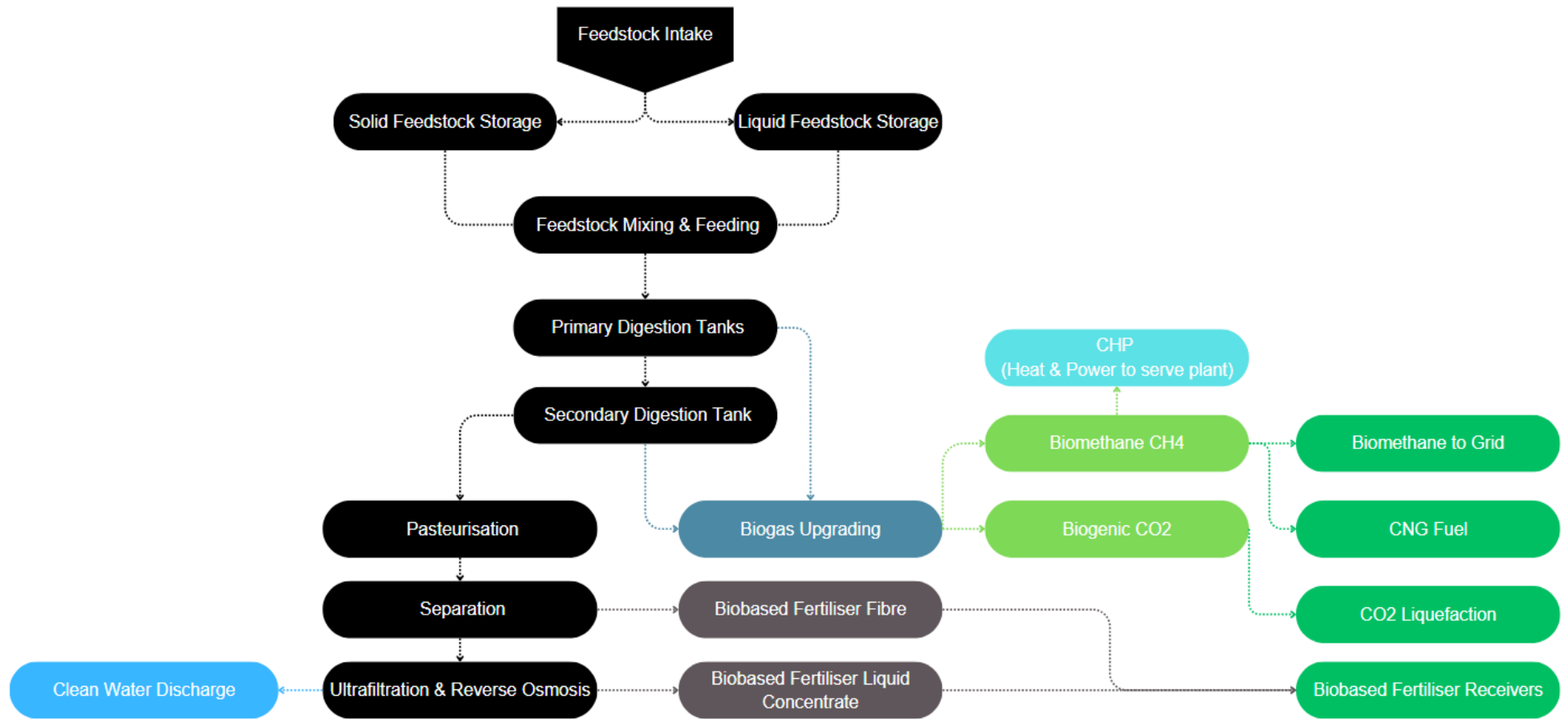


Figure 2.5: Process Flow

2.2.2 Plant Components

The plant components are listed in **Table 2.3** below. Detailed drawings showing design, layout and dimensions of components referenced are presented in the Planning Drawings that accompany this EIAR.

Table 2.3: Key Plant Components and Process

Drawing Ref.	Item	Details
01	Entrance Gate	Site entrance with 1.8 metre high security gate.
02	Car Park	Staff and visitor parking, providing 10no. vehicle parking spaces. Including 2no. EV charging points parking spaces, 1no. disabled access parking space and bicycle storage.
03	Weighbridge and Office	Weighbridge facility to record incoming feedstock delivery tonnages and outgoing biobased fertiliser tonnages. Site Office including Entrance Area, Canteen, Accessible Shower Room , WC, Welfare Facilities and Control Room on the Ground Floor. Office and Meeting Room on the First Floor.
04	Concrete Apron	Concrete apron to the front of Reception Hall providing vehicle access route and turning areas.
05	ESB Substation	Substation to allow for import of back-up electricity when required. Including transformers used to transform incoming electricity from high to low voltage.
06	Canteen and Toilet Wastewater Treatment	Wastewater treatment and percolation for wastewater from canteen and toilet facilities.
07	Perimeter Fencing	1.8 metre high palisade fencing surrounding the site.
08	Bund Floor and Ramps	The bund will be impermeable and provide the required storage volume i.e., a minimum of 110% of the largest single tank volume.
09	Bund Walls	
10	Landscaping	Native flora and tree planting.
11	Attenuation Ponds	Attenuation ponds providing attenuation of stormwater only.
12	Asphalt Access Road	Access road providing access to the Energy Hub.
50	Odour Treatment	An Odour Treatment System to collect and treat all odours arising from potentially odorous activities occurring on site.
51	Reception Hall	Reception Hall accommodating solid waste reception, storage area and quarantine area. Maintained under negative pressure with adjoining Odour Treatment System.
52	Liquid Feed Tank 1	Liquid feedstock intake and storage, prior to feeding.
53	Digesters	Digesters are constructed using pour in-situ concrete, featuring walls measuring 9m in height and 32m in diameter. Each primary digester has a
54	Digesters	

55	Digesters	<p>volume capacity of 6,514 m³.</p> <p>Each Digester is equipped with a double membrane gas collection dome with a biogas storage capacity of 3,137 Nm³.</p>
56	Digestate Storage Tank	<p>Storage tank providing a storage capacity of 6,514m³ for treated Liquid Digestate Concentrate.</p> <p>The site possesses a total storage capacity of 8,741m³ (2no. Digestate Storage Tanks of 6,514m³ and 2,227m³ volume capacity) – Items 56 and 63.</p>
57	Pasteurisation Tank	<p>Insulated pasteurisation tanks will provide treatment of the digestate material to ABP standard.</p>
58	Pasteurisation Tank	
59	Pasteurisation Tank	
61	Post Pasteurisation Cooling	<p>Post pasteurisation storage to allow recovery of heat from pasteurised digestate prior to further treatment.</p>
62	Pre-Biobased Fertiliser Manufacturing Tank	<p>Liquid digestate buffer tank used to ensure constant digestate supply to the nutrient recovery unit.</p>
63	Digestate Storage	<p>Storage tank providing a storage capacity of 2,227m³ for treated Liquid Digestate Concentrate.</p>
64	Nutrient Recovery	<p>Nutrient recovery unit will remove and clean the water from the digestate. It will concentrate the nutrients into a reduced volume of digestate concentrate.</p>
65	Solid Digestate Storage	<p>The Solid Digestate Storage will provide enclosed storage of pasteurised and treated solid digestate fibre, recovered during digestate treatment.</p>
66	Digestate Offtake	<p>Tanker connection for liquid digestate offtake.</p>
67	Pump House	<p>Accommodation for pumping equipment and pipework for the transfer of liquid feedstock and digestate materials.</p>
70	Pump House	
71	Workshop	<p>Dedicated area for undertaking mechanical repairs.</p>
72	Tool Store	<p>Storage of maintenance equipment and parts.</p>
73	Panel Room	<p>Electrical panel room.</p>
74	Laboratory	<p>On site laboratory providing a space for process monitoring and analysis.</p>
75	Liquid Feed Tank 2	<p>Liquid feedstock intake and storage, prior to feeding.</p>
101	CO ₂ Tanks	<p>Insulated storage tanks for the temporary storage of liquefied CO₂.</p>
102	CO ₂ Loading Pump	<p>Pump for the loading of liquefied CO₂ to specialist tanker for export.</p>
103	CO ₂ Auxiliaries	<p>Auxiliary equipment to CO₂ liquefaction process.</p>
104	CO ₂ Liquefaction	<p>CO₂ liquefaction system to recover CO₂ from the biogas upgrading process.</p>
105	CO ₂ Compressor	

106	CO ₂ Pre-Treatment Skid	
107	H ₂ S Washing Tower	H ₂ S scrubber system providing removal of H ₂ S from biogas prior to treatment.
108	Biogas Treatment Skid	Containerised biogas upgrading system to upgrade biogas to biomethane.
109	CHP + Panel Room	1.2MWe capacity containerised CHP unit and panel room.
110	Biogas Compression System	Biogas upgrading removes trace impurities in the biogas stream. The primary goal is to separate carbon dioxide (CO ₂) from methane (CH ₄) to produce renewable biomethane and CO ₂ .
111	Biogas Upgrading Module	
112	Biogas Flare	Two enclosed gas flares serving as additional safety measures. Flares only operate under distinct scenarios to ensure safety and compliance.
113	Biomethane Flare	
114	Grid Injection Unit	The Grid Injection Unit (GIU) comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the local gas network.
115	Propane Tanks	Supply of propane to enhance CV of biomethane when necessary.
116	Fuel Tank	1,000 litre capacity self-bunded fuel storage for refuelling of site plant and machinery.
117	CNG Compression Unit	Compressed Natural Gas compression unit
118	Biomethane Boiler	1No. 500kW containerised biomethane boiler, which will provide emergency backup heat utilising biomethane generated on site to produce heat for the digestion process.

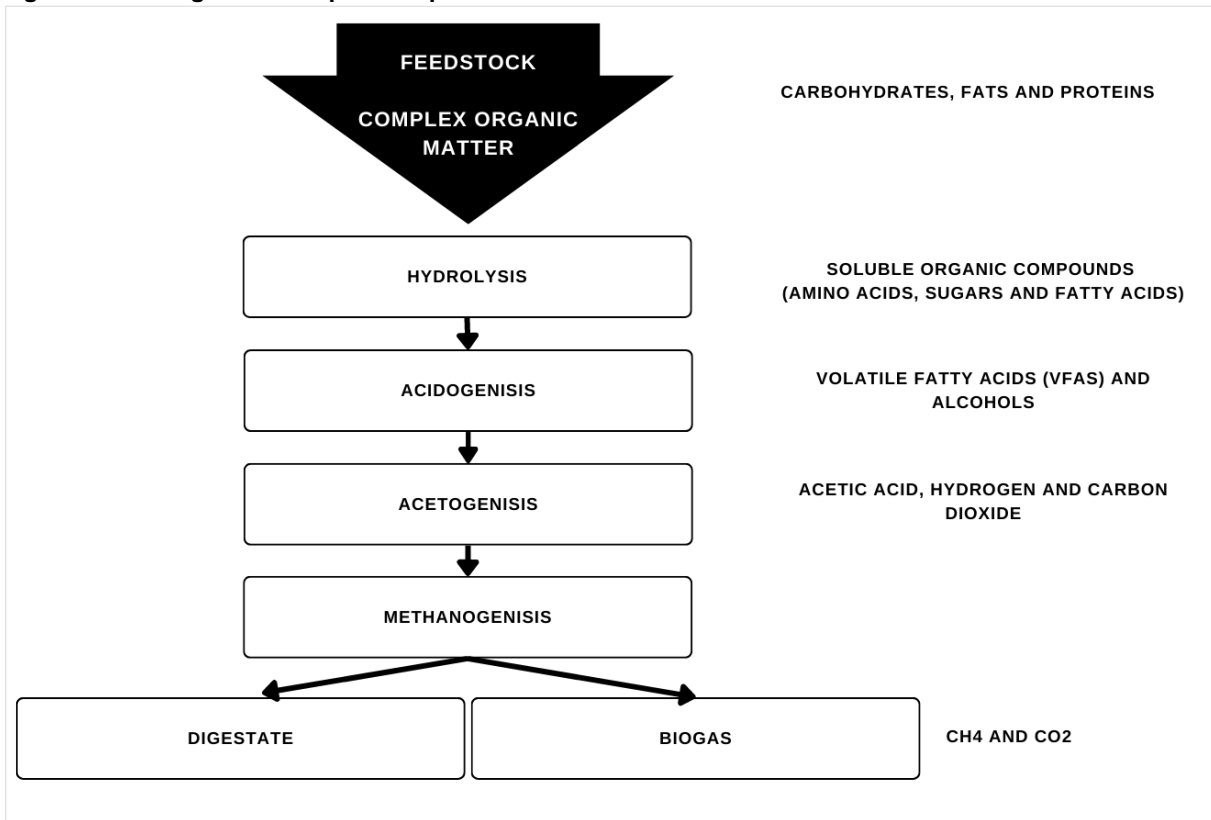
2.2.3 Anaerobic Digestion Process

Anaerobic Digestion (AD) is a natural biological decomposition process which takes place in an oxygen-free environment, where micro-organisms (bacteria and archaea) break down organic matter. There are four main stages to this process:

- Hydrolysis - large, complex polymers like carbohydrates, cellulose, proteins, and fats are broken down by hydrolytic enzymes into soluble monomers i.e., amino acids from proteins, long chain fatty acids from lipids, and simple sugars from complex carbohydrates.
- Acidogenesis – these soluble monomers are further broken down into short chain volatile fatty acids (VFAs), alcohols, carbon dioxide and hydrogen.
- Acetogenesis - the products of acidogenesis are broken down into acetate, releasing hydrogen and carbon dioxide.
- Methanogenesis – In this final stage of AD, various groups of methanogenic bacteria consume acetate, hydrogen and carbon dioxide and convert these intermediate products into CH₄.

The biological decomposition stages are illustrated in **Figure 2.6**.

Figure 2.6: Biological decomposition process in AD



2.2.4 Biogas

Biogas is the product of this complex biological decomposition of organic materials, mainly consisting of 55-70% by volume methane (CH₄), 30-45% carbon dioxide (CO₂), together with traces of other gases, i.e., nitrogen (N₂), hydrogen (H₂), hydrogen sulphide (H₂S), ammonia (NH₃), as well as water vapour. The exact composition of biogas is dependent on the type of feedstock being digested.

Biogas can be 'upgraded' to pure methane, often called biomethane, by removing CO₂, H₂S, moisture and other trace gases. The biogas upgrading process produces a purified stream of biomethane, which can then be injected into the main gas grid. The upgrading process also produces a CO₂ rich gas stream which can be recovered for treatment within a CO₂ liquefaction system to produce renewable liquefied CO₂.

Based on the feedstock composition and design operating capacity, it is projected that the facility will be capable of producing 1350-1600 Nm³ of biomethane per hour.

2.2.5 Feedstock

The Proposed Development has been designed to accept and treat up to 90,000 tonnes per annum of predominantly locally sourced agricultural manures, slurries, food processing residues and crop-based feedstocks. The estimated feedstock composition and annual tonnages accepted are outlined in **Table 2.4** below. These tonnages are indicative and subject to change based on market and season conditions and availability and quality of feedstocks. The annual feedstock quantity will not exceed 90,000 tonnes per annum.

Table 2.4: Estimated Annual Feedstock Composition and Intake

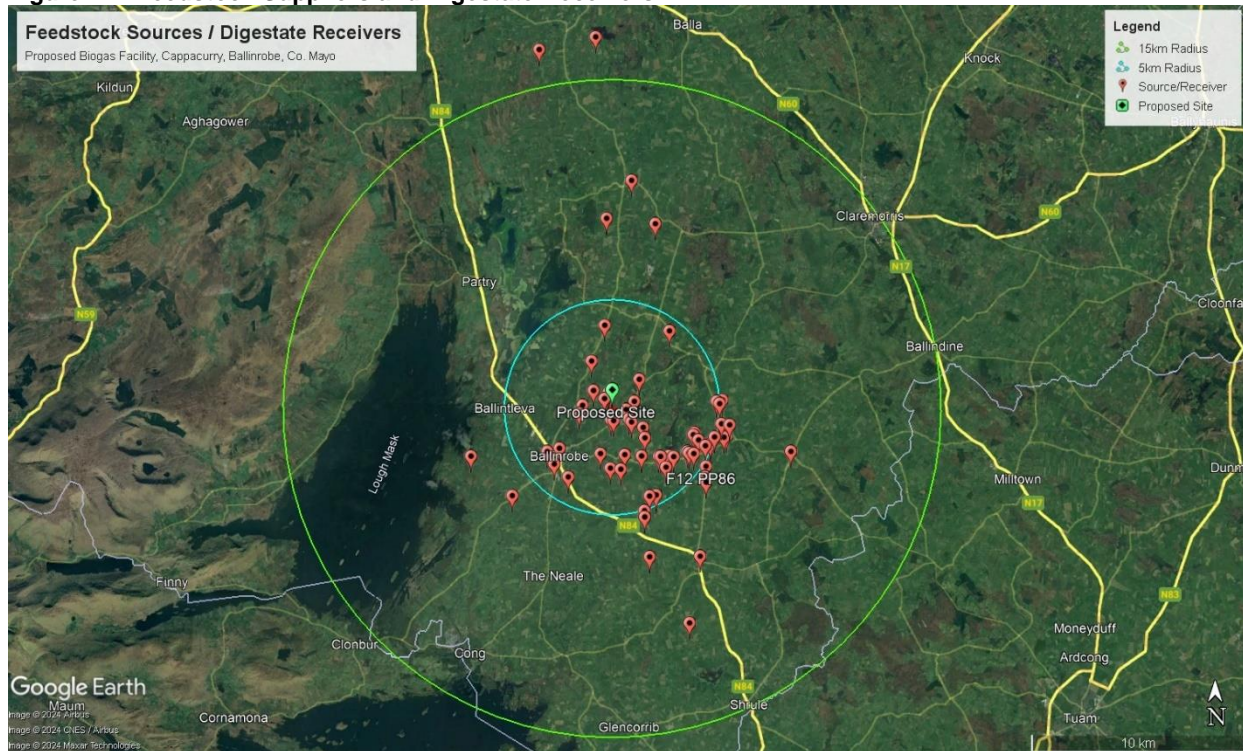
Feedstock	Tonnes/Annum
Cattle Slurry	17,760
Cattle Manure	1,184
Pig Slurry	9,472
Poultry Litter	11,840
Food Production Residues	14,208
Drinks Production Residues	8,880
Dairy Production Residues	1,794
Grass Silage	4,736
Whole Crop Silage	20,128
Total	90,000

The agricultural manures, slurries and crop-based feedstocks will be sourced from agricultural operators in the vicinity of the site. Pig Slurry will be supplied to the plant by tanker from the neighbouring Piggery (IPPC Licence Ref: P0981) located 200m to the west of the site.

To date the applicant has engaged with a large number of local farmers, of which 71 have confirmed their agreement to supply feedstock to the Proposed Development and receive biobased fertiliser in return. Letters of support from these feedstock suppliers and biobased fertiliser receivers have been compiled and submitted alongside the Planning Statement accompanying the application.

The geographical distribution of these feedstock suppliers and biobased fertiliser receivers is represented in **Figure 2.7**. 82% (58) of these sources are located within a 5km radius of the site and 100% (71) within a 16-kilometer radius of the site.

Figure 2.7: Feedstock Suppliers and Digestate Receivers



2.2.6 Feedstock Acceptance and Storage Procedure

Feedstocks will be transported to the Proposed Development using heavy goods vehicles (HGVs), enclosed trailers, and sealed vacuum tankers.

Only feedstocks meeting strict feedstock acceptance procedures and complying with any Environmental Protection Agency (EPA) or Department of Agriculture, Food & Marine (DAFM) license conditions will be accepted. All suppliers must complete a Feedstock Acceptance Agreement (FAA). Suppliers are also required to notify the weighbridge operator 24 hours in advance of delivery.

Upon arrival at the site, incoming feedstock deliveries will be weighed and logged at the weighbridge located at the site entrance and office, in accordance with any regulatory requirements set by the EPA or DAFM. All haulier drivers will proceed to the office for review and submission of commercial documentation related to feedstock transport. Visual inspection of feedstocks will ensure conformity with the FAA.

Once delivery and documentation are confirmed, delivery vehicles will be directed to the Reception Hall for further processing.

2.2.7 Weighbridge

All vehicles entering the facility to deliver feedstock or export digestate will enter and depart via a weighbridge located at the site entrance and adjacent to the site office. Weighbridge information will be recorded automatically by a weighbridge data management system. The weighbridge will be of steel construction, mounted on load cells within a reinforced concrete pit chamber.

The weighbridge is shown as **item 03** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.8 Reception Hall

The Reception Hall will be constructed utilising a steel frame, composite PVC coated cladding, concrete flooring, and retaining walls equipped with rapid closing doors. The building will feature ventilation and odour abatement system, designed to maintain negative air pressure within the building, thereby minimising the release of fugitive odours. This integrated system of high-speed roller shutter doors, building ventilation, and odour abatement will effectively prevent fugitive emissions. Pedestrian doors are included for safe ingress and egress of personnel. All liquids and washings will be contained within the Reception Hall building and returned to process.

Upon arrival to the Reception Hall, drivers will reverse their vehicles into the building. Prior to entry, high-speed roller shutter doors will open to allow access, and upon entering, the doors will promptly close prior to the discharge of the material.

Liquid feedstock will be discharged into either the reception pit with a capacity of 70m³ or directly transferred via pump to one of the two liquid feedstock tanks, each capable of holding up to 150m³. The reception pit will be constructed using concrete, while the liquid feedstock tanks will also be made of concrete and located within a bunded area.

Solid materials will be unloaded into designated feedstock bays, with a total storage capacity of

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745 tonnes of solid feedstock material, the equivalent of 5 days storage.

All vehicles will undergo external cleaning via a power hose prior to exiting the building. Rapid closing doors will open to facilitate the vehicle's departure, after which it will return to the office and weighbridge for re-weighing before exiting the site.

The Reception Hall is shown as **item 51** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.9 Liquid Feed Tanks

The Liquid Feed Tanks will provide intake storage of liquid feedstocks prior to processing.

Liquid Feed Tanks are shown as **items 52 and 75** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.10 Odour Treatment System

An Odour Treatment System will recover and treat all odours arising from potentially odorous activities occurring on site. All major odour sources, inclusive of the Reception Hall, Digestate Storage Tanks, Liquid Feed Tanks, Pasteurisation Tanks are all connected to the Odour Treatment System. The odour treatment system is a proprietary system designed and supplied by a specialist contractor with extensive experience of treating odour from biogas and other organic waste facilities. In the event of a grant of licence by the EPA to carry out activities that require such licence, it is expected that odour emission rates will be agreed as part of such licence.

The Reception Hall has a volume of ca. 19,000m³ and Digestate Storage building discussed below has a volume of ca 8,000 m³. The ventilation and odour abatement system will be designed to achieve a minimum two (2) air changes per hour which corresponds to a flowrate of 54,000 m³/hour, providing adequate air changes in accordance with BAT. The odour abatement system will be designed to treat 60,500 m³/hour providing an overcapacity of 12% and an odour destruction efficiency of 95-99.5%.

Following a comprehensive review of BAT and odour abatement technologies on the market, the applicant has adopted multi-stage treatment technology. This technology uses a combination of Ammonia (NH₃) Scrubbing, High Intensity Ultraviolet (UV), Photo Chemical Oxidation, and Activated Carbon Filtration to achieve high levels of odour removal.

Ammonia (NH₃) Scrubbing

An NH₃ Scrubber is used for efficient NH₃ removal consisting of a reaction vessel with packing and liquid distributor and spray system. The exit route from the packed column includes a demister for removing entrained liquid droplets. Water conditioned with weak sulphuric acid is used as the scrubbing liquid, reacting with the ammonia to form ammonium sulphate. Once treated by the NH₃ Scrubber the treated air is combined with the larger low concentration air flow for polishing treatment via ColdOx.

DEO 500

Sources such as the Liquid Feed Tanks and Pasteurisation Tanks will be treated via DEO™ technology. DEO™ is designed to eliminate reduced sulphur compounds, aromatics, and other

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VOCs. DEO™ allows for VOC and odour reduction of > 95% (typical values are in between 98-99,5%). Once treated by the DEO system the treated air is combined with the larger low concentration air flow for polishing treatment in the Coldox® System.

ColdOx

ColdOx® oxidises volatile organic compounds (VOCs) and eliminates odour through the use of high intensity ultraviolet (UV), excess ozone, and photo chemical oxidation supported by special purpose catalysts. The UV reactor achieves odour reduction efficiency of up to 90% on its own.

Activated Carbon Filtration

Activated Carbon Filters act as a polishing step in the odour treatment process prior to discharge to the atmosphere via the stack.

The Odour Treatment System process flow is depicted in **Figure 2.8**.

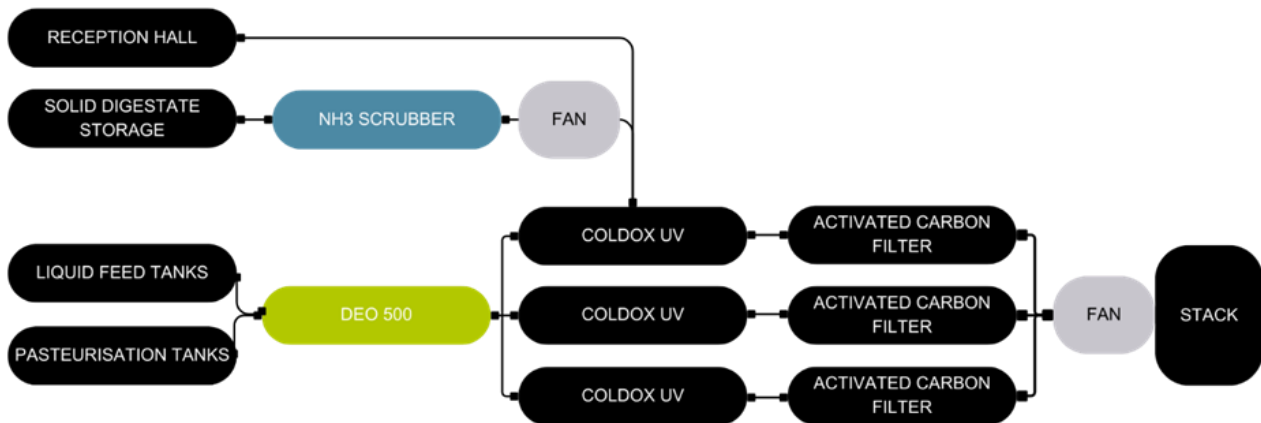


Figure 2.8: Odour Treatment Process Flow

The Odour Treatment System is shown as **item 50** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**

2.2.11 Primary and Secondary Digester

In two-stage AD, the digestion process takes place in a series of primary and secondary anaerobic digesters. The primary and secondary digestion process will take place within 3no. Continuously Stirred Tank Reactor (CSTR) tanks:

- 2no. Primary Digestion Tanks
- 1no. Secondary Digestion Tank

Primary Digestion Tanks

The Primary Digestion Tanks are constructed using pour in-situ concrete. The walls of the digestion tanks will be constructed from pour-in-situ reinforced concrete and constructed on a reinforced concrete base sloping to a central point to facilitate optimum mixing. Each primary digestion tank has a volume capacity of 6,514 m³.

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The tanks will be designed and constructed in accordance with Eurocode 2 Part 2 Liquid retaining structures and a Construction Quality Assurance (CQA) plan will validate their proper design and construction.

The Primary Digestion Tanks are each equipped with a double membrane gas collection system. The flexible, sealed twin membrane gasholder will act as low-pressure gas capture and temporary storage which will accommodate any fluctuation in gas generation from the process. The inner membrane temporarily stores the biogas while the outer membrane contains low-pressure air which is maintained at a slightly higher pressure to ensure biogas within the inner membrane flows to its destination i.e., Biogas Upgrade Unit. The double membrane gas collection systems of the primary digestion tanks each have a biogas storage capacity of 3,137 Nm³.

Primary Digestion Tanks are shown as **items 53 and 54** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

Secondary Digestion Tank

The Secondary Digestion Tank is constructed using pour in-situ reinforced concrete and constructed on a reinforced concrete base sloping to a central point to facilitate optimum mixing. The Secondary Digestion Tank is also equipped with a double membrane gas collection system with a biogas storage capacity of 3,137 Nm³. The Secondary Digestion Tank has a volume capacity of 6,514 m³.

The Secondary Digestion Tank is shown as **item 55** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

Digestion Mixing

The Digestion Tanks are equipped with mechanical mixers featuring a series of paddles with externally mounted drive units. This configuration is designed to facilitate thorough mixing and homogenisation of the tank contents. The sizing of these mixers is determined based on the characteristics of the substrate, specifically considering factors such as dry matter content and viscosity. This ensures optimal mixing efficiency tailored to the specific requirements of the digestion process.

Digestion Temperature

The temperature in both primary and secondary digestion tanks is maintained within the temperature range of 37-42°C. Each digester tank is heated using integrated water heating pipework in the walls of the digester. The Supervisory Control and Data Acquisition (SCADA) system ensures the digesters operate in the mesophilic range at 37-42°C.

2.2.12 Pasteurisation System

The Pasteurisation System is designed to minimise the risks from microbiological hazards. The EU pasteurisation standard uses indicator organisms to;

- verify that pasteurisation achieves the required reductive effect on pathogens and,
- verify that no cross contamination between untreated ABP feedstock and digestate product occurs.

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The EU pasteurisation standard requires that all the digestate material is simultaneously held at 70°C or above for a minimum of 60 continuous minutes. The use of this pasteurisation standard reduces pathogens to levels at which they do not pose a risk, ensuring that all digestate end products (Digestate Liquid and Fibre) are safe to handle and use.

In accordance with Animal By-product (ABP) Regulations all organic material must also be mechanically treated to ensure all particles are less than 12mm in size. This will be achieved through a screening and maceration pump prior to pasteurisation.

The Pasteurisation System will comprise the following items:

- 3 no. enclosed pasteurisation tanks
- Heat exchanger (with heat provided by the CHP/Biomethane Boiler)
- 1 no. maceration and screening pump (12mm)
- Post-Pasteurisation Cooling Tank

Digestate from the Secondary Digestion Tank will be fed using enclosed pipework via the macerator and pump system to the 3 no. pasteurisation tanks. Pasteurisation will take place independent of the digestion system, in a batch process. By utilising 3 no. pasteurisation tanks in parallel it is possible to operate the pasteurisation system on a sequential batch basis with one tank filling, one processing and one emptying.

The digestate will be circulated by a pump system through a heat exchanger which will raise the temperature to greater than 70°C. The heating process will cease once the desired process temperature is achieved but material will continue to be maintained at temperature and agitated within the pasteurisation tank for a minimum of 60 minutes.

The pasteurisation tanks will each be equipped with 3no. temperature probes and ultrasonic level indicators to provide evidence to regulatory authorities that all material is kept above the minimum temperature (70°C) for the required minimum period of 60 minutes, therefore meeting the legal time and temperature standards.

The Pasteurisation System will be equipped with datalogging system that will allow real-time thermographs to be produced via a SCADA system. The datalogging system and thermographs produced will be tamperproof.

The Pasteurisation Tanks (**items 57, 58, 59**) and Post-Pasteurisation Cooling Tank (**item 61**) are shown on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.13 Digestate Treatment

Following pasteurisation, the digestate passes to the Digestate Treatment System which through a combination of separation, ultrafiltration and reverse osmosis generates three outputs namely solid digestate, concentrated liquid digestate and clean water of suitable quality for discharge to receiving waters.

The Digestate Treatment System has a design capacity to treat a minimum of 78,000 tonnes of whole digestate per annum. Following treatment of the whole digestate, ca. 8,000 tonnes of digestate fibre, and ca. 17,000 tonnes of liquid digestate concentrate will be produced. The treatment process will recover ca. 53,000 tonnes of clean water which will be reused on site for cleaning, with the remaining volume discharged under licence to receiving waters.

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The digestate treatment process involves the following stages:

- Screwpress Separation
- Ultrafiltration
- Reverse Osmosis

Screwpress Separation

The screwpress, comprising a rotating screw and mechanical screen, separates the digestate into a solid and liquid fraction. The solid fraction (solid digestate) is passed through the separator and is collected in the enclosed storage bay below. The liquid fraction (permeate) is pumped to the nutrient recovery unit for further treatment by ultrafiltration and reverse osmosis.

Ultrafiltration

The liquid fraction of the digestate is then concentrated to reduce the water content and increase the nutrient concentration in the remaining concentrated digestate. The liquid digestate is first passed through a vibrating screen ultra filtration module to further remove suspended solids from the liquid. The concentrate material obtained from the ultra filtration module is stored in one of the digestate storage tanks.

The thin fraction permeate which passes through the ultra filtration module contains dissolved solids with the suspended solids being removed during the ultrafiltration process.

Reverse Osmosis

In order to remove dissolved solids Reverse Osmosis is required. Spiral wound reverse osmosis membranes are installed on a 3-stage treatment system; this ensures that there can be no breakthrough of nutrients, bacteria or ions as the material undergoes reverse osmosis. The membranes within the reverse osmosis module are 0.2 micron ensuring any dissolved solid material containing nutrients is recovered from the liquid.

Due to the small pore size only water molecules can pass through. The water permeate produced from the reverse osmosis unit is pure water free from bacteria, salts, and nutrients. The filtrate collected during the process contains high concentrations of nutrients. The nutrient rich digestate concentrate is pumped to the digestate storage tank and mixed with the concentrate obtained from the ultrafiltration unit. This mixing of concentrate ensures a pumpable, homogenous, nutrient rich, high quality biobased fertiliser is produced.

Discharge of Clean Water

The Reverse Osmosis (RO) system will maintain a steady maximum outflow volume of 10m³ per hour. Following the RO stage, the purified water generated by the process will be stored in a balance tank before being reused onsite for cleaning activities. The remaining volume of excess water will be diverted through an overflow pipe to undergo continuous water quality monitoring. Upon confirmation that the discharge emissions limit values (ELV) are met, the purified water will be released under a discharge license to surface water. However, should the ELV not be met, an automated shut-off valve will be activated to prevent discharge, diverting the water back into the processing system. Please refer to **Figure 2.9** for the discharge monitoring process.

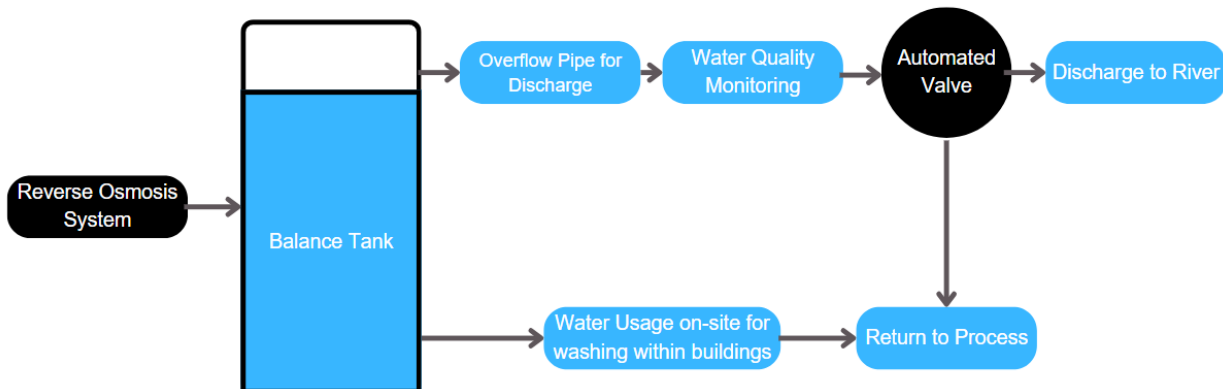


Figure 2.9: Discharge Monitoring Process

The Digestate Treatment process includes **items 62, 63, 64** as shown on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.14 Digestate Storage

Digestate Liquid Concentrate Storage

The site possesses a total storage capacity of 8,741m³ (2no. Digestate Storage Tanks of 6,514m³ and 2,227m³ volume capacity) for digestate liquid concentrate. It is projected that ca. 17,000m³ of digestate liquid concentrate will be produced annually after complete digestate separation and treatment.

With onsite storage capacity amounting to 8,741m³, there is sufficient storage to accommodate volume for up to 26 weeks, surpassing the maximum requirement of 20 weeks set down by the Department of Agriculture, Food & Marine (DAFM).

Digestate Fibre Storage

Solid digestate fibre will be housed in the dedicated Digestate Storage Building. The building is vented to the Odour Treatment System which will recover and treat all odours arising from within. With no land spreading permitted during the closed period, the storage building possesses adequate capacity to store solid digestate for over 20 weeks.

The Digestate Storage is shown as **item 63** and **65** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.15 Digestate Quality and Volume

Digestate produced will meet the quality and end-of-waste requirements of an agreed quality standard, such as Article 28 End of Waste, PAS110 or standard agreed with the regulator and will comply with DAFM transformation parameters and testing requirements as per the CN 11: Approval and Operation of Biogas Plants Transforming Animal By-Products and Derived Products in Ireland (DAFM, 2014).

Digestate Liquid and Digestate Fibre will be classified as a bio-based fertiliser for use on agricultural lands as a direct replacement for chemical/mineral fertilisers. Digestate liquid and

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fibre will, on the whole, be returned to lands associated with feedstock supplies of crop and/or slurry, thereby promoting a local circular bioeconomy. Digestate receivers will manage the storage and application of bio-based fertiliser on their lands and will be subject to controls set out in S.I. No. 113 of 2022 European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022.

The treatment process recovers 70% of the liquid digestate concentrate volume as clean water with the remaining concentrate being stored in the Digestate Storage tank.

With an annual processing capacity of 90,000 tonnes of feedstock, approximately 78,000 tonnes of whole digestate are expected to be generated following the anaerobic breakdown. Approximately 17,000 tonnes of liquid digestate concentrate (biobased fertiliser) is projected to be produced annually after separation and treatment.

At full capacity the process is projected to produce a total of ca. 78,000 tonnes per annum of pasteurised whole digestate of ca. 10-12% Dry Matter (DM) content. Following the screw press separation process ca. 8,000 tonnes of solid Digestate Fibre of typically 29% DM content will be recovered. The remaining liquid digestate will be treated within the Digestate Treatment Unit, producing 53,000 tonnes of recovered clean water and 17,000 tonnes of nutrient rich liquid digestate concentrate to be stored in the Digestate Storage Tank prior to offtake and delivery to DAFM registered end users.

At full capacity the total digestate (fibre and liquid) tonnages for transportation off-site as biobased fertiliser to local receivers are summarised below:

- Digestate Fibre - 8,000 tonnes
- Digestate Liquid Concentrate - 17,000 tonnes

Post-pasteurisation the digestate will achieve End of Waste requirements, such as Article 28, PAS110 or relevant standard. The operator will complete the application process for End of Waste status upon grant of permission.

2.2.16 Biomethane Boiler

The proposal includes 1No. 500kW containerised biomethane boiler, which will provide emergency backup heat when the CHP is unavailable. The boiler will utilise biomethane generated on site to produce heat for the digestion process.

The 1No. Biomethane Boiler is shown as **item 118** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.17 Fuel Storage

1 no. 1,000 litre above ground fuel tank will be located within a bunded area on site and used for refueling on site plant and equipment.

This Fuel Storage is shown as **item 116** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.18 CHP Unit

The Proposed Development includes a 1.2MWe capacity containerised CHP unit. Biomethane

or imported natural gas will be utilised to generate electricity to power the site parasitic load, and to supply heat for the primary and secondary digester tanks, pasteurisation, biogas upgrading and CO₂ liquefaction processes.

The CHP unit is shown as **item 109** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.19 Biogas Upgrading

Biogas upgrading removes trace impurities in the biogas stream. The primary goal is to separate carbon dioxide (CO₂) from methane (CH₄) to produce renewable biomethane and CO₂. The proposed Biogas Upgrading Unit will recover over 99.9% of the biomethane present in untreated biogas by separating CO₂ from the biogas through the following process.

Initially, biogas is directed through a biological desulphurisation unit where specialised bacteria work to reduce the concentration of hydrogen sulphide present within the biogas. Following this step, the biogas is filtered through a series of activated carbon filters. This filtration process aims to eliminate any remaining hydrogen sulphide or trace volatile organic compounds (VOCs) generated during the breakdown of organic material in the anaerobic digestion process. Subsequently, the biogas proceeds through a biogas upgrading module, featuring a selective permeable membrane. Here, carbon dioxide passes through the membrane while methane gas is retained, resulting in an upgraded biogas known as biomethane. Notably, the biomethane attains a molecular composition equivalent to natural gas.

The Biogas Upgrading process includes H₂S Washing Tower (**item 107**) Biogas Treatment Skid (**item 108**) Biogas Compression Module (**item 110**) and Biogas Upgrading Module (**item 111**) as shown on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

Post treatment, the biomethane is injected into the local natural gas grid via the onsite Grid Injection Unit (GIU).

2.2.20 Grid Injection Unit (GIU)

Biomethane will be supplied to the existing gas network via the Grid Injection Unit (GIU) and a pipeline connecting the site to the existing medium pressure distribution gas pipeline located to the south of the Proposed Development, running parallel to the R331. The GIU will be owned and operated by Gas Networks Ireland.

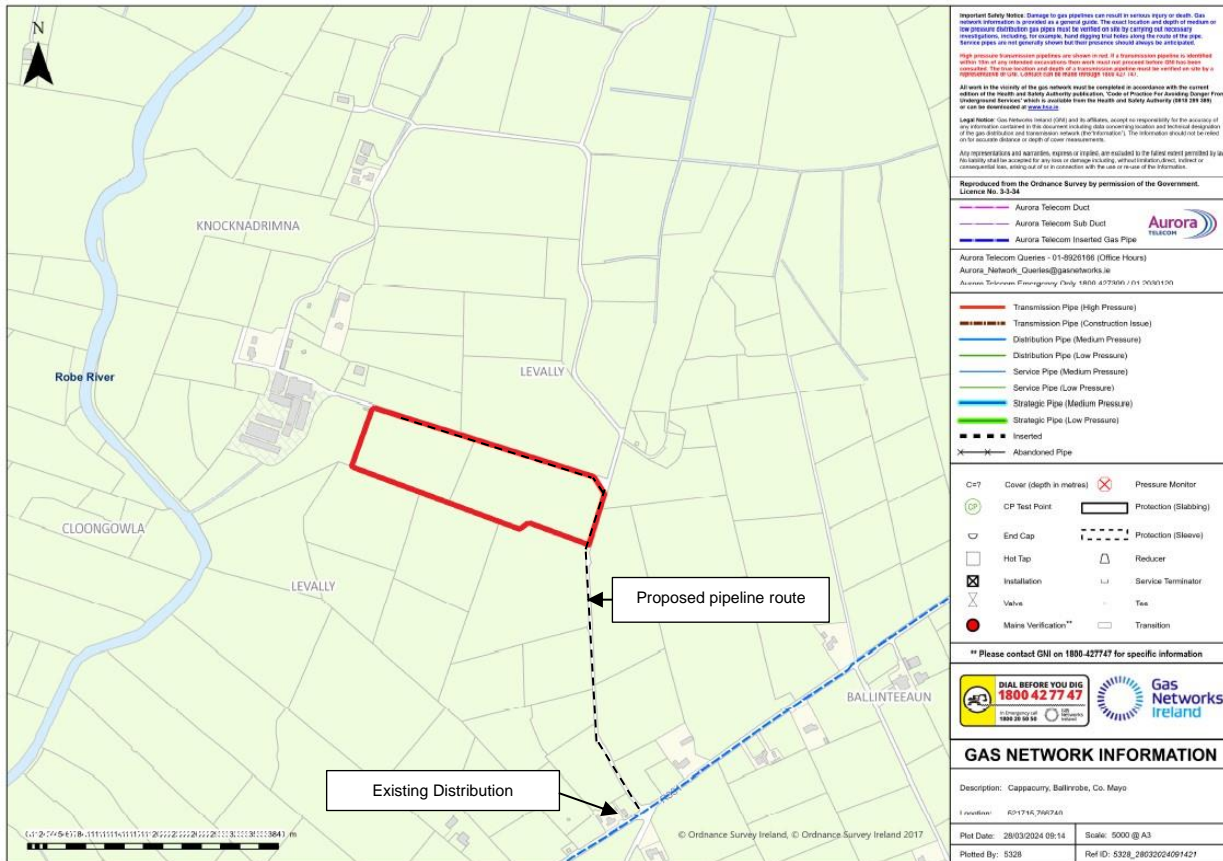
The GIU comprises equipment which will ensure that the biomethane is compliant with all necessary standards and regulations before it enters the local gas network. The unit performs the following key tasks:

- Gas pressure reduction and control: so that the gas pressure is always correct to match the medium pressure gas network.
- Gas analysis for compliance monitoring: the gas is tested for contaminants
- Metering: the volume of gas needs to be measured and recorded
- Flow Weighted Average Calorific Value: the energy content of the gas being injected into the grid needs to be measured and recorded. The calorific value must match the value stipulated by the local gas distributor.
- Propanation: Where there are any shortfalls in the calorific value of biomethane, propane can be added from the on-site propane storage to match the calorific value required.

The Grid Injection Unit (GIU) is shown as **item 114** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

The existing medium pressure distribution gas pipeline, the proposed route for the pipeline linking the site to the existing local gas network is shown in **Figure 2.10** below.

Figure 2.10: Existing gas network and proposed pipeline connection route.



2.2.21 CO₂ Liquefaction

By extending the Biogas Upgrading Unit with a CO₂ Liquefaction system, the gaseous CO₂ that is produced during the biogas upgrading process can be captured and liquefied.

The CO₂ which passed through the membranes in the biogas upgrading unit is further treated using activated carbon filters. Residual compounds which may have passed through the membrane of the biogas upgrading unit are removed. The clean carbon dioxide is then cooled, compressed, and dried into liquid form. The liquid is then stored in the carbon dioxide storage tanks prior to being transported offsite.

By utilising this process, the biogenic CO₂ from biomethane production which would have been emitted to the atmosphere is now captured, purified, and reused, thereby creating a circular economy.

The CO₂ Liquefaction process incorporates CO₂ Tanks (**item 101**), CO₂ Loading Pumps (**item 102**), CO₂ Auxiliary equipment (**item 103**), Discovery & CO₂ Liquefaction (**item 104**), CO₂ Compressor (**item 105**) and CO₂ Pre-Treatment Skid (**item 106**) and are shown on Site Layout

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Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.22 Gas Flares

Two enclosed gas flares are proposed for installation on the site, serving as additional safety measures. These flares only operate under distinct scenarios to ensure safety and compliance.

Firstly, the high temperature Biomethane Flare situated within the Grid Injection Unit (GIU) compound is utilised when the Remote Operated Valve (ROV) is closed. Propane is introduced to the biomethane to adjust its calorific value (CV) within the specified range of 36.9-42.3 MJ/m³, as outlined in the Gas Networks Ireland Code of Operation Part G. The gas volume directed to the high temperature biomethane flare comprises the portion of gas within the pipeline post-propane and odorant addition, prior to the ROV. Gas prior to propane addition will be recirculated to the gas dome for storage; however, biomethane with added propane cannot be recirculated to the gas dome.

Additionally, the second high temperature biogas flare serves as a safety device in case the biomethane upgrading unit requires unscheduled maintenance. This flare is activated only in the unlikely event of when there is no outlet (i.e. the biogas upgrading unit and CHP) available for the produced biogas.

Both flares are controlled and operated by the Supervisory Control and Data Acquisition (SCADA) system. Enclosed flares, characterised by their concealed flame and quiet operation below 65dB, ensure discreet and efficient operation during use.

The Gas Flares are shown as **items 112 and 113** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.23 Supervisory Control and Data Acquisition system

A supervisory control and data acquisition (SCADA) system will be installed for ease of operation and monitoring of plant processes. This system comprises hardware and software components to monitor and control industrial processes within the site. SCADA will be used to monitor and control the anaerobic digestion process, biogas upgrade, grid injection and associated plant and emissions control devices.

2.2.24 Office

The Site includes a two-storey Office Building incorporating an office area, meeting room welfare facilities, storeroom, first aid facility, communications, and control room.

The Office is shown as **item 3** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.25 Water Supply

All potable and welfare water will be from a public supply.

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

2.2.26 Surface Water Management

The design development of the site is based on eliminating potential contamination and having clearly defined work areas which can be monitored and isolated if required, for example, the bunded area.

Levels and gradients were identified and used to reduce the need for below ground drainage and to maximise surface gravity-based drainage. The site has two wetland areas which will be used for attenuation of surface water and to control the rate of the discharge from the Proposed Development.

It is proposed to take run-off from the roads, yards, roof and the impermeable bunded area and discharge these areas through sediment chambers, oil traps, drainage systems and attenuation ponds. The system is designed to accommodate the 1:100-year rainfall event plus normal design parameter of +20% based on a combination of duration and volume.

Attenuation Ponds

In order to accommodate the existing gradients on site, two attenuation ponds are used. The attenuation ponds are designed both for 1:100-year events as well as to regulate the outflow from the site. The attenuation ponds will accommodate the total catchment area capacity and will provide a minimum storage capacity of 1,174m³.

The use of a hydro brake will restrict the max flow to 7.7l/s which is less than that of the greenfield run off rate.

The Attenuation Ponds are shown as **item 11** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

The Surface Water Management strategy and civil design measures are detailed in the **Civil Engineering Planning Support Statement** and Drawing which accompany the application.

2.2.27 Foul Water Management

The Proposed Development will have 5 workers on site each day with normal loadings of 30l/day and BOD of 20g/day. The wastewater from the toilet and canteen will be treated using a proprietary system as recommended in the Site Suitability Assessment.

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

2.2.28 Bunding

The bund is designed in accordance with IPC Guidance on Storage and Transfer of Materials for Scheduled Activities (EPA, 2004). The digestion tank area will be bunded in its entirety to provide sufficient containment volume in the unlikely event of a leak at the facility.

The bund will be impermeable and provide the required storage volume i.e., a minimum of 110% of the largest single tank volume (110% of 6,514 m³ = 7,166m³). The bund has been designed to accommodate >7,166m³ in the unlikely event of a failure of the storage tanks.

Maintenance vehicle access to the bund will be provided via 2no. ramps.

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The Bunding is shown as **item 08** and **09** on Drawing Ref. **231924-ORS-Z1-ZZ-DR-B-200**.

2.2.29 Access Road

The site is located approximately 1km (via access road) north of the R331 / L56391 / L5646 four arm crossroad junction. Vehicles travelling between the proposed site and the R331 corridor can avail of the L56391 third class road.

The Proposed Development includes improvements to the L56391 local road, inclusive of 3no. passing bays on the L56391 to provide safe and efficient passing of vehicles.

Road improvement works are depicted in Drawings Ref. **231924-ORS-ZZ-00-DR-TR-705 to 707**, **231924-ORS-ZZ-00-DR-TR-710 and 711**, **231924-ORS-ZZ-00-DR-TR-730 to 733**.

2.2.30 Boundary Treatment

The site boundary will be enclosed by a mesh panel perimeter fencing system ca. 1.8m high with secured mesh panel entrance and exit. The landscape strategy offers short to long term buffering, sustainability and biodiversity at its core and is specifically adapted to assist in integrating the Proposed Development into its surrounds. The buffer planting aims to increase value for wildlife and is pollinator friendly. The primary objective being to buffer visual receptors of the Proposed Development.

The Perimeter Fencing as **item 07** on Drawing **Ref. 231924-ORS-Z1-ZZ-DR-B-200**.

Please refer to Landscape Plan (**Ref: 24/NRG/ORS/M/001**) which accompanies the application.

2.2.31 Electricity Substation

The Proposed Development will include an ESB Networks substation. The substation will be designed and constructed in accordance with published ESB standard details and subject to ESB certification. A transformer is incorporated in the substation area to convert imported high voltage electricity to low voltage for use on site.

Under normal operation the Proposed Development will be powered by the on-site CHP unit and Solar PV, with power supply from the grid provided only as a backup.

The Electricity Substation is shown as **item 05** on Site Layout Drawing Ref. **231924-ORS-Z0-00-DR-B-200**.

2.2.32 Solar PV

Solar photovoltaic (PV) modules are included upon the roof structures of the Reception Hall and Solid Digestate Storage buildings.

2.2.33 Lightning Protection System

An independent lightning consultant was engaged by the applicant to design a level 2 Lightning Protection System for the site. The Lightning Protection System is designed in accordance with BSEN60079 & BSEN 1127. The system is designed to provide a protective virtual dome over the site. The purpose of the protective dome is to ensure no structures or tanks are within any potential lightning strike path. Lightning finials are strategically positioned around the site to ensure all areas of the site are protected from a potential lightning strike. The finial positioning

is determined by detailed 3D site modelling which was undertaken as part of the lightning protection design.

2.2.34 Site Security

Entrance to the site will include a locked gate, controlled entrance barrier and CCTV monitoring system.

2.2.35 Operating Hours

The facility will operate 24 hours per day, 7 days a week, as Anaerobic Digestion is a continuous biological process. However, feedstock will only be accepted between the hours of 0700 and 1900 Monday to Friday, and 0700 to 1600 on Saturday. There will be no deliveries on Sunday and on Bank Holidays.

2.3 Licensing Requirements

2.3.1 Environmental Protection Agency (EPA)

The EPA were consulted during the design phase of the Proposed Development, to verify authorisation requirements under the Environmental Protection Agency Act 1992 (as amended) or the Waste Management Act 1996 (as amended).

Having regard to current law and practice, the Proposed Development will require an application for an Industrial Emissions (IE) licence to the EPA in accordance with Class 11.4 (b) of the First Schedule of the EPA Act 1992 as amended, outlined in **Table 2.5** below:

Table 2.5: Class 11.4 of First Schedule to the EPA Act 1992 as amended

11.4 (a) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving one or more of the following activities (other than activities to which the Urban Wastewater Treatment Regulations 2001 (S.I. 254 of 2001) apply):

- 1. biological treatment;*
- 2. physico-chemical treatment;*
- 3. pre-treatment of waste for incineration or co-incineration;*
- 4. treatment of slags and ashes;*
- 5. treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components.*

(b) Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, (other than activities to which the Urban Wastewater Treatment Regulations 2001 (S.I. No. 254 of 2001) apply):

- 1. biological treatment;*
- 2. pre-treatment of waste for incineration or co-incineration;*
- 3. treatment of slags and ashes;*
- 4. treatment in shredders of metal waste, including waste electrical and electronic equipment and end-of-life vehicles and their components.*

(c) Notwithstanding clause (b), when the only waste treatment activity carried out is anaerobic digestion, the capacity threshold for that activity shall be 100 tonnes per day.

In the event of a grant of licence by the EPA to carry out activities that require such licence, it is expected that the following will be regulated under such licence:

- Emission Limit Values for emissions to air and stormwater;
- Monitoring requirements for emissions;

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- Resource use and energy efficiency;
- Waste management control documentation;
- Waste acceptance procedures and records;
- Storage and transfer of substances;
- Changes to operations and the physical fabric of the facility;
- Facility management including the requirement for an environmental management system (EMS);
- Accident prevention and emergency response including fire water retention; and,
- Operational controls.

An Environmental Management System (EMS) will be put in place for the facility, as will be required by the IE Licence. The operator shall develop the EMS in accordance with ISO14001:2015, applying for accreditation when operational. This EMS will include but not be limited to the following:

- Measures to comply with the IE licence and other relevant environmental legislation;
- Waste Acceptance Procedures;
- Standard Operating Procedures;
- Measures to comply with the corporate sustainability goals (e.g., reducing water and energy consumption); and
- Accident prevention and emergency response procedures

2.3.2 Department of Agriculture, Food and Marine (DAFM)

The Anaerobic Digestion Facility will be a 'Type 1' plant under the European Union (Animal By-Products (ABP)) Regulations (S.I. No. 187 of 2014).

The facility will process Category 2 animal by-products, specifically farmyard manures i.e., cattle slurry, pig slurry and poultry manure. Approval will be required from the Department of Agriculture, Food, and the Marine (DAFM) in accordance with Article 24(a) of Regulation (EC) No. 1069/2010, for the acceptance and/or treatment of animal by-products.

DAFM were consulted during the design phase and the Proposed Development has been designed in accordance with DAFM guidance *CN11: Conditions for approval and operation of biogas plants transforming animal by-products and derived products in Ireland*. The application process for approval and operation of the proposed facility by the DAFM occurs in three stages as follows;

1. Application for approval in principle.
2. Application for conditional approval to operate which allows an operating period of three months to test and demonstrate ABP compliance. This stage commences following the construction and handover of the facility.
3. Full approval.

This application process will commence upon receipt of planning consent.

2.3.3 SEVESO III Directive / Control of Major Accident Hazards (COMAH) Regulations

The Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S. L No. 209 of 2015) transposes Directive 2012/18/EU of the European

Parliament and of the Council of 4 July 2012 on the control of major accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (“the SEVESO III Directive”).

The purpose of the COMAH Regulations is to lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents when they occur, with the overall objective of providing a high level of protection in a consistent and effective manner.

The COMAH Regulations place an obligation on operators of establishments that store, handle, or process dangerous substances above certain thresholds to take all necessary measures to prevent major accidents and to limit the consequences for human health and the environment. Under the Regulations, an establishment may qualify as upper tier or lower tier, depending on the inventory of dangerous substances; sites that store, handle or process dangerous substances below a certain threshold do not qualify as establishments under the Regulations.

SEVESO/COMAH Assessment of the Proposed Development

Methane, the combustible component of biogas is classified as a P2 flammable gas in accordance with Regulation (EC) No. 1272/2008 on the classification, labelling and packaging of substances and mixtures.

Under COMAH, P2 Flammable gases are subject to a threshold quantity of 10 tonnes meaning that any biogas facility storing less than 10 tonnes of methane will fall outside of the COMAH Regulations. At full operation, the proposed facility will store less than 3.72 tonnes of flammable gas, and is, therefore not a COMAH regulated site.