

2 Project Description

2.1 Introduction

The applicants, Mr. Seoirse McGrath and Nephin Renewable Gas - Moneylane Limited, propose to develop an Anaerobic Digestion Facility (herein referred to as the Proposed Development) on a site located in the townlands of Moneylane, Arklow, Co. Wicklow.

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. 15.5m in height), 2 no. digestate storage structures (c. 15.5m and 12m in height), a liquid feed tank (c. 4.3m in height) and 4 no. pump houses (each c. 2.6m in height), located in the northern section of the site.
- 4 no. pasteurisation tanks (each c. 6m in height), a post pasteurisation cooling tank (c. 4m in height) and a pre fertiliser manufacturing tank (c. 4m in height), located to the southeast of the digesters, in the centre of the site.
- A part single-storey and part two-storey reception hall (with a gross floor area (GFA) of c. 2,113 sq.m and an overall height of c. 16.5m) to accommodate a laboratory, panel room, tool store, workshop, and storage areas, with a liquid feed intake adjacent to the reception hall, located to the centre of the site.
- A single-storey solid digestate storage and a nutrient recovery building (with a GFA of c. 880 sq.m and an overall height of c. 12.4m) located to the east of the reception hall, in the central portion of the site.
- Odour abatement plant (with an overall height of c. 6m) and equipment and a digestate offtake area will be provided to the east of the solid digestate storage and nutrient recovery building.
- Construction of an ESB substation (c. 3.4m in height), a fuel storage tank (c. 1.6m in height), a CNG compression unit (c. 4.1m in height), 2 no. CO₂ tanks (c. 10.7m in height), a CO₂ loading pump (c. 2.6m in height), CO₂ auxiliaries (c. 2.6m in height), CO₂ liquefactor (with an overall height of c. 8.2m), a CO₂ compressor (with an overall height of c. 5.9m) and a CO₂ pre-treatment skid (c. 3.5m in height), located in the eastern portion of the site.
- Construction of an emergency biogas flare (c. 11.3m in height), a biogas treatment skid (with an overall height of c. 4.1m), a biogas compression system (with a maximum height of c. 5.8m in height), a biogas upgrading module (with a maximum height of c. 4.6m), a combined heat and power unit and panel room (with a height of c. 5.8m and a flue height of c. 10m) and a H₂S washing tower (with an overall height of c. 7.8m), located within the eastern section of the site.
- Construction of a grid offtake skid, a biomethane boiler (c. 5.6m in height to flue stack), a grid injection unit (c. 2.8m in height), and 2 no. propane tanks (c. 1.3m in height), located to the southeast of the CO₂ structures, at the eastern section of the site.
- Construction of a two-storey office and administration building (with an overall height of c. 8.6m and a GFA of c. 271.5 sq.m), located within the southeast section of the site, adjacent to the main site entrance.

- Associated works including parking (8 no. standard, 3 no. EV, and 1 no. accessible parking spaces; and bike storage), access arrangements (including new access point to the site from the adjacent road to the south), a weighbridge, provision of solar panels (roofed mounted solar array), wastewater treatment equipment, attenuation pond in the northern portion of the site, boundary treatments, lighting, services, lightning protection masts, drainage, landscaping, and all associated and ancillary works.

2.1.2 Site Location

General

The Proposed Development site (herein referred to as 'the site') is found in the townlands of Moneylane, Arklow, Co. Wicklow. approximately 2.1km southeast of the town of Arklow, Co. Wicklow and approximately 23km southwest of Wicklow Town, Co. Wicklow. The approximate grid reference location for the centre of the site is T 22154, 72252, ITM: 722094, 672281.

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

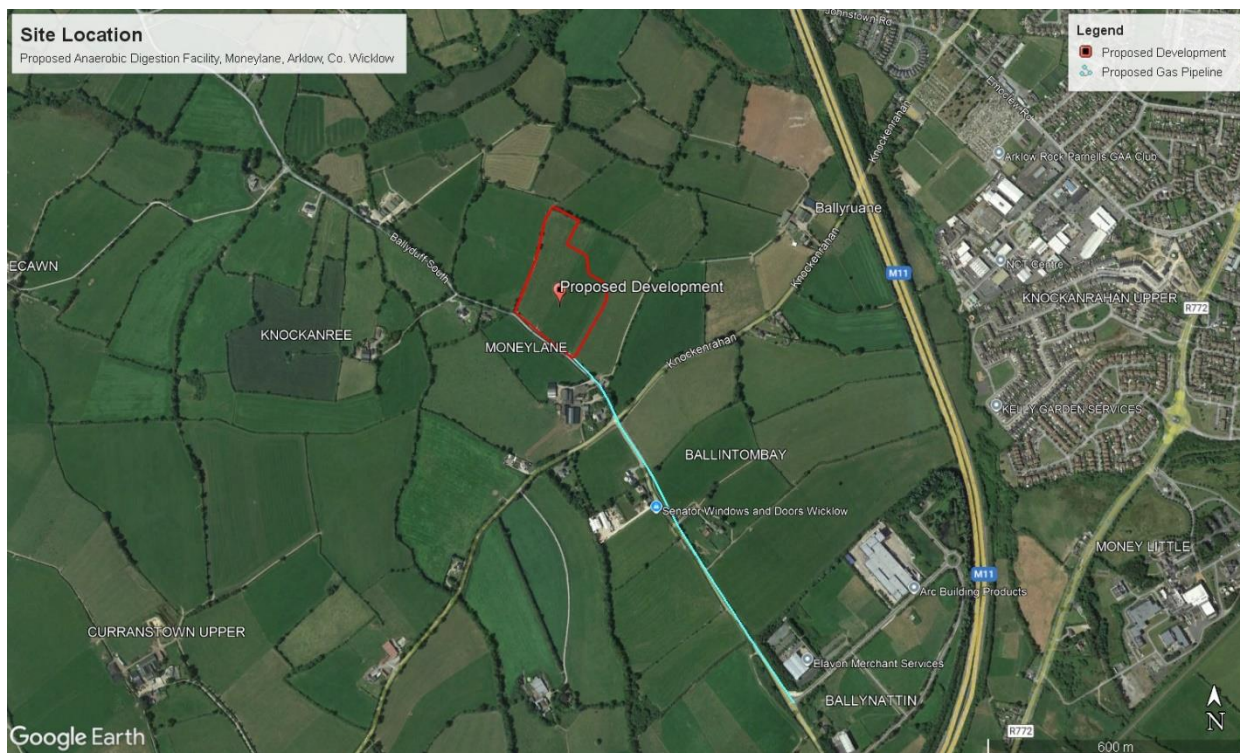


Figure 2.1: Site Location

The total site area measures ca. 4.02ha. The site is currently used as agricultural pastureland and bounded to the north, south, east, and west by further agricultural pastureland. An operational dairy farm is located ca. 100m to the southeast.

Topography

The site is characterized as being flat to gently undulating. A peak in the site topography, 52m Above Ordnance Datum (AOD), is situated along the southwest boundary of the site with a gradual decrease in gradient to the west. The site topography falls to 50m AOD in the centre of the site and falls to 46m AOD along the northeastern boundary.

RECEIVED: 03/04/2025

The proposed site entrance and access location has an existing topography of 50m AOD, sloping from east to west from 52m AOD to 46m AOD at the northwestern corner.

Proximity to Designated Sites

The 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 two European Designated sites within 15km of the Proposed Development, each of which are designated as Special Areas of Conservation (SACs) (Refer to **Chapter 5: Biodiversity**). These sites are illustrated in **Figure 2.2**.

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 Appropriate Assessment Screening Report which accompanies the planning application.

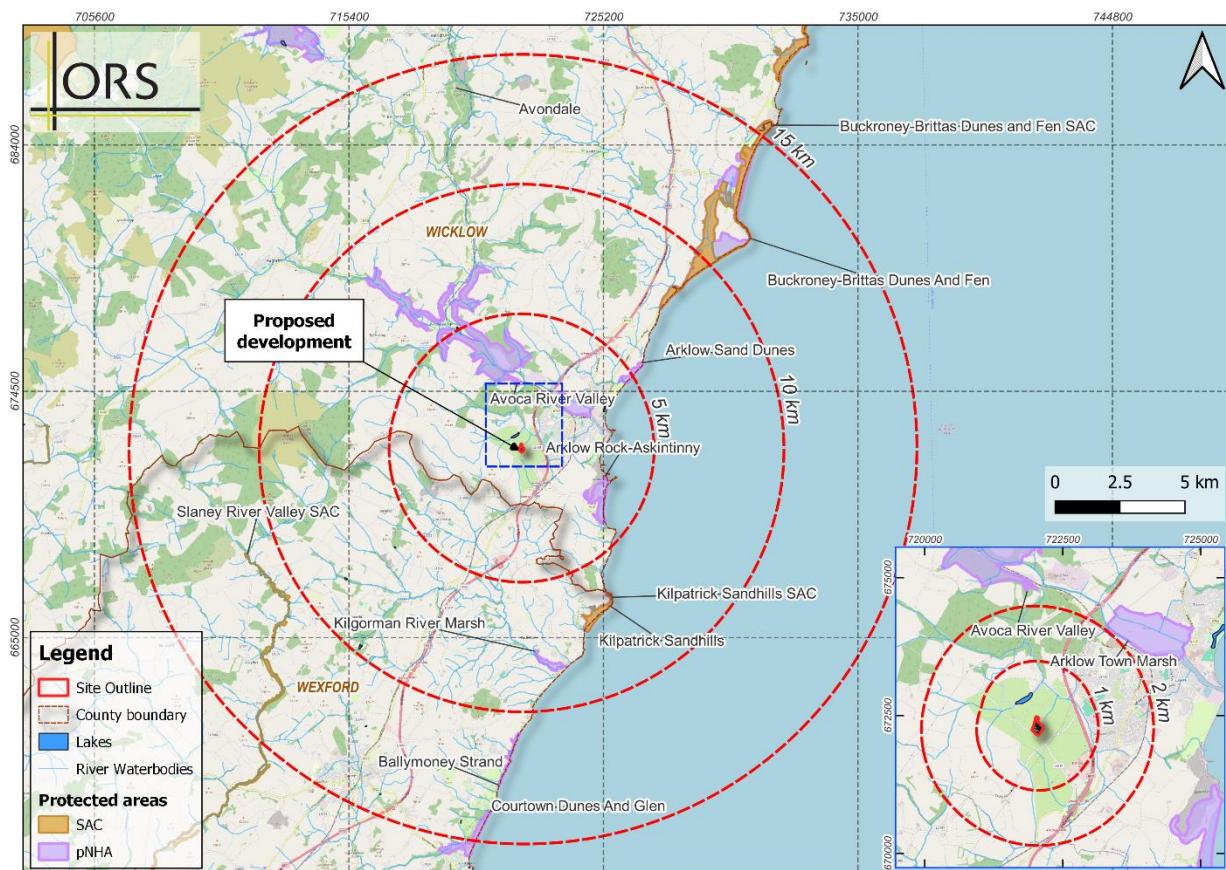


Figure 2.2: Map of Natura 2000 Sites within 15km of the Proposed Site

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

RECEIVED: 06/01/2025

this field will be accessed via a proposed access road along the Ballyduff South Road (L6187).

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*). This habitat extends beyond the development site and is primarily used for agricultural purposes. The overall ecological value of the grassland habitat within the field is low.

Hedgerows (WL1) are present along the perimeters of the site and are of high ecological value at the local level. These features provide important ecological functions, serving as habitat corridors for birds and invertebrates, and small mammals.

The southern boundary is defined by a dense hedgerow and treeline that includes species such as blackthorn and bramble, with climbing ivy observed in the canopy. Mature ash and beech are interspersed, supporting additional structural diversity. The western border features mature deciduous trees, including beech, contributing to the local landscape and acting as an important corridor for wildlife movement.

Surface Water

The main hydrological feature in the vicinity of the site is Rooaun Stream (Tributary to Ballyduff) ca. 20m north of the site, Moneylane_10 Stream (Tributary to Ballyduff) – Located ca. 515m north of site and Ballyduff (Stream) [Wicklow] - Located ca. 680m north of site. All streams discharge into the Avoca River approximately 2.4km north of the site.

The section of the Avoca River to the north of the site flows in a west to east direction and turns southeast towards Arklow town centre and discharges into the Irish sea, ca. 3.2km northeast of the Proposed Development.

The site is not located in the vicinity of any Arterial Drainage Schemes (ADS) or Direct Drainage (DD) Schemes. The site is not located on ADS or DD benefitted lands. The site is not directly hydrologically connected to any arterial drainage channel.

Proximity to Existing Gas Network

An existing medium pressure distribution pipeline is located at Ballynattin, Co. Wicklow ca. 835m southeast. The existing medium pressure distribution gas pipeline and the proposed route for the pipeline linking the site to the existing local gas network are shown in **Figures 2.3 and 2.4.**

RECEIVED: 03/04/2025

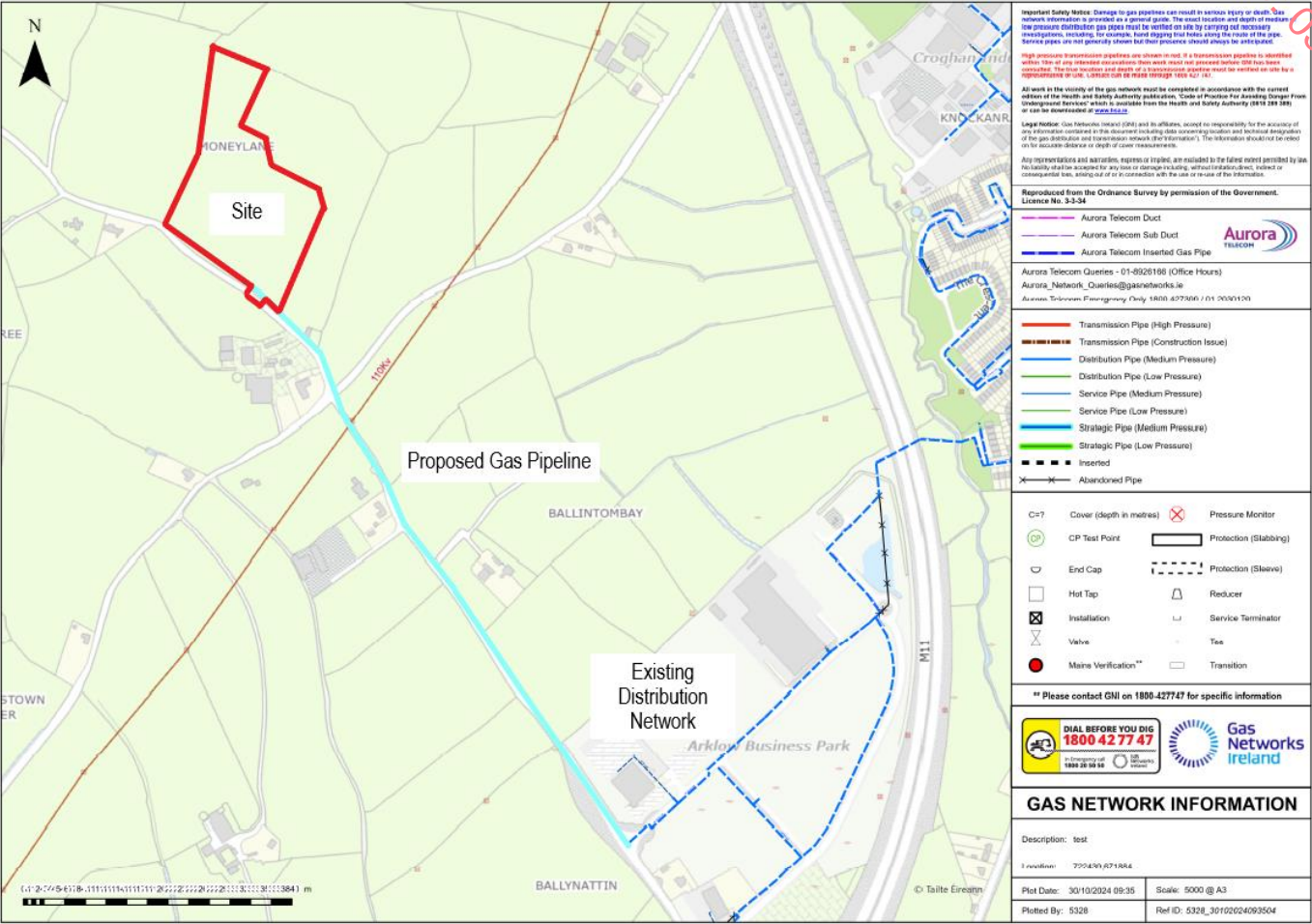


Figure 2.3: Existing gas network and proposed pipeline connection

RECEIVED: 03/04/2025

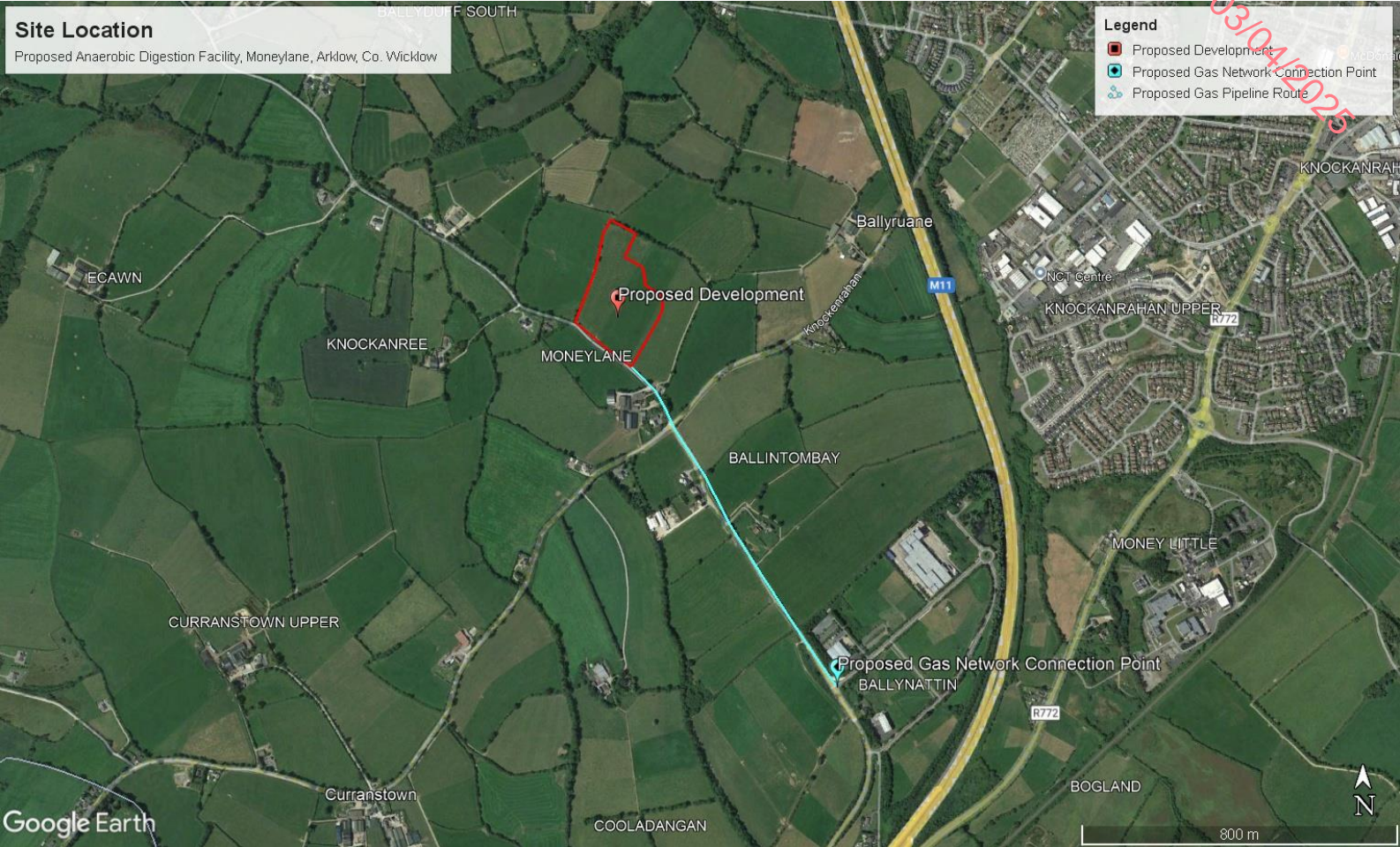


Figure 2.4: Proposed gas network connection point and pipeline route from Proposed Development.

The site layout is displayed in **Figures 2.5**. Detailed site layout and structural drawings are included in **Volume IV: Drawings**.

[illegible]

2.1.4 3D Image of the Site Layout

A 3D model image of the site layout is included in **Figure 2.6**.



Figure 2.6: 3D Image of Site Layout

2.2 Process and Design Description

The key processes and design details illustrated in **Figures 2.5** and **2.6** 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 2.7**.

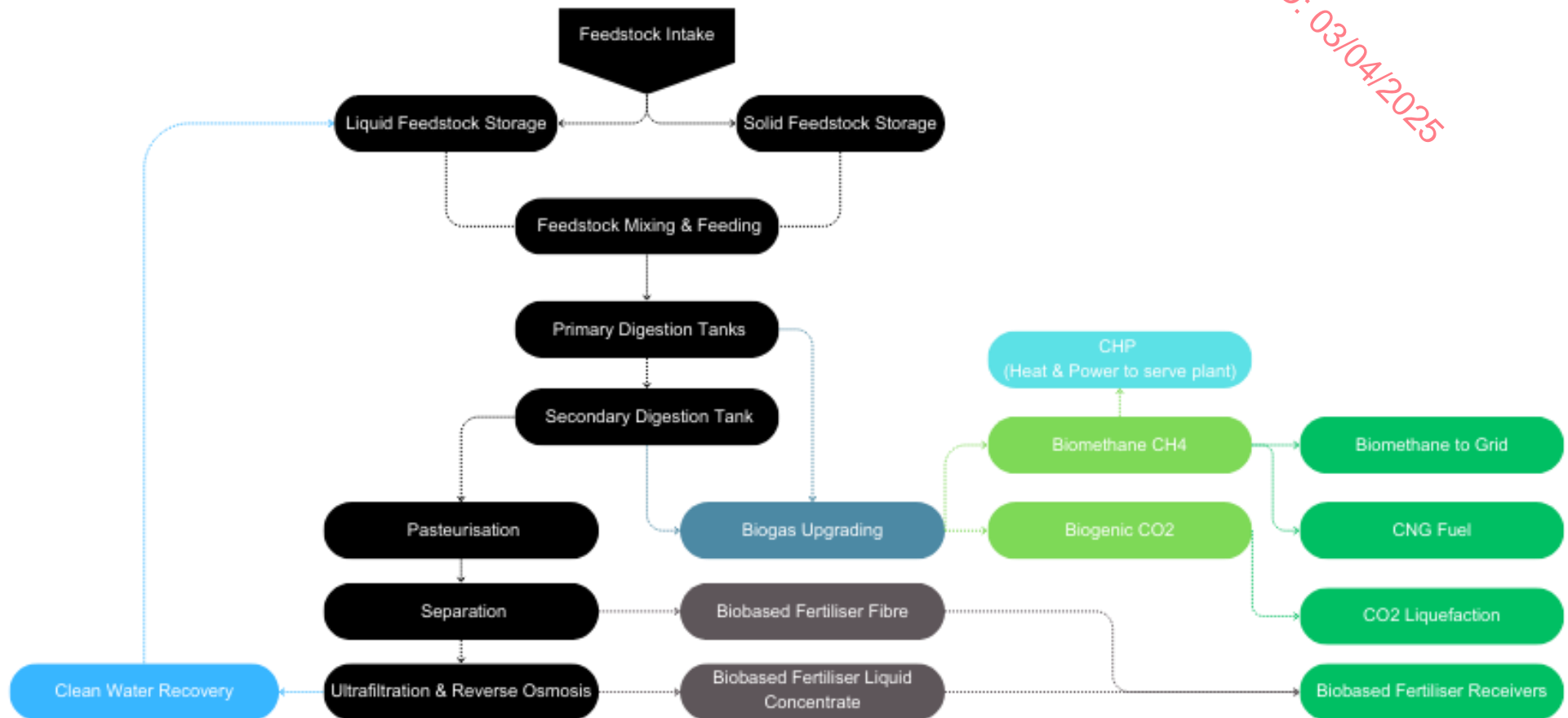


Figure 2.7: Process Flow

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 3no. 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 area 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 Pond	Attenuation pond 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	Liquid feedstock intake and storage, prior to feeding.
53	Digesters	Digesters are constructed using pour in-situ concrete, featuring walls measuring 8m in height and 32m in diameter. Each primary digester has a
54	Digesters	

RECEIVED: 03/04/2025

55	Digesters	volume capacity of 6,032 m ³ . Each Digester is equipped with a double membrane gas collection dome with a biogas storage capacity of 2,460 Nm ³ .
56	Digestate Storage Tank	Storage tank providing a storage capacity of 6,032m ³ for treated Liquid Digestate Concentrate. The site possesses a total storage capacity of 7,832m ³ (2no. Digestate Storage Tanks of 6,032m ³ and 1,800m ³ volume capacity) – Items 56 and 63.
57	Pasteurisation Tank	Insulated pasteurisation tanks will provide treatment of the digestate material to ABP standard.
58	Pasteurisation Tank	
59	Pasteurisation Tank	
60	Pasteurisation Tank	
61	Post Pasteurisation Cooling	Post pasteurisation storage to allow recovery of heat from pasteurised digestate prior to further treatment.
62	Pre-Biobased Fertiliser Manufacturing Tank	Liquid digestate buffer tank used to ensure constant digestate supply to the nutrient recovery unit.
63	Digestate Storage	Storage tank providing a storage capacity of 1,800m ³ for treated Liquid Digestate Concentrate.
64	Nutrient Recovery	Nutrient recovery unit will remove and clean the water from the digestate. It will concentrate the nutrients into a reduced volume of digestate concentrate.
65	Solid Digestate Storage	The Solid Digestate Storage will provide enclosed storage of pasteurised and treated solid digestate fibre, recovered during digestate treatment.
66	Digestate Offtake	Tanker connection for liquid digestate offtake.
67	Pump House	Accommodation for pumping equipment and pipework for the transfer of liquid feedstock and digestate materials.
68	Pump House	
69	Pump House	
70	Pump House	
71	Workshop	Dedicated area for undertaking mechanical repairs.
72	Tool Store	Storage of maintenance equipment and parts.
73	Panel Room	Electrical panel room.
74	Laboratory	On site laboratory providing a space for process monitoring and analysis.
75	Liquid Feed Intake	Liquid feedstock intake point
101	CO ₂ Tanks	Insulated storage tanks for the temporary storage of liquefied CO ₂ .
102	CO ₂ Loading Pump	Pump for the loading of liquefied CO ₂ to specialist tanker for export.
103	CO ₂ Auxiliaries	Auxiliary equipment to CO ₂ liquefaction process.

RECEIVED: 03/04/2025

104	CO ₂ Liquefaction	CO ₂ liquefaction system to recover CO ₂ from the biogas upgrading process.
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	1no. enclosed gas flare serving as additional safety measure. Flare only operates under distinct scenarios to ensure safety and compliance.
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

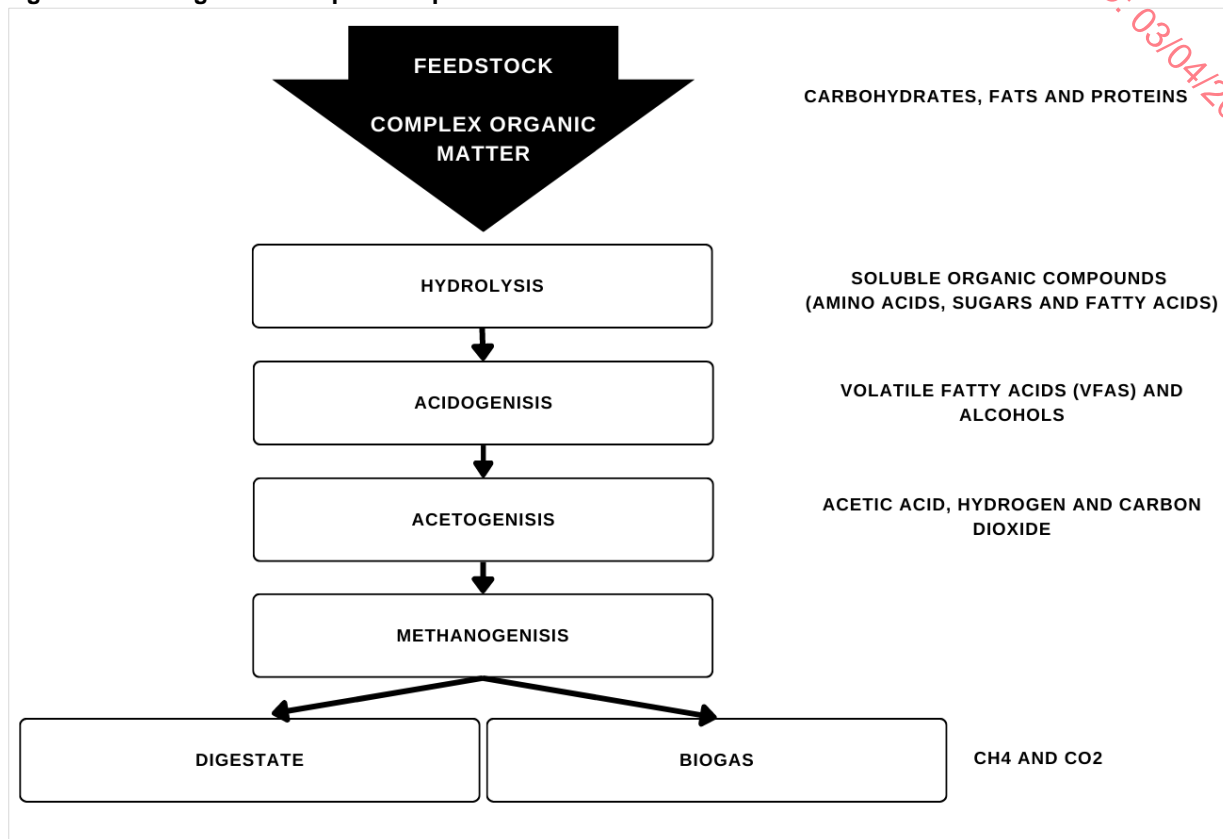
Anaerobic Digestion (AD) is a natural biological decomposition process which takes place in an oxygen-free environment, where micro-organisms (bacteria and archaea) break down organic matter. There are four main stages to this process:

- 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 2.8**.

RECEIVED: 03/04/2025

Figure 2.8: 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 (CH_4), 30-45% carbon dioxide (CO_2), together with traces of other gases, i.e., nitrogen (N_2), hydrogen (H_2), hydrogen sulphide (H_2S), ammonia (NH_3), 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 CO_2 , H_2S , 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 CO_2 rich gas stream which can be recovered for treatment within a CO_2 liquefaction system to produce renewable liquefied CO_2 .

Based on the feedstock composition and design operating capacity, it is projected that the facility will be capable of producing 810-960 Nm^3 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.

RECEIVED: 03/04/2025

Overall tonnage will not exceed 90,000 tonnes.

Table 2.4: Estimated Annual Feedstock Composition and Intake

Feedstock	Tonnes/Annum
Cattle Slurry	11,931
Cattle Manure	1,302
Poultry Litter	22,981
Vegetable Residues	1,302
Drinks Production Residues	18,595
Dairy Production Residues	9,077
Whole Crop Silage	24,812
Total	90,000

The agricultural manures, slurries and crop-based feedstocks will be sourced from agricultural operators in the vicinity of the site. Slurry will be supplied to the Proposed Development by tanker from the neighbouring farms.

To date the applicant has engaged with a large number of local farmers, of which 41 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 digestate receivers is represented in **Figure 2.9**. 92% (38) of these sources are located within a 10km radius of the site and 100% (41) within a 15km radius of the site.

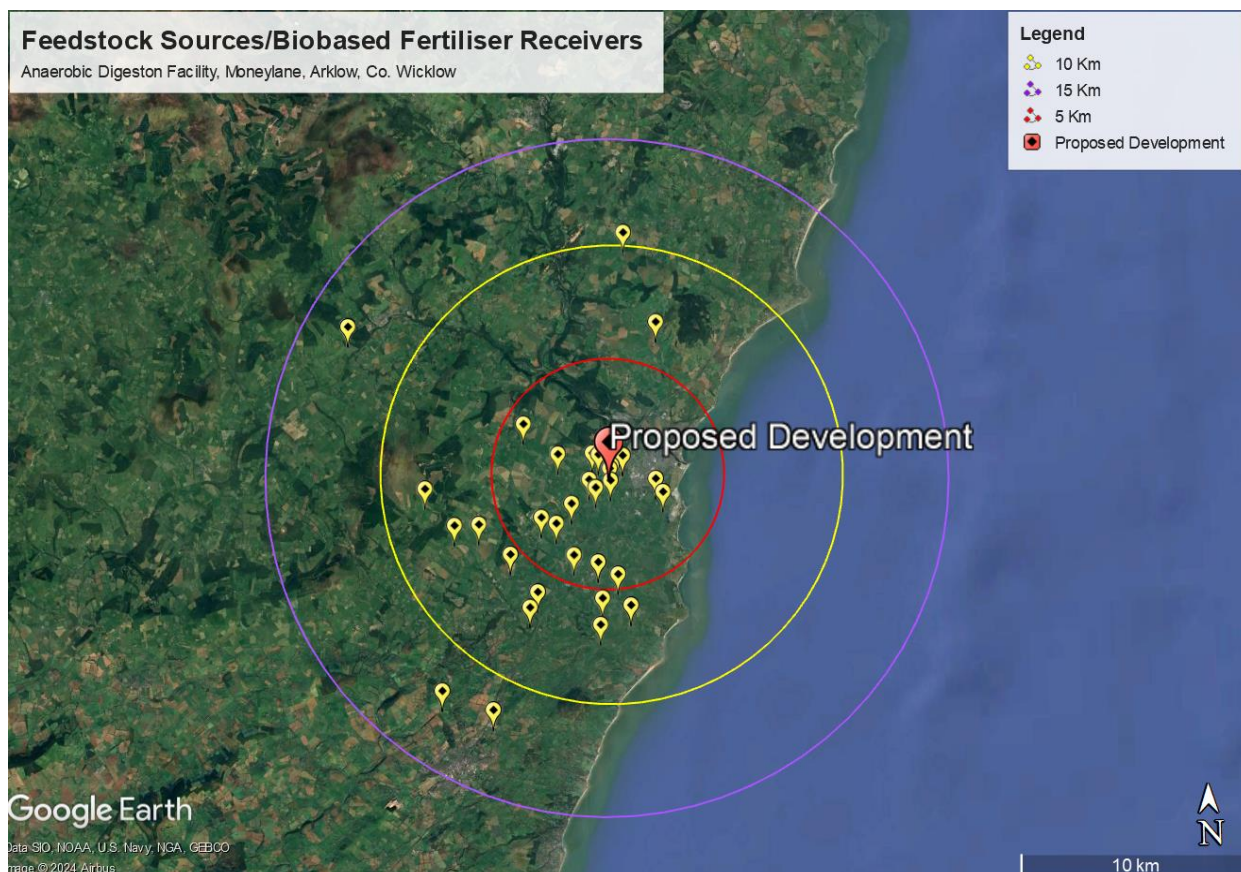


Figure 2.9: Feedstock Suppliers and Digestate Receivers

2.2.6 Feedstock Acceptance and Storage Procedure

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

Only feedstocks meeting strict feedstock acceptance procedures and complying with Environmental Protection Agency (EPA) and 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 regulatory requirements set by the EPA and DAFM. All hauler 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. **241504-ORS-ZZ-00-DR-AR-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 at 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 the liquid feedstock tank, which has a capacity of 196m³. The reception pit will be constructed using concrete, while the liquid feedstock tanks will also be made of concrete and are located within a bunded area.

RECEIVED: 03/04/2025

Solid materials will be unloaded into designated feedstock bays, with a total storage capacity of 745 tonnes of solid feedstock material, the equivalent of 5 days storage.

All vehicles will undergo external cleaning using 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. **241504-ORS-ZZ-00-DR-AR-200**.

2.2.9 Liquid Feed Tank

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

Liquid Feed Tank is shown as **items 52** on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-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, including the Reception Hall, Digestate Storage Tanks, Liquid Feed Tanks and Pasteurisation Tanks are all connected to the Odour Treatment System. The odour treatment is a proprietary system designed and supplied by a specialist contractor with extensive experience of treating odour from biogas and other organic waste facilities. The maximum odour concentration from the odour treatment system is 1,000Ou/m³.

The Reception Hall has a volume of ca. 19,000m³ and the 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 of 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 60,000 – 70,000 m³/hour providing an overcapacity of 10-23% 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 and Activated Carbon Filtration to achieve high levels of odour removal.

Ammonia (NH₃) Scrubbing

High concentration odour sources such as the pre-storage tanks and pasteurisation units will be treated via an ammonia scrubber. An ammonia scrubber is used for an efficient NH₃ removal consisting of a reaction vessel with packing and distributor. Exit from the packed column includes a demister. Water conditioned with sulphuric acid is used in the system. The water reacts with the NH₃ to form ammonium sulphate. The water which contains ammonium sulphate is drained when concentration reaches for instance 25% and will discharge to the anaerobic digestion process for treatment. Once treated by the ammonia scrubber the air passes through polishing activated carbon filter prior to being combined with the main extract ducting system to the stack.

Activated Carbon Filtration

Hi-Flo deep bed 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 2.10**.

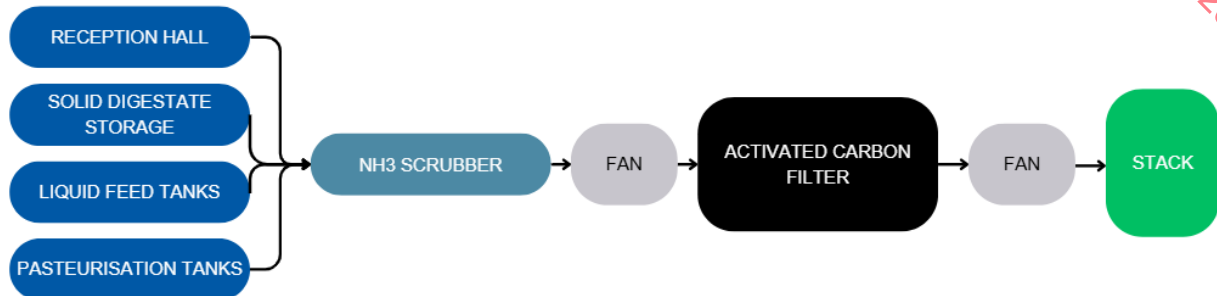


Figure 2.10: Odour Treatment Process Flow

The Odour Treatment System is shown as **item 50** on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-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 3 no. Continuously Stirred Tank Reactor (CSTR) tanks:

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

Primary Digestion Tank

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 6,032 m³.

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 2,460 Nm³.

Primary Digestion Tanks are shown as **items 53 and 54** on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-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 2,460 Nm³. The Secondary Digestion Tank has a volume capacity of 6,032 m³.

The Secondary Digestion Tank is shown as **item 55** on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-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.

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:

- 4 no. enclosed pasteurisation tanks (each of 25m³ capacity)
- Heat exchanger (with heat provided by the CHP/Biomethane Boiler)
- 1 no. maceration and screening pump (12mm)
- Post-Pasteurisation Cooling Tank (200m³ volume capacity)

Digestate from the Secondary Digestion Tank will be fed using enclosed pipework via the macerator and pump system to the 4 no. pasteurisation tanks. Pasteurisation will take place

independent of the digestion system, in a batch process. By utilising 4 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 a 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 60**) and Post-Pasteurisation Cooling Tank (**item 61**) are shown on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-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 recovered clean water.

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 returned to the process as a feeding liquid.

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 firstly 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

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.

Recovery 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 and returned to the process as a feeding liquid.

Please refer to **Figure 2.11** for Digestate treatment process flow.

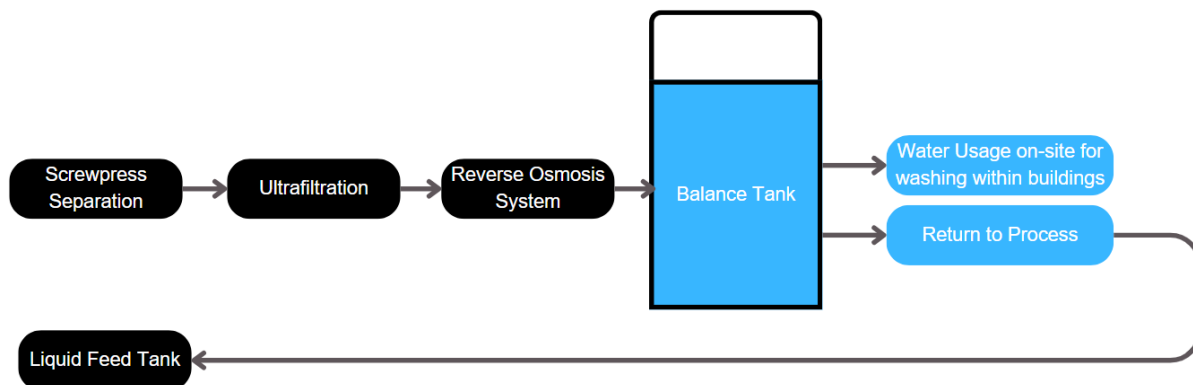


Figure 2.11: Digestate Treatment Process

The Digestate Treatment process includes **items 62, 63, 64** as shown on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-200**.

2.2.14 Digestate Storage

Digestate Liquid Concentrate Storage

The site possesses a total storage capacity of 7,832m³ (2no. Digestate Storage Tanks of

6,032m³ and 1,800m³ 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 7,832m³, there is sufficient storage to accommodate volume for up to 24 weeks, surpassing the maximum requirement of 16 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 16 weeks.

Digestate Storage is shown as **item 63** and **65** on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-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 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 75% 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 for energy recovery. 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 meet the standard of an EU fertilising product under Regulation (EC) No 2019/1009 under the criteria outlined for Product Function Category (PFC) 3 B: Inorganic Soil Improver. The operator will complete the application process for End of Waste status upon grant of permission and commencement of operations.

2.2.16 Biomethane Boiler

The proposal includes 1No. 500kW containerised biomethane boiler, which will provide emergency backup heat utilising 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. **241504-ORS-ZZ-00-DR-AR-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. **241504-ORS-ZZ-00-DR-AR-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. **241504-ORS-ZZ-00-DR-AR-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, biomethane attains a molecular composition equivalent to natural gas.

The Biogas Upgrading process includes Hydrogen Sulphide (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. **241504-ORS-ZZ-00-DR-AR-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 on-site Grid Injection Unit (GIU) and a pipeline connecting the site to the existing medium pressure distribution gas pipeline located ca. 835m southeast at Ballynattin, Co. Wicklow. The GIU and pipeline 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. **241504-ORS-ZZ-00-DR-AR-200**.

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 passes 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 into 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 Drawing Ref. **241504-ORS-ZZ-00-DR-AR-200**.

2.2.22 Biogas Flare

An enclosed biogas flare is proposed for installation on the site, serving as an additional safety measure. The flare will only operate under distinct scenarios to ensure safety and compliance.

The 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.

The flare is controlled and operated by the Supervisory Control and Data Acquisition (SCADA) system. An enclosed flare, characterised by the concealed flame and quiet operation below 65dB, ensures discreet and efficient operation during use.

The Biogas Flare is shown as **item 112** on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-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. **231240-ORS-ZZ-00-DR-AR-200**.

2.2.25 Water Supply

The water supply for the Proposed Development is organised into three categories: Fire Water, Grey Water, and Potable Water.

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

2.2.26 Surface Water Management

The Proposed Development will comprise two separate drainage networks:

- Run-off from the buildings and yards in the facility will be collected in a sealed pipe network which will discharge to the attenuation pond at the rear of the facility.
- Rain falling on the bunded area will be collected in a separate sealed drainage network and

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

A model for the surface water drainage system was designed using AutoDesk Infodrainage. Details of this model are provided in **Technical Note Ref: 24118-TN-SUDS - Appendix B**. The results of design calculations for the critical 1% AEP rainfall events are provided in **Technical Note Ref: 24118-TN-SUDS - Appendix C**.

SUDs Regime – Quantity

Discharge Rate

Subsoils are unsuited to infiltration of all surface water run-off and so it will be necessary to discharge surface water run-off to an outfall that is positioned to maintain the natural drainage course as best as possible.

The rate of discharge to the stream will be restricted to a maximum permissible rate of 10.6 lit/sec. This rate shall be achieved through attenuation in the attenuation pond and a variable head orifice in the outlet structure/manhole of the pond. This rate is calculated in accordance with criteria defined in the Greater Dublin Strategic Drainage Study [GDSDS] to ensure the Proposed Development will not affect the flow / flood regimes in the receiving environment.

Storage of Attenuated Surface Water

The restriction on discharge will attenuate surface water run-off within the Site when the run-off from the Proposed Development exceeds the discharge rate.

This attenuated water will be stored temporarily in an Attenuation Pond located in a grass landscaped area close to the receiving stream. Details of this Attenuation Pond are provided in the reference drawings.

The Attenuation Pond is shown as **item 11** on Site Layout Drawing Ref. **241504-ORS-ZZ-00-DR-AR-200**.

The Surface Water Management strategy and civil design measures are detailed in **Technical Note Ref: 24118-TN-SUDS** and Drawings which accompany the application.

SUDS Regime – Quality

Surface water run-off will be treated by the various measures described in Table 2.5.

Table 2.5: Surface Water Treatment Measures

Stage	Treatment Measure
1	Sumps in gullies and catchpits collect silts in run-off from roads
2	Where feasible, run-off will discharge to filter drains. The filter material will treat run-off before its entry to pipes
3	Class 1 discharge bypass separator treats surface water for hydrocarbons run-off before its discharge to the attenuation pond

RECEIVED: 03/04/2025

4	All surface water run-off will discharge to the attenuation pond. The floor of the basin will be shaped to allow for the retention of silts in the pond
5	Regular inspection and maintenance of all treatment measures to remove accumulated silts and disposed of to an appropriately licensed landfill

2.2.27 Foul Water Management

The Proposed Development does not have access to the public sewer, so a private wastewater treatment system is proposed for the site. The office building will be the sole generator of wastewater and is designed for a max occupancy of 10 employees a day. A minimum 4 PE wastewater treatment system with a sump chamber and pump (min. 140 litres of volume below invert of system required) and a 60qm partially raised soils polishing filter is being proposed for the facility. The system is designed by Geoenvironmental Consultants. Refer to **Technical Note 24118-TN-SUDS - Appendix D** for a site-specific assessment report, testing results, and specifications.

The site 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. The proposed system is a tertiary treatment system and percolation area as shown on **Drawing Ref: 24118-DR-0501**.

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

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 6,032 m³ = 6,636m³). The bund has been designed to accommodate >6,636m³ in the unlikely event of a failure of the storage tanks.

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

The Bunding is shown as **items 08 and 09** on Drawing Ref. **241504-ORS-ZZ-00-DR-AR-200**.

2.2.29 Access Road

The Proposed Development will be accessed via a site entrance onto Ballyduff South Road (L6187).

The Access Road is shown on Drawing **Ref. 241504-DR-0102**.

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 Perimeter Fencing as **item 07** on Drawing **Ref. 241504-ORS-ZZ-00-DR-AR-200**.

RECEIVED 03/04/2025

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

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. **241504-ORS-ZZ-00-DR-AR-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 waste authorisation requirements as defined by the classes of waste activity listed in the Third Schedule of the Waste Management (Facility Permit and Registration) Regulations, 2007 (S.I. No. 821 of 2007), 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

<p>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):</p> <ol style="list-style-type: none"> 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. <p>(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):</p> <ol style="list-style-type: none"> 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. <p>(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.</p>

The IE licence will set conditions under which the following will be controlled:

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

RECEIVED: 03/04/2025

- 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 COMAH Regulations place a requirement on operators of obligated facilities 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 fall 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.

RECEIVED: 03/04/2025

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 regulations, 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 7.205 tonnes of flammable gas, and is, therefore not a COMAH regulated site.

As per S.I. 209/2015, in cases where no individual substance is present in a quantity above or equal to the relevant qualifying quantities, the following rule shall apply.

$q_1/Q_{L1} + q_2/Q_{L2} + q_3/Q_{L3} = q_n/Q_{un}$ is greater than or equal to 1

Diesel and propane are also stored on site in small quantities and should be accounted for in the inventory calculations. Diesel is classified as a petroleum product (lower tier threshold of 2500 tonnes) whilst LPG is a liquid flammable gas (lower tier threshold of 50 tonnes). Using the above calculation yields a result as follows:

$$\frac{7.3}{10} + \frac{1}{2500} + \frac{1}{50} = 0.741$$

Since the result is less than 1, it can be concluded that the Proposed Development does not meet the lower tier threshold of the Seveso III Directive and will therefore not be a COMAH regulated site.