3 Consideration of Alternatives

3.1 Introduction

The purpose of this chapter is to present the reasonable alternatives considered by the developer during the design and pre-application phases of the Proposed Development.

3.2 Background and Legislative Context

Annex IV (2) of the EIA Directive 2014/52/EU requires the consideration of reasonable alternatives which are relevant to the project, taking into account the effects of the project on the environment. An EIAR must contain:

"…*a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment*."

The EU 'Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)' (EU, 2017) states that reasonable alternatives "*must be relevant to the proposed project and its specific characteristics, and resources should only be spent assessing these alternatives*". The guidance also acknowledges that "*the selection of alternatives is limited in terms of feasibility. On the one hand, an alternative should not be ruled out simply because it would cause inconvenience or cost to the Developer. At the same time, if an alternative is very expensive or technically or legally difficult, it would be unreasonable to consider it to be a feasible alternative*".

Schedule 6 of the Planning and Development Regulations, 2001 (as amended) sets out the information which is to be contained in an EIAR and Part 1 (d) of Schedule 6 states that the following shall be included:

"*A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment*."

In accordance with 2022 EPA Guidelines, different types of alternatives may be considered at several key stages during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.

The EPA Guidelines (EPA, 2022) state:

"*The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option. It is generally sufficient to provide a broad description of each main alternative, and the key issues associated with each, showing how environmental considerations were taken into account is deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required*."

The development aims to support the Irish Governments' ambition to produce 5.7 TWh of indigenously produced biomethane by 2030. Historically across Europe, Anaerobic Digestion (AD) was developed to produce biogas which in turn generated electricity (through combustion of the untreated biogas). This is now seen as an expensive way to generate renewable electricity. There has been a shift across Europe to utilise limited bio-resources to generate

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biomethane (biogas which has been treated to remove the carbon dioxide portion) and decarbonise high temperature heat, gas grids in general and the transport sector.

During the project design process, different Anaerobic Digestion (AD) site layouts were considered, aiming to achieve an optimum design that had the least impact on the environment and surroundings. This chapter outlines the site selection process, the design considerations and site layout, and the technical configurations that are available in the AD sector. Where sites have been scoped in or out as reasonable alternatives, an explanation is given.

The consideration and examination of alternatives is set out in the following sections under the following headings:

- Alternative Locations,
- Alternative Designs and Layouts,
- Alternative Technical Configurations, and
- Do Nothing Scenario.

3.3 Consideration of Alternatives

3.3.1 Consideration of Alternative Locations

The mission as outlined in the National Biomethane Strategy is that the Irish Anaerobic Digestion industry would be “agri-led and farmer-centric” with the developments themselves located in rural Ireland, due to the nature of the feedstocks (largely slurry and silage) used in the anaerobic digestion (AD) process.
The National Biomethane Strategy Working Group assessed a number of scenarios for the deployment of a biomethane sector in Ireland and it was concluded that centrally located, larger plants utilising the national gas network would reduce overall emissions and energy consumption and represented the most environmentally sustainable and cost-effective pathway to develop the sector. Thus, proximity to a gas pipeline to facilitate grid injection is an important consideration. The applicant endeavoured to identify and investigate sites that would be suitable for the agri-centric biogas model that is proposed in the National Biomethane Strategy.

When considering the location of the site, a detailed site selection process was undertaken by the Applicant, with reference to the following criteria:

- Transport Network and Access
- Availability and proximity to Feedstock Supply
- Availability and proximity to Digestate Receivers
- Existing Land Use
- Landscape Sensitivity
- Ecological Designations
- Archaeological Designations
- Access to Gas Grid
- Access to Electricity Grid
- Proximity to Sensitive Receptors
- Available Land Size
- Land Availability
- Landscape and Visual Amenity
- Proximity to Suitable Water Course or Sewer
- Proximity to Drinking Water Source/Aquifer

- Topography
- Flood Risk

The Applicant devised a scoring matrix based on each of the site-specific criteria outlined above, assigning scores from 1 to 3(or 4) for different scenarios relating to that criteria e.g. a site that is less than 1km from the gas distribution pipeline was given a score of 3, whereas a site that is further from the pipeline and that would require connection works of greater than 5km was given a score of 1. Similarly, a site that has favourable road conditions e.g. good site access opportunities, capacity for additional vehicles was given a score of 3, whilst sites that had no road access or whose road network comprised predominantly local (as opposed to regional) roads were given a score of 1.

A weighting of between 1 to 3 was applied to each criteria, where higher values were assigned to criteria that were more critical to the viability of the development e.g. proximity to the feedstock providers is essential for successful implementation of the agri-model. Further explanation of some of the key considerations that influenced the designated weighting are described here:

Grid Connection
A viable biomethane generation scheme must ideally be located near to existing gas grid infrastructure to minimise the transport/construction requirements and maximise resource efficiency e.g. preferable over the virtual pipeline model (movement by truck from production plant to injection point). Thus, a large weighting was applied for this criterium.
Proximity to feedstock providers/digestate receivers
An agri-centric model is being proposed, meaning that the majority of feedstocks are derived from the agricultural sector and include manures, slurries, grass/maize silage and chicken litter. It is preferable to site the plant as proximate to the feedstock providers as possible such that transport of feedstocks/digestate is minimised. Thus, consideration was given to areas that had larger densities of farms that could provide these types of feedstock e.g. dairy herds, intensive pig/poultry farms i.e. aiming to have 80% of the feedstock within 5km or less of the site.
Transport Network and Access
The feedstocks and digestate will be transported by HGVs thus sites where direct access to a road is possible are preferable i.e. as opposed to fields with no direct road access. Furthermore, roads that have capacity for additional vehicles would achieve a greater weighting. Note: where improvement measures could be implemented e.g. road widening or junction realignment to improve sightlines, a higher weighting was applied.
Existing land use
The preference, in the absence of viable industrially zoned land, is to locate the development on an existing rural brownfield site if possible e.g. disused intensive farm, surrendered licensed site such as quarry. It has been found that in general, there is limited availability of these kinds of sites, and those that are available tend to be less proximate to feedstock providers and closer to sensitive human receptors e.g. on the outskirts of urban areas. Thus, greenfield sites with low biodiversity value were scoped as a reasonable alternative i.e. termed “improved agricultural pastureland”, where trees have been removed, and land has been subject to fertiliser.
Proximity to sensitive human receptors
The preference is to locate the development as far from sensitive human receptors as possible, whilst also balancing the need to have sufficient road network accessibility. It should be noted that design measures, as described in the other EIAR chapters, aim to mitigate for any offsite impacts relating to noise, odour, fugitive gas emissions and air quality, irrespective of proximity of receptors.
Available land size
Sites that are greater than 4ha in size are preferable as they facilitate optimum site layout e.g.

allowing for ample turning space for vehicles, space to allow for optimal positioning of site infrastructure, potential for more extensive landscaping that encourages biodiversity.

Landscape sensitivity

The preference is to site the development in areas with medium to low landscape sensitivity i.e. Areas with the capacity to accommodate a range of uses without significant adverse effects on the appearance or character of the landscape having regards to localized sensitivity factors. Thus, greater weighting was allocated to sites that were further from sensitive landscapes e.g. further from designated scenic routes, SACs and viewpoints

Multiplication of the two scores presented the conclusion from the assessment of the site. Site visits and desk-based studies were completed for all candidate sites. Each candidate site was then assessed and an overall score assigned. The matrix with site-specific selection criteria and basis for assessment is included in **Table 3.1**.

Table 3.1: Site-Specific Selection Criteria and Basis for Assessment

Criteria	Scoring	Score	Weighting	Total Score
Transport Network and Access	1. Greater than 5km from Regional Roads, 2. 1 - 5km km from Regional Road 3. Less than 1km from Regional Road. 4. Immediately adjacent to major source of feedstock allowing for transport internally.		3	
Proximity to Feedstock Supply	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km 4. Immediately adjacent to major source of feedstock.		3	
Proximity to Biobased Fertiliser Receivers	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km		3	
Existing Land Use	1. Urban or greenfield 2. Rural Brownfield, 3. Zoned Industrial		2	
Landscape Sensitivity	1. Proximate to Sensitive Landscape 2. Greater than 1km 3. Greater than 5km		2	
Ecological Designations Score	1. Adjacent to designated site 2. >1km from designated sites 3. >5km from designated sites		2	
Archaeological Designations Score	1.Adjacent to archaeology sites 2. >1km from archaeology sites 3. >5km from archaeology sites		1	
Access to Gas Grid	1. Greater than 5km, 2. 1-5km, 3. <1km		3	
Access to Electricity Grid	1. Greater than 5km, 2. 1-5km, 3. <1km		1	

Sensitive Receptors	1. Less than 250m. 2. less than 1km. 3. Greater than 1 km		3	
Available Land Size	1. 1- 2ha 2. 2-3ha 3. Greater than 4ha		3	
Land Availability	1. Not for Sale or Lease 2. Available for Sale or Lease but financially unviable 3. Owned or for sale/lease at		3	
Landscape and Visual Amenity	1. Site is elevated or exposed 2. Site has existing cover and partial views 3. Site is hidden and with few or any receptors overlooking the site.		2	
Proximity to Suitable Water Course Or Sewer	1. Greater than 1km 2. Less than 1km. 3. Immediately adjacent or on site		3	
Proximity to Drinking Water Source/Aquifer	1. Less than 250m. 2. less than 1km. 3. Greater than 1km		1	
Existing Topography	1. Undulating or severe level changes 2. Moderate level changes that can be engineered out. 3. Relatively flat and level.		2	
Flood Risk	1. In a Flood Risk Zone 3. Outside Flood Risk Zone		3	
Total Ranked Score				

Regarding site selections, six sites within County Wicklow were assessed under the above criteria, with the site at Moneylane, Arklow, County Wicklow, scoring the highest. The resultant scores for each candidate site are included in **Appendix 3.1**. A description of some of the key features of the sites is summarised in **Table 3.2.**

Table 3.2: Some key features of sites under consideration

Name of site	Land use	Site size	Proximity to gas grid	Proximity to feedstock/ digestate	Ecology designation	Proximity to sensitive human receptors
Moneylane, Arklow	Greenfield	>4ha	<1km	80% available within 5km	>5km from designated site	<1km
IDA business park, Arklow	Industrial site	2-3ha	<1km	80% available within 5km	>5km from designated site	<250m
Ballinabarney	Greenfield	>4ha	>5km	80% available within 10km	>5km from designated site	<250m
Avoca River business park	Industrial	>4ha	<1km	80% available greater than 10km	>5km from designated site	<1km
Kish business park	Industrial	1-2ha	<1km	80% available within 5km	>1km from designated site	<250m
Arklow Business Enterprise park	Industrial	1-2ha	<1km	80% available within 10km	>1km from designated site	<250m
Consequence of the colouring: **Red -** Requires significant design measures, likely to be impractical **Amber -** Possible - minimal impact and minor further design measures required **Green -** Ideal – minimal impact option, optimum design measures						

The reasoning for identification of the Proposed Development site at Moneylane as the preferred site is further discussed in the following sections.

3.3.1.1 Transport Network and Access

The Proposed Development site is located southeast of the town of Arklow, County Wicklow, proximate to the M11 motorway and will be accessed via the Ballyduff South Road (L6187). The traffic assessment has confirmed that the road has sufficient capacity to handle the additional vehicles. Furthermore, road improvements have been proposed including improving sightlines on Moneylane road at the site entrance and on approach to the Knockenrahan/Moneylane junction. In addition, targeted realignment and widening of the Knockenrahan/Moneylane junction has been incorporated, which will facilitate safe ingress and egress for vehicles associated with the development as well benefitting local residents and road users through improved road conditions and geometry.

3.3.1.2 Land zoning

Given the agri-centric nature of the Proposed Development it would be preferable to locate the site on an existing rural brownfield site if possible, e.g. disused intensive farm, surrendered licensed site such as quarry. It has been found that in general, there is limited availability of these kinds of sites. A number of industrially zoned lands were screened during the

assessment namely Arklow IDA Business Park, Avoca River Business Park, Kish Business Park and Arklow Business Enterprise Centre. As illustrated in their respective scoring matrices (see appendix 3.1), these sites were scoped out for reasons including, 1. Not enough land being available for the AD project (IDA business park), 2. proximity to sensitive human receptors (IDA business park and Arklow Business Enterprise Centre) and 3. The land being already allocated for development (A live application for a biofuel facility at Kish business park). Moneylane provides a good alternative to a brownfield site as it is proximate to industrially zoned lands (<1km from the IDA park) and the site, categorised as “improved agricultural pastureland”, has been assessed as being of low biodiversity value i.e., it has low habitat and floral species potential due to activities such as removal of trees, and spreading of chemical fertiliser on the land.

3.3.1.3 Proximity to Feedstock Supply and Biobased Fertiliser Receivers

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 geographical distribution of these feedstock suppliers and biobased fertiliser receivers is represented in **Figure 3.1**.

92% (38) of these sources are located within a 10km radius of the site and 100% (41) within a 15km radius of the site. Cattle Slurry will be supplied to the Proposed Development by tanker from the neighbouring dairy farm located 100m to the southeast.

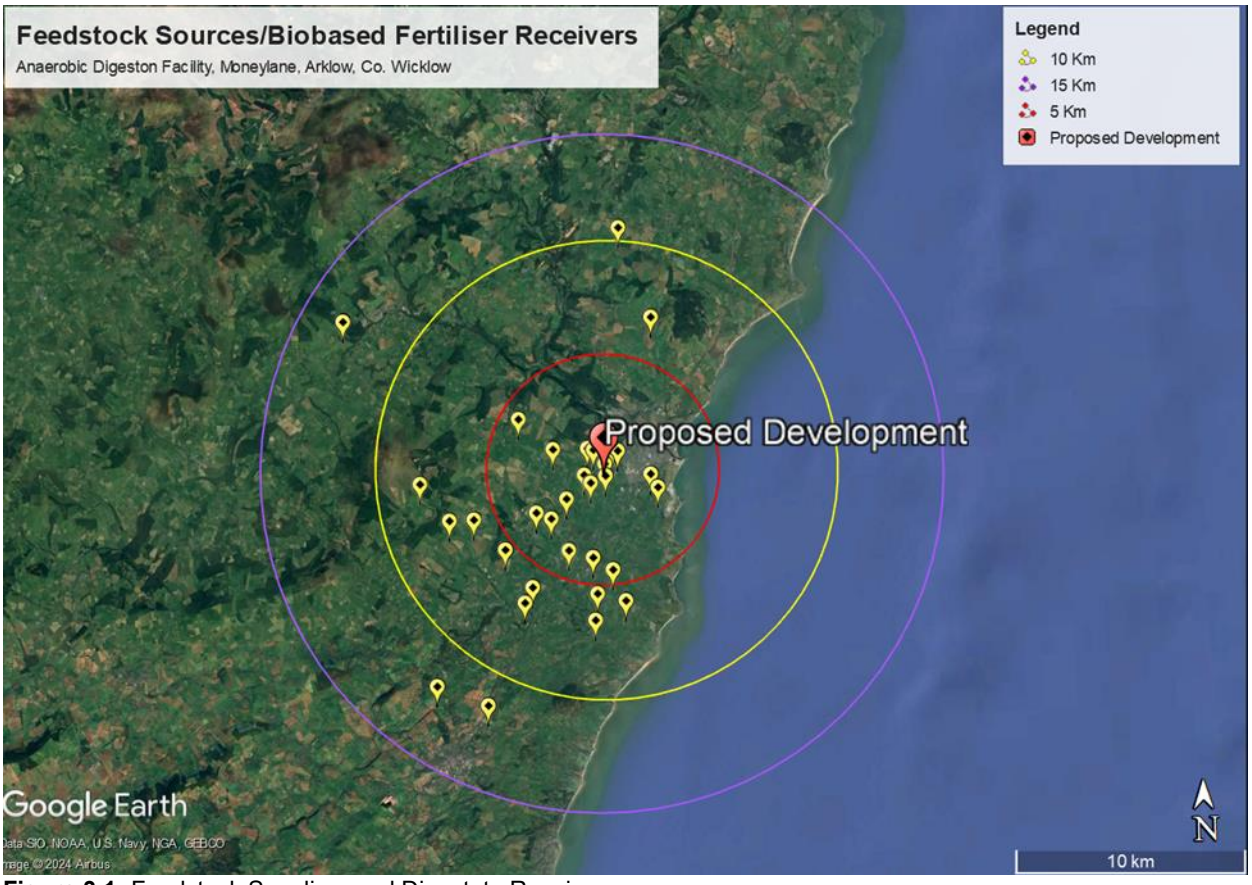

Figure 3.1: Feedstock Suppliers and Digestate Receivers

Note: the pin locations in **Figure 3.1** relate to the suppliers postal address rather than location of the feedstocks themselves and so a further figure, **Figure 3.2** has been included to illustrate the land parcels/slurry stores from which the feedstocks will be recovered and the digestate dispensed to.

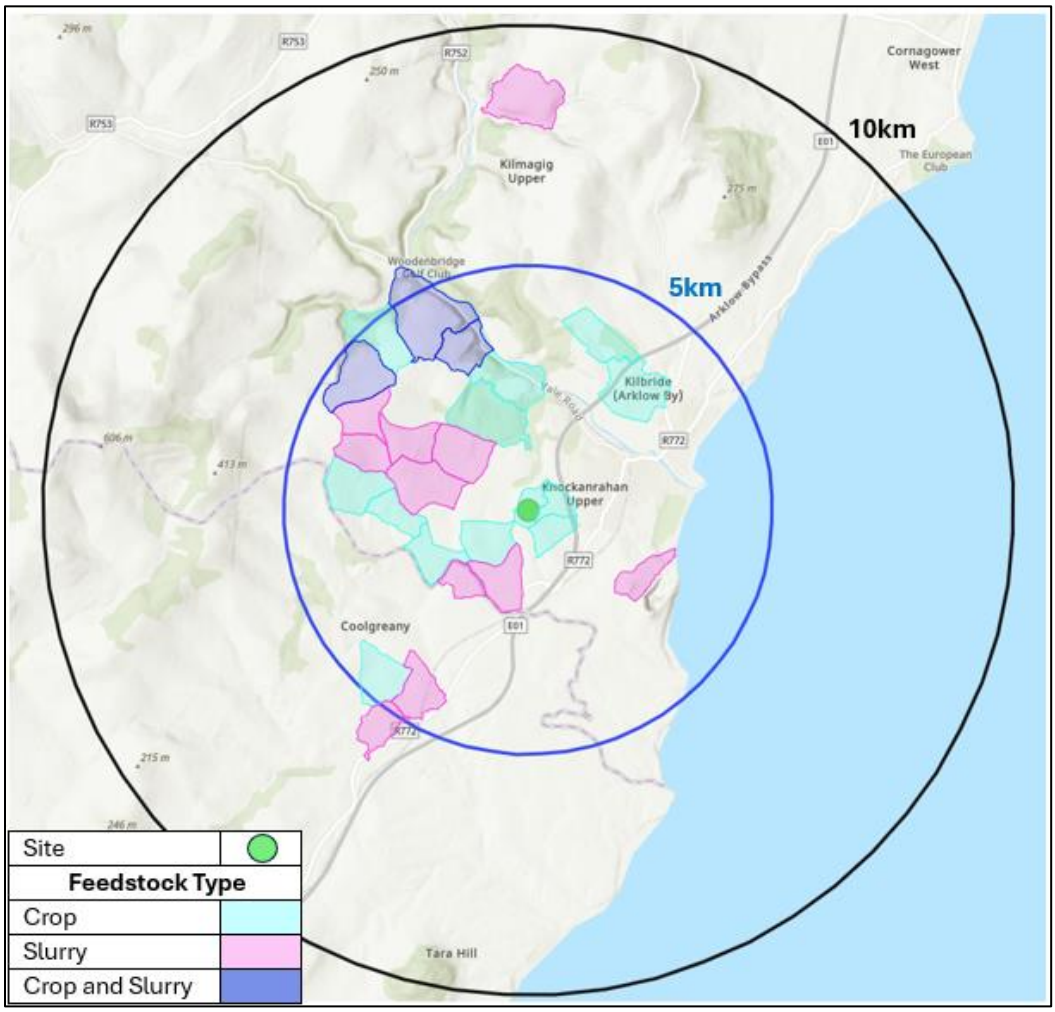

Figure 3.2: Illustration of land parcels slurry stores from which the feedstocks will be recovered and the digestate dispensed to and relative radius from the site.

Alternative sites considered were deemed unsuitable for two primary reasons. Firstly, there was uncertainty regarding the availability of sustainably sourced agricultural feedstocks. Secondly, the distances required to transport these feedstocks from their source locations to the alternative sites would result in significantly more HGV (heavy goods vehicle) movements compared to the current proposal. The increased HGV traffic would lead to higher estimated greenhouse gas emissions, which would conflict with the overall sustainability goals of the Proposed Development.

3.3.1.4 Proximity to the Existing Gas Network

Proximity to the existing gas network was a key consideration when considering alternative locations. In comparison to other locations considered, the site at Moneylane, Arklow benefits

from existing infrastructure as the existing medium pressure distribution pipeline is located ca. 835m southeast 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 3.3.**

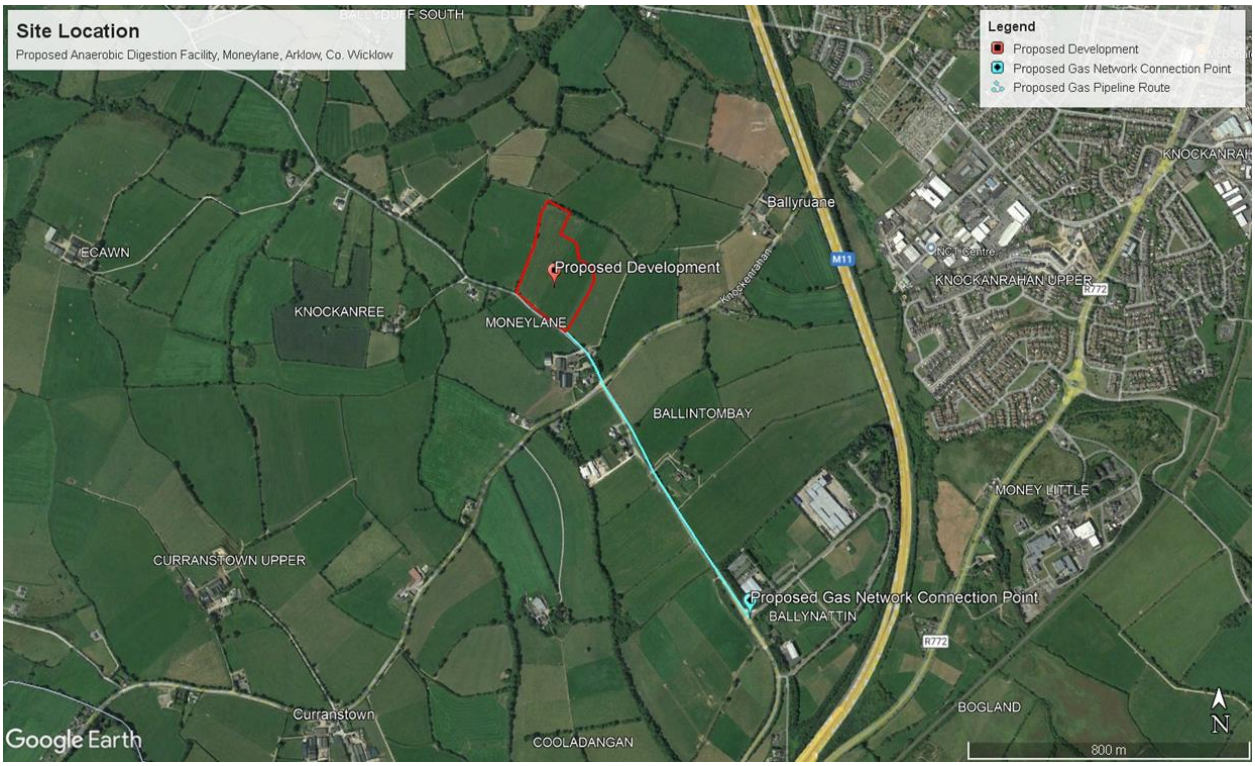

Figure 3.3: Local Existing Gas Network (Source: Gas Networks Ireland)

The other site locations considered were deemed to be located significant distances from the existing national gas network, meaning a direct connection point via a Grid Injection Unit (GIU) would not be feasible and/or economically viable. Whilst some of the scoped industrial sites are relatively proximate to the gas pipeline, the proximity of sensitive human receptors and urban infrastructure would add additional complexity to the siting of the connecting pipelines.

3.3.1.5 Proximity to Sensitive Environmental Receptors and Designated Sites

The Proposed Development 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. Furthermore, the application site is not within or immediately adjacent to any nationally designated site, such as a Natural Heritage Area or a proposed Natural Heritage Area. This is also the case for the other scoped sites. All work within the Proposed Development site will take place in areas considered to be of low biodiversity value on a local level.

3.3.1.6 Landscape and Visual Impact

Alternative site locations were visited for preliminary landscape and visual impact surveys during spring 2024. Each site location and hinterland were examined and a preliminary assessment with respect to viewpoint sensitivity and the likely magnitude of change was made.

Following the preliminary assessments, the Proposed Development location was preferred as the existing topography and natural screening offered benefits in terms of minimising potential impacts.

Furthermore, existing agricultural development types are found in the immediate vicinity of the Proposed Development. The site is bounded to the north, south, east, and west by further agricultural pastureland, and an operational dairy farm located is located adjacent to the southeast corner of the site boundary.

3.3.1.7 Flood Risk

A preliminary flood risk assessment was undertaken for all candidate sites considered. There have been no recorded historic flooding incidents within the Proposed Development site boundaries, and no part of the Proposed Development work is scheduled within an area which has been declared as Flood Zone A or B.

A Site-Specific Flood Risk Assessment accompanies the planning application (Document Ref: **241504-ORS-XX-XX-RP-EN-13d-011**)

3.3.1.8 BAT techniques to minimize environmental impact

A site of this nature will be licensed and regulated by the EPA. The EPA, as part of licensing, encourages implementation of new and innovative techniques that meet the best available techniques (BAT) criteria and provide continuous environmental improvement. The applicant is cognisant of environmental impact from early stages of site selection, with preliminary investigations carried out to establish groundwater and soil conditions, ecological sensitivity, traffic movements and baseline air and noise levels.
Design processes focused on employing typical BAT techniques to maintain these baseline conditions, for example conserving water quality through the use of SUDS measures e.g. surface water attenuation tanks, rainwater harvesting or emission mitigation through use of housed processing areas, odour treatment systems, screening etc. The Moneylane site provides an ideal layout to facilitate maximum employment of BAT techniques i.e. existing ecological habitats at the perimeter that offer natural screening, landscaping opportunities and an outfall near the site boundary that is positioned to maintain the natural drainage course of the site e.g. water currently drains from the site to the tributary of the Ballyduff Stream.

3.3.2 Consideration of Alternative Design and Site Layout

The design of the Proposed Development has been an informed and collaborative process from the outset, involving design, engineering, planning, environmental, hydrological, geotechnical, archaeological, landscape and traffic specialists. The design process has also taken account of the comments of the relevant statutory and non-statutory consultees as detailed in **Chapter 1: Introduction**.

Throughout the preparation of the EIAR, the layout of the Proposed Development has been revised and refined to take account of the findings of all site investigations and baseline assessments, which have brought the design from its first concept layout (**Figure 3.4**) to the final site layout.

Figure 3.4: Concept Site Layout

Layout selection was an iterative process, with the objective of identifying a suitable layout that;

- Optimised the existing topography of the site in order to minimise excavation works.
- Optimised the existing topography of the site in order to minimise potential visual impacts on the local landscape.
- Met the design and operational requirements of DAFM guidance document CN11: Conditions for approval and operation of Biogas Plants transforming Animal By-Products and derived products in Ireland.

- Met the design and operational requirements of the EPA Industrial Emissions licencing.

The design of emissions stacks was considered throughout the design and planning process. Air dispersion modelling undertaken as part of the Air and Odour impact Assessment detailed in **Chapter 8: Air, Odour & Climate Change** informed the suitable height of the 1 No. CHP stack, 1 no. Biomethane Boiler stack and 1 No. Odour Treatment stack.

The landscape plan (**Figure 3.5**) offers short to long term buffering and is specifically developed to assist in integrating the Proposed Development into its surrounds. In addition, native planting is proposed, in order to provide enhanced biodiversity areas within the Proposed Development. The alternate layout considered initially, which did not include this additional buffering, would have given rise to a higher degree of landscape and visual impact from the Proposed Development, compared to the design and layout ultimately selected.

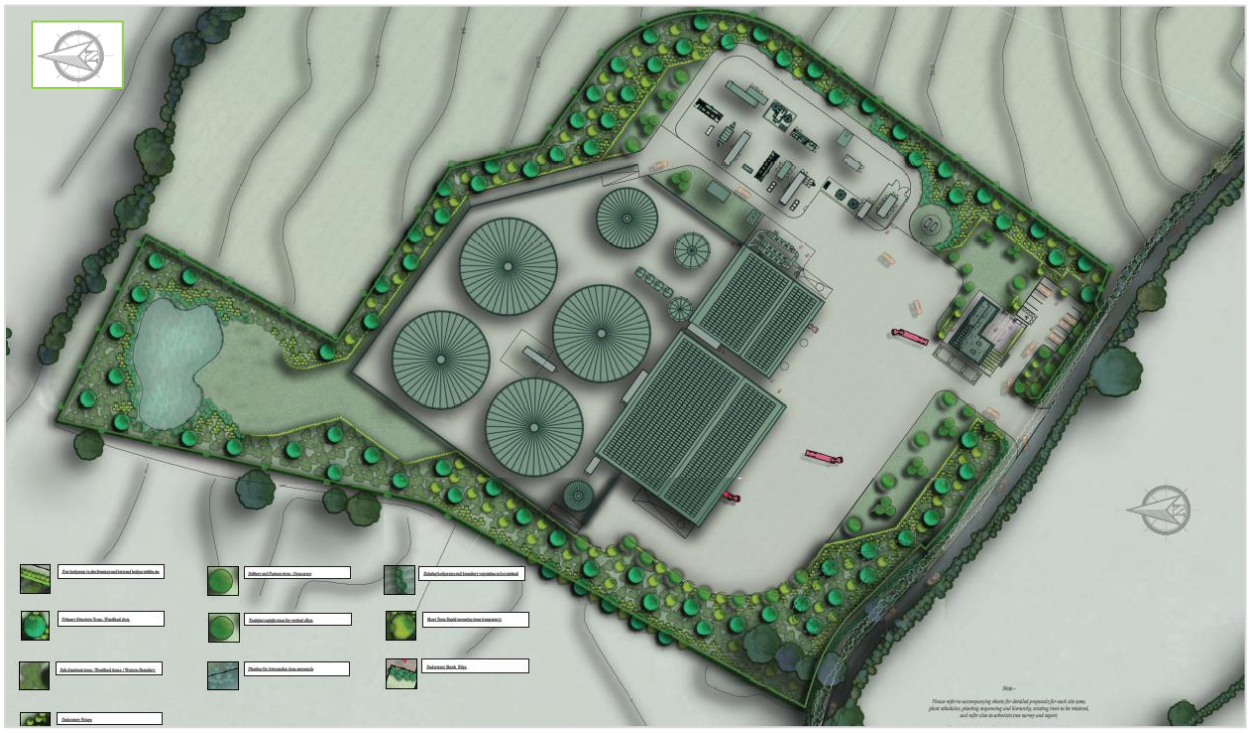

Figure 3.5: Extract from Landscape Plan (Document Ref: 24/NRG/ORSML/A/007 Rev C)

A landscape plan has been incorporated and accompanies the application (Document Ref: **24/NRG/ORSML/A/001/**).

3.3.3 Consideration of Alternative Technical Configurations

Alternative Technical Configurations were considered as part of the design process of the Proposed Development.

There are several different process configurations around which AD systems may be designed. Factors considered when making design decisions included whether the process is ‘batch’ or ‘continuous’ feed, whether it is a ‘dry’ or ‘wet’ system, whether it is a ‘single stage’ or ‘multi-stage’ process and whether the anaerobic digester is operated at ‘mesophilic’ or ‘thermophilic’ temperatures.

3.3.3.1 Process Configuration

A Batch' Flow system involves the single addition of feedstock to a digester at the start of the process. When the feedstock has been placed in the digester, the unit is sealed for the duration of the process with no more material added. The process was ruled out as it is deemed unsuitable given the characteristics of the agricultural manures, slurries, food processing residues and crop-based feedstocks available locally.

In contrast, Continuously Stirred Tank Reactor (CSTR) systems have feedstock added consistently or in stages with substrate displaced as new material is added. A multi-stage CSTR anaerobic digestion system is chosen for the Proposed Development, providing primary and secondary digestion within suitably sized Digestion Tanks. In comparison to single stage systems, multi-stage CSTR anaerobic digestion systems provide greater process stability, increased energy efficacy and better control over crucial parameters such as temperature, mixing, and substrate concentration. CSTR systems are fed consistently resulting in a steady-state and a consistent biogas production rate.

3.3.3.2 Operating Temperature

It is proposed to operate the AD process at mesophilic temperature range (30^{o}C – 40^{o}C). Mesophilic digestion systems are generally more stable than thermophilic systems (50^{o}C-60^{o}C) because a wider diversity of bacteria grow at mesophilic temperatures and these bacteria are generally more robust and adaptable to changing environmental conditions.

Thermophilic digestion offers the advantages of faster reaction rates compared to mesophilic digestion, leading to shorter retention times. However, thermophilic systems require significant additional energy to maintain the higher operating temperatures which is considered contradictory to the sustainability goals of the proposed project. The additional heat demand would increase the volume of biomethane required to be used on site as a fuel for the CHP engine and boiler, thereby reducing the overall volume of biomethane available for export to the national gas network thereby reducing the positive environmental impact of the proposed development with regard to the displacement of fossil fuels.

3.3.3.3 Biogas Uses Considered

Biomethane

A number of options were considered for the utilisation of the biomethane produced from the AD process.

- On-site generation of electricity and heat using a Combined Heat and Power (CHP) plant.
- Injection of biomethane to the existing gas network for industrial, commercial, or residential use.

The Proposed Development is conceived to adopt both options above, as both electricity and heat are required to support the process and enable the production of biomethane. On-site generation of electricity and heat using a CHP plant is incorporated to ensure the Proposed Development can be largely self-sufficient in terms of electrical and thermal energy demand.

The Irish Government is committed to supporting delivery of up to 5.7TWh of indigenously produced biomethane by 2030. The National Biomethane Strategy published by the

Department of Environment, Climate, and Communications and the Department of Agriculture, Food and the Marine on the 28th of May 2024, sets the primary objective to deliver on the ambitious target set by the Government as part of the agreement on the sectoral emission ceilings.

Considering the proximity of the Proposed Development to the existing gas network, injection of biomethane to the existing gas network for industrial, commercial, or residential use was deemed the most suitable option. The Grid Injection Unit (GIU) within the Proposed Development will allow for the direct injection of biomethane into the gas network. A distribution gas connection to the Proposed Development will be delivered separately by GNI under a separate consenting process (with this gas connection considered in this EIAR).

Biomethane supplied to the existing gas network in this manner will be used as a direct substitute for fossil gas in various applications, such as high-temperature heat, electricity generation and transport. The biomethane produced by the Proposed Development will therefore directly contribute to meeting the national target of 5.7TWh of indigenously produced biomethane by 2030. Furthermore, direct entry into the gas network is more efficient in terms of GHG emissions compared to virtual pipeline as no additional fuel is required for the transport of the renewable energy. Traffic is also less with the direct entry method as opposed to a virtual pipeline.

Biogenic CO_2

A CO_2 liquefaction system has been included within the Proposed Development. The biogenic CO_2 that is extracted during the biogas upgrading process can be captured and liquefied. By utilising this process, the biogenic CO_2 is now captured, purified, and reused.

3.3.3.4 Best Available Techniques (BAT)

The processes outlined in **Chapter 2: Project Description** were selected following a thorough review of Best Available Techniques (BAT) detailed below, site conditions, and regulatory requirements.

- Best Available Techniques (BAT) Waste Treatment - Commission Implementing Decisions (CID)
- Best Available Techniques (BAT) Reference Document for the Animal By-products and/or Edible Co-products Industries
- Best Available Techniques (BAT) Reference Document for Energy Efficiency
- Best Available Techniques (BAT) Reference Document Emissions from Storage

The chosen techniques and technologies are industry-standard, support the effective implementation of emission control measures, and are well-established and proven within the industry.

3.3.4 Do Nothing Scenario

Article IV, Part 3 of the EIA Directive states that the description of reasonable alternatives studied by the developer should include "*an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge*." This is referred to as the 'Do Nothing' scenario.

EU guidance (EU, 2017) states that the assessment should involve the assessment of "*an outline of what is likely to happen to the environment should the Project not be implemented – the so-called 'do nothing' scenario*."

In implementing this 'Do-Nothing' scenario, an Anaerobic Digestion Facility would not be developed and there would be no changes made to existing land-use practices. The site would likely continue to be used for agricultural grazing.

The Climate Action and Low Carbon Development (Amendment) Act 2021 has committed Ireland on a legally binding path to net-zero emissions by no later than 2050, and to a 51% reduction in emissions by 2030. Indigenously produced biomethane will play a significant role in enabling this transition to a net-zero economy as biomethane can be used to displace fossil gas in many hard-to-decarbonise sectors, while also playing a significant role in the decarbonisation of County Wicklow's agriculture sector. In the 'Do-Nothing' scenario, the opportunity to capture a volume of County Wicklow's bioenergy resource for the production of biomethane to supply the national grid would be missed.

Total greenhouse gas (GHG) emissions for County Wicklow equate to 1,101 ktCO2e per year, with a target to achieve a 50% reduction by 2030. Agriculture accounts for 40% of Wicklow's total GHG emissions, making agriculture the single largest sectoral emitter of greenhouse gasses in the county. Methane emissions produced by livestock is one of the main contributors to agricultural sector emissions. Methane emissions account for 97% of agriculture emissions with the remaining 3% produced from energy usage.

This Proposed Development alone can reduce County Wicklow's emissions by *ca*. 7,680 tCO2e per year, or 1.4% of the emission reduction target for Wicklow. In the 'Do-Nothing' scenario, this contribution to a reduction in emissions from agriculture would not be achieved.

Agricultural manures and slurries will be sourced from agricultural operators within a 15km radius of the Proposed Development. Cattle slurry will be supplied to the facility from the neighbouring dairy farm located 100m to the southeast of the Proposed Development. In the 'Do-Nothing Scenario' these agricultural wastes would not be treated locally through the AD process. Untreated and unpasteurised manures and slurries would continue to be applied directly to the land at current volumes, with the continued addition of chemical fertiliser.

As outlined in the National Biomethane Strategy, AD offers an opportunity to add value to the animal slurry by processing it into a safe and valuable product (biobased fertiliser) and removing the need for slurries to be spread in the immediate vicinity of farms. AD with digestate processing will allow for centralised management of manure in areas of surplus nutrients and creates an opportunity to support compliance with the Nitrates Directive limits. This can provide farmers with a solution to the long-term management of slurry, manure and agri-waste through processing of the digestate fertiliser output as well as reducing need to purchase chemical fertilisers and thus reducing the costs.
Furthermore, the associated CH_4 would not be captured within the AD process. In addition, the current traffic movements associated with the movement of manures and slurries from source to lands for spreading would remain unchanged.

The Proposed Development will provide important construction stage employment. The construction phase will also have secondary and indirect 'spin-off' impacts on ancillary support services in the area of the site, such as retail services, together with wider benefits in the building supply services, professional and technical professions etc. These beneficial impacts

on economic activity will be largely temporary but will contribute to the overall future viability of the construction sector and related services and professions over the construction period.

The operational stage will offer direct employment at the Proposed Development, while also supporting existing employment opportunities on surrounding farms. Further indirect employment will be created as a result of the induced benefits of the development such as surrounding businesses catering for employee subsistence and hauliers transporting materials to the facility. The Proposed Development will be of considerable benefit to the area in terms of employment provision and economic gain leading to a positive, medium-term impact which is significant in the context of its rural location.

The Proposed Development can deliver between 70-75 jobs to the immediate area (consisting of *ca*. 7 full time jobs in the AD Facility, 13 jobs supported in the applicant operational team, *ca*. 45 contractors, and an estimated *ca*. 10 supporting roles) specifically across rural locations and protect existing farming employment.

Under the ‘Do-Nothing’ scenario the opportunity to generate direct and indirect local employment would be forgone. It would lead to a missed opportunity for an increase in employment opportunities in the area generally, and a missed opportunity for rural employment objectives of the County Development Plan to be fulfilled. The overall economic and social benefits that the development would bring to the area would not be experienced by the community in the event of the Proposed Development not occurring.

The ‘Do-Nothing’ scenario is discussed in further detail within each EIAR technical assessment chapter.

3.4 Conclusion

In conclusion, this chapter has thoroughly examined the practicable alternatives considered during the design and pre-application phases of the Proposed Development, in compliance with the legislative context and guidelines provided by the EIA Directive 2014/52/EU and the EPA. The methodology followed a structured approach, ensuring all reasonable alternatives were assessed with respect to their environmental impacts.

Detailed considerations were given to the 'Do Nothing' scenario, highlighting the significant environmental, economic, and social benefits that would be forfeited if the project were not implemented.

The chapter also detailed the alternative locations considered, using a comprehensive scoring matrix to evaluate site-specific criteria. By presenting a clear rationale for the selected option, this chapter underscores the careful and informed decision-making process that ensured environmental considerations were taken into account in deciding on the proposed site location and technical configuration.

Appendix 3.1

Site 1: Site-Specific Selection Criteria and Assessment: Moneylane, Arklow, Co. Wicklow

Criteria	Scoring	Score	Weighting	Total Score
Transport Network and Access	1. Greater than 5km from Regional Roads, 2. 1 - 5km km from Regional Road 3. Less than 1km from Regional Road. 4. Immediately adjacent to major source of feedstock allowing for transport internally.	3	3	9
Proximity to Feedstock Supply	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km 4. Immediately adjacent to major source of feedstock.	3	3	9
Proximity to Biobased Fertiliser Receivers	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km	3	3	9
Existing Land Use	1. Urban or greenfield 2. Rural Brownfield, 3. Zoned Industrial	1	2	2
Landscape Sensitivity	1. Proximate to Sensitive Landscape 2. Greater than 1km 3. Greater than 5km	1	2	2
Ecological Designations Score	1. Adjacent to designated site 2. >1km from designated sites 3. >5km from designated sites	3	2	6
Archaeological Designations Score	1.Adjacent to archaeology sites 2. >1km from archaeology sites 3. >5km from archaeology sites	3	1	3
Access to Gas Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	3	3	9
Access to Electricity Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	3	1	3
Sensitive Receptors	1. Less than 250m. 2. less than 1km. 3. Greater than 1 km	2	3	6
Available Land Size	1. 1- 2ha 2. 2-3ha 3. Greater than 4ha	3	3	9

Land Availability	1. Not for Sale or Lease 2. Available for Sale or Lease but financially unviable 3. Owned or for sale/lease at	3	3	9
Landscape and Visual Amenity	1. Site is elevated or exposed 2. Site has existing cover and partial views 3. Site is hidden and with little or no receptors overlooking the site.	2	2	4
Proximity to Suitable Water Course Or Sewer	1. Greater than 1km 2. Less than 1km. 3. Immediately adjacent or on site	2	3	6
Proximity to Drinking Water Source/Aquifer	1. Less than 250m. 2. less than 1km. 3. Greater than 1km	3	1	3
Existing Topography	1. Undulating or severe level changes 2. Moderate level changes that can be engineered out. 3. Relatively flat and level.	3	2	6
Flood Risk	1. In a Flood Risk Zone 3. Outside Flood Risk Zone	3	3	9
Total Ranked Score				**104**

Site 2: Site-Specific Selection Criteria and Assessment: Arklow Business Park, Co Wicklow

Criteria	Scoring	Score	Weighting	Total Score
Transport Network and Access	1. Greater than 5km from Regional Roads, 2. 1 - 5km km from Regional Road 3. Less than 1km from Regional Road. 4. Immediately adjacent to major source of feedstock allowing for transport internally.	3	3	9
Proximity to Feedstock Supply	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km 4. Immediately adjacent to major source of feedstock.	3	3	9
Proximity to Biobased Fertiliser Receivers	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km	3	3	9
Existing Land Use	1. Urban or greenfield 2. Rural Brownfield, 3. Zoned Industrial	3	2	6
Landscape Sensitivity	1. Proximate to Sensitive Landscape 2. Greater than 1km 3. Greater than 5km	3	2	6
Ecological Designations Score	1. Adjacent to designated site 2. >1km from designated sites 3. >5km from designated sites	3	2	6
Archaeological Designations Score	1.Adjacent to archaeology sites 2. >1km from archaeology sites 3. >5km from archaeology sites	3	1	3
Access to Gas Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	1	3	3
Access to Electricity Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	1	1	1
Sensitive Receptors	1. Less than 250m. 2. less than 1km. 3. Greater than 1 km	1	3	3
Available Land Size	1. 1- 2ha 2. 2-3ha 3. Greater than 4ha	1	3	3

Land Availability	1. Not for Sale or Lease 2. Available for Sale or Lease but financially unviable 3. Owned or for sale/lease at	2	3	6
Landscape and Visual Amenity	1. Site is elevated or exposed 2. Site has existing cover and partial views 3. Site is hidden and with little or no receptors overlooking the site.	1	2	2
Proximity to Suitable Water Course Or Sewer	1. Greater than 1km 2. Less than 1km. 3. Immediately adjacent or on site	3	3	9
Proximity to Drinking Water Source/Aquifer	1. Less than 250m. 2. less than 1km. 3. Greater than 1km	3	1	3
Existing Topography	1. Undulating or severe level changes 2. Moderate level changes that can be engineered out. 3. Relatively flat and level.	1	2	2
Flood Risk	1. In a Flood Risk Zone 3. Outside Flood Risk Zone	1	3	3
Total Ranked Score				**83**

Site 3: Site-Specific Selection Criteria and Assessment: Potential Investment Land, (Agricultural Land) Ballinabarney, Wicklow Town, Co. Wicklow

Criteria	Scoring	Score	Weighting	Total Score
Transport Network and Access	1. Greater than 5km from Regional Roads, 2. 1 - 5km km from Regional Road 3. Less than 1km from Regional Road. 4. Immediately adjacent to major source of feedstock allowing for transport internally.	3	3	9
Proximity to Feedstock Supply	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km 4. Immediately adjacent to major source of feedstock.	2	3	6
Proximity to Biobased Fertiliser Receivers	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km	2	3	6
Existing Land Use	1. Urban or greenfield 2. Rural Brownfield, 3. Zoned Industrial	2	2	4
Landscape Sensitivity	1. Proximate to Sensitive Landscape 2. Greater than 1km 3. Greater than 5km	3	2	6
Ecological Designations Score	1. Adjacent to designated site 2. >1km from designated sites 3. >5km from designated sites	3	2	6
Archaeological Designations Score	1.Adjacent to archaeology sites 2. >1km from archaeology sites 3. >5km from archaeology sites	2	1	2
Access to Gas Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	1	3	3
Access to Electricity Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	2	1	2
Sensitive Receptors	1. Less than 250m. 2. less than 1km. 3. Greater than 1 km	1	3	3
Available Land Size	1. 1- 2ha 2. 2-3ha 3. Greater than 4ha	3	3	9

Land Availability	1. Not for Sale or Lease 2. Available for Sale or Lease but financially unviable 3. Owned or for sale/lease at	2	3	6
Landscape and Visual Amenity	1. Site is elevated or exposed 2. Site has existing cover and partial views 3. Site is hidden and with little or no receptors overlooking the site.	2	2	4
Proximity to Suitable Water Course Or Sewer	1. Greater than 1km 2. Less than 1km. 3. Immediately adjacent or on site	1	3	3
Proximity to Drinking Water Source/Aquifer	1. Less than 250m. 2. less than 1km. 3. Greater than 1km	3	1	3
Existing Topography	1. Undulating or severe level changes 2. Moderate level changes that can be engineered out. 3. Relatively flat and level.	3	2	6
Flood Risk	1. In a Flood Risk Zone 3. Outside Flood Risk Zone	3	3	9
Total Ranked Score				**87**

Site 4: Site-Specific Selection Criteria and Assessment: Avoca River Business Park, Co. Wicklow

Criteria	Scoring	Score	Weighting	Total Score
Transport Network and Access	1. Greater than 5km from Regional Roads, 2. 1 - 5km km from Regional Road 3. Less than 1km from Regional Road. 4. Immediately adjacent to major source of feedstock allowing for transport internally.	2	3	6
Proximity to Feedstock Supply	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km 4. Immediately adjacent to major source of feedstock.	2	3	6
Proximity to Biobased Fertiliser Receivers	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km	2	3	6
Existing Land Use	1. Urban or greenfield 2. Rural Brownfield, 3. Zoned Industrial	3	2	6
Landscape Sensitivity	1. Proximate to Sensitive Landscape 2. Greater than 1km 3. Greater than 5km	2	2	6
Ecological Designations Score	1. Adjacent to designated site 2. >1km from designated sites 3. >5km from designated sites	3	2	6
Archaeological Designations Score	1.Adjacent to archaeology sites 2. >1km from archaeology sites 3. >5km from archaeology sites	3	1	3
Access to Gas Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	1	3	3
Access to Electricity Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	3	1	3
Sensitive Receptors	1. Less than 250m. 2. less than 1km. 3. Greater than 1 km	2	3	6
Available Land Size	1. 1- 2ha 2. 2-3ha 3. Greater than 4ha	3	3	9

Land Availability	1. Not for Sale or Lease 2. Available for Sale or Lease but financially unviable 3. Owned or for sale/lease at	3	3	9
Landscape and Visual Amenity	1. Site is elevated or exposed 2. Site has existing cover and partial views 3. Site is hidden and with little or no receptors overlooking the site.	2	2	4
Proximity to Suitable Water Course Or Sewer	1. Greater than 1km 2. Less than 1km. 3. Immediately adjacent or on site	3	3	9
Proximity to Drinking Water Source/Aquifer	1. Less than 250m. 2. less than 1km. 3. Greater than 1km	3	1	3
Existing Topography	1. Undulating or severe level changes 2. Moderate level changes that can be engineered out. 3. Relatively flat and level.	3	2	6
Flood Risk	1. In a Flood Risk Zone 3. Outside Flood Risk Zone	3	3	9
Total Ranked Score				**91**

Site 5: Site-Specific Selection Criteria and Assessment: Kish Business Park, Co. Wicklow

Criteria	Scoring	Score	Weighting	Total Score
Transport Network and Access	1. Greater than 5km from Regional Roads, 2. 1 - 5km km from Regional Road 3. Less than 1km from Regional Road. 4. Immediately adjacent to major source of feedstock allowing for transport internally.	3	3	9
Proximity to Feedstock Supply	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km 4. Immediately adjacent to major source of feedstock.	3	3	9
Proximity to Biobased Fertiliser Receivers	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km	3	3	9
Existing Land Use	1. Urban or greenfield 2. Rural Brownfield, 3. Zoned Industrial	3	2	6
Landscape Sensitivity	1. Proximate to Sensitive Landscape 2. Greater than 1km 3. Greater than 5km	3	2	6
Ecological Designations Score	1. Adjacent to designated site 2. >1km from designated sites 3. >5km from designated sites	2	2	4
Archaeological Designations Score	1.Adjacent to archaeology sites 2. >1km from archaeology sites 3. >5km from archaeology sites	3	1	3
Access to Gas Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	2	3	6
Access to Electricity Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	3	1	3
Sensitive Receptors	1. Less than 250m. 2. less than 1km. 3. Greater than 1 km	1	3	3
Available Land Size	1. 1- 2ha 2. 2-3ha 3. Greater than 4ha	1	3	3

Land Availability	1. Not for Sale or Lease 2. Available for Sale or Lease but financially unviable 3. Owned or for sale/lease at	1	3	3
Landscape and Visual Amenity	1. Site is elevated or exposed 2. Site has existing cover and partial views 3. Site is hidden and with little or no receptors overlooking the site.	1	2	2
Proximity to Suitable Water Course Or Sewer	1. Greater than 1km 2. Less than 1km. 3. Immediately adjacent or on site	3	3	9
Proximity to Drinking Water Source/Aquifer	1. Less than 250m. 2. less than 1km. 3. Greater than 1km	3	1	3
Existing Topography	1. Undulating or severe level changes 2. Moderate level changes that can be engineered out. 3. Relatively flat and level.	3	2	6
Flood Risk	1. In a Flood Risk Zone 3. Outside Flood Risk Zone	3	3	9
Total Ranked Score				**93**

Site 6: Site-Specific Selection Criteria and Assessment: IDA Business Park, Arklow Co. Wicklow

Criteria	Scoring	Score	Weighting	Total Score
Transport Network and Access	1. Greater than 5km from Regional Roads, 2. 1 - 5km km from Regional Road 3. Less than 1km from Regional Road. 4. Immediately adjacent to major source of feedstock allowing for transport internally.	3	3	9
Proximity to Feedstock Supply	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km 4. Immediately adjacent to major source of feedstock.	2	3	6
Proximity to Biobased Fertiliser Receivers	1. 80% available >10km 2. 80% available within 10km 3. 80% Available within 5 km	2	3	6
Existing Land Use	1. Urban or greenfield 2. Rural Brownfield, 3. Zoned Industrial	3	2	6
Landscape Sensitivity	1. Proximate to Sensitive Landscape 2. Greater than 1km 3. Greater than 5km	3	2	6
Ecological Designations Score	1. Adjacent to designated site 2. >1km from designated sites 3. >5km from designated sites	2	2	4
Archaeological Designations Score	1.Adjacent to archaeology sites 2. >1km from archaeology sites 3. >5km from archaeology sites	1	1	1
Access to Gas Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	3	3	9
Access to Electricity Grid	1. Greater than 5km, 2. 1-5km, 3. <1km	3	1	3
Sensitive Receptors	1. Less than 250m. 2. less than 1km. 3. Greater than 1 km	1	3	3
Available Land Size	1. 1- 2ha 2. 2-3ha 3. Greater than 4ha	1	3	3

Land Availability	1. Not for Sale or Lease 2. Available for Sale or Lease but financially unviable 3. Owned or for sale/lease at	2	3	6
Landscape and Visual Amenity	1. Site is elevated or exposed 2. Site has existing cover and partial views 3. Site is hidden and with little or no receptors overlooking the site.	1	2	2
Proximity to Suitable Water Course Or Sewer	1. Greater than 1km 2. Less than 1km. 3. Immediately adjacent or on site	3	3	9
Proximity to Drinking Water Source/Aquifer	1. Less than 250m. 2. less than 1km. 3. Greater than 1km	3	1	3
Existing Topography	1. Undulating or severe level changes 2. Moderate level changes that can be engineered out. 3. Relatively flat and level.	3	2	6
Flood Risk	1. In a Flood Risk Zone 3. Outside Flood Risk Zone	3	3	9
Total Ranked Score				**91**