Comhairle Contae Dhún na nGall
Donegal County Council

www.ccdhunnangall.ie www.donegalcoco.ie

Your Ref: P1004-01 Our Ref: 13/50869

14/11/2014

Environmental Protection Agency
PO Box 3000
Johnstown Castle Estate
Co. Wexford

Re: EPA Notification under Section 87(1E) (a) of the EPA Act 1992(as amended)

A Chara

I wish to acknowledge receipt of correspondence from you dated the 28th ult advising that a licence application had been lodged by Glenmore Biogas Ltd in respect of their proposed facility at Glenmore Estate, Aghaveagh, Ballybofey, Co. Donegal. I am to advise that planning permission was granted for this development on the 18/8/2014 under planning reference 13/51569, a copy of the council's decision is attached hereto. I have today forwarded you the EIS by email and trust that this is satisfactory.

Mise le meas

A Melley

Anne Melley
Planning

Cuir freagra chuig: Áras an Chontae, Leifear, Contae Dhún na nGall, Éire | **Please reply to:** County House, Lifford, Co. Donegal, Ireland

Guthán/Tel: 074 9153900 | Facs/Fax: 074 9172812 | Ríomhphost/Email: info@donegalcoco.ie

COUNCIL OF THE DONEGAL COUNTY HEALTH DISTRICT

PLANNING AND DEVELOPMENT ACTS, 2000 - 2014

NOTIFICATION OF FINAL GRANT

TO: GLENMORE ESTATE AGHAVEAGH NW LTD
C/O MICHAEL BURROUGHS ASSOCIATES
33 SHORE ROAD
HOLYWOOD
CO. DOWN
BT18 9HX

Planning Register Number: 13/51569

Valid Application Receipt Date: 11/12/2013

Further Information Received Date: 13/03/2014

In pursuance of the powers conferred upon them by the above-mentioned Acts, Donegal County Council have by Order dated 10/07/2014 GRANTED PERMISSION to the above named, for the development of land, namely:-

DEVELOPMENT OF A COMMERCIAL CENTRALISED ANEROBIC DIGESTER FOR THE PRODUCTION OF RENEWABLE ENERGY AND FERTILISER INVOLVING THE CONSTRUCTION OF FOUR PRIMARY DIGESTERS WITH COLLECTION DOMES, A CO-JOINING PUMP ROOM AND OTHER STRUCTURES ASSOCIATED WITH THE OPERATION OF AN ANEROBIC DIGESTER SYSTEM INCLUDING THE FOLLOWING:TWO FEED HOPPERS, PRE PIT,CHP BUILDING, GAS COMPRESSION & CO2 BUILDING, FLARE AND BIOGAS PURIFICATION & BOTTLING UNIT. WORKS SHALL INCLUDE THE PROVISION OF AN EARTH BUND, CONCRETE APRON, ALL DRAINAGE, ALL OTHER ASSOCIATED SITE WORKS; IMPROVED SIGHT LINES AT THE ENTRANCE TO THE SITE FROM THE R253 ROAD INVOLVING ALTERATION OF THE LEVELS OF THE R253 ROAD; TWO PASSING BAYS ON THE R253 ROAD BETWEEN ITS JUNCTION WITH THE R252 ROAD AND THE ENTRANCE TO THE SITE; AND THE WIDENING OF THE LANEWAY AT AGHAVEAGH BALLYBOFEY LIFFORD PO IN ACCORDANCE WITH THE PLANS SUBMITTED WITH THE APPLICATION.

Subject to the 17 conditions set out in the Schedule attached.

Signed on behalf of Donegal County Council.
County House
LIFFORD
(Telephone 074 - 9153900)

for **A/SENIOR EXECUTIVE PLANNER**
Date: 18th August, 2014

Ref. No. 13/51569-Chief Executive's Order No. 2014PH1027

SCHEDULE

1.a. The development shall be carried out strictly in accordance with the plans, particulars, details and specifications lodged in support of the application and as amended by the details submitted to the Planning Authority on 13/03/14, except where altered or amended by conditions in this permission.

b. Cladding on all buildings shall be goosewing grey unless otherwise agreed with the Planning Authority in writing.

Reason: In order to define the terms of the permission and to cater for orderly development.

2. a. A maximum of 90,000 tonnes per annum of raw materials shall be treated in the anaerobic digesters.

b. A maximum of 20 tonnes of biogas shall be stored on site at any given time (inclusive of gases within tank domes and gases being stored prior to transportation off-site).

Reason: To define the terms of the permission.

3. a. Prior to commencement of any other works within the site, the applicants / persons entitled to take benefit of the permission shall remove the existing 'hump' on Regional Road R253 (as detailed on drawing No. 113281-005, submitted to the Planning Authority on 11/12/13) by -

(i) Excavating the existing roadway to a minimum of 450mm below proposed finished road level,

(ii) Lowering all existing services or renewing same in conjunction with relevant service providers,

(iii) Importing 300mm depth of '150mm crusher run' material, followed by a layer of CL806 material, followed by a double surface dressing with 60 PSV declared surface dressing chips 14mm and 6mm. All layers shall be adequately compacted and works shall be supervised by the Roads Dept. of Donegal County Council.

b. Prior to commencement of any other works within the site, the applicants / persons entitled to take benefit of the permission shall raise the level of the public road by approximately 1 metre at the junction with the development access road (as detailed on drawing No. 113281-005, submitted to the Planning Authority on 11/12/13) by -

(i) Filling the existing roadway using even layers,

(ii) Importing up to 1000mm depth of '150 crusher run' material in layers not exceeding 300mm depth, followed by a 150mm layer of CL806 material, followed by a double surface dressing with 60 PSV declared surface dressing chips 14mm and 6mm. All layers shall be adequately compacted and works shall be supervised by the Roads Dept. of Donegal County Council.

c. A passing bay shall be installed / constructed in the location indicated on drawing No. 113281-005, submitted to the Planning Authority on 11/12/13. The passing bay shall be 30m in length and the public road width shall be a minimum of 6m along the length of the passing bay.

Continuation of Schedule – Order No. 2014PH1027

d. Vehicular access to the development shall be solely via the 'Development Access Road' contained within the site boundaries as outlined in red on the site location plan submitted to the Planning Authority on 11/12/13.

e. The Development Access Road shall be a minimum of 5.5m wide for a distance of 50m south of the Regional Road.

f. Drainage channels shall be installed across the Development Access Road in order to prevent the discharge of water onto the public road.

g. No surface water from site shall be permitted to discharge to public road and applicant shall take steps to ensure that no public road water discharges onto site.

h. Passing bays shall be installed at appropriate intervals along the Development Access Road to allow for the safe passing of vehicles.

i. The Development Access Road shall be surfaced using appropriate road surfacing materials.

j. Vehicle wheels shall be cleaned prior to exiting onto public road so as to ensure no material deposits on public road.

k. Prior to commencement of development, precise details for compliance with and phasing of the works required by Condition 3 (a. – i. inclusive) shall be agreed in writing with the Planning Authority, in consultation with the Roads Dept. of Donegal County Council. Thereafter, the development shall proceed in strict accordance with the agreed details and all road works and alterations to the R253 shall be carried out in accordance with the NRA Environmental Construction Guidelines unless otherwise agreed.

Reason: In the interests of traffic safety.

4. Prior to commencement of any works within the site, permanent visibility splays of 160 metres shall be provided in each direction at a point 3 metres back from road edge at location of vehicular entrance. Visibility in the vertical plane shall be measured from a driver's eye- height of 1.05 metres and 2 metres positioned at the setback distance in the direct access to an object height of between 0.26 metres and 1.05 metres. Vision Splays to be calculated and provided as per Figure 7 of Section 10.2.10 of Chapter 10 (Development and Technical Standards), County Donegal Development Plan 2012 – 2018, as varied.

Reason: In the interests of traffic safety.

5.a. All mitigation measures contained in the Environmental Impact Statement submitted to the Planning Authority on 11/12/13 (and as amended by the addendum to the EIS submitted on 13/03/14) shall be implemented in full.

b. Prior to the commencement of development a copy of the 'hazard and operability study' (HAZOP) together with a copy of the construction phase accident plan shall be submitted for the records of the Planning Authority.

Continuation of Schedule – Order No. 2014PH1027

c. Prior to first use or commissioning of the development herein permitted details of the operational phase Environmental Management System (EMS) shall be confirmed to the Planning Authority in writing.

Reason: **In the interests of environmental protection.**

6. Prior to commencement of development, a detailed Construction Management Plan shall be submitted for the written agreement of the Planning Authority. Thereafter, the development shall proceed in accordance with the agreed details.

Reason: **To ensure the satisfactory completion of the development.**

7. Prior to commencement of development, precise details in relation to the proposed surface water drainage system shall be agreed in writing with the Planning Authority. Details shall include a site plan detailing the location of the drainage system and proposed discharge points and the location of monitoring points, sediment traps, SuDS features and interceptors. Thereafter, the development shall proceed strictly in accordance with the agreed details.

Reason: **In the interests of environmental protection and pollution prevention.**

8. Any foul water drains shall be designed to carry contaminated wastewater safely to a storage lagoon, treatment system or sewage works for treatment.

Reason: **To prevent pollution.**

9.a Sludge and / or polluting materials shall not be stored –

- within 50 metres of a spring, well or borehole;
- within 10 metres of a watercourse;
- in locations where any spillage could enter open drains, loose fitting manhole covers or soak into the ground where it could pollute groundwater;
- in locations where a spill could run over hard ground to enter a watercourse or soak into the ground where it could pollute groundwater;
- in locations where tank vent pipe outlets can't be seen from the filling point.

Reason: **To prevent pollution of surface water**

10. a Site preparation and construction shall adhere to best practice and shall conform to the Inland Fisheries Ireland 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' (www.fisheriesireland.ie, see section relating to Construction Stage).

b. All effluents and soiled water from the development shall be recycled/contained within the facility and shall not be discharged into any stream/drainage channel that flows into the River Finn.

Continuation of Schedule – Order No. 2014PH1027

c. Prior to commencement of development, detailed proposals for the collection and discharge of uncontaminated surface waters from roof, buildings and clean yard water via serviced oil and sediment interceptors traps to an adequate outfall shall be submitted to the planning authority for written approval.

d. Any bulk fuel storage tanks shall be properly bunded with a bund capacity of at least 110% of that of the fuel tank.

e. Secondary containment shall be provided for all storage tanks within the site.

f. All sludges, influent and wastes shall be stored in designated areas that are isolated from surface drains and bunded to contain any spillages.

g. Post construction surface water run-off from hardcore/concreted/tarmacadum areas shall be directed into a soakpit. If soakpit disposal is not viable/practicable, then surface water run-off from these areas shall be treated via serviced sediment and oil interceptor traps, prior to discharge into any stream/drainage channel that flows into the River Finn

Reason: **To prevent pollution and protect the integrity of the River Finn Special Area of Conservation.**

11.a. Noise levels as a result of the development hereby permitted, at any site boundary, shall not -

(i.) Contain any pure tones.

(ii.) Exceed the background noise level by 5dB(A) or exceed 55dB(A) by day or 45dB(A) by night, whichever is the lesser.

b. Within 3 months of commencement of operation of the facility hereby permitted the applicants or person/s entitled to take benefit of the permission shall carry out a noise survey and submit the results of the survey to the Planning Authority. In the event that the requirements of Condition 11(a.) above are not being met, remedial works shall be carried out within a further 3 months to address any identified issues and a further noise survey shall be carried out to confirm compliance with the required standards.

Reason: **To preserve the amenities of the area.**

12. The earthen bund hereby permitted shall be constructed prior to the commencement of construction of the anaerobic digesters, biogas bottling plant and CHP Building.

Reason: **In the interest of orderly development and the visual amenities of the area.**

13. Prior to commencement of development a detailed landscaping scheme shall be submitted to the Planning Authority for written agreement and thereafter any such scheme as may be considered acceptable shall be implemented within first planting season following commencement of development. Said scheme shall include substantial semi-mature broadleaved trees native to the area including planting of the earthen bund. Any trees dying within subsequent three years shall be replaced. This scheme shall include details of all existing trees and hedgerows on the site, specifying those proposed for retention, together with measures for their protection during the period in which the development is carried out.

Reason: **In the Interests of the visual and environmental amenities of the area.**

14. An annual report on the operation of the facility hereby permitted shall be submitted to the Planning Authority. The content of this report and date of submission shall be subject to the written agreement of the planning authority prior to the commencement of works on site and shall include, inter alia, the following;

(a) Details of the source of all associated wastes and the final disposal areas.
(b) The volumes of raw materials treated in the anaerobic digester in the previous 12 months or shorter period as appropriate.
(c) The volume of digestate produced and stored on site in the previous 12 months or shorter period as appropriate.
(d) The volume / quantity of gas produced / stored on site in the previous 12 months or shorter period as appropriate.

Reason: **In the interest of orderly development, of public health and to ensure that adequate storage facilities area available on site for the annual inputs and outputs to the system.**

15.(a) The applicants or person/s entitled to take benefit of the permission shall engage the services of a suitably qualified archaeologist (licensed under the National Monuments Acts 1930–2004) to carry out pre-development testing at the site. No sub-surface work shall be undertaken in the absence of the archaeologist without his/her express consent.

(b) The archaeologist shall notify the Department of Arts, Heritage and the Gaeltacht in writing at least four weeks prior to the commencement of site preparations. This will allow the archaeologist sufficient time to obtain a licence to carry out the work.

(c) The archaeologist shall carry out any relevant documentary research and may excavate test trenches at locations chosen by the archaeologist, having consulted the proposed development plans.

(d) Having completed the work, the archaeologist shall submit a written report to the Planning Authority and to the Department of Arts, Heritage and the Gaeltacht.

(e) Where archaeological material is shown to be present, avoidance, preservation in situ, preservation by record (excavation) and/or monitoring may be required (the Department of Arts, Heritage and the Gaeltacht will advise the Applicant/Developer with regard to these matters).

(f) No site preparation or construction work shall be carried out until after the archaeologist's report has been submitted and permission to proceed has been received in writing from the Planning Authority in consultation with the Department of Arts, Heritage and the Gaeltacht

Reason: **In the Interests of preserving the archaeological heritage of the area.**

Continuation of Schedule – Order No. 2014PH1027

16. Before any part of the development herein approved is commenced the developer shall provide adequate security to the Council to ensure the adequate reinstatement of the public road network in the vicinity of the site in accordance with the requirements of Condition No.3.a. and 3.b, in the form of:

(a) A Bond of a Banking or Insurance Company acceptable to the Council in an approved form and which post dates the expiration of the permission by two (2) years; or

(b) A Cash Deposit; or

(c) Such other security as the Council may approve - in the sum of € 8000.

Reason: **To ensure the satisfactory reinstatement of the public road network in the vicinity of the site following construction of the development.**

17. The applicant (or person at the relevant time entitled to the benefit of the permission) shall pay a contribution in respect of public infrastructure and facilities benefiting development in the area of the Planning Authority that is already provided or is intended will be provided by the Authority. The amount of the contribution will be as set out below and is determined in accordance with the "Donegal County Council Development Contribution Scheme 2008 - 2012" (made under Section 48 of the Planning and Development Act, 2000). The total contribution and breakdown of same in respect of the different classes of public infrastructure and facilities provided/to be provided by the Authority are –

Roads & Marine	€ 12,942.02
TOTAL:	€ 12,942.02

The above charges shall be index linked from 1st March each year following imposition of the levy in accordance with the Wholesale Price Index for Building and Construction published by the Central Statistics Office.

The total contribution shall be paid to the Council prior to commencement of the development unless the Council have agreed in writing beforehand to facilitate phased payment of the contributions in which event as part of any such agreement the Council may require the giving of security to ensure payment.

Reason: **To facilitate provision of capital works.**

Continuation of Schedule – Order No. 2014PH1027

ADVICE TO APPLICANT

Duration of Permission

The permission to be issued (hereinafter referred to as "the permission") will cease to have effect in five years from the date of issue as regards any part of the development **not completed** by that date.

No works can commence on foot of "A Notification of Decision" on an application.

The development is only authorised when a "Notification of Final Grant" is issued.

The planning legislation currently provides that where the development has either (i) not been completed but substantial works have been carried out pursuant to "the permission" or (ii) not commenced and there were considerations of a commercial, economic or technical nature beyond the control of the applicant which substantially militated against either the commencement of development or the carrying out of substantial works pursuant to "the permission" during the said five years, an application to "extend" "the permission" may be made. Such application shall not be made earlier than one year before the expiration of "the permission".

Road Opening

Permission for road openings associated with such connections must also be separately approved by the Council (as appropriate) prior to the commencement of any works on the opening of road, verge or footpath for the purpose of making such connections. (Separate fees are payable).

General

Developers are advised that on implementation, the use of the facility hereby approved must comply with the European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2010 (SI No.610 of 2010) and should have regard to relevant guidance contained within any current Rural Environmental Protection Scheme.

Developers are further advised that it will be necessary to apply for a fire safety certificate.

GLENMORE ESTATE AGHAVEAGH NW LTD

PLANNING APPLICATION FOR ANAEROBIC DIGESTER AT AGHAVEAGH, BALLYBOFEY, COUNTY DONEGAL

ENVIRONMENTAL IMPACT STATEMENT

DECEMBER 2013

Michael Burroughs Associates
33 Shore Road
Holywood
County Down
BT18 9HX

t: 028 9042 1011
f: 028 9042 5123
e: info@mbaplanning.com
w: www.mbaplanning.com

michael burroughs associates
PLANNING, DEVELOPMENT & LICENSING CONSULTANTS

CONTENTS

NON-TECHNICAL SUMMARY

Method statement

S1. This Environmental Impact Statement ('EIS') is submitted with a planning application on behalf of Glenmore Estate Aghaveagh NW Ltd for permission to develop a commercial centralised anaerobic digester for the production of renewable energy on lands at Glenmore Estate, Aghaveagh, Ballybofey, County Donegal.

S2. A scoping study was undertaken to ascertain what environmental factors have the potential to be significantly affected by the proposal. It was found to have a negligible impact in terms of the following factors and so these have not been assessed in this EIS:

- material assets, including the architectural, archaeological and cultural heritage;
- flora and fauna;
- landscape and visual impact;
- soils and the local water environment; and
- climatic factors.

S3. The following factors are assessed in this EIS:

- community and social effects (in Chapter 3.0);
- noise (Chapter 5.0);
- odour and air quality (Chapter 6.0); and
- traffic and transport (Chapter 7.0).

S4. The first four chapters of this EIS are as follows:

- Chapter 1 – Method Statement;
- Chapter 2 – Site Description and Planning History;
- Chapter 3 – The Proposed Development (including community and social effects); and
- Chapter 4 – Policy Context.

S5. An outline of the main alternatives studied is set out in Chapter 3.0. Any difficulties in compiling this EIS are noted out in the relevant chapters, as are any interrelationships between the environmental factors assessed.

Site Description and Planning History

S6. The proposal site is located off the R253 road close to the R252 Glenfin Road in the townland of Aghaveagh about 6km west of Ballybofey. The surrounding area is rural with small-scale

farms and single dwellings scattered throughout it. The River Finn is about 1000m to the north of the site.

S7. The site is about 0.72 hectares in area (excluding the access road) and located within the Glenmore Estate beside a cattle shed. It slopes downwards from south to north and has been cleared for development and is no longer in agricultural use.

S8. Access to the site is via a laneway through Glenmore Estate from the R253 road. The access on the R253 is about 230m west of the R253's junction with the R252 Glenfin Road.

S9. Permission has been granted for a number of substantial cattle sheds adjacent the site and for a 60m high wind turbine to the south west of it. Two anaerobic digester applications have already been approved on the site. The most recent was approved in September 2013.

The Proposed Development

S10. Anaerobic digestion ('AD') is the process whereby naturally occurring microorganisms break down biodegradable material in the absence of oxygen. This process is undertaken within enclosed tanks. It produces two renewable products:

- biogas which can be used as a fuel for heating systems or to power a combined heat and power engine to produce electricity; and
- digestate which can be used as a fertiliser or soil conditioner.

S11. AD is a sustainable and cost effective solution for dealing with naturally arising wastes from farms and helps farmers reduce the amount of nitrogen that is applied to their land in order to comply with their obligations under the EU Nitrates Directive. It has many other benefits.

S12. This proposal seeks consent for a commercial centralised anaerobic digestion ('CAD') facility to process up to 90,000 tonnes per annum of farm slurries, grass silage and other naturally occurring agricultural wastes. Some of this feedstock would come from the 335 hectares of land that the Applicant farms and the rest would mostly come from other farms within the local area (approximately a 20-mile radius, subject to contract post planning).

S13. The need for the AD facility arises from the waste produced on these farms. A local Agricultural Consultant has identified that farms within a 20-mile radius of the site produce about 80,000 tonnes per annum of slurry and 60,000 tonnes per annum of grass silage. This is well in excess of the tonnage capacity sought. In addition the Donegal Waste Management Plan states that over 1 million tonnes of agricultural wastes per annum is produced in Donegal. Of these agricultural wastes 680,000tpa, 300,000tpa and 37,000tpa is attributed to cattle slurry, pig slurry and silage wastes respectively.

S14. The need to deal with these wastes in an alternative manner than land disposal/spreading is driven by the EU Nitrates Directive (91/676/ECC). The proposal will support local farmers within the area by helping them ensure compliance with the Nitrates Directive and providing them with cheap, natural fertiliser which can be spread on the land over a longer period in the year than raw slurry which will improve the efficiency of their lands.

S15. The feedstock would be brought to the site by sealed tankers and accepted into a pre-pit before being fed into 4 primary digesters. It would be retained within these for about 63 days and the remaining digestate would be taken away by the same tankers delivering the feedstock.

S16. The biogas would be used to generate electricity to be fed into the grid by two 250kW combined heat and power ('CHP') engines within the proposed CHP building. The biogas would be cleaned before going to the engines in the proposed purification plant to produce a more efficient operation. Surplus biogas would also be cleaned as part of a bottling process and either stored on site or transported off site for utilisation elsewhere.

S17. The proposal also involves a gas flare stack which would only be required in exceptional circumstances when excess biogas which cannot be utilised by the CHP plant is flared to prevent over-pressurisation of the system; and two off feedstock reception hoppers, which are required to guarantee availability in the event that the operating hopper fails.

S18. Improved sight lines would be provided at the development access on the R253 road. Two passing bays would be constructed on the R253 road between the site access and the R253's junction with the R252 Glenfin Road. There would also be minor re-profiling of the R253 road in this location which would improve forward visibility.

S19. The Applicant considered other methods of managing this farm waste but considered AD was the most environmentally and economically sound method. He considered other sites within Glenmore Estate but the proposal site was chosen because an anaerobic digester has already been approved on it; it would have least visual impact; it is in close proximity to the source of the feedstock; and it would have a minimal impact on the amenity of surrounding residents.

Policy Context

S20. There is strong policy support for renewable energy proposals including AD from European to local level. The 2009 Renewable Energy Directive (2009/28/EC) sets a mandatory target of 20% of all energy to come from renewable energy sources by 2020. Ireland has a target of 16% of total energy consumption to come from renewables by 2020. The proposal would

contribute to this. It also contributes to the EU Nitrates Directive (91/676/EEC) and Climate and Energy Package by reducing nitrate rich raw slurries being spread onto farm land and reducing reliance on fossil fuels.

S21. The National Spatial Strategy is supportive of balanced regional development and encourages the alternative use of agricultural wastes for electricity generation. Regional Planning Guidelines promote and support an optimal mix of renewable energy generation within the Region and a move away from fossil-fuel energy production through investment in renewable energy. It supports proposals in line with the Nitrates Directive,

S22. The County Donegal Development Plan 2012-2018 has two main policies relevant to the proposal. Policy E-P-2 seeks to facilitate the appropriate development of renewable energy from a variety of sources in accordance all relevant material considerations and the proper planning and sustainable development of the area. Policy E-P-6 encourages the development of proposals to convert waste to energy, including AD, in the context of other objectives and policies of this Plan.

S23. The starting point for consideration of this proposal is the September 2013 approval for an anaerobic digester. The application proposal is almost identical to it, the main difference being that it seeks consent to process a higher volume of feedstock. No policies preclude this, indeed they actively support such proposals, meaning that the main planning issues are whether the increased tonnage is acceptable in terms of noise, odour, air quality and traffic. This EIS demonstrates that it is.

S24. It is also considered that the need identified for this facility is a material consideration of determining weight.

Noise Impact Assessment

S25. This assesses the noise levels in proximity to the main noise sources on site and the potential impact on the nearest neighbouring residential properties in proximity to the site.

S26. The noise impact assessment and evaluation of the noise impact arising from the proposed development involved the completion of a baseline noise survey, a comparison of the noise impact on the nearest residential receivers against the World Health Organisation (WHO) *Guidelines for Community Noise* and a review of the potential for noise nuisance in accordance with the BS 4142: 1997 *'Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas'*.

S27. The main existing noise sources in proximity to the proposed development site consist of road traffic on the R252 and on the R253. In terms of the noise impact of truck movements to and from the site, there will not be an appreciable increase in traffic volumes in the area due to the operation of the site. There will HGV movements on the access roads to the site but these will be infrequent and will occur during daytime only.

S28. The predicted noise levels at the nearest neighbouring residential properties to the north-west and east due to the operation of the proposed anaerobic digester and CHP plant are in accordance with the WHO *Guidelines for Community Noise* during daytime and night-time.

S29. The BS 4142 assessment indicates that during daytime, the predicted noise levels at the nearest noise sensitive properties do not have the potential to result in complaints being likely from nearby residents.

S30. No site specific noise mitigation measures are deemed necessary. However, as part of an Environmental Improvement Programme for the site, the developer should focus on reducing noise breakout off site where possible and aim to improve noise attenuation measures on the site.

Odour and Air Quality Impact Assessment

S31. The odour impact assessment assesses the odour levels in proximity to the main odour sources on site and the potential impact on the nearest neighbouring residential properties in proximity to the site.

S32. The assessment and evaluation of the odour impact arising from the proposed development involved the identification of odour sources, the identification of odour emission rates, dispersion modelling of odour emissions and a comparison of modelling results with relevant criteria.

S33. There are no odour Emission Limit Values (ELVs) from AD plants and since the facility is not operational, it was not possible to monitor site specific emissions. In the absence of such information, estimations of future releases from the various identified sources had to be made to inform the dispersion model. These were made based on odour monitoring data reported at similar plants.

S34. The aim of the odour impact assessment is to avoid "reasonable cause for annoyance" at sensitive receptors, i.e. to keep within a level of exposure that a high proportion of the exposed population finds "acceptable" on a long-term basis. Based on available technical

guidance documents it is recommended that an odour target value of $C_{98,\ 1\text{-Hour}}$ 3 ou_E/m^3 should be adopted at the nearest sensitive receptors.

S35. The predicted odour concentrations are well below the odour benchmark of 3 ou_E/m^3 at the odour sensitive receiver locations and due to the remoteness of the proposed site it is not anticipated that significant odour impacts will occur at any odour sensitive receiver locations.

S36. Appropriate operational procedures have been recommended which should be enforced on site to prevent potential odour impacts.

S37. There is no potential for air quality impacts in relation to air quality standards as a result of emissions to atmosphere from the proposed CHP engine due to regulatory emission controls, as well as the rural nature of the area of the proposed development site.

Traffic and Transport Assessment

S38. This assessment was carried out in accordance with the NRA's Traffic and Transportation Assessment Guidelines (2007) and makes reference to the Guidelines for Traffic Impact Assessment published by the Institution of Highways and Transportation (1994). It assesses the potential impact of the proposed development on the existing local transport network.

S39. The site would be accessed from the R253 road via a laneway through Glenmore Estate. The access on the R253 road is 230m west of the R253's junction with the R252 Glenfin Road.

S40. Adequate space for staff car parking would be provided on site so as to avoid conflict with delivery vehicles.

S41. The development would generate 9 tankers making a trip in and out plus 1 HGV collecting biogas from the site each day. Due to the limited width of the R253 road, two passing bays would be provided on it between the development access and the R253's junction with the R252 to allow for ease of movement between opposing traffic and eliminate the need to reverse when meeting traffic on the road. These passing bays would be a minimum of 15m long and the road width would be a minimum of 5.5m, allowing vehicles space to pass freely.

S42. Re-profiling of the R253 road would also be undertaken in order to improve forward visibility. This would involve reducing the hump in the road east of the site access by about 1m and raising the level of the road at the site access by about 1m. An improved sight line would also be provided at the development access and the laneway to the site would be widened to 5.5m for the first 15m to allow vehicles to pass safely.

S43. The proposal would provide a significant improvement on the existing roads situation once the proposed passing bays and re-profiling works are completed and the sight lines provided.

1.0 METHOD STATEMENT

Background

1.1 This Environmental Impact Statement ('EIS') is submitted with a planning application to Donegal County Council on behalf of Glenmore Estate Aghaveagh NW Ltd ('the Applicant') for permission to develop a commercial centralised anaerobic digester ('CAD') for the production of renewable energy on lands at Glenmore Estate, Aghaveagh, Ballybofey, County Donegal.

1.2 Glenmore Estate is a substantial agricultural holding located in a rural area south of the River Finn and the R252 Glenfin Road about 6km west of Ballybofey.

1.3 The application site is located within the southeastern portion of the Estate. Substantial agricultural sheds and a wind turbine have been approved adjacent the site by Donegal County Council between 2007 and 2012.

1.4 Permission was granted under reference 11/60299 in July 2012 for an anaerobic digestion facility on the application site subject to conditions stipulating, *inter alia*, that the raw materials to be processed in the digester should be drawn solely from slurry, contaminated bedding and grass produced on the Applicant's landholdings.

1.5 A further permission (reference 13/50869) issued in September 2013 and granted consent for a revised scheme with slightly larger tanks. It was also subject to the above restriction, and another stipulating that a maximum of 20,000 tonnes per annum ('tpa') of raw materials shall be treated in the digesters.

1.6 This application seeks consent to process up to 90,000tpa of feedstock in the digesters. The increased tonnage is proposed to respond to the need identified in the Donegal Waste Management Plan ('DWMP') which states that over 1 million tpa of agricultural waste is being produced in Donegal per annum. In the context of the EU Nitrates Directive (91/676/EEC) it is preferable to recover these wastes to produce renewable energy through anaerobic digestion technology than spread it over the land.

1.7 This proposal responds to this need and the demand echoed by farmers in the local area as set out by the Agricultural Consultant Mark McConnell in his letter at **Appendix 1**.

1.8 A significant portion of the waste will come from the Applicant's farm land and it is anticipated, subject to contract, that the remainder will be sourced from the local area (about a 20 mile

radius). It is reasonable to assume that this will be the case as minimising transportation costs is key to the efficiency of the process.

1.9 Consistent with the previous application there are three by-products of the proposal; electricity, biogas and digestate. This proposal will generate about 2.5MW of electricity which will be sold back to the grid via a substation. The biogas will be captured, cleaned and bottled and sold on for use as a bio-fuel which can be used for heating or for running engines. It is expected that no more than 20 tonnes of biogas will be stored on the site at any one time. The proposal will also produce up to 90,000 tpa of digestate which will be used for fertiliser on the Applicant's land and on the land from the farms which produce the feedstock.

1.10 This is a sustainable waste management solution both in terms of the feedstock and for the farmers producing it.

1.11 With regards to the feedstock the proposed recovery operation provides renewable energy in the form of biogas and electricity which is environmentally preferable to spreading raw slurry on the land. The production of these renewables reduces reliance on fossil fuels and reduces the carbon footprint of the farming practices which provide the feedstock. The benefits of this proposal are, therefore, consistent with the aims of the draft Climate Change Bill 2013.

1.12 The proposal will also ensure livestock manure from these holdings is managed in compliance with their obligation under the Nitrates Directive and the digestate from the proposal will be provided to them as a pathogen free fertiliser to spread on their land which is cheaper and more environmentally friendly than chemical based fertilisers. This will ensure that farms in the area reduce their costs and remain entitled to financial support which is key to their long term viability.

1.13 The support that this proposal will provide for the local farming community is the second type of need which the proposal satisfies.

1.14 The site layout has been slightly re-arranged from that approved under reference 13/50869 but the process and technology are practically identical. The main difference is that there will be slightly more vehicular movements into and out of the site as a result of the higher tonnage capacity. This is considered in Chapter 7.0.

1.15 The application was advertised in the Donegal Democrat on Monday 9th December 2013. The full description of this development proposal is:

A commercial centralised anaerobic digester for the production of renewable energy and fertiliser involving the construction of four primary digesters with collection domes, a co-joining pump room and other structures associated with the operation of an anaerobic digester system including the following: two feed hoppers, pre pit, CHP building, gas compression & CO2 building, flare and biogas purification & bottling unit. Works shall include the provision of: an earth bund; concrete apron; all drainage; all other associated site works; improved sight lines at the entrance to the site from the R253 road involving alteration of the levels of the R253 road; two passing bays on the R253 road between its junction with the R252 road and the entrance to the site; and the widening of the laneway to the site.

Relevant legislative provisions

1.16 Article 94 of the Planning and Development Regulations 2001 (as amended) ('the Regulations') says that an EIS shall contain –

(a) the information specified in paragraph 1 of Schedule 6 of those Regulations;

(b) the information specified in paragraph 2 of Schedule 6 to the extent that –

(i) such information is relevant to a given stage of the consent procedure and to the specific characteristics of the development or type of development concerned and of the environmental features likely to be affected, and

(ii) the person or persons preparing the EIS may reasonably be required to compile such information having regard, among other things, to current knowledge and methods of assessment; and

(c) a summary in non-technical language of the information required under paragraphs (a) and (b).

1.17 Schedule 6 paragraph 1 specifies the following information, which this EIS contains.

(a) A description of the proposed development comprising information on the site, design and size of the proposed development.

(b) A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.

(c) The data required to identify and assess the main effects which the proposed development is likely to have on the environment.

(d) An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment.

1.18 Schedule 6 paragraph 2 says further information is required, by way of explanation or amplification of the information referred to in paragraph 1, on the following matters:-

(a) (i) a description of the physical characteristics of the whole proposed development and the land-use requirements during the construction and operational phases;

(ii) a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;

(iii) an estimate, by type and quantity, of expected residues and emissions (including water, air and soil pollution, noise, vibration, light, heat and radiation) resulting from the operation of the proposed development;

(b) a description of the aspects of the environment likely to be significantly affected by the proposed development, including in particular:

- *human beings, fauna and flora,*
- *soil, water, air, climatic factors and the landscape,*
- *material assets, including the architectural and archaeological heritage, and the cultural heritage,*
- *the inter-relationship between the above factors;*

(c) a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from:

- *the existence of the proposed development,*
- *the use of natural resources,*
- *the emission of pollutants, the creation of nuisances and the elimination of waste, and a description of the forecasting methods used to assess the effects on the environment;*

(d) an indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.

1.19 The legislation is clear that the above information is only required as per Article 94. This means information is only required to be provided to the extent that it is relevant to the specific characteristics of the development and of the environmental features likely to be affected. Consistent with this provision we have undertaken a scoping exercise below to determine what aspects of the environment are likely to be significantly affected by the proposed development and require investigation. Where a likely and significant effect has been identified, the subject of that effect has been considered within this EIS.

Scoping

1.17 Scoping is an important early stage in Environmental Impact Assessment ('EIA'), as it sets the context for the remainder of the process. The purpose of the scoping study is to:

- define the nature/characteristics of the proposal;
- focus the EIA on the environmental issues and determine potentially significant impacts which need attention; and
- identify the extent to which each environmental topic area needs to be investigated.

1.18 The scoping process should therefore identify the important environmental issues that are most likely to be affected, so that all potentially significant effects are taken into account and that only those which are potentially significant are included in the EIS.

1.19 A checklist of environmental issues was used to give the scoping process a more structured approach. This exercise was used with caution as it is recognised that checklists are a useful tool to identify key issues at an early stage for consideration but are not exhaustive. The predicted nature and magnitude of all components of, and actions related to, the proposals were considered against the checklist.

1.20 The significance of issues has been derived from a standardised appraisal system. The significance of issues was determined by a consideration of both the importance or sensitivity of a receptor and the magnitude or scale of the effect on the receptor. The product of the two factors combined is shown in the table below:

Table 1.1 – Scoping Matrix

Importance/Sensitivity of Receptor	Predicted Scale or Magnitude of Effect	Significance	Address in EIS?
Negligible	Negligible	Negligible	N
Negligible	Small	Negligible	N
Negligible	Medium	Very Low	N
Negligible	Large	Low	Y
Low	Negligible	Negligible	N
Low	Small	Very Low	N
Low	Medium	Low	Y
Low	Large	Low to Moderate	Y
Medium	Negligible	Very Low	N
Medium	Small	Low	Y
Medium	Medium	Low to Moderate	Y
Medium	Large	Moderate	Y
High	Negligible	Low	Y
High	Small	Low to Moderate	Y
High	Medium	Moderate	Y
High	Large	High	Y

1.21 The significance of each issue was then able to be classed as negligible, very low, low, low to moderate, moderate or high. Those issues assessed as having a low significance or above were determined as likely to be required to be addressed in the EIS.

1.22 The significance of potential issues follows the concept of the source pathway receptor model. In the context of the scoping report, the magnitude of effect has been considered

through identification of the potential sources of change and pathways to the receptor. Receptors such as humans, surface waters, groundwater and designated sites of importance which may be at risk from the potential sources of change that may affect these entities. The degree of sensitivity to a receptor takes into account the geographical level of importance of receptors such as a designated ecological site or scheduled historic monument and the local setting where a dense population or urban area will have a higher degree of human importance than a rural location.

1.23 The list of environmental issues which have been scoped in advance of the preparation of this EIS is consistent with paragraph 2 of Schedule 6 of the Regulations.

1.24 As a result of scoping the ranking of environmental issues associated with the proposed development were predicted as follows:

Table 1.2 – Results of Scoping

Environmental Issue	Predicted Significance	Scoping Conclusion
Material assets, including the architectural, archaeological and cultural heritage	Negligible	No materials assets including features of architectural, archaeological or cultural heritage are within or abut the site that would be affected by the proposed development. No material assets were identified through the two previous applications for anaerobic digesters at this site. This application requires no significantly different earth works or structures which would result in a different assessment under this application. Consequently no assessment has been carried out as part of this EIS.
Noise	Low	The impact of the development proposal in terms of noise is assessed in Chapter 5.0 of this EIS.
Odour and air quality	Low	The impact of the development proposal in terms of odour and air quality is assessed in Chapter 6.0 of this EIS.
Fauna and Flora	Negligible	We are not aware of any protected species or flora within the vicinity of the site that would be affected by the development proposal. This is unsurprising given that the application site was historically in agricultural use which was been subject to extensive cultivation prior to being cleared. No impact on protected species or flora was identified by Donegal County Council through the previous two applications for anaerobic digesters on this site consistent with this position. This application requires no significantly different earth works or structures which would result in a different assessment under this application.
Landscape and visual impact	Negligible	Application 13/50869 was assessed in the context of the approvals for the very substantial agricultural sheds and wind turbine adjacent the site and found not to have an adverse impact on the visual amenity of the area. This

		proposal's physical characteristics are almost identical to that approved under application 13/50869. Seen in context with the approved developments and behind a planted earthern bund this proposal will not have a significant impact on the visual amenity of the local landscape.
Traffic and Transport	Low	The impact of the development proposal on the local road network is assessed in Chapter 7.0 of this EIS.
Soils and the local water environment	Negligible	There are no watercourses within or adjacent to the application site which require assessment however the proximity of the site to the River Finn has been considered in this scoping exercise. There is no evidence of contamination or flooding in the vicinity of the site that requires assessment. The scheme involves a dished drainage system, interceptors and bunds to catch any potential spills and so there will be minimal scope for pollution of the local water environment. The only difference between this application and the previous AD applications is an increase in tonnage. It is considered that the mitigating works outlined above remain the relevant infrastructure for the purposes of this planning application. These were considered acceptable to the Council and no reason for an alternative assessment, or further consideration, is identified.
Community and social effects	Low-Moderate	The development proposal is predicted to have a low to moderate effect on the population of this rural area in terms of providing farmers with sustainable solutions to wastes produced on farms in the local area and consistency with the Nitrates Directive. It is not considered that a dedicated impact assessment of this position is required but it is commented on further under the need section of Chapter 3.0.
Climatic factors/ other	Negligible	Although it is noted that the proposal is beneficial in reducing the carbon footprint of farming activities in the area and reducing reliance of fossil fuels it is not considered that the proposal would have a significant impact on climatic or any other environmental factors due to its relatively small scale. No other issues have been identified through the previous two planning applications for anaerobic digestors on this site by Donegal County Council consistent with this position.

Report structure

1.25 Having regard to the mandatory matters for inclusion as set out in paragraph 1 of Schedule 6 of the Regulations and the issues identified as potentially significant in Table 1.2 flowing from the provisions of paragraph 2 of Schedule 6, this EIS contains the following chapters:

- Chapter 2.0 – Site Description and Planning History;
- Chapter 3.0 – The Proposed Development;
- Chapter 4.0 – Policy Context;
- Chapter 5.0 – Noise Impact Assessment;

- Chapter 6.0 – Odour & Air Quality Impact Assessment;
- Chapter 7.0 – Traffic and Transport Assessment.

1.26 For most technical chapters the following approach was adopted:

- the current situation is described for the site;
- predictions are made of the likely impact of the proposed development; and
- measures to avoid, reduce or eliminate adverse impacts are outlined.

1.27 An outline of the main alternatives studied by the Applicant and an indication of the main reasons for his choice of proposal and site are set out in Chapter 3.0. Any difficulties in compiling this EIS are identified in the relevant chapters, as are any interrelationships between the environmental factors assessed in this EIS.

Environmental Assessors

1.28 Michael Burroughs Associates have been responsible for co-ordination of the EIS and the production of the Non-Technical Summary, this chapter and the following chapters:

- Chapter 2.0 – Site Description and Planning History;
- Chapter 3.0 – The Proposed Development;
- Chapter 4.0 – Policy Context.

1.29 The remaining chapters have been undertaken by the following specialists:

Chapter	Company/Contact
• Chapter 5.0 – Noise Impact Assessment • Chapter 6.0 – Odour & Air Quality Impact Assessment	Envest Environmental Ltd Innovation in Business Centre, GMIT, Westport Road, Castlebar, Co. Mayo **Tel** (094) 9010111 **Email** info@envest.ie
• Chapter 7.0 – Traffic and Transport Assessment	CST Group Consulting Engineers 1 O'Connell Street, Sligo **Tel** (071) 919 4500 **Email** info@cstgroup.ie

2.0 SITE DESCRIPTION AND PLANNING HISTORY

Site description

General location

2.1 The proposal site is located in the townland of Aghaveagh which is situated along the River Finn half way between Donegal town and Letterkenny, approximately 30km from each. The site is also approximately 30km west of Strabane in the north of Ireland.

2.2 The Twin Towns of Ballybofey and Stranorlar are nearest to the proposal site approximately 6km to the east. With a combined population of 4852, the towns are defined as tier 2 settlements in the County Donegal Development Plan 2012-2018 ('CDDP'), which are key growth centres for population as well as key centres for economic growth. Accordingly, the towns together provide a suitable level of services for the wider area in terms of retail, employment, administrative, education, health and leisure services.

2.3 The proposal site is located a short distance from the R252 Glenfin Road west of Ballybofey. The R252 is a rural road that connects the N56 in western Donegal to the N13/15 corridor in the east of the County (Donegal Town to Letterkenny).

Surrounding Area

2.4 The surrounding area of Aghaveagh is primarily rural and agricultural. Small-scale farms and rural dwellings are most common with some large-scale farming operations also present throughout the Finn Valley. There are a number of rural schools and churches throughout the area. Consistent with this it is identified as a Strong Rural Area in the CDDP.

2.5 The River Finn flows through the townland and is approximately 1000m north of the application site where the R252 crosses it. It is designated a Special Area of Conservation ('SAC').

2.6 No other special development control policies apply to the area. It is outside of the Area of Especially High Scenic Amenity identified in the CDDP.

The Site

2.7 The site is about 0.72ha in area (excluding the access road) and located within lands known as the Glenmore Estate. The site is located within the southwestern area of the Estate adjacent to an existing cattle shed.

2.8 Seven other substantial cattle sheds have been approved to the east and west of the site but have not yet been built. A wind turbine has been approved to its south west and is in the process of being constructed. Details of these permissions are set out below.

2.9 The site slopes downwards from south to north and away from the point of access. It has been cleared for development and is no longer in agricultural use.

2.10 Access to the site is via an existing laneway through the Estate from the R253 road. A portion of the R253 road between the entrance to the estate and the R253's junction with the R252 Glenfin Road has been included within the site boundary because two passing bays and minor alteration of road levels are proposed to facilitate the proposed development. Details of these road works and the proposed development are set out in Chapter 3.0.

Relevant planning history

Agricultural buildings

2.11 Permission **08/60198** granted consent for the following on 1 September 2008 on lands to the east of the application site:

- 3no agricultural slatted cattle sheds;
- 2no roofed silos; and
- a machinery shed and all associated site works.

2.12 The existing cattle shed, site engineering works and planting of the site boundaries were approved under permission **11/60092** in August 2011.

2.13 Permission **12/60039** granted consent for construction of the following in July 2012:

- 4no agricultural slatted cattle sheds;
- 1no dry shed for storage of grain and machinery;
- 1no concrete silage pit;
- 1no roofed dungstead; and
- associated site development works, drainage and concrete aprons.

Wind turbine

2.14 The wind turbine referred to above was approved under application reference **11/60106** in September 2011. This is an 800kW turbine 60m high with a blade diameter of 48m. The turbine site sits on high land approximately 100m south west of the application site. This consent has been implemented and the turbine is in the process of being constructed.

Anaerobic digesters

2.15 The first anaerobic digester permitted on the site was approved under reference number **11/60299** on 15 June 2012 (**Appendix 2**).

2.16 The second scheme was approved in September 2013 under reference number **13/50869** (**Appendix 3**). This was a slightly revised scheme to the first, and was subject to conditions stipulating that the digester's feedstock should be only slurry, contaminated bedding and grass produced on the Applicant's dispersed landholdings; and that a maximum of 20,000tpa of feedstock shall be treated in the digesters.

2.17 In permitting the 2013 application it was accepted that:-

- a centralised anaerobic digestion proposal was acceptable in the Countryside;
- a biogas purification and bottling plant was acceptable in principle to handle the excess gas produced;
- the site could accommodate 4 digestion and storage tanks and two feed hoppers; and
- the additional plant and equipment proposed from the 2011 scheme would not cause unacceptable visual impact;
- there was no significant harmful effect by way of noise or odour on surrounding properties; and
- drainage proposals for the development were acceptable and capable of mitigating any potential harm on the River Finn SAC.

2.18 This is the starting point for consideration of this development proposal. The details of it are set out in the next chapter. It is almost identical to the September 2013 approval in physical terms and in terms of process. The main difference is that consent for processing more tonnage is sought.

3.0 THE PROPOSED DEVELOPMENT

Anaerobic digestion

3.1 Anaerobic digestion ('AD') is the process whereby naturally occurring microorganisms break down biodegradable material in the absence of oxygen. This process is undertaken within enclosed tanks.

3.2 The outputs are the following renewable products:-

- biogas which in this instance is bottled as a fuel for heating systems and is used to power a combined heat and power ('CHP') engine to produce electricity which is sold back to the national grid;
- digestate which can be used as a fertiliser or soil conditioner.

3.3 It is widely recognised that these outputs offer a significant step towards a more sustainable economy for the following reasons:

- it is a cost effective solution for dealing with naturally arising wastes from farms;
- additional income from biogas technologies which produce electricity and fuel is supportive of the long term viability of farm businesses and AD renewable schemes;
- this biogas is carbon neutral and so has the twin benefit of reducing reliance on fossil fuels and is environmentally friendly from a greenhouse gas point of view;
- the nitrogen in AD digestate is more readily available as a plant nutrient than undigested slurry and so it is a more efficient fertiliser;
- the AD process lowers pathogens such as salmonella in the digestate;
- the AD process kills many weed seeds in the digestate reducing the need for herbicides following spreading;
- the AD digestate requires less mixing before spreading which reduces costs associated with spreading;
- AD digestate replaces chemical fertilisers which area produced with the consumption of large amounts of fossil energy; and
- AD digestate can be spread over a long period under the Nitrates Directive.

3.4 The context of the application and detail of the proposal for extracting these benefits is set out below.

The Description of the Proposal

3.5 The proposal is for a commercial CAD plant at lands within the Glenmore Estate, Aghaveagh, approximately 6km west of Ballybofey.

3.6 As outlined in Section 1.0, a higher tonnage than that approved under permission 13/50869 in September 2013 is sought. The reasons for this is to respond to the need identified in the following section.

3.7 The higher tonnage proposed will respond to the need and demand identified for a sustainable waste management solution for agricultural waste and has the twin benefit for farmers in the surrounding area of providing cheap fertiliser which can be spread on the land for longer which is supportive of the local farming community and practices generally.

3.8 The full description of this development proposal is:

A commercial centralised anaerobic digester for the production of renewable energy and fertiliser involving the construction of four primary digesters with collection domes, a co-joining pump room and other structures associated with the operation of an anaerobic digester system including the following: two feed hoppers, pre pit, CHP building, gas compression & CO2 building, flare and biogas purification & bottling unit. Works shall include the provision of: an earth bund; concrete apron; all drainage; all other associated site works; improved sight lines at the entrance to the site from the R253 road involving alteration of the levels of the R253 road; two passing bays on the R253 road between its junction with the R252 road and the entrance to the site; and the widening of the laneway to the site.

3.9 The proposal is shown on the application drawings submitted to Donegal County Council with this EIS.

Need

3.10 The Donegal Waste Management Plan ('DWMP') states that over 1 million tonnes of agricultural wastes per annum is produced in Donegal. This is a hugely significant figure as it represents over 75% of all Donegal's waste arising according to the plan.

3.11 Of these agricultural wastes 680,000tpa, 300,000tpa and 37,000tpa is attributed to cattle slurry, pig slurry and silage wastes respectively.

3.12 The need to deal with these wastes in an alternative manner than land disposal/spreading is driven by the EU Nitrates Directive (91/676/ECC). A full discussion of this is set out in Chapter 4.0 and is not duplicated here other than to say the promotion of alternatives to deal with these large quantities of waste must be prioritised.

3.13 The proposed commercial CAD plant will be fed by about 90,000tpa of farm slurries, grass silage and other naturally occurring wastes arising from agricultural practices. These are the

largest generated agricultural wastes as identified in the DWMP and hence those which should be prioritised for treatment.

3.14 The Applicant has employed an Agricultural Consultant Mark McConnell Consultancy Ltd to assess the need for processing of this feedstock within the immediate area (being that within a 20 mile radius).

3.15 Mark McConnell Consultancy Ltd's response is at **Appendix 1**. It states that within a 20 mile radius he serves about 200 farms which jointly, on average, produce about 400m^3 each, per winter of slurry from cattle, sheep and pigs. This equates to the production of about 80,000tpa of feedstock.

3.16 Mark McConnell Consultancy Ltd also identifies that associated with these farms is about 6000 acres of land which is suitable for the production of silage (60,000tpa) and, or that could be used for spreading the digestate from the proposal on the lands.

3.17 The Applicant's own land equates to about 335ha which is capable of producing about 20,000tpa of silage and slurry itself. The farm unit comprises of:

- Glenmore 82 ha;
- Aghaveagh 84.30 ha;
- Trusk 12.10 ha;
- Drumderrydoonan 9 ha;
- Tievebrack 40.80 ha;
- Derries 19 ha;
- Dooish 18.3 ha;
- Croghanagh 37 ha;
- Altnapaste 10 ha;
- Convoy 14.9 ha;
- Corraine 7.9 ha.

3.18 Given the above, farms within a 20 mile radius of the site have the potential to produce about 160,000tpa of slurries and silages which is far in excess of that proposed. While in reality much of the farmland identified above will remain in crop for traditional foods it is still evident that there is more than adequate feedstock available to feed the proposed facility.

3.19 The final split of feedstock between silage and slurry is a matter that will be subject to contract and can only be identified post-planning.

3.20 In addition to the need identified above the general need to support the agricultural community is relevant. The DWMP recognises that farming makes an important contribution to Donegal's economy but that farms are struggling to compete with larger units across the Province.

3.21 This proposal will support local farmers within the area by ensuring two key advantages:

- Financial provisions stemming from compliance with the Nitrates Directive are not removed due to non-compliance; and
- They will be provided with cheap, natural fertilisers which can be spread on the land over a longer period in the year which will improve the efficiency of their lands.

The Proposal

3.22 The site layout has been slightly re-arranged from that approved under permission 13/50869 in that all tanks and plant will be located further from the site's boundary with the adjoining farm holding.

3.23 This revised proposal involves four primary digesters all with a 27.6m diameter and capacity of 3,886m3 which gives a total primary digester capacity of 15,544m3.

3.24 The feedstock would be delivered to the site in sealed tankers. There would be a pre pit for reception of feedstock, and it would be fed by a hopper into the digesters where it would be retained for about 63 days. This is sufficient time for it to digest and for as much gas as possible to be extracted in order to maximise the revenue stream.

3.25 Digestate would be removed from the digesters by the same tankers delivering the feedstock in order to maximise efficiency, which in turn would minimise traffic movements. The impact of the proposal on the road network is set out in Chapter 7.0.

3.26 It is anticipated that up to 90,000 tonnes of digestate could be produced per year. Digestate is a weed free and nutrient rich pathogen free fertiliser. It is unsurprising that given high energy costs that have driven up the price of artificial fertilisers that there is a demand from the suppliers of the feedstock to spread this digestate over their land.

3.27 The other output from the process is biogas. The biogas would be used to generate electricity through two 250kW CHP engines (500kW total) which would then be fed back into the grid. The engines would be located in a 15.5m x 7.5m CHP building and would be prepared for bio methane at 99% concentration.

3.28 The biogas would be cleaned before going to the CHP engines in the proposed purification plant to produce a more efficient operation. Surplus biogas would also be cleaned as part of a bottling process and either stored on site (to be used for example in the CHP engines to ensure an uninterrupted supply) or transported off site for utilisation elsewhere where it can be used to reduce the planet's overall carbon footprint.

3.29 Biogas is suitable to use as a fuel to drive vehicle engines or provide heating fuel for domestic and commercial properties. The vehicle movements associated with the biogas production are examined in Chapter 7.0.

3.30 The proposal also involves:

- a gas flare stack, which would only be required in exceptional circumstances, when excess biogas which cannot be utilised by the CHP plant is flared to prevent over-pressurisation of the system;
- two off feedstock reception hoppers, which are required to provide a 98% availability guarantee by ensuring that in the event of the operating hopper failing a standby is available immediately.

3.31 A Report by Williams Industrial Services Ltd at **Appendix 4** sets out further details of the proposed development including drainage and safety measures. The mitigation proposed in this report has taken full consideration of the proximity of River Finn SAC. It is not considered that an additional risk arises from this proposal compared to that assessed under the previous AD scheme consented in August 2013.

Road improvements and site access

3.32 The site is accessed from the R253 road via a laneway through Glenmore Estate. The access on the R253 is about 230m from its junction with the R253 Glenfin Road.

3.33 The road works proposed involve provision of two passing bays, re-grading of the vertical profile of the R253 road and provision of improved visibility splays at the development access.

3.34 Two passing bays would be provided on the R253 road between the development access and the R253's junction with the R252 Glenfin Road. These would allow for ease of movement between opposing traffic and eliminate the need to reverse when meeting traffic on the road. Each passing bay would be a minimum length of 15m and the roadwidth would be a minimum of 5.5m.

3.35 The re-profiling of the vertical alignment of the R253 would involve removal of approximately 1m from the top of the hump in the road east of the development access together with raising the road at the development access by approximately 1m. The location of the proposed works to provide passing bays and forward visibility can be found on the drawing by CST Group Consulting Engineers submitted as part of this application. No third party land is required to undertake these works or provide improved visibility splays at the development access. The proposal also involves the widening of the laneway to the site to 5.5m for the 15m from the R253 to allow vehicles to pass safely.

Alternatives

3.36 This section outlines the main alternatives that have been considered in selecting the site, alternative configurations and alternative technology.

Alternative Sites

3.37 In selecting a site the Applicant considered that it would be preferable to have a countryside location for reasons of sustainability and to minimise the number of sensitive receptors which the commercial CAD plant would have the potential to impact on.

3.38 In terms of sustainability it is important to ensure that a centralised facility is located proximate to the source of the waste which is the feedstock for the proposal. In this case a Countryside location is important as it has the ability to be close to the farms which will supply the silage and slurries. This reduces the carbon footprint of the proposal.

3.39 A rural location also ensures that there is minimal disruption to residential amenity because there is less likely to be conflict with adjoining land uses given the more sparse population density prevalent in the countryside and the legitimate expectation of agricultural smells associated within this area generally.

3.40 As set out above Applicant controls about 335 ha of agricultural land. Only alternative sites within this farm holding were considered for the primary reason that feedstock from this land would contribute to almost a quarter of all material feeding into the commercial CAD plant.

3.41 It is, of course, sustainable and practical in such an instance to ensure that where the majority of the stock is coming from is the hub for the proposal. This means that the proposal is consistent with the proximity principle that advocates that waste should be managed as close as possible to the point at which it is generated.

3.42 Two of the largest units within the holding were accordingly considered; Glenmore Estate (82 ha) and Aghaveagh (87 ha) as this is where the majority of the waste would be generated. The two units are indistinguishable in terms of proximity benefits.

3.43 Glenmore Estate was chosen as the location for the development proposal for the following reasons:

(1) it abuts the existing cattle shed and the approved cattle sheds which is where a significant proportion of the feedstock will be produced in addition to the silage cut from the fields of the farm holding;

(2) an anaerobic digester has already been approved on it of a similar character as proposed;

(3) it is one of the furthest locations from existing dwellings (both the Applicant's and neighbouring properties) and thus any impact on their occupants' amenity will be minimised;

(4) it is not in an area of special environmental or amenity value;

(5) it is well screened from the main road by existing vegetation;

(6) it is easily accessible to the regional and national road networks;

(7) it is the furthest site away from the River Finn balanced against topographical factors i.e. there is land further away from River Finn on the holding but it is significantly higher ground that would not be suitable to the proposal in visual terms.

Alternative Configurations

3.44 The configuration of the proposed commercial CAD plant was largely fixed due to the following design parameters:

- Small curtilage within which the plant had to be located – fixed by the previous AD application **13/50869** and other adjoining approved development identified in the planning history section in Chapter 2.0;
- The large space requirements of the tanks; and
- The requirement to retain access through the site to the cattle shed, implemented wind turbine and for other approved development surrounding the site identified in Chapter 2.0.

3.45 However, the configuration was re-designed to deal with the concern regarding the proximity of the emergency flare to third party land on the southern boundary raised as a matter requiring consideration through condition under **13/50869.**

3.46 This alternative design moves the flare to the northern boundary beyond which land is within the Applicant's control and ensures that there is no third party implication arising from the location of the emergency flare.

Alternative Technology

3.47 As identified above, the Applicant and farmers in the surrounding area have a need to deal with slurry and other farm wastes.

3.48 The two other main ways of dealing with farm waste is landfilling or incineration.

3.49 Landfilling is inappropriate as this would be highly inconsistent with the EU Nitrates Directive (91/676/EEC) ('Nitrates Directive') or principles of sustainable waste management which discourage the disposal of waste where there are alternative technologies available for moving it up the waste hierarchy consistent with the EU Waste Framework Directive (2008/98/EC) ('WFD').

3.50 Incineration is not considered to be an appropriate alternative because the Donegal Waste Management Plan (DWMP) does not consider incineration technology as an acceptable method to process waste. As such, it would be futile to propose this method.

3.51 Contrary to both the above positions anaerobic digestion is a tried and tested technology which works well with farm wastes due to their largely homogenous nature and produces efficient renewable resources in terms of heat, electricity, biogas and digestate.

3.52 The digestate is processed so that it is phosphorous free and can be spread on the land as fertiliser in a way that is compliant with the Nitrates Directive. The digestate is a fertiliser which by virtue of processing is no longer considered to be a waste under the WFD. The recovery of agriculture wastes in this manner is considered to be farm more desirable that the disposal of this waste through land spreading.

4.0 PLANNING AND WASTE POLICY CONTEXT

4.1 A strong policy movement supporting renewable energy proposals, including commercial CAD as proposed here, prevails from European level to local policies. This chapter discusses the European policy context and then considers how this is transposed into National Legislation through the two policy arenas of waste management policy and planning policy.

European Policy Context

4.2 There are 3 strands to European Policy passed down from the European Commission ('EC') which is relevant to the proposal: Renewable Energy, Nitrates and Climate Change.

Renewable Energy

4.3 Policy at European level has laid down targets for renewable energy contributions which must be transposed at National level to avoid breaching EU law.

4.4 The 2009 Renewable Energy Directive (2009/28/EC) sets a mandatory target of 20% of all energy to come from renewable energy sources by 2020. Different targets are given to each member state in order to achieve this overall target for Europe.

Nitrates

4.5 The Nitrates Directive (91/676/EEC) of 12 December 1991 has the objective of reducing water pollution caused or induced by nitrates from agricultural sources. In accordance with this Directive each Member State is obliged to put in place a Nitrates Action Programme.

Climate Change

4.6 At European level a comprehensive package of policy measures to reduce greenhouse gas emissions has been initiated through the European Climate Change Programme (ECCP). The ECCP prepares policies and measures as well as an emissions trading scheme to ensure the EU meets its commitments under the Kyoto Protocol.

4.7 In 2007 the European Council committed the European Union to a reduction of 30% of its greenhouse gas emissions by 2020 (compared to 1990) provided that other developed countries commit themselves to comparable emission reductions. In addition, it made a firm independent commitment to achieve at least a 20% reduction, regardless of the actions of other developed countries.

4.8 The Climate and Energy Package, which the European Council adopted in December 2008, provides the legislative foundation for the 2013-2020 EU agenda. Under the terms of the

package, Ireland faces a significant greenhouse gas mitigation challenge, particularly in relation to emissions from those areas of the economy not covered by the EU Emissions Trading Scheme (ETS). In summary, in the sectors of the economy not covered by the ETS, Ireland is required to progress down an annual emissions reduction trajectory from 2013, reaching a point in 2020 where emissions are equivalent to 20% below their level in 2005.

National Legislation

Renewable Energy

4.9 The Renewable Energy Directive is translated into the overall renewables target of 16% of total final consumption to come from renewable energy in 2020 in Ireland. This target will be made up of contributions from renewable energy in electricity (RES-E), renewable energy in transport (RES-T) and renewable energy for heat and cooling (RES-H).

4.10 The proposal contributes to the RES-E target of 40% renewables contribution to gross electricity consumption by 2020 through the CHP element feeding electricity back into the national grid.

4.11 It contributes to the RES-T target of 10% renewables (biofuels & the renewable portion of electricity) contribution to transport energy by 2020 through the provision of bottled biogas, a fuel that can be used for powering vehicle engines.

Nitrates

4.12 The first legislation giving effect to the Nitrates Directive was the European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2009 which was revised in the European Communities (Good Agricultural Practice for the Protection of Waters) Regulations 2010. Local Authorities, under the general supervision of the Environmental Protection Agency, have primary responsibility for the enforcement of these regulations.

4.13 Table 1 & 2 of Schedule 2 of the Regulations lists the criteria as to storage capacity and nutrient management. According to Article 9 (1) the storage capacity for pig manure must exceed the capacity required to store all such livestock manure produced on the holding during a period of 26 weeks. Under sub-article (2) that period is reduced to 20 weeks if (a) the number of pigs on the holding is less than 100, and (b) the holding comprises a sufficient area of land for the application in accordance with these Regulations of all livestock manure produced on the holding.

4.14 According to Article 12 "the capacity of facilities for the storage on a holding of livestock manure produced by cattle shall, subject to Article 13, equal or exceed the capacity required to store all such livestock manure produced on the holding during the period specified in

Schedule 3" (20 weeks). For uncovered storage tanks both calculations of capacity for pig and cattle manure must allow for the average net rainfall during the specified storage period of 38 mm/week in Donegal.

4.15 Adequate storage must also be provided for effluent produced by silage. Article 8 states that the capacity of facilities for the storage on a holding of—

- effluent produced by ensiled forage and other crops shall equal or exceed the capacity specified in Table 5 of Schedule 2, and
- soiled water shall equal or exceed the capacity required to store all soiled water likely to arise on the holding during a period of 10 days.

4.16 Article 19, the application of fertiliser to land is prohibited during certain periods as follows in county Donegal:

a. 15 September to 31 January in the case of the application of chemical fertiliser
b. 15 October to 31 January in the case of the application of organic fertiliser (other than farmyard manure).
c. 1 November to 31 January in the case of the application of farmyard manure.

4.17 Article 20 of the regulations limits the amount of manure that can be spread on land. Sub-article (1) states that "the amount of livestock manure applied in any year to land on a holding, together with that deposited to land by livestock, shall not exceed an amount containing 170 kg of nitrogen per hectare."

4.18 These regulations strictly control the amount of silage and slurries that can be stored on individual farms and when and what can be spread on the land.

Climate Change

4.19 In January 2012 a roadmap was published by the Minister for the Environment, Community and Local Government to bring about national climate policy and legislation. It is envisioned by the end of 2013, the Government will adopt a national policy position on transition to a low-carbon future, including appropriate institutional arrangements, and finalise the introduction of climate legislation.

4.20 The current draft of the Climate Change Bill requires Ministers to have regard to EU targets for 2020 and 2030 when drawing up action plans. Article 4 (1) states that "*it is the duty of the Taoiseach to ensure that the State's net carbon account for the year 2050 is at least 80 per cent lower than the 1990 baseline.*" Article 4 (1)(c) states "*notwithstanding the targets set in each budgetary period the overall target reduction in greenhouse gas emissions by 2020 shall be between 20 per cent to 30 per cent.*"

4.21 The Climate Change Bill is currently in its first stage in the Dail.

4.22 All the above national legislation supports the delivery of renewable energy infrastructure to reduce reliance on fossil fuels and minimise the storage and spreading of harmful levels of nitrates arising from farming practices. This is precisely what the development proposal delivers.

National Planning Policy

4.23 The following sections of the National Spatial Strategy contains the following sections supportive of the development proposal:

- Section 2.6 "How to Strengthen Areas and Places": states that National and international evidence demonstrates that rural areas have a vital contribution to make to the achievement of balanced regional development. This involves utilising and developing the economic resources of rural areas, particularly in agriculture and food, marine, tourism, forestry, **renewable energy**, enterprise and local services, while at the same time capitalising on and drawing strength from vibrant neighbouring urban areas. In this way rural and urban areas are seen as working in partnership, rather than competing with each other;
- Section 3.7 "Key Infrastructure": Other economic infrastructure, such as water services and waste, and social infrastructure, such as schools and hospitals, relate to particular locations and are also needed to support balanced regional development. **Waste management is a particular current priority**. Efficient, effective and cost competitive waste management facilities are essential if industrial and enterprise activity is to thrive and develop in a balanced way across Ireland (p. 56);
- Section 5.5 Environmental Quality: The NSS does not replace or re-state environmental policies generally. However, development arising from the NSS will be implemented within the framework of strong and ambitious policies for the protection of the environment and policies to integrate environmental considerations into sectoral policies. Policy and action in this regard will focus, on limitations on greenhouse gas emissions in the context of the National Climate Change Strategy (2000), measures to support sustainable agriculture, and initiatives to address the impact of transport on the environment (p. 114);
- In economic development, the environment provides a resource base that supports a wide range of activities that includes agriculture, forestry, fishing, aquaculture, mineral use, energy use, industry, services and tourism. For these activities, the aim should be to ensure that the resources are used in sustainable ways that put as much emphasis as possible on their renewability (p. 114);

- The Reinforcing and Co-operating areas are characterised, in general terms, by medium to small towns and rural areas associated with a changing or weak agricultural base. There are, of course, a variety of environmental conditions within these broad areas and the different circumstances call for particular responses. Overall, the following are the prime considerations (p. 115); and
- In areas where there is intensive agriculture, either on poorly drained land (such as Cavan and Monaghan) or on better land (such as North Cork and the Golden Vale), there is a potential for the alternative use of agricultural wastes for electricity generation. This would provide **renewable energy and protect water quality** by reducing the amount of slurry spreading. Biomass and forestry by-products can be promoted as renewable fuel sources. (p. 115).

Regional Planning Policy

4.24 Border Regional Authority: Regional Planning Guidelines 2010 – 2022 make the following statements in general support of schemes such as that proposed and in relation to the above Directives and legislative requirements:

- The Border Region strongly supports the national targets for renewable energy and reducing energy consumption, and seeks to contribute to achieving these targets through the development of sustainable energy policies and practices;
- ***Policy INFP24:*** Promote and support an optimal mix of renewable energy generation within the Region;
- ***Policy INFP25:*** The Border Regional Authority will prepare an Energy Strategy during the life of these Guidelines. Local Authorities shall comply with the proposed integrated regional energy strategy on energy conservation and renewable energy generation;
- ***Policy INFP26:*** Local Authorities should support and promote a move away from fossil-fuel energy production through investment in renewable energy and the creation of more 'green collar jobs'.
    - Re: Bio-Energy – "Local Authorities will support the implementation of the Bioenergy Action Plan for Ireland," but this action plan contains little in the way of concrete policy.
- ***Objective INFO8*** Develop a balanced portfolio of renewable technologies and support Gate 3 projects and associated infrastructure including small renewable and low carbon projects, subject to relevant environmental assessments;
- ***Policy ENVP9:*** alignment between the core objectives of the Water Framework Directive,(including River Basin Management Plans and POMS and Fresh Water Pearl Mussel Sub-Basin Management Plans pertaining to the Border Region) and other related plans such as County Development Plans and related Local Area Plans; Habitat and

Species Protection Plans under the Habitats Directive, Water Services Investment Programme, **Nitrates Action Programme**; and Flood Management Plans."

- *Objective INFO11;* Local Authorities will ensure that strategic goals for reducing energy demand and energy related emissions will contribute in a major way to achieving regional and national climate change targets. It further states in Chapter 6 that Planning Authorities should provide for the integration of climate change considerations, including uncertainties in climate projections, into development plans.
- *Policy ENVP1:* Support the Implementation of National Climate Strategy 2007-2012;
- *Policy ENVP2:* Manage population growth through the proper planning and sustainable development of the Region;
- *Policy ENVP3*: Reduce demands on non – renewable resources and promote the use of sustainable resources.

Local Planning Policy

4.25 The County Donegal Development Plan 2012-2018 sets out the Council's strategic land use objectives and policies for the overall development of the County up to 2018 and beyond to a horizon year of 2022. It is supportive in approach to renewable energy schemes.

4.26 *Policy E-P-2* seeks to facilitate the appropriate development of renewable energy from a variety of sources, including wind, wave, tide, biofuel, biogas, solar power, geothermal, hydro and the storage of water as a renewable kinetic energy resource, in accordance all relevant material considerations and the proper planning and sustainable development of the area.

4.27 *Policy E-P-6* encourages the development of proposals to convert waste to energy, including AD and dry digestion for farm or other wastes and by-products in the context of other objectives and policies of this Plan.

4.28 The above policy is the only mention of AD in the development plan. It states that proposals for AD will be considered favourably subject to other considerations including relevant transport, economic development, landscape, flood risk, and environmental considerations. It is a positively framed policy statement.

4.29 In making the above policy the Council has had regard to the climate change obligations placed upon it and so no further, separate policy relating to this issue arises. For this reason it is also considered that the proposal is compliant with climate change objectives of the Local Plan.

4.30 While local policy does not specifically refer to nitrates, the County Donegal Development Plan 2012-2018 provides operational policy for water protection in *Policy WES-O-5*. This provides wider environmental protection through:

- The protection of surface water and ground water from pollution in accordance with the River Basin Management Plan, Groundwater Protection Scheme and Source Protection Plans for public water supplies;
- The protection against soil contamination;
- Minimising air and noise pollution;
- Supporting remediation of all existing pollution; and importantly
- Ensuring full compliance with relevant National and European Regulations, Statutes and Directives through monitoring and control of relevant activities.

4.31 The proposal contributes towards compliance with the Nitrates Directive by ensuring that nitrate rich farm slurries and manures are handled in an environmentally friendly and sustainable manner. The WIS report at **Appendix 4** assesses the drainage infrastructure and management proposals for the development and sets out clear strategies which ensure that there is appropriate protection of surface, groundwater and soil pollution consistent with the position on the previous application. Chapter 6.0 and 7.0 respectively deal with odour and noise impact specifically. For the reasons set out in these relevant sections the proposal is compliant with these policy provisions.

Planning Policy Conclusion

4.32 As noted in Chapter 2.0, the starting point for consideration of this proposal is the 2013 approval. This proposal is practically the same as it, the main difference being that this proposal would process a larger volume of feedstock.

4.33 None of the above policies preclude this, and indeed, the policies identified above support the development of sustainable waste management and renewable facilities such as this. Having assessed the compliance of the proposal in policy terms it falls to consider the environmental credentials of the scheme. Having regard to the scoping exercise in Chapter 1.0, the main planning issues are whether this increased tonnage is acceptable in terms of noise, odour, air quality and traffic and whether there are other material considerations which have weight in the subsequent decision making.

4.34 The following Chapters demonstrate that the proposal has an acceptable environmental impact. In fact Chapter 7.0 notes that the proposal will significantly improve the existing roads situation when the proposed sight line and passing bays are provided.

4.35 The only other material consideration of weight in the decision making process relevant to the proposal is the issue of need. Chapter 3.0 sets out the need for the proposal in light and demonstrates the benefit to the local farming community. This is a planning consideration of determining weight.

National Waste Management Plan

4.36 National waste management policy is grounded on the Department of the Environment and Local Government's policy statement of September 1998, *"Changing Our Ways"*. This statement firmly bases national policy on the EU Waste Management Hierarchy. In descending order of preference this is: -

- Prevention;
- Minimisation;
- Reuse;
- Recycling;
- Energy Recovery;
- Disposal

4.37 The policy statement was based on, and supported by, EU legislation that requires the reduction in the volume of biodegradable waste disposed to landfill and does not address agricultural wastes per say.

4.38 Nothwithstanding that, paragraph 7.6 is relevant in so far as it states that anaerobic digestion has been used for many years to treat agricultural waste and sewage sludge and that although more expensive plant is required for anaerobic digestion than for composting, it has the advantages of recovering energy and reducing emissions of methane to the atmosphere.

4.39 In light of the above it is possible to state that the proposal, consistent with the waste management hierarchy, moves agricultural wastes up the chain by reusing them in the form of digestate and recovering energy from them to produce biofuel and electricity via a CHP engine and uses technology which is tried and tested to do so.

4.40 In *'Waste Management – Taking Stock and Moving Forward'* 2004, the significant improvement in recycling and recovery rates achieved since 1998 were recognised, but the need for further expansion is emphasised. The statement confirms that Ireland's national policy approach remains *'grounded in the concept of integrated waste management, based on the internationally recognised waste hierarchy, designed to achieve, by 2013, the ambitious targets set out in Changing Our Ways'* and recognises that centralised biological treatment infrastructure for agricultural wastes is required.

4.41 In 2006, the *National Biodegradable Waste Strategy* was published. Its primary focus was to meet the limits set for the quantity of biodegradable municipal waste which is permitted to be sent to landfill under the Landfill Directive (1999/31/EC). As such its relevance is limited to a proposal such as this which deals solely with agricultural wastes.

4.42 Most recently, in 2008, the Department of the Environment, Heritage and Local Government (Department) initiated a review of waste policy. The scope was to identify possible changes to policy at national level that would assist Ireland to move towards a sustainable resource and waste policy, including minimising the creation of waste and self-sufficiency in the reuse and recycling of materials. The review also sought to address how better to implement waste recovery in the context of the application of alternative technologies for waste management, which includes anaerobic digestion.

4.43 The EU Waste Framework Directive 2008/98/EC was introduced to coordinate waste management in the Member States in order to limit the generation of waste and to optimise the organisation of waste treatment and disposal. The Directive also established the first EU wide recycling targets. The Directive was transposed into Irish Law by the European Communities (Waste Directive) Regulations 2011.

4.44 In response, the Department initiated a further review of national waste policy, one of the objectives of which is to provide the necessary measures to ensure that waste undergoes recovery operations in accordance with Articles 4 and 13 of the Directive. The consultation document issued by the Department states that classification of a treatment process as a recovery activity will depend on the level of success in recovering material or producing heat and/or power and examples include anaerobic digestion plants. The proposal is consistent with this.

Regional Waste Management Plan

4.45 The Donegal Waste Management Region has commenced an evaluation of the *Donegal Regional Waste Management Plan* and, consequent on this evaluation, the Plan will be revised or replaced as necessary to comply with the Waste Framework Directive (2008/98/EC) transposed through European Communities (Waste Directive) Regulations 2011.

4.46 In accordance with Section 22 of the Waste Management Act, 1996 and the Waste Management (Planning) Regulations, 1997, Mayo County Council, as Lead Authority in the Connaught-Ulster region, gave notice of the intention to commence the preparation of a New Regional Waste Management Plan on 10 October, 2013.

4.47 Further detail on existing Regional WMP and weight to be given to it will be sought from Donegal County Council. Until such times we are unable to provide comment on this document.

Donegal Waste Management Plan 2006 – 2010

4.48 The Donegal Waste Management Plan ('DWMP') notes that agriculture provides a significant contribution to Donegal's economy both in relation to output and employment and that farming in Donegal is facing significant challenges as it seeks to respond to the reforms within the Common Agricultural Policy (CAP), the Nitrates Directive and to compete with the larger farms in the rest of the country.

4.49 Table 7.1 of the DWMP states that agricultural wastes are by far the largest source of wastes arising in Donegal with over 1 million tonnes per annum occurring. The DWMP goes in paragraph 7.9 to state that 64% of all agricultural wastes are generated from cattle manure and slurries which equates to about 679,656 tpa with the next biggest source being pig slurry accounting for 28% or 297,120 tpa.

4.50 There are no specific policies targeted at minimising agricultural waste but it is sufficient to say that this proposal aims to provide a sustainable solution to the main sources of waste that are produced by the agricultural industry in the region. This is key infrastructure that delivers a sustainable solution to managing these wastes in a robust and environmentally friendly manner.

4.51 It is also important to acknowledge that this proposal in providing a solution to the holding of nitrate rich manures and slurries on individual farms and providing them with cheap, environmentally friendly fertiliser in the form of digestate will encourage the viability of farms and help them respond to the economically difficult context outlined in the DWMP.

Waste Policy Conclusions

4.52 For the reasons set out above the proposal is generally consistent with the thrust of waste management policy in that it moves waste up the hierarchy by reusing and recovering it. It is also consistent where limited specific references are made to agricultural wastes and the benefits of centralised anaerobic digestion in dealing with such wastes.

5.0 NOISE IMPACT ASSESSMENT

Introduction

5.1 This Noise Impact Assessment chapter has been prepared by Envest Environmental Ltd. in support of an application for a commercial Centralised Anaerobic Digester ('CAD') and CHP Plant at Ballybofey, Co. Donegal.

5.2 The noise impact assessment has been prepared to assess the noise levels in proximity to the main noise sources on site and to assess the potential impact on the nearest neighbouring residential properties in proximity to the site.

5.3 The assessment and evaluation of the noise impact arising from the proposed development involved the following methodology:

- Baseline Noise Survey – noise monitoring during daytime in proximity to existing residential receivers in the vicinity of the site. The purpose of the noise monitoring survey was to evaluate the existing noise climate in the area.
- A comparison of the noise impact on the nearest residential receivers against the World Health Organisation (WHO) *Guidelines for Community Noise*.
- A review of the potential for noise nuisance in accordance with the BS 4142: 1997 *'Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas'*.

Methodology

Relevant Guidelines

World Health Organisation *Guidelines for Community Noise:*

5.4 The World Health Organisation (WHO) has published *Guidelines for Community Noise*, the outcome of a WHO expert task force meeting in April 1999. The WHO guidelines recommend a daytime limit of 50 – 55 dB(A) for outdoor living areas. The report states that "*to protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady continuous noise should not exceed 55 dB L_{Aeq} on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB L_{Aeq}. Where it is practical and feasible, the lower outdoor sound level should be considered the maximum desirable sound level for new development*". According to the WHO guidelines noise impacts within dwellings include annoyance, speech interference and sleep disturbance. WHO considers that for bedrooms, the critical effect is sleep disturbance. Guideline values for bedrooms consider that the sleep disturbance criteria should be taken as internal noise levels of 30 dB L_{Aeq} or 45 dB L_{Amax} or external levels of 45 dB L_{Aeq} or 60 dB L_{Amax}. Table 1 shows the WHO Guideline noise levels applicable to residential properties.

Table 1: Guideline values for community noise in specific environments (World Health Organisation, 1999)

Specific Environment	Critical Health Effects	L_{Aeq} (dB)	Time Base	L_{Amax} (dB)
Outdoor Living Area during daytime	Serious Annoyance, daytime & evening Moderate Annoyance, daytime & evening	55 50	16 16	- -
Outside Bedrooms during nighttime	Sleep disturbance, window open (outdoor values)	45	8	60

BS4142: *Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas:*

5.5 The BS4142: *Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas* describes methods for evaluating noise annoyance from factories, industrial premises or fixed installations. BS4142 includes a method for assessing if noise is likely to give rise to complaints. The method is based on measuring existing background noise and comparing this with the actual measured or predicted noise levels from an existing or new source(s). The BS4142 standard allows for the assessment of potential noise impacts from fixed installations at existing or new installations. The potential for complaints in relation to noise from the proposed site operations can be assessed in accordance with BS4142.

5.6 A detailed assessment of potential noise nuisance in accordance with BS4142 requires measurement of background noise and any specific noise from adjacent activities. In terms of BS4142, an increase of 5dB above the background noise level would be of marginal significance. BS4142 considers that complaints are likely where the rating noise (L_{Ar}) from fixed installations exceeds the background (L_{A90}) by 10 dB. The standard allows for the addition of a rating correction to take account of the annoyance potential from intermittent, tonal or impulsive noise. The method for evaluating the likelihood of complaint using this standard is as follows:

- The background noise level, L_{A90}, for the receiver is determined through a noise monitoring survey.
- The specific noise level due to the noise source(s) at the receiver locations is either measured or predicted by calculation and the use of sound power / pressure data.
- The specific noise level is rated according to the following methodology from BS 4142:
    - *Apply a 5dB correction if one or more of the following features occur, or are expected to be present for new or modified noise sources:*
        - *the noise contains a distinguishable, discrete, continuous note (whine, hiss, screech, hum, etc.);*
        - *the noise contains distinct impulses (bangs, clicks, clatters or thumps)*

- *-the noise is irregular enough to attract attention*

- The rating level, $L_{r,T}$, is compared to the measured background noise level at the receiver and the likelihood of annoyance is assessed using the following guidelines from BS4142:
  - *Assess the likelihood of complaints by subtracting the measured background noise level from the rating level. The greater the difference the greater the likelihood of complaints:*
    - *A difference of around +10dB or more indicates that complaints are likely*
    - *A difference of around +5dB is of marginal significance*
    - if the rating level is more than 10dB below the measured background noise level then this is a positive indication that complaints are unlikely.
- The standard should not be used where both the background noise and rating level are low i.e. the background should not be below 30 dB L_{A90} and the rating level should not be below 35 dB.

Existing Environment

5.7 A daytime noise measurement survey was conducted on Tuesday, 15th October 2013 in proximity to existing residential receivers in the vicinity of the site. The noise monitoring results are presented in Table 2 and the noise monitoring locations are shown in Figure 1.

5.8 All noise measurements were conducted according to international standard ISO 1996-1:2003 *Description and Measurement of Environmental Noise*. The measurements were made using a Norsonic Nor140 Sound Level Meter which is a Type 1 meter according to IEC 651. The sound level meter was orientated towards the dominant noise source during all measurements and was placed at a height of 1.5m off the ground. A wind shield was used on the microphone throughout the survey and the sound level meter was calibrated before and after the survey. The Time Weighting used was Fast and the Frequency Weighting was A-weighted. All sources of noise were identified during the course of this survey. Weather conditions on the day of the survey were dry and warm with clear skies, with a dry ground surface and a light breeze.

5.9 The measurement parameters recorded during the baseline survey are defined as follows:

- L_{Aeq} is the A-weighted equivalent continuous steady sound level during the sample period and effectively represents an average value.
- L_{Amax} is the maximum A-weighted sound level measured during the sample period.
- L_{Amin} is the minimum A-weighted sound level measured during the sample period.
- L_{A10} is the A-weighted sound level that is exceeded for 10% of the sample period and is used to quantify traffic noise.

- L_{A90} is the A-weighted sound level that is exceeded for 90% of the sample period and is used to quantify background noise in the absence of the main noise source.
- Frequency analysis measurement data was also recorded.

Figure 1: Noise monitoring location (NML) and nearest noise sensitive receivers (NSR).

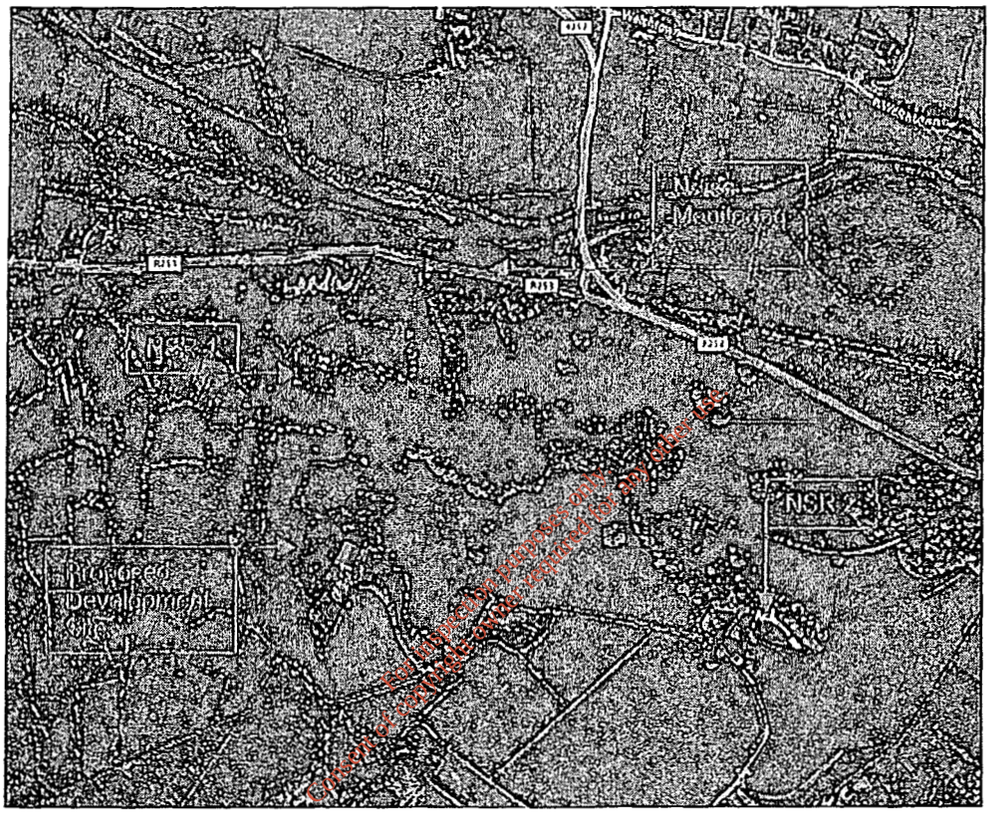


Table 2: Noise levels recorded at the Noise Monitoring Locations proximity to existing residential receivers in the vicinity of the site (30 minute measurement period) – Tuesday 15th October.

Location	Time	L_{Aeq}	L_{AFmax}	L_{AFmin}	$L_{AF,10}$	$L_{AF,90}$	Notes
NML 1.	10.38 – 11.08	58.5	85.4	27.2	51.1	32.3	Dog barking across river. Birdsong. Traffic on R252.

5.10 The main noise sources in proximity to the proposed development site consist of road traffic on the R252 and on the R253.

Noise Impact Assessment

Predicted noise levels at noise sensitive receivers

5.11 Based on the drawings and information provided to Envest, the proposed development will consist of the following aspects of which some have the potential to be the main noise sources;

- *Pre Pit* – This is a sealed tank linked to the digesters – not a noise source.
- *Feed Hoppers* – This is a possible source of noise due to the ventilation fan (part of the triolet feeder unit).
- *Digestate Tanks* x4 – These are sealed units – not a noise source.
- *CHP Building* – CHP unit is acoustically attenuated to 70 dB(A) @1m
- *Gas Compression Unit* – noise less that 70 dB(A) @1m
- *Biogas Transportation Trailers* – not a noise source.
- *Flare* – To be used only in emergency – not a noise source.

5.12 In terms of development generated traffic, it is proposed to obtain consent to process 90,000tpa within the digesters. The raw material will be mostly slurry drawn from surrounding farms. The intake will be controlled by the applicant and this will be drawn to site using 25 tonnes tankers. The spent digestate from the tanks will be delivered back to the farms in the same tankers. It is estimated that this would equate to approximately 18 traffic movements per day, i.e. 9 tankers in, 9 tankers out. In addition, there will be 1 lorry collecting biogas from the site each day. Therefore, this equates to 20 HGV traffic movements per day.

5.13 In terms of the noise impact of truck movements to and from the site, there will not be an appreciable increase in traffic volumes in the area due to the operation of the site. There will HGV movements on the access roads to the site but these will be infrequent and will occur during daytime only. Therefore, the proposed development will not result in a significant additional noise impact due to increased traffic levels.

5.14 For the purposes of noise impact assessment, the Sound Power Level (L_w) can be determined by measuring the Sound Pressure Level at a specific distance (e.g. 1m) from the source and using the following equation.

$SWL = SPL + (20*Log_{10}(Distance)) + 8$

5.15 The predicted noise level at a location can be calculated at a specific location if the SWL of the source, and the distance between source and receptor are both known.

$SPL = SWL - (20*Log_{10}(Distance)) - 8$

5.16 Adjustments can be made for the presence of any barriers and the nature of the ground the noise has to travel over. The correction for barriers requires knowledge of sound pressure levels at different frequencies and of the precise geometry of the receptor in relations to the source and barrier. These adjustments are quite complex, and are outlined in detail in Annex D of BS 5228: Part 1: 1997. However, the Standard suggests that as a working approximation, an attenuation of 10dB can be made if a screen completely hides the source from the receiver. If the top of the plant is just visible to the receiver, then an attenuation of 5dB can be assumed.

5.17 On the basis of the above it can be assumed that there are two main noise sources on site. The CHP unit, which is acoustically attenuated to 70 dB(A) @1m and the Gas Compression unit which has a noise output of less than 70 dB(A) @1m. Each of these sources have a Sound Power Level (L_w) of approximately 78 dB(A).

5.18 Therefore, the following noise level has been predicted at the façade of the nearest noise sensitive properties, assuming a worst case on site Sound Power Level (L_w) of 85 dB(A), without taking into account any corrections for barriers / perimeter boundaries that would further reduce the potential noise impact by approximately 5dB(A).

- At **NSR 1** – ~ 240m north-west from proposed development site.

⇨ Worst-case Predicted Noise Level = ~30 dB(A)

- At **NSR 2** – ~ 650m east from proposed development site.

⇨ Worst-case Predicted Noise Level = ~21 dB(A)

Comparison of measured and predicted noise levels against WHO Guidelines

5.19 The measured noise levels at the noise monitoring location are in accordance with the relevant guideline noise limits outlined in the World Health Organisation (WHO) *Guidelines for Community Noise.*

5.20 As outlined above, the predicted noise levels at the nearest neighbouring residential properties to the north-west and east are in accordance with the WHO *Guidelines for Community Noise* during daytime and night-time.

BS 4142 Noise Impact Assessment

5.21 A BS 4142 assessment was carried out to assess the potential impact on the nearest noise sensitive receiver to the north-west (NSR 1) and to determine the likelihood of the potential for complaints due to the proposed development.

Table 3: BS4142 assessment at the nearest noise sensitive receiver to the north-west (NSR 1) of the proposed development site (Based on the noise monitoring data presented in Table 2).

BS4142 Assessment	Noise Levels	Notes
Measured Noise Level	58.5 dB L_{Aeq}	Noise level at NML.
Background L_{A90} Noise Level	32.3 L_{A90}	Dog barking across river. Birdsong. Traffic on R252.
Predicted Specific Noise Level from proposed development	~30 dB L_{Aeq}	Worst-case Predicted Noise Level = 28 dB(A)
Acoustic Feature Correction	+5 dB	In case of a tonal aspect at lower frequencies as well as intermittent bangs which as outlined in BS4142 results in a Rating Level of +5dB.
Rating Level	35 dB L_{Ar}	As per BS 4142 methodology - Specific Noise Level + Acoustic Feature Correction
Background L_{A90} Noise Level	32.3 L_{A90}	Dog barking across river. Birdsong. Traffic on R252.
Excess of Rating Level over Background Noise Level	+2.7 dB	According to BS 4142: *+10dB - complaints are likely* *+5dB - marginal significance* ⇨ *No complaints likely at Noise Sensitive Receivers*

5.22 The BS 4142 assessment as outlined in Table 3 indicates that during daytime, the predicted noise levels experienced at the nearest noise sensitive properties do not have the potential to result in complaints being likely from nearby residents.

5.23 The proposed development site will be inaudible at the nearest noise sensitive properties.

Conclusions

5.24 This noise impact assessment has compared the measured noise levels in proximity to the nearest noise sensitive properties to the relevant guideline noise limits outlined in the World Health Organisation (WHO) *Guidelines for Community Noise* and the BS4142: *Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas.*

5.25 The predicted noise levels at the nearest noise sensitive properties are in accordance with the WHO *Guidelines for Community Noise* during daytime and nighttime.

5.26 When the measured and predicted noise levels are compared to the BS 4142: *Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas* methodology, it is indicated that complaints are unlikely from the noise sensitive receivers as a result of the proposed site operations.

5.27 No site specific noise mitigation measures are deemed necessary. However, as part of an Environmental Improvement Programme for the site, the developer should focus on reducing noise breakout off site where possible and aim to improve noise attenuation measures on the site.

5.28 This can be dealt with by way of planning condition subject to the Council's final decision on the application.

6.0 ODOUR & AIR QUALITY IMPACT ASSESSMENT

Introduction

6.1 This Odour and Air Quality Impact Assessment chapter has been prepared by Envest Environmental Ltd. to assess the odour levels in proximity to the main odour sources on site and to assess the potential impact on the nearest neighbouring residential properties in proximity to the site.

6.2 The UK Department for Environment, Food and rural Affairs (DEFRA) guidance, Odour Guidance for Local Authorities, Department for Environment, Food and Rural Affairs, 2010, defines odour as follows;

'An odour is the organoleptic attribute perceptible by the olfactory organ on sniffing certain volatile substances. It is a property of odorous substances that make them perceptible to our sense of smell. The term odour refers to the stimuli from a chemical compound that is volatilised in air. Odour is our perception of that sensation and we interpret what the odour means. Odours may be perceived as pleasant or unpleasant. The main concern with odour is its ability to cause a response in individuals that is considered to be objectionable or offensive.'

6.3 It is proposed to construct and operate an AD plant that will be fuelled by mostly slurry drawn from farms within the local area (approximately a 10 mile radius subject to contract post planning). Most of the biogas produced by the AD process will be combusted in an on-site CHP plant used to power the facility and export electricity to the National Grid and some will bottled in a *Gas Compression Unit*. The process can briefly be described as;

- **Feedstock** - The site will operate using biomass feedstock mainly in the form of slurry from nearby farms. The feedstock will be delivered to site using a tanker prior to unloading within the pre-pit.
- **Operation** - The feedstock will be digested within the plant in completely sealed digestate tanks. The biogas produced which is a mixture of methane (CH_4) and carbon dioxide (CO_2) will fuel 2 x 250 kW CHP engines for the generation of electricity and heat. Exhaust gases from the CHP engine will be dispersed via a dedicated stack from which there will be no odour. Some of the biogas produced will be bottled in the Gas Compression Unit.
- **Digestate** - The process will create digestate which can be used as a high quality fertiliser which can be loaded into a tanker for transportation to local farms. The digestate will be stored within a sealed storage tank prior to pumping into tankers and delivery to the end user.

6.4 The proposed development site is located in a rural area with few sensitive locations in the immediate vicinity of the proposed development location. During the operation of the development there is the potential for atmospheric emissions from the combustion of biogas and odours from the storage and processing of feedstock.

6.5 The assessment and evaluation of the odour impact arising from the proposed development involved the following methodology:

- Identification of odour sources;
- Identification of odour emission rates;
- Dispersion modelling of odour emissions; and,
- Comparison of modelling results with relevant criteria.
- Reference to the following documentation;
    - EPA, Office of Environmental Enforcement (OEE), Air Guidance Note 5 (AG5) Odour Impact Assessment Guidance for EPA Licensed Sites.
    - EPA, Odour Impacts and Odour Emission Control Measures for Intensive Agriculture
    - EPA, Air Guidance Note 4: Air Dispersion Modelling from Industrial Installations Guidance Note (AG4).
    - Environment Agency (UK), Draft Horizontal Guidance for Odour - Part 1- Regulation and Permitting & Part 2 Assessment & Control.

Methodology

6.6 Based on the drawings and information provided to Envest, the proposed development will consist of the following aspects of which some have the potential to be the main odour sources;

- *Pre Pit* – This is a sealed tank linked to the digesters – not an odour source.
- *Feed Hoppers* – This is a possible source of odour and if required the ventilation fan (part of the triolet feeder unit) can be routed through an activated carbon filter.
- *Digestate Tanks* x4 – These are sealed units and no odour can escape – not an odour source.
- *CHP Building* – sealed unit and no odour can escape – not an odour source
- *Gas Compression Unit* – sealed unit and no odour can escape – not an odour source
- *Biogas Transportation Trailers* – not an odour source.
- *Flare* – To be used only in emergency – no way of quantifying the odour level as it depends on the throughput, but odourous air will be combusted in the flare so odours will be removed.

6.7 In terms of development generated traffic, it is proposed to obtain consent to process 90,000tpa within the digesters. The raw material will be mostly slurry drawn from farms within the local area. The intake will be controlled by the applicant and this will be drawn to site using 25 tonne tankers. The spent digestate from the tanks will be delivered back to the farms in the same tankers. It is estimated that this would equate to approximately 18 traffic movements per day, i.e. 9 tankers in, 9 tankers out. In addition, there will be 1 lorry collecting biogas from the site each day. Therefore, this equates to 20 HGV traffic movements per day.

6.8 In terms of the odour impact of truck movements to and from the site, there will not be an odour impact as the intake will be drawn to site using sealed 25 tonnes tankers. The lorry collecting biogas from the site each day will also be sealed.

6.9 To predict the impact of the above emissions from the proposed commercial CAD facility during the operational phase, air dispersion modelling using *AERMOD* has been used.

AERMOD Dispersion Modeling Package Description

6.10 The AMS/EPA Regulatory Model (AERMOD) is the current US EPA regulatory model used to predict pollutant concentrations from a wide range of sources that are present at typical industrial facilities. The model estimates the concentration or deposition value for each source and receptor combination for each hour of meteorological data and calculates user-selected short term averages. Since most air quality standards are stipulated as averages or percentiles, AERMOD allows further analysis of the results for comparison purposes. Percentile analysis for emissions is calculated for the maximum averages using the AERMOD-percent post-processing utility. This utility calculates the maximum concentration of a pollutant from all receptors at a specific percentile, for a specific period. Employing the percentile facilitates the omission of unusual short-term meteorological events that October cause elevated pollutant concentrations and hence a more accurate representation of the likely average pollutant concentrations over an averaging period.

6.11 The following information was input into the model for the prediction of maximum ambient concentrations of odour in proximity to the proposed Anaerobic Digester & CHP plant.

Site Map and Cartesian Grid

6.12 The site layout map was supplied by Michael Burroughs Associates, which was imported into the dispersion model. The map included the site boundary and all relevant buildings and tanks. The boundary and all relevant structures were traced and emission sources were included.

Buildings

6.13 When one or more buildings or tanks in the vicinity of a source interrupt wind flow, an area of turbulence known as a building wake is created. Pollutants emitted from a relatively low level can be caught in this turbulence, affecting their dispersion. This phenomenon is called building downwash. In order to conduct an extensive analysis of downwash effects of all point sources, the dimensions (including heights) of all significant buildings or tanks on-site were obtained from drawings supplied by the client and inputted into the model. The downwash effects are determined using the building profile input programme (BPIP-Prime) which is run prior to all modelling runs.

Meteorological Data

6.14 Hourly sequential meteorological data from the Ballykelly Meteorological Station outside Derry was used in the AERMOD dispersion modelling assessment. This allows for the determination of the predicted worst case overall impact of emissions from the proposed facility.

Sources

6.15 The site layout map was used as a template for the source locations of the proposed commercial CAD & CHP plant. On-site sources were modelled as point sources. A point source is one that releases pollutants from an opening, such as a stack or vent. An area source is one that releases pollutants from an open tank or flat surface.

Odour Emission Rates

6.16 The rate of production of a pollutant emission is best quantified as an emission rate. For a chimney or vent, this is equivalent to the odour concentration (ou_E/m^3) multiplied by the air flow rate (m^3/s). It is the mass of odorous pollutant emitted from a source per second and is expressed in ou_E/s. For an area source such as the settlement, aeration and storm tanks, this is the mass of odorous pollutant emitted per m^2 of surface area per unit time (ou_E/m^2/second).

6.17 There are no Emission Limit Values (ELVs) for odour and since the facility is not operational, it was not possible to monitor site specific emissions. In the absence of such information, estimations of future releases from the various identified sources had to be made to inform the dispersion model. These were made based on odour monitoring data reported at similar plants and are therefore considered to provide representative inputs for an assessment of this nature. The odour emission rates used in the odour dispersion model are summarised in Table 6.1.

Table 6.1: Odour emission rates used in the in the dispersion modelling assessment.

Odour Source	Odour Emission Rate	Reference
Feed Hoppers – Slurry / Farmyard Manure	68.66 ou/m^2/s	Institute of Animal Science and Technology [Note 1]
Air expelled during filling of digestate transportation tanker for removal off site	100,000 ou/ m^3	Odournet UK Ltd [Note 2]

Notes:

1. Odour Evaluation of a Dairy Farm with Anaerobic Digestion, Institute of Animal Science and Technology Universidad Politécnica de Valencia.
2. Assessment of Potential Odour Impact from a Proposed Biomass Renewable Energy Facility in Taverham, Norfolk, Odournet UK Ltd.

6.18 For the purposes of the odour dispersion model it has been assumed that that above odour emission concentration 100,000 ou/m^3 for the 'air expelled during filling of digestate transportation tanker for removal off site' equates to a worst-case point source odour emission rate of 2,500 ou/s. This is a potential odour source that will occur for a short duration on certain days and will not be a constant emission source.

Odour Assessment Criteria

6.19 An odour unit is a measure of the concentration of a mixture of odorous compounds. It is determined by means of olfactometry. Odour unit values are determined by a standard method given in BS EN13725; 2003 on olfactometry. An odour unit as defined by the standard is 1 European odour unit (1 ou_E). The limit of detection of an odour by an average human nose under laboratory conditions is 1 European odour unit per cubic meter of air (1 ou_E/m^3). However, in the open environment detection limits may be considerably greater. The typical recognition threshold is about 5 times this concentration i.e. $5ou_E/m^3$. Furthermore, odour concentrations of between 5 and 10 ou_E/m^3 above background will give rise to a faint odour and concentrations greater than 10 ou_E/m^3 constitute a distinct odour and are likely to give rise to nuisance complaints.

6.20 The Environment Agency for England and Wales, in collaboration with the Scottish Environment Protection Agency (SEPA) and the Northern Ireland Environment and Heritage Service (now known as the Northern Ireland Environment Agency) published a document in October 2002 entitled 'Draft Horizontal Guidance for Odour Part 1- Regulation and Permitting'. This document provides guidelines for odour impact assessment and dispersion modeling as well as identifying target odour levels at the nearest sensitive locations in the vicinity of a range of types of operations. The following Benchmark Levels based on the 98th

percentile of hourly average concentrations of odour modeled over a year at the site/installation boundary have been quoted in this document:

- 1.5 odour units for most offensive odours;
- 3 odour units for moderately offensive odours;
- 6 odour units for less offensive odours.

6.21 Any modeled results that predict exposures above these benchmark levels, after taking uncertainty into account, indicates the possibility of unacceptable odour pollution and the level of offensiveness of an odour is defined as follows;

Most offensive

- processes involving decaying animal or fish remains
- processes involving septic effluent or sludge
- biological landfill odours

Moderately offensive

- intensive livestock rearing
- fat frying (food processing)
- sugar beet processing
- well aerated green waste composting

Most odours from the regulated processes fall into this category i.e. any odours which do not obviously fall within the "most offensive" or "less offensive" categories.

Less offensive

- brewery
- confectionery
- coffee roasting
- bakery

6.22 In the Technical Guidance Note, IPPC H4, Integrated Pollution Prevention and Control (IPPC), Draft Horizontal Guidance for Odour Part 2 – Assessment and Control, a Sensitive Receptor is defined as people who are exposed to odour released from a given source, or have the potential to be exposed. Through the use of air dispersion modeling it is possible to compare the modeled ground level concentration of odour at sensitive receptors to an installation-specific benchmark "acceptable" concentration.

6.23 Based on the above description of 'most', 'moderately' and 'less' offensive odours, the worst case odours from the proposed facility can be defined as potentially ranging from 'most' to 'moderately' offensive, for the purposes of assessing odorous emissions from the proposed development. Therefore, it is recommended that an odour target value of $C_{98,\ 1\text{-Hour}}$ 3 ou_E/m^3 should be adopted at the nearest sensitive receptors. This criterion is at a level below which

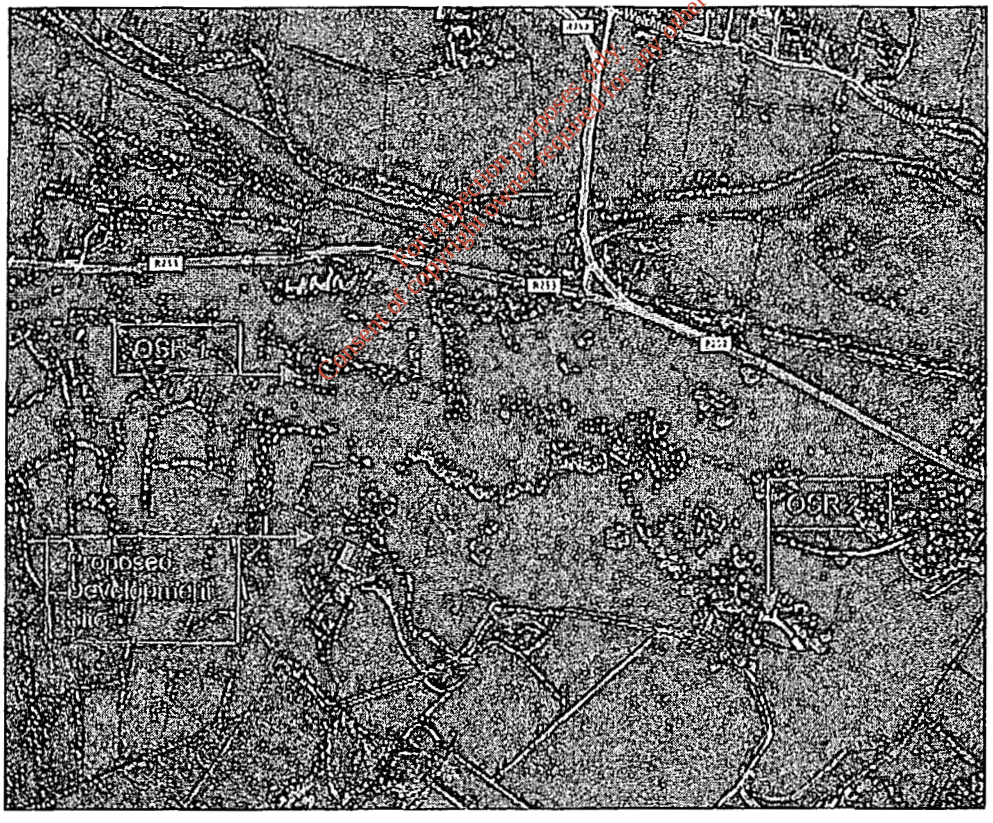
may be recognised by the general public or constitute a nuisance in the location of the proposed development.

6.24 The aim of the odour impact assessment is to avoid "reasonable cause for annoyance" at sensitive receptors, i.e. to keep within a level of exposure that a high proportion of the exposed population finds "acceptable" on a long-term basis.

Existing Environment

6.25 There is no significant individual odour source in proximity to the proposed development site. Background odours are most likely to be typical of intermittent rural area odours influenced by existing agricultural activities, etc.

Figure 6.1: Nearest odour sensitive receivers (OSR).



- Odour sensitive receiver, OSR 1 – ~ 240m north-west from proposed development site.
- Odour sensitive receiver, OSR 2 – ~ 650m east from proposed development site.

6.26 The background air quality in the area of the proposed development is of very good quality and the site is located in 'Zone D' as denoted by the EPA. The EPA has divided the country into zones for the assessment and management of air quality. The zones adopted in Ireland are Zone A, the Dublin conurbation; Zone B, the Cork conurbation; Zone C, comprising 21 large towns in Ireland with a population >15,000; and Zone D, the remaining area of Ireland. Concentrations of air quality pollutants in Zone D are very low and well below the relevant air quality limit values.

Odour Impact Assessment

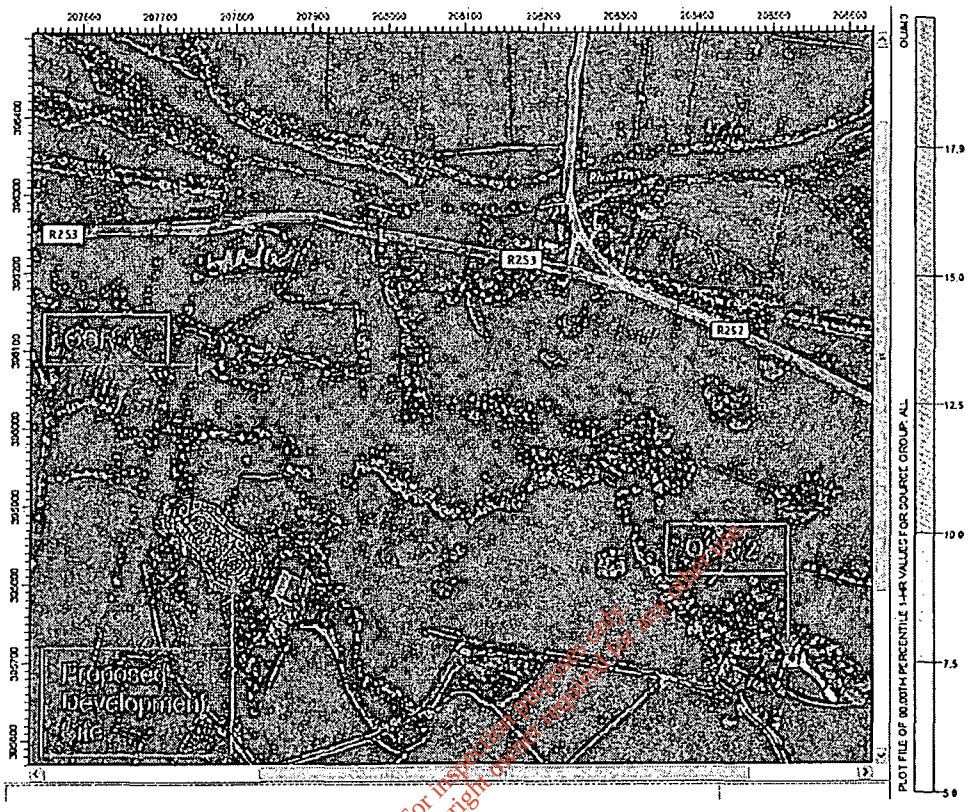
6.27 The results of the odour dispersion modelling assessment are presented in Table 6.2.

Table 6.2: Odour Dispersion Modeling Prediction, 98th %ile of maximum hourly odour concentrations at the nearest odour sensitive receivers to the proposed Anaerobic Digestion & CHP Plant.

Odour Sensitive Receiver	98th Percentile of Maximum 1-Hour Odour Concentration at OSR
OSR 1	0.35 ou_E/m^3
OSR 2	0.04 ou_E/m^3

6.28 The odour dispersion modelling assessment has predicted that at the nearest odour sensitive receivers to the proposed Anaerobic Digestion & CHP Plant, odour emissions will have an odour impact below the specified odour criterion of 3 ou_E/m^3 for the 98th percentile, as illustrated in Figure 6.2.

Figure 6.2: Predicted odour concentration isopleths in proximity to the proposed development site - 98th percentile of maximum hourly odour concentrations.



Air Quality Impact Assessment

6.29 Appropriate Emission Limit Values (ELV) for the proposed 2 x 250 kW CHP engines are outlined below. These ELVs are defined by the UK Environment Agency based on Best Available Technique (BAT) for the sector to ensure environmental impacts are not significant at any location within the vicinity of the site.

- Nitrogen Oxides (NOx) ELV = 500 mg/m^3
- Sulphur Dioxide (SO_2) ELV = 350 mg/m^3
- Non-methane volatile organic compounds (NMVOCs) ELV = 75 mg/m^3
- Carbon Monoxide (CO) ELV = 1,400 mg/m^3

6.30 As stated above, background air quality pollutant concentrations in the vicinity of the site are very low and there is also a very large separation distance to the nearest sensitive properties. Therefore, it is considered highly unlikely that atmospheric emissions from the combustion of biogas within the relatively small CHP engines will result in significant air quality impacts in the vicinity of the site.

Mitigation Measures

6.31 The following operational procedures will be enforced on site for controlling odours;

- An operating manual will be created for the facility which states the operational procedures to be followed in order to maintain and operate plant to agreed standards. These standards will include procedures for ensuring that generation of odour is kept to a minimum.
- Records of all key operational tasks will be kept on site. These records will include:
  - Total volumes and type of materials received on site;
  - Vehicle movements associated with material imports, compressed gas removal and digestate removal;
  - Subjective Odour Assessment daily log sheets;
- Any spillages significant enough to cause odour emission will be cleared as soon as practicable.
- In addition to the routine operational tasks, planned preventative and defect maintenance of all plant will be carried out. For plant which may have a significant odour release it is critical to ensure that effective performance is maintained.
- In normal operating conditions, approximately 9 lorry movements will be delivering material to the facility each day during normal operating hours. This waste should be accepted by the digestion system immediately to minimise the potential for generation of fugitive odours.
- A Neighbour / Stakeholder Communication Plan will identify how and when contact will be made with stakeholders in relation to odour emissions off-site and establish a Complaints Records Procedure and a Response Protocol.

Conclusions

6.32 Dispersion modelling of potential odour emissions was undertaken. The predicted odour concentrations are well below the odour benchmark of 3 ou_E/m^3 at the odour sensitive receiver locations.

6.33 Due to the remoteness of the proposed site it is not anticipated that significant odour impacts will occur at any odour sensitive receiver locations.

6.34 There is no potential for air quality impacts in relation to air quality standards as a result of emissions to atmosphere from the proposed CHP engine due to regulatory emission controls, as well as the rural nature of the area of the proposed development site.

7.0 TRAFFIC AND TRANSPORTION ASSESSMENT

Introduction

7.1 This Traffic and Transportation Assessment ('TTA') has been prepared by CST Group Consulting Engineers in respect of the application for a centralised anaerobic digester on the Glenmore Estate within the townland of Agheveagh, west of Ballybofey, County Donegal.

7.2 The assessment has been carried out in accordance with the NRA's Traffic and Transportation Assessment Guidelines (2007) and makes reference to the Guidelines for Traffic Impact Assessment published by the Institution of Highways and Transportation (1994). The purpose of the report is to assess the potential impact of the proposed development on the existing local transport network.

Proposed Development

7.3 The proposal site (excluding the access laneway) is 0.72ha and comprises 4no primary digesters with collection domes, a co-joining pump room, CHP building, flare, feed hoppers and other structures associated with the operation of anaerobic digester systems.

7.4 The site will be accessed via the R253 which connects to the R252 approximately 6km west of Ballybofey.

7.5 The proposed layout and location of the site can be found in the series of drawings submitted as part of this application.

Car Parking Provision & Turning Space

7.6 Adequate space for staff car parking will be provided on site so as to avoid conflict with delivery vehicles.

7.7 An AutoTrack swept path analysis for the largest delivery vehicle type accessing the development should be carried out. The swept path of the vehicle should not cross any proposed parking spaces. Also the designer should ensure that these vehicles can manoeuvre internally within the goods area and drive forwards out of the development.

Existing Road Network and Traffic

Aghaveagh Existing Road Network and Site Location

7.8 The proposed site is located in Aghaveagh south of the R252 and R253. This is the connecting road between the N15 (Sligo to Lifford) and the N56 (Donegal to Letterkenny).

7.9 This site is about 7km from Ballybofey's town centre. The Glenmore Estate, on which the site is situated, is primarily used as agricultural lands with a number of dwellings and associated sheds.

Existing and Future Traffic Flows

7.10 In order to estimate the likely volumes of traffic that will be generated by the proposed development, traffic flows and movements to and from similar developments were assessed and CST Group were provided with the following; 9 tankers, making a trip in and out, are expected at the development per day plus 1 HCV collecting biogas from the site each day.

7.11 In order to gain a scope for the proposed TTA, we liaised with and met on site with Ballybofey Assistant Area Engineer, Mr. Adrian McCool. We informed him of the expected generated traffic flows to/from the development. Due to the low numbers of traffic generated by the development and the low numbers of traffic currently using the R253, a capacity check of both the development access junction and the R253/R252 T-Junction was deemed unnecessary.

7.12 Due to the limited width of the R253 and restricted forward visibility due to a hump in the road it is considered minor improvement works to the R253 would be of benefit to both the development user traffic and also existing road users. It is proposed to provide passing bays to allow for ease of movement between opposing traffic and eliminate the need to reverse when meeting traffic on the new road together with re-grading of the vertical profile of the road in order to omit the impact of the existing hump in the road.

7.13 The passing bays have been provided so that there is sufficient visibility between suitable passing points for the entire stretch of roadway between the junction of the R252 and the development access junction. Each passing bay shall be a minimum of 15m in length and the roadwidth at this location shall be a minimum of 5.5m, allowing vehicles space to pass freely. All proposed locations for passing abut the applicant's lands; therefore no 3rd party consent is required for the construction of these bays.

7.14 The re-profiling of the vertical alignment will involve removal of approximately 1m from the top of the hump in the road together with raising the road at the development access by approximately 1m. The location of the proposed works to provide sufficient passing bays and forward visibility can be found on the drawing by CST Group Consulting Engineers submitted as part of this application.

7.15 Widening of the laneway to the site to 5.5m for the first 15m of the laneway is also proposed in order to allow vehicles to pass safely.

Junction Visibility

7.16 A site assessment of junction visibility has been undertaken however as works to the level of the roadway are proposed it is difficult to determine to final junction visibility. However as the applicant is in control of the lands to both sides of the development access, any works required in order to achieve a 2.4m x 160m sightline to the west and a 2.4m x 132m sightline to the east will be undertaken.

Pedestrians, Cyclists and Public Transport Users

7.17 Due to the remote nature of the site and the limited availability of public transport nearby, it is envisaged that access to the site will be mostly made by car.

Conclusion

7.18 The proposed facility can be provided without undue traffic impact once the proposed passing bays are completed and sightlines improved. In fact, the proposed roadworks are a significant improvement on the existing situation.