Attachment A.1

Non-Technical Summary

NON-TECHNICAL SUMMARY

This is the summary of the information contained within the Environmental Impact Statement (included in Attachment B6) which reports the findings of the assessment into the environmental effects associated with the proposed development of a Biogas Plant at Timoleague, Bandon, Co. Cork.

The Environmental Impact Assessment, prepared by NRGE Ltd as a submission to be included in support of a Planning Application to Cork County Council and a Waste Facility Licence to the Environmental Protection Agency. The Environmental Impact Assessment has been produced in accordance with the European Community Directive Environmental Impact Assessment Directive 85/337/EEC (as amended by Directives 97/11/EC, 2003/35/EC, 2009/31/EC) and the Regulations implementing the Directive in Ireland: the Planning and Development Act 2000-2010, the Planning and Development Regulations 2001-2012 and the European Communities (Environmental Impact Statement) Regulations 1989-2000.

The proposed project has involved consultation with stakeholders locally, regionally and nationally, including statutory bodies and regulatory authorities, in an attempt to identify concerns and predict any likely environmental effects of the development, and the evaluation of these effects against specified criteria such as legal guidelines and limits.

This project has involved formal and informal discussions with a large number of stake holders from the local, regional and national categories, to help formulate an integrated model, that will stand up to detailed critical analyses. In the current climate such critical analyses will be applied not only from an environmental perspective, but also from an economical and sustainable perspective. The vision is to create a centre of excellence for an Anaerobic Digester and associated integrated business, which will provide a template that can be applied to other similar regions throughout the jurisdiction.

It is the intention of this summary to provide all the relevant information contained within the Assessment, in a non-technical and comprehensible manner. The Environmental Assessment is an evaluation of the potential significant likely environmental impacts that this development will have on the locality.

Timoleague Agri Gen Ltd. is a limited company with two directors, both of whom are active progressive farmers in the local community. These are Mr. Colin Bateman, upon whose farm the proposed development is located, and Mr. Martin O' Donovan, whose pig farm unit is located to the North of the proposed site.

The development will occupy a landscaped site of approximately 3.67 hectares (9.07 acres). The proposed development consists of a Biogas Plant consisting of 2 no Digester tanks, 2 no

validation tanks, 1 no homogenising tank, 3 geo-membrane lined manure storage basins, 1 no fibre store, 1 No Feed Tank, Reception Building, Plant Building, Pasteurisation Tanks, Weighbridge and associated site works including an integrated constructed wetland, to produce renewable energy and fertilizer. The proposed Anaerobic Digester will reduce net emissions from Mr. O' Donovan's Pig Farm as it will require fresh delivery of manure from the pig houses. It will also effect a net reduction of emissions in the area.

This proposal will aid compliance with Nitrate Directive Regulations and incorporates emission reduction measures. A map (Scale 1:2500) in Attachment 1 of the Environmental Impact Statement clearly outlines the site boundary marked red.

Facilities

The buildings and their layout will be state of the art for the industry. A thorough review across Europe was undertaken of best available techniques to minimise emissions from the proposed development, and to maximise beneficial outputs. The Biogas Facility's storm water will be routed to a single storm-water monitoring point (identified as SW1 on Site Plan included in Attachment 2 of the EIS), and then piped to the land drainage watercourse. Each individual component of the Biogas Plant will have an independent leak detection system with an individual inspection chamber for each section. These inspection points are identified as LD1 to LD7 on the site plan included in Attachment 2 of the EIS.

Employment

This development has the potential to provide for 2 full time jobs at the Biogas Plant and 1 part-time with indirect employment potential of 40-50 full time jobs in associated waste and biomass collection sectors. A sister project is currently being drafted for the development of a glasshouse facility adjacent to this site which will have an additional job creation potential of 20-40 direct job positions, while utilizing heat and CO_2 emissions from the anaerobic digester.

Manure storage capacity

The proposed facility provides storage on site in three geo-membrane lined storage basins, of 4500 M3 capacity each. The secondary digester has 4300 M3 capacity. The pre mix tanks have 220 M3 and 1500 M3 capacity respectively. In addition there are separate plans to provide additional 7000 M3 storage on customer farms. This is a total of 22,020 M3 which is equivalent to 29 weeks output on site.

Land-spreading Areas

The pig manure from Mr. O' Donovan's Farm is currently being recovered on customer farms as a fertiliser in the general area of South West Cork. There is a total of 2,461 hectares of good agricultural land available in the area for this purpose. Upon the completion of this Anaerobic Digester, this same list of customer farms will be used to recover the liquid digestate as a

fertiliser source. The bedrock in the region is mostly Devonian Old Red Sandstones (DORS), containing a Locally Important Aquifer.

Timoleague Agri Gen Ltd and O' Donovan Pig Farm Unit have with the consent of the existing customer farm list sufficient capacity to recover the nutrients in the liquid digestate form, with sufficient capacity to provide a 20% reserve.

Manure Spreading

The application of digested manure to farmland is regulated under European Communities (Good Agricultural Practice for Protection of Waters) Regulations 2009 S.I. No. 610 of 2010 and distribution of digested manure from this site will comply with those regulations.

Digested Manure will not be supplied to customer farms between 15th October and 15th January in any year except with the consent of the local authority, or any other relevant authority. Outside that period, digestate manure will be supplied from the site to a customer farmer, only in response to an order. Managed and used in this way, manure digestate produced at this Facility will not have any adverse impact on environmental parameters either inside or outside the site. However recognition must be taken of the fact that 50% of these traffic movements occur in the general area currently, and will continue to do so irrespective of the construction of this proposed development, in the form of current deliveries of pig slurry, belly grass, dairy sludge and other organic materials to farms in the general area for use as agricultural fertilizer.

It is planned to import an additional 25,567 tonnes of organic material per annum to mix with the pig manure to increase the efficiency of the proposed Anaerobic Digester. The additional organic material is laid out in Table 1 below along with the estimated volume and source of each. A menu of these materials will be used subject to their availability and appropriate 'mix' of materials.

The current volume of pig manure produced on Martin O' Donovan's farm is 14,600m3. Planning permission has being granted to increase his sow number from 1,150 to 1,750, which will increase the slurry production to 23,000m3 referenced. It is likely that the construction required to house this additional stock will commence in quarter three 2013.

Table 1: The Intended Feedstock for Processing

TYPE	Volume	Source
	M3	
Pig Manure	23000	Own ABP
Seaweed	5000	Cork County Council
Dairy Flotation Sludge	11,000	Carbury
Feedmill Residuals	200	Barryroe Co op
Fruit residuals	300	TBA
Residuals from vegetables	750	TBA
Other slurry fish manufacturing	300	Fishermans Co ops
Paunch pigs	300	Staunitons
Paunch cows	5,000	AIBP
Flotation sludge	1,200	Food & ingredient Processers
Fat trap waste	600	TBA
Draff via Beer Production	750	Brewery
Bread	100	Bakery
TOTALS	**48,500**	

It is proposed to primarily target organic materials that are currently being land spread, as this process will greatly reduce current environmental impacts, in accordance with current land spreading directives. In accordance with Regulations: EC no 1069/2009, EC no 142/2011 and EC (TSE and Animal by-Products) Regulations (S.I. No 252 of 2008 as amended), the approval of the Environmental Protection Agency, Cork County Council and the Department of Agriculture will have to be granted, in order for the permission to treat other waste types at this proposed Anaerobic Digester.

This organic material will be imported onto the site on a needs basis only. It will be delivered directly into the relevant pre mix tanks. The high fibre material will be transferred directly into the underground pre mix tanks, and liquid material will be pumped into the sealed storage tanks on site. Waste material will only be accepted on site from approved facilities, to be delivered by approved permitted contractors. All deliveries will be recorded on site, and this register will be

available for inspection by officials from Cork County Council, Department of Agriculture, Food and the Marine and the Environmental Protection Agency.
The plan to develop an Anaerobic Digester in this area first took seed in 2003 when following a detailed review of all available alternative technologies to treat pig manure, it was decided the most suitable technology was Anaerobic Digestion, which is simply the natural breakdown of organic waste in the absence of air. A Digester is a warmed, mixed, airless vessel which creates ideal conditions for the necessary bacteria to naturally break down this material. A chain reaction of different bacteria attacks the carbon in the digesting material, giving off methane gas as Biogas (65% Methane). This gas can be collected, contained, and then burned to create electricity and heat, or in some cases processed further into a vehicle fuel. It is now accepted within the EU that farming and life in general must become more sustainable with regards to protecting the environment, and maintaining rural life. There is now a significant amount of legislation that is demanding this sustainable and integrated approach. The use of anaerobic digestion can help to meet many of these targets.

(i) The pig manure produced on Mr. O' Donovan's Pig Farm will provide the required fuel base for this Anaerobic Digester i.e. 23,000 m3 (at full production) and will be supplied by a pipeline avoiding the use of vehicles to transport the manure to the AD facility.
(ii) The additional fuel waste required (25,000 m3) will be sourced locally, and transported to the Facility by lorry, at a rate of 10-15 loads per week.
(iii) The gas generated will be used to supply power to the Facility.
(iv) The excess power will be exported to the National Grid.
(v) The solids will be separated, including approximately 80% of the Phosphorous, currently being reviewed as a soil conditioner. Other alternative reuse options are also being investigated.
(vi) The liquid digestate will be used on customer farms, in accordance with a digestate fertiliser plan.
(vii) The odour impact of spreading digestate versus pig manure, belly grass, and/or dairy sludge will be reduced by 80% min.
(viii) The digestion process will destroy 98% of all pathogens & parasites.
(ix) The digestate is relatively stable, and will not produce a crust in storage.
(x) The digestion process will kill all weed seeds.
(xi) The digestate is a pleasant, clean and easy material to handle.

Application methods
The application of liquid digestate to agricultural land as a fertiliser will be carried out using specialist equipment fitted to tractor tankers which will ensure direct application to ground, thereby increasing the nitrogen uptake of plants.

Steps will be taken with the customer farms whereupon it is proposed to use digestate and in designing the management of its use to ensure that no contamination of surface and groundwater takes place. The proposed development of an Anaerobic Digester will significantly reduce the risk to surface-water and groundwater. The existing customer farm base has the capacity to recover the proposed volume of liquid digestate.

Storm/clean surface water

All clean water is separated from soiled water. Roof water is collected via galvanised gutters and downpipes and piped underground to a nearby watercourse via a stormwater monitoring point identified as SW1 on the Site Plan 001 included in Attachment 2 of the EIS. This monitoring point will be visually inspected on a weekly basis. A register of these inspections will be maintained on site for inspection. A water sample will be taken on a quarterly basis from this point (SW1) for analysis at an independent accredited laboratory.

The surface water collected from the open yard area in front of the reception building, and the access road will be collected and diverted to an integrated constructed wetland (ICW), before being discharged to the adjacent watercourse, via a monitoring point which will also be visually inspected on a weekly basis. A register of these inspections will also be maintained on site for inspection.

Surface Water

Teagasc have put in place a regional monitoring programme at a point up-stream from this site as part of their Agricultural Catchments Programme over recent years, wherein they have recorded flow rates and ambient monitoring has being carried out for phosphorus and nitrogen. Upon completion of this proposed development it is intended to engage with this programme to monitor any impacts from the displacement of applications to land of pig manure, and other organic materials, in this catchment area, with the digestate fertilizer from the anaerobic digester process.

In order to maximise farm outputs and profits, grassland and tillage production rely on a supply of essential plant nutrients Nitrogen (N) and Phosphorus (P). The use of these nutrients is regulated by recommended guidelines in feed and fertiliser and also the EC Good Agricultural Practice for Protection of Waters (S.I. No 610 of 2010) which implements the EU Nitrates Directive into Irish Law.

One of the main aims of Teagasc's Agriculture Catchments Programme is to protect and improve the quality of water, both surface and ground water. This programme intends to work with 300 farmers across six catchment areas in order to monitor and assess the measures implemented by the Nitrates Action Programme in compliance with the Nitrates Directive and the recommended guidelines.

It is intended to cooperate fully with Teagasc in this programme to monitor on-going future impacts from this proposed development.

See Teagasc report included in Attachment 4 of the Environmental Impact Statement.

Traffic

An assessment of sightlines at the entrance to this Facility was undertaken by Mr. John Mc Eniry in order to ascertain that adequate sightlines were available to support an increase in the level of traffic movement due to the proposed level of organic material to be delivered to the Biogas Plant. This report is included in full in Attachment 13 of the Environmental Impact Statement. However recognition must be taken of the fact that 50% of these traffic movements occur in the general area currently, and will continue to do so irrespective of the construction of this proposed development, in the form of current deliveries of pig slurry, belly grass, dairy sludge and other organic materials to farms in the general area for use as agricultural fertilizer.

Noise & Odour

This planned operation will be developed on a green site therefore there are no existing significant effects on noise or odour.

On completion of the project, all aspects of the facility which have the potential to cause nuisance noise or odours will be housed in sealed and soundproofed buildings e.g. the Combined Heat and Power Unit and Generators. The only issues will arise from the delivery of the imported organic matter but this will not be a problem outside of the boundary of the site. This imported fraction of matter will also be transported in sealed containers helping control odours.

Archaeological Features

An assessment of Archaeological Features in the vicinity of the proposed development has been carried out by Dominic Delany & Associates. It is considered unlikely that there are any unknown archaeological remains or features in the vicinity of the proposed development, or that the development will impact, either physically or visually, on the archaeological heritage of this area.

Heritage Areas

The Biogas Plant and selected spread-lands will not have an impingement on any Heritage areas.

Cultural Heritage and Material Assets

Farming traditions in the area have been stock rearing, milk production, pig production and tillage. Animal manures are recycled onto the land reducing the cost of production.

Climate

The most important contribution of this biogas development to the protection of the environment is that it reduces emissions of methane, ammonia. Methane is a gas that has a huge effect on climate that would otherwise be released, uncontrolled, from the land-spreading of raw pig manure, belly grass, and dairy sludge. There are additional potential benefits with the associated proposed development of glasshouses via the CO_2 recovery systems.

Population

The town of Bandon has a population of ca. 6,000 people**,** with a population of ca. 1,500 people in the town boundaries. The nearest settlement location adjacent to the proposed site is Timoleague village which has a population of ca 300.

The proposed development will have a positive impact on human beings from the increased employment it will create, and the resultant reduction of existing impacts from emissions. The development will be located in an agricultural area; the buildings will blend into the surrounding area. Also, the development will be landscaped with a screening of trees, shrubs and flowers. Thus, there will be no nuisance or loss of amenity (see Attachment 20 Photomontage of the proposed Anaerobic Digester Facility included in the Environmental Impact Statement**).**

Effects of the development on air are insignificant outside the buildings and adjoining yards. Mitigation measures taken will minimise the effects of odour on the days of digestate spreading. The application of digestate will replace the current practice of pig manure application to land, resulting in an 80% reduction of odours generated, due to gas extraction. Pig manure will also be moved fresh, in sealed pipes, from the farm to the Anaerobic Digester weekly thereby further reducing emissions from the pig farm.

This report was prepared in accordance with the EPA publication (*Odour Impacts and Odour Emission Control Measures for Intensive Agriculture).*

Noise levels from the development are unlikely to be a nuisance. The main sources of noise will be produced by the traffic and the generator. The generator is a permanent source of noise but is quite low and considering the seclusion of the site, this should not be a nuisance outside of the site boundary.

The development will have an insignificant effect on the climate of the area.

Thus, the measures that have been put in place will ensure that impact/effects of the development on human beings, noise, air, climate and the interaction of human beings, fauna, soils, air, water, climate, landscape and material assets will be minimised.

In a discussion paper published by the Environmental Protection Agency (January 2005), it concluded that "*Anaerobic Digestion has the potential to deliver multiple environmental benefits, including reduced water pollution potential, lower green house gas emissions, and reduced odours from agricultural slurries"*

This proposed development has the potential to benefit all stakeholders adjacent to the proposed site and the customer farms. The net result of this proposed development will be a reduction of existing impacts to the order of at least 30% from the site and 80% from the application of digestate in place of pig manure, belly grass, and dairy sludge to customer farms.

This proposed development has the potential to provide an economic outlet for crops grown by customer farmers in the area, on lands that may not otherwise be utilised fully. These crops can be fertilised by the digestate from the process. This proposed development also has the potential to provide the energy to drive additional projects such as the proposed Glasshouse Facility located adjacent to this site, to be the subject of a separate planning application. This proposed Glasshouse Facility will utilise heat and CO_2 that would otherwise be released into the environment.

A full process control system (SCADA) has been prepared for this proposed Facility. This report has been prepared by our Associates who have over twenty five years experience in the anaerobic sector. It is based on the professional management systems currently operational on similar Anaerobic Digestion Facilities throughout Europe. It details the type of system software, reporting, alarm systems, data exchange and functional systems required to operate a facility such as the proposed development. This expertise is available to the management and operators of the proposed development, at local and remote levels.

Monitoring and Register

Proposals for monitoring storm water emissions at the site and for monitoring soil fertility are set down in the Environmental Report. A register of slurry quantities, rates and locations of spread-lands will be maintained for inspection and monitoring by Cork County Council and other Regulatory Bodies.

An Annual Environmental Report will be submitted annually to the Environmental Protection Agency, in accordance with the requirements of a Waste Facility Licence.

The intention of the joint developers for this project is that the AD and Glasshouse projects will create a synergy to provide valuable employment in the local and regional economies, and at the same time become a centre of excellence which will aid the development of similar projects to benefit the regional and national economies.

Hours of Operation

Biogas Production or Anaerobic Digestion is a bacteriological Process which operates 24 hours per day 365 days per year. Wastes are accepted and finished products exported between 7.00 and 19.00 Mondays to Saturday.

Requested Location Maps are included in Attachment B.2.

Requested Site Plans and Facility Drawings are included in Attachment D.