

F.1 Control and Monitoring

General

The main purpose of these new developments and licence review is the construction of an anaerobic digester which by its very development will ensure a major reduction of the current emissions to air from the existing facilities under the control of the applicant. Some reductions of emissions have already been achieved for this facility since the issue of IPC Licence PO467-01.

This has been achieved by the incorporation of low protein diets on-site in association with Nutec Ltd.. This work is on going but a reduction of 30% of emissions has already been achieved.

The proposed development of the anaerobic digester at this facility will result in a major reduction in the current emissions from this site, to the order of 40 to 50%, and possibly greater. The principles of these reductions are:

1. The proposed development will require the frequent removal of raw pig manure from the existing storage tanks under the pig houses. The reason for this frequent removal is that the fresher the pig manure is brought to the digester the greater the volume of gas production. This will result in a reduction of 20 to 40% of current emissions, as referenced in Section 4.1.1 of the Breff Notes for Intensive Rearing of Poultry and Pigs.
2. This proposed development will result in a complete cessation of agitation of raw pig manure in open storage tanks. The current practice is that raw pig manure is agitated in the overground storage tank, prior to releasing to customer farmers.

Odourmet UK Ltd who have acted as the Agency's experts on a number of sites to date have referenced in a report prepared for another pig farm that "The specific emission rate of an open storage tank, is assumed to increase from $150 \text{ ouE} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ to $500 \text{ ouE} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$, when the slurry is being agitated" this is stated in page 10. Section 2.2, of a report prepared by Odourmet UK titled '**Review of Odour impact of two pig production units and options for improvement**'. It is possible that the total emissions from these open storage tanks could equate to 20% of the total emissions from this site at present. This would be totally eliminated by this proposed development.

3. The development of the proposed anaerobic digester will in effect reduce the emissions to air from the current practice of landspreading raw pig manure to the landspreading of liquid digestate by a factor of at least 80%. This has been proven in tests carried out in Denmark. It is anticipated that this will be the single most notable effect of the proposed development in the hinterland of the facility, and will greatly reduce the impacts on human beings in the area.

Proposed Measures to further Minimize and Abate Odour on site

5. Continued incorporation of low protein diets on site in line with recommendations from Nutec Ltd It is estimated that 30% reductions have already been achieved.
6. All pig manure will be delivered fresh to the anaerobic digester, thereby greatly reducing emissions from under floor storage tanks. The fresher the pig manure is delivered to the digester the greater the gas production levels that will be achieved. Removal of pig manure regularly from the storage tanks under the pig houses will effectively qualify these houses as low emission housing. This process is described in detail in a document that is available on the internet, at <http://www.infomil.nl/luch/index.htm>.
7. The odour impact of land application of liquid digestate v pig manure will be reduced by 80% approx, based on studies undertaken in Denmark on the actual application of liquid digestate replacing pig manure applications.
8. The development of this anaerobic digester will negate the requirement of agitation of raw pig manure in open storage tanks, which we know is a major source of emissions from this site currently, as all pig manure leaving this facility is agitated in one of the four existing over-ground storage tanks. Odournet UK Ltd who have acted as the Agency's experts on a number of sites to date have referenced in a report prepared for another pig farm that "The specific emission rate of an open storage tank, is assumed to increase from $150 \text{ ouE} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ to $500 \text{ ouE} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$, when the slurry is being agitated" this is stated in page 10. Section 2.2, of a report prepared by Odournet UK titled '**Review of Odour impact of two pig production units and options for improvement**'.

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TABLE F.1(i) : EMISSIONS MONITORING AND SAMPLING POINTS - (1 table per monitoring point)

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

Emission Point Reference No. : _____ SW3

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
COD or BOD	Quarterly	Good	Standard Methods	Standard Methods

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TABLE F.1(i) : EMISSIONS MONITORING AND SAMPLING POINTS - (1 table per monitoring point)

Site 2. Fattening Unit at Ballyknockane

Ref: FU

Emission Point Reference No. : SW4

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Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
COD or BOD	Quarterly	Good	Standard Methods	Standard Methods

TABLE F.1(i) : EMISSIONS MONITORING AND SAMPLING POINTS - (1 table per monitoring point)

Site 3. Woodville Pig farm at Woodville

Ref: WPF

Emission Point Reference No. : _____ SW1 _____

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Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method Standard Methods	Analysis method/ technique Standard Methods
COD or BOD	Quarterly	Good		

TABLE F.1(i) : EMISSIONS MONITORING AND SAMPLING POINTS - (1 table per monitoring point)

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

Emission Point Reference No. : SW2

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Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method Standard Methods	Analysis method/ technique Standard Methods
COD or BOD	Quarterly	Good		

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

Emission Point Reference No. : AGW4 (to be provided)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Nitrate	Annually	Good	Standard Methods	Standard Methods
Total Ammonia	Annually	Good	Standard Methods	Standard Methods
Faecal coliforms	Annually	Good	Standard Methods	Standard Methods

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Site 2. Fattening Unit at Ballyknockane

Ref: FU

Emission Point Reference No. : AGW5 (existing)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Nitrate	Annually	Good	Standard Methods	Standard Methods
Total Ammonia Faecal coliforms	Annually	Good	Standard Methods	Standard Methods

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Site 3. Woodville Pig Farm at Woodville

Ref: WPF

Emission Point Reference No. : AGW1 (existing)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Nitrate	Annually	Good	Standard Methods	Standard Methods
Total Ammonia	Annually	Good	Standard Methods	Standard Methods
Faecal coliforms	Annually	Good	Standard Methods	Standard Methods

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Site 3. Woodville Pig Farm at Woodville

Ref: WPF

Emission Point Reference No. : AGW2 (existing)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Nitrate	Annually	Good	Standard Methods	Standard Methods
Total Ammonia	Annually	Good	Standard Methods	Standard Methods
Faecal coliforms	Annually	Good	Standard Methods	Standard Methods

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Emission Point Reference No. : AGW3 (existing)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Nitrate	Annually	Good	Standard Methods	Standard Methods
Total Ammonia	Annually	Good	Standard Methods	Standard Methods
Faecal coliforms	Annually	Good	Standard Methods	Standard Methods

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G.1 Resource Use and Energy Efficiency

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

The proposed Anaerobic Digester plans to utilize fuel streams currently available in the area, including pig manure, belly grass, grass, maize, silage, flotation sludge, fish waste and feed mill waste.

The primary one is pig manure which will be sourced from the unit. The total volume of pig manure which is planned to be treated at this site is 26,000 m³.

In addition to the pig manure, it is planned to import approximately 11,000 tonnes per annum of additional waste available in the area. We have specifically identified waste being produced in the area which are currently being landspread for agricultural re-use. These are belly grass, grass, maize, silage, and flotation sludge, fish waste and mill feed waste.

In the event that the organic waste referenced is either not available or does not satisfy quality criteria, it is possible to utilize energy crops as a fuel for the proposed digester. In the current changing agricultural climate, it is possible that energy crop production for supply to an anaerobic digester may be a viable alternative in the future.

Site 2. Fattening Unit at Ballyknockane

Ref: FU

The raw materials used in the pig farm are, Feed, Heating Oil, Medication,, electricity, and water.

About 4,420 tonnes of feed will be used annually on site or equivalent in liquid form.

All feeds are typical, standard pig feeds. There are 4 main classes of feed used for different classes of animals. Feeds or ingredients are purchased from feed trading/milling industry. Typical composition of the main classes of feeds used on site currently is set out hereunder.

The veterinary medicines usage on site is minimized by restricting access to the site by unnecessary personnel, and maintaining the site as, a minimal disease unit.

VET MEDICINES: Antibiotics
 Anthelmintics

Vaccines (RE Disease prevention)
Hormones (RE lactation and pregnancy)
Insecticides (Parasite and fly control)
Disinfectants (Hygiene)

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

The raw materials used in the pig farm are, Feed, Heating Oil, Medication,, electricity, and water.

All feeds are typical, standard pig feeds. There are 4 main classes of feed used for different classes of animals. Feeds or ingredients are purchased from feed trading/milling industry. Typical composition of the main classes of feeds used on site currently is set out hereunder.

The veterinary medicines usage on site is minimized by restricting access to the site by unnecessary personnel, and maintaining the site as a minimal disease unit.

VET MEDICINES: Antibiotics
 Anthelmintics
 Vaccines (RE Disease prevention)
 Hormones (RE lactation and pregnancy)
 Insecticides (Parasite and fly control)
 Disinfectants (Hygiene)

During 2007 546,971 Kwh of electricity were utilized on site.

H.1 H.1 Raw Materials, Intermediates and Product Handling

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

Site 2. Fattening Unit at Ballyknockane

Ref: FU

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

A leak detection system will be provided under all new structures and facilities in this proposed development. This combined with well monitoring will ensure that all liquids will be stored and handled safely and will not give rise to groundwater contamination.

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H.1 Waste Handling

Site 1. Anaerobic Digester at Ballaghveny**Ref: AD**

Name	Domestic Refuse
Description & nature of waste	Canteen waste & packaging
Source	Work areas and canteen
Where stored and integrity/permeability of storage areas	Bin on site
Estimated Amount (m3) and tonnage	1
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	20 03 01
Waste Category per EC Reg 1774/2002/EC where relevant	
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	N

Comments

This waste will be stored in a covered area on site and collected and brought to landfill every 2 weeks.

See attached EIS for proposed record

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Name	Digestate
Description & nature of waste	Product of Anaerobic digestion
Source	Digester
Where stored and integrity / impermeability of storage areas	Overground Storage Tanks
Estimated Amount (m3) and tonnage	26,000
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	19 06 05
Waste Category per EC Reg 1774/2002/EC where relevant	N/A
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	Y

Comments

Digestate from the proposed anaerobic digester is only included here because the Agency expects it to be included here. It is not a waste product from this facility. It will not be discarded from this facility, but rather supplied to customer farmers for use as a valuable fertilizer source.

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Name	Fluorescent lighting tubes
Description & nature of waste	Fluorescent lighting tubes
Source	Used fluorescent tubes
Where stored and integrity/impermeability of storage areas	Designated Storage
Estimated Amount (m3) and tonnage	0.25
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	21 01 21
Waste Category per EC Reg 1774/2002/EC where relevant	
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	Y

Comments

The tubes are brought to a local Civic Bring Centre by the site owner.

See attached EIS for proposed record

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Site 2. Fattening Unit at Ballyknockane**Ref: FU**

Name	Domestic Refuse
Description & nature of waste	Canteen waste & packaging
Source	Work areas and canteen
Where stored and integrity/permeability of storage areas	Bin on site
Estimated Amount (m3) and tonnage	2.5
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	20 03 01
Waste Category per EC Reg 1774/2002/EC where relevant	
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	N

Comments

This waste will be stored in a covered area on site and collected and brought to landfill every 2 weeks.

See attached EIS and AER for further info

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Name	Animal tissue Waste
Description & nature of waste	Dead pigs
Source	Animal Houses
Where stored and integrity / impermeability of storage areas	Covered Storage
Estimated Amount (m3) and tonnage	20
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.) N/A	N/A
European Waste Catalogue Code	02 01 02
Waste Category per EC Reg 1774/2002/EC where relevant	n/a
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	N

Comments

Carcasses will be temporarily stored in a covered sealed metal skip for transport by Beechfield Products Ltd who is an authorised waste collector and disposal to Premier Proteins Ballinasloe who are a licensed rendering plant at regular intervals. A signed agreement to this effect is given in Appendix 6 of the Attached EIS.

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Name	Vet. Waste
Description & nature of waste	Sharps
Source	Animal houses
Where stored and integrity / impermeability of storage areas	Designated Containers
Estimated Amount (m3) and tonnage	50 KG
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.) N/A	N/A
European Waste Catalogue Code	18 02 02
Waste Category per EC Reg 1774/2002/EC where relevant	N/A
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	Y

Comments

These sharps are collected by Initial Healthcare. See Appendix 17 of the Attached EIS for record of Service Agreement

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Name	Fluorescent lighting tubes
Description & nature of waste	Fluorescent lighting tubes
Source	Used fluorescent tubes
Where stored and integrity/impermeability of storage areas	Designated Storage
Estimated Amount (m3) and tonnage	0.2
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.) N/A	N/A
European Waste Catalogue Code	21 01 21
Waste Category per EC Reg 1774/2002/EC where relevant	
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	Y

Comments

The tubes are brought to a local Civic Bring Centre by the site owner

See attached EIS Attachment 15 for proposed record

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Name	Animal Slurry
Description & nature of waste	Pig Slurry
Source	Animal Houses
Where stored and integrity / impermeability of storage areas	Underground storage and storage basin
Estimated Amount (m3) and tonnage	15,000
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	19 06 05
Waste Category per EC Reg 1774/2002/EC where relevant	N/A
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	N

Comments

This animal slurry will be re-cycled in the proposed digester

It is only included here because the Agency expects it to be included here. It is not a waste product from this facility. It will not be discarded from this facility, but rather recycled and supplied to customer farmers for use as a valuable fertilizer source.

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Site 3. Woodville Pig Farm at Woodville**Ref: WPF**

Name	Domestic Refuse
Description & nature of waste	Canteen waste & packaging
Source	Work areas and canteen
Where stored and integrity/permeability of storage areas	Bin on site
Estimated Amount (m3) and tonnage	3.3
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	20 03 01
Waste Category per EC Reg 1774/2002/EC where relevant	
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	N

Comments

This waste is stored in a covered area on site and collected and brought to landfill every 2 weeks.

See attached AER for details

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Name	Animal tissue Waste
Description & nature of waste	Dead pigs
Source	Animal Houses
Where stored and integrity / impermeability of storage areas	Covered Storage
Estimated Amount (m3) and tonnage	49 tonnes
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	02 01 02
Waste Category per EC Reg 1774/2002/EC where relevant	n/a
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	N

Comments

Carcasses are temporarily stored in a covered sealed metal skip for transport by Beechfield Products Ltd who is an authorised waste collector and disposal to Premier Proteins Ballinasloe who are a licensed rendering plant at regular intervals. A signed agreement to this effect is given in Appendix 6 of the Attached EIS. See also attached AER for details

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Name	Vet. Waste
Description & nature of waste	Sharps
Source	Animal houses
Where stored and integrity / impermeability of storage areas	Designated Containers
Estimated Amount (m3) and tonnage	11 kg
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.) N/A	N/A
European Waste Catalogue Code	18 02 02
Waste Category per EC Reg 1774/2002/EC where relevant	N/A
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	Y

Comments

These sharps are collected by Initial Healthcare. See Appendix 17 of the Attached EIS for record of Service Agreement. See also Attached AER for collection record

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Name	Fluorescent lighting tubes
Description & nature of waste	Fluorescent lighting tubes
Source	Used fluorescent tubes
Where stored and integrity/impermeability of storage areas	Designated Storage
Estimated Amount (m3) and tonnage	0.09
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.) N/A	N/A
European Waste Catalogue Code	21 01 21
Waste Category per EC Reg 1774/2002/EC where relevant	
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	Y

Comments

The tubes are brought to a local Civic Bring Centre by the site owner

See attached EIS Attachment 15 for record. See also Attached AER for details

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Name	Animal Slurry
Description & nature of waste	Pig Slurry
Source	Animal Houses
Where stored and integrity / impermeability of storage areas	Underground storage and storage basin
Estimated Amount (m3) and tonnage	11,000
Period or Periods of generation	Continuously
Analysis (include test methods and Q.C.)	N/A
European Waste Catalogue Code	19 06 05
Waste Category per EC Reg 1774/2002/EC where relevant	N/A
Hazardous as Defined by WMA 1996 to 2003 (y/n)?	N

Comments

This animal slurry will be re-cycled in the proposed digester

It is only included here because the Agency expects it to be included here. It is not a waste product from this facility. It will not be discarded from this facility, but rather recycled and supplied to customer farmers for use as a valuable fertilizer source.

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TABLE H.1(i) WASTE - Waste Recovery/Disposal

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

Waste material	EWC Code	Hazardous(H) /Other Waste (O)	Main source ¹	Quantity (Estimated)		On-site recovery/disposal ² (Method & Location)	Off-site Recovery, reuse or recycling (Method, Location & Undertaker)	Off-site Disposal (Method, Location & Undertaker)
				Tonnes / month	m ³ / month			
Domestic Refuse	20 03 01	O	Work areas and canteen	0.02		Disposal	Owner takes to landfill	
Fluorescent Tubes	20 01 21	H	Light through unit			Re-cycle	Local Civic Centre	
Digestate	19 06 05	O	Digester		2166	Re-cycle	Re-cycle as fertiliser to customers	

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Digestate from the proposed anaerobic digester is only included here because the Agency expects it to be included here. It is not a waste product from this facility. It will not be discarded from this facility, but rather supplied to customer farmers for use as a valuable fertilizer source.

Site 2. Fattening Unit at Ballyknockane

Ref: FU

Waste material	EWC Code	Hazardous(H) /Other Waste (O)	Main source ¹	Quantity		On-site recovery/disposal: ² (Method & Location)	Off-site Recovery, reuse or recycling (Method, Location & Undertaker)	Off-site Disposal
				Tonnes / month	m ³ / month			
Domestic Refuse	20 03 01	O	Work areas and canteen	0.2			Disposal	Owner takes to local landfill
Animal Tissue Waste	02 01 02	O	Animal Houses	1.6			Disposal	Premier Proteins Ballinasloe
Sharps	18 02 02	H	Animal Houses	4.1			Disposal	Healthcare initial collect & disposal
Fluorescent Tubes	20 01 21	H	Light through unit	0.01			Re-cycle	Local Civic Centre
Animal Slurry*	19 06 05	O	Animal Houses		1250	Re-cycle		Proposed Digester

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***This animal slurry will be re-cycled in the proposed digester**

It is only included here because the Agency expects it to be included here. It is not a waste product from this facility. It will not be discarded from this facility, but rather recycled and supplied to customer farmers for use as a valuable fertilizer source.

TABLE H.1(i) WASTE - Waste Recovery/Disposal

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

Waste material	EWC Code	Hazardous(H) /Other Waste (O)	Main source ¹	Quantity		On-site recovery/disposal ²	Off-site Recovery, reuse or recycling	Off-site Disposal
				Tonnes / month	m ³ / month			
Domestic Refuse	20 03 01	O	Work areas and canteen			(Method & Location)	(Method, Location & Undertaker)	Taken to landfill by owner
Animal Tissue Waste	02 01 02	O	Animal Houses	4.1			Disposal	Premier Proteins Ballinasloe
Sharps	18 02 02	H	Animal Houses	0.9			Disposal	Healthcare initial collect & disposal
Fluorescent Tubes	20 01 21	H	Light through unit	0.0007			Re-cycle	Local Civic Centre
Animal Slurry	19 06 05	O	Animal Houses		916	Re-cycle		Proposed Digester

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This animal slurry will be re-cycled in the proposed digester. It is only included here because the Agency expects it to be included here. It is not a waste product from this facility. It will not be discarded from this facility, but rather recycled and supplied to customer farmers for use as a valuable fertilizer source.

I.1 Existing Environment & Impact of the Activity

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

The development of this anaerobic digester will negate the requirement of agitation of raw pig manure in open storage tanks, which we know is a major source of emissions.

Odournet UK Ltd who have acted as the Agency's experts on a number of sites to date have referenced in a report prepared for another pig farm that "The specific emission rate of an open storage tank, is assumed to increase from $150 \text{ ouE} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ to $500 \text{ ouE} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$, when the slurry is being agitated" this is stated in page 10. Section 2.2, of a report prepared by Odournet UK titled '**Review of Odour impact of two pig production units and options for improvement**'. The level of emissions from the agitation of the overground storage tank on site at present equates to at least 20% of the total emissions from the site. If this development proceeds, these emissions will be completely eliminated.

The nett result of this proposed development will be a major reduction of the current level of emissions from this facility, in the order of at least 50%.

Site 2. Fattening Unit at Ballyknockane

Ref: FU

Site 3. Woodville Pig Farm at Woodville

Continued incorporation of low protein diets on site in line with recommendations as previously outlined. It is estimated that 30% reductions have already been achieved.

All pig manure will be delivered fresh to the anaerobic digester, thereby greatly reducing emissions from underfloor storage tanks. The fresher the pig manure is delivered to the digester the greater the gas production levels that will be achieved. Removal of pig manure regularly from the storage tanks under the pig houses will effectively qualify these houses as low emission housing. This process is described in detail in a document that is available on the internet, at <http://www.infomil.nl/luch/index.htm>. The effective reduction of emissions achieved will be 20 to 40%.

1.2 Assessment of impact of ground emissions

1.3 Ground and/or groundwater contamination

General

Pig Manure can cause serious water pollution if discharged directly to groundwater or surface waters. Whether or not land application creates a risk to the aquatic environment is largely dependent on a number of natural physical characteristics. These include such factors as geology, soils, climate, hydrology and hydro-geology, and on more anthropogenic factors such as operational procedures and the proximity of other potentially polluting features such as farmyards, silage pits. Slurry pits and septic tanks.

The assessment of the likely impacts from the landspreading needs to consider all of the above factors in a holistic way.

Over the past few years a number of working parties have produced guidelines on the environmental management of intensive agricultural developments.

These include: -

- The Geological Survey of Ireland guidelines for the assessment of the vulnerability of groundwater to various potentially polluting activities and proposed approaches to the risk assessment of groundwater pollution (Daly, 1994)
- The BATNEEC guidance note for the Pig Production Sector, published by the EPA
- Guidance notes prepared as the result of the work of a Technical Sub-Committee under the aegis of the Management committee of the Regional Water Laboratory, which looked at the land-spreading of animal wastes and the scoping of Environmental Impact Statements related to piggery developments (Moore 1995)
- Guidelines for good farm practice detailed in the Rural Environment Protection Scheme documentation (1992 & 1999) also include a section on landspreading.
- Guidance notes and oral communications with EPA representatives relating to the Integrated Pollution Control Licensing Application procedures (1997)

Reference was made to all these sets of guidelines in the preparation of this report. The proposed development of the anaerobic digester will greatly reduce the potential impacts on surface and groundwater.

Vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities. The travel time, attenuation capacity of the soils and the nature of the contaminants are important elements in determining the vulnerability of groundwater. The Geological Survey of Ireland has prepared guidelines, which help in categorising the vulnerability. Applying these guidelines and using the properties of the

subsoils and bedrock, vulnerability ratings can be determined for the proposed landspread areas.

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

There has been no historical contamination of groundwater at this site. This proposed development will further reduce the potential impacts at this site, for the following reasons.

The application of digestate from the proposed facility, which will replace the current practice of application of raw pig manure, and will greatly reduce the risk of nitrate-nitrogen contamination of groundwater, due to the alteration of nitrogen which occurs in the process, rendering it more suitable for plant uptake.

Site 2. Fattening Unit at Ballyknockane

Ref: FU

There has been no historical contamination of groundwater at this site. This proposed development will further reduce the potential impacts at this site, for the following reasons.

The removal of raw pig manure on a regular basis from the existing storage tanks and channels under the pig houses will reduce the loading pressure on these tanks.

A leak detection system will be provided under all new structures and facilities in this proposed development.

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

There has been no historical contamination of groundwater at this site. This proposed development will further reduce the potential impacts at this site, for the following reasons.

The removal of raw pig manure on a regular basis from the existing storage tanks and channels under the pig houses will reduce the loading pressure on these tanks.

A leak detection system will be provided under all new structures and facilities in this proposed development.

1.4 Noise Impact.

General

A simple definition of noise is "unwanted sound". The major noises associated with a pig unit are animals at feeding time, ventilation fans, feed unloading and tractors loading pig manure.

Noise levels are measured in decibels and a weighting factor (A) is applied to approximate the frequency response to the human ear. This weighted decibel scale, dB (A) correlates well with human sensations of loudness, disturbance and annoyance.

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

The proposed development of an anaerobic digester will include a GE Jenbacher gas fuelled generator engine, which will be located within a sound proofed plant room, as shown in attached drawings. This proposed development will not result in audible noise outside of acceptable limits at or beyond site boundary.

Site 2. Fattening Unit at Ballyknockane

Ref: FU

Noise emissions from this pig farm are not audible, at the site boundary. Noise levels are generally low and typical of a quiet rural area during daytime.

Apart from the noise level at feeding time (10-15 minutes) and from delivery vehicles, the noise levels from the pigs at other times are insignificant.

Other noises arise from the operation of feed preparation plant and ventilating fans. The noise generated by these is inaudible outside the immediate vicinity of the buildings and adjoining yards.

Insulation levels in modern pig unit are high, normally 60 mm extruded polystyrene in walls and 60 mm extruded polystyrene in ceilings. This will greatly muffle noise levels from the interiors of the pig buildings.

The activities currently on site do not generate noise levels that could be detected at site boundary, similar to most pig farms in the country.

There have been no complaints of noise emissions for this facility to date

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

Noise emissions from this pig farm are not audible, at the site boundary. Noise levels are generally low and typical of a quiet rural area during daytime.

Apart from the noise level at feeding time (10-15 minutes) and from delivery vehicles, the noise levels from the pigs at other times are insignificant.

Other noises arise from the operation of feed preparation plant and ventilating fans. The noise generated by these is inaudible outside the immediate vicinity of the buildings and adjoining yards.

Insulation levels in modern pig unit are high, normally 60 mm extruded polystyrene in walls and 60 mm extruded polystyrene in ceilings. This will greatly muffle noise levels from the interiors of the pig buildings.

The activities currently on site do not generate noise levels that could be detected at site boundary, similar to most pig farms in the country.

There have been no complaints of noise emissions for this facility to date

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1.5 Environmental Considerations and BAT

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

Alternative Sites Considered

The applicant engaged NERGE (Nutrient Recovery to Generate Electricity Ltd), to carry out a feasibility study for the development of an anaerobic digester adjacent to its pig farm at Woodville, Ballymackey, Nenagh, Co Tipperary.

NERGE identified a primary location at the rear of Woodville pig farm, adjacent to Ballaghveny Landfill, but this property is owned by North Tipperary County Council. After consultation it was decided that the timeframe necessary to agree a long term lease or purchase could be years. It was decided that this project was much too important to ensure the medium to long term operation of the referenced pig farms to wait years. The current proposed location was then identified as the best alternative.

The location of this proposed development across the road from the Ballaghveny landfill site which is currently being capped at present is an added advantage, which will be further investigated when relevant planning permissions and Licences are in place, for the proposed development.

It is fully intended to investigate the possibility of utilising the gas from the adjacent landfill, in the generating set which will be installed in this proposed development, thereby preventing the current requirement for flaring off this gas.

Alternative Site Layout and Designs

Alternative site layouts and designs were considered, but this proposal is prepared taking account of similar processes operating today using a similar feedstock mix to that which is proposed at this facility. Following a detailed review of all operational designs it was agreed that the Xergi Danish design best suited this operation.

Alternative processes considered

The proposed anaerobic digester will utilise the pig manure from the adjacent pig farms to generate gas. In the process solids will be removed including 70% of P. The digested material is stabilized by the process so it is almost odour free. Much of the carbon has been removed from it and has been homogenized during the process so it becomes thinner and of an even consistency and the nutrient it contains has become plant available so it is a valuable uniform fertiliser. The method proposed for application (low trajectory splash-plate/band spreading) is very practicable for applying this product.

J. Accident Prevention and Emergency Response

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

An Emergency Response Procedure will be put in place for this facility.

This procedure sets out the contact numbers of all the key personnel on-site, who are the responsible people. It also identifies the emergency contact numbers of relevant contractors and specialists that may be required in the event of an emergency. It further includes contact numbers for local Garda, fire brigade and doctors.

This procedure is to be laminated and erected at a number of key locations around the facility. A register is in place to record all notifiable events on-site in the event of such an incident.

A copy of the emergency response procedure is included in Appendix 10 of the Attached EIS

Site 2. Fattening Unit at Ballyknockane

Ref: FU

An Emergency Response Procedure has been put in place for this facility.

This procedure sets out the contact numbers of all the key personnel on-site, who are the responsible people. It also identifies the emergency contact numbers of relevant contractors and specialists that may be required in the event of an emergency. It further includes contact numbers for local Garda, fire brigade and doctors.

This procedure is to be laminated and erected at a number of key locations around the facility. A register is in place to record all notifiable events on-site in the event of such an incident.

A copy of the emergency response procedure is included in Appendix 13 of the Attached EIS

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

An Emergency Response Procedure has been put in place for this facility.

This procedure sets out the contact numbers of all the key personnel on-site, who are the responsible people. It also identifies the emergency contact numbers of relevant contractors and specialists that may be required in the event of an emergency. It further includes contact numbers for local Garda, fire brigade and doctors.

This procedure is to be laminated and erected at a number of key locations around the facility. A register is in place to record all notifiable events on-site in the event of such an incident.

A copy of the emergency response procedure is included in Appendix 13 of the Attached EIS

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K. Remediation, Decommissioning, Restoration and Aftercare

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

If cessation of the pig facilities that are proposed to be the feed stock for this proposal was to occur, a review would have to be undertaken in respect of the continual use of the anaerobic digester. It is envisaged that additional sources such as energy crops could be sourced from the farms adjacent to the plants to enable the anaerobic digester to continue operation.

Site 2. Fattening Unit at Ballyknockane

Ref: FU

If the enterprise had to cease operation, all pig feeding, pig production, pig manure production and waste production would cease also. At such time there would be normal inputs still in stock (e.g. feed in bins and gas/oil in tanks, medicines, etc.) and there would be pigs in houses, pig manure in tanks and also some of the wastes (dead pigs, medicine containers) in their respective containers. All of those materials would then be disposed of or distributed in the same ways as was normal during the normal operation of the enterprise. Saleable pigs would be sold to the usual outlets. All remaining feed, gas, oil and medicines would be returned/sold back to the respective suppliers. The buildings, once empty of pig stock would be washed clean and all dirty wash water would be spread on farmland with the pig manure, there would be no special or adverse impact on the environment.

In the unlikely event of closure being the result of a Class A disease incident, any non-saleable pigs would be humanely put down and consigned either for rendering (as currently done for the dead pig/pig tissues) or for incineration. In such a situation, all of that would be under the control of the veterinary Division of the Department of Agriculture.

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

If the enterprise had to cease operation, all pig feeding, pig production, pig manure production and waste production would cease also. At such time there would be normal inputs still in stock (e.g. feed in bins and gas/oil in tanks, medicines, etc.) and there would be pigs in houses, pig manure in tanks and also some of the wastes (dead pigs, medicine containers) in their respective containers. All of those materials would then be disposed of or distributed in the same ways as was normal during the normal operation of the enterprise. Saleable pigs would be sold to the usual outlets. All remaining feed, gas, oil and medicines would be returned/sold back to the respective suppliers. The buildings, once empty of pig stock would be washed clean and all dirty wash water would be spread on farmland with the pig manure, there would be no special or adverse impact on the environment.

In the unlikely event of closure being the result of a Class A disease incident, any non-saleable pigs would be humanely put down and consigned either for rendering (as currently done for the dead pig/pig tissues) or for incineration. In such a situation, all of that would be under the control of the veterinary Division of the Department of Agriculture.

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L. Statutory Requirements

General

No relevant specifications issued by the EPA under Section 83(3) of the Act.

In relation to those activities to which Section 83(3) of the act may apply, the requirements of Section 83(3)(a) to (e) of the EPA Act, 1992 shall be met by operating the facilities and managing the site so that :

- (a) Any emissions from the activity will not result in the contravention of any relevant air quality standard specified under Section 50 of the Air Pollution Act, 1987, and will comply with any relevant emission limit value specified under section 51 of the Air Pollution Act, 1987.
- (b) Any emissions from the activity will comply with or will not result in the contravention of, any relevant quality standard for waters, trade effluents and sewage effluents and standards in relation to treatment of such effluents prescribed under section 26 of the Local Government (Water Pollution) Act, 1977.
- (c) Any emissions from the activity or any premises, plant, methods, processes, operating procedures or other factors which affect such emissions, will comply with, or will not result in the contravention of, any relevant standard including any standard for an environmental medium, prescribed under regulations made under the European Communities Act, 1972 or under any other enactment.
- (d) Any noise from the activity will comply with, or will not result in the contravention of, any regulations under section 106.
- (e) Any emissions from the activity will not cause significant environmental pollution and
- (f) The best available technology not entailing excessive costs will be used to prevent or eliminate or, where that is not practicable, to limit above or reduce an emission from the activity.

The Applicant is satisfied that the activity is not in or near and is not likely to have an adverse effect on the integrity of

- (a) A site placed on a list in accordance with Chapter 1 of SI 94 of 1997 or
- (b) A site where consultation has been initiated in accordance with Article 5 of the EU Habitats Directive (94/43/EEC), or
- (c) A European site as defined in Article 2 of SI 94 of 1997

The activity is not likely to have an adverse effect on water quality in the vicinity of the activity. Normal recommended inputs of P fertilizer into farmland in accordance with Good Farming Practice (REPS code or DAF/DoE code), are unlikely to have any adverse effect on quality of either surface waters or groundwater. S.I. 258 of 1998 (Local Government (Water Pollution) Act, 1977 (Water Quality Standards for Phosphorus) Regulations, 1998) are not directly relevant to farmers including those who are customers for pig manure/digestate from this application.