Attachment No. C

C.1 Site Management & Control

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

This facility under the control of the applicants will be at located Ballaghveny Ballymackey, Co Tipperary. The manager on-site who is also the responsible person on-site is the owner Mr Tim Cullinan

The main activities at this facility will occur during normal working hours between 8.00 a.m. and 6.00 p.m. Normal farming practices are to be carried out everyday including weekends and holidays.

The proposed development of the anaerobic digester is a fully automated process with all flow valves and emissions monitored electronically both at the site office and centrally by a controlling company under contract. The staffing of this facility will require manual inspection of the facility of 2 to 3 hours per normal working day. All servicing and maintenance of this facility will be provided by specialists under contract.

Specialist services are utilized by management on-site in specific areas of responsibility, in order to ensure the efficient and proper running of the facility There will be training procedure on-site to ensure that new and on going training is provided to all staff members as required. This will also provides for training of new staff members or temporary staff. Documentation in respect of this training procedure and training events will be maintained on site and will be available for inspection at all reasonable times.

Site 2. Fattening Unit at Ballyknockane

Ref: FU

This facility is under the control of Woodville Pigs Ltd at Ballyknockane, Ballymackey, Co Tipperary. The manager on-site who is also the responsible person on-site is the owner Mr. Tim Cullinan.
The main activities at this facility occur during normal working hours between 8.00 a.m. and 6.00 p.m. Stock inspections in line with normal farming practices are carried out everyday including weekends and holidays.

Specialist services are utilized by management on-site in specific areas of responsibility, in order to ensure the efficient and proper running of the facility. These are Nutec Ltd and Ultan Kennedy to monitor the efficiency of all diets on-site, NRGE Ltd, to monitor environmental performance, including internal audits and Denis Kelleher to provide veterinary advice.

There is a training procedure on-site to ensure that on going training is provided to all existing staff members as required. This also provides for training of new staff members or temporary staff. Documentation in respect of this training procedure and training events are maintained on site and available for inspection at all reasonable times

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

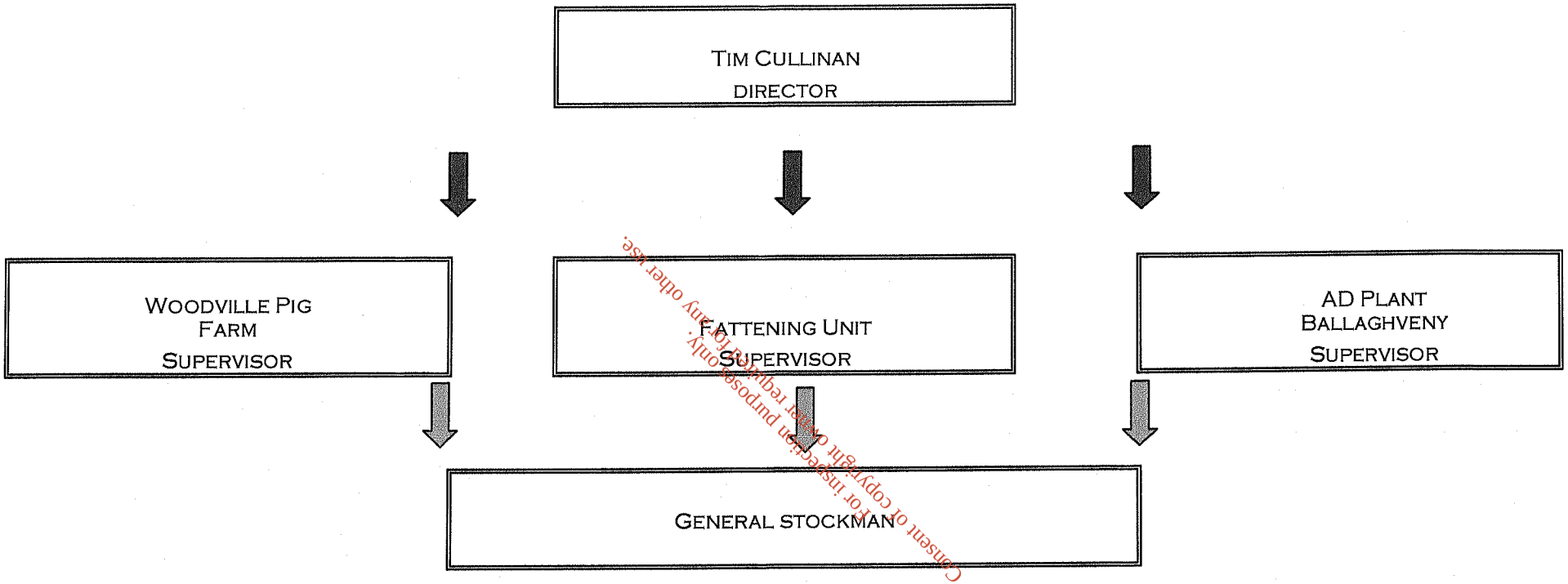
This facility is under the control of Woodville Pigs Ltd at Woodville Ballymackey, Nenagh, Co. Tipperary. The manager on-site who is also the responsible person on-site is the owner Mr Tim Cullinan

The main activities at this facility occur during normal working hours between 8.00 a.m. and 6.00 p.m. Stock inspections in line with normal farming practices are carried out everyday including weekends and holidays.

Specialist services are utilized by management on-site in specific areas of responsibility, in order to ensure the efficient and proper running of the facility. These are Nutec Ltd and Ultan Kennedy to monitor the efficiency of all diets on-site, NRGE Ltd, to monitor environmental performance, including internal audits and Denis Kelleher to provide veterinary advice.

There is a training procedure on-site to ensure that on going training is provided to all existing staff members as required. This also provides for training of new staff members or temporary staff. Documentation in respect of this training procedure and training events are maintained on site and available for inspection at all reasonable times.

The proposed operation and management of the three facilities is shown in the management table below



Attachment D

D.1. Operational Information Requirements

Site 1. Anaerobic Digester at Ballaghveny

Ref: AD

Introduction

With a view to complying fully with current and forthcoming Environmental Legislation, Woodville Pigs engaged NRGE Ltd to undertake a feasibility study for the development of an Anaerobic Digester for the operation in North Tipperary. This study undertook to review all possible alternatives, for treatment of pig manure from the farm. It concluded that Anaerobic Digestion was the only feasible treatment option.

Overall Description

The proposal envisages the construction of a primary and secondary anaerobic digester, with 4 No feedstock storage tanks, a five span shed with segments for an engine room, plant room, office, and a centrifuge system, a dry store, two No. pre mix concrete circular tanks, two No. digestate engineered covered storage basins, and two No grain stores.
This proposal incorporates such features as covered storage tanks and covered extraction tank, spill pads adjacent to all tanks with diversion to adjacent tank, to prevent surface water contamination. Drawings of the proposed new structures are presented in Appendix 3 of the attached EIS

This proposed development of an anaerobic digester, will ensure the overall reduction of emissions, from the associated pig farms which is in accordance with BATNEEC, and conditions of IPC Licence which will have to be applied for to incorporate the new proposed developments.

Scale of the proposed development

The size and scale of the proposed development have been chosen after consideration of such matters as the site, customer demand for manure, economic viability and labour efficiency. The development is designed to cater for the treatment of all the pig manure generated by the associated adjacent pig farms in the area. The tariff available for electricity produced from alternative sources such as wind and anaerobic digestion in Ireland is among the lowest in Europe, therefore the size of the development reflects the economies of scale required to make the development viable.

The development is designed to cater for the treatment of all the pig manure generated by Woodville Pig Farm Ltd at its breeding and fattening facilities.

Proposed structures table

The following table details the proposed structures on site

FARM STRUCTURES TABLE Rev 1

*Covered Structures to Stormwater System
Paved Areas to Stormwater System only
Paved Areas to Foul/Stormwater System
Paved Areas to Foulwater System Only
Unpaved Areas

TITLE	STATUS	CLASS	STRU LGT (M)	CTURE WTH (M)	AREA SQ MTS	TOTAL AREA B/F		TANK WIDTH	TANK LENGHT	TANK DEPTH	CAPACITY CUBIC MTS	TOTAL CAPACITY	EFFECTIVE CAPACITY WITH 200 F. B.	TOTAL EFFECTIVE CAPACITY
Portal Frame Shed	Proposed	9	26.6	10.6	282.0	281.96	*							
Digester	Proposed	8	15	15.0	176.7	458.698		11	11	14	1329.79	1329.79	1310.793	1310.793
Secondary Digester/GasHolder	Proposed	7	31	31.0	754.9	1213.56	*	31	31	4	3017.54	4347.33	2866.663	4177.456
Basin	Proposed	7	40	40.0	1600.0	2813.56	*	40	40	4	6400	8948.162	6080	10257.456
Basin 2	Proposed	7	40	40.0	1600.0	4413.56	*	40	40	4	6400	8948.162	6080	16337.456
Mixing Tank	Proposed	7	10.75	10.8	90.8	4504.3	~	10.8	10.75	1.8	163.28981	9111.4518	145.1465	16482.6025
Mxing Tank 1	Proposed	7	15.35	15.4	185.1	4689.4	~	15.35	15.35	3	554.89099	9666.3428	517.898255	17000.50076
Concrete Apron	Proposed	8	5	5.0	25.0	4714.4	~							
Feed Tank 1	Proposed	7	3.3	3.3	8.5	4723.0	~							
Feed Tank 2	Proposed	7	3.3	3.3	8.5	4731.5	~							
Feed Tank 3	Proposed	7	3.3	3.3	8.5	4740.1	~							
Hot Water tank	Proposed	8	3.3	3.3	8.5	4748.6	~							
Gas Purifier	Proposed	8	2	2.0	3.1	4751.8	~							
Fiber Store	Proposed	8	30.29	16.6	502.8	5254.6								
Feed Store	Proposed	9	78.2	18	1407.6	6662.2								
Feed Store	Proposed	9	66.3	18	1193.4	7855.6								

Introduction to the Anaerobic Digestion Process

Following a detailed review of all available alternative technologies, to treat pig manure, as required by IPC licence P0467-01, it has been decided that the most suitable technology for this site is Anaerobic Digestion, which is simply the natural breakdown of organic waste in the absence of air. A Digester is simply 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, attack 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/or 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 regard to care taking of 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

The pig manure produced on this pig farm will provide the majority of the required fuel for this anaerobic digester
The additional fuel waste required will be sourced, and transported to the facility by lorry, at a rate of 9-13 loads per week.
The gas generated will be used to supply power for the pig farm, and heat, replacing oil usage.
The excess power will be exported.
The solids will be separated, including 70-80% of the P.
The liquid fertiliser will be used on customer farms, in accordance with a fertiliser plan.
The odour impact of spreading digestate vv pig manure will be reduced by 80% min.
The digestion process will destroy 98% of all pathogens & parasites.
The digestate is relatively stable, and will not produce a crust in storage.
The digestion process will kill all weed seeds.
The digestate is a pleasant, clean and easy material to handle.

Description of the Anaerobic Digestion Process

The estimated annual production of pig manure from the referenced pig farms is 15,000 M3 from the Ballyknockane fattening unit, and 11,000 M3 from Woodville Pig Farm. The location of these units in relation to the proposed site are identified in a location map (Scale 1:50,000) included in Attachment 1 of the attached EIS

Therefore the total volume of pig manure to be treated by the proposed Anaerobic Digester is therefore 26,000M3 annually.

It is planned to import an additional 11,000 tonnes of organic material per annum to mix with the pig manure to increase the efficiency of the proposed Anaerobic Digester. This organic material will be added directly to the mixing tank and will be green crop (maize, grass, oil seed or corn), or alternatively will be belly grass from adjacent meat factories, cake sludge from adjacent dairy processing plants, or fish waste etc. It is proposed to use only organic materials that are currently being applied to land, in accordance with Dept of Agriculture recommendations, as this process will greatly reduce current environmental impacts, in accordance with current landspreading directives. The approval of the Environmental Protection Agency, North Tipperary County Council and the Department of Agriculture will have to be granted to permit the treatment of other waste types at this proposed anaerobic digester.

All pig manure will be diverted fresh to the mixing tank where other organic materials will be mixed, and pumped at regular intervals to the anaerobic digester for gas production. The resultant digestate is then pumped to a centrifuge for removal of solids, with the final liquid odourless digestate, transferred to the covered storage tanks, for export to customer farms as fertiliser.

The organic material from the materials tanks will be transferred to the mixing tank at a 1:9 ratio to pig manure, having taken account of any deliveries directly into the mixing tank. The organic material will be transferred using a shaftless screw conveyor. The mixing ratios will be achieved by operating the screw on a timer when the required quantity of pig manure has charged to the mixing tank. Charging of the mixing tank with manure can only take place when the low level probe has been activated. Consistency of feed to the digester is achieved by a measured volume of manure charged to the mixing tank between the high and low level probes and a measured volume from the reception pit screw. The homogenised digester feed is pumped to the digester at regular intervals, controlled by computer. A meter will be installed on the line from the mixing tank to the digester. Liquid fatty material such as fish oil can be pumped directly into the digester from these material storage tanks adjacent to the plant room, a meter is also installed on these lines. The frequency of pumping to the digester is governed by gas recovery rates monitored by the computer control system both on the site and remotely at the control room of the equipment suppliers.

The operating temperature within the digester will be 55 degrees (Low Temperature Theromphelic Process) and a mechanical agitator will be affected by gas release. The digester will be constructed from Mild steel with the necessary heating coils fixed outside the digester walls. 100 mm insulation and weather cladding will be fitted to provide weather protection. The expected holding time in digester is fifteen days approx. Gas extracted from the digester will be diverted to the gas storage tank which will be located on top of the secondary digester, after passing through a gas purification unit to remove sulphur. After digester one the feedstock will be transferred to digester two where again the throughput time will be fifteen days approx. The secondary digester will not have heating coils around the circumference for the digester.

Collected gas from digester two will be transferred to the gas storage tank also passing through the gas purification system which incorporates a condensate well to reduce the moisture content of the gas. The excess moisture from the condensate well will be discharged to the digestate basin. The gas purifying system is only intended to reduce the H_2S content in the biogas. The main purpose is to protect the engine, the second purpose is to lower the SO_2 content in the exhaust gas (and also the H_2S content in the exhaust gas as there will always be smaller parts of uncombusted H_2S in the exhaust gas; with a H_2S content in the purified gas at 400 ppm the content in the exhaust gas will be 1,09 ppm).

The gas purifying system does not influence the NO_x content in the exhaust gas, as the NO_x content is dependent on the combustion temperature.

Normally the H_2S content in the biogas before the gas purifying is 2000-2500 ppm.

The gas purifying system is based on microbiological activity. The micro organisms colonise plastic balls with a high surface area within the gas purification tank. The sulphide oxidising micro-organisms use carbon dioxide from the biogas to cover their carbon need. The products formed are predominantly elementary sulphur but also sulphate, which will be discharged to the digestate basin. For the microbiological oxidation of sulphide it is essential to add specific amounts of oxygen with a minute

quantity of manure to the biogas. Depending on the concentration of hydrogen sulphide 2-5% air is added to the biogas. The quantity of air is monitored by the gas meter on the biogas digester and an oxygen meter on the outlet from the gas purifier to control the air quantities supplied by pump to the gas purifier.

A dual membrane gas storage dome will be constructed. The construction will comprise of a rolled angle flange constructed on top of the existing tank. The gas tight membrane will be placed between the flanges and clamped. A blower unit will maintain the air pressure between the membranes constant allowing the accumulation of biogas under the inner membrane to be maintained at a level slightly higher than the air space between the membranes usually 0.5 bar. The gas storage unit is an atmospheric pressure bag type gas collector contained within the dome. The gas will be piped to the engine-boiler room.

It is proposed to install one gas engine coupled to a generator developing approximately 300 KVA. The proposed Model is a GE Jenbacher J 316 GS, and the spreadsheet attached gives expected levels heat and power generated. The emissions from the proposed engine are as per the chart attached. Hot water from the engine will be passed through a heat exchanger to provide heat for the digester process and the excess heat will be used within the pig unit. There will be additional heat available for possible alternative heating in the area. A dual fuel boiler 250 KW capacity will also be installed in the shed. This boiler will provide the heat for the process when the system is initially started and to maintain the heat on occasions that the gas engine is out of service.

After digester two the digestate will be transferred via sealed pipe system to a centrifuge. The fiberous material is removed and transferred into a storage skip. The liquid digestate will be transferred to the adjacent overground storage tanks, via a sealed pipe system. The pipework throughout the digestion process from mixing tank to the centrifuge will all be mild steel pipe. The pipework from the centrifuge to the digestate basin will be uPVC Pipe.

Traffic Levels

Details are set out below of the proposed traffic movements of this proposed development.

They come under the following headings.

Staff Transport.
There will be two movements to and from work daily.

Service staff, sales, inspectors, etc.
There will be an average of 3 car visits per week for service men, salesmen, and inspectors from all regulatory authorities to this facility.

Deliveries of pig manure from 2 No pig farms to Anaerobic Digester.
Fresh pig manure will be delivered every week from the 2 No pig farms, by lorry tanker of 6000 gallon (27.3 M3) capacity. The volume to be transported is 26,000 M3. This will require 19 loads per week. This lorry will arrive to the proposed site with fresh pig manure and leave with liquid digestate to the pig farms or to be delivered to customer farmers.

Deliveries of imported organic material to anaerobic digester.
There will be 11000 Tonnes of additional organic waste delivered to the proposed site annually, which will require 9 to 11 lorry loads per week.

Delivery of liquid digestate to customer farmers.
There will be 32,000 M3 approx of liquid digestate to be delivered to customer farmers per annum. The total volume of pig manure to be treated is 26,000 M3, along with 11000 Tonnes of organic waste imported. The extraction of gas will reduce volume by 8% approx and separation of the fiberous material will further reduce the liquid volume by 7% approx. Therefore the resultant estimated liquid digestate volume is 32,000 M3 approx. This will require 22 lorry loads per week, which corresponds with the trafficking required to transport pig manure in.

Delivery of solid digestate to customers.
There will be 2700 Tonnes of fiberous material produced per annum, which will require 135 lorry loads to be delivered to customers, or 3 loads per week, on average.

TABLE 2. Traffic Volumes

No	Vehicle Type Car/Lorry etc	Details	Capacity	Weekly Units	Annual Units
1	Car	Staff to work		10	520
2	Car	Service staff; sales men; Inspectors		6	312
3	Lorry	Fresh pig manure in	27.3 M3	38	1976
4	Lorry	Imported Organic waste	20 Tonne	22	1144
5	Lorry	Liquid digestate to customer farmers	27.3 M3	23	1196
6	Lorry	Fiberous digestate to Customers	20 Tonne	16	312
Totals				115	5460

This equates to less than 30% of the volume of heavy goods vehicle movements which service the Ballaghveny Landfill adjacent to this facility.

It is also worthy of note that the largest volume of the pig manure is already trafficked along this route to customer farmers.

Services

The estimated daily water requirement at the facility will be minimal, but a bored well will provide water. This well will also be used a monitoring well to prove the integrity of all tanks, and pipelines at the proposed facility.

A feasibility study must be undertaken by the ESB to analyse the capacity of the adjacent network to utilise the output from this proposed facility. A CHP plant on site will provide the heat needed to maintain the digester process temperature. The existing pole infrastructure servicing this site will be sufficient to deal with export of power, required for this development.

Monitoring and Control of the Anaerobic Digester

The following is a HACCP plan for the proposed AD unit

CCP No. 1 Daily checks

- Check all lids and covers are sound and closed after daily feed completed
- Check that all areas are clean after feeding
- Check visually that all gauges and automatic controls are working
- Check visually and audibly that digester mixing is working correctly
- Check that digester temperature is correct
- Check the pasteurisation recording system
- That daily log book is filled
- That gates are closed and locked after visiting the site

CCP No. 2 Weekly checks

- That pipes, pumps, valves and tanks are sound
- That reception area drains are clear
- There is no sign of vermin, if there is take remedial action
- That level monitors are working correctly
- That fences and gates are in good order

CCP No. 3 Areas classified as dirty

- Reception areas during reception of wastes and until washed and clear of debris after delivery
- Dirty clothes store
- Storage tanks for untreated waste
- Site dirty water collection tank and dedicated pump
- All equipment used pre-pasteurisation
- Pasteurisers before pasteurisation process is completed

CCP No. 4 Areas classified as clean.

- All areas and equipment not classified as dirty, in particular, pasteurisers after pasteurisation is complete and all equipment post pasteurisation
- Long term digested liquid storage tank and pump and pipework to the long term store
- Fibre storage shed
- Control area

CCP No. 5 Managing risk of cross-contamination between clean and dirty areas.

- Operatives will wear designated dirty clothing when receiving deliveries of non farm material, operating and maintaining dirty equipment or otherwise working in dirty areas or with dirty equipment
- Operatives when dressed in dirty clothes will not travel into clean areas
- All vehicles that pass into dirty areas will have their wheels washed at wash point beside mixing tank before leaving that area
- All delivery vehicles will unload over an area designated as dirty and have any debris from the delivery washed off before leaving the dirty area
- The cover over the mixing tank must be kept closed after delivery of organic waste into it.

- Any splashes created during delivery, feeding or maintenance will be washed down immediately after operations are completed
- During maintenance and servicing of dirty equipment care will be taken to ensure that any waste material contained in them is cleaned out into other dirty areas.
- All dirty areas drain into the dirty water collection tank. The contents of this tank are transferred by dedicated pump and pipes into the feeding system for the digester and pasteuriser system
- The pasteuriser will not be emptied unless it has achieved the correct time and temperature parameters

CCP No. 6 Deliveries of waste material

All reception areas have concrete surfaces and drain into the collection tank. Care will be taken to ensure that

- all personnel that will oversee the delivery dress in clothing (boots, gloves and boiler suit) that are dedicated to such purpose
- the collection tank is empty before delivery commences
- a delivery vehicle parks in such a way that the unloading point is over the concrete reception area.
- all hoses are sound and connected and positioned correctly
- there is sufficient space in the reception/storage tanks to receive the material
- that vehicles are free of debris after delivery is complete
- that any spillage is cleaned immediately after delivery, by shovel either directly into the reception pit, and by washing down
- wash footwear and gloves, if contaminated, on reception areas
- pump empty the collection tank into reception pit after delivery and washing down
- all lids on tanks are closed
- remove dedicated clothing and place in store or take overalls for washing if necessary

CCP No. 7 Records

- All waste from non farm sources will only be taken for treatment if it has a delivery docket, which states the date, the quantity and type of waste and provides the name and address of source of the material and the transport company, and is signed by an authorised person from each.
- A waste register is maintained on site for all deliveries of non farm waste. This register records;

  - All deliveries of farm waste to the facility including the date, the type and volume of material, and who delivered it to the facility
  - Volumes of non-farm waste received by the facility
  - Daily feed volumes
  - Amount pasteurised each day
  - Volumes of fibre removed from site, and on what date, by whom and to where
  - Amounts of liquid fertiliser removed from site, by whom, on what date and to where
  - Details of any analysis of material that is undertaken or provided
  - Details of any materials (time, quantity, type, how and to where) other than the processed
  - products that have to be removed from the site

A process log book will be kept which will record

- that all procedures during reception of waste and feeding the digester are maintained
- that daily and weekly checks have been carried out
- process observations
- changes in method of process management
- any remedial action that was taken at any time
- details of when, where and type of vermin if found and the remedial action taken

CCP No. 8 Vermin control policy

No waste will be left in any location where vermin can access.
Any spillages that occur will be cleaned immediately
Visual checks will be carried out weekly to see if there are any rats on the site, if any sign is apparent then poison or other methods to remove them will be undertaken.

CCP No. 9 Ensuring particle size and pasteurisation has been achieved

This procedure will be formulated when final recommendations are supplied by the Dept of Agriculture and Food.

CCP No. 10 Contingency plans for digestion process difficulties or failure

Chemical contamination (e.g. high level of bleach) of the feedstock can cause process problems.
Waste will only be taken from regular and reputable suppliers, who have been made aware of the important issues regarding waste quality. However if a bad batch does get delivered without notice, the action to be followed will vary with each site.

- If the digester is given time to recover and the temperature is maintained generally the process will continue and soon return to normal performance.
- The contaminated waste can then either be returned to the supplier for them to deal with or possibly could be fed to the digester at a diminished rate.

Process failure
It is most unlikely that there will ever be a complete process failure if the feedstock contains a larger proportion of farm waste than off farm waste. This is because the bacteria in the process occur naturally and a wide variety of bacteria families are present in animal manures. Therefore generally if the digester continues to be fed slowly with the farm waste it will recover in time.

Loss of performance in process
This would result in a decrease of gas production from the digesters. Therefore there must be an alternative source of heat for the pasteurisation process other than that created by using the biogas

CCP No. 11 Security of the AD facility site

The site will be suitably fenced.

Animal intruders

In the unlikely event of any animal breaking into the facility area, there would be no risk of harm to the animal as there is no place they could have access to the waste and all tanks and roofs are constructed to withstand the weights and pressures that could be exerted by an animal, and all surface areas would be clean.

Human intruders
It is always possible, regardless of what measures one takes, that human intruders may access the facility. Therefore the best method of managing this risk is to keep all surfaces clean of waste material, so that walking over the site should not create a problem.

CCP No. 12 Areas of potential risk and how this risk will be managed (not already mentioned above)

- *Damage to the tanks by vehicles*
- There will be a wheel stop for vehicles backing up to the off-tipping tank, and the materials tanks 1, 2 and 3.
- All vehicle movements at the facility will be supervised
- *Burst pipes* – visual checks and quantity monitoring
- *Valves being opened at the wrong time*
- Experienced operatives only will operate the facility and each operation will be double checked before commencement
- *Valves being left open after use*
- The operative will stay at the facility for at least 10 mins after completing the days operations and before carrying out the final check that all is in order.
- *Tank over-filling*
- The first fail safe is the level controls and indicators. The second fail safe is visual observance. The third failsafe is that any overflow from the tanks will drain into the mixing tank.
- *Biogas leaks*
- Weekly checks of all pipework will be carried out. Biogas is a very smelly gas and is quite noticeable if escaping, so a smell of gas at the facility would alert one. The risk of explosion from any escaping biogas is very low, however the areas where there is a potential risk of a gas leak should be designed to always have good air movement

CCP No 13. Record keeping

- Deliveries to and collections from the site
- Thermographs of the pasteurisation process
- preventative measures against vermin
- Cleaning procedures and inspection schedules and results
- Equipment maintenance and calibration
- Sampling procedures, schedules and results
- Traceability system for all processed goods
- HACCP plan and report

Site 2. Fattening Unit at Ballyknockane

Ref: FU

Development History
This site has been taken over by Woodville Pig Farms Ltd in recent times. This facility is a pig fattening unit, which has developed at this site since over the last two decades. The activities on site involve the normal management, feeding, and monitoring of stock for the production of meat. Staff on site carry out, record, and document all practices and duties necessary for the proper management and monitoring of this facility.

Overall Description

This proposal envisages the re-development of the existing facility which has the capacity to accommodate 8000 fattening pigs comprising the facilities necessary for this pig farm, and associated meal and manure storage and distribution facilities. This proposal incorporates such features as a covered engineered geomembrane storage basin, covered passageways, which when coupled with the use of low protein diets, and anaerobic digestion at the adjacent site, ensure the overall reduction of emissions, which is in accordance with BATNEEC, and conditions of IPC Licence which will have to be applied for to incorporate the new proposed developments. It is planned to submit this IPPC License application shortly. Drawings of the proposed new structures are presented in Appendix 2 of the Attached EIS.

SIZE AND SCALE OF THE PROPOSED DEVELOPMENT

The size and scale of the proposed development have been chosen after consideration of such matters as the site, customer demand for manure, economic viability and labour efficiency. This application does not propose to increase from the current capacity of 8000 fattening places.

In full production the pig population at this site will comprise at any one time 8000 fattening pigs. Pigs will be slaughtered at approximately 75 - 105-kg live weight depending on market forces.

The proposed development is situated on the site of an existing pig unit facility. Development involves the construction of new buildings and items of plant to comply with Animal Welfare Regulations, and Nitrate Directive Regulations. It is also proposed to replace the existing over-ground pig manure storage tanks, with an engineered covered storage basin. Details of siting and design are shown in Appendix 2 of the Attached EIS.

Construction Details
A site location map and planning notice and a site plan are provided as part of Appendix 2 of the attached EIS.

Design
In arriving at an overall design of new buildings, consideration is given to colours of external facing materials to ensure maximum compatibility with the surrounding landscape. Also, features such as minimising ridge heights are an important element of the design process.

The following table details the farm structures on site

FARM STRUCTURES TABLE														
Ballyknockane Fattening Unit														
*Covered Structures to Stormwater System 9876 Paved Areas to Stormwater System only # Paved Areas to Foul/Stormwater System Paved Areas to Foulwater System Only Unpaved Areas														
TITLE	STATUS	CLASS	STRU LGT (M)	CTURE WTH (M)	AREA SQ MTS	TOTAL AREA B/F		TANK WIDTH	TANK LENGHT	TANK DEPTH	CAPACITY CUBIC MTS	TOTAL CAPACITY	EFFECTIVE CAPACITY WITH 200 F. B.	TOTAL EFFECTIVE CAPACITY
Fattening House 6	Existing	6	54.02	18.3	988.6	988.566	*	18.3	54.0	0.9	889.7	889.7	692.0	692.0
Fattening House 7	Existing	6	37	13.5	392.4	1380.92	*	13.5	37.0	1.5	749.3	1639.0	649.4	1341.3
Ditto	Existing	6	16	8.0	100.5	1481.5	*	8.0	16.0	1.5	192.0	1831.0	166.4	1507.7
Fattening House 8	Existing	6	21.5	18.3	309.1	1689.98	*	18.3	43.0	0.9	708.2	2539.2	550.8	2058.6
Fattening House 9	Existing	6	49.25	15.0	1600.0	3289.98	*	1.3	98.5	0.9	110.8	2650.0	86.2	2144.8
Manure tank 1	Existing	7	18.75	12.0	176.7	176.7	~	12.0	18.8	2.1	579.6	3229.5	360.0	2504.8
Manure tank 2	Existing	7	18.75	12.0	176.7	353.5	~	12.0	18.8	2.1	472.5	8948.2	360.0	2864.8
Manure tank 3	Existing	7	18.75	12.0	176.7	530.2	~	12.0	18.8	2.1	472.5	8948.2	360.0	3224.8
							~							
Mill Building 1	Existing	7	14	4.0	8.5	8.5	~							
Mill Building	Existing	7	9	3.0	8.5	17.1	~							
Meal Bin 1	Existing	8	2.5	2.5	4.9	4.9	~							
Meal Bin 2	Existing	8	2.5	2.5	4.9	9.8								
Meal Bin 3	Existing	9	2.5	2.5	4.9	14.7								
Meal Bin 4	Existing	9	2.5	2.5	4.9	19.6								
Fattening House A	Proposed	6	109.1	18	1962.9	1962.9		18.0	109.1	0.6	5601.1	14549.2	785.2	4009.9
Fattening House A Channel	Proposed	7	109.1	1.8	196.3	2159.2		1.8	109.1	1.2	11202.2	25751.4	137.4	4147.3
Fattening House B	Proposed	6	54.83	18.3	1003.4	3162.6		18.3	54.8	0.6	1416.0	15965.2	401.4	4411.3
Fattening House B Channel	Proposed	7	54.83	1.8	98.7	3261.3		1.8	54.8	1.2	2832.0	28583.4	69.1	4216.4

Fattening House C	Proposed	6	64.68	18.3	1183.6	4444.9		18.3	64.7	0.6	1970.4	30553.8	473.5	4689.9
Fattening House C Channel	Proposed	7	64.68	1.8	116.4	4561.3		1.8	64.7	1.2	3940.9	32524.2	81.5	4297.9
Manure Basin	Proposed	7	45	45	2025.0	2025.0		41	41	4	5278.3	37802.6	6387.8	10685.7

Pig manure Production

BALLYKNOCKANE FATTENING UNIT
CALCULATION OF PIG MANURE VOLUMES

PIG TYPE	NUMBER OF STOCK	NEAT excreta Pig/week (liters)	Total Liters	Total M3
Farrowing Sows	0	0	0	0.00
Dry Sows	0	0	0	0.00
Boars	0	0	0	0.00
Gilts	0	0	0	0.00
Weaner	0	0	0	0.00
Fattener	8000	34	272000	272.00
Total Pig Manure per week			272000	272
Total Pig Manure per annum			14144000	14144
Extraneous water 8%			1131520	1132
Total annual production pig manure			**15275520**	**15276**

Extraneous Water

In addition to the pig manure there currently is extraneous water for washing at a rate of 8% for fatteners, which equates to a further 1132 m3 to the annual figure of 14144 m3.

The total volume of pig manure generated at this facility will therefore be 14144 m3 neat pig manure and 1132 M3 extraneous, arriving at 15276 M3. This figure is herein used for all calculations, but it is expected it will be reduced following the development of this new facility, by exclusion of rainfall ingress to pig manure storage tanks, and a more efficient feeding system on site.

Minimal Disease Status

The health status of the stock is probably the most important single element to ensure the efficiency of the enterprise. There are approximately six diseases that have a major economic impact on any pig unit and many more with a lesser effect. One or more of these diseases acting in combination are capable of reducing output by 10 – 20%. Two of these diseases can be spread by aerosol droplets, but as they are located in an area of low pig density, the risk of a disease outbreak is greatly reduced.

All stock entering the unit will be free from all major diseases. All replacement stock for the unit is sourced from PIC Ireland units, which are also free of these diseases. As a secondary method of disease prevention all the pigs are vaccinated with (Mycoplasma) as soon as they arrive and once again 3 weeks later.

To minimise the risk of personnel bringing infection into either yard, all staff entering the yards must shower in, and have a complete change of clothing. All visitors are banned

with the exception of essential personnel such as company veterinarians and servicemen. All visitors must sign a register stating that they have not been in contact with any other piggery in at least 4 days.

Designated lorries are used to deliver feed to the minimal disease units. Each lorry is washed out and disinfected on a daily basis, to minimise the transfer of disease between units. Pigs are loaded for the factory 2 days per week and the haulier who collects the pigs washes and disinfects the lorry before entering the site. The Cull Sow transporter for the unit and the Carcass disposal lorry are also instructed on the importance of cleanliness of their vehicles when entering both yards.

The final part of maintaining health within the unit is to allow sufficient space on the unit such that pigs are moved in an "All In – All Out" basis, as they progress from building to building. Each age group of pigs have a different level of immunity and even in high health status herds it is important not to mix pigs of different age groups. Equally important is the necessity to clean out pens or rooms after each batch moves on to the next section of the unit. This avoids the build up of bacteria and viruses which challenge the incoming pigs and which may affect their growth efficiency. On these units special emphasis has been laid on providing a system that ensures adequate time for cleaning, disinfection and resting between successive batches of pigs.

If pigs are kept at a high health status, then the necessity for widespread medication is substantially reduced. This is important from the viewpoint of cost efficiency, the welfare of stock, and particularly the consumer who will be able to purchase the product without concern for drug residues.

Feed

Feed represents 65 – 70% of the total costs of production. It is therefore essential that feeds are manufactured to the highest standards. The unit manufactures their own feed in the mill onsite, in association with Nutec Ltd. This mill has a capacity to produce 12,000 tonnes/ annum of ruminant diets. The unit produces feed to satisfy all diets for each stage of pigs. To produce the quality feed which it requires for each unit, each raw material purchased is tested at an independent laboratory.

Management and Stockmanship

The management of the piggery keep accurate records. All the figures in relation to performance are calculated on a monthly basis. In the breeding herd records of growth rates, food conversion efficiency and mortality in each stage of the pig's growth help to ensure that efficiency is maintained. These measurements, together with the weight, determine the value of the end product.

Each member of staff is fully briefed on all aspects of the unit. Any new staff undergoes an 'in house' training programme where they are trained individually by the unit manager for a six month period. After this training programme is complete they will be capable of managing any of the sections within the unit. Farm Relief are used from time to time if the unit is busy or short staffed.

The management of the pig farm also maintain detailed waste management records on site for disposal of animal carcasses, veterinary waste, general refuse etc. A register is also

maintained of pig manure deliveries to customer farmers. This register is submitted bi monthly to the agency, along with a summary of any complaints received.

Documented Procedures are also maintained on site in accordance with conditions of IPC Licence Reg P0420-01, in respect of Emergency Response Procedure, Corrective Action Procedure, Training Procedure, Public Information Procedure, etc.

Ventilation:

All buildings within the facility are computerised mechanically ventilated. Standard calculations are used which take into account the following:

i. The air volume inside the building
ii. The desired temperature within the building
iii. The insulation value of the building
iv. The number and size of stock in the building
v. The feeding method used

All the above factors determine the number and size of extractor fans required and the number and size of air outlets required. The temperature in the building determines how often these fans are activated. The higher the temperature the more stages of fans required. The method employed is that air is drawn through a number of air inlets at equal intervals down the length of the building. These inlets are controlled by computer also. The air inlets normally run at 15% to maintain a healthy atmosphere in the house. This fresh air mixes with the existing air in the building and the warm air is expelled through the apex of the roof by the extractor fan. This process is controlled by the computer.

From within the computer program, the stock person can enter details as follows:

1. The desired room or building temperature
2. The degree by which the temperature may fluctuate before the computer starts making adjustments.
3. Whether the temperature is to be changed over a specific period.
4. Minimum and maximum ventilation rates
5. Whether humidity levels are to be controlled.
6. Whether artificial heat should be turned on if the temperature drops below a specified level.

Apart from the computer, the system comprises a series of air vents, a winch which is connected to the air inlets by stainless steel cables and a number of extractor fans. When the temperature rises within the building a temperature sensor informs the computer of the rise and according to the program requirements the computer sends signals to the extractor fan to increase speed. At the same time, the computer instructs the winch motor to wind the cable. This in turn opens the flaps in each outlet, allowing more air into the buildings.

The combination of the flaps opening and the fans increasing will then reduce the temperature to the desired level. This process is continuous with the temperature sensor informing the computer every 15 seconds as to the building temperature.

Where additional heat is required (i.e. the temperature has fallen below the desired level) and the ventilation has reduced to the minimum level acceptable for the health of the stock and the stock person, then the computer will switch on artificial heat. The heat

warmed as it enters the building. However, in the event of the temperature in any house rising 5°C above the desired room temperature, the computer will set off an audible alarm. The same applies in the event of a fire or a power failure. In the event of a power failure a battery back-up in the computer operates the winch motor which in turn opens up the air inlets to their maximum.

The purpose of using this ventilation system is:

1. The extent and accuracy of temperature control helps maintain the health and comfort of the stock which affects the efficiency of production.

2. The use of artificial heat is confined only to those times when the stock needs it, thus minimizing ESB consumption.

3. The alarm system together with automatic air inlet opening gives a high degree of safety.

4. The number of air changes per hour is strictly controlled and this has a substantial effect on reducing the spread and the intensity of respiratory infections.

Through-put

This unit is a fattening unit. Pigs are taken in from Woodville into this unit around 32 kg weight. They are fattened to between 75 and 105 kg factory weight depending on market conditions.

Cleaning

In an intensive pig unit the concentration of pigs, in turn increases the level of bacteria and viruses that are likely to cause disease problems. To reduce the "pressure" on the pigs it is necessary to maintain high levels of hygiene in the facility. This is affected by cleaning out all pens or rooms after each batch of pigs are moved to the next stage.

When empty the room is soaked and then pressure washed using water at up to 2,500 psi until all internal surfaces are completely clean and all faecal material washed into the slurry tanks. Once clean the same washer is used to spray disinfectant over all internal surfaces.

The disinfectant is used at a dilution rate of 1:200 and is inactivated on contact with the soil. The room is then left empty for at least 3-4 days before the next batch of pigs re-occupy the room.

Animal Carcasses

Animal carcasses will be stored temporarily on site in covered sealed containers. No offensive odours will be associated with the storage of animal carcasses in these skip. The skip is located in a convenient position where there is no possibility of spillage. The skip is removed on a regular basis and delivered to a local rendering plant.

See Attachment No. 17 and 18 of the Attached EIS

Pest and Fly Control

Rats and mice are carriers of some of the infections that are detrimental to pig health. In addition rats and mice can cause considerable damage to insulation materials and

accessible woodwork thereby reducing a buildings thermal efficiency and longevity. Management and staff on site take responsibility for pest control.
Own control is based on the strategic use of "Storm Rat and Mice Killer." In each case it will only be used when activity is apparent and great care will be taken to put it into areas where pigs cannot reach it.

The natural life style of flies makes pig units attractive to them. Two types of fly predominate – the common house fly and the fruit fly. Both are controlled by "Golden Malarin" which is painted on the walls and ceilings above pig height and attracts and kills flies

Birds can be a major problem for minimal disease units and it is extremely important that proper control measures are carried out. All inlets to all the houses are screened with netting to prevent access to the various buildings. A Vermin control register is maintained on site, and submitted annually to the Agency as part of the Annual Environmental report.

Traffic Levels
Details are set out below of the current and proposed traffic movements of this pig farm. They come under the following headings.

Staff transport
There are currently two movements to and from work daily. On completion of this development staff numbers will remain the same.

Stock Deliveries
There will be 3 deliveries of weaner pigs per week. This figure will remain the same on completion of the new development.

Feed Deliveries
There currently are 5 deliveries of feed per week and this volume will remain the same on completion of this proposed development.

Stock sales & Carcasses
There are currently a maximum of 3 loads of fat pigs delivered to the factory weekly from this site and this will be the same on completion of this development. Carcasses are currently removed fortnightly from this site and this will remain the same on completion of this development.

Service staff, sales, inspectors, etc.
There is currently and will be an average of 3 car visits per week for service men, salesmen, and inspectors from all regulatory authorities to this facility.

Delivery of pig manure to proposed anaerobic digester or to customer farmers.
There will be 15,276 M3 approx of Pig manure/digestate to be delivered to customer farmers per annum. This will require 12 lorry loads per week as all liquid digestate will be transported off site by lorry tanker. Currently approx 50% of the pig manure being transported off site is carried by tractor tanker with 2500 gallon capacity. The current practice requires 275 lorry movements and 658 tractor movements per annum to transport pig manure off site. It is proposed to cease use of tractor tanker movements off site thereby reducing overall traffic movements

Table 2: Current Traffic Movements Servicing this Site

No	Vehicle Type Car/Lorry etc	Details	Capacity	Weekly Units	Annual Units
1	Car	Staff to work		24	1248
2	Lorry	Weaners to the fattening unit		6	312
3	Lorry	Feed deliveries	20 Tonne	10	520
4	Lorry Lorry	Fat pigs to factory Carcasses to rendering	260 15 Tonne	6 1	312 52
5	Car	Service staff; sales men; Inspectors		6	312
6	Lorry Tractor	Pig manure to customer farmers	27.3 M3 11.4 M3	11 25	550 1300
Totals				89	4606

Table 2a: Proposed Traffic Movements to Service this Site

No	Vehicle Type Car/Lorry etc	Details	Capacity	Weekly Units	Annual Units
1	Car	Staff to work		24	1248
2	Lorry	Weaner deliveries		6	312
3	Lorry	Feed deliveries	20 Tonne	10	520
4	Lorry Lorry	Fat pigs to factory Carcasses to rendering	260 15 Tonne	6 1	312 52
5	Car	Service staff; sales men; Inspectors		6	312
7	Lorry	Pig Manure to Anaerobic Digester or customer farmers	27.3 M3	22	1144
Totals				75	3900

Upon completion of this proposed development the volume of traffic will be less than current levels as set out in Tables 2 and 2a above.

All drivers regularly entering the site are or will be trained in the areas of disease prevention and health and safety whilst on site

Services

The estimated daily water requirement of the unit in full production is 35000 litres (35 M3). A bored well provides water and this well has sufficient capacity for the new development. The analysis of a water sample taken from this well is included in Appendix 9 of the Attached EIS, along with location map.

A 200 KVA transformer, adjacent to the site provides electricity supply. A generator on site provides the back up supply with a 450 KVA capacity.

Waste water generated in the cleaning process of pig houses will be minimal since waste minimization is a priority of the operation of this unit and such water will enter the underground storage tanks. All drinkers will be maintained in a good working order such that wastage and leaks are prevented. Waste water generated by the showers, toilets, etc. in the staff accommodation/office will be discharged to a septic tank.

Site 3. Woodville Pig Farm at Woodville

Ref: WPF

Development History

This facility is a pig production unit, which has developed at this site since over the last two decades. The activities on site involve the normal management, feeding, and monitoring of stock for the production of meat. Staff on site carry out, record, and document all practices and duties necessary for the proper management and monitoring of this facility.

Overall Description

The principal reason for the review is too incorporate the fattening unit associated with the licence, located at Ballyknockane, Nenagh, Co. Tipperary. This review also seeks to include a new anaerobic digester proposed at Ballaghveny, Ballymackey, Nenagh, Co. Tipperary. All three activities are under the control of Woodville Pig Farms Ltd.

This proposal envisages some re-development of the existing facility which has which when coupled with the use of low protein diets, and anaerobic digestion at the adjacent site, ensure the overall reduction of emissions, which is in accordance with BATNEEC, and conditions of IPC Licence. An application to North Tipperary County Council has been submitted, a full copy of this is attached. The application in the main is for a new dry-sow house and other ancillary buildings.

SIZE AND SCALE OF THE PROPOSED DEVELOPMENT

The size and scale of the proposed development have been chosen after consideration of such matters as the site, customer demand for manure, economic viability and labour efficiency.

The current capacity of the unit is as follows

Farrowing Sows	350
Dry Sows	850
Gilts	300
Boars	15
Weaners	6600

Development involves the construction of new buildings and items of plant to comply with Animal Welfare Regulations, and Nitrate Directive Regulations.

Construction Details

A site location map and planning notice and a site plan are provided as part of planning documents attached.

Design

In arriving at an overall design of new buildings, consideration is given to colours of external facing materials to ensure maximum compatibility with the surrounding landscape. Also, features such as minimising ridge heights are an important element of the design process.

The following table details the farm structures on site

FARM STRUCTURES TABLE

Woodville Pig Farm

*Covered Structures to Stormwater System
~Paved Areas to Stormwater System only
Paved Areas to Foul/Stormwater System #REF!
Paved Areas to Foulwater System Only 27
Unpaved Areas 1770

TITLE	STATUS	CLASS	STRU LGT (M)	CTURE WTH (M)	AREA SQ MTS	TOTAL AREA B/F		TANK WIDTH	TANK LENGHT	TANK DEPTH	CAPACITY CUBIC MTS	TOTAL CAPACITY	EFFECTIVE CAPACITY WITH 100 FREE BOARD	TOTAL EFFECTIVE CAPACITY
												0.0		0.0
Farrowing Hse No 2	Existing	6	62.0	12.8	793.6	793.6	*	12.8	62.0	1.2	952.3	952.3	793.6	793.6
Dry Sow House Hse No 3	Existing	6	20.0	11.0	220	1013.6	*	11.0	20.0	1.2	264.0	1216.3	220.0	1013.6
Dry Sow Hse No4	Existing	6	32.0	15.5	496	1509.6	*	15.5	32.0	0.75	372.0	1588.3	272.8	1286.4
Dry Sow Hse No 5	Existing	6	20.0	13.1	262	1771.6		13.1	20.0	1.2	314.4	1902.7	262.0	1548.4
Gilt House 6	Existing	6	16.0	15.6	249.6	2021.2		15.6	16.0	1.2	299.5	2202.2	249.6	1798.0
first Weaner Hse No 7	Existing	6	28.4	11.9	337.96	2359.2		11.9	28.4	2.7	912.5	3114.7	844.9	2642.9
Gilt House 8b	Existing	6	17.3	9.1	157.43	2516.6	*	9.1	17.3	1.2	188.9	3303.6	157.4	2800.3
first Weaner Hse No 9a	Existing	6	18.1	6.1	110.41	2627.0	*	6.1	18.1	1.2	132.5	3436.1	110.4	2910.7
first Weaner Hse No 9b	Existing	6	16.5	6.1	100.65	2727.7		6.1	16.5	1.2	120.8	3556.9	100.7	3011.4
Dry Sow Hse No 10a	Existing	6	27.7	14.0	387.8	3014.8		14.0	27.7	0.9	349.02	3905.9	271.5	3282.9
Farrowing Hse No 10b	Existing	6	20.3	14.0	284.2	3299.0		14.0	20.3	0.8	227.36	4133.3	170.5	3453.4
first Weaner Hse No 10c	Existing	6	11.6	5.5	63.8	3362.8		5.5	11.6	1.2	76.56	4209.9	63.8	3517.2
Farrowing Hse No 10d	Existing	6	8.0	2.6	20.8	3383.6		2.6	8.0	0.6	12.48	4222.3	8.3	3525.5
first Weaner Hse No 12a	Existing	6	10.5	9.9	103.95	3487.6		9.9	10.5	0.9	93.555	4315.9	72.8	3598.3
Farrowing Hse No 13	Existing	6	10.5	9.9	103.95	3591.5		9.9	10.5	0.9	93.555	4409.5	72.8	3671.0
2 Stage Weaner hse No 13a	Existing	6	12.7	10.5	133.35	3724.9		10.5	12.7	0.7	93.345	4502.8	66.7	3737.7
Farrowing Hse No 13b	Existing	6	14.6	10.5	153.3	3878.2		10.5	14.6	0.9	137.97	4640.8	107.3	3845.0
Farrowing Hse No 13c	Existing	6	12.6	10.5	132.3	4010.5		10.5	12.6	0.9	119.07	4759.8	92.6	3937.6

1Stage Weaner Hse No 13d	Existing	6	10.3	10.5	108.15	4118.6		10.5	10.3	0.7	75.705	4835.5	54.1	3991.7
1Stage Weaner Hse No 13e	Existing	6	11.9	10.5	124.95	4243.6		10.5	11.9	0.9	112.455	4948.0	87.5	4079.2
2 Stage Weaner hse No 14	Existing	6	51.6	10.0	516	4759.6		10.0	51.6	0.75	387	5335.0	283.8	4363.0
2 Stage Weaner hse No 15	Existing	6	51.6	8.0	412.8	5172.4		8.0	51.6	0.95	392.16	5727.2	309.6	4672.6
Dry Sow House Hse No 1	Proposed	6	60.0	20.0	1200	6372.4		20.0	60.0	1	1200	6927.2	960.0	5632.6
Dry Sow Channel	Proposed		60.0	2.0	120	6492.4		2.0	60.0	2	240	7167.2	216.0	5848.6
Abstraction Sump	Proposed		10.0	4.0	40	6532.4		4.0	10.0	3	120	7287.2	112.0	5960.6
Oil Storage Shed 2A	Existing	9	3.9	2.2	8.58	6500.9								
Office 11	Existing	9	8.2	4	32.8									
Canteen 12	Existing	9	10.5	6.8	71.4									
Store Hse No 11A	Existing	9	2.3	1.6	3.68									
Store Hse No 11B	Existing	9	3.3	1.5	4.95									
Store Hse No 11C	Existing	9	4	2.5	10									
Store Hse No 11D	Existing	9	1.3	1.1	1.43									
Store Hse No 5A	Existing	9	2.0	1.5	3.0									
Store Hse No 7A	Existing	9	3.0	1.4	4.2									
Store Hse No 7B	Existing	9	1.9	1.1	2.1									
Store Hse No 5B	Existing	9	2.8	2.2	6.1									
Shower/canteen	Proposed	9	9.8	8.8	86.2									
Bin A	Existing	8	1.25	1.25	1.22656	1.22656								
Bin B	Existing	8	2	2	3.14	4.36656								
Bin C	Existing	8	2	2	3.14	7.50656								
Bin D	Existing	8	2	2	3.14	10.6466								
Bin E	Existing	8	2	2	3.14	13.7866								
Bin F	Existing	8	2	2	3.14	16.9266								
Bin G	Existing	8	2	2	3.14	20.0666								
Bin H	Existing	8	3	3	7.065	27.1316								
Bin J	Existing	8	1.8	1.8	2.5434	29.675								
Bin K	Existing	8	1.8	1.8	2.5434	32.2184								

Soya Tank 1	Existing	8	2	1.2	1.1304	1.1304								
Water Tank 2	Existing	8	2	1.2	1.1304	2.2608								
Tank 3	Existing	8	2	1.2	1.1304	3.3912								

Pig manure Production

The total pig manure production for 2008 will be 103 M3/week. A Copy of the last NMP for the unit is attached at "C". This NMP also include the pig manure produced at Site 2. Fattening Unit at Ballyknockane.

Genetic Potential

To provide stock with the best genetic potential, GP gilts are sourced from PIC Irl Ltd, which in turn will produce commercial mothers, to ensure that all pigs produced are of a very high standard.

Selection of the stock by physical measurements (e.g. litter size, growth rate, back-fat depth) and the use of computers enable genetically transmitted performance to be improved each year. Thus the facility is stocked with pigs which have a high genetic potential which will be continually monitored and improved by replacement.

Minimal Disease Status

The health status of the stock is probably the most important single element to ensure the efficiency of the enterprise. There are approximately six diseases that have a major economic impact on any pig unit and many more with a lesser effect. One or more of these diseases acting in combination are capable of reducing output by 10 – 20%. Two of these diseases can be spread by aerosol droplets, but as they are located in an area of low pig density, the risk of a disease outbreak is greatly reduced.

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The unit produces feed to satisfy all diets for each stage of pigs. To produce the quality feed which it requires for each unit, each raw material purchased is tested at an independent laboratory.

Management and Stockmanship

The management of the piggery keep accurate records. All the figures in relation to performance are calculated on a monthly basis. In the breeding herd records of growth rates, food conversion efficiency and mortality in each stage of the pig's growth help to ensure that efficiency is maintained. These measurements, together with the weight, determine the value of the end product.

Each member of staff is fully briefed on all aspects of the unit. Any new staff undergoes an 'in house' training programme where they are trained individually by the unit manager for a six month period. After this training programme is complete they will be capable of managing any of the sections within the unit. Farm Relief are used from time to time if the unit is busy or short staffed.

The management of the pig farm also maintain detailed waste management records on site for disposal of animal carcasses, veterinary waste, general refuse etc. A register is also maintained of pig manure deliveries to customer farmers. This register is submitted bi monthly to the agency, along with a summary of any complaints received.

Ventilation:

All buildings within the facility are computerised mechanically ventilated. Standard calculations are used which take into account the following:

vi. The air volume inside the building
vii. The desired temperature within the building
viii. The insulation value of the building
ix. The number and size of stock in the building
x. The feeding method used

All the above factors determine the number and size of extractor fans required and the number and size of air outlets required. The temperature in the building determines how

often these fans are activated. The higher the temperature, the more stages of fans required. The method employed is that air is drawn through a number of air inlets at equal intervals down the length of the building. These inlets are controlled by computer also. The air inlets normally run at 15% to maintain a healthy atmosphere in the house. This fresh air mixes with the existing air in the building and the warm air is expelled through the apex of the roof by the extractor fan. This process is controlled by the computer.

From within the computer program, the stock person can enter details as follows:

7. The desired room or building temperature
8. The degree by which the temperature may fluctuate before the computer starts making adjustments.
9. Whether the temperature is to be changed over a specific period.
10. Minimum and maximum ventilation rates
11. Whether humidity levels are to be controlled.
12. Whether artificial heat should be turned on if the temperature drops below a specified level.

Apart from the computer, the system comprises a series of air vents, a winch which is connected to the air inlets by stainless steel cables and a number of extractor fans. When the temperature rises within the building a temperature sensor informs the computer of the rise and according to the program requirements the computer sends signals to the extractor fan to increase speed. At the same time, the computer instructs the winch motor to wind the cable. This in turn opens the flaps in each outlet, allowing more air into the buildings.

The combination of the flaps opening and the fans increasing will then reduce the temperature to the desired level. This process is continuous with the temperature sensor informing the computer every 15 seconds as to the building temperature.

Where additional heat is required (i.e. the temperature has fallen below the desired level) and the ventilation has reduced to the minimum level acceptable for the health of the stock and the stock person, then the computer will switch on artificial heat. The heat sources are 1.5 kW electric elements placed below an air vent, so that the incoming air is warmed as it enters the building. However, in the event of the temperature in any house rising 5°C above the desired room temperature, the computer will set off an audible alarm. The same applies in the event of a fire or a power failure. In the event of a power failure a battery back-up in the computer operates the winch motor which in turn opens up the air inlets to their maximum.

The purpose of using this ventilation system is:

5. The extent and accuracy of temperature control helps maintain the health and comfort of the stock which affects the efficiency of production.

6. The use of artificial heat is confined only to those times when the stock needs it, thus minimizing ESB consumption.

7. The alarm system together with automatic air inlet opening gives a high degree of safety.

8. The number of air changes per hour is strictly controlled and this has a substantial effect on reducing the spread and the intensity of respiratory infections.

The Farrowing Rooms

These rooms will have sows or in-pig gilts from five days prior to farrowing and for up to 28 days after farrowing. These rooms are provided with built in trough and drinker which contains the sow and an area where piglets may live without risk of crushing by the sow. Additional heat is provided to the piglets by the use of infra-red bulbs if required during farrowing and 24 hours after and the use either tri-bar heat pads or electric heat pads. The required temperature at farrowing is approximately 22° C while after farrowing it is 19 °C.

Twice per week, sows that are due to farrow in five or so days are moved to a farrowing room. After the farrowing process is completed, the number of pigs born alive is recorded and the piglets de-tusked and given an iron injection to protect against iron deficiency. Litter numbers are evened up so each sow has a similar number of piglets to look after.

Particularly small pigs are grouped together and given special attention as these pigs are more likely to die if not looked after carefully. Treatment of sow and piglet is given as necessary and recording in the Drug Treatment Book. Over the 28 to 30 day lactation period the sow is fed an increasing amount of food by computer wet feed system where the stock person gradually adjusts the daily amount according to the needs of the individual sow. Feeding takes place twice per day. Additional water is taken from the mono-flow nipple drinker mounted in front of each pig. Dry feed is offered to the piglets from two weeks of age in "creep feeders" to encourage uptake of dry feed that will be eaten after weaning. Water is made available for the piglets by means of a water nipple which is located at the front of the farrowing area. At weaning, the sows are returned to the Dry Sow House, while the weaned piglets are transferred to the first stage rooms.

First Stage Rooms

The 1st stage pigs are moved in large groups of approx 130 No, and fed ad-lib in feeders located in the centre of the pen in which the feeds are placed. Because the volume of feed used for this type of pig is small the feed is brought in 25 kg bags and then when required in larger quantities, in a barrow from an outlet at the base of a bulk feed bin. A "Link Diet" is introduced and fed for 5 days before a complete change is made to a "Full Link Diet" which is fed for 13-14 days. This is done to help adapt the pig's digestive system from a milk based diet to that of a cereal and vegetable base. Water is obtained by the pig from nipple drinkers. Pigs are housed in first stage for 4 weeks where they grow from 7 kgs to 17 kgs in weight during this period.

Second Stage Rooms

Pigs are moved to the second stage once per week and pigs are graded according for size on entry. Pigs that do not thrive are treated and re-graded if necessary. Pigs enter here at 17 kgs and will remain here until they reach a weight of 32 kg.

These weaners are then transferred off-site to the r fattening unit at Site 2.

Cleaning

In an intensive pig unit the concentration of pigs, in turn increases the level of bacteria and viruses that are likely to cause disease problems. To reduce the "pressure" on the pigs it is

necessary to maintain high levels of hygiene in the facility. This is affected by cleaning out all pens or rooms after each batch of pigs are moved to the next stage.

When empty the room is soaked and then pressure washed using water at up to 2,500 psi until all internal surfaces are completely clean and all faecal material washed into the slurry tanks. Once clean the same washer is used to spray disinfectant over all internal surfaces.

The disinfectant is used at a dilution rate of 1:200 and is inactivated on contact with the soil. The room is then left empty for at least 3-4 days before the next batch of pigs re-occupy the room.

Animal Carcasses

Animal carcasses will be stored temporarily on site in covered sealed containers. No offensive odours will be associated with the storage of animal carcasses in these skip. The skip is located in a convenient position where there is no possibility of spillage. The skip is removed on a regular basis and delivered to a local rendering plant.

Pest and Fly Control

Rats and mice are carriers of some of the infections that are detrimental to pig health. In addition rats and mice can cause considerable damage to insulation materials and accessible woodwork thereby reducing a buildings thermal efficiency and longevity. Management and staff on site take responsibility for pest control.
Own control is based on the strategic use of "Storm Rat and Mice Killer." In each case it will only be used when activity is apparent and great care will be taken to put it into areas where pigs cannot reach it.

The natural life style of flies makes pig units attractive to them. Two types of fly predominate – the common house fly and the fruit fly. Both are controlled by "Golden Malarin" which is painted on the walls and ceilings above pig height and attracts and kills flies

Birds can be a major problem for minimal disease units and it is extremely important that proper control measures are carried out. All inlets to all the houses are screened with netting to prevent access to the various buildings. A Vermin control register is maintained on site, and submitted annually to the Agency as part of the Annual Environmental report.

Traffic Levels

Details are set out below of the current traffic movements of this pig farm. They come under the following headings.

Staff transport

There are currently two movements to and from work daily. On completion of this development staff numbers will remain the same.

Stock sales & Carcasses

Carcasses are currently removed fortnightly from this site and this will remain the same on completion of this development.

Service staff, sales, inspectors, etc.
There is currently and will be an average of 3 car visits per week for service men, salesmen, and inspectors from all regulatory authorities to this facility.

All drivers regularly entering the site are or will be trained in the areas of disease prevention and health and safety whilst on site

Services

Water is supplied by three bored wells.

Waste water generated in the cleaning process of pig houses will be minimal since waste minimization is a priority of the operation of this unit and such water will enter the underground storage tanks. All drinkers will be maintained in a good working order such that wastage and leaks are prevented. Waste water generated by the showers, toilets, etc. in the staff accommodation/office will be discharged to a septic tank.