

RAC/6819/5 Management Plan

1	Management system.....	2
1.1	Management system document update and review	2
1.2	Background - the operation	2
2	Operations	4
2.1	Normal operations.....	4
2.2	Site specific processes, activities and operations.....	4
2.3	Emissions and discharges	6
2.4	Accidents, incidents and emergencies	7
2.5	Abnormal operations.....	7
2.6	Site engineering and infrastructure	8
2.7	Plant and machinery use and maintenance	8
2.8	Inspection and maintenance schedule	8
2.9	A review of your activities against what your permit allows you to do	12
2.10	Waste acceptance, quantities, treatment and storage procedures	12
2.11	Storage of materials on site	13
2.12	Drainage infrastructure	13
2.13	Transportation and distribution.....	13
2.14	How any potential pollution from the above activities could impact on air, water, land and neighbours	14
2.15	Procedures to enable you to apply the waste hierarchy of re-use, recover, recycle, dispose.....	15
2.16	Your Duty of Care	16
3	Accident Management Plan	17
3.1	Accident Management Plan	18
3.2	Accident Management Site Plan	18
4	Site security	27
5	Non-compliance	27
6	Closure	27
7	Pollution Incident Record	29
8	Complaints.....	30
9	Sufficient competent persons, resources and training	30

1 Management system

This document details the management system for the Anaerobic Digester (AD) installation at Coomb Farm, Llangynog, SA33 5HP.

The management systems have been prepared with reference to guidance laid out in *How to comply with your environmental permit*.

The techniques applied at the installation are Best Available Techniques (BAT) and have been planned with reference to *Reference Document on Best Available Techniques for the Waste Treatments Industries (2006)*.

The management plan includes a bespoke Environmental Management System (EMS) which is itself a BAT, as per section 5.1 in the BREF document.

1.1 Management system document update and review

The Management System document is a live and controlled document, which will be reviewed annually by management, and more frequently in the event of accidents or malfunction. It will be updated when any major changes are made to the AD processes, management techniques or any significant change made to the Installation.

1.2 Background - the operation

Coomb Farm is an established dairy unit with a herd of 600 milking cows and 500 replacement heifers and calves.

The Installation will comprise a 500kW AD unit and associated elements including: underground reception tank; Combined Heat and Power (CHP) gas stack; CHP gas flare; and a digestate storage lagoon.

The Installation will take farm cattle manure and slurry from the dairy unit and chopped barley straw. This will then undergo anaerobic digestion to produce biogas. The resultant biogas will then be combusted in a CHP unit to produce electricity which will be fed into the grid. The resultant heat will be recycled into the digesters.

The layout of the Installation is shown at

Figure 1 and the elements are detailed in Table 1.

Figure 1: Coomb Farm Anaerobic Digester layout

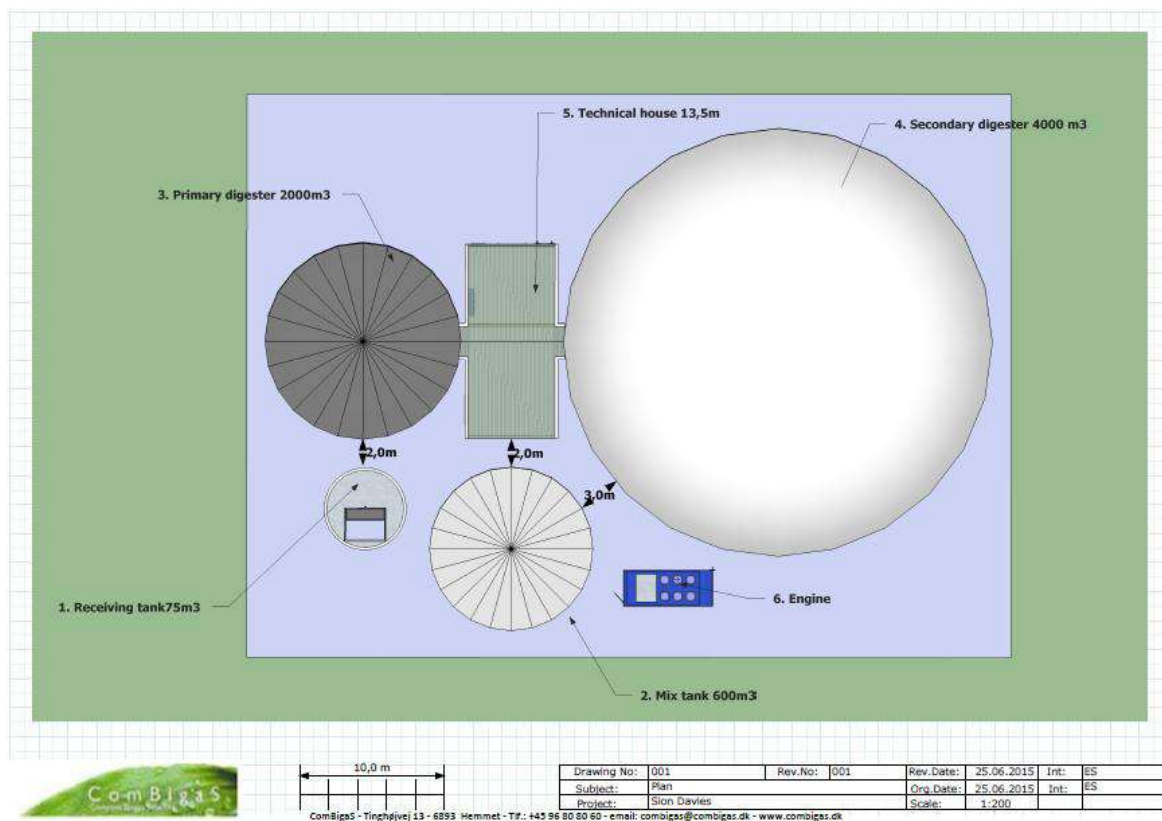


Table 1: AD plant schedule

AD plant component	Length/diameter (m)	Width (m)	Height to eaves (m)	Overall height (m)	Gross volume
Primary digestion tank	13.1	-	14.4	15.4 (top of gantry 16.1)	2,089m ³
Secondary storage tank	30.1	-	6.0	16.0	4,4043m ³
Mixing tank	11.5	-	4.8	6.0	622m ³
Intake tank	6.8	-	-	3.0	75m ³
CHP building	6.1	2.5	2.5	5.9	-
Technical building	9.6	6.4	2.5	6.3	-
Flare stack	-	-	-	5.0	-

Adapted from Design and Access Statement submitted with planning application

2 Operations

2.1 Normal operations

Daily records are kept on all aspects of the farms operation including:

- waste movements;
- waste inputs;
- water inputs;
- gas production;
- delivery of goods and materials; and
- plant performance, environmental and operational data.

Staff carry out daily inspections of the Installation to ensure all plant is operating correctly.

The manager reviews information and operation frequently with staff to identify any unexpected or abnormal changes in operation and agree suitable remedial action if necessary.

2.2 Site specific processes, activities and operations

The anaerobic digestion system is shown at Appendix 1 - Principal Layout. The processes and mass flows are shown at Appendix 2 - Mass flow and gas production.

Underground reception tank and mix tank

The total waste input of waste and non-waste is 52,950 (145 tonnes per day). This includes 33,950 tonnes per annum of waste (92 tonnes per day), 4,000 tonnes of water per annum (11 tonnes per day) and 15,000 tonnes of recirculated digestate (41 tonnes per day). The solid inputs (manure and straw) are loaded into an underground reception tank where they are chopped and mixed with the liquid inputs (slurry and water) in the mix tank, until they form a pumpable homogenous feedstock.

The waste and non-waste inputs for the AD unit are shown at Table 2.

Table 2: Coomb Farm Anaerobic Digester inputs

		t/annum	t/day
Waste	Cattle slurry	29,000	79
	Cattle manure/deep litter	3,000	8
	Barley straw (chopped)	1,950	5
Non-waste	Water	4,000	11
	Recirculated digestate	15,000	41

Primary digester

There are two anaerobic digestion stages. The mixed feedstock is then pumped into a 2,000m³ active volume primary digester. The feedstock undergoes a thermophilic stage (digestion at 50-53°C) which will result in 1,174,605m³ per year (3,218m³ per day) of biogas. The primary digester has a retention time of approximately 20 days.

The mixing takes place due to an internal feedstock circulation system, including chopper pumps and high pressure recirculated biogas injection.

Secondary digester

After the primary thermophilic stage the feedstock is pumped into the 4,000m³ secondary digester which will produce 503,402m³/annum (1,379m³/day) of biogas, product of a mesophilic process. The retention time in the secondary digester is approximately 26 days.

Gas production

The two digesters have a combined total output of 1,678,007m³ per annum (4,597m³ per day or 192m³ per hour) of biogas. This is the equivalent¹ of 1,009,771m³ per year (2,766m³ per day or 115m³ per day) of CH₄ (methane).

The gas is stored in a double-membrane situated on top of the secondary digester.

CHP engine

The biogas is combusted in a 500kWh CHP engine, situated in a specially designed container. The engine produces 3,950MWh of electricity, which is utilised by Coomb Farm or will be sold to the grid. The resultant gas emissions will be discharged to the atmosphere via the CHP stack.

The CHP engine will produce 1,580MWh per annum of heat, a proportion of which will be recycled into the digesters to increase the temperature of the feedstock to increase methane production.

Digestate output

The digestate biomass total output will comprise 50,898 tonnes per annum (139 tonnes per day) at a total solid level of 6.7%. This will equate to 3,425 tonnes of solids per year.

The digestate is stored in a digestate lagoon. The digestate is spread to land as a fertiliser, which reduces manufactured fertiliser inputs to the farming system. The organic matter content of the digestate acts as a soil conditioner. The digestate is spread to land in line with

¹ Based on biogas as 60% CH₄

Good Agricultural Practice. The Installation is not in a Nitrate Vulnerable Zone (NVZ) and thus is not subject to regulation.

Gas flare

A gas flare is located at the CHP unit for the combustion of biogas in emergencies. It will also be occasionally used for emergencies. It is not in the operator's interest to use the flare and thus will be rarely used.

Biological treatment

The following biological treatment techniques applied to the anaerobic digestion system are BAT.

The automated AD system will manage and minimise water use. The maximum amount of water will be recirculated back into the AD system. The system will have a thermophilic digestion condition state.

TOC, COD, N, P and CI levels will be measured in the inlet and outlet flows.

Biogas production will be maximised, taking into account biogas and digestate quality.

2.3 Emissions and discharges

The emissions to air resulting from the CHP emissions limits set out in Standard Rules Permit SR2012 no. 09 are shown at Table 3. The point source emissions are from the CHP gas stack.

There are no limits set for the emergency gas flare, as this will be rarely used.

Table 3: Point source emissions to air - emission limits and monitoring requirements

Emission Point and Source	Parameter	Limit (including units)	Coomb Farm emissions (including units)	Monitoring Frequency and Standard or Method
Stacks on engines	Oxides of Nitrogen	500mg/m ³	500mg/m ³	Annual monitoring Monitoring equipment, techniques, personnel and organisations employed for the engine stack emissions monitoring programme (including the measurement of exhaust gas temperature) shall have either MCERTS certification or MCERTS accreditation (as appropriate).
	Carbon monoxide	1400mg/m ³	750mg/m ³	
	Sulphur dioxide	350mg/m ³	<300 mg/Nm ³	
	Total volatile organic compounds including methane	1000mg/m ³ Emission levels at Normal Temperature and Pressure and 5%O ₂ , unless otherwise agreed in writing by	<150 mg/m ³ 5%O ₂ At 180°C gas exit velocity is	

		Natural Resources Wales Uncertainty allowance as stated in Environment Agency guidance LFTGN08 v2 2010. To ensure effective plume breakaway, minimum stack gas exit velocity shall be no less than 15 m/s or the gas exit temperature shall be no less than of 200°C	17.4m/s	
Stacks on boilers burning biogas	Oxides of Nitrogen	No limit set	N/a	None specified
Auxiliary flare	Oxides of Nitrogen	No limit set	N/a	Record of operating hours.
Pressure relief valves	Biogas	No limit set	N/a	Weekly visual or remote monitoring to ensure valves are correctly seated.

Emissions Monitoring

Monitoring is carried out in line with the frequency and methods stipulated in Table 3.

2.4 Accidents, incidents and emergencies

The Installation has an Accident Management Plan (see section 3) appended to this document which will be implemented in the event of an accident. Events or failures that could damage the environment have been identified in the Risk Assessment (see 6819 RAC-6 Risk Assessment). A back up copy of the Accident Management Plan can be found in the Technical Building entrance. All staff are aware of the location and content, and their responsibilities in the event of an accident.

2.5 Abnormal operations

Measures are in place to identify incidents and abnormal operations such as breakdowns, damage etc. Staff are trained to notice and respond to abnormal changes in operation by investigating the causes. They then either take steps to return the site to normal operation and ensure the problem does not reoccur or report to management issues that cannot be immediately addressed, with an associated action plan.

A copy of the permit is available and accessible for staff to read. Staff have been given training on the potential environmental impacts of the unit and their role in ensuring environmental impacts are minimised.

2.6 Site engineering and infrastructure

The installation is constructed on an existing impermeable concrete hardstanding.

A dwarf perimeter wall will be constructed along the southern boundary of the installation. This is designed to act as a bund to prevent escape of spillages to the south. Due to the fall of the concrete, the flow of the spillages and rainwater will be to the digestate lagoon.

The Installation has a silage clamp drain running from the north boundary of the Installation to the west boundary, with an outfall into the digestate lagoon. The silage clamp drain will be regularly inspected and accumulations that may cause a blockage removed.

The Installation has a water supply installed and electrical connection to the upgraded transformer. The slurry reception pit and the 9,785m³ digestate lagoon were previously associated with day-to-day farming operations at the farm.

2.7 Plant and machinery use and maintenance

The AD plant elements within the installation are shown at Table 1. Staff will be trained in the how to operate and maintain the AD unit.

The plant is fully automated, apart from the feeding of the solid biomass into the underground reception tank. The solid biomass will be loaded into the tank using a skid-steer loader, telescopic handler or similar machine. Only qualified and trained operators will load the machine.

The plant AD and CHP units will be fully-automated. The units will be remotely monitored and controlled, if any intervention required directed by experts off-site. The unit will automatically log data which will be used for performance monitoring.

2.8 Inspection and maintenance schedule

Records are kept of inspection and maintenance plant and associated elements. Staff report any problems encountered and actions taken on a daily basis directly to the AD unit manager. A record is made in a log book kept in the Installation Technical Building. This is reviewed daily by the person with overall responsibility for the Installation for that day and appropriate action implemented.

As part of the site inspection system, structures and equipment are inspected weekly. The inspection and maintenance programme covers the following areas:

- AD plant structures including: primary digestion tank; secondary storage tank; mixing tank; intake tank; CHP building; technical building; and flare stack. Includes: structural

integrity; water supply system; electrical systems (including ventilation and gas management fail-safes); drainage systems; gutters; and downpipes;

- Hardstanding and associated drainage;
- Digestate pipes and outfall;
- Underground reception pit;
- Bollards and kerbing, security arrangements;
- Collision protection integrity as applicable; and
- Dwarf wall.

The full annual inspection and maintenance schedule are detailed in below.

2.8.1 Annual Inspection and Planned Maintenance Schedule

Year: _____

Facility (reference on Site Layout Plan)	Remedial work required and date noted	Date remedial work completed	Print name and signature
Primary digester			
Secondary digester			
Reception tank			
Mixing tank			
Plant Room (Technical Building)			

Facility (reference on Site Layout Plan)	Remedial work required and date noted	Date remedial work completed	Print name and signature
Flare			
CHP plant			
Slurry access track			
Dwarf wall			
Hardstanding			

Operator signature: Date: / /

2.9 A review of your activities against what your permit allows you to do

A review of the activities to take place at the Installation against the SR 2012 N°9 Standard Rules Permit is shown at Table 4.

Table 4: Description and limits of activities

Description of activities	Limits of activities	Coomb Farm activities
Section 5.4 Part A(1) of the Environmental Permitting Regulations – Recovery of Waste	All activities must be carried out on premises used for Agriculture.	Y
R13: Storage of wastes pending the operations numbered R1 and R3	Treatment of waste including shredding, sorting, screening, compaction, bailing, mixing and maceration.	Y
	Digestion of wastes including pasteurisation and chemical addition	Y
	Gas cleaning and upgrading to biomethane.	Y
R3: Recycling or reclamation of organic substances that are not used as solvents	Gas storage and drying	Y
	Treatment of digestate including screening to remove plastic residues, centrifuge or pressing, addition of thickening agents (polymers) or drying.	Y
	Composting and maturation of digestate	N
R1: Use principally as a fuel or other means to generate energy.	The total quantity of waste or a combination of waste and non-waste including solids and liquids accepted at the site shall be less than 100,000 tonnes a year.	Y
	Burning of biogas in gas engines, gas turbines, boilers and use in fuel cells.	Y
	Except for the auxiliary flare, the aggregate rated thermal input of all appliances used to burn biogas shall be less than 5 megawatts.	Y
	Use of an auxiliary flare required only for short periods of breakdown or maintenance of the facility.	Y
	Use of pressure release valves to protect the integrity of the plant. Such systems should not be used routinely to vent unburnt biogas.	Y

Reproduced from Standard rules SR2012 N° 9 - On-farm anaerobic digestion facility using farm wastes only, including use of the resultant biogas.

2.10 Waste acceptance, quantities, treatment and storage procedures

Waste acceptance and quantities

Whilst the majority of feedstock is not classified as waste, the types and quantities of the materials accepted on the Installation are shown in Table 2. The mass flow and gas production for the site is shown at Appendix 2.

To ensure good working knowledge and records of the wastes accepted on to the Installation, all inputs are classified according to their European Waste Catalogue (EWC) code, and the origin of each feedstock and quantities are also recorded. Representative feedstock samples are tested annually. This procedure is BAT.

Cattle slurry and cattle manure have the EWC 02 01 06, defined as: “animal faeces, urine, manure including spoiled straw”.

The digestate leaving the Installation would not be considered a waste.

Storage

No wastes are stored within the installation.

Handling

Cattle slurry is pumped onto the Installation and into the mixing tank. The solid manure is bought on to the installation and directly fed into the underground reception tank. The manure source is the young stock building adjacent to the installation. The waste is transferred safely. The procedure is described at 2.7.

The connections between the waste vessels is capable of being closed by valves and any overflow is directed to the digestate lagoon as per BAT guidelines. Tanks handling wastes are fitted with overflow alarms. All vessels are appropriately labelled with a unique identifier and show direction of flow. Containers and conduits for combustible liquids and vapours are labelled. Exhaust gases from vessels are collected.

Air emissions treatments

Emissions of dust, odour, VOC and inorganic compounds are prevented and controlled through enclosed vessels which do not allow direct venting or discharging to air.

2.11 Storage of materials on site

No raw materials are stored within the Installation.

2.12 Drainage infrastructure

The Installation drainage system comprises a concrete yard which has a fall from the east (90.1m AOD) of the Installation to the west (89.9-90.0m AOD), draining into the adjacent digestate lagoon (see RAC/6819/1 Site Layout). Incident rainfall that results in run-off from the digesters, tanks, technical buildings and associated elements drains *via* the concrete hardstanding to the digestate lagoon.

2.13 Transportation and distribution

Access is *via* a farm track, at the east of the Installation.

Farm vehicles accessing the Installation will comprise loaders moving solid manure to the underground reception tank, and slurry tankers to remove digestate from the lagoon.

The Installation is well placed to receive slurry and manure from the adjacent farming operations.

There are two car parks for vehicles to use when accessing the site for maintenance.

2.14 How any potential pollution from the above activities could impact on air, water, land and neighbours

Potential pollution impacts on air, water, land and neighbours arising from the Installation have been assessed in RAC/6819/3 Odour Management Plan and RAC/6819/6 Environmental Risk Assessment.

The Installation will meet the standards required by the Standard Rules permit SR 2012 N^o 9.

The risks of CHP gas stack point-source emissions causing respiratory harm to humans are mitigated through system design and meeting operational emissions limits, as set by the permit, as shown at Table 3. The Installation adheres to a management plan. The Installation is not in an AQMA designated for NO_x. Therefore residual risk is low.

The risk of bioaerosols being inhaled by humans is medium due to the handling methods for solid manures. Manures are regularly handled on the farm, and the Installation will not cause a net increase in the manure handling. Wind speed and direction will be considered when wastes are handled and when digestate is removed from the lagoon. Digestate agitation only takes place when necessary and is kept to a minimum. Therefore residual risk is low.

Odour impacts have been considered in RAC/6819/3 Odour Management Plan. Odour could cause a nuisance and loss of amenity for neighbours. Wastes to be handled within the Installation are typical of farm wastes already being handled on farm. Measures are in place to ensure that there are no fugitive biogas emissions. Therefore residual risk is low.

A Noise Assessment has been carried out by WYG (see RAC/6819/4 Noise Assessment). The report concluded that the anaerobic digester has a low impact. Noise and vibration arising from the Installation can potentially cause nuisance and loss of amenity for neighbours, *via* vibration travelling through the ground and noise through the air. This has been mitigated through the design of the unit. The residual risk is deemed low.

A potential risk associated with the installation is bodily injury to livestock or humans associated by the operation of plant at the site. This event is mitigated through design of the

AD system, where any moving parts are suitably guarded and inside buildings. Site security measures prevent unauthorised access. Therefore the residual risk is low.

There is a risk to local human populations and local environment from arson or vandalism causing escape of pollutants to air, land or water due to spillages, run-off or fugitive gaseous emissions. Risk of direct physical contact with flammable biogas is low due to digestion and storage being carried out within enclosed systems. An Accident Management Plan (see section 3) contains instructions for spillages and fire. Therefore the residual risk is low.

There is a risk to local human populations and the local environment from an explosion of biogas. This could cause emissions of gases into the air, which could cause respiratory illness or nuisance, and any uncontrolled escape of digestate could pollute land or water. The risk magnitude is medium due to good design of the system and efficacy of management systems. The hardstanding within the Installation drains to the slurry lagoon. Therefore the residual risk is low.

Accidental fire may comprise a potential threat local human populations and the local environment. Fire could cause the release of pollutants to air, water or land. The risk of accidental combustion is low. The residual risk is low because of adherence to management systems.

The spillage of liquids poses a risk to receptors including land, surface waters, groundwater and abstraction for agricultural or potable water supply. This is mitigated through good design of the anaerobic digesters and adherence to management plans. The system is designed to that there are no point-source or diffuse emissions to surface water. The Installation is sited on an impermeable surface, which drains to the digestate lagoon. The hardstanding features a dwarf containing wall to the south. Therefore residual risk is low.

The NRW Protected Sites and Landscape Map show that there are no nature conservation sites within 2km of the Installation. The nearest Site of Special Scientific Interest (SSSI) is 0.5km away and is designated due to its geological features; emissions from the Installation are unlikely to have an effect. Therefore the residual risk is low.

2.15 Procedures to enable you to apply the waste hierarchy of re-use, recover, recycle, dispose

The Installation has engineering and operational systems that apply the waste hierarchy. The system is designed to be as efficient as possible. This is achieved through recirculation of digestate to maximise biogas production and recovery of heat in CHP engines. The feedstock itself is mainly farmyard manure and cattle slurry. The digestate produced will be applied to farm land to reduce manufactured fertiliser inputs for crops and to condition soil.

Minimising water use

Water use is from a metered mains supply. Water consumption is closely monitored in order to detect leakage and waste. Any significant fluctuations or deviation from expected consumption patterns are investigated by the farm manager and appropriate remedial action taken.

A water efficiency audit will take place within two years of the permit issue. An action plan to reduce water use will be agreed as a result. Water use will then be reviewed every four years.

All devices that utilise water are regularly inspected as part of a planned maintenance regime to ensure no water is leaking and that devices are working correctly and efficiently.

Avoidance, recovery and Disposal of wastes

Within two years of the permit being granted, a waste minimisation review will be undertaken taking into account the waste hierarchy in order to identify whether appropriate measures to minimise waste arising need to be updated and changed.

The methodology for this review and an action plan for reducing the use of raw materials will be submitted within two months of completion of the review.

Utilities and raw material management

Energy consumption and generation (including export of electricity) data will be recorded by the onsite management computer. The mass flow diagram is shown at Appendix 2. This technique is considered BAT.

2.16 Your Duty of Care

A daily record of feedstock fed into the system will be kept and will be kept for two years as per the *How to comply with your environmental permit*.

The process is described at section 2.10.

3 Accident Management Plan

Farm Name: Coomb Farm, Llangynog, SA33 5HP	Operator: Mr Sion Davies
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SITE LOCATION DETAILS – Coomb Farm, Llangynog, SA33 5HP		
Mobile Contact Number	07814 903942	
Grid Reference of Unit	SN 33914 14273	
Grid Reference of Access	SN 33935 14258	
EMERGENCY CONTACT DETAILS		
Emergency Services	999	
Local Police	101	
Natural Resources Wales: General enquiries:	0800 80 70 60 (24-hour service) 0300 065 3000 (Mon-Fri, 8am-6pm)	
	Office Hours	Out of Hours
Electricity Supplier	TBC	TBC
Gas Supplier	TBC	TBC
Local Authority	TBC	TBC
Maintenance Contractor	TBC	TBC
Manure Haulage Contractor	TBC	TBC
Water Undertaker	TBC	TBC
Electrician	TBC	TBC
Plumber	TBC	TBC
EMERGENCY CONTACT DETAILS		
Site Operator:	Mr Sion Davies	07814 903942
Unit Manager:	As above	As above
Head Office Contact:	As above	As above

3.1 Accident Management Plan

This accident management plan contains the following information:

- Accident management site plan
- Inventory of tanks and stores
- Inventory of raw materials
- Emergency procedures:
 - Immediate actions
 - Secondary actions – depending on type of accident.

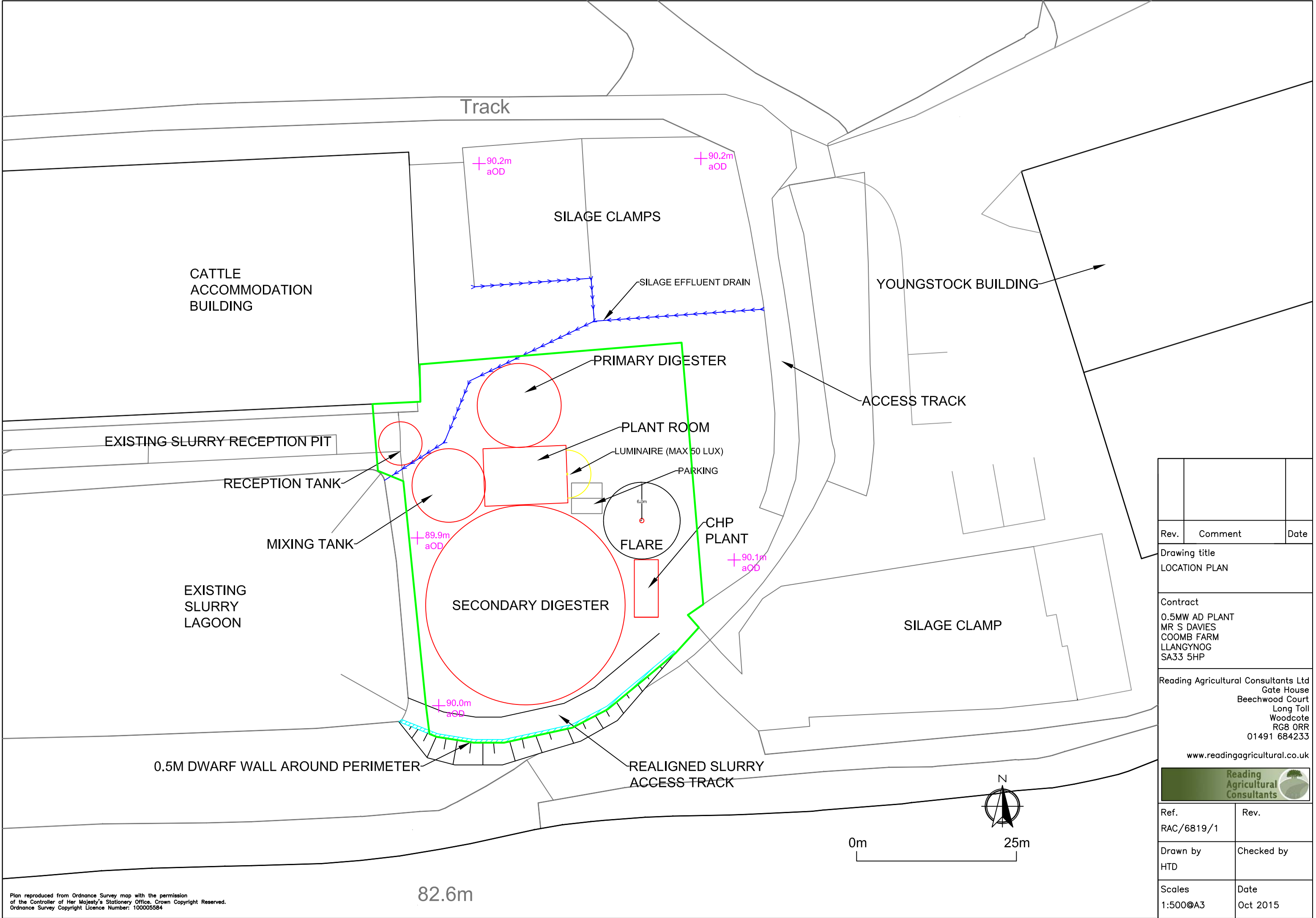
3.2 Accident Management Site Plan

The Accident Management Site Plan includes information of relevance for dealing with accidents that may pose a risk of environmental pollution and lists the location of key equipment. A structured Accident Management Plan is BAT. The Site Plan will up updated to include the below items when the plant design has been finalised.

This includes:

- Site plan;
- Mains water stop tap; (TBC)
- Main electrical supply isolator; (TBC)
- Gas supply isolator(s); (TBC)
- Location of fire extinguishers;
- Spill kits or emergency materials e.g. sand bags;
- Vulnerable locations such as tanks; and
- Damming points.

3.2.1 Site Plan



Rev.	Comment	Date
Drawing title LOCATION PLAN		
Contract 0.5MW AD PLANT MR S DAVIES COOMB FARM LLANGYNOG SA33 5HP		
Reading Agricultural Consultants Ltd Gate House Beechwood Court Long Toll Woodcote RG8 0RR 01491 684233 www.readingagricultural.co.uk		
		
Ref. RAC/6819/1	Rev.	
Drawn by HTD	Checked by	
Scales 1:500@A3	Date Oct 2015	

3.2.2 Inventory of tanks and stores

AD plant component	Length/diameter (m)	Width (m)	Height to eaves (m)	Overall height (m)	Gross volume
Primary digestion tank	13.1	-	14.4	15.4 (top of gantry 16.1)	2,089m ³
Secondary storage tank	30.1	-	6.0	16.0	4,4043m ³
Mixing tank	11.5	-	4.8	6.0	622m ³
Intake tank	6.8	-	-	3.0	75m ³

3.2.3 Recording incidents

All incidents that have caused or could result in environmental pollution are to be recorded immediately after the event in the Accident Management Plan.

3.2.4 Emergency procedures

Important: Livestock welfare and prevention of environmental pollution must be given priority during any emergency event but with full regard to the health and safety of all persons.

3.2.5 Immediate actions:

- Raise alarm where human safety is at risk;
- If necessary contact emergency services;
- Extinguish all naked flames;
- Obtain help from other members of staff nearby;
- In all cases wear and use appropriate Personal Protective Equipment; and
- Do not enter tanks or confined spaces unless trained in correct procedures and not before all procedures have been satisfied.

3.2.6 Secondary actions:

Follow appropriate procedures for type of accident as described in the following tables.

3.2.7 Training

A plan is of no use unless everyone on the site who is responsible for tasks that could result in an incident has been made fully aware of the plan and trained in carrying it out. Details of training are recorded in the site training manual.

Accident type	Anticipated consequences	Action to be taken (listed in order of priority)
1. Overflow or failure of: - Underground reception pit; - Mix tank; - Primary digester; - Secondary digester; or - Drain channels. Failure of liquid feedstock system pipework or controls. Chemical spillage. Spillages during loading, unloading or internal transport operations. Spillages during manure handling activity. Failure of slurry pumping systems resulting in reception pit overflow. Failure of automatic liquid level control	Potentially polluting liquids flow over yard in to: - existing digestate lagoon; - ditch; - stream; or - surrounding land.	- Quickly stem source of liquid - Assess route of discharge and identify easiest method and location to prevent further discharge. Key points are identified below. - digestate lagoon adjacent to Installation - allow liquid to flow to digestate lagoon. - silage clamp to the south-east of the Installation - insert emergency barrier boards; and - block with sandbags kept by plant room. - water course to the south at the hill adjacent to the Installation - Contact office or Duty Manager (n.b. this may be whilst any of the above are being carried out) - Consult COSHH Data Sheets where appropriate - If necessary, contact NRW hotline 0800 80 70 60 - If possible stop further additions to reception tank - Use vacuum tanker or pump to clean up spillage and - dispose of safely either by: - land spreading providing no further pollution risk; and/or - place in another appropriate storage vessel. - Reduce tank contents to a safe level - Make temporary repairs if appropriate and safe - Clean up yard/land/ditch/contaminated areas - Dispose of contaminated materials safely - Assess cause and take action to prevent repeat - Record incident, measures taken and to be take.

Accident type	Anticipated consequences	Action to be taken (listed in order of priority)
2. Rupture of gas pipe	Potentially explosive polluting gas which may cause fire, harm humans, livestock etc.	▪ Turn off gas supply. ▪ Shut off biogas valves ▪ Stop CHP engine
3. Power outage: • failure of slurry pumping systems resulting in tank overflow; and • failure of automatic liquid level control sensors and devices	Overflow of storage facilities	• As above – see (1) • Start emergency generator and pump slurry into digestate lagoon

4. Fire affecting: • livestock; • manure • stored and <i>in situ</i> biogas; and/or • buildings – those with a large timber component at highest risk.	• Spreading between buildings and stores • Toxic and polluting smoke • Wind dispersion of pollutants • Surface runoff from fire- fighting water (firewater) • Surface runoff from failed tanks, stores or pipework • Exploding gas and fuel canisters/containers • Dust and fibres from sheet building materials (may contain asbestos).	• Raise alarm on site. • Ensure all persons are evacuated from danger area. • If safe to do so, turn off electricity/fuel supplies. • Ensure all staff on farm are alerted. • Call fire brigade and other emergency services necessary. • Contact office or Duty Manager. • If necessary, contact NRW 0800 80 70 60 or local office number. • Post member of staff at end of farm road/gate to direct emergency services. • Liaise and follow instructions of emergency services making them aware of risks and hazards, provide copy of Accident Management Plan. • Consult COSHH Data Sheets if appropriate. • Do not enter or permit others to enter affected area unless it is safe to do so to evacuate persons/livestock. Contact vet if livestock are affected. Evacuate livestock from adjacent buildings and areas if safe to do so • Ensure fire- fighting water and other liquids cannot cause pollution – follow steps as outlined above – see (1). • Once under control give priority to remaining livestock. • Make temporary repairs if appropriate. • Clean up any materials that may be a hazard to the environment – where materials identified as containing asbestos are present specialist services are to be employed. • Dispose of contaminated materials safely. • Assess cause and take action to prevent repeat. • Record incident, measures taken and to be taken.
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Accident type	Anticipated consequences	Action to be taken (listed in order of priority)
5. Severe weather • flooding • wind damage	• Overflow of storage facilities • Power outage • Fire	• As above – see (1) • Start emergency generator • As above – see (2) • As above – see (3)

3.2.8 Types and amounts of raw materials

No raw materials will be stored on site. If raw materials are required to be stored on the Installation in the future, the below table will be amended.

Inventory of raw materials	Justification for use of this material	Quantity used (litres or kg per year)
N/A	N/A	N/A

4 Site security

Due to the rural location of the Installation and the low population of the surrounding area, there is a low level of crime.

A public footpath crosses the farm. It would not be possible to install fencing across the functional farm yard. Therefore direction and appropriate hazard warning signage will be installed where the footpath crosses the farm path. CCTV will be installed and low level proximity lighting will be installed at the control room.

The control room and other technical elements of the site will be securely locked at night.

5 Non-compliance

Non-compliance refers to an activity carried out on a site which doesn't meet the permit conditions. Non-compliance issues can be raised by regulatory officers. Staff or members of the public may inform the Operator about problems which might need further action.

If a non-compliance is raised, the action plan comprises:

- record it;
- investigate and establish the root cause of the problem (if needed);
- record any action taken to resolve it;
- consider whether there is a need to change any operations on the site in response to the review of the non-compliance (as part of the continuous improvement process)
- amend the management system to reflect changes;
- make sure staff and managers are aware of the changes; and
- update NRW about the changes.

6 Closure

Purpose

This plan indicates how buildings, infrastructure, and any remaining manures and wastes will be dealt with when the Installation is closed or decommissioned.

The plan also includes a record of any pollution incidents at Section 7, such as spillages or leaks which have occurred during the operation of the permitted Installation, together with the steps taken to remedy the incident. This will help to establish whether the Installation is in a satisfactory state when the permit is surrendered.

Methodology

Buildings and facilities which are to remain in place, will be cleaned thoroughly internally and externally to avoid any potential risk of pollution. If these buildings or facilities are to continue in use for activities for which the Permit is no longer required, a suitable programme of works and timescale for completion will be agreed in writing with NRW to achieve the best environmental outcome and to minimise waste.

Wastes will be disposed of following the Duty of Care.

Manure, slurry, or digestate within the Installation will be emptied as appropriate into the digestate lagoon and applied to land for agricultural benefit.

7 Pollution Incident Record

Attach relevant documents or provide details using the Pollution Incident Record form provided below.

Permit no.: _____

Date of incident	Description of the incident (include any NRW case number and name(s) of NRW officers in attendance if applicable).	Action taken	Signature

8 Complaints

Complaints relating to the installation's operation are logged and referred to the farm manager for investigation and follow up action. A record is kept of any remedial action to prevent or minimise the causes and staff will also respond to concerns raised by the local community as appropriate.

On receipt of the environmental permit a site identification notice will be placed at the entrance of the site clearly visible from a public highway. The sign will notify neighbours and members of the public about the nature of the farm who they can contact for further information or to notify a concern.

9 Sufficient competent persons, resources and training

At the time of writing, the operator is intending to enrol upon a WAMITAB or similar course for the management of anaerobic digestion units.

All staff will be suitably qualified to work at the installation. Any staff working on the Installation receive formal training from both the farm manager and external training providers which includes making them aware of their (and contractors') roles and responsibilities.

All staff have received formal training on Health and Safety, the accident management plan and will be trained about the requirements of the environmental permit and pollution prevention.

New staff are mentored as part of their 'on the job' training.

Staff and contractors have defined roles and understand what is required of them and what others will carry out.

Training and instruction of staff and contractors is recorded in a training record. The training record is kept in the control room.

General Complaint Form

Name of Farm:		
Time and Date of Complaint:	Name and address of complainant:	
How was complaint received (telephone call, visit etc.?)	Email address of complainant:	
Who first received the complaint?	Tel N° of complainant:	
Who was the complaint reported to for further action?		
Type of Complaint (give all relevant details – use space overleaf if necessary):		
Describe the activity which was happening at the time of the complaint (include names of any relevant staff):		
Any other relevant information:		
Are there any other complaints relating to the installation or that location? If yes, give details:		
Actions taken and by whom:		
Form completed by:	Date:	Signed: