ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) MANUAL

Pencefn Drysgol Anaerobic Digester

Permit Number EPR/BB3794CF

Version 2

September 2020

On Behalf of: Pencefn Feeds Ltd
Pencefn Drysgol
Dewi Road
Tregaron
Ceredigion
SY25 6JW

E4environment Ltd, Hilley Farm,
Pentre, Shropshire SY4 1BP

Quality Sheet

Version	Amendment Made	Date of Revision	Confirmed by (Signed)
2	Additional information relating to details of environmental permit for SR2018 No.11 and installation of bund wall around digestate tank.	29th September 2020	DSC

Contents

E4 environment

1)PREFACE

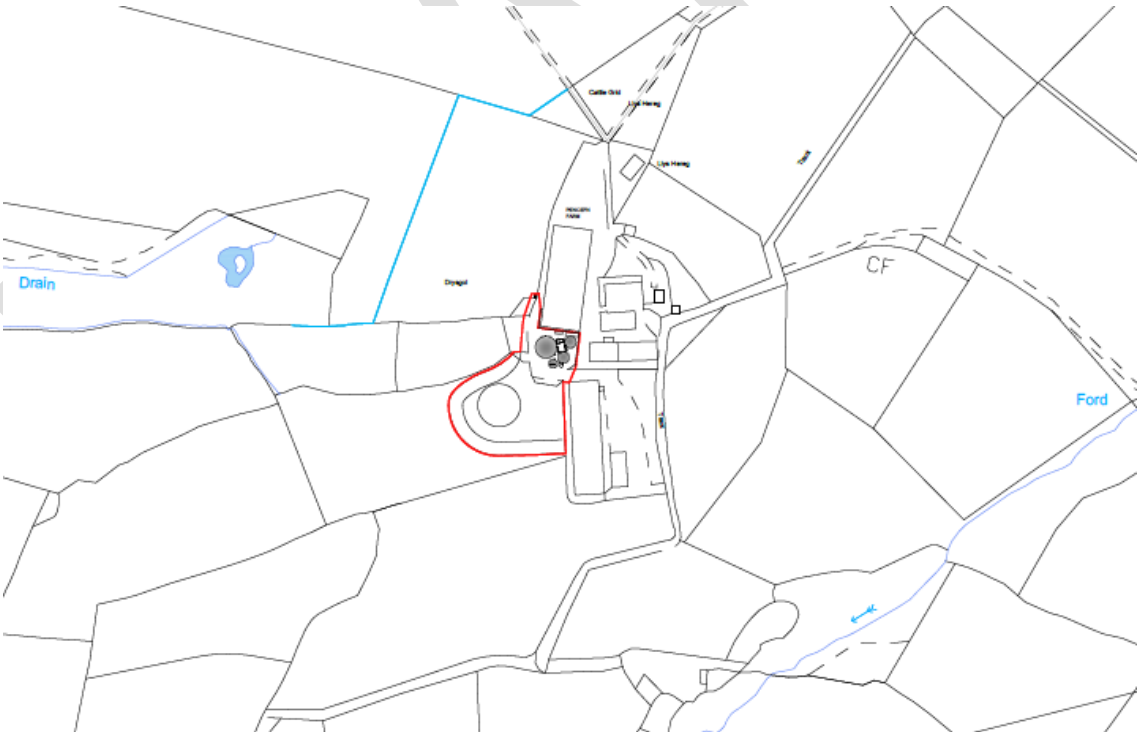
The Site

1. The site and 'on-farm' Anaerobic Digestion Facility is located at Pencefn Drysgol, Dewi Road, Tregaron, Ceredigion, SY25 6JW. OS Grid Ref: SN 86132 57696 and is managed and operated by Pencefn Feeds Ltd.

2. This Environmental Management System (EMS) relates to an Anaerobic Digestion (AD) renewable energy facility at Pencefn Drysgol, Tregaron. The 'Controlling' statutory document for the facility is the Environmental Permit number EPR/BB3794CF. The facility utilises maize, grass silage and slurry for the purpose of generating electricity, heat and a fertiliser in the form of digestate.

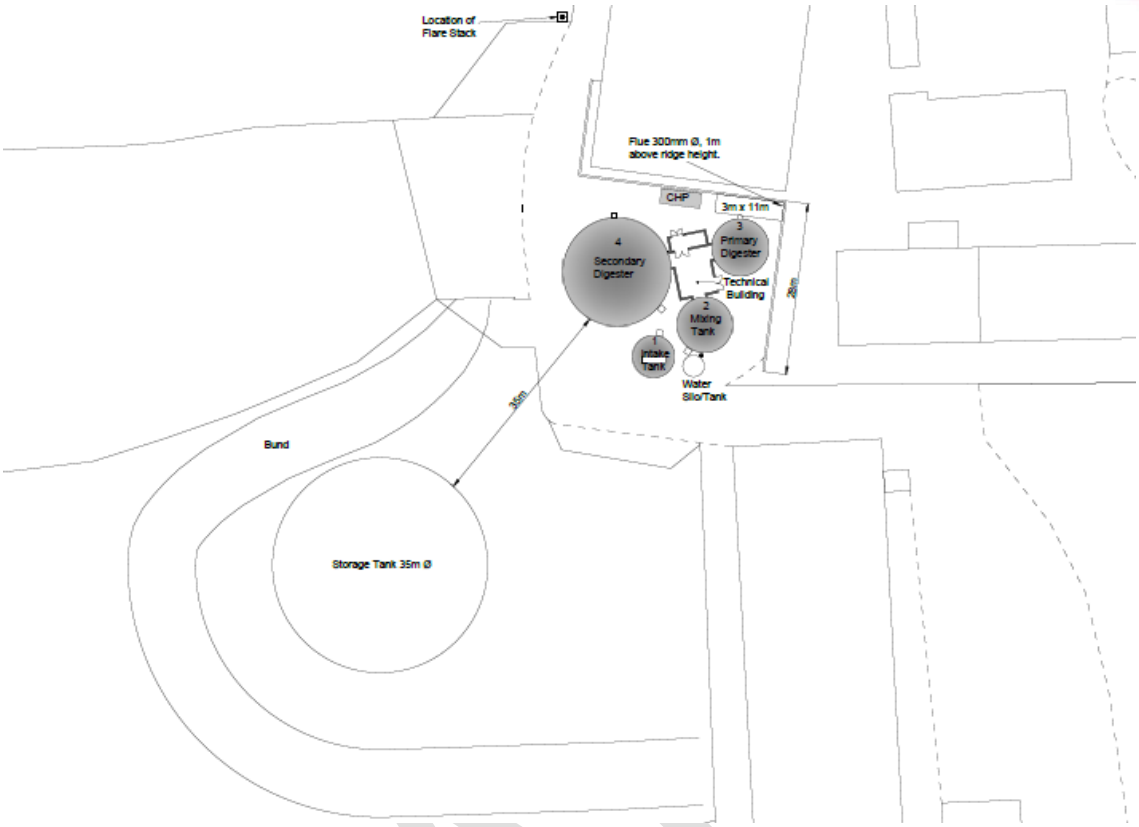
3. Pencefn Drysgol Anaerobic Digestion (AD) facility is sited approximately 200m to the east of a watercourse which runs into the River Teifi SAC/SSSI, so it is imperative any pollution of the stream is prevented. Management of pollution prevention has therefore deserved greater attention within this plan.

4. The site is situated directly adjacent to the Pencefn Feeds Ltd large agricultural shed and within the wider farm complex which includes two residential properties used by the operators of Pencefn Feeds Ltd. The particular site location has been determined in order to provide the co-location with Pencefn Feeds Ltd, to ensure that the energy produced by the AD plant can be efficiently used. Furthermore, the site has been chosen so that it sits well within the farm complex, and therefore has a sensitive impact on the wider landscape. The site's location is outlined in the below plan:



Site Location Plan

5. The AD plant is comprised of a number of tanks and related buildings which are set out on the site layout plan below. This includes the intake tank, mixing tank, primary digester, secondary digester and storage tank, along with the CHP engine and technical building.



Site Layout Plan

Introduction to this Environmental Management System (EMS)

6. In order to manage the risks of emissions and environmental impacts arising from the facility, this EMS considers a wide range of aspects and responds to each of the significant impacts with specifically designed systems and procedures for ensuring safety and security of the facilities. Information and assistance has been sought from the Natural Resources Wales (NRW) guidance document "How to comply with your environmental permit", v8, October 2014.

7. As well as giving due consideration to potential environmental affects, the EMS also sets out plans for Staff Responsibilities, Staff Training, Systems Management and Maintenance, Process and Environmental Monitoring and Record Keeping; and the regular reviewing and updating of the EMS itself.

8. This EMS is driven by its Environmental Policy and is structured based on the following format:

   - Identifying and minimising risks of pollution.
   - Operations and maintenance
   - Accidents
   - Incidents and non-conformances
   - Complaints
   - Staff training and competence
   - Odour, noise and emissions management
   - Documentation of legislation and other requirements

9. Where appropriate, The EMS also cross refers to other Guidance Documents, Risk Assessments and Operating Systems including the Technology Supplier's Manuals.

DRAFT

10. The EMS will be reviewed and updated as any processes alter, or equipment is changed, if there are any accidents or incidents and on at least, an annual basis. More detailed information on what will be reviewed is included in paragraph 83 below.

The Scope, Aims and Structure of the Environmental Management System

11. The purpose of the EMS is to provide documented procedures to enable the safe operation of the facility so that managers, operatives and third parties can readily understand and undertake or monitor the day-to-day activities in an organised fashion.

12. The EMS has regard to the environmental impacts of the facility and in particular requires that infrastructure, equipment and operational management systems are put in place to ensure that there is minimal risk of any adverse impact to the local environment.

13. In particular this considers nearby sensitive receptors including humans, dwelling places, and workplaces; water courses and groundwater, plants and animals and any specific sites that are identified for their environmental sensitivity.

14. Consequently, any activity, operation or material that occurs or is generated within the activities of the site that may have an adverse impact on the environment is closely considered and measures implemented to increase the level of control where appropriate.

15. The Environmental Management System (EMS) primarily relates to the Environmental objectives of the operating company but also cross refers to parallel systems such as Health and Safety and the Plant and Equipment Manuals.

Roles and Responsibilities

16. The full roles and responsibilities for specific aspects of the plant operations and procedures is included in Appendix 14 below but the key aspects are outlined in the table below:-

Management Operators / WAMITAB CoTC		
Bill Lloyd	Managing Director	Office 01974 298278 Mobile 07976 910410
Jim Lloyd	Operations Manager	Office 01974 298278 Mobile 0777 9394981

DRAFT

ENVIRONMENTAL POLICY

Pencefn Feeds Ltd
Anaerobic Digestion Facility

Environmental Policy

Pencefn Drysgol is an environmentally aware family farm. The main business is an animal feed pellet mill and this is supported by an anaerobic digester to produce a sustainable energy supply and biofertiliser. The green energy production and biofertiliser complement the woodlands that have been planted at Pencefn Drysgol as measures to reduce carbon emissions, alleviate flooding and improve the wildlife habitats to increase the biodiversity of the area. Overall the farm is working to ensure they work in in harmony with agriculture providing resources and activities for environmental benefit.

Our aim is to improve environmental sustainability by seeking and implementing systems that reduce the environmental impact of our operations.

At Pencefn Feeds Ltd as well as conducting our operations with due regard to the environment, we intend that the outcome of our farming activities shall have a wider beneficial impact on the global environment.

As such, the work of Pencefn Feeds Ltd is guided by the following principles:

- To comply with the relevant legislation, to prevent pollution and protect the environment.
- To adopt practices and procedures in keeping with industry good practice.
- To embrace the management principles of Renewable Energy Generation.
- Wherever possible to commit to waste reduction, recovery and recycling of energy and natural resources e.g. fertilisers and organic matter.
- To continue to minimise our environmental impacts including our company's carbon footprint, by reduction in fossil fuel fertiliser usage and generation of renewable energy.
- To establish procedures to improve our environmental performance.
- To make our policy and environmental information available to the public, schools, suppliers and other interested third parties.
- To demonstrate our commitment to all employee involvement through training and environmental awareness raising.

Signed: _____ ***WHJ Lloyd*** *Dated:* ***June 2020***

Managing Director, **Pencefn Feeds Ltd**

DRAFT

2)INTRODUCTION TO THE SITE

Site Location

17. The Pencefn Drysgol AD Facility is located at Pencefn Drysgol, Dewi Road, Tregaron, Ceredigion, SY25 6JW. OS Grid Ref: SN 68114 57681 (easting 268114, northing 257681). The farmyard is located at the end of a 2km road which traverses the hillside and is accessed off Dewi Road to the south west of Tregaron. There are a number of buildings within the site of various ages and construction. All have been / are in agricultural use. Over the years the farming business has diversified into farm feeds and as such one or two of the buildings are now being used in association with this use.

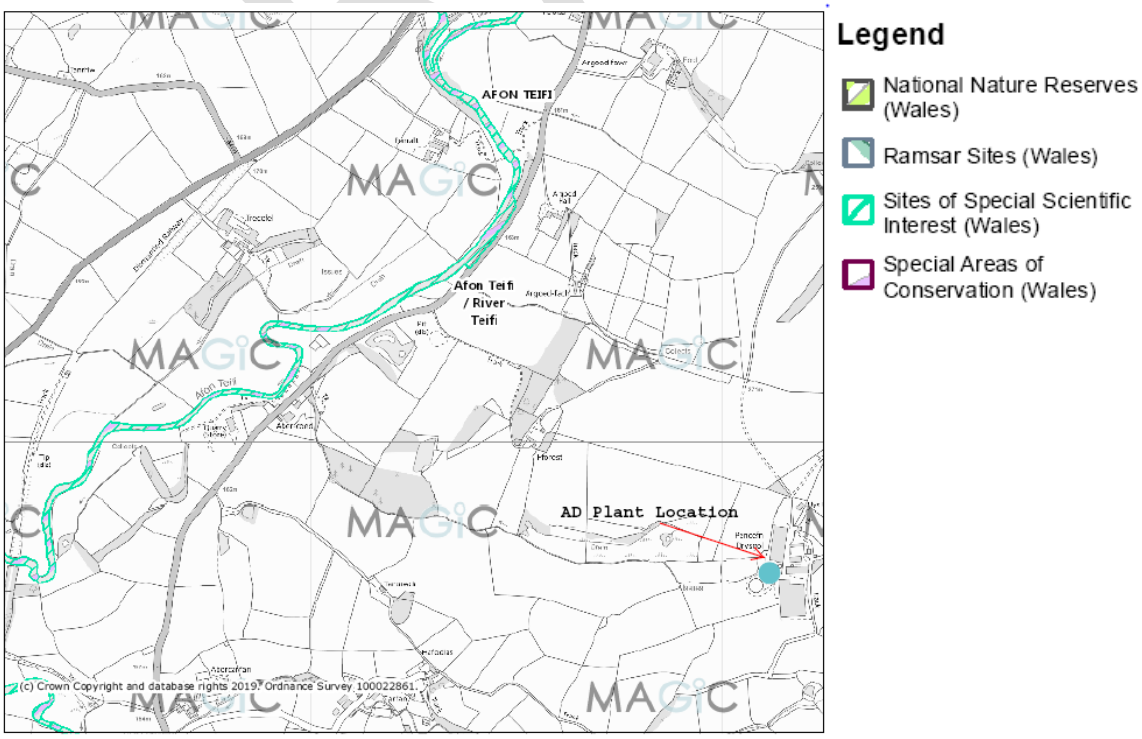
18. Access to the site is from the public highway along the farm drive and then left along the track at the northern edge of the farmstead. The roadway is in normal regular use by farm traffic and is capable of taking large heavy goods vehicles.

Site Location Sensitive Receptors

19. The farmstead is separated from its nearest neighbour by an open area of land and the AD facility is located at a distance greater than 200m from non-associated residences and public access tracks (this being a measure that is used by the NRW in regard to site proximity and beyond which reduced sensitivities are likely).

20. However, at its closest point the site is located approximately 1.2km from the River Teifi which is a protected site with Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) status. There is a watercourse approximately 200m to the west of the site boundary which runs into the River Teifi SAC/SSSI, so it is imperative any pollution of the stream is prevented. The Defra MAGIC website has been used to identify the designated sites in the locality and this is included at Appendix 1 but the proximity to the River Teifi is show below:-

Proximity of Pencefn Drysgol to SSSI/SAC River Teifi



21. The details of the sensitive receptors to the AD plant are set out below:-

Residences

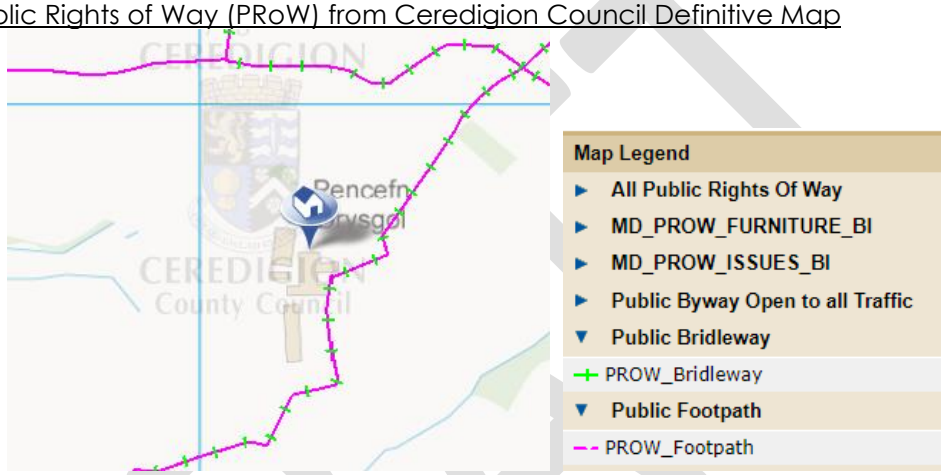
- The nearest non-associated residential dwellings to the AD plant are Nant yr Onnen , approximately 1.2km northwest of the site; Benjamin, Abercarfan approximately 950m west of the site; and Cwm farm approximately 1km southwest of the site.

Public Footpaths and Bridelways

There are two public footpaths which are also bridleways in relatively close proximity to Pencefn Drysgol.

- One track runs along the east side of the farmstead and at its closest point is approximately 70 meters from the AD development.
- The second is nouth of the development, about 415m at its closest point.

Public Rights of Way (PRoW) from Ceredigion Council Definitive Map



Introduction to the Anaerobic Digestion Process

22. The anaerobic digestion process is a simple natural process that enables the biological breakdown of organic matter in carefully controlled conditions to transform carbohydrates into water, carbon dioxide (CO^2) and methane (CH^4). The water stays within the closed environment and the mixture of CO^2 and CH^4 is known as 'biogas'.

23. The process at Pencefn Drysgol utilises agricultural crops of maize and grass silage and slurry as 'feedstocks'. These are blended in a pre-specified ratio to form a 'soup' that is readily pumped into the closed tank called 'the digester vessel (or digester tank)'. The tank is warmed to the optimum temperature for the bacteria and here undergoes a cycle of changes as various bacteria biologically transform the feedstock from carbohydrates into soluble acetic based high energy solution and then the methanogens transform this into methane and carbon dioxide.

24. The 3 critical process conditions are:
    - Containment;
    - Temperature Control; and
    - Mixing.

25. Each day a known batch of digested material is removed in sealed pipelines from the secondary digester and later, a known pre-specified batch of feedstock is pumped into the mixer tank. Gas that bubbles up from the liquid is held within the headspace of the tanks and is removed so that a constant very low pressure is maintained within the system. The gas is cleaned through a system of condensation traps and is piped to the CHP engine units that drive the generators.

26. The overall process flow is as follows:-

    a) An intake / receiving tank is mechanically fed with solid biomass (straw and/or solid manure) where it will be pumped to the mixing tank for mixing with liquid materials from the water /silo tank, until a homogenous consistency is reached suitable for pumping. The mix tank is designed for more liquid types of biomass and is where the main mixing takes place.

    b) The digesting process takes place in two steps and starts in the primary digester tank. The first step is a thermophilic process at a temperature of 52°C, and takes a period of approximately 18days within the primary digester tank. Mixing is based on an interval controlled circulation system (rather than a blade propeller system). When the pump is running it draws thick liquid from the bottom of the tank into the chopper pump.

    c) The second step of the digesting process takes places in the secondary digester tank and is a mesophilic process and retains the liquid within the tank for approximately 36 days.

    d) Biogas is produced both in the primary and secondary digesters. The biogas is self-flowing through related pipes at the top of the digesters. Gas flows to the storage facility designed as a double membrane on top of the secondary digester. This is then used within the adjacent Pencefn Feeds business in the form of heat and energy via a CHP unit.

    e) The outputted fertiliser is pumped to the storage tank, from where it is utilised around the farm.

    f) A gas flare is located to the north-west of the site in order to allow for the release of any excess gas.

27. The tanks are heated using under floor or concentric pipe heating systems, so that the elevated temperatures are maintained.

Site Safety and Security

28. Access to the site is via the farm track. The site is easily accessible by full-sized lorries and other vehicles as the tarmac drive has been designed to support Pencefn Feeds Ltd. Containerised plant and equipment are kept secure, and high risk items are kept locked. Fire-fighting facilities are available: water supplies and small extinguishers. There is open (fresh air) access to the top of the anaerobic digester tanks. There are no buildings with high level working areas, but there are stairwells to lower levels and the Combined Heat and Power Unit (CHP) is located within an adjacent accessible building.

29. The biogas system operates at very low pressure. The pressure of biogas within the digester tanks is closely monitored and controlled. There are two high pressure relief vents that will function to release pressure if required. In the event of an emergency, there is a safety flare that would enable surplus biogas to be safely consumed.

30. Biogas is piped to the engine house and is only compressed as it is used within the engines that drive the electricity generators.

31. There are methane sensors within the closed work areas, including the engine house, control room and the pump house. All areas are purged with fresh air by extractor fans and ducted ventilation systems.

32. For security of the site itself – as the facility lies within a substantial farm unit which is controlled by the family of the operator, the complex relies generally on the farm security fencing and gates to limit vehicular access. The boundary fences to the application site and gate from the internal access are checked on a regular basis for damage or signs of attempted entry. Such occurrences are entered in the site diary

DRAFT

and any damage is repaired at the earliest opportunity. All visitors are required to sign in at the Site Office on arrival and exiting the site.

3)ENVIRONMENTAL REVIEW

Summary of the Environmental Review

33. The EMS utilises the methodology as used in a typical ISO14001 approach for carrying out an Environmental Review in order to determine the Environmental Aspects, together with consideration of:
    - The relevant statutory controls
    - The site history and any incidents
    - Determination of environmental aspects
    - Review and consideration of existing procedures

Register of Statutory Controls

34. This EMS utilises the NRW and other sources (such as regular legal updates from E4environment Ltd) for the Register of Statutory Controls, considers these and determines those that are relevant to this site. The Register is written as a list that is supplemented with a short commentary that describes the relevance and key features of each Act, Regulation, Code and/or any other relevant statutory (or self-imposed) management control. For this site, the Primary Statutory Controls have been addressed as follows:-

a). The Environmental Protection Act	Due consideration to management of Waste and of ways in which the processes may affect the environment; in particular the impacts on neighbours and air quality, including noise, emissions and odours.
b). The Environmental Permitting Regulations - Environmental Permit	Due consideration to the Environmental Permit for this site as described above; responding to each of the clauses and maintaining compliance in regard to the feedstocks used, the management of the processes and management of environmental aspects.
c).The Environmental Permitting Regulations Environment Agency Classification of Waste	Due consideration to other aspects of the Environmental Permitting Regulations where they are not defined within the Permit, or materials that are not waste, such as silage and vegetable matter as feedstocks for the Anaerobic Digester.
d) Wildlife and Countryside Act and Conservation of Habitats Regulations	Given the proximity of the site to hydrological catchment of the SSSI/SAC River Teifi this is of major importance as a sensitive receptor.
e). The DSEAR Regulations	Reference to documentation compiled by ComBigas (the technology supplier) and guidance provided by consultants.
f). The Water Resources Act	Due consideration to the protection of water; in particular the River Teifi and other water discharges that may directly or indirectly enter a watercourse.

DRAFT

g). The Health and Safety at Work Act	Compliance with the H&S Act, and the associated requirements and regulations for employed personnel. Due consideration of third party Visitors Health and Safety as described by the H&S Policy.
h). The Duty of Care Regulations	Compliance with the Duty of care regulations in regard to Waste Transfers if and when required.

35. The key controlling document for this site is the Environmental Permit number EPR/BB3794CF.

36. The full Register of Statutory Controls is provided within an excel spreadsheet as Appendix 2. A snapshot of the Register of Statutory Controls is shown below. This snapshot is to illustrate the form and scope of the Register and does not represent the latest update. The relevance of each item is given a score within column G, and the spreadsheet (data-base) is then sorted so that the more relevant items are shown towards the top of the list.

Snapshot of the Register of Statutory Controls 2019

Env Media	Date Enforced	Title	Relates to	
Created June 2019				
ENV PERMITTING	2017	Environmental Permitting (England and Wales) Regulations SI 2016/1154	Consolidate the system of environmental permitting in England and Wales, replacing the Environmental Permitting (England and Wales) Regulations SI 2010/675. It integrates regimes covering waste management licensing, pollution prevention and control, water discharge consents and groundwater authorisations.	1
WATER	2010	Water Resources (Control of Pollution) (Silage and Slurry and Agricultural Fuel Oil)(Wales) Regulations 2010 SI 1933 *(Known as the SSAFO Regs)*	Establishes construction and storage standards for silage-making and storage, slurry storage systems and agricultural fuel oil stores, with the aim of reducing water pollution.	1
WASTE LEGISLATION	1995	Environment Act 1995	Establishes Natural Resources Wales, the Environment Agency and SEPA as the regulating bodies for contaminated land, abandoned mines, national parks, control of pollution, conservation of natural resources, conservation or enhancement of the environment, and fisheries.	1
CONSERVATION	1981	Wildlife and Countryside Act 1981 Chapter 69	Deals with nature conservation, the coutryside, conservation areas and national parks.	1
CONSERVATION	2010	Conservation of Habitats and Species Regulations SI 2017/1012	These Regulations came into force on 30 November 2017. In particular these Regulations provide for: the conservation of natural habitats and habitats of species (including European sites, management, agreements, European marine sites); protection of species; additional protection of habitats and wild animals and plants, including by surveillance and monitoring; the grant of licences for certain activities relating to animals or plants; planning permission and other planning provisions; marine policy statements; and enforcement, offences and powers of entry.	1
CONSERVATION	2009	Environmental Damage (Prevention and Remediation) (Wales) Regulations SI 2009/995	These Regulations came into force on 19 July 2015. They impose obligations on operators certain activities requiring them to prevent or remediate environmental damage. They apply to damage to protected species, natural habitats, sites of special scientific interest (SSSIs), water and land.	1
CONSERVATION	2010	Environmental Civil Sanctions (Wales) Order 2010 SI 1821	Allows the environmental regulator to impose civil sanctions on a business committing certain environmental offences, as an alternative to prosecution and criminal penalties of fines and imprisonment.	1
ENV PERMITTING WASTE		Waste (England and Wales) Regulations 2011 SI 988	Requires businesses to apply the waste management hierarchy, introduces a two-tier system for waste carrier and broker registration, and excludes some categories of waste from waste controls.	2
SOIL WASTE STATUTORY NUISANCE	1990	Environmental Protection Act 1990	Defines within England, Scotland and Wales the legal framework for duty of care for waste, contaminated land and statutory nuisance.	2

Site History and any Incidents

37. The Site History and consideration of historic incidents is maintained as part of this EMS. The Pencefn Drysgol AD Plant site is a part of the farmyard with existing buildings and infrastructure for agricultural crop storage and cow herd management. There was a pollution incident in December 2016 which resulted in pollution of the SSSI/SAC River Teifi. The incident happened during the construction of the AD plant but prior to the bund and full drainage system having been designed and installed. There have been no dumping or depositing of wastes and no other spills or leakages into the ground at this site.

38. Any future Environmental Incidents shall be recorded to the Incidents Register (See Appendix 12).

Determination of Environmental Aspects

39. The determination of the environmental aspects, their significance and their impacts have been assessed. The key steps in undertaking this key part of the environmental review and where the details have been recorded are as follows:-

1. Delivery of feedstock – vehicle emissions	Air inhalation	Local residents, CO_2 to environment
2. Delivery of feedstock – odour	Air inhalation	Local residents
3. Delivery of feedstock – spillage	Water and land	Local rivers and land
4. Storage of feedstock - odour	Air inhalation	Local residents
5. Storage of feedstock - spillage	Water and land	Local rivers and land
6. Transfer of feedstock to AD feeder - odour	Air inhalation	Local residents
7. Transfer of feedstock to AD feeder - spillage	Water and land	Local rivers and land
8. Digester tank operations – leakage	Water and land	Local rivers and land
9. Digester tank operations – collapse	Water and land	Local rivers and land
10. Biogas flare operation	Air emissions	Gases to environment
11. CHP Unit – noise and exhaust gas emissions	Air emissions and noise nuisance	Gases to environment and local residents
12. Digestate storage – odour	Air inhalation	Local residents
13. Digestate storage – gases	GHG Air emissions	GHG to environment
14. Digestate storage - spillage	Water and land	Local rivers and land
15. Digestate spreading	Water and land	Local rivers and land

40.

Steps to determine the Significant Environmental Aspects for Pencefn Drysgol		
1.	Compilation of register of all possible or potential aspects for this facility as an Environmental Risk Assessment.	Aspects register – compiled as an excel spreadsheet. See Box 1below.
2.	Population and use of the assessment	In this instance, use of a simple scoring system of High, Medium and Low.
3.	Sorting and ranking of the aspects based on their potential impacts	Use of a spreadsheet system to sort the register so that the significant aspects are shown first.
4.	Production of a 'Significant Aspects Register'.	Produce the Significant Aspects register
5.	Referral of the Significant Aspects to further evaluation and detailed consideration as part of a Management Plan.	Develop Environmental Protection Procedures

DRAFT

Box 1 Environmental Aspects	
The 'Environment' is defined as Air, Water, Land, Flora, Fauna, Natural Resources and Humans and the way in which these all interact. Thus every aspect of the activity or operation that may have a lesser or greater impact on the environment (positive or negative) is registered. As a minimum therefore these include:	
Process operation Plant and machinery Waste management Raw materials used Water use Storage of materials on site Transportation and distribution	Emissions & discharges including: Noise, odour, dust Bio-aerosols Water/ effluent discharges Waste disposal Energy sources and usage

Table 1. Aspects and their Environmental Impact Rating subject to the controls

		Impact on Environmental Media												
Item or Action	**Aspect**	**A**	**W**	**E**	**D**	**L**	**No**	**Nn**	**R**	**F**	**Normal/ Abnormal/ Emergency Operating Conditions**	SORTING COLUMN	Rated	Based on controls
		Air	water	Energy	Waste Disposal	Land (contamination)	Nuisance Odours	Noise / Vibration	Resources (Water Chemicals etc.)	Flora & Fauna				

A=Emissions to Air (including dust); W=Emissions to Water; E=Energy Use (e.g. gas/electricity) D= Waste Disposal; L= Land Contamination; No=Nuisance Odours; Nn=Nuisance Noise; R=Resource Consumption (Water, Chemicals etc.); F=Flora & Fauna

41. Based on the Aspects Register, each Aspect is assessed in order to determine the nature and extent of any risk that it may impose upon the 'environment'. The Preliminary Register of Aspects is provided at Appendix 3. The Assessment and sorting to determine the Significant Aspects is provided at Appendix 3.

Environmental Management Procedures

42. On the basis of the consideration of the Environmental Aspects and their significance, a number of Management Procedures have been developed. Procedures, systems and techniques are established as a priority for the control and management of the environmental risks from these key aspects. These necessarily also include aspects such as accidents or failures that could lead to pollution and therefore form part of pollution abatement and pollution response planning.

4)OPERATIONS AND MAINTENANCE

Site Checks

43. Daily, weekly, monthly and semi-annual checks are conducted on the site as per the installer's guidance document (example attached as Appendix 6) in order to monitor:-

- Drains and sumps are working

- Checking of AD operation of both digesters for mix and temperature, for CH_4, CO_2, O_2, H_2S.
- Checking tank gas safety systems, pressure and level sensors operating, all round for leakage (liquid or biogas)
- Checking of bunded area for standing water (if discoloured or evidence of leakage from tanks or pipelines)
- Checking of CHP operation for biogas compression, oils and coolant
- Ancilliary equipment and pipework checked for liquid leakages, mechanical operation and integrity
- Compressors checked for liquid or biogas leakages and mechanical operation.
- Control systems checked – automated software, data acquisition software, critical values and information displays.

44. Notes of all checks are kept on daily log sheets and kept in the operations office.

Operations

45. There are currently (2020) only two operators at the AD plant and both have been trained in how to use all the equipment on site. However, written operating instructions are retained in the site office if required to use for any plant and equipment present on-site. The instructions provide direction on how equipment is to be used and address any precautions which are to be taken as part of that work to ensure any risks to the environment posed by the use of the equipment are minimised or eliminated. These instructions include details of what to do when things go wrong ie. when the plant or equipment malfunction and how to stop this from causing an adverse environmental impact.

46. The High Priority Instructions are provided as:-
    - Accident (Environmental) Management Plan (Example Summary at Appendix 7)
    - Fire and Emergency Procedures (Included in Contractors Induction Booklet - summary attached as Appendix 8)
    - DSEAR Management Safety Zones (Appendix 9)
    - Leak and Spillage Procedure (summary within Appendix 16)

47. The Equipment Operating Instructions are listed in the ComBigaS Handbook which is kept in the site office. This includes reference to hired in, or contract operated equipment. The equipment at this site is registered in a specific form that provides key information; and their Environmental Impacts are evaluated within the Aspects Register and Impacts Assessment.

48. Operational Procedures are attached as Appendix 16 and cover the following areas:-
    - Feedstock Acceptance and Rejection
    - Feedstock Control Procedures
    - Waste Dispatch
    - Waste Quantity Measurement System
    - Stockpiled Waste Measurement
    - Plant Equipment and procedures
    - Pollution Control, Monitoring and Reporting
    - Control, Monitoring and Reporting of Dusts, Fibres and Particulates
    - Control and Monitoring of Odourous Emissions
    - Control of Pest Infestations
    - Control of Scavenging Birds and Other Scavengers
    - Control of Litter
    - Security and Availability of Records
    - Leak and Spillage Procedure

DRAFT

Maintenance

49. Management appreciate that pollution incidents may be the result of a maintenance failure and therefore have plans for proactive and preventative maintenance of the plant and equipment used on the site. The maintenance advice provided by a manufacturer, supplier or installer is diligently followed. Inspection and maintenance timescales follow closely those recommended by the manufacturer, supplier or installer and if there is a variance from this, then the reasoning behind this shall be explained in writing in this section of the EMS. Appendix 4 is the Plant and Equipment Register and Assessment and Appendix 5 is the Equipment Check and Service Record template.

50. The primary containment on site is provided by the two digesters and storage tank which are each constructed of poured in-situ concrete design. The tanks have been built to standards BS –EN205 and BS8500.

51. The manufacturers recommended design inspection frequency follows EEMUA 159 and is scheduled for 10 yearly inspection (ie. at least half-way through guaranteed life of 20 years). This will be followed at Pencefn Drysgol.

52. The AD plant at Pencefn Drysgol is constructed by Combigas uk. Part of the reason for choosing this installer is because Combigas UK design-in grit management to how the plant operates. The digester system keeps all the contents in suspension so there is no sediment or sediment built-up on the base or walls. There is both direct and indirect monitoring to ensure there is no grit build-up within the tank and the digester will be physically checked for any problems on the same schedule as tank integrity testing is undertaken.

53. Also any feedstocks used are assessed for their "grit" or debris risk. So naturally low risk feedstocks are used; grass silage, maize silage, hybrid rye, cereals, etc.

54. The secondary containment on site is provided by a concrete bund wall and a natural earth base liner. The walls and base are impermeable. The joints between the prestressed concrete panels have a core of hydrophilic polyurethane sealant which swells when in contact with moisture, thereby forming a compression strip at the core of the joints which is water-tight. The product used is Sika Swell, the performance of which is guaranteed by the manufacturer. There are no penetrations of the bund wall. Permeability tests carried out in 2017 on the reprocessed mudstone natural earth base liner, had results showing it to be at least 20 times more impermeable than the requirement for engineered clay liners.

Contractors and Permits to Work

55. Where third parties visit the site, then they are required to set out their work plans and take account of Fire and Accident Risk Management. Contractors require permission in the form of a 'Permit to Work' before they engage in activity within the Permitted site area. This Procedure Appendix 10, Permits to work, and 11, Permit to Work template) is so that they manage the risks and take account of any secondary risks that may be presented by their equipment. It specifically refers to HOT WORKS and attention is drawn to the DSEAR Management Zones, and the Fire Management Plan.

56. Where proposed work is identified as having a high risk, strict controls are required. The work must be carried out against previously agreed safety procedures, a 'permit-to-work' system.

57. The permit-to-work is a documented procedure that authorises certain people to carry out specific work within a specified time frame. It sets out the precautions required to complete the work safely, based on a risk assessment. It describes what work will be done and how it will be done; the latter can be detailed in a 'method statement'.

58. Where the specialist contractor provides all of the expertise, then the contractor will write down the method statement and undertake the risk assessment before submitting

DRAFT

it to the site operator for approval and or discussion/clarification where required. The permit-to-work will then be approved by the responsible person/site manager/ person authorising the work and confirmed and accepted by the contractor and his personnel that are to undertake the work.

59. Assigned Contractors who perform works at Pencefn Drysgol AD plant are required to complete Permits to Work and Method Statements which are checked and approved by Pencefn Drysgol AD. A small number of regular contractors only are used so this ensures compliance and familiarity to the site and its risks.

5) ACCIDENT AND INCIDENTS

Accident and Incident Management Training

60. All staff shall be trained and made aware of the existence of incident and accident management plans. These plans shall be clearly communicated to all employees, managers and contractors who work at the site. A list of persons that need this training is included within the 'Training Needs Assessment Matrix' documentation (see Appendix 12). A record of all training is retained by management as part of the Farm Safety file and can be found in the farm office.

61. Incident Management Training includes-
- Machinery breakdown, partial or total failure
- Equipment unavailability
- Adverse weather
- Circumstantial change – feedstock deliveries
- Third Parties, visitors

62. Accident Management Training includes:-
- Effluent spillages
- Oil (eg. hydraulic) spillages
- Fuel oil spillages
- Collision of equipment, vehicles etc.
- Personnel accident, injury or impact
- Fire in the material
- Equipment Fire

Incident/Accident Management Procedure

63. The procedure has been designed by taking into account associated information contained in the Environmental Risk Assessment, the Aspects Impacts Assessment and the Accidents Management Plan ie.:-
- Identifying the risks from the activities carried out that could damage the environment;
- Assessing how likely they are to happen and the potential environmental consequences;
- Taking action to minimise the potential causes and consequences of accidents;
- Identifying how to minimise the consequences should such accidents occur.

64. If an accident does happen and it may cause an adverse environmental impact, then the trained operatives shall be expected to:-
- Immediately do what it says in the accident management plan;
- Do whatever else is necessary to minimise the environmental consequences;
- Take precautions to ensure the health and safety of both employees and external people is not compromised.

DRAFT

65. Based on the above, management shall find out why the accident happened and take action to stop it re-occurring. Further, they will review the accident management plan.

Accident Management Plan

66. The accident management plan includes a site map, details of the Accident Management Procedure and information on where accident response equipment are located. This will include spill kits, fire extinguishers, protective clothing, first aid kits and fresh water supply. Further the plan includes a list of key contacts and contact numbers, emergency response services and a list of associated contractor service providers for breakdown, engineering, haulage, etc. Crucially the plan includes information on preventing accidents which could occur on the site and what to do if an accident happens. A summary of the plan is included at Appendix 7.

67. The accident management plan shall be reviewed at least every 4 years if management or a named responsible people change or as soon as possible after an accident. Any updates or changes needed shall then be uploaded into an updated accident management plan. If no changes are needed then the date of the review shall be recorded together with a note recording that no changes were needed.

Response to Alarms

68. The accident management plan sets out the response to alarms raised either from the SCADA system or directly by employees, contractors or members of the public. While SCADA alarms can be acknowledged by a recipient the system has to be checked on-site with a code for the error message to be stopped. If an alarm has been raised either remotely via SCADA or directly by an employee, contractor or member of the public then the incident will be investigated by management to determine the cause and impact. Following a review, the required corrective action will be implemented to prevent a further incident.

Site Security to assist the Avoidance of Incidents and Accidents

69. Site security measures are in place to prevent unauthorised access to the site and there-by reduce any resultant pollution that unauthorised access may cause to the environment or human health. Site security measures are recorded in the EMS and any breaches of security shall also be recorded.

Incident/Accident Recording

70. All incidents and non-conformances shall be recorded (See Appendix 12). This includes those reported by external people as well as those picked up in monitoring, reviews and audits of the site. Incidents that require investigation include any malfunction, breakdown or failure of plant or equipment or techniques and any near misses which affect or potentially affect the environment. Non-conformances include where the management system is not followed as well as non-compliances with the conditions in the permit.

71. If an incident or non-conformance occurs the EMS should be reviewed to find the root cause of the problem and steps should be taken to ensure that there is no re-occurrence. The findings of the review should be communicated to employees to ensure they understand any changes that need to be made to operations or procedures.

DRAFT

6) SITE CLOSURE PLAN

72. The operators have put in place plans for closure of this site. This is because when the Environment Agency receives an application to surrender a permit, it requires operators to show that the site has been returned to its original state. It's therefore especially important to ensure operators know the state of the land where the permitted activities will be taking place, prior to starting the activities.

73. The permitted site's management system takes account of this to ensure that processes are in place to record details of how the land under the site was thoroughly protected when the operations started and during operations under the permit. For example, by recording the use and maintenance of impermeable surfacing and sealed drains.

74. The records of how the land has been protected will be considered at permit surrender alongside records of any relevant spills and incidents which occurred during the time the site was permitted and what was done to rectify and clean up after those incidents.

7) COMPLAINTS

75. All complaints received by the Pencefn Drysgol AD Ltd about their activities shall be recorded and acted upon. The EMS Appendix 14 provides the means for doing this.

76. If the site receives a complaint this form shall be completed. Records shall be available to the NRW when they visit the site. The forms can be used as evidence that any complaints received have been taken seriously and that actions have been taken to rectify any problems identified, especially if the NRW has also received the same complaint.

8) STAFF TRAINING AND COMPETENCE

77. Any person having duties that are or may be affected by the matters set out in this document shall have convenient access to a copy of it kept at or near the place where those duties are carried out. This includes not only staff but any contractors that may be working on the site as well. The copy may be in paper form or electronically available. The most important aspect is that staff and contractors are aware of the permit and this EMS, what is contained in them, what their obligations are under them and where and how to access them.

78. Staff roles and responsibilities have been clearly defined and names have been placed against each role and responsibility. See Appendix 15.

79. The training checklist and record forms (see Appendix 12) help to ensure that the recording requirements for training received by staff are met. The training checklist is used to identify the training required for each different role at the site.

9) ODOUR, NOISE AND EMISSIONS MANAGEMENT

80. The Environmental Permitting Regulations require the control of pollution including odour, noise and emissions. The potential impacts of these are managed and controlled as they may have serious adverse impacts on the environment and human health. Odour is monitored on a daily basis, as is the working of the flare and CHP unit, and noise is monitored on a monthly basis. Any abnormalities are reported to management for action to be taken.

DRAFT

10) DOCUMENTATION

81. The EMS manager maintains a record of any applicable environmental obligations, permits, exemptions, codes of practice, legislation and any other requirements Pencefn Drysgol AD Ltd is signed up to. The legislation which is relevant to the site's activities is kept on a compliance register and is maintained by the EMS Manager (see Appendix 2). The requirements of any permit or authorisation that Pencefn Drysgol AD Ltd has from the NRW is also included in this register.

11) EMS MANAGEMENT AND REVIEW

82. The EMS is managed by the responsible person with assistance from third party environmental consultants. Currently the responsible person is Bill Lloyd. An internal audit shall be undertaken by the third party consultants each year.

83. The EMS shall be reviewed at least once per year (12 months) and the following key components checked:-

- Environmental Management Policy and responsibilities
- Site records
- Digestate Production records
- Environmental Incidents and Accidents
- Equipment condition, fitness for purpose and maintenance records
- Training Records
- Product quality
- Complaints
- Environmental Monitoring
- Statutory Register – Statutory compliance.
- Aspects Register
- Environmental Risk Assessment
- Aspects – Environmental Impact Assessment.
- Standard Operating Procedures
- Environmental Management Plans
- Accident management plans

DRAFT

Permit

The Environmental Permitting (England & Wales) Regulations 2016

Pencefn Feeds Limited

Pencefn AD
Pencefn Drysgol
Dewi Road
Tregaron
Ceredigion
SY25 6JW

Permit number
EPR/BB3794CF

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/BB3794CF

The Natural Resources Body for Wales ("Natural Resources Wales") authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

Pencefn Feeds Limited ("the operator"),

whose registered office is

Pencefn Drysgol

Tregaron

Ceredigion

Cymru

SY25 6NH

company registration number **04536928**

to operate waste operations at

Pencefn AD

Pencefn Drysgol

Dewi Road

Tregaron

Ceredigion

SY25 6JW

to the extent authorised by and subject to the conditions of this permit.

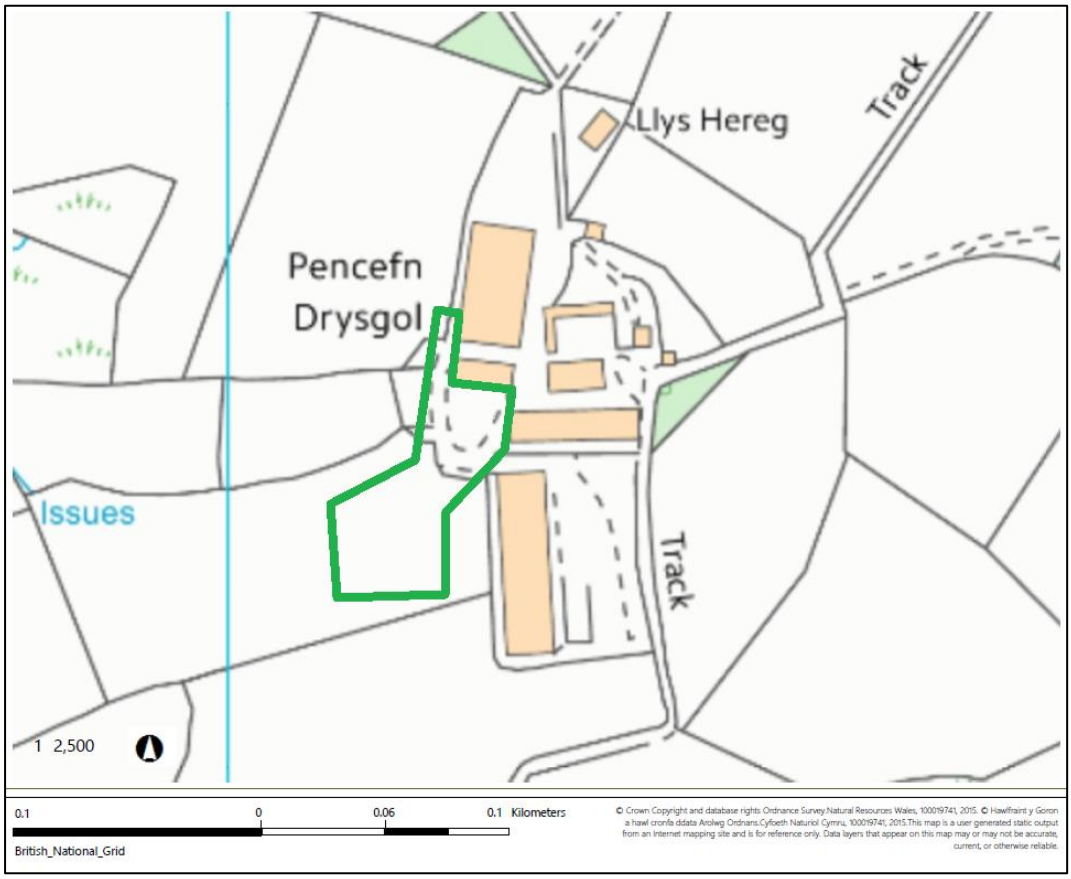
Under regulation 27(2) of the Regulations, standard rules **SR2018 No11** are conditions of this permit.

Name	Date
Huw Davies	**11/08/2020**

Authorised on behalf of Natural Resources Wales

Schedule 1 - Site plan

This is the plan referred to in the standard rules SR2018 No11



© Crown Copyright and database right 2020. Ordnance Survey licence number 100019741.

END OF PERMIT

Standard rules

Chapter 4, The Environmental Permitting (England and Wales) Regulations 2016

Cyfoeth Naturiol Cymru
Natural Resources Wales

Standard rules SR2018 No11

On-farm anaerobic digestion facility using farm wastes only, including use of the resultant biogas

Waste Recovery Operation – treatment capacity less than 100 tonnes of waste per day

Introductory note

This introductory note does not form part of these standard rules

These rules are limited to premises used for agriculture and to wastes arising from on-farm activities, including dairies and are available to operators with an anaerobic digestion treatment capacity of less than 100 tonnes of waste or a combination of waste and non-waste – both solid and liquid - on any one day. For anaerobic digesters operating above this threshold, standard rules for installation activities are available.

These Standard Rules include the implementation of the Medium Combustion Plant Directive and Specified Generators Regulations for a new Medium Combustion Plant (MCP) and Tranche B Generator without secondary abatement.

When referred to in an environmental permit, these rules will allow the operator to carry out the anaerobic digestion of wastes and the combustion of the resultant biogas in gas engines with an aggregate rated thermal input of up to 5 megawatts. The rules also allow use of gas turbines, boilers, fuel cells and treatment and/or upgrading the biogas to biomethane.

Permitted wastes do not include hazardous wastes.

Any wastes controlled by the Animal By-Products Regulations must be treated and handled in accordance with any requirements imposed by those Regulations.

These standard rules do not allow any emission into surface waters or groundwater except clean water from roofs and parts of the site not used for waste activity including storage of wastes. However, under the emissions of substances not controlled by emission limits rule, biogas condensate, treated digestate and waste waters may be discharged to a sewer subject to a consent issued by the local water company.

These rules do not apply to installations with more than one operator.

End of Introductory Note

Rules

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in these standard rules shall have convenient access to a copy of them kept at or near the place where those duties are carried out.

1.1.4 The operator shall comply with the requirements of an approved competence scheme.

1.2 Avoidance, recovery and disposal of wastes produced by the activities

1.2.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.2.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in table 2.1 below ("the activities").

Table 2.1 Activities	
Description of activities	**Limits of activities**
R13: Storage of wastes pending the operations numbered R1 and R3 R3**:** Recycling or reclamation of organic substances that are not used as solvents R1: Use principally as a fuel or other means to generate energy. D10: Incineration on land New Medium Combustion Plant and / or Specified Generator	All activities must be carried out on premises used for agriculture. Anaerobic digestion of waste and the following associated activities: • Treatment of waste including shredding, sorting, screening, compaction, bailing, mixing and maceration. • Digestion of wastes including pasteurisation and chemical addition • Gas cleaning and upgrading to biomethane. • Gas storage and drying • Treatment of digestate including screening to remove plastic residues, centrifuge or pressing, addition of thickening agents (polymers) or drying. • Composting and maturation of digestate • The use of combustible gases produced as a by-product of the anaerobic digestion process as fuel. • Burning of biogas in gas engines, gas turbines, boilers and use in fuel cells. • Use of an auxiliary flare required only for short periods of breakdown or maintenance of the facility. • Use of pressure release valves to protect the integrity of the plant. Such systems should not be used routinely to vent unburnt biogas. • Except for the auxiliary flare, the aggregate rated thermal input of all appliances used to burn biogas shall be less than 5 megawatts. The MCP and / or generator must not have secondary abatement. The MCP and / or generator must not be mobile. The total quantity of waste or a combination of waste and non-waste including solids and liquids accepted at the site shall not exceed 100 tonnes in any one day. Anaerobic digestion of waste or waste containing mixtures shall not exceed 100 tonnes per day.

2.1.2 All process plant and equipment shall be commissioned, operated and maintained, and shall be fully documented and recorded, in accordance with the manufacturers recommendations.

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan attached to the permit.

2.2.2 The permitted activities must not be carried out within:

(a) 10 metres of any watercourse;

(b) a groundwater source protection zone 1, or if a source protection zone has not been defined then within 50 metres of any well, spring or borehole used for the supply of water for human consumption. This must include private water supplies;

(c) a specified Air Quality Management Area;

2.2.3 The gas engine stack must be a minimum of 3 metres in height and must not be located within:

(a) 500 metres of a European Site or a Site of Special Scientific Interest (excluding any site designated solely for geological features);

(b) 200 metres from the nearest sensitive receptor in cases where the stack does not have an "effective" stack height of 3 metres or more, or the stack is less than 7 metres in height.

2.3 Waste acceptance

2.3.1 Waste shall only be accepted if:

(a) it is of a type and quantity listed in tables 2.1 and 2.3 of these rules;

(b) it conforms to the description in the documentation supplied by the producer and holder;

(c) the waste is biodegradable;

(d) wastes that are animal by-products or contain animal by-products must be handled and processed in accordance with any requirements and restrictions imposed by the animal by-products legislation; and

(e) it is not hazardous waste.

2.3.2 Records demonstrating compliance with rule 2.3.1 shall be maintained.

Table 2.3 Waste Types

Waste Codes	Description
02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, AND HUNTING, FISHING, FOOD PREPARATION AND PROCESSING**
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 01	sludge from washing and cleaning – vegetables, fruit and other crops
02 01 03	plant tissue waste - husks, cereal dust, waste animal feeds, off-cuts from vegetable and fruit and other vegetation waste
02 01 06	animal faeces, urine, manure including spoiled straw
02 05	**Wastes from the dairy products industry**
02 05 01	biodegradable materials unsuitable for consumption or processing (other than those containing hazardous substances) − solid and liquid dairy products, milk, food processing wastes, yoghurt, whey from dairies
02 05 02	sludge from dairies effluent treatment

2.4 Operating techniques

2.4.1 The activities shall be operated using the techniques and in the manner described in Table 2.4 below.

Table 2.4 Operating Techniques
Measures
1) All waste solids, liquids and sludges shall be securely stored. In the event of a leak, spill or failure, material can be contained and recovered.
2) All storage and process tanks shall be fit for purpose and shall be regularly inspected and maintained in accordance with paragraph 2.1.2. In the event of a leak, spill or failure, material can be contained and recovered.
3) Digestate shall be stored within containers or lagoons and should be of a design and capacity fit for purpose. The lagoon shall have a free board of 750mm.
4) Gas engine stack height shall be no less than 3 metres.
5) Periods of start-up and shut down of the MCP and generator must be kept as short as possible
6) There is no persistent emission of 'dark smoke' as defined in section 3(1) of the Clean Air Act 1993.
7) The stack(s) must be vertical and unimpeded by cowls or caps.
8) All biogas condensate shall be discharged into a sealed drainage system or recirculated back to the digester.
9) Emissions of unburned biogas and the operation of the auxiliary flare shall be minimised. Any significant emissions of unburned biogas (including the operation of the pressure relief valves, and the operation of the auxiliary flare shall be recorded.

3 Monitoring

3.1 Emissions to air, water or land

3.1.1 There shall be no point source emissions to air, water or land, except from the sources and emission points listed in table 3.1

3.1.2 The limits given in table 3.1 shall not be exceeded.

Table 3.1 Point source emissions to air - emission limits and monitoring requirements

Emission Point and Source	Parameter	Limit (including units)	Monitoring Frequency and Standard or Method
Stacks on engines operational before 20 Dec 2018	Oxides of Nitrogen	500 mg/Nm^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). Emission levels at Normal Temperature and Pressure and 5%O2, unless otherwise agreed in writing by Natural Resources Wales. Uncertainty allowance as stated in EA guidance LFTGN08 v2 2010. To ensure effective plume breakaway, minimum stack gas exit velocity shall be no less than 15 m/s or 12 m/s where stack volume flow is less than 0.5 m^3/s; OR The gas exit temperature shall be no less than 200^{o}C.
	Carbon monoxide	1400mg/Nm^3	
	Sulphur dioxide	350 mg/Nm^3	
	Total volatile organic compounds including methane	1000 mg/m3	
Stacks on new engines put in operation after 20 Dec 2018	Oxides of Nitrogen	500 mg/Nm^3	Annual monitoring
	Carbon monoxide	1400mg/Nm^3	

	Sulphur dioxide	107 mg/Nm^3	Monitoring equiptment, techniques, personnel and organisations employed for the engine stack emissions monitoring programme (including measurement of Exhaust gas temperature) shall have either MCERTS certification or MCERTS accreditation (as appropriate). All limits are defined at a temperature of 273.15 K, a pressure of 101.3 kPa and after correction for the water vapour content of the waste gases at a standardised O2 content of 5%. Uncertainty allowance as stated in EA guidance LFTGN08 v2 2010. To ensure effective plume breakaway, minimum stack gas exit velocity shall be no less than 15 m/s or 12 m/s where stack volume flow is less than 0.5 m^3/s; OR The gas exit temperature shall be no less than 200ºC.
	Dust	No limit set	
	Total volatile organic compounds including methane	1000 mg/m3	
Stacks on boilers burning biogas	No_x	No limit set	None specified.
	SO_2	No limit set	
	Dust	No limit set	
Stacks or vents on biogas upgrading plant	No parameter set	No limit set	None specified.
Stacks or vents on biofilter and/or scrubbing system	No parameter set	No limit set	Biofilter and/or scrubbing system shall be regularly checked and maintained to ensure that they remain effective
Auxiliary flare	Oxides of Nitrogen	No limit set	Record of operating hours (to be submitted annually).
Pressure relief valves	Biogas	No limit set	Weekly visual or remote monitoring to ensure valves are correctly seated.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this rule if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions

3.2.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales for approval within the period specified, an emissions management plan;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable, to minimise, the odour.

3.3.2 The operator shall:

(a) maintain and implement an odour management plan;

(b) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to odour, submit to Natural Resources Wales for approval within the specified period, a revised odour management plan;

(c) implement any approved revised odour management plan from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan, to prevent or where that is not practicable, to minimise, the noise and vibration.

3.4.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to noise and vibration, submit to Natural Resources Wales for approval within the period specified, a noise and vibration management plan;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by Natural Resources Wales, undertake the monitoring specified in table 3.1.

3.5.2 The operator shall maintain records of all monitoring required by these standard rules including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, test and surveys and any assessment or evaluation made on the basis of such data. These records shall be submitted to Natural Resources Wales annually in the form of a report.

3.6 Pests

3.6.1 The activities shall not give rise to the presence of pests which are likely to cause pollution, hazard or annoyance outside the boundary of the site. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved pests management plan, have been taken to prevent or where that is not practicable, to minimise the presence of pests on the site.

3.6.2 The operator shall:

(a) if notified by Natural Resources Wales, submit to Natural Resources Wales for approval within the period specified, a pests management plan which identifies and minimises risks of pollution, hazard or annoyance from pests;

(b) implement the pests management plan, from the date of approval, unless otherwise agreed in writing by Natural resources Wales.

4 Information

4.1 Records

4.1.1 All records required to be made by these standard rules shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible or are capable of retrieval; and

(d) be retained, unless otherwise agreed by Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of land and groundwater

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by these standard rules, unless otherwise agreed in writing by Natural Resources Wales.

4.1.3 The operator must maintain a record of the type and quantity of fuel used in the MCPs.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by these standard rules to Natural Resources Wales using the contact details supplied in writing by Natural Resources Wales.

4.2.2 Within one month of the end of each quarter, the operator shall submit to Natural Resources Wales using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.3 Notifications

4.3.1 Natural Resources Wales shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution;

(b) the breach of a limit specified in these standard rules; or

(c) any significant adverse environmental effects.

4.3.2 Written confirmation of actual or potential pollution incidents and breaches of emission limits shall be submitted within 24 hours.

4.3.3 Where Natural Resources Wales has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform Natural Resources Wales when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to Natural Resources Wales at least 14 days before the date the monitoring is to be undertaken.

4.3.4 Natural Resources Wales shall be notified within 14 days of the occurrence of the following matters except where such disclosure is prohibited by Stock Exchange rules:

(a) Where the operator is a registered company:

- any change in the operator's trading name, registered name or registered office address; and
- any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

(b) Where the operator is a corporate body other than a registered company:

- any change in the operator's name or address; and
- any steps taken with a view to the dissolution of the operator.

(c) In any other case:

- the death of any of the named operators (where the operator consists of more than one named individual);
- any change in the operator's name(s) or address(es);and
- any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case them being in a partnership, dissolving the partnership.

4.3.5 Without undue delay Natural Resources Wales shall be notified of planned change to the MCP which would affect the applicable ELV.

4.4 Interpretation

4.4.1 In these standard rules the expressions listed below shall have the meaning given.

4.4.2 In these standard rules references to reports and notifications mean written reports and notifications, except when reference is being made to notification being made "without delay", in which case it may be provided by telephone.

"accident" means an accident that may result in pollution.

"anaerobic digestion" means a process of controlled decomposition of biodegradable materials under managed conditions where free oxygen is absent, at temperatures suitable for naturally occurring mesophilic or thermophilic anaerobe and facultative anaerobe bacteria species, which convert the inputs to a methane-rich biogas and whole digestate.

"agriculture" means as defined in The Agriculture Act 1947 including:-"horticulture, fruit growing, seed growing, dairy farming and livestock breeding and keeping, the use of land as grazing land, meadow land, osier land, market gardens and nursery grounds, and the use of land for woodlands where that use is ancillary to the farming of the land for other agricultural purposes, and 'agriculture' shall be constructed accordingly"

"animal by-products legislation" refers to animal by-products which are subject to the requirements and controls in Regulation (EC) 1069/2009 (as amended) and its corresponding implementing Regulation (EC) 142/2011 (as amended). These are enforced through The Animal By-Products (Enforcement) (England) Regulations 2011 and The Animal By-Products (Enforcement) (No2) (Wales) Regulations 2011. You will need to add NI and Scot legislation if QP covers the UK.

"*animal by-products*" are defined in Article 3 of Regulation (EC) 1069/2009 as 'entire bodies or parts of animals, products of animal origin or other products obtained from animals that are not intended for human consumption'. This includes catering waste, used cooking oil, former foodstuffs, butcher and slaughterhouse waste, blood, feathers, wool, hides and skins, fallen stock, pet animals, zoo and circus animals, hunt trophies, manure, ova, embryos and semen not intended for breeding purposes.

"animal waste" means any waste consisting of animal matter that has not been processed into food for human consumption.

"Annex I" means Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"Annex II" means Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"authorised officer" means any person authorised by Natural Resources Wales under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in Section 108(4) of that Act.

"D" means a disposal operation provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"digestate" means material resulting from an anaerobic digestion process

"emissions to land" includes emissions to groundwater.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from the emission points specified in these standard rules or from other localised or diffuse sources, which are not controlled by an emission limit**.**

"European Site" means candidate or Special Area of Conservation and proposed or Special Protection Area in England and Wales, within the meaning of Council Directives 79/409/EEC on the conservation of wild birds and 92/43/EEC on the conservation of natural habitats and of wild flora and fauna and the Conservation of Habitats and Species Regulations 2010. Internationally designated Ramsar sites are dealt with in the same way as European sites as a matter of government policy and for the purpose of these rules will be considered as a European Site.

"Gas engine effective stack height" means:

(a) If away from buildings actual stack height is no less than 3 meters.

(b) If attached to or on top of a building the stack tip must be no less than 3 meters above roof ridge.

(c) If there are other buildings within a distance of 5L from the point of discharge, the top of the stack must be no less than 3 meters above the roof ridge of the highest building. L is the lesser of the two measurements of building height and maximum width of the building.

'generator" means any combustion plant which is used to generate electricity, excluding mobile, unless it is connected to the national grid or other apparatus, equipment or appliances at a site, and is performing a function could be performed by a generator that is not mobile.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"groundwater source protection zone" has the meaning given in the document titled "Groundwater Protection: Principles and practice" published by the Environment Agency in 2012.

"hazardous property" has the meaning in Annex lll of the Waste Framework Directive.

"hazardous substance" means a substance classified as hazardous as a consequence of fulfilling the criteria laid down in parts 2 to 5 of Annex I to Regulation (EC) No 1272/2008.

"hazardous waste" has the meaning given in the Hazardous Waste (Wales) Regulations 2005 (as amended).

"impermeable surface" means a surface or pavement constructed and maintained to a standard sufficient to prevent the transmission of liquids beyond the pavement surface, and should be read in conjunction with the term "sealed drainage system" (below).

"maturation" means optional period of treatment or storage of separated fibre digestate under predominantly aerobic conditions

"MCERTS" means the Environment Agency's Monitoring Certification Scheme.

"medium combustion plant" means a combustion plant with a rated thermal input equal or greater than1 megawatt but less than 50 megawatts.

'Mobile Specified Generator' or 'Mobile MCP' means one that is designed to move or be moved whether on roads or on land

"Natural Resources Wales" means the Natural Resources Body for Wales established by article 3 of the Natural Resources Body for Wales (Establishment) Order 2012. The Natural Resources Body for Wales (Functions) Order 2013 transferred the relevant functions of the Countryside Council for Wales, and functions of the Environment Agency and the Forestry Commission in Wales to the Natural Resources Body for Wales.

"nearest sensitive receptor" means the nearest place to the permitted activities where people are likely to be for prolonged periods. This term would therefore apply to dwellings and associated gardens (including farmhouses) and to many types of workplaces. We would not normally regard a place where people are likely to be present for less than 6 hours at one time as being a sensitive receptor. The term does not apply to the operators of the permitted facility, their staff when they are at work or to visitors to the facility, as their health is covered by Health and Safety at Work legislation

"'new medium combustion plant" means one that is not existing i.e. which was put into operation after 20 December 2018.

"*Pests*" means Birds, Vermin and Insects.

"pollution" means emissions as a result of human activity which may—

(a) be harmful to human health or the quality of the environment,

(b) cause offence to a human sense,

(c) result in damage to material property, or

(d) impair or interfere with amenities and other legitimate uses of the environment.

"quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"R" means a recovery operation provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"sealed drainage system" in relation to an impermeable surface, means a drainage system with impermeable components which does not leak and which will ensure that:

(a) no liquid will run off the surface otherwise than via the system;

(b) except where they may lawfully be discharged to foul sewer, all liquids entering the system are collected in a sealed sump.

"secure storage" means storage where waste cannot escape and members of the public do not have access to it.

"site" means the location where waste storage and treatment activities can take place.

"specified AQMA" means an air quality management area within the meaning of the Environment Act 1995 which has been designated due to concerns about oxides of nitrogen.

"specified generator" means a group of generators other than excluded between 1 and 50 megawatts or less than 50 megawatts as defined in Schedule 25B(2) of SI 2018 No.110 of the EPRs.

"SSSI" means Site of Special Scientific Interest within the meaning of the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000).

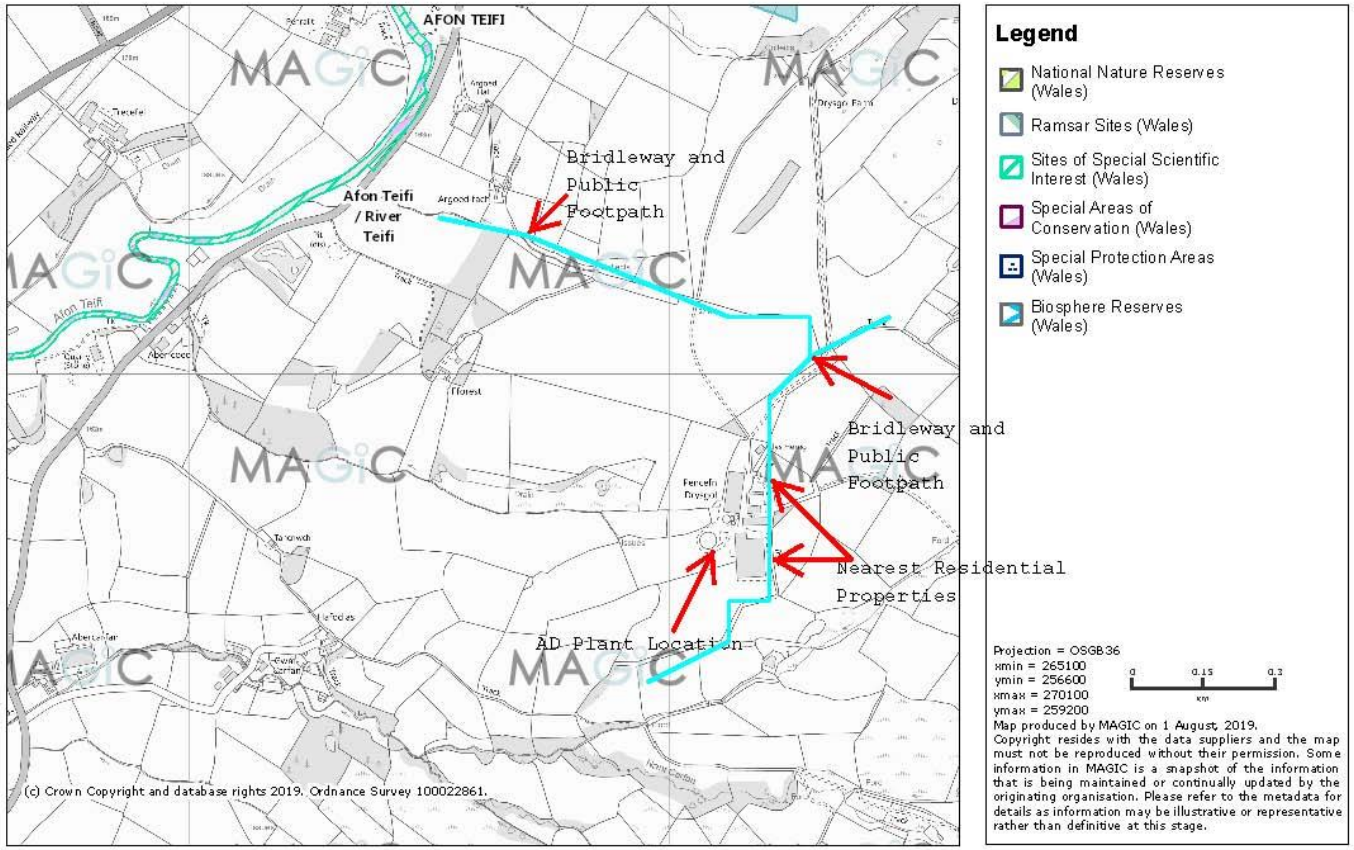
"waste code" means the six digit code referable to a type of waste in accordance with the list of wastes established by Commission Decision 2000/532/EC as amended from time to time (the 'List of Wastes Decision') and in relation to hazardous waste, includes the asterisk.

"year" means calendar year commencing on 1st January.

End of standard rules

Appendix 1 – Pencefn Drysgol Sensitive Receptors

MAGIC **Sensitive Receptors Pencefn Drysgol**



Appendix 2 – Summary of Statutory Register (xls) (June 2019)

Env Media	Date Enforced	Title	Relates to
Created June 2019			
ENV PERMITTING	2017	Environmental Permitting (England and Wales) Regulations SI 2016/1154	Consolidate the system of environmental permitting in England and Wales, replacing the Environmental Permitting (England and Wales) Regulations SI 2010/675. It integrates regimes covering waste management licensing, pollution prevention and control, water discharge consents and groundwater authorisations.
WATER	2010	Water Resources (Control of Pollution) (Silage and Slurry and Agricultural Fuel Oil)(Wales) Regulations 2010 SI 1493 *(Known as the SSAFO Regs)*	Establishes construction and storage standards for silage-making and storage, slurry storage systems and agricultural fuel oil stores, with the aim of reducing water pollution.
WASTE LEGISLATION	1995	Environment Act 1995	Establishes Natural Resources Wales, the Environment Agency and SEPA as the regulating bodies for contaminated land, abandoned mines, national parks, control of pollution, conservation of natural resources, conservation or enhancement of the environment, and fisheries.
CONSERVATION	1981	Wildlife and Countryside Act 1981 Chapter 69	Deals with nature conservation, the countryside, conservation areas and national parks.
CONSERVATION	2010	Conservation of Habitats and Species Regulations SI 2017/1012	These Regulations came into force on 30 November 2017. In particular these Regulations provide for: the conservation of natural habitats and habitats of species (including European sites, management, agreements, European marine sites); protection of species; additional protection of habitats and wild animals and plants, including by surveillance and monitoring; the grant of licences for certain activities relating to animals or plants; planning permission and other planning provisions; marine policy statements; and enforcement, offences and powers of entry.
CONSERVATION	2009	Environmental Damage (Prevention and Remediation) (Wales) Regulations SI 2009/995	These Regulations came into force on 19 July 2015. They impose obligations on operators certain activities requiring them to prevent or remediate environmental damage. They apply to damage to protected species, natural habitats, sites of special scientific interest (SSSIs), water and land.

CONSERVATION	2010	Environmental Civil Sanctions (Wales) Order 2010 SI 1821	Allows the environmental regulator to impose civil sanctions on a business committing certain environmental offences, as an alternative to prosecution and criminal penalties of fines and imprisonment.
ENV PERMITTING WASTE		Waste (England and Wales) Regulations 2011 SI 988	Requires businesses to apply the waste management hierarchy, introduces a two-tier system for waste carrier and broker registration, and excludes some categories of waste from waste controls.
SOIL WASTE STATUTORY NUISANCE	1990	Environmental Protection Act 1990	Defines within England, Scotland and Wales the legal framework for duty of care for waste, contaminated land and statutory nuisance.
SOIL WATER	2013	Nitrate Pollution Prevention (Amendment) and Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England) (Amendment) Regulations SI 2013/1001	Amends 2010/639, by correcting defects in definition and offences clauses.
WATER SOIL	2015	Nitrate Pollution Prevention Regulations SI 2015/668	The objective is to reduce nitrate pollution of fresh water by farming activity. It does so by identifying land that drains to nitrate-polluted waters, and by requiring farmers on that land to adopt farming practices designed to reduce the risk of causing such pollution.
WATER SOIL	2013	Nitrate Pollution Prevention (Wales) Regulations SI 2013/2506	These Regulations are designed for the protection of waters against pollution by nitrates from agricultural sources.
WATER SOIL	2019	Nitrate Pollution Prevention (Wales) (Amendment) Regulations SI 2019/863.	They amend the Nitrate Pollution Prevention (Wales) Regulations SI 2013/2506 relating to monitoring of nitrate pollution and designation of nitrate vulnerable zones.
WASTE LEGISLATION	2005	Technical Guidance WM3: Waste Classifiation - updated June 2018	Provides the European Waste Catalogue list of codes used to classify wastes.
WATER LEGN	1991	Water Resources Act 1991	Requires licences for abstraction and impoundment of water, and establishes flood defence committees. Provides for works notices and water protection zones.
WASTE LEGISLATION	1989	Control of Pollution (Amendment) Act 1989 c.14	Requires carriers of controlled waste to register with Natural Resources Wales, the Environment Agency or SEPA and outlines the penalties (including seizure and disposal) for vehicles shown to have been used for illegal waste disposal.
WATER	2016	Water Resources (Control of Pollution) (Oil Storage) (Wales) Regulations SI 2016/359	Imposes general requirements for preventing pollution of controlled waters from oil storage, particularly fixed tanks or mobile bowsers. Makes contravention a criminal offence.

LAND WATER		Control of Pollution (Oil Storage) (Wales) Regulations 2016 - Guidance document	Guidance from NRW to above Regulations
STATUTORY NUISANCE	2002	Control of Noise (Code of Practice for Construction and Open Sites) (Wales) Order SI 2002 / 1795	Approves British Standards Institution codes of practice for appropriate methods of minimising noise and vibration from construction and open sites in Wales.
STATUTORY NUISANCE	2001	Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001 SI 1701 as amended)	Establishes maximum noise levels for equipment used outdoors, mainly in construction and land maintenance, such as generators, lawn mowers, compaction machines and concrete breakers.
WATER LEGN	2010	Environmental Civil Sanctions (Wales) Order 2010 SI 1821	Allows the environmental regulator to impose civil sanctions on a business committing certain environmental offences, as an alternative to prosecution and criminal penalties of fines and imprisonment.
ENGLISH WASTE LEGISLATION	2005	Hazardous Waste (England and Wales) Regulations 2005 SI 894 (as amended)	Details requirements for controlling and tracking the movement of hazardous waste and bans mixing different types of hazardous waste.
AIR	2019	Clean Air Strategy 2019 Chapter 7	Outlines actions to reduce ammonia emissions including covering disegstate stores and using low emission techniques for spreading digestate on land(eg by injectin, trailing shoe or trailing hose).
ENV PERMITTING	2019	Environmental Permitting (England and Wales) (Amendment) (EU Exit) Regulations SI 2019/39, on 29 March 2019.	Ensures Environmental Permittting regime remains with a legal footing when the UK leaves the EU.
ENV PERMITTING WASTE		Waste (Miscellaneous Amendments) (EU Exit) (No. 2) Regulations SI 2019/188, on 29 March 2019.	Ensures waste management regime remains with a legal footing when the UK leaves the EU.
WATER	2019	Flood and Water (Amendments) (England and Wales) (EU Exit) Regulations SI 2019/460,	Ensures water management regime remains with a legal footing when the UK leaves the EU.
H&S	2002	Control of Substances Hazardous to Health Regulations 2002 SI 2677 (as amended)	Requires employers to assess the risks of, prevent or control exposure to hazardous substances and monitor employees' exposure. Also places duties on employees concerning their own protection from such exposure.
H&S	2019	Health and Safety (Amendment) (EU Exit) Regulations SI 2018/1370, on 29 March 2019	Ensures H&S regime remains with a legal footing when the UK leaves the EU.
AIR	1993	Clean Air Act 1993	Bans emission of dark smoke from chimneys and furnaces, sets minimum chimney heights, and creates smoke control zones.

AIR	1993	Guidance on Clean Air Act 1993	

Appendix 3 - Environmental Aspects Register

A=Emissions to Air (including dust); W=Emissions to Water; E=Energy Use (e.g. gas/electricity) D= Waste Disposal; L= Land Contamination; No=Nuisance Odours; Nn=Nuisance Noise; R=Resource Consumption (Water, Chemicals etc.); F=Flora & Fauna

Table #. Aspects and their Environmental Impact Rating subject to the controls

			Impact on Environmental Media												
Aspect Ref	**Item or Action**	**Aspect**	**A**	**W**	**E**	**D**	**L**	**No**	**Nn**	**R**	**F**	**Normal/ Abnormal/ Emergency Operating Conditions**	SORTING COLUMN	Rated	Based on controls
			Air	water	Energy	Waste Disposal	Land (contamination)	Nuisance Odours	Noise / Vibration	Resources (Water Chemicals etc.)	Flora & Fauna				
Jun-19															
Ref	**Aspect**												Changes "L" to "N", so that it will sort alphabetically		
1.1	Vehicle deliveries	Use Fuel	**L**	**L**	**M**			**L**	**L**	**L**	**L**	**N**	N	**L**	Vehicles only travel short distance to this local proximity facility proximity benefit
1.2	Vehicle deliveries	Noise							**M**			**N**	N	**L**	Slow speed, day-time only
2.1	Agricultural Feedstock Storage	Effluent		**M**			**L**	**L**			**M**	**N**		**M**	Storage built to SSAFO Regulations 2010
2.2	Agricultural Feedstock Storage - effluent	Odour	**L**					**L**			**L**	**N**		**L**	Feedstock covered until used and agitation kept to minimum to reduce odour release
2.3	Waste Feedstock Storage	Odours	**M**					**L**				**A**	N	**L**	Feedstock is delivered direct to the AD plant process
2.4	Waste Feedstock Storage	Effluent		**M**				**M**			**M**	**A**	M	**M**	Feedstock contained within bunded area and <50t on site at any one time, fully contained, means low tonnage generating minimal emissions
3.1	Transfer of Agricultural Feedstock to AD Feeder	Use Fuel	**L**	**L**	**L**			**L**	**M**	**L**	**L**	**N**	N	**L**	
3.2	Transfer of Agricultural Feedstock to AD Feeder	Noise							**M**			**N**	N	**L**	
3.3	Transfer of Agricultural Feedstock to AD Feeder	Maintenance	**L**	**L**	**L**	**M**	**L**	**L**	**L**	**L**	**L**	**A**	N	**L**	

3.4	Transfer of Agricultural Feedstock to AD Feeder	Failure	L	L	L	L	L	L	L	L	L	E	N	L	
3.5	Transfer Waste Feedstock to AD Feeder	Spillage	L	M	L	L	M	L	L	L	M	E	M	M	Transfer takes place within bunded area and spillage procedure in place
3.6	Transfer Waste Feedstock to AD Feeder	Use Fuel	L	L	L	L	L	L	L	L	L	N	N	L	
3.7	Transfer Waste Feedstock to AD Feeder	Noise	L	L	L	L	L	L	L	L	L	N	N	L	
3.8	Transfer Waste Feedstock to AD Feeder	Maintenance	L	L	L	M	L	L	L	L	L	A	N	L	
3.9	Transfer Waste Feedstock to AD Feeder	Failure	L	M	L	L	M	L	L	L	M	E	M	M	Transfer takes place within bunded area and spillage procedure in place
4.1	Digester Tank emissions	Liquid leak	M	M	L	L	M	M	L	L	M	E	H	H	The digester tanks are fitted with sensors to detect for leakage. Further they are set within a bunded area in case of an adverse event or if there was a failure. System designed to provide long term retention time for liquid to ensure it is digested with long residence time to reduce odours and produce stabilised biofertiliser.
4.2	Digester Tank emissions	Gas leak	M	M	L	L	M	M	L	L	M	E	H	H	The biogas system pressure is low with multi-stage alarm systems in the event of over-pressurising of the system. There are electronic sensor systems together with secondary manual over-ride and mechanical pressure vent systems if necessary in the event of a failure.
5.1	Biogas Safety Flare	Gas leak	M	M	H	L	M	H	L	L	M	E	H	H	The biogas system pressure is low with multi-stage alarm systems in the event of over-pressurising of the system. There are electronic sensor systems together with secondary manual over-ride and mechanical pressure vent systems if necessary in the event of a failure.
5.2	Biogas Safety Flare	Failure	M	M	M	L	M	M	L	L	M	E	H	H	The biogas system pressure is low with multi-stage alarm systems in the event of safety flare failure.
6.0	CHP	Maintenance	M	L	M	L	L	H	M	L	L	A	H	H	System designed so that the key equipment is containerised with appropriate valves and alarm systems for incidents. Surplus gas safety flare system is available if required. Gas leakages are therefore managed to a low risk.
6.1	CHP	Gas leak	M	L	M	L	L	H	M	L	L	E	H	H	

6.2	CHP	CHP Exhaust	M	L	M	L	L	H	M	L	L	N	H	H	Specialist engineers carry out the maintenance and servicing
6.3	CHP	Failure	M	L	M	L	L	H	M	L	L	E	H	H	The biogas system pressure is low with multi-stage alarm systems in the event of safety flare failure.
6.4	CHP	Noise	L	L	L	L	L	L	M	L	L	N	M	M	CHP Engine is muffled and located within a sound attenuated building, with louvered vents and ducted air.
6.5	CHP	Oils and lubes	L	M	L	L	L	L	L	M	L	N	M	M	Specialist engineers carry out the maintenance and servicing
7.1	Safety Vents	Maintenance	M	L	L	L	L	M	L	L	L	A	N	L	
7.2	Safety Vents	Failure	M	L	L	L	L	M	L	L	L	E	N	L	
7.3	Safety Vents	Gas leak	M	L	L	L	L	M	L	L	L	E	N	L	
8	Yard Drainage	Liquid	L	H	L	L	L	L	L	L	M	N	M	M	Yard drainage is designed for foul to drain to the effluent tank and be recirculated through the AD system
9	Condensate Drainage	Liquid	L	M	L	L	L	L	L	L	M	N	M	M	Yard drainage is designed for foul to drain to the effluent tank and be recirculated through the AD system
10	Digestate Storage	Liquid	L	H	L	L	H	L	L	L	H	N	H	H	The digestate is stored within the bunded area where liquids drain to an effluent tank or the spillage procedure comes into practice.
10	Digestate Storage	Gas emission	H	L	L	L	L	M	L	L	L	N	M	M	Digestate is covered to reduce air emissions and agitation is kept to a minimum.
11	Digestate Removal	Liquid	L	M	L	L	M	L	L	L	M	N	M	M	Digestate is removed via enclosed tanks or is piped to local fields. Sensors provide information to detect for leakage.
12	Digestate Use	Gas Emissions	H	L	L	L	L	M	L	L	L	N	M	M	Best practice of using trailing shoe injection is used to reduce emissions through digestate spreading
12	Digestate Use	Land pollution	L	H	L	L	H	L	L	L	M	N	H	H	A farm nutrient plan is used to plan for appropriate digestate spreading. Land Spreading training received & WAMITAB cert award in process.
12	Digestate Use	Odour	M	L	L	L	L	M	L	L	L	N	N	L	Best practice of using contained tanks or pipes with trailing shoe injection is used to reduce odour emissions through digestate spreading

Appendix 4 – Plant and Equipment Register and Assessment

Ref	Equipment	Consideration	ACCIDENT						FIRE			NUISANCE				
			Gaseous - Air	Liquid - Water	Solids - Land	Waste - Disposal	Mechanical	Health and Safety	Fuel Source	Ignition Source	Oxygen	Noise	Odours	RISK Rating	Maintenance requirement	Mitigation and Management Control of Equipment
4	Transfer Agricultural Feedstock to AD Feeder	Loading Shovel	M	L	L	L	M	M	Y	Y	L	M	L	M	Regular	Machine servicing, Good order, Trained Operator
5	Transfer Waste Feedstock to AD tank	Pump or Tanker	L	M	L	L	L	L	L	Y	L	L	L	L	Regular	Machine servicing, Good order, Trained Operator
6	Feedstock Solids Feeder	Motorised auger into AD Tank	M	L	L	L	M	M	L	Y	L	M	L	M	Frequent	High Wear so increased machine servicing, Well maintained
7	Feedstock Liquid Feed Pump	Electric Pump into AD Tank	L	M	L	L	L	L	L	Y	L	L	L	L	Regular	Enclosed system, Well maintained
8	Digester Tank	Concrete, Fixed, High Strength	M	L	L	L	L	M	H	L	L	L	M	M	Occ. Check	Designed and constructed to Regulatory requirements and proven technology, with reinforced cast in situ formation
9	Biogas Safety Flare	Automatic operation	M	L	L	L	L	M	H	H	L	L	M	H	Frequent	Regular checks, expert servicing. DSEAR and ATEX Applied
15	Safety Vents	Mechanical on top of AD tank	M	L	L	L	L	M	H	L	L	L	M	H	Regular	Regular checks, expert servicing. DSEAR and ATEX Applied
19	CHP	Biogas fuelled engine and electrical generator set	H	M	L	M	H	H	H	H	M	H	M	H	Regular	Regular checks, Regular and detailed prescription for maintenance (refer Manufacturer manual). expert servicing only. DSEAR and ATEX Applied.
21	Yard Drainage	Drains to bunded area	L	L	L	L	L	L	L	L	L	L	L	L	Occ. Check	Checked regularly, also detailed checks and

		where liquid pumped to AD tank														cleaning/servicing the system
22	Condensate Drainage System	Drains to area where liquid pumped to AD tank	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**Occ. Check**	Checked regularly, also detailed checks and cleaning/servicing the system
23	Digestate Removal Tanker/ Pipeline	Electrically driven Pump	**M**	**M**	**M**	**L**	**L**	**M**	**L**	**L**	**L**	**L**	**M**	**M**	**Occ. Check**	Detailed checks prior to use. Cleaning/servicing the system

Appendix 5 – Equipment Check and Service Record (Template)

Check Ref	Equipment item	Check required	Check Complet	Action Required	Action Taken	Date Actioned	Signed OK
	Loading Shovel/	Coolant water					
		Engine Oil level					
		Engine Oil filter					
		Fuel water trap					
		Hydraulic Oil level					
		Hydraulic Oil filter					
		Loader pins and bushes					
		Greasing Points					
		Warning lights/alarm					
		Hydraulic Hoses					
		Ram seals					
		Wear on bucket tip					
Check Ref	**Equipment item**	**Check required**	**Check Complet**	**Action Required**	**Action Taken**	**Date Actioned**	**Signed OK**
	Solids Feeder	Electric Motor					
		Hydraulic Oil level					

		Hydraulic Oil filter					
		Main drum drive cog /					
		Greasing Points					
		Warning lights/alarm					
		Hydraulic Hoses					
		Seals					
		feeder screw, rollers					
		output belt, rollers					

Appendix 6 – Daily / Weekly / Monthly / 6-Monthly Checklist

ComBigaS

Daily check list

Check list - Daily		
Frequency	**Checkpoint**	**Method**
Facility and process monitoring		
Daily ✓	Cleaning, repairs and maintenance.	The daily tasks must be planned every morning. The plan organizes the daily cleaning, repair and maintenance duties. Repair and maintenance has a very high priority. Cleaning is primarily used to keep the system working and for appearance.
Daily ✓	Visual inspection	Visually examine the facility for leaks, noises, functionality and more. Control whether there is flow through the pumps.
Daily ✓	Level monitoring	The level of the digesters is monitored for overfilling or for better utilization of capacity.
Daily ✓	Visual inspection	The surface of the biomass within the reactors, is controlled for crust. This applies to primary digesters. The inspection will form the justification for adjusting the mixers operating intervals and foaming tendencies.
Daily ✓	Temperature control	Control the reactor temperature to ensure a steady process. The temperature is registered.
Daily ✓	Gas yield control (if a gas flowmeter is mounted)	Monitor the daily gas volume on the gas flow meter and register it. This will give an indication of the process in the system.
Daily ✓	Radar (level gauge)	Control the radar for unmotivated fluctuations, which can indicate a possible foaming.
Daily ✓	Air compressor	Check for correct operating pressure. Empty condensed water.
Daily monitoring and planning of biomasses		
Daily ✓	Daily recipe input	The daily recipe is calculated and mixed in accordance with the composition of feedstock and the predetermined composition.
Daily ✓	Daily input register	The daily input quantities are registered and compared to the expected and calculated input. If the figures do not match, the missing quantity is transferred to the next day.
Daily ✓	Transport - input	The plan for transport of incoming biomasses is evaluated every day, to ensure enough feedstock.
Daily ✓	Transport - output	The plan for disposal of outgoing biomasses is evaluated every day, to ensure that there are no capacity problems.

13-12-18

Weekly check list

Check list - Weekly			
Frequency		Checkpoint	Method
Facility and process monitoring			
Weekly	✓	Intake tank- -Stonetrap	The stonestrap in the intake tank must be inspected and emptied every week. Experience will show whether it should be checked more often or more seldom.
Weekly	✓	Intake tank - Pump	Check the pump for foreign objects, strings etc. Experience will show whether it should be checked more often or more seldom.
Weekly	✓	Macerator - Stonetrap	The stonestrap must be inspected and emptied every week. Experience will show whether it should be checked more often or more seldom.
Weekly		Mixtank	The mixtank is controlled for surface crust.
Weekly	✓	Mono pumps	If there is a suspicious deviation in the level values compared to normal operation, the pressure transmitters intake tank, mixtank and secondary digesters accuracy needs to be calibrated in accordance with the collected density analysis.
Weekly	✓	Level pressure transmitters	The pressure transmitters (liquid intake, mixtank and secondary digesters) accuracy needs to be calibrated in accordance with the collected density analysis.
Weekly	✓	Gas flare	Check the functionality, and mobility of gas flare components, in accordance with the manufacturers operation and maintenance manual.
Weekly	✓	Membrane blower	The membrane blowers must be controlled. Please refer to the manufacturers operation and maintenance manual.
Weekly	✓	Air compressor (Air dryer if mounted)	Check for air leaks on dryer seals, fittings and pipe work. Ensure correct operation of the inlet filtration condensate drainage. Please refer to the manufacturers operation and maintenance manual.
Weekly	✓	Gas blower	Check the unit for smears, ice formation, odours and noises. Inspect the unit using a mobile leak detection device or portable gas sensor equipment. Please refer to the manufacturers operation and maintenance manual.
Weekly	✓	Condensation well	Inspect the level and empty the well, if necessary.
Weekly monitoring and planning of biomasses			
Weekly	✓	Process analysis	Carry out the process analysis for normal operation.

Monthly check list

Check list - Monthly		
Frequency	Checkpoint	Method
Facility and process monitoring		
Monthly ✓	Discharge of sand from primary digester.	Evacuate a truckload of biomass from the haulier spigot every month. This is done to prevent accumulation of sand and foreign matter in the tank.
Monthly ✓	Valves	Check the manual and automatic valves. Check the tightness and functionality.
Monthly ✓	Mono pumps	Check for leakage and correct functionality on the pumps. Please refer to the manufacturers operation and maintenance manual.
Monthly ✓	Gas flare	Check functionality and mobility of the gas flare components in accordance with the operation manual of the OEM.
onthly ✓	Pressure relief valves	The functionality of the pressure relief valves on the intake tank, mix tank, primary and secondary digester is inspected and cleaned, if necessary.
Monthly	Electrical switchboard	Inspect and clean air filter, if necessary.

Semi-annually check list

Check list – Semi-annually		
Frequency	Checkpoint	Method
Semi-annually ✓	Overfill alert	The overfill alert function is checked semi-annually. This includes the intake tank, mix tank and secondary digesters.
Semi-annually	Electrical switch board	Thermographic inspection of electrical components is recommended.

Appendix 7 – Summary Accident Management Plan

(Refer to Accident Management Plan as separate document)

1. LIQUID ACCIDENTAL RELEASE PLAN	All areas are on impermeable surfaces with kerbs or bunds. Bunding is designed to contain 110% of largest tank volume. All areas drain to be contained within the bunded area which has a cut-off drain, a catch-pit and pumping out point.	1. Report Incident 2. Stop Pumps 3. Close Valves 4. Contain Liquid 5. Squeegee 6. Absorbents 7. Suction Tanker 8. Load to Process 9. Clean surfaces
2. GAS ACCIDENT / RELEASE PLAN	System fitted with fail-safes for blockages, high or low pressure stops and valve interlocks. Processes are capable of being isolated Containment in enclosures. Air refreshed by extract fan. Use Personal Monitors – gas alarms H2S, CH4 etc.	1. Report Incident 2. Stop Pumps 3. Close Valves 4. Check Monitors 5. Assess extent 6. Ventilate area 7. Move to fresh air
3. BIOGAS ACCIDENT / SAFETY PLAN		1. Report Incident 2. Stop Pumps 3. Close Valves 4. Check Monitors 5. Assess extent 6. Ventilate area 7. Move to fresh air 8. Test CH4 %age 9. Determine fire/ explosion risk 10. Operate Biogas Safety Procedure 11. Operate Biogas Safety Boiler 12. Vent to external air
PERMIT AREA INCIDENT MANAGEMENT PLAN For Breach of Tank, Or leak or Digestate escape	1. Report Incident to Manager 2. Report Incident to Environment Agency 3. Call for Assistance, Tanker Company 4. Call for Assistance, Digger/Earth Mover Company 5. Stop Tank Filling Pumps 6. Earth Movers to Contain Liquid/ restore Breach 7. Suction Pumps and pipelines for Reducing level 8. Suction Tankers for Reducing level or Emptying 9. Transfer liquid to off-site store, at nearby farm or contractor, off-site tanks or storage 10. Construction or addition of temporary storage structure (Alligator bag store)	

FIRE ACCIDENT / SAFETY PLAN	System fitted with fail-safes Fire-water supply points Fire Extinguishers Training Fire practice 'drills'	1. Report Incident 2. Call Fire Brigade telephone 999 3. Get everyone out 4. Use fire fighting equipment for small fires or if necessary to get people out. 5. Assess Risk of fire spread or explosion 6. Shut off area 7. Get out; Move to fresh air area 8. Arrange for Fire brigade arrival 9. Implement FIRE WATER PLAN
FIRE –WATER PLAN	All areas are on impermeable surfaces with kerbs or bunds. No drains are directed to discharge outside of system, except clean roof water drains. Farm Yard drains lead to underground slurry store.	1. Review situation 2. Prepare portable bunds, drain covers 3. Close/cover Drains 4. Contain Liquid 5. Prepare tanker. 6. Prepare absorbents

Appendix 8 –Contractors Handbook – Fire Procedures

2 Emergency procedures

Fire – General

No form of fire is permitted on the Landfill site. The site is a no smoking zone and no one is permitted to smoke. You must not dispose of any waste by setting light to it.

Any fire found on the site must therefore be considered as a Serious Incident and if you discover a fire, you must follow the procedure detailed below immediately.

The following points should be noted:

- Fire exits and fire extinguishers must always be accessible.
- In the event of an emergency, dial 999.
- In the event of evacuations at the PENCEFN AD the assembly point will be the car park at the site offices.
- When evacuating an area, do not stop for any reason but do close fire doors as you go.

Actions to Be Taken On Discovering a Fire

- Raise the alarm
    - If you discover a fire, however small, you must raise the alarm immediately. The Company will support you if you raise the alarm in good faith even if it proves to have been a false alarm.
    - If you are in the offices, you should sound the fire alarm. If you cannot do this, you should raise the alarm by shouting "Fire".
    - On site, you should shout warnings to everyone around you and leave the area. If you have a phone, you should inform the Emergency Marshal, who is responsible for co-ordinating emergency activities. Otherwise, you should make your way as quickly as you can to the nearest point from where you can contact the Emergency Marshal and give him full details.

- Leave the area of the fire
- Whenever the alarm is sounded, your prime responsibility is to leave the area of the fire and to go to your Assembly Area. The fire alarm in the offices is a bell. Smoke alarms are also installed and they emit a high pitched whistle.
- If you are in a building, do not stop for any reason, but do close fire doors as you go.
- Report to your Assembly Point.
- The Emergency Marshal will call the roll at the Assembly Point.

- DO NOT go back to look for a missing person.
- You must stay at the Assembly Point and follow the instructions of the Emergency Marshal until the Fire Brigade, or a Manager, has said you may return to work.
- Remove plant from the area ONLY if it is safe to do so.

Do not attempt to put the fire out unless:–

- You have been trained in fire fighting;
- It is quite safe to do so;
- Your Emergency Marshal knows that you are and knows your location; AND
- You have been instructed to do so by a manager.

Extinguishing a Fire on the Landfill

- No one is permitted to attempt to control, or extinguish, a fire on the landfill site without the permission of a Manager.
- Fighting a fire buried beneath cover material.
- A Permit to Work must be obtained before any fire fighting attempt is made.
- The fire fighting procedure will be decided on in light of the particular incident, but generally it will involve isolating the burning waste using a dozer and spreading it thinly on nearby incombustible areas.

Generally, any such fire fighting should not proceed before the Fire Service has been consulted.

Medical Treatment

Any employee who has been involved in a fire incident should arrange to undergo a medical check by their own doctor.

Fire – Vehicle

In the event of a vehicle catching fire whilst on one of our sites, or if a vehicle is identified as carrying a burning load the following steps must be taken:-

- Raise the alarm by shouting warnings to everyone around you to leave the area.
- Immediately notify the fire brigade.
- Notify the site supervisor and/or the emergency marshal at the earliest opportunity so that other vehicles can be directed away from the area.
- Ensure all passengers are evacuated from the vehicle.
- If the vehicle can be driven, move it to a safe area, away from any combustible materials only if it is safe for you to do so and you have been instructed to do so by a manager.
- Ensure that any bystanders are at least twenty metres from the vehicle.
- Await the arrival of the fire brigade.

Gas emissions

Mobile Gas Detectors must be worn.

Actions to Be Taken

- If you hear the gas alarm sounding, your prime responsibility is to leave the building in an orderly manner and to go to your Assembly Point.
- Do not stop for any reason.
- Do not switch electrical equipment off. Leave doors open and, if you have time, open some windows.
- Report to your Assembly Point.
- The Emergency Marshal will call the roll at the Assembly Point.
- DO NOT go back to look for anyone who is missing.
- You must stay at the Assembly Point and follow the instructions of the Emergency Marshal.
- You may only return to your work place when cleared to do so by one of the directors of the company.

Injury to person

In cases of personal injury the following guidelines should be followed:

- Inform a Site First Aider.
- Reassure the casualty but do not move them unless necessary to prevent further injury.
- Await the arrival of a First Aider.
- Complete the accident book when able.

Vehicle accident

In cases of a vehicle accident the following guidelines should be followed:

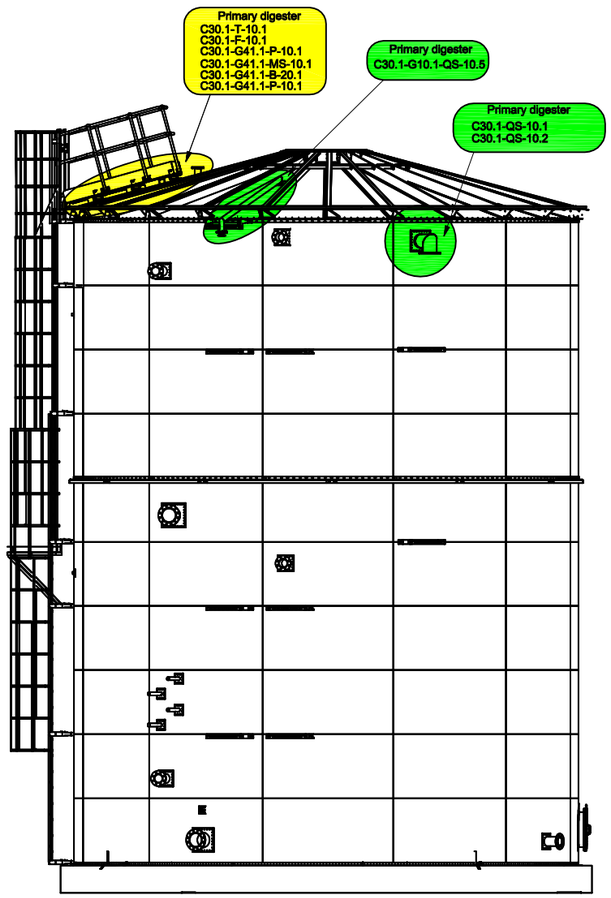
- Isolate the area and ensure that no-one is at risk from the vehicle or any associated spillage.
- Contact the emergency services if necessary.
- If the accident occurs on the landfill site, inform the weighbridge operator immediately.
- If the accident occurs elsewhere inform your supervisor.
- Direct traffic away from the accident.

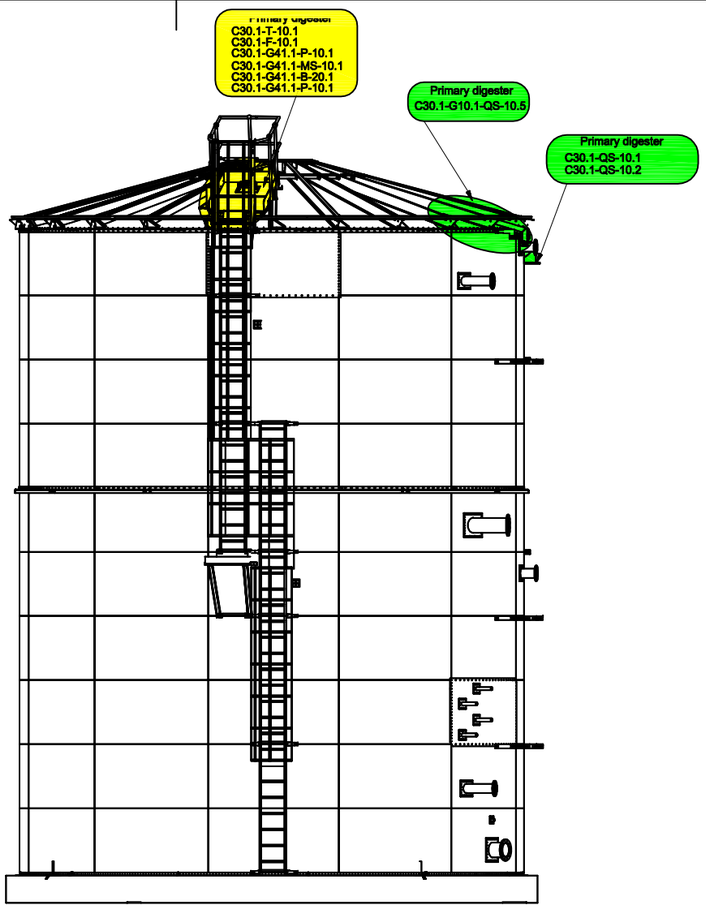
Criminal acts

Most crime will occur outside of operational hours. If on arriving at work you notice signs of criminal behaviour / damage you should:

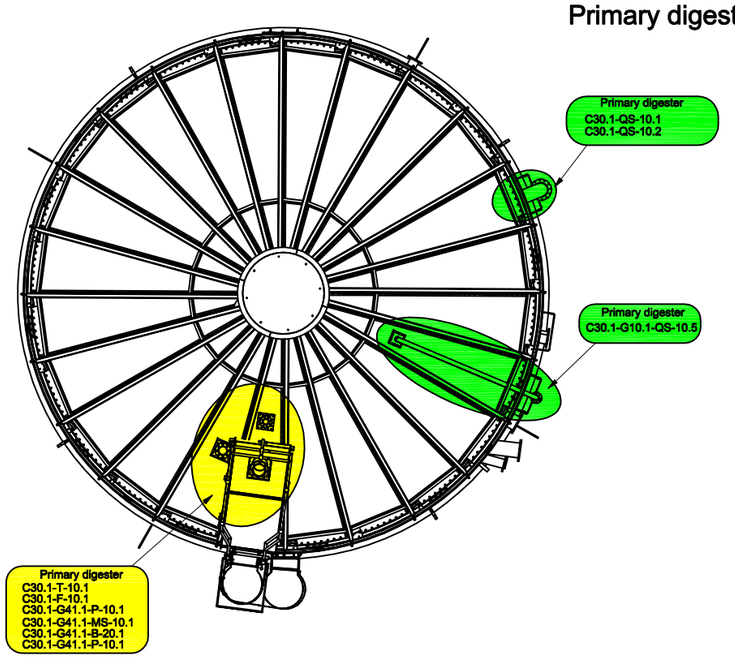
- Notify your Line Manager immediately.
- Do not touch anything until instructed to do so.
- Record the incident in your site diary.

Appendix 9 – DSEAR Management Plan Safety Zones Site Plan





Primary digester



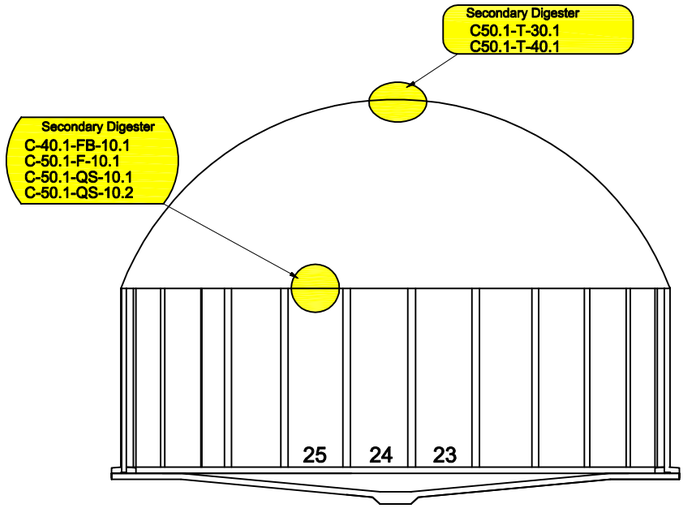
ATEX- zone classification
Gas: Within normal temperature and pressure

Zone	Definition	Equipment Category
0	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently	1, G
1	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.	1 or 2, G
2	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.	1, 2 or 3, G

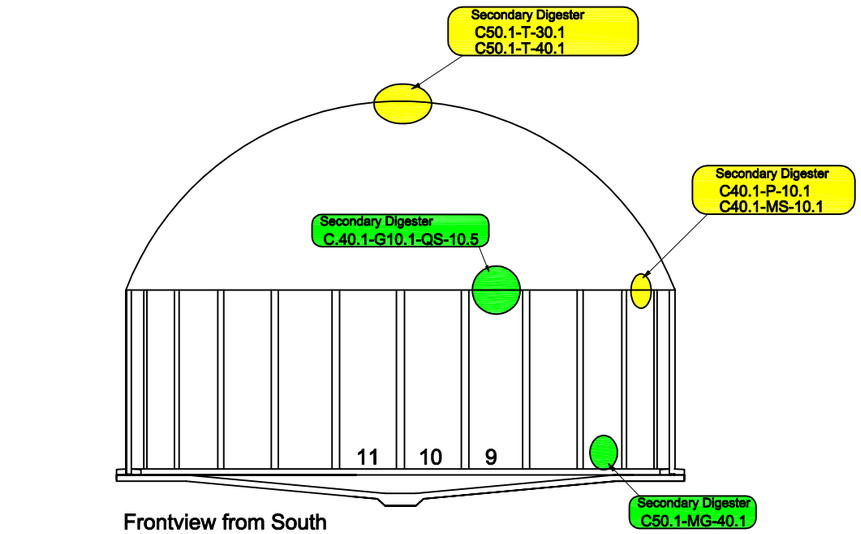
This drawing belongs to ComBigaS ApS, and must not be copied or distributed in any way without our written approval

Filename: 15.062-411 Primary Digester - ATEX zones.pdf		Project no.: 15.062	Scale: ?
Draw. nr.: 15.062 - 411		Description:: Primary Digester	
Rev. nr.		ATEX zones	
Init.: BTP			
Date: 23.09.2016			
Project: Jim & Bill Lloyd PENCEFN DRYSGOL TREGARON CEREDIGION SY26 6JW			

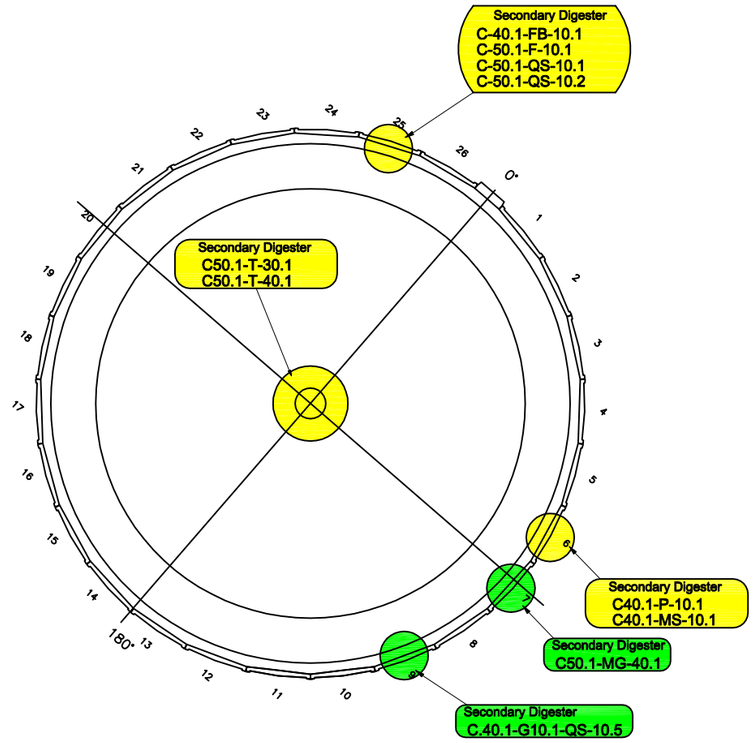
ComBigaS
Complete Biogas Solutions



Frontview from North



Frontview from South



ATEX- zone classification
Gas: Within normal temperature and pressure

Zone	Definition	Equipment Category
0	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently	1, G
1	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.	1 or 2, G
2	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.	1, 2 or 3, G

This drawing belongs to ComBigaS ApS, and must not be copied or distributed in any way without our written approval

Filename: 15.062-412 Secondary Digester - ATEX zones.pdf
Project no.: 15.062
Scale: ?
Draw. nr.: 15.062 - 412
Rev. nr.:
Init.: BTP
Date: 23.09.2016
Description::

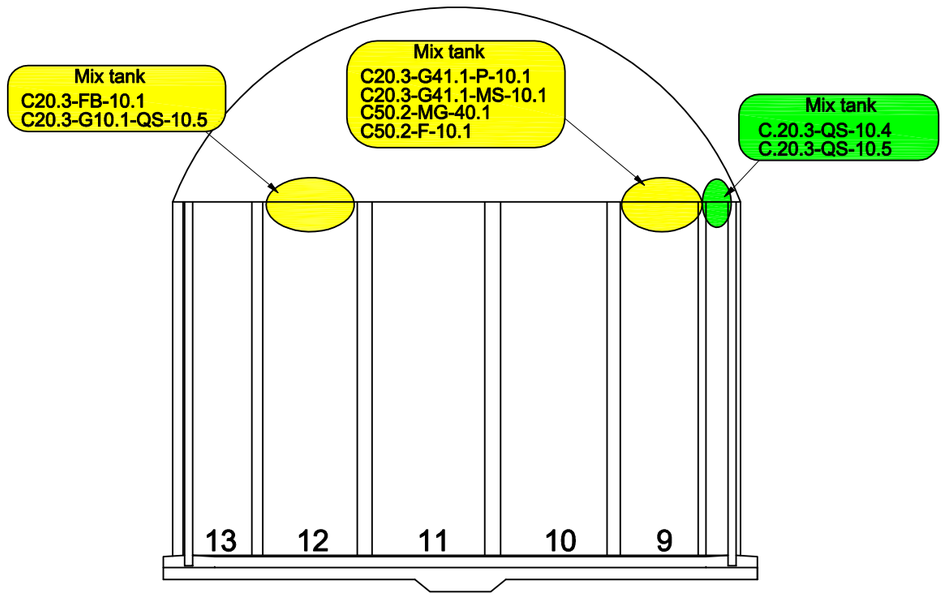
Secondary Digester

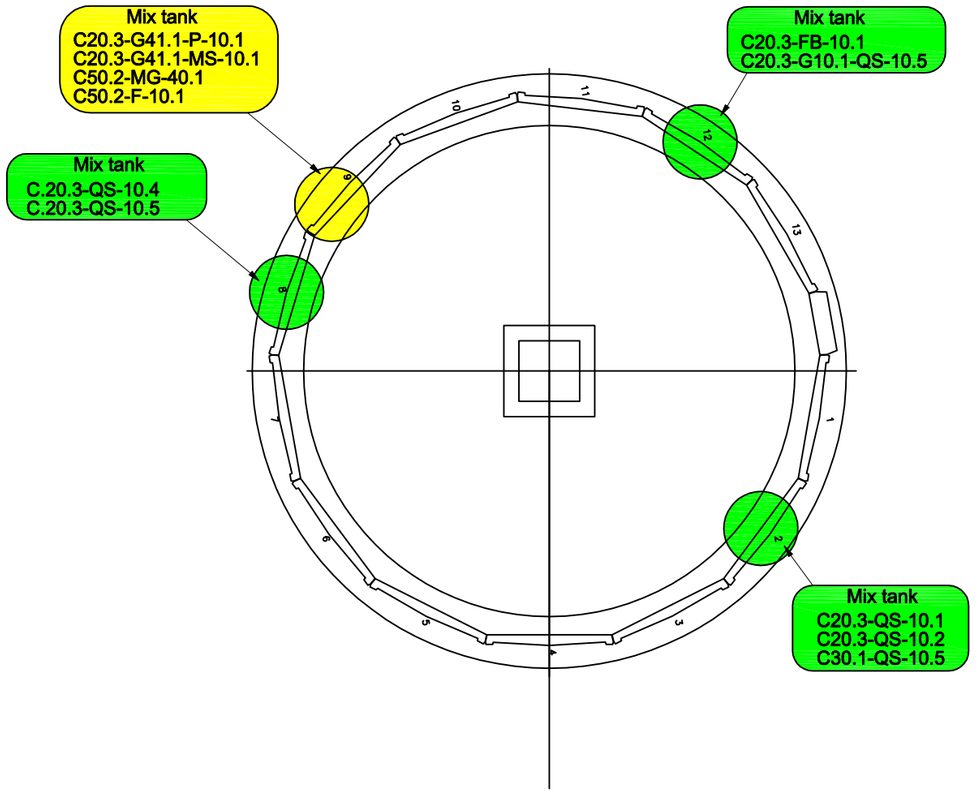
ATEX zones

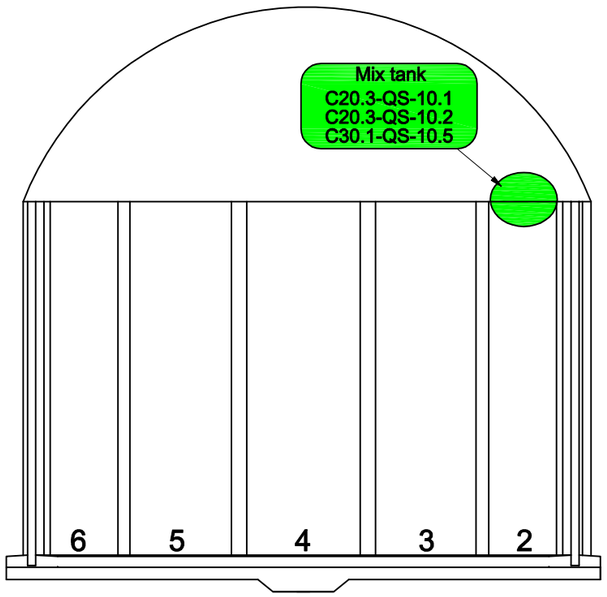
Project:

Jim & Bill Lloyd
PENCEFN DRYSGOL
TREGARON CEREDIGION SY26 6 JW

ComBigaS
Complete Biogas Solutions







ATEX- zone classification
Gas: Within normal temperature and pressure

Zone	Definition	Equipment Category
0	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently	1, G
1	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.	1 or 2, G
2	A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.	1, 2 or 3, G

This drawing belongs to ComBigaS ApS, and must not be copied or distributed in any way without our written approval

Filename: 15.062 - 413 Mix tank - ATEX zones.pdf	Project no.: 15.062	Scale: ?
Draw. nr.: 15.062 - 413	Description:: Mix tank	
Rev. nr.	ATEX zones	
Init.: BTP		
Date: 23.09.2016		

Project:
Jim & Bill Lloyd
PENCEFN DRYSGOL
TREGARON CEREDIGION SY26 6 JW

ComBigaS
Complete Biogas Solutions

Appendix 10 -Permit to Work Procedure

In regard to the defined 'Environmentally Permitted' (refer to EMS plan of site) area of:

On-Farm Anaerobic Digestion Facility
Pencefn Drysgol
Dewi Road
Tregaron
Ceredigion
SY25 6JW

Also Refer to the DSEAR Management Plan, Accident Management Plan, Fire Management Plan.

Permits to work are an important means of fulfilling the Company's general duty to ensure the health and safety of employees under section 2 of the Health and Safety at Work Act 1974. Non-routine work, such as maintenance, cleaning, equipment installation and refurbishment, can produce health and safety risks over and above those normally encountered in the workplace. To control these risks "permits-to-work" are being introduced for the following work activities:

a) hot work, that is any hot work outside of the controlled workshop environment which could reasonably be foreseen as posing a hazard to others or plant and equipment.
b) machinery permit, required where dangerous parts of plant or machinery could reasonably be foreseen as a hazard
c) confined spaces, entry into any area where by reason of its enclosed nature there arises a foreseeable risk from the following hazards;
    i) Injury to any person from fire or explosion
    ii) Loss of consciousness arising from raising the body temperature.
    iii) Loss of consciousness or asphyxiation of any person arising from gas, fume, vapour or the lack of oxygen.
    iv) Downing caused by an increase in the level of a liquid.
    v) Asphyxiation in a free flowing solid or the inability to reach a respirable environment due to entrapment by a free flowing solid.
d) A confined space permit must also address the specific requirements of the Confined Spaces Regulations 1997
e) electrical work, all work on installations which poses a hazard from electrocution, fire and explosion
f) excavation work, any excavation work, other than the winning of minerals, this permit is
g) required to ensure no underground services pose a risk to those working and to preserve the structural integrity of nearby structures.
h) equipment disjointing, used to control the disconnection of any equipment which has
i) contained a liquid or gas i.e. pipe work containing heated
j) bitumen, large diesel tanks etc.
k) work at height / roof access, access to fragile roofs or where the roof has no safety edge
l) protection or parapet, any work involving the risk of falling more than 2m.
m) It is the intention of the company to introduce new or modify existing permits to work as necessary and to review their use as appropriate.
n) The permit to work system applies to all the above work conducted by the Company, its employees, contractors and all visitors are expected to comply with the requirements of any permits that are in force

Employees working off site, for example on another company's site or premises, are expected to abide by all permits to work being operated on that site. Where no such permits are in use employees must operate permit procedures as they exist under this

policy. If additional permits are deemed to be necessary for certain off-site work then this should be raised with the appropriate person and the need for the permit determined.

Should employees experience any problems with the operation of permit to work systems, they should immediately inform a responsible person (usually a manager or supervisor) so that the company can investigate and rectify the situation.

Arrangements for Securing the Health and Safety of Workers

The Company will, in consultation with workers and their representatives:

(a) Appoint competent managers as persons authorised to raise permits.
(b) Ensure that persons receiving the permit have adequate information, instruction and appropriate training to enable them to conduct the task and any tests prescribed on the permit in a competent manner.
(c) Conduct a thorough risk assessment, plan the work to be carried out and prepare a written safe system of work outlining the hazards, the methods by which they can be avoided and details of any residual risks.
(d) determine the need for permit systems; ascertain whether present permit systems apply or whether a new permit needs to be developed
(e) Determine equipment needs and make available the equipment necessary for test work e.g. gas testers.
(f) Audit permit use on site (and off site when necessary)
(g) Review permit operation periodically, modify permits as necessary and implement follow-up action if "failure" incidents occur.

SAFE SYSTEM OF WORK

The Company's Permit-to-Work system is designed to ensure that those affected are consulted at the planning stage to check that all eventualities have been considered when organising such activities and are an important means of minimising any risks involved.

Only the following personnel are authorised to raise permits-to-work:-

For electrical, mechanical and civil engineering	Bill Lloyd / Jim Lloyd
Work entailing Gas or Biogas works	Bill Lloyd / Jim
Any Hot woks, including cutting, grinding, welding, brazing, soldering, heating, or use of any equipment that entails electric motors, or that generate friction heat.	Bill Lloyd / Jim Lloyd
Entry into confined spaces – in particular the Vessels, man-holes, Tanks, Gas Storage building	Bill Lloyd / Jim Lloyd

In their absence and for no other reasons than ill-health or annual leave;

- Site responsible Person Bill Lloyd / Jim Lloyd
- Anaerobic Digester Technology Provider/Engineer

Permit to Work Compilation

The permit-to-work will involve following the steps shown below.

1. Conduct a thorough risk assessment and determine who is at risk, what control measures are necessary to eliminate the hazards and the level of residual risk.
2. Prepare a written system of work identifying the following:-
   i) The level of competence of all operatives and any specialist skills.
   ii) List Isolation / pre-work precautions.
   iii) List prohibited activities (communicate to others as necessary).

iv) List Plant and Equipment required
v) List Personnel Protective Equipment to be used
vi) List Sequence of events as planned with identified hazards / residual risks and controls clearly defined.
vi) Emergency procedures for all foreseeable risks (ensure that procedures are conveyed to competent persons and fully understood).

3. Brief those who will be required to operate under the permit-to-work on the hazards and controls necessary to avoid them being realised.
4. Ensure that those conducting the task know that the safe system must be followed in full and that no other methods or sequence of work are allowed i.e. work must stop, all persons withdrawn and the safe system reviewed by the Authorised Person.
5. If the safe system is found to be floored then the Permit must be cancelled, the system of work reassessed, a new permit raised and those conducting the task re-briefed.
6. Display the permit at the work site / isolation point to all ensure that those who need to know do so.
7. Ensure that the work area is clean, tidy and that all safety devices have been replaced and are functioning correctly, prior to inspection by the Authorised person.

Please note the Authorised Person must not sign the 'hand back' section of the form until the area is in fact clean and safe.

RECORD KEEPING

In order to ensure successful auditing of the permit system, records of the following must be kept:

a) details of issued permits.
b) training provided — subjects covered, names of those trained and the levels of training given
c) servicing and maintenance records relating to equipment used, eg gas and oxygen detecting instruments, respiratory protection, protective clothing and rescue/emergency items, etc
d) incidents where permit procedures "failed" so that permit modifications can be considered.

SUMMARY

Permits to work will not prevent incidents unless:

a) their need and use has been established
b) their requirements are adhered to
c) staff are aware and competent
d) appropriate equipment is available for testing, implementation and rescue

Appendix 11 – Permit to Work Template

LINSTOCK CASTLE AD Ltd.

WORK PERMIT no.:

Area (sketch/description) N

LEVEL 1
- ❑ Hot work class A
- ❑ Hot work class B
- ❑ Entry (confined space)
- ❑ Isolation of safety system
- ❑ Pressure testing
- ❑ Work above sea
- ❑ Dangerous substances
- ❑ Radioactive materials
- ❑ Well operation
- ❑ Explosives
- ❑ Critical lifting operation
- ❑ Other/critical operation
- ❑ Work on hydrocarbon system

LEVEL 2
- ❑ Work level 2

1

Applicant name:_____ Discipline: _____ Phone: _____

Work description: _____

Task: _____

Equipment/tools: _____

Installation: _____ Location/module: _____ Deck: _____

Tag/line no.: _____ Zone: _____

Attachment: _____

- ❑ SAFE JOB ANALYSIS, NO.:
- ❑ REQUIRES APPROVAL FROM ELECTRICAL DEPARTM.

WORK ORDER NO.: _____

OPERATION NO.: _____

❑ ISOLATION NO.: _____

❑ Day ❑ Night ❑ Ongoing work

From date/hr. To date/hr.

Extended to hr.:

Area/Operations Supervisor Sign.:

CCR Technician Sign.:

Area Technician Sign.:

OPERATIONS- AND SAFETY PREPARATIONS A B

Required — Performed by area technician	Signature
❑ Depressurization	
❑ Draining/emptying	
❑ Cleaning/gasfreeing	
❑ Isolation by singel valve/double block and bleed	
❑ Isolation by blind/isolation plan	
❑ Safety tag/lock	
❑ Venting/Extra ventilation	
❑ Prevent release of oil/gas in the area	
❑ Measures against radioactive radiation	
❑ Inspection of the area every.....hour	
❑ Other	

Required — Performed by executing skilled worker	Signature
❑ Portable gasdetector no.: on the worksite	
❑ Verify mechanical isolation	
❑ Electrical isolation/locking	
Tag no.:	
❑ Fire extinguisher/fire prevention	
❑ Welding machine safely located and earthed	
❑ Continuous guard/radio communication	
❑ Drains blocked/covered	
❑ Barrier/warning signs/PA-announcement	
❑ Cooperate with CCR/Area technician	
❑ Follow requirements for work above sea/at height	
❑ Chemical data sheet known and available	
❑ Procedures/cheklist for the operation known	
Ref.nr.:	
❑ Control of temporary lifting equipment	
❑ Follow requirements for Entry (confined space)	
❑ Special personal protective equipment	
❑ Measures to avoid work related deseases	
❑ Other requirements/preparations	

2

GAS MEASUREMENTS PRIOR TO/DURING THE WORK

❑ Hydrocarbons every.....hour ❑ H_2S every .....hour

❑ Oxygen every .....hour ❑ ..... every.....hour

ISOLATION SAFETY SYSTEM ❑ Locally ❑ CCR

System: _____

Location/area: _____

Compensating measures: _____

APPROVAL / AUTHORIZATION

3

Area/Operations Supervisor: / *Other position:* *HSE function:* *Platform manager:*

Remarks/requirements:

PRECAUTIONS PRIOR TO / DURING WORK EXECUTION A B

Safety system isolated/reactivated	*Signature:*
Isolated locally/CCR	
Reinstated locally/CCR	
Remark:	

Gas test- value						
HC						
O_2						
H_2S						
Time/sign.						

4

Work site cleared according to requirements

Area Technician *time:* *Signature:*

The work is cleared with CCR

CCR Technician *time:* *Signature:*

Precautions understood and are/will be fulfilled

Executing skilled worker *Name: (block letters)*

COMPLETION A B

All locks/tags removed ❑ Yes ❑ No

Equipment ready for operation ❑ Yes ❑ No

5

Area Technician *time:* *Signature:*

Work cleared by CCR

CCR Technician *time:* *Signature:*

❑ Work completed ❑ Work not completed

❑ Work place cleaned and secured

Executing skilled worker *Signature:*

Original: Work site

Copy:

Appendix 12- Training Needs Assessment Matrix (tick shows requirement)

Reviewed and Updated September 2020

TRAINING			Bill Lloyd	Jim Lloyd	Technical Specialist
STATUTORY COMPLIANCE	Statutory Controls and regulations		✓	✓	✓
	AD Permit		✓	✓	✓
	EPOC		✓	✓	✓
	COTC WAMITAB		✓	✓	✓
	Landspr5eading WAMITAB		✓	✓	✓
	Permit EA Returns		✓	✓	✓
	Exemptions		✓	✓	✓
HEALTH AND SAFETY	Health and Safety at Digestion Facility		✓	✓	✓
	Risk Assessments		✓	✓	✓
	Gases & confined spaces		✓	✓	✓
	Gas monitoring		✓	✓	✓
	First Aid		✓	✓	
WASTE MANAGEMENT (Not currently taking in waste materials)	Feedstock Acceptance		✓	✓	✓
AD MANAGEMENT	Operator Training		✓	✓	✓
	System servicing		✓	✓	✓
	Feedstocks Management		✓	✓	✓
	Process Management		✓	✓	
PLANT & EQUIPMENT	Plant & Equipment Checks		✓	✓	
	Plant & Equipment Servicing		✓	✓	
	Vehicle Operation		✓	✓	
	Vehicle Maintenance		✓	✓	
PERMITS to WORK	Issue of Permits, Use and control		✓	✓	✓
DIGESTATE & EFFLUENT	Digestate Management. Effluent control		✓	✓	✓
ENVIRONMENTAL	Regular Environmental Checks		✓	✓	✓
	Detailed Monitoring		✓	✓	✓
	Expert CHP Testing				✓
	Odour Management		✓	✓	✓
	Effluent Management		✓	✓	✓
	Accident/ Spill Management		✓	✓	✓
	Explosion Prevention & Fire Management		✓	✓	✓

PEST CONTROL	Pest Control		✓	✓	

Appendix 13 – Environmental Accident / Incident Reporting

This is the report of the Environmental Accident or Incident at the following Site:

Site Name	Pencefn Drysgol AD Plant	**Permit Number:**	EPR/BB3794CF
Address	Penecfn Feeds Ltd, Dewi Road,	**Contact person**	Bill Lloyd / Jim Lloyd
	Tregaron, Ceredigion SY25 6JW	**Contact Tel. No.**	07976 910410 / 01974 299066

Accident and incident record	
Was there any significant pollution – for example: oil entering a surface water drain. If so what?	
If there was then you must notify Natural Resources Wales on 03000 65 3000 ASAP. Have you done so?	Yes / No
Please print your name, company and sign	

General Description of Incident/Accident			
Date of the incident		Time of the incident (duration)	
Was anyone else aware of this – other witnesses? If so who?			
What was involved?			
What caused it?			
What happened?			
Material Consequences?			
Environmental Consequences?			
Personnel/Human Consequences?			
Summary of the scale of the Environmental Impact.			
Pollution consequence?			
Emergency Response measures taken			
Actions taken to rectify the problem?			
External agencies involved?			
Actions/procedures or facilities implemented to make sure that it does not happen again?			
Emergency Services Called and actions taken			
Incident reported to the Natural Resources Wales?		Yes/No/Not Applicable:	
NRW Incident number:			
Reported to (officer)			
NRW Office			
Reported Date and Time:			

Appendix 14 – Complaints Procedure

The Complaints Management Procedures comprise a number of components:

1. General Complaints procedure (as follows)
2. Odour Complaints Procedures

General Complaint Management Procedures

1. Receive Complaint and acquire as much information and detail as possible
2. Record and Register the complaint and notify senior management
3. Determine the context, nature, form, and source of the Complaint; in particular the identity and contact details of the complainant , the date and time of the incident or issue being the subject of the complaint; and details of the extent, duration, magnitude and nuisance.
4. Investigate the source and cause of the incident or issue that generated the Complaint; check the date and time; activities being undertaken at the time, persons responsible and other relevant details such as environmental conditions (weather), third party activities in the area; irregular or unplanned activities, accidents, breakdowns or equipment malfunctions.
5. Record and report details and results of investigation to senior management.
6. Consider the environmental and other risks that the incident or issue may entail.
7. Implement properly considered measures to secure, alleviate or rectify the situation.
8. If necessary, report the incident to the relevant authorities, (EA, Police, Fire, etc).
9. Respond to the complainant with information describing measures being taken to alleviate or rectify the situation.
10. Record and follow up with additional checks and monitoring of the situation.

Appendix 15 - Roles and Responsibilities

1. In organising for an effective EMS, one of the principles is that all Pencefn Drysgol AD Ltd employees and associates have individual roles and responsibilities for applying the management System requirements and the Environmental Procedures in the performance of their tasks.

2. Management shall provide resources essential to the implementation and control of the EMS, including bringing in specialist consultancy support when required. The table below details the individual responsible for delivering environmental management at Pencefn Drysgol AD along with more detail on the specific responsibilities. Senior management ensures that responsibilities and authorities are defined and communicated.

Area of Accountability	Name	Company Role
EMS Manager	Bill & Jim Lloyd	Director / Operations Manager
Fire Training	Bill & Jim Lloyd	Director / Operations Manager
Non-Conformance	Bill & Jim Lloyd	Director / Operations Manager
Induction Procedure	Bill & Jim Lloyd	Director / Operations Manager
Control of EMS Documents	Bill & Jim Lloyd	Director / Operations Manager
Duty of Care Documents	Bill & Jim Lloyd	Director / Operations Manager
Plant Maintenance and Inspection Procedure	Bill & Jim Lloyd	Director / Operations Manager
Spillage Management Plan	Bill & Jim Lloyd	Director / Operations Manager
Fire Management Plan	Bill & Jim Lloyd	Director / Operations Manager
Feedstock Acceptance and Rejection	Bill & Jim Lloyd	Director / Operations Manager
Waste Quantity Measurement System	Bill & Jim Lloyd	Director / Operations Manager
Pollution Control, Monitoring and Reporting	Bill & Jim Lloyd	Director / Operations Manager
Control, Monitoring and Reporting of Dusts, Fibres and Particulates	Bill & Jim Lloyd	Director / Operations Manager
Control and Monitoring of Odourous Emissions	Bill & Jim Lloyd	Director / Operations Manager
Control of Pest Infestations	Bill & Jim Lloyd	Director / Operations Manager
Security and Availability of Records	Bill & Jim Lloyd	Director / Operations Manager
Accident Management	Bill & Jim Lloyd	Director / Operations Manager
Complaints	Bill & Jim Lloyd	Director / Operations Manager

3. All Employees must be aware of the Environmental Policy and specifically:-
   - Comply with the Environmental Policy and associated procedures and all relevant legislation;
   - To take reasonable care to protect the environment
   - Co-operate as far as is necessary to enable Pencefn Dysgol AD to comply with environmental legislation

Report to management as soon as is possible any work being carried on, to likely to be carried out which may be a danger to the environment.

Appendix 16 – Operating Procedures

Proc. 1 Feedstock Acceptance and Rejection

All site staff will be made aware of the categories of feedstock acceptable at the site. Site Staff will be responsible for inspecting each load; however, periodic spot checks will be made by the Site Manager to support this requirement. The waste acceptance criteria (and procedures) are defined within the Permit and reference is made to the Specific Quality Protocols.

All waste vehicles visiting the site are required to stop and sign in at the site office prior to unloading. On arrival, each load is checked for a Duty of Care Transfer Note and Registration of Carriers registration number - loads that do not comply with the duty of care and the waste management licence will be turned away and a record made of their registration within the site diary.

Loads arriving at the site will receive an initial visual inspection for non-compliant wastes prior to unloading wherever possible (e.g. high-sided container vehicles may not be able to be inspected prior to tipping). A member of staff will visually inspect every load as it is deposited.

Should any load be found to differ from that information supplied on a Transfer Note, or does not comply with the categories acceptable under the site licence conditions, the driver of the delivering vehicle or representative from the transport company will be informed. Where possible, the unsatisfactory load will be re-loaded into the delivering vehicle and the driver will be asked to leave the site.

If the deposited waste cannot be re-loaded onto the delivering vehicle, it will be moved to an isolated position and suitably covered to prevent its escape (and water ingress if there is a potential for suspended solid run-off) until appropriate measures can be undertaken to deal with or remove it.

In the event that any hazardous wastes are found during inspection they will be removed and placed in a secure lockable container. Quarantined hazardous wastes will not be stored on site for longer than 5 days unless agreed in writing with the NRW. In the event that wastes stored within the quarantine area are likely to be incompatible with one another then these wastes will be kept physically separate.

Should such incidents occur on the site, the Site Manager will take action by:

- Contacting the waste producer if known.
- Contacting the NRW by telephone as soon as possible after the incident has occurred.
- Recording the incident in the site diary.

Proc. 2 Feedstock Control Procedures

Materials received at the site will be kept separate from and will not be covered or mixed with other wastes until they have been confirmed for acceptance at the site. All containers being used to store waste will be clearly labelled to identify the wastes stored within them. Once deposited, wastes will be subject to the specified waste management operations outlined in the working plan.

Proc. 3 Waste Despatch

All wastes despatched from the site will be inspected prior to despatch to confirm their description and composition.

Proc. 4 Waste Quantity Measurement Systems

Records of the weight or volumes of waste received at the site and treated material (feedstocks and digestate) and other waste leaving the site will be recorded and held on site for inspection. Weights will be recorded by tanker load or other quantification (pump and flowmeter). The weight of dispatched waste containers will be retrieved from the waste disposal or receiving site, historical information or assessed using conversion factors.

Proc. 5 Stockpiled Waste Measurement

Non degradeable waste not suitable for digestion will not be stored on site for extended periods. Degradable waste that is not intended for the digestion process will not be stored on site for extended periods.

Those wastes entering the digestion process shall be stored in accordance with the digestate SOP.

Unless otherwise agreed in writing with the NRW, wastes being stored externally will be held within the appropriate area so that liquid runoff is via the site's drainage system. With any digestion process there is a possibility of odour generation. This is normally 'associated with wet waste being stored for too long without being processed.

The frequency of processing shall be in accordance with the Digestion SOP and shall entail waste processing on a daily basis using the mixer tank.

Temperature levels may be monitored but not recorded at this stage. If temperature increases to a point at which it is thought to be a risk the stockpile shall be moved to effectively cool the pile and reduce the risk of combustion.

In the unlikely event of the stockpile material drying out to the extent that there is an increased risk of spontaneous combustion the material will be wetted by pumping water from the storage pond, or else from clean water supply, and or by using a suitable water pump.

Proc. 6 Plant equipment and Procedures

Treatment of permitted waste types by buffering with or without maceration shall be undertaken in accordance with the Digestate Standard Operating Procedure. Refer to the Digestate SOP.

Proc. 7 Pollution Control, Monitoring and Reporting

Monitoring and Reporting for Gases and Aerosols.

The digestion process may release aerosols or odours into the atmosphere during certain operations, such as solids incorporation, biogas generation and digestate storage.

The nearest third party residential dwelling is around 285 meters to the north-east of the site and is unlikely to be affected by any aerosol production at the facility. Monitoring at similar

sites has shown that the bioaerosols levels reduce to acceptable levels before crossing the site perimeter and this is accepted by the NRW within their position statement PS031 Bioaerosols Nov 2010. Refer to the Site Specific Risk Assessment within this EMS.

Operations with the potential to produce elevated levels of emissions i.e. solids incorporation shredding, digestate storage are operated with care. Staff are briefed on the risks of aerosols and emissions, and operational procedures employed to reduce emissions.

Visitors will not be shown around the site whilst high-risk operations are occurring.

Proc. 8 Control, Monitoring & Reporting of Dusts, Fibres and Particulates

The site will be formally inspected on a daily basis for dust, fibres and particulates; the result of this inspection including any remedial action will be recorded in the site diary.

Waste that is intended for the digestion process prior to being incorporated shall be damped down as required in order that it does increase the risk of dust release.
All waste received will be inspected on delivery and any waste being stored / treated on site causing airborne particulate matter will be dealt with immediately by wetting. This will be achieved by hoses connected to mains water supply, or to a pump from the grey water pond. Any waste handling operation giving rise to airborne particulate matter will also cease until the emission has been suppressed.

Any incidents will be reported in the site diary and assessed for methods that may reduce any future problems.

Proc. 9 Control and Monitoring of Odorous Emissions

The digestion process has the ability to generate odours if anaerobic conditions are allowed to develop in the feedstock prior to being incorporated into the AD system. The feedstock storage system shall be monitored for odours and managed to ensure conditions are managed.

The digestion system will utilise plant material waste and other low odour biodegradable waste as feedstocks. The site will be constantly monitored by for unpleasant odours using site personnel's olfactory senses, the result of this monitoring, including any remedial action taken will be recorded in the site diary when required. Refer to Appendix 12 – Site Walkabout Monitoring Plan.

If any undesirable odours are perceived their source will be investigated. When the source of any undesirable odour is identified, the most appropriate method for eliminating these odours will be implemented immediately. This may take the form of covering, removal, deodorising and/or changing management operations to remove or minimise any odour causing situations.

Malodorous wastes shall be dealt with or removed from site within 24 hours of its discovery unless otherwise agreed in writing with the Environment Agency. Refer to the Odour Management Plan.

Proc. 10 Control Of Pest Infestations

Constant vigilance will be exercised to the operation of the digestion facility in order to determine pest activity. Pests can include flies and vermin. All waste storage areas and wastes undergoing treatment will be visually inspected for evidence of pests, vermin etc. on a daily basis, and the results and any remedial actions will be recorded in the site diary:

- evidence of droppings
- evidence of damage to property/plant
- evidence of ground disturbance e.g. nests
- Excessive infestation present.

Remedial measures will be taken for the control of pests and where necessary by employing the services of a recognised pest control organisation, i.e. the use of dusting/spraying for flies etc and poisons for vermin. A baiting plan shall be available.

NOTE – Pest Management has been contracted with Ceredigion County Council. Visual inspection will continue to be made as part of the site walkover but any action will be undertaken by the outsourced company.

Proc. 11 Control Of Scavenging Birds and Other Scavengers

The presence of scavenging wild life will be monitored daily and recorded in the site diary. If any evidence of scavengers on site is observed, it will be noted in the site diary, and further action will be taken if it is deemed necessary. NOTE – Pest Management has been contracted with Ceredigion County Council. Visual inspection will continue to be made as part of the site walkover but any action will be undertaken by the outsourced company.

Proc. 12 Control Of Litter

The nature of waste accepted at the digestion facility ensures that litter will be a very small problem. Any material that could form litter (i.e. plastic bags and paper) will be removed and placed into suitable container(s) when the waste is inspected within the waste reception area directly after receipt. Any windblown litter material will also be retrieved immediately in the event that it escapes: beyond the site boundary. Litter picking will also take place on the request of an authorised officer the NRW if there is perceived to be a litter problem during inspection of the site.

Any unacceptable waste of this type will be removed from the facility and, by prior agreement, will disposed of at a suitable landfill site. The site will be monitored for litter daily.

Proc. 13 Security And Availability Of Records

All records pertinent to the operation of the digestion facility will be securely stored and protected from adverse conditions.

The site office is either manned or locked during the working day and records will be within a safe environment.

All site records will be filed in the site office, where they will be securely retained. These are to include, the EMS and all documents as on the register.

- Transfer notes
- Site diary/inspection forms

- Digestion process records
- Rejection notices
- Copy of Environmental permit
- Copy of Working Plan and support documents
- Storage of such information will be controlled by management and will be available for inspection on request.

Proc. 14 Leak and Spillage procedure

A summary of the hazards and actions are listed below:-

Solid or Liquid Leaks/Spillages

NOTE –spill kits can be found at the diesel tank and farm chemical store. Larger volumes of material suitable for containing and collecting spillage can be accessed on-site and at the farm – sand, sawdust and digestate solids (which are absorbent). Further, Pencefn Drysgol has liquid tankers which can be quickly mobilised to collect a spill if required.

Solids or Liquid Leaks / Spillages

Environmental Aspect	Hazard	Spill Equipment to Use in the event of Incident.	Actions to Undertake
Loading of solids feeder.	Spillage of materials may result in effluent release to soils or drainage system.	Bucket loader, absorbents (straw materials).	Any spilt material will be immediately cleared up and loaded back into the solids feeder. Any effluent not picked up will be covered with straw material as an absorbent then loaded to the solids feeder.
Failure Intake or Mixer tank.	Failure of the intake or mixer tanks could result in the release of large volumes of liquid potentially to the soil or drainage system.	Spill kit, Absorbents (straw materials). Tanker with pump.	Contain the leak by use of the spill socks to direct leak to effluent tank. Use absorbent to soak up spillage. Empty the holding tank with a tanker and pump.
Failure of digester tanks or digestate storage tank.	Failure of the digester tanks or digestate storage tank could result in the release of large volumes of digestate potentially to the surface water and soil systems.	Tankers with pumps Drain mats and absorbents (straw materials).	Where possible direct the spilt digestate to a safe contained area. Make provisions for material to be removed from site. ie. utilising a vacuum tanker. Remove the

			feedstock/digestate to either the old cattle shed area or direct to the digestate lagoon for temporary storage.
Leakage from process pipework.	Leakage from process pipework may result in the release of liquids to the soils or drainage system.	Spill kit, Drain mats, absorbents (straw materials).	Where possible identify the source of the leak through visual inspection. Utilise on-site spill kits to contain the leak. Contact contractors to carry out repairs as a priority. Contain the leak by closing linked pipes if possible.