ENVIRONMENTAL MANAGEMENT SYSTEM

Grays Biogas AD Plant, Mona Industrial Estate, Mona, Anglesey

Grays Biogas Ltd
Phase 1

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Waste, Planning & Environmental Consultants

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1.4	01/03/2011	JPE		Revised submission with original application
2.2	16/02/2012	JPE	RD	Formal submission with variation application
3.0	11/03/2016	JPE		For submission with permit variation for AD activity changes- PHASE 1

CONTENTS

List of Appendices:

Site Information & Key Contacts List

Site Address:	Grays Biogas AD Plant, Mona Industrial Estate, Mona, Anglesey		
Site Operator:	Grays Biogas Ltd	**National Grid Ref:**	SH 42035 75575

CONTACT	Description	Office Hours	Out of Hours
Matthew Davis	*Technically Competent Manager*		
	Local NHS Hospital (Main)		*999*
	Accident & Emergency (A&E)	*999*	*999*
	Local Doctor Surgery (GP)	*0121 766 1335*	*999*
Police Station -	*Local Police Non-Emergency*	*101*	
	Police Emergency	*999*	*999*
Fire Service -	*Fire and Rescue Service (in Emergency Dial 999)*	*999*	*999*
Natural Resources Wales	*Environmental Regulator*	*0300 065 3000*	*0800 80 70 60*
	General Enquiries		
	Environmental Health Dept.		
DCWW	*Fresh Water Provider & Sewage provider*		
Oaktree Environmental Ltd	*Specialist Advisor (Waste and Planning Issues)*	*01606 558833*	

1 GENERAL CONSIDERATIONS

1.1.1 This document represents the Written Management System for the Anglesey Biogas Plant (Anaerobic Digestion facility) **Phase 1**, operated by Grays Biogas Ltd and has been prepared in accordance with best practice current at the time of writing. It is submitted as part of an application to Natural Resources Wales (NRW) for the **variation** of Environmental Permit AP3033HY to operate an installation under Schedule 7 of the Environmental Permitting (England and Wales) Regulations 2010 ('the Regulations'). This variation is required due to the change of technical specification and feedstock associated with the AD plant. The variation also includes increasing the permit boundary.

1.1.2 The Application is to allow anaerobic digestion (AD) with a plant capacity of >100 tonnes per day and will therefore be regarded as an installation activity under Schedule 2 Section 5.4 Part A(1) b)(i) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 100 tonnes per day involving biological treatment.

1.1.3 **Phase 1** The applicant will carry out anaerobic digestion of wastes and use the biogas in compression and spark ignition engine with a rated thermal input (fuel input) of approximately 4.68KW based on the technical data supplied showing total efficiency of 84.4% (2 megawatts to produce electricity for supply into the national grid). The Combined Heat Power Unit includes a single 2.0 MW electrical power generator. The digestate will be produced to PAS 110 and will be landspread.

1.1.4 ***This variation application is for Phase 1. Refer to Drawing 'Flowsheet diagram Part 1' located in Appendix P of this document and attached to the Non Technical Summary document 3407/819/NTS.***

1.1.5 **Phase 2** which will be submitted as a second variation will involve the introduction of a drying process which will result in the production of compost and solid fertilizer.

1.1.6 This document is for Phase 1 only and is intended to show the policy and procedures which will be put in place to ensure that the site is run effectively and will produce by-products that conform to PAS 110 standards.

1.1.7 Management System and associated Appendices (Phase 1)

The Management System identifies the measures that will be taken to prevent or, where this is not practicable, to reduce emissions from the site, throughout references are given to relevant sections of the Sector Guidance Notes and the various specific management plans submitted with the permit application, many of which will form part of this Management System when the site becomes operational. This Management System should be read in conjunction with the following documents submitted with the application or prepared prior to the commencement of operations:

- The Odour and Fugitive Emissions Management Plan (3407/819/A)*;
- The Noise and Vibration Management Plan (3407/819/B)*;
- Emissions and Monitoring (3407/819/C)*
- List of Raw Materials (3407/819/D)*
- Energy Efficiency (3407/819/E)*
- List of proposed wastes (3407/819/F
- Technical Competent Management (3407/819/G)
- Site Condition Report (3407/819/H)*
- Planning Permissions (3407/819/I)*
- Site Conditioning Plan (3407/819/J)*
- Environmental Risk Assessment (3407/819/K)*
- Accident Management Plan (3407/819/L)
- QMS (*TBC)* (3407/819/M) (PAS 110 WRAP Protocol)
- Technical Report (3407/819/N)*
- Drainage Design (3407/819/O)*
- Drawings (3407/819/P)*
- Recording forms (3407/819/Q)

*Documents have been revised for this variation submission. The above documents will be appended to the Management System.

This Management System has been produced prior to the site development and will therefore be reviewed on commencement of operations to ensure it reflects best practice and actual operations. This document should also be read in conjunction with the Technical Proposal for AD Plant produced by the Technical Providers for the site operator (Appendix N).

The management system will be subject to continuous review and revision. Natural Resources Wales will be supplied with details of revisions on a regular basis.

Major revisions will be subject to prior approval by NRW. After commissioning of the plant a site closure plan will be developed and incorporated into the Site Condition Report.

1.1.8 The contact details for Grays Biogas Ltd are as follows:

Grays Biogas Ltd	**Contact:**	Matthew Davis
Mona Industrial Estate	**Position:**	Technical Competent Manager
Mona	**Mobile:**	07730920206
Gwalchmai		
Anglesey		
LL65 4RJ		

1.1.9 Oaktree Environmental Ltd have been engaged to act as consultants for Grays Biogas Ltd to assist in the preparation of this revised Management System as part of the variation application. This Management System has been prepared to meet the requirements of The Environmental Permitting (England and Contact details for Oaktree Environmental are as follows:

Oaktree Environmental Ltd
Unit 5, Oasis Park
19 Road One
Winsford Industrial Estate
Winsford
Cheshire CW7 3RY

Contact: Jan Edwards
Position: Senior Consultant
Tel: 01606 558833
Fax: 01606 861182
E-mail: jan@oaktree-environmental.co.uk

SITE LOCATION

1.1.10 The site is situated approximately 3 miles west of Llangefni, Anglesey SH419 755 and is part of the Mona Industrial Estate. The site is located at the northern boundary of the industrial estate and is accessed via the estate road, which runs past the western site boundary. Within the industrial estate the site is located next to a poultry farm and a council run gritting yard, a waste transfer station (operated by Grays Waste Management Ltd) and RAF Mona Training Centre beyond.

1.1.11 SURROUNDING LAND USE

The site is predominately surrounded by open fields, separated by stock proof fences. On the eastside of the site is a concrete base and remnants of an old road. On the eastern boundary there is a culvert/drain running roughly north to south which flows under the un-named road.

1.1.12 PLANNING PERMISSION

Planning was granted by Isle of Anglesey County Council (Ref 14C28Y/ECON) on 7th January 2010 for the erection of a new reception building together with the installation of an anaerobic digestion/biogas energy recovery plant at Plot 8 Mona Industrial Park, Mona with a revised permission Ref No. 14C28C/1ECON being issued on 13th January 2012. Planning permission (Ref 14C28B/1) was issued on 23rd December 2011 to include the construction of vehicular access road, weighbridge, portacabin and surface water lagoon. Further planning was issued on 28th October 2015 to reflect the changes in the design.

Copy of Planning Permissions attached as Appendix I.

THE OPERATOR

1.1.13 Grays Biogas Ltd wish to preserve their commitment to environmentally sound operations. To achieve this aim, they have invited Agraferm to supply the digestion plant, to source supplier of the CHP plant and equipment and to source the biofilter systems.

1.1.14 TECHNICAL COMPETENCE

The operations on site fall within the scope of a relevant waste operation as defined in the Environmental Permitting Regulations 2010. There is therefore a requirement for an appointed COTC holder or other such Technically Competent Manager (TCM) to be available for the site. The TCM for the site will be Matthew Davis who has undertaken the relevant Vocational Qualification. (See Appendix G).

1.1.15 The site will also be operated by competent staff with relevant knowledge in their area of work. Staff training requirements will be reviewed as detailed in company policy.

The site will be led by management who will be aware of relevant health and safety legislation, operating procedures and requirements at the site, including:

- The Environmental Permit;
- This Management System; and
- Current and relevant legislation and guidance
- Health & Safety Requirements

1.1.16 Management duties will also include the undertaking of inspections of the site and keeping of the appropriate records as detailed in this management system.

1.1.17 The applicant also employs an independent Health and Safety Consultant to oversee and advise on health and safety matters. Copy of the summary of agreement can be found in Appendix H.

1.1.18 SITE STAFFING

Adequate staff will be available on site to operate the facility. This will include a Technically Competent Manager. Agraferm will be supplying an experienced plant supervisor to manage the start up of the plant and for a 12 month period after commissioning.

The CHP will operate on a continuous 24 hour basis but importation of feedstock and export of by-products will only take place during the times as agreed with the local planning authority and as detailed in Section 1.1.20 below. Staffing levels will be increased at management discretion if additional equipment or processes are in use at the site.

1.1.19 STAFF TRAINING

New employees will be given full induction training by site managerial staff or other appropriately qualified persons. The site managerial staff or other appropriately qualified persons will monitor the progress and assessment of competences of all staff.

All staff employed at the site will benefit from a training programme, which aims to improve their professional and technical knowledge. An assessment of training needs will be carried out to identify the posts for which specific environmental awareness training is needed, and the scope and level of such training. The assessment of training needs will be reviewed on an annual basis. The training programme will seek to maintain staff awareness of the following:

- Regulatory implications of the Environmental Permit and their specific work activity;
- All potential environmental effects from operations under normal and abnormal circumstances;
- The requirements for monitoring the environmental impact of the site including assessment of odour and dust and the operation of noise meters;
- The need to report deviations from the Environmental Permit;
- Prevention of accidental emissions and action to be taken should accidental emissions occur. and

- Making and keeping legible records using the paper or electronic formats provided.

Records will be kept of all staff qualifications and training in relation to operation of the waste processes at the site, emergency procedures and the content and requirements of the Environmental Permit and Management Plan. Site operatives will be trained in the safe operation of all plant.

Plant Maintenance

1.1.20 All equipment connected with the proposed processes will be subject to testing and commissioning in accordance with the manufacturer's procedures and recommendations. Site management may undertake or delegate additional preventative maintenance checks on a more frequent basis to ensure, where possible, the plant and machinery is mechanically sound. These checks will be carried out using a preventative maintenance checklist and any results/defects will be recorded in the site diary and actioned immediately, and in any event prior to operational use. Records of testing and commissioning will be maintained in the site control office. Should stationary plant or equipment for any reason become unserviceable or inoperable, its replacement, repair or arrangements for its repair will be carried out as a priority. Natural Resources Wales will be advised of any shut downs of greater than 14 days.

Details of routine maintenance and unplanned maintenance will be kept in the maintenance record system.

1.1.21 WASTE AND MATERIAL RECEPTION TIMES

Importation and removal of materials and operation of mobile plant will be carried out within the following hours:

Monday to Friday	0700 to 1900 hours
Saturday	0700 to 1600 hours
Sundays and Bank Holidays	0900 and 1600 hours.

The digestion plant will operate on a 24 hour basis and access may be required for the delivery of occasional emergency loads outside normal working hours, as agreed with the planning authority.

1.1.22 WASTE AND MATERIAL ACCEPTANCE ANDPROCEDURES

The acceptance procedures ensure that systems and procedures are in place to prevent acceptance of unsuitable wastes which may lead to adverse reactions or uncontrolled emissions. The proposed activities are covered by Schedule 1 Section 5.4 Part A(1)b) (i) Anaerobic Digestion (>100t/day), and the associated R codes

R3: Recycling or reclamation of organic substances.
R5: Recycling/reclamation of other inorganic materials
R13: Storage of waste pending recovery.

1.1.23 WASTE STORAGE PERIODS

It is the intention to transfer the waste feedstock into the process as soon as possible after delivery (this is especially important if any of the feedstock have been found to be very odorous). All treated wastes and materials (solid and liquid digestate) will be processed or removed off site as soon as practicably possible.

1.1.24 The system for determining the suitability of the waste will consist of two stages:

- Stage 1: Pre-acceptance and initial screening procedure
  This involves the operator getting information on the waste characteristics and process that produces the waste. This will enable the operator to determine the suitability of the waste for processing and will provide comparison information for wastes received at site
- Stage 2 – Acceptance procedures at site
  When wastes are received at site there will need to be measures to confirm the characteristics of the waste, without time pressure and the potential hazard of checking a waste at the facility gate.

1.1.25 Stage 1

Pre-acceptance procedures will be carried out to get information on new waste types. This will consist of the following key points:

- Nature of the process producing the waste, including the variability of the process
- Specific details of the process producing the wastes including any storage and preservatives used
- The chemical composition of the waste (the operator may need to take samples if the producer does not have this information)
- The physical composition of the waste e.g. solid/liquid/sludge
- Description of waste type including a visual and odour assessment
- Waste handling requirements
- Hazards associated with the wastes
- The waste EWC codes

By getting the information listed above it will enable the operator to establish some key points regarding the waste, these include

- Screening out unsuitable wastes
- Confirming verification parameters that can be used to test waste batches arriving at site
- Identify any substances used in the producers processing that may impact the operators anaerobic digestion process (including contraries that may affect waste preparation)
- Identify any substances within the waste that may effect the treatment process (for example chemicals that are toxic to anaerobic bacteria)
- Identify any substances within the waste that may react with other wastes in the process
- Accurately define the range of hazards exhibited by the waste

1.1.26 Any information gathered on the different waste types will be kept on record within the facility. This will allow the operator to cross-reference future analysis and verification when the waste is accepted on site. Records should be updated on a

regular basis if there are any changes to the process producing the waste or to the waste characteristics.

1.1.27 Wastes will not be accepted on site if the pre-acceptance information has not been collected, if the waste may have adverse effects on the process or if there is not a clearly defined route for the waste type. Feedstocks proposed are detailed in Section 5 below.

1.1.28 Stage 2

Acceptance procedures when the waste arrives at site will be put in place to confirm the characteristics of the wastes being delivered to the site. The main characterisation of the wastes will have been carried out in the waste pre-acceptance stage.

Procedures will be quick tests to minimise the amount of time delivery vehicles are kept waiting. There are several key issues that the operator must address during the arrival of wastes at the site, to determine if the waste can be accepted. The details at each stage must be recorded and copies kept at the site. The procedure for the acceptance of wastes at the site will be as follows

- The operator will record the details of the incoming batch of material. This will include details of the type of material, the amount of material, the waste producer, the residence time at site of production, the waste haulier, the driver and vehicle details, the time and date of delivery
- The operator must then check if they have the pre-acceptance data for the particular waste.
- The operator must check the delivery has the correct paper work and has been assigned the correct EWC code.
- Once satisfied that the paper work is in order and that the facility is permitted to take the waste the operator can direct the driver to the appropriate discharge point
- Solid feedstock delivery vehicles will be directed into the appropriate storage area. If sheeted, the load will be de-sheeted and the contents checked before tipping. Staff members will ensure that the driver tips the solid waste into the

correct reception area. Waste and biomass discharge areas will be clearly marked and separated so that there is no cross contamination between the feedstocks.

- At this point a suitably trained member of staff can make a visual and odour assessment of the waste
- If the waste material delivered does not conform to the paper work and EWC code associated with the delivery then the batch must be rejected. The material will be loaded back into the container/vehicle and sent back to the producer.
- Liquid feedstock deliveries will be directed to the reception unloading area at the side of the chicken litter storage shed. The tanker can be connected to the pipe work, open the correct valves under the supervision of a trained operator who will transfer the material to the appropriate tank. The valves and pipe work will be coded and labelled clearly to ensure that correct valves are opened and the correct tank is used.
- Samples of wastes will be taken regularly, at least every 6 months for analysis. This will confirm if the materials being received and processed on site are in accordance with the acceptance criteria in general and within the acceptance parameters for that particular waste.

1.1.29 NON-CONFORMING WASTE

Each incoming delivery of waste will be checked to confirm that it complies with the categories of wastes permitted for acceptance under the Environmental Permit and is consistent with the description of the waste provided. Any waste that, upon arrival at the site, is found to be unacceptable under the conditions of the permit and site acceptance procedures described above, will be rejected. If non-conforming waste is discovered after deposit it will either be immediately reloaded and returned to the waste producer or stored in a designated quarantine area.

1.1.30 Records of rejected waste and details of their removal from the site will be kept and maintained within the site log and will be available for inspection by NRW.

1.1.31 Wastes that are rejected and that exhibit any hazardous properties will be stored in containers that are appropriate to the hazardous properties that they possess.

Should any hazardous wastes be identified that may present a serious and immediate risk of harm to the environment and/or human health then NRW will be notified immediately and asked for advice on appropriate actions. These wastes will be dealt with in a manner agreed with NRW and arrangements made as soon as possible for their removal off site to a suitably permitted facility.

1.1.32 Procedures dealing with unauthorised wastes: Any wastes that are rejected from the site due to insufficient/incorrect paper work will be sent back to the waste producer for them to arrange disposal.

2 GENERAL SITE INFRASTRUCTURE

SITE IDENTIFICATION BOARD

2.1.1 An identification board of durable material and minimum size 1 metre by 1 metre will be erected and maintained in a prominent position at the site entrance. The board will display the following information:

- Site name and address;
- Permit holder and Operator name;
- Environmental Permit number;
- Emergency contact name and telephone number;
- Statement that the site is permitted by Natural Resources Wales;
- Days and hours site is open to receive waste; and
- Natural Resources Wales national contact numbers;
- General enquiries 0300 065 3000
- Incident hotline 0800 807 060

SITE SECURITY

2.1.2 The permitted area will be fully enclosed with an appropriate site security fence, to prevent unauthorised access to the site. At all site access points, gates of a suitable width and height will be provided, these shall be of a similar construction and height as the fencing provided to the site boundary. The access gates will be locked whenever the site is unmanned. Appropriate signage to discourage trespassers will be erected at the site entrance.

2.1.3 Maintenance and inspection of the site fencing and gates will be undertaken on a routine basis and temporary repairs will be implemented either upon identification during the inspection, or by the end of the day that the defect is found. A note of the inspections and repairs will be kept at the site and will form part of the site log.

2.1.4 Permanent repairs to the fencing and gates will be carried out within 5 working days and again a note will be made in the site log to this effect.

SITE OFFICE

2.1.5 Office facilities will be provided which will hold the following documents:

Documents to be retained in site office
The Environmental Permit (original & any subsequent variations)
This Environmental Management System (EA agreed document)
Current site diary (to record all inspections/visitors to the site)
Environment Agency inspection (CAR) forms
In-house inspection sheets/recording forms
Duty of care transfer notes (for 2 years minimum)
Hazardous waste consignment notes (rejected waste, etc., kept for 3 years)
Waste delivery tickets
Accident book (& 1st aid kit)

WEIGHBRIDGE

2.1.6 A weighbridge system will be installed to enable input and output weights to be recorded. A suitable unmanned weighbridge system is being designed by a specialist with restricted access and manual over ride system.

2.1.7 The weighbridge will be regularly serviced, maintained and calibrated in accordance with the manufacturer's recommendations and statutory requirements.

LIGHTING

2.1.8 Lighting will be provided at external areas of the site and shall be sufficient to meet the requirements of appropriate health and safety legislation. This will permit operations to be undertaken during hours of darkness and will also serve as a deterrent to trespass.

2.1.9 Lighting will be needed to comply with the Health and Safety needs of the staff on site and of vehicle drivers visiting the site. Staff will need to access the premises 24 hours per day, lighting will therefore be needed occasionally through the night, but

this will be minimised by ensuring that only the essential lights are used and motion detection systems are deployed to minimise any potential impacts.

CCTV SURVEILLANCE SYSTEMS

2.1.10 CCTV is being considered for general security with cameras positioned to serve as a deterrent to trespassers.

VEHICLE CLEANING FACILITIES

2.1.11 The waste types handled on site and the fact that the main vehicle running surfaces are hard surfaced minimises the likelihood of mud or debris being carried onto the industrial estate roads. The public highway is also a considerable distance from the site.

2.1.12 A water hose will be provided to permit the effective spraying of the whole site surface to help limit dust and mud tracking off site.

2.1.13 A road sweeper will also be hired in as necessary to ensure that hard surfaced areas of the site are free from mud and debris and to sweep the highway if required.

STORAGE OF FUEL, OIL AND OTHER LIQUIDS

2.1.14 Storage tanks will not be positioned near watercourses, general traffic movement areas and alongside access roads. Appropriate storage will be provided for substances with special requirements e.g. flammability or sensitivity to light. Covered storage and additional protection from vandalism will be arranged where appropriate. Storage tanks will be bunded in accordance with Section 7.1.14. A responsible person will supervise all deliveries to the site. The quantity of fuel in storage will be checked, by using a sight glass or by dipping prior to a fuel delivery being made and the maximum residual capacity of the tank will be determined prior to the commencement of re-filling, so as to prevent overfilling. Containment details are described in Appendix N.

2.1.15 Hydraulic and lubricating oils, including waste oils, will be stored in a secure lockable container. The container will be provided with a spillage containment tray, to prevent

the leakage from the container of any materials that might leak from any of the drums contained within it. Filling and emptying procedures will be adopted to minimise the risk of spillages. All drums and similar containers stored within the facility will be clearly marked with their contents and capacity. Drum openings will be securely sealed before being moved to or from the facility to prevent spillages. All storage facilities will be kept locked at all times when not in use.

3 ANAEROBIC DIGESTER PROCESS DESCRIPTION

(For full details refer to Appendix N –Document (Appendix N).

OPERATING PROCEDURES MANUAL

3.1.1 Where not already detailed in this Written Management System detailed written Technical Operating Procedures will be in place for each element of the Bio-Energy Plant prior to commissioning. The operating procedures will be contained within specific plant operating and maintenance manuals, which will form an integral part of this Management System

ENVIRONMENT, HEALTH AND SAFETY MANAGEMENT SYSTEM

3.1.2 Please refer to Appendix H and Appendix L for details of the site Accident Management Plan and the Statutory Health and Safety Manual and Environmental Policy Statements which will be in place prior to commissioning operations. The Technology Provider will provide a HACCP (Hazard Analysis and Critical Control Points) plan for the site. This will consider the potential hazards associated with the process and what needs to be monitored to ensure a high quality and safe material is produced. This will be included in Appendix M when available.

MAINTENANCE PROCEDURES

3.1.3 Maintenance procedures will be in place for the following:

- Stationary plant and equipment;
- Mobile plant and equipment; and
- Fuel, oil and liquid storage.
- Buildings
- Site surfaces
- Gates and fencing

3.1.4 Routine maintenance at the facility will be undertaken in accordance with manufacturer's recommendations. Details of inspections and maintenance and all remedial works undertaken for the site plant and equipment will be held in the site log.

3.1.5 Programmed maintenance of plant and equipment will generally be undertaken outside the waste delivery and dispatch hours. Routine maintenance and breakdown/emergency repairs will be scheduled by the plant management team.

QUALITY MANAGEMENT SYSTEM (QMS)

3.1.6 A QMS will be in place to demonstrate that there are site management techniques and processes in place to be able to operate the anaerobic digestion facility to a high standard. This will also be used in support of the company's application for compliance with the PAS 110 requirements. The QMS will be based on the PAS 110 WRAP protocol and will be placed in Appendix M during commissioning of the AD plant.

3.1.7 In Appendix K copies of Risk Assessments have been included, based on the Environment Agency H1 Guidance. These show that under normal operating conditions the site does not pose a significant risk of causing harm to human health, pollution to the environment or detriment to local amenity.

SAMPLING AND TESTING

3.1.8 Sampling and testing will be undertaken at the facility to monitor its operation in order to confirm that the facility is operating efficiently and effectively and to demonstrate compliance with the Permit. All instrumentation and monitoring methodologies employed at the site will be undertaken in line with MCERTs requirements where necessary and practicable.

3.1.9 The specific process control monitoring undertaken at the facility will be detailed in the Facility Management plan provided by the Technical Provider and will be available on site prior to commencement of operation.

3.1.10 Any samples that require to be sent off site for testing/monitoring will be despatched to an appropriate laboratory where suitably accredited test methods are in place.

3.1.11 It is the aim of the applicant to produce digestate that conforms to the PAS 110 standard for quality digestate for landspreading on local fields and which will result in

it no longer being classified as a waste. Sampling and results management plans have been developed to ensure correct sampling procedures are in place and followed and the results are monitored and recorded appropriately. Documents have also been produced using the WRAP Quality Protocol for Anaerobic Digestate and will provide the necessary requirements for the end users of the by-products (Appendix M Quality Management System a copy should be available prior to commissioning stage).

SITE VISITORS

3.1.12 Persons visiting the plant will be required to report to the site office. A record of their identity time and reason for their visit will be recorded. Visitors entering the working areas will be briefed with respect to site safety.

3.1.13 All visitors will be made aware of the requirement for protective clothing. No person will be allowed entry to the site without the correct protective clothing. The site staff will be responsible for the Health and Safety of all visitors and will make visitors aware of the potential hazards/risks to their safety or welfare whilst at the site.

SITE INSPECTIONS

3.1.14 The site shall be inspected daily by the Plant or Maintenance Manager (or other suitably trained and experienced member of the management team) for defects in plant, equipment or structure or in any working practice that may affect satisfactory compliance with the Environmental Permit. The staff carrying out inspections will be trained and familiar with the day-to-day site operations. Any defects shall be noted in the appropriate records and appropriate remedial action programmed as dictated by the urgency of the situation. Records shall be kept of daily inspections and shall be made available for inspection as reasonably required by authorised officers of NRW.

AUDITING

3.1.15 In addition to daily site inspections, operational procedures will be audited annually. The audits will be used to identify non-compliance and monitor progress of corrective action. The Plant Manager and Senior Management will review details of audits. Copies of the audits will be kept in the site office.

Audits are also undertaken for:

- Raw and auxiliary materials selection
- Waste production and waste minimisation
- Water efficiency
- Energy efficiency and
- Digestate production (Sampling and Testing).

OPERATING CONDITIONS

3.1.16 Standard and Abnormal Operating Procedures:-Specific operational procedures for normal and abnormal conditions will be available, after completion of the detailed design stage for this site. This will be produced by the technical provider and will be included within Appendix N prior to commencement of site operations.

3.1.17 Any temporary cessation of operations in excess of two weeks will be notified to NRW in writing. A minimum of seven days written notice (or such shorter period as may be agreed in writing by NRW) will be given of the intention to recommence operations in the event of such a cessation. This will be undertaken by a technically competent person.

RECORDS

3.1.18 A record of the types and quantities (in tonnes) of wastes and biomass received at the site and residues removed from the site will be made in accordance with the site management procedures and maintained in the site office. In addition the total energy generated and net energy exported from the facility will be logged.

3.1.19 A summary of the types and quantities of wastes deposited at the site and removed from the site will be provided to Natural Resources Wales at an agreed frequency and in an agreed format.

3.1.20 The following significant events at the site will be recorded, as detailed below:

- The start and finish of any construction/engineering works undertaken at the site;
- Start and finish of waste management processes carried out at the site;
- Maintenance;
- Breakdowns;
- Emergencies;
- Problems with waste received and action taken;
- Site inspections;
- Despatch of records to the Regulator;
- Complaints received;
- Visitors to the site;
- Pest or vermin incidents;
- Rejected loads and the reason for rejecting the load; and
- Assessments of condition of the land and drainage.

3.1.21 The Plant Manager or nominated person will maintain a record of all the above information in the site log or on inspection forms, as appropriate.

3.1.22 The site log and maintenance records will be kept at the site at all times and will be available for inspection at all reasonable times by any authorised officer of NRW. The site records will be kept in 24 hour clock format and generated as either:

- Hand generated log;
- Computer generated hard copies; or
- Electronic permanent storage media.

3.1.23 To ensure the security of records they will be housed in either locked containers or kept in offices that shall be locked when not attended. Copies of records will be kept by the Plant Manager for at least 2 years, before archiving. Records of action taken where an Officer notes non-conformance or failure will be kept until permit surrender. Records will be disposed of in accordance with company policy, which shall ensure an appropriate but secure method of disposal e.g. shredding and recycling, where feasible.

SITE LOG AND RECORD FILING

3.1.24 The Plant Manager will be responsible for maintaining an organised general filing system at the site, which will include the keeping of records and a site log. The results of any inspections will be recorded in the site log on the day of the inspection along with any actions taken in order to achieve compliance.

3.1.25 The records and site log will be made available to authorised officers of NRW on request and are maintained in a form, which can be readily audited. The Plant Manager will keep a copy of the Environmental Permit, Management System, Accident and Emergency Plan and Complaints Procedure available for convenient access to any person having duties that are or may be affected by this information.

RAW MATERIAL SELECTION

3.1.26 Document reference 2407/819/D provides details of proposed Raw Material selection and use. A copy is attached in Appendix D. The list will be reviewed on a regular basis and any revisions will be appended to the management system

WASTE MINIMISATION

3.1.27 Document reference 2407/819/D provides details of measures to minimise waste and is appended to the Management System in Appendix D.

3.1.28 A waste minimisation audit will be carried out every four years to analyse the use of materials and assess opportunities for reducing this use in accordance with guidelines given in the Sector Guidance notes. Any revision will be included into Appendix D. Where no practical, re-use opportunity is available waste generated on site will be recycled or recovered through the plant, although it is intended that the process should achieve close to 100% recycling, it will only be waste generated from the subsidiary operations eg from office and mess room equipment maintenance/servicing that will need to be considered.

WATER USAGE

3.1.29 Document reference 3407/819/D provides details of measures to minimise water use and will be appended to the Management System in Appendix D when the site becomes operational. It has been anticipated that the water used in the process will be supplied from the grey water collected on site being supplemented with clean water only if necessary. By introducing liquid feedstocks into the process this reduces the requirement for additional water. Clean water will be needed for general AD plant cleanliness and maintenance tasks (approx 2m3/day). Clean water may also be required to replace the water utilised in the odour control facility.

ENERGY

3.1.30 Documents referenced 3407/819/E provide details of basic and specific measures to optimise energy use and will be appended to the Management System as Appendix E when the site becomes operational with any subsequent revisions.

CONTROL OF PESTS AND VERMIN

3.1.31 Storage and processing operations involving biodegradable wastes will be undertaken within an enclosed building, or within enclosed vessels minimising the risks of scavenging of the wastes by pests, birds and other scavengers. The site will instigate a vermin monitoring and control regime as a precautionary measure, but no further special precautions are deemed necessary to control birds and other scavengers at the site.

3.1.32 The Plant Manager or his nominated deputy will inspect the site at regular intervals for the presence of pests such as rats and flies. A specialist contractor will be retained to inspect the site and return at recommended intervals to check for the presence of rats and vermin. In the event that evidence of rats or other vermin is found, appropriate remedial action will be undertaken by the specialist contractor. A record will be maintained in the site log of all inspections for pests and other scavengers and of actions taken.

COMPLAINTS

3.1.33 In the event that a complaint is received about operations on site adversely affecting a person or property outside the site boundary the complaints procedure detailed in Appendix Q will be instigated. A senior member of the site management team will carry out investigation of complaints.

4 EMISSIONS

EMISSIONS MONITORING

4.1.1 Monitoring will be undertaken in accordance with the requirements of the Environmental Permit and with regard to the Sector Guidance notes, to comply with the mandatory monitoring requirements for this installation.

4.1.2 Dispersion Modelling Assessment has been undertaken to identify potential air quality impacts associated with operation of the proposed AD plant. No exceedances of the relevant human health based criteria have been predicted at any location within or surrounding the plant. Furthermore, negligible impacts have been predicted at sensitive receptor locations. The full Dispersion Modelling Assessment Report (Ref 3388-819-A) is included in Appendix C.

POINT SOURCE EMISSIONS TO AIR

Phase 1

4.1.3 The point source emissions to air at the Bio-Energy Plant will be emissions associated with the Odour Control unit serving the chicken hall shed and the liquid feed storage vessels.

4.1.4 The biofilters and air extraction system are designed to prevent odours, dust, fibres and particulates from escaping to the environment. Maintenance procedures for the biofilters will be undertaken to maximise the control and abatement performance and copy of the procedures will be placed in Appendix A when available. Daily visual inspections of the biofilter outlet will be undertaken by site operatives. Emissions to air from the biofilters are considered to be fugitive and unlikely to be significant. Regular olfactometric assessment (sniff testing) will be carried out around the site boundary and if necessary adjacent to sensitive receptors. An Odour Management Plan (OMP) ref 3407/819/OMP using Environment Agency H4 Guidance has been produced for the site and includes monitoring and modelling information. The OMP is in Appendix A and details the positions of the nearest sensitive receptors along with monitoring procedures and action plans.

4.1.5 Biogas will be diverted to a flare during periods of maintenance and engine downtime. However, it is anticipated that the flare would be operational for a maximum of 600 hours per year, which is 6.98% of the year. As such, potential flare emissions are considered insignificant and have not therefore been considered in this application.

POINT SOURCE EMISSIONS TO SEWER AND SURFACE WATER

4.1.6 Welfare facilities will be situated in the office building and will be consented to discharge to foul sewer.

4.1.7 Uncontaminated surface water collected from surface water management system may be re-used for dust suppression as well as being recycled within the AD process. Any excess may be directed into the proposed settling pond as previously discussed. Process waters will be recycled within the AD process.

EMISSIONS TO LAND AND GROUNDWATER

4.1.8 There will be no direct or indirect emissions to groundwater from the site. There will be no disposal into or onto land of any substances containing List I or List II substances from this site. The Site Condition Report (SCR) Document reference 3407/819/H provides detail of previous emissions to land. The Report also includes a description of the underlying geology, hydrogeology, quality of groundwater and the potential groundwater vulnerability. Copy of the SCR can be found in Appendix H.

4.1.9 Detection of an emission to land or groundwater would be considered an emergency and remedial action would be instigated immediately.

FUGITIVE EMISSIONS TO AIR

4.1.10 There are potential fugitive sources of emissions to air from the site as a result of waste handling operations and road transportation as detailed below:

- Dusts, fibres and particulate matter;
- Odours;
- Litter; and

Biofilter emissions

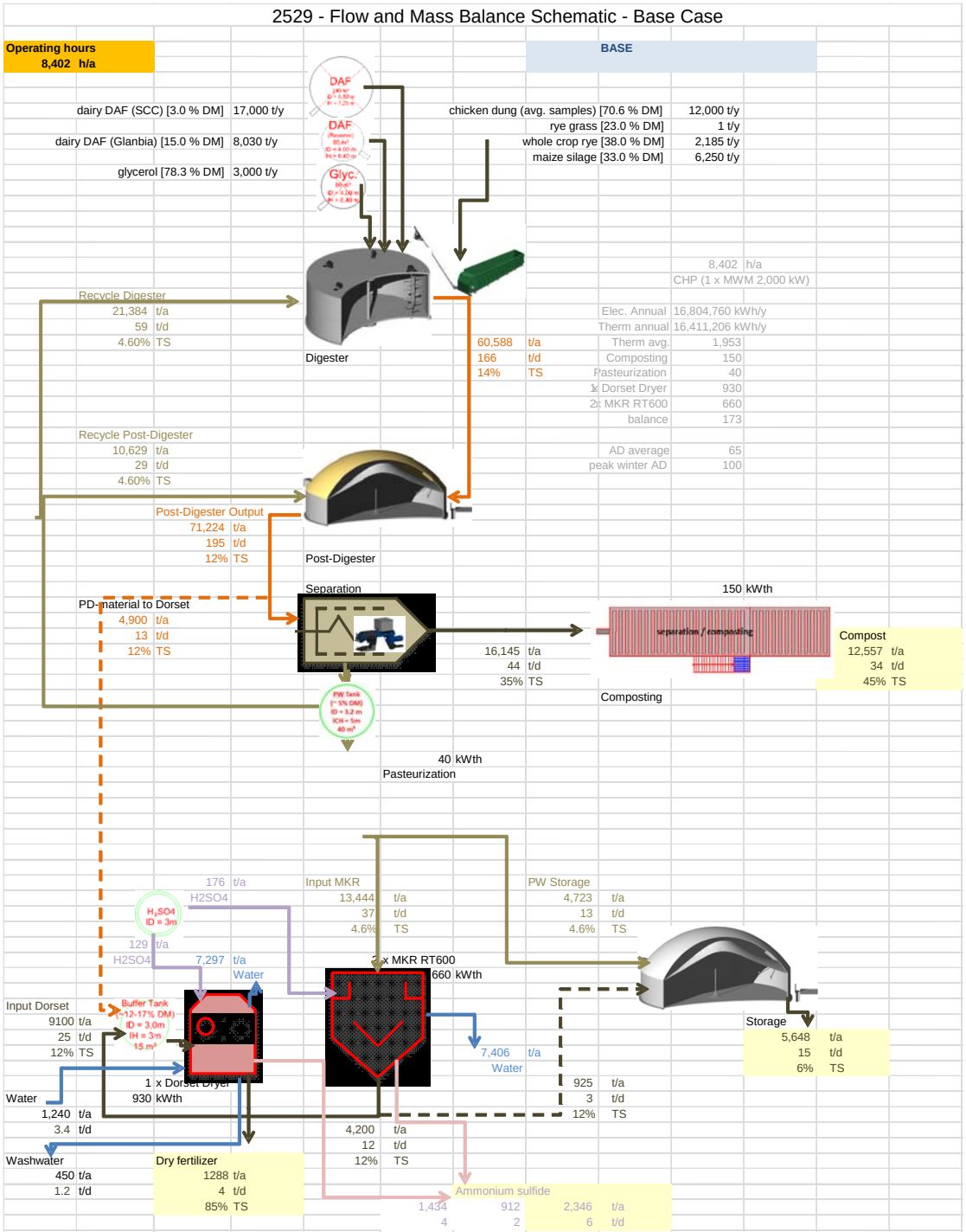
4.1.11 Reference Documents 3407/819/C (Odour Management Plan), Dust-3407/819 (Dust Management Plan), 3407/819/K (Risk Assessments) and 3388/819/A provide more details of odour and fugitive emissions and will be appended to the Management System as Appendices A, C and K. The Odour Management Plan will be reviewed at regular intervals or if there are any issues.

4.1.12 A Dust Management Plan (3407/819/DMP) and Odour Management Plan (3407/819/OMP) have been prepared for the site and attached to Appendix C.

CONTROL OF NOISE AND VIBRATION

4.1.13 A noise survey has been carried out and all procedures are considered to meet the indicative BAT requirements within the Sector Guidance notes and the H5 Guidance. Appendix B contains the Noise Survey Report and also includes a Noise and Vibration Management Plan for the site.

5 SITE PROCESS



5.1.1 The system is designed and optimized for the digestion of the feedstock input as shown in the Mass Balance Diagram. The Mass Balance Diagram above shows Phases 1 and 2. This variation application only refers to the processes being undertaken in **Phase 1.**

5.1.2 The AD system which includes a single 2.0 MW CHP unit, pre-cast tanks, feeding system and a gas conditioning single unit, has been designed for operation under climate conditions as prevalent at the Isle of Anglesey. The design presumes that any feedstock has a temperature of at least 5°C and at most 30°C when loaded in the feeding systems or buffer tank.

The AD plant is defined as a system for the generation, storage and utilisation of biogas. The biogas is generated through the microbiological formation of methane during the decomposition of organic substances.

With the proposed feedstock the following data has been offered by the supplier of the CHP Unit:

Electrical output: 2000 kW at a cos φ 1
Heat Output (without exhaust heat recovery)**: 1043 kW
Heat Output (with exhaust recovery)**: 1953 kW, at an exhaust heat exchanger of 180 °C
NOx emissions: 500 mg/Nm³ (@5% O2)
CO emissions: ≤ 1400 mg/Nm³ (@5% O2)
Further details can be found in Appendix Q Technical Documentation.

The feedstock (substrates) is buffered and fed into the digester via suitable input systems as follows:-

5.1.3 FEEDSTOCKS

Liquid feedstock (DAF and Gylcerine)

Liquid and other pumpable feedstock are delivered into the designated sealed tanks which are linked into the Odour Management Centre associated with the chicken storage hall. Details are specified in the Odour Reports found in Appendix A to this document. The liquids are feed to the digesters automatically via pipework. Details can be seen on Drawing No. A2529UK_MONA-00-01.

Solid Feedstock (Chicken litter and biomass)

The chicken litter is stored in a building. The building (chicken hall) is only opened when a load is delivered, pushed by a wheel loader to the push walls and then

opened again when the dung is taken out to be transferred to the feeding system which are located 20m from the chicken hall. The building will has Odour Management Control. Further details are given in Appendix A.

It is proposed to take approximately 35 tonnes of chicken litter per day from the chicken litter shed and evenly split between the two primary digesters via the two respective hoppers. Each bucket load of litter removed from the building will equate to just over one tonne with an estimated cycle time one minute per bucket (ie to load bucket, travel 20m across yard, tip bucket into the feed hopper, return to storage hall and re load bucket). It has been estimated that it will take approximately 45 minutes per day for the chicken litter is being loaded and unloaded. Once the loading has been completed the doors to the chicken shed and lids to the hoppers closed and therefore minimise any escape of odours or bioaerosols.

The Biomass is stored within specially designed silage clamps which are covered, and will only be accessible at one end where material is taken to the feeding system. To avoid losses, the opening will be kept as small as possible and carefully be cut. Once the silage has been accessed for the feeding cycle, it will be recovered to protect it and therefore minimise any escape of odours or bioaerosols.

It is estimated that approximately 26 tonnes of silage will be used per day (at peak rate). Approximate cycle time of one minute which equates to loading time of approximately around 30 minutes per day. Each feeder hopper will be open for a maximum of one hour per day. There are two hoppers but only one is open at a time. A wheel loader takes the silage from the open end to the feeding system. The operator will layer the chicken litter and silages such that they enter in a mixed form into the digester. The hoppers will be fitted with odour deneutralizer spray bars which are activated when the lids are open.

The solid feedstocks are fed automatically into the digesters as shown on the site layout plan A2529UK_MONA-00-01.

DETAILS OF THE AD PROCESS

5.1.4 The first and most active stage of the anaerobic digestion process takes place in the digester, the biogas flows from here into the gas-storage dome on the post-digester. The control of the biological process is focused on stability, i.e. very careful feeding and monitoring of changes in key parameters like

- FOS/TAC in particular when changes to feedstock input are made.
- Power consumption of the agitators.

There is also a stream of digestate from the digester to the post-digester, where the process continues. The design of the digester and postdigester agitators allows the system to cope with Dry Matter (DM) levels of 8 to 15% and 6 to 10% respectively. The DM level in the storage tank shall not exceed 6%.

Liquid digestate is a valuable organic fertilizer and can be traded, as it has been subjected to the required treatment process to be passed as PAS 110.

The biogas after a conditioning and desulphurization will be used in the CHP unit. The thermal heat needed for the digestion process will be delivered by the hot water cooling system of the CHP connected to the heating distribution system in the plant room.
The electricity produced by the CHP is fed into the local electricity grid.

5.1.5 PROCESS CONTROL

The AD plant is highly automated and alarm systems installed as standard on all the relevant processes. In emergencies, the plant operator (including the technical provider) are alerted who can access the central supervisory system for further diagnosis.

The technical provider being on standby to provide any relevant assistance. The service packages provided by the technical provider cover both technical and biological services assistance and are tailored to the specific AD plants' needs. Packages include

- daily or weekly remote monitoring of the process

- recommendations for improved biological and overall operation,
- monthly or quarterly inspections of the operation with report
- recommendations for parts replacements.

5.1.6 SITE RECEPTION

PROCESSING LIMITS ON WASTE

When the site is in full production (on completion of Phase 2) the maximum tonnages of wastes to be processed by the facility during any one year could reach 50,000 tonnes which equates to >100 tonnes (for the purpose of recycling) per day, which the AD Plant will comfortably cope with. The system has been designed to accept a feedstock of biomass, chicken litter, DAF and glycerol. The outputs, in tonnes per year, from the site will be subject to the composition of the received waste.

The 50,000 tonne limit does not include non waste (biomass) eg maize or rye crop.

The applicant is proposing a two phased approach. Phase 1 will not include the dryer and composting elements of the scheme. It will just consist of the AD unit and CHP (and emergency flare). Phase 2 will include the additional activities and associated infrastructure for the dryers and composting units. The maximum daily tonnage for Phase 1 will be limited to a maximum of 36.4 tonnes (which equates to 13,200 tonnes per annum). This is based on the available digestate storage capacity to be provided currently on site under Phase 1. The post disgester and storage tank each having a storage capacity of 3280m^3. A further variation application will therefore be submitted to NRW prior to the commencement of Phase 2 to cover the additional activities, and to increase maximum waste input of 50,000 tonnes per annum *(max 136 tonnes/day) as the digestate will be subjected to a drying process. Details of which will be included in the Phase 2 application.

5.1.7 PERMITTED WASTE AND MATERIALS (FEEDSTOCK) FORM AND TYPES

Non-hazardous waste and biomass will be accepted at the site for processing. The total annual tonnage may comprise of any combination of the feedstocks detailed in the permit listed at Appendix F. The listed wastes are classified under European Waste Codes according to Council Decision 2000/532/EC. However the current

proposal has been designed on the following breakdown of feedstocks (including waste and non waste materials)

Proposed Feedstocks (based on full production (based on facility's full production*)

Input materials	Input quantity tonnes/year
Dairy DAF(waste)	25,000
Chicken litter (waste)	12,000
Glycerol	3,000
Biomass Rye Maize	10,000
Total input	**50,000**

EXCLUDED WASTES

Notwithstanding the permitted waste types in Appendix F, the site will not accept the following general types of waste:

- Clinical waste
- Hazardous wastes;

Wastes will be excluded or rejected from the site where they display the following hazard properties defined in Schedule 3 of the Hazardous Waste (England and Wales) Regulations 2005 as amended.

- HP1 Explosive;
- HP3A Highly flammable
- HP9 Infectious – except wastes falling within the scope of the Animal By-Products (England and Wales) Regulations
- HP10 Teratogenic
- HP11 Mutagenic
- HP12 Substances or preparations which release toxic or very toxic gases in contact with water, air or an acid

All materials accepted at the site will be assessed in accordance with the procedures detailed below.

5.1.8 WASTE AND MATERIAL STORAGE

Incoming waste and materials will be stored within the designated storage containers; solid waste ie chicken litter within designated chicken storage hall. Liquid wastes (DAF) will be stored within sealed tanks. Biomass will be stored in silage clamps. Glycerol which is bought in as a product, is stored in designated sealed tank.

Quantities of waste and materials stored will not normally exceed those specified in Table 1 below.

Table 1 Quantities of incoming materials in Storage

Reception Hall Storage	Maximum Quantity
Liquid feedstock: Dairy DAF A (waste) Dairy DAF B (waste) Gyclerol: (**Non waste)**	X2 120m^3 storage tanks giving a holding capacity of at least 3 days X2 80m^3 storage tanks giving a holding capacity of at least 3 days Tank 90m^3 giving holding capacity of at least 3 days
Solid waste: Chicken litter (waste)	Chicken litter reception hall Dimensions 16m x6m x6m giving holding capacity of at least 3 days
Imported biomass stored in the on-site silage clamps (vertical wall silage panel system) **Seasonal feedstock** (**Non waste)**	Each clamp offers about 2.0m^3 storage. Depending on the crops and their harvest timing as will occur in operations, this allows 9 to 12 months of storage, assuming volumes of crops between 6.000 to 10.000 t/a and using compression density of 0.75 t/m^3.

6 SITE INFRASTRUCTURE

6.1.1 The site infrastructure will briefly comprise:

- Silage clamps for the biomass
- Chicken litter receptor shed
- Liquid feedstock storage buffer tanks, ancillary equipment and secondary containment (for DAF and Gylcerol)
- Solids feeding system (lidded hoppers x2)
- Digester tanks, ancillary equipment and secondary containment
- Digester technical building
- Post digester tank/ Storage tank, ancillary equipment and secondary containment and double membrane gas storage unit
- Air ventilation system with biofilter
- Primary fermenter tank
- Secondary fermenter tank
- Weighbridge
- Site office and Welfare facility block.
- External areas of impermeable hardstanding (tarmac surface and concrete bund walls)
- Gas engine generator (Combined Heat Power Unit) CHP and associated active carbon filter)
- Emergency Biogas flare
- Associated pumps and pipework
- Leachate tank and associated equipment
- Impermeable pavement for vehicle movements and pedestrian pathways.

Further details can be found in Appendix N Technical Infrastructure Report

7 DRAINAGE

7.1.1 Drawings 2341/PH2/6000 and 2341/PH2/6003 show the drainage for the main area of the site and the storage lagoon.

7.1.2 The site is served by three systems:

A) Uncontaminated Surface Water Drainage, collecting:
- Access road and hardstanding
- Roof drainage
- Empty and clean silage clamps
- Tested and clean containment area runoff

B) Leachate Drainage, collecting:
- Silage clamp runoff
- Un tested or polluted containment area runoff
- Reception building floor
- Dairy products off-loading area

C) Foul Drainage, collecting:
- Domestic effluent from the office welfare facility

7.1.3 There are valves within certain areas of the surface water and leachate systems which allow the operator to control the direction of flow subject to the water quality. The sections below describe the networks in more detail.

Uncontaminated Surface Water

7.1.4 The system discharges into the adjacent watercourse at a controlled rate of 5l/s. Control is achieved by the installation of a vortex flow control device on the outfall. Upstream of the outfall is a lined storage lagoon with capacity to attenuate flows for 1 in 100 Annual Event Probability rainfall. The outfall also contains a penstock which can be closed to retain surface water within the on-site system.

7.1.5 The containment area is drained by a single large gulley which connects to an 8,000 litre holding tank. The valve connecting the containment area to the SW system will

normally be closed. Rainwater will either be held in the tank or directed to the leachate holding tank. If confirmed clean the water will be directed to the surface water system. The assessment of the surface water attenuation storage requirement allows for the containment area runoff. This is a conservative approach.

7.1.6 The access road drains into a filter strip and yard areas drain via trapped gullies, and all drain through a full retention petrol oil interceptor towards the storage lagoon.

Leachate Drainage

7.1.7 The leachate drainage is held in an 80,000 litre storage tank, from where it is pumped into the AD process.

7.1.8 Silage Clamps- The silage clamp volume is 8,925m3. They are drained by central trapped gullies, with a cut off drainage channel at the clamp entrance. Normally leachate and rainfall runoff will be directed to the leachate holding tank. Penstocks are provided on each of the connections so that clean runoff can be directed to the surface water system.

7.1.9 A perimeter open channel around the outside of the silage clamp base is connected to the leachate system.

7.1.10 Reception Building- A single trapped gulley to collect wash-down or leachate is connected to the leachate system.

Liquid Discharge Point

The designated tanker connection point drains to a trapped gulley which is connected to the leachate storage tank. Refer to Appendix N (Technical Documents) for specification of the design

Foul Drainage

7.1.11 Domestic effluent from the welfare facilities will drain to a cess tank which will be regularly emptied by the operator.

7.1.12 All drainage from delivery, storage and dispatch areas will be captured and returned back into the system where possible. The bulk of the surface water drainage will also be captured for process use.

7.1.13 The drainage at the facility has been designed to prevent uncontrolled discharges from the site. Appropriate pollution prevention measures have been incorporated into the drainage design.

7.1.14 Site bunding will be in line with EA/NRW requirements. All bunded areas will have impermeable surfaces with sealed construction joints. The bunded area will have a capacity of at least 110% of the largest vessel or 25% of the total tankage volume, whichever is the greater. Connections and fill points will be within the bunded area and no pipework will penetrate the bund wall. Any underground tanks will have secondary containment. The site will have internal and external bunded areas as shown on Drawings in Appendix O.

7.1.15 Level Control

Digester

Each digester tank is equipped with a radar sensor, which is mounted in the digester roof. This sensor has two lower switch points (SL, ZLL) and two upper switch points (SH, ASHH).

The switch points SL / ZLL and SH control the digester pump, which is started if the level increases above SH and pumps the substrate from the digester to the post digester.

If ASHH is reached the feeding stops.

Additionally to this level control there is a capacity sensor in the digester roof. This sensor acts as second line of defense. In case of an overfill alarm a hardware contact turns off the feeding pumps.

As third overfill safety a hydrostatic sensor is mounted in the lower part of the tank. This measurement acts as safeguard for the hydrostatic level control.

Post Digester

The post digester tank is equipped with a hydrostatic level control, which measures the pressure near the bottom of the tank. This sensor has one lower switch point (ASL) and two upper switchpoints (SH, ASHH).

The switch points SL and SH control the post digester pump, which is started if the level increases above SH and pumps the digestate from the post digester to the separation unit.

If ASHH is reached the feeding stops.

Additionally to this level control there is a vibration sensor mounted in the upper part of the post digester. This sensor acts as second line of defense. In case of an overfill alarm a hardware contact turns off the feeding pumps.

Storage tank

The storage tank is equipped with a hydrostatic level control, which measures the pressure near the bottom of the tank. This sensor has one lower switch point (ASL) and an upper switchpoint (ASH).

The switch points SL stops the post digester pump, in case the level drops below the allowed minimal level.

If ASH is reached the feeding stops.

Additionally to this level control there is a vibration sensor in the upper part of the post digester. This sensor acts as second line of defense. In case of an overfill alarm a hardware contact turns off the feeding pumps.

8 RECORD KEEPING

8.1.1 The details in this section will be recorded on a combination of the record keeping forms listed in Appendix II, invoices and the site diary.

8.1.2 Records will be kept in paper/electronic format.

8.1.3 The following details will be recorded for every load deposited at the site (i.e. record form MON/RF/1):

i) The date and time of delivery.
ii) The name and address of the waste producer.
iii) The detailed and accurate description of the waste including type, quantity (in tonnes and/or cubic metres) and EWC codes.
iv) How the waste is contained e.g. loose, container type.
v) The carrier's name and address.
vi) Driver's name, signature and vehicle registration No.
vii) Signature or initials of person(s) producing/ accepting/ inspecting/ carrying the waste.
viii) Additional handling details/notes made by the driver after inspection of the load.
ix) SIC code of the premises which produced the waste (where relevant).
x) Waste hierarchy declaration.
xi) Information on previous treatment of the waste e.g. manual or mechanical (if relevant).

8.1.4 The following details will be recorded for all deposits of non-conforming waste at the site and will be forwarded to NRW, where required (i.e. record form MON/RF/2):

i) Date and time of deposit.
ii) A detailed, accurate description of the waste including type and EWC code.
iii) The quantity of waste (in tonnes or cubic metres).
iv) How the waste is contained e.g. loose, container type.

v) Name, address and telephone No. of waste producer.
vi) The carrier's name, registration number and vehicle registration.
vii) Signature or initials of persons who produced, accepting/inspecting and carrying the waste.
viii) Reason for the rejection of waste and action taken.

8.1.5 The following details will be recorded for every load of waste leaving the site (i.e. record form MON/RF/3):

i) The date and time of removal.
ii) Detailed and accurate description of the waste including type, quantity of waste (in tonnes or cubic metres) and EWC codes.
iii) How the waste is contained e.g. loose, container type.
iv) The destination waste management site or exempt facility.
v) The name and registration No. of the carrier or employee removing the waste (if applicable) and vehicle registration No.
vi) Signature or initials of persons i.e. transferor, transferee and carrier of the waste.
vii) SIC code of the premises transferring the waste.
viii) Waste hierarchy declaration.
ix) Type of treatment waste subjected to (if relevant) e.g. manual, mechanical.

8.1.6 Multi load transfer documentation where relevant may be used to record on going waste streams.

8.1.7 A summary of waste types and quantities deposited at and removed from the site and origin and destination details are then forwarded to NRW using the standard Generic Operator Returns electronic spreadsheet(s), with submission due within one month of the end of each quarter as below:

a) Quarter 1: January to March (due on or before 30th April)
b) Quarter 2: April to June (due on or before 31st July)
c) Quarter 3: July - September (due on or before 30th October)

d) Quarter 4: October - December (due on or before 31st January of the following year)

8.1.8 Outcomes of inspections of waste types, hardstanding areas, transfer/treatment areas, storage areas, drainage channels, interceptor, etc., will be recorded on site inspection form MON/RF/4 and detailed comments will be entered into the site diary (including action taken or proposed).

8.1.9 Visitors to the site will sign the visitor's book upon arrival and exit stating the purpose of their visit and whom they represent (MON/RF/5).

8.1.10 Complaints will be recorded on form MON/RF/7 (see section 4.9).

Weighing and categorising loads

8.1.11 The weight of each load into and out of the site will be weighed using the site's weighbridge to obtain accurate data for the purposes of providing waste returns and tracking the annual throughput of waste.

9 ENVIRONMENTAL CONTROL, MONITORING AND REPORTING

Breakdowns and spillages

9.1.1 In the event of breakdown of the loading plant, an alternative machine will be brought on site until it is repaired. If an alternative machine cannot be used then waste will be stored securely until the plant is repaired. The repair will be carried out at the most convenient location with absorbents used to clear oil or fuel spillages.

9.1.2 All site surfaces will be inspected daily when the site is in operation. Debris will be swept as required and placed in a skip for disposal to a suitably permitted site.

9.1.3 Any spillages of fuel/oil will be cleared immediately by depositing sand or absorbents on the affected area. The sand or absorbents will be placed in a skip to be taken to a suitably permitted site for disposal. All spillages of waste and windblown litter will be cleared by the end of the working day in which they occur. Sand and absorbents will be stored on site.

9.1.4 All drainage from delivery, storage and dispatch areas will be captured and returned back into the system where possible.

9.1.5 The drainage at the facility has been designed to prevent uncontrolled discharges from the site. Appropriate pollution prevention measures have been incorporated into the drainage design.

9.1.6 All wastes liable to give rise to contamination will be removed from the site if the site is not secure or if operations cease or are temporarily suspended.

Site inspections and maintenance

9.1.7 The inspection frequencies for maintenance/housekeeping are listed on record form MON/RF/4. The inspection form will be completed by a person who is familiar with the requirements of the management system and permit for the site. All details of defects, problems and repairs carried out will be recorded on the form on the day that each event occurs. Detailed comments may also be recorded in the site diary.

All repairs will be carried out within 5 working days unless agreed otherwise with NRW.

9.1.8 All repairs to site security including gates and fencing will be made within 5 working days of the discovery of the damage and the site will be made secure until the repair has been carried out.

9.1.9 Any major defects found during the daily site inspection which are likely to lead to a breach of permit conditions will be repaired by the end of the working day in which they are found, where possible. If a repair is not possible by the end of the working day and a potential breach of permit conditions may occur, the Environment Agency will be contacted to agree a suitable timescale for repair.

9.1.10 All defects and problems likely to give rise to pollution will be recorded on the form MON/RF/4 with repairs/solutions being carried out immediately.

9.1.11 Essential spares for plant maintenance are kept on site in the workshop/store.

Control of mud and debris

9.1.12 Vehicles will be visually inspected before exit to check that loads are safe and that no mud is carried out on the wheels or body of the vehicle. Visual inspections of the site roads are carried out daily (see MON/RF/4), however, staff will report any problems with mud or debris on the site roads immediately to the site manager.

9.1.13 The length of surfaced haul road which each delivery/collection vehicle must track to egress the site should be adequate to ensure that any residual materials on the wheels or chassis of the vehicles should be shed upon exit. All site roads will be kept free from mud/debris to ensure maximum efficacy.

9.1.14 The deposit of material on the access road or public highway will be treated as an emergency and will be cleared immediately by the operator using either a brush and shovel or vacuum tanker/road sweeper if necessary. Silt will not be washed into roadside drains or gullies.

Control and monitoring of dust

9.1.15 A series of dust mitigation measures will be implemented on site to ensure dust emissions are controlled as far as is practically possible. A Dust Management Plan has been written for the proposed activities which gives details of the procedures which will be in place to control dust, fibres and particulate matter emissions. Copy of the Dust MP is located in Appendix C and contains more detail. The measures include as a minimum:

- Sheeting of vehicles delivering waste to the site (if necessary);
- sheeting of vehicles transporting potentially dusty loads off site;
- Storing solid feedstocks under cover (eg chicken litter shed, covered silage clamps)
- Minimise the distance the material is being hauled on site
- use of uncontaminated water to damp down vehicle running surfaces, cleaning of any spillages using wet cleaning methods;
- drop heights ALWAYS minimised to prevent dust emissions.
- Good housekeeping ensuring the site yard areas are kept clean regularly brushed and the reception hall emptied and cleaned at least weekly.

9.1.16 Chicken litter will be delivered to the site in covered trailer and tractor units. Rye which is harvested late June/early July and maize late October /early November will be delivered to site in 10-12 tonne loads by farm tractor and trailer rigs, the load will be sheeted to minimise dust emissions. The biomass will generally have a relatively high moisture content which reduces the risk of dust emissions but measures will be in place to ensure any emissions are kept to a minimum. The remaining feedstocks are liquid (DAF effluent and Gyclerol).

9.1.17 When moving any potential dusty materials to the feeding hoppers the material will be carefully loaded from the storage stockpile by bucket loader and taken directly to the feed hopper ensuring the lid of the hopper is opened as soon as the load is ready to be deposited thus reducing the risk of dust being released.

9.1.18 Site operatives will continuously monitor dust emissions whilst the site is in operation and will report back to the site supervisor for advice if required. The site supervisor will make a formal visual inspection of dust emissions at least twice daily. Results of monitoring will be entered into the site diary / record forms.

9.1.19 A permanent water supply is available on site in all climatic conditions to ensure that the dust suppression systems can function effectively. Any external water pipes will be lagged to prevent frost damage during winter months.

Odour control

9.1.20 There is potential for odour to arise during the storage and handling of feedstock and for the digestate during loading from the Post Digester and Storage tank to the tank lorry. Chicken litter will be delivered in sheeted trailers as described above and deposited into the designated shed which has fast acting roller/shutter doors. An Odour Control System (OCS) will be used to control odours arising from the DAF tank vents and chicken litter shed with a residual exhaust air vented via a vertical flue located adjacent to the chicken litter storage shed. The other feedstock materials handled on site include glycerol which is odourless and DAF effluent, the latter being delivered in sealed tankers unloaded to an enclosed tank via delivery line and are connected to the OCS. The biomas will be delivered to site in covered trailers and deposited into covered and contained silage clamps x3 which have been constructed as close as possible to the two feed hoppers serving the digester tanks. The clamps will only be open at one end to enable loading and unloading and will be closed again as soon as the loading/unloading has been completed. The digester tanks, post digester tank and storage tank are all covered tanks designed to be fit for purpose as shown in the Technical Provider technical specification data. Transfer of digestate between the storage tanks is via sealed pipeline.

9.1.21 Measures in place to ensure the site present a low risk of odour nuisance include as a minimum:

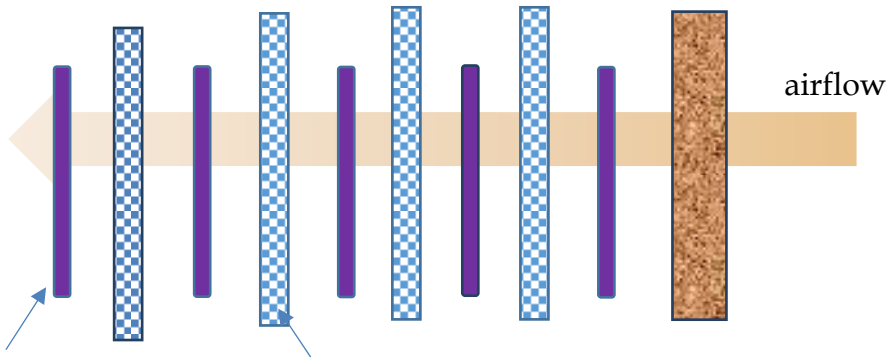
a) The containment of waste within the site (coverage silage clamps), (chicken litter stored in a purpose built shed which has fast closing doors, negative pressure system and Odour Control unit,

b) strict turnaround times for any wastes which could give rise to odours and

c) the inclusion of Odour Control Units on the waste reception area ie chicken litter shed and the liquid feed vessels will mean the site will present a low risk of odour nuisance. Air purification system. iPUR-Air Unit uses Technology: Photocatalyst destruction of organic species in air and liquids.

9.1.22 The Ipur-Air system does not capture odours nor does it use bacteria to break the odourous molecules. Instead it allows the foul air to pass over an activated catalyst where odours are destroyed in much the same way as by the bacteria but in a shorter time.

The catalyst coating is held on a multi-layered 600mm x 600mm cartridge which has a 3mm honeycomb outer layer holding foamed glass beads in a 50mm thick sandwich. This washable, lightweight, cartridge has all its very large surface area coated in catalyst. Air passes through in an unrestricted fashion at a known air speed. Contact times are designed to allow reactions to take place.
Each layer of four cartridges has a set of UV-C lamps providing the activation energy before and after each cartridge section. In this case we would have five sets of lamps driving four layers of cartridge.
The front section of the unit has a set of dust filters to prevent the catalyst layers being covered with debris. These require washing periodically or can be made disposable. The complete enclosure is manufactured in Stainless Steel.
The only other maintenance is a yearly exchange of cartridges and UV lamps.



9.1.23 As A Odour Modelling Assessment (OMA) has been undertaken in support of the application to vary the environmental permit. The assessment has been undertaken to predict the potential odour impacts at surrounding human receptors as a result of the proposed operations. Detailed dispersion modelling has been undertaken to predict the likely resulting ground level odour concentrations, which have been compared with the relevant assessment criteria. The Report has summaries the findings and any recommendations will be taken on board by the applicant. A copy of the report has been placed in Appendix A.

9.1.24 An Odour Management Plan has also been produced for the proposed operations taking into account the findings of the OMA. Therefore further details of the measures proposed can be found in the OMP included in Appendix A.

9.1.25 Olfactory assessments will be carried out daily and results recorded on the inspection form for the site (i.e. record form MON/RF/4).

9.1.26 The complaints procedure in record form MON/RF/7 will be rigorously enforced should a third-party complaint be received from a public or private source.

Litter control

9.1.27 Given the nature of wastes accepted at the site it is very unlikely that there will be a problem. The risk to low/negligible.

Control of pests, birds and other scavengers

9.1.28 The operator holds a pest-control contract to check the site for the presence of vermin periodically.

9.1.29 The site will be inspected daily for the presence of vermin and the results of the inspection noted in the site diary or site inspection form. If any occurrences are noted, the pest control officer will be called to site within 48 hours to eradicate the problem.

Control and monitoring of noise & vibration

9.1.30 The nature and infrastructure proposed including insulated acoustic enclosures, in closed tanks, restricting operating hours for certain operations and its rural location setting will keep any potential noise nuisance to a minimum. The nearest potentially affected noise-sensitive locations are residential dwellings approximately 160m and 250m from the proposed facility. A noise survey has been carried out related to operation manoeuvering, arrival and dispatch of delivery vehicles, and the sources of noise associated with the processing and plant operation of the AD facility. Copy of the report will be attached in Appendix B.

9.1.31 The table below identifies the likely sources of noise arising from the site activities and, the actions to be taken / procedures to be followed or planned in order to prevent or minimise levels.

Table 4: Noise Management

POTENTIAL NOISE SOURCE	*ACTION TO BE TAKEN TO PREVENT OR MINIMISE NOISE*
HGVs travelling to and from the site for delivery/collection of wastes/products.	- ***All vehicles are required to be driven onto and off site with due consideration for neighbouring premises.*** - ***HGV movements will be spread out evenly throughout the day.***
Loading/unloading of waste delivery vehicles	- ***Vehicles must be well maintained and operated with silencers. Moving parts to be regularly lubricated. All vehicles must be driven slowly around the site (5mph site speed limit).*** - ***Engines to be switched off when not in use.*** - ***Reversing alarms to be preferentially fitted with white noise alarms to minimise impacts on neighbouring sites.*** - ***Drivers must lower the tipper body for inert waste deposits before driving away from the reception area.*** - ***No shaking of vehicle bodies whilst raised.***
Small vehicles travelling to and from the site (e.g. staff and visitor's cars, courier van deliveries etc.)	- ***All those working on and visiting the site to be made aware of need for considerate driving and keeping vehicles well maintained.*** - ***Small vehicles will arrive marginally earlier than the main site operating hours.***
Plant & Machinery	- ***Full noise and vibration assessment has been carried out and recommendations taken on board.***

Complaint procedure

9.1.32 All complaints will be recorded on form MON/RF/7 and will include a record of the complaint, particulars of the complainant and details of any action taken to alleviate the problem.

10 EMERGENCY PROCEDURES

General

10.1.1 In addition to obligations imposed by RIDDOR '95 (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995) the permit holder will notify the Environment Agency of any serious injuries to employees of Grays Biogas Ltd, other site users or members of the public arising as a result of operations on site. Minor injuries such as cuts and grazes etc. will be recorded in the accident book on site. Separate procedures will be used for different types of emergency. An emergency at the site is defined by the site management as follows:

"Any incident which is likely to result in harm to human health or pollution of the environment or serious breach of permit conditions and serious detriment to the amenities of the locality."

10.1.2 For all emergency situations, the deposit of any further waste will be suspended where necessary to allow action to be taken safely. If necessary, staff and other users of the site will be evacuated to an area which is a safe distance away from the hazards. Staff handling the emergency will be provided with and trained to use the necessary PPE (personal protective equipment) unless the manager instructs them that the hazard is too severe and outside help is needed from the emergency services or specialist waste contractors. A visitor's book will be kept to check who is on site at all times.

Fire

10.1.3 Full details of fire prevention and response procedures are found in the Fire Prevention Plan (FPP) which accompanies this EMS (Doc. Ref. 3407/819/FPRP).

10.1.4 No waste will be burnt on site other than in plant specifically designed for the purpose and in accordance with the relevant statutory instruments. In the event of a fire occurring on site, the operator/site supervisor will exercise his judgement and extinguish the fire with the water hose or suitable fire extinguisher and/or call the fire service for assistance. Any fires will be reported to NRW on the working day that they

occur and will be confirmed in writing by fax or letter within 3 working days. All staff will be evacuated from the site if necessary.

10.1.5 Smoking is not permitted on site.

10.1.6 All firefighting residues will be disposed of to a permitted waste management facility.

10.1.7 For quick reference, the following actions will be taken when fire is detected or suspected (Site operatives):

A. DON'T PANIC

B. RAISE THE ALARM (IF NOT DONE SO ALREADY)

C. NOTIFY THE SITE MANAGER (IF SAFE TO DO SO)

D. DO NOT TRY TO TACKLE THE FIRE YOURSELF UNLESS YOU ARE TRAINED IN DOING SO AND YOU ARE SURE OF THE NATURE OF THE FIRE

E. LEAVE THE BUILDING USING THE NEAREST EXIT (I.E. FIRE DOOR OR ROLLER SHUTTER DOOR) AS QUICKLY AND AS ORDERLY AS POSSIBLE

F. ASSEMBLE AT THE SPECIFIED FIRE ASSEMBLY POINT WHICH IS LOCATED BY THE SITE ACCESS GATES.

G. THE SITE MANAGER OR DELEGATED OPERATIVE WILL BE IN CHARGE OF CALLING THE EMERGENCY SERVICES ON "999" AND ENSURING THAT ALL PERSONS WHO WERE WORKING IN THE BUILDING ARE ASSEMBLED SAFELY

H. INFORM ALL NEIGHBOURING PREMISES WHO ARE LIKELY TO BE AFFECTED

I. DO NOT RETURN TO THE SITE UNTIL YOU HAVE BEEN GIVEN THE 'ALL CLEAR' BY THE EMERGENCY SERVICES AND THE SITE MANAGER

Spillages

10.1.8 All fuel stores on site are bunded to contain any fuel leaks. If oil and vehicle maintenance chemicals are kept on site these will be stored securely. If any spills occur a spill containment kit (absorbent pads, booms or granules) will be used to prevent further spillage and the contaminated absorbents placed in a skip for disposal to a suitably permitted landfill.

10.1.9 Waste feedstocks which would be classified as having the potential to cause polluting runoff are stored under cover and on engineered concrete hardstanding which have sealed drainage systems. Refer to silage clamp infrastructure and litter shed for further details in Appendix N.

10.1.10 The site infrastructure technical specification ensures the facility has valves within relevant areas of the surface water and leachate systems which allow the operator to control the direction of flow subject to the water quality. The drainage at the facility has been designed to prevent uncontrolled discharges from the site. Appropriate pollution prevention measures have been incorporated into the drainage design.

Operational failure

10.1.11 The manager will be contacted by staff in the event of any operational failure such as the breakdown of plant, systems or equipment and will decide whether operations are to continue or be suspended prior to corrective action being taken. Serious operational failures, which result in the closure of the site, will be recorded in the site diary.

Bomb scare

10.1.12 In the unlikely event of a bomb scare, the site will be evacuated and the police contacted. The police will then assume control of the site until the threat has been verified or the device defused and removed. NRW will be kept informed of the events on site.

11 TRAINING FOR SITE STAFF

Training needs assessment

11.1.1 All new and existing site staff are subject to a specific training regime based on their responsibilities at the site to ensure all operations are carried out without harm to the environment or amenity of the surrounding area. Training in all aspects of the site and waste operations at the site with regard to the individual responsibilities of the site staff will help to prevent incidents occurring which may have an adverse impact on the environment and/or the employees and their co-workers.

11.1.2 An employee training record (i.e. MON/RF/12 in Appendix II) shall provide a comprehensive checklist for the training needs of all new site staff and also serves as a training review for existing site staff which will be carried out annually or a period set at the operator's preference.

Site rules and infrastructure training

11.1.3 This information will be provided to all employees, visitors and contractors with a full understanding of the site's conditions of use, which will be communicated and documented at induction for all staff with specific induction for visitors and contractors.

11.1.4 Competency should be demonstrated within this field to ensure the employee is fully aware of the site's surroundings and operations to ensure their safety and compliance with specific operating conditions at the site.

Emergency procedures training

11.1.5 All employees will be required to be familiar with the Environmental Controls and the Emergency Procedures for the site.

11.1.6 In addition to normal operating conditions as specified in the site rules, employees must also be trained in dealing with eventualities which may occur outside the scope of normal operating conditions, so they are aware of how to deal with these situations in advance of an occurrence.

Fire safety / firefighting training

11.1.7 Management must provide all employees with appropriate fire safety training with regard to their individual responsibilities.

11.1.8 Emergency procedures detailing what measures employees should adopt should a fire occur at the site as detailed in Section 10.1.17 and will be covered by the 'emergency procedures' training.

11.1.9 Regular fire drills will be undertaken by site management to ensure proper procedures are followed by employees in the unlikely event that a fire incident occurs. These will be unannounced drills and will not form part of the induction or review training.

Recognition of waste types training

11.1.10 All employees will be given induction training and subsequent regular training to identify those waste types which are permitted for acceptance at the site under the site's Environmental Permit and those wastes which are not. All employees will be advised that they should refer any unrecognisable or unknown wastes to senior management, who should, in turn, follow procedures outlined in the Management System and/or contact NRW to agree a suitable method for removal.

11.1.11 This training will be provided to all site users who handle waste on site and those in charge of administration and reporting.

Storage areas / limits training

11.1.12 Those employees who carry out their responsibilities at the site and those in senior posts must be trained to identify appropriate waste storage areas to ensure that waste storage operations comply with the requirements of the Environment Permit for the site.

11.1.13 Employees in these roles must also be trained to recognize storage limits to ensure that they are in accordance with those specified in the site's technical specification and in the management system.

Vehicle / plant preventative maintenance training

11.1.14 This training is provided specifically for the vehicle and plant operators in order to ensure that all plant and machinery is checked regularly to prevent any occurrences which may lead to any adverse impacts on the environment or human health.

11.1.15 Training will be in accordance with Section 1.1.5 of this document and will be based on the preventative maintenance schedule supplied by the plant/equipment manufacturer.

11.1.16 The same training will be provided to senior management enabling a dual-level maintenance programme.

Duty of care training

11.1.17 All employees dealing with consignments of waste will be trained in the completion of Duty of Care Waste Transfer Notes and the appropriate auditing of destination sites and/or contractors to ensure compliance.

Plant operation training

11.1.18 Any employees who are required to operate loading or treatment plant for the movement or processing of waste will be required to undertake the necessary qualifications for the operation of the specific item of plant in question. This will be required prior to operating the plant and will be obtained through necessary external certification programmes.

11.1.19 Regardless of general plant operation certification, all operatives will be fully inducted in the operation of the specific make and/or model of plant used on site.

Permit / management system training

11.1.20 All employees will be inducted into the operating conditions as prescribed in the Environmental Permit for the site. Whilst much of the above training will provide specific guidance on many aspects of these documents, all employees will be made aware of the location of the Environmental Permit in the site office. All managerial positions will be made fully aware of the site's operating conditions.

Training for contractors

11.1.21 General site training will be provided to any contractors who are working on the site on a temporary basis.

11.1.22 Additional training will be provided to contractors in their area of expertise. If they are dealing with specific items of plant/machinery, site operating conditions and a general understanding of the Environmental Permit conditions will be provided to prevent any adverse impacts on the environment.

Best Available Techniques for Installation Activity

11.1.23 The Environmental Permitting (England and Wales) Regulations (2010) define BAT as:

"The most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and where that is not practicable, generally reduce emission and the impact on the environment as a whole."

11.1.24 The EA's H1 Annex K - Cost Benefit Analysis guidance3 further defines the component parts of BAT as:

- "Best" – means the most effective techniques for achieving a high level of protection of the environment as a whole;
- "Available" – means techniques developed on a scale which allows them to be used in the relevant industrial sector, under economically and technically viable conditions, taking into account the costs and advantages; and,
- "Techniques" – includes both the technology and the way the installation is designed, built, maintained, operated and decommissioned

12 BAT ASSESSMENT

12.1.1 BAT may be demonstrated by either:

a) Compliance with the sector-level, indicative BAT performance described in the Sector Guidance Notes produced by the EA and in the European Commission 'Reference Documents on BAT' (BREFs); or,

b) Conducting an installation-specific, options appraisal of candidate techniques. The indicative BAT provided in the European BREF documents is based on an analysis of the costs and typical benefits for typical, or representative, plants within that sector. When assessing the applicability of the sectoral, indicative, BAT standards at the installation level, departures may be justified on the grounds of the technical characteristics of the installation concerned, its geographical location and the local environment

12.1.2 The following areas have been considered under the relevant sections of

a) BREF Waste Treatment Industries (August 2006);

b) Draft RGN (EA 2013) How to comply with your environmental permit.. Additional guidance for: Anaerobic Digestion; and

c) BREF Waste Treatment Draft 1 (December 2015)

d) Getting the basics right – how to comply with your environmental permit (GTBR)

12.1.3 Table 1. below sets out the Site operations and references them to guidance which indicates that they meet BAT requirements either general or sector specific.

Table 1. Showing Site Operations Meet BAT plus reference to relevant guidance.

General Consideration	Specific Topic	Proposal	BAT/BREF
General Management of Facility		Site has EMS in place meeting external audit requirements and all relevant inspection, maintenance, improvement and training targets.	✓ BREF (WTI 2006) RGN>>>AD.
Waste Acceptance Procedures	Waste Pre-acceptance	EMS includes waste stream pre-acceptance and characterisation in place meeting Indicative BAT. Ensures feedstock nutrients are balanced	✓ BREF (WTI 2006) 2.1.1 Draft RGN:AD 3.1.4
Waste Acceptance Procedures	Waste Acceptance	EMS includes waste acceptance procedures to ensure compliance with pre-acceptance characterisation meeting indicative BAT. Ensures feedstock is directed to correct storage/reception facility.	✓ BREF (WTI 2006) 2.1.1 Draft RGN:AD 3.2.2
Waste Acceptance Procedures	Waste reception and storage	Site has solid and liquid/sludge reception areas depending on physical properties of the waste. Storage tanks and solid waste storage areas are enclosed with odour treatment infrastructure. Appropriate procedures in EMS. Combine to Meet indicative BAT.	✓ BREF (WTI 2006) 2.1.1 Draft RGN:AD 3.3.12
Treatment	Loading	Semi continuous feed controlled via automated monitoring system for gas production and digestate strength. Meeting Indicative BAT	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 4.8.3

General Consideration	Specific Topic	Proposal	BAT/BREF
Treatment	Digestion Start-up	Plant commissioned by technology provider following protocol and subject to testing of automated control systems and manual checks on all infrastructure equipment and pipework. Meeting Indicative BAT	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 4.8.3
Treatment	Digestion Digester Mixing Digester heating	Semi continuous feed of solids liquids and sludges mechanical stirring wet digestion. Controlled via automated monitoring system for gas production and digestate strength, residual heat from gas engines used to maintain digester temperature. Meeting Indicative BAT	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 4.8.3
Biogas	Treatment and Storage	All biogas collected and stored in suitable tanks and flexible roof bags all pipe-work checked daily fixed automated gas detection and alarms in place full process telemetry to manage gas storage and use. All pressure release directed to enclosed flare. Flare available for occasional managed use during start-up and shut down. Meeting indicative BAT.	✓ BREF (WTI 2006) Draft RGN:AD 5.5

General Consideration	Specific Topic	Proposal	BAT/BREF
Energy Recovery	Electricity Generation Combine Heat and Power	The biogas is used to fuel a gas engine which will power a generating set which will generate around 16,800Mw of electricity and 16,400 Mw of heat per year. The electricity will provide power for the plant and the surplus is exported to the national grid. The residual heat is used to maintain the temperature of the digestors and optimise gas generation.	✓ BREF (WTI 2006) 4.2.7 Draft RGN:AD 6.7.1
Energy Recovery	Basic energy requirements.	The site will be built using energy saving techniques and incorporate insulation and monitoring and control of all aspects of the operation to minimise heat loss. All mechanical equipment will be well maintained through a programme of regular preventative maintenance.	✓ BREF (WTI 2006) 4.2.7 Draft RGN:AD 6.5.1 and 6.6.1
Digestate	Treatment and storage	Solids separated and stored in covered bay. Liquid digestate stored in bunded fixed tank all digestate will meet PAS 110 standards for use as fertiliser 190 days storage available to cover winter no spread periods.	✓ BREF (WTI 2006) 4.2.5 Draft RGN:AD 7.4.1

General Consideration	Specific Topic	Proposal	BAT/BREF
Emissions Control and Abatement	Emissions to Air	Biogas cleaned before use in engine emissions meet IED requirements. Fugitive emissions covered by odour management arrangements as these also capture potential bio-aerosols etc.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 7.5.2 and 7.5.4
Emissions Control and Abatement	Odour	Odour management plan includes odour control and monitoring procedures carbon and bio-filters on tank and building outlets.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 7.6.5
Emissions Control and Abatement	Dust/Litter/Vermin/Light Noise and Vibration	Fugitive emissions management plan in place. Light pollution dealt with as part of original planning application. Vermin management in EMS. A full noise and vibration assessment has been carried out. Noise and Vibration Management Plan in place	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 7.12.1
Management	Technically Competent Management	Two holders of suitable COTCs to cover Technically Competent Management of the site. Training matrix and training review procedures within EMS	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 8.2.1
Management	Efficient Use of Raw Materials	EMS includes resource efficiency with management targets and objectives set to ensure most efficient use.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 8.3.1

General Consideration	Specific Topic	Proposal	BAT/BREF
Management	Avoidance recovery and disposal of waste	EMS includes resource efficiency with audits/management targets and objectives set to ensure most effective management of wastes.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 8.4.1
Management	Water Use	EMS includes water use audits/management targets and objectives set to ensure most effective management of water.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 8.5.1
Management	Avoidance recovery and disposal of waste	EMS includes resource efficiency with management targets and objectives set to ensure most effective management of wastes. Waste hierarchy always pursued.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 8.6.1
Management	Accident Management Plan	EMS includes Accident Management Plan Spillage Procedure. Procedures for abnormal operations Contact details for emergency services service providers and regulatory agencies.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 8.7.1
Monitoring	Emissions	Continuous and periodic monitoring in accordance with EMS and permit.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 9.1.1

General Consideration	Specific Topic	Proposal	BAT/BREF
Monitoring	Environmental	Procedures in fugitive emissions management plan and Odour Management Plan for external monitoring of AD plant to assess environmental impact.	✓ BREF (WTI 2006) 4.2 Draft RGN:AD 9.2.1

12.1.4 It is clear that all site operations currently meet the requirements of BAT in the general and sector specific guidance.