

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

R100 Energy Limited

Spaldington Anaerobic Digestion Facility
Spaldington Airfield
Spaldington
Howden
East Yorkshire
DN14 7NG

Variation application number

EPR/GP3439QK/V003

Permit number

EPR/GP3439QK

Spaldington Anaerobic Digestion Facility

Permit number EPR/GP3439QK

Introductory note

This introductory note does not form a part of the notice

Under the Environmental Permitting (England & Wales) Regulations 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made. Only the variations specified in schedule 1 are subject to a right of appeal.

This variation authorises the addition of a post pasteurisation holding tank (PPHT) to the existing anaerobic digestion plant. The tank will temporarily store pasteurised waste material which is destined for anaerobic digestion at a third party permitted site. This will allow waste to be simultaneously fed to the onsite digesters and to the PPHT. The PPHT will be constructed from steel and has a maximum capacity of 80 m³. The tank is located adjacent to the tanker filling area and is situated within a pre-fabricated steel bund which will provide impermeable secondary containment. The bund wall is perforated by a steel pipe for the tank outlet but is fitted with pneumatic penstock valves and is subject to daily integrity inspections. We have included improvement conditions which require the testing to the bund to both static and hydrostatic pressure in line with CIRIA C736.

The tank is fitted with odour abatement in the form of a localised carbon filter at the vent on top of the tank. The carbon filter will treat odorous air displaced from the PPHT as waste is discharged into the tank.

The operation of the new tank is classed as a separate waste operation.

We have carried out an Environment Agency initiated variation to update some of the permit conditions following a statutory review of the permits in the industry sector for biowaste treatment.

Description of site activities

The primary activity covered in this permit is the anaerobic digestion (AD) of biodegradable food wastes, source segregated kitchen/catering wastes and animal by-products that fall under Category 3 of the Animal By-products Regulations (ABPR) and similar suitable biodegradable wastes. The facility will process up to 90,000 tonnes of non-hazardous biodegradable waste per annum to produce biogas. The upgraded biogas will be primarily injected into the National Gas Grid for energy use via biomethane upgrading plant and/or used in two combined heat and power (CHP) engines to generate electricity and heat. Surplus biogas will be burned via a single enclosed flare during periods of gas upgrading/CHP maintenance and to prevent pressure build up in the bio-dome in an emergency situation.

The proposed AD Facility will comprise of the following primary elements.

Liquid waste tank, Feedstock tank, Hydrolysis tank, Pasteurisation tank, two 0.8 MWth package emergency boilers to supply heat to pasteurisation process, the PPHT, two digester tanks, a gas compound comprising of two CHP units rated at ~2.9 MWth each, Biodome tank, Biomethane upgrade unit, Emergency/backup flare, Post-digestate tank and rain water harvesting tank. The waste reception, storage, hydrolysis, pasteurisation and digestion phases are carried out in a completely sealed process.

The site, which was formerly part of the RNAS Howarth airfield, is located approximately 1.3 km to the south-west of the village of Spaldington at National Grid Reference SE 74614 32868. The nearest residential properties are located approximately 1,150 metres to the West and at 702 metres to the North West from the site.

This environmental permit does not authorise the spreading of solid or liquid digestate on land. Spreading of digestate on land will be subject to a separate environmental permit or exemption.

The schedules specify the changes made to the permit.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	Date	Comments
Application EPR/GP3439QK/A001	Duly made 25/09/2018	Application for a 90,000 tonnes per annum anaerobic digestion facility with combustion of biogas and Gas upgrading plant.
Additional information received	04/12/2018	Response to Schedule 5 Notice dated 20/11/2018. Waste Treatment BAT conclusions compliance in accordance with Commission Implementing Decision (EU) 2018/114 further details regarding digestate separation/treatment and site drainage.
Additional information received	18/12/2018	Response to Schedule 5 Notice dated 05/12/2018. Revised odour management plan dated December 2018
Additional information received	21/01/2019	Response to Schedule 5 Notice dated 15/01/2019 Section 1 BAT options appraisal for gas upgrading plant, Section 2 confirmation of boiler thermal input and Section 3 digestate handling and PAS110 compliancy
Additional information received	05/04/2019	Response to Schedule 5 dated 28/02/2019. Air dispersion modelling report dated 05/04/2019 version V0.1 including confirmation of noise impact assessment resulting from the addition of CHP engines to the application proposal including gas engine electrical rating and thermal input.
Additional Information received	04/10/2019	E-Mail – Emission points plan drawing, Ref: ST15903-041, Rev B, dated 30/03/2019
Permit determined	21/10/2019	Permit issued to R100 Energy Limited
Notified of change of Registered office	20/12/2019	Registered office changed to Control Tower, Hemswell Cliff Industrial Estate, Hemswell Cliff, Gainsborough, DN21 5TU
Variation issued EPR/GP3439QK	09/01/2020	Varied permit issued to R100 Energy Limited.
Application EPR/GP3439QK/V003 (variation and consolidation)	Duly made 01/04/2021	Application to add a holding tank for pasteurised waste.
Additional information received	19/07/2021	Response to Schedule 5 Notice. Details of tank bund and odour abatement.
Additional information received	08/10/2021	Response to request for information. Details of tank bund construction and justifications for chosen odour abatement.
Variation determined EPR/GP3439QK Billing ref: WP3204LS	15/12/2021	Varied and consolidated permit issued.

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies and consolidates

Permit number

EPR/GP3439QK

Issued to

R100 Energy Limited (“the operator”)

whose registered office is

Control Tower

Hemswell Industrial Estate

Hemswell Cliff

Gainsborough

DN21 5TU

company registration number

to operate a regulated facility at 10829140

Spaldington Anaerobic Digestion Facility

Spaldington Airfield

Spaldington

Howden

East Yorkshire

DN14 7NG

to the extent set out in the schedules.

The notice shall take effect from 15 December 2021

Name	Date
Rebecca Warren	15 December 2021

Authorised on behalf of the Environment Agency

Schedule 1

The following conditions were varied as a result of the application made by the operator.

- Table S1.1 as referenced in condition 2.1.1 has been amended to include an additional directly associated activity for the temporary storage of pasteurised waste pending removal from site.
- Table S1.2 as referenced in conditions 2.3.1 and 2.3.2 has been amended to include additional operating techniques within the permit.
- Table S1.3 as referenced in condition 2.4.1 has been amended to include additional improvement conditions.
- Table S1.4A as referenced in condition 2.5.1 has been amended to include additional pre-operational measures.
- Table S2.3 as referenced in condition 2.3.4 (a) has been added in include the waste code accepted in the PPHT waste operation (AR9).
- Table S3.1 as referenced in condition 3.1.1 has been amended to add the additional emission point for displaced air from the pasteurised waste holding tank.
- Table S3.2 as referenced in condition 3.5.1 (b) has been amended to add additional process monitoring for the new tank and secondary containment.
- Table S4.1 as referenced in condition 4.2.3 has been amended to add reporting requirements for the monitoring of odour abatement and to correct an error from the original permit.
- Condition 1.2.1 has been amended to indicate that energy efficiency conditions only apply to installations activities.
- Condition 1.3.1 has been amended to indicate that efficient use of raw materials conditions only apply to installations activities.
- Condition 2.1.4 has been added to identify wastes authorised under installations activities and separate waste operations.
- Condition 2.3.4 (a) has been amended to reference a new waste table for waste accepted under the new waste operation (AR9).
- Condition 3.5.3 has been amended to correct an error from the original permit.
- Condition 4.2.2 has been amended to indicate that reporting requirements in this condition only applies to installation activities.
- Schedule 7 as referenced in condition 2.2.1 has been amended to include a revised site layout plan.

The following conditions were varied as a result of an Environment Agency initiated variation:

- Condition 2.1.2 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 2.1.3 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 2.3.4 (c) has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 2.3.7 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Conditions 2.3.8 (a) (b) and (c) have been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 3.2.4 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 3.5.5 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 3.5.6 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 3.6.2 (a) (b) (c) (d) (e) has been added following a statutory review of the permits in the industry sector for biowaste treatment.

- Condition 3.7.1 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 3.7.2 (a) and (b) has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 4.2.6 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 4.3.3 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Condition 4.3.6 has been added following a statutory review of the permits in the industry sector for biowaste treatment.
- Table S1.3 as referenced in condition 2.4.1 has been amended to include an additional improvement condition (IC5) following a statutory review of the permits in the industry sector for biowaste treatment.
- Table S3.1 as referenced in condition 3.1.1 has been amended to update table notes and add monitoring requirements for VOCs for the biogas upgrading plant following a statutory review of the permits in the industry sector for biowaste treatment.
- Table S3.2 as referenced in condition 3.5.1 (b) has been amended to update process monitoring following a statutory review of the permits in the industry sector for biowaste treatment.
- Table S4.4 as referenced in conditions 4.2.2 (c) and 4.2.3 (b) have been amended to update reporting requirements for process monitoring following a statutory review of the permits in the industry sector for biowaste treatment.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/GP3439QK

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/GP3439QK/V003 authorising,

R100 Energy Limited (“the operator”),

whose registered office is

Control Tower

Hemswell Industrial Estate

Hemswell Cliff

Gainsborough

DN21 5TU

company registration number 10829140

to operate an installation at

Spaldington Anaerobic Digestion Facility

Spaldington Airfield

Spaldington

Howden

East Yorkshire

DN14 7NG

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

Name	Date
Rebecca Warren	15 December 2021

Authorised on behalf of the Environment Agency

Conditions

Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.
- 1.1.4 The operator shall comply with the requirements of an approved competence scheme.

1.2 Energy efficiency

- 1.2.1 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR8), the operator shall:
- (a) take appropriate measures to ensure that energy is used efficiently in the activities;
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

- 1.3.1 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR8), the operator shall:
- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

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

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
 - (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

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

Operations

2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).
- 2.1.2 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR8), the activities shall be undertaken in accordance with best available techniques.
- 2.1.3 All process plant and equipment shall be commissioned, operated and maintained and shall be fully documented and recorded in accordance with the manufacturer’s recommendations.
- 2.1.4 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR8), waste authorised by this permit shall be clearly distinguished from any other waste on the site.

2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

- 2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.
- 2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation (“plan”) specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 2.3.3 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.4 Waste shall only be accepted if:
- (a) it is of a type and quantity listed in schedule 2 tables S2.2 and S2.3 and
 - (b) it conforms to the description in the documentation supplied by the producer and holder.
 - (c) the facility has sufficient free capacity to store and treat the waste.
- 2.3.5 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:
- (a) the nature of the process producing the waste;
 - (b) the composition of the waste;
 - (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.

- 2.3.6 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.
- 2.3.7 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR8), waste pre-acceptance and acceptance procedures shall be undertaken in accordance with best available techniques.
- 2.3.8 For the following activities referenced in schedule 1, table S1.1 (AR4):
- (a) each MCP must be operated in accordance with the manufacturer's instructions and records must be made and retained to demonstrate this.
 - (b) the operator must keep periods of start-up and shut-down of each MCP as short as possible.
 - (c) there must be no persistent emission of 'dark smoke' as defined in section 3(1) of the Clean Air Act 1993.

2.4 Improvement programme

- 2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.
- 2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

- 2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 table S3.1.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.
- 3.1.4 The first monitoring measurements shall be carried out within four months of the issue date of the permit or the date when the MCP is first put into operation, whichever is later.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

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

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

3.2.4 The operator shall implement a leak detection and repair (LDAR) programme to detect and mitigate the release of volatile organic compounds, including methane from diffuse sources.

3.3 Odour

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

3.4 Noise and vibration

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

3.4.2 The operator shall:

- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
- (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

- (a) point source emissions specified in table S3.1;
- (b) process monitoring specified in table S3.2.

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1 unless otherwise agreed in writing by the Environment Agency.

3.5.5 In the case of new medium combustion plant, the first monitoring measurements shall be carried out within four months of the issue date of the permit or the date when the MCP is first put into operation, whichever is later.

3.5.6 Monitoring shall not take place during periods of start-up or shut-down.

3.6 Pests

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

3.6.2 The operator shall:

- (a) only use approved products for pest control;
- (b) treat pest infestations promptly;
- (c) reject pest-infected incoming waste;
- (d) if notified by the Environment Agency, submit to the Environment Agency for approval within the period specified, a pests management plan which identifies and minimises risks of pollution from pests;
- (e) implement the pests management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.7 Fire prevention

3.7.1 The operator shall take all appropriate measures to prevent fires on site and minimise the risk of pollution from them including, but not limited to, those specified in any approved fire prevention plan.

3.7.2 The operator shall:

- (a) if notified by the Environment Agency that the activities are giving rise to a risk of fire, submit to the Environment Agency for approval within the period specified, a fire prevention plan which prevents fires and minimises the risk of pollution from fires;
- (b) implement the fire prevention plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

- (a) be legible;
- (b) be made as soon as reasonably practicable;
- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
- (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.
- 4.2.2 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR8), a report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production/treatment data set out in schedule 4 table S4.2; and
 - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.
- 4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.
- 4.2.6 The operator shall keep records of non-waste materials leaving the site, including the type of material, the batch number, the date of export off-site and the tonnage exported on that date. These records shall be maintained for at least 2 years.

4.3 Notifications

- 4.3.1 In the event:
- (a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
 - (i) inform the Environment Agency,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
 - (b) of a breach of any permit condition the operator must immediately—
 - (i) inform the Environment Agency, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

- (c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

- 4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Following the detection of an issue listed in condition 4.3.1, the operator shall review and revise the management system and implement any changes as necessary to minimise the risk of reoccurrence of the issue.
- 4.3.4 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.5 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
 - Where the operator is a registered company:
 - (a) any change in the operator's trading name, registered name or registered office address; and
 - (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.
 - Where the operator is a corporate body other than a registered company:
 - (a) any change in the operator's name or address; and
 - (b) any steps taken with a view to the dissolution of the operator.
 - In any other case:
 - (a) the death of any of the named operators (where the operator consists of more than one named individual);
 - (b) any change in the operator's name(s) or address(es); and
 - (c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.
- 4.3.6 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:
 - (a) the Environment Agency shall be notified at least 14 days before making the change; and
 - (b) the notification shall contain a description of the proposed change in operation.
- 4.3.7 The Environment Agency shall be given at least 14 days' notice before implementation of any part of the site closure plan.
- 4.3.8 The operator shall notify the Environment Agency as soon as is practicable, in writing of any change of the medium combustion plant.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “immediately”, in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
AR1	S5.4 A(1) (b) (i) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving biological treatment.	R3: Recycling/reclamation of organic substances which are not used as solvents	From receipt of waste through to digestion and recovery of by-products (digestate). Anaerobic digestion of waste in two tanks followed by burning/upgrading of biogas produced from the process. Waste types suitable for acceptance are limited to those specified in Table S2.2.
Directly Associated Activity			
AR2	Emergency flare operation	D10: Incineration on land	From the receipt of biogas produced at the on-site anaerobic digestion process to incineration with the release of combustion gases. Use of one auxiliary flare required only during periods of breakdown or maintenance of the CHP engine, biogas upgrading plant and/or auxiliary boiler.
AR3	Gas upgrading	Upgrading of biogas to biomethane (including the removal of moisture and other substances such as carbon dioxide, hydrogen sulphide and Volatile organic compounds) for injection into the National Grid.	From the receipt of biogas produced at the on-site anaerobic digestion process to injection into the National Grid. This includes return of off-specification biogas for combustion to the on-site CHP engines, auxiliary boiler and/or emergency flare.
AR4	Steam and electrical power supply	Medium Combustion Plant R1: Use principally as a fuel to generate energy	From the receipt of biogas produced at the on-site anaerobic digestion process to combustion with the release of combustion gases. Combustion of biogas in two combined heat and power (CHP) engines with an aggregated thermal input of 5.98 MWth.

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
			Combustion of biogas in two auxiliary emergency boilers with an aggregated thermal input of 1.6 MWth. (To be used for the generation of heat using biogas to provide heat to the pasteurisation stage when the primary source of heat is unavailable).
AR5	Raw material storage	Storage of raw materials including lubrication oil, antifreeze, propane, ferric chloride, activated carbon, diesel.	From the receipt of raw materials to despatch for use within the facility.
AR6	Gas storage	R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	Storage of biogas produced from on-site anaerobic digestion of permitted waste in one bio-dome. From the receipt of biogas produced at the on-site anaerobic digestion process to despatch for use within the facility.
AR7	Digestate storage	R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	From the receipt of processed uncertified digestate produced from the on-site anaerobic digestion process to despatch for use off-site. Storage of processed uncertified liquid digestate in one storage tank.
AR8	Surface water collection and storage	Collection and storage of uncontaminated roof and site surface water in one storage tank	From the collection of uncontaminated roof and site surface water from non-operational areas only to re-use within the facility.
Activity reference	Description of activities for waste operations		Limits of activities
AR9	<u>Transfer of pre-treated waste off-site</u> R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)		Storage of pasteurised waste pending recovery or disposal off site. From the receipt of permitted waste to pre-treatment (pasteurisation) and despatch for further treatment off site.

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
		Storage of pasteurised waste in a sealed tank fitted with appropriate odour abatement and on an impermeable surface with sealed drainage. Waste types suitable for acceptance are limited to those specified in Table S2.3.	

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application EPR/GP3439QK/A001	Non-technical summary, Operating Techniques, Appendix 1 Permitted waste types, Accident and Amenity Risk assessment of the application document in response to section 3a – technical standards, Part B of the application form.	Duly Made 25/09/2018
Response to Schedule 5 Notice dated 20/11/2018	Sections 1.1 Waste Treatment BAT conclusions compliance in accordance with Commission Implementing Decision (EU) 2018/114, Section 2 and 3 detailing digestate separation and site drainage.	04/12/2018
Response to Schedule 5 Notice dated 05/12/2018	Preliminary revised odour management plan dated December 2018.	18/12/2018
Response to Schedule 5 Notice dated 15/01/2019	Section 1 BAT options appraisal for gas upgrading plant, Section 2 confirmation of boiler thermal input and Section 3 digestate handling and PAS110 compliancy.	21/01/2019
Application EPR/GP3439QK/V003	Supporting documents. <ul style="list-style-type: none"> • <i>Amenity and Accident Risk Assessment Addendum.</i> Reference ST15903. • <i>Operating Techniques Addendum.</i> Reference ST15903. 	Duly Made 01/04/2021
Response to Schedule 5 Notice dated 29/04/2021	Supporting documents <ul style="list-style-type: none"> • <i>Supplementary BAT Assessment of Tank Bunding.</i> Reference ST15903 April 2021. • <i>Supplementary Assessment of Odour Management.</i> Reference ST15903 April 2021. 	19/07/2021
Response to request for information dated 12/08/2021	Letter containing operating techniques regarding odour abatement and secondary containment Reference JB/ST15903/002. Responses to questions 1, 2, 4, 5, 6 and 7.	08/10/2021

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC1	<p>The operator shall carry out a monitoring study to verify the assumptions made in the application in relation to the releases of pollutants to air. The study shall include the monitoring of point source releases to air from the biogas upgrading plant emission point A6 during normal operation, having regard to the Environment Agency technical guidance M2 and to MCERTS standards. As a minimum, two separate monitoring campaigns in a year shall be completed (one monitoring survey six months following commissioning of the biogas upgrading plant).</p> <p>The pollutants to be monitored shall include:</p> <ul style="list-style-type: none"> • total volatile organic compounds; and • hydrogen sulphide 	17/04/2020 or otherwise agreed in writing by the Environment Agency
IC2	<p>Following the completion of IC1, the operator shall undertake an environmental impact assessment of all point source releases to air, using the information obtained through the emissions monitoring. The environmental impact assessment report and all associated monitoring reports and assessments shall be submitted in writing to the Environment Agency for review.</p> <p>The environmental impact assessment shall, as a minimum, include:</p> <ul style="list-style-type: none"> • reports showing details of the monitoring undertaken and the results obtained; • results of the assessment of long and short term impacts from the emissions in accordance with Environment Agency Guidance – Air emissions risk assessment for your environmental permit • a completed H1 assessment software tool <p>If the H1 assessment shows potential long or short term impacts from the emissions, the operator shall propose an action plan to reduce the impacts of the substances identified.</p>	17/04/2020 or otherwise agreed in writing by the Environment Agency
IC3	<p>The operator shall submit a written ‘secondary containment plan’ and shall obtain the Environment Agency’s written approval to it. The plan shall contain the results of an inspection and program of works undertaken by a competent structural engineer, in accordance with the risk assessment methodology detailed within CIRIA C736 (2014) guidance, of the condition and extent of secondary containment for the post pasteurisation holding tank.</p> <p>The inspection shall consider, but not be limited to, the storage vessels, bund and transfer pipework/pumps.</p> <p>The plan shall include:</p> <ul style="list-style-type: none"> • an assessment of the physical condition of all secondary and/or tertiary containment systems, using a Written Scheme of Examination and their suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure; • a program of works with timescales for the implementation of individual improvement measures necessary for the secondary containment systems to comply with CIRIA C736 (2014) guidance, or equivalent. • a preventative maintenance and inspection regime. 	15/06/2022 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	The plan shall be implemented in accordance with the Environment Agency's written approval.	
IC4	<p>The operator shall carry out a review of the odour abatement plant installed at the extraction point on the post pasteurisation holding tank and carbon filters at the biogas upgrading plant, in order to determine whether the measures have been effective and adequate to prevent and where not possible minimise emissions released to air including but not limited to odour and ammonia.</p> <p>The operator shall submit a written report to the Environment Agency following this review for assessment and approval.</p> <p>The report shall include but not limited to the following aspects:</p> <ul style="list-style-type: none"> • Full investigation and characterisation of the waste gas streams. • Abatement vent monitoring results (not limited to odour and ammonia). • Abatement process monitoring results. • Odour monitoring results at the site boundary. • Records of odour complaints and odour related incidents. • Recommendations for improvements including the replacement or upgrading the abatement plant. • Timescales for implementation of improvements to the abatement plant. <p>The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.</p>	Within 6 months of completion of PO6 or other date as agreed in writing with the Environment Agency
IC5	The operator shall establish the methane emissions in the exhaust gas from engines burning biogas and compare these to the manufacturer's specification and benchmark levels agreed in writing with the Environment Agency. The operator shall, as part of the methane leak detection and repair (LDAR) programme, develop proposals to assess the potential for methane slip and take corrective actions where emissions above the manufacturer's specification or appropriate benchmark levels are identified.	15/12/2022 or other date as agreed in writing with the Environment Agency

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO1	<p>At least 8 weeks (or any other date as agreed with the Environment Agency) prior to the commencement of commissioning of the installation, the operator shall ensure that a review of the design, method of construction and integrity of the proposed site secondary containment is carried out by a qualified structural engineer. The review shall compare the constructed secondary containment against the standards set out in section 7.9.1 of the Environment Agency Draft Technical Guidance for Anaerobic Digestion (Reference LIT 8737, November 2013) and CIRIA C736 - Containment Systems for the Prevention of Pollution - secondary, tertiary and other measures for industrial and commercial premises or other relevant industry standard.</p> <p>The review shall include:</p> <ul style="list-style-type: none"> • physical condition of the secondary containment

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
	<ul style="list-style-type: none"> • the suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure; • any work required to ensure compliance with the standards set out in CIRIA C736 or other relevant industry standard; and • a preventative maintenance and inspection regime <p>A written report of the review shall be submitted to the Environment Agency detailing the review's findings and recommendations. Remedial action shall be taken to ensure that the secondary containment meets the standards set out in the technical guidance documents and implement the maintenance and inspection regime.</p> <p>No site operations shall commence or waste accepted at the facility unless the Environment Agency has given prior written permission under this condition.</p>
PO2	<p>At least 2 weeks (or any other date as agreed with the Environment Agency) prior to commissioning of the installation, the operator shall submit a written copy of the site Environmental Management System (EMS) and make available for inspection all documents and procedures which form part of the site EMS.</p> <p>The EMS shall cover all activities at the installation and shall be in accordance with the Environment Agency Guidance – How to develop a management system: environmental permits and section 8.2.1 of the Environment Agency Draft Technical Guidance for Anaerobic Digestion (Reference LIT 8737, November 2013). The EMS shall include the techniques the operator relies upon to manage the operation, accidents (including flooding), closure and decommissioning of the site. The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.</p> <p>No site operations shall commence or waste accepted at the installation unless the Environment Agency has given prior written permission under this condition.</p>
PO3	<p>At least 8 weeks (or any other date as agreed with the Environment Agency) prior to the commencement of commissioning of the installation, the operator shall provide a written commissioning plan (including timescales for completion) for approval by the Environment Agency. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the measures to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved by the Environment Agency.</p> <p>No site operations shall commence or waste accepted at the installation unless the Environment Agency has given prior written permission under this condition.</p>
PO4	<p>At least 4 weeks (or any other date as agreed with the Environment Agency) prior to the commencement of commissioning of the installation, the operator shall provide written evidence to the Environment Agency of the Technically Competent Manager (TCM) at the proposed installation. The report shall confirm that the person(s):</p> <ul style="list-style-type: none"> • hold the relevant qualifications under the CIWM/WAMITAB scheme or other equivalent for the operation of the anaerobic digestion plant, and • have appropriate competence in operating the biogas upgrading plant (including the injection of biomethane into the Gas Grid).

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
	No site operations shall commence or waste accepted at the installation unless the Environment Agency has given prior written permission under this condition.
PO5	<p>At least 2 weeks (or any other date as agreed with the Environment Agency) prior to the commencement of commissioning of the installation, the operator shall submit a revised odour management plan to the Environment Agency for written approval. The plan shall take into account the appropriate measures for odour control specified in section 7.6.5 of the Environment Agency Draft Technical Guidance for Anaerobic Digestion (Reference LIT 8737, November 2013). The plan shall also include all the required information as specified in the Environment Agency Horizontal Guidance H4 - Odour Management.</p> <p>No site operations shall commence or waste accepted at the facility unless the Environment Agency has given prior written permission under this condition.</p>
PO6	<p>Prior to the discharge of pasteurised waste into the post pasteurisation holding tank (Activity reference AR12, Table S1.1), the operator shall submit to the Environment Agency, a written report on the odour abatement systems proposed.</p> <p>The report shall comprise a detailed description of the odour abatement system, the operational design parameters, the monitoring of process parameters and a demonstration of how the system will effectively abate odorous emissions from the proposed post pasteurisation holding tank.</p> <p>The report must include but not be limited to:</p> <ul style="list-style-type: none"> • Expected content of odorous emissions from the post pasteurisation holding tank vent after the abatement treatment stage. • Details (with evidence) of why the odour abatement will allow effective treatment of all odorous components contained within the emissions. • Details (with evidence) of the optimum process operational parameters for the odour abatement systems and why this will ensure effective treatment of all odorous components within the emissions. • How the abatement systems will be maintained to remain effective. • The process monitoring regime to be used to demonstrate that the operation remains at the optimum parameters. A process monitoring regime shall use the following parameters; carbon bed temperature, gas flow rate, moisture or humidity, back pressure and efficiency assessment. • Contingency measures in place to bring the process back under control in the event of abatement failure. <p>If it is shown that the proposed odour abatement design will not result in considerable abatement or reduction of the odorous emissions from the airstream from the post pasteurisation holding tank, the operator shall carry out further investigation and propose to the Environment Agency for written approval, further mitigation in the form of additional abatement or change of design or process operational parameters supported by a Best Available Techniques demonstration and scientific evidence, to ensure that the proposed treatment process shall not result in odour pollution off-site.</p> <p>This condition will be considered complete when the final report and any identified improvement have been approved by the Environment Agency.</p>

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
-	

Table S2.2 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	Annual throughput shall not exceed 90,000 tonnes
Waste code	Description
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing
02 01	wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing
02 01 01	sludges from washing and cleaning – vegetables, fruit and other crops
02 01 02	animal tissue waste
02 01 03	plant tissue waste
02 01 06	animal faeces, urine and manure (including spoiled straw) only
02 01 07	wastes from forestry
02 02	wastes from the preparation and processing of meat, fish and other foods of animal origin
02 02 01	sludges from washing and cleaning
02 02 02	animal tissue waste
02 02 03	materials unsuitable for consumption or processing
02 02 04	sludges from on-site effluent treatment
02 03	wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation
02 03 01	sludges from washing, cleaning, peeling, centrifuging and separation
02 03 04	materials unsuitable for consumption or processing
02 03 05	sludges from on-site effluent treatment
02 04	wastes from sugar processing
02 04 03	sludges from on-site effluent treatment
02 05	wastes from the dairy products industry
02 05 01	materials unsuitable for consumption or processing
02 05 02	sludges from on-site effluent treatment
02 06	wastes from the baking and confectionery industry
02 06 01	materials unsuitable for consumption or processing
02 06 03	sludges from on-site effluent treatment
02 07	wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials

Table S2.2 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	Annual throughput shall not exceed 90,000 tonnes
Waste code	Description
02 07 02	wastes from spirits distillation
02 07 04	materials unsuitable for consumption or processing
03	Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard
03 03	wastes from pulp, paper and cardboard production and processing
03 03 02	green liquor sludge
03 03 08	paper and cardboard – not allowed if any non-biodegradable coating or preserving substance is present
03 03 10	fibre rejects, fibre, filler- and coating-sludges from mechanical separation
04	Wastes from the leather, fur and textile industries
04 01	wastes from the leather and fur industry
04 01 01	fleshings and lime split wastes
04 01 05	tanning liquor free of chromium
04 01 07	sludges not containing chromium
04 02	wastes from the textile industry
04 02 10	organic matter from natural products, e.g. grease, wax
07	Wastes from organic chemical processes
07 02	Wastes from the manufacture supply and use of plastic, synthetic rubber and manmade fibres
07 02 13	Waste Plastic – must conform to BS EN 13432 and not allowed if any non-biodegradable coating or preserving substance is present
15	Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
15 01	packaging (including separately collected municipal packaging waste)
15 01 01	paper and cardboard packaging – excludes laminates such as Tetrapaks and must conform to BS EN 13432 and not allowed if any non-biodegradable coating or preserving substance is present
15 01 02	biodegradable plastic packaging – must conform to BS EN 13432 and not allowed if any non-biodegradable coating or preserving substance is present
15 01 03	untreated wooden packaging – not allowed if any non-biodegradable coating or preserving substance is present
15 01 05	composite packaging – must conform to BS EN 13432 and not allowed if any non-biodegradable coating or preserving substance is present
19	Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use
19 02	wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)
19 02 10	glycerol not designated as hazardous i.e. excludes EWC code 19 02 08
19 05	wastes from aerobic treatment of solid wastes
19 05 01	non-composted fraction of municipal and similar wastes

Table S2.2 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	Annual throughput shall not exceed 90,000 tonnes
Waste code	Description
19 05 02	non-composted fraction of animal and vegetable waste
19 05 03	off-specification compost
19 06	wastes from anaerobic treatment of waste
19 06 03	liquor from anaerobic treatment of municipal waste (from a process that treats wastes which are listed in this table only)
19 06 04	digestate from anaerobic treatment of source segregated biodegradable waste (from a process that treats wastes which are listed in this table only)
19 06 05	liquor from anaerobic treatment of animal and vegetable waste (from a process that treats wastes which are listed in this table only)
19 06 06	digestate from anaerobic treatment of animal and vegetable waste (from a process that treats wastes which are listed in this table only)
19 08	wastes from waste water treatment plants not otherwise specified
19 08 09	grease and oil mixture from oil/water separation containing only edible oil and fats
19 08 12	sludges from biological treatment of industrial waste water
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 12	waste types listed in this table, Table S2.2, that have been subjected to mechanical treatment only
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions
20 01	separately collected fractions (except 15 01)
20 01 01	paper and cardboard packaging – excludes laminates such as Tetrapaks and must conform to BS EN 13432 and not allowed if any non-biodegradable coating or preserving substance is present.
20 01 08	biodegradable kitchen and canteen waste
20 01 25	edible oil and fat
20 01 38	untreated wood where no non-biodegradable coating or preserving substance is present
20 02	garden and park wastes (including cemetery waste)
20 02 01	biodegradable waste
20 03	other municipal wastes
20 03 01	mixed municipal waste – only separately collected biodegradable wastes of types listed within this table, Table S2.2
20 03 02	waste from markets – allowed only if source segregated biodegradable fractions e.g. plant material, fruit and vegetables

Table S2.3 Permitted waste types and quantities for storage and transfer off-site	
Maximum quantity	Annual throughput for storage and transfer off-site shall not exceed 50,000 tonnes.
Waste code	Description
02	Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 12	waste types listed in Table S2.2, that have been subjected to mechanical treatment only

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 on emission points to air site drawing reference: ST15903-041, REV B dated 20/03/19	CHP engine 1 stack [note 1 and 2]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	250 mg/m ³	Hourly average	Annual	BS EN 14792
		Sulphur dioxide	40 mg/m ³			BS EN 14791
		Carbon monoxide	1400 mg/m ³			BS EN 15058
		Total VOCs	No limit set			BS EN 12619:2013
A2 on emission points to air site drawing reference: ST15903-041, REV B dated 20/03/19	CHP engine 2 stack [note 1 and 2]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	250 mg/m ³	Hourly average	Annual	BS EN 14792
		Sulphur dioxide	40 mg/m ³			BS EN 14791
		Carbon monoxide	1400 mg/m ³			BS EN 15058
		Total VOCs	No limit set			BS EN 12619:2013
A3 on emission points to air site drawing reference: ST15903-041, REV B, dated 20/03/19	Emergency flare stack [note 3]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	150 mg/m ³	Hourly average	[note 4]	BS EN 14792
		Carbon monoxide	50 mg/m ³			BS EN 15058
		Total VOCs	10 mg/m ³			BS EN 12619:2013
A4 and A5 on emission points to air site drawing reference: ST15903-041, REV B, dated 20/03/19	Auxiliary boiler stacks	No parameter set	No limit set	--	--	--
A6 on emission points to air site drawing reference:	Biogas upgrading plant stack	VOCs including methane	No limit set	Leak detection and repair (LDAR) programme	In accordance with written management system	BS EN15446

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
ST15903-041, REV B, dated 20/03/19						
Pressure relief valves	Digesters/Digestate storage tank(s) Hydrolysis tank/Feedstock Tank	No parameter set	No limit set	--	Record of operating hours	--
Point 12 on site plan in Schedule 7	Channelled emissions to odour abatement vent. Carbon filter, treatment of air from post pasteurisation holding tank.	Hydrogen sulphide	No limit set	Average over sample period	Once every 6 months or other date as agreed in writing with the Environment Agency	CEN TS 13649 for sampling NIOSH 6013 for analysis
		Ammonia	20 mg/m ³	Average over sample period		EN ISO 21877
		Odour concentration	No limit set	--		BS EN 13725
<p>Note 1 – These emission limits are based on normal operating conditions and load - temperature 0°C (273 K); pressure 101.3 kPa and oxygen 5% (for gas engines burning biogas) and oxygen 3% (for medium combustion plants other than engines and gas turbines burning biogas).</p> <p>Note 2 - Monitoring to be undertaken 4 months after commissioning of the engines and then annually thereafter.</p> <p>Note 3 - These limits are based on normal operating conditions and load - temperature 0°C (273K); pressure: 101.3 kPa and oxygen: 3 per cent (dry gas).</p> <p>Note 4 - Monitoring to be undertaken 12 months after commissioning of the emergency flare. Following commissioning, monitoring to be undertaken in the event the emergency flare has been operational for more than 10 per cent of a year (876 hours). Record of operating hours to be submitted annually to the Environment Agency.</p>						

Table S3.2 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Digester feed (digestion process)	pH	As described in site operating techniques	As described in site operating techniques	Process monitoring to be recorded using a SCADA system where relevant.
	Alkalinity			
	Temperature			
	Hydraulic loading rate			
	Organic loading rate			
	Volatile fatty acids concentration			

	Ammonia			
	Liquid /foam level			
Biogas in digester	Flow	Continuous	In accordance with EU weights and measures Regulations	Process monitoring to be recorded using a SCADA system where relevant. Gas monitors to be calibrated every 6 months or in accordance with the manufacturer's recommendations.
	Methane	Continuous	None specified	
	CO ₂	Continuous	None specified	
	O ₂	Continuous	None specified	
	Hydrogen sulphide	Daily	None specified	
	Pressure	Continuous	None specified	
Digestate batch	Volatile fatty acids concentration	One sample at the end of each batch (hydraulic retention time) cycle.	As described in site operating techniques	--
	Ammonia			
Digesters and storage tanks	Integrity checks	Weekly	Visual assessment	--
Digesters	Agitation /mixing	Continuous	Systems controls.	Records maintained in daily operational records.
	Tank capacity and sediment assessment	Once every 5 years from date of commission	Non-destructive pressure testing integrity assessment every 5 years or as specified by manufacturers technical specification.	In accordance with design specification and tank integrity checks.
Waste reception building or area; Digesters and storage tanks	Odour	Daily	Olfactory monitoring	Odour detection at the site boundary.
Diffuse emissions from all sources identified in the Leak Detection and Repair (LDAR) programme	VOCs including methane	Every 6 months or otherwise agreed in accordance with the LDAR programme	In accordance with the LDAR programme	Leak detection and repair (LDAR) programme in accordance with permit condition 3.2.4.
CHP engine stacks	VOCs including methane	Annually	BS EN 12619	Total annual VOCs emissions from the CHP engines to be

				calculated and submitted to the Environment Agency.
	Exhaust gas temperature		Traceable to National Standards	
	Exhaust gas pressure		Traceable to National Standards	
	Exhaust gas water vapour content		BS EN 14790-1	Unless gas is dried before analysis of emissions.
	Exhaust gas oxygen		BS EN 14789	
	Exhaust gas flow		BS EN 16911-1	
Meteorological conditions	Wind speed, air temperature, wind direction	Continuous	Method as specified in management system	<p>Conditions to be recorded in operational diary and records.</p> <p>Equipment shall be calibrated on a 4 monthly basis, in accordance with manufacturer's recommendations or as agreed in writing by the Environment Agency.</p>
Emergency flare	Operating hours	Continuous	Recorded duration and frequency. Recording using a SCADA system or similar system	Date, time and duration of use of auxiliary flare shall be recorded.
	Quantity of gas sent to emergency flare			Quantity can be estimated from gas flow composition, heat content, ratio of assistance, velocity, purge gas flow rate, pollutant emissions.
Pressure relief valves and vacuum systems	Re-seating	Weekly inspection	Visual and gas pressure	<p>Continuous gas pressure shall be monitored.</p> <p>Operator must ensure that valves are re-seated after release in accordance with the</p>

				manufacturer's design.
	Maintenance	Written scheme of examination in accordance with condition 1.1.1	Written scheme of examination in accordance with condition 1.1.1	Continuous gas pressure shall be monitored. Operator must ensure that valves are re-seated after release in accordance with the manufacturer's design.
	Inspection calibration and validation report	In accordance with design and construction specifications or after over topping or foaming event		Operator must ensure that valves are re-seated after release, after a foaming event or sticking, build-up of debris, obstructions or damage. Operator must ensure that PRV function remains within designed operation gas pressure in accordance with the manufacturer's design by suitably trained/qualified personnel. Inspection, calibration and validation report. In accordance with industry Approved Code of Practice
Storage lagoons and storage tanks	Volume	Daily	Visual or flow metre measurement	750 mm freeboard must be maintained for storage lagoons.
Bund	Integrity checks	Daily	Visual assessment	--
Bund perforation pipework seal, pipework, pumps and valves.	Integrity checks	Daily and during every tanker unloading period.	Visual assessment	--
Post pasteurisation holding tank	Volume	Daily	High and low level probes	--
Post pasteurisation holding tank carbon filter	As determined by Pre-operational measure 6	As determined by Pre-operational measure 6	As determined by Pre-operational measure 6	As determined by Pre-operational measure 6

Carbon filters				
Carbon filter (Post pasteurisation holding tank)	Carbon bed temperature – inlet and outlet	Continuous	Temperature probe	Odour abatement plant shall be managed in accordance with permit condition 3.3, the odour management plan and manufacturer's recommendations.
	Gas flow rate – inlet and outlet	Continuous	Gas flow meter	
	Moisture or humidity	Daily	Moisture meter	
	Back pressure	Weekly	Recognised industry method	
	Efficiency assessment	Annual	Emission removal efficiency (BS EN 13725 for odour removal)	Carbon filter(s) to be replaced in accordance with manufacturer's recommendations.
	Hydrogen sulphide – inlet and outlet gas stream	Every 6 months or as agreed in writing by the Environment Agency.	CEN TS 13649 for sampling NIOSH 6013 for analysis	Equipment shall be calibrated on a 4 monthly basis, or as agreed in writing by the Environment Agency.
	Ammonia – inlet	Every 6 months or as agreed in writing by the Environment Agency.	EN ISO 21877	
	Odour concentration – inlet and outlet gas stream	Every 6 months or as agreed in writing by the Environment Agency.	BS EN 13725	

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1.	A1, A2, A3.	Every 12 months	1 January, 1 April, 1 July, 1 October
Emissions to air from odour abatement plant Parameters as required by condition 3.5.1.	A7	Every 6 months other date as agreed in writing with the Environment Agency	1 January, 1 July
Process monitoring Parameters as required by condition 3.5.1	As specified in schedule 3 table S3.2	Every 12 months	1 January
Total annual VOCs emissions from gas engines (calculated)	As specified in schedule 3 table S3.2	Every 12 months	1 January

Table S4.2 Annual production/treatment	
Parameter	Units
Biomethane generated	tonnes or m ³
Whole digestate	tonnes
Electricity generated	MWh
Non-waste outputs	tonnes

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Water usage	Annually	tonnes or m ³
Energy usage	Annually	MWh
Raw material usage	Annually	tonnes or m ³
Emergency flare operation	Annually	hours
Biomethane exported	Annually	tonnes or m ³
Auxiliary boiler usage	Annually	hours
CHP engine usage	Annually	hours
CHP engine efficiency	Annually	%
Electricity exported	Annually	MWh

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	15/12/2021
Process monitoring	Form process 1 or other form as agreed in writing by the Environment Agency	15/12/2021
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	27/10/2019
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	27/10/2019
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	27/10/2019
Waste returns	E-waste Return Form or other form as agreed in writing by the Environment Agency	--

Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B – to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

“accident” means an accident that may result in pollution.

“ADQP” means Anaerobic Digestion Quality Protocol

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

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

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

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

“Best available techniques” means 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 the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole:

(a) ‘techniques’ includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;

(b) ‘available techniques’ means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;

(c) ‘best’ means most effective in achieving a high general level of protection of the environment as a whole.

“Biodegradable” means a material is capable of undergoing biological anaerobic or aerobic degradation leading to the production of CO₂, H₂O, methane, biomass, and mineral salts, depending on the environmental conditions of the process.

“building” means a construction that has the objective of providing sheltering cover and minimising emissions of noise, particulate matter, odour and litter.

“Capacity” means the potential capacity and not historical or actual production levels or throughput. This means that the designed capacity is the maximum rate at which the site can operate. Biological treatment of waste usually takes place over more than one day, so the physical daily capacity can be calculated by dividing the maximum quantity of waste that could be subject to biological treatment at any one time by the minimum residence time. For in-vessel composting, the residence time for sanitisation should be calculated separately and then aggregated to the complete composting time.

“channelled emissions” means the emissions of pollutants into the environment through any kind of duct, pipe, stack, etc. This also includes emissions from open top biofilters.

“combined heat and power” (CHP) or Cogeneration means the simultaneous generation in one process of thermal energy and electrical or mechanical energy.

“compost” means a solid particulate material that is the result of composting, which has been sanitised and stabilised, and which confers beneficial effects when added to soil, used as a component of growing media or used in another way in conjunction with plants.

“compostable plastics” means plastics that are certified to meet the standards of EN 13432, EN 14995 or equivalent and is capable of breaking down by microbial digestion to create compost.

“composting” means the managed biological decomposition of biodegradable waste organic materials, under conditions that are predominantly aerobic and that allow the development of thermophilic temperatures as a result of biologically produced heat and that result in compost.

“diffuse emissions” mean non-channelled emissions (e.g. of dust, organic compounds, odour) which can result in ‘area’ sources (e.g. tanks) or ‘point’ sources (e.g. pipe flanges). This also includes emissions from open-air windrow composting.

“digestate” means material resulting from an anaerobic digestion process.

“disposal” means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit.

“emissions to land” includes emissions to groundwater.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“existing medium combustion plant” means an MCP which was put into operation before 20 December 2018.

“generator” means any combustion plant which is used to generate electricity, excluding mobile, unless it is connected to the national grid.

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

“impermeable surface” means a surface or pavement constructed and maintained to a standard sufficient to prevent the transmission of liquids beyond the pavement surface.

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions, as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“Leak detection and repair (LDAR) programme” means a structured approach to reduce fugitive emissions of organic compounds by detection and subsequent repair or replacement of leaking components. Currently, sniffing (described by EN 15446) and optical gas imaging methods are available for the identification of leaks as set out in BAT 14 and section 6.6.2 of the Waste Treatment BAT Conclusions.

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“medium combustion plant” or “MCP” means a combustion plant with a rated thermal input equal to or greater than 1 MW but less than 50 MW.

“Medium Combustion Plant Directive” or “MCPD” means Directive 2015/2193/EU of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants, as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

“new medium combustion plant” means an MCP which was put into operation after 20 December 2018. This includes replacement MCP and Generators.

“operational area” means any part of a facility used for the handling, storing and treatment of waste.

“operator” means in relation to a regulated facility:

- (a) the person who has control over the operation of the regulated facility,
- (b) if the regulated facility has not yet been put into operation, the person who will have control over the regulated facility when it is put into operation, or

(c) if a regulated facility authorised by an environmental permit ceases to be in operation, the person who holds the environmental permit

“pests” means Birds, Vermin and Insects.

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

- (a) be harmful to human health or the quality of the environment,
- (b) cause offence to a human sense,
- (c) result in damage to material property, or
- (d) impair or interfere with amenities and other legitimate uses of the environment.

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

“recovery” means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

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

- no liquids will run off the surface otherwise than via the system
- all liquids entering the system are collected in a sealed sump, except where liquids may be lawfully discharged to foul sewer.

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

“treated wood” means any wood that has been chemically treated (e.g. to enhance or alter the performance of the original wood). Treatments may include penetrating oils, tar oil preservatives, water-borne preservatives, organic-based preservatives, boron and organo-metallic based preservatives, boron and halogenated flame retardants and surface treatments (including paint and varnish).

“VOC” means Volatile organic compounds as defined in Article 3(45) of Directive 2010/75/EU – ‘volatile organic compound’ means any organic compound as well as the fraction of creosote, having at 293.15K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use.

“Waste code” means the six digit code referable to a type of waste in accordance with the List of Wastes (England) Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

“Waste Framework Directive” or “WFD” means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste, as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

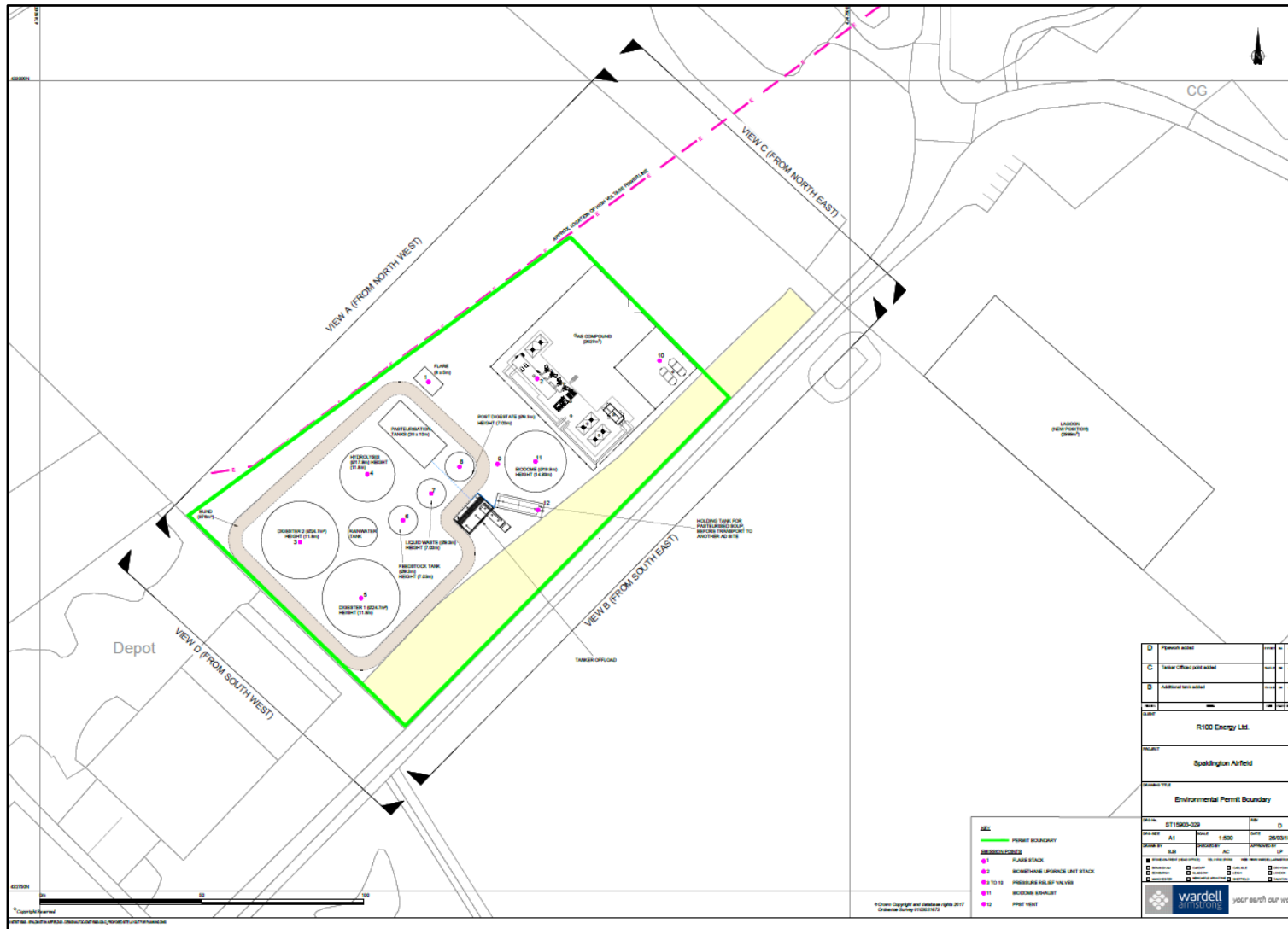
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid fuels and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

“year” means calendar year ending 31 December.

Schedule 7 – Site plan



END OF PERMIT

Permit number
EPR/GP3439QK

Permit Number: GP3439QK

Operator: R100 Energy Limited

Facility: Spaldington Anaerobic Digestion Facility

Form Number: Air1 / 15/12/2021

Reporting of emissions to air for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
A1	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	250 mg/m ³	1 hour period		BS EN 14792		
	Sulphur dioxide	40 mg/m ³	1 hour period		BS EN 14791		
	Carbon monoxide	1400 mg/m ³	1 hour period		BS EN 15058		
	Total VOCs	No limit set	1 hour period		BS EN 12619:2013		
A2	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	250 mg/m ³	1 hour period		BS EN 14792		
	Sulphur dioxide	40 mg/m ³	1 hour period		BS EN 14791		
	Carbon monoxide	1400 mg/m ³	1 hour period		BS EN 15058		
	Total VOCs	No limit set	1 hour period		BS EN 12619:2013		
A3	Oxides of nitrogen (NO and NO ² expressed as NO ²)	150 mg/m ³	1 hour period		BS EN 14792		
	Carbon monoxide	50 mg/m ³	1 hour period		BS EN 15058		

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
	Total VOCs	10 mg/m ³	1 hour period		BS EN 12619:2013		

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

[3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.

[4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed

Date.....

(Authorised to sign as representative of Operator)

Permit Number: GP3439QK

Operator:

R100 Energy Limited

Facility: Spaldington Anaerobic Digestion Facility

Form Number:

WaterUsage1 / 21/10/19

Reporting of Water Usage for the year

Water Source	Usage (m3/year)	Specific Usage (m3/unit output)
Mains water		
TOTAL WATER USAGE		

Operator's comments:

Signed

Date.....

(authorised to sign as representative of Operator)

Permit Number: GP3439QK

Operator: R100 Energy Limited

Facility: Spaldington Anaerobic Digestion Facility

Form Number: Energy1 / 21/10/19

Reporting of Energy Usage for the year

Energy Source	Energy Usage		Specific Usage (MWh/unit output)
	Quantity	Primary Energy (MWh)	
Electricity *	MWh		
Natural Gas	MWh		
Biogas	tonnes		
TOTAL	-		

* Conversion factor for delivered electricity to primary energy = 2.4

Operator's comments:

Signed

Date.....

(Authorised to sign as representative of Operator)

Permit Number: GP3439QK

Operator: R100 Energy Limited

Facility: Spaldington Anaerobic Digestion Facility

Form Number: Performance1 / 21/10/19

Reporting of other performance indicators for the period DD/MM/YYYY to DD/MM/YYYY

Parameter	Units
Total raw material used	Tonnes or m3
CHP engine usage	hours
CHP engine efficiency	%
Auxiliary boiler usage	hours
Emergency flare operation	hours
Electricity exported	MWh
Biomethane exported	tonnes or m3

Operator's comments:

Signed

Date.....

(Authorised to sign as representative of Operator)

Permit Number: GP3439QK

Operator: R100 Energy Limited

Facility: Spaldington Anaerobic Digestion Facility

Form Number: Process1 / 15/12/2021

Reporting of process monitoring for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Trigger Value /Threshold Value /Industry Standard	Result /Reading ^[1]	Test Method ^[2]	Monitoring Date and Time
Process monitoring of digestion stability					
Digester feed	pH				
	Alkalinity				
	Temperature				
	Hydraulic loading rate				
	Organic loading rate				
	Volatile fatty acids concentration				
	Ammonia				
	Liquid/foam level				
Digestate (Other monitoring)					
Digestate batch	Volatile fatty acids concentration				
	Ammonia				
Monitoring of biogas produced					

Emission Point	Substance / Parameter	Trigger Value /Threshold Value /Industry Standard	Result /Reading [1]	Test Method [2]	Monitoring Date and Time
Biogas in digester	Flow				
	Methane				
	CO ₂				
	O ₂				
	Hydrogen sulphide				
	Pressure				
Tank structural integrity					
Digester and storage structural stability	Integrity checks				
Digester tanks (Other monitoring)					
Digester tanks	Agitation /mixing				
	Tank capacity and sediment assessment				
Site odour monitoring					
Waste reception building or area; Digesters and storage tanks	Odour olfactory monitoring				
Odour abatement plant					
	Temperature				
	Moisture				
	Thatching compaction (biofilters only)				
	Efficiency assessment				
	Gas flow				

Emission Point	Substance / Parameter	Trigger Value /Threshold Value /Industry Standard	Result /Reading [1]	Test Method [2]	Monitoring Date and Time
	Ammonia				
	Odour concentration				
Monitoring of diffuse emissions					
Diffuse emissions from all sources identified in the Leak Detection and Repair (LDAR) programme	VOCs including methane				
Monitoring of CHP engine stacks					
CHP engine 1 and 2	VOCs including methane				
	Exhaust gas temperature				
	Exhaust gas pressure				
	Exhaust gas water vapour content				
	Exhaust gas oxygen				
	Exhaust gas flow				
	Total annual VOCs emissions (calculated)				
Meteorological conditions					
Wind speed					
Wind direction					
Air temperature					
Emergency flare operation					

Emission Point	Substance / Parameter	Trigger Value /Threshold Value /Industry Standard	Result /Reading [1]	Test Method [2]	Monitoring Date and Time
Date of operation					
Time of operation					
Duration of operation					
Annual operational hours					
Pressure relief valve operation					
Date of release	Biogas release				
Time of release					
Duration of release					
Annual mass release					
Storage tank volume (for digestate and leachate storage)					
Daily volume check	Volume				
Storage tank volume (Digesters /Feedstock tanks / Other tanks)					
Daily volume check	Volume				

1. Monitoring results can be submitted to the Environment Agency in an electronic format or in other format as agreed in writing by the Environment Agency.
2. Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.

Signed

Date.....

(Authorised to sign as representative of Operator)

