

# Permit with introductory note

## The Environmental Permitting (England & Wales) Regulations 2016

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Green Create W2V Kent Ltd  
Knoxbridge Farm Anaerobic Digestion Facility  
Knoxbridge Farm  
Cranbrook Road  
Knoxbridge  
Kent  
TN17 2BT

### **Permit number**

**EPR/PP3939QL**

# Knoxbridge Farm Anaerobic Digestion Facility

## Permit number EPR/PP3939QL

### Introductory note

#### **This introductory note does not form a part of the permit**

The main features of the permit are as follows:

The activity is a 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”* activity.

#### **The activity**

The Installation is an anaerobic digestion facility which processes poultry manure feedstock from laying chickens. The anaerobic digestion process produces biogas. The biogas will be upgraded via a biogas upgrading plant (BUP) to produce biomethane that can be exported to the national gas grid. There is also a combined heat and power plant (CHP) to generate electricity and heat for on-site consumption for less than 500 hours per annum, and an emergency flare. An ammonia stripper removes ammonia from the whole digestate so it can be recycled, and produces ammonium sulphate as a waste by-product. Digestate is stored in an on-site lagoon with covered gas storage capability, prior to being taken off-site. The plant can process a maximum of 62,000 tonnes of manure annually.

The process is as follows.

1. The feedstock is received via two routes i) the adjoining poultry farm delivers the waste twice a week via a conveyor belt to 1 of 2 dedicated bays within an operations building ii) manure from off-site farms will be received via road transport on tractor-trailers and manure tipped into the operations building.
2. The manure is automatically fed into a blending tank using conveyors via a manure grinder that breaks up clumps. In the blending tank a homogenous slurry is created by adding recycled digestate and mixing.
3. The slurry passes through a macerator to further reduce particle size then into one of two grit settling tanks. Grit is removed from the tanks and washed in a sand washer. Waste grit is collected for off-site disposal. (Process steps 1 to 3 are carried out within a building with air extraction and ventilation installed. Blending and grit settling tanks have point-source extraction. Emissions are collected and directed to an odour abatement plant).
4. Homogenised slurry is then fed into one of two horizontal, anaerobic digestion chambers which operate in parallel. The biogas produced is collected in the headspace of the digester. The digestate produced is pumped into an effluent pit and from there to an ammonia stripping plant which also acts to pasteurise the digestate at ~72°C over 5 days. Emissions from this process are abated using a chemical scrubber and emitted to air via a stack.
5. Digestate is dewatered using a centrifuge. The solid fraction is stored within a dedicated bay in the operations building. The liquid fraction is either sent to a buffer tank for recycling back into the blending tank or goes to the site's covered, storage lagoon installed with gas collection. Excess liquid digestate is sent off-site.
6. Collected biogas is either used in the combined heat and power plant for energy use on site or upgraded via the BUP for injection into the national gas grid.

The site is located at approximately National Grid Reference TQ 79427 41172 in a rural/agricultural setting, adjacent to Knoxbridge Poultry Farm, approximately 3km south of the village of Staplehurst. There is one Special Site of Scientific Interest (Sissinghurst Wood SSSI) within 2km of the facility (1.97km away); four local wildlife sites and several ancient woodland sites, the closest of which is 450m away.

The main point-source emissions are the ammonia scrubber, odour abatement plant serving the operations building, and the BUP. There are also the combustion plant (CHP, boiler and emergency gas flare) and an emergency stand-by generator.

The CHP has operating hours of less than 500 per annum and so is exempt from the Emission Limit Values stated in the Medium Combustion Plant Directive. The boiler is fired on natural gas.

The operator has an Environment Management System in place.

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

<b>Status log of the permit</b>		
<b>Description</b>	<b>Date</b>	<b>Comments</b>
Application EPR/PP3939QL/A001	Received 17/11/2020	Application for an anaerobic digestion facility with combustion of biogas.
Request for further information	02/12/2020	
Additional information received	02/12/2020	Site Condition Report Knoxbridge Farm v1 Desk study and ground investigation, Knoxbridge Farm (ref 120932/ENV/DOC/0114) Environmental risk assessment Knoxbridge Farm v1
Additional information received	03/12/2020	Hazardous Area Classification Report
Not duly made email	23/12/2020	
Not duly made response	Email response dated 18/01/2021	Site Location Plan (Lease Plan 120932-NRG-DWG-0406-0D) Site Layout Plan (1374-065 Noise and Emission) Drainage Plan (1374-310 Drainage Plan)
	Email response dated 27/01/2021	Combi-bag description REV02-2016 340m <sup>3</sup> Ammonium sulphate tank details 1374-051A REVA Site layout Option A CHP – technical specification 40m <sup>3</sup> sulphuric acid tank details
Additional information received	28/01/2021	Updated air quality assessment (ref 47934 Knoxbridge Farm AD AQ Technical Note Rev2)
Additional information received	01/02/2021	Non-Technical summary Knoxbridge Farm v2
	Duly made 28/01/2021	
Request for further information	17/02/2021	
Additional information received	24/02/2021	ADBA risk assessment Potentially hazardous area identification Lining roll test certificates
	02/03/2021	Confirmation of NOx emission rate for CHP Ammonia stripper tank and digester drawings DSEAR risk assessment Kent W2V final DSEAR Hazardous Area Classification report A Combi bag specification Ammonia scrubber technical specification BUP technical specification Flare specification Boiler technical specification

<b>Status log of the permit</b>		
<b>Description</b>	<b>Date</b>	<b>Comments</b>
	Email dated 26/04/2021	Flex fermenter details
Schedule 5 Notice issued	10/03/2021	Request for further information
Schedule 5 Notice response	Email dated 10/05/2021	ERA v2, BAT Assessment v2, OMP v2, AMP v3, FEMP v3, EMS v2 and NTS v3 SCAIL data in Microsoft format BAT 5 Drain sump design (1374-001 Rev 2) Updated Noise and Emissions Plan with NGRs (1374-065 Noise Emission on Site Rev 3) Secondary Containment Options (210504_405-10965-00001_M_Secondary_Containment_Options) Sewage Treatment Plant details (Kent W2V Plant – Office WTP) Design of the external conveyor system (BD-101219_Fridays Conveyor) Surface Water Drainage Scheme Report (120488 NRG-DOC-500-2 Surface Water Drainage Scheme Report)
	14/06/2021	Digestate Management Plan Commissioning Plan
	15/06/2021	Foaming information HAZOP report, Oct 2020 Drainage plan (2018)
	16/06/2021	LDARv2 Bioaerosol risk assessment v2
	21/06/2021	FEMP final Odour management plan v3 Air Quality Technical Note v3 As built drainage plan
	25/06/2021	Secondary containment design strategy report Increased throughput evaluation Air quality input files
	05/07/2021	New flare details Odour abatement details
	03/08/2021	Technically competent management details
	13/08/2021	Updated noise and emissions plan v4
	30/08/2021	As built drainage and secondary containment plan, ref 1374-065 Standby generator details
	08/09/2021	Secondary containment assessment report (ref 405-10965-00001, Sept 2021)
	10/09/2021	Certificate of continuing competence (ref 518420, issued 07/09/2021)
	Permit determined	15/09/2021

End of introductory note

# Permit

## The Environmental Permitting (England and Wales) Regulations 2016

### Permit number

**EPR/PP3939QL**

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

**Green Create W2V Kent Ltd** (“the operator”),

whose registered office is

**40 Craven Street**

**London**

**WC2N 5NG**

company registration number 11197510

to operate an installation at

**Knoxbridge Farm Anaerobic Digestion Facility**

**Knoxbridge Farm**

**Cranbrook Road**

**Knoxbridge**

**Kent**

**TN17 2BT**

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

Name	Date
Louise Hann	15/09/2021

Authorised on behalf of the Environment Agency

# Conditions

## 1 Management

### 1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
  - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in 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 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 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.

## **1.5 Climate change**

- 1.5.1 The operator shall review and if appropriate update, at least every 4 years, the climate change adaptation risk assessment submitted with the permit application, and shall update the written management system as appropriate.

## **2 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 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.

### **2.2 The site**

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in red 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 table S2.2; 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 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.

## **3 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 tables S3.1 and S3.2.

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 For the following activities referenced in schedule 1, table S1.1 (AR4) Limited Operating Hours MCPs shall:

(a) not exceed 500 hours operation in a 12 month period as a rolling average over a 3 year period, and thereafter assessed annually.

(b) Not operate for more than 750 hours in any single year.

### **3.2 Emissions of substances not controlled by emission limits**

3.2.1 Emissions of substances not controlled by emission limits (excluding odour, but including ammonia) 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 tables S3.1 and S3.2;
- (b) process monitoring specified in table S3.3;

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 and S3.2, 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;

### **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.

## **4 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.

The operator shall maintain a record of the type and quantity of fuel used and the total annual hours of operation of each MCP.

## 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 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 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 re-occurrence 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 medium combustion plant.
- 4.3.9 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:
- (a) a decision by the Secretary of State not to re-certify the agreement;
  - (b) a decision by either the operator or the Secretary of State to terminate the agreement; and
  - (c) any subsequent decision by the Secretary of State to re-certify such an agreement.

## **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

<b>Table S1.1 activities</b>			
<b>Activity reference</b>	<b>Activity listed in Schedule 1 of the EP Regulations</b>	<b>Description of specified activity and WFD Annex I and II operations</b>	<b>Limits of specified activity and waste types</b>
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	<p>From receipt of waste through to digestion and recovery of by-products (digestate).</p> <p>Anaerobic digestion of waste in two, horizontal digestion tanks followed by burning of biogas produced from the process.</p> <p>Waste types suitable for acceptance are limited to those specified in Table S2.2.</p>
<b>Directly Associated Activity</b>			
AR2	Storage of waste pending recovery or disposal	R13: Storage of waste pending the operations numbered R1 and R3 (excluding temporary storage, pending collection, on the site where it is produced)	<p>From the receipt of permitted waste to pre-treatment and despatch for anaerobic digestion on site, including the receipt of waste using transfer conveyors from adjoining poultry unit, permit reference EA/EPR/KP3333US.</p> <p>Storage of residual wastes from pre-treatment to despatch off-site for recovery.</p> <p>Storage of waste (poultry manure, solid digestate and separated residues/grits) in an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system. No more than 500 tonnes (or 600m<sup>3</sup>) of poultry manure stored at any one time and for no longer than 4 days.</p> <p>Safe storage of ammonium sulphate in sealed</p>

<b>Table S1.1 activities</b>			
<b>Activity reference</b>	<b>Activity listed in Schedule 1 of the EP Regulations</b>	<b>Description of specified activity and WFD Annex I and II operations</b>	<b>Limits of specified activity and waste types</b>
			<p>tanks/vessels located within an appropriate secondary containment bund and on an impermeable surface with a sealed drainage system.</p> <p>Safe storage of spent activated carbon.</p> <p>Waste types suitable for acceptance are limited to those specified in Table S2.2.</p>
AR3	Physical treatment for the purpose of recycling	R3: Recycling/reclamation of organic substances which are not used as solvents	<p>From the receipt of waste to despatch for anaerobic digestion or despatch off site for recovery.</p> <p>Pre-treatment of waste in sealed tanks or an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system. Including grinding, blending, mixing, maceration, chemical addition and de-gritting.</p> <p>Post-treatment of digestate in an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system. Including dewatering (via centrifuge), pressing, blending, mixing and recirculation of separated liquids.</p> <p>Heat treatment (including pasteurisation) of waste in an ammonia stripping plant for the purpose of recovery.</p> <p>Gas cleaning by biological or physical (carbon filtration) or chemical scrubbing.</p>

<b>Table S1.1 activities</b>			
<b>Activity reference</b>	<b>Activity listed in Schedule 1 of the EP Regulations</b>	<b>Description of specified activity and WFD Annex I and II operations</b>	<b>Limits of specified activity and waste types</b>
			Waste types suitable for acceptance are limited to those specified in Table S2.2.
AR4	Heat and electrical power supply	R1:Use principally as a fuel to generate energy	<p>From the receipt of biogas produced at the on-site anaerobic digestion process to combustion with the release of combustion gases.</p> <p>Combustion of biogas in one combined heat and power (CHP) engine with a thermal input of 1.193 MWth and operational less than 500 hours per annum (Low operating hours MCP)</p> <p>Combustion of diesel in one emergency generator with a thermal input of 0.716MWth and operational less than 500 hours per annum (Low operating hours MCP).</p> <p>Combustion of natural gas in one boiler with an aggregated thermal input of 1.413 MWth.</p>
AR5	Emergency flare operation	D10: Incineration on land	<p>From the receipt of biogas produced at the on-site anaerobic digestion process to incineration with the release of combustion gases.</p> <p>Use of one auxiliary flare required only during periods of breakdown or maintenance of the CHP engine, biogas upgrading plant and/or auxiliary boiler.</p>
AR6	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	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



<b>Table S1.1 activities</b>			
<b>Activity reference</b>	<b>Activity listed in Schedule 1 of the EP Regulations</b>	<b>Description of specified activity and WFD Annex I and II operations</b>	<b>Limits of specified activity and waste types</b>
		injection into the National Grid.	CHP engine, auxiliary boiler and/or emergency flare.
AR7	Raw material storage	Storage of raw materials including lubrication oil, antifreeze, propane, ferric chloride, activated carbon, diesel, sulphuric acid.	From the receipt of raw materials to despatch for use within the facility. Storage of raw materials within a contained and secure area and on an impermeable surface with sealed drainage system.
AR8	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 roof space of digesters and digestate storage lagoon.  From the receipt of biogas produced at the on-site anaerobic digestion process to despatch for use within the facility.
AR9	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 covered storage lagoon with gas collection.  Storage of processed uncertified solid digestate in an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system.
AR10	Process water collection and storage	Collection and storage of process water in one storage tank	From the receipt of process water produced at the facility to despatch for treatment at the facility or despatch off site for recovery or disposal.
AR11	Surface water collection and storage	Collection and storage of uncontaminated roof and site surface water	From the collection of uncontaminated roof and site surface water from non-operational areas only to re-

<b>Table S1.1 activities</b>			
<b>Activity reference</b>	<b>Activity listed in Schedule 1 of the EP Regulations</b>	<b>Description of specified activity and WFD Annex I and II operations</b>	<b>Limits of specified activity and waste types</b>
			use within the facility or discharge off-site. Collection and storage of uncontaminated roof and site surface water in one attenuation pond.
AR12	Air Treatment	Collection and treatment of air from the buildings or plant using abatement systems – [carbon filters and ammonia scrubber] prior to release to atmosphere.	From the collection of air from site processes to treatment and release of treated air to atmosphere.

<b>Table S1.2 Operating techniques</b>		
<b>Description</b>	<b>Parts</b>	<b>Date Received</b>
Application	Sections 1.2, 1.4, 1.6 and 1.8 of the application document in response to section 3a – technical standards , Part B of the application form Best available techniques as described in the BAT Reference Document for Waste Treatment (the BREF) and BAT conclusions.	17/11/2020
Response to Schedule 5 Notice dated DD/MM/YY	Digestate Plan, undated Commissioning plan, dated May 2021	14/06/2021
	Email confirming foaming management	15/06/2021
	LDAR v2, June 2021	16/06/2021
	Odour management plan, v3, dated 21/06/2021 FEMP, v4, dated June 2021 Accident management plan, v3, May 2021 Air Quality Technical Note, v3, 16/06/2021 Non-technical summary, v3 Environmental risk assessment, v2, May 2021 Digestate management plan (undated)	24/06/2021
Additional information	Response to question 2 detailing odour abatement equipment	05/07/2021

<b>Table S1.3 Improvement programme requirements</b>		
<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
<b>Improvement condition for assessing emissions from the biogas upgrading plant (point sources only)</b>		
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 from channelled emission sources. The study shall include the monitoring of point source releases to air from the ammonia scrubber (emission point A4); the biogas upgrading plant (emission point A5); and the odour abatement plant (emission point A6) during normal operation; having regard to the Environment Agency technical guidance, <i>Monitoring stack emissions: environmental permits</i> 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 plant).</p> <p>The pollutants to be monitored shall include, as appropriate:</p> <ul style="list-style-type: none"> <li>• total volatile organic compounds;</li> <li>• hydrogen sulphide;</li> <li>• odour; and</li> <li>• ammonia</li> </ul>	14/03/2022 or otherwise agreed in writing by the Environment Agency
IC2	<p>Following the completion of IC1, the operator shall undertake an emissions impact assessment of point source releases to air from emission points A4, A5, and A6 using the information obtained through the emissions monitoring. The emissions impact assessment report and all associated monitoring reports and assessments shall be submitted in writing to the Environment Agency for review.</p> <p>The emissions impact assessment shall, as a minimum, include:</p> <ul style="list-style-type: none"> <li>• reports showing details of the monitoring undertaken and the results obtained;</li> <li>• 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</li> <li>• a completed H1 assessment software tool.</li> </ul> <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>	14/03/2022 or otherwise agreed in writing by the Environment Agency
<b>Improvement condition for review of effectiveness of abatement plant</b>		
IC3	<p>The operator shall carry out a review of the abatement plant on site (odour control unit and ammonia scrubber), 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, hydrogen sulphide 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"> <li>• Full investigation and characterisation of the waste gas streams for both the ammonia scrubber serving the ammonia stripping plant and the odour abatement plant serving the operations building</li> <li>• Abatement stack monitoring results (not limited to odour, hydrogen sulphide and ammonia)</li> </ul>	14/03/2022 or other date as agreed in writing with the Environment Agency

<b>Table S1.3 Improvement programme requirements</b>		
<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
	<ul style="list-style-type: none"> <li>Abatement process monitoring results in accordance with parameters listed in table S3.3 (not limited to odour, hydrogen sulphide and ammonia)</li> <li>A proposal for site-specific “action levels” (not limited to odour concentration, hydrogen sulphide and ammonia)</li> <li>Odour monitoring results at the site boundary</li> <li>Records of odour complaints and odour related incidents</li> <li>Recommendations for improvement including the replacement or upgrading the abatement plant</li> <li>Timescales for implementation of improvements to the abatement plant</li> </ul> <p>The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.</p>	
<b>Improvement condition for review of the air extraction and ventilation system and abatement plant – for operations building</b>		
IC4	<p>The operator shall submit a written report to the Environment Agency detailing the results of a review of the installed air extraction and ventilation system and associated abatement plant serving the operations building. The operator shall obtain the Environment Agency’s written approval to it.</p> <p>The report shall include but not be limited to:</p> <ol style="list-style-type: none"> <li>System design performance criteria for effective fugitive emission control</li> <li>As-built design details and air process flow diagram for the air extraction and ventilation system</li> <li>Evidence to show that all odorous chemical compounds and their loading rates expected in the relevant air streams were considered in the design; and supporting evidence that the odorous compounds are being controlled and/or abated either by operating techniques or by the installed abatement plant.</li> <li>Design alarms and triggers for each relevant scenario to alert the operator to the malfunction of both the extraction/ventilation and abatement systems. The report should further list all relevant contingency mitigation actions to minimise risk of elevated odour pollution from the installation linked to each malfunction scenario and detail the actions to restore systems to normal operating conditions for effective odour control.</li> <li>Evidence to show the extraction and ventilation system and associated abatement plant has been designed, installed and signed-off as appropriate for its purpose by a suitably qualified engineer.</li> </ol> <p>Following completion of IC3 &amp; IC4 the operator shall review and update the Odour Management Plan (OMP) and submit a copy to the Environment Agency for approval.</p>	14/03/2022 or other date as agreed in writing with the Environment Agency
<b>Improvement condition to submit an updated HAZOP report</b>		
IC 5	Submit a revised HAZOP report to the Environment Agency for technical assessment and agreement following commissioning of the site. The report must reflect any changes in infrastructure or plant (for example	14/03/2022 or other date as agreed in

<b>Table S1.3 Improvement programme requirements</b>		
<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
	<p>addition of the odour control unit) against the design HAZOP. Relevant recommendations following the review are to be addressed. The report must contain dates for the implementation of individual measures.</p> <p>The notification requirements of condition 2.4.2 will be deemed to have been complied with on submission of the plan.</p> <p>You must implement the report as agreed, and from the date stipulated by the Environment Agency.</p>	<p>writing with the Environment Agency</p>

## Schedule 2 – Waste types, raw materials and fuels

Raw materials and fuel description	Specification
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Maximum quantity	Annual throughput shall not exceed 62,000 tonnes
<b>Exclusions</b>	<p>Wastes having any of the following characteristics shall <b>not</b> be accepted:</p> <ul style="list-style-type: none"> <li>wastes containing persistent organic pollutants</li> <li>wastes containing Japanese Knotweed or other invasive plant species listed in the Alien Invasive Species Regulations 2014</li> <li>manures, slurries and spoiled bedding and straw from farms where animals have notifiable diseases as stipulated in the Animal By-Products (Enforcement) (England) Regulations 2013.</li> </ul>
<b>Waste code</b>	<b>Description</b>
<b>02</b>	<b>Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing</b>
<b>02 01</b>	<b>wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing</b>
02 01 06	animal faeces, urine and manure (including spoiled straw) 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
<b>New medium combustion plant, limited operating hours (&lt;500 hours per annum), all fuels</b>						
A1 [Point A1 on site plan in schedule 7] TQ 79474 41204	CHP engine 1 stack (Note 1)	Oxides of Nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	No limit set	In line with web guide: Monitoring stack emissions: low risk MCPs and specified generators  Published 16 February 2021	After 3 times the maximum average annual operating hours have elapsed.  And no less frequent than every 5 years	web guide: Monitoring stack emissions: low risk MCPs and specified generators  Published 16 February 2021
		Sulphur dioxide	No limit set			
		Carbon monoxide	No limit set			
		Total VOCs	No limit set	--	--	BS EN 12619
A7 [Point A7 on site plan in schedule 7] TQ 79475 41167	Diesel emergency generator exhaust (Note 1) (Note 4 & 5)	Oxides of Nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	No limit set	In line with web guide: Monitoring stack emissions: low risk MCPs and specified generators  Published 16 February 2021	After 3 times the maximum average annual operating hours have elapsed.  And no less frequent than every 5 years	web guide: Monitoring stack emissions: low risk MCPs and specified generators  Published 16 February 2021
		Carbon monoxide	No limit set			
<b>Emergency gas flare</b>						
A2 [Point A2 on site plan in schedule 7] TQ 79503 41208	Emergency flare stack	(NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	150 mg/m <sup>3</sup>	Average over sample period	(Note 2)	BS EN 14792
		Carbon monoxide	50 mg/m <sup>3</sup>			BS EN 15058
		Total VOCs	10 mg/m <sup>3</sup>			BS EN 12619:2013
<b>New medium combustion plant other than engines and gas turbines fuelled on natural gas</b>						
A3 [Point A3 on site plan in schedule 7]	New medium combustion plant other than engines and gas turbines fuelled	Oxides of Nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )	100 mg/m <sup>3</sup>		Every 3 years	

<b>Table S3.1 Point source emissions to air – emission limits and monitoring requirements</b>						
<b>Emission point ref. &amp; location</b>	<b>Source</b>	<b>Parameter</b>	<b>Limit (including unit)</b>	<b>Reference period</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>
TQ 79430 41173	on natural gas (ie boiler) (Note 1)	Carbon monoxide	No limit set	In line with web guide: Monitoring stack emissions: low risk MCPs and specified generators  Published 16 February 2021		web guide: Monitoring stack emissions: low risk MCPs and specified generators  Published 16 February 2021
A4 [Point A4 on site plan in schedule 7] TQ 79410 41190	Ammonia scrubber serving the ammonia stripping plant	Ammonia	No limit set (Note 3)	Average over sample period	Once every 6 months	EN ISO 21877
A5 [Point A5 on site plan in schedule 7] TQ 79489 41222	Biogas upgrading plant stack	VOCs including methane	No limit set	Leak detection and repair (LDAR) programme	In accordance with written management system	BS EN 15446
A6 [Point A6 on site plan in schedule 7] TQ 79410 41165	Channelled emissions - odour abatement stack serving the operations building	Hydrogen sulphide	No limit set [Note 3]	Average over sample period	Once every 6 months	CEN TS 13649 for sampling  NIOSH 6013 for analysis
		Odour concentration	No limit set [Note 3]	--	Once every 6 months	BS EN 13725
		Ammonia	No limit set [Note 3]	Average over sample period	Once every 6 months	EN ISO 21877
Pressure relief valves	Digesters and digestate storage lagoon(s)	Biogas release and operational events	No limit set	Recorded duration and frequency	SCADA	--
Vents from tank(s)	Chemical/Oil/Fuel Storage tank(s)	No parameter set	No limit set	--	--	--



<b>Table S3.1 Point source emissions to air – emission limits and monitoring requirements</b>						
<b>Emission point ref. &amp; location</b>	<b>Source</b>	<b>Parameter</b>	<b>Limit (including unit)</b>	<b>Reference period</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>
<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) and oxygen 3% for emergency flares and medium combustion plants other than engines and gas turbines (such as boilers).</p> <p>Note 2 – 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> <p>Note 3 – Action levels to be agreed in writing with the Environment Agency on completion of IC 3</p> <p>Note 4 - A Limited Operating Hours MCP which is an excluded generator may only be operated for the sole purpose of maintaining power supply to a site during an on-site emergency and it may not participate in any balancing services.</p> <p>Note 5 - A Limited Operating Hours MCP which is an excluded generator may only be operated for the sole purpose of testing no more than 50 hours a year.</p>						

<b>Table S3.2 Point source emissions to water (other than sewer) and land – emission limits and monitoring requirements</b>						
<b>Emission point ref. &amp; location</b>	<b>Source</b>	<b>Parameter</b>	<b>Limit (incl. unit)</b>	<b>Reference Period</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>
W1 Outfall to pond TQ 79353 41185	Site surface water / water from bunded areas	Oil and grease	No visible oil or grease	--	Weekly	Visual assessment
		Total organic carbon (TOC) [Note 1]	60 mg/l	Spot sample or flow-proportional composite sample	Once every month	BS EN 1484
		Chemical oxygen demand (COD) [Note 1]	180 mg/l	Spot sample or flow-proportional composite sample	Once every month	BS ISO 15705
		Total nitrogen	25 mg/l	Spot sample or flow-proportional composite sample	Once every month	BS EN ISO 11905-1 or BS EN 12260
		Total phosphorus	2 mg/l	Spot sample or flow-proportional composite sample	Once every month	EN ISO 5681-1 and -2 or EN ISO 6878 or EN ISO 11885
		Total suspended solids	60 mg/l	Spot sample or flow-proportional composite sample	Once every month	BS EN 872
<p>Note 1 – Either TOC or COD can be monitored. TOC is the preferred option, because its monitoring does not rely on the use of very toxic compounds.</p>						

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
Digester feed (digestion process)	pH	As described in site operating techniques – Environmental Management System	As described in site operating techniques – Environmental Management System	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			
Digestate batch	Volatile fatty acids concentration	One sample at the end of each batch (hydraulic retention time) cycle.	As described in site operating techniques – Environmental Management System	--
	Ammonia			
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 <sub>2</sub>	Continuous	None specified	
	O <sub>2</sub>	Continuous	None specified	
	Hydrogen sulphide	Daily	None specified	
	Pressure	Continuous	None specified	
Digester(s) and storage lagoon	Integrity checks	Weekly	Visual assessment	--
Digester(s)	Agitation /mixing	Continuous	Systems controls. Yearly lithium or thermal imaging.	Records maintained in daily operational records.
	Tank capacity and sediment assessment	Once a year		In accordance with design specification and tank integrity checks.

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
Waste reception building or area; digesters and storage lagoon	Odour	Daily	Olfactory monitoring	Odour detection at the site boundary.
Diffuse emissions from gas storage membrane, stacks, vents on biogas upgrading plant	Ammonia	Every 6 months	In accordance with written management system	Leak detection and repair (LDAR) programme in accordance with permit condition 3.2.4.
	VOCs including methane			
	Odour			
CHP engine stack(s)	VOCs including methane	Annually	BS EN 12619	Total annual VOCs emissions from the CHP engine(s) 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 oxygen		BS EN 14789	
	Exhaust gas flow		BS EN 16911-1	
	Exhaust gas water vapour content		BS EN 14790-1	Unless gas is dried before analysis of emissions.
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

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
				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	Continuous gas pressure shall be monitored. Operator must ensure that valves are re-seated after release in accordance with the 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.

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
				In accordance with industry Approved Code of Practice.
Storage lagoons and storage tanks	Volume and substrate level	Daily	Substrate level monitoring device. Visual or flow metre measurement	750 mm freeboard must be maintained for storage lagoons.
<b>Odour abatement - scrubbers (chemical)</b>				
Ammonia scrubber (serving the ammonia stripping plant)	Gas temperature – inlet and outlet	Continuous	Temperature probe / Traceable to national standards	Odour abatement plant shall be regularly checked and maintained to ensure appropriate temperature and moisture content.
	Gas flow rate – inlet and outlet	Continuous	Gas flow meter	
	Back pressure	Weekly	Pressure differential using sensors	Odour abatement plant shall be managed in accordance with permit condition 3.3, the odour management plan and manufacturer's recommendations.  Equipment shall be calibrated on a 4 monthly basis, or as agreed in writing by the Environment Agency.
	Efficiency assessment	Annual	Emission removal efficiency (BS EN 13725 for odour removal)	
	pH scrubber solution	Continuous	pH meter	
	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	

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
				permit condition 3.2 and the odour management plan.
	Ammonia – inlet and outlet gas stream	Every 6 months or as agreed in writing by the Environment Agency.	EN ISO 21877	Action levels to be agreed on completion of IC3 as approved in writing by the Environment Agency.  Action levels to be achieved in accordance with permit condition 3.2 and the odour management plan.
	Odour concentration – inlet and outlet gas stream	Every 6 months or as agreed in writing by the Environment Agency.	BS EN 13725	Action levels to be agreed on completion of IC3 as approved in writing by the Environment Agency.  Action levels to be achieved in accordance with permit condition 3.2 and the odour management plan.
<b>Abatement - carbon filters</b>				
Carbon filter (odour control unit serving the operations building)	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	Carbon filters to be replaced in

Table S3.3 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
			efficiency (BS EN 13725 for odour removal)	accordance with manufacturer's recommendations.  Equipment shall be calibrated on a 4 monthly basis, or as agreed in writing by the Environment Agency.
	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	Action levels to be agreed on completion of IC3 as approved in writing by the Environment Agency.  Action levels to be achieved in accordance with permit condition 3.2 and the odour management plan.
	Ammonia – inlet and outlet gas stream	Every 6 months or as agreed in writing by the Environment Agency.	EN ISO 21877	Action levels to be agreed on completion of IC3 as approved in writing by the Environment Agency.  Action levels to be achieved in accordance with permit condition 3.2 and the odour management plan.
	Odour concentration – inlet and outlet gas stream	Every 6 months or as agreed in writing by the Environment Agency.	BS EN 13725	Action levels to be agreed on completion of IC3 as approved in writing by the Environment Agency.

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
				Action levels to be achieved in accordance with permit condition 3.2 and the odour management plan.



## Schedule 4 – Reporting

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

<b>Table S4.1 Reporting of monitoring data</b>			
<b>Parameter</b>	<b>Emission or monitoring point/reference</b>	<b>Reporting period</b>	<b>Period begins</b>
Emissions to air from CHP engines and boilers Parameters as required by condition 3.5.1.	A1, A3	Every 12 months	1 January
Emissions to air from odour abatement plant Parameters as required by condition 3.5.1.	A4, A6	Every 6 months	1 January, 1 July
Emissions to water Parameters as required by condition 3.5.1	W1	Every 12 months	1 January
Process monitoring Parameters as required by condition 3.5.1	As specified in schedule 3 table S3.3	Every 12 months	1 January

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

<b>Table S4.3 Performance parameters</b>		
<b>Parameter</b>	<b>Frequency of assessment</b>	<b>Units</b>
Water usage	Annually	tonnes or m <sup>3</sup>
Energy usage	Annually	MWh
Raw material usage	Annually	tonnes or m <sup>3</sup>
Emergency flare operation	Annually	hours
Electricity exported	Annually	MWh
Biomethane exported	Annually	tonnes or m <sup>3</sup>
CHP engine usage	Annually	hours
CHP engine efficiency	Annually	%
Standby generator usage	Annually	hours
Boiler usage	Annually	hours

<b>Table S4.4 Reporting forms</b>		
<b>Media/parameter</b>	<b>Reporting format</b>	<b>Date of form</b>
Air	Form air 1 or other form as agreed in writing by the Environment Agency	15/09/2021
Process monitoring	Form process 1 or other form as agreed in writing by the Environment Agency	15/09/2021
Water	Form water 1 or other form as agreed in writing by the Environment Agency	15/09/2021
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	15/09/2021
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	15/09/2021
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	15/09/2021
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	

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

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

<b>Time periods for notification following detection of a breach of a limit</b>	
<b>Parameter</b>	<b>Notification period</b>

<b>(c) Notification requirements for the breach of permit conditions not related to limits</b>	
<b>To be notified within 24 hours of detection</b>	
Condition breached	
Date, time and duration of breach	
Details of the permit breach i.e. what happened including impacts observed.	
Measures taken, or intended to be taken, to restore permit compliance.	

<b>(d) Notification requirements for the detection of any significant adverse environmental effect</b>	
<b>To be notified within 24 hours of detection</b>	
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.

“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 By-Products Regulations” means The Animal By-Products (Enforcement) (England) Regulations 2013 (SI 2013 No.2952).

“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 CO<sub>2</sub>, H<sub>2</sub>O, 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.

“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.

“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.

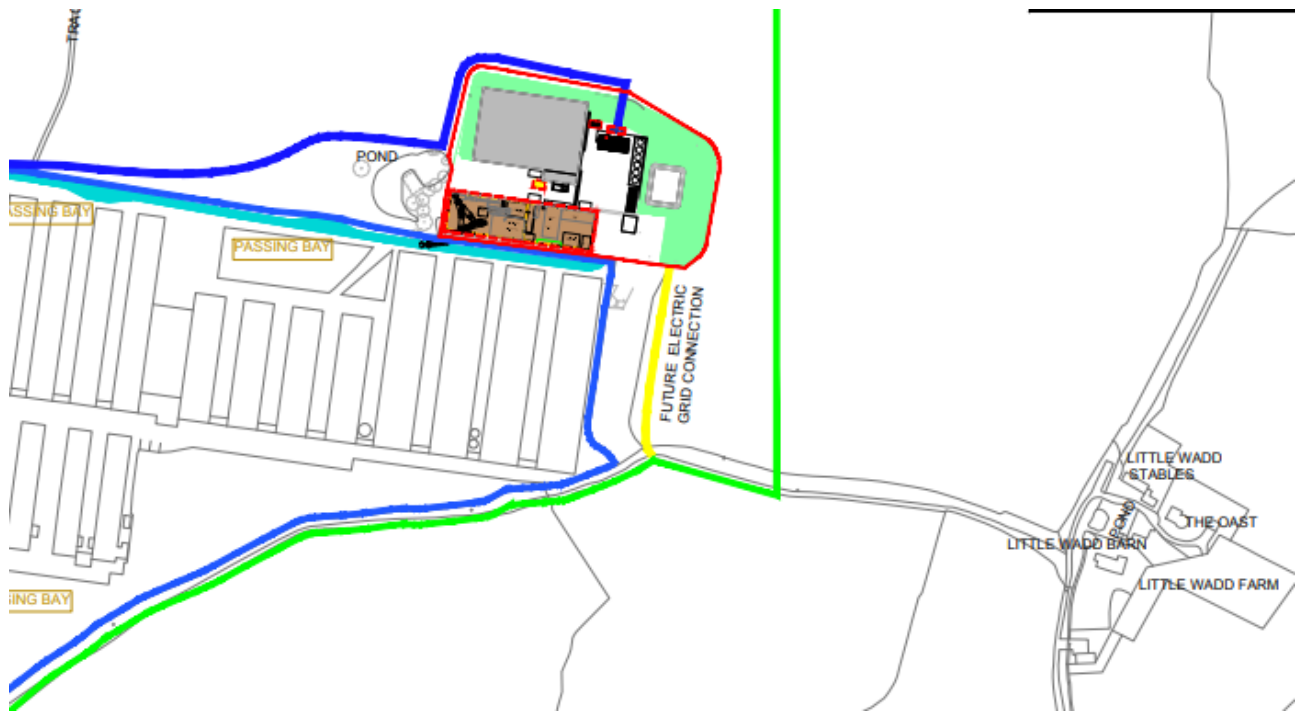
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- 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 and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from gas engines or gas turbines, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 15% dry for liquid and gaseous fuels

“year” means calendar year ending 31 December.

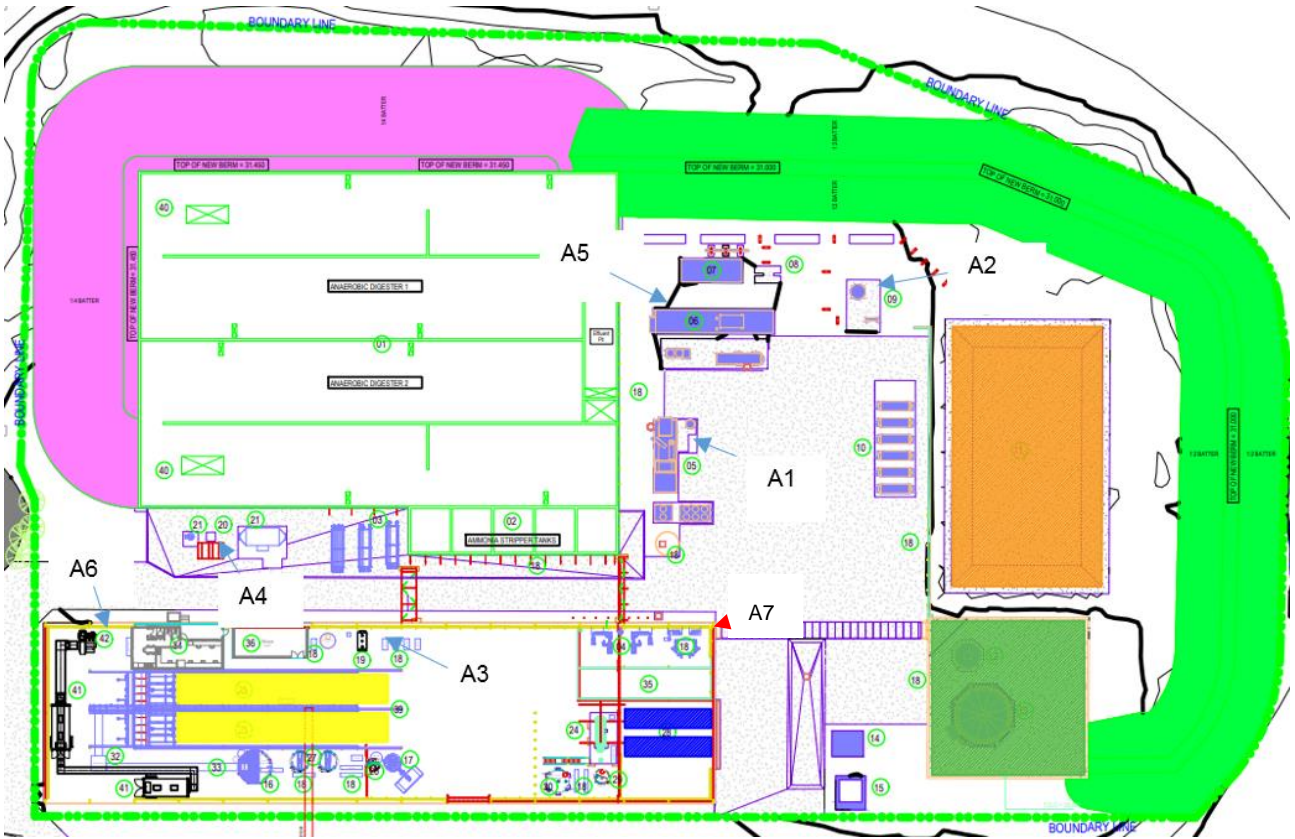


# Schedule 7 – Site plan



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# Site Layout



# Annex 1 of MCP

<p><b>1. Rated thermal input (MW) of the medium combustion plant.</b></p>	<p>CHP 1.193 MWth Boiler 1.1413 MWth Standby generator 0.716 MWth</p>
<p><b>2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant).</b></p>	<p>CHP – biogas Boiler - natural gas Standby generator - diesel</p>
<p><b>3. Type and share of fuels used according to the fuel categories laid down in Annex II.</b></p>	<p>See above</p>
<p><b>4. Date of the start of the operation of the medium combustion plant or, where the exact date of the start of the operation is unknown, proof of the fact that the operation started before 20 December 2018.</b></p>	<p>New plant</p>
<p><b>5. Sector of activity of the medium combustion plant or the facility in which it is applied (NACE code).</b></p>	<p>E38.3.2</p>
<p><b>6. Expected number of annual operating hours of the medium combustion plant and average load in use.</b></p>	<p>CHP - limited operating hours &lt;500 hours per annum, 91% Standby generator – limited operating hours &lt;500 hours per annum Natural gas boiler – 8,760 hours per annum</p>
<p><b>7. Where the option of exemption under Article 6(3) or Article 6(8) is used, a declaration signed by the operator that the medium combustion plant will not be operated more than the number of hours referred to in those paragraphs.</b></p>	<p>NA</p>
<p><b>8. Name and registered office of the operator and, in the case of stationary medium combustion plants, the address where the plant is located.</b></p>	<p>Name and registered address: Green Create W2V Kent Ltd, 40 Craven Street, London, WC2N 5NG Site address: Knoxbridge Farm Anaerobic Digestion Facility, Knoxbridge Farm, Cranbrook Road, Knoxbridge, Kent, TN17 2BT</p>

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