

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Anglian Water Services Limited
Great Billing Sludge Treatment Centre (STC)
Crow Lane
Little Billing
Northampton
Northamptonshire
NN3 9BX

Variation application number

EPR/KP3734GJ/V006

Permit number

EPR/KP3734GJ

Great Billing Sludge Treatment Centre (STC)

Permit number EPR/KP3734GJ

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. All the conditions of the permit have been varied and are subject to the right of appeal.

Changes introduced by this variation

The Industrial Emissions Directive (IED) came into force on 7 January 2014 with the requirement to implement all relevant Best Available Techniques (BAT) Conclusions as described in the Commission Implementing Decision. The schedule of waste management activities includes the recovery of non-hazardous waste with a capacity exceeding 75 tonnes per day involving biological treatment, but excludes activities covered by the Urban Waste Water Treatment Regulations (UWWTR). However, UK environmental regulators concluded that the biological treatment of waste sewage sludge is not an activity covered by the UWWTR and is therefore within the scope of the IED. The BAT Conclusions for Waste Treatment (the BREF) was published on 17 August 2018 following a European Union wide review of BAT, implementing decision (EU) 2018/1147 of 10 August 2018. BAT applies to new waste sewage sludge treatment not covered by the UWWTR. The operations at Great Billing Sludge Treatment Centre (STC) are existing but will be brought into environmental regulation for the first time and are required to operate using BAT.

As part of an Agency led variation, we have imposed improvement conditions in the permit to determine the impact on the River Nene from the tankered wastes imported and subsequently discharged to Great Billing Water Recycling Centre (WRC). The discharge is classed as an indirect emission to water. In this case, the River Nene.

Brief description of the process

Great Billing Sludge Treatment Centre (STC) is located approximately 7.5km East of the City of Northampton. The facility is co-located with the Great Billing Water Recycling Centre (WRC) site.

The STC receives sewage sludge from Great Billing WRC, liquid sludge tanker imports and imported raw (dewatered) sludge cake. Imported sludges are blended with indigenous Great Billing WRC sludge, blended sludge undergoes screening to remove solid debris and to allow mechanical thickening. The thickened and blended sludge is then combined with surplus activated sludge (SAS) and imported diluted, raw cake prior to anaerobic digestion (AD) treatment.

Prior to AD treatment, sludge is batched and mixed in three batch tanks. Sludge is pumped forward to the advanced AD pre-treatment system which is an Enhanced Enzymic Hydrolysis (EEH) plant. The EEH plant consists of two process steps, biological hydrolysis to condition the sludge prior to digestion and pasteurisation to reduce pathogens. The first stage of the process is heated via heat exchange using recovered heat from the four combined heat and power (CHP) engines to approx. 40°C and stage 2 is heated to a minimum of 55°C for 5 hours by steam injection. Steam is generated from recovered exhaust gas heat from the CHP engines via waste heat recovery boilers.

From the advanced pre-treatment system, the waste sludge is transferred into one of six anaerobic digesters operating on a continual basis with a retention time of approx. 14 days. This biological treatment of this waste is regulated as an installation activity, (paragraph A(1)(b)(i), Section 5.4, Chapter 5, Part 2 of Schedule 1 to the Environmental Permitting (England and Wales) Regulations 2016 [the EPR 2016]). This variation

adds the section 5.4 activity to the permit and consolidates the combustion activities which now form directly associated activities (DAA) to the installation.

The AD process produces biogas. The biogas is primarily used to fuel the four CHP engines to generate electrical power and heat for the AD processes. The electricity generated is used to power the STC and adjacent WRC with additional power exported to the national grid. CHP engines A1, A2 and A3 produce heat for use in the process as hot water for heating stage 1 of EEH and steam from exhaust gases by passing the exhaust through waste heat recovery steam boilers. CHP A4 recovers heat in the form of hot water for heating EEH stage 1. Following AD treatment, the liquid sludge is dewatered to produce a sludge cake. The produced cake is exported offsite for land spreading.

Liquid effluent is produced during the pre-treatment and post-treatment stages of the STC process. The returned effluent (liquors) are transferred by pipeline via (emission points S1, S2, S3, S4, S5 and S6) to the head of the biological treatment process at Great Billing WRC.

Discharges of clean and uncontaminated roof water are discharged to a drain leading to the River Nene via emission points W1 and W2.

Digested cake waste operations (activity AR11)

In addition to the installation activities introduced as part of this variation, a waste operation is included for the storage and moisture adjustment of sludge cake prior to onward land spreading under the Sludge Use in Agriculture Regulations (SUiAR). The waste operations taking place at the site are existing, however, under the EP regulations, the import and treatment of digested cake not produced on the site where it is produced is a separate waste operation. The waste activity (AR11) at the Great Billing site allows digested cake to be stored on two dedicated storage pads prior to offsite transfer. The total capacity of the storage operation is 150,000 tonnes per year with a maximum storage capacity of 35,000 tonnes at any given time. The operations take place on an impermeable surface with a sealed drainage system. Treatment operations are limited to the addition of non-waste straw and non-waste lime only. The treatment is to achieve a moisture concentration required prior onward spreading to land. The storage of non-waste straw and lime is not permitted on site.

Head of Works operation (activity AR12)

Effluent and waste waters in the form of sludge and liquid only, will be delivered by tanker to the head of the works for discharge directly into the head of the works for treatment under the UWWTR. This activity involves the storage of liquid wastes and discharge to the main WRC. The discharge is classed as an indirect emission to water. In this case, the River Nene. We have imposed improvement conditions in the permit (IC9) to determine the impact on the River Nene from the tankered wastes imported and subsequently discharged to the WRC.

The Upper Nene Valley Gravel Pits (SPA), Upper Nene Valley Gravel Pits Ramsar and Site of Special Scientific Interest (SSSI) are within relevant screening distances of the facility. The site is not located within an Air Quality Management Area (AQMA).

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 permit		
Description	Date	Comments
Application received	Duly made 16/10/2009	Application for a combined heat and power (CHP) facility.
Additional information received	17/03/2010	--
Permit determined EPR/KP3734GJ	16/04/2010	Original permit issued to Anglian Water Services Limited.
Environment Agency initiated variation EPR/KP3734GJ/V002	-	Environment Agency initiated variation.

Status log of permit		
Description	Date	Comments
Variation determined	15/12/2011	Varied permit issued.
Environment Agency initiated variation EPR/KP3734GJ/V003 (EAWML 400027)	-	Environment Agency variation to implement the changes introduced by the Industrial Emissions Directive.
Variation determined	28/03/2013	Varied and consolidated permit issued in modern condition format.
Application EPR/KP3734GJ/V004 (Variation and consolidation)	Duly made 11/11/2014	Application to extend the site boundary, add a new gas engine and consolidate this permit and permit EPR/FP3899LV.
Variation determined	12/01/2015	Varied permit issued.
Application EPR/KP3734GJ/V005 (Variation and consolidation)	Duly made 15/05/2020	Application to amend the site boundary that was previously assessed.
Variation determined	22/05/2020	Varied permit issued.
Application EPR/KP3734GJ/V006 (variation and consolidation)	Duly made 26/08/2021	Application to vary the permit for an anaerobic digestion facility with combustion of resultant biogas.
Response to Schedule 5 notice issued 17/11/21	21/12/2021	Response to questions relating to technical assessment (BAT), waste acceptance, odour management and combustion processes.
Additional information received in response to Schedule 5 notice issued 17/11/21	19/04/2022	CIRIA 736 containment and spill modelling assessment received supplementary to Schedule 5 response
Additional information received in response to Schedule 5 notice issued 07/08/23	01/09/2023	Additional information received in response to BAT, monitoring of discharged process waters, covering of open processes and odour abatement techniques.
Additional information received	09/02/2024	Additional supporting documents received for cake storage activity (waste operation: Activity AR11) introduced as part of this variation.
Additional information received	15/04/2024	Additional information received for head of works activity (waste operation: Activity AR12) introduced as part of an agency led variation
Variation determined and consolidation issued EPR/KP3734GJ (Billing Ref: QP3605BD) EAWML 400027)	18/07/2024	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/KP3734GJ

Issued to

Anglian Water Services Limited (“the operator”)

whose registered office is

**Lancaster House
Lancaster Way
Ermine Business Park
Huntingdon
Cambridgeshire
PE29 6XU**

company registration number 02366656

to operate an installation at

**Great Billing Sludge Treatment Centre (STC)
Crow Lane
Little Billing
Northampton
Northamptonshire
NN3 9BX**

to the extent set out in the schedules.

The notice shall take effect from 18/07/2024

Name	Date
Peter Maksymiw	18/07/2024

Authorised on behalf of the Environment Agency

Schedule 1

All conditions have been varied by the consolidated permit as a result of both Environment Agency initiated variation, and as a result of the application made by the operator.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/KP3734GJ

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

Anglian Water Services Limited ("the operator"),

whose registered office is

**Lancaster House
Lancaster Way
Ermine Business Park
Huntingdon
Cambridgeshire
PE29 6XU**

company registration number 02366656

to operate an installation at

**Great Billing Sludge Treatment Centre (STC)
Crow Lane
Little Billing
Northampton
Northamptonshire
NN3 9BX**

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

Name	Date
Peter Maksymiw	18/07/2024

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 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR10) 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 AR10) 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.

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 For the following activities referenced in schedule 1, table S1.1 (AR1 to AR10) 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 AR10) 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, S2.2a, and S2.2b; 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 AR10) 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 operations specified in schedule 1 table S1.4 shall not commence until the measures specified in that table have been completed.

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 table(s) S3.1, S3.2 and S3.3.
- 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.

3.2 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 Subject to condition 3.2.4, below, all liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container have been agreed in writing with the Environment Agency.
- 3.2.4 Condition 3.2.3, above, shall apply unless the operator strictly complies in full with IC1 below.
- 3.2.5 Subject to condition 3.2.6, below, all liquid wastes in storage tanks and lagoons shall be fully enclosed, with emissions collected and directed to an appropriate abatement system, unless other appropriate measures to prevent or where that is not practicable, to minimise, emissions of waste gases from storage tanks and lagoons have been agreed in writing with the Environment Agency.
- 3.2.6 Condition 3.2.5, above, shall apply unless the operator strictly complies in full with IC2c below.
- 3.2.7 Subject to condition 3.2.8, below, the anaerobic treatment of all wastes shall take place within fully enclosed vessels. Combustible biogas or biomethane produced during biological treatment shall be utilised as a fuel or stored for utilisation off site, unless other appropriate measures to prevent or where that is not practicable, to minimise, emissions of biogas or biomethane from treatment vessels have been agreed in writing with the Environment Agency. There shall be no uncontrolled emissions of biogas to the environment. This excludes the venting of biogas in an emergency using pressure release valves.
- 3.2.8 Condition 3.2.7, above, shall apply unless the operator strictly complies in full with IC2b below.
- 3.2.9 Subject to condition 3.2.10, below, the operator shall use buffer storage to store waste water and digestate to prevent waste water or digestate being discharged off site during the receiving waste water treatment works storm overflow operating, unless other appropriate measures to prevent or where that is not practicable, to minimise, emissions during waste water treatment works storm overflow, have been agreed in writing with the Environment Agency.
- 3.2.10 Condition 3.2.9, above, shall apply unless the operator strictly complies in full with IC4 below.
- 3.2.11 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, S3.2 and S3.3;
 - (b) process monitoring specified in table S3.4;
 - (c) bioaerosols monitoring specified in table S3.5.
- 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, S3.2, S3.3, S3.4, S3.5 and S3.6. unless otherwise agreed in writing by the Environment Agency.
- 3.5.5 Monitoring shall not take place during periods of start up or shut down.

3.6 Bioaerosols

- 3.6.1 The operator shall take all appropriate measures, to prevent or where that is not practicable to minimise the release of bioaerosols. Emissions of bioaerosols from the operational activities shall not exceed the emission action levels specified in table S3.5.
- 3.6.2 The operator shall where the emission action levels are exceeded:
- (a) notify the Environment Agency and investigate and take remedial action;
 - (b) submit to the Environment Agency for approval within the period specified, a bioaerosols management plan which identifies and minimises the risks of pollution from bioaerosols; and
 - (c) implement the bioaerosols management plan from the date of approval and revise the plan periodically, unless otherwise agreed in writing by the Environment Agency.

3.7 Pests

- 3.7.1 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.
- 3.7.2 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.

3.8 Fire prevention

- 3.8.1 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.
- 3.8.2 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.
- 3.8.3 The operator shall undertake a DSEAR assessment and maintain an accident management plan.

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.

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.
- 4.2.7 The operator shall submit an annual report detailing the efficiency of removal of non-digestible materials from feedstock prior to processing and the level of contamination in the final recovered digestate.

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 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

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 six anaerobic digesters followed by burning of biogas produced from the process. Anaerobic digestion shall be limited to 1,500m³/day Waste types suitable for acceptance are limited to those specified in Table S2.2.
Directly Associated Activity			
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)	Undertaken in relation to Activity AR1 From the receipt of permitted waste to pre-treatment and despatch for anaerobic digestion on site. Storage of residual wastes from pre-treatment to despatch off-site for recovery. Storage of waste in an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system. Waste types suitable for acceptance are limited to those specified in Table S2.2.
AR3	Physical treatment for the purpose of recycling	R3: Recycling/reclamation of organic substances which are not used as solvents	Undertaken in relation to Activity AR1. From the receipt of waste to despatch for anaerobic digestion or despatch off site for recovery. Dilution of incoming wastes using final waste waters from the wastewater treatment works to aid pre-treatment and digestion only. Pre-treatment of sewage sludge prior to anaerobic digestion by means of heat and pressure treatment (pasteurisation) of waste in an Enhanced Enzymic Hydrolysis (EEH) plant for the purpose of recovery.

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
			Pre-treatment of waste in enclosed building / process fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system, including shredding, sorting, screening, compaction, baling, mixing and maceration. Post-treatment of digestate in an enclosed building / process fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system, including separation, screening to remove contraries, centrifuge or pressing and addition of thickening agents (polymers) or drying for use as a fertiliser or soil conditioner (drying for the purpose of use as a fuel is not permitted). Heat treatment (pasteurisation) of waste in 1 tank for the purpose of recovery. Waste types suitable for acceptance are limited to those specified in Table S2.2.
AR4	Steam and electrical power supply	R1:Use principally as a fuel to generate energy	Undertaken in relation to Activity AR1. 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 1.5 MWth. Combustion of biogas in three auxiliary boiler(s) with an aggregated thermal input of (approx.) 2.13 MWth.
AR5	Emergency flare operation	D10: Incineration on land	Undertaken in relation to Activity AR1. From the receipt of biogas produced at the on-site anaerobic digestion process to incineration with the release of combustion gases. There shall be no venting or flaring of gas for disposal. Use of one auxiliary flare required only during periods of breakdown or maintenance of the CHP engines or auxiliary boilers.

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
AR6	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.
AR7	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)	Undertaken in relation to Activity AR1. Storage of biogas produced from on-site anaerobic digestion of permitted waste in one stand-alone double membrane biogas holder. From the receipt of biogas produced at the on-site anaerobic digestion process to despatch for use within the facility. Emissions of unburnt biogas shall be minimised.
AR8	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)	Undertaken in relation to Activity AR1. 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 tank on an impermeable surface with sealed drainage system. Storage of processed solid digestate in uncovered bays on an impermeable surface with sealed drainage system.
AR9	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-use within the facility or discharge off-site.
AR10	Odour abatement	Collection and treatment of air from the buildings or plant using abatement system – biofilters, carbon filter, and dry scrubbers, prior to release to atmosphere.	From the collection of air from site processes to treatment and release of treated air to atmosphere. Collection and treatment of air from the buildings, tanks or plant using abatement system consisting of – a biofilter, carbon filter and dry scrubber.

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
Activity reference	Description of activities for waste operations		Limits of activities
AR11 – Acceptance of digested waste for storage and moisture adjustment treatment only	R3 Recycling/reclamation of organic substances which are not used as solvents 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)		Secure storage of waste listed in Table S2.2a Waste shall not be stored on site for longer than 6 months. The maximum quantity of waste accepted shall not exceed 150,000 tonnes per year. The maximum storage capacity of the site shall not exceed 35,000 tonnes. Treatment of digested waste shall only take place to adjust moisture content prior to onward spreading to land. Treatment is limited to; addition of non-waste straw or lime. Storage of non-waste straw and lime is not permitted on-site. Individual wastes must be stored separately. All storage operations must take place on an impermeable surface with a sealed drainage system.
AR12 - Blending of waste for discharge to Great Billing WRC	D13: D13 Blending or mixing prior to submission to any of the operations numbered D1 to D12		From the receipt of waste sludges and waste liquids via tanker at the head of the works for storage and treatment. Treatment operations shall be limited to the blending and mixing of waste. Blending and mixing shall not be undertaken to achieve a reaction or a dilution of contaminants. Subject to any other requirements of this permit wastes shall be stored for no longer than 1 year prior to disposal. Discharge and storage of tankered waste shall take place on an impermeable surface with a sealed drainage system. Waste types as specified in Table 2.2b.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	Sections 6 of the “IED Permit Application, Great Billing Sludge Treatment Centre”, dated March 2021 in response to section 3a – technical standards, Part B of the application form. Section 3 and Figure 1 - Process Flow Diagram for Great Billing Installation Best available techniques as described in the BAT Reference Document for Waste Treatment (the BREF) and BAT conclusions.	20/03/2021
Response to Schedule 5 Notice dated 17/11/2021	Response to BAT points (technical standards) in document “Great Billing Schedule 5” (excel file format), all of document except items:1 and 11. Updated plan received, identifying emission sources and emission points of wastewater and waste gas streams: document “Great Billing wastewater and waste gas streams” Containment infrastructure plan submitted (as currently built), document “Great Billing Containment Bunds”. Accident management plan for STC assets: “Gt Billing Accident Management Plan”	21/12/2021
Additional information received for item 8 of the Schedule 5 Notice dated 01/11/2021	Response to BAT conclusion 19. Containment assessment including a completed ABDA risk assessment tool, 2D spill modelling results, assessment against CIRIA 763 guidance and proposed improvement to achieve site-wide containment at the facility. Final containment design and implementation are to be finalised upon completion of improvement programme	28/03/2022
Application	Odour management plan reference “Anglian Water OMP Version 001” in response to section 5B, Table 3 – General Requirements, Part B of the application form	14/12/2022
Response to Schedule 5 Notice dated 07/08/2023	Response to BAT points (technical standards) and clarifications required for setting improvement condition programme in document “2023 07 28 Great Billing Schedule 5 (2nd notice)” (excel file format), all of document. Process controls, flow diagrams, specifications and maintenance procedures for odour control abatement plant, document: “00140 Odour Control Package Plant (belt area and primary storage tank)”. Process controls, diagrams, specifications and maintenance procedures for odour control abatement plant, document: “00141 Odour Control Package Plant (T1-T4 and cake reception)”. Finalised emission point location list with NGRs, document: “Summary List of Great Billing emission points v2”.	01/09/2023

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
Improvement condition for secondary containment design		
IC1	The operator shall submit a written ‘secondary containment implementation plan’ and shall obtain the Environment Agency’s written approval to it. The plan shall contain the finalised designs and an	Within 6 months of permit issue or such other date

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	implementation schedule for the identified secondary containment systems proposed in the document “Containment Assessment for Great Billing Sludge Treatment Centre”, March 2022. The finalised design(s) and specifications shall be produced by the appropriate competent individuals (qualified civil or structural engineer), in accordance with the risk assessment methodology detailed within CIRIA C736 (2014) guidance. The plan and associated reports should include but not be limited to the following components: • An updated BAT assessment with specific regard to BAT 19 of the Waste Treatment BREF to confirm the finalised designs based on the systems proposed in the document “Containment Assessment for Great Billing Sludge Treatment Centre”, March 2022 meet BAT 19. • An assessment of the suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure. • Finalised designs and specifications of the proposed secondary containment proposal completed by appropriate competent individuals. • A program of works with timescales for the commissioning of the secondary containment systems to comply with CIRIA C736 (2014) guidance, or equivalent. • An updated site and infrastructure plan. • A preventative maintenance and inspection regime. The plan shall be implemented in accordance with the Environment Agency’s prior written approval.	as agreed in writing with the Environment Agency Implementation of all required containment improvements must be completed by 31/3/2025
Improvement conditions for enclosure of tanks storing (or treatment) stable and unstable digestate		
IC2a	The operator shall submit a written report, with supporting evidence, on the stability of digestate stored within the de gas tank and post digestion storage tank and obtain the Environment Agency’s written approval to it. The report shall assess whether an effective digestion process has taken place within the anaerobic digestion tanks and whether biogas emissions from post digestion storage or treatment are minimised. The report shall assess digester stability and that the digestate has minimal potential for biogas production. The report shall include but not be limited to: • An assessment of residual biogas potential in line with the OFW004-005 [N6] methodology specified by <i>BSI PAS 110: Producing Quality Anaerobic Digestate</i> or an equivalent methodology for assessing residual biogas potential. • An assessment of the stability of the digestion process in the digester. The assessment for stable digester operations shall be undertaken in line with BAT 38 of the Waste Treatment BREF. The assessment shall be supported by process monitoring data recorded using an automatic monitoring system (and sampling of the digester feed) for the following parameters over a period of one month: · pH and alkalinity of the digester feed · digester operating temperature	Within 10 months of permit issue or such other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	- hydraulic loading rate - organic loading rate - volatile fatty acids concentration - ammonia - liquid and foam levels in the digester	
IC2b	Unless the report approved under IC2a concludes that the digestate is stable, the operator shall submit a written 'anaerobic digestion vessel cover' plan and obtain the Environment Agency's written approval to it. The plan shall contain the final designs and an implementation schedule for the installation of covers for vessels undertaking anaerobic digestion and storing or treatment of unstable digestate de gas tank and post digestion storage tank. The plan shall also contain a detailed description of the proposed gas utilisation plant, gas storage infrastructure for the biogas produced during anaerobic digestion, pressure relief valves and gas pipe-work. The plan should include but not be limited to the following components: - Evidence that the vessel covers, gas utilisation plant and ancillary equipment have been designed by appropriately qualified engineers. - Evidence that the vessel covers, and gas utilisation plant will be designed and installed in line with guidance, <i>Biological waste treatment: appropriate measures for permitted facilities</i>. - An updated Hazard and Operability Study (HAZOP) and DSEAR risk assessment. - An assessment of gas storage capacity and gas utilisation capacity including proposals for additional gas utilisation plant. - A program of works with timescales for the commissioning of the vessel cover(s), gas utilisation infrastructure and ancillary equipment. The plan shall be implemented in accordance with the Environment Agency's prior written approval.	Within 6 months of the Environment Agency's written approval of IC2a or such other date as agreed in writing with the Environment Agency Implementation of all required vessel cover improvements must be completed by 31/3/2025
IC2c	Should the report approved under IC2a conclude that the digestion process is stable and the digestate has minimal potential for biogas production, the operator shall submit a written 'waste water and digestate storage enclosure plan' and obtain the Environment Agency's written approval to it. The plan shall contain the final designs and an implementation schedule for the installation of enclosures/covers (and associated waste gas abatement systems) for waste water/stable digestate storage tanks identified as: the de gas tank and post digestion storage tank. The report shall include evidence that the tank and lagoon enclosures/covers will be designed and installed in line with guidance, <i>Biological waste treatment: appropriate measures for permitted facilities</i>. The plan shall be implemented in accordance with the Environment Agency's prior written approval.	Within 6 months of the Environment Agency's written approval of IC2a or such other date as agreed in writing with the Environment Agency Implementation of all required vessel cover improvements must be completed by 31/3/2025
Improvement conditions for primary containment tanks		

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC3	The operator shall submit a written ‘primary 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 an appropriately qualified engineer and shall assess the extent, design specification and condition of primary containment systems where polluting liquids and solids are being stored, treated, and/or handled. The plan shall include: • An assessment of the physical condition of all primary containment systems (storage and treatment vessels) using a Written Scheme of Examination and their suitability for providing primary containment when subjected to the dynamic and static loads. • A program of works with timescales for the implementation of individual improvement measures necessary to demonstrate that the primary containment is fit for purpose or alternative appropriate measures to ensure all polluting materials will be contained on site. • A preventative maintenance and inspection regime. The plan shall be implemented in accordance with the Environment Agency’s written approval.	Within 12 months of permit issue or other date as agreed in writing with the Environment Agency.
Improvement conditions for operational storage buffer capacity		
IC4	The operator shall submit a written “waste water and digestate buffer storage plan” and shall obtain the Environment Agency’s written approval to it. The plan shall contain the results of a review of the current storage of waste water and digestate produced from site operations. The review shall propose and describe site contingency arrangements to provide appropriate storage capacity for waste water or digestate to prevent waste water and digestate being discharged off site during any occasions when the receiving wastewater treatment works is in storm overflow operating conditions. The storage plan shall include but not be limited to: • Proposals for additional storage capacity with secondary containment within the site boundary for wastewater and/or other digestate during any occasions when the receiving wastewater treatment works is in storm overflow operating conditions. • Procedures to cease discharges during these conditions. • Calculation of a reasonable contingency capacity of waste water and/or other digestate during any occasions when the receiving wastewater treatment works is in storm overflow operating conditions. • A description and design specification of the buffer storage infrastructure and secondary containment measures. The design shall be completed by an appropriately qualified engineer and secondary containment shall be designed in line with CIRIA C736.	Within 6 months of permit issue or such other date as agreed in writing with the Environment Agency Implementation of all required containment improvements must be completed by 31/3/2025

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	- A program of works with timescales for the implementation and construction of the buffer storage. - A preventative maintenance and inspection regime. The plan shall be implemented in accordance with the Environment Agency's prior written approval.	
Improvement conditions for establishing an inventory of liquid waste water streams		
IC5a	The operator shall submit a sampling programme in relation to waste water streams and shall obtain the Environment Agency's written approval to it. The sampling programme shall be designed to fully characterise the waste waters discharged to Great Billing WRC wastewater treatment works (WwTW) from emission points S1, S2, S3, S4, S5 and S6 in (table S3.3 of the permit). The programme should include but not be limited to a methodology for a minimum of one 24-hour flow proportional sample a month, for each emission point, for a period of 12 months. The programme shall detail the sampling methods/standards used. Sampling methods shall be in line with BAT conclusion 20 of the Waste Treatment BREF. The programme shall include the National Grid Reference (NGR) of the sampling point(s) location(s). The programme shall establish the characteristics of the liquid waste water streams and shall include as a minimum for each emission point: - Average values and variability of flow, pH, temperature and conductivity. - Average concentration and load values of all relevant substances and their variability. - Data on bioeliminability. The programme shall sample for all relevant substances but must include: - Hydrocarbon oil index (HOI) (mg/l) - Free cyanide (CN⁻) (mg/l) - Adsorbable organically bound halogens (AOX) (mg/l) - Metals and metalloids; arsenic (expressed as As), cadmium (expressed as Cd), chromium (expressed as Cr), hexavalent chromium (expressed as Cr(VI)), copper (expressed as Cu), lead (expressed as Pb), nickel (expressed as Ni), mercury (expressed as Hg), zinc (expressed as Zn) (µg/l) The operator shall submit the collected monitoring data in writing to the Environment Agency according to agreed reporting periods. The sampling programme shall be produced in line with Environment Agency guidance: - Specific substances and priority hazardous substances – <i>Surface water pollution risk for your environmental permit</i> <u>Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk)</u>.	A sampling programme shall be submitted within 6 months of issue of the permit

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<i>Monitoring discharges to water: guidance on selecting a monitoring approach</i> <u>Monitoring discharges to water: guidance on selecting a monitoring approach - GOV.UK (www.gov.uk)</u> The monitoring programme shall be carried out and the monitoring data submitted in accordance with the Environment Agency's written approval.	
Improvement conditions for indirect discharges to water		
IC5b	The operator shall submit a report for audit and approval by the Environment Agency, following completion of the sampling programme referred to in IC5a. The report shall include but not be limited to; a summary of the sample results, a completed H1 risk assessment(s) and modelling outputs where appropriate. The operator shall provide conclusions on whether the waste waters discharged to S1, S2, S3, S4, S5 and S6 will have any adverse impact on the receiving waters once discharged from Great Billing WRC. An assessment shall be made against the parameters specified in the relevant environmental standards as specified within our guidance as follows: - Specific substances and priority hazardous substances – <i>Surface water pollution risk for your environmental permit</i> <u>Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk)</u>. - Sanitary substances – <i>H1 annex D2: assessment of sanitary and other pollutants in surface water discharges 1076 14 H1 Annex D2 - Assessment of sanitary and other pollutants within Surface Water Discharges</i> (publishing.service.gov.uk) The report shall include any proposals and/or additional measures required to prevent or minimise any significant emissions from the installation along with timescales for implementation.	Within 12 months of the Environment Agency's written approval of the sampling programme submitted under IC5a or any subsequent date as notified in writing by the Environment Agency
IC5c	The operator shall implement any improvements identified within the report approved under IC5b in accordance with the Environment Agency's written approval and provide written confirmation to the Environment Agency that the improvements have been completed.	Within 12 months of the report in relation to IC5b being submitted to the Environment Agency or any subsequent date as notified in writing by the Environment Agency
Improvement condition to address methane slip emissions from gas engines burning biogas		
IC6	The operator shall establish a site-specific leak detection and repair (LDAR) programme to detect and mitigate the release of volatile organic compounds, including methane from diffuse sources. The programme	Within 6 months of issue of the permit or

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	shall include, but not be limited to an LDAR survey, diffuse emissions source inventory and associated monitoring arrangements. The programme shall be submitted to the Environment Agency for approval. The programme shall take into account the appropriate measures for LDAR plans specified in Section 11.9 of Environment Agency guidance, Biological waste treatment: appropriate measures for permitted facilities. The operator shall also have regard to BS EN 17628 when designing the LDAR programme and consider the use of optical gas imaging cameras in addition to the mandatory application of 'sniffer' techniques according to BS EN 15446.	as agreed in writing with the Environment Agency
IC7	The operator shall submit a written plan for approval by the Environment Agency which establishes the methane emissions in the exhaust gas from engines burning biogas and or biomethane and compare these to the manufacturer's specification and benchmark levels. The plan shall develop proposals to assess the potential for methane slip and take corrective actions where emissions of methane above the manufacturer's specification are identified. The operator shall establish methane emissions in the exhaust gas and methane slip using the following standards: • EN ISO 25139 • EN ISO 25140	Within 12 months of the Environment Agency's written approval of the LDAR programme submitted under IC6 or such other date as agreed in writing with the Environment Agency
Improvement condition for review of effectiveness of abatement plant		
IC8	The operator shall carry out a review of the abatement plant Emission point (A7) biofilters and scrubber units on site, 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, hydrogen chloride (HCl), and TVOC. The operator shall submit a written report to the Environment Agency following this review for assessment and approval. The report shall include but not be limited to the following aspects: • Full investigation and characterisation of the waste gas streams. • Evidence that the pollutants of the waste gas stream will be controlled and/or abated either by the abatement plant or by the proposed abatement systems. • Abatement stack monitoring results (not limited to odour and ammonia, hydrogen chloride (HCl), and TVOC). • Abatement process monitoring results (not limited to odour and ammonia, hydrogen chloride (HCl), and TVOC). • Details of air quality quantitative impact assessment including modelling and a proposal for site-specific "action levels" (not limited to odour concentration, hydrogen sulphide, hydrogen chloride (HCl), TVOC and ammonia). • Odour monitoring results at the site boundary. • Records of odour complaints and odour related incidents.	Within 12 months of issues of the permit or such other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	- Recommendations for improvement including the replacement or upgrading the abatement plant. - Timescales for implementation of improvements to the abatement plant. - Review of the recommendations detailed in section 7.0 of document "13122021-V002 - 101265_OMR_CHEL" The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.	
Improvement condition for establishing an inventory of liquid waste water discharged from the Head of works waste operation activity (AR12)		
IC9a	The operator shall submit a sampling programme in relation to liquid/sludge waste streams that are to be discharged to emission point S7 and shall obtain the Environment Agency's written approval to it. The sampling programme shall be designed to fully characterise the liquid/sludge waste discharged to Great Billing (WRC) wastewater treatment works (WwTW) from emission point S7 in (table S3.2 of the permit). The programme shall include but not be limited to a methodology for gathering a representative chemical pollutant suite of analysis of all incoming wastes, that will be discharged to emission point S7, for a minimum period of 12 months. A minimum of 12 spot samples from each waste producer shall be taken, provided the liquid/sludge waste is appropriately mixed, homogeneous, and is representative of the specific waste stream being discharged. The programme shall detail the sampling methods/standards and limits of detection (LOD)/minimum reporting values (MRV) used. Waste Characterisation sampling methods shall be in accordance with guidance, <u>Non-hazardous and inert waste: appropriate measures for permitted facilities</u> and <u>Biological waste treatment: appropriate measures for permitted facilities</u>, and shall fully characterise the liquid/sludge waste streams, including as a minimum for each waste stream the: - Maximum, minimum and average values and variability of flow, pH, temperature and conductivity. Flow rates shall be based upon the capability of the discharging tanker. - Chemical names, the units of measurement, maximum, minimum and average concentration and load values of all substances that have an environmental quality standard (EQS) or ecotoxic properties, and their variability. - Total and dissolved metals data - Data on bioeliminability. - Information on the liquid/sludge waste stream source - National Grid Reference (NGR) of the sampling point The sampling programme shall be produced in accordance with the following Environment Agency guidance:	Within 15 months of issue of this permit

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	- Section 3 (Waste pre-acceptance, acceptance and tracking) of guidance <u>Non-hazardous and inert waste: appropriate measures for permitted facilities</u> - Section 6 (Waste pre-acceptance, acceptance and tracking) of guidance <u>Biological waste treatment: appropriate measures for permitted facilities</u> - Specific substances and priority hazardous substances – <u>Surface water pollution risk for your environmental permit Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk).</u> <u>Monitoring discharges to water: guidance on selecting a monitoring approach Monitoring discharges to water: guidance on selecting a monitoring approach - GOV.UK (www.gov.uk)</u> <u>Monitoring discharges to water: CEN and ISO monitoring methods Monitoring discharges to water: CEN and ISO monitoring methods - GOV.UK (www.gov.uk)</u> The sampling programme shall be carried out as approved by the Environment Agency and the sampling data shall be submitted in accordance with the Environment Agency's written approval.	
Improvement conditions for indirect discharges to water discharged from the Head of works waste operation activity (AR12)		
IC9b	The operator shall submit a report for audit and approval by the Environment Agency, following completion of the sampling programme referred to in IC9a. The report shall include but shall not be limited to: - the raw data used to undertake the screening, - a summary of the sample results, - a completed H1 risk assessment or equivalent risk assessments and - modelling outputs where appropriate, in order to assess the impact from each individual liquid/sludge waste stream discharged to point S7. The operator shall provide conclusions on whether the liquid/sludge wastes discharged to S7 will have any adverse impact on the receiving waters once discharged from Great Billing WRC. An assessment shall be made against the parameters identified in IC9a and against the relevant environmental quality standards (EQS – or Predicted No Effect Concentrations (PNECs) for substances that have ecotoxic properties but no established EQS) as specified within Environment Agency guidance as follows: - Specific substances and priority hazardous substances – <u>Surface water pollution risk for your environmental permit Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk).</u> - Sanitary substances – <u>H1 annex D2: assessment of sanitary and other pollutants in surface water discharges 1076_14 H1 Annex</u>	Within 6 months of the Environment Agency's written approval of the sampling programme submitted under IC9a or such other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<u>D2 - Assessment of sanitary and other pollutants within Surface Water Discharges (publishing.service.gov.uk).</u> H1 risk assessment tool ADMLC https://admlc.com/h1-tool/ The report shall include proposals for any additional measures/abatement required to prevent or minimise any significant emissions from the waste operation. The operator shall implement the proposals in the report in accordance with the timescales as approved in writing by the Environment Agency.	
IC9c	The operator shall submit a report that provides written confirmation to the Environment Agency that the proposed improvements identified within the report approved under IC9b have been implemented and completed in accordance with the Environment Agency's written approval. Approval of reports under this improvement condition does not preclude the need for permit variation application(s) to operate the improvements identified in the report and/or include any necessary emission limit values.	Within 6 months of the report in relation to IC9b being submitted to the Environment Agency or such other date as agreed in writing with the Environment Agency

Table S1.4 Pre-operational measures		
Reference	Operation	Pre-operational measures
Pre-operational condition to submit an assessment of the fate and impact of new waste streams not previously accepted, and that change the risk of the waste stream to be discharged under existing waste codes as specified in Table S2.2b		
PO1	AR12	Prior to accepting new waste streams under activity AR12 for existing permitted waste codes identified in table S2.2b for discharge into the head of works (emission point S7), the operator shall undertake an assessment of the fate and impact on the receiving waters by updating the environmental risk assessment established in IC9b, the additional measures/abatement implementation plan as approved under IC9b and in accordance with the sampling plan as approved under IC9a. Acceptance of the new liquid/sludge waste streams under existing waste codes shall only commence following submission of the above risk assessment and any recommendations for additional measure/abatement considered to be required, written approval from the Environment Agency and the submission of written confirmation to the Environment Agency that any additional measures/abatement considered to be required have been implemented and completed as approved.

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
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Table S2.2 Permitted waste types and quantities for anaerobic digestion	
Maximum quantity	Annual throughput shall not exceed 460,431 tonnes
Exclusions	Wastes having any of the following characteristics shall not be accepted: • Biodegradable wastes that is significantly contaminated with non-compostable or digestible contaminants, in particular plastic and litter shall be no more than 5% w/w and shall be as low as reasonably practicable by 31 December 2025. • Wastes containing wood-preserving agents or other biocides and post-consumer wood. • Wastes containing persistent organic pollutants. • Wastes containing Japanese Knotweed or other invasive plant species listed in the Invasive Species (Amendment etc.) (EU Exit) Regulations 2019. • 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. • Pest infested waste.
Waste code	Description
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 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05 (sewage sludge only)
19 08	wastes from waste water treatment plants not otherwise specified
19 08 05	sludges from the treatment of urban waste water

Table S2.2a Permitted waste types and quantities for waste storage operations (AR11)	
Maximum quantity	Annual throughput shall not exceed 150,000 tonnes
Exclusions	- Waste containing Hazardous substances (as defined in Environment Permitting Regulations 2016) shall not be accepted - Wastes containing Japanese Knotweed or other invasive plant species listed in the Invasive Species (Amendment etc.) (EU Exit) Regulations 2019. - 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. - Pest infested waste.
Waste code	Description
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 06	Wastes from anaerobic treatment of waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste (digested sewage sludge only)

Table S2.2b Permitted waste types and quantities for non-hazardous waste storage and treatment (Head of Works) (AR12)	
Maximum quantity	Annual throughput shall not exceed 20,000 tonnes
Exclusions	Wastes having any of the following characteristics shall not be accepted: - Wastes containing persistent organic pollutants. - Wastes containing Japanese Knotweed or other invasive plant species listed in the Invasive Species (Amendment etc.) (EU Exit) Regulations 2019. - 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. - Pest infested waste. - Hazardous waste. - Solid wastes (only wastes of liquid free flowing form shall be accepted).
Waste code	Description
16	Wastes not otherwise specified in the list
16 10	aqueous liquid wastes destined for off-site treatment
16 10 02	Aqueous liquid wastes other than those mentioned in 16 10 01

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, A2 and A3 (CHP 1, 2 and 3) [points A1, A2 and A3 on site plan 1 in Schedule 7]	3 x 3.371 MWth CHP engines fuelled on biogas [note 1]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500 mg/m ³	Average over sample period	Annual	BS EN 14792
		Sulphur dioxide	350 mg/m ³ [note 2]			BS EN 14791 or CEN TS 17021 or by calculation based on fuel sulphur
		Sulphur dioxide	162 mg/m ³ [note 3]			
		Carbon monoxide	1400 mg/m ³			BS EN 15058
		Total VOCs	No limit set	--	--	BS EN 12619
A4 (CHP 4) [point A17 on site plan 1 in Schedule 7]	1 x 3.72 MWth CHP engine fuelled on biogas [note 1]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500 mg/m ³	Average over sample period	Annual	BS EN 14792
		Sulphur dioxide	350 mg/m ³ [note 2]			BS EN 14791 or CEN TS 17021 or by calculation based on fuel sulphur
		Sulphur dioxide	162 mg/m ³ [note 3]			
		Carbon monoxide	1400 mg/m ³			BS EN 15058
		Total VOCs	No limit set	--	--	BS EN 12619
A5 (Boiler 1) [point A4 on site plan 1 in Schedule 7]	1 x 4.3 MWth Boiler fuelled on biogas [note 1]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	250 mg/m ³ [note 3]	Average over sample period	Annual	BS EN 14792
		Sulphur dioxide	200 mg/m ³ [note 3]			BS EN 14791 or CEN TS 17021 or

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
						by calculation based on fuel sulphur
A6 (Flare) [point A5 on site plan 1 in schedule 7]	Emergency flare stack [note 1]	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	150 mg/m ³	Average over sample period	[note 4]	BS EN 14792
		Carbon monoxide	50 mg/m ³			BS EN 15058
		Total VOCs	10 mg/m ³			BS EN 12619
A7 (OCU) [points A9 and A20 on site plan 1 in schedule 7]	Channelled emissions from Biofilter and Scrubber odour abatement stack [Note 6]	Hydrogen sulphide	No limit set	Average over sample period	Once every 6 months	CEN TS 13649 for sampling NIOSH 6013 for analysis
		Ammonia	20 mg/m ³	Average over sample period	Once every 6 months	EN ISO 21877
		Odour concentration	No limit set	--	Once every 6 months	BS EN 13725
	Channelled emissions to air from treatment of water-based liquid waste	Hydrogen chloride (HCl)	5 mg/m ³ [note 5]	Average over sample period	Once every 6 months	EN 1911
		TVOC	20 mg/m ³ [note 5]	Average over sample period	Once every six months	EN 12619
A8, A9, A10, A11 and A12 (Pressure relief valves) [points A6, A7, A8, A9 and A10 on site plan 1 in Schedule 7]	Digester pressure relief valves	Biogas release and operational events	No limit set	Recorded duration and frequency	Daily inspection	--
A13 (Vents from tanks) [point A21 on site plan 1 in Schedule 7]	Oil/Fuel Storage tank(s)	No parameter set	No limit set	--	--	--
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). Note 2 – This emission limit applies until 31 December 2029, unless the gas engine is replaced. Note 3 – This emission limit applies from 1 January 2030, unless otherwise advised by the Environment Agency.						

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
Note 4 – 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. Note 5 – Monitoring and limits only apply where the substance concerned is identified as relevant in the waste gas inventory IC8. Note 6 – The monitoring of NH3 and H2S can be used as an alternative to the monitoring of the odour concentration.						

Table S3.2 Point source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	Source [Note 1]	Parameter	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
W1 and W2 [points W2 and W3 on site plan 1 in schedule 7 emission to a drain leading to the River Nene]	Uncontaminated site surface water from roofs and non-operational areas	Oil and grease	No visible oil or grease	--	Weekly	Visual assessment
Note 1 – Clean surface water from roofs, or from areas of the site that are not being used in connection with storing and treating waste can be discharged directly to surface waters, or to groundwater by seepage through the soil via a soakaway.						

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter [Note 1]	Limit (incl. unit) [Note 1]	Reference Period	Monitoring frequency [Note 1]	Monitoring standard or method
S1, S2 ,S3, S4, S5 and S6 on site plan 1 in Schedule 7, emission to Great Billing Water Recycling Centre (WRC)	Site surface water, water from bunded areas, biogas condensate and process water (liquors) arising from sludge treatment operations	Oil and grease	No visible oil or grease	--	Weekly	Visual assessment
		Benzene, toluene, ethylbenzene, xylene (BTEX)	--	Spot sample or flow-proportional composite sample	Once every month	EN ISO 15680
		Hydrocarbon oil index (HOI)	10 mg/l		Once every day	EN ISO 9377-2
		Free cyanide (CN ⁻)	0.1 mg/l			EN ISO 14403-1 or EN ISO 14403-2

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter [Note 1]	Limit (incl. unit) [Note 1]	Reference Period	Monitoring frequency [Note 1]	Monitoring standard or method
		Adsorbable organically bound halogens (AOX)	1 mg/l	Spot sample or flow-proportional composite sample	Once every day	EN ISO 9562
		Arsenic (As)	0.1 mg/l			EN ISO 11885, EN ISO 17294-2 or EN ISO 15586
		Cadmium (Cd)	0.1 mg/l			
		Chromium (Cr)	0.3 mg/l			
		Copper (Cu)	0.5 mg/l			
		Lead (Pb)	0.3 mg/l			
		Nickel (Ni)	1 mg/l			
		Zinc (Zn)	2 mg/l			
		Mercury (Hg)	10 µg/l	Spot sample or flow-proportional composite sample	Once every day	EN ISO 17852 or EN ISO 12846
		Manganese (Mn)	--			EN ISO 11885, EN ISO 17294-2 or EN ISO 15586
		Hexavalent chromium (Cr(VI))	0.1 mg/l			EN ISO 10304-3 or EN ISO 23913
		PFOA and PFOS	--		Once every six months	--
S7 on site plan 1 in schedule 7 emission to River Nene [via Great Billing WRC]	Discharge of tankered waste waters to the head of works	-- [Note 3]	-- [Note 3]	-- [Note 3]	-- [Note 3]	-- [Note 3]
Note 1 – Monitoring and limits only apply where the substance concerned is identified as relevant in the waste water inventory as determined by improvement condition IC5a Note 2 – Monitoring frequency as specified unless the Environment Agency has agreed in writing other alternative appropriate monitoring frequencies. Note 3 - Emission limits and monitoring requirements to be set following completion of IC9a, IC9b and IC9c.						

Table S3.4 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			
Digester and storage tanks	Integrity checks	Weekly	Visual assessment	In accordance with design specification and tank integrity checks.
Digester	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;	Odour	Daily	Olfactory monitoring	Odour detection at the site boundary.

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Digester and storage tank				
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	BS EN 15446 In accordance with the LDAR programme, according to BS EN 17628.	Monitoring points as specified in a DSEAR risk assessment and LDAR programme. Limit as agreed with the Environment Agency as a percentage of the overall gas production.
CHP engine stacks	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 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	Conditions to be recorded in operational diary and records. Equipment shall be calibrated on a 4 monthly basis, in accordance with manufacturer's recommendations or as agreed in writing by the Environment Agency.
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,

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
				purge gas flow rate, pollutant emissions.
Pressure relief valves and vacuum systems	Gas pressure	Continuous	Recording using a SCADA system	Continuous gas pressure shall be monitored.
	Re-seating	Weekly inspection	Visual	Operator must ensure that valves are re-seated after release in accordance with the manufacturer's design.
	Inspection, maintenance, calibration, repair and validation	Following foaming or overtopping or at 3 yearly intervals whichever is sooner	Written scheme of examination in accordance with condition 1.1.1	After a foaming event or sticking, build-up of debris, obstructions or damage, operator must ensure that pressure relief valve function remains within designed gas pressure in accordance with the manufacturer's design by suitably trained and qualified personnel.
	Inspection, calibration and validation report	In accordance with design and construction specifications or after over topping or foaming event	Written scheme of examination in accordance with condition 1.1.1	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 tanks	Volume	Daily	Visual or flow metre measurement	Records of volume must be maintained.
Biofilter [points A19 and A20 on	Gas temperature – inlet and outlet	Daily	Temperature probe / Traceable to national standards	Odour abatement plant shall be regularly checked and maintained

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
site plan 1 in schedule 7]	Biofilter media moisture	Daily	Moisture meter, Grab test, oven drying or recognised industry method	to ensure appropriate temperature and moisture content.
	Thatching /compaction	Weekly	Back pressure	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 / EN 16911-1 and MID for EN 16911-1	
	pH (biofilter drainage effluent)	Daily	pH metre or litmus paper	Equipment shall be calibrated on a 4 monthly basis, or as agreed in writing by the Environment Agency.
	Efficiency assessment	Annual	Media health, air-flow distribution and emission removal efficiency (BS EN 13725 for odour removal)	
	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 IC8 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	Every 6 months or as agreed in writing by the Environment Agency.	EN ISO 21877	Action levels to be agreed on completion of IC8 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 streamIC8	Every 6 months or as agreed in writing by the Environment Agency.	BS EN 13725	Action levels to be agreed on completion of IC8 as approved in writing by the Environment Agency.

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
				Action levels to be achieved in accordance with permit condition 3.2 and the odour management plan.
Dry chemical scrubber [points A19 and A20 on site plan 1 in Schedule 7]	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. 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.
	Gas flow rate – inlet and outlet	Continuous	Gas flow meter / EN 16911-1 and MID for EN 16911-1	
	Moisture content or humidity – inlet and outlet (for dry scrubbers only)	Daily	Moisture meter	
	Moisture content or humidity – outlet (for wet scrubbers if used before other abatement systems)	Daily	Moisture meter	
	Back pressure	Weekly	Pressure differential using sensors	
	Efficiency assessment	Annual	Emission removal efficiency (BS EN 13725 for odour removal)	
	pH scrubber solution (pre-abatement)	Continuous	pH meter	
	pH scrubber solution (post-abatement)	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	Action levels to be agreed on completion of IC8 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	Every 6 months or as agreed in	EN ISO 21877	Action levels to be agreed on completion of

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
		writing by the Environment Agency.		IC8 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.
Carbon filter [points A19 and A20 on site plan 1 in Schedule 7]	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	Carbon filter(s) to be replaced in accordance with 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)	
	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 IC8 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	Every 6 months or as agreed in writing by the Environment Agency.	EN ISO 21877	Action levels to be agreed on completion of IC8 as approved in writing by the Environment Agency. Action levels to be achieved in accordance with permit condition 3.2

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
				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 IC8 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.

Table S3.5 Bioaerosols monitoring requirements – ambient monitoring					
Location or description of point of measurement	Parameter	Bioaerosols action levels (CFU m ⁻³)	Monitoring frequency	Monitoring standard or method	Other specifications
Upwind of the operational area, as described in the Technical Guidance Note M9	Total bacteria	1000 ^{Note 1}	Quarterly for the first year of operation and twice a year thereafter, unless another frequency is agreed in writing by the Environment Agency ^{Note 2}	In accordance with Technical Guidance Note M9 – Environmental monitoring of bioaerosols at regulated facilities.	As described in the Technical Guidance Note M9, including all the additional data requirements specified therein.
Downwind of the operational area, as described in the Technical Guidance Note M9	Aspergillus Fumigatus	500 ^{Note 1}			
Note 1 – The bioaerosols action levels are only applicable at downwind sampling locations equivalent to the distance of the nearest sensitive receptor. Where these action levels are elevated, the operator must take action to mitigate the impact on sensitive receptors. Assessment of compliance will be based on risk and in line with guidance. Note 2. Where the bioaerosols action levels are exceeded, then monitoring remain quarterly until such time that it is demonstrated that the site has adequate mitigation for a 12 month period.					

Table S3.6 Emissions to sewer, effluent treatment plant or other transfers off-site – Monitoring points

Effluent(s) and discharge point(s)	Monitoring type	Monitoring point NGR	Monitoring point reference
S1, S2, S3, S4, S5 and S6 Site surface water, water from bunded areas, biogas condensate and process water (liquors) arising from sludge treatment operations. Emission to River Nene [via Great Billing WRC]	Effluent monitoring	S1 Process wastewater from plant: SP 81852 62101 S2 Process wastewater from plant: SP 81851 63065 S3 Gravity belt thickeners – RAW filtrate returns: SP 81770 61723 S4 Dewatering – Centrate Returns: SP 81602 61768 S5 Gravity Belt Thickeners – SAS Filtrate returns: SP 81847 61902 S6 Grit washing returns SP 81570 61831	S1, S2, S3, S4, S5 and S6 on site plan 1 in Schedule 7
S7 Imported tankered waste. Emission to River Nene [via Great Billing WRC]	Effluent monitoring	S7 Imported tankered waste to head of works: SP 81522 61868	S7 on site plan 1 in Schedule 7

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 from CHP engines and boilers Parameters as required by condition 3.5.1.	A1 – A5	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	1 January, 1 July
Include IC8 reference for effectiveness of air abatement systems for waste water treatment plant. Parameters as required by condition 3.5.1.	A7	Every 6 months	1 January, 1 July
Emissions to water and land Parameters as required by condition 3.5.1	W1 – W2	Every 12 months	1 January
Emissions to sewer Parameters as required by condition 3.5.1	S1 – S7	Upon completion of IC5a, IC5b, IC9a and IC9b	Upon completion of IC5a, IC5b, IC9a and IC9b
Process monitoring – digester tank integrity Parameters as required by condition 3.5.1	As specified in schedule 3 table S3.4	Every 5 years from the date of commissioning or as per the manufacturer's recommendation, whichever is sooner	1 January
Process monitoring – under and over pressure relief systems Parameters as required by condition 3.5.1	As specified in schedule 3 table S3.4	Every 12 months Yearly summary report of over-pressure and under-pressure events detailing mass balance release	1 January
Process monitoring – leak detection and repair (inspection, calibration and maintenance) Parameters as required by condition 3.5.1	As specified in schedule 3 table S3.4	Every 3 years	1 January
Process monitoring – use of emergency flare Parameters as required by condition 3.5.1	As specified in schedule 3 table S3.4	Every 12 months	1 January

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Non-compostable contamination removal efficiency Parameters as required by conditions 2.3.4 and 2.3.7	--	Every 12 months Yearly report of detailing contamination removal efficiency and progress with plastic reduction contamination	1 January
Total annual VOCs emissions from gas engines (calculated)	As specified in schedule 3 table S3.4	Every 12 months	1 January
Bioaerosols monitoring Parameters as required by condition 3.5.1	As specified in schedule 3 table S3.5	Every 3 months or as agreed in writing by the Environment Agency	1 January, 1 April, 1 July, 1 October

Table S4.2 Annual production/treatment	
Parameter	Units
Electricity generated	MWh
Liquid digestate	m ³
Solid digestate	tonnes
Recovered outputs	tonnes or m ³

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
CHP engine usage	Annually	hours
CHP engine efficiency	Annually	%
Auxiliary boiler usage	Annually	hours

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	08/003/2021
Bioaerosols	As specified in the Technical Guidance Note M9 or other form as agreed in writing by the Environment Agency	--
Process monitoring	Form process 1 or other form as agreed in writing by the Environment Agency	08/003/2021

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Sewer	Form sewer 1 or other form as agreed in writing by the Environment Agency	08/003/2021
Water	Form water 1 or other form as agreed in writing by the Environment Agency	08/003/2021
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	08/003/2021
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	08/003/2021
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	08/003/2021
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	

(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.

“appropriate abatement system” means the appropriate treatment technique for channelled emissions to air defined in 6.6.1 ‘Channelled emissions to air’ from the ‘Best Available Techniques (BAT) Reference Document for Waste Treatment’.

“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.

“bioaerosols action levels” mean the acceptable bioaerosols concentrations at the nearest sensitive receptor, or at an equivalent distance downwind of the biowaste treatment operations, which are attributable to the biowaste treatment operations. The acceptable concentrations are respectively 1000 and 500 CFU m⁻³ for total bacteria and *Aspergillus fumigatus*. Where these action levels are elevated, the operator must take action to mitigate the impact on sensitive receptors.

“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.

“BREF” means Best Available Techniques (BAT) Reference Document.

“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. Further guidance '[RGN2: Understanding the meaning of regulated facility Definition of regulated facility](#)' is available.

“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.

“competent persons and resources” means that a technically competent person accredited to a relevant scheme must attend site and record their attendance, and that all roles and responsibilities are clearly stated in the management systems along with records of operatives' training. See the guidance on the [level of competence and duration of attendance](#)

“compost” means 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 waste containing packaging or non-packaging items (or both) with a valid certificate of conformity to EN 13432 or an equivalent standard for compostable and digestible items, the certificate issued by an independent certification body capable of fully biodegrading by a biological process to create compost or digest.

“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.

“composting batch” means an identifiable quantity of material that progresses through the composting system and when fully processed has similar characteristics throughout. For composting systems that operate on a continuous- or plug-flow basis, batches will be taken to mean a series of “portions of production”.

“direct discharge” means discharge to a receiving water body

“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.

“DSEAR” means the Dangerous Substances and Explosive Atmospheres Regulations 2002.

“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.

“Indirect discharge” means a discharge to a sewer or off-site waste water treatment plant.

“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.

“maturation” means optional period of treatment or storage of separated fibre digestate under predominantly aerobic conditions.

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

“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.

“PFOA” means Perfluorooctanoic acid.

“PFOS” means Perfluorooctanesulphonic acid.

“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.

“Representative internal” – means representative monitoring at a point internally of the windrows that will give a representative assessment of temperature. Note: Larger windrows will require more bespoke temperature equipment to adequately assess temperature profiles accurately.

“sanitisation” means the actively managed and intensive stage of composting, lasting for at least 5 days, characterised by high oxygen demand and temperatures of over 55°C, during which biological processes, together with conditions in the composting mass, eradicate human and animal pathogens or reduce them to acceptably low levels. The operator also needs to meet ABPR requirements.

“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.

“stable, stabilised” means the degree of processing and biodegradation at which the rate of biological activity has slowed to an acceptably low and consistent level and will not significantly increase under favourable, altered conditions.

“stabilisation stage” means the stage of composting following sanitisation, during which biological conditions in the composting mass, give rise to compost that is nominally stable.

“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 veneer).

“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.

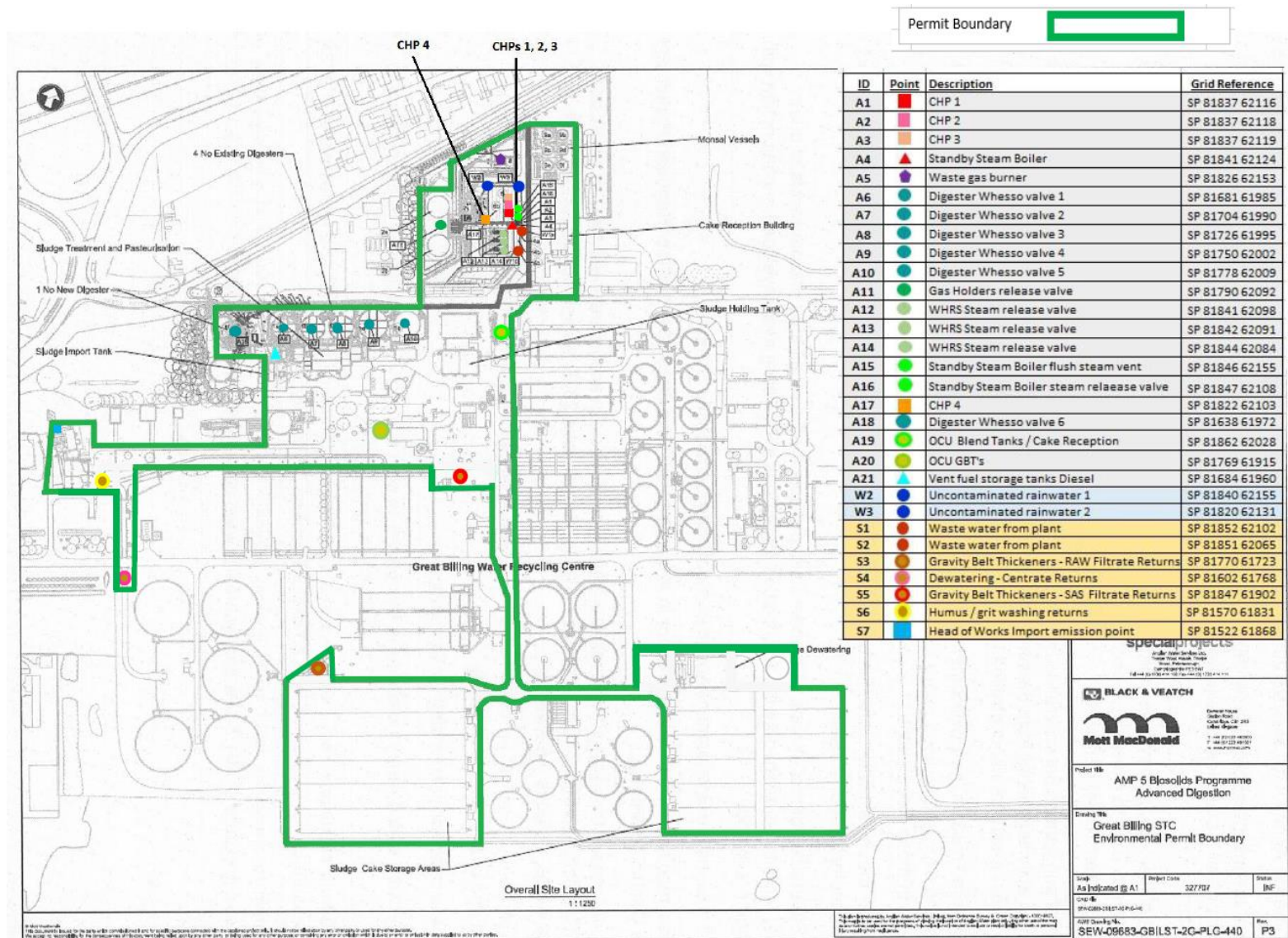
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- 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

Installation (AR1 – AR10) – Site plan 1



Permit number
EPR/KP3734GJ

END OF PERMIT