Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Dŵr Cymru Cyfyngedig

Cardiff East Wastewater Treatment Works CHP Facility
Cardiff East Wastewater Treatment Works
Tide Fields Road
Rover Way
Tremorfa
Cardiff
CF24 2RX

Permit number:

EPR/FP3232KG

Cardiff East Wastewater Treatment Works CHP Facility

Permit number EPR/FP3232KG

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

This permit allows the operator to carry out anaerobic digestion of wastes and the combustion of the resultant biogas at the Wastewater Treatment Works. This activity is captured under S5.4 A1 (b)(i) of the Environmental Permitting (England & Wales) Regulations 2016 which allows for the recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 100 tonnes per day (where the only waste treatment activity is anaerobic digestion) involving biological treatment. Hazardous wastes are not permitted.

The throughput for the Anaerobic Digestion installation is 160,000 tonnes per annum.

The site utilises the biogas generated from the wet Anaerobic Digestion process to produce heat and electricity using a Combined Heat and Power (CHP) Unit. The biogas generated by the digesters is combusted.

The facility includes 3No. CHP units, each unit comprising a gas engine, composite boiler and steam delivery pipework with a combined total thermal input capacity of 11.235 MW. Each unit has a thermal input capacity of 3.745MWth, and electrical generating capacity of 1.56 MWe each and a thermal generating capacity of 0.84 MWth.

Biogas will be combusted in the 3No. CHP gas engines that make up the CHP units and drive electrical generators. The biogas will be treated pre combustion by dedicated Siloxane removal equipment which is designed to remove 95% of the Siloxane prior to combustion. Heat will be recovered for use in the Cardiff WwTW for sewage sludge treatment. Hot exhaust gases will be used to generate steam in the composite boilers and cooling water from the CHP will pass through heat exchangers to produce hot water.

The 3No. composite boilers are each linked to a CHP unit, and steam delivery pipework. The exhaust from the CHP gas engine, together with combustion of natural gas, will provide the heat to raise the steam necessary. Each boiler has a natural gas thermal capacity of 2.5 MW.

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

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/FP3232KG/A001	Duly Made 27/11/09	
Notice for Further Information	Dated 11/03/10	Received electronically 07/04/10
Confirmation of carbon monoxide limit	Sent electronically 20/04/10	Received electronically 29/04/10
Permit determined	26/04/10	
Application EPR/FP3232KG/V002 Duly Made	14/12/12	Variation to add in Siloxane removal process
Application EPR/FP3232KG/V002 Issued	28/03/13	Varied and consolidated permit issued to Dŵr Cymru Cyfyngedig
Regulation 61 Notice sent to the Operator	05/04/19	Issue of a Notice under Regulation 61(1) of the EPR. Natural Resources Wales initiated review and variation to vary the permit following the publication of the revised Best Available Techniques (BAT) Reference Document (BRef) for Waste Treatment.
Regulation 61 Notice response	27/09/19	Response received from the operator
Additional information received	28/02/20	Additional response provided to sections 1, 2, 3 4, 5, 6 and 7 of Reg 61(1) Notice
NRW initiated variation determined EPR/FP3232KG/V003	22/04/21	Varied and consolidated permit issued in modern condition format

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/FP3232KG

This is the consolidated permit referred to in the variation and consolidation notice for application **EPR/FP3232KG/V003** authorising,

Dŵr Cymru Cyfyngedig ("the operator"),

Whose registered office is:

Dŵr Cymru Welsh Water Linea

Fortran Road

St. Mellons

Cardiff

CF3 0LT

Company registration number: **02366777**

to operate an installation at:

Cardiff East Wastewater Treatment Works CHP Facility

Tide Fields Road

Rover Way

Tremorfa

Cardiff

CF24 2RX

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

Name	Date
Holly Noble	**22/04/2021**

Authorised on behalf of Natural Resources Wales

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

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

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

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

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

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

1.3.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

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

1.4.1 The operator shall take appropriate measures to ensure that:

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

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

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

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

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 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 (a) 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 Natural Resources Wales.

(b) If notified by Natural Resources Wales that the activities are giving rise to pollution, the operator shall submit to Natural Resources Wales 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 Natural Resources Wales.

2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.3 Waste shall only be accepted if:

(a) it is of a type and quantity listed in schedule 2 table S2.2; and

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

2.3.4 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.

2.3.5 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.

2.4 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 Natural Resources Wales.

2.4.2 Except in the case of an improvement which consists only of a submission to Natural Resources Wales, the operator shall notify Natural Resources Wales within 14 days of completion of each improvement.

2.5 Pre-operational conditions

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

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, 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) 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 Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales for approval within the period specified, an emissions management plan 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 Natural Resources Wales.

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

3.3 Odour

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

3.3.2 The operator shall:

(a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to odour, submit to Natural Resources Wales for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

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

3.4 Noise and vibration

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

3.4.2 The operator shall:

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

3.5 Monitoring

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

(a) point source emissions specified in tables S3.1, S3.2 and S3;

(b) process monitoring specified in table S3.4;

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 Natural Resources Wales.

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 and S3.3 unless otherwise agreed in writing by Natural Resources Wales.

3.6 Pests

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

3.6.2 The operator shall:

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

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

4 Information

4.1 Records

4.1.1 All records required to be made by 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 Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of 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 Natural Resources Wales.

4.2 Reporting

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

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) 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 Natural Resources Wales, 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 Natural Resources Wales, 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 Natural Resources Wales using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.3 Notifications

4.3.1 (a) In the event 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 Natural Resources Wales,

(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) In the event of a breach of any permit condition the operator must immediately—

(i) inform Natural Resources Wales, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

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

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

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.

4.3.5 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) Natural Resources Wales 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.

4.3.6 Natural Resources Wales shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, Natural Resources Wales 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**
A1	S5.4 A1 (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 one or more of the following activities: Biological treatment	Anaerobic digestion (with a capacity exceeding 100 tonnes per day) of permitted waste followed by burning of biogas produced from the process **R3**: Recycling/reclamation of organic substances which are not used as solvents **R13**: Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced) **D9**: Physico-chemical treatment which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 (e.g. evaporation, drying, calcination, etc)	Waste types as specified in Table S2.2 Pre-treatment of waste including shredding, sorting, screening, compaction, baling, mixing and maceration. Digestion of wastes including pasteurisation and chemical addition. Gas cleaning and upgrading to biomethane. Gas storage and drying. Treatment of digestate including screening to remove plastic residues, centrifuge or pressing, addition of thickening agents (polymers) or drying. Use of pressure release valves to protect the integrity of the plant. Such systems should not be used routinely to vent unburnt biogas. All waste to be stored and treated on an impermeable surface with sealed drainage, surrounded by a bund with a capacity of at least 110% of the largest vessel or 25% of the total tank volume (whichever is the greatest). Digestate shall be stored within covered containers or covered lagoons and should be of a design and capacity fit for purpose. All Biogas concentrate shall be discharged into a sealed drainage system. From the receipt of permitted waste through to its digestion and recovery of by-products from the installation.
Directly Associated Activity			
A2	Biogas storage and supply system	Storage of biogas arising from the WwTW.	From receipt of gas into the holders to supply to the listed activity.
A3	Siloxane removal plant	A synthetic media filter, which will remove Siloxane from the biogas prior to its combustion in the CHP's and the boiler.	The generation of gas from the anaerobic digester to the use of gas in the CHP's and boiler.

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**
A4	Emergency Flare Operation	Use of an auxiliary flare required only for periods of breakdown or maintenance of CHP engines. **D10**: Incineration on land.	From receipt of biogas to the release of combustion products from the flare stack.
A5	Water treatment and conditioning	Condensate and boiler blow down drainage systems.	From collection to the point of discharge to the adjacent WwTW.
A6	Combustion of resultant Biogas	**R1**: Burning of waste as a fuel Combustion of biogas in combined heat and power (CHP) engines with an aggregated thermal input of Below 50MWth	The combustion of biogas in three combined heat and power (CHP) engines, each with a rated thermal input of 3.745 megawatts (MW) for the recovery of energy in the form of steam, electrical power and hot water. Generation of steam by passing the exhaust gases from the CHP engine through the boilers to generate steam. Each boiler has a natural gas thermal input capacity of 2.5 MW. From receipt of biogas from the gas holders to the production of steam, electrical power and hot water. The CHP engines shall consist of no more than three spark ignition engines with a combined thermal input capacity of 11.235 MW. The boilers shall use natural gas for supplementary firing and shall consist of no more than three boilers with a combined natural gas thermal input capacity of 7.5 MW.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Original Permit Application	Section 2 (Techniques for Pollution Control) of the Application Supporting Information Document provided in response to section 5a – technical standards, Part B of the Application form.	27/11/2009
Response to Schedule 5 Notice dated 11/03/10 in relation to Original Permit Application	Response to question 7 detailing operation of the waste gas burner. Response to question 8 detailing biogas storage	07/04/2010
Pp Tek Operation and Maintenance data doe Siloxane removal system Cardiff WwTW received as part of variation application EPR/FP3232KG/V002	All	09/11/2012

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
PP Tek Cardiff WwTW Siloxane Removal System Hazardous Area Classification Report	All	09/11/2012
Response to regulation 61(1) Notice – request for information dated 04/04/2019 detailing how the Operator will comply with the BAT conclusions for Waste Treatment, under Directive 2010/75/EU of the European Parliament and of the Council	Operator Response to Regulation 61 Notice for Waste Treatment – "Cardiff WwTW AD plant BAT conclusion notice"	27/09/2019
Additional information	Additional information received: "Cardiff WwTW AD S61 response March 2020" "Copy of WT BREF Spreadsheet Guide CARDIFF WwTW AD"	28/02/2020
Agreed written methodology for meeting the process parameters listed in Schedule 3b Table S3.4	All relevant sections	In line with IC1 BAT 38

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The operator shall submit to Natural Resources Wales for written approval, information to evidence compliance with the following BAT Conclusions, in accordance with requirements specified within the Waste Treatment BREF Document (EU 2018): • BAT 1 - Implement and adhere to an environmental management system (EMS) that incorporates all of the following features: o (IV)(h) Emergency preparedness & response o (VII) Following development of cleaner technologies; o (VIII) Whole life cycle considerations when designing a new plant; o (IX) Regular sectoral bench marking; o (X) Waste stream management; o (XI) Inventory of waste water & waste gas streams; o (XII) Residues Management Plan; o (XIII) Accident Management Plan. • BAT 2 In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques described within BAT 2 Table. • BAT 3 In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of wastewater and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features: o information about the characteristics of the waste to be treated and the waste treatment processes; o information about the characteristics of the waste water streams; and o information about the characteristics of the waste gas streams. • BAT 4 In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques described within BAT 4 Table. • BAT 5 In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.	17 February 2022 or otherwise agreed in writing with Natural Resources Wales

- BAT 13 Techniques to prevent, or where not practicable reduce odour emissions.
- BAT 14 In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques described within BAT 14 Table.
- BAT15 BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques described within BAT 15 Table.
- BAT 19 In order to optimise water consumption, to reduce the volume of wastewater generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques described within BAT 19 Table:
    a) Water Management;
    b) Water Recirculation;
    c) Impermeable Surface;
    e) Roofing of waste storage and treatment areas;
    f) Segregation of water streams;
    g) Adequate drainage infrastructure;
    h) Design and maintenance provisions to allow detection and repair of leaks; and
    i) Appropriate buffer storage capacity.
- BAT 21 In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques described within BAT 21 Table.
- BAT 22 In order to use materials efficiently, BAT is to substitute materials with waste.
- BAT 23 Energy efficiency Plan and Energy Balance Record.
- BAT 24 Maximise the reuse of packaging as part of a Residues Management Plan.
- BAT 33 In order to reduce odour emissions and to improve the overall environmental performance, by selecting the waste input (to ensure its suitability for biological treatment).
- BAT 34 In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H_2S and NH_3, BAT is to use one or a combination of the techniques described within BAT 34 Table.
- BAT 35 In order to reduce the generation of wastewater and to reduce water usage, BAT is to use all of the techniques described within BAT 35 Table.
- BAT 38 Reduce emissions to air and to improve the overall environmental performance. The Operator shall submit for written approval a methodology for meeting the process parameters listed in Schedule 3b Table S3.3, as per BAT 38 for the anaerobic treatment of waste. The methodology shall identify each of the process parameters and detail the frequency and techniques in place to record the data. Where a process parameter cannot be monitored justification should be provided and/or a suitable alternative proposed. The methodology should include trigger levels for each of the parameters with associated procedures in place if trigger levels are exceeded.

IC2	The operator shall submit to Natural Resources Wales for written approval, information to evidence compliance with the following BAT Conclusions, in accordance with requirements specified within the Waste Treatment BREF Document (EU 2018): • BAT 19 d) Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels. Depending on the risks posed by the liquids contained in tanks and vessels in terms of soil and/or water contamination, this includes techniques such as: o overflow detectors; o overflow pipes that are directed to a contained drainage system (i.e. the relevant secondary containment or another vessel); o tanks for liquids that are located in a suitable secondary containment; the volume is normally sized to accommodate the loss of containment of the largest tank within the secondary containment; o isolation of tanks, vessels and secondary containment (e.g. closing of valves).	17 February 2022 or otherwise agreed in writing with Natural Resources Wales
IC3	The Operator shall complete and submit for approval: • a baseline report containing information necessary to determine the current state of soil and groundwater contamination; or • Provide a summary report referring to information previously submitted where you are satisfied that such information represents the current state of soil and groundwater contamination; so as to enable a quantified comparison to be made with the state of soil and groundwater contamination upon definitive cessation of activity.	17 February 2022 or otherwise agreed in writing with Natural Resources Wales

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
1	14 days prior to the operation of the siloxane removal system the operator shall provide to Natural Resources Wales O&M documentation showing: • Routine monitoring procedures • Procedures for start-up & shut down • Emergency procedures • Hazardous operations plan • Management of change procedure • Hazardous area classification

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
2	A report for the siloxane removal plant shall be provided to Natural Resources Wales to demonstrate its performance within the first three months of its operation. The report should be submitted within 6 months of its operation. This will include: • Appropriate sampling of the emissions from the Siloxane removal plant (A9) shall be undertaken to allow the operator to carry out an environmental impact assessment of the releases to air from A9. The impact assessment shall use representative release data, obtained through the monitoring exercises, and the H1 tool, or other appropriate assessment method. • Temperature results from the exhaust gas from the siloxane condensate stack. • Any compliants, incidents or releases. • Any breakdown, operational problems and remedial action. • Monitor condition of the engine oil to highlight contamination trends, in particular to examine concentration of siloxane within the oil.

Schedule 2 - Waste types, raw materials and fuels

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

Table S2.2 Permitted waste types and quantities for storage prior to separation and subsequent treatment by anaerobic digestion, dewatering and final recovery of by-products	
Maximum quantity	Annual throughput shall not exceed 160,000 tonnes
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 08	**Wastes from waste water treatment plants no otherwise specified**
19 08 05	Sludges from treatment of urban waste water

Schedule 3(a) – Emissions and monitoring effective until 16 August 2022

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (including unit)[Note 1]	Reference period	Monitoring frequency	Monitoring standard or method
A1 [Combined stack, Air Release Point A on site plan in Schedule 7]	CHP 1 Engine	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Mean	Annually	BS EN 14792
		Carbon Monoxide	1100 mg/m^3	Hourly Mean	Annually	BS EN 15058
		Sulphur Dioxide	340 mg/m^3	Hourly Mean	Annually	BS EN 14791
A2 [Combined stack, Air Release Point A on site plan in Schedule 7]	CHP 2 Engine	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Mean	Annually	BS EN 14792
		Carbon Monoxide	1100 mg/m^3	Hourly Mean	Annually	BS EN 15058
		Sulphur Dioxide	340 mg/m^3	Hourly Mean	Annually	BS EN 14791
A3 [Combined stack, Air Release Point A on site plan in Schedule 7]	CHP 3 Engine	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Mean	Annually	BS EN 14792
		Carbon Monoxide	1100 mg/m^3	Hourly Mean	Annually	BS EN 15058
		Sulphur Dioxide	340 mg/m^3	Hourly Mean	Annually	BS EN 14791
A4 [Combined stack, Air Release Point A (B1) on site plan in Schedule 7]	Composite Boiler 1	No parameters set	No limit set	-	-	Permanent sampling access not required
A5 [Combined stack, Air Release Point A (B2) on site plan in Schedule 7]	Composite Boiler 2	No parameters set	No limit set	-	-	Permanent sampling access not required

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)[Note 1]**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A6 [Combined stack, Air Release Point A (B3) on site plan in Schedule 7]	Composite Boiler 3	No parameters set	No limit set	-	-	Permanent sampling access not required
A7 [Air Release Point B (E1) on site plan in Schedule 7]	Emergency Flare	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	150 mg/m^3	Hourly Mean	Annually [Note 2]	BS EN 14792
		Carbon Monoxide	50 mg/m^3	Hourly Mean	Annually [Note 2]	BS EN 15058
		Sulphur Dioxide	360 mg/m^3	Hourly Mean	Annually [Note 2]	BS EN 14791
		Operational Temperature	>1000°C [Note 3]		Annually [Note 2]	BS EN 13284-1
A8	Pressure Relief Valves	No parameters set	No limit set	-	-	-
A9 [PPTAK Stack on site plan in Schedule 7]	Siloxane Removal Plant	Siloxanes	No limit set	-	-	-

Note 1: These limits do not apply during start up and shut down.

Note 2: Annual monitoring is only required when emergency flare operates in excess of 10% of the time, taken on an annual assessment period.

Note 3: This is an indicative performance limit. An alternative minimum temperature may be acceptable providing the Operator can demonstrate that the other emission limit values are met at a lower temperature.

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
-	-	-	-	-	-	-

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**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
S1 [Aqueous Release Point A (W1) on site plan in Schedule 7, emission to on-site Cardiff WwTW]	Waste waters, process waters (condensate and boiler blow down) and site drainage	No parameters set	No Limit Set	-	-	-

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 [Note 2]**
Biogas	Methane content	[Note 1]	[Note 1]	To obtain calorific value
Biogas	Hydrogen sulphide content	[Note 1]	[Note 1]	
CHP engines (1,2 & 3)	Hours run on biogas	-	-	
Composite Boilers (1,2 & 3)	Hours run on biogas	-	-	
Composite Boilers (1,2 & 3)	Hours run on natural gas	-	-	
Emergency Flare	Gas flow	-	[Note 1]	
Gas Holders	Leak detection	-	[Note 1]	

Note 1: Monitoring frequency and standards to be agreed in writing with Natural Resources Wales.

Note 2: There is no requirement to report process monitoring data. This information shall be made available at the installation for inspection.

Schedule 3 (b) – Emissions and monitoring effective from 17 August 2022

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (including unit) [Note 1]	Reference period	Monitoring frequency	Monitoring standard or method
A1 [Combined stack, Air Release Point A on site plan in Schedule 7]	CHP 1 Engine	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Mean	Annually	BS EN 14792
		Carbon Monoxide	1100 mg/m^3	Hourly Mean	Annually	BS EN 15058
		Sulphur Dioxide	340 mg/m^3	Hourly Mean	Annually	BS EN 14791
A2 [Combined stack, Air Release Point A on site plan in Schedule 7]	CHP 2 Engine	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Mean	Annually	BS EN 14792
		Carbon Monoxide	1100 mg/m^3	Hourly Mean	Annually	BS EN 15058
		Sulphur Dioxide	340 mg/m^3	Hourly Mean	Annually	BS EN 14791
A3 [Combined stack, Air Release Point A on site plan in Schedule 7]	CHP 3 Engine	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500 mg/m^3	Hourly Mean	Annually	BS EN 14792
		Carbon Monoxide	1100 mg/m^3	Hourly Mean	Annually	BS EN 15058
		Sulphur Dioxide	340 mg/m^3	Hourly Mean	Annually	BS EN 14791
A4 [Combined stack, Air Release Point A (B1) on site plan in Schedule 7]	Composite Boiler 1	No parameters set	No limit set	-	-	Permanent sampling access not required
A5 [Combined stack, Air Release Point A (B2) on site plan in Schedule 7]	Composite Boiler 2	No parameters set	No limit set	-	-	Permanent sampling access not required
A6 [Combined stack, Air Release Point A (B3) on site plan in Schedule 7]	Composite Boiler 3	No parameters set	No limit set	-	-	Permanent sampling access not required

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)** [Note 1]	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A7 [Air Release Point B (E1) on site plan in Schedule 7]	Emergency Flare	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No limit set	-	-	-
		Carbon Monoxide	No limit set	-	-	-
		Sulphur Dioxide	No limit set	-	-	-
		Operational Temperature	>1000ºC [Note 3]	-	-	-
A8	Pressure Relief Valves	No parameters set	No limit set	-	-	-
A9 [PPTAK Stack on site plan in Schedule 7]	Siloxane Removal Plant	Siloxanes	No limit set	-	-	-

Note 1: These limits do not apply during start up and shut down.

Note 2: Annual monitoring is only required when emergency flare operates in excess of 10% of the time, taken on an annual assessment period.

Note 3: This is an indicative performance limit.

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
-	-	-	-	-	-	-

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**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
S1 [Aqueous Release Point A (W1) on site plan in Schedule 7, emission to on-site Cardiff WwTW]	Waste waters, process waters (condensate and boiler blow down) and site drainage	No Parameter Set	No Limit Set	-	-	-

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 [Note 2]**
Biogas	Methane content	[Note 1]	[Note 1]	To obtain calorific value
Biogas	Hydrogen sulphide content	[Note 1]	[Note 1]	
CHP engines (1,2 & 3)	Hours run on biogas	-	-	
Composite Boilers (1,2 & 3)	Hours run on biogas	-	-	
Composite Boilers (1,2 & 3)	Hours run on natural gas	-	-	
Emergency Flare	Gas flow	-	[Note 1]	
Gas Holders	Leak detection	-	[Note 1]	
Digester, Gas Holders, Storage Tanks	Odour	[Note 1]	[Note 1]	Subject to approved methodology in improvement condition IC1 BAT 38 and as agreed with NRW
	Operating temperature			
	Liquid and foam levels			
	Concentration of ammonia			
	Concentration of VFAs			
	Alkalinity			
	FOS/TAC ratio (VFA/TA)			
	pH			
Digestate	Concentration of VFAs			
	Ammonia			

Note 1: Monitoring frequency and standards to be agreed in writing with Natural Resources Wales.

Note 2: There is no requirement to report process monitoring data. This information shall be made available at the installation for inspection.

Schedule 4 (a) – Reporting effective until 16 August 2022

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

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to air Parameters as required by condition 3.5.1	A1, A2 and A3 A7 [Note 1]	Annually	1 January

Note 1: Reporting in accordance with the requirements set out in Table S3.1 of this permit.

Table S4.2 Annual Production / Treatment	
Parameter	**Units**
Total fuel input (Biogas)	m^3
Total fuel input (Natural Gas)	MWh

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Power output – heat	Annually	MWh
Power output – electricity	Annually	MWh
Energy Efficiency	Annually	MWh/ m^3 biogas
Water usage	Annually	m^3
Water generated	Annually	m^3/MWh
Energy usage	Annually	MWh
Operational time of waste gas burner	Annually	% of operational time

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form air 1 or other form as agreed in writing by Natural Resources Wales	28/03/13
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	28/03/13
Waste Subject to Conditions 4.2.5	Waste tonnage return form from the Natural Resources Wales website or other form as agreed in writing by Natural Resources Wales	N/A

Schedule 4 (b) – Reporting effective from 17 August 2022

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

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1	A1, A2 and A3 A7 [Note 1]	Annually	1 January

Note 1: Reporting in accordance with the requirements set out in Table S3.1 of this permit.

Table S4.2 Annual Production / Treatment

Parameter	Units
Total fuel input (Biogas)	m^3
Total fuel input (Natural Gas)	MWh
Total amount of waste treated	tonnes

Table S4.3 Performance parameters

Parameter	Frequency of assessment	Units
Power output – heat	Annually	MWh
Power output – electricity	Annually	MWh
Energy Efficiency	Annually	MWh/ m^3 biogas
Electrical energy exported to the grid	Annually	MWh
Electrical energy drawn from the grid	Annually	MWh
Water usage	Annually	m^3
Water generated	Annually	m^3/MWh
Energy usage	Annually	MWh
Generation of residues	Annually	tonnes
Generation of wastewater	Annually	m^3
Operational time of waste gas burner	Annually	% of operational time
Total raw material used	Annually	tonnes

Table S4.4 Reporting forms

Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by Natural Resources Wales	17/08/2022
Water usage	Form water usage 1 or other form as agreed in writing by Natural Resources Wales	17/08/2022
Energy usage	Form energy 1 or other form as agreed in writing by Natural Resources Wales	17/08/2022
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	17/08/2022

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Waste Subject to Conditions 4.2.5	Waste tonnage return form from the Natural Resources Wales website or other form as agreed in writing by Natural Resources Wales	N/A

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 activity that gives rise to an incident or accident which significantly affects or may significantly affect the environment	
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 permit condition	
To be notified within 24 hours of detection	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
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) In the event 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:	
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.

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

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

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

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

"Background Concentration" means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

"Best Available Treatment, recovery and recycling techniques" shall have the meaning given to it in the document published jointly by the Department for Environment, Food and Rural Affairs, the Welsh Assembly Government and the Scottish Executive on 27th November 2006, entitled "Guidance on Best Available Treatment, Recovery and Recycling Techniques (BATRRT) and Treatment of Waste Electrical and Electronic Equipment (WEEE).

"Bioaerosol Threshold Limits" means the maximum acceptable bioaerosol concentrations at the nearest sensitive receptor, or at an equivalent distance downwind of the composting operations, which are attributable to the composting operations. The maximum acceptable concentrations are respectively 1000 and 500 CFU m-3 for total bacteria and *Aspergillus fumigatus*.

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

*"Disposal" or "D" m*eans any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"Emissions 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.

"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 or background concentration limit**.**

"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.

"Industrial Emissions Directive" means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

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

"Pests" means Birds, Vermin and Insects.

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

"Recovery" or "R" 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.

‘*Residue*’ means the solid waste generated by the waste treatment activity and is not directly related to the type of waste treated in the plant.

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

“Waste Framework Directive” or *“WFD”* means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste.

“*Waste Treatment BAT Conclusions*” means the BAT Conclusions for the Waste Treatment sector published as a Commission Implementing Decision EU 2018/1447 in the Official Journal of the EU on 17 August 2018.

“Year” means calendar year ending 31 December.

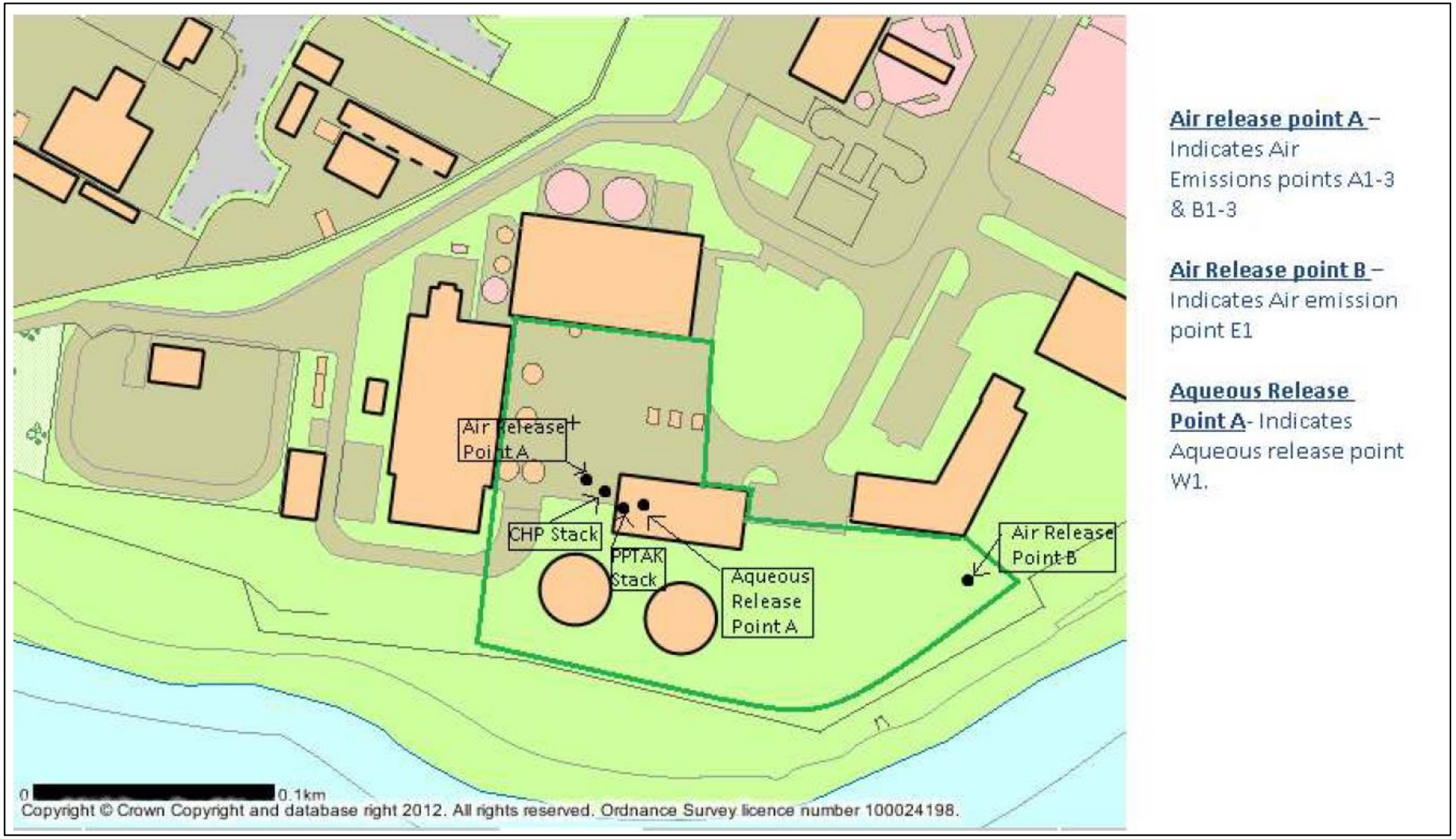
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

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

(a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

(b) 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.

Schedule 7 - Site plan



Air release point A – Indicates Air Emissions points A1-3 & B1-3

Air Release point B – Indicates Air emission point E1

Aqueous Release Point A- Indicates Aqueous release point W1.

END OF PERMIT