Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Biomass UK No.2 Limited

Barry Energy Production Facility
Woodham Road
Barry
Vale of Glamorgan
CF63 4JE

Permit number

EPR/AB3790ZB

Barry Energy Production Facility
Permit number EPR/AB3790ZB

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of a waste co-incineration plant. The permit implements the requirements of the EU Directives on Industrial Emissions and Waste.

The main features of the permit are as follows:

Furnace Technology	Fluidised Bed gasification & combustion
Number of lines	1
Waste	Wood - commercial & industrial, construction & demolition
Stack height	43 m
Permitted plant capacity	86,400 tonnes per year
Energy Generated Gross electrical efficiency	10 MW_e (net) >20 %
Heat exported	CHP ready (not implemented)

The installation is a waste co-incinerator that utilises gasification technology, as a means of processing mixed waste wood feedstocks to produce a synthesis gas which is then combusted to raise steam and generate electricity. The plant can process up to 86,400 tonnes of waste wood and includes diesel as a stand-by fuel for combustion stabilisation.

The principal components of the process that are within the scope of the permit, comprise the following:

Waste Acceptance and Reception: All waste wood originates from commercial, industrial, construction and demolition waste streams. The wood fuel is screened on arrival at site and delivered directly into the fuel storage building via electrically operated automated roller shutter doors. The wood will arrive at the site in the form of pre-processed wood chips in accordance with an agreed fuel supply specification, no further processing occurs on site. As required, the wood is then discharged onto the feedstock feed system, which delivers it into the gasification building.

Gasification: The feedstock feed system delivers the wood into a fluidised bed gasification system, where the wood is thermally treated to produce a synthetic gas (syngas). The syngas is then combusted to produce a high temperature flue-gas. The combustion chamber is designed to minimise pollutant formation, with selective non-catalytic reduction (SNCR) in place for NO_X control. A steam boiler

recovers the heat from the combustion gases. The recovered heat is then converted into superheated steam which passes to the turbine.

Electricity generation: The superheated steam passes to a Steam Turbine and Generator, which generates electricity, which then exports approximately 10MW_e (net) of renewable electricity to the National Grid. The waste steam is then condensed and recovered; an air-cooled condenser circuit is used to cool the exhaust steam from the turbine to be re-used by the boiler.

Flue-Gas Cleaning: Flue gas cleaning and pollution control consists of urea injection for the reduction of NO_x via selective catalytic reduction (SCR), lime injection for acid gas neutralisation and activated carbon powder injection for absorption and removal of heavy metals, dioxins, VOCs and other substances. The flue gas cleaning system also incorporates a baghouse system, which is designed to remove submicron dust particles. Cleaned flue gas is released to atmosphere via a 43m stack. Emissions from the stack are monitored in accordance with permit requirements and for process control purposes. Permitted emission limit values (ELV's) are in accordance with the requirements of Annex VI and Chapter IV of the Industrial Emissions Directive (IED), and from 3rd December 2023 with the 2019 Waste Incineration BREF.

Water Treatment: The installation will include a water treatment system which is designed to provide high quality water to the boiler. Make up water will be provided from a multi-stage de-mineralisation plant treating mains water. All water treatment chemicals are dosed directly into the feed line, no solid chemicals are added to the water, therefore solid deposit formations are avoided. The plant will generate aqueous process effluent through boiler blowdown and water treatment plant discharges. The effluent will be discharged via emission point S1 in accordance with a trade effluent consent from the local sewerage undertaker, Dŵr Cymru Welsh Water. The plant can discharge approximately 3921l/h of waste water to sewer although expected volumes are considerably lower.

Furnace bottom ash is removed from the process, transported and deposited in a designated ash silo for storage. The Air Pollution Control Residue (APC) is removed from the process and kept separate, stored in a dedicated silo. The furnace bottom ash silo holds approximately 70 tonnes and is emptied approximately once a fortnight. The APC residue is deposited in 1 tonne sealed bags and removed from site by lorry and disposed at an appropriate hazardous waste landfill. The silos are sealed reducing fugitive emissions to atmosphere. The ash in these silos can either be removed via skip or powder lorry and are transported off site in-line with the regulations to be re-used or disposed of in the appropriate manner.

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 PAN-000869	Duly made 23/01/17	Application for a waste wood co-incinerator
Additional Information Received	04/01/17	Schedule 5 issued on 15/12/16 requesting air quality, human health, habitats and noise modelling files.
Additional Information Received	22/02/17	Schedule 5 issued on 24/01/17 requesting Air quality modelling, Computational Fluid Dynamics, noise assessment plan, noise modelling files
Additional Information Received	08/03/17	Additional information provided relating to the Schedule 5 issued on 24/01/17 requesting Air quality modelling, Computational Fluid Dynamics, noise assessment plan, noise modelling files
Additional Information Received	14/07/17	Schedule 5 issued on 11/05/17 requesting information relating to the noise assessment, air quality assessment, waste acceptance tonnages, energy efficiency, role of the operator, waste acceptance & pre-acceptance, fire prevention plan, site condition report, BAT assessment, selection of technology.
Additional Information Received	19/10/17	Additional information requested by NRW on 06/10/17, related to answers in the Schedule 5 response received on the 14/07/17, including noise assessment, role of the operator, fire prevention plans and energy efficiency
Additional Information Received	23/10/17	Email with final attenuation tank details used for collection of rain water and firefighting water on-site
Permit determined	07/02/2018	
Application Received PAN-004454	Duly Made 18/01/19	Application for change to 'periodic' hydrogen fluoride monitoring instead of 'continuous'.
Variation Determined	14/03/19	Variation issued
Regulation 61 Notice sent to the Operator	15/06/21	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 Incineration.
Regulation 61 Notice response	13/01/22	Response received from the Operator.
Natural Resources Wales initiated variation determined EPR/AB3790ZB/V003 [PAN-019626]	21/12/22	Varied permit issued to operator

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number
EPR/AB3790ZB

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/AB3790ZB/V003 authorising

Biomass UK No.2 Limited ("the operator"),

whose registered office is

St Helen's
1 Undershaft
London
EC3P 3DQ

company registration number **09847089**

to operate an installation at:

Barry Energy Production Facility
Woodham Road
Barry
Vale of Glamorgan
CF63 4JE

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

Signed	Date
Holly Noble	**21/12/2022**

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.

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is recovered with a high level of energy efficiency and 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.

1.2.2 The operator shall provide and maintain steam and/or hot water pass-outs such that opportunities for the further use of waste heat may be capitalised upon should they become practicable.

1.2.3 The operator shall review the viability of Combined Heat and Power (CHP) implementation at least every four years, or in response to any of the following factors, whichever comes sooner:

(a) new plans for significant developments within 15 km of the installation;

(b) changes to the Local Plan;

(c) changes to the UK CHP Development Map or similar; and

(d) new financial or fiscal incentives for CHP.

The results shall be reported to Natural Resources Wales within two months of each review, including where there has been no change to the original assessment in respect of the above factors

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 Waste paper, metal, plastic or glass that has been separately collected for the purpose of preparing for re-use or recycling shall not be accepted. Waste from the treatment of these separately collected wastes shall only be accepted if incineration delivers the best environmental outcome in accordance with regulation 12 of the Waste (England and Wales) Regulations 2011.

2.3.5 Separately collected fractions other than those listed in condition 2.3.4 shall not be accepted unless they are unsuitable for recovery by recycling.

2.3.6 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.

2.3.7 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.

2.3.8 Waste shall not be charged if:

(a) the combustion chamber temperature is below 850 ˚C,

(b) it is hazardous waste with a hazardous halogenated organic content of more than 1% (expressed as chlorine) and the combustion chamber temperature is below 1,100 ˚C.

(c) it is cytotoxic or cytostatic waste and the combustion chamber temperature is below 1,000 ˚C

(d) any continuous emission limit value in schedule 3 table S3.1 is exceeded; or

(e) continuous emission monitors to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 are unavailable; or

(f) there is a stoppage, disturbance or failure of the activated carbon abatement system.

(g) continuous emission monitors to demonstrate compliance with the emission limit values for particulates, TOC or CO in schedule 3 are unavailable unless alternative techniques, as agreed in writing with Natural Resources Wales, are used to demonstrate compliance with those emission limit values.

2.3.9 The operator shall have at least one auxiliary burner in each line which shall be operated at start up, shut down and as required during operation to ensure that the operating temperature specified in condition 2.3.8 is maintained as long as incompletely burned waste is present in the combustion chamber. Unless the temperature specified in condition 2.3.8 is maintained in the combustion chamber, such burner(s) shall be fed only with fuels which result in emissions no higher than those arising from the use of gas oil, liquefied gas or natural gas.

2.3.10 Bottom ash and APC residues shall not be mixed.

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 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 tables S3.1, S3.2 and S3.3.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 3 table S3.5. Additional samples shall be taken and tested and appropriate action taken, whenever:

(a) disposal or recovery routes change; or

(b) it is suspected that the nature or composition of the waste has changed such that the route currently selected may no longer be appropriate.

3.1.4 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 limits and monitoring for emission to air for co-incineration plant

3.2.1 The limits for emissions to air apply as follows:

(a) The limits in table S3.1 shall not be exceeded

3.2.2 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1; the Continuous Emission Monitors shall be used such that;

(a) the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed the following percentages of the emission limit values:

- Carbon monoxide 10%
- Sulphur dioxide 20%
- Oxides of nitrogen (NO & NO_2 expressed as NO_2) 20%

- Particulate matter 30%
- Total organic carbon (TOC) 30%
- Hydrogen chloride 40%
- Hydrogen fluoride 40%
- Ammonia 40%
- Mercury (Hg) 40%

(b) valid half-hourly average values or 10-minute averages shall be determined within the effective operating time (excluding the start-up and shut-down periods) from the measured values after having subtracted the value of the confidence intervals in condition 3.2.2 (a).

(c) where it is necessary to calibrate or maintain the monitor and this means that data are not available for a complete half-hour or 10 minute period, the half-hourly average or 10-minute average shall in any case be considered valid if measurements are available for a minimum of 20 minutes or 7 minutes during the half-hour or 10-minute period respectively. The number of half-hourly or 10-minute averages so validated shall not exceed 5 or 15 respectively per day.

(d) daily average values shall be calculated as follows: the average of valid half hourly averages or 10 minute averages over a calendar day. The daily average value shall be considered valid if no more than five half-hourly average or fifteen 10-minute average values in any day have been determined not to be valid;

(e) no more than ten daily average values per year shall be determined not to be valid:

3.3 Emissions of substances not controlled by emission limits

3.3.1 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.

3.3.2 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.

3.3.3 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.

3.4 Odour

3.4.1 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.

3.4.3 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.

3.5 Noise and vibration

3.5.1 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.

3.5.2 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.

3.6 Monitoring

3.6.1 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 S3.3;

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

(c) residue quality in table S3.5

3.6.2 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.

3.6.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.6.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by Natural Resources Wales. Newly installed CEMs, or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 1.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges. Newly installed Data handling and acquisition systems (DAHS), or DAHS replacing existing DAHS, shall have MCERTS certification.

3.6.4 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.

3.7 Fire

3.7.1 The operator shall manage and operate the activities in accordance with a written fire prevention plan using the current, relevant fire prevention plan guidance.

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.

(d) the functioning and monitoring of the co-incineration plant in a format agreed with Natural Resources Wales. The report shall, as a minimum requirement (as required by Chapter IV of the Industrial Emissions Directive) give an account of the running of the process and the emissions into air and water compared with the emission standards in the IED.

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.

4.4 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 listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
Section 5.1 A1 (b)	The incineration of non-hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 3 tonnes per hour.	Co-incineration of waste wood in a single co-incineration line with a 42.84 MW rated thermal input. From receipt of waste to emission of exhaust gas and disposal of waste arising. Waste types and quantities as specified in Table S2.2 of this permit. Total storage capacity of incoming waste wood – 2000m^3 Waste reception, storage on-site, waste wood and fuel and air supply systems, boiler, facilities for the treatment of exhaust gases and on-site facilities for treatment or storage of residues and waste water. All waste storage must be indoors, on a concrete surface with sealed drainage Abnormal operation not permitted
Directly Associated Activities		
Electricity Generation	Generation of approximately 10MW_e (net) electrical power using a steam turbine from energy recovered from the flue gases.	The generation of electricity for export to the grid and for on-site operations.
Air Cooled Condenser	Air cooled steam condenser to recover water for recirculation to the boiler steam circuit	
Fuel Reception and Storage	Reception, Storage and handling of recycled wood	
Solid residue storage and handling	Reception, Storage and handling of Ash	Bottom ash to be stored on-site prior to off-site disposal or treatment. Fly ash is to be stored in sealed containers separate to the bottom ash prior to removal from site
Water Treatment	Boiler make up water will be provided from a multi-stage de-mineralisation plant treating mains water	
Air Pollution Control	Flue-gas recirculation, SCNR, SCR treatment, activated carbon treatment, lime injection, fabric particulate filter	Control of gases prior to emission to air
Back up electrical generator	For providing emergency electrical power to the plant in the event of supply interruption or emergency.	<1MW_{th} input, (not medium combustion plant or specified generator.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application PAN-000869	Accident Management Plan, doc ref; BUK-E09. The application supporting information also includes a description of: • The incineration capacity • Plant capacity • The waste feed cessation system • Start-up and shut down • Temperature monitoring in the combustion chamber • Energy recovery from the installation • Temperature, oxygen, water vapour and pressure at air release sampling points	25/10/16
Additional information received via Not Duly Made response	Updated site plan showing; • Aerial emission point • Surface water emission point • Sewer emission point	21/11/16
Additional information received	Waste Pre-acceptance procedures; BUK-E01 Pre-acceptance Application Support Document; SOL1605BUK201 - Application Support Document - V3 – Whole document Revised Fire Prevention Plan; SOL1605BUK201 - Fire Prevention Plan v2 Off-site Waste Transfer; BUK-E04 Response to 3rd Schedule 5 notice; SOL1605BUK201 Schedule 5 response 2	14/07/17
Application	Energy efficiency calculation; Doc ref. 004-02-10 Efficiency Plant R1.pdf	20/10/17
Application	Clarification answers, doc ref; SOL1710BUK201 Clarification Questions response	19/10/17
Application	Email received confirming drainage strategy for firefighting water and confirmation of site attenuation tank. Drawing no. BARRY_01_DWG_01_20145_C	23/10/17
Application	Section 2 of EPR Minor Technical Variation Application. Report no – SOL1901BUK201	18/01/19
Response to regulation 61(1) Notice – request for information dated 15/06/2021 detailing how the Operator will comply with the BAT conclusions for Waste Incineration, under Directive 2010/75/EU of the European Parliament and of the Council	All	13/01/22
Other than normal operating conditions (OTNOC) management plan	As stated in written approval to the response to Pre-operational Condition PO7	Post variation V003 issue

Table S1.3 Improvement programme requirements		
Reference[1]	**Requirement**	**Date**
IC1	The Operator shall submit a written report to Natural Resources Wales on the implementation of its Environmental Management System (EMS) and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified. The report shall also include details of a review of the OTNOC	Within 12 months of operation following the completion of

	management plan and any updates to the plan following the review.	commissioning.
IC2	The Operator shall submit a written proposal to Natural Resources Wales to carry out tests to determine the size distribution of the particulate matter in the exhaust gas emissions to air from emission point A1, identifying the fractions within the PM_{10}, and $PM_{2.5}$ ranges. The proposal shall include a timetable for approval by Natural Resources Wales to carry out such tests and produce a report on the results. On receipt of written approval from Natural Resources Wales to the proposal and the timetable, the Operator shall carry out the tests and submit to Natural Resources Wales a report on the results.	Within 6 months of operation following the completion of commissioning.
IC3	The Operator shall submit a written report to Natural Resources Wales on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirm that the Environmental Management System (EMS) has been updated accordingly.	Within 4 months of operation following the completion of commissioning.
IC4 (a)	The operator shall notify Natural Resources Wales of the proposed date(s) that validation testing is planned for.	Notification at least 3 weeks prior to validation testing
IC4 (b)	During commissioning the operator shall carry out validation testing to validate the residence time, minimum temperature and oxygen content of the gases in the furnace whilst operating under normal load and most unfavourable operating conditions. The validation shall be to the methodology as approved through pre-operational condition PO6.	Validation tests completed before the end of commissioning
IC4 (c)	The operator shall submit a written report to Natural Resources Wales on the validation of residence time, oxygen and temperature whilst operating under normal load, minimum turn down and overload conditions. The report shall identify the process controls used to ensure residence time and temperature requirements are complied with during operation of the co-incineration plant	Report submitted within 2 months of operation following the completion of commissioning.
IC5	The Operator shall submit a written report to Natural Resources Wales describing the performance and optimisation of: o The lime injection system for minimisation of acid gas emissions o The carbon injection system for minimisation of dioxin and heavy metal emissions. o The Selective Non Catalytic Reduction (SNCR) and selective catalytic reduction (SCR) systems, and combustion settings to minimise oxides of nitrogen (NOx). The report shall include an initial assessment of the level of NO_X, N_2O and NH_3 emissions that can be achieved under optimum operating conditions.	Within 4 months of operation following the completion of commissioning.
IC6	The operator shall carry out a further study on the potential to further reduce NO_X emissions from the plant below an emissions limit value [ELV] of 225 mg/Nm^3 as a daily average on a long-term basis. The study shall be based on trials carried out at the installation. The study shall include but not necessarily be limited to the following: • A brief description of the currently installed measures at the installation to minimise NO_X emissions and data which illustrates the best NO_X performance that can currently be achieved.	Within 18 months of operation following the completion of commissioning

	• The results of trials conducted to further reduce daily average NO_x emissions as far as possible below 225 mg/Nm^3 using currently installed measures, including: ▪ quantification of the reduction in NO_x levels ▪ associated levels of ammonia and nitrous oxide emissions, and reagent consumption ▪ any effects on plant operation and reliability ▪ any changes to the composition of the bottom ash and boiler ash and the implications of those changes for the ability to process and use the ash, as well as for the pollution potential of the ash both during processing and its subsequent use as a secondary aggregate ▪ any other relevant cross-media effects ▪ an assessment whether a lower ELV of 225 mg/Nm^3 as a daily average is achievable on a consistent basis and any alternative ELVs which would provide an equivalent level of NO_x reduction on a long-term basis such as an annual mass emission limit or percentile-based ELV. A written report of the study shall be submitted to Natural Resources Wales. If required by Natural Resources Wales in writing, the operator shall carry out a further study on the additional measures that could be applied at the installation to further reduce NO_x emissions beyond the ELV(s) identified as being achievable in the initial study. The study shall include a cost-benefit assessment of the additional measures identified. A written report of the study shall be submitted to Natural Resources Wales.	Further study within 6 months from the written notification by Natural Resources Wales
IC7	The Operator shall carry out an assessment of the impact of emissions to air of the following component metals subject to emission limit values: Cd, $Cr^{(VI)}$, As. A report on the assessment shall be made to Natural Resources Wales. Emissions monitoring data obtained during the first year of operation shall be used to compare the actual emissions with those assumed in the impact assessment submitted with the Application. An assessment shall be made of the impact of each metal against the relevant ES. In the event that the assessment shows that an environmental standard can be exceeded, the report shall include proposals for further investigative work.	Within 15 months of operation following the completion of commissioning
IC8	The Operator shall submit a written summary report to Natural Resources Wales to confirm that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 complies with the requirements of EN 14181, specifically the requirements of QAL1, QAL2 and QAL3. The report shall include the results of calibration and verification testing,	Initial calibration report to be submitted within 3 months of operation following completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of operation following completion of commissioning.

IC9	The operator shall carry out a programme of dioxin monitoring over a period and frequency agreed with Natural Resources Wales. The operator shall submit a report to Natural Resources Wales with an analysis of whether dioxin emissions can be considered to be stable.	Within 6 months of operation following completion of commissioning or as agreed in writing with Natural Resources Wales
IC10	The operator shall carry out a programme of mercury monitoring over a period and frequency agreed with Natural Resources Wales. The operator shall submit a report to Natural Resources Wales with an analysis of whether the waste feed to the plant can be proven to have a low and stable mercury content.	Within 6 months of operation following completion of commissioning or as agreed in writing with Natural Resources Wales
IC11	During commissioning, the operator shall carry out tests to assess whether the air monitoring location(s) meet the requirements of BS EN 15259 and supporting Method Implementation Document (MID). A written report shall be submitted to Natural Resources Wales for approval setting out the results and conclusions of the assessment including where necessary proposals for improvements to meet the requirements. The report shall specify the design of the ports for PM10 and PM2.5 sampling. Where notified in writing by Natural Resources Wales that the requirements are not met, the operator shall submit proposals or further proposals for rectifying this in accordance with the time scale in the notification. The proposals shall be implemented in accordance with Natural Resources Wales' written approval.	Report to be submitted within 3 months of operation following completion of commissioning.
IC12	The Operator shall calculate the gross electrical efficiency using the method set out in the general considerations section of the Waste Incineration BAT conclusions and submit details of the calculation to Natural Resources Wales in a written report for approval. If the calculated gross electrical efficiency is below the range specified in BAT 20 of the BAT conclusions, the operator shall carry out an assessment of the opportunities to increase the energy efficiency of the installation. The assessment shall include but not necessarily be limited to: • Improvements that could be made to the furnace (including control systems) in order to increase the amount of thermal energy produced per unit of thermal energy in the waste. • Improvements that could be made to the steam system and related components to allow a greater quantity of electricity to be generated per unit of thermal energy in the steam. • Improvements in the heat and electrical efficiency of the plant's ancillary systems that could be made in order to reduce the parasitic heat and electrical loads of the plant.	Within 6 months of operation following completion of commissioning.

	• Where relevant, an implementation plan for the improvements identified, including the anticipated increase in the gross and/or net electrical efficiency of the plant which would be achieved. • A review of the viability of Combined Heat and Power (CHP) implementation. If required, the assessment shall be submitted to Natural Resources Wales in the written report referred to above.	
IC13	Following successful commissioning and establishment of routine steady operation, the Operator shall undertake noise monitoring at the nearest local receptors. An addendum to the existing noise impact assessment for the site shall be submitted to Natural Resources Wales for approval This shall include: o A full noise monitoring survey and assessment meeting the BS4142:2014 standard o 1/3rd octave and narrow band (FFT) measurements to identify any tonal elements or low frequency noise o Reference to the Welsh Government Noise and soundscape action plan 2018-2023 The Operator shall submit the revised noise impact assessment to Natural Resources Wales for approval. The assessment shall refer to the predictions in the report produced as part of the new bespoke permit application. If rating levels likely to cause adverse impact at sensitive receptors are detected, the assessment shall include identification of the most suitable abatement techniques, an estimate of the cost and a proposed timetable for their installation.	Within 6 months of operation following completion of commissioning

Note 1: All previous ICs were removed upon issue of permit V003, and replaced where necessary:

IC1 replaces former IC6 with added OTNOC reference,

IC2 replaces former IC5, IC3 replaces former IC1,

IC4 replaces former IC2 with revisions,

IC5 replaces former IC3 with revisions,

IC6 is a new requirement,

IC7 and IC 8 replace former IC7 and IC 8 respectively, and retain previous numbering,

IC9 - IC12 are new requirements,

IC13 replaces former IC4 with revisions.

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational measures**
PO7	Recommencement of commissioning or operation of permitted activity	The operator shall submit an Other than normal operating conditions (OTNOC) management plan to Natural Resources Wales for approval prior to the re-commencement of commissioning. The OTNOC management plan shall be produced in line with all relevant current guidance provided by Natural Resources Wales to the operator and the requirements of the following BAT conclusions of the Waste Incineration BREF Document (EU 2019): • BAT 1 (xxiv) – BAT is also to incorporate the following features in the EMS: o (xxiv) for incineration plants, an OTNOC management plan (see BAT 18) • BAT 5 – BAT is to appropriately monitor channelled emissions to air from the incineration plant during OTNOC • BAT 18 – In order to reduce the frequency of the occurrence of OTNOC and to reduce emissions to air and, where relevant, to water from the incineration plant during OTNOC, BAT is to set up and implement a risk based OTNOC management plan as part of the environmental management system (BAT 1) that includes all of the following elements: o Identification of potential OTNOC (e.g. failure of equipment critical to the protection of the environment ('critical equipment')), of their root causes and of their potential consequences, and regular review and update of the list of identified OTNOC following the periodic assessment below; o Appropriate design of critical equipment (e.g. compartmentalisation of the bag filter, techniques to heat up the flue-gas and obviate the need to bypass the bag filter during start-up and shutdown, etc.); o Set-up and implementation of preventative maintenance plan for critical equipment (see BAT 1(xii)) o Monitoring and recording of emissions during OTNOC and associated circumstances (see BAT 5) o Periodic assessment of the emissions during OTNOC (e.g. frequency of events, duration, amount of pollutants emitted) and implementation of corrective actions if necessary. The OTNOC management plan shall include: o a list of any potential OTNOC situations that are considered to be abnormal operation under the definition in Schedule 6 of this permit. o a definition of start-up and shut-down conditions having regard to any relevant regulatory guidance on start-up and shut-down. o any updates on the design of critical equipment to minimise OTNOC since the permit application

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Fuel Oil (auxiliary burners)	Less than 0.1% sulphur content.

Table S2.2 Permitted waste types and quantities for co-incineration plant	
Maximum quantity	Total annual throughput 86,400 tonnes of waste wood per year
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 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 07	Wood other than mentioned in 19 12 06

Schedule 3(a) – Emissions and monitoring effective until 2 December 2023

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

Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 (43m Stack – shown on site plan in Schedule 7)	Particulate matter	Cleaned exhaust gas from combustion furnace	45 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
	Particulate Matter		15 mg/m^3	daily average	Continuous measurement	BS EN 14181
	Total Organic Carbon (TOC)		30 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
	Total Organic Carbon (TOC)		15 mg/m^3	daily average	Continuous measurement	BS EN 14181
	Hydrogen chloride		90 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
	Hydrogen chloride		15 mg/m^3	daily average	Continuous measurement	BS EN 14181
	Hydrogen fluoride		3 mg/m^3	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
	Carbon monoxide		150 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
	Carbon monoxide		75 mg/m^3	daily average	Continuous measurement	BS EN 14181
	Sulphur dioxide		300 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
	Sulphur dioxide		75 mg/m^3	daily average	Continuous measurement	BS EN 14181
	Oxides of nitrogen (NO and NO_2 expressed as NO_2)		600 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
	Oxides of nitrogen (NO and NO_2 expressed as NO_2)		300 mg/m^3	daily average	Continuous measurement	BS EN 14181
	Cadmium & thallium and their compounds (total)		0.05 mg/m^3	periodic over minimum 30 minute, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
	Mercury and its compounds		0.05 mg/m^3	periodic over minimum 30 minute, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS EN 13211
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)		0.5 mg/m^3	periodic over minimum 30 minute, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS EN 14385

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A1 (43m Stack – shown on site plan in Schedule 7)	Ammonia (NH_3)	Cleaned exhaust gas from combustion furnace	5 mg/m^3	daily average	Continuous measurement	BS EN 14181
	Nitrous oxide (N_2O)		No Limit Set	daily average	Continuous measurement	BS EN 14181
	Dioxins / furans (I-TEQ)		0.01 ng/m^3	periodic over minimum 6 hours, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
	Dioxins / furans (WHO-TEQ Humans / Mammals)		No Limit Set	periodic over minimum 6 hours, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3
	Dioxins / furans (WHO-TEQ Fish)					
	Dioxins / furans (WHO-TEQ Birds)					
	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)		No Limit Set	periodic over minimum 6 hours, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
	Dioxin-like PCBs (WHO-TEQ Fish)					
	Dioxin-like PCBs (WHO-TEQ Birds)					
	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as B[a]P		0.001 mg/m^3	periodic over minimum 6 hours, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS ISO 11338 Parts 1 and 2.
A2 (Point A2 on site plan in Schedule 7)	No Parameters set	Backup generator	No limit set	-	No monitoring required	-

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
W1	No Parameters Set	Accumulated surface and roof water run-off released from attenuation tank	No Limit Set	-		

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	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
S1 (trade effluent discharge to Dŵr Cymru Welsh Water Sewer as shown on the site plan in Schedule 7)	No Parameters Set	Boiler blow down water & water treatment plant effluent	No Limit Set	-		

Table S3.4 Process monitoring requirements				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Location close to the Combustion Chamber inner wall or as identified and justified in Application.	Temperature (°C)	Continuous	Traceable to national standards	As agreed in writing with Natural Resources Wales
A1	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with Natural Resources Wales
A1	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with Natural Resources Wales
A1	Exhaust gas oxygen content	Continuous	BS EN 14181	-
A1	Exhaust gas water vapour content	Continuous	BS EN 14181	Unless gas is dried before analysis of emissions
Bag Filter	Pressure drop	Continuous	Not applicable	-

Table S3.5 Residue quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit**	**Monitoring frequency**	**Monitoring standard or method** *	**Other specifications**
Bottom Ash (including boiler ash)	TOC	<3%	Monthly in the first year of operation. Then Quarterly	Natural Resources Wales ash sampling protocol.	-
Bottom Ash (including boiler ash)	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No Limit Set	Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	-
Bottom Ash (including boiler ash)	Total soluble fractions and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No Limit Set	Before use of a new disposal or recycling route	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	-
APC Residues	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No Limit Set	Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	-
APC Residues	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No Limit Set	Before use of a new disposal or recycling route	Sampling and analysis as per Natural Resources Wales ash sampling protocol.	-
* Or any other equivalent standard as agreed in writing with Natural Resources Wales.					

Schedule 3(b) – Emissions and monitoring effective from 3 December 2023

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 (43 m Stack – shown on site plan in Schedule 7)	Cleaned exhaust gas from combustion furnace	Particulate matter	45 mg/Nm^3	½-hr average	Continuous	EN 14181 and EN 17255 and EN 13284
			7.5 mg/Nm^3	daily average	Continuous	
		Hydrogen chloride	90 mg/Nm^3	½-hr average	Continuous	EN 14181 and EN 17255
			12 mg/Nm^3	daily average	Continuous	
		Hydrogen fluoride	1.5 mg/Nm^3	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year then bi-annually	CEN TS 17340
		Sulphur dioxide	300 mg/Nm^3	½-hr average	Continuous	EN 14181 and EN 17255
			60 mg/Nm^3	daily average	Continuous	
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	600 mg/Nm^3	½-hr average	Continuous	EN 14181 and EN 17255
			225 mg/Nm^3	daily average	Continuous	
		Carbon monoxide	150 mg/Nm^3	½-hr average	Continuous	EN 14181 and EN 17255
			75 mg/Nm^3	daily average	Continuous	
		Total Organic Carbon (TOC)	30 mg/Nm^3	½-hr average	Continuous	EN 14181 and EN 17255
			15 mg/Nm^3	daily average	Continuous	
		Ammonia (NH_3)	5 mg/Nm^3	daily average	Continuous	EN 14181 and EN 17255
		Nitrous Oxide (N_2O)	No limit set	½-hr average and daily average	Continuous	EN 14181 and EN 17255
		Cadmium & thallium and their compounds (total)	0.03 mg/Nm^3	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year then bi-annually	EN 14385

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**
		Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.45 mg/Nm^3	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year then bi-annually	EN 14385
		Mercury and its compounds	0.03 mg/Nm^3	Average of three consecutive measurements of at least 30 minutes each	Quarterly in first year then bi-annually unless otherwise agreed in writing with Natural Resources Wales	EN 13211
			0.03 mg/Nm^3	Daily average	Continuous unless otherwise agreed in writing with Natural Resources Wales [1]	EN 14181 and EN 17255 and EN14884
		Dioxins / furans (I-TEQ)	0.01 ng/Nm^3	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year then bi-annually	Relevant parts of EN 1948
			0.01 ng/Nm^3	Value over sampling period of 2 to 4 weeks for long term sampling	Monthly unless otherwise agreed in writing with Natural Resources Wales [2]	CEN TS 1948-5
		Dioxin-like PCBs (WHO-TEQ Humans / Mammals, Fish, Birds)	No limit set	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year then bi-annually	Relevant parts of EN 1948
		Dioxins / furans (WHO-TEQ Humans / Mammals, Fish, Birds)	No limit set	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year then bi-annually	Relevant parts of EN 1948
		Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	0.001 mg/Nm^3	Periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year then bi-annually	BS ISO 11338 Parts 1 and 2.

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**
		Exhaust gas temperature	No limit set	½-hr average and daily average	Continuous	Traceable to national standards
		Exhaust gas pressure	No limit set	½-hr average and daily average	Continuous	Traceable to national standards
		Exhaust gas flow	No limit set	½-hr average and daily average	Continuous	EN 16911-2
		Exhaust gas oxygen content	No limit set	½-hr average and daily average	Continuous	EN 14181 and EN 17255
		Exhaust gas water vapour content	No limit set	½-hr average and daily average	Continuous	EN 14181 and EN 17255
		No parameters set	No limit set	-	No monitoring required	-
A2 [Point A2 on site plan in Schedule 7]	Back-up generator					

Note 1: Continuous monitoring does not apply for plants incinerating wastes with a proven low and stable mercury content
Note 2: Long term sampling does not apply if the emission levels are proven to be sufficiently stable

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**
W1 [Point W1 on site plan in Schedule 7]	Accumulated uncontaminated surface and roof water run-off released from attenuation tank	No parameters set	No limit set	-	-	-

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 [Point S1 shown on the site plan in Schedule 7- trade effluent discharge to Dŵr Cymru Welsh Water Sewer]	Boiler blow down water & water treatment plant effluent	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**
Location close to Combustion Chamber inner wall or as identified and justified in Application.	Temperature (°C)	Continuous	Traceable to national standards	As agreed in writing with Natural Resources Wales.
Bag filter	Pressure drop	Continuous	Not applicable	
Incineration plant	Gross electrical efficiency[1] or Gross energy efficiency[2]	within 6 months of any modification that significantly affects energy efficiency	Performance test at full load	Recovery with a high level of energy efficiency as required by permit condition 1.2.1(a) and as may be agreed in writing with NRW. In any case of no lower than: • 20 % for Gross electrical efficiency[1] • 72 % for Gross energy efficiency[2]

Note [1]: Gross electrical efficiency only applies to plants or parts of plants producing electricity using a condensing turbine

Note [2]: Gross energy efficiency only applies to plants or parts of plants producing only heat or producing electricity using a back-pressure turbine and heat with the steam leaving the turbine

Table S3.5 Residue quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit (including unit)**	**Monitoring frequency**	**Monitoring standard or method***	**Other specification**
Bottom Ash (including boiler ash)	TOC	3%	Monthly in the first year of operation. Then Quarterly	BS EN 14899 and either BS EN 13137 or BS EN 15936	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'.
Bottom Ash (including boiler ash)	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No limit set	Monthly in the first year of operation. Then Quarterly	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	
Bottom Ash (including boiler ash)	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No limit set	Before use of a new disposal or recycling route	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	
APC Residues	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	No limit set	Monthly in the first year of operation. Then quarterly	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	
APC Residues	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	No limit set	Before use of a new disposal or recycling route	Environment Agency Guidance, 'TGN M4 – Guidelines for Ash Sampling and Analysis'	

*Or other equivalent standard as agreed in writing with Natural Resources Wales

Schedule 4(a) – Reporting until 2 December 2023

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 3.6.1.	A1	Quarterly	1 January, 1 April, 1 July & 1 October
TOC Parameter as required by condition 3.6.1.	Bottom Ash (including boiler ash)	Quarterly (but monthly for the first year of operation)	1 January, 1 April, 1 July & 1 October
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.6.1	Bottom Ash (including boiler ash)	Quarterly (but monthly for the first year of operation)	1 January, 1 April, 1 July & 1 October
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.6.1	Bottom Ash (including boiler ash)	Before use of a new disposal or recycling route	-
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.6.1	APC residues	Quarterly (but monthly for the first year of operation)	1 January, 1 April, 1 July & 1 October
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.6.1	APC residues	Before use of a new disposal or recycling route	-
Functioning and monitoring of the co-incineration plant as required by condition 4.2.2	-	Annually	1 January

Table S4.2: Annual production/treatment	
Parameter	**Units**
Total Waste Wood Received [1]	Tonnes
Total Waste Wood Co-incinerated	Tonnes
Electrical energy generated	MWh
Electrical energy exported	MWh
Electrical energy used on installation	MWh
Thermal energy produced e.g. steam	MWh
Thermal energy used on installation	MWh
Total bottom ash (including boiler ash) produced	Tonnes
Total APC residue produced	Tonnes
[1] All waste wood delivered to the installation, including waste which is subsequently rejected.	

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Electrical energy exported, imported and used at the installation	Quarterly	MWh / tonne of waste incinerated
Fuel oil consumption	Quarterly	Kgs / tonne of waste incinerated
Mass of Bottom Ash (including boiler ash) produced	Quarterly	Kgs / tonne of waste incinerated
Mass of APC residues produced	Quarterly	Kgs / tonne of waste incinerated
Urea consumption	Quarterly	Kgs / tonne of waste incinerated
Activated Carbon consumption	Quarterly	Kgs / tonne of waste incinerated
Lime consumption	Quarterly	Kgs / tonne of waste incinerated
Water consumption	Quarterly	m^3 / tonne of waste incinerated

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form Air 1_Continuous and Air_2 or other form as agreed in writing by Natural Resources Wales	01/01/2018
Residues	Form Residues 1 or other form as agreed in writing by Natural Resources Wales	01/01/2018
Other performance indicators	Form Performance 1 or other form as agreed in writing by Natural Resources Wales	01/01/2018
Waste subject to condition 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 from 3 December 2023

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 3.6.1.	A1	Quarterly	1 January, 1 April, 1 July & 1 October
TOC Parameter as required by condition 3.6.1.	Bottom Ash (including boiler ash)	Quarterly (but monthly for the first year of operation)	1 January, 1 April, 1 July & 1 October
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.6.1	Bottom Ash (including boiler ash)	Quarterly (but monthly for the first year of operation)	1 January, 1 April, 1 July & 1 October
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.6.1	Bottom Ash (including boiler ash)	Before use of a new disposal or recycling route	-
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.6.1	APC residues	Quarterly (but monthly for the first year of operation)	1 January, 1 April, 1 July & 1 October
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.6.1	APC residues	Before use of a new disposal or recycling route	-
Functioning and monitoring of the co-incineration plant as required by condition 4.2.2	-	Annually	1 January

Table S4.2: Annual production/treatment	
Parameter	**Units**
Total waste wood received (1)	Tonnes
Total waste wood co-incinerated	Tonnes
Electrical energy generated	MWh
Electrical energy exported	MWh
Electrical energy used on installation	MWh
Thermal energy produced e.g. steam	MWh
Thermal energy used on the installation	MWh
Thermal energy exported	MWh
Total bottom ash (including boiler ash) produced	Tonnes
Total APC residue produced	Tonnes
(1) All waste wood delivered to the installation, including waste which is subsequently rejected.	

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Annual report as required by condition 4.2.2	Annually	-
Electrical energy exported, imported and used at the installation	Quarterly	KWh/tonne of waste co-incinerated
Fuel oil consumption	Quarterly	Kg/tonne of waste co-incinerated
Bottom Ash residue (including boiler ash) produced	Quarterly	Route, tonnes and tonnes/tonne of waste co-incinerated
APC residue produced	Quarterly	Route, tonnes and tonnes/tonne of waste co-incinerated
Urea consumption	Quarterly	Kg / tonne of waste co-incinerated
Activated Carbon consumption	Quarterly	Kg / tonne of waste co-incinerated
Lime consumption	Quarterly	Kg / tonne of waste co-incinerated
Water Consumption	Quarterly	m^3 / tonne of waste co-incinerated

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Annual report required by condition 4.2.2	No specific format specified	N/A
Air	For CEMS monitoring data - In the format indicated in forms air 1-15 as a direct output from Data Acquisition and Handling system. For other monitoring results – Form air 16. Or other forms as agreed in writing by Natural Resources Wales	Air 1-15 03/12/2023 Air 16 03/12/2023
Residue Quality	Form residue 1 or other form as agreed in writing by Natural Resources Wales	01/01/2018
Other performance indicators	Form performance 1 or other form as agreed in writing by Natural Resources Wales	01/01/2018
Waste Subject to Conditions 4.2.5	Waste tonnage return form from Natural Resources Wales 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	**AB3790ZB**
Name of operator	**Biomass UK No.2 Limited**
Location of Facility	**Barry Energy Production Facility, Woodham Road, CF63 4JE**
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 unless otherwise specified below	
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

"abatement equipment" means that equipment dedicated to the removal of polluting substances from releases from the installation to air or water media.

"accident" means an accident that may result in pollution.

"APC residues" means air pollution control residues.

"abnormal operation" means: any technically unavoidable stoppages, disturbances, or failures of the plant or the measurement devices during which alternative ELVs may be applied. Abnormal operation limits are not allowed for this plant as noted in table S1.1.

"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.

"BAT conclusions" means Commission Implementing Decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for Waste Incineration.

"bi-annually" and *"bi-annual*" means twice per year with at least five months between tests.

"boiler ash" means ash collected at the bottom of the boiler passes.

"bottom ash" means tramp material removed from the bed material via the gasifier Bed Recycle System as described in the Permit Application.

"*CEM*" means Continuous emission monitor.

"CEN" means Commité Européen de Normalisation.

"co-incineration" line or plant means all of the co-incineration equipment related to a common discharge to air location.

"commissioning" means testing of the new incineration plant that involves any operation of the furnace or as agreed with Natural Resources Wales.

"completion of commissioning" means when the plant is technically capable of commercial operation, as determined by Natural Resources Wales.

"DAHS" means data handling and acquisition system and includes software and hardware.

"daily average emissions limit value" means 'the average of at least 43 valid half hourly averages or for CO the average of at least 43 valid half hourly averages or 129 valid 10 minute averages'.

"*dioxin(s) [and furan(s)]*" means polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

*"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 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.

"hazardous property" has the meaning in Annex lll of the Waste Framework Directive.

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

"ISO" means International Standards Organisation.

'*List of Wastes'* means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, as amended from time to time.

"low and stable mercury content" can be demonstrated using the latest version of the UK WI BREF Mercury monitoring protocol (V0.28 or as updated) or an appropriate alternative method as agreed in writing with Natural Resources Wales.

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

"normal operation" consists of any operation of the plant other than that as defined as "OTNOC" unless otherwise agreed in writing with Natural Resources Wales.

"OTNOC" means other than normal operating conditions. OTNOC consists of start-up, shut-down, and abnormal operation only, unless additional definitions are agreed in writing with Natural Resources Wales.

"*PAH*" means Poly-cyclic aromatic hydrocarbon, and comprises Anthanthrene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[b]naph(2,1-d)thiophene, Benzo[c]phenanthrene, Benzo[ghi]perylene, Benzo[a]pyrene, Cholanthrene, Chrysene, Cyclopenta[c,d]pyrene, Dibenzo[ah]anthracene, Dibenzo[a,i]pyrene, Fluoranthene, Indo[1,2,3-cd]pyrene, Naphthalene.

"*PCB*" means Polychlorinated Biphenyl. Dioxin-like PCBs are the non-ortho and mono-ortho PCBs listed in the table below.

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

"quarterly" for reporting/sampling means after/during each 3-month period, January to March; April to June; July to September and October to December and, when sampling, with at least 2 months between each sampling date.

"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.

"*shut down*" is any period where the plant is being returned to a non-operational state and there is no waste being burned as described in the application or agreed in writing with Natural Resources Wales.

"*start up*" is any period, where the plant has been non-operational, after igniting the auxiliary burner until waste has been fed to the plant in sufficient quantity to initiate steady-state conditions as described in the application or agreed in writing with Natural Resources Wales.

"sufficiently stable" in respect of dioxins/furans emissions can be demonstrated using the latest version of the UK WI BREF PCDD/F monitoring protocol (V0.28 or as updated) or an appropriate alternative method as agreed in writing with Natural Resources Wales.

"TOC" means Total Organic Carbon. In respect of releases to air, this means the gaseous and vaporous organic substances, expressed as TOC. In respect of Bottom Ash (including boiler ash), this means the total carbon content of all organic species present in the ash (excluding carbon in elemental form).

"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.

"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 gases from co-incineration plants the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 6% dry.

For dioxins/furans and dioxin-like PCBs the determination of the toxic equivalence concentration (I-TEQ, & WHO-TEQ for dioxins/furans, WHO-TEQ for dioxin-like PCBs) stated as a release limit and/ or reporting requirement, the mass concentrations of the following congeners have to be multiplied with their respective toxic equivalence factors before summing. When reporting on measurements of dioxins/furans and dioxin-like PCBs, the toxic equivalence concentrations should be reported as a range based on: all congeners less than the detection limit assumed to be zero as a minimum, and all congeners less than the detection limit assumed to be at the detection limit as a maximum. However the minimum value should be used when assessing compliance with the emission limit value in table S3.1.

TEF schemes for dioxins and furans				
Congener	**I-TEF**	**WHO-TEF**		
	1990	**2005**	**1997/8**	
		Humans / Mammals	Fish	Birds
Dioxins				
2,3,7,8-TCDD	1	1	1	1
1,2,3,7,8-PeCDD	0.5	1	1	1
1,2,3,4,7,8-HxCDD	0.1	0.1	0.5	0.05
1,2,3,6,7,8-HxCDD	0.1	0.1	0.01	0.01
1,2,3,7,8,9-HxCDD	0.1	0.1	0.01	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01	0.001	<0.001
OCDD	0.001	0.0003	-	-
Furans				
2,3,7,8-TCDF	0.1	0.1	0.05	1
1,2,3,7,8-PeCDF	0.05	0.03	0.05	0.1
2,3,4,7,8-PeCDF	0.5	0.3	0.5	1
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,4,6,7,8_HpCDF	0.01	0.01	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01	0.01
OCDF	0.001	0.0003	0.0001	0.0001

TEF schemes for dioxin-like PCBs			
Congener	**WHO-TEF**		
	2005	**1997/8**	
	Humans / mammals	Fish	Birds
Non-ortho PCBs			
3,4,4',5-TCB (81)	0.0001	0.0005	0.1
3,3',4,4'-TCB (77)	0.0003	0.0001	0.05
3,3',4,4',5 - PeCB (126)	0.1	0.005	0.1
3,3',4,4',5,5'-HxCB(169)	0.03	0.00005	0.001
Mono-ortho PCBs			

TEF schemes for dioxin-like PCBs			
Congener	**WHO-TEF**		
	2005	**1997/8**	
	Humans / mammals	Fish	Birds
2,3,3',4,4'-PeCB (105)	0.00003	<0.000005	0.0001
2,3,4,4',5-PeCB (114)	0.00003	<0.000005	0.0001
2,3',4,4',5-PeCB (118)	0.00003	<0.000005	0.00001
2',3,4,4',5-PeCB (123)	0.00003	<0.000005	0.00001
2,3,3',4,4',5-HxCB (156)	0.00003	<0.000005	0.0001
2,3,3',4,4',5'-HxCB (157)	0.00003	<0.000005	0.0001
2,3',4,4',5,5'-HxCB (167)	0.00003	<0.000005	0.00001
2,3,3',4,4',5,5'-HpCB (189)	0.00003	<0.000005	0.00001

Schedule 7 - Site plan

Schedule 7 - Site plan

END OF PERMIT