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# Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

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Biomass UK No.2 Ltd

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

Permit number

**EPR/XXXXXXXX**

# Barry Energy Production Facility

## Permit number **EPR/XXXXXXXX**

### 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 relevant listed activity is S5.1A (1)(b): The incineration of non-hazardous waste in a waste co-incineration plant with a capacity exceeding 3 tonnes per hour. The permit implements the requirements of the Industrial Emissions Directive.

The main features of the permit are as follows:

The installation is a waste co-incinerator that utilises advanced thermal technology, in the form of gasification, as a means of processing mixed waste wood feedstocks to produce a synthesis gas which is then used 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 and for combustion stabilisation.

The principle 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 to 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. 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 10MWe (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<sub>x</sub>, lime injection for acid gas neutralisation and activated carbon powder injection for absorption and removal of heavy metals, dioxins, VOCs and other substances. 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. The flue gas cleaning system also incorporates a baghouse system, which is designed to remove submicron dust particles within anticipated emission limit values (ELV's) listed in Annex VI which are referenced by Chapter IV of the Industrial Emissions Directive (IED).

*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.

Furnace bottom ash is removed from the process, transported and deposited in a designated ash silo for storage. 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 Air Pollution Control Residue is removed from the process and kept separate, stored in a dedicated silo. The silo holds approximately 70 tonnes and is emptied approximately once a fortnight. The ash is deposited in 1 tonne sealed bags and removed from site by lorry and disposed at an appropriate hazardous waste landfill.

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

<b>Status Log of the permit</b>		
<b>Detail</b>	<b>Date</b>	<b>Comments</b>
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.

## Status Log of the permit

Detail	Date	Comments
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	xx/xx/xx	

End of Introductory Note

# Permit

The Environmental Permitting (England and Wales) Regulations 2016

**Permit number**

**EPR/XXXXXXXX**

The Natural Resources Body for Wales (“Natural Resources Wales”) authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

**Biomass UK No.2 Ltd** (“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.

Name	Date
	<b>xx/xx/xx</b>

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 practicability of Combined Heat and Power (CHP) implementation at least every 2 years. The results shall be reported to Natural Resources Wales within 2 months of each 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 the 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 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.
- 2.3.6 Waste fuel shall not be charged, or shall cease to be charged, if:
- (a) the combustion chamber temperature is below, or falls below 850°C, or
  - (b) any continuous emission limit value in schedule 3 table S3.1 is exceeded or
  - (c) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 are unavailable.
- 2.3.7 The operator shall have at least one auxiliary burner in each line at start up or shut down or whenever the operating temperature falls below that specified in condition 2.3.6, as long as incompletely burned waste is present in the combustion chamber. Unless the temperature specified in condition 2.3.6 is maintained in the combustion chamber, such burner(s) may 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.
- 2.3.8 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 The Operator shall carry out monitoring of groundwater at least once every 5 years; and soil at least once every 10 years; to the monitoring plan agreed in writing by Natural Resources Wales under PO1.

### **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 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 S3.3;
  - (b) process monitoring specified in table S3.4;
  - (c) residue quality in table S3.5.
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) 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.

- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in Schedule 3 Tables S3.1, S3.2, S3.3 unless otherwise agreed in writing by Natural Resources Wales.
- 3.5.5 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:
    - Carbon monoxide 10%
    - Sulphur dioxide 20%
    - Oxides of nitrogen (NO & NO<sub>2</sub> expressed as NO<sub>2</sub>) 20%
    - Particulate matter 30%
    - Total organic carbon (TOC) 30%
    - Hydrogen chloride 40%
  - (b) valid half-hourly average values 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 3.5.5 (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 period, the half-hourly average shall in any case be considered valid if measurements are available for a minimum of 20 minutes during the half-hour period. The number of half-hourly so validated shall not exceed 5 per day;
  - (d) daily average values shall be determined as the average of all the valid half-hourly average values within a calendar day. The daily average value shall be considered valid if no more than five half-hourly 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.

## 3.6 Fire prevention

- 3.6.1 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;
- (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule; and
- (d) the functioning and monitoring of the 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 The Operator shall

- (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
S5.1 A1 (b)	<p>The incineration of non-hazardous waste in a waste co-incineration plant with a capacity of 3 tonnes per hour or more.</p> <p>Co-incineration of waste wood biomass in a single co-incineration line with a 42.84MW rated thermal input.</p>	<p>From receipt of waste to emission of exhaust gas and disposal of waste arising.</p> <p>Waste types and quantities as specified in Table S2.2 of this permit.</p> <p>Total storage capacity of incoming waste wood – 2000m<sup>3</sup></p> <p>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.</p> <p>All waste storage must be indoors, on a concrete surface with sealed drainage</p> <p>Abnormal operation not permitted</p>

## Directly Associated Activities

Electricity Generation	Generation of approximately 10MWe 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

**Table S1.2 Operating techniques**

<b>Description</b>	<b>Parts</b>	<b>Date Received</b>
Application PAN-000869	Accident Management Plan, doc ref; BUK-E09 The application supporting information also includes a description of: <ul style="list-style-type: none"> <li>• The incineration capacity</li> <li>• Plant capacity</li> <li>• The waste feed cessation system</li> <li>• Start-up and shut down</li> <li>• Temperature monitoring in the combustion chamber</li> <li>• Energy recovery from the installation</li> <li>• Temperature, oxygen, water vapour and pressure at air release sampling points.</li> </ul>	25/10/16
Additional information received via Not Duly Made response	Updated site plan showing; <ul style="list-style-type: none"> <li>• Aerial emission point</li> <li>• Surface water emission point</li> <li>• Sewer emission point</li> </ul>	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 3 <sup>rd</sup> 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
Response to Improvement Condition IC3 as approved in writing by Natural Resources Wales	As stated in written approval to the response to Improvement Condition IC3.	Post Permit issue

**Table S1.3 Improvement programme requirements**

<b>Ref.</b>	<b>Requirement</b>	<b>Date</b>
IC1	The Operator shall submit a written report to Natural Resources Wales for approval 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.	Within 4 months of the completion of commissioning.



**Table S1.3 Improvement programme requirements**

<b>Ref.</b>	<b>Requirement</b>	<b>Date</b>
<b>IC2</b>	The Operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the furnace whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to Natural Resources Wales.	Within 4 months of the completion of commissioning.
<b>IC3</b>	<p>The Operator shall submit a written report to Natural Resources Wales describing the performance and optimisation of the Selective Non-Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NO<sub>x</sub>) emissions within the emission limit values described in this permit with the minimisation of nitrous oxide emissions. The report shall include an assessment of the level of NO<sub>x</sub> and N<sub>2</sub>O emissions that can be achieved under optimum operating conditions.</p> <p>The report shall also provide details of the optimisation (including dosing rates) for the control of acid gases and dioxins</p>	Within 4 months of the completion of commissioning.
<b>IC4</b>	<p>Following successful commissioning and establishment of routine steady operation, the Operator shall undertake noise monitoring at the nearest local receptors. This shall include:</p> <ul style="list-style-type: none"><li>• A full noise monitoring survey and assessment meeting the BS4142:2014 standard</li><li>• 1/3rd octave and narrow band (FFT) measurements to identify any tonal elements or low frequency noise</li><li>• Reference to the World Health Organisation guidelines for community noise</li></ul> <p>Upon completion of the work, a written report shall be submitted to Natural Resources Wales. The report shall refer to the predictions in the report produced as part of the application. If rating levels likely to cause adverse impact at sensitive receptors are detected, the report shall include an assessment of the most suitable abatement techniques, an estimate of the cost and a proposed timetable for their installation.</p>	Within 6 months of the completion of commissioning
<b>IC5</b>	<p>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<sub>10</sub>, and PM<sub>2.5</sub> 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.</p> <p>On receipt of written agreement by 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.</p>	Within 6 months of the completion of commissioning.
<b>IC6</b>	The Operator shall submit a written report to Natural Resources Wales on the implementation of its Environmental Management System 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.	Within 12 months of the date commissioning.

**Table S1.3 Improvement programme requirements**

Ref.	Requirement	Date
IC7	<p>The Operator shall carry out an assessment of the impact of emissions to air of all the following component metals subject to emission limit values; i.e. Cd, Cr(VI), As. A report on the assessment shall be made to Natural Resources Wales.</p> <p>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 EQS/EAL. If the assessment shows that an EQS/EAL can be exceeded, the report shall include proposals for further investigative work to determine whether the emissions of these metals from the site can be further reduced.</p>	Within 15 months of the completion of commissioning
IC8	<p>The Operator shall submit a written summary report to Natural Resources Wales to which presents the results of calibration and verification testing to confirm that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.</p>	<p>Initial calibration report to be submitted to Natural Resources Wales within 3 months of completion of commissioning.</p> <p>Full summary evidence compliance report to be submitted within 18 months of commissioning.</p>

**Table S1.4 Pre-operational measures**

Ref.	Pre-operational measures
PO1	<p>At least 1 month prior to the commencement of commissioning, the operator shall submit the written monitoring plan referenced in Condition 3.1.4 for the monitoring of soil and groundwater for approval by Natural Resources Wales. The monitoring plan shall demonstrate how the operator will meet the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the IED.</p> <p>The monitoring plan shall be implemented in accordance with the written approval from Natural Resources Wales.</p>
PO2	<p>Prior to the commencement of commissioning, the Operator shall send a summary of the site Environment Management System (EMS) to Natural Resources Wales and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Environment Agency web guide on developing a management system for environmental permits (found on <a href="http://www.gov.uk">www.gov.uk</a>). The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.</p>
PO3	<p>At least 1 month prior to the commencement of commissioning; the operator shall provide a written commissioning plan, including timelines for completion, for approval by Natural Resources Wales. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to Natural Resource Wales if actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.</p>
PO4	<p>At least 1 month prior to the commencement and commissioning, the operator shall submit to Natural Resources Wales for approval a protocol for the sampling and testing of co-incinerator bottom ash for assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.</p>

**Table S1.4 Pre-operational measures**

Ref.	Pre-operational measures
P05	Prior to the commencement of commissioning, the operator shall submit a copy of the trade effluent consent for the discharge to sewer to Natural Resources Wales
P06	Within 1 month the operator will propose a methodology for Temperature - Residence Time verification in writing to Natural Resources Wales.  The methodology shall be implemented in accordance with the written approval from Natural Resources Wales

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## 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 co-incineration plant**

Maximum quantity	Total annual throughput 86,400 tonnes of waste wood per annum.
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 – Emissions and monitoring

**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 <sup>3</sup>	½-hr average	Continuous measurement	BS EN 14181
	Particulate Matter		15 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Total Organic Carbon (TOC)		30 mg/m <sup>3</sup>	½-hr average	Continuous measurement	BS EN 14181
	Total Organic Carbon (TOC)		15 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Hydrogen chloride		90 mg/m <sup>3</sup>	½-hr average	Continuous measurement	BS EN 14181
	Hydrogen chloride		15 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Hydrogen fluoride		6 mg/m <sup>3</sup>	½-hr average	Continuous measurement	BS EN 14181
	Hydrogen fluoride		1.5 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Carbon monoxide		150 mg/m <sup>3</sup>	½-hr average	Continuous measurement	BS EN 14181
	Carbon monoxide		75 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Sulphur dioxide		300 mg/m <sup>3</sup>	½-hr average	Continuous measurement	BS EN 14181
	Sulphur dioxide		75 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Oxides of nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )		600 mg/m <sup>3</sup>	½-hr average	Continuous measurement	BS EN 14181
	Oxides of nitrogen (NO and NO <sub>2</sub> expressed as NO <sub>2</sub> )		300 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Cadmium & thallium and their compounds (total)		0.05 mg/m <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	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 <sub>3</sub> )	Cleaned exhaust gas from combustion furnace	5 mg/m <sup>3</sup>	daily average	Continuous measurement	BS EN 14181
	Nitrous oxide (N <sub>2</sub> O)		No Limit Set	daily average	Continuous measurement	BS EN 14181
	Dioxins / furans (I-TEQ)		0.01 ng/m <sup>3</sup>	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 <sup>3</sup>	periodic over minimum 6 hours, maximum 8-hour period	Quarterly in first year. Then Bi-annual	BS ISO 11338 Parts 1 and 2.		

**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**

<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Limit</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method *</b>	<b>Other specifications</b>
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 4 - Reporting

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

<b>Table S4.1 Reporting of monitoring data</b>			
<b>Parameter</b>	<b>Emission or monitoring point/reference</b>	<b>Reporting period</b>	<b>Period begins</b>
Emissions to air Parameters as required by condition 3.5.1	A1	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
TOC Parameters as required by condition 3.5.1	Bottom Ash (including Boiler Ash)	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
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 3.5.1	Bottom Ash (including Boiler Ash)	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
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 3.5.1	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 3.5.1	APC Residues	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
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 3.5.1	APC Residues	Before use of a new disposal or recycling route	-
Functioning and monitoring of the incineration plant as required by condition 4.2.2	-	Annually	1 Jan

**Table S4.2: Annual production/treatment**

Parameter	Units
Total Waste Wood Received <sup>(1)</sup>	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

<sup>(1)</sup> 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 <sup>3</sup> / tonne of waste incinerated

**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	DD/MM/YY
Residues	Form Residues 1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
Other performance indicators	Form Performance 1 or other form as agreed in writing by Natural Resources Wales	DD/MM/YY
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 5 - Notification

These pages outline the information that the operator must provide.

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

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

## Part A

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

**(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution**

<b>To be notified within 24 hours of detection</b>	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

**(b) Notification requirements for the breach of a limit**

<b>To be notified within 24 hours of detection unless otherwise specified below</b>	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

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

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

**Part B - to be submitted as soon as practicable**

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

<b>Name*</b>	
<b>Post</b>	
<b>Signature</b>	
<b>Date</b>	

\* 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.

*“abnormal operation”* means any technically unavoidable stoppages, disturbances, or failures of the abatement plant or the measurement devices, during which the emissions into the air and the discharges of waste water may exceed the prescribed emission limit values

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

*“APC residues”* means air pollution control residues

*“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.

*“bi-annual”* means twice per year with at least five months between tests;

*“boiler ash”* means as collected at the bottom of the boiler passes;

*“bottom ash”* means ash falling through the grate

*“CEM”* Continuous emission monitor

*“CEN”* means Comité Européen de Normalisation

*“co-incineration line”* means all the incineration equipment related to a common discharge to air location.

*“Completion of Commissioning”* means the date on which the listed activity is first operated

*“daily average”* for releases of substances to air means the average of valid half-hourly averages over a calendar day during normal operation.

*“dioxin and furans”* means polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

*“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 III 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.

“*LOI*” means loss on ignition a technique used to determine the combustible material by heating the ash residue to a high temperature

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

“*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.

“*shut down*” is any period where the plant is being returned to a non-operational state and there is no waste being burned 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] [waste fuel] has been fed to the plant to initiate steady-state conditions [as described in the application or 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

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 must 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.

<b>TEF schemes for dioxins and furans</b>				
<b>Congener</b>	<b>I-TEF</b>	<b>WHO-TEF</b>		
	<b>1990</b>	<b>2005</b>	<b>1997/8</b>	
<b>Dioxins</b>		<b>Humans / Mammals</b>	<b>Fish</b>	<b>Birds</b>
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	-	-
<b>Furans</b>				
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

<b>TEF schemes for dioxin-like PCBs</b>			
<b>Congener</b>	<b>WHO-TEF</b>		
	<b>2005</b>	<b>1997/8</b>	
<b>Non-ortho PCBs</b>	<b>Humans /mammals</b>	<b>Fish</b>	<b>Birds</b>
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
<b>Mono-ortho PCBs</b>			
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



END OF PERMIT