Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Biomass Power Plant Ridham Limited

Ridham Biomass Power Plant
Ridham Dock
Sittingbourne
Kent
ME9 8SR

Permit number

EPR/NP3930TH

Ridham Biomass Power Plant
Permit Number EPR/NP3930TH

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of an installation, whose purpose is energy recovery from waste in a co-incineration plant. The relevant listed activity is Schedule 1 Part 2 Section 1.1 Part A(1) (a) Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts (2 lines aggregated). The permit implements the requirement of the EU Directive(s) on Integrated Pollution Prevention and Control (IPPCD) and Waste Incineration (WID).

The main features of the permit are as follows:

The site is located on the western bank of the River Swale, southwest of the Isle of Sheppey and approximately 5km north of the centre of Sittingbourne, Kent at National Grid reference 592247,168178. The village of Iwade is approximately 2km to the West of the site and Kemsley 2km to the South.

Waste wood will be delivered to the site, either shredded or unshredded, and stored outdoors in a part covered storage area. The waste wood will contain some wood which is exempt from the requirements of WID. No hazardous wastes will be burned. The wood will be shredded and blended in two covered shredded prior to being burned.

The furnace has two separate combustion units, each comprising a combustion chamber with primary and secondary combustion zones. Each primary combustion chamber has a moving grate onto which the shredded waste wood will be fed by a ram feeder from a conveyor fed hopper. Each combustion chamber has an auxiliary burner, fired by gas oil, in order to maintain the required temperature. It will be activated if the temperature at the outlet of the chamber falls below 850^{o}C. The burners will also be used to pre-heat the combustion units before start-up and to ensure complete combustion of residual material in the chambers on plant shut-down. The secondary combustion chamber zone is to ensure complete combustion of volatile components and is designed to meet the WID requirement on residence time.

Hot gases from the secondary combustion zone will be passed to a fire-tube boiler in which steam is to be raised before passing through a superheater and steam turbine, where the electricity will be generated. Cooling water is abstracted from The River Swale via Ridham Dock; some of which is demineralised by reverse osmosis for use as boiler feedwater. There is provision for use of the supply of heat in the form of steam and / or hot water for use in nearby facilities. Two evaporative cooling units reduce the residual temperature of the cooling water discharge to a temperature at which it can be returned to Ridham Dock. There are no discharges to sewer from the installation. Boiler blowdown will be added to the cooling water discharge into Ridham Dock.

The plant will incinerate up to 205,000 tonnes of waste wood per year which will generate up to 200,000MWh of electricity of which approximately 184,000MWh will be exported to the National Grid.

Exhaust gases will be treated in an air pollution control (APC) system that will consist of an alkaline treatment of acid gases (with sodium bicarbonate or lime) and activated carbon dosing, a bag filter and selective non-catalytic reduction using ammonia. The abated flue gases will then be emitted to atmosphere via a 90 metre stack enclosing the two flues from the separate incineration lines.

The final emissions from the plant are to be continuously monitored in the main stack for particulate matter, nitrogen oxides, carbon monoxide, volatile organic compounds, hydrogen chloride and sulphur dioxide and ammonia.

Bottom ash and boiler ash from combustion will be quenched with aqueous effluent and transported to a waste skip which will be covered to prevent fugitive emissions. Options for off-site reuse of this waste stream will be regularly reviewed. APC residues and fly ash from a cyclone separator will be collected and stored separately within enclosed silos. Both waste streams will be sent for disposal or recovery, in accordance with their status, by a waste contractor approved to handle that type of waste.

Local Environmentally significant features include:

Medway Estuary and Marshes: A Site of Special Scientific Interest, Special Protected Area and Ramsar Site.
The Swale: . A Site of Special Scientific Interest, Special Protected Area and Ramsar Site.
Thames Estuary and Marshes: Special Protected Area and Ramsar Site.
Elmley National Nature Reserve
Milton Creek, Sittingbourne: Local Wildlife Site.

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

Status Log of the permit		
Detail	**Date**	**Comments**
Application EPR/NP3930TH/A001	Duly made 27/09/10	
Additional Information Schedule 5 notice.	Requested 13/12/10	General queries concerning: Operational control Qu1 Wood waste composition Qu 2,3 Wood storage Qu 4 Raw materials Qu 5-10 Water use, storage and discharge Qu 11-16 Risk assessment Qu 17-19 Residues Qu 20 Energy efficiency Qu 21 Air emissions Qu 22-23 Equipment failure and emergency preparedness Qu 24-28 Process design Qu 29-32 Monitoring and Sampling Qu 33 Operational details Qu 34,35 Flood risk and construction Qu 36-38
Schedule 5 notice response	Partial Response Received 14/01/11 Remaining Response Received 14&15/2/11	Where answers in the two responses conflict 14/15th February response supersedes 14th January response.
Additional Information Schedule 5 notice.	Requested 03/05/11	Further details of Ridham Dock hydrodynamic modelling requested for model checking.
Schedule 5 notice response	Received 20/05/11	Further interpretation and hydrodynamic modelling which supplements and, where relevant, supersedes previously received information.
Further clarification requested in response to questions arising from 20/05/11 Schedule 5 response.	Received by e-mail 11/07/11	Further interpretation and hydrodynamic modelling which supplements and, where relevant, supersedes previously received information.
Permit determined	DD/MM/YY	

End of Introductory Note

The Environmental Permitting (England and Wales) Regulations 2010

Permit

Permit number
EPR/NP3930TH

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Biomass Power Plant Ridham Limited ("the operator"),

whose registered office is
5 Kew Road
Richmond
London
TW9 2PR

company registration number 07103758

to operate an installation at

Ridham Biomass Power Plant
Ridham Dock
Sittingbourne
Kent
ME9 8SR

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

Name	Date
	[DD/MM/YYYY]

M Jenkins

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

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

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

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

1.2 Energy efficiency

1.2.1 For the following activities referenced in schedule 1, table S1.1 (A1 to A4), 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 recovery and 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 the Agency within 2 months of each review.

1.3 Efficient use of raw materials

1.3.1 For the following activities referenced in schedule 1, table S1.1 (A1 to A4), 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 in condition 2.3.3 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. For the avoidance of doubt, this includes the facilities for water abstraction and discharge at Ridham Dock and the pipelines connecting them to the main part of the site. Discharges shall be made at the points listed in Table S3.2.

2.3 Operating techniques

2.3.1 (a) For the following activities referenced in schedule 1, table S1.1 (A1 to A5 etc.), the activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

(b) The operator shall ensure that the depth profile of the Ridham Dock is maintained for the efficient operation of the water discharge jet dispersion port as described in the modelling report referenced in schedule 1, table S1.2.

(c) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.2 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.

(c) when separately collected for recycling, it is contaminated and otherwise destined for landfill.

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 shall not be charged, or shall cease to be charged, if:

(a) the combustion chamber temperature is below, or falls below, 850^{o}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 other than under WID abnormal operating conditions.

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 The operator shall record the beginning and end of each period of “WID abnormal operation”.

2.3.9 During a period of “WID abnormal operation”, the operator shall restore normal operation of the failed equipment or replace the failed equipment as rapidly as possible.

2.3.10 Where, during “WID abnormal operation”, any of the following situations arise, the operator shall, as soon as is practicable, cease the burning of waste until normal operation can be restored:

(a) continuous monitoring devices are out of service for a total of 4 hours uninterrupted duration;

(b) the cumulative duration of “WID abnormal operation” periods over 1 calendar year exceeds 60 hours on a co-incineration line;

2.3.11 The operator shall interpret the end of the period of “WID abnormal operation” as the earliest of the following:

(a) when the failed equipment is repaired and brought back into normal operation;

(b) when the operator initiates a shut down of the waste combustion activity, as described in the application or as agreed in writing with the Environment Agency;

(c) when a period of four hours has elapsed from the start of the “WID abnormal operation”;

(d) when, in any calendar year, an aggregated period of 60 hours “WID abnormal operation” has been reached for a given incineration line.

2.3.12 Bottom ash and APC residues shall not be mixed.

2.3.13 The sewage treatment plant shall conform to all relevant British Standards in force at the time of installation.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

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

2.5 Pre-operational conditions

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

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1and S3.2.

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 S3.4. 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.

3.2 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 the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

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

3.3 Odour

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

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan;

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

3.4 Noise and vibration

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

3.4.2 The operator shall:

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

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

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

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

(b) process monitoring specified in table S3.3;

(c) residue quality in table S3.4

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Environment Agency. 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 The provisions for monitoring shall meet the requirements of BS EN 15259. 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 S3.1and S3.2 unless otherwise agreed in writing by the Environment Agency.

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 & NO2 expressed as NO2) 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 averages 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.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

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

4.2.2 report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the annual production /treatment data set out in schedule 4 table S4.2; and

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

(d) the functioning and monitoring of the incineration plant in a format agreed with the Environment Agency. The report shall, as a minimum requirement (as required by Article 12(2) of the Waste Incineration Directive) give an account of the running of the process and the emissions into air and water compared with the emission standards in the WID.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.3 Notifications

4.3.1 The Environment Agency shall be notified without delay following the detection of:

(a) 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) the breach of a limit specified in the permit; or

(c) any significant adverse environmental effects.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

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

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

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) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:

(a) a decision by the Secretary of State not to re-certify the agreement;

(b) a decision by either the operator or the Secretary of State to terminate the agreement; and

(c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “without delay”, in which case it may be provided by telephone.

Waste Incineration Plant Schedules

Schedule 1 - Operations

Table S1.1 activities			
Activity Reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
A1	S1.1 A1 (a)	Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts	From receipt of waste to emission of exhaust gas and disposal of waste arising. Fuel types as specified in Table S2.1 of this permit. Waste types and quantities as specified in Table S2.2 of this permit.
	Directly Associated Activities		
A2	Electricity Generation and/or heat supply	Generation of electrical power using a steam turbine from energy recovered from the flue gases; and/or supply of heat.	
A3	Back up electrical generator	For providing emergency electrical power to the plant in the event of supply interruption.	Low sulphur Diesel fuelled
A4	Treatment and use of water from Ridham Dock	Treatment of water from Ridham Dock for use as cooling water and boiler water (after demineralisation) and water return to Ridham Dock	Limits relating to abstraction will be defined in a separate abstraction licence.
	Other Activities		
	Description	**Limits of Specified Activity**	
A5	Discharge of secondary treated sewage effluent to North Side Ditch via outlet W3	Discharge via a Package treatment plant (sanitary systems) complying with BS EN 12566 or relevant British Standards in force at the time of installation Monitored as specified in Table S3.2.	

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Section 2 Non-Technical Summary Section 3 Best Available Techniques and Operating Techniques (BATOT) Including appendices: BATOT1 Environmental Management System BATOT3 Supply Water and Disposal BATOT4 Answers to questions in introduction to guidance The Incineration of Waste (EPR 5.01) BATOT5 Waste Codes BATOT6 Air Quality	Duly Made 27/09/10

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
	BATOT7 NOx Abatement BATOT8 Acid Gas Abatement Section 4 Accident Management Plan including Appendix A Risk Assessment Modelling Section 6 Site Condition Report Subsection 4 Section 7 Residue Management Plan Section 8 Heat Plan Copy of Planning Application Chapter 8 Noise and Vibration Copy of Planning Application Technical Appendix 9.1 Flood Risk Assessment Copy of Planning Application Technical Appendix 9.2 Cooling water Discharge Temperature Survey	
Response to Schedule 5 Notice dated 13/12/10	Wood supply source and type Question 1 Input Wood waste composition and quantities Questions 2 and 3 Wood storage Question 4 Raw Materials selection and storage Questions 6 - 10 Water use, storage and discharge Questions 11-16 Abatement methods Question 20, 22 Equipment failure and emergency preparedness Questions 24,- 28 Process design Questions 29 - 32 Monitoring and Sampling Question 33 Site EMS Question 35 Installation boundary Question 37	14/01/11 and 14&15/02/11 Where answers in the two responses conflict 14/15th February response supersedes 14th January response.
Response to Schedule 5 Notice dated 03/05/11	Operational details of water abstraction and discharge relating to Ridham Dock: Further interpretation and hydrodynamic modelling which supplements and, where relevant, supersedes previously received information.	20/05/11
Further clarification requested in response to questions arising from 20/05/11 Schedule 5 response.	Operational details of water abstraction and discharge relating to Ridham Dock: Further interpretation and hydrodynamic modelling which supplements and, where relevant, supersedes previously received information. This includes the depth profile required for the efficient operation of the jet dispersion port (ref ER11-142 8th July 2011, particularly section 4.5 Outfall Design)	By e-mail 11/07/11

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The Operator shall submit a written report to the Agency 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 (including a thermal survey of the effect of the water discharge on Ridham Dock to confirm its insignificant impact on the Swale). 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		
Reference	**Requirement**	**Date**
IC2	The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of the Selective Non Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NOx) 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 NOx and N_2O emissions that can be achieved under optimum operating conditions. The report shall also provide details of the optimisation (including dosing rates) for the control of acid gases and dioxins	Within 4 months of the completion of commissioning.
IC3	The Operator shall carry out an assessment of the impact of emissions to air of Arsenic, Nickel and Chromium (VI). A report on the assessment shall be made to the Environment Agency. 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. In the event that the assessment shows that an EQS/EAL can be exceeded, the report shall include proposals for further investigative work.	15 months from commencement of operations
IC4	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 the Environment Agency. The report shall include verification of the CFD modelling submitted in response to Pre-operational condition PO5.	Within 4 months of the completion of commissioning.
IC5	The Operator shall submit a written summary report to the Agency to confirm by the results of calibration and verification testing that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 and Table S3.1(a) complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.	Initial calibration report to be submitted to the Agency within 3 months of completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of commissioning.
IC6	The Operator shall submit a written report to the Agency on the implementation of its Environmental Management System at the installation. This report shall compare the requirements and operation of the EMS against ISO14001 and EMAS.	Within 12 months of the date on which waste is first burnt.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	Prior to the commencement of commissioning, the Operator shall send a summary of the site Environment Management System (EMS) to the Agency 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 Section 1 of How to comply with your environmental permit – Getting the basics right (including a Site Closure plan covering the key aspects outlined in Section 3 Best Available Techniques and Operating Techniques 5.1.2 of the Application). 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.
PO2	Prior to the commencement of commissioning, the Operator shall send a report to the Agency which will contain a comprehensive review of the options available for utilising the heat generated by the waste incineration process in order to ensure that it is recovered as far as practicable. The review shall detail any identified proposals for improving the recovery and utilisation of waste heat and shall provide a timetable for their implementation.
PO3	Prior to the commencement of commissioning, the Operator shall submit a written plan to the Agency for approval detailing the ash sampling protocol to be used for bottom/boiler ash; cyclone collected fly ash; and Air Pollution Control residues and in conformance to Agency Guidance. The plan shall be implemented in accordance with the Agency's written approval.
PO4	Prior to the commencement of commissioning; the Operator shall provide a written commissioning plan, including timelines for completion, for approval by the Agency. 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 the Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PO5	After completion of furnace design and at least 3 months before commissioning the operator shall submit a written report to the Environment Agency of the Computerised Fluid Dynamics modelling used to demonstrate that the residence time and temperature requirements of the Waste Incineration Directive will be met and to identify the best practicable locations for temperature monitoring for validation and compliance. This report shall include the finalised design for flue gas recycling.
PO6	Prior to the commencement of commissioning, the Operator shall submit a written report to the Agency detailing the finalised waste acceptance procedures to be used at the site. The waste acceptance procedure shall include the process and systems by which wastes unsuitable for incineration at the site will be controlled. The procedure shall be implemented in accordance with the written approval from the Environment Agency.
PO7	Prior to the commencement of construction, the Operator shall submit a written summary of the finalised design of the acid gas abatement and choice of reagent to the Environment Agency for approval.
PO8	Prior to the commencement of construction, the Operator shall submit a written summary of the finalised design of the reverse osmosis plant, including quantitative consideration of energy consumption and any waste streams generated to the Environment Agency for approval.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO9	Prior to the commencement of commissioning; the Operator shall provide written evidence to the Environment Agency for approval that Ridham Dock has been dredged to attain the depth profile required for the efficient operation of the jet dispersion port described in the final water discharge modelling report submitted as part of the application (ref ER11-142 8th July 2011, particularly section 4.5 Outfall Design)

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Light Fuel Oil for auxiliary burners	< 0.1% sulphur content
Diesel for standby generator and vehicles	< 0.1% sulphur content

Table S2.2 Permitted waste types and quantities for co-incineration plant	
Maximum quantity	205,000 Tonnes per annum. Blended Calorific Value 10-16 MJ/kg
Waste code	**Description**
02 01 07	[WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing] **wastes from forestry**
03 01 01	[WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD wastes from wood processing and the production of panels and furniture] **waste bark and cork**
03 01 05	[WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD wastes from wood processing and the production of panels and furniture] **sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04**
15 01 03	[WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED packaging (including separately collected municipal packaging waste)] **wooden packaging**
17 02 01	[CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES) wood, glass and plastic] **wood**
17 09 04	[CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES) other construction and demolition wastes] **mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03 (wood fraction only)**
19 05 01	[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 wastes from aerobic treatment of solid wastes] **non-composted fraction of municipal and similar wastes (wood fraction only)**
19 05 02	[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 wastes from aerobic treatment of solid wastes] **non-composted fraction of animal and vegetable waste (wood fraction only)**
19 05 03	[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 wastes from aerobic treatment of solid wastes] **off-specification compost (wood derived fraction only)**

Table S2.2 Permitted waste types and quantities for co-incineration plant	
Maximum quantity	205,000 Tonnes per annum. Blended Calorific Value 10-16 MJ/kg
Waste code	**Description**
19 12 07	[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 wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified] **wood other than that mentioned in 19 12 06**
19 12 10	[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 wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified] **combustible waste (refuse derived fuel) (wood derived fraction only)**
20 01 38	[MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS separately collected fractions (except 15 01)] **wood other than that mentioned in 20 01 37**
20 02 01	[MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS garden and park wastes (including cemetery waste)} **biodegradable waste (wood fraction only)**
20 03 02	[MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS other municipal wastes] **waste from markets (wood fraction only)**
20 03 07	[MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS other municipal wastes] **bulky waste (wood fraction only)**

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) (Note 2)	Reference period	Monitoring frequency	Monitoring standard or method (note 3)
A1	Particulate matter	Co-Incinerator exhaust gases	15 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A1	Total Organic Carbon (TOC)	Co-Incinerator exhaust gases	15 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A1	Hydrogen chloride	Co-Incinerator exhaust gases	15 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A1	Hydrogen fluoride	Co-Incinerator exhaust gases	3 mg/m^3	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A1	Carbon monoxide	Co-Incinerator exhaust gases	75 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A1	Sulphur dioxide	Co-Incinerator exhaust gases	75 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A1	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Co-Incinerator exhaust gases	300 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A1	Cadmium & thallium and their compounds (total)	Co-Incinerator exhaust gases	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1	Mercury and its compounds	Co-Incinerator exhaust gases	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit) (Note 2)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method (note 3)**
A1	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total) [Note 1]	Co-Incinerator exhaust gases	0.5 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1	Ammonia (NH_3)	Co-Incinerator exhaust gases	No limit set	daily average	Continuous where CEM installed.	BS EN 15267-3/ BS EN 14181
A1	Nitrous oxide (N_2O)	Co-Incinerator exhaust gases	No limit set	daily average	Continuous where CEM installed.	BS EN 15267-3/ BS EN 14181
A1	Dioxins / furans (I-TEQ)	Co-Incinerator exhaust gases	0.1 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
A1	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1	Dioxin-like PCBs (WHO-TEQ Fish)	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1	Dioxin-like PCBs (WHO-TEQ Birds)	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	Procedure shall use BS ISO 11338-1 and BS-ISO 11338-2.
A1	Dioxins / furans (WHO-TEQ Humans / Mammals)	Co-Incinerator exhaust gases	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

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

Emission point ref. & location	Parameter	Source	Limit (including unit) (Note 2)	Reference period	Monitoring frequency	Monitoring standard or method (note 3)
A1	Dioxins / furans (WHO-TEQ Fish)	Co-Incinerator exhaust gases	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
A1	Dioxins / furans (WHO-TEQ Birds)	Co-Incinerator exhaust gases	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
A2	Particulate matter	Co-Incinerator exhaust gases	15 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A2	Total Organic Carbon (TOC)	Co-Incinerator exhaust gases	15 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A2	Hydrogen chloride	Co-Incinerator exhaust gases	15 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A2	Hydrogen fluoride	Co-Incinerator exhaust gases	3 mg/m^3	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A2	Carbon monoxide	Co-Incinerator exhaust gases	75 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A2	Sulphur dioxide	Co-Incinerator exhaust gases	75 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A2	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Co-Incinerator exhaust gases	300 mg/m^3	daily average	Continuous measurement	BS EN 15267-3/ BS EN 14181
A2	Cadmium & thallium and their compounds (total)	Co-Incinerator exhaust gases	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A2	Mercury and its compounds	Co-Incinerator exhaust gases	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211

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

Emission point ref. & location	Parameter	Source	Limit (including unit) (Note 2)	Reference period	Monitoring frequency	Monitoring standard or method (note 3)
A2	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total) [Note 1]	Co-Incinerator exhaust gases	0.5 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A2	Ammonia (NH_3)	Co-Incinerator exhaust gases	No limit set	daily average	Continuous measurement.	BS EN 15267-3/ BS EN 14181
A2	Nitrous oxide (N_2O)	Co-Incinerator exhaust gases	No limit set	daily average	Continuous measurement.	BS EN 15267-3/ BS EN 14181
A2	Dioxins / furans (I-TEQ)	Co-Incinerator exhaust gases	0.1 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
A2	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A2	Dioxin-like PCBs (WHO-TEQ Fish)	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A2	Dioxin-like PCBs (WHO-TEQ Birds)	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A2	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	Co-Incinerator exhaust gases	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	Procedure shall use BS ISO 11338-1 and BS-ISO 11338-2.
A2	Dioxins / furans (WHO-TEQ Humans / Mammals)	Co-Incinerator exhaust gases	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

e emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit) (Note 2)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method (note 3)**
A2	Dioxins / furans (WHO-TEQ Fish)	Co-Incinerator exhaust gases	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
A2	Dioxins / furans (WHO-TEQ Birds)	Co-Incinerator exhaust gases	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

Note 1: Metals include gaseous, vapour and solid phases as well as their compounds (expressed as the metal or the sum of the metals as specified). Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V mean antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium respectively.

Note 2: See Schedule 6 Interpretation for co-incineration plant reference conditions for reporting concentration of substances.

Note 3: The Environment Agency MCERTS performance standards for Continuous Emission Monitoring apply the requirements of BS EN 15267-3 and BS EN 14181.

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 Discharge to Ridham Dock (before dilution)	Flow	Cooling water/ Demineralisation Plant / Boiler System	275 m^3/hr	Instantaneous	Continuous	MCERTS compliant method
W1 Discharge to Ridham Dock (before dilution)	Temperature	Cooling water/ Demineralisation Plant / Boiler System	35 degC	Instantaneous	Continuous	MCERTS compliant method
W1 Discharge to Ridham Dock (before dilution)	Temperature increase (discharge above abstraction temperature)	Cooling water/ Demineralisation Plant / Boiler System	+10 degC	Instantaneous	Continuous	MCERTS compliant method
W1 Discharge to Ridham Dock (before dilution)	pH	Cooling water/ Demineralisation Plant / Boiler System	6-9	Instantaneous	Continuous	MCERTS compliant method
W1 Discharge to Ridham Dock (before dilution)	Free Chlorine	Cooling water/ Demineralisation Plant / Boiler System	0.2 mg/l	24 hour flow proportional sample	Monthly (Note 1)	SCA Blue book 218 or otherwise as agreed with the Environment Agency
W1 Discharge to Ridham Dock (before dilution)	Salinity	Cooling water/ Demineralisation Plant / Boiler System	50 practical salinity units	24 hour flow proportional sample	Monthly (Note 1)	Method as agreed with the Environment Agency
W1 Discharge to Ridham Dock (before dilution)	Suspended solids	Cooling water/ Demineralisation Plant / Boiler System	No limit set	24 hour flow proportional sample	Monthly (Note 1)	BS EN 872:2005 or otherwise as agreed with the Environment Agency
W1 Discharge to Ridham Dock (before dilution)	Chemical oxygen Demand	Cooling water/ Demineralisation Plant / Boiler System	No limit set	24 hour flow proportional sample	Monthly (Note 1)	SCA Blue book 215 or otherwise as agreed with the Environment Agency

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 Discharge to Ridham Dock (before dilution)	Total Phosphorus	Cooling water/ Demineralisation Plant / Boiler System	No limit set	24 hour flow proportional sample	Monthly (Note 1)	SCA Blue book 147 or otherwise as agreed with the Environment Agency
W1 Discharge to Ridham Dock (before dilution)	Adsorbable organic halogens (AOX)	Cooling water/ Demineralisation Plant / Boiler System	No limit set	24 hour flow proportional sample	Monthly (Note 1)	BS EN ISO6468: 1997 BS 6068-2.57:1997 or otherwise as agreed with the Environment Agency
W2 Surface water discharge to North side ditch	Flow	Cooling water/ Demineralisation Plant / Boiler System	No limit set	Instantaneous	Continuous	MCERTS compliant method
W2 Surface water discharge to North side ditch	pH	Site surface water run off	6-9	Instantaneous	Continuous	MCERTS complaint method
W2 Surface water discharge to North side ditch	Oil and Grease	Site surface water run off	No visible oil or grease	Instantaneous	Continuous	Online Oil detector or otherwise as agreed with the Environment Agency
W2 Surface water discharge to North side ditch	Suspended solids	Site surface water run off	No limit set	24 hour flow proportional sample	Monthly	BS EN 872:2005 or otherwise as agreed with the Environment Agency
W3 Waste water discharge to North side ditch	Maximum daily flow	Package treatment plant (sanitary systems) complying with BS EN 12566	Max $5m^3$/day	Total Daily Volume	-	As agreed with the Environment Agency

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**
W3 Waste water discharge to North side ditch	Visual Appearance	Package treatment plant (sanitary systems) complying with BS EN 12566	The discharge must be clear	-	-	-
W3 Waste water discharge to North side ditch	Visual Appearance	Package treatment plant (sanitary systems) complying with BS EN 12566	The discharge must have no adverse visible effect on the receiving water, the bed of the watercourse or any plants or animals within the watercourse	-	-	-
W3 Waste water discharge to North side ditch	Visible oil and grease	Package treatment plant (sanitary systems) complying with BS EN 12566	No significant trace present	-	-	-
W4 Surface water discharge to North side ditch Ref SW1 on diagram in application	No parameters set	Overflow from rainwater collection tank	No limit set	-	-	-

Note 1: Weekly during commissioning and first six months of full operation.

Table S3.3 Process monitoring requirements				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
As identified in the Application	Wind Speed and Direction	Continuous	Anemometer	
Location close to the inner wall of Combustion Chamber post combustion zone	Temperature (° C)	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1	Exhaust gas oxygen content	Continuous	BS EN 15267-3	
A1	Exhaust gas water vapour content	Continuous	BS EN 15267-3	Unless gas is dried before analysis of emissions.
A2	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A2	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A2	Exhaust gas oxygen content	Continuous	BS EN 15267-3	
A2	Exhaust gas water vapour content	Continuous	BS EN 15267-3	Unless gas is dried before analysis of emissions.

Table S3.4 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/Boiler Ash	Loss on Ignition	<5%	Monthly in the first year of operation. Then Quarterly	Environment Agency ash sampling protocol.	
Bottom Ash/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 Environment Agency ash sampling protocol.	
Bottom Ash/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	Sampling and analysis as per Environment Agency ash sampling protocol.	
Cyclone Fly Ash	Loss on Ignition	<5%	Monthly in the first year of operation. Then Quarterly	Environment Agency ash sampling protocol.	
Cyclone Fly 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 Environment Agency ash sampling protocol.	
Cyclone Fly 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	Sampling and analysis as per Environment Agency ash sampling protocol.	

ble S3.4 Residue quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit**	**Monitoring frequency**	**Monitoring standard or method ***	**Other specifications**
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 Environment Agency 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 Environment Agency ash sampling protocol.	

* Or other equivalent standard as agreed in writing with the Environment Agency.

Schedule 4 - Reporting

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

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1	A1, A2	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
Emissions to water Parameters as required by condition 3.5.1	W1, W2, W3	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
Loss on igniiton Parameters as required by condition 3.5.1	Bottom Ash/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/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/Boiler Ash	Before use of a new disposal or recycling route	
Loss on Ignition Parameters as required by condition 3.5.1	Cyclone 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	Cyclone 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	Cyclone Ash	Before use of a new disposal or recycling route	

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
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 Accepted on Site	tonnes
Total Waste Incinerated	tonnes
Electrical energy produced	MWhrs
Electrical energy exported	MWhrs
Thermal energy produced	MWhrs
Waste heat utilised by the installation	MWhrs
Waste heat utilised off site	MWhrs

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Electrical energy exported, imported and used at the installation	Quarterly	KWhrs / tonne of waste incinerated (dry basis)
Heat/Steam energy exported and used at the installation	Quarterly	KWhrs / tonne of waste incinerated (dry basis)
Light Fuel oil consumption	Quarterly	Kgs / tonne of waste incinerated (dry basis)
Mass of Bottom Ash/Boiler Ash produced	Quarterly	Kgs / tonne of waste incinerated (dry basis)
Mass of Cyclone Ash produced	Quarterly	Kgs / tonne of waste incinerated (dry basis)
Mass of APC residues produced	Quarterly	Kgs / tonne of waste incinerated (dry basis)
Mass of Other solid residues produced	Quarterly	Kgs / tonne of waste incinerated (dry basis)
25% Aqueous Ammonia / Urea consumption	Quarterly	Kgs / tonne of waste incinerated (dry basis)
Activated Carbon consumption	Quarterly	Kgs / tonne of waste incinerated (dry basis)

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Sodium Bicarbonate/lime consumption	Quarterly	Kgs / tonne of waste incinerated (dry basis)
Water consumption	Quarterly	Kgs / tonne of waste incinerated (dry basis)
Periods of WID abnormal operation	Quarterly	No of occasions and cumulative hours for current calendar year for each line.

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air (Particulates, TOC, HCl, CO, SO_x, NO_x, NH_3, N_2O for A1 and A2 emissions)	Standard Spreadsheet based Forms compatible with many CEMS systems. Each quarter – 3 monthly forms for each of two emission points and each of 8 parameters. Example format shown in Form Air 1 for particulates with 15mg/m^3 limit. Or otherwise as agreed in writing by the Environment Agency	October 2011
Air (HF, Metals, Dioxins/furans/PCBs)	Form air 2 or otherwise as agreed in writing by the Environment Agency	October 2011
Water	Form water 1 or otherwise as agreed in writing by the Environment Agency	October 2011
Residue Analyses (composition)	Form Residues 1 or otherwise as agreed in writing by the Environment Agency	October 2011
Residue Analyses (solubility)	Form Residues 2 or otherwise as agreed in writing by the Environment Agency	October 2011
Performance indicators	Form Performance 1 or otherwise as agreed in writing by the Environment Agency	October 2011
Production indicators	Form Production 1 or otherwise as agreed in writing by the Environment Agency	October 2011

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	**EEPR/NP3930TH**
Name of operator	**Biomass Power Plant Ridham Limited**
Location of Facility	**Ridham Dock, Sittingbourne, Kent**
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

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

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

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

Part B - to be submitted as soon as practicable

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

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

"abatement" means 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

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

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

"bi-annual" means twice per year with at least five months between tests;

"boiler ash" means ash collected from the boiler stage of the combustion gas lines

"bottom ash" means ash falling through or transported by the grate *;*

"CEM" Continuous emission monitor

"CEN" means Commité Européen de Normalisation

"cyclone ash" and *"cyclone fly ash"* mean ash collected from the combustion gas lines by cyclone before the flue gas cleaning stage of abatement;

"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.

"disposal" means any of the operations provided for in Annex IIA to Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste.

"EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 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 given in Schedule 3 of the Hazardous Waste (England and Wales) Regulations 2005 No.894 and the Hazardous Waste (Wales) Regulations 2005 No. 1806 (W.138).

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

"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.

"recovery" means any of the operations provided for in Annex IIB to Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste.

"*shut down"* is any period where the plant is being returned to a non-operational state as described in the application or agreed in writing with the Environment Agency.

"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 cover the grate and to initiate steady-state conditions as described in the application or agreed in writing with the Environment Agency.

"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, 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 (England)Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

"Waste Incineration Directive" means Directive 2000/76/EC on the incineration of waste (O.J. L 332, 28.12.2000)

"WFD" means Waste Framework Directive (Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste).

"WID abnormal operation" means any technically unavoidable stoppages, disturbances, or failures of the measurement devices during which the concentrations in the discharges into air of the regulated substances may exceed the normal emission limit values.

"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 that 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 all substances.

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. For the purposes of compliance against the emission limit value, the lower of the two figures should be used.

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			
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

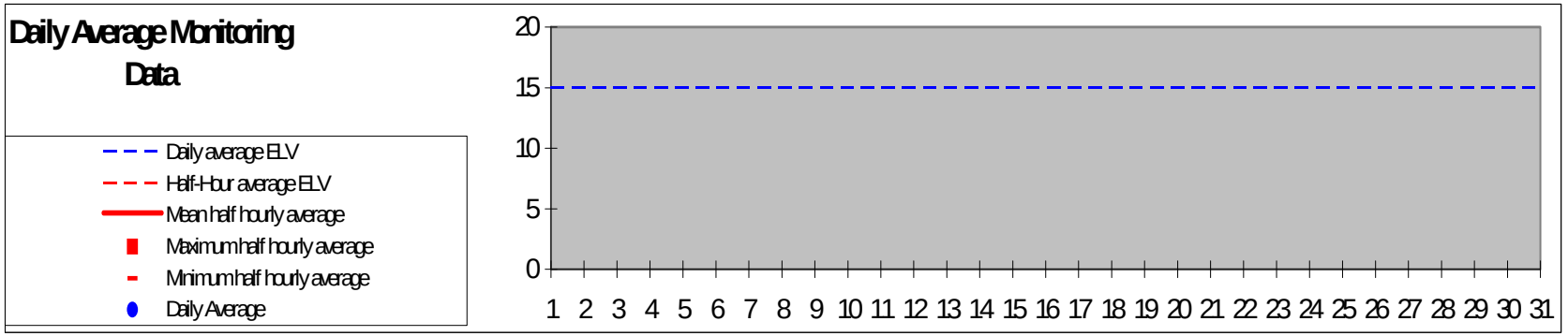
Permit Reference Number : EPR/NP3930TH

Operator : Biomass Power Point Ridham Limited

Installation : Ridham Biomass Power Plant

Form Number : air 1 Form Dated: October 2011

Reporting of Continuously Monitored Emissions to Air for Particulates for the month of ……, 20__



	Monthly summary		Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Half-hourly average			Half-Hour average ELV																															
	Monthly maximum	0	Maximum half hourly average																															
	Monthly mean	####	Mean half hourly average																															
	Monthly minimum	0	Minimum half hourly average																															
	Total invalid results	0	No. of invalid results																															
	Sum of exceedances	0	No. of exceedances of ELV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daily average			Daily average ELV	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	Monthly maximum	0	Daily Average																															
	No. of invalid days	0	Value valid? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Sum of exceedances	0	Value exceeds ELV (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Signed ……. Date……..

(authorised to sign as representative of Biomass Power Plant Ridham Limited)

Permit Reference Number : EPR/NP3930TH

Operator : Biomass Power Point Ridham Limited

Installation : Ridham Biomass Power Plant

Form Number : air 2 Form Dated: October 2011

Reporting of Emissions to Air for the period from ……..to…….

Emission Point	Substance / Parameter	Emission Limit Value	Result [1]	Test Method [2]	Sample Date and Times [3]	Accreditation/ Certification [4]	Uncertainty [5]
A1	Hydrogen fluoride	3 mg/m^3 over minimum 1 hour period		BS ISO 15713			
A1	Cadmium & thallium and their compounds (total)	0.05 mg/m^3 over minimum 30 minute, maximum 8 hour period		BS EN 14385			
A1	Mercury and its compounds	0.05 mg/m^3 over minimum 30 minute, maximum 8 hour period		BS EN 13211			
A1	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m^3 over minimum 30 minute, maximum 8 hour period		BS EN 14385			
A1	Dioxins / furans (I-TEQ)[6]	0.1 ng/m^3 over minimum 6 hour, maximum 8 hour period		BS EN 1948			
A1	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)[6]	No limit applies		BS EN/TS 1948-4			
A1	Dioxin-like PCBs (WHO-TEQ Fish)[6]	No limit applies		BS EN/TS 1948-4			

Emission Point	Substance / Parameter	Emission Limit Value	Result [1]	Test Method [2]	Sample Date and Times [3]	Accreditation/ Certification [4]	Uncertainty [5]
A1	Dioxin-like PCBs (WHO-TEQ Birds)[6]	No limit applies		BS EN/TS 1948-4			
A1	Dioxins / furans (WHO-TEQ Humans / Mammals) [6]	No limit applies		BS EN/TS 1948-4			
A1	Dioxins / furans (WHO-TEQ Fish) [6]	No limit applies		BS EN/TS 1948-4			
A1	Dioxins / furans (WHO-TEQ Birds) [6]	No limit applies		BS EN/TS 1948-4			
A1	Poly-cyclic aromatic hydrocarbons (PAHs) Total	No limit applies		BS ISO 11338-1/2			
A1	Anthanthrene	No limit applies					
A1	Benzo{a}anthracene	No limit applies					
A1	Benzo[b]fluoranthene	No limit applies					
A1	Benzo[k]fluoranthene	No limit applies					
A1	Benzo[b]naph(2,1-d} thiophene	No limit applies					
A1	Benzo[c]phenanthrene	No limit applies					
A1	Benzo[ghi]perylene	No limit applies					
A1	Benzo[a]pyrene	No limit applies					
A1	Cholanthrene	No limit applies					
A1	Chrysene	No limit applies					
A1	Cyclopenta(c,d)pyrene	No limit applies					
A1	Dibenzo[ah]anthracene	No limit applies					
A1	Dibenzo[a,i]pyrene	No limit applies					
A1	Fluoranthene	No limit applies					

Emission Point	Substance / Parameter	Emission Limit Value	Result [1]	Test Method [2]	Sample Date and Times [3]	Accreditation/ Certification [4]	Uncertainty [5]
A1	Indo[1,2,3-cd]pyrene	No limit applies		BS ISO 11338-1/2			
A1	Naphthalene	No limit applies					
A2	Hydrogen fluoride	3 mg/m^3 over minimum 1 hour period		BS ISO 15713			
A2	Cadmium & thallium and their compounds (total)	0.05 mg/m^3 over minimum 30 minute, maximum 8 hour period		BS EN 14385			
A2	Mercury and its compounds	0.05 mg/m^3 over minimum 30 minute, maximum 8 hour period		BS EN 13211			
A2	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m^3 over minimum 30 minute, maximum 8 hour period		BS EN 14385			
A2	Dioxins / furans (I-TEQ)[6]	0.1 ng/m^3 over minimum 6 hour, maximum 8 hour period		BS EN 1948			
A2	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)[6]	No limit applies		BS EN/TS 1948-4			
A2	Dioxin-like PCBs (WHO-TEQ Fish)[6]	No limit applies		BS EN/TS 1948-4			
A2	Dioxin-like PCBs (WHO-TEQ Birds)[6]	No limit applies		BS EN/TS 1948-4			
A2	Dioxins / furans (WHO-TEQ Humans / Mammals) [6]	No limit applies		BS EN/TS 1948-4			

Emission Point	Substance / Parameter	Emission Limit Value	Result [1]	Test Method [2]	Sample Date and Times [3]	Accreditation/ Certification [4]	Uncertainty [5]
A2	Dioxins / furans (WHO-TEQ Fish) [6]	No limit applies		BS EN/TS 1948-4			
A2	Dioxins / furans (WHO-TEQ Birds) [6]	No limit applies		BS EN/TS 1948-4			
A2	Poly-cyclic aromatic hydrocarbons (PAHs) Total	No limit applies		BS ISO 11338-1/2			
A2	Anthanthrene	No limit applies					
A2	Benzo{a}anthracene	No limit applies					
A2	Benzo[b]fluoranthene	No limit applies					
A2	Benzo[k]fluoranthene	No limit applies					
A2	Benzo[b]naph(2,1-d} thiophene	No limit applies					
A2	Benzo[c]phenanthrene	No limit applies					
A2	Benzo[ghi]perylene	No limit applies					
A2	Benzo[a]pyrene	No limit applies					
A2	Cholanthrene	No limit applies					
A2	Chrysene	No limit applies					
A2	Cyclopenta(c,d)pyrene	No limit applies					
A2	Dibenzo[ah]anthracene	No limit applies					
A2	Dibenzo[a,i]pyrene	No limit applies					
A2	Fluoranthene	No limit applies					
A2	Indo[1,2,3-cd]pyrene	No limit applies					
A2	Naphthalene	No limit applies					

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.
[3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
[4] The accreditation status of the equipment and/or the monitoring organisation, as appropriate, for the methods used for both sampling and analysis.
[5] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.
[6] The result to 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

Signed …… Date……..
(authorised to sign as representative of Biomass Power Plant Ridham Limited)

Permit Reference Number : EPR/NP3930TH

Operator : Biomass Power Point Ridham Limited

Installation : Ridham Biomass Power Plant

Form Number : Water 1 Form Dated: October 2011

Reporting of emissions to water (other than to sewer) and land for the period from to

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
W1	Flow Rate	275 m^3/hr	Instantaneous		MCERTS compliant method		
W1	Temperature	35 degC	Instantaneous		MCERTS compliant method		
W1	Temperature increase (discharge above abstraction temperature)	+10 degC	Instantaneous		MCERTS compliant method		
W1	pH	Min 6.0 Max 9.0	Instantaneous		MCERTS approved or otherwise as agreed with the Environment Agency		
W1	Free chlorine	0.2 mg/l	24 hour flow proportional sample		SCA Blue book 218 or otherwise as agreed with the Environment Agency		
W1	Salinity	50 practical salinity units	24 hour flow proportional sample		BS EN 872:2005 or otherwise as agreed with the Environment Agency		
W1	Chemical Oxygen Demand	No limit set	24 hour flow proportional sample		SCA Blue book 215 or otherwise as agreed with the Environment Agency		

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
W1	Total Phosphorus	No limit set	24 hour flow proportional sample		SCA Blue book 147 or otherwise as agreed with the Environment Agency		
W1	Adsorbable organic halogens (AOX)	No limit set	24 hour flow proportional sample		BS EN ISO6468:1997 BS 6068-2.57:1997 or otherwise as agreed with the Environment Agency		
W2	Flow	No limit Set	Instantaneous		MCERTS compliant method		
W2	pH	Min 6.0 Max 9.0	Instantaneous		MCERTS compliant method		
W2	Oil and grease	No visible oil or grease	Instantaneous		Online Oil detector or otherwise as agreed with the Environment Agency		
W2	Suspended Solids	No limit set	24 hour flow proportional sample		BS EN 872:2005 or otherwise agreed with the Environment Agency		

Notes:

(1)The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
(2)Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
(3)For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
(4)The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed …… Date……..

(authorised to sign as representative of Biomass Power Plant Ridham Limited)

Permit Reference Number : EPR/NP3930TH

Operator : Biomass Power Point Ridham Limited

Installation : Ridham Biomass Power Plant

Form Number : Residues 1 Form Dated: October 2011

Reporting of residue quality for the period from …… ….to…… ……

Ash Composition	LOI (%)
Bottom Ash/Boiler Ash	
Cyclone Fly Ash	

Ash Composition (Metals, Dioxins, etc.)																	
	Sb mg/kg	**Cd** mg/kg	**Tl** mg/kg	**Hg** mg/kg	**Pb** mg/kg	**Cr** mg/kg	**Cu** mg/kg	**Mn** mg/kg	**Ni** mg/kg	**As** mg/kg	**Co** mg/kg	**V** mg/kg	**Zn** Mg/kg	**DIOXIN I-TEQ ng/kg**	**DIOXIN WHO-TEQ ng/kg**		
															Humans /	Birds	Fish
Bottom Ash																	
Cyclone Fly Ash																	
APC Residues																	

Signed …… Date……..

(authorised to sign as representative of Biomass Power Plant Ridham Limited)

Reporting of Ash Solubility for the period from …… ….to…… ……

Ash Solubility (Metals)													
	Sb mg/kg	**Cd** mg/kg	**Tl** mg/kg	**Hg** mg/kg	**Pb** mg/kg	**Cr** mg/kg	**Cu** mg/kg	**Mn** mg/kg	**Ni** mg/kg	**As** mg/kg	**Co** mg/kg	**V** mg/kg	**Zn** Mg/kg
Bottom Ash													
Cyclone Fly Ash													
APC Residues													

Signed …… Date……..
(authorised to sign as representative of Biomass Power Plant Ridham Limited)

Permit Reference Number : EPR/NP3930TH

Operator : Biomass Power Point Ridham Limited

Installation : Ridham Biomass Power Plant

Form Number : Performance 1 Form Dated: October 2011

Reporting of performance indicators for the period to

Parameter	Result	Units
Electrical energy exported from the installation		kWhrs/tonne of waste incinerated (dry basis)
Electrical energy imported at the installation		kWhrs/tonne of waste incinerated (dry basis)
Electrical energy used at the installation		kWhrs/tonne of waste incinerated (dry basis)
Heat/Steam energy exported from the installation		kWhrs/tonne of waste incinerated (dry basis)
Heat/Steam energy used at the installation		kWhrs/tonne of waste incinerated (dry basis)
Light Fuel oil consumption		kg/tonne of waste incinerated (dry basis)
Mass of Bottom Ash/Boiler Ash produced		kg/tonne of waste incinerated (dry basis)
Mass of Cyclone Ash produced		kg/tonne of waste incinerated (dry basis)
Mass of APC residues produced		kg/tonne of waste incinerated (dry basis)
Mass of Other solid residues produced		kg/tonne of waste incinerated (dry basis)
25% Aqueous Ammonia / Urea consumption		kg/tonne of waste incinerated (dry basis)
Activated Carbon consumption		kg/tonne of waste incinerated (dry basis)
Sodium Bicarbonate/lime consumption		kg/tonne of waste incinerated (dry basis)

Parameter	Result	Units
Water consumption		kg/tonne of waste incinerated (dry basis)
Periods of WID abnormal operation	1. 2.	No of occasions and cumulative hours for current calendar year for each line.

Operator's comments :

Signed …… Date……..
(authorised to sign as representative of Biomass Power Plant Ridham Limited)

Permit Reference Number : EPR/NP3930TH

Operator : Biomass Power Point Ridham Limited

Installation : Ridham Biomass Power Plant

Form Number : Production 1 Form Dated: October 2011

Reporting of production indicators for the period **to**

Parameter	Result	Units
Total Waste Accepted on Site		tonnes
Total Waste Incinerated		tonnes
Electrical energy produced		MWhrs
Electrical energy exported		MWhrs
Thermal energy produced		MWhrs
Waste heat utilised by the installation		MWhrs
Waste heat utilised off site		MWhrs

Operator's comments :

Signed …… Date……..

(authorised to sign as representative of Biomass Power Plant Ridham Limited)