Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Avonmouth Energy Facility

New Earth Energy (West) Operations Limited
Kings Weston Lane
Avonmouth
Bristol
BS11 8AZ

Permit number

EPR/JP3535CE

Avonmouth Energy Facility
Permit Number EPR/JP3535CE

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of an installation, whose purpose is the energy recovery from waste in an incineration plant. The relevant listed activity is Section 5.1A(1)(c) (The incineration of non-hazardous waste in an incineration plant with a capacity of 1 tonne or more per hour) in schedule 1 of the EP Regulations. The permit implements the requirements of EU Directives, in particular the Directives on Integrated Pollution Prevention and Control and Waste Incineration.

The main features of the permit are as follows:

The site is situated within the Avonmouth Industrial Area. The nearest settlements are Shirehampton, approximately 1 km to the south, and Lawrence Weston 2 km to the south-east. Bristol City Centre is approximately 9.5 km to the south-east. There are several conservation sites close to the facility: within 10 km are the Severn Estuary (which is a Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar Site) and the Avon Gorge (SAC): within 2 km is the Severn Estuary Site of Special Scientific Interest (SSSI). Also within 2 km are a Local Nature Reserve (Lawrence Weston Moor), 16 Local Wildlife Sites and an Ancient Woodland.

The Avonmouth Energy Facility has a total thermal input capacity of approximately 58 MWth and is capable of generating up to approximately 13.2 MWe of electrical power, the majority of which is exported to the local distribution network. Provision has been made to supply heat, in the form of steam or hot water, in the event that a commercial scheme comes available to take the heat.

The facility consists of two lines with a total annual throughput of up to 120,000 tonnes per year of waste materials with a design average lower calorific value (LCV) of approximately 13.0 MJ/kg. The facility includes waste receipt and storage, waste heat boilers, exhaust gas abatement, steam turbine and electrical generators, on-site storage and treatment of residues and all systems for controlling and monitoring incinerator operation.

The facility uses advanced thermal conversion (ATC) technology, specifically an in-house development of a staged pyrolysis, gasification and combustion process. It utilises a pre-prepared feedstock produced from non-hazardous waste: reject material that is not recyclable or compostable from mechanical sorting, and oversized material that is not suitable for compost. The waste feedstock is produced to a quality that contains a high proportion of biomass material.

The waste feedstock is brought into the facility by enclosed conveyor or delivered directly in bales or loose in covered bulk trailers. The acceptance of material at the renewable energy facility is done within a completely sealed system. Some shredding can take place to reduce the size of large, bulky items.

There are 2 streams, each of 8 pyrolyser/gasifier/combustion units. The combustion gases from each stream pass into its associated boiler to produce steam to drive the turbine electricity generators.

The waste is continuously fed using conveyors from a buffer store via feed compactors into a pyrolyser. In the pyrolysis units the feed is continuously, indirectly heated in the absence of oxygen to between 850ºC and 1000ºC. This enables the feed to decompose and release a gas known as ‘pyrogas’ (consisting of methane, hydrogen, carbon monoxide and water vapour) and leave a solid carbon char. The pyrogas leaves the pyrolysis units and enters the gasification chambers. The carbon char is also fed into the gasification units. High temperature steam is injected into the gasification unit

together with a limited amount of oxygen. Under these conditions the char further decomposes and when mixed with the pyrogas produces syngas (consisting of methane, hydrogen, carbon monoxide carbon dioxide, nitrogen and condensable oils, tars and waxes) and residual ash. The syngas passes through a cyclone to remove particulates before being fed into the syngas combustion unit.

The combustion chamber operates at above 850°C and the high temperature combustion gas from the combustion chamber is used as the heating medium for both the pyrolysis stage and the steam boiler. Sufficient air is fed into the combustion chamber to ensure that there is complete oxidation of all the gases and the design ensures that these gases remain above 850°C for at least 2 seconds.

During start-up of the process before waste is introduced, oil-fired auxiliary burners are used to bring the combustion chambers (one x 1 MWth burner for each of 16 chambers) and steam boilers (one x 10 MWth for each of the two boilers) up to operating temperature. During normal operation, the auxiliary burners automatically fire to prevent the temperature in a combustion chamber falling below 850^{o}C. The auxiliary burners are also used during shut down to ensure the minimum operating temperature of 850°C is maintained until all the waste has passed through the system.

High temperature gas from the combustion chamber is passed through the pyrolysis heat exchangers, to provide the heat energy for the pyrolysis reaction, before passing into the boiler unit. In the boiler the temperature is rapidly reduced to below 250°C through transfer of the heat energy in the gas to form steam. High pressure steam from the boiler drives the steam turbine sets to generate electricity.

The technique of flue gas recirculation (FGR) is used as the means to reduce the amount of NO_x formed in the combustion chamber.

After passing through the boilers, combustion gases are cleaned before they are released to atmosphere. There are three components to the gas cleaning, abatement technique:

- sodium bicarbonate injection to neutralise acid gas compounds;
- activated carbon injection to absorb mercury vapour, dioxins and furans;
- bag filtration to remove fine particulate residues.

Cleaned flue gases exiting the abatement system of each of the pyrolyser lines are discharged through the 30 m tall, two-flue stack. Gases in each of the flues are continuously monitored for particulate matter, oxides of nitrogen, sulphur dioxide, carbon monoxide, total organic carbon and hydrogen chloride. Monitoring for heavy metals, dioxins, PAH and hydrogen fluoride is carried out periodically.

The ash residue from the gasifier is quenched with water to cool and control dust and stored in an internal bunker area of the plant prior to removal off-site for recovery or disposal. Ash from the boilers, collected after soot blowing, is combined with the gasifier ash. Bag filter and cyclone (APC) residues are hazardous, collected in IBCs and stored ready for disposal off-site.

All plant areas are surfaced to the appropriate standards for the activities within those areas. All liquid tanks and drums, whose emissions to water or land could cause pollution, are contained in adequate bunding constructed in line with industry best practice standards and sized to contain 110% of the contents of the largest tank or 25% of the total tankage within a bund, whichever is the larger. Materials used for surfacing of process areas and bunds are resistant to the materials they may come into contact with.

There are no direct discharges to groundwater from the facility; surplus rainwater and other clean water arisings are collected and disposed of to the local rhines via the neighbouring MBT Plant interceptors. There is no discharge of process liquids to controlled waters. Wash down water and liquid collected from incoming waste and ash quench in the sump beneath the incoming waste buffer store is removed for treatment off-site by tanker. Process boiler blow down is tankered off-site for treatment.

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/JP3535CE/A001 (dated 24/05/12) Additional information for duly making (27/06/12)	Duly made 27/06/12	
Additional Information received	12/07/12	Clarification of drainage system
Additional Information received in response to an email dated 15/08/12	21/08/12	Clarification of energy system
Response to Schedule 5 notice (#1) dated 31/07/12	22/08/12	General aspects clarified
Response to Schedule 5 notice (#2) dated 14/08/12	18/09/12	General aspects clarified
Response to Schedule 5 notice (#3) dated 31/08/12	03/10/12	General aspects clarified
Additional Information received in response to an email dated 08/11/12	12/11/12	Clarification regarding abnormal operation assessment.
Additional Information received in response to an email dated 28/11/12	28/11/12	Clarification of heat recovery potential
Additional Information received in response to an email dated 29/11/12	29/11/12	Clarification of water discharge arrangements.
Additional Information received in response to an email dated 05/12/12	05/12/12	Addendum to Accident Management Plan.
Additional Information received in response to an email dated 05/12/12	12/12/12	Revised proposal for standby electricity supply.
Additional Information received in response to an email dated 06/12/12	13/12/12 14/12/12	Clarification of NO_x emission control mechanisms.
Permit EPR/JP3535CE determined	03/01/13	

End of Introductory Note

Permit

Permit number

EPR/JP3535CE

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

New Earth Energy (West) Operations Limited ("the operator"),

whose registered office is

35 Black Moor Road
Ebblake Industrial Estate
Verwood
Dorset
BH31 6AT

company registration number **07932861**

to operate an installation at

Avonmouth Energy Facility
Kings Weston Lane
Avonmouth
Bristol
BS11 8AZ

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

Name	Date
B Graham	**3 January 2013**

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 The operator shall:

(a) take appropriate measures to ensure that energy is recovered and 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 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.

2.3 Operating techniques

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

(b) 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 or holder; and

(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(a) is exceeded; or

(c) any continuous emission limit value in schedule 3 table S3.1 is exceeded, other than under WID abnormal operating conditions ; or

(d) 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 measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 due to disturbances or failures of the abatement systems, or continuous emission monitor(s) are out of service, as the case may be, 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 an incineration line;

(c) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 (a) due to disturbances or failures of the abatement systems;

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.

2.4 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 S3.1 and S3.2 except in "WID abnormal operation", when there shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1(a) and 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 S3.5. Additional samples shall be taken and tested and appropriate action taken, whenever:

(a) disposal or recovery routes change; or

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

3.2 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 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.

3.4 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.

3.5 Monitoring

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

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

(b) noise specified in table S3.3

(c) process monitoring specified in table S3.4

(d) residue quality in table S3.5

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

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by 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 S3.1, S3.1(a) and 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 & NO_2 expressed as NO_2) 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.

3.6 Pests

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

3.6.2 The operator shall:

(a) if notified by the Environment Agency, submit to the Environment Agency for approval within the period specified, a pests management plan;

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

4 Information

4.1 Records

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

(a) be legible;

(b) be made as soon as reasonably practicable;

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

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

(i) off-site environmental effects; and

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

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

4.2 Reporting

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

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

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

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

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

(d) the functioning and monitoring of the incineration plant in a format agreed with 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.

4.4 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 listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S5.1 (A1) (c)	The incineration of non-hazardous waste in a pyrolysis and gasifier plant with a capacity of 1 tonne or more per hour.	The incineration of non-hazardous waste including the operation of pyrolysis and gasifier lines, boilers and auxiliary burners; facilities for the treatment of exhaust gases; on-site facilities for treatment and storage of residues, surface water and waste water; systems for controlling and monitoring incineration operations; and receipt, storage and handling of wastes and raw materials (including fuels). Waste types and quantities as specified in Table S2.2 of this permit
Directly Associated Activities		
Electricity Generation	Generation of nominally 13.2 MWe electrical power using a steam turbine from energy recovered from the flue gases.	The export of electricity to the grid and for on-site operations.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Operating techniques described in the main application parts entitled: • Section 1.2: Process description • Section 1.3: Non-technical summary • Section 2: Techniques for pollution control • Sections 2.2.4/5: Fugitive emissions management plan • Section 2.2.6: Odour management plan • Section 2.8.1: Accident management plan • Section 2.9: Noise management plan	27/06/12
Response to Schedule 5 Notice #1 dated 31/07/12	Operating techniques described in the responses to the Notice: Response 1 (auger cooling water), 2 (waste type assessment), 3 (wind blown loss prevention), 5 (action on PAC screw failure), 9 (bag filter dust handling), 11 (shut down method), 16 (flood risk mitigation), 17 (flood protection), 20 (gas sample drying).	22/08/12
Response to Schedule 5 Notice #3 dated 31/08/12	Operating techniques described in the responses to the Notice: Response 1 (optimising air flows), 2 (gas oil), 3 (carbon injection control), 7 (noise management), 10 (action on CEM failure)	03/10/12

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The operator shall submit a written post-commissioning report to the Environment Agency which shall include: • a review of performance of the facility against the conditions of this permit. • details of optimisation of acid gas, dioxin and mercury emission abatement systems including reagent dosing rates. • details of the control of the Flue Gas Recirculation (FGR) system and combustion settings to optimise NO_x emissions. • details of procedures developed during commissioning for achieving and demonstrating satisfactory process control and covering the range of designed operating rates.	Within 4 months of the completion of commissioning
IC2	The Operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the combustion chamber whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to the Environment Agency.	Within 4 months of the completion of commissioning
IC3	The operator shall submit written summary reports to the Environment 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.	
	(a) Initial calibration report to be submitted to the Agency	Within 4 months of completion of commissioning
	(b) Full summary evidence compliance report to be submitted	Within 18 months of completion of commissioning
IC4	The operator shall submit a written proposal to the Environment Agency to carry out tests to determine the size distribution of the particulate matter in the exhaust gas emissions to air from emission points A1 and A2, identifying the fractions within the PM_{10}, $PM_{2.5}$ and $PM_{1.0}$ ranges. The proposal shall include a timetable for approval by the Environment Agency to carry out such tests and produce a report on the results. On receipt of written agreement by the Environment Agency to the proposal and the timetable, the operator shall carry out the tests and submit to the Environment Agency a report on the results.	Within 6 months of the completion of commissioning
IC5	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System (EMS) and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be subject to certification.	Within 12 months of the completion of commissioning
IC6	The Operator shall carry out an assessment of the impact of emissions to air of PAH and Chromium VI. The assessment shall predict the impact of the substances against the relevant EQS/EAL through the use of emissions monitoring data obtained during the first year of operation and air dispersion modelling. In the event that the assessment shows that an EQS/EAL can be exceeded, the report shall include proposals for further investigative work. A report on the assessment shall be made to the Environment Agency.	Within 15 months of the completion of commissioning

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC7	The Operator shall assess the emissions to air of NO_x for up to the first 12 months of commercial operation and a) submit a proposal to reduce the daily NO_x emission limit to be in the region of 125 mg/m^3 or b) (i) submit a written programme for approval by the Environment Agency to install and implement additional measures to abate NOx emissions; and (ii) implement the programme in accordance with the Environment Agency's written approval.	Submissions to be completed within 13 months of the completion of commissioning

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	Prior to the commencement of commercial destruction of waste, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment 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 Part 1 of *How to comply with your environmental permit*. 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 first sampling of bottom ash, the Operator shall submit to the Environment Agency for approval a protocol for the sampling and testing of bottom ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.
PO3	Prior to the commencement of commissioning the Operator shall provide a written commissioning plan for approval by the Agency. The plan shall include: • the expected emissions to the environment during the different stages of commissioning, • the expected durations of commissioning activities and estimated timeline for completion • 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.
PO4	Prior to the commencement of commercial destruction of waste the operator shall provide the Environment Agency with a written report for approval describing the detailed programme of noise and vibration monitoring that will be carried out at the site at the commissioning stage and also when the plant is fully operational as proposed in the Application. The report shall include confirmation of locations, time, frequency and methods of monitoring. The monitoring programme shall be carried out in accordance with the Environment Agency's written approval.

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels

Raw materials and fuel description	Specification
Fuel Oil	< 0.1% sulphur content

Table S2.2 Permitted waste types and quantities for incineration plant

Maximum quantity 120,000 tonnes per annum

Waste code	Description
02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING**
02 01	**wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 03	plant-tissue waste
02 01 07	wastes from forestry (comprising wood and plant tissue)
03	**WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD**
03 01	**wastes from wood processing and the production of panels and furniture**
03 01 01	waste bark and cork
03 01 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those containing dangerous substances
03 03	**wastes from pulp, paper and cardboard production and processing**
03 03 01	waste bark and wood
03 03 08	wastes from sorting of paper and cardboard destined for recycling
15	**WASTE PACKAGING, ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED**
15 01	**packaging (including separately collected municipal packaging waste)**
15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging (untreated)
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 09	textile packaging
17	**CONSTRUCTION AND DEMOLITION WASTES**
17 02	**wood, glass and plastic**
17 02 01	Wood (untreated)
17 09	**other construction and demolition wastes**
17 09 04	mixed construction and demolition wastes other than recyclable materials and those mentioned in 17 09 01, 17 09 02 and 17 09 03

Table S2.2 Permitted waste types and quantities for incineration plant

Maximum quantity 120,000 tonnes per annum

Waste code	Description
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 12	**wastes from the mechanical treatment of waste**
19 12 01	paper and cardboard
19 12 07	wood other than wood containing dangerous substances
19 12 08	textiles
19 12 10	Combustible waste (refuse derived fuel)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) (NON-HAZARDOUS)**
20 01	**separately collected fractions (except 15 01)**
20 01 01	paper and cardboard
20 01 38	wood other than wood containing dangerous substances from separately collected fractions of municipal wastes (household waste and similar commercial, industrial and institutional wastes).

Schedule 3 – Emissions and monitoring

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

Emission point ref. & location	Parameter	Limit	Reference period	Monitoring frequency	Monitoring standard or method
A1 & A2 (as shown on site plan in Schedule 7)	Particulate matter	30 mg/m^3	½-hr average	Continuous measurement	BS 14181
	Particulate matter	10 mg/m^3	daily average	Continuous measurement	BS 14181
A1 & A2 (as shown on site plan in Schedule 7)	Total Organic Carbon (TOC)	20 mg/m^3	½-hr average	Continuous measurement	BS 14181
	Total Organic Carbon (TOC)	10 mg/m^3	daily average	Continuous measurement	BS 14181
A1 & A2 (as shown on site plan in Schedule 7)	Hydrogen chloride	60 mg/m^3	½-hr average	Continuous measurement	BS 14181
	Hydrogen chloride	10 mg/m^3	daily average	Continuous measurement	BS 14181
A1 & A2 (as shown on site plan in Schedule 7)	Hydrogen fluoride	2 mg/m^3	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A1 & A2 (as shown on site plan in Schedule 7)	Carbon monoxide	100 mg/m^3	½-hr average	Continuous measurement	BS 14181
	Carbon monoxide	50 mg/m^3	daily average	Continuous measurement	BS 14181
A1 & A2 (as shown on site plan in Schedule 7)	Sulphur dioxide	200 mg/m^3	½-hr average	Continuous measurement	BS 14181
	Sulphur dioxide	50 mg/m^3	daily average	Continuous measurement	BS 14181
A1 & A2 (as shown on site plan in Schedule 7)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	400 mg/m^3	½-hr average	Continuous measurement	BS 14181
	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200 mg/m^3	daily average	Continuous measurement	BS 14181
A1 & A2 (as shown on site plan in Schedule 7)	Cadmium & thallium and their compounds (total)	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1 & A2 (as shown on site plan in Schedule 7)	Mercury and its compounds	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211
A1 & A2 (as shown on site plan in Schedule 7)	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385

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

Emission point ref. & location	Parameter	Limit	Reference period	Monitoring frequency	Monitoring standard or method
A1 & A2 (as shown on site plan in Schedule 7)	Dioxins / furans (I-TEQ)	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 & A2 (as shown on site plan in Schedule 7)	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
	Dioxin-like PCBs (WHO-TEQ Fish)				
	Dioxin-like PCBs (WHO-TEQ Birds)				
A1 & A2 (as shown on site plan in Schedule 7)	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	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 & A2 (as shown on site plan in Schedule 7)	Dioxins / furans (WHO-TEQ Humans / Mammals)	No limit set	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
	Dioxins / furans (WHO-TEQ Fish)				
	Dioxins / furans (WHO-TEQ Birds)				

Table S3.1(a) Point source emissions to air during abnormal operation of incineration plant – emission limits and monitoring requirements

Emission point ref. & location	Parameter	Limit	Reference period	Monitoring frequency	Monitoring standard or method
A1 & A2 (as shown on site plan in Schedule 7)	Particulate matter	150 mg/m^3	½-hr average	Continuous measurement	BS 14181
	Total Organic Carbon (TOC)	20 mg/m^3	½-hr average	Continuous measurement	
	Carbon monoxide	100 mg/m^3	½-hr average	Continuous measurement	

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit	Monitoring frequency	Monitoring standard or method
There are no direct discharges to local water courses					

Table S3.3 Noise monitoring requirements

Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Noise survey at, or nearby, sensitive receptors and at representative locations on the site boundary	Noise	Once during commissioning and once within 6 months of plant commissioning	BS 4142:1997	Plant to be operating at a high a rate as practicable. Survey to be carried out in accordance with the requirements of PO4

Table S3.4 Process monitoring requirements

Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Location close to the Combustion Chamber inner wall or as identified and justified in Application.	Temperature (°C)	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 & A2 (as shown on site plan in Schedule 7)	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
	Exhaust gas oxygen content	Continuous	BS EN 15267-3	---
W1, W2, W3 Drainage of uncontaminated rain water to attenuation pond (W1) and surface water to MBT Plant interceptors (W2, W3) (as shown on site plan in Schedule 7)	Visible oil and grease (W2 and W3 only)	Weekly	---	---

Table S3.5 Residue quality

Emission point reference or source or description of point of measurement	Parameter	Limit	Monitoring frequency	Monitoring standard or method *
Bottom Ash (from each pyrolysis/gasifier line)	Loss On Ignition – LOI	<5%	Monthly in the first year of operation. Then Quarterly	Environment Agency ash sampling protocol.
Bottom Ash (from each pyrolysis/gasifier line)	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.	None set	Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Environment Agency ash sampling protocol.
APC Residues (from each pyrolysis/gasifier line)				
Bottom Ash (from each pyrolysis/gasifier line)	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions	None set	Before use of a new disposal or recycling route	Sampling and analysis as per Environment Agency ash sampling protocol.
APC Residues (from each pyrolysis/gasifier line)				

* 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, 1 Oct
LOI	Bottom Ash (from each pyrolysis/gasifier line)	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul, 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 (from each pyrolysis/gasifier line) APC Residues (from each pyrolysis/gasifier line)	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul, 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 (from each pyrolysis/gasifier line) APC Residues (from each pyrolysis/gasifier line)	Before use of a new disposal or recycling route	
Functioning and monitoring of the incineration plant as required by condition 4.2.2	Plant function	Annually	1 Jan

Table S4.2: Annual production/treatment

Parameter	Units
Total waste incinerated (a)	tonnes
Electrical energy exported (b)	MWh
Electrical energy used on installation (c)	MWh
Thermal energy exported from the installation (d)	MWh
Total electrical and thermal energy generated (b + c + d)	MWh

Table S4.3 Performance parameters

Parameter	Frequency of assessment	Units
Electrical energy imported at the EfW installation	Quarterly	kWh / tonne of waste incinerated
Fuel oil consumption	Quarterly	litres / tonne of waste incinerated
Mass of Bottom Ash and boiler ash produced	Quarterly	kg / tonne of waste incinerated
Mass of APC (filter + cyclone) residues produced	Quarterly	kg / tonne of waste incinerated
Activated Carbon consumption	Quarterly	kg / tonne of waste incinerated
Sodium bicarbonate consumption	Quarterly	kg / tonne of waste incinerated
Water consumption	Quarterly	m^3 / tonne of waste incinerated
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**
Releases to Air	Forms **Air 1 to Air 9** inclusive or other forms as agreed in writing by the Environment Agency	01/12/12
Residues quality	Form **Residues 1** or other form as agreed in writing by the Environment Agency	01/12/12
Other performance indicators	Form **Performance 1** or other form as agreed in writing by the Environment Agency	01/12/12
Annual reporting	Forms **Annual Performance 1** and **Annual Performance 2** or other form as agreed in writing by the Environment Agency	01/12/12

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	EPR/JP3535CE
Name of operator	New Earth Energy (West) Operations Limited
Location of Facility	Avonmouth Energy Facility, Kings Weston Lane, Bristol, Avon, BS11 8AZ
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 equipment" means that equipment dedicated to the removal of polluting substances from releases from the installation to air or water media.

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

"APC residues" means air pollution control residues and includes bag filter residues and gasifier cyclone 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.

"bottom ash" means ash collected from the gasifier and boiler ash collected after soot blowing.

"CEM" means Continuous Emission Monitor.

"CEN" means Commité Européen de Normalisation.

"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 pyrolysis/gasifier 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[g,h,i]perylene, Benzo[a]pyrene, Cholanthrene, Chrysene, Cyclopenta[c,d]pyrene, Dibenzo[a,h]anthracene, Dibenzo[a,i]pyrene Fluoranthene, Indo[1,2,3-c,d]pyrene, Naphthalene.

"Pests" means Birds, Vermin and Insects.

"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 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 abatement plant or the measurement devices, other than continuous emission monitors for releases to air of particulates, TOC and/or CO, during which the concentrations in the discharges into air and the purified waste water 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.

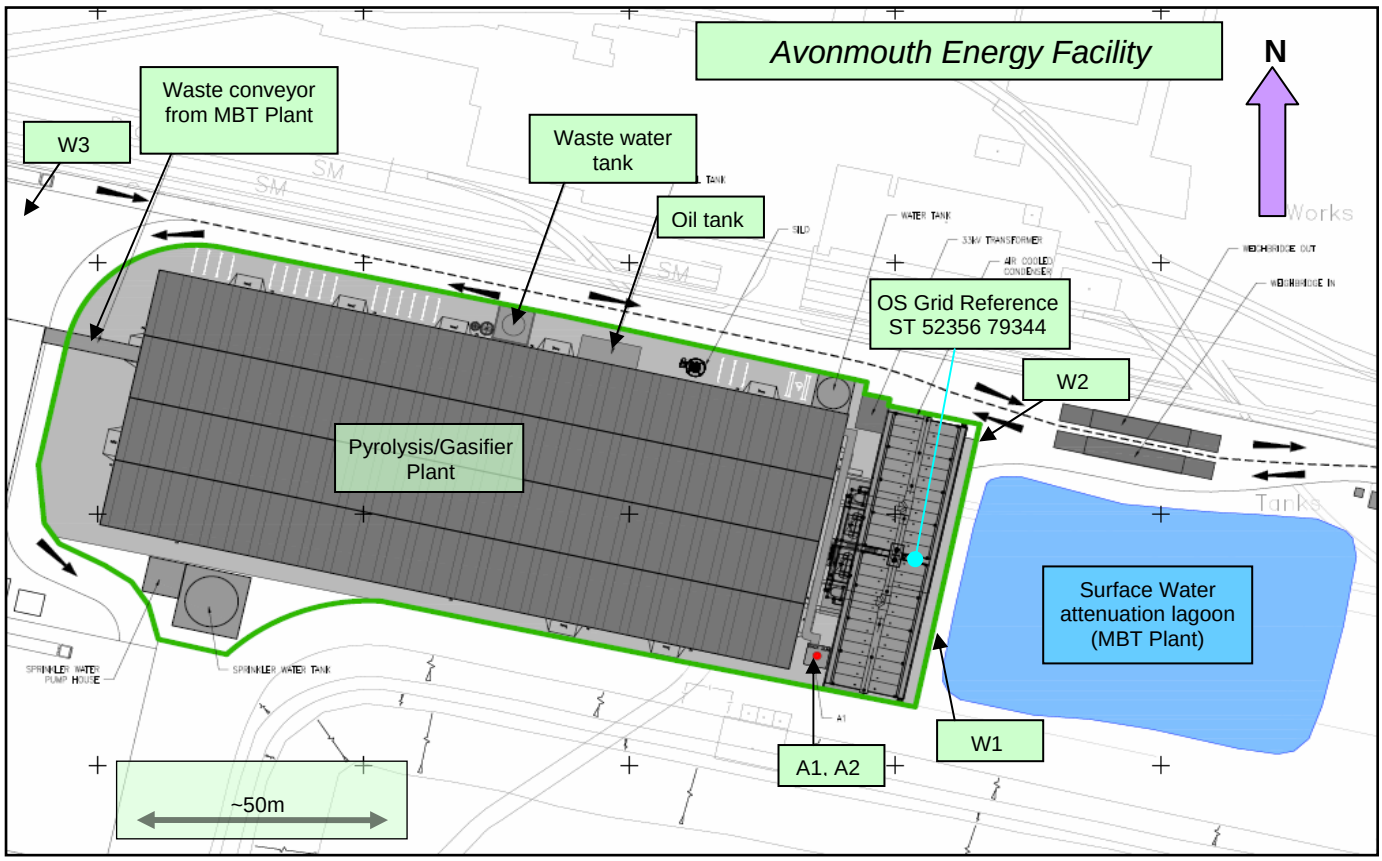
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means in relation to gases from incineration plants other than those burning waste oil, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 11% dry.

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

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