Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Air Products Renewable Energy Limited

Tees Valley 2 Renewable Energy Facility
Reclamation Pond
Huntsman Drive
Stockton-on-Tees
TS2 1TT

Permit number

EPR/XP3336NN

Tees Valley 2 Renewable Energy Facility
Permit Number EPR/XP3336NN

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 conversion of waste to energy in a gasification plant. The relevant listed activity is 5.1 Part A(1)(b) The incineration of non-hazardous waste in an incineration plant with a capacity exceeding 3 tonnes per hour. The permit implements the requirement of the EU Directives on Industrial Emissions and Waste.

The main features of the permit are as follows:

The facility will produce approximately 49.9 MWe through oxygen-assisted plasma gasification of approximately 385,000 tonnes per year of processed municipal solid waste (MSW) including some commercial and industrial waste (C&I) conveyed directly from an adjacent recycling facilities, owned and operated by others where raw municipal solid waste will be processed by the recycler to remove recyclable materials, such as ferrous and non-ferrous metals, glass, and some plastics, and will then be shredded to approximately 300mm average size and delivered to the facility via conveyor. The MSW will be further processed to increase its density, mixed with metallurgical coke and limestone fluxant, and then introduced into the top of a vertical cylindrical gasifier.

As the material moves downward in the atmospheric pressure gasifier, it is heated by electric plasma torches to bulk temperatures in excess of 1,200ºC. Most of the carbon in the waste reacts with controlled amounts of oxygen introduced immediately above the plasma torches to produce carbon monoxide. Some of the carbon reacts with water present in the waste or steam introduced into the gasifier to produce hydrogen, carbon monoxide and methane. The product syngas is partially quenched as it exits from the top of the gasifier vessel to cool and increase the density of the syngas prior to the gas cleaning and conditioning train. Inorganic and inert materials exit the bottom of the gasifier as slag, which is quenched in a water bath, and conveyed onto trucks for offsite reuse or disposal by a recycler.

The syngas produced undergoes a series of process operations to further quench, scrub, cool, compress, and remove particulates, HCl, ammonia, sulphur compounds, and mercury from the syngas to make it suitable as fuel for two combustion gas turbines and an auxiliary boiler to power a steam turbine.

The gas turbine generators will produce electricity, and the heat from each turbine‘s exhaust will be recovered as steam in heat recovery steam generators. The steam produced will be delivered to the steam turbine generator to produce additional electric power; in addition, excess syngas will fuel a direct fired auxiliary boiler which will produce additional steam for operation of the steam turbine. The exhaust from the auxiliary boiler plant and gas turbines will be catalytically treated to remove NO_x. The electric power will be transformed to 132kV and delivered to the National Grid. A flare stack will be in operation during start up periods and potentially during abnormal or emergency periods of operation.

Scrubbing water and process wastewater is treated and filter cake and particulates separated and these will be recycled back to the gasifier feed for destruction. The water is then sent to an offsite Wastewater Treatment Facility for further treatment.

Each of the three stacks will be fitted with continuous emission monitors

Process wastewater will be collected, treated, and re-used as far as possible.

Rainwater that falls on areas that can potentially contaminate the rainwater with oil is discharged via oil water separators and collected with the non-contact wastewater from the facility (cooling tower blowdown, clean rainwater, demineraliser regeneration waste). This discharges to the effluent basin and subsequently to the River Tees.

The site is located approximately 2.0 km to the north of South Bank, 2.5 km east of Port Clarence and 4.5 km to the east of Billingham on the Reclamation Pond Site. It is situated in the Seal Sands Area on the north bank of the Tees Estuary in Stockton, Teesside. The site is located near to Ramsar site and SPA Teesmouth and Cleveland Coast and SSSI Tees and Hartlepool Foreshore and Wetlands.

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

Status log of the permit

Description	Date	Comments
Application EPR/XP3336NN/A001	Duly made 19/08/2013	Application for a plasma torch gasification renewable energy facility.
Permit determined EPR/XP3336NN	10/04/2014	Permit issued to Air Products Renewable Energy Limited.

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
EPR/XP3336NN

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

Air Products Renewable Energy Limited ("the operator"),

whose registered office is
Hersham Place Technology Park
Molesey Road
Walton-on-Thames
Surrey
KT12 4RZ

company registration number 08443239

to operate an installation at
Tees Valley 2 Renewable Energy Facility
Reclamation Pond
Huntsman Drive
Stockton-on-Tees
TS2 1TT

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

Name	Date

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 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 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 waste disposal is necessary, this is undertaken in a manner which minimised 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 red 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.

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, from storage, if:

(a) any continuous emission limit value in schedule 3 table S3.1 is exceeded other than in the conditions described in 2.3.11; or

(b) no monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 are available other than in the conditions described in 2.3.11 .

(c) Both of the combustion gas turbines or one combustion gas turbine and the auxiliary boiler trips or malfunctions simultaneously such that not all of the syngas produced at the gasifier can be combusted other than to flare.

2.3.7 Operation of the Auxiliary Boiler using syngas, shall cease if the combustion gas temperature falls below 850^0C.

2.3.8 The operator shall have at least one auxiliary burner in operation within the gasification chamber at start up or shut down, as long as incompletely gasified waste is present in the gasification 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.

2.3.9 The operator shall record the beginning and end of each period of abnormal operation, such as one or more turbines being offline, mechanical failure of abatement plant, or requiring emergency flare operation.

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

2.3.11 Where, during operation, either of the following situations arise, the operator shall, as soon as is practicable, cease the gasification 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) or continuous effluent monitoring device(s) are out of service, for any period exceeding four hours of abnormal operation, maximum sixty hours cumulative in any twelve months on a combustion line, as the case may be; or

(b) in the event of one CEMs package failure at any single point source emission to air, whereby the affected CEMs cannot meet the condition 2.3.11 (a), the respective combustion device is to be shutdown and the syngas diverted to the remaining devices for combustion to demonstrate compliance, as detailed in the application or as agreed in writing with the Environment Agency.

2.3.12 The operator shall interpret the end of the period of “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 gasification 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 “abnormal operation”;

(d) when in any twelve month rolling period an aggregated period of sixty hours “abnormal operation” has been reached for a given combustion line.

2.3.13 Vitrified slag 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, S3.2 and S3.3

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

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

(a) disposal or recovery routes change; or

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

3.1.4 The Operator shall carry out monitoring of groundwater at least once every five years; and of soil at least once every ten years unless such monitoring is based on a systematic appraisal of the risk of contamination; to the protocol agreed in writing with the Environment Agency under Pre-operational measure PO 7 in Table S1.4.

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, S3.2 and S3.3;

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

(c) residue quality in table S3.5

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

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by 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 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2 and S3.3 unless otherwise agreed in writing by 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 respectively. 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 55(2) of the Industrial Emissions Directive) give an account of the running of the process and the emissions into air and water compared with the emission standards in the IED.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by 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 Operator shall:

(a) in the event that the operation of the activities give rise to an incident or accident which significantly affects or may significantly affect the environment, the Operator must immediately-
  (i) inform the Environment Agency,
  (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
  (iii) take the measures necessary to prevent further possible incidents or accidents;

(b) in the event of a breach of any permit condition, the Operator must immediately-
  (i) inform the Environment Agency, and
  (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) in the event of a breach of permit conditions which pose an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the Operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to a breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where 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.

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 A(1) (b)	The incineration of non-hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity exceeding 3 tonnes per hour.	From receipt of waste to emission of exhaust gas and disposal of waste arising. Waste types and quantities as specified in Table S2.2 of this permit.
S5.4 A(1) (a) (ii)	Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day by physico-chemical treatment.	On site effluent treatment plant
Directly Associated Activities		
Electricity Generation	Generation of electrical power using a steam turbine from energy recovered from the gas turbine exhaust gases.	
Back up electrical generator	For providing emergency electrical power to the plant in the event of supply interruption.	

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Sections: 1.2 Non-technical summary; 2.1 In-process controls; 2.2 Emission controls; 2.3 Management techniques; 2.4 Raw and auxiliary materials; 2.5 Waste management, storage and handling; 2.6 Waste recovery and disposal; 2.7 Energy and 2.10 Monitoring.	Duly Made Date 19/08/2013

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be subject to certification.	Within 12 months of the date on which waste is first accepted.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC2	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 A2, A3 and A4 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.
IC3	The Operator shall submit a written report to the Environment 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. 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 6 months of the completion of commissioning.
IC4	The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of the Selective Catalytic Reduction (SCR) system and combustion settings to minimise oxides of nitrogen (NO_x) emissions within the emission limit values described in this permit with the minimisation of nitrous oxide emissions. The report shall include an assessment of the level of NO_x 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 6 months of the completion of commissioning.
IC5	The Operator shall carry out an assessment of the impact of emissions to air of all the following component metals subject to emission limit values, i.e. Cd, Tl, Hg, Sb, Cr, Co, Cu, Mn, Ni and V. 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

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC6	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 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.

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 Environment Agency and make available for inspection all documents and procedures which form part of the EMS.
PO2	Prior to the commencement of commissioning, the Operator shall send a report to the Environment 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 to the Environment Agency for approval a protocol for the sampling and testing of the vitrified slag for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the IBA protocol as approved.
PO4	Prior to the commencement of commissioning; the Operator shall provide a written commissioning plan, including timelines for completion, for agreement by the Environment 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 Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as agreed.
PO5	Prior to the commencement of commissioning, the Operator shall submit a written report to the Agency detailing the waste acceptance procedure 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 agreement from the Agency.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO6	Prior to the commencement of commissioning, the Operator shall submit a written report on the baseline conditions of soil and groundwater at the installation. The report shall contain the information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definitive cessation of activities provided for in Article 22(3) of the IED. The report shall contain information, supplementary to the already provided in the Application Site Condition Report, needed to meet the information requirements of Article 22(2) of the IED.
PO7	The Operator shall submit the written protocol referenced in condition 3.2.4 for the monitoring of soil and groundwater for approval by the Environment Agency. The protocol shall demonstrate how the Operator will meet the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the IED. *The protocol shall be implemented in accordance with the written approval from the Agency.*

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Metallurgical Coke/Anthracite/Bed Material	< 0.8% sulphur content
Fuel Oil – Back-up generator	< 0.1% sulphur content

Table S2.2 Permitted waste types and quantities for gasification plant	
Maximum quantity	385,000 tonnes/annum
Waste code	**Description**
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARA-TION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE
19 10	Wastes from shredding of metal-containing wastes
19 10 04	Fluff-light fraction and dust other than those mentioned in 19 10 03
19 10 06	Other fractions other than those mentioned in 19 10 05
19 12	Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 01	Paper and cardboard
19 12 04	Plastic and rubber
19 12 07	Wood other than that mentioned in 19 12 06
19 12 08	Textiles
19 12 10	Combustible waste (refuse derived fuels)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
20	20 MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	Separately collected fractions (except 15 01)
20 01 38	Wood other than that mentioned in 20 01 37

Schedule 3 – Emissions and monitoring

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

Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard(s) or method(s)
A1 (as located on site plan in Schedule7)	Particulate matter, NOx, SO_X, CO, CO_2, TOC, HCl, HF, NH_3 and heavy metals	Flare Stack	No limits			
A2, A3 and A4 (as located on site plan in Schedule7)	Particulate matter	Exhaust Stacks from two gas turbines and one auxiliary boiler	30 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Particulate matter	Exhaust Stacks from two gas turbines and one auxiliary boiler	10 mg/m^3	daily average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Total Organic Carbon (TOC)	Exhaust Stacks from two gas turbines and one auxiliary boiler	20 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Total Organic Carbon (TOC)	Exhaust Stacks from two gas turbines and one auxiliary boiler	10 mg/m^3	daily average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Hydrogen chloride	Exhaust Stacks from two gas turbines and one auxiliary boiler	20 mg/m^3	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS EN 1911 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)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A2, A3 and A4 (as located on site plan in Schedule7)	Hydrogen fluoride	Exhaust Stacks from two gas turbines and one auxiliary boiler	2 mg/m^3	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A2, A3 and A4 (as located on site plan in Schedule7)	Carbon monoxide	Exhaust Stacks from two gas turbines and one auxiliary boiler	100 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Carbon monoxide	Exhaust Stacks from two gas turbines and one auxiliary boiler	50 mg/m^3	daily average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Sulphur dioxide	Exhaust Stacks from two gas turbines and one auxiliary boiler	200 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Sulphur dioxide	Exhaust Stacks from two gas turbines and one auxiliary boiler	50 mg/m^3	daily average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Exhaust Stacks from two gas turbines and one auxiliary boiler	400 mg/m^3	½-hr average	Continuous measurement	BS EN 14181
A2, A3 and A4 (as located on site plan in Schedule7)	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Exhaust Stacks from two gas turbines and one auxiliary boiler	200 mg/m^3	daily average	Continuous measurement	BS EN 14181

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A2, A3 and A4 (as located on site plan in Schedule7)	Cadmium & thallium and their compounds (total)	Exhaust Stacks from two gas turbines and one auxiliary boiler	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, A3 and A4 (as located on site plan in Schedule7)	Mercury and its compounds	Exhaust Stacks from two gas turbines and one auxiliary boiler	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211
A2, A3 and A4 (as located on site plan in Schedule7)	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	Exhaust Stacks from two gas turbines and one auxiliary boiler	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, A3 and A4 (as located on site plan in Schedule7)	Ammonia (NH_3)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	periodic over minimum 1-hour period	For periodic measurement, quarterly in the first year of operation, then bi-annual	Procedural requirments of BS EN 14791
A2, A3 and A4 (as located on site plan in Schedule7)	Nitrous oxide (N_2O)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	periodic over minimum 1-hour period	For periodic measurement, quarterly in the first year of operation, then bi-annual	BS EN ISO 21258
A2, A3 and A4 (as located on site plan in Schedule7)	Dioxins / furans (I-TEQ)	Exhaust Stacks from two gas turbines and one auxiliary boiler	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, A3 and A4 (as located on site plan in Schedule7)	Dioxins / furans (WHO-TEQ Humans / Mammals)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	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)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A2, A3 and A4 (as located on site plan in Schedule7)	Dioxins / furans (WHO-TEQ Fish)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	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, A3 and A4 (as located on site plan in Schedule7)	Dioxins / furans (WHO-TEQ Birds)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	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, A3 and A4 (as located on site plan in Schedule7)	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
A2, A3 and A4 (as located on site plan in Schedule7)	Dioxin-like PCBs (WHO-TEQ Fish)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
A2, A3 and A4 (as located on site plan in Schedule7)	Dioxin-like PCBs (WHO-TEQ Birds)	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948-4
A2, A3 and A4 (as located on site plan in Schedule7)	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	Exhaust Stacks from two gas turbines and one auxiliary boiler	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS ISO 11338 Parts 1 and 2.

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard(s) or method(s)**
A5 and A6 (as located on site plan in Schedule7)	Particulate matter, NOx, SO_2, CO, CO_2 and TOC.	Exhaust stacks from diesel firewater pump and stand by generator.	No Limits			

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 (as located on site plan in Schedule7)	TDS, TSS, BOD, COD, heavy metals, sulphates as SO_4, nitrates as NO_3, nitrites as NO_2 and ammonia as N.	Non-contact cooling water and potentially contaminated surface water, via settlement and oil removal.	No limit set.			
W1 (as located on site plan in Schedule7)	pH	Boiler blowdown	6-9	Instantaneous	Continuous	BS6068-2.50
W1 (as located on site plan in Schedule7)	No parameters set	Uncontaminated Surface water	No limit set			

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
S1 (as located on site plan in Schedule7)	TDS, TSS, BOD, COD, oil and grease heavy metals, sulphates as SO_4, nitrates as NO_3, nitrites as NO_2 and ammonia as N, total sulphides, fluorides, chlorine, sulphates, total phosphorus.	Gas scrubber and quench effluent via onsite treatment plant to Bran Sands wastewater treatment plant then to the River Tees.	No limit set.			

Table S3.4 Process monitoring requirements				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
A2, A3 and A4 (as located on site plan in Schedule7)	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A2, A3 and A4 (as located on site plan in Schedule7)	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A2, A3 and A4 (as located on site plan in Schedule7)	Exhaust gas oxygen content	Continuous	BS EN 15267-3 BS EN 14181	
A2, A3 and A4 (as located on site plan in Schedule7)	Exhaust gas water vapour content	Continuous	BS EN 14181	

Table S3.5 Residue quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit**	**Monitoring frequency**	**Monitoring standard or method ***	**Other specifications**
Vitrified Slag	TOC	<3%	Monthly in the first year of operation. Then Quarterly	Environment Agency ash sampling protocol.	
Vitrified Slag	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.		Monthly in the first year of operation. Then Quarterly	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 3.1.1	A2, A3, and A4.	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
Emissions to water Parameters as required by condition 3.1.1	W1	Annually	1 Jan
Emissions to sewer Parameters as required by condition 3.1.1	S1	Annually	1 Jan
TOC Parameters as required by condition 3.1.1	Vitrified Slag	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 3.1.1	Vitrified Slag	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
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 municipal waste gasified (including C&I)	tonnes
Total metallurgical coke processed	tonnes
Electrical energy produced	KWhrs
Electrical energy exported	KWhrs
Electrical energy used on installation	KWhrs
Total thermal energy exported	kWhrs

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
Metallurgical coke consumption	Quarterly	Kgs / tonne of waste incinerated and percentage ratio to MSW
Mass of vitrified slag produced	Quarterly	Kgs / tonne of waste incinerated
Mass of other solid residues produced	Quarterly	Kgs / tonne of waste incinerated
Ammonia consumption	Quarterly	Kgs / tonne of waste incinerated
Activated carbon consumption	Quarterly	Kgs / tonne of waste incinerated
Limestone consumption	Quarterly	Kgs / tonne of waste incinerated
Water consumption	Quarterly	Kgs / tonne of waste incinerated

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form air 1-8 or other form as agreed in writing by the Environment Agency	10/11/13
Water and Land	Form water 1 or other form as agreed in writing by the Environment Agency	10/11/13
Sewer	Form sewer 1 or other form as agreed in writing by the Environment Agency	10/11/13
Residues	Form residues 1 or other form as agreed in writing by the Environment Agency	10/11/13
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	10/11/13
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	10/11/13

Schedule 5 - Notification

These pages outline the information that the operator must provide.

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

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

Part A

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

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

(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.

"abnormal operation" means any technically unavoidable stoppages, disturbances, or failures of the abatement plant or the measurement devices during whichthe concentrations in the discharges into air and the purified waste water of the regulated substances may exceed the normal emission limit values.

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

"APC residues" means air pollution control residues.

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

"authorised officer" means any person authorised by 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;

"CEM" 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 consecutive discrete periods of 24 hours as described in the application 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 2008/98/EC of the Waste Frameword Directive.

"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.

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

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

"ISO" means International Standards Organisation.

"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 II to Directive 2008/98/EC of the Waste Framework Directive.

"*shut down"* is any period where the plant is being returned to a non-operational state and there is no waste being consumed.

"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.

"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 Vitrifieid Slag, this means the total carbon content of all organic species present in the material (excluding carbon in elemental form).

"*Vitrified Slag*" means solidified material tapped off from the gasifier.

"Waste code" means the six digit code referable to a type of waste in accordance with the List of Wastes (England)Regulations 2005, and in relation to hazardous waste, includes the asterisk.

"Waste Framework Directive (WFD)" means (Directive 2008/98/EC of the European Parliament and Council).

"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 and co-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. However, the minimum value should be used when assessing compliance with the emission limit value in table S3.1.

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

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